Full wwPDB EM Validation Report

Nov 17, 2026 – 09:30 pm GMT

PDB ID	:	9TJN / pdb_00009tjn
EMDB ID	:	EMD-56014
Title	:	Premature Aminopeptidase-1 dodecamer from S. cerevisiae determined by subtomogram averaging in situ
Authors	:	Boyle, E.; Cruz-Leon, S.; Lizarrondo, J.; Brenner, J.; Wilfling, F.
Deposited on	:	2025-12-07
Resolution	:	3.84 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:

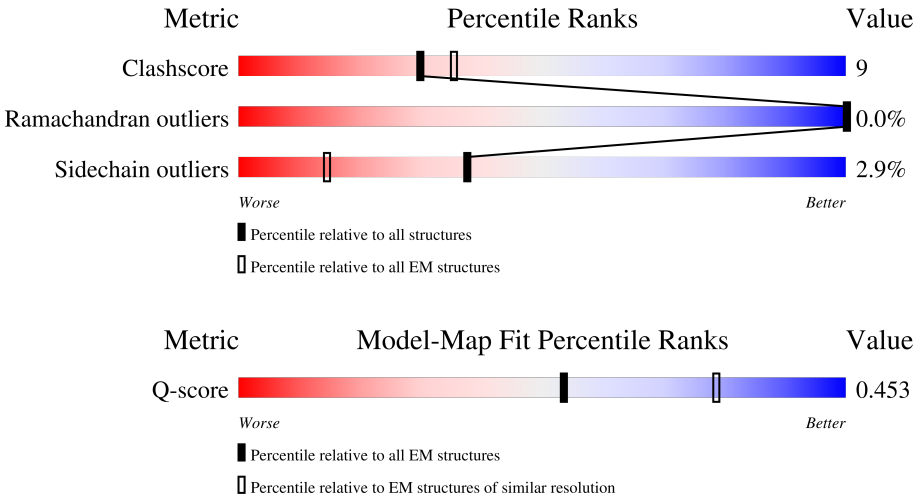
EMDB validation analysis	:	0.0.1.dev133
MolProbity	:	4-5-2 with Phenix2.2
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.51

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 3.84 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	9033 (3.34 - 4.34)

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 <=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	514	75% 18% • 6%
1	B	514	77% 14% • 7%
1	C	514	76% 17% • 6%
1	J	514	75% 18% • 6%

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Mol	Chain	Length	Quality of chain
1	K	514	
1	L	514	
1	S	514	
1	T	514	
1	U	514	
1	b	514	
1	c	514	
1	d	514	

2 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 89673 atoms, of which 44463 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 Vacuolar aminopeptidase 1.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	A	482	Total	C	H	N	O	S	0	0
			7472	2403	3706	637	717	9		
1	B	480	Total	C	H	N	O	S	0	0
			7428	2391	3680	633	715	9		
1	C	482	Total	C	H	N	O	S	0	0
			7472	2403	3706	637	717	9		
1	J	484	Total	C	H	N	O	S	0	0
			7502	2413	3718	639	723	9		
1	K	483	Total	C	H	N	O	S	0	0
			7487	2408	3712	638	720	9		
1	L	482	Total	C	H	N	O	S	0	0
			7465	2402	3699	636	719	9		
1	S	482	Total	C	H	N	O	S	0	0
			7472	2403	3706	637	717	9		
1	T	482	Total	C	H	N	O	S	0	0
			7472	2403	3706	637	717	9		
1	U	482	Total	C	H	N	O	S	0	0
			7472	2403	3706	637	717	9		
1	b	483	Total	C	H	N	O	S	0	0
			7487	2408	3712	638	720	9		
1	c	482	Total	C	H	N	O	S	0	0
			7472	2403	3706	637	717	9		
1	d	482	Total	C	H	N	O	S	0	0
			7472	2403	3706	637	717	9		

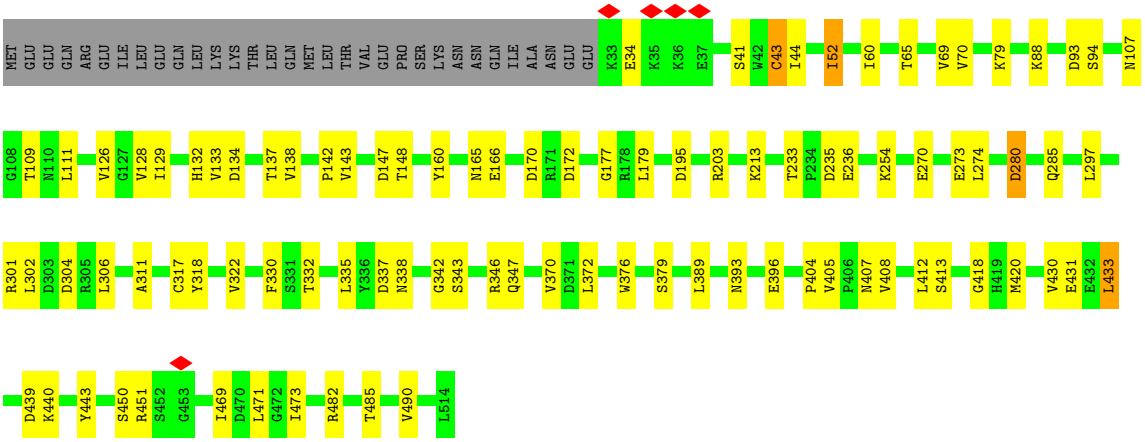
3 Residue-property plots (i)

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: Vacuolar aminopeptidase 1

Chain A:

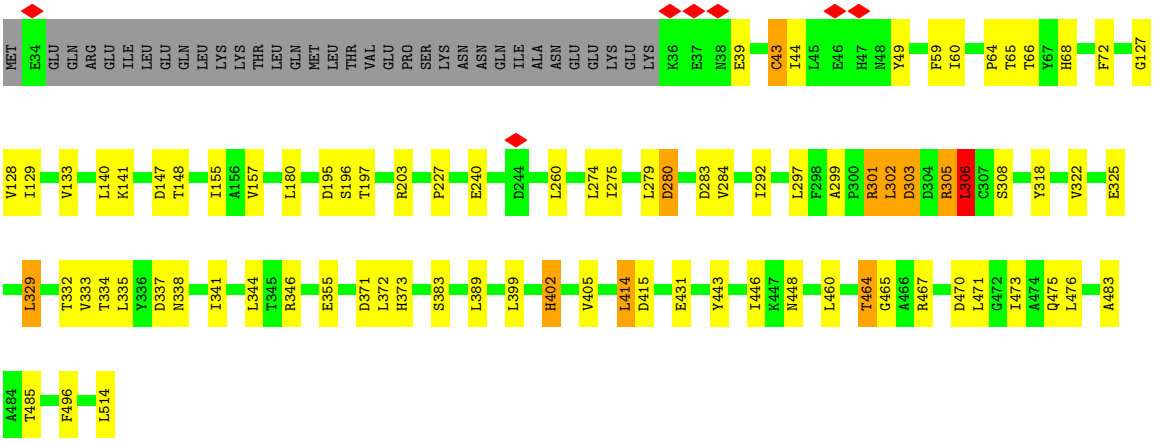




• Molecule 1: Vacuolar aminopeptidase 1

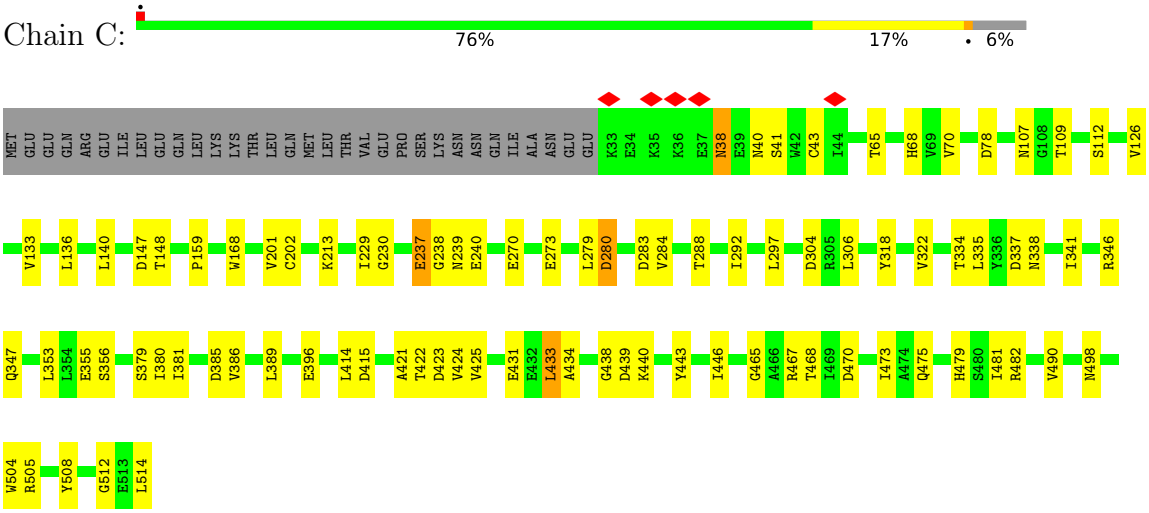
Chain B:





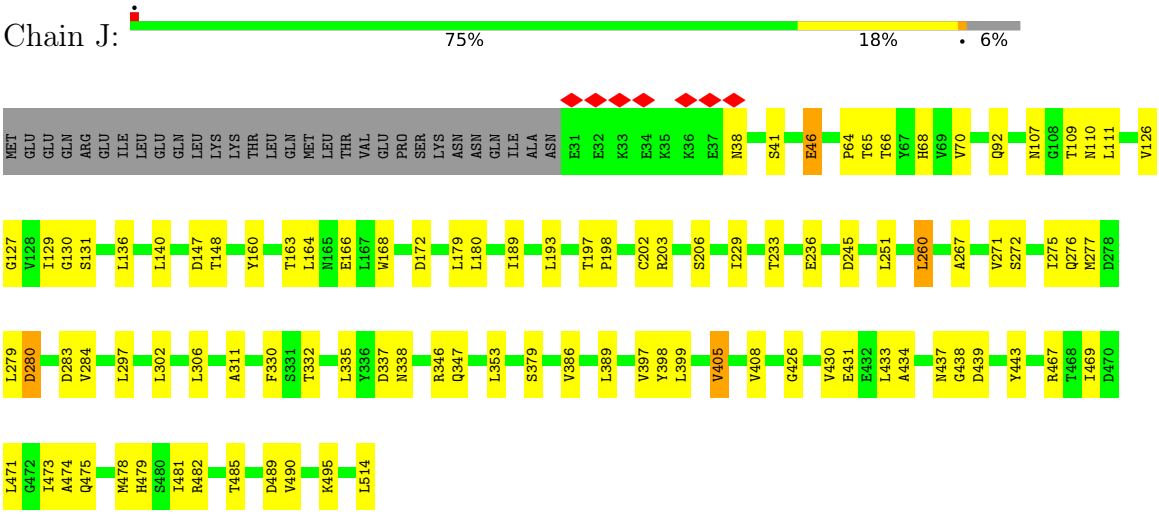
• Molecule 1: Vacuolar aminopeptidase 1

Chain C:



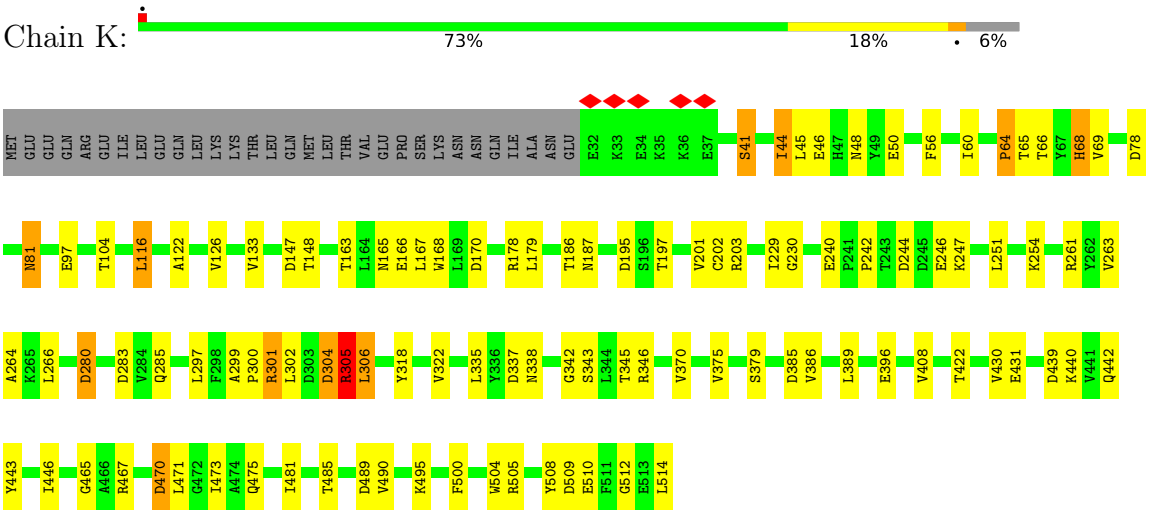
• Molecule 1: Vacuolar aminopeptidase 1

Chain J:



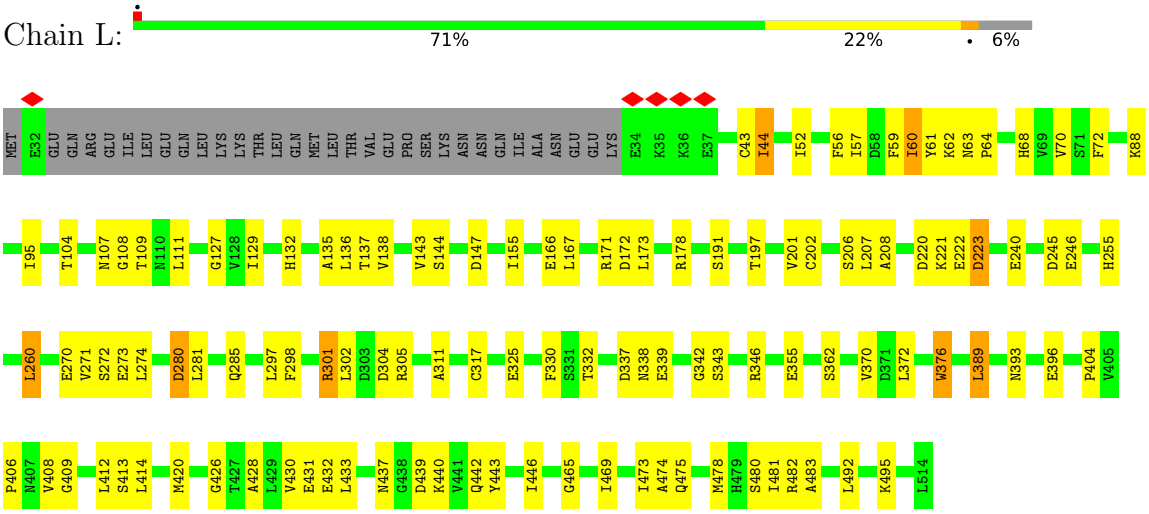
• Molecule 1: Vacuolar aminopeptidase 1

Chain K:



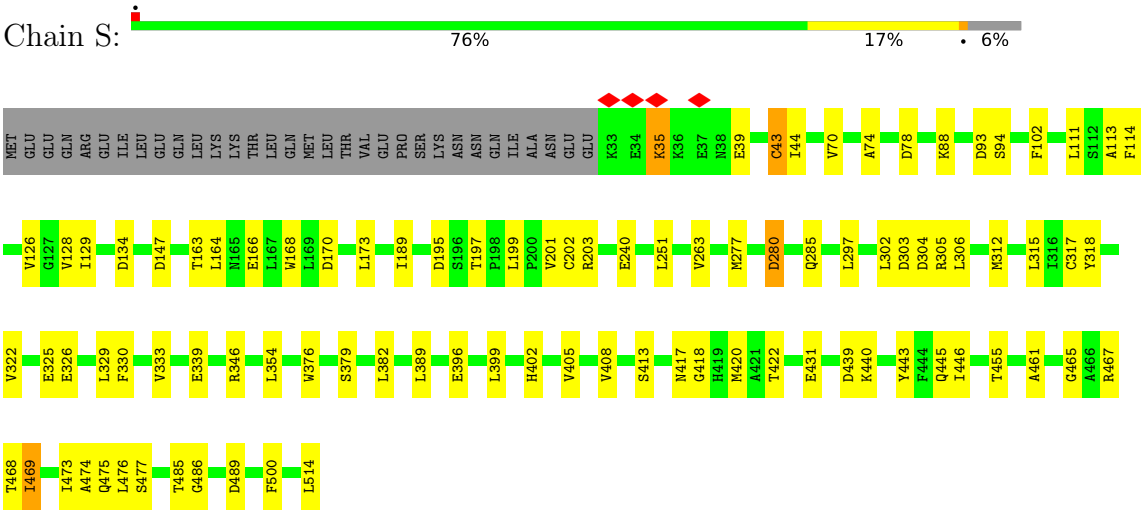
• Molecule 1: Vacuolar aminopeptidase 1

Chain L:



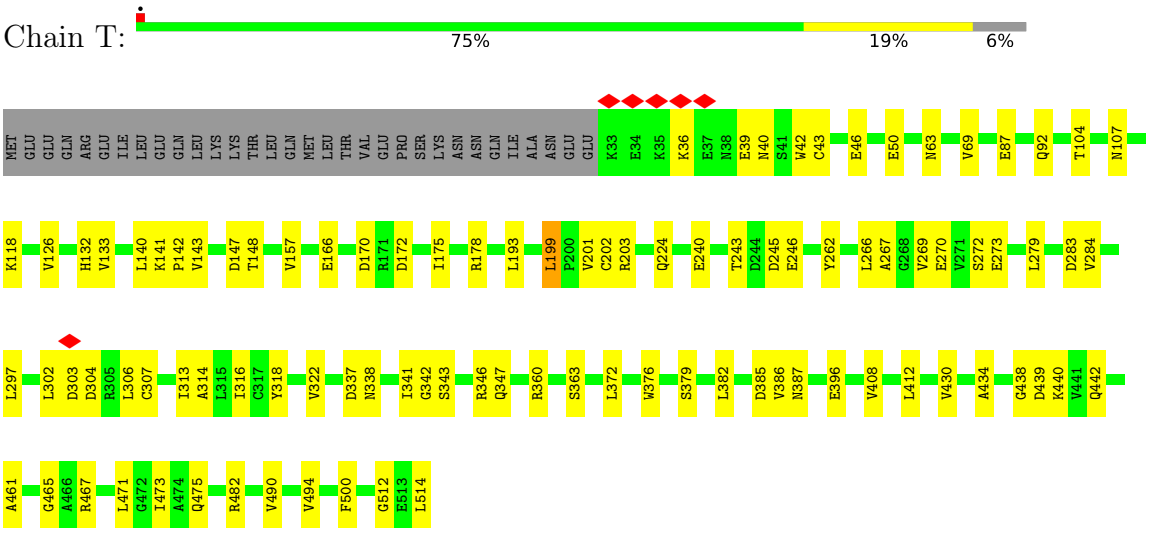
• Molecule 1: Vacuolar aminopeptidase 1

Chain S:



