Full wwPDB EM Validation Report

Mar 12, 2024 – 06:48 PM JST

PDB ID	:	8H3Q
EMDB ID	:	EMD-34473
Title	:	Cryo-EM Structure of the CAND1-Cul3-Rbx1 complex
Authors	:	Hu, Y.; Mao, Q.; Chen, Z.; Sun, L.
Deposited on	:	2022-10-09
Resolution	:	3.76 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

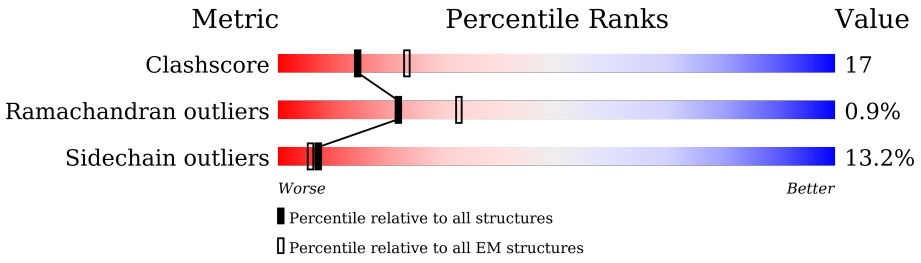
EMDB validation analysis	:	0.0.1.dev70
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.76 Å.

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



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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	1230	51% 36% 6% 7%
2	C	768	57% 32% 5% 7%
3	E	108	9% 53% 29% 18%

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 15511 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 Cullin-associated NEDD8-dissociated protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1150	8930	5683	1513	1678	56	0	0

- Molecule 2 is a protein called Cullin-3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	C	717	5841	3672	1034	1096	39	0	0

- Molecule 3 is a protein called E3 ubiquitin-protein ligase RBX1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	E	89	737	466	135	127	9	0	0

- Molecule 4 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

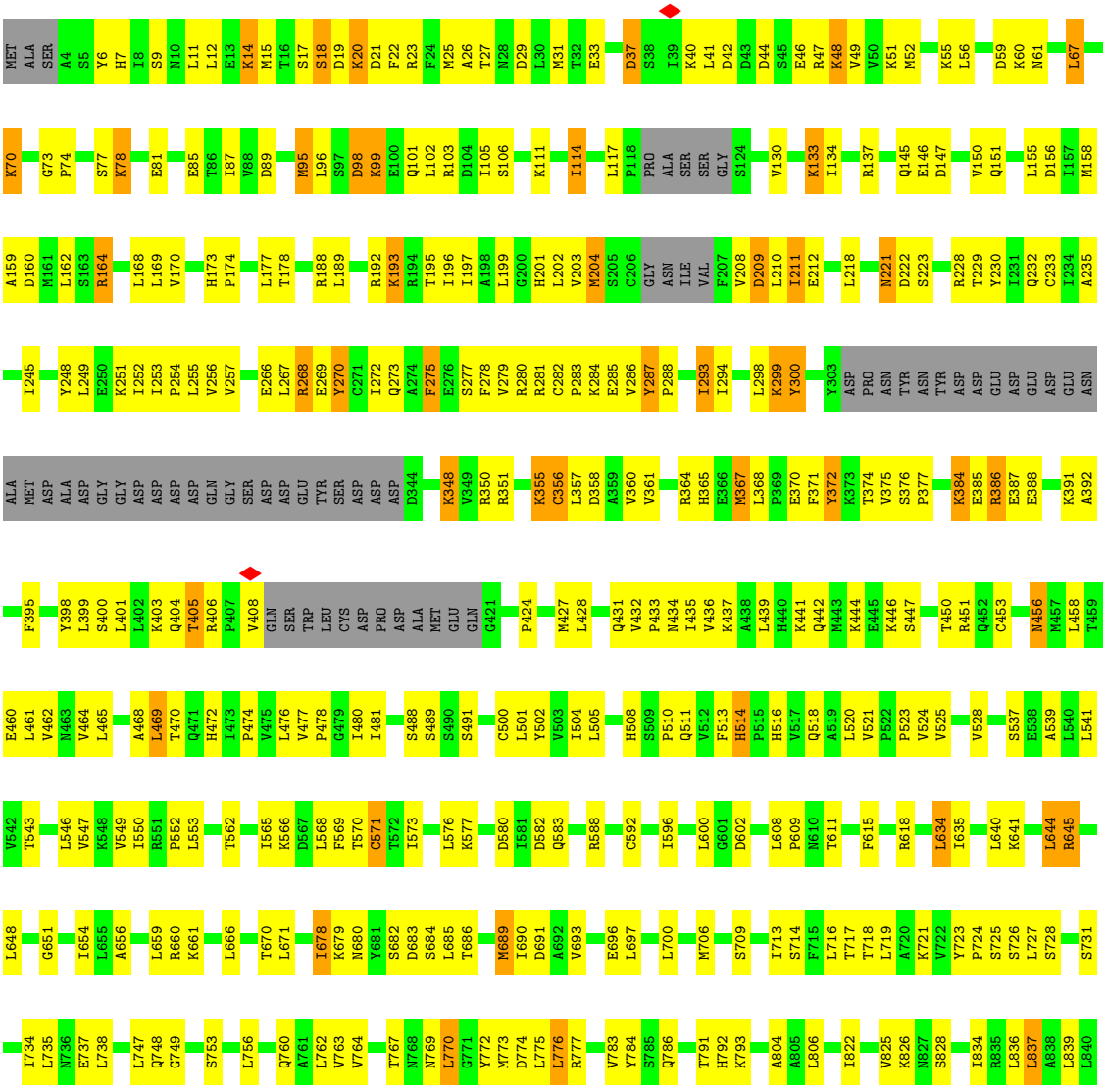
Mol	Chain	Residues	Atoms		AltConf
			Total	Zn	
4	E	3	3	3	0

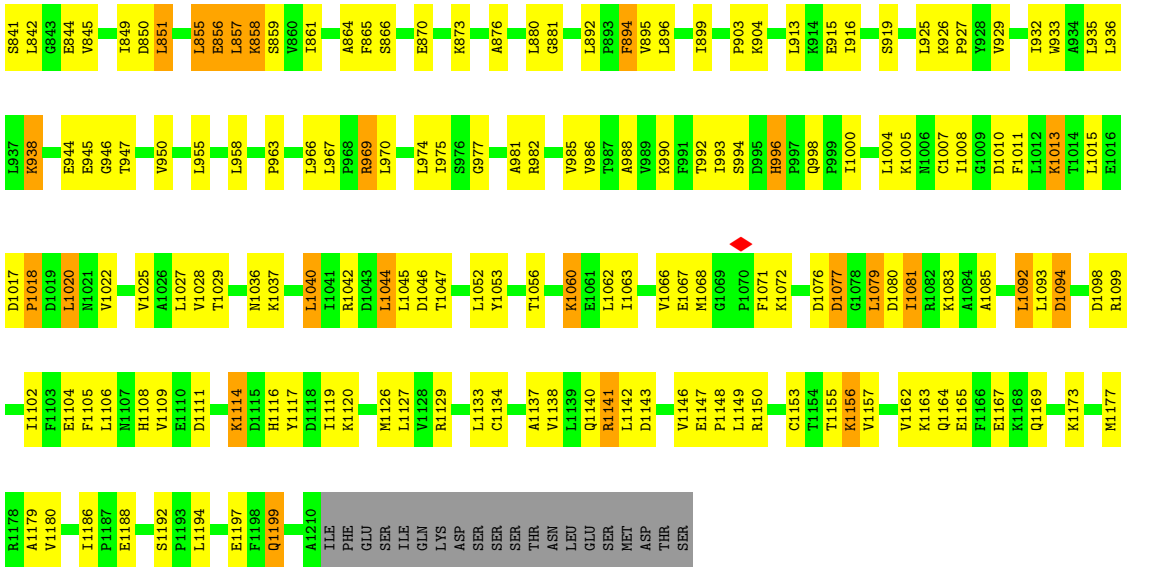
3 Residue-property plots (i)

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

- Molecule 1: Cullin-associated NEDD8-dissociated protein 1

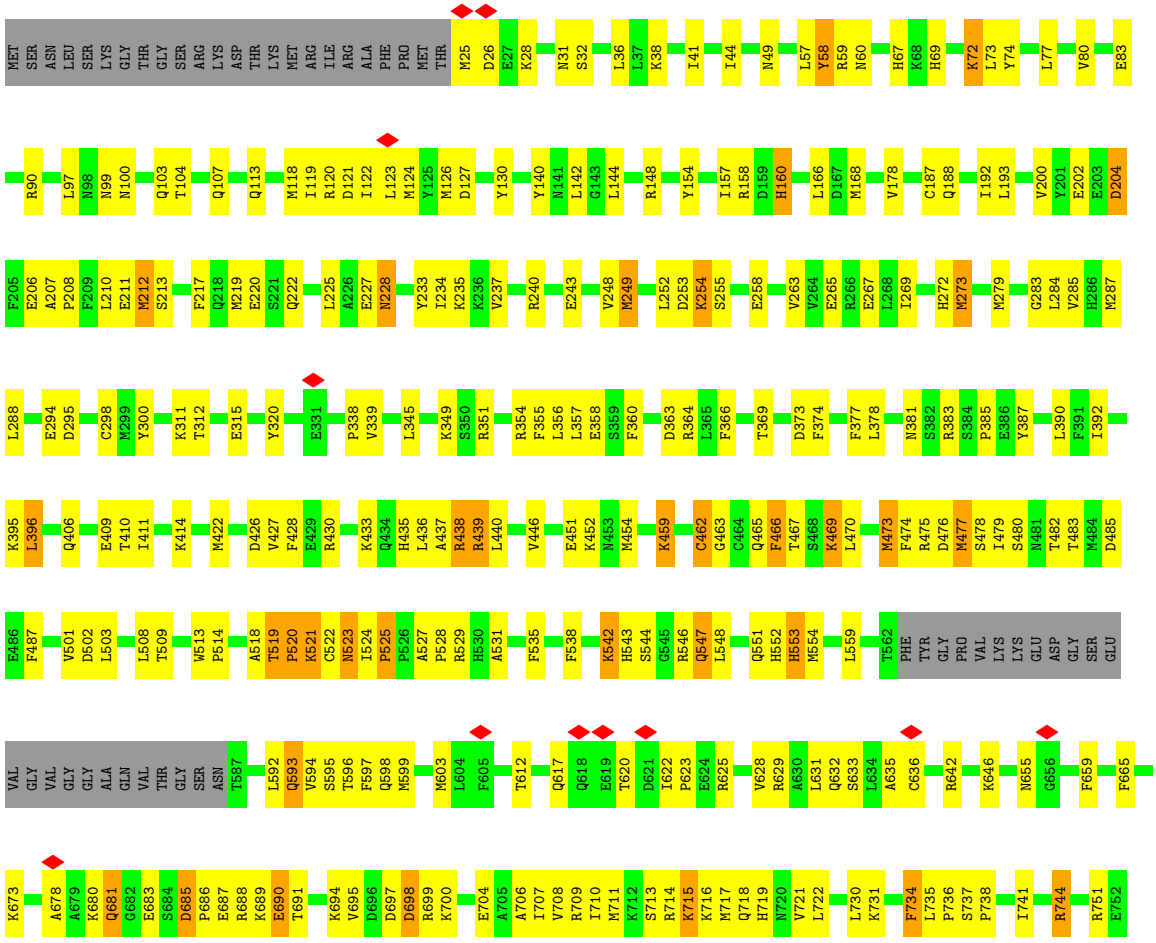
Chain A:

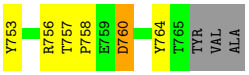




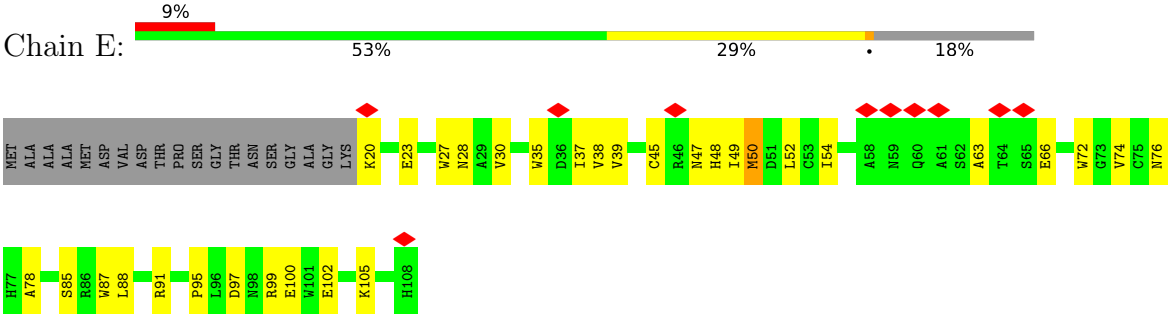
• Molecule 2: Cullin-3

Chain C:





• Molecule 3: E3 ubiquitin-protein ligase RBX1



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	644994	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	53	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	2200	Depositor
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	1.868	Depositor
Minimum map value	-0.002	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.033	Depositor
Recommended contour level	0.001	Depositor
Map size (Å)	267.264, 267.264, 267.264	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.044, 1.044, 1.044	Depositor

5 Model quality

5.1 Standard geometry

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

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	0.43	0/9069	0.61	0/12285
2	C	0.34	0/5933	0.59	0/7971
3	E	0.24	0/759	0.51	0/1029
All	All	0.39	0/15761	0.60	0/21285

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	8930	0	9281	336	0
2	C	5841	0	5881	193	0
3	E	737	0	686	24	0
4	E	3	0	0	0	0
All	All	15511	0	15848	543	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 17.

