



Full wwPDB EM Validation Report ⓘ

Nov 18, 2024 – 11:30 AM EST

PDB ID : 9CLI
EMDB ID : EMD-45675
Title : Cryo-EM model derived from localized reconstruction of human adenovirus (Ad5)-hexon-FX complex at 3.6Å resolution
Authors : Reddy, V.S.; Ma, O.X.
Deposited on : 2024-07-11
Resolution : 3.61 Å(reported)
Based on initial model : 6B1T

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.dev113
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4.02b-467
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

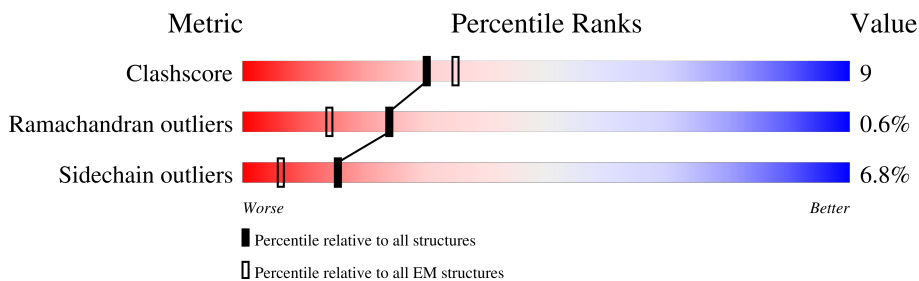
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.61 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	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	J	952	
1	K	952	
1	L	952	
2	Z	488	

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 25186 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 Hexon protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	J	925	7401	4703	1253	1409	36	0	0
1	K	922	7382	4691	1250	1405	36	0	0
1	L	924	7394	4699	1252	1407	36	0	0

- Molecule 2 is a protein called Coagulation factor X.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	Z	377	3002	1849	516	606	31	0	0

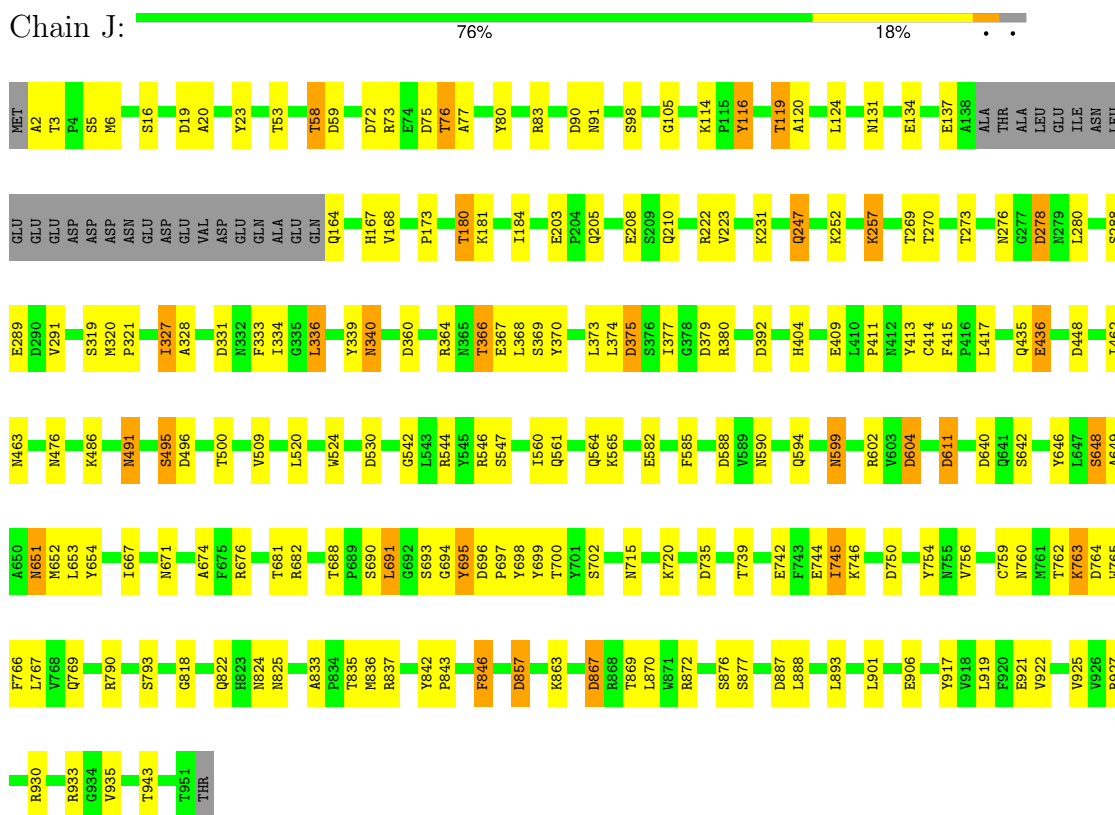
- Molecule 3 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		AltConf
3	L	1	Total	Ca	0
			1	1	
3	Z	6	Total	Ca	0
			6	6	

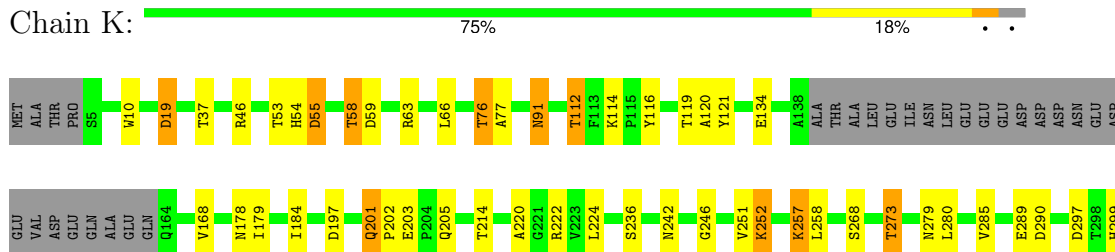
3 Residue-property plots

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

- Molecule 1: Hexon protein



- Molecule 1: Hexon protein



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	26000	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	81	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	5000	Depositor
Magnification	81000	Depositor
Image detector	GATAN K3 BIOCONTINUUM (6k x 4k)	Depositor
Maximum map value	0.161	Depositor
Minimum map value	-0.091	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.016	Depositor
Recommended contour level	0.01	Depositor
Map size (\AA)	116.864, 205.568, 129.536	wwPDB
Map dimensions	146, 92, 83	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.408, 1.408, 1.408	Depositor

5 Model quality

5.1 Standard geometry

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

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	J	0.46	0/7600	0.50	0/10336
1	K	0.45	0/7580	0.50	0/10307
1	L	0.45	0/7593	0.50	0/10326
2	Z	0.24	0/2918	0.43	0/3912
All	All	0.44	0/25691	0.49	0/34881

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	J	0	1
1	K	0	2
1	L	0	1
All	All	0	4

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	J	846	PHE	Peptide
1	K	201	GLN	Peptide
1	K	731	TRP	Peptide
1	L	201	GLN	Peptide

