



Full wwPDB EM Validation Report ⓘ

Feb 25, 2024 – 01:20 AM EST

PDB ID : 7KZN
EMDB ID : EMD-23083
Title : Outer dynein arm core subcomplex from *C. reinhardtii*
Authors : Walton, T.; Wu, H.; Brown, A.B.
Deposited on : 2020-12-10
Resolution : 4.00 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:

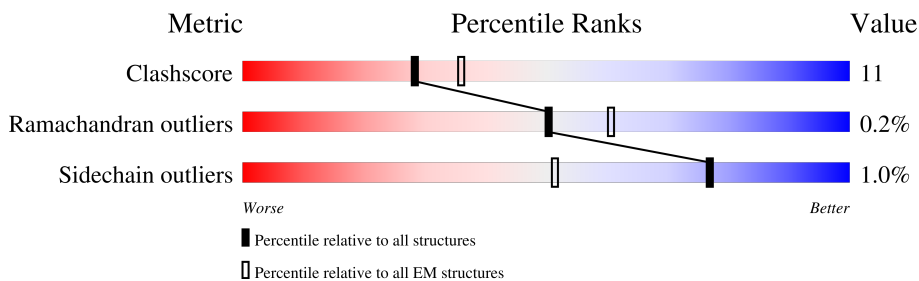
EMDB validation analysis : 0.0.1.dev70
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

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 4.00 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.





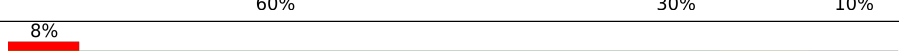
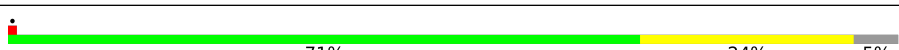


Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	4503	
2	B	4568	
3	C	4485	
4	D	683	
5	E	567	
6	F	136	
7	G	159	
8	H	120	

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Mol	Chain	Length	Quality of chain
9	I	105	 70% 26%
10	J	100	 78% 16% 6%
11	K	91	 63% 27% 10%
11	L	91	 65% 25% 10%
11	M	91	 60% 30% 10%
11	N	91	 8% 80% 10% 10%
12	O	117	 12% 81% 10% 17%
13	P	103	 71% 24% 5%
14	X	121	 100%
15	Y	168	 99%
16	Z	184	 18% 64% 21% 15%

2 Entry composition [i](#)

There are 16 unique types of molecules in this entry. The entry contains 31205 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 Heavy chain alpha.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
1	A	315	1544	914	315	315	0	0

- Molecule 2 is a protein called Flagellar outer dynein arm heavy chain beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	683	5028	3180	878	946	24	0	0

- Molecule 3 is a protein called Dynein gamma chain, flagellar outer arm.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	965	7293	4574	1296	1386	37	0	0

- Molecule 4 is a protein called Dynein, 78 kDa intermediate chain, flagellar outer arm.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	456	3609	2297	610	678	24	0	0

- Molecule 5 is a protein called Dynein, 70 kDa intermediate chain, flagellar outer arm.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	E	474	3697	2332	623	725	17	0	0

- Molecule 6 is a protein called Flagellar outer dynein arm light chain 2.

Mol	Chain	Residues	Atoms			AltConf	Trace	
			Total	C	N			O
6	F	100	495	295	100	100	0	0

- Molecule 7 is a protein called Dynein 18 kDa light chain, flagellar outer arm.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	G	138	1089	677	183	220	9	0	0

- Molecule 8 is a protein called Dynein 11 kDa light chain, flagellar outer arm.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
8	H	91	451	269	91	91	0	0

- Molecule 9 is a protein called Dynein light chain roadblock LC7a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	I	103	827	525	148	153	1	0	0

- Molecule 10 is a protein called Dynein light chain roadblock LC7b.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	J	94	741	466	133	140	2	0	0

- Molecule 11 is a protein called Dynein 8 kDa light chain, flagellar outer arm.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	K	82	671	433	112	122	4	0	0
11	L	82	671	433	112	122	4	0	0
11	M	82	671	433	112	122	4	0	0
11	N	82	407	243	82	82		0	0

- Molecule 12 is a protein called Dynein light chain 9.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
12	O	97	481	286	97	98	0	0

- Molecule 13 is a protein called Dynein light chain 10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	P	98	805	523	128	146	8	0	0

- Molecule 14 is a protein called DC1.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
14	X	121	605	363	121	121	0	0

- Molecule 15 is a protein called DC2.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
15	Y	168	840	504	168	168	0	0

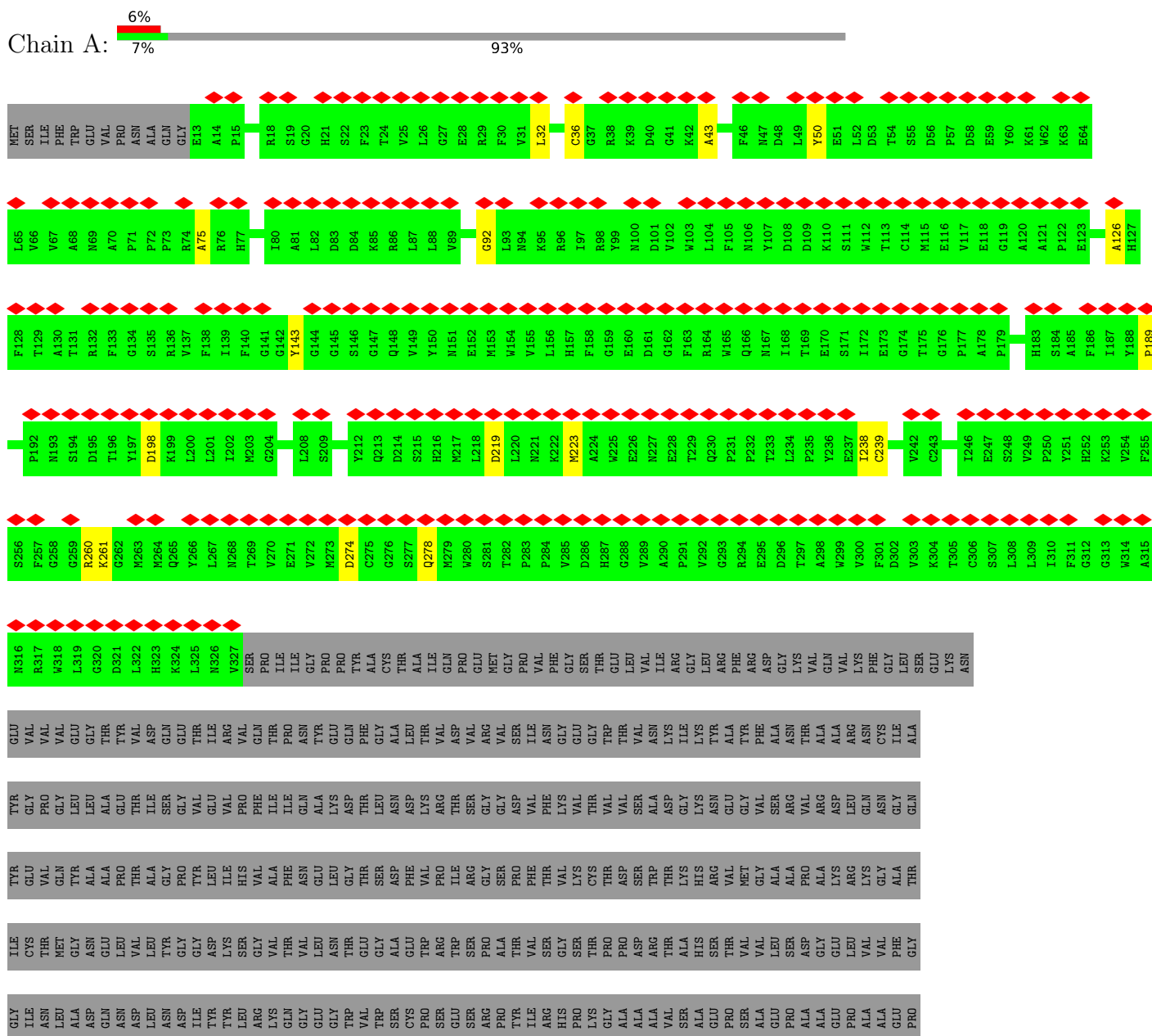
- Molecule 16 is a protein called Outer dynein arm-docking complex protein DC3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	Z	157	1280	798	221	252	9	0	0

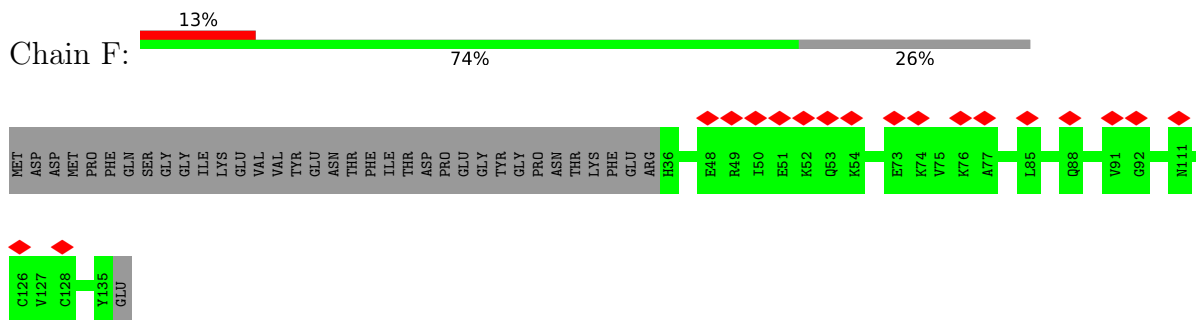
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

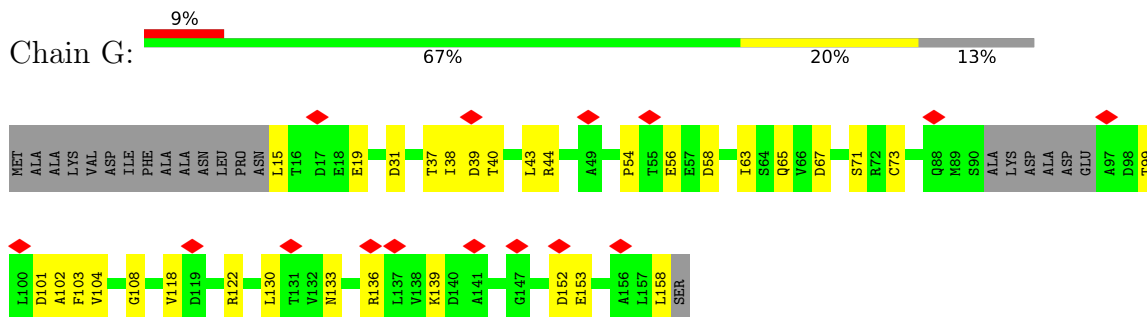
- Molecule 1: Heavy chain alpha



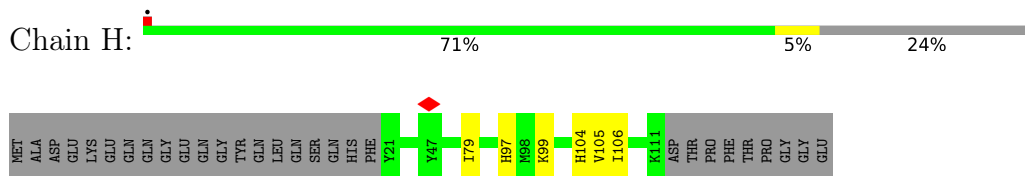
D795	KY99	L804	D807	V808	D809	L810	V811	L812	N813	T814	I815	K816	D817	K820	A821	T822	Q823	G824	I825	L826	ALA	MET	TRP	LYS	ASN	LEU	MET	PHE	ILE	GLU	ARG	LYS	THR	THR	THR	F845	D846	E847	L848	N849	D850	A851	F852	N853	Q854	Q858	R859	I863	R864	D865	
A866	GLY	LYS	LEU	LEU	LEU	SER	SER	SER	SER	ARG	VAL	LEU	VAL	SER	K885	S898	N899	I900	V901	I902	D903	G904	F905	S906	A907	ALA	ILE	ILE	ILE	GLU	SER	THR	VAL	ARG	LYS	GLN	LEU	GLN	ILE	VAL	ASP	PRO	ASP	GLY	GLY	ASN	LEU	GLU	ILE		
GLN	VAL	LEU	GLU	VAL	ILE	TRP	VAL	LYS	PRO	ASP	VAL	GLY	GLY	ALA	LYS	PRO	GLY	LEU	ARG	ASP	MET	ILE	LEU	GLN	ALA	ILE	ILE	GLU	PHE	GLU	LYS	GLN	VAL	ASP	VAL	ASP	VAL	ASP	GLY	GLY	ASN	LEU	GLN	ILE	VAL	ASP	PHE				
GLU	VAL	TYR	ASP	ALA	VAL	MET	TRP	MET	VAL	THR	ALA	GLY	ARG	CYS	GLU	ASP	PHE	LYS	PHE	GLU	ALA	LYS	TYR	VAL	LEU	TRP	LYS	TRP	ASP	GLY	GLN	ALA	THR	ILE	ILE	THR	THR	VAL	VAL	GLY	GLY	ASN	VAL	THR	ASP	GLU	ASP				
PRO	PRO	ALA	PHE	GLU	GLN	THR	VAL	THR	LYS	TYR	ASN	ALA	ILE	ALA	ALA	PHE	LYS	LYS	ALA	THR	MET	VAL	VAL	LYS	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL		
LYS	VAL	ASN	SER	ILE	THR	GLU	THR	PHE	THR	MET	THR	THR	THR	LEU	ASP	GLY	VAL	GLY	GLY	GLU	GLU	GLU	GLU	PRO	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	GLU	TYR		
ALA	ILE	MET	ARG	CYS	MET	ARG	ARG	ARG	THR	THR	THR	THR	THR	ARG	MET	THR	THR	LYS	GLY	THR	THR	ALA	HIS	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	MET	
LEU	ASN	ARG	GLU	GLN	LEU	PRO	LEU	GLN	THR	THR	THR	THR	THR	ARG	ARG	LYS	SER	ALA	ASN	GLU	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	LEU	
LEU	ASP	PHE	SER	GLY	SER	GLU	TYR	THR	THR	THR	THR	THR	THR	ALA	GLU	GLY	LYS	LEU	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	ILE	LEU
THR	VAL	MET	PHE	THR	THR	TRP	TRP	THR	LYS	TRP	TRP	TRP	TRP	ASP	PHE	PHE	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	LEU	
PRO	LEU	VAL	GLN	LEU	HIS	HIS	PRO	ALA	MET	GLU	ARG	HIS	MET	GLN	PHE	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	GLU
LEU	ASN	ILE	GLU	GLN	LEU	LYS	ILE	ASP	THR	THR	THR	THR	THR	ALA	PHE	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	SER	
ASN	PRO	MET	PHE	LEU	VAL	SER	TRP	GLN	ASN	ASN	MET	MET	ALA	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	ASN	
ALA	ASP	PHE	GLN	LEU	MET	ARG	THR	ASP	THR	THR	ASN	CYS	ARG	GLN	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	VAL	
SER	PRO	ALA	ASP	LEU	ILE	THR	THR	GLY	ASN	ASN	PRO	HIS	ARG	GLN	HIS	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	VAL	
GLU	ASP	SER	ASP	GLY	PRO	THR	VAL	THR	GLN	ASN	ASN	MET	MET	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	PHE	
THR	GLN	ILE	GLU	ALA	PHE	ASP	ASP	ASN	GLY	GLY	ASN	ASN	LYS	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	VAL	ARG	
ASP	LEU	VAL	LYS	LEU	ASP	ARG	VAL	GLU	GLN	GLN	MET	CYS	ILE	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	PRO	
LEU	THR	ASP	ARG	PHE	THR	THR	THR	THR	THR	THR	THR	THR	THR	ALA	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	HIS		
THR	TYR	GLY	ALA	GLN	THR	GLY	THR	THR	THR	THR	THR	THR	THR	ALA	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	MET	