All (543) 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:A:731:SER:O	1:A:735:LEU:HB2	1.56	1.03
1:A:364:ARG:HB2	1:A:367:MET:HE2	1.57	0.87
2:C:714:ARG:HE	2:C:715:LYS:H	1.24	0.86
3:E:72:TRP:HB2	3:E:105:LYS:HB3	1.56	0.84
1:A:839:LEU:HD11	1:A:864:ALA:HB1	1.60	0.83
2:C:524:ILE:HB	2:C:529:ARG:HE	1.44	0.82
1:A:193:LYS:HA	1:A:196:ILE:HD12	1.59	0.82
1:A:395:PHE:HD2	1:A:453:CYS:HB3	1.45	0.81
1:A:60:LYS:HE3	1:A:60:LYS:HA	1.62	0.79
1:A:235:ALA:HB2	1:A:273:GLN:HG2	1.66	0.78
2:C:622:ILE:HG13	2:C:623:PRO:HD2	1.66	0.78
2:C:148:ARG:HB2	2:C:193:LEU:HD11	1.67	0.76
2:C:735:LEU:HD23	2:C:737:SER:H	1.52	0.75
1:A:173:HIS:HB3	1:A:210:LEU:HD21	1.68	0.75
1:A:861:ILE:HG21	1:A:880:LEU:HD12	1.70	0.73
2:C:625:ARG:HG3	2:C:629:ARG:HH12	1.54	0.73
1:A:706:MET:HB2	2:C:222:GLN:HG2	1.70	0.72
1:A:391:LYS:HE3	1:A:450:THR:HG22	1.71	0.72
2:C:392:ILE:O	2:C:396:LEU:HB2	1.90	0.71
1:A:562:THR:HA	1:A:565:ILE:HD12	1.71	0.71
1:A:387:GLU:HG2	1:A:388:GLU:H	1.56	0.70
1:A:160:ASP:OD1	1:A:164:ARG:NE	2.20	0.70
1:A:278:PHE:CZ	1:A:360:VAL:HA	2.27	0.70
1:A:986:VAL:HG22	1:A:1029:THR:HG21	1.74	0.70
1:A:1104:GLU:O	1:A:1108:HIS:ND1	2.25	0.69
2:C:686:PRO:HA	2:C:689:LYS:HZ2	1.57	0.69
1:A:278:PHE:CE1	1:A:360:VAL:HA	2.28	0.68
1:A:364:ARG:HB2	1:A:367:MET:CE	2.24	0.68
1:A:1025:VAL:O	1:A:1029:THR:HG23	1.93	0.68
2:C:383:ARG:HE	2:C:387:TYR:HE2	1.40	0.68
1:A:1165:GLU:OE1	2:C:120:ARG:NH1	2.26	0.68
2:C:436:LEU:O	2:C:440:LEU:CB	2.42	0.68
2:C:124:MET:HA	2:C:127:ASP:HB2	1.76	0.68
1:A:565:ILE:HG12	1:A:600:LEU:HD13	1.76	0.68
2:C:383:ARG:HH22	2:C:688:ARG:HH21	1.42	0.67
1:A:70:LYS:O	1:A:74:PRO:HD2	1.95	0.67
1:A:1104:GLU:HB3	1:A:1108:HIS:HE1	1.59	0.67
2:C:635:ALA:O	2:C:642:ARG:NH1	2.28	0.67
2:C:225:LEU:HB3	2:C:272:HIS:HE1	1.59	0.66
2:C:508:LEU:HD22	3:E:30:VAL:HB	1.77	0.66
2:C:119:ILE:HG23	2:C:123:LEU:HD12	1.77	0.66
1:A:501:LEU:HD21	1:A:520:LEU:HD21	1.77	0.66

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:974:LEU:HD22	1:A:1011:PHE:HD2	1.60	0.66
2:C:628:VAL:HB	2:C:629:ARG:NH2	2.11	0.66
2:C:225:LEU:HB3	2:C:272:HIS:CE1	2.31	0.65
1:A:510:PRO:HA	1:A:513:PHE:HB2	1.78	0.65
1:A:19:ASP:HB3	1:A:22:PHE:HB2	1.78	0.65
1:A:1000:ILE:HG13	1:A:1004:LEU:HB2	1.78	0.65
2:C:123:LEU:HA	2:C:126:MET:HG3	1.79	0.65
1:A:374:THR:HG23	1:A:375:VAL:HG13	1.79	0.65
1:A:693:VAL:O	1:A:697:LEU:HD22	1.97	0.65
2:C:235:LYS:HE3	2:C:235:LYS:HA	1.77	0.65
2:C:704:GLU:HA	2:C:707:ILE:HG22	1.78	0.64
1:A:20:LYS:NZ	1:A:21:ASP:OD1	2.29	0.64
2:C:508:LEU:HG	2:C:513:TRP:CD1	2.33	0.64
2:C:478:SER:O	2:C:482:THR:HG23	1.98	0.64
2:C:700:LYS:HB3	2:C:744:ARG:HH12	1.63	0.64
3:E:35:TRP:HD1	3:E:76:ASN:HB3	1.63	0.64
1:A:1164:GLN:N	1:A:1164:GLN:OE1	2.31	0.64
2:C:120:ARG:O	2:C:124:MET:HB2	1.97	0.63
1:A:977:GLY:O	1:A:982:ARG:NH1	2.31	0.63
1:A:102:LEU:HD13	1:A:105:ILE:HD11	1.80	0.63
2:C:700:LYS:HB3	2:C:744:ARG:NH1	2.12	0.63
1:A:145:GLN:O	1:A:151:GLN:NE2	2.32	0.63
1:A:881:GLY:HA2	1:A:916:ILE:HG13	1.78	0.63
1:A:1134:CYS:HB3	1:A:1137:ALA:HB3	1.79	0.63
1:A:569:PHE:O	1:A:573:ILE:HG12	1.98	0.63
2:C:426:ASP:OD2	2:C:699:ARG:NE	2.31	0.63
1:A:387:GLU:HG2	1:A:388:GLU:N	2.14	0.62
1:A:432:VAL:O	1:A:436:VAL:HG13	1.99	0.62
1:A:713:ILE:O	1:A:717:THR:HG23	1.99	0.62
1:A:15:MET:HA	1:A:23:ARG:HG2	1.81	0.62
1:A:858:LYS:HB3	1:A:894:PHE:CE2	2.34	0.62
2:C:599:MET:O	2:C:603:MET:HG2	1.98	0.62
2:C:396:LEU:HB3	2:C:439:ARG:HH12	1.64	0.62
1:A:659:LEU:HD22	1:A:700:LEU:HD22	1.82	0.62
1:A:537:SER:HB2	1:A:588:ARG:HG3	1.79	0.61
1:A:446:LYS:O	1:A:451:ARG:NH2	2.33	0.61
1:A:731:SER:HA	1:A:735:LEU:HD23	1.81	0.61
2:C:436:LEU:O	2:C:440:LEU:HB2	2.00	0.61
2:C:524:ILE:HG23	3:E:27:TRP:HH2	1.64	0.61
1:A:938:LYS:HA	1:A:938:LYS:HE3	1.83	0.61
1:A:936:LEU:HD23	1:A:955:LEU:HG	1.83	0.61

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:248:TYR:O	1:A:252:ILE:HG12	2.01	0.60
1:A:925:LEU:O	1:A:929:VAL:N	2.30	0.60
1:A:966:LEU:HA	1:A:969:ARG:HD3	1.82	0.60
2:C:414:LYS:HE3	2:C:414:LYS:HA	1.82	0.60
1:A:651:GLY:HA2	1:A:654:ILE:HG22	1.84	0.60
1:A:162:LEU:HB2	1:A:201:HIS:HB3	1.83	0.60
1:A:648:LEU:HD21	1:A:685:LEU:HD13	1.83	0.60
1:A:913:LEU:HD21	1:A:932:ILE:HD12	1.83	0.60
2:C:285:VAL:HG13	2:C:320:TYR:HD2	1.67	0.60
1:A:1066:VAL:HG22	1:A:1067:GLU:H	1.66	0.59
1:A:1119:ILE:HD12	1:A:1119:ILE:H	1.66	0.59
2:C:718:GLN:H	2:C:721:VAL:HG12	1.67	0.59
1:A:1072:LYS:HE2	1:A:1072:LYS:HA	1.83	0.59
1:A:881:GLY:HA3	1:A:915:GLU:HG3	1.82	0.59
2:C:100:ASN:HB3	2:C:103:GLN:HB3	1.85	0.59
1:A:480:ILE:HG21	1:A:501:LEU:HD13	1.84	0.59
1:A:505:LEU:HD12	1:A:549:VAL:HG21	1.83	0.59
1:A:245:ILE:O	1:A:249:LEU:HB2	2.02	0.59
1:A:804:ALA:HA	1:A:845:VAL:HG12	1.83	0.59
1:A:724:PRO:HA	1:A:727:LEU:HD12	1.83	0.59
1:A:377:PRO:HG3	1:A:431:GLN:HE22	1.67	0.59
1:A:478:PRO:HA	1:A:481:ILE:HD12	1.85	0.59
1:A:858:LYS:HB3	1:A:894:PHE:HE2	1.67	0.59
1:A:1005:LYS:HD3	1:A:1040:LEU:HA	1.85	0.58
1:A:195:THR:O	1:A:199:LEU:HG	2.03	0.58
2:C:508:LEU:HG	2:C:513:TRP:NE1	2.19	0.58
2:C:760:ASP:OD2	2:C:760:ASP:N	2.36	0.58
2:C:396:LEU:HD11	2:C:454:MET:HG3	1.86	0.58
2:C:632:GLN:HB2	2:C:636:CYS:HB3	1.86	0.58
2:C:735:LEU:HG	2:C:736:PRO:HD2	1.86	0.58
2:C:97:LEU:HB2	2:C:160:HIS:CD2	2.39	0.58
2:C:503:LEU:HG	2:C:531:ALA:HB1	1.86	0.58
2:C:685:ASP:OD2	2:C:689:LYS:NZ	2.29	0.58
1:A:982:ARG:HD2	1:A:1015:LEU:HD21	1.85	0.58
2:C:144:LEU:HD12	2:C:193:LEU:HA	1.86	0.58
1:A:174:PRO:O	1:A:178:THR:HG23	2.04	0.57
1:A:1062:LEU:HG	1:A:1077:ASP:HB2	1.86	0.57
2:C:436:LEU:O	2:C:440:LEU:HB3	2.04	0.57
2:C:436:LEU:HD12	2:C:440:LEU:HD22	1.85	0.57
1:A:945:GLU:HG3	2:C:99:ASN:HB2	1.86	0.57
1:A:510:PRO:HB3	1:A:549:VAL:HG13	1.85	0.57

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:689:MET:SD	1:A:689:MET:N	2.75	0.57
1:A:1053:TYR:HA	1:A:1056:THR:HB	1.86	0.57
1:A:1106:LEU:HA	1:A:1109:VAL:HG12	1.86	0.57
1:A:583:GLN:N	1:A:583:GLN:OE1	2.37	0.57
1:A:11:LEU:HB2	1:A:26:ALA:HB1	1.87	0.57
1:A:656:ALA:HB1	1:A:696:GLU:HG3	1.86	0.57
1:A:996:HIS:CE1	1:A:998:GLN:HE21	2.22	0.57
1:A:37:ASP:HA	1:A:78:LYS:NZ	2.20	0.56
1:A:147:ASP:H	1:A:151:GLN:HE22	1.53	0.56
1:A:1010:ASP:OD1	1:A:1013:LYS:NZ	2.37	0.56
1:A:1102:ILE:HG21	1:A:1137:ALA:HB1	1.85	0.56
2:C:338:PRO:HA	2:C:387:TYR:CD1	2.40	0.56
2:C:474:PHE:HA	2:C:477:MET:HG3	1.86	0.56
2:C:487:PHE:CE2	2:C:535:PHE:HD1	2.23	0.56
2:C:714:ARG:HE	2:C:715:LYS:N	2.00	0.56
1:A:391:LYS:NZ	1:A:450:THR:HA	2.20	0.56
2:C:475:ARG:O	2:C:479:ILE:HG12	2.06	0.56
2:C:599:MET:SD	2:C:599:MET:N	2.76	0.56
1:A:435:ILE:O	1:A:439:LEU:HG	2.05	0.56
1:A:904:LYS:HD3	1:A:904:LYS:N	2.20	0.56
1:A:391:LYS:HE2	1:A:395:PHE:CE2	2.40	0.56
1:A:686:THR:O	1:A:690:ILE:HG12	2.06	0.56
1:A:933:TRP:CZ3	1:A:966:LEU:HB3	2.41	0.56
1:A:14:LYS:HD3	1:A:26:ALA:HB2	1.87	0.55
2:C:227:GLU:O	2:C:228:ASN:ND2	2.38	0.55
1:A:249:LEU:HD11	1:A:277:SER:HB3	1.88	0.55
3:E:97:ASP:OD1	3:E:99:ARG:N	2.35	0.55
1:A:723:TYR:HB3	1:A:726:SER:HB3	1.89	0.55
1:A:406:ARG:C	1:A:408:VAL:H	2.10	0.55
1:A:133:LYS:O	1:A:137:ARG:HG2	2.07	0.55
2:C:406:GLN:O	2:C:410:THR:HG23	2.06	0.55
1:A:488:SER:OG	1:A:489:SER:N	2.38	0.55
1:A:504:ILE:O	1:A:508:HIS:ND1	2.38	0.55
1:A:678:ILE:HG12	1:A:719:LEU:HD13	1.89	0.55
1:A:1094:ASP:HA	1:A:1129:ARG:HH22	1.72	0.54
2:C:118:MET:HA	2:C:121:ASP:OD2	2.07	0.54
2:C:527:ALA:HB3	2:C:528:PRO:HD3	1.88	0.54
1:A:272:ILE:HA	1:A:275:PHE:HD1	1.71	0.54
1:A:709:SER:O	1:A:713:ILE:HG12	2.08	0.54
2:C:554:MET:N	2:C:596:THR:OG1	2.39	0.54
1:A:193:LYS:O	1:A:197:ILE:HG12	2.07	0.54