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	J	7401	0	7105	129	0
1	K	7382	0	7086	136	0
1	L	7394	0	7097	141	0
2	Z	3002	0	2796	56	0
3	L	1	0	0	0	0
3	Z	6	0	0	0	0
All	All	25186	0	24084	432	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 (432) 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:L:759:CYS:SG	1:L:760:ASN:N	2.36	0.96
1:K:759:CYS:SG	1:K:760:ASN:N	2.39	0.94
1:J:759:CYS:SG	1:J:760:ASN:N	2.45	0.89
2:Z:3:SER:HB3	2:Z:6:CGU:HB3	1.60	0.81
1:L:415:PHE:HB3	1:L:416:PRO:HD2	1.64	0.77
1:J:759:CYS:HG	1:J:760:ASN:H	1.31	0.76
1:L:715:ASN:ND2	1:L:869:THR:O	2.20	0.73
2:Z:25:CGU:O	2:Z:29:CGU:N	2.23	0.72
1:K:463:ASN:O	1:K:467:ASN:ND2	2.25	0.70
1:L:759:CYS:HG	1:L:760:ASN:H	1.34	0.70
1:J:818:GLY:O	1:J:822:GLN:NE2	2.24	0.69
1:L:867:ASP:OD1	1:L:867:ASP:N	2.26	0.69
1:K:755:ASN:HD22	1:K:760:ASN:HA	1.56	0.69
1:J:715:ASN:ND2	1:J:869:THR:O	2.21	0.69
1:J:124:LEU:HG	1:L:825:ASN:HD21	1.59	0.68
1:J:764:ASP:O	1:J:766:PHE:N	2.27	0.68
1:K:635:ARG:NH1	1:K:932:HIS:O	2.26	0.68
2:Z:267:VAL:HB	2:Z:287:ARG:HB3	1.77	0.67
1:K:415:PHE:HB3	1:K:416:PRO:HD2	1.75	0.67
1:J:252:LYS:HB3	1:J:257:LYS:HG3	1.75	0.67
1:J:340:ASN:ND2	1:J:364:ARG:O	2.28	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:Z:1:ALA:N	2:Z:16:CGU:OE11	2.27	0.66
2:Z:28:ARG:O	2:Z:32:CGU:N	2.28	0.66
2:Z:126:PRO:HB3	2:Z:131:PRO:HG3	1.76	0.66
1:K:356:ASN:OD1	1:K:357:ALA:N	2.29	0.66
1:J:735:ASP:OD2	1:K:63:ARG:NH1	2.30	0.65
1:J:694:GLY:O	1:J:695:TYR:C	2.35	0.65
1:J:114:LYS:NZ	1:J:116:TYR:O	2.30	0.64
1:J:134:GLU:HG2	1:J:168:VAL:HG22	1.79	0.64
1:K:641:GLN:OE1	1:K:930:ARG:NH2	2.30	0.64
1:J:698:TYR:O	1:J:700:THR:HG23	1.97	0.63
1:L:763:LYS:O	1:L:764:ASP:C	2.34	0.63
1:K:646:TYR:O	1:K:647:LEU:C	2.36	0.63
1:L:432:LYS:N	1:L:438:GLY:O	2.31	0.63
1:K:436:GLU:OE1	1:K:437:ASN:ND2	2.31	0.62
1:K:415:PHE:CZ	1:L:828:PHE:HB3	2.35	0.62
1:K:114:LYS:NZ	1:K:116:TYR:O	2.33	0.62
1:J:58:THR:OG1	1:J:59:ASP:N	2.31	0.62
1:K:363:ASP:O	1:K:651:ASN:ND2	2.32	0.62
1:L:463:ASN:O	1:L:467:ASN:ND2	2.26	0.62
1:K:600:ASP:OD1	1:K:601:LEU:N	2.33	0.62
2:Z:99:PHE:HB2	2:Z:110:SER:O	1.99	0.62
1:L:290:ASP:OD1	1:L:290:ASP:N	2.33	0.61
1:J:588:ASP:OD2	1:J:602:ARG:NH2	2.33	0.61
1:J:651:ASN:OD1	1:J:651:ASN:N	2.33	0.61
1:L:253:GLN:OE1	1:L:255:ASN:N	2.33	0.61
1:J:415:PHE:CE2	1:K:828:PHE:HB3	2.35	0.61
1:K:681:THR:HG22	1:K:682:ARG:H	1.66	0.61
1:K:745:ILE:HG23	1:K:765:TRP:CG	2.36	0.61
1:K:756:VAL:HG21	1:K:763:LYS:HA	1.82	0.61
1:L:208:GLU:OE1	1:L:210:GLN:NE2	2.33	0.61
1:L:365:ASN:H	1:L:651:ASN:HD21	1.47	0.61
1:K:804:GLN:HE22	1:L:551:GLY:HA3	1.65	0.60
1:L:741:ASN:HB3	1:L:742:GLU:OE1	2.02	0.60
1:L:432:LYS:HB2	1:L:438:GLY:O	2.01	0.60
1:J:648:SER:O	1:J:649:ALA:HB2	2.02	0.60
1:L:589:VAL:O	1:L:593:LEU:HD12	2.02	0.60
1:J:119:THR:OG1	1:J:120:ALA:N	2.35	0.60
1:J:208:GLU:OE1	1:J:210:GLN:NE2	2.35	0.60
1:J:546:ARG:NH2	1:J:594:GLN:OE1	2.35	0.60
1:K:759:CYS:HG	1:K:760:ASN:H	1.48	0.60
1:J:203:GLU:OE1	1:J:205:GLN:NE2	2.34	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:604:ASP:OD1	1:J:604:ASP:N	2.35	0.59
2:Z:60:LYS:HB2	2:Z:71:THR:HB	1.83	0.59
1:K:203:GLU:OE1	1:K:205:GLN:NE2	2.30	0.59
1:L:588:ASP:OD2	1:L:602:ARG:NH2	2.35	0.59
1:L:681:THR:HG22	1:L:682:ARG:H	1.66	0.59
1:J:764:ASP:C	1:J:766:PHE:N	2.54	0.59
1:J:530:ASP:OD2	1:J:863:LYS:NZ	2.31	0.59
1:J:599:ASN:OD1	1:J:599:ASN:N	2.31	0.59
1:J:867:ASP:N	1:J:867:ASP:OD1	2.35	0.59
1:J:379:ASP:OD1	1:J:380:ARG:N	2.35	0.59
1:K:53:THR:O	1:K:54:HIS:ND1	2.36	0.59
1:K:374:LEU:O	1:K:375:ASP:C	2.40	0.58
1:K:715:ASN:ND2	1:K:869:THR:O	2.36	0.58
1:K:928:VAL:HG22	1:K:938:THR:HG22	1.84	0.58
2:Z:235:ALA:HA	2:Z:284:ALA:HB2	1.85	0.58
1:K:58:THR:OG1	1:K:59:ASP:N	2.36	0.58
1:L:340:ASN:ND2	1:L:364:ARG:O	2.36	0.58
1:J:435:GLN:NE2	1:J:436:GLU:O	2.35	0.58
1:J:681:THR:HG22	1:J:682:ARG:H	1.69	0.58
1:K:257:LYS:H	1:K:257:LYS:HD3	1.67	0.58
1:K:290:ASP:N	1:K:290:ASP:OD1	2.37	0.58
1:J:414:CYS:O	1:J:415:PHE:CG	2.56	0.58
1:L:437:ASN:O	1:L:439:TRP:N	2.36	0.58
1:L:205:GLN:N	1:L:205:GLN:OE1	2.37	0.58
1:L:379:ASP:OD1	1:L:380:ARG:N	2.36	0.57
1:L:595:SER:O	1:L:597:LEU:N	2.36	0.57
1:K:804:GLN:OE1	1:L:553:GLY:N	2.37	0.57
1:J:415:PHE:CZ	1:K:828:PHE:HB3	2.39	0.57
1:K:63:ARG:HD3	1:K:66:LEU:HD21	1.85	0.57
1:L:928:VAL:HG22	1:L:938:THR:HG22	1.87	0.57
1:L:363:ASP:O	1:L:651:ASN:ND2	2.38	0.57
2:Z:271:HIS:HE1	2:Z:273:ARG:HE	1.52	0.57
1:K:328:ALA:HB2	1:K:547:SER:HA	1.87	0.56
1:K:721:VAL:HG23	1:K:745:ILE:HD11	1.88	0.56
2:Z:259:GLY:O	2:Z:295:ARG:NH2	2.35	0.56
1:J:222:ARG:NH2	1:J:289:GLU:OE1	2.33	0.56
1:J:373:LEU:O	1:J:377:ILE:HG23	2.04	0.56
1:J:495:SER:OG	1:J:496:ASP:N	2.35	0.56
1:J:131:ASN:ND2	1:J:231:LYS:O	2.35	0.56
1:K:356:ASN:OD1	1:K:358:VAL:N	2.31	0.56
2:Z:1:ALA:N	2:Z:26:CGU:OE22	2.37	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:432:LYS:HB2	1:L:438:GLY:C	2.26	0.56
1:K:197:ASP:O	1:K:201:GLN:HB2	2.06	0.56
1:L:55:ASP:N	1:L:55:ASP:OD1	2.38	0.56
1:K:379:ASP:OD1	1:K:380:ARG:N	2.37	0.56
1:K:764:ASP:O	1:K:767:LEU:N	2.38	0.55
1:L:755:ASN:N	1:L:755:ASN:OD1	2.38	0.55
1:K:112:THR:O	1:K:112:THR:OG1	2.18	0.55
1:K:646:TYR:O	1:K:648:SER:N	2.39	0.55
1:J:824:ASN:OD1	1:J:825:ASN:ND2	2.39	0.55
1:K:758:GLN:HE21	1:L:560:ILE:HG22	1.71	0.55
1:J:836:MET:HA	1:L:413:TYR:OH	2.07	0.55
1:K:55:ASP:OD1	1:K:55:ASP:N	2.39	0.54
1:K:752:GLU:N	1:K:752:GLU:OE1	2.39	0.54
1:L:437:ASN:O	1:L:438:GLY:C	2.43	0.54
2:Z:347:ARG:HH22	2:Z:360:GLN:HA	1.71	0.54
1:K:857:ASP:OD1	1:K:857:ASP:N	2.39	0.54
1:K:745:ILE:HG23	1:K:765:TRP:CD2	2.43	0.54
1:L:47:ASN:OD1	1:L:47:ASN:N	2.40	0.54
1:L:114:LYS:NZ	1:L:116:TYR:O	2.33	0.54
1:K:842:TYR:OH	1:L:289:GLU:OE2	2.24	0.54
1:L:588:ASP:OD1	1:L:590:ASN:N	2.41	0.54
1:L:645:ASP:OD1	1:L:646:TYR:N	2.40	0.54
1:L:764:ASP:O	1:L:767:LEU:N	2.40	0.54
1:J:90:ASP:OD1	1:J:933:ARG:NH1	2.35	0.54
1:J:270:THR:O	1:J:273:THR:OG1	2.21	0.54
1:J:564:GLN:OE1	1:J:565:LYS:N	2.41	0.54
1:L:590:ASN:OD1	1:L:702:SER:HB3	2.07	0.54
1:J:922:VAL:HB	1:J:943:THR:O	2.07	0.53
1:K:887:ASP:OD1	1:K:887:ASP:N	2.32	0.53
1:J:3:THR:HB	1:J:6:MET:HG3	1.90	0.53
1:L:701:TYR:CG	1:L:702:SER:N	2.77	0.53
1:J:340:ASN:OD1	1:J:340:ASN:N	2.39	0.53
2:Z:12:HIS:HB3	2:Z:15:ARG:HB2	1.90	0.53
1:L:462:ILE:HG12	1:L:463:ASN:H	1.72	0.53
2:Z:233:THR:OG1	2:Z:234:ALA:N	2.42	0.53
1:L:671:ASN:OD1	1:L:672:TRP:N	2.42	0.53
1:K:448:ASP:N	1:K:448:ASP:OD1	2.39	0.52
1:K:720:LYS:HG2	1:K:906:GLU:HB3	1.90	0.52
1:K:763:LYS:O	1:K:764:ASP:C	2.45	0.52
1:K:764:ASP:O	1:K:765:TRP:C	2.47	0.52