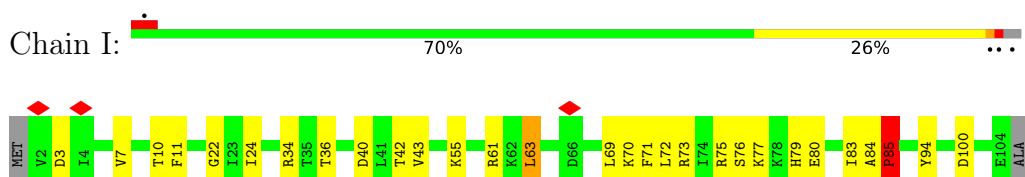
• Molecule 7: Dynein 18 kDa light chain, flagellar outer arm



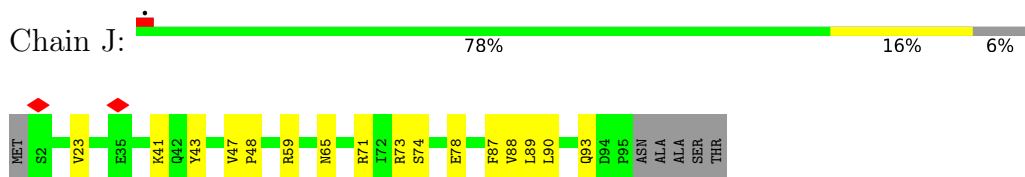
• Molecule 8: Dynein 11 kDa light chain, flagellar outer arm



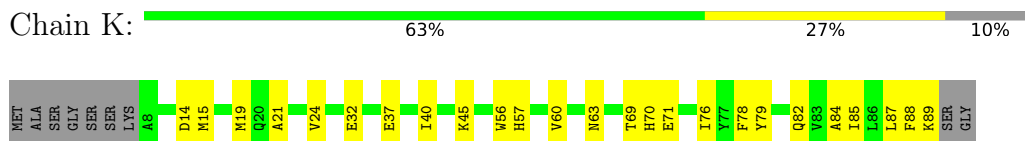
• Molecule 9: Dynein light chain roadblock LC7a



• Molecule 10: Dynein light chain roadblock LC7b



• Molecule 11: Dynein 8 kDa light chain, flagellar outer arm



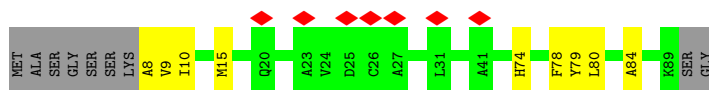
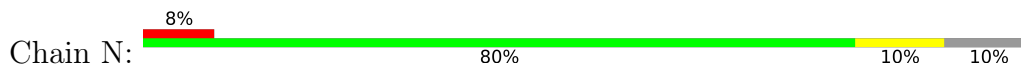
- Molecule 11: Dynein 8 kDa light chain, flagellar outer arm



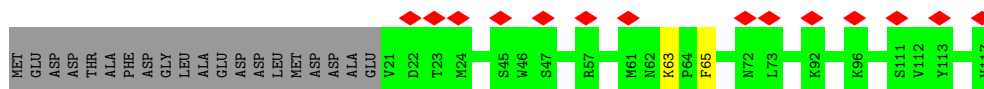
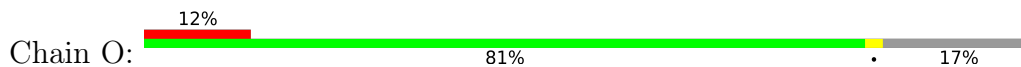
- Molecule 11: Dynein 8 kDa light chain, flagellar outer arm



- Molecule 11: Dynein 8 kDa light chain, flagellar outer arm



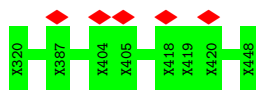
- Molecule 12: Dynein light chain 9



- Molecule 13: Dynein light chain 10



- Molecule 14: DC1

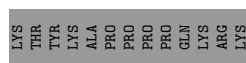
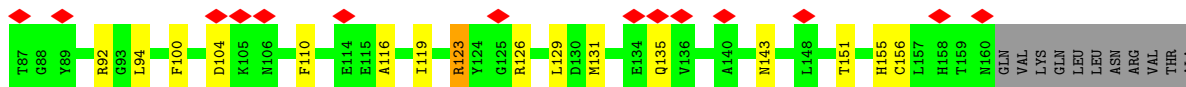


- Molecule 15: DC2





- Molecule 16: Outer dynein arm-docking complex protein DC3



4 Experimental information

Property	Value	Source
EM reconstruction method	HELICAL	Depositor
Imposed symmetry	HELICAL, twist=0°, rise=82 Å, axial sym=C1	Depositor
Number of segments used	485694	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 ($e^-/\text{Å}^2$)	61.48	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.150	Depositor
Minimum map value	-0.004	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.0125	Depositor
Map size (Å)	353.6, 353.6, 353.6	wwPDB
Map dimensions	260, 260, 260	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.36, 1.36, 1.36	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	0.26	0/1543	0.50	0/2140
2	B	0.43	0/5090	0.72	5/6881 (0.1%)
3	C	0.46	0/7381	0.71	8/9958 (0.1%)
4	D	0.70	2/3699 (0.1%)	0.88	6/5023 (0.1%)
5	E	0.71	1/3784 (0.0%)	0.90	7/5152 (0.1%)
6	F	0.24	0/494	0.52	0/687
7	G	0.34	0/1098	0.63	0/1471
8	H	0.26	0/450	0.46	0/626
9	I	0.57	0/840	0.85	3/1133 (0.3%)
10	J	0.55	0/752	0.78	0/1019
11	K	0.53	0/687	0.70	0/926
11	L	0.56	0/687	0.74	0/926
11	M	0.43	0/687	0.73	0/926
11	N	0.25	0/406	0.49	0/565
12	O	0.26	0/480	0.56	0/666
13	P	0.58	0/823	0.87	1/1108 (0.1%)
16	Z	0.32	0/1299	0.57	0/1745
All	All	0.52	3/30200 (0.0%)	0.74	30/40952 (0.1%)

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	D	314	SER	CA-CB	-5.72	1.44	1.52
5	E	336	GLU	CA-C	-5.47	1.38	1.52
4	D	378	VAL	CB-CG2	-5.17	1.42	1.52

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	D	376	LEU	CB-CG-CD1	8.76	125.89	111.00
3	C	129	PRO	CA-N-CD	-7.70	100.72	111.50
5	E	370	ARG	C-N-CA	-7.35	103.32	121.70
3	C	455	MET	CB-CG-SD	-6.89	91.72	112.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	552	LEU	CA-CB-CG	6.71	130.74	115.30
5	E	379	LEU	CB-CG-CD1	-6.70	99.61	111.00
3	C	586	ARG	CA-CB-CG	6.57	127.85	113.40
4	D	184	ARG	N-CA-CB	6.38	122.09	110.60
4	D	543	LEU	CB-CG-CD2	-6.04	100.73	111.00
2	B	795	ASP	CB-CG-OD1	5.97	123.67	118.30
2	B	603	ARG	CB-CG-CD	5.94	127.04	111.60
4	D	537	LEU	CA-CB-CG	5.82	128.69	115.30
5	E	454	LEU	CB-CG-CD1	-5.71	101.29	111.00
4	D	376	LEU	CB-CG-CD2	-5.67	101.36	111.00
4	D	439	LEU	CA-CB-CG	5.67	128.34	115.30
5	E	379	LEU	CA-CB-CG	5.64	128.28	115.30
5	E	231	LEU	CB-CG-CD2	-5.61	101.46	111.00
3	C	586	ARG	CB-CA-C	5.55	121.50	110.40
5	E	293	ASP	CB-CG-OD2	-5.51	113.34	118.30
2	B	566	LEU	CB-CG-CD1	-5.45	101.74	111.00
13	P	58	ASP	CB-CG-OD1	5.37	123.13	118.30
3	C	418	LEU	CA-CB-CG	5.29	127.46	115.30
5	E	431	MET	CA-CB-CG	5.23	122.18	113.30
9	I	61	ARG	NE-CZ-NH2	5.20	122.90	120.30
2	B	280	LEU	CA-CB-CG	-5.17	103.42	115.30
9	I	63	LEU	CA-CB-CG	5.16	127.17	115.30
9	I	85	PRO	N-CA-C	5.06	125.25	112.10
3	C	131	MET	CA-CB-CG	5.05	121.88	113.30
3	C	323	MET	CG-SD-CE	5.05	108.28	100.20
3	C	262	LEU	CB-CG-CD2	-5.00	102.49	111.00

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	1544	0	701	10	0
2	B	5028	0	4588	121	0
3	C	7293	0	6812	143	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	D	3609	0	3534	91	0
5	E	3697	0	3534	133	0
6	F	495	0	221	0	0
7	G	1089	0	1072	22	0
8	H	451	0	204	3	0
9	I	827	0	841	21	0
10	J	741	0	750	13	0
11	K	671	0	654	20	0
11	L	671	0	654	18	0
11	M	671	0	654	23	0
11	N	407	0	192	5	0
12	O	481	0	230	1	0
13	P	805	0	801	20	0
14	X	605	0	129	0	0
15	Y	840	0	181	1	0
16	Z	1280	0	1239	23	0
All	All	31205	0	26991	613	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 11.