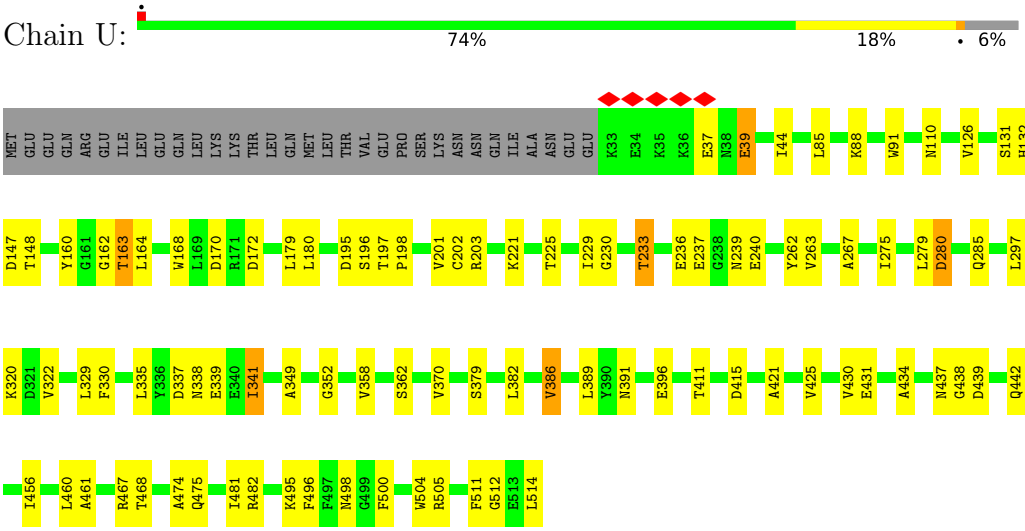
• Molecule 1: Vacuolar aminopeptidase 1

Chain T:



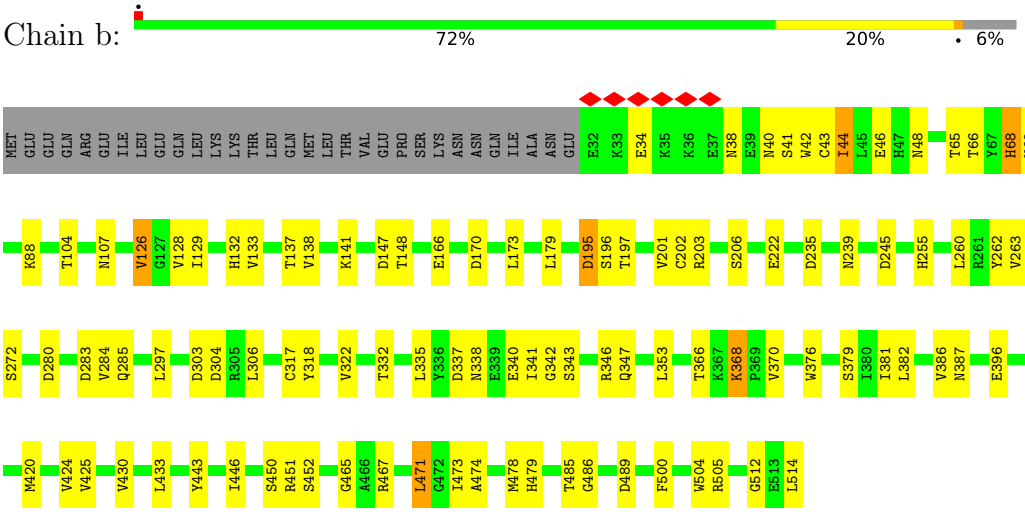
• Molecule 1: Vacuolar aminopeptidase 1

Chain U:



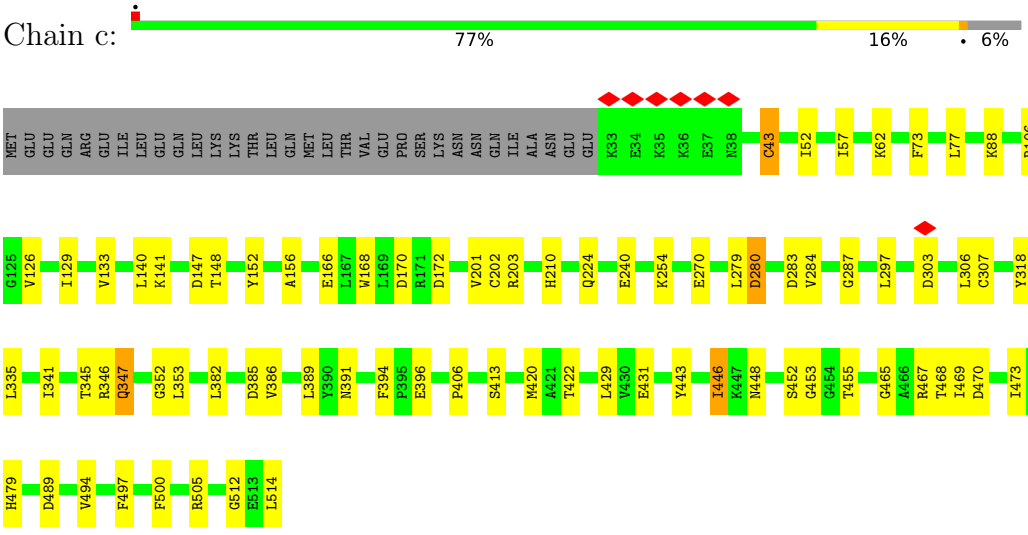
• Molecule 1: Vacuolar aminopeptidase 1

Chain b:



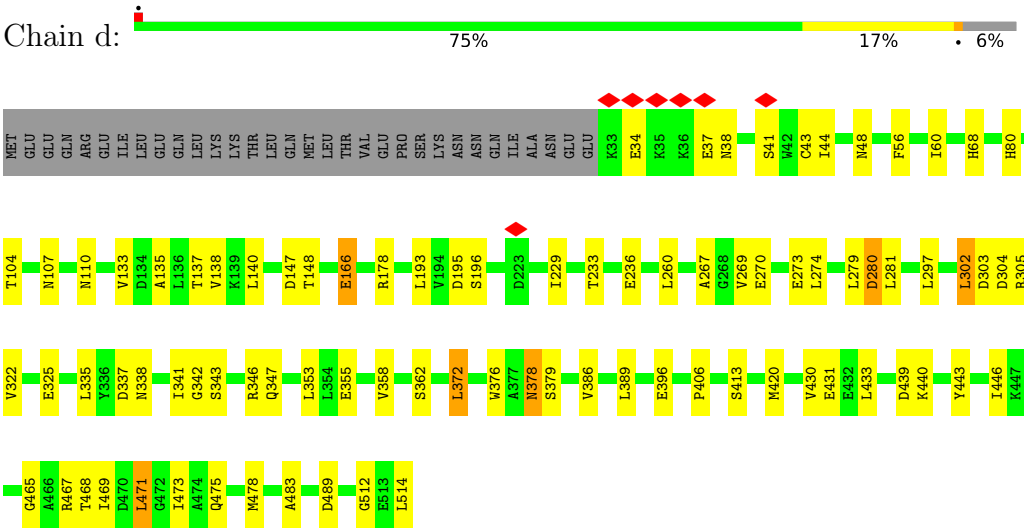
• Molecule 1: Vacuolar aminopeptidase 1

Chain c:



• Molecule 1: Vacuolar aminopeptidase 1

Chain d:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SUBTOMOGRAM AVERAGING	Depositor
Imposed symmetry	POINT, T	Depositor
Number of subtomograms used	12370	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	150	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	4500	Depositor
Magnification	64000	Depositor
Image detector	TFS FALCON 4i (4k x 4k)	Depositor
Maximum map value	3.080	Depositor
Minimum map value	-1.889	Depositor
Average map value	0.021	Depositor
Map value standard deviation	0.171	Depositor
Recommended contour level	0.417	Depositor
Map size (Å)	272.88, 272.88, 272.88	wwPDB
Map dimensions	144, 144, 144	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.895, 1.895, 1.895	Depositor

5 Model quality

5.1 Standard geometry

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	0.16	0/3855	0.35	0/5221
1	B	0.24	0/3836	0.43	2/5196 (0.0%)
1	C	0.17	0/3855	0.36	0/5221
1	J	0.16	0/3873	0.33	0/5245
1	K	0.28	1/3864 (0.0%)	0.47	6/5233 (0.1%)
1	L	0.29	1/3854 (0.0%)	0.50	5/5219 (0.1%)
1	S	0.17	0/3855	0.33	0/5221
1	T	0.16	0/3855	0.33	0/5221
1	U	0.18	0/3855	0.37	0/5221
1	b	0.21	0/3864	0.40	0/5233
1	c	0.20	0/3855	0.37	0/5221
1	d	0.19	0/3855	0.37	0/5221
All	All	0.21	2/46276 (0.0%)	0.39	13/62673 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	B	0	2
1	K	0	2
1	L	0	1
All	All	0	5

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	K	305	ARG	CA-C	6.62	1.62	1.52
1	L	62	LYS	CA-C	6.54	1.62	1.52

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	K	306	LEU	N-CA-C	-9.01	102.79	113.88
1	L	61	TYR	N-CA-C	8.79	122.02	111.82
1	B	303	ASP	N-CA-C	-7.85	103.92	113.97
1	L	62	LYS	CB-CA-C	-7.08	99.26	110.94
1	K	46	GLU	N-CA-CB	-6.78	101.89	110.90
1	B	306	LEU	N-CA-C	-5.92	104.77	112.23
1	K	304	ASP	N-CA-C	5.91	120.44	113.23
1	L	304	ASP	N-CA-C	-5.48	105.89	113.18
1	L	62	LYS	N-CA-C	5.48	118.97	112.72
1	L	60	ILE	N-CA-C	-5.17	105.34	110.62
1	K	305	ARG	CA-C-O	5.17	125.61	119.56
1	K	45	LEU	N-CA-C	-5.14	106.42	113.30
1	K	305	ARG	N-CA-C	-5.08	106.68	112.92

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	301	ARG	Sidechain
1	B	305	ARG	Sidechain
1	K	301	ARG	Sidechain
1	K	305	ARG	Sidechain
1	L	301	ARG	Sidechain

5.2 Too-close contacts (i)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3766	3706	3705	67	0
1	B	3748	3680	3678	75	0
1	C	3766	3706	3705	64	0
1	J	3784	3718	3717	77	0
1	K	3775	3712	3711	81	0
1	L	3766	3699	3697	104	0
1	S	3766	3706	3705	65	0
1	T	3766	3706	3705	67	0
1	U	3766	3706	3705	77	0
1	b	3775	3712	3711	70	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	c	3766	3706	3705	64	0
1	d	3766	3706	3705	67	0
All	All	45210	44463	44449	819	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 9.