1:L:764:ASP:O	1:L:765:TRP:C	2.46	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:720:LYS:HG2	1:J:906:GLU:HB3	1.91	0.52
1:L:488:SER:OG	1:L:507:ARG:NH1	2.42	0.52
1:L:531:ASN:OD1	1:L:531:ASN:N	2.42	0.52
1:J:842:TYR:CG	1:J:843:PRO:HD2	2.45	0.52
1:K:273:THR:O	1:K:273:THR:OG1	2.28	0.52
1:J:696:ASP:O	1:J:698:TYR:N	2.41	0.52
1:K:750:ASP:OD1	1:K:753:GLY:N	2.37	0.52
1:L:112:THR:O	1:L:112:THR:OG1	2.22	0.52
1:L:590:ASN:HB2	1:L:602:ARG:HE	1.74	0.52
1:J:702:SER:O	1:J:702:SER:OG	2.26	0.52
1:J:917:TYR:CZ	1:J:919:LEU:HD21	2.45	0.52
1:K:825:ASN:HD21	1:L:124:LEU:HB2	1.75	0.52
1:J:750:ASP:OD2	1:J:754:TYR:N	2.43	0.51
1:K:392:ASP:OD1	1:K:392:ASP:N	2.36	0.51
1:J:137:GLU:OE1	1:J:167:HIS:NE2	2.44	0.51
1:J:857:ASP:N	1:J:857:ASP:OD1	2.41	0.51
1:K:554:ARG:HD3	1:K:555:TYR:CE1	2.45	0.51
1:J:374:LEU:O	1:J:375:ASP:C	2.47	0.51
1:L:340:ASN:N	1:L:340:ASN:OD1	2.43	0.51
1:L:430:LYS:HG3	1:L:431:PRO:O	2.11	0.51
2:Z:212:LEU:HG	2:Z:246:VAL:HG22	1.91	0.51
1:J:690:SER:O	1:J:691:LEU:C	2.49	0.51
1:L:791:MET:SD	1:L:868:ARG:NH2	2.83	0.51
1:K:19:ASP:N	1:K:19:ASP:OD1	2.40	0.51
1:L:255:ASN:OD1	1:L:257:LYS:NZ	2.26	0.51
1:L:807:ASP:OD1	1:L:810:LYS:N	2.38	0.51
2:Z:324:PHE:CE2	2:Z:337:LEU:HB2	2.46	0.51
1:J:72:ASP:OD1	1:J:73:ARG:N	2.44	0.50
1:J:697:PRO:O	1:J:698:TYR:CG	2.64	0.50
1:L:252:LYS:NZ	1:L:253:GLN:O	2.44	0.50
2:Z:260:GLU:OE1	2:Z:260:GLU:N	2.44	0.50
1:K:807:ASP:HB2	1:K:859:ILE:HG23	1.93	0.50
1:K:407:GLU:OE2	1:L:539:ARG:NH2	2.43	0.50
1:J:476:ASN:HD22	1:J:476:ASN:N	2.08	0.50
1:L:305:THR:HG22	1:L:307:LYS:H	1.75	0.50
1:L:762:THR:O	1:L:763:LYS:C	2.50	0.50
1:L:131:ASN:ND2	1:L:231:LYS:O	2.43	0.50
1:J:756:VAL:HB	1:J:763:LYS:HD3	1.94	0.50
2:Z:24:TYR:O	2:Z:26:CGU:N	2.44	0.50
1:L:331:ASP:O	1:L:334:ILE:HG13	2.11	0.50
1:J:98:SER:O	1:J:98:SER:OG	2.29	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:404:HIS:HE1	1:L:544:ARG:HD3	1.77	0.49
1:L:564:GLN:OE1	1:L:565:LYS:N	2.45	0.49
1:L:701:TYR:OH	1:L:703:GLY:HA3	2.12	0.49
1:J:328:ALA:HB2	1:J:547:SER:HA	1.94	0.49
1:K:588:ASP:OD2	1:K:591:MET:N	2.46	0.49
1:K:638:THR:O	1:K:638:THR:OG1	2.29	0.49
1:L:432:LYS:HB2	1:L:438:GLY:HA3	1.95	0.49
1:J:611:ASP:OD1	1:J:611:ASP:N	2.45	0.49
1:K:220:ALA:HA	1:K:285:VAL:O	2.13	0.49
1:K:279:ASN:OD1	1:K:279:ASN:N	2.45	0.49
1:L:922:VAL:HG12	1:L:944:PRO:HD2	1.94	0.49
2:Z:239:TYR:OH	2:Z:270:LYS:NZ	2.34	0.49
1:J:137:GLU:O	1:J:164:GLN:HA	2.12	0.49
1:J:764:ASP:O	1:J:765:TRP:C	2.47	0.49
1:J:560:ILE:HG22	1:L:758:GLN:HE21	1.78	0.49
2:Z:1:ALA:N	2:Z:20:CGU:OE22	2.44	0.49
1:K:179:ILE:HD13	1:K:285:VAL:HG23	1.94	0.49
1:L:197:ASP:O	1:L:201:GLN:HB2	2.13	0.49
1:L:432:LYS:CB	1:L:438:GLY:HA3	2.42	0.49
1:J:824:ASN:HD21	1:K:121:TYR:HA	1.78	0.49
1:K:388:ASN:OD1	1:K:546:ARG:HD2	2.13	0.49
1:J:764:ASP:O	1:J:767:LEU:N	2.46	0.49
2:Z:393:VAL:HG12	2:Z:415:VAL:HG21	1.94	0.49
1:J:20:ALA:HA	1:J:23:TYR:CE2	2.47	0.49
1:J:367:GLU:O	1:J:368:LEU:C	2.51	0.49
1:J:676:ARG:HB2	1:J:921:GLU:HB2	1.94	0.49
2:Z:343:PRO:HD3	2:Z:367:TYR:CZ	2.48	0.48
1:J:448:ASP:OD1	1:J:448:ASP:N	2.45	0.48
1:J:750:ASP:CG	1:J:754:TYR:H	2.16	0.48
1:L:179:ILE:HD13	1:L:285:VAL:HG23	1.95	0.48
1:L:625:ASN:OD1	1:L:626:THR:N	2.47	0.48
2:Z:25:CGU:C	2:Z:28:ARG:H	2.26	0.48
1:J:180:THR:OG1	1:J:181:LYS:N	2.45	0.48
1:J:491:ASN:OD1	1:J:491:ASN:N	2.46	0.48
1:L:313:GLU:OE1	1:L:313:GLU:N	2.32	0.48
2:Z:134:LYS:NZ	2:Z:389:ASP:O	2.36	0.48
1:J:289:GLU:OE2	1:L:842:TYR:OH	2.22	0.48
1:K:831:TYR:N	1:K:838:GLU:OE2	2.47	0.48
1:J:681:THR:HG23	1:J:715:ASN:OD1	2.14	0.48
1:J:842:TYR:OH	1:K:289:GLU:OE2	2.27	0.48
1:L:530:ASP:OD2	1:L:863:LYS:NZ	2.45	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:252:LYS:HE3	1:K:252:LYS:H	1.78	0.48
1:K:416:PRO:HD3	1:K:458:PHE:O	2.14	0.48
1:K:488:SER:OG	1:K:507:ARG:NH1	2.47	0.48
1:J:846:PHE:CG	1:J:846:PHE:O	2.66	0.47
1:K:520:LEU:HD23	1:K:520:LEU:HA	1.74	0.47
1:L:876:SER:OG	1:L:877:SER:N	2.44	0.47
2:Z:13:LEU:HD13	2:Z:31:PHE:HZ	1.79	0.47
1:J:764:ASP:C	1:J:766:PHE:H	2.18	0.47
2:Z:233:THR:HG23	2:Z:284:ALA:HB3	1.96	0.47
1:K:564:GLN:OE1	1:K:565:LYS:N	2.48	0.47
1:L:119:THR:OG1	1:L:120:ALA:N	2.48	0.47
1:K:746:LYS:HE2	1:K:746:LYS:HB2	1.59	0.47
1:K:756:VAL:CG2	1:K:763:LYS:HA	2.44	0.47
2:Z:396:ILE:O	2:Z:413:THR:N	2.43	0.47
1:J:247:GLN:HG3	1:J:291:VAL:HG11	1.96	0.47
1:J:404:HIS:HE1	1:K:544:ARG:HD3	1.79	0.47
1:L:58:THR:OG1	1:L:59:ASP:N	2.47	0.47
1:L:437:ASN:O	1:L:439:TRP:CD1	2.68	0.47
2:Z:131:PRO:HG2	2:Z:134:LYS:HG3	1.97	0.47
2:Z:397:VAL:HG22	2:Z:412:TYR:CE2	2.50	0.47
1:K:542:GLY:O	1:K:546:ARG:HG3	2.15	0.47
1:K:280:LEU:HD12	1:L:439:TRP:O	2.15	0.46
1:K:867:ASP:OD1	1:K:867:ASP:N	2.42	0.46
1:L:595:SER:OG	1:L:702:SER:OG	2.29	0.46
1:K:681:THR:HG23	1:K:715:ASN:OD1	2.15	0.46
1:L:764:ASP:O	1:L:766:PHE:N	2.49	0.46
2:Z:18:MET:O	2:Z:44:TYR:OH	2.33	0.46
1:J:674:ALA:HB2	1:K:10:TRP:CZ2	2.51	0.46
1:L:325:ASN:HD21	1:L:599:ASN:HD21	1.63	0.46
1:L:750:ASP:OD2	1:L:754:TYR:N	2.38	0.46
1:L:458:PHE:HB2	2:Z:4:PHE:HE1	1.80	0.46
1:L:857:ASP:N	1:L:857:ASP:OD1	2.47	0.46
1:L:137:GLU:O	1:L:164:GLN:HA	2.16	0.46
2:Z:365:ALA:HB3	2:Z:412:TYR:CE1	2.51	0.46
1:J:524:TRP:CH2	1:J:863:LYS:HD3	2.51	0.46
1:L:180:THR:OG1	1:L:181:LYS:N	2.47	0.46
1:J:333:PHE:HB3	1:J:336:LEU:HD12	1.98	0.46
1:J:765:TRP:O	1:J:769:GLN:HG2	2.15	0.46
1:L:709:ASP:OD1	1:L:710:GLY:N	2.48	0.46
1:J:80:TYR:CE1	1:J:585:PHE:HB2	2.50	0.46
1:K:411:PRO:HB2	1:K:413:TYR:CE1	2.51	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:Z:3:SER:OG	2:Z:4:PHE:N	2.49	0.46
2:Z:93:ASN:HD21	2:Z:308:TRP:HZ2	1.62	0.46
2:Z:373:ASP:OD1	2:Z:374:ALA:N	2.49	0.46
1:J:486:LYS:HG2	1:J:509:VAL:HB	1.98	0.46
1:J:667:ILE:HB	1:J:901:LEU:HB3	1.97	0.46
1:K:402:GLU:HG2	1:K:404:HIS:NE2	2.31	0.46
1:K:922:VAL:HB	1:K:943:THR:O	2.15	0.46
1:L:711:THR:O	1:L:711:THR:OG1	2.30	0.46
2:Z:5:LEU:HA	2:Z:8:MET:HB3	1.96	0.46
1:J:105:GLY:HA2	1:J:611:ASP:OD1	2.17	0.45
1:J:276:ASN:C	1:J:278:ASP:H	2.19	0.45
1:K:358:VAL:HG13	1:K:566:PHE:CE2	2.51	0.45
1:L:69:ILE:HD13	1:L:69:ILE:HA	1.81	0.45
1:L:409:GLU:OE1	1:L:409:GLU:N	2.49	0.45
1:L:670:ARG:NH2	1:L:945:PHE:H	2.14	0.45
2:Z:321:VAL:HG22	2:Z:383:HIS:HA	1.99	0.45
1:J:173:PRO:HG3	1:L:840:GLN:HG2	1.97	0.45
1:K:252:LYS:HB3	1:K:258:LEU:HD13	1.99	0.45
2:Z:213:ILE:HB	2:Z:217:ASN:HA	1.97	0.45
1:J:76:THR:HG22	1:J:77:ALA:H	1.82	0.45
1:J:331:ASP:O	1:J:334:ILE:HG13	2.16	0.45
1:K:91:ASN:OD1	1:K:91:ASN:N	2.50	0.45
1:K:806:VAL:HG12	1:K:856:VAL:HG21	1.98	0.45
1:L:763:LYS:O	1:L:766:PHE:N	2.50	0.45
1:J:652:MET:SD	1:J:654:TYR:OH	2.66	0.45