All (613) 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)
8:H:79:ILE:O	8:H:105:VAL:HA	1.63	0.99
2:B:382:MET:O	2:B:386:VAL:HG23	1.69	0.92
2:B:503:GLU:HG2	4:D:510:SER:HB2	1.56	0.88
4:D:200:CYS:HG	13:P:89:TYR:HH	1.23	0.84
2:B:627:LEU:HG	2:B:631:MET:HE2	1.58	0.83
11:M:61:GLY:O	11:M:84:ALA:HB3	1.80	0.80
4:D:200:CYS:SG	13:P:89:TYR:OH	2.41	0.79
4:D:318:ASN:HD21	4:D:321:TYR:HB2	1.49	0.78
4:D:520:HIS:H	4:D:542:ARG:HD2	1.49	0.76
2:B:743:GLN:HE22	5:E:263:ARG:HD2	1.51	0.74
5:E:168:ASN:ND2	5:E:222:ALA:O	2.21	0.73
3:C:819:ILE:HG21	5:E:205:ASN:HB3	1.71	0.73
3:C:813:GLN:O	3:C:816:LEU:HB2	1.89	0.72
5:E:286:ASP:OD2	5:E:288:ASN:ND2	2.23	0.72
5:E:158:ASN:ND2	5:E:199:TYR:OH	2.23	0.71
5:E:266:ILE:HG22	5:E:268:ASP:H	1.55	0.71
4:D:319:PRO:HG2	4:D:370:PRO:HA	1.72	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:666:GLN:HG2	3:C:667:LEU:HD23	1.74	0.70
5:E:101:GLU:OE1	9:I:34:ARG:NH2	2.24	0.70
5:E:162:ARG:HD3	5:E:196:LEU:HD22	1.74	0.70
3:C:569:ARG:NH1	4:D:614:THR:OG1	2.24	0.69
4:D:282:TRP:O	4:D:638:LYS:NZ	2.23	0.69
4:D:436:ALA:HB3	4:D:454:LYS:HA	1.75	0.69
4:D:503:ARG:NH1	4:D:514:SER:OG	2.26	0.69
2:B:596:ARG:NE	5:E:404:TYR:OH	2.24	0.69
13:P:62:LYS:HG3	13:P:63:LYS:HD3	1.75	0.69
5:E:304:MET:SD	5:E:353:ARG:NH2	2.65	0.68
13:P:74:LYS:HE3	13:P:95:ARG:HD3	1.75	0.67
5:E:414:TRP:CD1	5:E:420:GLY:HA2	2.28	0.67
16:Z:151:THR:O	16:Z:155:HIS:ND1	2.24	0.67
2:B:590:VAL:HG11	2:B:635:ARG:HB3	1.76	0.67
2:B:619:GLU:HA	2:B:622:ARG:HG2	1.77	0.67
4:D:286:SER:O	4:D:290:ARG:NH1	2.28	0.67
4:D:598:LYS:O	4:D:598:LYS:NZ	2.28	0.66
3:C:784:ILE:HG12	3:C:820:ARG:HD3	1.77	0.66
4:D:349:ASN:ND2	4:D:352:HIS:O	2.29	0.66
5:E:375:SER:OG	5:E:376:LYS:N	2.27	0.66
4:D:195:THR:HG22	13:P:81:THR:HG22	1.78	0.66
2:B:349:GLN:NE2	2:B:353:ASN:OD1	2.29	0.66
5:E:332:MET:HG3	5:E:342:SER:HB2	1.76	0.66
7:G:15:LEU:N	7:G:19:GLU:OE2	2.29	0.66
11:K:15:MET:HE1	11:K:19:MET:HG3	1.76	0.66
3:C:696:LYS:O	3:C:700:ASN:ND2	2.28	0.66
11:L:68:VAL:HG23	11:M:57:HIS:HB3	1.78	0.66
5:E:454:LEU:HB3	5:E:468:VAL:HG11	1.78	0.65
9:I:84:ALA:O	9:I:94:TYR:HA	1.96	0.65
5:E:454:LEU:HD13	5:E:468:VAL:HG11	1.77	0.65
5:E:399:ILE:HG12	5:E:400:LEU:HD12	1.79	0.65
9:I:72:LEU:HB3	9:I:83:ILE:HB	1.78	0.65
4:D:418:GLN:HB2	4:D:427:GLN:HB2	1.78	0.65
2:B:392:ASN:HA	2:B:395:PHE:HD2	1.60	0.65
5:E:321:GLU:HG2	5:E:370:ARG:H	1.61	0.65
3:C:816:LEU:HD23	5:E:205:ASN:HD21	1.62	0.65
5:E:452:LEU:HB3	5:E:471:SER:HB3	1.80	0.64
2:B:418:PHE:O	2:B:422:ASP:HB2	1.98	0.64
7:G:99:THR:O	7:G:103:PHE:CB	2.45	0.64
11:K:60:VAL:HG22	11:K:85:ILE:HG12	1.79	0.64
4:D:583:VAL:HG22	4:D:589:VAL:HG22	1.80	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:G:44:ARG:NH1	7:G:54:PRO:O	2.30	0.63
3:C:586:ARG:HH21	4:D:520:HIS:CG	2.15	0.63
11:K:45:LYS:HG3	11:K:56:TRP:HB2	1.81	0.63
11:N:10:ILE:HA	11:N:78:PHE:HA	1.80	0.63
4:D:283:ASP:OD1	4:D:644:ARG:NH1	2.31	0.63
7:G:99:THR:O	7:G:103:PHE:HB2	1.97	0.63
7:G:136:ARG:HA	7:G:139:LYS:HE2	1.81	0.63
9:I:76:SER:HB3	9:I:79:HIS:H	1.63	0.63
11:K:78:PHE:HB2	11:K:85:ILE:HB	1.81	0.63
3:C:1029:GLY:O	7:G:65:GLN:NE2	2.32	0.62
3:C:573:PRO:O	3:C:577:ASN:ND2	2.32	0.62
4:D:203:TRP:HB2	10:J:59:ARG:HE	1.63	0.62
2:B:506:ARG:HH22	2:B:540:VAL:HG12	1.64	0.62
2:B:743:GLN:OE1	5:E:263:ARG:NH2	2.33	0.62
3:C:469:LYS:NZ	3:C:484:ASP:OD2	2.33	0.62
3:C:476:TYR:O	3:C:479:ASN:ND2	2.33	0.62
4:D:451:CYS:SG	4:D:454:LYS:NZ	2.73	0.62
11:L:67:TYR:HD2	11:M:45:LYS:HD3	1.65	0.62
3:C:226:ASP:H	3:C:230:ARG:HH12	1.48	0.62
3:C:417:PHE:O	3:C:421:ASP:HB2	1.99	0.62
4:D:408:LEU:O	4:D:409:ASN:ND2	2.32	0.62
1:A:274:ASP:O	1:A:278:GLN:N	2.33	0.61
2:B:147:GLU:OE2	3:C:154:LYS:NZ	2.34	0.61
2:B:627:LEU:HG	2:B:631:MET:CE	2.31	0.60
3:C:669:ARG:NH2	3:C:692:GLU:OE2	2.34	0.60
5:E:418:ARG:HD3	5:E:484:LEU:HD13	1.83	0.60
3:C:838:TYR:HD1	3:C:839:PRO:HD2	1.65	0.60
2:B:321:PHE:HB3	2:B:324:ILE:HD12	1.84	0.60
2:B:526:PHE:HB2	2:B:603:ARG:HH21	1.67	0.60
2:B:235:THR:O	2:B:239:PHE:HB2	2.01	0.60
16:Z:42:LEU:HA	16:Z:45:ARG:HD2	1.83	0.60
3:C:789:LEU:H	3:C:875:LEU:HD21	1.65	0.60
5:E:481:SER:OG	5:E:482:THR:N	2.33	0.60
5:E:262:HIS:HB2	5:E:290:LEU:HD13	1.82	0.59
2:B:155:PHE:HZ	3:C:152:THR:HG22	1.68	0.59
4:D:654:LYS:HG3	4:D:657:ASP:HB2	1.83	0.59
5:E:185:LEU:O	5:E:189:GLN:NE2	2.36	0.59
3:C:574:VAL:HG11	3:C:631:TRP:HB2	1.84	0.59
11:M:55:THR:OG1	11:M:89:LYS:NZ	2.35	0.59
5:E:385:THR:OG1	5:E:387:ARG:NE	2.35	0.59
3:C:129:PRO:HD2	3:C:130:ILE:H	1.67	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:569:ARG:NH1	4:D:614:THR:HG1	2.01	0.59
11:L:57:HIS:HB2	11:L:88:PHE:CE1	2.38	0.59
16:Z:10:TYR:HA	16:Z:13:LYS:HG2	1.83	0.59
2:B:591:ARG:HH21	2:B:693:LEU:HD21	1.68	0.58
3:C:823:GLU:O	3:C:827:ALA:N	2.36	0.58
4:D:575:LEU:HD11	4:D:644:ARG:HB2	1.85	0.58
8:H:99:LYS:HA	8:H:104:HIS:HA	1.84	0.58
10:J:47:VAL:HG11	10:J:90:LEU:HD11	1.85	0.58
5:E:164:ALA:HB3	5:E:469:GLY:HA3	1.85	0.58
16:Z:79:TYR:O	16:Z:83:ARG:NH2	2.36	0.58
5:E:379:LEU:HB2	5:E:414:TRP:CZ3	2.39	0.58
7:G:71:SER:OG	7:G:73:CYS:O	2.21	0.58
11:L:61:GLY:HA3	11:M:64:PHE:HA	1.86	0.58
2:B:424:PHE:HA	2:B:427:ARG:HD3	1.85	0.58
3:C:781:LEU:HD21	3:C:824:VAL:HG21	1.84	0.58
4:D:342:ILE:HG23	4:D:357:PHE:HB2	1.85	0.58
4:D:639:LEU:O	4:D:644:ARG:NH2	2.37	0.58
5:E:418:ARG:HD3	5:E:484:LEU:HA	1.84	0.58
3:C:116:LEU:HD12	3:C:163:VAL:HB	1.87	0.57
2:B:348:MET:HA	2:B:351:ILE:HD12	1.84	0.57
4:D:212:ASP:CG	13:P:20:LEU:HG	2.25	0.57
5:E:379:LEU:HB2	5:E:414:TRP:CH2	2.40	0.57
2:B:319:ASP:O	2:B:322:LYS:NZ	2.37	0.57
3:C:1030:VAL:HA	7:G:65:GLN:HE22	1.69	0.57
3:C:394:ARG:NH1	3:C:413:GLU:OE1	2.38	0.57
16:Z:131:MET:O	16:Z:155:HIS:NE2	2.37	0.57
2:B:324:ILE:O	2:B:327:THR:HB	2.04	0.57
2:B:729:SER:OG	2:B:730:ALA:N	2.37	0.57
3:C:1041:HIS:O	3:C:1045:ASN:N	2.31	0.57
3:C:869:GLN:OE1	3:C:956:ARG:NH1	2.34	0.57
4:D:366:VAL:HB	4:D:376:LEU:HD11	1.85	0.57
3:C:120:LYS:HB3	3:C:159:LEU:HD21	1.86	0.56
2:B:251:HIS:NE2	2:B:285:GLU:OE1	2.38	0.56
3:C:341:HIS:O	3:C:345:LEU:HB2	2.06	0.56
4:D:503:ARG:HB3	4:D:514:SER:HB2	1.86	0.56
16:Z:92:ARG:NH2	16:Z:156:CYS:SG	2.76	0.56
2:B:526:PHE:HB2	2:B:603:ARG:NH2	2.20	0.56
3:C:131:MET:O	3:C:135:GLN:N	2.37	0.56
5:E:107:ILE:HG21	9:I:3:ASP:HB3	1.88	0.56
5:E:289:VAL:HB	5:E:306:LEU:HD13	1.87	0.56
2:B:624:TYR:O	2:B:628:TRP:HB2	2.04	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:619:ASN:ND2	4:D:622:HIS:O	2.39	0.56
5:E:243:TYR:HD2	5:E:254:GLU:HB2	1.69	0.56
5:E:384:TRP:HB3	5:E:408:TYR:HA	1.88	0.56
3:C:676:ARG:HG3	3:C:689:LEU:HD21	1.87	0.56
2:B:147:GLU:OE2	2:B:151:ASN:ND2	2.38	0.55
2:B:768:LEU:O	2:B:772:LYS:N	2.38	0.55
7:G:44:ARG:NH1	7:G:56:GLU:OE2	2.27	0.55
3:C:225:LYS:HB2	3:C:344:ARG:HH22	1.71	0.55
3:C:230:ARG:HG3	3:C:348:LYS:HE3	1.88	0.55
5:E:168:ASN:OD1	5:E:179:VAL:HB	2.06	0.55
5:E:168:ASN:HD22	5:E:223:LYS:HA	1.72	0.55
5:E:180:VAL:HG21	5:E:201:TRP:HE1	1.71	0.55
3:C:784:ILE:HG23	3:C:817:LEU:HD22	1.87	0.55
3:C:792:LEU:HD21	3:C:882:LEU:HD13	1.88	0.55
5:E:120:LEU:HD11	9:I:73:ARG:HH11	1.71	0.55
5:E:72:LYS:HA	11:K:69:THR:HA	1.89	0.55
16:Z:28:SER:N	16:Z:38:GLU:OE1	2.37	0.55
2:B:649:THR:HG22	2:B:653:LYS:HE2	1.89	0.55
4:D:428:PHE:HB2	4:D:440:TRP:HB2	1.89	0.55
4:D:504:CYS:SG	4:D:505:SER:N	2.80	0.55
13:P:42:VAL:HG21	13:P:92:VAL:HG11	1.88	0.55
3:C:296:TYR:HE2	3:C:332:ILE:HG21	1.72	0.55
2:B:211:GLN:OE1	2:B:253:GLN:NE2	2.40	0.54
5:E:345:ARG:HA	5:E:353:ARG:HE	1.72	0.54
11:L:76:ILE:O	11:L:86:LEU:HA	2.08	0.54
5:E:374:ASN:HD21	5:E:489:PRO:HB2	1.71	0.54
5:E:450:SER:OG	5:E:452:LEU:N	2.40	0.54
3:C:132:GLN:O	3:C:135:GLN:HB2	2.07	0.54
5:E:112:GLN:O	5:E:115:SER:OG	2.22	0.54
5:E:361:HIS:HE1	5:E:383:ASP:H	1.55	0.54
7:G:37:THR:HB	7:G:73:CYS:HB3	1.89	0.54
9:I:69:LEU:HA	10:J:74:SER:HA	1.89	0.54
5:E:366:TYR:H	5:E:382:GLY:HA3	1.71	0.54
9:I:85:PRO:HA	9:I:94:TYR:HA	1.90	0.54
2:B:443:ARG:NH2	2:B:533:GLU:O	2.41	0.53
11:M:76:ILE:HB	11:M:87:LEU:HB2	1.89	0.53
2:B:630:GLU:O	2:B:633:GLU:HB2	2.08	0.53
3:C:830:ASP:O	3:C:833:THR:OG1	2.22	0.53
4:D:329:TYR:HD2	4:D:341:LEU:HD23	1.72	0.53
3:C:500:GLN:NE2	3:C:504:ASN:OD1	2.41	0.53
4:D:503:ARG:HD2	4:D:550:LEU:HD11	1.89	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:381:ARG:HH12	2:B:431:MET:HG3	1.74	0.53
4:D:369:HIS:HE1	4:D:371:GLU:HB3	1.73	0.53
2:B:134:PRO:HA	2:B:137:GLN:HG3	1.89	0.53
3:C:328:MET:O	3:C:331:THR:OG1	2.26	0.53
2:B:330:LEU:HA	2:B:333:LYS:HB2	1.89	0.53
2:B:682:ARG:HH11	5:E:188:GLN:HG2	1.73	0.53
9:I:76:SER:OG	10:J:65:ASN:OD1	2.27	0.53
13:P:13:LEU:HD21	13:P:95:ARG:HH11	1.72	0.53
13:P:21:VAL:HG12	13:P:90:ILE:HG22	1.89	0.53
2:B:380:LEU:O	2:B:383:THR:OG1	2.25	0.52
2:B:685:ARG:HH12	5:E:265:PRO:HG3	1.73	0.52
2:B:743:GLN:HA	2:B:746:ALA:HB3	1.90	0.52
3:C:675:GLN:HB2	3:C:689:LEU:HD23	1.91	0.52
3:C:864:TYR:HA	3:C:867:ILE:HD12	1.91	0.52
3:C:503:VAL:HG21	3:C:536:LEU:HD11	1.90	0.52
5:E:245:ASP:OD1	5:E:246:VAL:N	2.41	0.52
5:E:386:ALA:O	5:E:402:THR:OG1	2.27	0.52
5:E:80:GLY:HA2	11:K:79:TYR:CE2	2.45	0.52
7:G:39:ASP:OD1	7:G:40:THR:N	2.39	0.52
9:I:11:PHE:CE2	9:I:34:ARG:HD2	2.44	0.52
11:L:67:TYR:CD2	11:M:45:LYS:HD3	2.45	0.52
16:Z:29:LYS:HE2	16:Z:31:ASP:HB2	1.92	0.52
16:Z:39:LEU:HD11	16:Z:94:LEU:HD21	1.92	0.52
16:Z:7:ARG:HH21	16:Z:123:ARG:HB2	1.75	0.52
3:C:316:THR:OG1	3:C:317:GLU:OE1	2.28	0.52
3:C:358:LYS:NZ	3:C:475:ASP:OD1	2.40	0.52
2:B:64:LEU:CB	2:B:75:THR:O	2.57	0.52
2:B:380:LEU:HD12	2:B:381:ARG:HG3	1.92	0.52
2:B:560:LEU:HD22	2:B:624:TYR:HE1	1.75	0.52
11:K:71:GLU:HG2	11:K:89:LYS:HB3	1.92	0.52
4:D:334:PHE:O	4:D:337:GLN:NE2	2.43	0.51
4:D:510:SER:HB3	4:D:513:LEU:HD23	1.91	0.51
5:E:272:LEU:HD11	5:E:291:TRP:HZ3	1.75	0.51
10:J:48:PRO:HG3	10:J:88:VAL:HG11	1.92	0.51
16:Z:13:LYS:NZ	16:Z:14:ASN:OD1	2.43	0.51
1:A:219:ASP:O	1:A:223:MET:HA	2.10	0.51
3:C:781:LEU:HB3	3:C:867:ILE:HD11	1.92	0.51
3:C:823:GLU:O	3:C:826:ARG:HB2	2.09	0.51
3:C:826:ARG:O	3:C:829:GLU:HB3	2.10	0.51
11:L:31:LEU:HD12	11:L:40:ILE:HD13	1.93	0.51
3:C:204:GLU:HG2	3:C:205:GLU:N	2.25	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:785:SER:HB2	3:C:867:ILE:HA	1.93	0.51
4:D:382:ASP:OD1	4:D:382:ASP:N	2.36	0.51
2:B:327:THR:HG23	5:E:542:LEU:HD11	1.93	0.51
3:C:580:TRP:HZ3	3:C:623:PHE:HE2	1.58	0.51
3:C:239:TRP:HZ3	3:C:290:SER:HA	1.77	0.50
9:I:7:VAL:O	9:I:10:THR:OG1	2.23	0.50
5:E:280:CYS:SG	5:E:292:TRP:HB2	2.51	0.50
16:Z:110:PHE:O	16:Z:143:ASN:ND2	2.43	0.50
2:B:507:ARG:HD3	4:D:509:SER:HB3	1.94	0.50
3:C:803:PHE:O	3:C:806:GLN:HB2	2.10	0.50
3:C:931:THR:HA	3:C:934:LYS:HZ3	1.75	0.50
16:Z:29:LYS:HE3	16:Z:33:LYS:HE3	1.92	0.50
2:B:515:ALA:HB1	2:B:528:LEU:HD21	1.94	0.50
11:M:25:ASP:HA	11:M:28:THR:HG22	1.93	0.50
2:B:813:ASN:O	2:B:816:LYS:HG2	2.11	0.50
3:C:669:ARG:HH12	3:C:692:GLU:HG3	1.77	0.50
5:E:169:TRP:NE1	5:E:460:GLN:OE1	2.44	0.50
2:B:296:LYS:NZ	5:E:549:THR:O	2.44	0.50
3:C:791:GLU:OE2	3:C:813:GLN:NE2	2.44	0.50
4:D:499:GLY:HA2	4:D:521:LEU:O	2.12	0.50
2:B:499:VAL:O	2:B:503:GLU:HB2	2.12	0.50
3:C:129:PRO:O	3:C:133:GLU:N	2.42	0.50
2:B:520:THR:HG22	2:B:521:THR:HG23	1.93	0.49
2:B:566:LEU:HD11	5:E:407:THR:H	1.77	0.49
3:C:578:ILE:HD11	3:C:627:TRP:HB2	1.93	0.49
3:C:671:ALA:O	3:C:675:GLN:NE2	2.44	0.49
9:I:55:LYS:NZ	11:K:32:GLU:O	2.45	0.49
2:B:525:THR:O	2:B:529:LEU:CB	2.60	0.49
3:C:959:LYS:HE2	7:G:158:LEU:HA	1.94	0.49
5:E:287:GLY:O	5:E:289:VAL:N	2.41	0.49
2:B:544:ASP:O	2:B:547:LYS:NZ	2.37	0.49
5:E:272:LEU:HD11	5:E:291:TRP:CZ3	2.47	0.49
2:B:625:ASP:O	2:B:629:GLU:HB2	2.12	0.49
2:B:506:ARG:NH2	2:B:540:VAL:HG12	2.27	0.49
4:D:539:ALA:HB1	4:D:567:ILE:HG21	1.92	0.49
2:B:134:PRO:HA	2:B:137:GLN:HE21	1.77	0.49
2:B:166:MET:HG2	2:B:167:LYS:HD3	1.94	0.49
2:B:264:LYS:HA	2:B:267:GLU:HB2	1.94	0.49
4:D:542:ARG:NH1	4:D:544:ASP:OD2	2.45	0.49
4:D:544:ASP:OD1	4:D:544:ASP:N	2.43	0.49
2:B:812:LEU:HA	2:B:815:ILE:HG22	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:1019:ALA:HA	3:C:1022:THR:HG22	1.94	0.49
5:E:236:GLN:OE1	5:E:240:GLN:HB2	2.12	0.49
9:I:75:ARG:NH1	9:I:76:SER:O	2.46	0.49
9:I:75:ARG:HG2	9:I:80:GLU:HG3	1.95	0.49
11:M:40:ILE:HB	11:M:60:VAL:HG11	1.94	0.49
16:Z:58:MET:HE2	16:Z:94:LEU:HD13	1.95	0.49
16:Z:126:ARG:NH2	16:Z:135:GLN:O	2.39	0.49
1:A:238:ILE:HA	1:A:261:LYS:HA	1.95	0.49
5:E:381:ILE:HD11	5:E:424:THR:HA	1.94	0.49
2:B:385:ARG:HH12	2:B:428:CYS:HB2	1.77	0.49
4:D:597:ASN:OD1	4:D:598:LYS:N	2.44	0.49
5:E:384:TRP:HA	5:E:409:LEU:HB2	1.95	0.49
3:C:782:GLY:O	3:C:786:SER:OG	2.31	0.49
3:C:789:LEU:N	3:C:875:LEU:HD21	2.28	0.48
3:C:675:GLN:N	3:C:675:GLN:OE1	2.46	0.48
9:I:24:ILE:HD11	9:I:42:THR:HG23	1.94	0.48
15:Y:275:UNK:O	15:Y:279:UNK:CB	2.61	0.48
3:C:224:ILE:HD13	3:C:238:TYR:CZ	2.49	0.48
2:B:323:PRO:HA	2:B:326:HIS:ND1	2.28	0.48
2:B:563:VAL:HG13	2:B:593:LEU:HD22	1.95	0.48
3:C:361:ILE:HG12	3:C:378:ASN:HB3	1.95	0.48
4:D:368:PHE:CD1	4:D:376:LEU:HD13	2.49	0.48
7:G:152:ASP:OD1	7:G:153:GLU:N	2.46	0.48
16:Z:78:LEU:HA	16:Z:81:ARG:HD3	1.95	0.48
1:A:75:ALA:HB1	1:A:92:GLY:HA3	1.95	0.48
11:N:79:TYR:HA	11:N:84:ALA:HA	1.95	0.48
13:P:51:LYS:HA	13:P:54:GLN:HB2	1.94	0.48
16:Z:5:ALA:O	16:Z:9:ARG:NH1	2.46	0.48
2:B:678:PRO:N	5:E:188:GLN:HE22	2.12	0.48
3:C:583:GLN:NE2	4:D:543:LEU:HD13	2.28	0.48
5:E:146:PRO:HB2	5:E:445:LEU:HD22	1.95	0.48
7:G:99:THR:O	7:G:103:PHE:HB3	2.14	0.48
5:E:154:PHE:CZ	5:E:203:VAL:HG22	2.49	0.48
9:I:40:ASP:HA	9:I:43:VAL:HG22	1.96	0.48
2:B:592:GLY:O	5:E:362:HIS:NE2	2.46	0.48
3:C:611:LYS:HA	3:C:611:LYS:HD2	1.70	0.48
3:C:1028:ASN:HD21	3:C:1048:LYS:HE3	1.79	0.48
3:C:1060:GLN:HA	3:C:1063:HIS:HB3	1.95	0.48
9:I:76:SER:OG	9:I:77:LYS:N	2.47	0.48
2:B:326:HIS:O	2:B:329:MET:HG2	2.14	0.48
2:B:234:LEU:HD13	2:B:237:LEU:HD22	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:864:TYR:O	3:C:867:ILE:HB	2.13	0.48
13:P:45:TYR:CD2	13:P:51:LYS:HG3	2.49	0.48
2:B:254:LEU:HD12	2:B:255:THR:HG23	1.95	0.47