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:361:VAL:HB	1:A:401:LEU:HD13	1.89	0.54
2:C:100:ASN:O	2:C:104:THR:HG22	2.07	0.54
1:A:386:ARG:HG3	1:A:387:GLU:OE2	2.08	0.54
2:C:284:LEU:HD23	2:C:288:LEU:HD23	1.90	0.54
1:A:228:ARG:HD3	1:A:266:GLU:HG3	1.89	0.54
1:A:504:ILE:HG22	1:A:513:PHE:HZ	1.73	0.54
2:C:207:ALA:HB3	2:C:208:PRO:HD3	1.90	0.54
3:E:74:VAL:HG13	3:E:102:GLU:HB2	1.89	0.54
1:A:826:LYS:NZ	1:A:828:SER:O	2.37	0.53
1:A:915:GLU:OE2	1:A:919:SER:OG	2.20	0.53
1:A:925:LEU:HB3	1:A:929:VAL:HG23	1.89	0.53
2:C:338:PRO:HA	2:C:387:TYR:HD1	1.72	0.53
1:A:1037:LYS:HB2	1:A:1040:LEU:HG	1.88	0.53
2:C:430:ARG:NH2	2:C:698:ASP:OD2	2.41	0.53
1:A:994:SER:OG	1:A:998:GLN:NE2	2.41	0.53
2:C:120:ARG:O	2:C:124:MET:CB	2.56	0.53
1:A:446:LYS:HD3	1:A:446:LYS:N	2.24	0.53
1:A:189:LEU:HA	1:A:192:ARG:HD2	1.91	0.53
1:A:1153:CYS:HA	1:A:1173:LYS:HE3	1.90	0.53
1:A:963:PRO:HG3	1:A:1000:ILE:HD13	1.90	0.53
2:C:410:THR:O	2:C:414:LYS:HG2	2.09	0.53
1:A:511:GLN:HA	1:A:514:HIS:HE1	1.75	0.52
2:C:300:TYR:CD2	2:C:360:PHE:HA	2.44	0.52
2:C:58:TYR:HE1	2:C:122:ILE:HA	1.74	0.52
2:C:437:ALA:HA	2:C:513:TRP:HZ3	1.74	0.52
2:C:44:ILE:HA	2:C:49:ASN:HB3	1.92	0.52
1:A:229:THR:HA	1:A:232:GLN:HG2	1.91	0.52
2:C:687:GLU:HA	2:C:690:GLU:HG3	1.90	0.52
1:A:666:LEU:O	1:A:670:THR:HG23	2.10	0.51
2:C:706:ALA:O	2:C:709:ARG:HG2	2.10	0.51
1:A:967:LEU:HD21	1:A:1007:CYS:SG	2.49	0.51
2:C:363:ASP:OD2	2:C:364:ARG:N	2.44	0.51
1:A:1186:ILE:O	1:A:1188:GLU:N	2.39	0.51
1:A:267:LEU:HA	1:A:270:TYR:CD2	2.45	0.51
2:C:477:MET:O	2:C:480:SER:OG	2.21	0.51
2:C:427:VAL:HG12	2:C:695:VAL:HG21	1.92	0.51
2:C:707:ILE:O	2:C:711:MET:HG2	2.11	0.51
1:A:177:LEU:HD22	1:A:202:LEU:HD21	1.91	0.51
2:C:717:MET:HB2	2:C:722:LEU:HD23	1.93	0.51
3:E:100:GLU:O	3:E:100:GLU:HG2	2.11	0.51
1:A:1197:GLU:O	1:A:1199:GLN:NE2	2.44	0.51