1:K:669:SER:HA	1:K:899:HIS:O	2.16	0.45
1:K:410:LEU:HB2	1:L:471:ASN:OD1	2.17	0.45
1:K:702:SER:O	1:K:702:SER:OG	2.29	0.45
1:K:804:GLN:NE2	1:L:551:GLY:HA3	2.31	0.45
1:J:588:ASP:OD1	1:J:590:ASN:N	2.47	0.45
1:L:94:LEU:HD13	1:L:619:PHE:HE1	1.82	0.45
1:L:594:GLN:HG2	1:L:595:SER:H	1.81	0.45
2:Z:226:LEU:HD13	2:Z:303:LEU:HD11	1.98	0.45
1:K:745:ILE:O	1:K:746:LYS:HB3	2.16	0.45
1:L:214:THR:OG1	1:L:215:GLU:N	2.49	0.45
1:L:701:TYR:CZ	1:L:703:GLY:HA3	2.52	0.45
2:Z:232:LEU:HD11	2:Z:283:ILE:HD11	1.99	0.45
2:Z:401:GLU:OE1	2:Z:408:LYS:NZ	2.31	0.45
1:K:119:THR:OG1	1:K:120:ALA:N	2.50	0.44
1:K:178:ASN:OD1	1:K:179:ILE:N	2.51	0.44
1:L:575:LEU:HB2	1:L:930:ARG:HD2	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:887:ASP:OD1	1:J:888:LEU:N	2.51	0.44
1:K:655:PRO:HA	1:K:915:LEU:HD23	1.99	0.44
1:L:561:GLN:N	1:L:561:GLN:OE1	2.51	0.44
1:J:223:VAL:O	1:J:288:SER:HA	2.18	0.44
1:L:91:ASN:N	1:L:91:ASN:OD1	2.48	0.44
1:L:432:LYS:HB2	1:L:438:GLY:CA	2.48	0.44
1:L:742:GLU:O	1:L:742:GLU:HG2	2.17	0.44
1:J:790:ARG:N	1:J:793:SER:OG	2.51	0.44
1:K:331:ASP:OD1	1:K:332:ASN:N	2.50	0.44
1:K:428:LYS:HE3	1:K:446:PHE:CD1	2.53	0.44
1:J:327:ILE:HA	1:J:594:GLN:O	2.18	0.44
1:J:698:TYR:O	1:J:700:THR:N	2.50	0.44
1:L:259:GLU:OE2	1:L:260:SER:N	2.51	0.44
1:L:759:CYS:SG	1:L:864:PHE:HB3	2.58	0.44
1:J:824:ASN:OD1	1:J:825:ASN:N	2.51	0.44
1:J:930:ARG:HG2	1:J:935:VAL:O	2.17	0.44
1:L:681:THR:HG23	1:L:715:ASN:OD1	2.17	0.44
1:K:76:THR:HG22	1:K:77:ALA:H	1.83	0.44
1:J:367:GLU:C	1:J:369:SER:N	2.69	0.43
1:J:762:THR:C	1:J:764:ASP:H	2.21	0.43
1:K:567:PHE:CD2	1:K:645:ASP:HB2	2.53	0.43
1:J:642:SER:OG	1:K:46:ARG:HB2	2.18	0.43
1:K:738:LEU:O	1:L:63:ARG:NH2	2.51	0.43
1:J:366:THR:O	1:J:369:SER:HB2	2.18	0.43
1:J:520:LEU:HD23	1:J:520:LEU:HA	1.76	0.43
1:J:649:ALA:HA	1:J:922:VAL:HG22	1.99	0.43
1:K:222:ARG:HH21	1:K:289:GLU:CD	2.21	0.43
1:K:876:SER:OG	1:K:877:SER:N	2.51	0.43
2:Z:236:HIS:HA	2:Z:239:TYR:HD2	1.83	0.43
1:K:242:ASN:ND2	1:K:246:GLY:O	2.50	0.43
1:L:90:ASP:OD1	1:L:933:ARG:NH1	2.49	0.43
1:L:415:PHE:HB3	1:L:416:PRO:CD	2.42	0.43
2:Z:236:HIS:ND1	2:Z:282:ASP:OD2	2.41	0.43
2:Z:277:GLU:OE1	2:Z:277:GLU:N	2.45	0.43
2:Z:329:GLU:OE2	2:Z:405:ARG:NH2	2.51	0.43
1:J:2:ALA:N	1:L:894:TYR:HA	2.34	0.43
1:J:19:ASP:OD1	1:J:19:ASP:N	2.52	0.43
1:K:738:LEU:HA	1:L:63:ARG:HH21	1.83	0.43
2:Z:230:TYR:CZ	2:Z:426:MET:HA	2.53	0.43
2:Z:309:ALA:HA	2:Z:313:LEU:HB2	2.00	0.43
1:K:595:SER:OG	1:K:702:SER:OG	2.32	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:75:ASP:OD1	1:J:76:THR:N	2.51	0.43
1:J:833:ALA:HB1	1:J:835:THR:HG23	2.01	0.43
1:K:268:SER:HB3	1:L:429:VAL:HG21	2.01	0.43
1:K:589:VAL:HG12	1:K:608:ILE:HG22	2.00	0.43
1:J:653:LEU:HD21	1:J:917:TYR:HD1	1.83	0.43
1:K:486:LYS:O	1:K:507:ARG:NH2	2.52	0.42
1:K:257:LYS:HE2	1:K:257:LYS:HB2	1.70	0.42
1:L:599:ASN:OD1	1:L:599:ASN:N	2.39	0.42
2:Z:95:ASP:HB2	2:Z:122:LYS:HD2	2.00	0.42
1:J:339:TYR:HB3	1:J:340:ASN:OD1	2.20	0.42
1:J:561:GLN:OE1	1:J:561:GLN:N	2.52	0.42
1:L:430:LYS:HE3	1:L:442:ASP:HB2	2.01	0.42
1:K:679:ALA:HA	1:K:871:TRP:O	2.19	0.42
1:K:756:VAL:HG13	1:K:763:LYS:HG2	2.02	0.42
1:K:842:TYR:CG	1:K:843:PRO:HD2	2.53	0.42
1:L:178:ASN:OD1	1:L:179:ILE:N	2.53	0.42
1:L:684:LYS:HA	1:L:914:THR:HG22	2.02	0.42
1:L:807:ASP:OD1	1:L:809:THR:N	2.42	0.42
1:J:542:GLY:O	1:J:546:ARG:HG3	2.20	0.42
1:J:691:LEU:O	1:J:691:LEU:HG	2.18	0.42
1:K:299:HIS:CE1	1:K:320:MET:HG2	2.54	0.42
1:K:412:ASN:ND2	1:K:412:ASN:N	2.67	0.42
1:L:476:ASN:HD21	1:L:539:ARG:NE	2.18	0.42
1:J:409:GLU:N	1:J:409:GLU:OE1	2.53	0.42
1:L:111:PRO:HD2	1:L:604:ASP:O	2.19	0.42
2:Z:261:ALA:HB2	2:Z:295:ARG:HH22	1.84	0.42
1:J:369:SER:O	1:J:370:TYR:C	2.58	0.42
1:K:531:ASN:OD1	1:K:531:ASN:N	2.51	0.42
1:L:476:ASN:HD21	1:L:539:ARG:HE	1.66	0.42
1:J:411:PRO:HB2	1:J:413:TYR:CE1	2.54	0.42
1:L:495:SER:OG	1:L:496:ASP:N	2.53	0.42
1:L:540:ASN:O	1:L:543:LEU:N	2.53	0.42
1:J:888:LEU:HD23	1:J:888:LEU:HA	1.75	0.41
1:K:367:GLU:H	1:K:367:GLU:HG2	1.59	0.41
1:J:280:LEU:H	1:J:280:LEU:HD12	1.85	0.41
1:K:665:ILE:HG13	1:K:903:MET:HB2	2.02	0.41
1:L:635:ARG:NH1	1:L:932:HIS:O	2.53	0.41
2:Z:306:ARG:NH2	2:Z:307:ASP:OD1	2.48	0.41
1:K:915:LEU:HD23	1:K:915:LEU:HA	1.92	0.41
1:L:220:ALA:HA	1:L:285:VAL:O	2.21	0.41
1:K:201:GLN:O	1:K:222:ARG:NH1	2.54	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:297:ASP:N	1:K:297:ASP:OD1	2.53	0.41
1:L:667:ILE:HA	1:L:668:PRO:HD3	1.96	0.41
1:L:750:ASP:OD1	1:L:753:GLY:N	2.37	0.41
1:L:823:HIS:O	1:L:823:HIS:ND1	2.53	0.41
1:J:462:ILE:HG12	1:J:463:ASN:N	2.35	0.41
1:L:311:SER:OG	1:L:313:GLU:OE1	2.26	0.41
2:Z:259:GLY:C	2:Z:297:ASN:HD21	2.24	0.41
1:J:876:SER:OG	1:J:877:SER:N	2.54	0.41
1:K:314:LEU:HD23	1:K:314:LEU:HA	1.84	0.41
1:K:520:LEU:HD13	1:L:116:TYR:CD2	2.56	0.41
1:L:356:ASN:OD1	1:L:357:ALA:N	2.53	0.41
1:L:842:TYR:CD1	1:L:843:PRO:HD2	2.55	0.41
2:Z:329:GLU:HG2	2:Z:330:LYS:HG3	2.03	0.41
1:L:720:LYS:HE2	1:L:720:LYS:HB3	1.72	0.41
1:J:476:ASN:N	1:J:476:ASN:ND2	2.68	0.41
1:K:257:LYS:H	1:K:257:LYS:CD	2.30	0.41
1:K:369:SER:O	1:K:370:TYR:C	2.55	0.41
1:L:462:ILE:HG12	1:L:463:ASN:N	2.34	0.41
1:L:473:LEU:HA	1:L:473:LEU:HD23	1.85	0.41
1:L:888:LEU:HA	1:L:888:LEU:HD23	1.77	0.41
1:J:320:MET:HG3	1:J:321:PRO:HD2	2.02	0.41
1:J:646:TYR:O	1:J:646:TYR:CG	2.74	0.41
1:L:470:ARG:NH1	1:L:829:VAL:HG21	2.36	0.41
2:Z:329:GLU:HB2	2:Z:403:CYS:HB2	2.02	0.41
2:Z:358:ILE:HG23	2:Z:362:MET:HB2	2.03	0.41
1:K:66:LEU:HD23	1:K:66:LEU:HA	1.89	0.40
1:K:280:LEU:HD23	1:K:280:LEU:HA	1.80	0.40
1:K:338:TYR:CZ	1:K:586:ARG:HG2	2.56	0.40
2:Z:70:CYS:HB3	2:Z:81:CYS:SG	2.61	0.40
1:J:640:ASP:OD2	1:J:927:ARG:NE	2.45	0.40
1:K:808:ASP:N	1:K:808:ASP:OD1	2.53	0.40
1:K:926:VAL:HG22	1:K:940:TYR:CD2	2.56	0.40
1:L:208:GLU:OE2	1:L:216:ILE:HD13	2.21	0.40
1:J:3:THR:HG22	1:J:5:SER:H	1.86	0.40
1:L:504:MET:SD	1:L:597:LEU:HD23	2.61	0.40
1:L:595:SER:O	1:L:595:SER:OG	2.33	0.40
1:J:648:SER:O	1:J:649:ALA:CB	2.67	0.40
1:K:134:GLU:HG2	1:K:168:VAL:HG22	2.04	0.40
1:K:299:HIS:HE1	1:K:320:MET:HG2	1.86	0.40
1:K:750:ASP:OD1	1:K:751:GLY:N	2.55	0.40
1:K:917:TYR:CZ	1:K:919:LEU:HD21	2.56	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:745:ILE:HG23	1:K:765:TRP:CD1	2.57	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	J	921/952 (97%)	843 (92%)	75 (8%)	3 (0%)	37 67
1	K	918/952 (96%)	848 (92%)	64 (7%)	6 (1%)	19 53
1	L	920/952 (97%)	847 (92%)	63 (7%)	10 (1%)	12 44
2	Z	362/488 (74%)	347 (96%)	14 (4%)	1 (0%)	37 67
All	All	3121/3344 (93%)	2885 (92%)	216 (7%)	20 (1%)	24 55