All (819) 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:B:59:PHE:CE1	1:B:72:PHE:CD2	2.01	1.47
1:L:59:PHE:HE1	1:L:72:PHE:CE2	1.44	1.34
1:L:59:PHE:CE1	1:L:72:PHE:CE2	2.18	1.30
1:L:59:PHE:HE1	1:L:72:PHE:CD2	1.49	1.29
1:B:59:PHE:CE1	1:B:72:PHE:CG	2.22	1.27
1:L:59:PHE:CE1	1:L:72:PHE:CD2	2.26	1.22
1:B:59:PHE:CD1	1:B:72:PHE:CD2	2.32	1.18
1:B:59:PHE:HE1	1:B:72:PHE:CB	1.59	1.14
1:B:59:PHE:HE1	1:B:72:PHE:CG	1.60	1.12
1:U:196:SER:HG	1:U:262:TYR:HH	1.07	1.00
1:B:59:PHE:CE1	1:B:72:PHE:CB	2.44	0.99
1:B:59:PHE:CE1	1:B:72:PHE:HD2	1.86	0.93
1:L:137:THR:HB	1:L:301:ARG:HH22	1.35	0.90
1:L:59:PHE:CD1	1:L:72:PHE:CE2	2.61	0.89
1:C:431:GLU:OE2	1:C:443:TYR:OH	1.94	0.86
1:B:59:PHE:CD1	1:B:72:PHE:CE2	2.65	0.84
1:C:43:CYS:SG	1:C:498:ASN:ND2	2.51	0.84
1:C:337:ASP:OD1	1:C:338:ASN:N	2.11	0.83
1:J:166:GLU:N	1:J:166:GLU:OE1	2.11	0.83
1:S:166:GLU:OE1	1:S:166:GLU:N	2.11	0.83
1:B:64:PRO:CD	1:B:301:ARG:NH1	2.42	0.83
1:d:135:ALA:O	1:d:137:THR:OG1	1.98	0.81
1:d:166:GLU:OE1	1:d:166:GLU:N	2.13	0.81
1:B:64:PRO:HD3	1:B:301:ARG:HH12	1.45	0.81
1:c:431:GLU:OE2	1:c:443:TYR:OH	1.98	0.80
1:K:242:PRO:O	1:K:247:LYS:NZ	2.14	0.80
1:S:485:THR:OG1	1:S:489:ASP:OD2	1.98	0.80
1:B:383:SER:OG	1:B:470:ASP:OD1	1.99	0.79
1:C:467:ARG:NH2	1:C:514:LEU:OXT	2.15	0.79
1:d:325:GLU:OE1	1:d:325:GLU:N	2.16	0.78
1:C:126:VAL:N	1:C:379:SER:OG	2.16	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:126:VAL:N	1:J:379:SER:OG	2.17	0.78
1:T:107:ASN:ND2	1:T:347:GLN:OE1	2.16	0.78
1:K:64:PRO:HB3	1:K:301:ARG:CZ	2.14	0.77
1:S:240:GLU:N	1:S:240:GLU:OE1	2.16	0.77
1:A:132:HIS:CE1	1:A:304:ASP:CG	2.62	0.77
1:d:56:PHE:CZ	1:d:60:ILE:HD11	2.19	0.77
1:K:337:ASP:OD1	1:K:338:ASN:N	2.17	0.77
1:B:64:PRO:HD3	1:B:301:ARG:NH1	2.00	0.77
1:J:389:LEU:N	1:J:475:GLN:O	2.17	0.77
1:K:69:VAL:HG21	1:K:305:ARG:HE	1.50	0.76
1:L:59:PHE:CE1	1:L:72:PHE:HE2	1.95	0.76
1:B:64:PRO:HB3	1:B:301:ARG:CZ	2.15	0.76
1:C:306:LEU:HD21	1:C:473:ILE:HG21	1.67	0.76
1:K:163:THR:OG1	1:K:165:ASN:OD1	2.03	0.76
1:B:240:GLU:N	1:B:240:GLU:OE1	2.19	0.76
1:J:337:ASP:OD1	1:J:338:ASN:N	2.18	0.75
1:K:97:GLU:N	1:K:97:GLU:OE1	2.19	0.75
1:A:41:SER:HB2	1:A:52:ILE:HD13	1.67	0.75
1:T:240:GLU:OE1	1:T:240:GLU:N	2.19	0.75
1:b:132:HIS:ND1	1:b:304:ASP:OD2	2.19	0.75
1:b:337:ASP:OD1	1:b:338:ASN:N	2.18	0.75
1:K:470:ASP:N	1:K:470:ASP:OD1	2.18	0.74
1:T:126:VAL:N	1:T:379:SER:OG	2.18	0.74
1:d:467:ARG:NH2	1:d:514:LEU:O	2.21	0.74
1:b:443:TYR:OH	1:c:254:LYS:NZ	2.16	0.74
1:A:337:ASP:OD1	1:A:338:ASN:N	2.21	0.73
1:A:431:GLU:OE2	1:A:443:TYR:OH	2.06	0.73
1:S:285:GLN:OE1	1:b:285:GLN:NE2	2.22	0.73
1:S:486:GLY:N	1:S:489:ASP:OD2	2.21	0.73
1:B:325:GLU:OE1	1:B:325:GLU:N	2.21	0.73
1:T:166:GLU:N	1:T:166:GLU:OE1	2.21	0.73
1:K:166:GLU:N	1:K:166:GLU:OE1	2.21	0.73
1:L:166:GLU:OE1	1:L:166:GLU:N	2.22	0.72
1:J:107:ASN:ND2	1:J:347:GLN:OE1	2.23	0.72
1:d:110:ASN:ND2	1:d:335:LEU:O	2.21	0.72
1:L:325:GLU:OE1	1:L:325:GLU:N	2.21	0.72
1:K:126:VAL:N	1:K:379:SER:OG	2.22	0.72
1:B:59:PHE:CE1	1:B:72:PHE:HB3	2.25	0.72
1:S:467:ARG:NH2	1:S:514:LEU:OXT	2.23	0.72
1:C:40:ASN:O	1:C:41:SER:OG	2.07	0.72
1:L:285:GLN:NE2	1:c:172:ASP:OD2	2.23	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:155:ILE:HD12	1:B:155:ILE:O	1.90	0.72
1:K:240:GLU:N	1:K:240:GLU:OE1	2.22	0.72
1:S:439:ASP:OD1	1:S:440:LYS:N	2.23	0.72
1:T:467:ARG:NH2	1:T:514:LEU:OXT	2.23	0.72
1:B:64:PRO:HB3	1:B:301:ARG:NH1	2.04	0.71
1:T:306:LEU:HD21	1:T:473:ILE:HG21	1.71	0.71
1:d:431:GLU:OE2	1:d:443:TYR:OH	2.08	0.71
1:U:179:LEU:HD11	1:U:263:VAL:HG12	1.73	0.71
1:K:305:ARG:HB2	1:K:305:ARG:HH21	1.55	0.71
1:B:64:PRO:CG	1:B:301:ARG:NH1	2.54	0.71
1:C:355:GLU:N	1:C:355:GLU:OE1	2.24	0.71
1:J:437:ASN:OD1	1:J:495:LYS:NZ	2.24	0.71
1:K:50:GLU:N	1:K:50:GLU:OE1	2.24	0.71
1:B:59:PHE:HE1	1:B:72:PHE:HB2	1.55	0.70
1:J:233:THR:OG1	1:J:236:GLU:OE1	2.07	0.70
1:K:514:LEU:HD22	1:L:178:ARG:HH22	1.56	0.70
1:d:439:ASP:OD1	1:d:440:LYS:N	2.24	0.70
1:b:245:ASP:O	1:b:272:SER:OG	2.10	0.70
1:c:166:GLU:N	1:c:166:GLU:OE1	2.24	0.70
1:B:64:PRO:CB	1:B:301:ARG:NH1	2.55	0.70
1:C:280:ASP:N	1:C:280:ASP:OD1	2.24	0.70
1:J:245:ASP:O	1:J:272:SER:OG	2.08	0.70
1:J:306:LEU:HD21	1:J:473:ILE:HG21	1.72	0.70
1:K:422:THR:OG1	1:K:470:ASP:OD1	2.07	0.70
1:c:280:ASP:N	1:c:280:ASP:OD1	2.24	0.70
1:U:337:ASP:OD1	1:U:338:ASN:N	2.24	0.69
1:U:39:GLU:OE1	1:U:39:GLU:N	2.25	0.69
1:d:195:ASP:OD1	1:d:196:SER:N	2.25	0.69
1:T:342:GLY:O	1:T:343:SER:OG	2.08	0.69
1:L:413:SER:OG	1:L:420:MET:SD	2.48	0.69
1:S:126:VAL:N	1:S:379:SER:OG	2.25	0.69
1:L:56:PHE:CZ	1:L:60:ILE:HD11	2.27	0.68
1:T:243:THR:OG1	1:T:245:ASP:OD1	2.11	0.68
1:A:233:THR:OG1	1:A:236:GLU:OE2	2.10	0.68
1:T:439:ASP:OD1	1:T:440:LYS:N	2.27	0.68
1:L:137:THR:HB	1:L:301:ARG:NH2	2.06	0.68
1:L:439:ASP:OD1	1:L:440:LYS:N	2.26	0.68
1:B:39:GLU:O	1:B:43:CYS:N	2.26	0.67
1:d:386:VAL:HG23	1:d:473:ILE:O	1.94	0.67
1:d:386:VAL:HG13	1:d:478:MET:HE1	1.76	0.67
1:B:337:ASP:OD1	1:B:338:ASN:N	2.26	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:137:THR:OG1	1:L:281:LEU:O	2.13	0.67
1:K:439:ASP:OD1	1:K:440:LYS:N	2.28	0.67
1:J:46:GLU:OE1	1:J:46:GLU:N	2.28	0.66
1:K:304:ASP:OD1	1:K:304:ASP:O	2.13	0.66
1:A:132:HIS:CE1	1:A:304:ASP:OD2	2.48	0.66
1:K:431:GLU:OE2	1:K:443:TYR:OH	2.12	0.66
1:T:412:LEU:HD23	1:T:471:LEU:HB3	1.76	0.66
1:J:70:VAL:HG21	1:J:109:THR:HA	1.77	0.65
1:S:399:LEU:HD23	1:S:402:HIS:CE1	2.31	0.65
1:d:337:ASP:OD1	1:d:338:ASN:N	2.29	0.65
1:L:135:ALA:HB1	1:L:301:ARG:HG2	1.78	0.65
1:c:468:THR:C	1:c:469:ILE:HD12	2.21	0.65
1:K:389:LEU:N	1:K:475:GLN:O	2.25	0.65
1:T:87:GLU:OE1	1:T:360:ARG:NH1	2.29	0.65
1:L:222:GLU:OE1	1:L:222:GLU:N	2.28	0.65
1:c:477:SER:OG	1:c:477:SER:O	2.13	0.65
1:U:233:THR:N	1:U:236:GLU:OE2	2.28	0.65
1:J:471:LEU:HD12	1:J:471:LEU:O	1.95	0.65
1:S:306:LEU:HD21	1:S:473:ILE:HG21	1.77	0.65
1:L:220:ASP:OD1	1:L:221:LYS:N	2.29	0.65
1:c:514:LEU:HD22	1:d:178:ARG:HH22	1.62	0.65
1:B:59:PHE:CZ	1:B:72:PHE:CD2	2.80	0.64
1:c:107:ASN:ND2	1:c:347:GLN:OE1	2.30	0.64
1:J:431:GLU:OE2	1:J:443:TYR:OH	2.09	0.64
1:A:126:VAL:N	1:A:379:SER:OG	2.31	0.64
1:b:467:ARG:NH2	1:b:514:LEU:OXT	2.30	0.64
1:K:306:LEU:HD21	1:K:490:VAL:HG22	1.80	0.64
1:L:270:GLU:N	1:L:273:GLU:OE1	2.31	0.64
1:T:512:GLY:O	1:U:88:LYS:NZ	2.27	0.64
1:U:126:VAL:N	1:U:379:SER:OG	2.28	0.64
1:A:439:ASP:OD1	1:A:440:LYS:N	2.31	0.64
1:b:107:ASN:ND2	1:b:347:GLN:OE1	2.31	0.64
1:L:107:ASN:ND2	1:L:107:ASN:O	2.31	0.64
1:c:505:ARG:NE	1:c:505:ARG:O	2.25	0.64
1:C:421:ALA:N	1:C:470:ASP:OD2	2.29	0.64
1:K:179:LEU:HD11	1:K:263:VAL:CG1	2.28	0.64
1:U:110:ASN:ND2	1:U:335:LEU:O	2.30	0.64
1:B:141:LYS:NZ	1:B:157:VAL:O	2.30	0.63
1:J:160:TYR:OH	1:J:338:ASN:ND2	2.30	0.63
1:U:163:THR:OG1	1:U:168:TRP:NE1	2.31	0.63
1:C:107:ASN:ND2	1:C:347:GLN:OE1	2.31	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:136:LEU:O	1:L:136:LEU:HD12	1.98	0.63
1:B:147:ASP:OD1	1:B:148:THR:N	2.31	0.63
1:U:197:THR:HG23	1:U:198:PRO:HD3	1.80	0.63
1:T:170:ASP:OD1	1:T:203:ARG:NH2	2.31	0.63
1:d:137:THR:HG22	1:d:138:VAL:H	1.64	0.63
1:c:512:GLY:O	1:d:88:LYS:NZ	2.32	0.63
1:A:132:HIS:CD2	1:A:304:ASP:OD1	2.52	0.63
1:d:270:GLU:N	1:d:273:GLU:OE1	2.32	0.63
1:K:510:GLU:OE1	1:K:510:GLU:N	2.32	0.62
1:S:389:LEU:N	1:S:475:GLN:O	2.31	0.62
1:A:128:VAL:HG22	1:A:332:THR:CG2	2.30	0.62
1:S:396:GLU:OE1	1:S:396:GLU:N	2.32	0.62
1:T:396:GLU:N	1:T:396:GLU:OE1	2.31	0.62
1:C:439:ASP:OD1	1:C:440:LYS:N	2.32	0.62
1:T:147:ASP:OD1	1:T:148:THR:N	2.33	0.62
1:d:420:MET:HE1	1:d:455:THR:HG21	1.81	0.62
1:d:355:GLU:N	1:d:355:GLU:OE1	2.31	0.62
1:A:134:ASP:OD2	1:A:338:ASN:N	2.33	0.62
1:K:471:LEU:HD12	1:K:471:LEU:O	2.00	0.62
1:L:60:ILE:HG23	1:L:305:ARG:HG3	1.81	0.62
1:T:141:LYS:NZ	1:T:157:VAL:O	2.33	0.62
1:U:431:GLU:OE2	1:U:443:TYR:OH	2.13	0.62
1:b:34:GLU:OE1	1:b:79:LYS:NZ	2.32	0.62
1:A:34:GLU:OE1	1:A:79:LYS:NZ	2.32	0.61
1:B:64:PRO:HB3	1:B:301:ARG:NE	2.15	0.61
1:J:260:LEU:HD12	1:J:271:VAL:HG13	1.80	0.61
1:b:170:ASP:OD1	1:b:203:ARG:NH2	2.33	0.61
1:T:63:ASN:O	1:T:63:ASN:ND2	2.34	0.61
1:d:304:ASP:OD1	1:d:305:ARG:N	2.33	0.61
1:L:337:ASP:OD1	1:L:338:ASN:N	2.34	0.60
1:d:386:VAL:HG13	1:d:478:MET:CE	2.31	0.60
1:C:446:ILE:HD12	1:C:446:ILE:O	2.01	0.60
1:L:408:VAL:O	1:L:442:GLN:NE2	2.33	0.60
1:A:107:ASN:ND2	1:A:347:GLN:OE1	2.35	0.60
1:A:128:VAL:HG22	1:A:332:THR:HG23	1.83	0.60
1:L:59:PHE:CE1	1:L:72:PHE:HD2	2.09	0.60
1:L:240:GLU:N	1:L:240:GLU:OE1	2.34	0.60
1:L:57:ILE:HD11	1:L:297:LEU:HG	1.83	0.60
1:L:207:LEU:HD23	1:c:394:PHE:CD1	2.37	0.60
1:S:43:CYS:N	1:S:317:CYS:SG	2.74	0.60
1:B:59:PHE:CZ	1:B:72:PHE:HD2	2.17	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:b:166:GLU:N	1:b:166:GLU:OE1	2.34	0.60
1:L:222:GLU:HB2	1:L:223:ASP:HA	1.83	0.59
1:T:306:LEU:CD1	1:T:490:VAL:HG22	2.32	0.59
1:C:109:THR:OG1	1:C:337:ASP:OD2	2.18	0.59
1:S:39:GLU:O	1:S:43:CYS:N	2.34	0.59
1:U:147:ASP:OD1	1:U:148:THR:N	2.36	0.59
1:B:446:ILE:O	1:B:446:ILE:HD12	2.03	0.59
1:d:304:ASP:OD2	1:d:305:ARG:NH2	2.36	0.59
1:C:335:LEU:HD12	1:C:335:LEU:O	2.02	0.59
1:J:482:ARG:NH2	1:U:172:ASP:OD2	2.36	0.59
1:K:116:LEU:O	1:K:116:LEU:HD12	2.03	0.59
1:b:128:VAL:HG13	1:b:332:THR:HG23	1.84	0.59
1:c:467:ARG:NH2	1:c:514:LEU:OXT	2.35	0.59
1:B:195:ASP:OD2	1:B:197:THR:OG1	2.19	0.59
1:T:385:ASP:OD1	1:T:386:VAL:N	2.36	0.58
1:S:189:ILE:HD11	1:U:511:PHE:CD2	2.37	0.58
1:K:65:THR:OG1	1:K:66:THR:N	2.35	0.58
1:K:280:ASP:N	1:K:280:ASP:OD1	2.36	0.58
1:U:389:LEU:N	1:U:475:GLN:O	2.35	0.58
1:b:65:THR:O	1:b:68:HIS:N	2.28	0.58
1:J:306:LEU:CD1	1:J:490:VAL:HG22	2.33	0.58
1:C:434:ALA:O	1:C:438:GLY:N	2.37	0.58
1:A:393:ASN:ND2	1:T:224:GLN:O	2.36	0.58
1:C:306:LEU:HD21	1:C:473:ILE:CG2	2.34	0.58
1:B:306:LEU:HD11	1:B:473:ILE:HG21	1.85	0.58
1:d:280:ASP:OD1	1:d:280:ASP:N	2.34	0.58
1:J:65:THR:OG1	1:J:66:THR:N	2.33	0.58
1:L:222:GLU:CB	1:L:223:ASP:HA	2.34	0.58
1:S:129:ILE:HG22	1:S:382:LEU:HD12	1.85	0.57
1:T:337:ASP:OD1	1:T:338:ASN:N	2.37	0.57
1:U:240:GLU:N	1:U:240:GLU:OE1	2.33	0.57
1:T:50:GLU:OE1	1:T:50:GLU:N	2.33	0.57
1:d:471:LEU:O	1:d:471:LEU:HD12	2.04	0.57
1:B:65:THR:OG1	1:B:66:THR:N	2.32	0.57
1:b:147:ASP:OD1	1:b:148:THR:N	2.37	0.57
1:b:195:ASP:OD1	1:b:197:THR:OG1	2.21	0.57
1:b:306:LEU:HD21	1:b:473:ILE:HG21	1.87	0.57
1:U:196:SER:OG	1:U:262:TYR:OH	1.98	0.57
1:c:111:LEU:HD23	1:c:111:LEU:C	2.30	0.57
1:J:514:LEU:HD22	1:K:178:ARG:HH22	1.69	0.57
1:B:59:PHE:CD1	1:B:72:PHE:CG	2.80	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:d:37:GLU:O	1:d:41:SER:N	2.38	0.57
1:d:147:ASP:OD1	1:d:148:THR:N	2.38	0.56
1:L:127:GLY:O	1:L:332:THR:N	2.39	0.56
1:K:81:ASN:O	1:K:81:ASN:ND2	2.38	0.56
1:S:111:LEU:HD21	1:S:312:MET:HE2	1.85	0.56
1:S:163:THR:OG1	1:S:168:TRP:NE1	2.38	0.56
1:J:276:GLN:OE1	1:J:277:MET:N	2.37	0.56
1:L:206:SER:O	1:c:391:ASN:ND2	2.38	0.56
1:b:420:MET:SD	1:b:420:MET:N	2.77	0.56
1:C:505:ARG:O	1:C:505:ARG:NE	2.34	0.56
1:d:43:CYS:HB2	1:d:44:ILE:HA	1.87	0.56
1:J:172:ASP:OD2	1:U:285:GLN:NE2	2.38	0.56
1:U:140:LEU:HD12	1:U:279:LEU:HB2	1.88	0.56
1:U:160:TYR:OH	1:U:338:ASN:ND2	2.37	0.56
1:c:147:ASP:OD1	1:c:148:THR:N	2.39	0.56
1:d:468:THR:C	1:d:469:ILE:HD12	2.30	0.56
1:K:69:VAL:HG21	1:K:305:ARG:NE	2.19	0.56
1:L:431:GLU:OE2	1:L:443:TYR:OH	2.18	0.56
1:d:80:HIS:CE1	1:d:316:ILE:HD11	2.40	0.56
1:B:133:VAL:HG11	1:B:335:LEU:HD23	1.87	0.56
1:C:385:ASP:OD1	1:C:386:VAL:N	2.39	0.56
1:T:40:ASN:ND2	1:T:46:GLU:OE2	2.36	0.56
1:K:306:LEU:HD22	1:K:473:ILE:HG21	1.87	0.55
1:b:222:GLU:OE1	1:d:448:ASN:ND2	2.40	0.55
1:L:412:LEU:HD23	1:L:414:LEU:HD21	1.89	0.55
1:b:346:ARG:NE	1:d:465:GLY:O	2.37	0.55
1:A:88:LYS:NZ	1:C:512:GLY:O	2.38	0.55
1:J:65:THR:O	1:J:68:HIS:N	2.38	0.55
1:T:302:LEU:O	1:T:302:LEU:HD13	2.05	0.55
1:c:446:ILE:HD12	1:c:446:ILE:O	2.06	0.55
1:A:433:LEU:HD12	1:A:433:LEU:O	2.06	0.55
1:L:147:ASP:N	1:L:147:ASP:OD1	2.37	0.55
1:L:372:LEU:HD12	1:L:376:TRP:CZ3	2.40	0.55
1:S:147:ASP:OD1	1:S:147:ASP:N	2.38	0.55
1:A:132:HIS:NE2	1:A:304:ASP:CG	2.65	0.55
1:L:446:ILE:HD12	1:L:446:ILE:O	2.06	0.55
1:L:127:GLY:N	1:L:330:PHE:O	2.40	0.55
1:S:431:GLU:OE2	1:S:443:TYR:OH	2.14	0.55
1:U:39:GLU:OE2	1:U:320:LYS:NZ	2.29	0.55
1:U:382:LEU:HD11	1:U:500:PHE:CE1	2.42	0.55
1:B:64:PRO:N	1:B:301:ARG:HH11	2.05	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:110:ASN:ND2	1:J:335:LEU:O	2.37	0.55
1:U:179:LEU:HD12	1:U:267:ALA:HB2	1.89	0.55