2:B:632:THR:HA	2:B:635:ARG:HG3	1.95	0.47
5:E:324:THR:HG22	5:E:376:LYS:HD3	1.95	0.47
2:B:816:LYS:O	2:B:820:LYS:HG2	2.14	0.47
2:B:822:THR:HA	2:B:825:ILE:HD12	1.95	0.47
3:C:551:LEU:HD11	3:C:613:TYR:HB2	1.96	0.47
11:K:57:HIS:HB2	11:K:88:PHE:CE1	2.49	0.47
11:M:58:CYS:HB2	11:M:87:LEU:HD13	1.95	0.47
4:D:615:LYS:O	4:D:627:VAL:HA	2.14	0.47
5:E:162:ARG:NH1	5:E:194:MET:SD	2.82	0.47
4:D:537:LEU:HD23	4:D:572:TRP:CE2	2.49	0.47
5:E:342:SER:HB3	5:E:356:TYR:HB2	1.97	0.47
2:B:687:THR:O	2:B:691:LEU:HB3	2.13	0.47
3:C:876:GLN:HG3	3:C:960:ALA:HB1	1.95	0.47
5:E:272:LEU:HD21	5:E:291:TRP:CZ3	2.49	0.47
1:A:189:PRO:HA	1:A:198:ASP:HA	1.97	0.47
1:A:239:CYS:N	1:A:260:ARG:O	2.43	0.47
3:C:226:ASP:O	3:C:230:ARG:NH1	2.48	0.47
3:C:322:LEU:HD21	3:C:349:ILE:HD11	1.96	0.47
3:C:578:ILE:HD12	3:C:624:GLU:HA	1.97	0.47
4:D:598:LYS:HG3	4:D:599:LEU:HD12	1.96	0.47
5:E:294:LEU:O	5:E:296:LYS:N	2.47	0.47
5:E:426:LYS:HE3	5:E:430:ALA:HB3	1.97	0.47
4:D:584:THR:OG1	4:D:585:ASP:N	2.47	0.47
5:E:306:LEU:O	5:E:313:THR:OG1	2.32	0.47
5:E:418:ARG:NH1	5:E:435:ASP:OD2	2.48	0.47
7:G:31:ASP:HB2	7:G:38:ILE:HD13	1.97	0.47
11:L:59:ILE:HG22	11:M:66:SER:HB2	1.97	0.47
11:M:60:VAL:HA	11:M:84:ALA:O	2.15	0.47
4:D:428:PHE:O	4:D:439:LEU:HD12	2.14	0.47
5:E:231:LEU:HA	5:E:244:PHE:O	2.14	0.47
5:E:241:LEU:HD11	5:E:282:THR:HG21	1.96	0.47
3:C:790:VAL:HG22	3:C:875:LEU:HD22	1.97	0.47
5:E:248:LYS:HD3	5:E:250:ASN:HD21	1.80	0.47
5:E:77:VAL:HG21	11:K:84:ALA:HB2	1.96	0.46
2:B:525:THR:O	2:B:529:LEU:HB2	2.15	0.46
11:M:24:VAL:HG22	11:M:78:PHE:HE1	1.81	0.46
13:P:59:GLN:HB3	13:P:63:LYS:HZ1	1.80	0.46
2:B:649:THR:O	2:B:652:GLU:HG3	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:581:ALA:HB2	3:C:623:PHE:HD2	1.81	0.46
1:A:36:CYS:HA	1:A:43:ALA:HA	1.98	0.46
2:B:274:TYR:HA	2:B:277:PHE:HD2	1.81	0.46
5:E:152:THR:HG21	5:E:206:PRO:HG3	1.96	0.46
5:E:323:ASP:HB3	5:E:327:GLY:HA2	1.97	0.46
5:E:414:TRP:HB3	5:E:415:SER:H	1.57	0.46
2:B:115:PRO:HG2	2:B:116:LEU:HD12	1.97	0.46
11:N:9:VAL:O	11:N:79:TYR:N	2.49	0.46
2:B:122:ILE:HA	2:B:126:VAL:HG22	1.97	0.46
2:B:647:ALA:O	2:B:650:SER:OG	2.27	0.46
3:C:672:LYS:NZ	3:C:687:MET:O	2.44	0.46
5:E:81:TRP:HE1	5:E:88:THR:HG1	1.62	0.46
5:E:105:ASP:OD1	5:E:106:TYR:N	2.48	0.46
10:J:59:ARG:HG3	10:J:65:ASN:O	2.16	0.46
11:L:77:TYR:HD1	11:L:86:LEU:HD12	1.80	0.46
11:M:59:ILE:O	11:M:85:ILE:HA	2.15	0.46
2:B:128:MET:SD	2:B:129:PRO:HD3	2.55	0.46
2:B:742:GLN:O	2:B:746:ALA:N	2.47	0.46
3:C:449:ILE:HD13	3:C:523:PHE:HE1	1.80	0.46
7:G:104:VAL:HA	7:G:108:GLY:HA3	1.96	0.46
13:P:55:MET:O	13:P:59:GLN:HG2	2.15	0.46
16:Z:84:ASP:OD1	16:Z:84:ASP:N	2.48	0.46
2:B:570:TYR:OH	5:E:428:ASP:OD2	2.33	0.46
3:C:261:VAL:HA	3:C:264:ILE:HD12	1.98	0.46
4:D:186:THR:OG1	11:L:65:GLY:HA2	2.15	0.46
4:D:484:LYS:HG2	4:D:492:TYR:HB3	1.98	0.46
4:D:528:TRP:CH2	4:D:550:LEU:HD13	2.51	0.46
11:K:56:TRP:HA	11:K:88:PHE:O	2.15	0.46
11:L:77:TYR:CD1	11:L:86:LEU:HD12	2.50	0.46
3:C:239:TRP:HB3	3:C:294:VAL:HG22	1.98	0.46
3:C:324:THR:HG22	3:C:327:ARG:HH22	1.81	0.46
4:D:315:VAL:HG11	4:D:626:LEU:HD12	1.97	0.46
5:E:155:LYS:NZ	5:E:159:ASN:O	2.48	0.46
11:K:14:ASP:N	11:K:14:ASP:OD1	2.48	0.46
11:K:76:ILE:HB	11:K:87:LEU:HD23	1.98	0.46
11:L:24:VAL:HG22	11:L:78:PHE:CE1	2.51	0.46
11:M:28:THR:O	11:M:32:GLU:HG2	2.17	0.45
2:B:499:VAL:O	2:B:503:GLU:CB	2.64	0.45
3:C:313:THR:O	3:C:316:THR:OG1	2.27	0.45
4:D:266:MET:HG3	10:J:71:ARG:NH2	2.30	0.45
4:D:562:ASP:OD1	4:D:563:LEU:N	2.49	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:G:63:ILE:O	7:G:67:ASP:N	2.39	0.45
9:I:63:LEU:HD11	10:J:43:TYR:HE1	1.82	0.45
2:B:633:GLU:O	2:B:636:THR:OG1	2.29	0.45
5:E:241:LEU:HB2	5:E:256:THR:HB	1.99	0.45
3:C:443:LEU:HD11	3:C:452:LEU:HD22	1.99	0.45
3:C:492:ILE:HD13	3:C:492:ILE:HA	1.85	0.45
3:C:1041:HIS:NE2	7:G:58:ASP:OD2	2.40	0.45
4:D:490:SER:OG	4:D:505:SER:OG	2.25	0.45
4:D:573:ALA:HB1	4:D:575:LEU:HD23	1.98	0.45
2:B:164:GLY:O	2:B:168:GLY:N	2.49	0.45
2:B:687:THR:O	2:B:691:LEU:CB	2.64	0.45
3:C:422:LEU:HB3	3:C:476:TYR:CG	2.51	0.45
3:C:783:ALA:HA	3:C:786:SER:HG	1.81	0.45
4:D:342:ILE:HD11	4:D:376:LEU:HD21	1.99	0.45
4:D:413:TRP:CZ3	4:D:433:SER:HB2	2.51	0.45
5:E:164:ALA:HA	5:E:182:TYR:HA	1.98	0.45
5:E:392:ASP:O	5:E:396:LYS:NZ	2.33	0.45
2:B:280:LEU:O	2:B:284:VAL:HG23	2.16	0.45
4:D:394:LYS:O	4:D:396:GLU:N	2.48	0.45
4:D:558:VAL:HG23	4:D:559:MET:HG3	1.99	0.45
13:P:31:LYS:O	13:P:35:MET:HB2	2.17	0.45
3:C:752:LEU:HD23	3:C:752:LEU:HA	1.68	0.45
4:D:576:GLN:NE2	4:D:578:THR:OG1	2.50	0.45
11:K:57:HIS:O	11:K:87:LEU:HA	2.16	0.45
11:K:79:TYR:OH	11:K:82:GLN:OE1	2.35	0.45
3:C:564:GLU:N	3:C:564:GLU:OE1	2.49	0.45
5:E:369:ARG:HH21	5:E:413:THR:HG21	1.82	0.45
11:M:57:HIS:HB2	11:M:88:PHE:CE1	2.50	0.45
3:C:1052:VAL:HA	3:C:1055:LYS:NZ	2.32	0.45
4:D:541:CYS:HA	4:D:566:SER:HB2	1.99	0.45
11:M:47:GLU:HG2	11:M:50:ARG:NH1	2.32	0.45
2:B:216:LEU:HA	2:B:216:LEU:HD23	1.73	0.45
4:D:516:TYR:CZ	4:D:548:VAL:HG11	2.52	0.45
10:J:78:GLU:HB3	10:J:93:GLN:O	2.17	0.45
3:C:811:LYS:O	3:C:814:ALA:HB3	2.17	0.44
3:C:825:ARG:HE	3:C:864:TYR:HE2	1.64	0.44
9:I:100:ASP:OD1	9:I:100:ASP:N	2.50	0.44
2:B:391:LYS:HA	2:B:391:LYS:HD2	1.80	0.44
3:C:120:LYS:HG2	3:C:159:LEU:HD11	1.99	0.44
5:E:272:LEU:HD13	5:E:322:TYR:CE2	2.51	0.44
3:C:211:CYS:SG	3:C:276:TRP:NE1	2.90	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:589:GLU:OE1	3:C:613:TYR:OH	2.24	0.44
3:C:804:VAL:O	3:C:807:ASN:HB2	2.17	0.44
11:L:39:ASP:N	11:L:39:ASP:OD1	2.47	0.44
16:Z:32:LYS:HG3	16:Z:72:LEU:HD13	1.99	0.44
2:B:510:ALA:HA	2:B:513:ILE:HG22	1.98	0.44
3:C:224:ILE:HG13	3:C:344:ARG:NH2	2.33	0.44
3:C:225:LYS:HA	3:C:344:ARG:HH12	1.82	0.44
3:C:789:LEU:HD23	3:C:875:LEU:HD11	1.98	0.44
2:B:807:ASP:O	2:B:811:VAL:HG23	2.16	0.44
5:E:361:HIS:CE1	5:E:383:ASP:H	2.33	0.44
13:P:45:TYR:HB2	13:P:52:CYS:SG	2.57	0.44
2:B:453:LYS:O	2:B:455:LYS:N	2.51	0.44
2:B:622:ARG:O	2:B:625:ASP:HB2	2.18	0.44
5:E:545:GLU:HA	5:E:548:LYS:HD2	2.00	0.44
5:E:356:TYR:HB3	5:E:358:LEU:HD12	1.98	0.44
2:B:239:PHE:HD2	2:B:240:TRP:HD1	1.65	0.44
3:C:129:PRO:HD2	3:C:130:ILE:N	2.31	0.44
3:C:669:ARG:O	3:C:673:TYR:N	2.51	0.44
11:N:15:MET:HA	11:N:74:HIS:HA	2.00	0.44
12:O:63:LYS:O	12:O:65:PHE:N	2.51	0.44
2:B:266:LEU:HB3	2:B:274:TYR:CZ	2.53	0.43
2:B:330:LEU:HB3	5:E:542:LEU:HD22	1.99	0.43
3:C:149:LEU:O	3:C:152:THR:OG1	2.30	0.43
4:D:276:ALA:O	4:D:279:PHE:HB3	2.18	0.43
5:E:199:TYR:CE2	5:E:209:PRO:HG3	2.53	0.43
5:E:399:ILE:HG23	5:E:400:LEU:H	1.82	0.43
2:B:266:LEU:HB3	2:B:274:TYR:CE1	2.52	0.43
2:B:457:LEU:HD22	2:B:511:ILE:HG23	2.00	0.43
2:B:517:ASP:OD1	2:B:517:ASP:N	2.48	0.43
2:B:520:THR:HG21	5:E:402:THR:HA	1.99	0.43
3:C:728:ASP:OD1	3:C:732:ARG:NH1	2.51	0.43
4:D:212:ASP:OD2	13:P:20:LEU:HG	2.18	0.43
4:D:318:ASN:HA	4:D:368:PHE:HD2	1.83	0.43
5:E:71:ASN:O	11:K:70:HIS:N	2.51	0.43
5:E:366:TYR:H	5:E:382:GLY:CA	2.31	0.43
5:E:395:VAL:O	5:E:397:THR:N	2.50	0.43
11:M:44:ILE:HG22	11:M:87:LEU:HD11	2.00	0.43
2:B:464:ILE:HD13	2:B:508:LEU:HD12	1.99	0.43
3:C:857:ARG:HD2	3:C:857:ARG:HA	1.80	0.43
2:B:820:LYS:HA	2:B:823:GLN:HG3	2.00	0.43
3:C:500:GLN:HG2	3:C:535:ASP:OD2	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:1024:VAL:HG13	3:C:1044:LYS:NZ	2.33	0.43
5:E:273:GLN:HE21	5:E:273:GLN:HB3	1.53	0.43
11:M:80:LEU:HD12	11:M:80:LEU:HA	1.81	0.43
3:C:446:HIS:HD2	3:C:526:ILE:HG12	1.84	0.43
5:E:377:TYR:CD1	5:E:390:VAL:HG22	2.53	0.43
5:E:381:ILE:HD13	5:E:381:ILE:HG21	1.79	0.43
1:A:219:ASP:O	1:A:223:MET:CA	2.67	0.43
2:B:293:ASP:O	2:B:296:LYS:HG2	2.18	0.43
3:C:399:THR:HB	3:C:403:GLN:HE22	1.83	0.43
3:C:528:GLN:HE22	3:C:533:GLN:HG3	1.84	0.43
3:C:1015:LYS:HA	3:C:1015:LYS:HD3	1.78	0.43
16:Z:32:LYS:O	16:Z:72:LEU:N	2.52	0.43
2:B:68:ASP:O	2:B:70:LYS:N	2.51	0.43
5:E:272:LEU:CG	5:E:291:TRP:HZ3	2.32	0.43
16:Z:100:PHE:O	16:Z:104:ASP:N	2.52	0.43
3:C:486:LEU:HD23	3:C:486:LEU:HA	1.88	0.43
3:C:872:LEU:O	3:C:876:GLN:HG2	2.19	0.43
3:C:1013:GLU:HA	3:C:1016:LYS:HE3	2.01	0.43
4:D:352:HIS:CD2	4:D:353:PRO:HD2	2.53	0.43
5:E:77:VAL:HG13	11:K:63:ASN:H	1.84	0.43
2:B:583:TYR:HB3	2:B:642:TRP:CZ3	2.53	0.43
4:D:357:PHE:O	4:D:358:HIS:ND1	2.52	0.43
5:E:247:ARG:HG3	5:E:248:LYS:NZ	2.34	0.43
5:E:417:SER:O	5:E:417:SER:OG	2.29	0.43
5:E:547:PHE:HA	5:E:550:THR:HG23	2.00	0.43
2:B:693:LEU:HA	2:B:693:LEU:HD23	1.78	0.42
3:C:53:GLN:HA	3:C:83:HIS:HA	2.01	0.42
3:C:394:ARG:HH12	3:C:416:ILE:HG21	1.84	0.42
3:C:850:LYS:O	3:C:853:SER:OG	2.31	0.42
4:D:406:GLY:HA3	4:D:449:PRO:HG3	2.01	0.42
10:J:87:PHE:HE1	10:J:89:LEU:HB2	1.84	0.42
11:L:60:VAL:HG12	11:L:85:ILE:HG23	2.01	0.42
4:D:268:ASN:O	4:D:268:ASN:ND2	2.52	0.42
5:E:199:TYR:CZ	5:E:209:PRO:HG3	2.54	0.42
8:H:97:HIS:HA	8:H:106:ILE:HA	2.01	0.42
9:I:71:PHE:CD1	10:J:73:ARG:HB2	2.54	0.42
4:D:490:SER:HA	4:D:506:LYS:HD3	1.99	0.42
5:E:184:ILE:HD12	5:E:191:PRO:HG3	2.00	0.42
5:E:228:ASP:OD1	5:E:229:ASN:N	2.52	0.42
2:B:729:SER:N	2:B:732:ASP:OD2	2.52	0.42
2:B:637:ARG:HA	2:B:637:ARG:HD3	1.77	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:209:TYR:CZ	13:P:94:GLY:HA2	2.54	0.42
5:E:169:TRP:HZ3	5:E:467:ALA:HB2	1.85	0.42
5:E:414:TRP:HD1	5:E:420:GLY:HA2	1.82	0.42
7:G:130:LEU:HD11	7:G:133:ASN:ND2	2.34	0.42
9:I:22:GLY:HA2	9:I:36:THR:HG21	2.01	0.42
2:B:475:PHE:HE1	2:B:493:ASP:HB3	1.85	0.42
5:E:502:GLU:O	5:E:506:GLU:HG3	2.19	0.42
7:G:101:ASP:OD1	7:G:102:ALA:N	2.52	0.42
11:K:21:ALA:HA	11:K:24:VAL:HG22	2.00	0.42
2:B:385:ARG:HH22	2:B:428:CYS:HB3	1.84	0.42
2:B:389:THR:O	2:B:393:TYR:HB2	2.20	0.42
3:C:632:ILE:O	3:C:635:ILE:HG22	2.19	0.42
3:C:975:VAL:O	3:C:979:ILE:HD12	2.20	0.42
4:D:296:LEU:HA	4:D:638:LYS:O	2.20	0.42
11:M:37:GLU:OE1	11:M:60:VAL:HG13	2.19	0.42
2:B:583:TYR:HB3	2:B:642:TRP:CH2	2.54	0.42
3:C:759:LEU:HD12	3:C:759:LEU:HA	1.82	0.42
3:C:764:GLU:O	3:C:767:ARG:HG3	2.19	0.42
3:C:859:TYR:O	3:C:863:MET:HG2	2.19	0.42
4:D:313:THR:HG23	4:D:363:VAL:O	2.19	0.42
5:E:269:PHE:HE2	5:E:271:TRP:CZ2	2.37	0.42
11:L:12:ASN:HB2	11:L:75:PHE:HE2	1.84	0.42
3:C:789:LEU:HA	3:C:813:GLN:OE1	2.19	0.42
4:D:493:LEU:HD21	4:D:550:LEU:HD11	2.01	0.42
11:N:8:ALA:HA	11:N:80:LEU:HA	2.01	0.42
2:B:271:SER:OG	2:B:272:THR:N	2.52	0.41
4:D:316:CYS:SG	4:D:317:TRP:N	2.93	0.41
4:D:516:TYR:CE2	4:D:548:VAL:HG11	2.55	0.41
4:D:598:LYS:HA	4:D:598:LYS:HD2	1.88	0.41
5:E:166:TYR:HE1	5:E:168:ASN:HB3	1.85	0.41
7:G:118:VAL:O	7:G:122:ARG:HG3	2.20	0.41
11:L:44:ILE:O	11:L:48:PHE:HB2	2.20	0.41
2:B:583:TYR:CE2	2:B:682:ARG:HD3	2.55	0.41
2:B:597:ILE:HG23	2:B:628:TRP:NE1	2.35	0.41
3:C:296:TYR:O	3:C:299:THR:OG1	2.33	0.41
3:C:1028:ASN:ND2	3:C:1048:LYS:HE3	2.36	0.41
4:D:480:MET:SD	4:D:524:TYR:HA	2.60	0.41
5:E:376:LYS:HD2	5:E:376:LYS:HA	1.90	0.41
7:G:43:LEU:HD12	7:G:43:LEU:HA	1.84	0.41
3:C:549:LYS:O	3:C:552:ASP:HB3	2.19	0.41
3:C:562:LYS:HA	3:C:623:PHE:HZ	1.86	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:318:ASN:HB3	4:D:368:PHE:CE2	2.55	0.41
4:D:590:HIS:HB3	4:D:604:SER:HA	2.02	0.41
5:E:186:GLN:O	5:E:189:GLN:NE2	2.42	0.41
5:E:234:ALA:HB3	5:E:242:ALA:HB3	2.03	0.41
5:E:236:GLN:HB3	5:E:237:TYR:H	1.63	0.41
5:E:371:ASN:HB3	5:E:414:TRP:CH2	2.55	0.41
2:B:762:LEU:O	2:B:766:LYS:N	2.53	0.41
4:D:615:LYS:HE2	4:D:615:LYS:HB2	1.78	0.41
5:E:506:GLU:HA	5:E:509:LEU:HG	2.02	0.41
11:L:20:GLN:O	11:L:24:VAL:HG23	2.20	0.41
13:P:57:LYS:HB3	13:P:70:VAL:HG23	2.03	0.41
3:C:1015:LYS:HA	3:C:1018:MET:HB2	2.03	0.41
5:E:495:ILE:HA	5:E:498:MET:HG2	2.03	0.41
2:B:543:HIS:HA	2:B:546:GLU:OE1	2.20	0.41
3:C:732:ARG:NH1	3:C:732:ARG:HB2	2.35	0.41
4:D:304:SER:O	4:D:307:SER:OG	2.20	0.41
5:E:161:LYS:O	5:E:184:ILE:HD11	2.19	0.41
5:E:371:ASN:N	5:E:377:TYR:O	2.53	0.41
11:M:55:THR:O	11:M:89:LYS:NZ	2.52	0.41
16:Z:116:ALA:HA	16:Z:119:ILE:HG22	2.02	0.41
4:D:432:SER:OG	4:D:433:SER:N	2.53	0.41
5:E:342:SER:OG	5:E:343:CYS:N	2.53	0.41
13:P:92:VAL:HG13	13:P:96:THR:OG1	2.20	0.41
2:B:155:PHE:HE1	3:C:155:PHE:HE2	1.68	0.41
2:B:522:ILE:O	2:B:556:TYR:OH	2.25	0.41
2:B:738:ASP:HA	2:B:741:ARG:HH11	1.85	0.41
3:C:702:LEU:HA	3:C:702:LEU:HD23	1.93	0.41
5:E:154:PHE:HZ	5:E:203:VAL:HG22	1.85	0.41
5:E:243:TYR:CD2	5:E:254:GLU:HB2	2.53	0.41
11:K:40:ILE:HG22	11:K:60:VAL:HG21	2.02	0.41
1:A:32:LEU:O	1:A:50:TYR:N	2.51	0.41
3:C:456:LEU:HD23	3:C:456:LEU:HA	1.94	0.41
3:C:788:LEU:HD12	3:C:788:LEU:HA	1.92	0.41
3:C:1025:THR:HA	3:C:1028:ASN:ND2	2.35	0.41
4:D:408:LEU:HA	4:D:408:LEU:HD23	1.87	0.41
5:E:272:LEU:HD13	5:E:322:TYR:HE2	1.86	0.41
5:E:339:GLN:HB3	5:E:357:VAL:HG23	2.02	0.41
10:J:41:LYS:HA	10:J:41:LYS:HD2	1.86	0.41
2:B:273:TYR:HB3	2:B:277:PHE:CE2	2.55	0.41
3:C:931:THR:HG22	3:C:934:LYS:HZ1	1.86	0.41
4:D:179:TYR:HA	4:D:180:PRO:HD3	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:390:ARG:HH22	3:C:421:ASP:N	2.19	0.40
5:E:202:ASP:OD1	5:E:203:VAL:N	2.54	0.40
16:Z:129:LEU:HD21	16:Z:135:GLN:HB2	2.02	0.40
2:B:152:LEU:HD12	2:B:152:LEU:HA	1.91	0.40
3:C:151:SER:O	3:C:154:LYS:HG3	2.20	0.40
3:C:681:CYS:SG	3:C:682:SER:N	2.95	0.40
4:D:520:HIS:CE1	4:D:542:ARG:HH21	2.39	0.40
5:E:367:GLY:HA3	5:E:381:ILE:HG22	2.04	0.40
11:M:53:ASN:HD22	11:M:89:LYS:HE2	1.86	0.40
1:A:126:ALA:H	1:A:143:TYR:H	1.69	0.40
2:B:756:LYS:HA	2:B:759:ARG:HG2	2.03	0.40
10:J:23:VAL:O	10:J:87:PHE:HB2	2.21	0.40
11:K:37:GLU:OE1	11:K:37:GLU:N	2.54	0.40
11:L:24:VAL:HG22	11:L:78:PHE:HE1	1.86	0.40
11:M:40:ILE:HG21	11:M:60:VAL:HG21	2.04	0.40
5:E:286:ASP:O	5:E:314:THR:HA	2.21	0.40
3:C:588:ILE:HD12	3:C:588:ILE:HA	1.91	0.40
3:C:785:SER:O	3:C:785:SER:OG	2.28	0.40
4:D:408:LEU:HD22	4:D:432:SER:HB3	2.03	0.40
5:E:170:HIS:HA	5:E:171:PRO:HD3	1.87	0.40
5:E:304:MET:O	5:E:306:LEU:HD12	2.21	0.40
13:P:20:LEU:HA	13:P:20:LEU:HD13	1.81	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	313/4503 (7%)	279 (89%)	34 (11%)	0	100	100
2	B	647/4568 (14%)	615 (95%)	31 (5%)	1 (0%)	47	79
3	C	925/4485 (21%)	858 (93%)	65 (7%)	2 (0%)	47	79