All (20) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	K	646	TYR
1	L	437	ASN
1	L	596	SER
1	L	764	ASP
1	L	435	GLN
1	L	597	LEU
1	J	695	TYR
1	J	699	TYR
1	J	745	ILE
1	K	648	SER
1	K	746	LYS
1	K	764	ASP
1	L	413	TYR
2	Z	18	MET

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Mol	Chain	Res	Type
1	L	438	GLY
1	L	595	SER
1	L	702	SER
1	K	647	LEU
1	K	202	PRO
1	L	202	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	J	805/829 (97%)	754 (94%)	51 (6%)	15 43
1	K	803/829 (97%)	737 (92%)	66 (8%)	9 34
1	L	804/829 (97%)	739 (92%)	65 (8%)	9 34
2	Z	313/408 (77%)	310 (99%)	3 (1%)	73 84
All	All	2725/2895 (94%)	2540 (93%)	185 (7%)	16 40

All (185) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	J	16	SER
1	J	53	THR
1	J	58	THR
1	J	76	THR
1	J	83	ARG
1	J	91	ASN
1	J	116	TYR
1	J	119	THR
1	J	180	THR
1	J	184	ILE
1	J	247	GLN
1	J	257	LYS
1	J	269	THR
1	J	278	ASP
1	J	319	SER

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Mol	Chain	Res	Type
1	J	327	ILE
1	J	336	LEU
1	J	340	ASN
1	J	360	ASP
1	J	366	THR
1	J	375	ASP
1	J	392	ASP
1	J	417	LEU
1	J	436	GLU
1	J	491	ASN
1	J	495	SER
1	J	500	THR
1	J	544	ARG
1	J	582	GLU
1	J	599	ASN
1	J	604	ASP
1	J	611	ASP
1	J	648	SER
1	J	651	ASN
1	J	671	ASN
1	J	688	THR
1	J	691	LEU
1	J	693	SER
1	J	739	THR
1	J	742	GLU
1	J	744	GLU
1	J	745	ILE
1	J	746	LYS
1	J	763	LYS
1	J	837	ARG
1	J	857	ASP
1	J	867	ASP
1	J	870	LEU
1	J	872	ARG
1	J	893	LEU
1	J	925	VAL
1	K	19	ASP
1	K	37	THR
1	K	55	ASP
1	K	58	THR
1	K	76	THR
1	K	91	ASN

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Mol	Chain	Res	Type
1	K	112	THR
1	K	184	ILE
1	K	214	THR
1	K	224	LEU
1	K	236	SER
1	K	251	VAL
1	K	252	LYS
1	K	257	LYS
1	K	273	THR
1	K	314	LEU
1	K	336	LEU
1	K	340	ASN
1	K	344	ASN
1	K	355	LEU
1	K	366	THR
1	K	369	SER
1	K	381	THR
1	K	385	SER
1	K	392	ASP
1	K	414	CYS
1	K	429	VAL
1	K	437	ASN
1	K	462	ILE
1	K	500	THR
1	K	508	VAL
1	K	520	LEU
1	K	544	ARG
1	K	558	PHE
1	K	559	HIS
1	K	580	THR
1	K	582	GLU
1	K	588	ASP
1	K	596	SER
1	K	603	VAL
1	K	608	ILE
1	K	634	LEU
1	K	638	THR
1	K	644	ASN
1	K	645	ASP
1	K	646	TYR
1	K	651	ASN
1	K	669	SER

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Mol	Chain	Res	Type
1	K	705	ILE
1	K	745	ILE
1	K	746	LYS
1	K	756	VAL
1	K	759	CYS
1	K	762	THR
1	K	829	VAL
1	K	837	ARG
1	K	840	GLN
1	K	857	ASP
1	K	869	THR
1	K	876	SER
1	K	881	SER
1	K	887	ASP
1	K	936	ILE
1	K	937	GLU
1	K	943	THR
1	K	946	SER
1	L	11	SER
1	L	12	TYR
1	L	16	SER
1	L	47	ASN
1	L	49	THR
1	L	53	THR
1	L	54	HIS
1	L	55	ASP
1	L	74	GLU
1	L	76	THR
1	L	91	ASN
1	L	112	THR
1	L	122	ASN
1	L	124	LEU
1	L	180	THR
1	L	255	ASN
1	L	259	GLU
1	L	269	THR
1	L	271	GLU
1	L	279	ASN
1	L	280	LEU
1	L	298	THR
1	L	327	ILE
1	L	336	LEU

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Mol	Chain	Res	Type
1	L	338	TYR
1	L	340	ASN
1	L	344	ASN
1	L	375	ASP
1	L	417	LEU
1	L	432	LYS
1	L	433	THR
1	L	435	GLN
1	L	442	ASP
1	L	452	ILE
1	L	497	ASN
1	L	509	VAL
1	L	530	ASP
1	L	531	ASN
1	L	558	PHE
1	L	580	THR
1	L	582	GLU
1	L	592	VAL
1	L	593	LEU
1	L	597	LEU
1	L	599	ASN
1	L	637	ASP
1	L	638	THR
1	L	651	ASN
1	L	653	LEU
1	L	661	THR
1	L	711	THR
1	L	746	LYS
1	L	755	ASN
1	L	756	VAL
1	L	761	MET
1	L	762	THR
1	L	802	SER
1	L	825	ASN
1	L	837	ARG
1	L	840	GLN
1	L	865	LEU
1	L	867	ASP
1	L	872	ARG
1	L	876	SER
1	L	914	THR
2	Z	4	PHE

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Mol	Chain	Res	Type
2	Z	13	LEU
2	Z	30	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	J	404	HIS
1	J	476	ASN
1	K	404	HIS
1	K	755	ASN
1	L	325	ASN
1	L	651	ASN
2	Z	42	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

11 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	CGU	Z	25	2,3	9,11,12	1.39	0	10,14,16	0.76	0
2	CGU	Z	32	2	9,11,12	1.70	2 (22%)	10,14,16	0.83	0
2	CGU	Z	20	2	9,11,12	1.28	0	10,14,16	0.75	0
2	CGU	Z	19	2	9,11,12	1.53	1 (11%)	10,14,16	0.83	0
2	CGU	Z	14	2	9,11,12	1.45	1 (11%)	10,14,16	0.79	0
2	CGU	Z	6	2,3	9,11,12	1.62	1 (11%)	10,14,16	0.97	0
2	CGU	Z	7	2,3	9,11,12	1.44	1 (11%)	10,14,16	0.83	0
2	CGU	Z	26	2,3	9,11,12	1.46	0	10,14,16	0.86	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	CGU	Z	16	2,3	9,11,12	1.15	0	10,14,16	0.85	0
2	CGU	Z	29	2,3	9,11,12	1.70	2 (22%)	10,14,16	1.06	0
2	CGU	Z	39	2	9,11,12	1.65	1 (11%)	10,14,16	0.82	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	CGU	Z	25	2,3	-	7/13/14/16	-
2	CGU	Z	32	2	-	6/13/14/16	-
2	CGU	Z	20	2	-	7/13/14/16	-
2	CGU	Z	19	2	-	4/13/14/16	-
2	CGU	Z	14	2	-	6/13/14/16	-
2	CGU	Z	6	2,3	-	2/13/14/16	-
2	CGU	Z	7	2,3	-	8/13/14/16	-
2	CGU	Z	26	2,3	-	4/13/14/16	-
2	CGU	Z	16	2,3	-	4/13/14/16	-
2	CGU	Z	29	2,3	-	6/13/14/16	-
2	CGU	Z	39	2	-	3/13/14/16	-

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	Z	6	CGU	CG-CD1	2.93	1.55	1.52
2	Z	39	CGU	CG-CD2	2.88	1.55	1.52
2	Z	32	CGU	CG-CD1	2.69	1.55	1.52
2	Z	29	CGU	CG-CD2	2.53	1.55	1.52
2	Z	32	CGU	CG-CD2	2.43	1.55	1.52
2	Z	29	CGU	CG-CD1	2.35	1.55	1.52
2	Z	19	CGU	CG-CD2	2.34	1.55	1.52
2	Z	14	CGU	CG-CD2	2.20	1.54	1.52
2	Z	7	CGU	CG-CD2	2.06	1.54	1.52

There are no bond angle outliers.

There are no chirality outliers.