1:A:132:HIS:ND1	1:A:304:ASP:OD2	2.39	0.54
1:B:280:ASP:OD1	1:B:280:ASP:N	2.39	0.54
1:K:133:VAL:HG11	1:K:335:LEU:HD13	1.88	0.54
1:b:318:TYR:CZ	1:b:322:VAL:HG21	2.42	0.54
1:c:429:LEU:C	1:c:429:LEU:HD23	2.32	0.54
1:B:195:ASP:OD1	1:B:196:SER:N	2.41	0.54
1:L:155:ILE:HG23	1:L:155:ILE:O	2.07	0.54
1:b:201:VAL:HG13	1:b:202:CYS:N	2.23	0.54
1:d:133:VAL:HG12	1:d:133:VAL:O	2.07	0.54
1:B:467:ARG:NH2	1:B:514:LEU:OXT	2.40	0.54
1:A:147:ASP:OD1	1:A:148:THR:N	2.40	0.54
1:L:396:GLU:OE1	1:L:396:GLU:N	2.37	0.54
1:S:304:ASP:OD1	1:S:305:ARG:NE	2.41	0.54
1:K:44:ILE:HG13	1:K:495:LYS:HB2	1.90	0.54
1:K:65:THR:O	1:K:68:HIS:N	2.35	0.54
1:S:514:LEU:HD22	1:T:178:ARG:NH2	2.23	0.54
1:U:44:ILE:HG21	1:U:495:LYS:HA	1.89	0.54
1:K:44:ILE:HG21	1:K:495:LYS:HD2	1.89	0.54
1:b:465:GLY:O	1:c:346:ARG:NH2	2.41	0.54
1:S:297:LEU:N	1:S:485:THR:O	2.40	0.54
1:L:64:PRO:O	1:L:301:ARG:NH1	2.36	0.54
1:C:140:LEU:HD12	1:C:279:LEU:HB2	1.90	0.53
1:S:304:ASP:OD1	1:S:305:ARG:N	2.41	0.53
1:c:303:ASP:OD2	1:c:479:HIS:N	2.42	0.53
1:J:405:VAL:HG23	1:J:408:VAL:HG21	1.89	0.53
1:K:446:ILE:HD12	1:K:446:ILE:O	2.08	0.53
1:C:396:GLU:OE1	1:C:396:GLU:N	2.37	0.53
1:C:433:LEU:HD12	1:C:433:LEU:C	2.34	0.53
1:J:251:LEU:HD23	1:J:260:LEU:HD21	1.90	0.53
1:L:44:ILE:HD11	1:L:495:LYS:HG3	1.89	0.53
1:B:460:LEU:O	1:B:464:THR:HG22	2.07	0.53
1:J:280:ASP:OD1	1:J:280:ASP:N	2.41	0.53
1:L:433:LEU:C	1:L:433:LEU:HD23	2.33	0.53
1:c:452:SER:OG	1:c:453:GLY:N	2.41	0.53
1:J:346:ARG:NE	1:L:465:GLY:O	2.41	0.53
1:K:122:ALA:O	1:K:375:VAL:HG22	2.09	0.53
1:C:38:ASN:ND2	1:C:41:SER:OG	2.39	0.53
1:K:342:GLY:O	1:K:343:SER:OG	2.20	0.53
1:b:382:LEU:HD11	1:b:500:PHE:CD1	2.44	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:b:512:GLY:O	1:c:88:LYS:NZ	2.41	0.53
1:c:57:ILE:HD12	1:c:287:GLY:O	2.07	0.53
1:S:413:SER:O	1:S:422:THR:HG21	2.08	0.53
1:b:433:LEU:C	1:b:433:LEU:HD23	2.34	0.53
1:A:407:ASN:O	1:A:407:ASN:ND2	2.42	0.53
1:d:430:VAL:HG21	1:d:469:ILE:HG21	1.91	0.53
1:d:433:LEU:C	1:d:433:LEU:HD23	2.34	0.53
1:A:396:GLU:OE1	1:A:396:GLU:N	2.35	0.53
1:U:446:ILE:O	1:U:446:ILE:HD12	2.08	0.53
1:b:133:VAL:HG11	1:b:335:LEU:HD13	1.91	0.53
1:b:471:LEU:HD12	1:b:471:LEU:O	2.09	0.53
1:A:143:VAL:HG22	1:A:254:LYS:HB3	1.91	0.53
1:d:376:TRP:O	1:d:379:SER:OG	2.26	0.52
1:c:396:GLU:OE1	1:c:396:GLU:N	2.36	0.52
1:A:342:GLY:O	1:A:343:SER:OG	2.19	0.52
1:b:465:GLY:O	1:c:346:ARG:NE	2.42	0.52
1:J:306:LEU:HD11	1:J:490:VAL:HG22	1.90	0.52
1:A:70:VAL:HG21	1:A:109:THR:HA	1.92	0.52
1:B:371:ASP:OD1	1:B:373:HIS:N	2.42	0.52
1:C:133:VAL:HG11	1:C:335:LEU:HD13	1.91	0.52
1:U:179:LEU:HD12	1:U:267:ALA:CB	2.39	0.52
1:d:386:VAL:HG21	1:d:475:GLN:CD	2.35	0.52
1:L:201:VAL:HG23	1:L:202:CYS:N	2.25	0.52
1:T:412:LEU:HD21	1:T:430:VAL:HG11	1.91	0.52
1:L:389:LEU:HD13	1:L:404:PRO:O	2.09	0.51
1:S:113:ALA:HB3	1:S:312:MET:HE1	1.93	0.51
1:U:339:GLU:HG2	1:U:456:ILE:HD11	1.92	0.51
1:c:43:CYS:O	1:c:494:VAL:HG12	2.09	0.51
1:A:41:SER:HA	1:A:44:ILE:HG23	1.91	0.51
1:U:237:GLU:OE1	1:U:237:GLU:N	2.36	0.51
1:b:486:GLY:N	1:b:489:ASP:OD2	2.43	0.51
1:L:389:LEU:HD22	1:L:474:ALA:HB1	1.93	0.51
1:b:179:LEU:HD11	1:b:263:VAL:CG1	2.40	0.51
1:S:315:LEU:HD22	1:S:333:VAL:HG23	1.92	0.51
1:d:233:THR:OG1	1:d:236:GLU:OE2	2.22	0.51
1:d:267:ALA:HB3	1:d:269:VAL:HG22	1.93	0.51
1:A:270:GLU:N	1:A:273:GLU:OE1	2.38	0.51
1:A:346:ARG:NE	1:C:465:GLY:O	2.37	0.51
1:C:229:ILE:HG23	1:C:230:GLY:N	2.26	0.51
1:L:70:VAL:HG21	1:L:109:THR:HA	1.93	0.51
1:A:306:LEU:HD21	1:A:473:ILE:HD13	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:355:GLU:OE1	1:B:355:GLU:N	2.42	0.51
1:L:246:GLU:HG2	1:L:271:VAL:HG11	1.92	0.51
1:T:43:CYS:O	1:T:494:VAL:HG12	2.10	0.51
1:B:59:PHE:CZ	1:B:72:PHE:HB3	2.45	0.51
1:S:399:LEU:HD23	1:S:402:HIS:NE2	2.26	0.51
1:C:415:ASP:OD2	1:C:446:ILE:HD11	2.10	0.51
1:B:318:TYR:O	1:B:322:VAL:HG23	2.11	0.50
1:B:431:GLU:OE2	1:B:443:TYR:OH	2.13	0.50
1:U:179:LEU:HD11	1:U:263:VAL:CG1	2.42	0.50
1:U:280:ASP:OD1	1:U:280:ASP:N	2.40	0.50
1:A:405:VAL:HG23	1:A:408:VAL:HG21	1.92	0.50
1:L:389:LEU:HD12	1:c:152:TYR:OH	2.11	0.50
1:L:132:HIS:ND1	1:L:339:GLU:OE1	2.38	0.50
1:c:297:LEU:C	1:c:297:LEU:HD23	2.36	0.50
1:d:260:LEU:HD12	1:d:274:LEU:HD12	1.92	0.50
1:L:342:GLY:O	1:L:343:SER:OG	2.19	0.50
1:S:465:GLY:O	1:T:346:ARG:NE	2.45	0.50
1:T:245:ASP:OD1	1:T:246:GLU:N	2.45	0.50
1:T:297:LEU:C	1:T:297:LEU:HD23	2.37	0.50
1:T:303:ASP:OD1	1:T:304:ASP:N	2.45	0.50
1:b:386:VAL:HG22	1:b:387:ASN:N	2.27	0.50
1:K:56:PHE:CE2	1:K:306:LEU:HD12	2.46	0.50
1:C:147:ASP:OD1	1:C:148:THR:N	2.45	0.50
1:C:270:GLU:N	1:C:273:GLU:OE1	2.39	0.50
1:K:297:LEU:HD23	1:K:299:ALA:H	1.77	0.50
1:A:297:LEU:N	1:A:485:THR:O	2.41	0.50
1:B:127:GLY:O	1:B:332:THR:N	2.43	0.50
1:J:140:LEU:HD12	1:J:279:LEU:HB2	1.92	0.50
1:S:318:TYR:CZ	1:S:322:VAL:HG21	2.47	0.50
1:L:280:ASP:OD1	1:L:280:ASP:N	2.42	0.50
1:A:280:ASP:N	1:A:280:ASP:OD1	2.45	0.49
1:L:137:THR:OG1	1:L:138:VAL:N	2.45	0.49
1:L:201:VAL:HG23	1:L:202:CYS:H	1.76	0.49
1:L:255:HIS:HB2	1:L:260:LEU:HD23	1.94	0.49
1:U:386:VAL:HG21	1:U:475:GLN:OE1	2.12	0.49
1:U:415:ASP:OD2	1:U:446:ILE:HD11	2.11	0.49
1:b:396:GLU:OE1	1:b:396:GLU:N	2.38	0.49
1:c:413:SER:OG	1:c:420:MET:HE2	2.10	0.49
1:A:482:ARG:NH2	1:T:172:ASP:OD2	2.45	0.49
1:C:201:VAL:HG13	1:C:202:CYS:N	2.28	0.49
1:J:433:LEU:O	1:J:433:LEU:HD23	2.11	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:389:LEU:HD23	1:L:475:GLN:CA	2.42	0.49
1:S:173:LEU:N	1:S:173:LEU:HD12	2.27	0.49
1:T:382:LEU:HD11	1:T:500:PHE:CD1	2.47	0.49
1:U:179:LEU:HD21	1:U:263:VAL:HG11	1.94	0.49
1:d:34:GLU:O	1:d:38:ASN:ND2	2.42	0.49
1:K:229:ILE:HG23	1:K:230:GLY:N	2.27	0.49
1:T:132:HIS:O	1:T:132:HIS:ND1	2.42	0.49
1:K:283:ASP:OD1	1:K:285:GLN:N	2.42	0.49
1:T:193:LEU:N	1:T:193:LEU:HD12	2.27	0.49
1:S:88:LYS:NZ	1:U:512:GLY:O	2.43	0.49
1:J:283:ASP:OD1	1:J:284:VAL:N	2.46	0.49
1:B:471:LEU:HD11	1:B:496:PHE:CE2	2.48	0.49
1:C:168:TRP:CZ2	1:C:481:ILE:HD13	2.48	0.49
1:K:465:GLY:O	1:L:346:ARG:NE	2.46	0.49
1:S:514:LEU:HD22	1:T:178:ARG:HH21	1.77	0.49
1:T:140:LEU:HD12	1:T:279:LEU:HB2	1.93	0.49
1:T:267:ALA:HB3	1:T:269:VAL:HG22	1.94	0.49
1:T:283:ASP:OD1	1:T:284:VAL:N	2.46	0.49
1:A:389:LEU:HD12	1:A:404:PRO:O	2.12	0.49
1:b:40:ASN:O	1:b:44:ILE:HD12	2.12	0.49
1:C:341:ILE:HD12	1:C:341:ILE:C	2.37	0.49
1:T:306:LEU:HD21	1:T:473:ILE:CG2	2.41	0.49
1:d:110:ASN:OD1	1:d:353:LEU:HD13	2.13	0.49
1:J:111:LEU:C	1:J:111:LEU:HD23	2.37	0.49
1:K:318:TYR:CZ	1:K:322:VAL:HG21	2.48	0.49
1:K:430:VAL:HG21	1:K:471:LEU:HD23	1.95	0.49
1:L:167:LEU:HD13	1:L:480:SER:OG	2.12	0.49
1:L:245:ASP:O	1:L:272:SER:OG	2.31	0.48
1:U:133:VAL:HG11	1:U:335:LEU:HD13	1.95	0.48
1:U:136:LEU:HD22	1:U:162:GLY:O	2.13	0.48
1:C:38:ASN:ND2	1:C:38:ASN:O	2.40	0.48
1:C:292:ILE:CD1	1:K:229:ILE:HD11	2.43	0.48
1:L:95:ILE:HG23	1:L:95:ILE:O	2.13	0.48
1:L:207:LEU:HD13	1:L:208:ALA:N	2.27	0.48
1:U:437:ASN:ND2	1:U:437:ASN:O	2.46	0.48
1:b:44:ILE:HD11	1:b:46:GLU:O	2.13	0.48
1:d:137:THR:HG22	1:d:281:LEU:O	2.13	0.48
1:A:413:SER:OG	1:A:420:MET:SD	2.68	0.48
1:C:70:VAL:HG21	1:C:109:THR:HA	1.94	0.48
1:C:389:LEU:N	1:C:475:GLN:O	2.35	0.48
1:S:297:LEU:C	1:S:297:LEU:HD23	2.38	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:c:170:ASP:OD1	1:c:203:ARG:NH2	2.46	0.48
1:A:142:PRO:HG3	1:C:414:LEU:HD13	1.95	0.48
1:U:229:ILE:HG23	1:U:230:GLY:N	2.29	0.48
1:c:389:LEU:N	1:c:475:GLN:O	2.44	0.48
1:d:56:PHE:CE1	1:d:60:ILE:HD11	2.48	0.48
1:d:389:LEU:HD21	1:d:406:PRO:HG3	1.96	0.48
1:d:413:SER:HB3	1:d:420:MET:HE2	1.95	0.48
1:B:292:ILE:HD12	1:d:229:ILE:HD11	1.95	0.48
1:J:439:ASP:CG	1:J:495:LYS:HZ2	2.22	0.48
1:K:201:VAL:HG13	1:K:202:CYS:N	2.28	0.48
1:L:70:VAL:HG13	1:L:111:LEU:HB2	1.95	0.48
1:L:362:SER:O	1:L:370:VAL:HG21	2.14	0.48
1:U:163:THR:HG23	1:U:164:LEU:N	2.27	0.48
1:b:46:GLU:OE1	1:b:48:ASN:ND2	2.46	0.48
1:B:64:PRO:CB	1:B:301:ARG:HH11	2.26	0.48
1:J:197:THR:HG23	1:J:198:PRO:HD3	1.95	0.48
1:L:172:ASP:N	1:L:172:ASP:OD1	2.45	0.48
1:d:446:ILE:HG21	1:d:452:SER:HB2	1.95	0.48
1:B:297:LEU:N	1:B:485:THR:O	2.45	0.48
1:S:399:LEU:HD21	1:T:141:LYS:CD	2.44	0.48
1:A:306:LEU:HD13	1:A:490:VAL:HG22	1.95	0.48
1:B:180:LEU:O	1:B:275:ILE:HG22	2.13	0.48
1:B:301:ARG:HG2	1:B:301:ARG:HH21	1.78	0.48
1:L:245:ASP:OD1	1:L:272:SER:OG	2.28	0.48
1:U:358:VAL:O	1:U:362:SER:OG	2.30	0.48
1:S:420:MET:SD	1:S:420:MET:N	2.87	0.48
1:A:433:LEU:HD12	1:A:433:LEU:C	2.38	0.47
1:K:246:GLU:OE2	1:K:261:ARG:NH1	2.47	0.47
1:L:302:LEU:HB3	1:L:483:ALA:HB3	1.96	0.47
1:U:37:GLU:OE1	1:U:37:GLU:N	2.45	0.47
1:b:340:GLU:OE2	1:b:479:HIS:NE2	2.45	0.47
1:A:142:PRO:CG	1:C:414:LEU:HD13	2.44	0.47
1:C:292:ILE:HD12	1:K:229:ILE:HD11	1.97	0.47
1:T:199:LEU:O	1:T:199:LEU:HD23	2.15	0.47
1:T:382:LEU:HD11	1:T:500:PHE:CE1	2.50	0.47
1:A:133:VAL:CG1	1:A:335:LEU:HD13	2.44	0.47
1:L:223:ASP:OD1	1:L:223:ASP:N	2.48	0.47
1:U:430:VAL:HG13	1:U:496:PHE:HZ	1.78	0.47
1:c:110:ASN:ND2	1:c:335:LEU:O	2.44	0.47
1:c:124:LYS:NZ	1:c:328:ASP:OD1	2.34	0.47
1:J:302:LEU:O	1:J:302:LEU:HD13	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:T:408:VAL:HG21	1:T:442:GLN:HG3	1.95	0.47
1:b:283:ASP:OD1	1:b:284:VAL:N	2.48	0.47
1:B:60:ILE:HD13	1:B:299:ALA:HB1	1.96	0.47
1:J:245:ASP:OD1	1:J:272:SER:OG	2.32	0.47
1:L:446:ILE:HD12	1:L:446:ILE:C	2.39	0.47
1:S:418:GLY:HA2	1:T:341:ILE:HD12	1.97	0.47
1:U:396:GLU:OE1	1:U:396:GLU:N	2.41	0.47
1:K:179:LEU:HD11	1:K:263:VAL:HG11	1.95	0.47
1:K:186:THR:HG22	1:K:187:ASN:N	2.29	0.47
1:U:131:SER:OG	1:U:132:HIS:N	2.48	0.47
1:b:446:ILE:HG21	1:b:452:SER:HB2	1.95	0.47
1:L:473:ILE:HD12	1:L:473:ILE:N	2.30	0.47
1:U:195:ASP:OD1	1:U:196:SER:N	2.48	0.47
1:U:425:VAL:HG21	1:U:467:ARG:NH2	2.29	0.47
1:A:43:CYS:H	1:A:44:ILE:HA	1.80	0.47
1:A:137:THR:HG22	1:A:138:VAL:H	1.78	0.47
1:S:134:ASP:OD2	1:S:339:GLU:N	2.48	0.47
1:U:421:ALA:HB1	1:U:468:THR:CG2	2.45	0.47
1:d:193:LEU:HD12	1:d:193:LEU:N	2.30	0.47
1:A:170:ASP:OD1	1:A:203:ARG:NH2	2.45	0.46
1:S:280:ASP:OD1	1:S:280:ASP:N	2.47	0.46
1:c:465:GLY:O	1:d:346:ARG:NE	2.46	0.46
1:L:43:CYS:N	1:L:317:CYS:SG	2.88	0.46
1:C:283:ASP:OD1	1:C:284:VAL:N	2.49	0.46
1:d:413:SER:CB	1:d:420:MET:HE2	2.45	0.46
1:S:473:ILE:HG22	1:S:474:ALA:N	2.31	0.46
1:c:73:PHE:O	1:c:77:LEU:N	2.43	0.46
1:A:179:LEU:HD11	1:A:274:LEU:HD22	1.98	0.46
1:B:338:ASN:HB3	1:B:341:ILE:HD11	1.98	0.46
1:b:473:ILE:HG22	1:b:474:ALA:N	2.29	0.46
1:A:297:LEU:HD23	1:A:297:LEU:C	2.41	0.46
1:C:237:GLU:OE1	1:C:238:GLY:N	2.49	0.46
1:J:168:TRP:CE2	1:J:481:ILE:HD13	2.51	0.46
1:J:433:LEU:HD23	1:J:433:LEU:C	2.40	0.46
1:b:73:PHE:O	1:b:77:LEU:N	2.42	0.46
1:J:233:THR:HG1	1:J:236:GLU:CD	2.14	0.46
1:J:302:LEU:HD13	1:J:302:LEU:C	2.41	0.46
1:S:251:LEU:HD21	1:S:277:MET:SD	2.55	0.46
1:d:140:LEU:HD12	1:d:279:LEU:HB2	1.97	0.46
1:d:378:ASN:N	1:d:378:ASN:OD1	2.48	0.46
1:A:165:ASN:OD1	1:A:166:GLU:N	2.46	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:128:VAL:HG22	1:B:332:THR:CG2	2.46	0.46
1:J:430:VAL:HG21	1:J:471:LEU:HD23	1.98	0.46
1:J:434:ALA:O	1:J:438:GLY:N	2.48	0.46
1:K:500:PHE:O	1:K:500:PHE:CG	2.69	0.46
1:T:141:LYS:O	1:T:142:PRO:C	2.58	0.46
1:T:245:ASP:O	1:T:272:SER:OG	2.32	0.46
1:c:52:ILE:HD11	1:c:494:VAL:HG21	1.98	0.46
1:A:129:ILE:HG21	1:A:311:ALA:CB	2.46	0.46
1:S:35:LYS:HG2	1:S:35:LYS:O	2.15	0.46
1:S:382:LEU:HD11	1:S:500:PHE:CD1	2.51	0.46
1:C:504:TRP:CG	1:C:505:ARG:N	2.84	0.46
1:L:430:VAL:HG23	1:L:469:ILE:HD13	1.97	0.46
1:S:330:PHE:CD1	1:S:330:PHE:C	2.90	0.46
1:d:341:ILE:O	1:d:341:ILE:HG23	2.16	0.46
1:B:203:ARG:O	1:B:227:PRO:HA	2.16	0.45
1:C:283:ASP:HB2	1:C:481:ILE:HD11	1.98	0.45
1:b:267:ALA:HB3	1:b:269:VAL:HG22	1.98	0.45
1:c:140:LEU:HD12	1:c:279:LEU:HB2	1.97	0.45
1:C:318:TYR:CE2	1:C:322:VAL:HG21	2.52	0.45
1:J:193:LEU:HD12	1:J:193:LEU:N	2.31	0.45
1:L:171:ARG:NE	1:L:481:ILE:HD11	2.31	0.45
1:U:160:TYR:CZ	1:U:341:ILE:HD13	2.51	0.45
1:A:430:VAL:HG23	1:A:469:ILE:HD13	1.96	0.45
1:B:65:THR:O	1:B:68:HIS:N	2.46	0.45
1:A:137:THR:HG22	1:A:138:VAL:N	2.32	0.45
1:B:333:VAL:HG12	1:B:334:THR:N	2.32	0.45
1:K:297:LEU:N	1:K:485:THR:O	2.41	0.45
1:C:306:LEU:CD1	1:C:490:VAL:HG22	2.45	0.45
1:J:65:THR:O	1:J:66:THR:C	2.60	0.45
1:K:147:ASP:OD1	1:K:148:THR:N	2.49	0.45
1:L:355:GLU:OE1	1:L:355:GLU:N	2.43	0.45
1:L:433:LEU:HD23	1:L:433:LEU:O	2.16	0.45
1:S:44:ILE:HG23	1:S:44:ILE:O	2.16	0.45
1:T:262:TYR:CZ	1:T:266:LEU:HD11	2.51	0.45
1:U:197:THR:HG23	1:U:198:PRO:CD	2.46	0.45