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
4	D	450/683 (66%)	387 (86%)	63 (14%)	0	100	100
5	E	470/567 (83%)	371 (79%)	94 (20%)	5 (1%)	14	51
6	F	98/136 (72%)	94 (96%)	4 (4%)	0	100	100
7	G	134/159 (84%)	125 (93%)	9 (7%)	0	100	100
8	H	89/120 (74%)	77 (86%)	12 (14%)	0	100	100
9	I	101/105 (96%)	89 (88%)	11 (11%)	1 (1%)	15	53
10	J	92/100 (92%)	81 (88%)	11 (12%)	0	100	100
11	K	80/91 (88%)	73 (91%)	7 (9%)	0	100	100
11	L	80/91 (88%)	72 (90%)	8 (10%)	0	100	100
11	M	80/91 (88%)	73 (91%)	7 (9%)	0	100	100
11	N	80/91 (88%)	68 (85%)	12 (15%)	0	100	100
12	O	95/117 (81%)	92 (97%)	3 (3%)	0	100	100
13	P	96/103 (93%)	89 (93%)	7 (7%)	0	100	100
16	Z	155/184 (84%)	136 (88%)	19 (12%)	0	100	100
All	All	3985/16194 (25%)	3579 (90%)	397 (10%)	9 (0%)	50	79