All (57) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	Z	6	CGU	N-CA-CB-CG
2	Z	6	CGU	C-CA-CB-CG
2	Z	7	CGU	C-CA-CB-CG
2	Z	14	CGU	CA-CB-CG-CD1
2	Z	14	CGU	CA-CB-CG-CD2
2	Z	14	CGU	OE12-CD1-CG-CD2
2	Z	16	CGU	CA-CB-CG-CD1
2	Z	16	CGU	CA-CB-CG-CD2
2	Z	19	CGU	N-CA-CB-CG
2	Z	20	CGU	CA-CB-CG-CD1
2	Z	20	CGU	CA-CB-CG-CD2
2	Z	20	CGU	OE12-CD1-CG-CD2
2	Z	25	CGU	N-CA-CB-CG
2	Z	25	CGU	C-CA-CB-CG
2	Z	25	CGU	CA-CB-CG-CD1
2	Z	25	CGU	CA-CB-CG-CD2
2	Z	26	CGU	N-CA-CB-CG
2	Z	26	CGU	C-CA-CB-CG
2	Z	26	CGU	OE12-CD1-CG-CD2
2	Z	32	CGU	C-CA-CB-CG
2	Z	32	CGU	OE21-CD2-CG-CB
2	Z	32	CGU	OE22-CD2-CG-CB
2	Z	7	CGU	OE11-CD1-CG-CB
2	Z	7	CGU	OE12-CD1-CG-CB
2	Z	16	CGU	OE11-CD1-CG-CB
2	Z	16	CGU	OE12-CD1-CG-CB
2	Z	19	CGU	OE21-CD2-CG-CB
2	Z	19	CGU	OE22-CD2-CG-CB
2	Z	20	CGU	OE21-CD2-CG-CB
2	Z	20	CGU	OE22-CD2-CG-CB
2	Z	25	CGU	OE21-CD2-CG-CB
2	Z	25	CGU	OE22-CD2-CG-CB
2	Z	14	CGU	OE11-CD1-CG-CD2
2	Z	20	CGU	OE11-CD1-CG-CD2
2	Z	26	CGU	OE11-CD1-CG-CD2
2	Z	32	CGU	OE21-CD2-CG-CD1
2	Z	32	CGU	OE22-CD2-CG-CD1
2	Z	19	CGU	CA-CB-CG-CD2
2	Z	7	CGU	N-CA-CB-CG
2	Z	32	CGU	N-CA-CB-CG
2	Z	7	CGU	OE21-CD2-CG-CB
2	Z	7	CGU	OE22-CD2-CG-CB
2	Z	14	CGU	OE21-CD2-CG-CB

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Mol	Chain	Res	Type	Atoms
2	Z	14	CGU	OE22-CD2-CG-CB
2	Z	29	CGU	OE11-CD1-CG-CB
2	Z	29	CGU	OE12-CD1-CG-CB
2	Z	29	CGU	OE21-CD2-CG-CB
2	Z	29	CGU	OE22-CD2-CG-CB
2	Z	39	CGU	OE11-CD1-CG-CB
2	Z	39	CGU	OE12-CD1-CG-CB
2	Z	7	CGU	OE11-CD1-CG-CD2
2	Z	7	CGU	OE12-CD1-CG-CD2
2	Z	20	CGU	OE22-CD2-CG-CD1
2	Z	25	CGU	OE22-CD2-CG-CD1
2	Z	29	CGU	OE21-CD2-CG-CD1
2	Z	29	CGU	OE22-CD2-CG-CD1
2	Z	39	CGU	OE12-CD1-CG-CD2

There are no ring outliers.

7 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	Z	25	CGU	2	0
2	Z	32	CGU	1	0
2	Z	20	CGU	1	0
2	Z	6	CGU	1	0
2	Z	26	CGU	2	0
2	Z	16	CGU	1	0
2	Z	29	CGU	1	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 7 ligands modelled in this entry, 7 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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.

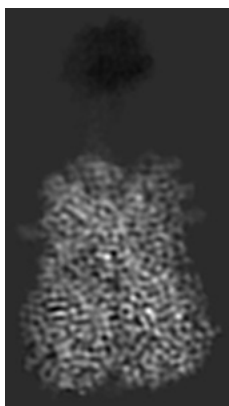
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-45675. These allow visual inspection of the internal detail of the map and identification of artifacts.

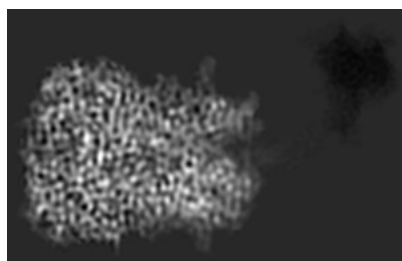
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

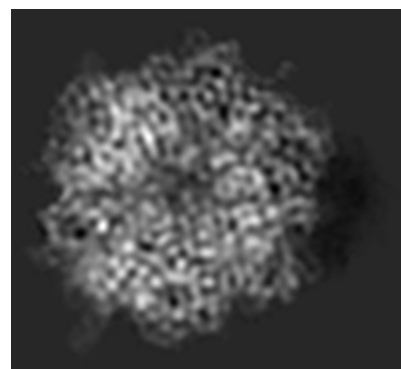
6.1.1 Primary map



X

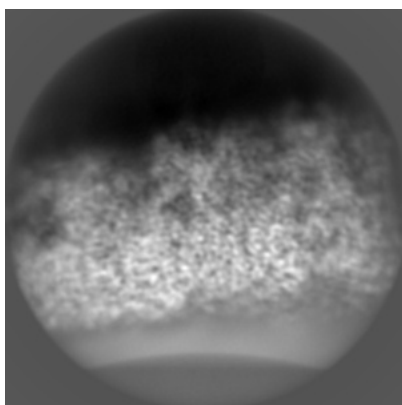


Y

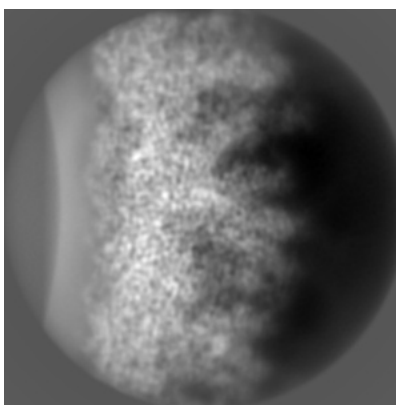


Z

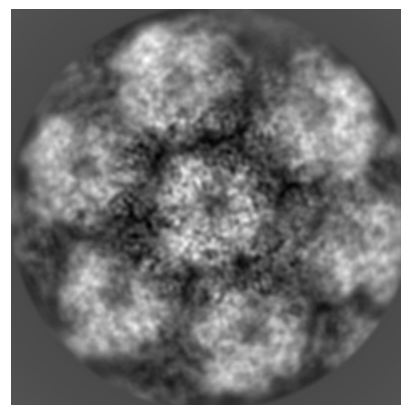
6.1.2 Raw map



X



Y



Z

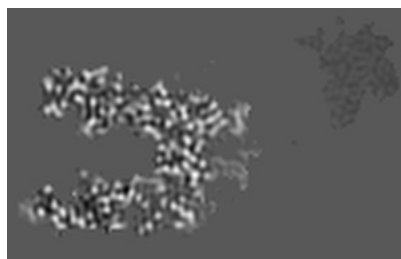
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

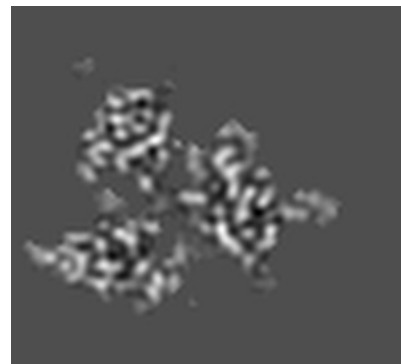
6.2.1 Primary map



X Index: 46

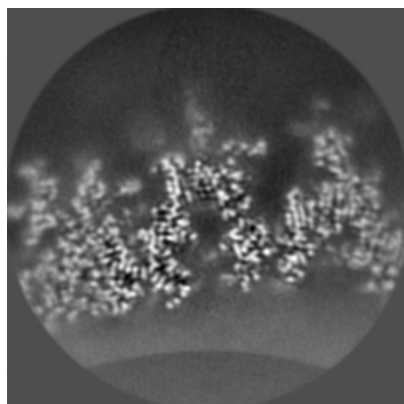


Y Index: 41

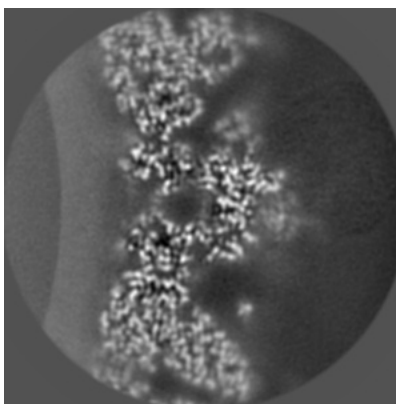


Z Index: 73

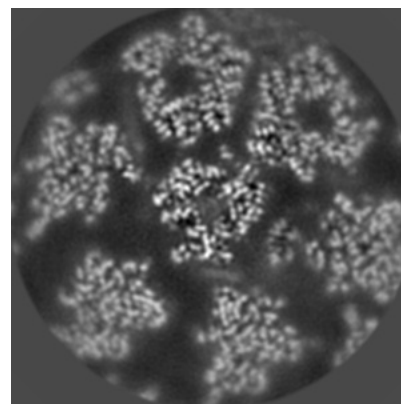
6.2.2 Raw map



X Index: 100



Y Index: 100

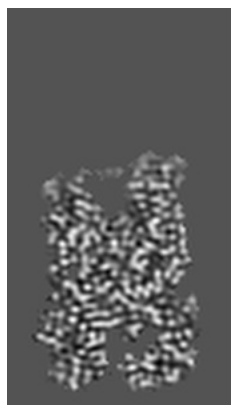


Z Index: 100

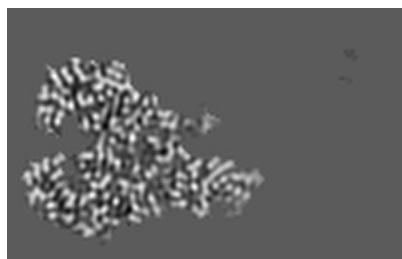
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