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:368:LEU:O	1:A:372:TYR:HB2	2.11	0.51
1:A:391:LYS:HD3	1:A:391:LYS:C	2.31	0.51
1:A:481:ILE:HG23	1:A:523:PRO:HG2	1.92	0.51
1:A:671:LEU:HD11	1:A:700:LEU:HD21	1.92	0.51
2:C:294:GLU:OE1	2:C:294:GLU:N	2.38	0.51
2:C:521:LYS:HG2	2:C:552:HIS:CE1	2.46	0.51
1:A:734:ILE:HG23	1:A:738:LEU:HD13	1.93	0.50
1:A:1156:LYS:HE2	1:A:1156:LYS:HA	1.92	0.50
1:A:384:LYS:HG2	1:A:395:PHE:HE1	1.76	0.50
1:A:472:HIS:O	1:A:476:LEU:HG	2.11	0.50
1:A:25:MET:HG2	2:C:713:SER:HB2	1.92	0.50
1:A:99:LYS:HB3	1:A:102:LEU:HD23	1.92	0.50
1:A:543:THR:OG1	1:A:592:CYS:SG	2.68	0.50
1:A:249:LEU:HD12	1:A:252:ILE:HD11	1.93	0.50
1:A:384:LYS:O	1:A:442:GLN:NE2	2.45	0.50
1:A:428:LEU:O	1:A:432:VAL:HG23	2.11	0.50
2:C:409:GLU:HA	2:C:409:GLU:OE1	2.11	0.50
1:A:990:LYS:HB2	1:A:1029:THR:HB	1.93	0.50
2:C:168:MET:HG3	2:C:178:VAL:HG11	1.93	0.50
1:A:456:ASN:O	1:A:460:GLU:HG2	2.12	0.50
1:A:147:ASP:HB3	1:A:150:VAL:HB	1.94	0.50
2:C:685:ASP:HA	2:C:688:ARG:NH1	2.26	0.50
1:A:981:ALA:O	1:A:985:VAL:HG12	2.12	0.50
1:A:547:VAL:HA	1:A:550:ILE:HG12	1.94	0.50
1:A:81:GLU:OE2	1:A:81:GLU:N	2.36	0.49
1:A:270:TYR:HA	1:A:273:GLN:HG3	1.93	0.49
1:A:974:LEU:HD22	1:A:1011:PHE:CD2	2.43	0.49
1:A:406:ARG:HG2	1:A:408:VAL:HB	1.94	0.49
1:A:539:ALA:O	1:A:543:THR:HG23	2.12	0.49
1:A:899:ILE:HG21	1:A:935:LEU:HD21	1.94	0.49
2:C:31:ASN:OD1	2:C:32:SER:N	2.45	0.49
2:C:385:PRO:HB3	2:C:428:PHE:HB2	1.95	0.49
1:A:365:HIS:O	1:A:368:LEU:HD23	2.12	0.49
1:A:405:THR:HG22	1:A:424:PRO:HB3	1.93	0.49
1:A:547:VAL:HG21	1:A:596:ILE:CD1	2.42	0.49
1:A:946:GLY:O	1:A:950:VAL:HG12	2.12	0.49
2:C:513:TRP:O	3:E:105:LYS:NZ	2.46	0.49
1:A:505:LEU:HG	1:A:546:LEU:HD12	1.93	0.49
1:A:1194:LEU:HD21	1:A:1197:GLU:HG3	1.94	0.49
2:C:188:GLN:O	2:C:192:ILE:HG12	2.12	0.49
2:C:686:PRO:HA	2:C:689:LYS:NZ	2.26	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:147:ASP:O	1:A:150:VAL:N	2.44	0.49
1:A:477:VAL:O	1:A:481:ILE:HG13	2.12	0.49
1:A:525:VAL:HG13	1:A:571:CYS:SG	2.53	0.49
2:C:383:ARG:HH22	2:C:688:ARG:NH2	2.10	0.49
1:A:155:LEU:HA	1:A:158:MET:HB3	1.94	0.49
1:A:272:ILE:HA	1:A:275:PHE:CD1	2.47	0.49
1:A:793:LYS:HE2	1:A:793:LYS:HA	1.93	0.49
2:C:699:ARG:HD2	2:C:734:PHE:CD2	2.47	0.49
2:C:187:CYS:HB3	2:C:253:ASP:HB3	1.93	0.49
2:C:513:TRP:HE3	2:C:514:PRO:HD3	1.77	0.49
1:A:151:GLN:O	1:A:155:LEU:HD23	2.13	0.48
2:C:107:GLN:OE1	2:C:107:GLN:HA	2.13	0.48
2:C:525:PRO:HA	2:C:603:MET:SD	2.53	0.48
3:E:37:ILE:HG22	3:E:78:ALA:H	1.77	0.48
3:E:45:CYS:SG	3:E:47:ASN:ND2	2.80	0.48
1:A:287:TYR:CD1	1:A:288:PRO:HD3	2.48	0.48
1:A:170:VAL:HA	1:A:173:HIS:CD2	2.48	0.48
1:A:385:GLU:HB2	1:A:442:GLN:NE2	2.28	0.48
1:A:433:PRO:O	1:A:436:VAL:HG22	2.13	0.48
3:E:45:CYS:HB2	3:E:54:ILE:HG23	1.94	0.48
1:A:46:GLU:HA	1:A:49:VAL:HG12	1.95	0.48
1:A:196:ILE:HG12	1:A:233:CYS:SG	2.53	0.48
1:A:370:GLU:HG2	1:A:371:PHE:N	2.27	0.48
1:A:516:HIS:O	1:A:520:LEU:HB2	2.13	0.48
1:A:293:ILE:HD13	1:A:293:ILE:HA	1.68	0.48
1:A:776:LEU:HD12	1:A:776:LEU:HA	1.75	0.48
2:C:594:VAL:HG21	2:C:599:MET:HB3	1.95	0.48
1:A:434:ASN:HA	1:A:437:LYS:HE2	1.95	0.48
1:A:944:GLU:HB2	1:A:947:THR:HG23	1.96	0.48
1:A:1066:VAL:HG13	1:A:1067:GLU:HG2	1.95	0.48
1:A:1162:VAL:HG23	2:C:120:ARG:HD3	1.95	0.48
2:C:265:GLU:HA	2:C:269:ILE:HD12	1.96	0.48
2:C:374:PHE:HA	2:C:377:PHE:CE1	2.49	0.48
2:C:524:ILE:HB	2:C:529:ARG:NE	2.21	0.48
1:A:117:LEU:HD12	1:A:117:LEU:HA	1.73	0.48
1:A:199:LEU:O	1:A:203:VAL:HG13	2.13	0.48
1:A:211:ILE:H	1:A:211:ILE:HG13	1.46	0.48
1:A:447:SER:O	1:A:450:THR:OG1	2.32	0.48
1:A:1105:PHE:O	1:A:1109:VAL:HG12	2.13	0.48
2:C:38:LYS:O	2:C:41:ILE:HG13	2.13	0.48
2:C:166:LEU:HD22	2:C:212:MET:HE2	1.96	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:249:MET:HE2	2:C:249:MET:HB2	1.76	0.48
2:C:683:GLU:O	2:C:688:ARG:NH2	2.47	0.48
1:A:543:THR:HG1	1:A:592:CYS:HG	1.62	0.47
1:A:635:ILE:HD13	1:A:644:LEU:HD11	1.96	0.47
1:A:903:PRO:HG2	1:A:904:LYS:HD3	1.95	0.47
2:C:469:LYS:H	2:C:469:LYS:HG2	1.48	0.47
2:C:501:VAL:HG23	2:C:502:ASP:H	1.78	0.47
2:C:731:LYS:HB2	2:C:731:LYS:NZ	2.28	0.47
1:A:269:GLU:O	1:A:273:GLN:HG3	2.15	0.47
1:A:376:SER:OG	1:A:377:PRO:HD3	2.14	0.47
1:A:521:VAL:O	1:A:525:VAL:HG23	2.15	0.47
3:E:39:VAL:HA	3:E:49:ILE:HB	1.96	0.47
1:A:61:ASN:ND2	3:E:102:GLU:OE1	2.47	0.47
1:A:520:LEU:O	1:A:523:PRO:HD2	2.14	0.47
1:A:568:LEU:HA	1:A:571:CYS:SG	2.54	0.47
1:A:267:LEU:HA	1:A:270:TYR:HD2	1.77	0.47
1:A:763:VAL:HG21	1:A:806:LEU:HG	1.96	0.47
2:C:67:HIS:HB3	2:C:69:HIS:HD2	1.80	0.47
1:A:469:LEU:HD13	1:A:476:LEU:HD21	1.97	0.47
1:A:576:LEU:O	1:A:618:ARG:NH1	2.48	0.47
1:A:856:GLU:HB2	1:A:859:SER:HB3	1.96	0.47
1:A:870:GLU:HA	1:A:873:LYS:HD3	1.95	0.47
2:C:738:PRO:HA	2:C:741:ILE:HD11	1.97	0.47
1:A:570:THR:O	1:A:573:ILE:HG13	2.14	0.47
1:A:1106:LEU:HA	1:A:1109:VAL:CG1	2.45	0.47
2:C:612:THR:OG1	2:C:655:ASN:O	2.33	0.47
1:A:822:ILE:O	1:A:826:LYS:N	2.42	0.47
1:A:101:GLN:O	1:A:105:ILE:HG12	2.15	0.46
1:A:474:PRO:HA	1:A:516:HIS:CE1	2.50	0.46
2:C:753:TYR:CE1	2:C:758:PRO:HD3	2.50	0.46
3:E:63:ALA:HB1	3:E:66:GLU:HA	1.97	0.46
1:A:1108:HIS:HA	1:A:1111:ASP:OD1	2.14	0.46
3:E:27:TRP:HD1	3:E:28:ASN:H	1.63	0.46
1:A:70:LYS:HD3	1:A:70:LYS:HA	1.62	0.46
1:A:804:ALA:HB2	1:A:844:GLU:HB3	1.97	0.46
2:C:113:GLN:OE1	2:C:140:TYR:OH	2.33	0.46
1:A:251:LYS:O	1:A:254:PRO:HD2	2.16	0.46
2:C:716:LYS:HB2	2:C:756:ARG:HE	1.80	0.46
1:A:130:VAL:O	1:A:134:ILE:HG13	2.15	0.46
1:A:441:LYS:HA	1:A:444:LYS:HG2	1.96	0.46
2:C:28:LYS:HA	2:C:31:ASN:ND2	2.30	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:509:THR:O	2:C:513:TRP:HB2	2.15	0.46
1:A:1116:HIS:CG	1:A:1117:TYR:H	2.34	0.46
1:A:1147:GLU:HB2	1:A:1148:PRO:HD3	1.96	0.46
2:C:390:LEU:HD22	2:C:435:HIS:NE2	2.29	0.46
1:A:294:ILE:HG12	1:A:356:CYS:SG	2.55	0.46
1:A:1163:LYS:O	1:A:1167:GLU:HG3	2.14	0.46
1:A:634:LEU:HD23	1:A:634:LEU:HA	1.76	0.46
2:C:283:GLY:O	2:C:287:MET:HG2	2.16	0.46
1:A:566:LYS:HD2	1:A:566:LYS:HA	1.59	0.46
1:A:660:ARG:O	1:A:661:LYS:HD2	2.16	0.46
1:A:192:ARG:O	1:A:196:ILE:HG13	2.15	0.46
1:A:427:MET:O	1:A:431:GLN:HG2	2.16	0.46
2:C:631:LEU:HD11	2:C:659:PHE:CZ	2.50	0.46
2:C:426:ASP:OD1	2:C:426:ASP:N	2.49	0.45
1:A:728:SER:O	1:A:731:SER:HB3	2.16	0.45
1:A:735:LEU:HG	1:A:770:LEU:HD11	1.98	0.45
2:C:593:GLN:HB3	2:C:673:LYS:HA	1.97	0.45
1:A:988:ALA:O	1:A:992:THR:OG1	2.27	0.45
1:A:993:ILE:HG21	1:A:1036:ASN:HD22	1.81	0.45
1:A:1098:ASP:OD1	1:A:1099:ARG:HG2	2.15	0.45
2:C:273:MET:HG2	2:C:312:THR:HG21	1.97	0.45
1:A:1068:MET:HB3	1:A:1071:PHE:HB2	1.98	0.45
1:A:1092:LEU:HD12	1:A:1092:LEU:HA	1.73	0.45
1:A:1104:GLU:HB3	1:A:1108:HIS:CE1	2.46	0.45
1:A:1127:LEU:HD22	1:A:1179:ALA:HB1	1.99	0.45
2:C:374:PHE:HA	2:C:377:PHE:CD1	2.51	0.45
2:C:716:LYS:HG3	2:C:756:ARG:O	2.16	0.45
2:C:753:TYR:HE1	2:C:757:THR:HA	1.81	0.45
1:A:208:VAL:O	1:A:209:ASP:C	2.55	0.45
1:A:521:VAL:O	1:A:524:VAL:HG12	2.15	0.45
2:C:80:VAL:O	2:C:83:GLU:HG3	2.15	0.45
2:C:598:GLN:NE2	2:C:633:SER:OG	2.49	0.45
2:C:466:PHE:HD2	2:C:467:THR:HG23	1.81	0.45
2:C:707:ILE:HA	2:C:710:ILE:HG22	1.99	0.45
2:C:717:MET:HG2	2:C:719:HIS:H	1.82	0.45
2:C:466:PHE:HB2	2:C:467:THR:H	1.62	0.45
2:C:483:THR:HG22	2:C:542:LYS:HZ1	1.82	0.45
2:C:717:MET:HG3	2:C:722:LEU:H	1.81	0.45
1:A:384:LYS:CG	1:A:395:PHE:HE1	2.30	0.45
1:A:395:PHE:CD2	1:A:453:CYS:HB3	2.36	0.45
1:A:689:MET:H	1:A:689:MET:CE	2.30	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:311:LYS:HE3	2:C:311:LYS:HB3	1.88	0.45
2:C:520:PRO:HB2	2:C:553:HIS:CE1	2.53	0.45
1:A:173:HIS:HB3	1:A:210:LEU:CD2	2.43	0.44
1:A:822:ILE:HA	1:A:825:VAL:HG12	1.99	0.44
1:A:1067:GLU:O	1:A:1068:MET:HG3	2.18	0.44
3:E:20:LYS:HE3	3:E:23:GLU:HG2	1.99	0.44
1:A:95:MET:HE3	1:A:95:MET:HB3	1.79	0.44
2:C:158:ARG:HB3	2:C:158:ARG:NH1	2.33	0.44
2:C:248:VAL:HA	2:C:252:LEU:HD12	1.98	0.44
2:C:366:PHE:HA	2:C:369:THR:HG22	2.00	0.44
2:C:440:LEU:HD12	2:C:446:VAL:HG11	1.99	0.44
2:C:559:LEU:O	2:C:592:LEU:N	2.44	0.44
1:A:252:ILE:O	1:A:256:VAL:HG22	2.18	0.44
2:C:753:TYR:CZ	2:C:758:PRO:HD3	2.52	0.44
1:A:221:ASN:O	1:A:223:SER:N	2.51	0.44
1:A:249:LEU:HD21	1:A:277:SER:HB3	2.00	0.44
1:A:737:GLU:OE2	1:A:738:LEU:HD12	2.17	0.44
2:C:595:SER:O	2:C:596:THR:HG22	2.17	0.44
1:A:249:LEU:HD11	1:A:277:SER:CB	2.48	0.44
1:A:569:PHE:CZ	1:A:611:THR:HG21	2.53	0.44
1:A:102:LEU:O	1:A:106:SER:OG	2.21	0.44
1:A:608:LEU:HB3	1:A:609:PRO:HD3	2.00	0.44
1:A:690:ILE:HG13	1:A:691:ASP:N	2.33	0.44
1:A:98:ASP:HA	1:A:103:ARG:NH1	2.33	0.43
2:C:547:GLN:H	2:C:547:GLN:HG2	1.48	0.43
1:A:355:LYS:HD2	1:A:355:LYS:HA	1.57	0.43
2:C:680:LYS:HD2	2:C:680:LYS:HA	1.79	0.43
1:A:208:VAL:HG23	1:A:209:ASP:H	1.84	0.43
2:C:690:GLU:OE1	2:C:691:THR:N	2.52	0.43
1:A:268:ARG:HG3	1:A:269:GLU:N	2.32	0.43
1:A:268:ARG:O	1:A:272:ILE:HG12	2.19	0.43
2:C:74:TYR:CZ	2:C:142:LEU:HD22	2.53	0.43
2:C:234:ILE:HA	2:C:237:VAL:HG12	2.01	0.43
3:E:76:ASN:OD1	3:E:76:ASN:O	2.37	0.43
1:A:7:HIS:HE1	1:A:33:GLU:HG2	1.83	0.43
1:A:469:LEU:H	1:A:469:LEU:HG	1.63	0.43
1:A:895:VAL:HG11	1:A:913:LEU:HD13	2.00	0.43
1:A:970:LEU:HG	1:A:985:VAL:HG23	2.01	0.43
2:C:439:ARG:HD3	2:C:446:VAL:HG12	2.01	0.43
1:A:384:LYS:HG2	1:A:395:PHE:CE1	2.53	0.43
1:A:481:ILE:HG13	1:A:481:ILE:H	1.66	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1017:ASP:N	1:A:1018:PRO:HD3	2.33	0.43
2:C:756:ARG:HD2	2:C:764:TYR:CZ	2.53	0.43
2:C:704:GLU:O	2:C:708:VAL:HG12	2.19	0.43
1:A:278:PHE:CE2	1:A:287:TYR:HB3	2.54	0.43
1:A:348:LYS:H	1:A:348:LYS:HG2	1.37	0.43
1:A:573:ILE:HB	1:A:577:LYS:HZ2	1.84	0.43
2:C:395:LYS:HZ3	2:C:411:ILE:HG21	1.83	0.43
3:E:87:TRP:CZ2	3:E:95:PRO:HG3	2.53	0.43
1:A:208:VAL:HG23	1:A:209:ASP:N	2.33	0.43
1:A:645:ARG:H	1:A:645:ARG:HG2	1.60	0.43
2:C:523:ASN:HD22	2:C:523:ASN:HA	1.60	0.43
2:C:217:PHE:HE1	2:C:263:VAL:HG13	1.84	0.43
2:C:459:LYS:HB3	2:C:459:LYS:HE3	1.39	0.43
2:C:717:MET:HG2	2:C:719:HIS:N	2.33	0.43
1:A:56:LEU:HA	1:A:59:ASP:OD1	2.19	0.42
1:A:391:LYS:HD3	1:A:392:ALA:N	2.34	0.42
1:A:465:LEU:HD12	1:A:465:LEU:HA	1.91	0.42
1:A:784:TYR:HE2	1:A:837:LEU:HD22	1.84	0.42
1:A:1129:ARG:HH21	1:A:1133:LEU:HD11	1.84	0.42
2:C:77:LEU:HD12	2:C:123:LEU:HD22	2.01	0.42
1:A:384:LYS:NZ	1:A:435:ILE:HG12	2.34	0.42
1:A:541:LEU:HD23	1:A:541:LEU:HA	1.87	0.42
2:C:25:MET:HB3	2:C:26:ASP:H	1.74	0.42
1:A:528:VAL:HG11	1:A:571:CYS:HB2	2.02	0.42
1:A:547:VAL:HG22	1:A:600:LEU:HD11	2.02	0.42
1:A:1044:LEU:HD13	1:A:1044:LEU:HA	1.80	0.42
1:A:1081:ILE:H	1:A:1081:ILE:HG13	1.58	0.42
1:A:1102:ILE:O	1:A:1106:LEU:HD23	2.19	0.42
2:C:267:GLU:OE2	2:C:267:GLU:HA	2.19	0.42
2:C:295:ASP:N	2:C:295:ASP:OD1	2.52	0.42
1:A:146:GLU:OE1	1:A:188:ARG:NH1	2.53	0.42
1:A:158:MET:CE	1:A:162:LEU:HD21	2.49	0.42
1:A:1027:LEU:HD12	1:A:1085:ALA:HA	2.00	0.42
2:C:433:LYS:HG2	2:C:514:PRO:HG3	2.00	0.42
2:C:438:ARG:HD3	2:C:678:ALA:HB2	2.01	0.42
2:C:518:ALA:O	2:C:519:THR:C	2.57	0.42
1:A:48:LYS:H	1:A:48:LYS:HG3	1.65	0.42
1:A:714:SER:O	1:A:718:THR:HG22	2.19	0.42
1:A:839:LEU:HD21	1:A:864:ALA:CB	2.50	0.42
1:A:851:LEU:HB3	1:A:857:LEU:HD21	2.01	0.42
1:A:1060:LYS:HE2	1:A:1060:LYS:HA	2.02	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:617:GLN:HA	2:C:622:ILE:HG21	2.02	0.42
1:A:1098:ASP:OD1	1:A:1099:ARG:N	2.52	0.42
2:C:704:GLU:HG2	2:C:744:ARG:HD3	2.02	0.42
3:E:48:HIS:HB3	3:E:50:MET:O	2.19	0.42
3:E:52:LEU:HD13	3:E:52:LEU:HA	1.89	0.42
1:A:299:LYS:HD2	1:A:299:LYS:HA	1.74	0.42
1:A:1076:ASP:OD1	1:A:1079:LEU:N	2.53	0.42
1:A:159:ALA:HB1	1:A:201:HIS:CD2	2.55	0.42
1:A:361:VAL:HG11	1:A:401:LEU:HD22	2.02	0.42
1:A:1093:LEU:HD21	1:A:1126:MET:HG3	2.01	0.42
3:E:87:TRP:CZ2	3:E:91:ARG:HB3	2.55	0.42
1:A:469:LEU:HA	1:A:472:HIS:HD2	1.84	0.42
1:A:839:LEU:HD22	1:A:876:ALA:HA	2.02	0.42
1:A:926:LYS:HB2	1:A:927:PRO:HD3	2.01	0.42
1:A:1114:LYS:HD3	1:A:1114:LYS:HA	1.69	0.42
2:C:90:ARG:NH2	2:C:154:TYR:OH	2.53	0.42
2:C:730:LEU:HB3	2:C:734:PHE:CE1	2.55	0.42
1:A:7:HIS:NE2	1:A:29:ASP:HB3	2.35	0.41
1:A:189:LEU:HA	1:A:192:ARG:CD	2.50	0.41
1:A:252:ILE:HG22	1:A:255:LEU:HD12	2.02	0.41
1:A:253:ILE:O	1:A:257:VAL:HG12	2.20	0.41
1:A:713:ILE:HD13	1:A:716:LEU:HD12	2.02	0.41
1:A:969:ARG:H	1:A:969:ARG:HG3	1.63	0.41
2:C:97:LEU:HB2	2:C:160:HIS:HD2	1.85	0.41
2:C:462:CYS:HB2	2:C:463:GLY:H	1.64	0.41
1:A:1106:LEU:HB3	1:A:1141:ARG:HD2	2.01	0.41
2:C:154:TYR:HB3	2:C:157:ILE:HB	2.02	0.41
2:C:72:LYS:HG3	2:C:73:LEU:N	2.35	0.41
1:A:441:LYS:HB2	1:A:441:LYS:HE2	1.87	0.41
1:A:1020:LEU:HD22	1:A:1062:LEU:HD22	2.03	0.41
2:C:240:ARG:O	2:C:243:GLU:HG3	2.20	0.41
2:C:440:LEU:HD23	2:C:513:TRP:CH2	2.55	0.41
2:C:620:THR:OG1	2:C:622:ILE:HB	2.20	0.41
1:A:377:PRO:HG3	1:A:431:GLN:NE2	2.34	0.41
1:A:1116:HIS:O	1:A:1120:LYS:HG2	2.20	0.41
2:C:204:ASP:O	2:C:208:PRO:HD2	2.20	0.41
2:C:437:ALA:HA	2:C:513:TRP:CZ3	2.54	0.41
2:C:551:GLN:OE1	2:C:551:GLN:N	2.54	0.41
1:A:892:LEU:O	1:A:896:LEU:HD23	2.21	0.41
1:A:958:LEU:HD23	1:A:958:LEU:HA	1.91	0.41
1:A:1063:ILE:H	1:A:1063:ILE:HG12	1.63	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:646:LYS:HE3	2:C:659:PHE:HE1	1.86	0.41
3:E:45:CYS:HB2	3:E:54:ILE:HG12	2.03	0.41
1:A:371:PHE:CZ	1:A:375:VAL:HG21	2.55	0.41
1:A:458:LEU:O	1:A:462:VAL:HG23	2.20	0.41
1:A:520:LEU:O	1:A:520:LEU:HD23	2.20	0.41
2:C:704:GLU:O	2:C:707:ILE:HG22	2.20	0.41
1:A:177:LEU:CD2	1:A:202:LEU:HD21	2.51	0.41
1:A:371:PHE:O	1:A:375:VAL:HG22	2.20	0.41
1:A:406:ARG:HG3	1:A:464:VAL:HG12	2.03	0.41
1:A:706:MET:H	2:C:222:GLN:CD	2.25	0.41
2:C:36:LEU:HG	2:C:60:ASN:HD21	1.86	0.41
2:C:338:PRO:HG2	2:C:681:GLN:HB2	2.03	0.41
2:C:378:LEU:HD23	2:C:422:MET:HB2	2.03	0.41
2:C:628:VAL:O	2:C:632:GLN:HG3	2.21	0.41
2:C:704:GLU:HA	2:C:707:ILE:CG2	2.49	0.41
1:A:747:LEU:HD23	1:A:747:LEU:HA	1.89	0.41
1:A:1020:LEU:H	1:A:1020:LEU:HG	1.38	0.41
1:A:1149:LEU:HD13	1:A:1180:VAL:HG22	2.03	0.41
1:A:1157:VAL:HG21	1:A:1169:GLN:HG3	2.03	0.41
2:C:123:LEU:O	2:C:127:ASP:HB2	2.20	0.41
1:A:204:MET:H	1:A:204:MET:HG2	1.72	0.40
1:A:855:LEU:HD13	1:A:855:LEU:HA	1.72	0.40
1:A:975:ILE:HD13	1:A:975:ILE:HA	1.89	0.40
2:C:233:TYR:CD1	2:C:233:TYR:C	2.94	0.40
1:A:99:LYS:HA	1:A:99:LYS:HD2	1.61	0.40
1:A:298:LEU:HD12	1:A:298:LEU:HA	1.95	0.40
1:A:713:ILE:HA	1:A:716:LEU:HD12	2.02	0.40
1:A:1008:ILE:HA	1:A:1011:PHE:HD1	1.87	0.40
2:C:451:GLU:HG2	2:C:452:LYS:HD3	2.03	0.40
2:C:473:MET:HA	2:C:476:ASP:OD2	2.21	0.40
1:A:55:LYS:HB2	1:A:55:LYS:HE2	1.73	0.40
1:A:168:LEU:HB2	1:A:169:LEU:HD12	2.03	0.40
1:A:477:VAL:HG21	1:A:516:HIS:HB3	2.03	0.40
1:A:1025:VAL:O	1:A:1028:VAL:HG12	2.21	0.40
2:C:158:ARG:HB3	2:C:158:ARG:HH11	1.86	0.40
2:C:254:LYS:H	2:C:254:LYS:HG3	1.53	0.40
2:C:482:THR:HA	2:C:485:ASP:OD2	2.22	0.40
1:A:678:ILE:O	1:A:682:SER:HB3	2.21	0.40
1:A:858:LYS:H	1:A:858:LYS:HG2	1.48	0.40
2:C:521:LYS:HB3	2:C:521:LYS:HE3	1.38	0.40
3:E:27:TRP:HD1	3:E:28:ASN:N	2.19	0.40