1:c:133:VAL:HG11	1:c:335:LEU:HD13	1.99	0.45
1:U:318:TYR:CE2	1:U:322:VAL:HG21	2.51	0.45
1:b:376:TRP:CZ3	1:b:381:ILE:HD11	2.51	0.45
1:U:411:THR:HG22	1:U:442:GLN:HB2	1.99	0.45
1:d:318:TYR:O	1:d:322:VAL:HG23	2.17	0.45
1:d:358:VAL:O	1:d:362:SER:OG	2.33	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:260:LEU:CD1	1:B:274:LEU:HD12	2.47	0.45
1:C:38:ASN:ND2	1:C:40:ASN:O	2.50	0.45
1:J:38:ASN:O	1:J:41:SER:OG	2.34	0.45
1:J:147:ASP:OD1	1:J:148:THR:N	2.50	0.45
1:K:168:TRP:CE2	1:K:481:ILE:HD12	2.51	0.45
1:K:467:ARG:NH1	1:K:508:TYR:OH	2.49	0.45
1:L:409:GLY:H	1:L:492:LEU:HD22	1.82	0.45
1:d:297:LEU:C	1:d:297:LEU:HD23	2.42	0.45
1:K:514:LEU:HD22	1:L:178:ARG:NH2	2.27	0.44
1:S:201:VAL:HG23	1:S:202:CYS:N	2.32	0.44
1:b:65:THR:O	1:b:66:THR:C	2.60	0.44
1:c:283:ASP:OD1	1:c:284:VAL:N	2.50	0.44
1:C:422:THR:HG22	1:C:423:ASP:N	2.33	0.44
1:J:397:VAL:HG23	1:J:398:TYR:CE1	2.52	0.44
1:K:60:ILE:HD13	1:K:305:ARG:HD2	1.99	0.44
1:K:244:ASP:OD1	1:K:247:LYS:NZ	2.48	0.44
1:b:41:SER:OG	1:b:48:ASN:ND2	2.50	0.44
1:d:396:GLU:OE1	1:d:396:GLU:N	2.39	0.44
1:K:505:ARG:NH2	1:K:509:ASP:OD1	2.51	0.44
1:L:246:GLU:CG	1:L:271:VAL:HG11	2.47	0.44
1:L:426:GLY:CA	1:L:469:ILE:HD11	2.46	0.44
1:S:346:ARG:HB3	1:U:461:ALA:HB1	1.98	0.44
1:U:318:TYR:OH	1:U:329:LEU:HD12	2.17	0.44
1:U:389:LEU:HG	1:U:474:ALA:HB1	1.99	0.44
1:A:306:LEU:CD1	1:A:490:VAL:HG22	2.46	0.44
1:C:136:LEU:HD11	1:C:479:HIS:CD2	2.53	0.44
1:C:381:ILE:HB	1:C:468:THR:HG22	2.00	0.44
1:J:297:LEU:N	1:J:485:THR:O	2.49	0.44
1:U:233:THR:OG1	1:U:236:GLU:OE1	2.34	0.44
1:c:389:LEU:HD13	1:c:406:PRO:HG3	1.99	0.44
1:U:467:ARG:NH2	1:U:514:LEU:OXT	2.42	0.44
1:b:38:ASN:O	1:b:42:TRP:N	2.50	0.44
1:b:126:VAL:N	1:b:379:SER:OG	2.34	0.44
1:b:128:VAL:HG12	1:b:129:ILE:N	2.33	0.44
1:b:505:ARG:O	1:b:505:ARG:NE	2.40	0.44
1:A:65:THR:HG21	1:A:177:GLY:HA2	1.99	0.44
1:C:380:ILE:HD11	1:C:508:TYR:CE1	2.52	0.44
1:L:393:ASN:ND2	1:c:224:GLN:O	2.51	0.44
1:c:57:ILE:HD12	1:c:287:GLY:C	2.42	0.44
1:c:306:LEU:HD21	1:c:473:ILE:CG2	2.47	0.44
1:c:318:TYR:CZ	1:c:322:VAL:HG21	2.53	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:65:THR:O	1:B:66:THR:C	2.60	0.44
1:K:514:LEU:HD21	1:L:191:SER:HB2	1.99	0.44
1:b:405:VAL:HG23	1:b:408:VAL:HG21	1.99	0.44
1:b:450:SER:OG	1:b:451:ARG:N	2.50	0.44
1:c:422:THR:HG23	1:c:470:ASP:H	1.82	0.44
1:d:260:LEU:CD1	1:d:274:LEU:HD12	2.47	0.44
1:A:60:ILE:O	1:A:301:ARG:NH2	2.51	0.44
1:C:297:LEU:C	1:C:297:LEU:HD23	2.42	0.44
1:J:467:ARG:NH2	1:J:514:LEU:OXT	2.51	0.44
1:T:372:LEU:HD21	1:T:376:TRP:HE1	1.83	0.44
1:U:180:LEU:O	1:U:275:ILE:HG22	2.17	0.44
1:B:465:GLY:O	1:C:346:ARG:NE	2.51	0.44
1:J:64:PRO:O	1:J:68:HIS:ND1	2.51	0.44
1:S:329:LEU:C	1:S:329:LEU:HD12	2.42	0.44
1:d:303:ASP:HA	1:d:386:VAL:HG11	1.99	0.44
1:K:64:PRO:CB	1:K:301:ARG:CZ	2.91	0.43
1:T:306:LEU:HD11	1:T:490:VAL:HG22	2.00	0.43
1:A:172:ASP:OD2	1:T:482:ARG:NH1	2.47	0.43
1:B:283:ASP:OD1	1:B:284:VAL:N	2.50	0.43
1:T:318:TYR:CZ	1:T:322:VAL:HG21	2.53	0.43
1:T:461:ALA:O	1:T:465:GLY:N	2.43	0.43
1:b:504:TRP:CG	1:b:505:ARG:N	2.85	0.43
1:C:318:TYR:CZ	1:C:322:VAL:HG21	2.52	0.43
1:J:386:VAL:HG11	1:J:475:GLN:NE2	2.33	0.43
1:U:170:ASP:OD1	1:U:203:ARG:NH2	2.50	0.43
1:A:372:LEU:HD21	1:A:376:TRP:HE1	1.82	0.43
1:J:260:LEU:HD13	1:J:260:LEU:O	2.18	0.43
1:L:70:VAL:HG11	1:L:108:GLY:O	2.18	0.43
1:L:389:LEU:HD11	1:L:406:PRO:N	2.33	0.43
1:T:434:ALA:O	1:T:438:GLY:N	2.51	0.43
1:B:318:TYR:CE2	1:B:322:VAL:HG21	2.53	0.43
1:C:288:THR:O	1:C:288:THR:HG23	2.17	0.43
1:J:197:THR:N	1:J:198:PRO:HD2	2.33	0.43
1:S:170:ASP:OD1	1:S:203:ARG:NH2	2.52	0.43
1:S:405:VAL:HG23	1:S:408:VAL:CG2	2.48	0.43
1:b:424:VAL:HG13	1:b:425:VAL:N	2.34	0.43
1:A:318:TYR:CZ	1:A:322:VAL:HG21	2.54	0.43
1:J:126:VAL:HG12	1:J:127:GLY:N	2.34	0.43
1:K:396:GLU:OE1	1:K:396:GLU:N	2.41	0.43
1:C:65:THR:O	1:C:68:HIS:N	2.41	0.43
1:C:433:LEU:HD12	1:C:433:LEU:O	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:202:CYS:HB3	1:J:229:ILE:HG22	2.00	0.43
1:S:461:ALA:HB2	1:S:468:THR:OG1	2.18	0.43
1:d:302:LEU:HB2	1:d:483:ALA:HB3	1.99	0.43
1:A:370:VAL:HG13	1:A:370:VAL:O	2.18	0.43
1:C:353:LEU:O	1:C:356:SER:N	2.52	0.43
1:K:301:ARG:HE	1:K:305:ARG:HH12	1.67	0.43
1:L:129:ILE:HG21	1:L:311:ALA:HB1	2.01	0.43
1:L:260:LEU:CD1	1:L:274:LEU:HD12	2.48	0.43
1:A:126:VAL:HG13	1:A:330:PHE:CD1	2.54	0.43
1:B:329:LEU:C	1:B:329:LEU:HD23	2.43	0.43
1:B:448:ASN:HB2	1:C:159:PRO:HD2	2.00	0.43
1:J:203:ARG:NH2	1:U:482:ARG:O	2.51	0.43
1:J:473:ILE:HG22	1:J:474:ALA:N	2.34	0.43
1:T:314:ALA:HB2	1:T:494:VAL:HG13	2.01	0.43
1:b:342:GLY:O	1:b:343:SER:OG	2.25	0.43
1:c:106:ARG:NH1	1:c:352:GLY:O	2.47	0.43
1:c:110:ASN:OD1	1:c:353:LEU:HD22	2.18	0.43
1:c:382:LEU:HD11	1:c:500:PHE:CD1	2.53	0.43
1:B:140:LEU:HD12	1:B:279:LEU:HB2	1.99	0.43
1:B:299:ALA:HB3	1:B:302:LEU:HD13	2.00	0.43
1:L:413:SER:O	1:L:414:LEU:HD13	2.19	0.43
1:U:297:LEU:HD23	1:U:297:LEU:C	2.44	0.43
1:U:318:TYR:CZ	1:U:322:VAL:HG21	2.54	0.43
1:c:514:LEU:HD22	1:d:178:ARG:NH2	2.33	0.43
1:K:305:ARG:HG2	1:K:305:ARG:O	2.19	0.42
1:U:44:ILE:C	1:U:44:ILE:HD12	2.43	0.42
1:A:418:GLY:HA2	1:B:341:ILE:HD12	2.01	0.42
1:B:129:ILE:HG23	1:B:129:ILE:O	2.19	0.42
1:J:426:GLY:CA	1:J:469:ILE:HD11	2.49	0.42
1:S:93:ASP:OD1	1:S:94:SER:N	2.52	0.42
1:T:175:ILE:HD11	1:T:279:LEU:HD13	2.00	0.42
1:b:196:SER:OG	1:b:262:TYR:OH	2.14	0.42
1:c:303:ASP:OD1	1:c:475:GLN:NE2	2.52	0.42
1:L:389:LEU:HD11	1:L:406:PRO:CA	2.49	0.42
1:b:65:THR:HG21	1:b:280:ASP:HB2	2.01	0.42
1:A:126:VAL:HG13	1:A:330:PHE:HD1	1.83	0.42
1:B:414:LEU:HD23	1:B:415:ASP:N	2.33	0.42
1:J:386:VAL:HG11	1:J:475:GLN:HE22	1.85	0.42
1:K:301:ARG:HE	1:K:305:ARG:NH1	2.16	0.42
1:L:389:LEU:N	1:L:475:GLN:O	2.51	0.42
1:L:408:VAL:O	1:L:408:VAL:HG13	2.18	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:T:69:VAL:HG11	1:T:133:VAL:CG2	2.49	0.42
1:U:425:VAL:HG11	1:U:467:ARG:NE	2.34	0.42
1:b:255:HIS:HB2	1:b:260:LEU:HD21	2.02	0.42
1:c:201:VAL:HG13	1:c:202:CYS:N	2.33	0.42
1:c:385:ASP:OD1	1:c:386:VAL:N	2.52	0.42
1:L:482:ARG:NH2	1:c:172:ASP:OD2	2.53	0.42
1:T:201:VAL:HG13	1:T:202:CYS:N	2.35	0.42
1:b:239:ASN:ND2	1:b:239:ASN:O	2.52	0.42
1:K:41:SER:HB2	1:K:48:ASN:HB3	2.02	0.42
1:K:305:ARG:HB2	1:K:305:ARG:NH2	2.29	0.42
1:S:114:PHE:HB2	1:S:330:PHE:HE1	1.84	0.42
1:S:477:SER:OG	1:b:206:SER:O	2.32	0.42
1:U:504:TRP:CG	1:U:505:ARG:N	2.88	0.42
1:J:163:THR:O	1:J:164:LEU:HB2	2.19	0.42
1:b:297:LEU:N	1:b:485:THR:O	2.45	0.42
1:K:306:LEU:HD23	1:K:306:LEU:O	2.20	0.42
1:L:136:LEU:HD12	1:L:136:LEU:C	2.44	0.42
1:U:201:VAL:HG13	1:U:202:CYS:N	2.34	0.42
1:b:129:ILE:HG23	1:b:129:ILE:O	2.19	0.42
1:b:235:ASP:OD1	1:b:235:ASP:N	2.52	0.42
1:c:345:THR:HG22	1:c:346:ARG:H	1.85	0.42
1:K:64:PRO:HG3	1:K:301:ARG:NH1	2.34	0.42
1:K:170:ASP:OD1	1:K:203:ARG:NH1	2.47	0.42
1:S:468:THR:HG22	1:S:469:ILE:N	2.35	0.42
1:J:127:GLY:O	1:J:332:THR:HG22	2.20	0.42
1:J:130:GLY:C	1:J:131:SER:HG	2.24	0.42
1:J:179:LEU:HD12	1:J:267:ALA:HB2	2.02	0.42
1:J:206:SER:O	1:U:391:ASN:ND2	2.52	0.42
1:K:385:ASP:OD1	1:K:386:VAL:N	2.53	0.42
1:S:163:THR:O	1:S:164:LEU:HB2	2.19	0.42
1:T:270:GLU:N	1:T:273:GLU:OE1	2.40	0.42
1:U:370:VAL:O	1:U:370:VAL:HG13	2.20	0.42
1:A:482:ARG:NH1	1:T:172:ASP:OD1	2.51	0.41
1:L:473:ILE:HG22	1:L:474:ALA:N	2.34	0.41
1:b:173:LEU:N	1:b:173:LEU:HD12	2.35	0.41
1:b:410:ILE:HD12	1:b:473:ILE:HD13	2.02	0.41
1:A:450:SER:OG	1:A:451:ARG:N	2.54	0.41
1:B:372:LEU:HD23	1:B:372:LEU:H	1.85	0.41
1:J:129:ILE:HG21	1:J:311:ALA:HB1	2.02	0.41
1:K:408:VAL:HG11	1:K:442:GLN:CD	2.45	0.41
1:T:39:GLU:HA	1:T:42:TRP:HB2	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:T:313:ILE:HA	1:T:316:ILE:HG22	2.03	0.41
1:U:168:TRP:CZ2	1:U:481:ILE:HD13	2.55	0.41
1:A:233:THR:O	1:A:235:ASP:N	2.53	0.41
1:J:168:TRP:CZ2	1:J:481:ILE:HD13	2.55	0.41
1:J:251:LEU:HD21	1:J:277:MET:HG2	2.03	0.41
1:L:171:ARG:HB2	1:L:173:LEU:HD21	2.00	0.41
1:S:128:VAL:HG11	1:S:354:LEU:HD11	2.03	0.41
1:U:44:ILE:HD12	1:U:44:ILE:O	2.20	0.41
1:U:85:LEU:HD21	1:U:91:TRP:CD2	2.56	0.41
1:U:349:ALA:O	1:U:352:GLY:N	2.53	0.41
1:b:141:LYS:NZ	1:d:448:ASN:OD1	2.53	0.41
1:b:430:VAL:HG21	1:b:471:LEU:HD23	2.00	0.41
1:d:85:LEU:HD13	1:d:91:TRP:CE2	2.55	0.41
1:J:189:ILE:HD11	1:L:432:GLU:OE1	2.20	0.41
1:J:197:THR:CG2	1:J:198:PRO:HD3	2.50	0.41
1:c:141:LYS:HD2	1:c:156:ALA:HB1	2.01	0.41
1:C:306:LEU:HD13	1:C:490:VAL:HG22	2.01	0.41
1:J:405:VAL:HG23	1:J:408:VAL:CG2	2.50	0.41
1:S:318:TYR:OH	1:S:329:LEU:HD11	2.20	0.41
1:S:382:LEU:HD11	1:S:500:PHE:CE1	2.56	0.41
1:S:445:GLN:CG	1:S:446:ILE:H	2.33	0.41
1:U:330:PHE:C	1:U:330:PHE:CD1	2.96	0.41
1:d:302:LEU:CB	1:d:483:ALA:HB3	2.51	0.41
1:d:372:LEU:HD12	1:d:376:TRP:CD1	2.55	0.41
1:C:424:VAL:HG13	1:C:425:VAL:N	2.35	0.41
1:J:478:MET:HE2	1:J:479:HIS:CE1	2.55	0.41
1:b:473:ILE:HG22	1:b:474:ALA:H	1.85	0.41
1:c:318:TYR:CE2	1:c:322:VAL:HG21	2.56	0.41
1:c:448:ASN:OD1	1:c:448:ASN:N	2.53	0.41
1:A:285:GLN:NE2	1:T:172:ASP:OD2	2.54	0.41
1:C:201:VAL:CG1	1:C:202:CYS:N	2.84	0.41
1:K:370:VAL:O	1:K:370:VAL:HG13	2.20	0.41
1:T:302:LEU:HD13	1:T:302:LEU:C	2.46	0.41
1:U:437:ASN:ND2	1:U:439:ASP:OD2	2.50	0.41
1:B:44:ILE:HD12	1:B:49:TYR:HE1	1.86	0.41
1:C:481:ILE:HG23	1:C:482:ARG:N	2.36	0.41
1:J:110:ASN:OD1	1:J:353:LEU:HD22	2.21	0.41
1:J:126:VAL:HG13	1:J:330:PHE:CD1	2.56	0.41
1:K:65:THR:O	1:K:66:THR:C	2.64	0.41
1:T:92:GLN:OE1	1:T:363:SER:OG	2.38	0.41
1:c:476:LEU:HD23	1:c:477:SER:N	2.36	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:302:LEU:HD23	1:B:483:ALA:HB3	2.03	0.41
1:K:163:THR:O	1:K:163:THR:HG23	2.21	0.41
1:K:251:LEU:O	1:K:254:LYS:N	2.49	0.41
1:L:144:SER:OG	1:L:155:ILE:HD11	2.21	0.41
1:L:298:PHE:N	1:L:298:PHE:CD1	2.89	0.41
1:S:325:GLU:OE1	1:S:326:GLU:N	2.54	0.41
1:U:434:ALA:O	1:U:438:GLY:N	2.54	0.41
1:b:88:LYS:NZ	1:d:512:GLY:O	2.51	0.41
1:A:93:ASP:OD1	1:A:94:SER:N	2.53	0.41
1:A:111:LEU:HD23	1:A:111:LEU:C	2.46	0.41
1:C:112:SER:HB2	1:C:334:THR:HG23	2.02	0.41
1:J:180:LEU:O	1:J:275:ILE:HG22	2.21	0.41
1:K:512:GLY:O	1:L:88:LYS:NZ	2.40	0.41
1:L:412:LEU:HD23	1:L:414:LEU:CD2	2.51	0.41
1:S:70:VAL:O	1:S:74:ALA:N	2.48	0.41
1:c:307:CYS:SG	1:c:386:VAL:HG13	2.61	0.41
1:c:345:THR:HG22	1:c:346:ARG:N	2.35	0.41
1:d:413:SER:OG	1:d:420:MET:HE2	2.21	0.41
1:B:302:LEU:HD11	1:B:306:LEU:HB2	2.02	0.40
1:K:261:ARG:O	1:K:264:ALA:HB3	2.21	0.40
1:K:300:PRO:O	1:K:301:ARG:C	2.64	0.40
1:K:345:THR:HG22	1:K:346:ARG:N	2.36	0.40
1:L:437:ASN:O	1:L:495:LYS:NZ	2.54	0.40
1:L:478:MET:SD	1:c:210:HIS:NE2	2.93	0.40
1:U:430:VAL:HG13	1:U:496:PHE:CZ	2.57	0.40
1:b:137:THR:OG1	1:b:138:VAL:N	2.46	0.40
1:c:420:MET:HE1	1:c:455:THR:CG2	2.51	0.40
1:d:342:GLY:C	1:d:343:SER:HG	2.21	0.40
1:J:136:LEU:HD11	1:J:479:HIS:CD2	2.55	0.40
1:J:276:GLN:HB2	1:L:428:ALA:HB2	2.02	0.40
1:S:195:ASP:OD2	1:S:197:THR:OG1	2.27	0.40
1:U:421:ALA:HB1	1:U:468:THR:HG23	2.03	0.40
1:b:366:THR:HG22	1:b:368:LYS:HG2	2.03	0.40
1:c:240:GLU:OE1	1:c:240:GLU:N	2.42	0.40
1:A:132:HIS:CD2	1:A:304:ASP:CG	3.00	0.40
1:K:467:ARG:NH2	1:K:514:LEU:OXT	2.54	0.40
1:U:221:LYS:O	1:U:225:THR:OG1	2.38	0.40
1:b:337:ASP:OD1	1:b:338:ASN:ND2	2.50	0.40
1:c:129:ILE:HD13	1:c:497:PHE:CD1	2.55	0.40
1:B:389:LEU:HD23	1:B:476:LEU:HG	2.03	0.40
1:K:165:ASN:O	1:K:167:LEU:N	2.55	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:64:PRO:O	1:L:301:ARG:NE	2.54	0.40
1:L:338:ASN:O	1:L:343:SER:N	2.50	0.40
1:S:102:PHE:HB2	1:S:114:PHE:CZ	2.57	0.40
1:S:399:LEU:HD21	1:T:141:LYS:HD3	2.03	0.40
1:T:36:LYS:O	1:T:40:ASN:N	2.41	0.40
1:A:137:THR:O	1:A:160:TYR:HB3	2.22	0.40
1:B:399:LEU:HD23	1:B:402:HIS:CG	2.56	0.40
1:J:430:VAL:HG23	1:J:469:ILE:HD13	2.04	0.40
1:b:260:LEU:HD22	1:b:260:LEU:H	1.86	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	480/514 (93%)	458 (95%)	22 (5%)	0	100	100
1	B	477/514 (93%)	447 (94%)	30 (6%)	0	100	100
1	C	480/514 (93%)	453 (94%)	27 (6%)	0	100	100
1	J	482/514 (94%)	457 (95%)	25 (5%)	0	100	100
1	K	481/514 (94%)	459 (95%)	20 (4%)	2 (0%)	30	64
1	L	479/514 (93%)	453 (95%)	26 (5%)	0	100	100
1	S	480/514 (93%)	457 (95%)	23 (5%)	0	100	100
1	T	480/514 (93%)	459 (96%)	21 (4%)	0	100	100
1	U	480/514 (93%)	448 (93%)	32 (7%)	0	100	100
1	b	481/514 (94%)	460 (96%)	21 (4%)	0	100	100
1	c	480/514 (93%)	452 (94%)	28 (6%)	0	100	100
1	d	480/514 (93%)	455 (95%)	25 (5%)	0	100	100
All	All	5760/6168 (93%)	5458 (95%)	300 (5%)	2 (0%)	100	100