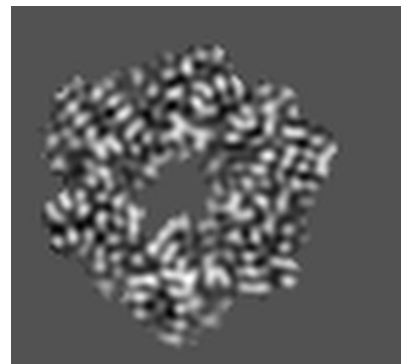
6.3.1 Primary map



X Index: 27

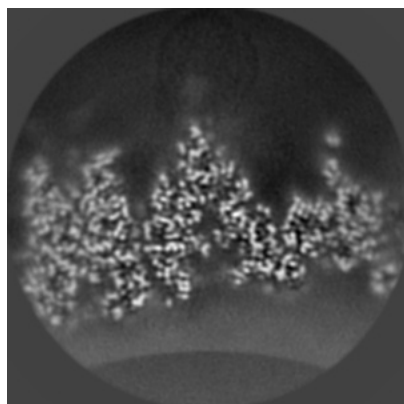


Y Index: 54

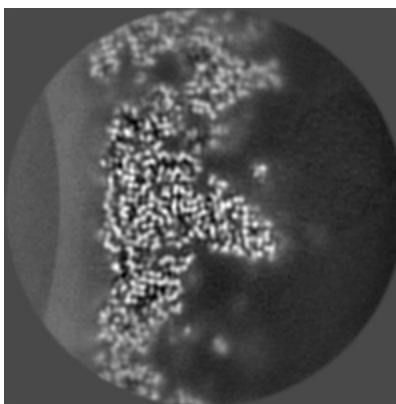


Z Index: 34

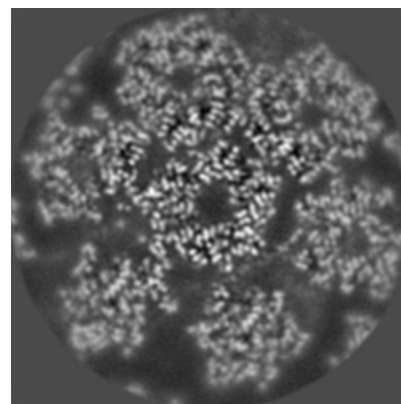
6.3.2 Raw map



X Index: 107



Y Index: 81

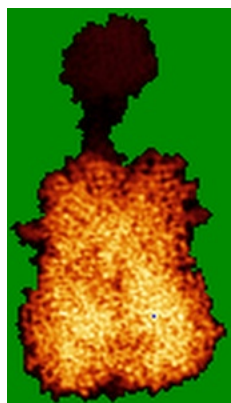


Z Index: 91

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

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

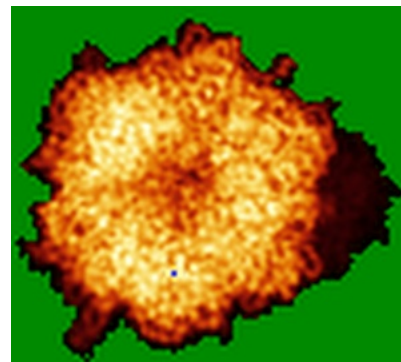
6.4.1 Primary map



X

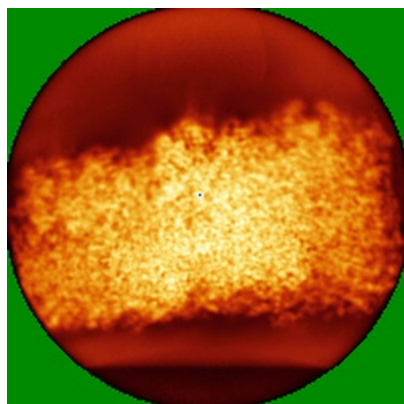


Y

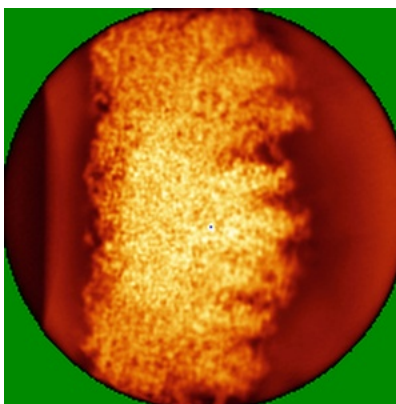


Z

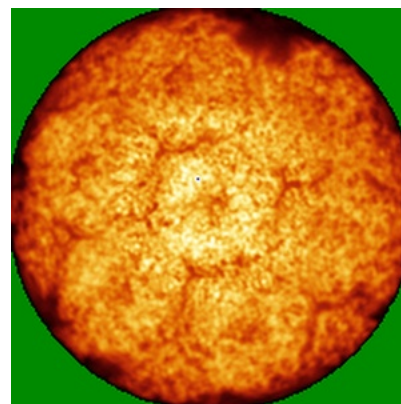
6.4.2 Raw map



X



Y

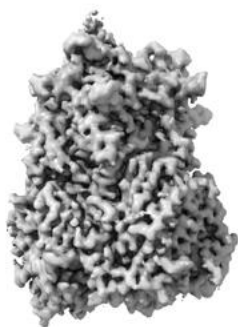


Z

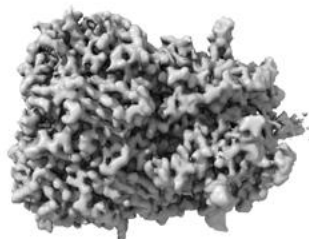
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views [i](#)

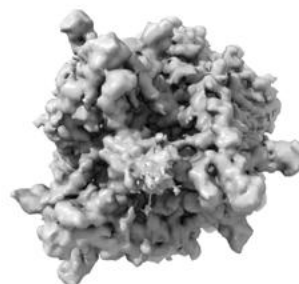
6.5.1 Primary map



X



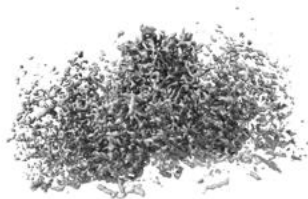
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.01. 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.

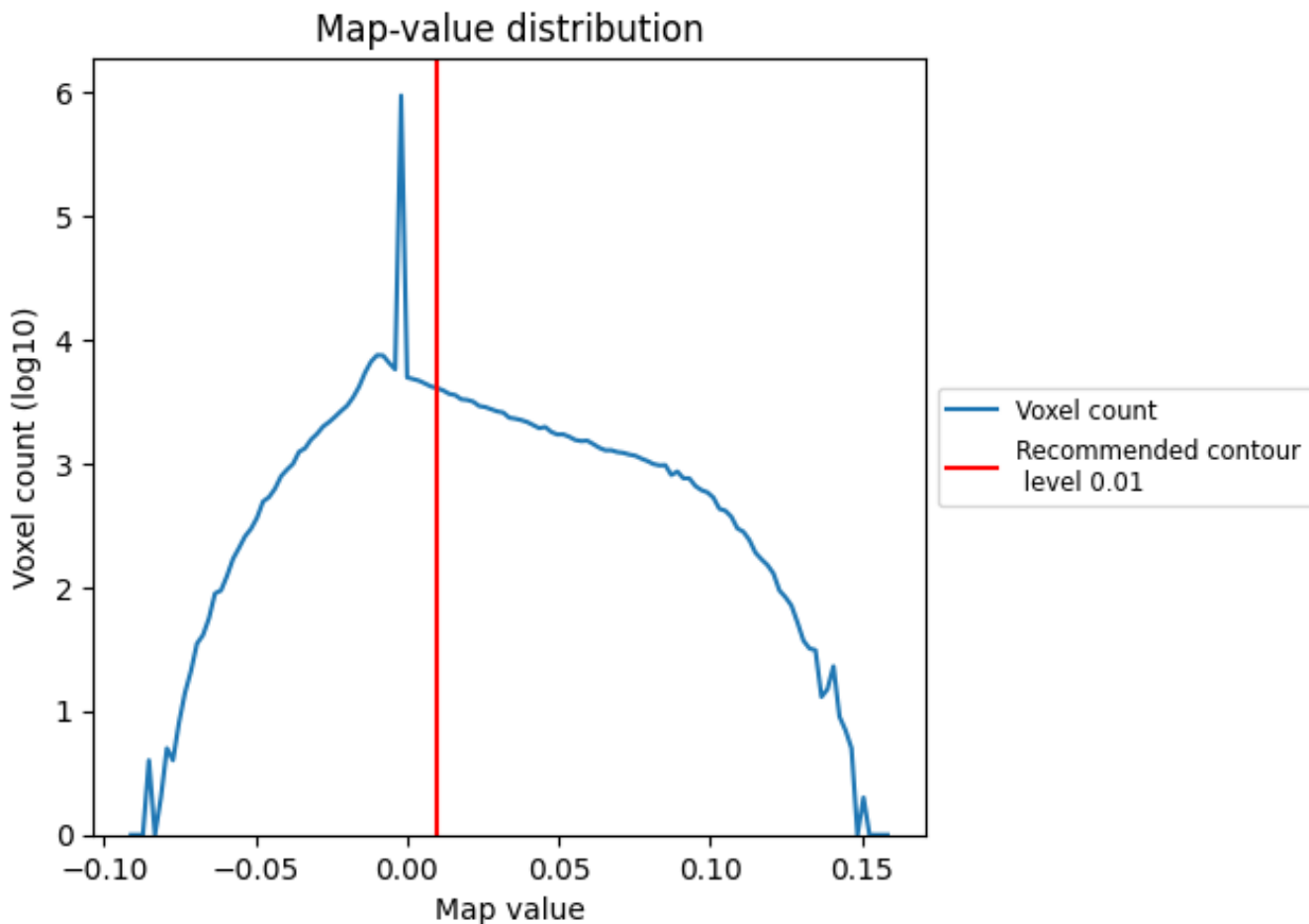
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

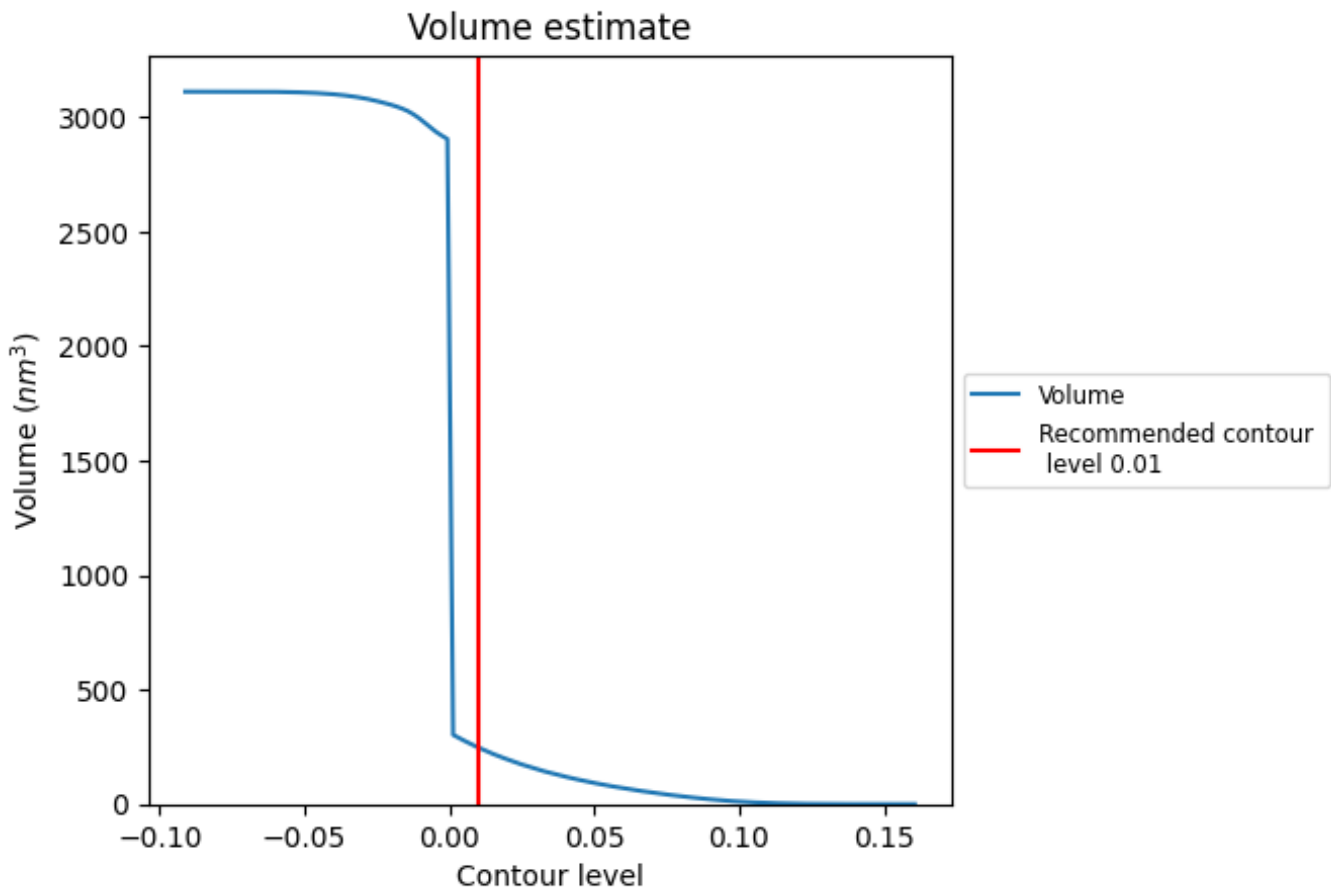
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

7.2 Volume estimate [i](#)



The volume at the recommended contour level is 247 nm³; this corresponds to an approximate mass of 223 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](#)

This section was not generated. The rotationally averaged power spectrum is only generated for cubic maps.