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:E:85:SER:HA	3:E:88:LEU:HD12	2.02	0.40
1:A:27:THR:CG2	1:A:67:LEU:HB3	2.51	0.40
1:A:51:LYS:HD2	1:A:51:LYS:O	2.21	0.40
1:A:114:ILE:H	1:A:114:ILE:HG12	1.73	0.40
1:A:436:VAL:HG21	1:A:472:HIS:ND1	2.36	0.40
1:A:784:TYR:CD2	1:A:834:ILE:HG12	2.56	0.40
1:A:849:ILE:H	1:A:849:ILE:HG12	1.71	0.40
2:C:119:ILE:HD13	2:C:119:ILE:HA	1.95	0.40
2:C:430:ARG:NH1	2:C:694:LYS:HD2	2.36	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	1142/1230 (93%)	1006 (88%)	125 (11%)	11 (1%)	15	52
2	C	713/768 (93%)	634 (89%)	73 (10%)	6 (1%)	19	56
3	E	87/108 (81%)	70 (80%)	16 (18%)	1 (1%)	14	51
All	All	1942/2106 (92%)	1710 (88%)	214 (11%)	18 (1%)	21	54

All (18) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	552	PRO
1	A	1018	PRO
2	C	228	ASN
1	A	222	ASP
1	A	300	TYR
1	A	749	GLY
1	A	1192	SER
2	C	202	GLU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	18	SER
1	A	386	ARG
1	A	283	PRO
2	C	255	SER
2	C	544	SER
3	E	38	VAL
1	A	468	ALA
1	A	73	GLY
2	C	520	PRO
2	C	525	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	1025/1098 (93%)	862 (84%)	163 (16%)	2 16
2	C	650/693 (94%)	582 (90%)	68 (10%)	7 30
3	E	78/90 (87%)	77 (99%)	1 (1%)	69 83
All	All	1753/1881 (93%)	1521 (87%)	232 (13%)	7 23

All (232) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	6	TYR
1	A	9	SER
1	A	12	LEU
1	A	14	LYS
1	A	17	SER
1	A	18	SER
1	A	20	LYS
1	A	31	MET
1	A	37	ASP
1	A	40	LYS
1	A	41	LEU
1	A	42	ASP

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	44	ASP
1	A	47	ARG
1	A	48	LYS
1	A	52	MET
1	A	67	LEU
1	A	70	LYS
1	A	77	SER
1	A	78	LYS
1	A	85	GLU
1	A	87	ILE
1	A	89	ASP
1	A	95	MET
1	A	96	LEU
1	A	98	ASP
1	A	99	LYS
1	A	111	LYS
1	A	114	ILE
1	A	133	LYS
1	A	156	ASP
1	A	164	ARG
1	A	193	LYS
1	A	204	MET
1	A	209	ASP
1	A	211	ILE
1	A	212	GLU
1	A	218	LEU
1	A	221	ASN
1	A	230	TYR
1	A	268	ARG
1	A	270	TYR
1	A	275	PHE
1	A	279	VAL
1	A	280	ARG
1	A	281	ARG
1	A	282	CYS
1	A	284	LYS
1	A	285	GLU
1	A	286	VAL
1	A	287	TYR
1	A	293	ILE
1	A	299	LYS
1	A	300	TYR

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	348	LYS
1	A	350	ARG
1	A	351	ARG
1	A	355	LYS
1	A	356	CYS
1	A	357	LEU
1	A	358	ASP
1	A	367	MET
1	A	372	TYR
1	A	384	LYS
1	A	398	TYR
1	A	399	LEU
1	A	400	SER
1	A	403	LYS
1	A	404	GLN
1	A	405	THR
1	A	456	ASN
1	A	461	LEU
1	A	469	LEU
1	A	470	THR
1	A	491	SER
1	A	500	CYS
1	A	502	TYR
1	A	514	HIS
1	A	518	GLN
1	A	553	LEU
1	A	571	CYS
1	A	580	ASP
1	A	582	ASP
1	A	602	ASP
1	A	615	PHE
1	A	634	LEU
1	A	640	LEU
1	A	641	LYS
1	A	644	LEU
1	A	645	ARG
1	A	678	ILE
1	A	679	LYS
1	A	680	ASN
1	A	683	ASP
1	A	684	SER
1	A	689	MET

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	721	LYS
1	A	725	SER
1	A	748	GLN
1	A	753	SER
1	A	756	LEU
1	A	760	GLN
1	A	762	LEU
1	A	764	VAL
1	A	767	THR
1	A	769	ASN
1	A	770	LEU
1	A	772	TYR
1	A	773	MET
1	A	774	ASP
1	A	775	LEU
1	A	776	LEU
1	A	777	ARG
1	A	783	VAL
1	A	786	GLN
1	A	791	THR
1	A	792	HIS
1	A	836	LEU
1	A	837	LEU
1	A	841	SER
1	A	842	LEU
1	A	850	ASP
1	A	851	LEU
1	A	855	LEU
1	A	856	GLU
1	A	857	LEU
1	A	858	LYS
1	A	865	PHE
1	A	866	SER
1	A	894	PHE
1	A	938	LYS
1	A	969	ARG
1	A	996	HIS
1	A	1013	LYS
1	A	1020	LEU
1	A	1022	VAL
1	A	1040	LEU
1	A	1042	ARG

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	1044	LEU
1	A	1045	LEU
1	A	1046	ASP
1	A	1047	THR
1	A	1052	LEU
1	A	1060	LYS
1	A	1077	ASP
1	A	1079	LEU
1	A	1080	ASP
1	A	1081	ILE
1	A	1083	LYS
1	A	1092	LEU
1	A	1094	ASP
1	A	1114	LYS
1	A	1138	VAL
1	A	1140	GLN
1	A	1141	ARG
1	A	1142	LEU
1	A	1143	ASP
1	A	1146	VAL
1	A	1150	ARG
1	A	1155	THR
1	A	1156	LYS
1	A	1177	MET
1	A	1199	GLN
2	C	57	LEU
2	C	58	TYR
2	C	59	ARG
2	C	72	LYS
2	C	130	TYR
2	C	160	HIS
2	C	200	VAL
2	C	204	ASP
2	C	206	GLU
2	C	210	LEU
2	C	211	GLU
2	C	212	MET
2	C	213	SER
2	C	219	MET
2	C	220	GLU
2	C	249	MET
2	C	254	LYS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	C	258	GLU
2	C	273	MET
2	C	279	MET
2	C	298	CYS
2	C	315	GLU
2	C	339	VAL
2	C	345	LEU
2	C	349	LYS
2	C	351	ARG
2	C	354	ARG
2	C	355	PHE
2	C	356	LEU
2	C	357	LEU
2	C	358	GLU
2	C	373	ASP
2	C	381	ASN
2	C	396	LEU
2	C	438	ARG
2	C	439	ARG
2	C	459	LYS
2	C	462	CYS
2	C	465	GLN
2	C	466	PHE
2	C	469	LYS
2	C	470	LEU
2	C	473	MET
2	C	477	MET
2	C	519	THR
2	C	521	LYS
2	C	522	CYS
2	C	523	ASN
2	C	538	PHE
2	C	542	LYS
2	C	543	HIS
2	C	546	ARG
2	C	547	GLN
2	C	548	LEU
2	C	553	HIS
2	C	593	GLN
2	C	597	PHE
2	C	665	PHE
2	C	681	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	C	685	ASP
2	C	690	GLU
2	C	697	ASP
2	C	698	ASP
2	C	715	LYS
2	C	734	PHE
2	C	744	ARG
2	C	751	ARG
2	C	760	ASP
3	E	50	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (30) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	66	ASN
1	A	201	HIS
1	A	240	GLN
1	A	442	GLN
1	A	452	GLN
1	A	456	ASN
1	A	485	ASN
1	A	511	GLN
1	A	544	GLN
1	A	555	GLN
1	A	663	GLN
1	A	998	GLN
1	A	1006	ASN
1	A	1036	ASN
1	A	1205	ASN
2	C	69	HIS
2	C	84	HIS
2	C	135	ASN
2	C	188	GLN
2	C	272	HIS
2	C	381	ASN
2	C	423	GLN
2	C	523	ASN
2	C	593	GLN
2	C	618	GLN
2	C	664	GLN
2	C	718	GLN
3	E	59	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	E	76	ASN
3	E	98	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 monosaccharides in this entry.