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	K	44	ILE
1	K	64	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	408/439 (93%)	397 (97%)	11 (3%)	39	60
1	B	406/439 (92%)	391 (96%)	15 (4%)	30	54
1	C	408/439 (93%)	399 (98%)	9 (2%)	45	64
1	J	410/439 (93%)	403 (98%)	7 (2%)	53	68
1	K	409/439 (93%)	395 (97%)	14 (3%)	32	56
1	L	408/439 (93%)	396 (97%)	12 (3%)	37	58
1	S	408/439 (93%)	395 (97%)	13 (3%)	34	56
1	T	408/439 (93%)	401 (98%)	7 (2%)	53	68
1	U	408/439 (93%)	397 (97%)	11 (3%)	39	60
1	b	409/439 (93%)	392 (96%)	17 (4%)	26	51
1	c	408/439 (93%)	397 (97%)	11 (3%)	39	60
1	d	408/439 (93%)	395 (97%)	13 (3%)	34	56
All	All	4898/5268 (93%)	4758 (97%)	140 (3%)	38	58

All (140) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	43	CYS
1	A	52	ILE
1	A	69	VAL
1	A	195	ASP
1	A	213	LYS
1	A	280	ASP
1	A	302	LEU

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Mol	Chain	Res	Type
1	A	317	CYS
1	A	412	LEU
1	A	433	LEU
1	A	471	LEU
1	B	43	CYS
1	B	280	ASP
1	B	302	LEU
1	B	303	ASP
1	B	305	ARG
1	B	306	LEU
1	B	308	SER
1	B	329	LEU
1	B	344	LEU
1	B	346	ARG
1	B	402	HIS
1	B	405	VAL
1	B	414	LEU
1	B	464	THR
1	B	475	GLN
1	C	38	ASN
1	C	78	ASP
1	C	213	LYS
1	C	237	GLU
1	C	239	ASN
1	C	240	GLU
1	C	280	ASP
1	C	304	ASP
1	C	433	LEU
1	J	46	GLU
1	J	92	GLN
1	J	260	LEU
1	J	280	ASP
1	J	399	LEU
1	J	405	VAL
1	J	489	ASP
1	K	41	SER
1	K	68	HIS
1	K	78	ASP
1	K	81	ASN
1	K	104	THR
1	K	116	LEU
1	K	195	ASP

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Mol	Chain	Res	Type
1	K	197	THR
1	K	266	LEU
1	K	280	ASP
1	K	302	LEU
1	K	470	ASP
1	K	489	ASP
1	K	504	TRP
1	L	44	ILE
1	L	52	ILE
1	L	63	ASN
1	L	68	HIS
1	L	104	THR
1	L	143	VAL
1	L	197	THR
1	L	223	ASP
1	L	260	LEU
1	L	280	ASP
1	L	376	TRP
1	L	389	LEU
1	S	35	LYS
1	S	43	CYS
1	S	78	ASP
1	S	199	LEU
1	S	263	VAL
1	S	280	ASP
1	S	302	LEU
1	S	303	ASP
1	S	376	TRP
1	S	417	ASN
1	S	455	THR
1	S	469	ILE
1	S	476	LEU
1	T	104	THR
1	T	118	LYS
1	T	143	VAL
1	T	199	LEU
1	T	307	CYS
1	T	387	ASN
1	T	475	GLN
1	U	39	GLU
1	U	163	THR
1	U	233	THR

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Mol	Chain	Res	Type
1	U	239	ASN
1	U	280	ASP
1	U	304	ASP
1	U	341	ILE
1	U	386	VAL
1	U	446	ILE
1	U	460	LEU
1	U	498	ASN
1	b	43	CYS
1	b	44	ILE
1	b	68	HIS
1	b	69	VAL
1	b	78	ASP
1	b	104	THR
1	b	126	VAL
1	b	195	ASP
1	b	303	ASP
1	b	317	CYS
1	b	341	ILE
1	b	353	LEU
1	b	368	LYS
1	b	370	VAL
1	b	405	VAL
1	b	471	LEU
1	b	478	MET
1	c	43	CYS
1	c	62	LYS
1	c	126	VAL
1	c	168	TRP
1	c	270	GLU
1	c	280	ASP
1	c	341	ILE
1	c	347	GLN
1	c	446	ILE
1	c	477	SER
1	c	489	ASP
1	d	48	ASN
1	d	68	HIS
1	d	104	THR
1	d	107	ASN
1	d	166	GLU
1	d	280	ASP

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Mol	Chain	Res	Type
1	d	302	LEU
1	d	317	CYS
1	d	347	GLN
1	d	372	LEU
1	d	378	ASN
1	d	471	LEU
1	d	489	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (38) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	107	ASN
1	A	255	HIS
1	A	338	ASN
1	A	387	ASN
1	A	475	GLN
1	B	258	HIS
1	B	285	GLN
1	B	323	ASN
1	C	63	ASN
1	C	239	ASN
1	C	255	HIS
1	C	498	ASN
1	J	255	HIS
1	J	407	ASN
1	K	258	HIS
1	L	224	GLN
1	L	373	HIS
1	S	107	ASN
1	S	132	HIS
1	T	210	HIS
1	T	258	HIS
1	U	110	ASN
1	U	388	HIS
1	U	407	ASN
1	U	437	ASN
1	U	479	HIS
1	U	498	ASN
1	U	503	HIS
1	b	48	ASN
1	b	239	ASN
1	b	258	HIS

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Mol	Chain	Res	Type
1	b	285	GLN
1	b	407	ASN
1	c	387	ASN
1	d	258	HIS
1	d	323	ASN
1	d	338	ASN
1	d	407	ASN

5.3.3 RNA

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains

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

5.5 Carbohydrates

There are no oligosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

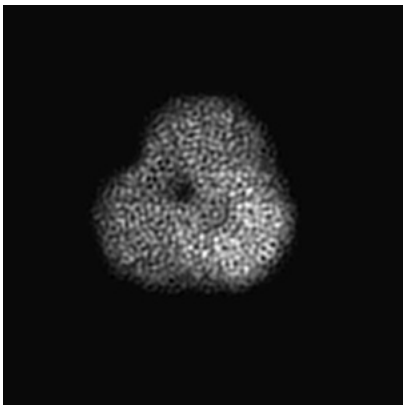
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-56014. These allow visual inspection of the internal detail of the map and identification of artifacts.

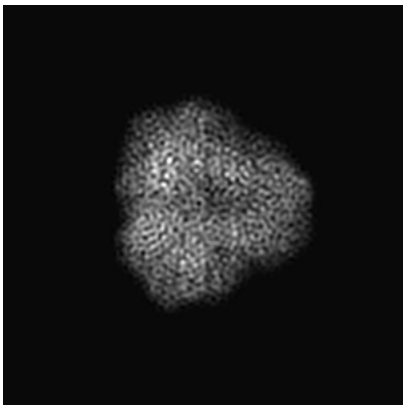
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

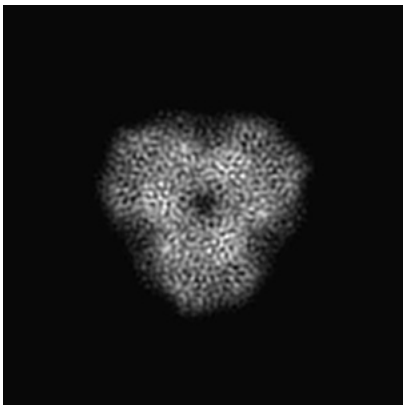
6.1.1 Primary map



X

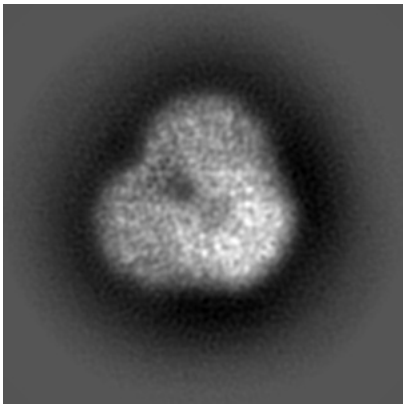


Y

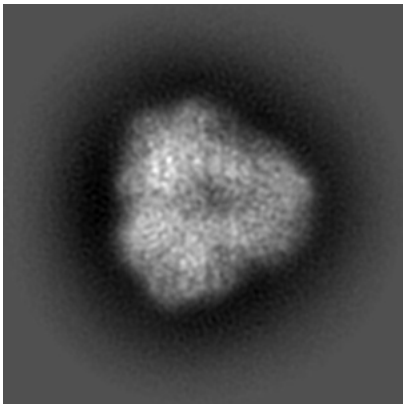


Z

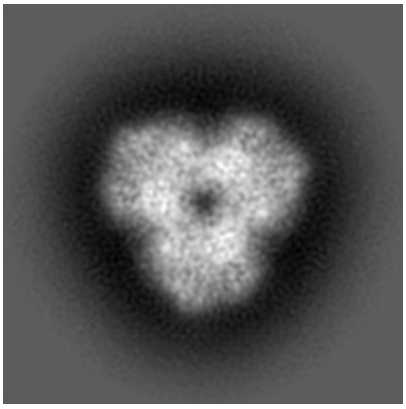
6.1.2 Raw map



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: 72

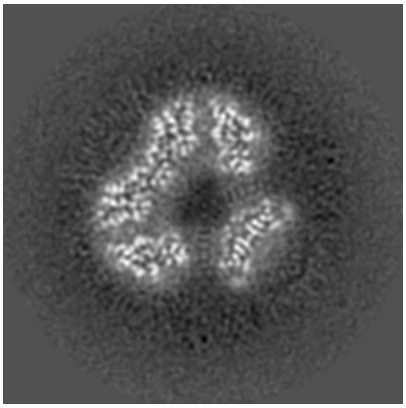


Y Index: 72

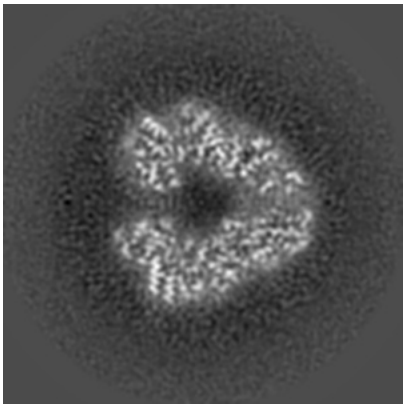


Z Index: 72

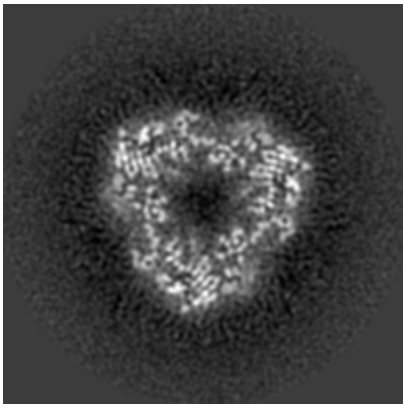
6.2.2 Raw map



X Index: 72



Y Index: 72

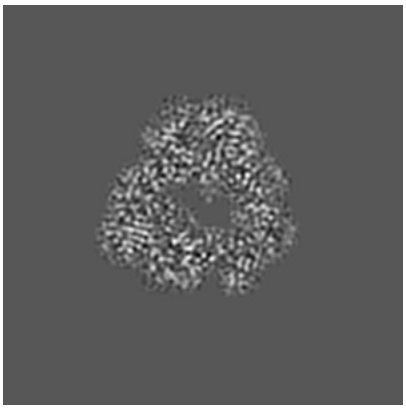


Z Index: 72

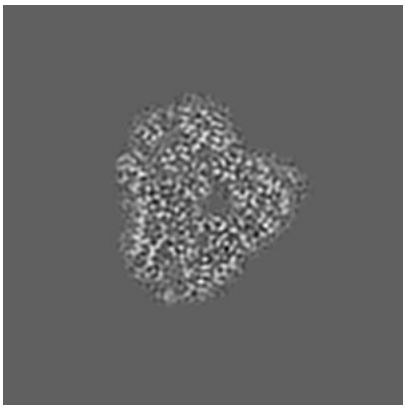
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