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	625	ASP
5	E	298	ASN
9	I	85	PRO
5	E	295	ARG
3	C	114	TRP
5	E	269	PHE
5	E	231	LEU
5	E	209	PRO
3	C	839	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	
2	B	463/3998 (12%)	455 (98%)	8 (2%)	60	78
3	C	701/3945 (18%)	695 (99%)	6 (1%)	78	88
4	D	401/584 (69%)	396 (99%)	5 (1%)	71	84
5	E	400/489 (82%)	396 (99%)	4 (1%)	76	86
7	G	121/136 (89%)	121 (100%)	0	100	100
9	I	90/91 (99%)	89 (99%)	1 (1%)	73	85
10	J	83/87 (95%)	83 (100%)	0	100	100
11	K	70/76 (92%)	70 (100%)	0	100	100
11	L	70/76 (92%)	69 (99%)	1 (1%)	67	81
11	M	70/76 (92%)	70 (100%)	0	100	100
13	P	86/90 (96%)	86 (100%)	0	100	100
16	Z	138/162 (85%)	136 (99%)	2 (1%)	67	81
All	All	2693/9810 (28%)	2666 (99%)	27 (1%)	77	86

All (27) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	B	124	GLN
2	B	596	ARG
2	B	598	LYS
2	B	627	LEU
2	B	628	TRP
2	B	629	GLU
2	B	731	LYS
2	B	799	LYS
3	C	120	LYS
3	C	154	LYS
3	C	200	LEU
3	C	204	GLU
3	C	295	LYS
3	C	956	ARG
4	D	268	ASN
4	D	270	ASN
4	D	309	ARG
4	D	312	VAL
4	D	672	LYS
5	E	273	GLN
5	E	279	GLU
5	E	296	LYS

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Mol	Chain	Res	Type
5	E	507	LYS
9	I	70	LYS
11	L	45	LYS
16	Z	21	ARG
16	Z	123	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
3	C	500	GLN
3	C	504	ASN
4	D	576	GLN
5	E	158	ASN
5	E	205	ASN
5	E	273	GLN
5	E	374	ASN
7	G	65	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 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

The following chains have linkage breaks:

Mol	Chain	Number of breaks
15	Y	3
14	X	2

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	X	396:UNK	C	403:UNK	N	28.65
1	Y	387:UNK	C	394:UNK	N	22.26
1	Y	420:UNK	C	424:UNK	N	12.82
1	X	345:UNK	C	348:UNK	N	10.08
1	Y	281:UNK	C	284:UNK	N	6.72

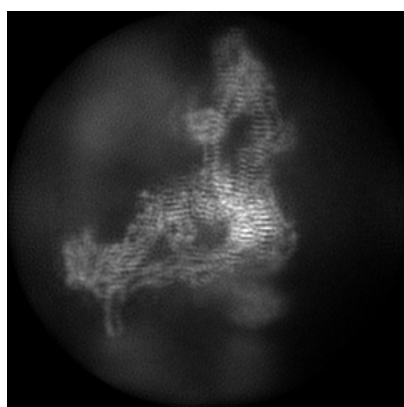
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-23083. These allow visual inspection of the internal detail of the map and identification of artifacts.