5.6 Ligand geometry

Of 3 ligands modelled in this entry, 3 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.

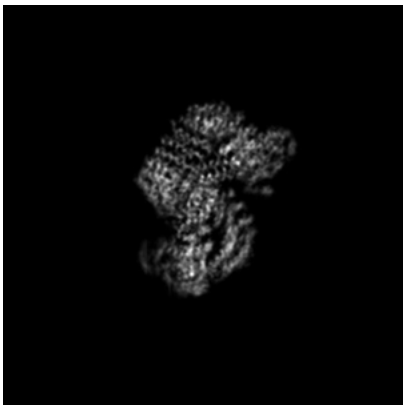
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-34473. These allow visual inspection of the internal detail of the map and identification of artifacts.

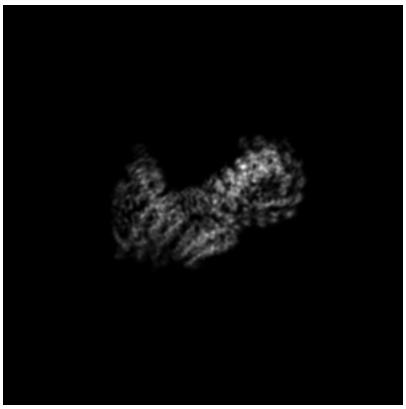
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

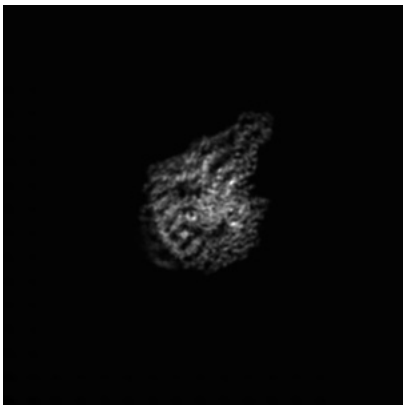
6.1.1 Primary map



X

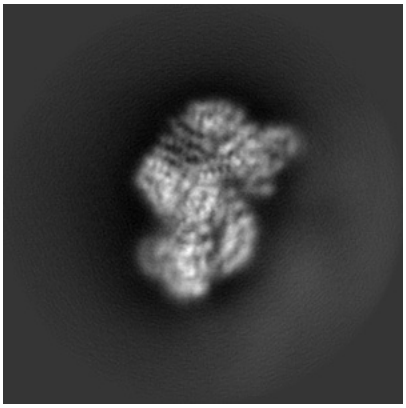


Y

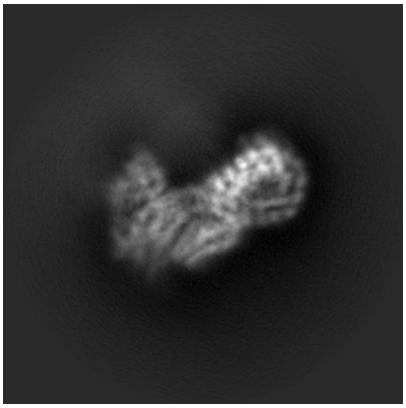


Z

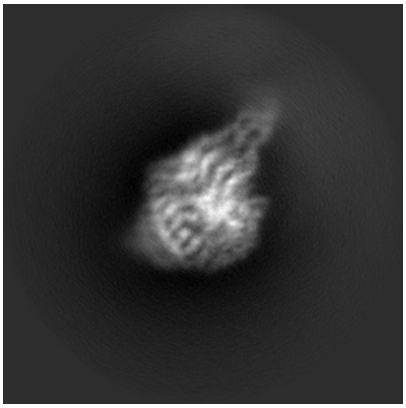
6.1.2 Raw map



X



Y



Z

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

6.2 Central slices (i)

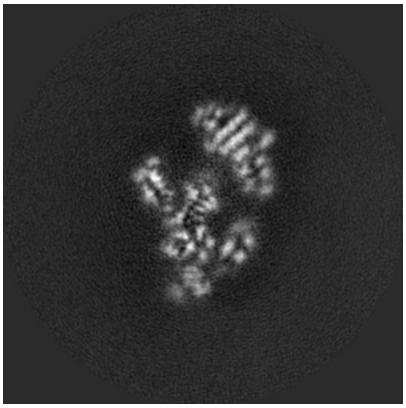
6.2.1 Primary map

X Index: 128

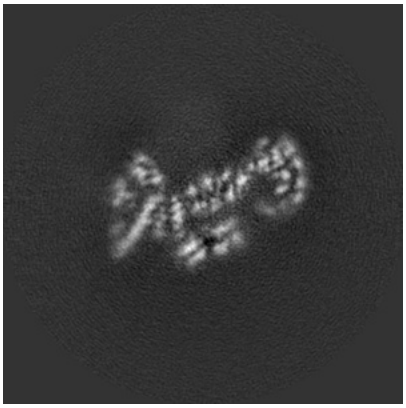
Y Index: 128

Z Index: 128

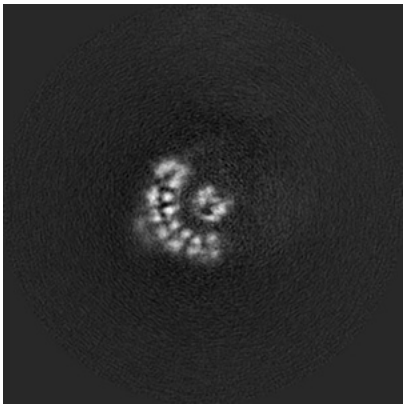
6.2.2 Raw map



X Index: 128



Y Index: 128



Z Index: 128

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

6.3 Largest variance slices (i)

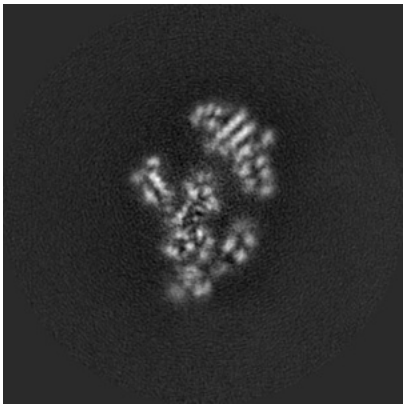
6.3.1 Primary map

X Index: 147

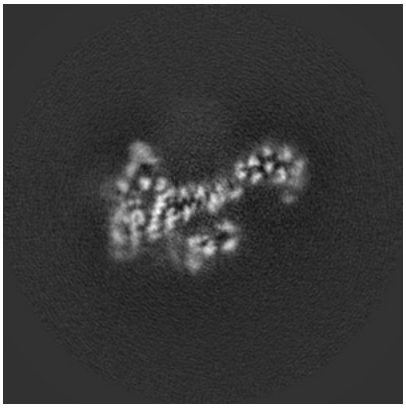
Y Index: 119

Z Index: 146

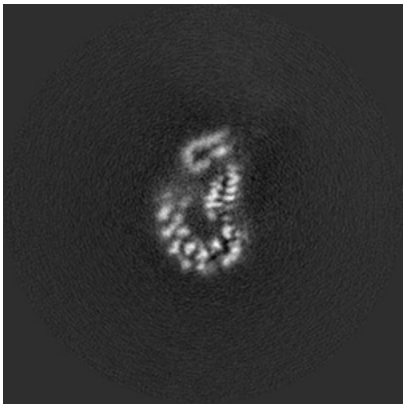
6.3.2 Raw map



X Index: 129



Y Index: 120

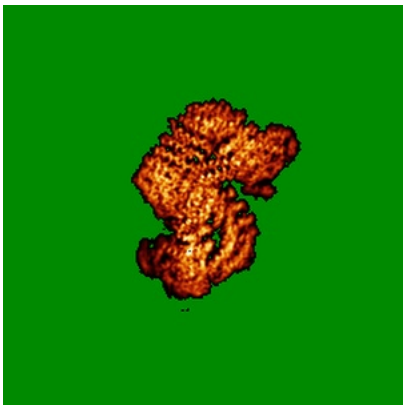


Z Index: 146

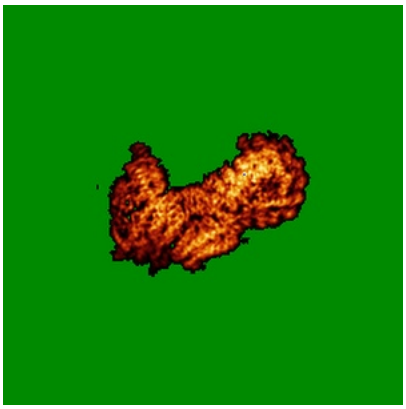
The images above show the largest variance slices of the map in three orthogonal directions.

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

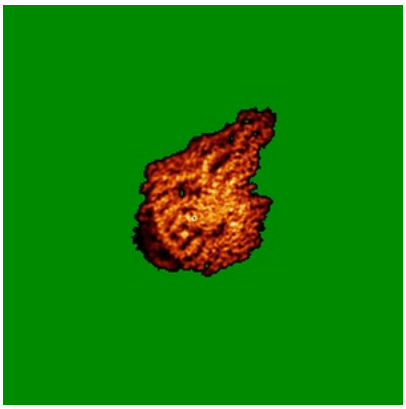
6.4.1 Primary map



X

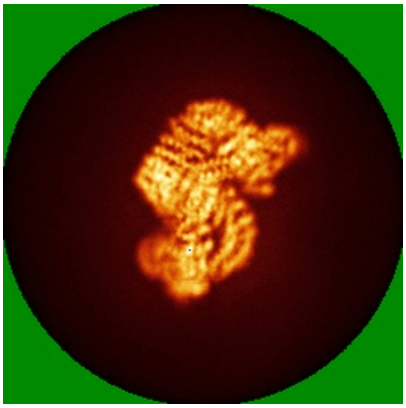


Y



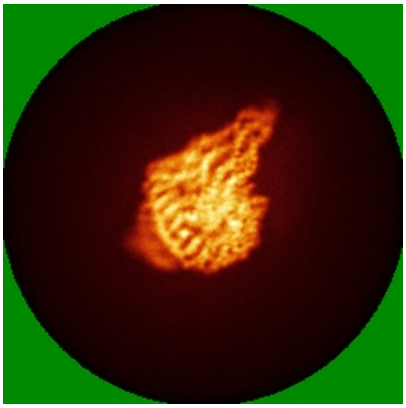
Z

6.4.2 Raw map



X

Y

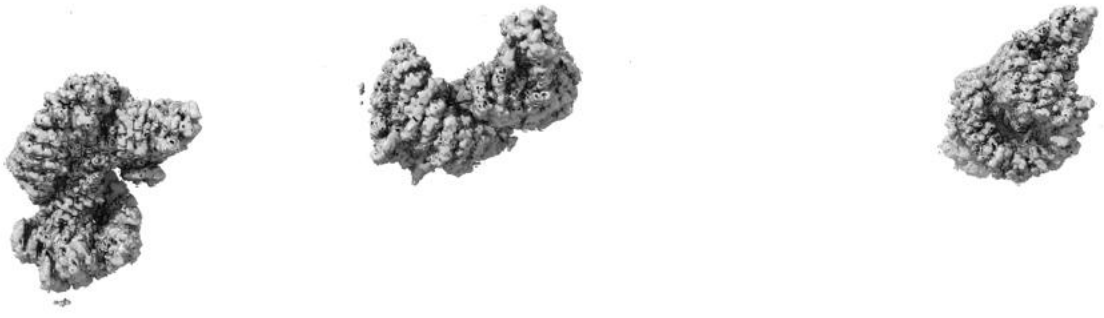


Z

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)

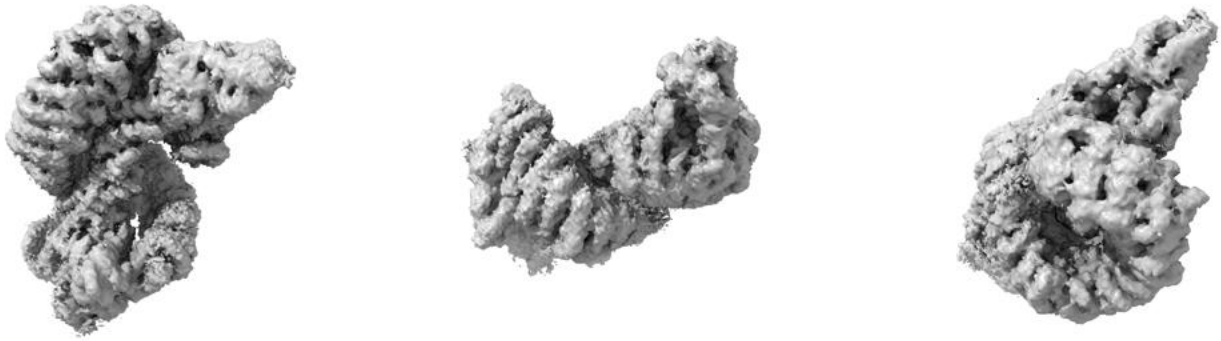
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.001. 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.