6.3.1 Primary map



X Index: 82

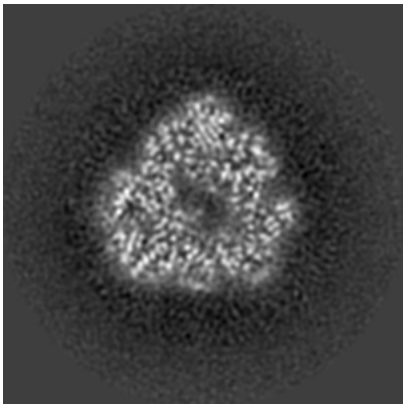


Y Index: 87

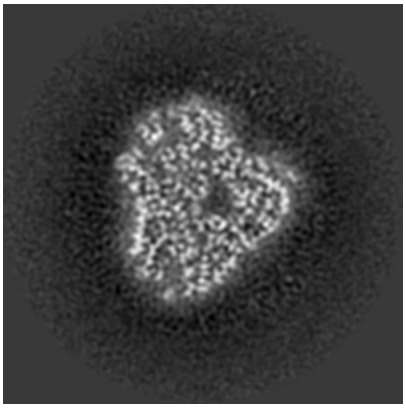


Z Index: 59

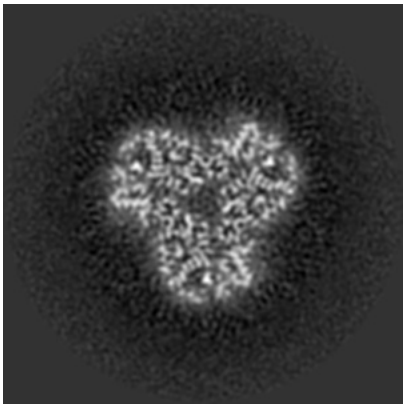
6.3.2 Raw map



X Index: 62



Y Index: 87

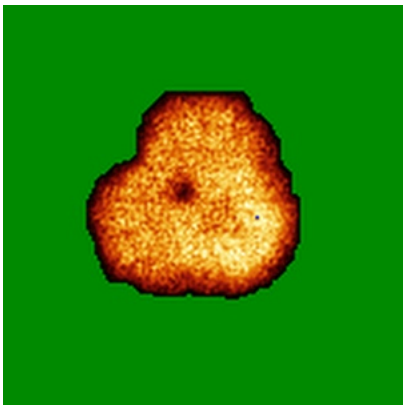


Z Index: 54

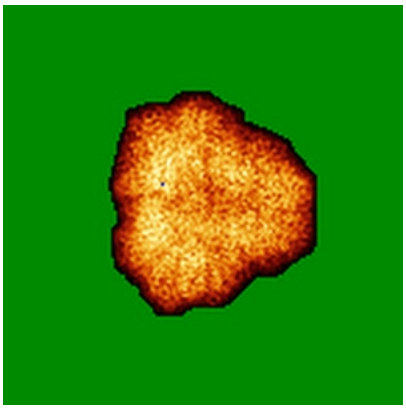
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

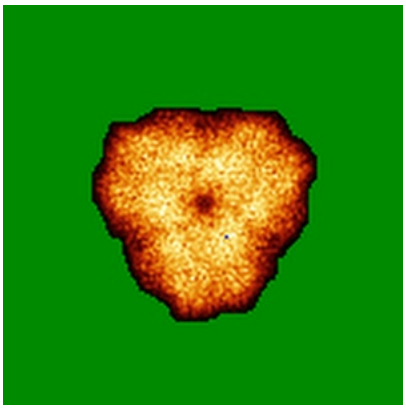
6.4.1 Primary map



X

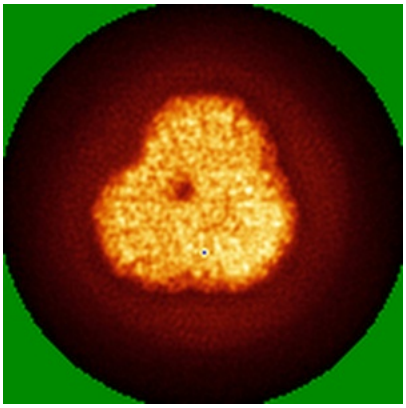


Y

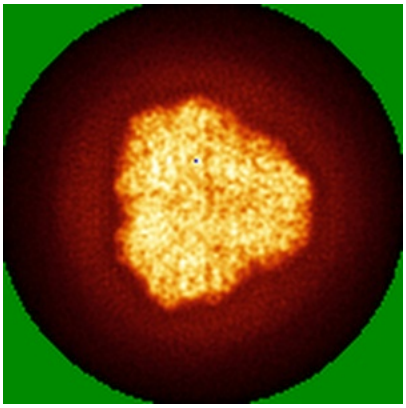


Z

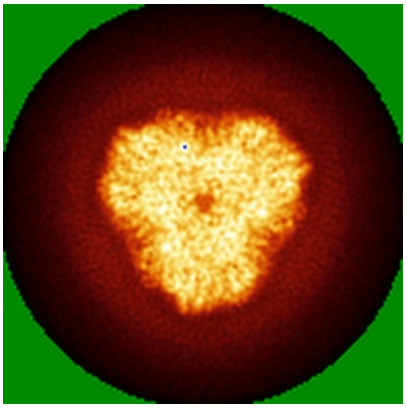
6.4.2 Raw map



X



Y

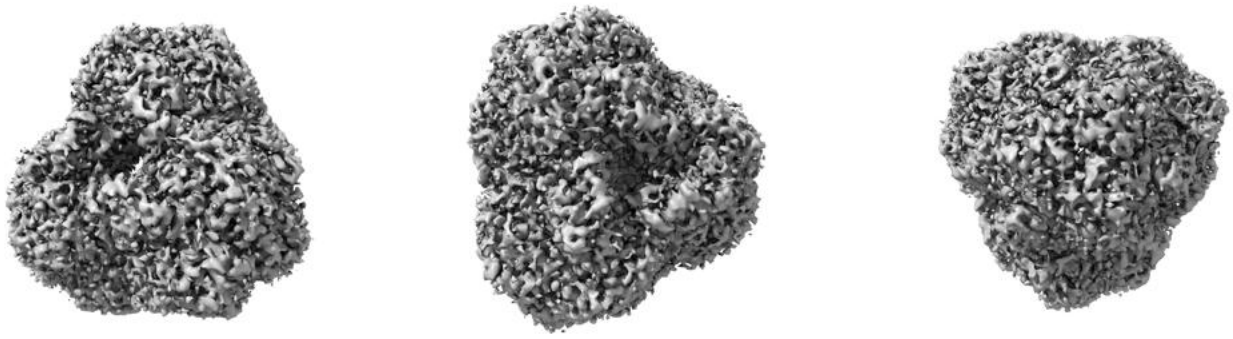


Z

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)

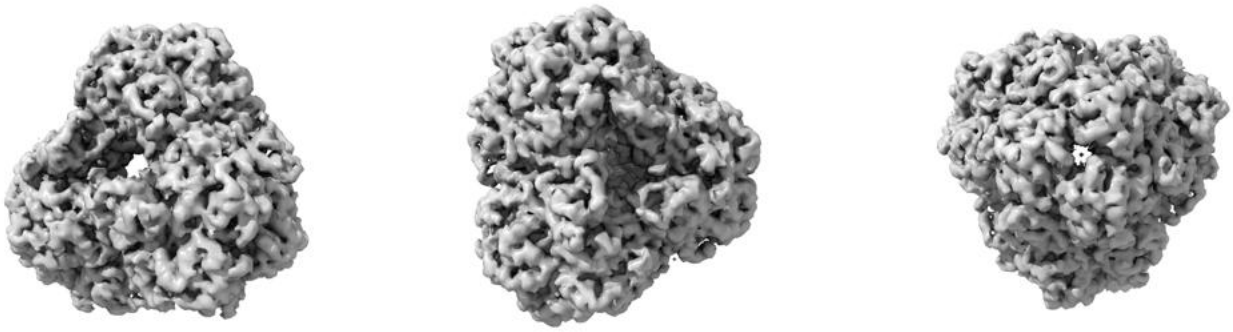
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.417. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

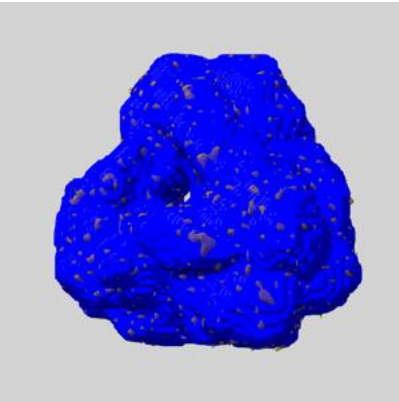
6.6 Mask visualisation (i)

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

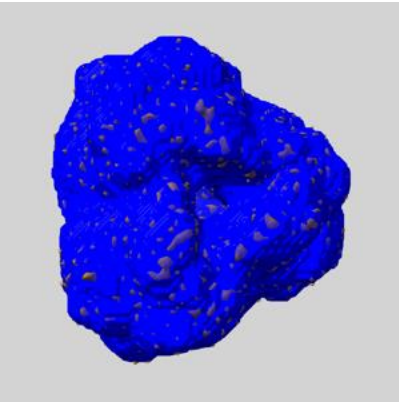
A mask typically either:

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

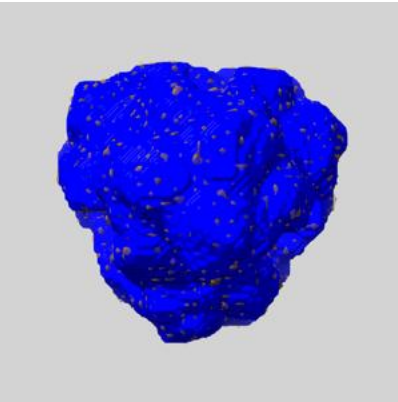
6.6.1 emd_56014_msk_1.map (i)



X



Y

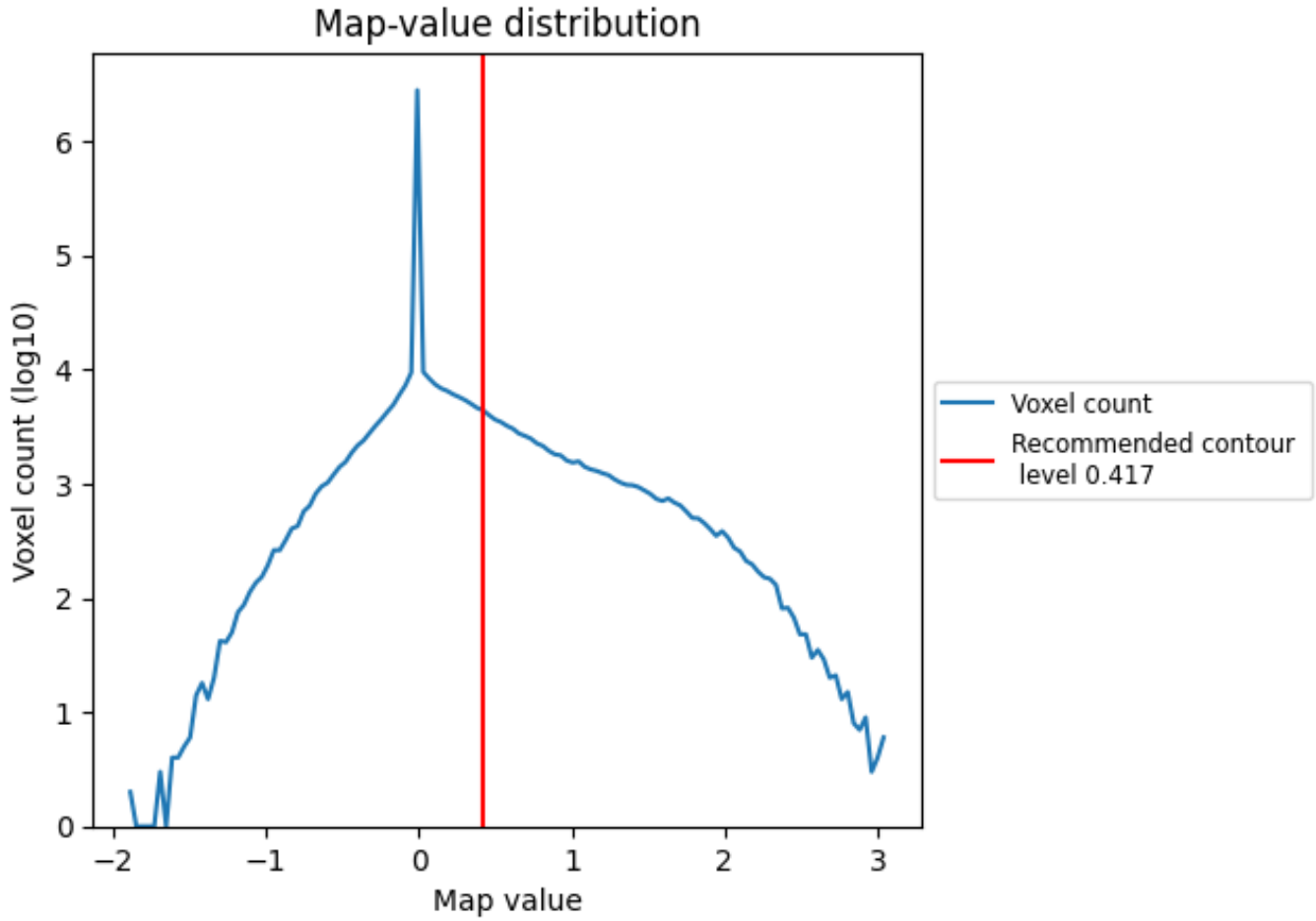


Z

7 Map analysis

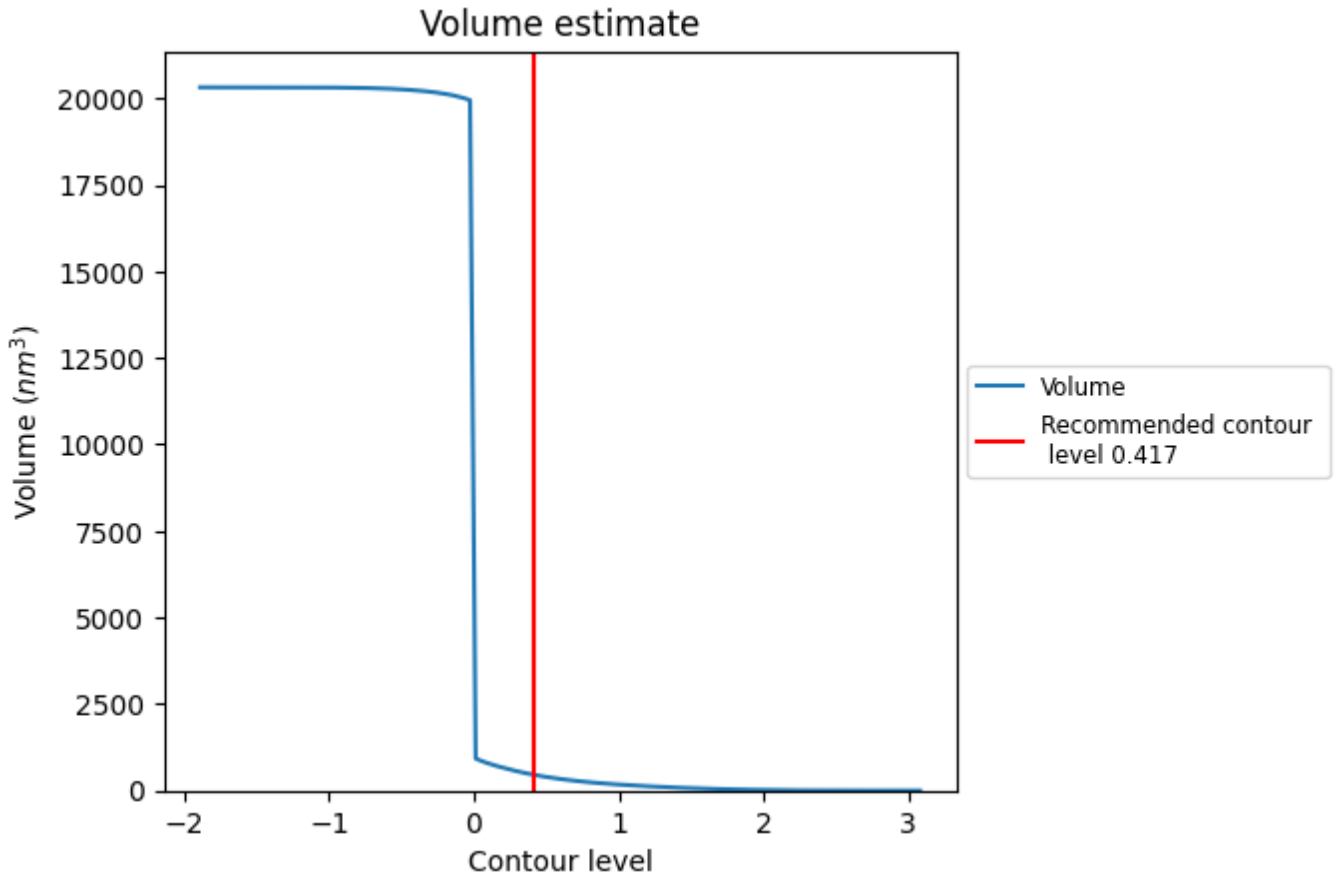
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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.