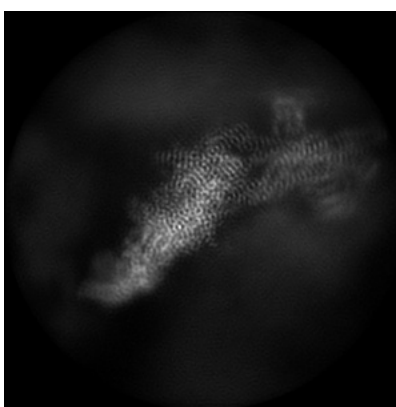
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

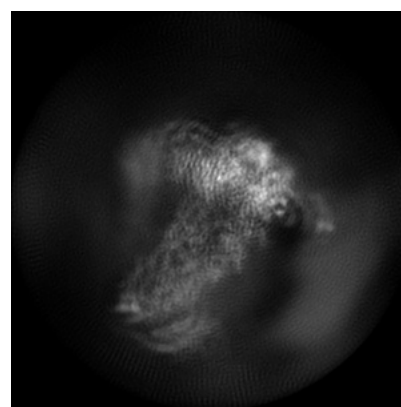
6.1.1 Primary map



X



Y

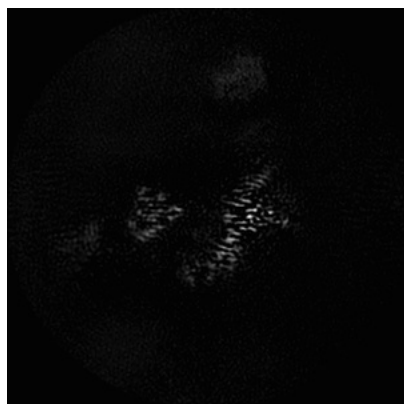


Z

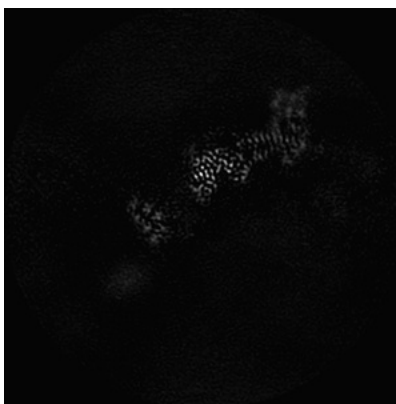
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

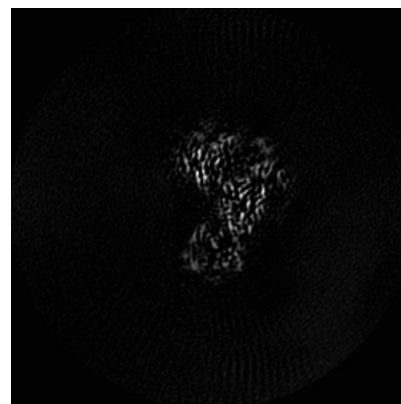
6.2.1 Primary map



X Index: 130



Y Index: 130

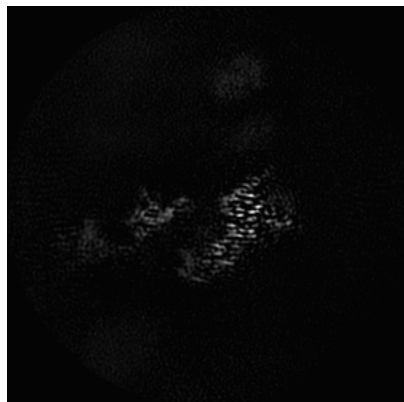


Z Index: 130

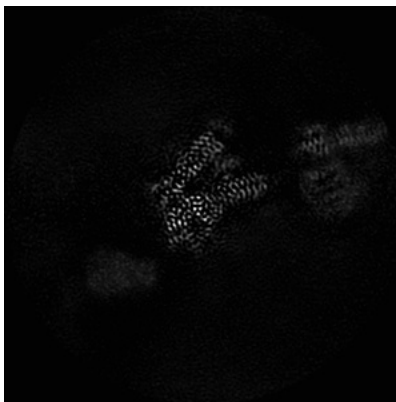
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

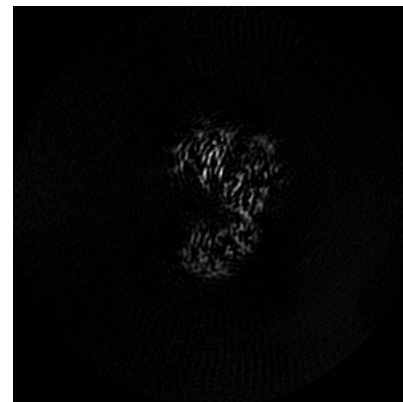
6.3.1 Primary map



X Index: 127



Y Index: 152

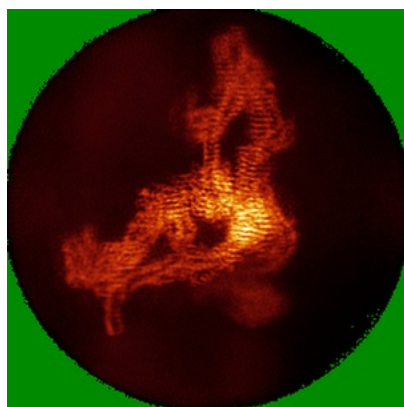


Z Index: 126

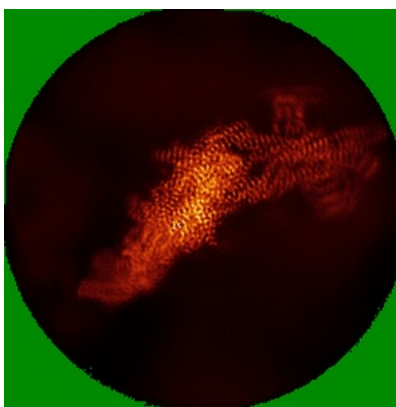
The images above show the largest variance slices of the map in three orthogonal directions.

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

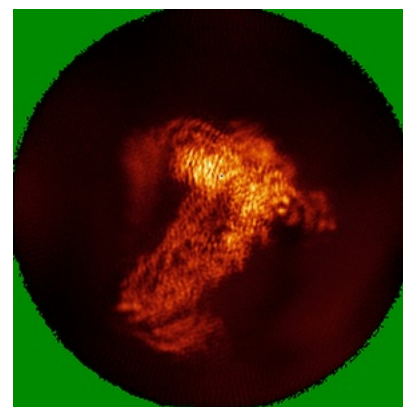
6.4.1 Primary map



X



Y



Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0125. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

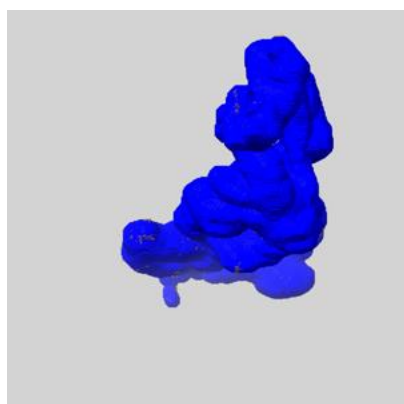
6.6 Mask visualisation [i](#)

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

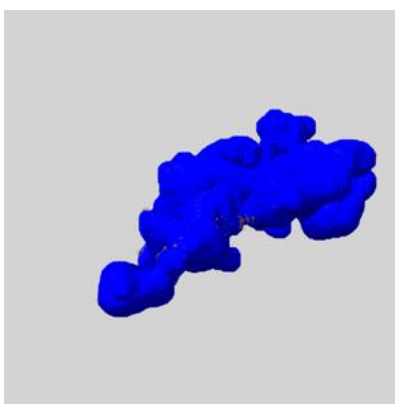
A mask typically either:

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

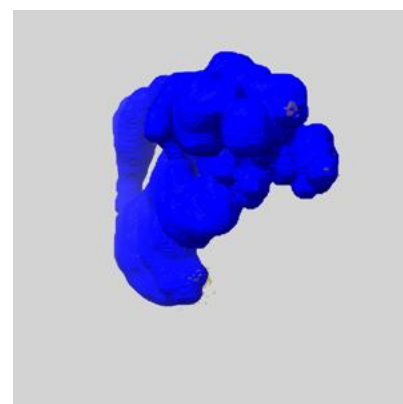
6.6.1 emd_23083_msk_1.map [i](#)



X



Y

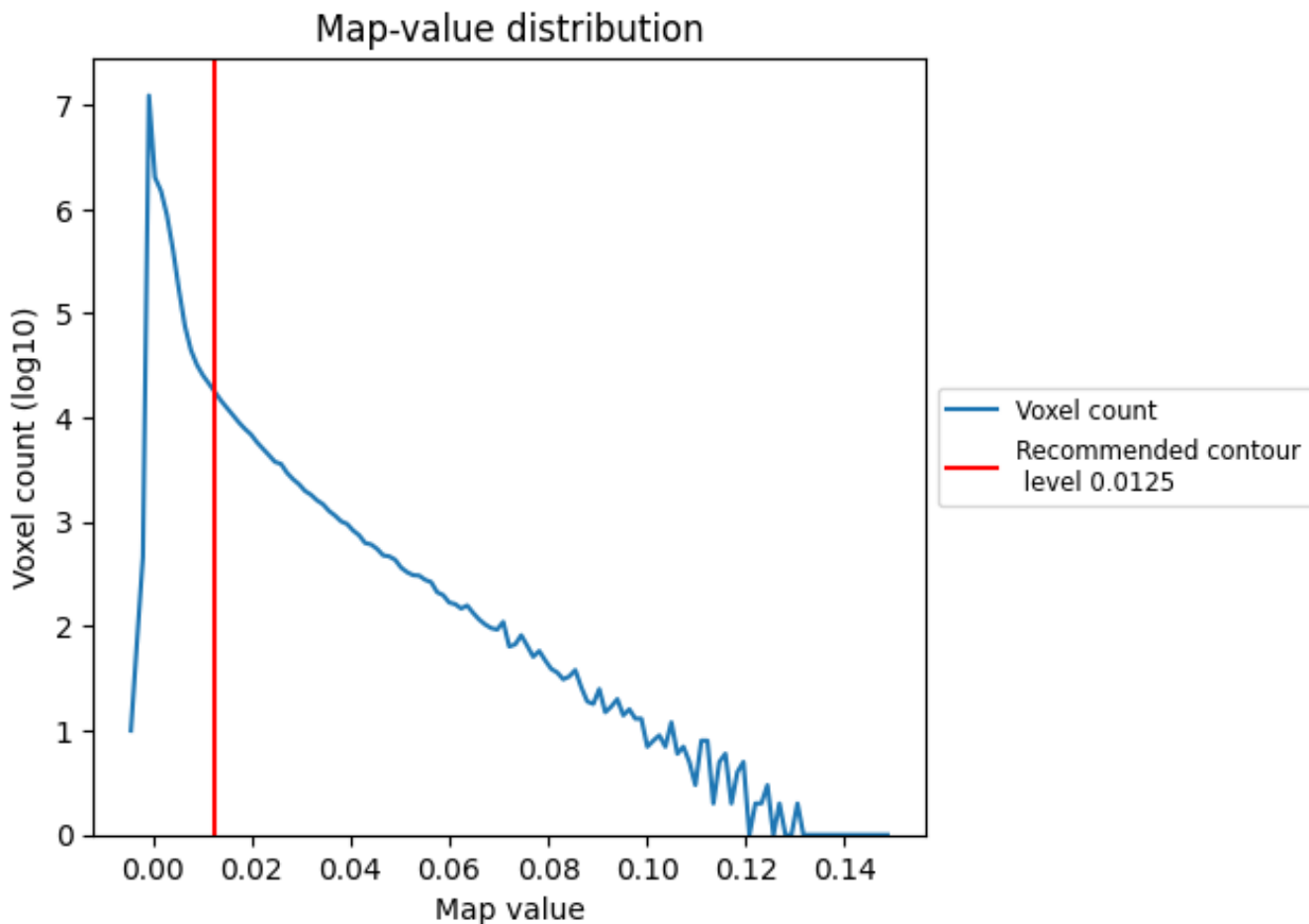


Z

7 Map analysis [i](#)

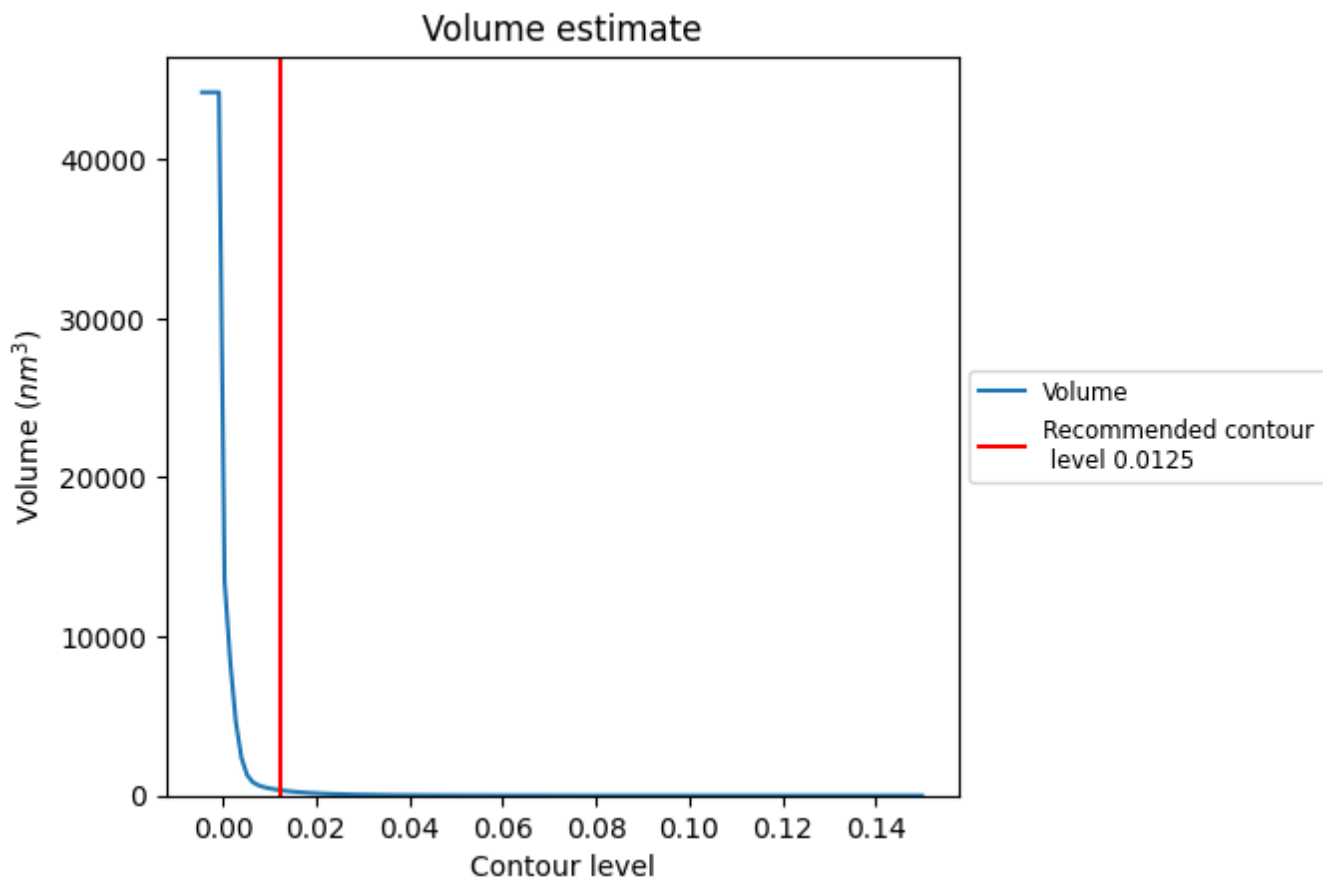
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