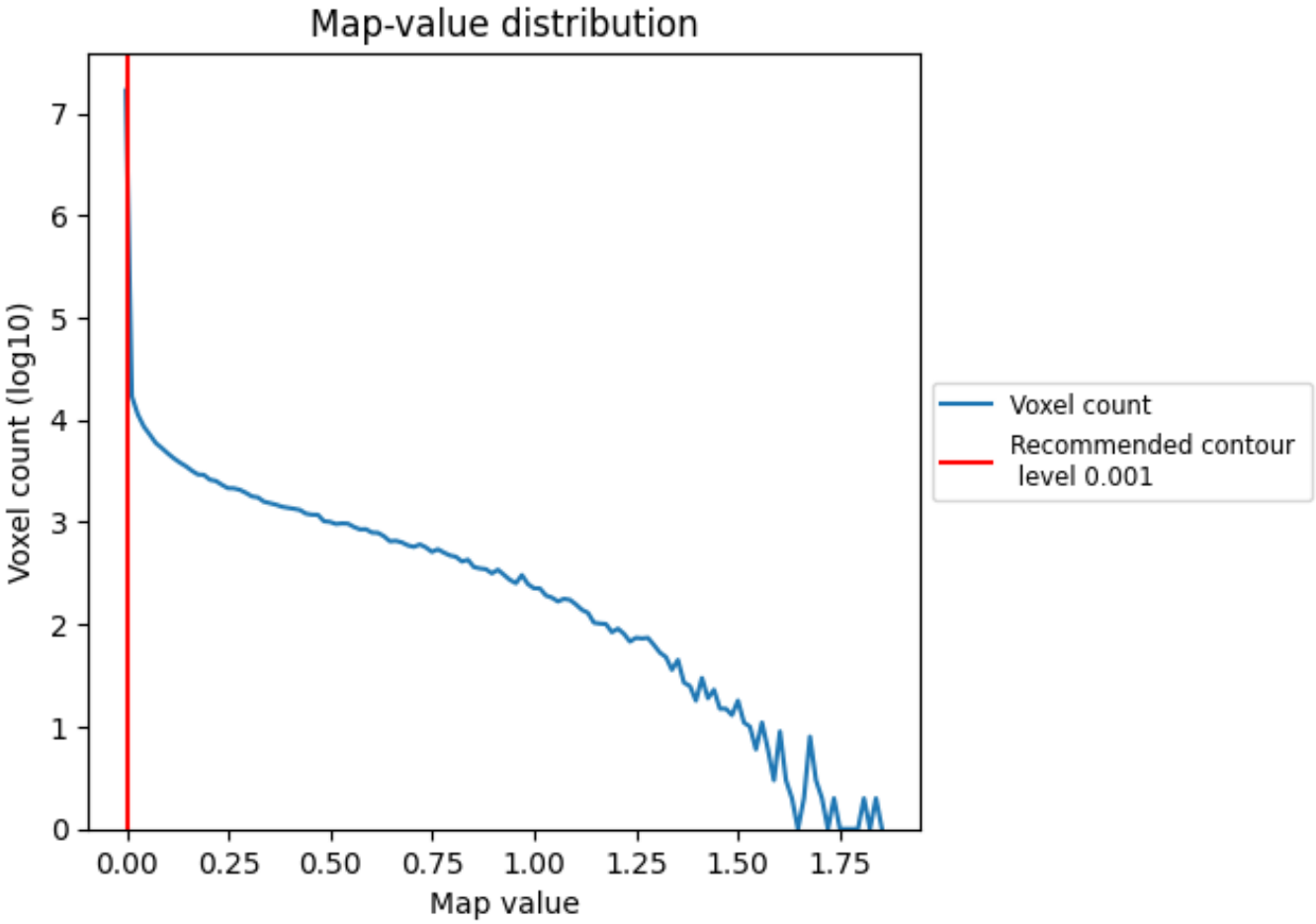
6.6 Mask visualisation (i)

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

7 Map analysis

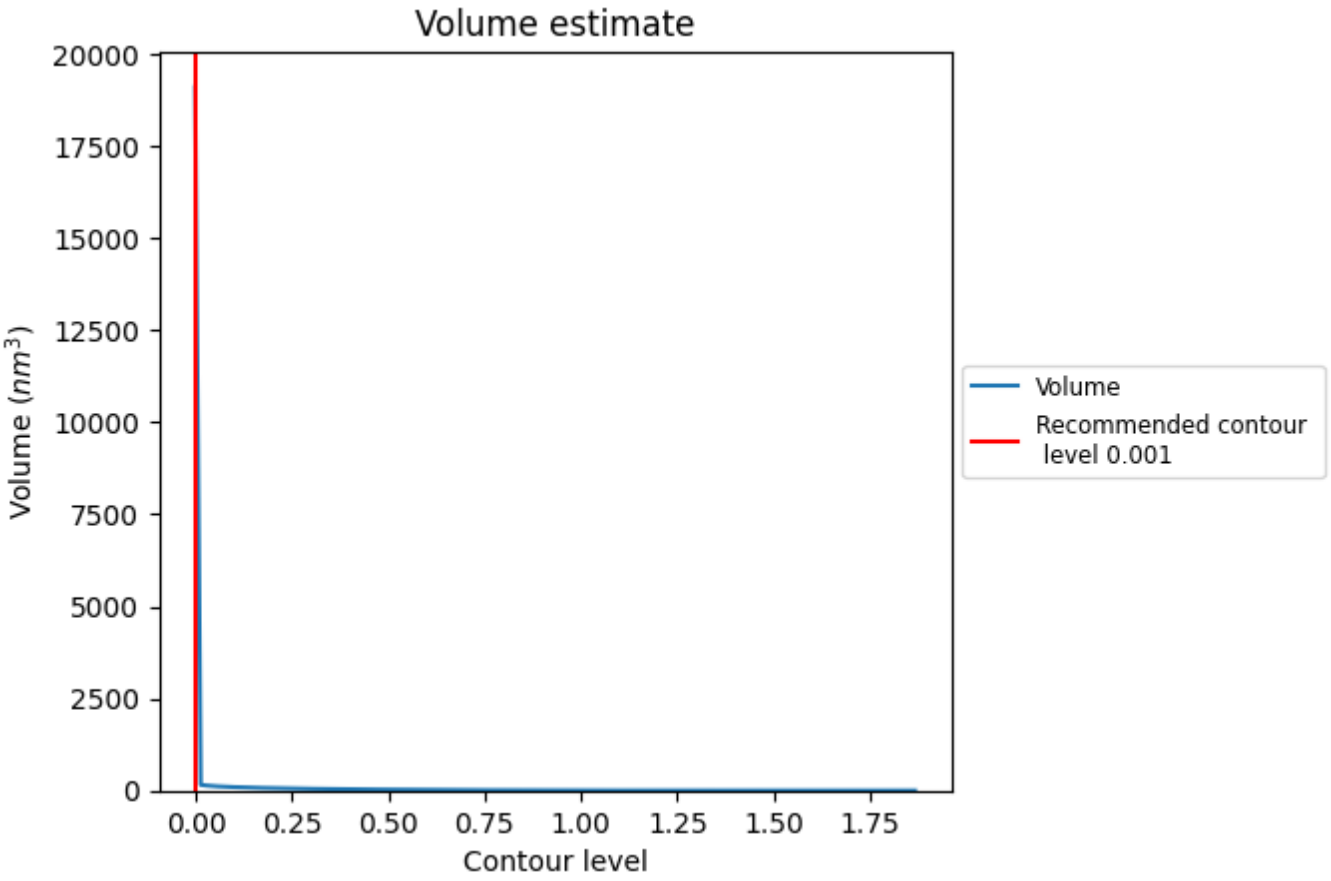
This section contains the results of statistical analysis of the map.

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.

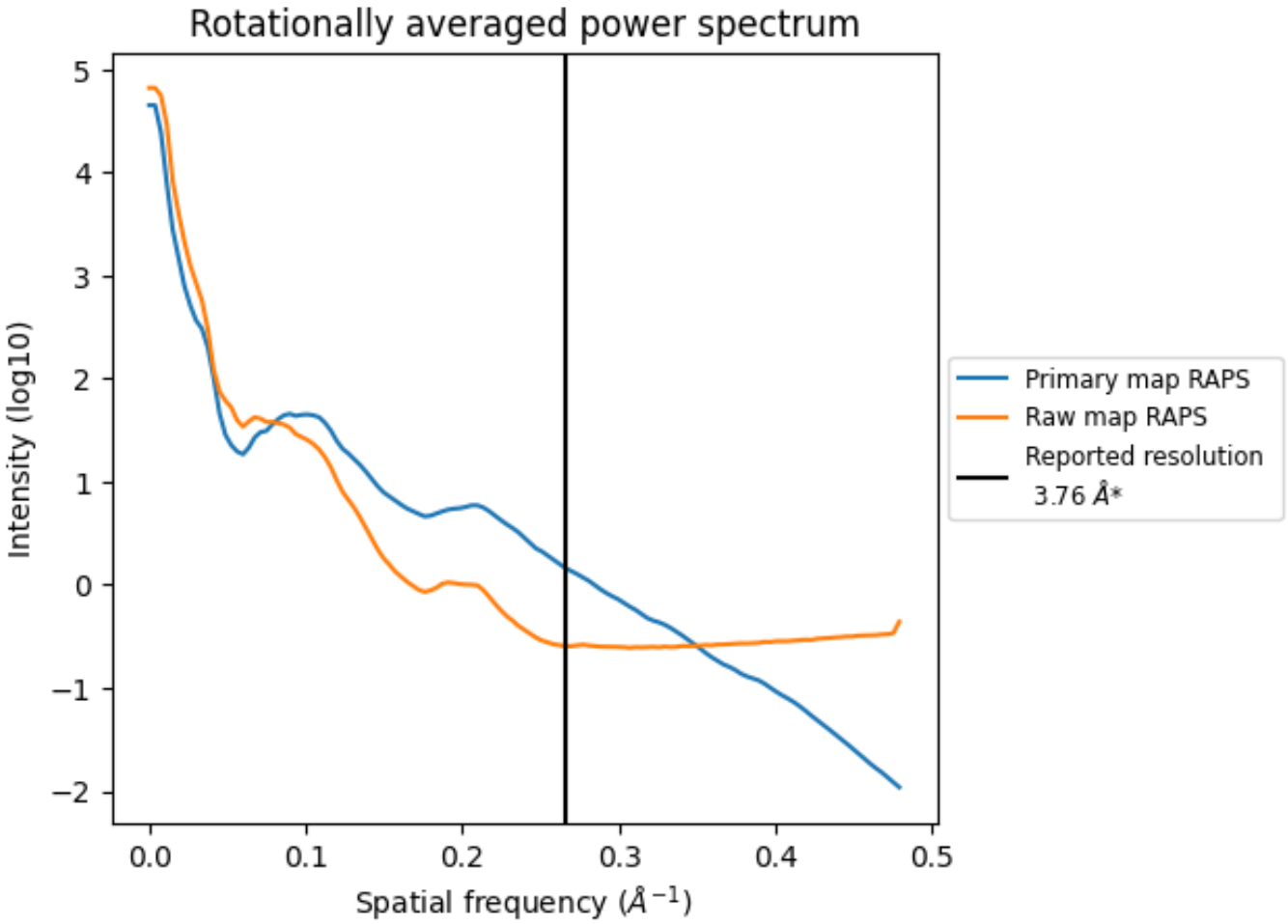
7.2 Volume estimate



The volume at the recommended contour level is 15515 nm^3; this corresponds to an approximate mass of 14015 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)