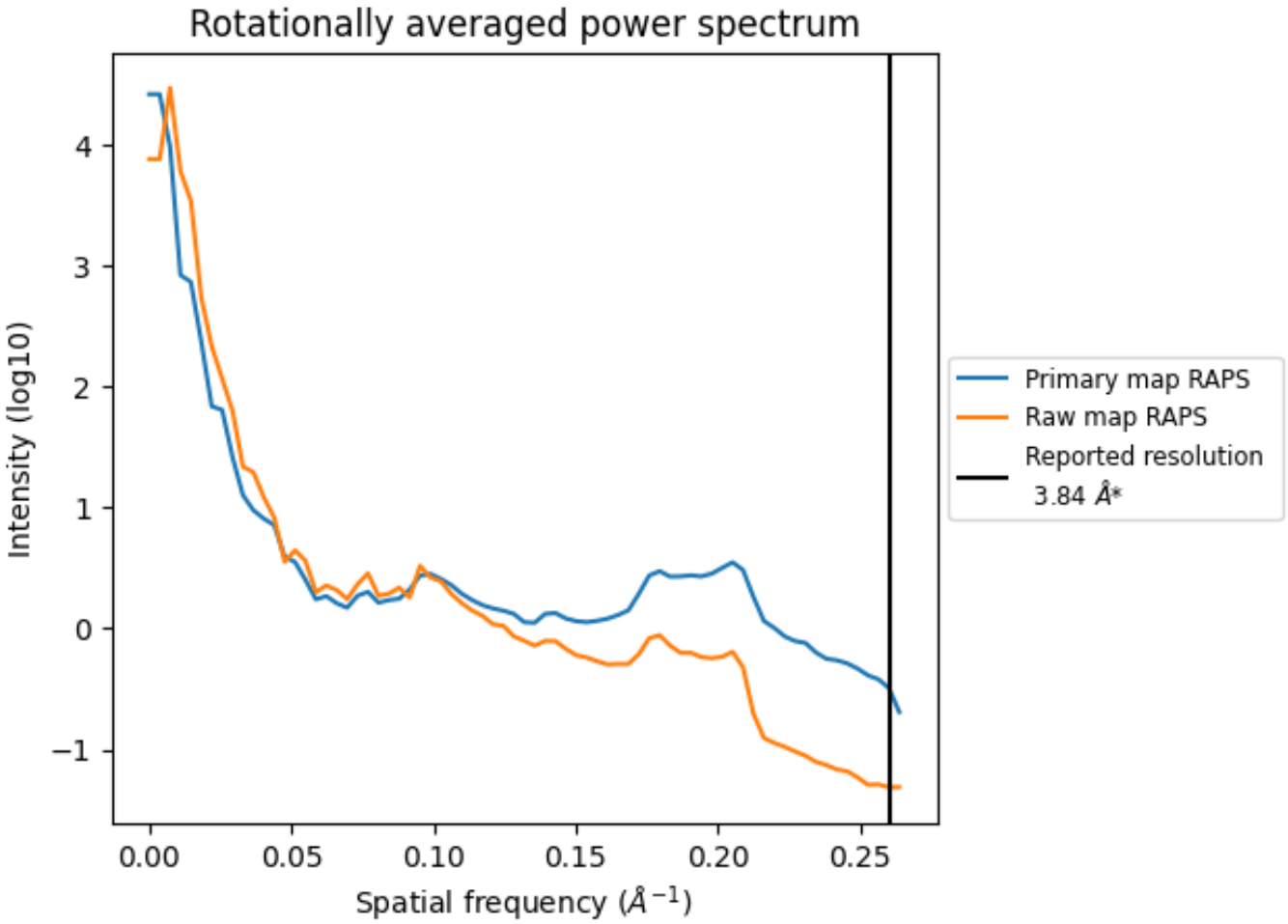
7.2 Volume estimate



The volume at the recommended contour level is 454 nm^3; this corresponds to an approximate mass of 411 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)

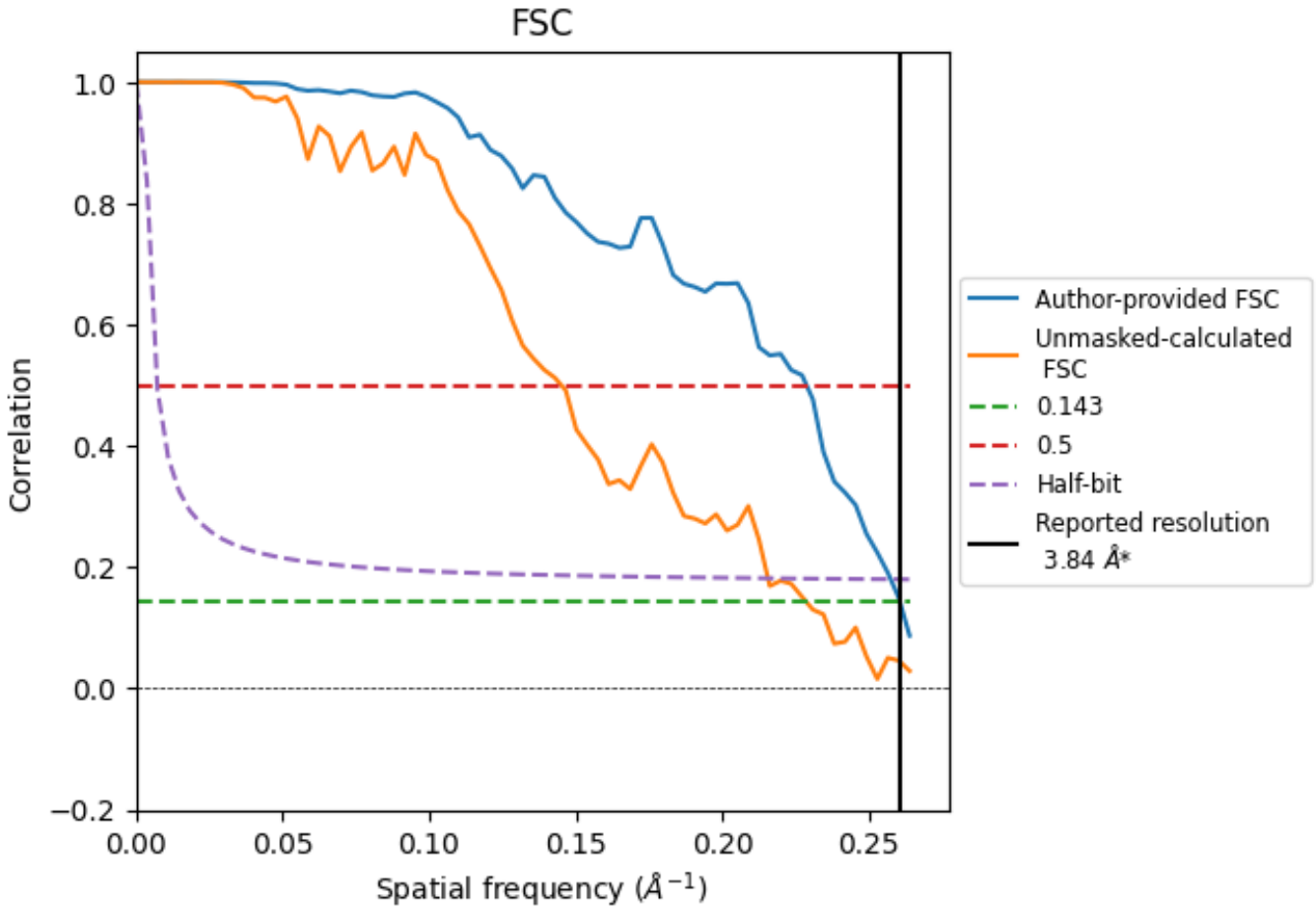


*Reported resolution corresponds to spatial frequency of 0.260 Å^{-1}

8 Fourier-Shell correlation

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.260 Å^{-1}

8.2 Resolution estimates (i)

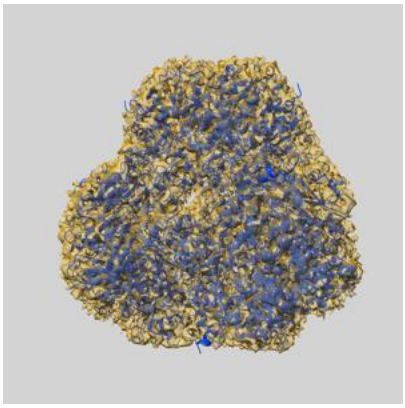
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.84	-	-
Author-provided FSC curve	3.84	4.37	3.88
Unmasked-calculated*	4.37	6.89	4.64

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.37 differs from the reported value 3.84 by more than 10 %

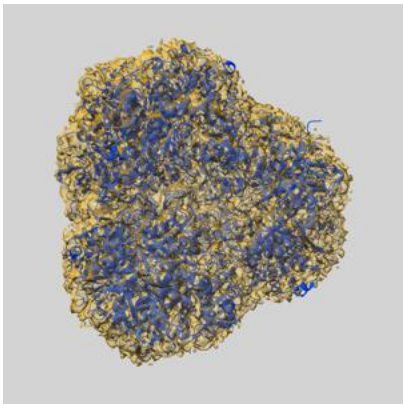
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-56014 and PDB model 9TJN. Per-residue inclusion information can be found in section 3 on page 5.

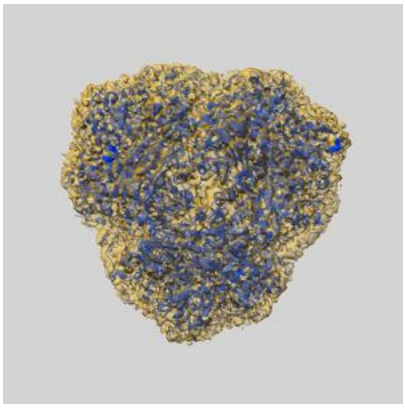
9.1 Map-model overlay



X



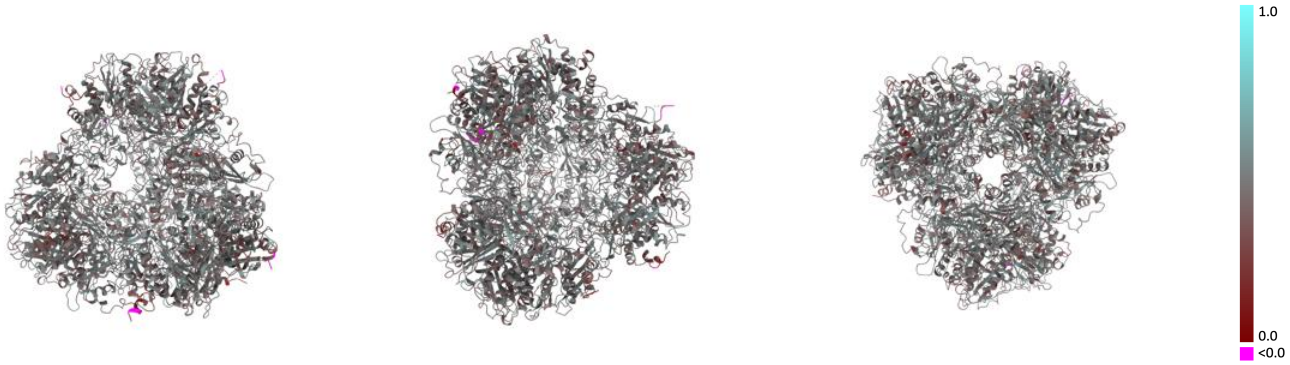
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.417 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.

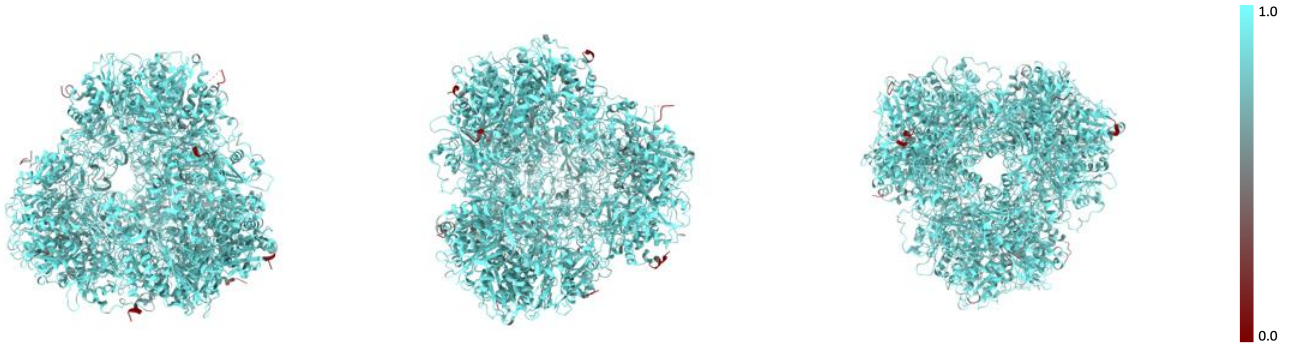
9.2 Q-score mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according 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.

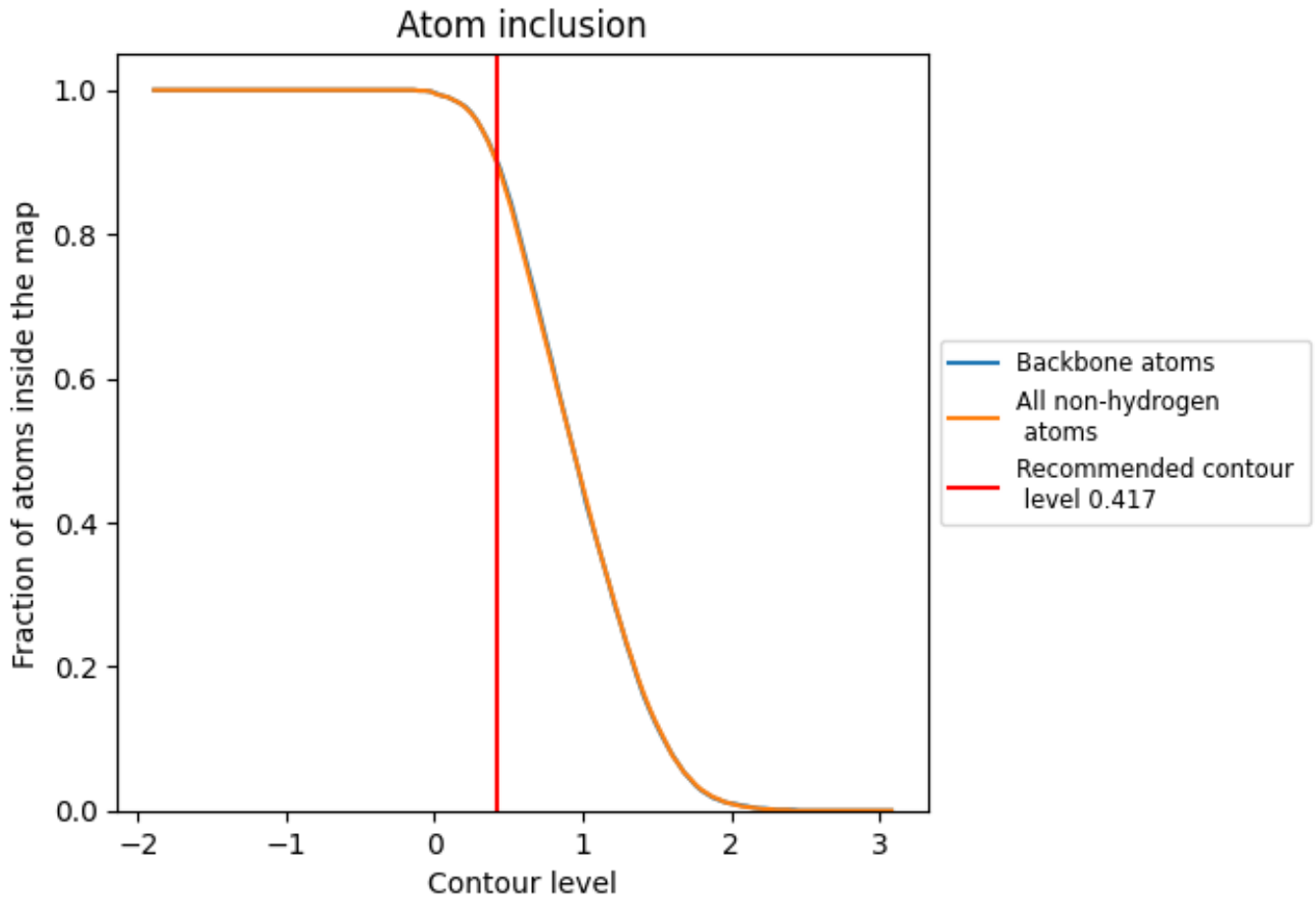
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

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 (0.417).

9.4 Atom inclusion (i)



At the recommended contour level, 90% of all backbone atoms, 90% 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 (0.417) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9010	0.4530
A	0.8980	0.4520
B	0.9000	0.4530
C	0.9030	0.4560
J	0.9010	0.4530
K	0.9010	0.4510
L	0.8980	0.4500
S	0.8990	0.4520
T	0.8990	0.4560
U	0.9050	0.4540
b	0.8930	0.4490
c	0.9050	0.4580
d	0.9020	0.4530