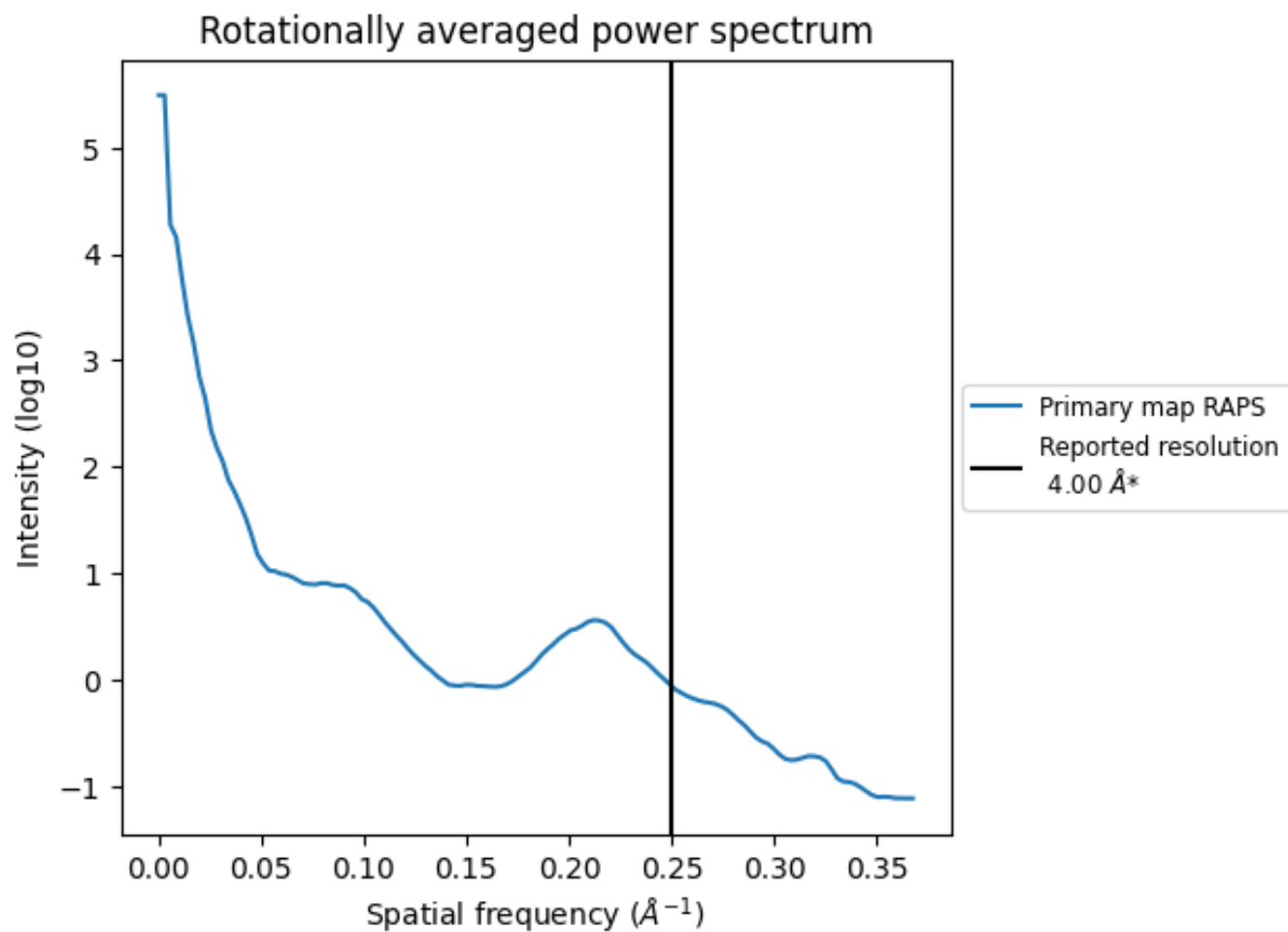
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 330 nm³; this corresponds to an approximate mass of 298 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 0.250 Å⁻¹

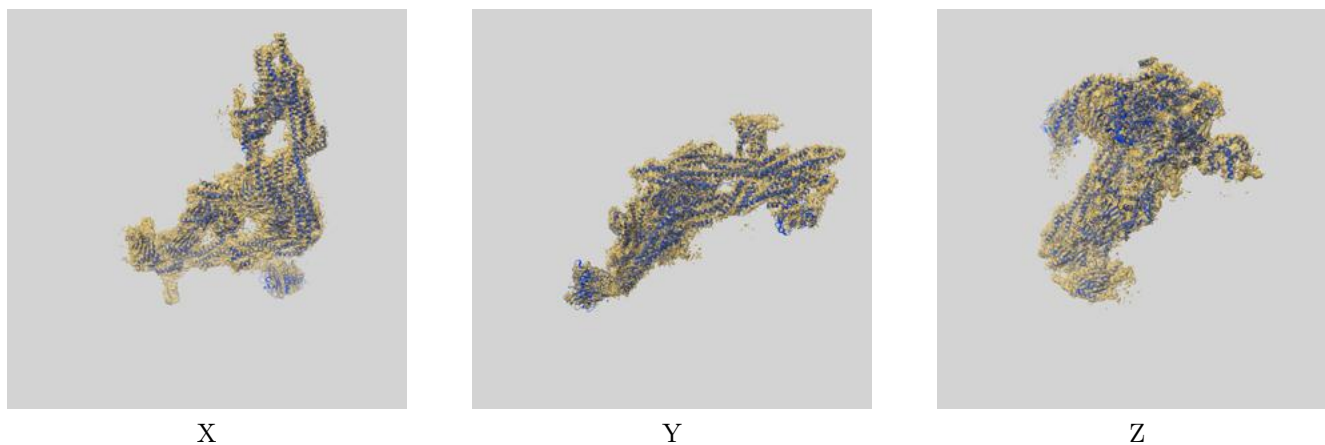
8 Fourier-Shell correlation

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-23083 and PDB model 7KZN. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay [i](#)



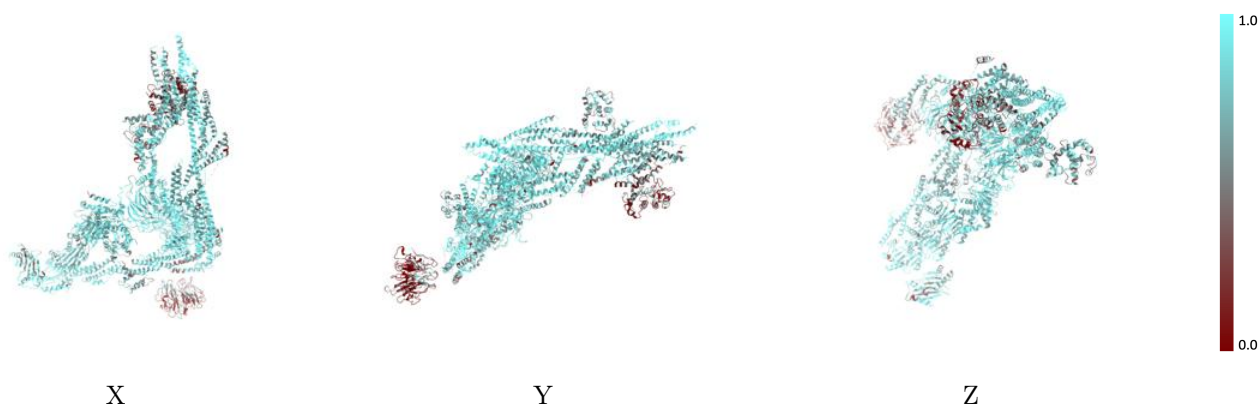
The images above show the 3D surface view of the map at the recommended contour level 0.0125 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



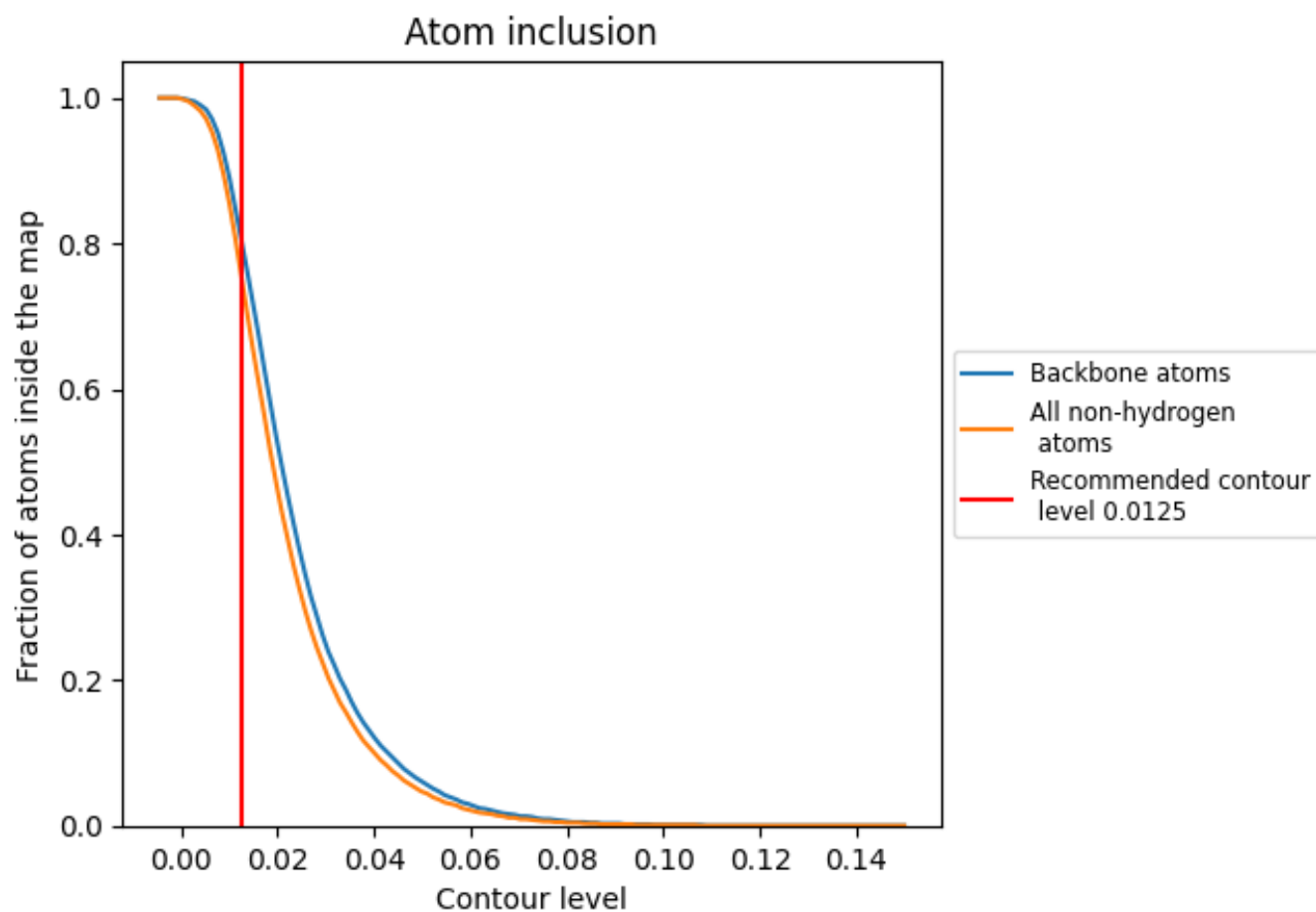
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.0125).









































9.4 Atom inclusion [i](#)



At the recommended contour level, 80% of all backbone atoms, 76% 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 (0.0125) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7550	 0.3760
A	 0.2160	 0.2390
B	 0.6780	 0.3280
C	 0.7650	 0.3780
D	 0.8840	 0.4800
E	 0.8440	 0.4280
F	 0.7310	 0.2340
G	 0.7040	 0.3780
H	 0.9200	 0.3880
I	 0.8290	 0.4610
J	 0.8890	 0.4840
K	 0.8310	 0.4030
L	 0.7850	 0.3470
M	 0.8430	 0.3440
N	 0.8620	 0.3230
O	 0.7800	 0.2730
P	 0.7850	 0.4020
X	 0.8350	 0.3370
Y	 0.8840	 0.3590
Z	 0.6070	 0.2890