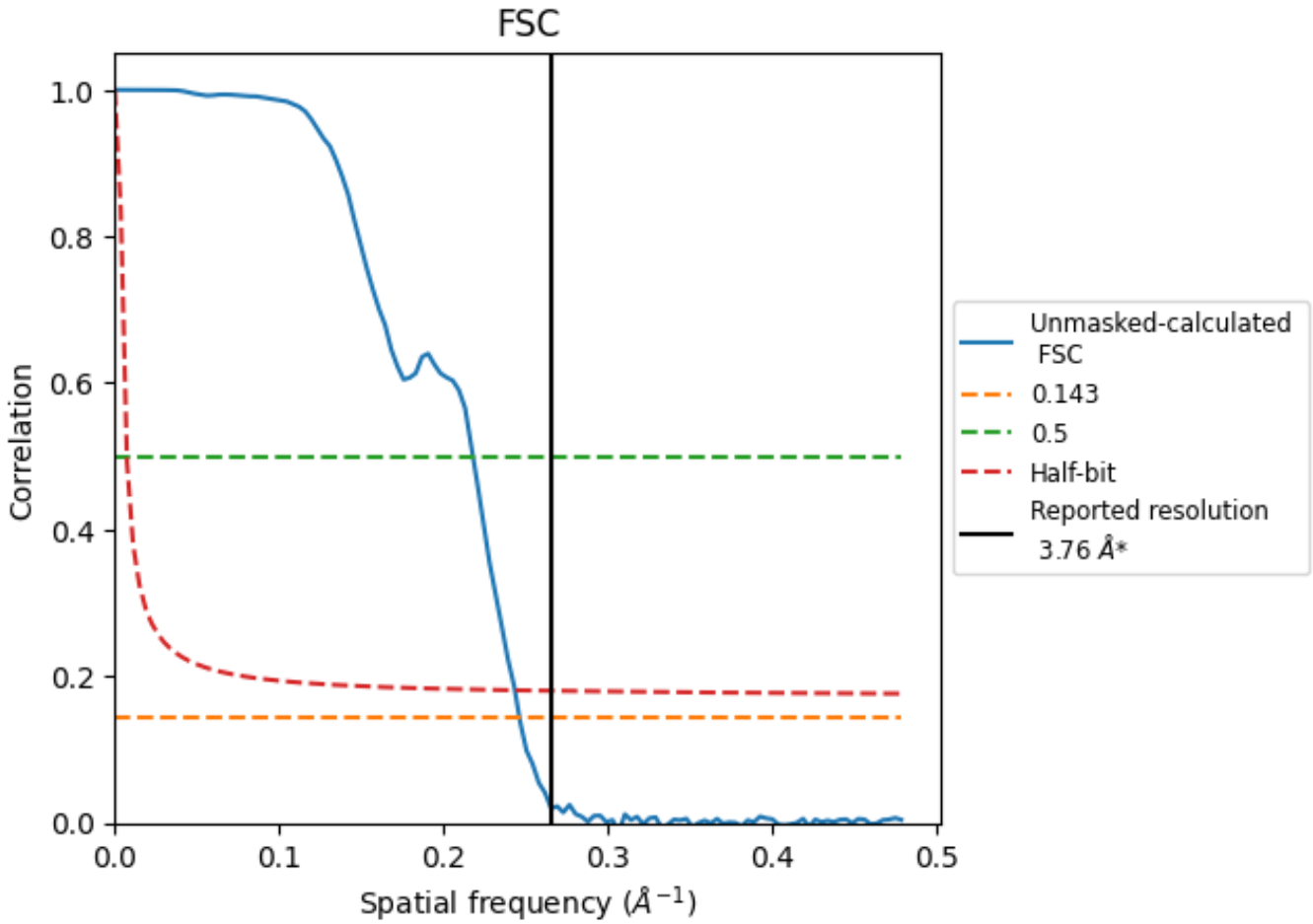


*Reported resolution corresponds to spatial frequency of 0.266 Å^{-1}

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 0.266 Å^{-1}

8.2 Resolution estimates (i)

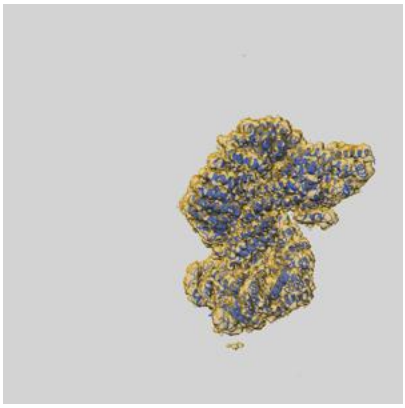
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.76	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.06	4.59	4.11

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

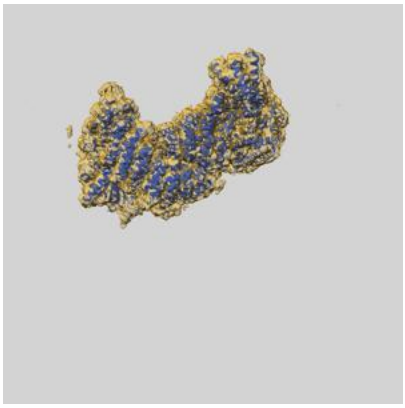
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-34473 and PDB model 8H3Q. Per-residue inclusion information can be found in section 3 on page 4.

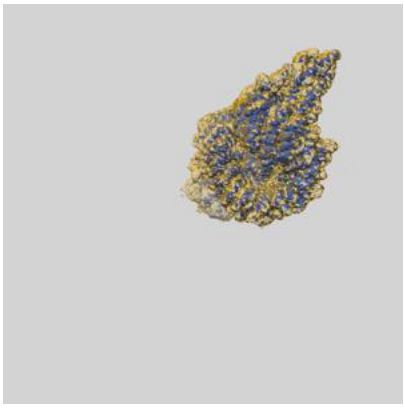
9.1 Map-model overlay



X



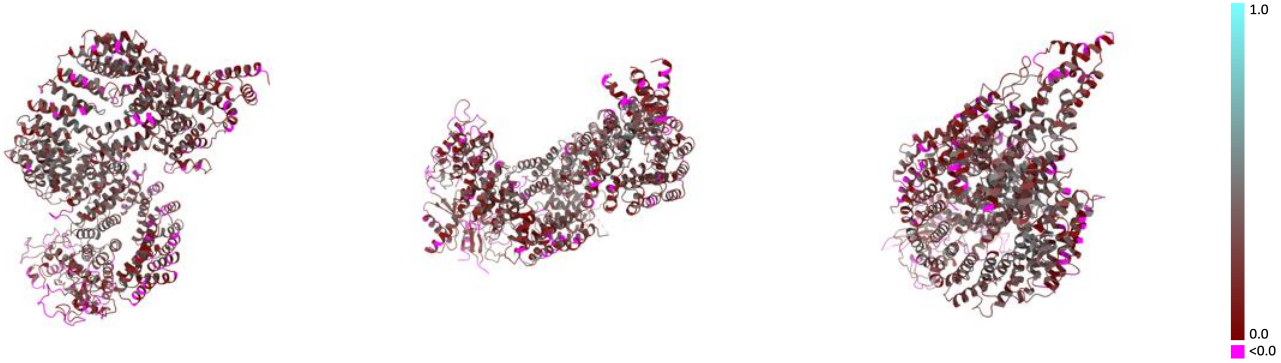
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.001 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.

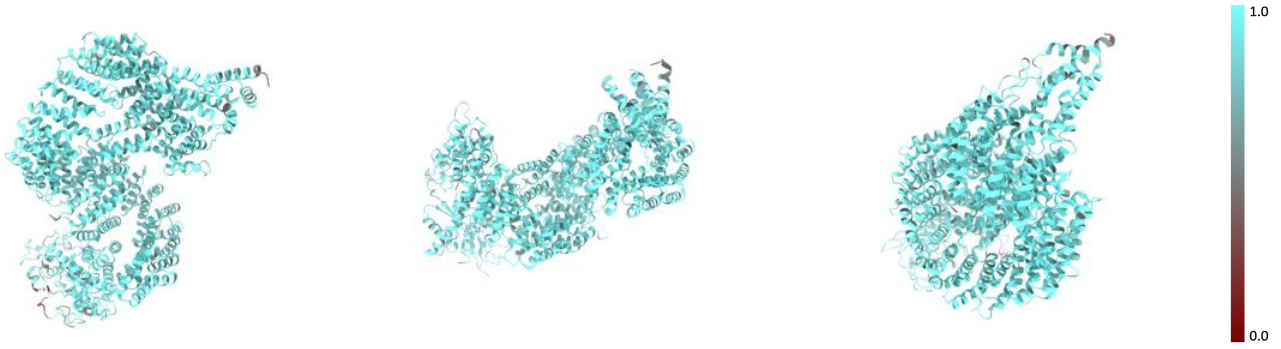
9.2 Q-score mapped to coordinate model



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.

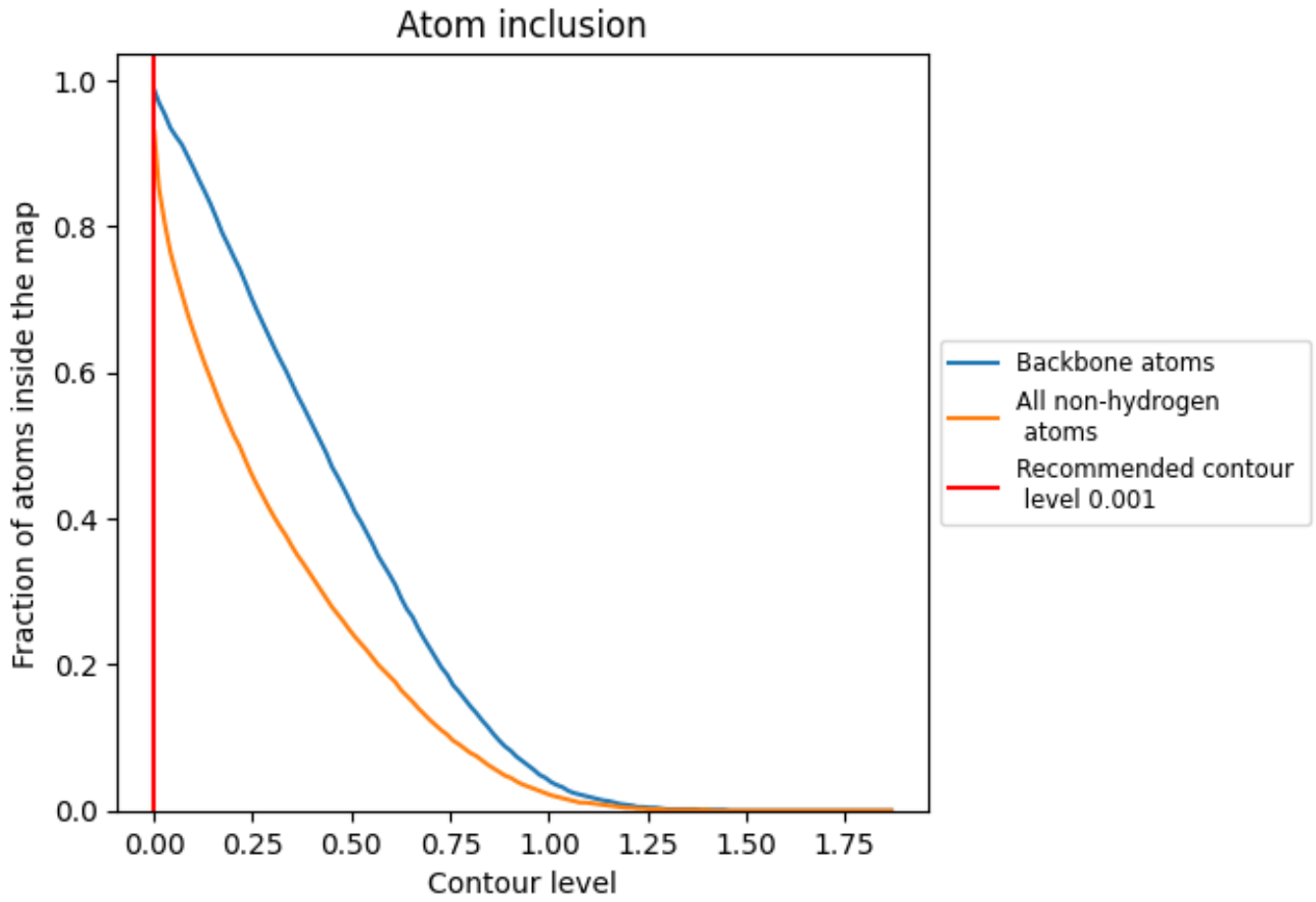
9.3 Atom inclusion mapped to coordinate model



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 (0.001).

9.4 Atom inclusion (i)



At the recommended contour level, 99% of all backbone atoms, 93% 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 (0.001) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9290	0.2390
A	0.9480	0.2500
C	0.9180	0.2370
E	0.7920	0.1320