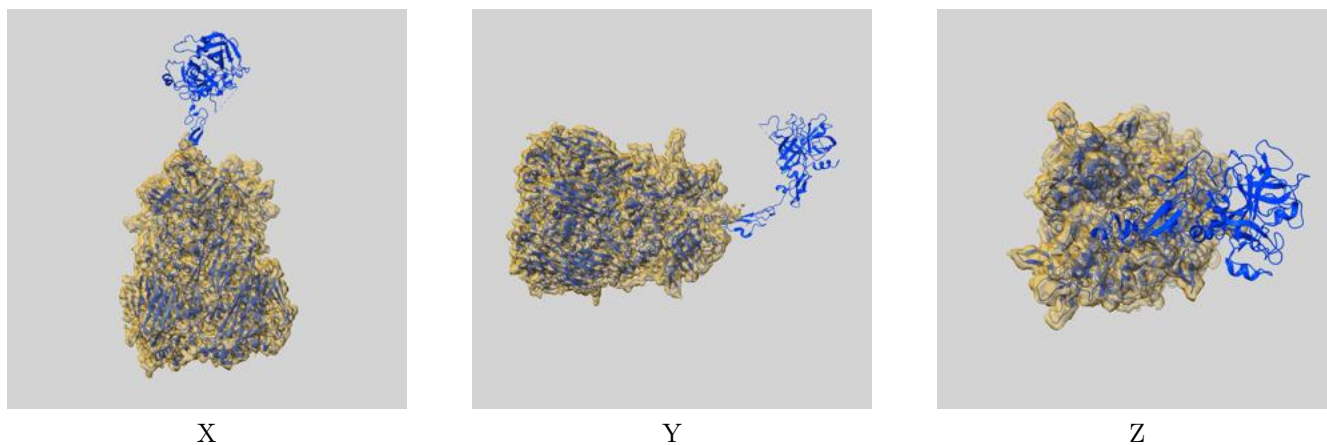
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

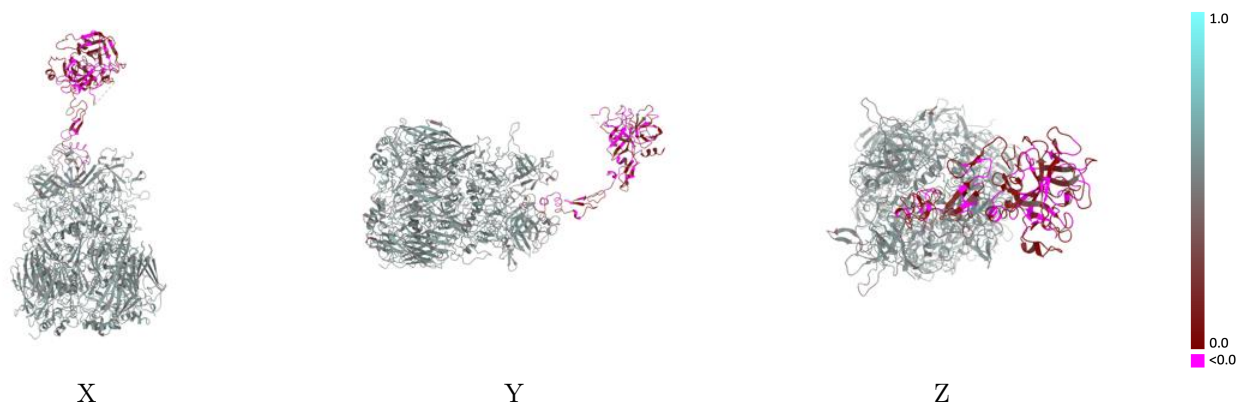
This section contains information regarding the fit between EMDB map EMD-45675 and PDB model 9CLI. Per-residue inclusion information can be found in section 3 on page 4.

9.1 Map-model overlay [i](#)



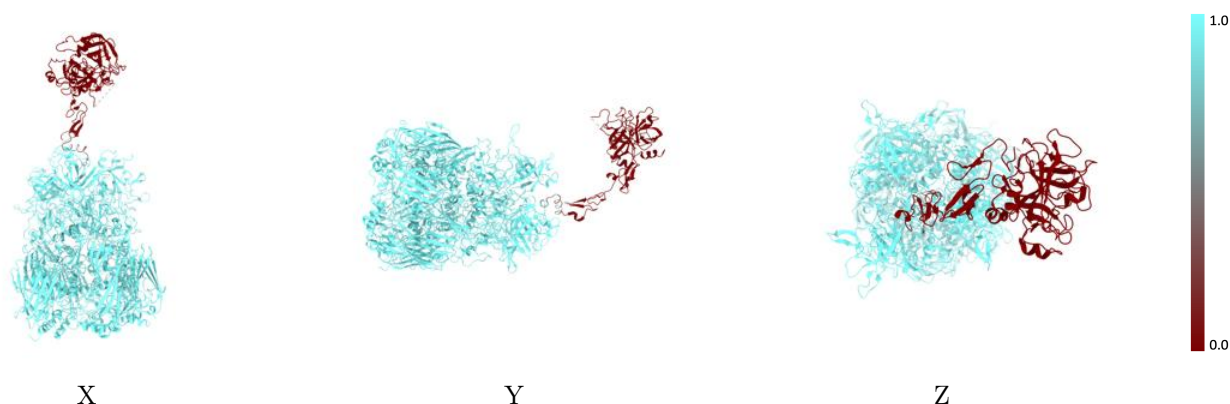
The images above show the 3D surface view of the map at the recommended contour level 0.01 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



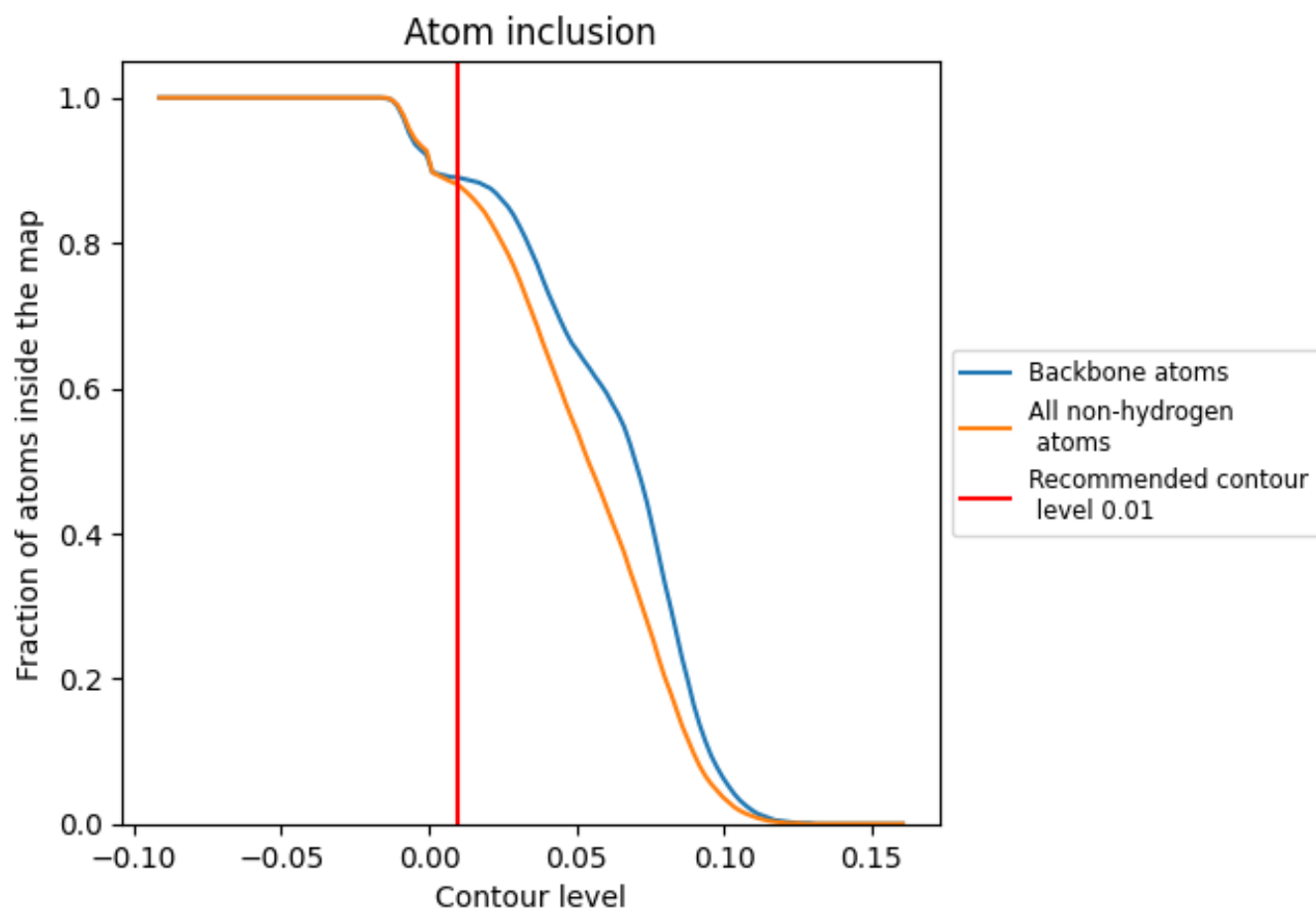
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.01).











9.4 Atom inclusion [i](#)



At the recommended contour level, 89% of all backbone atoms, 88% 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 (0.01) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8800	 0.4740
J	 0.9860	 0.5240
K	 0.9860	 0.5260
L	 0.9870	 0.5280
Z	 0.0970	 0.0870

