Full wwPDB EM Validation Report

Dec 10, 2022 – 09:40 am GMT

PDB ID	:	5FN3
EMDB ID	:	EMD-3238
Title	:	Cryo-EM structure of gamma secretase in class 1 of the apo- state ensemble
Authors	:	Bai, X.C.; Rajendra, E.; Yang, G.H.; Shi, Y.G.; Scheres, S.H.W.
Deposited on	:	2015-11-10
Resolution	:	4.10 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 (i) 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 (i)) were used in the production of this report:

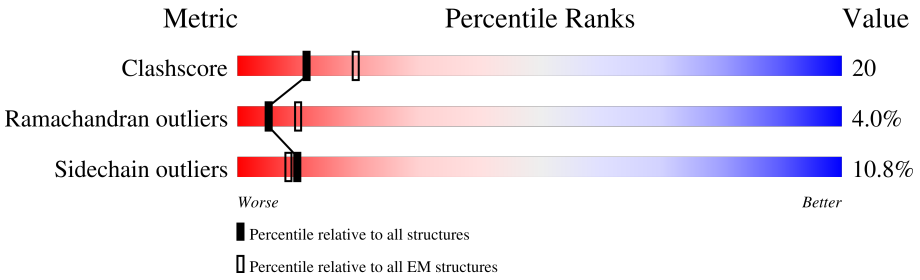
EMDB validation analysis	:	0.0.1.dev43
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

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 4.10 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	709	69% 21% 6%
2	B	467	12% 28% 25% 7% 39%
3	C	265	12% 62% 27% 8%
4	D	101	8% 78% 19%
5	G	24	63% 38% 33% 25%

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 10291 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 Nicastrin.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	665	5222	3312	888	1001	21	0	0

- Molecule 2 is a protein called Presenilin-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	286	2234	1523	335	363	13	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	256	THR	TYR	conflict	UNP P49768

- Molecule 3 is a protein called Gamma-secretase subunit APH-1A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	243	1868	1252	299	313	4	0	0

- Molecule 4 is a protein called Gamma-secretase subunit PEN-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	100	847	579	133	134	1	0	0

- Molecule 5 is a protein called POLY ALA CHAIN.

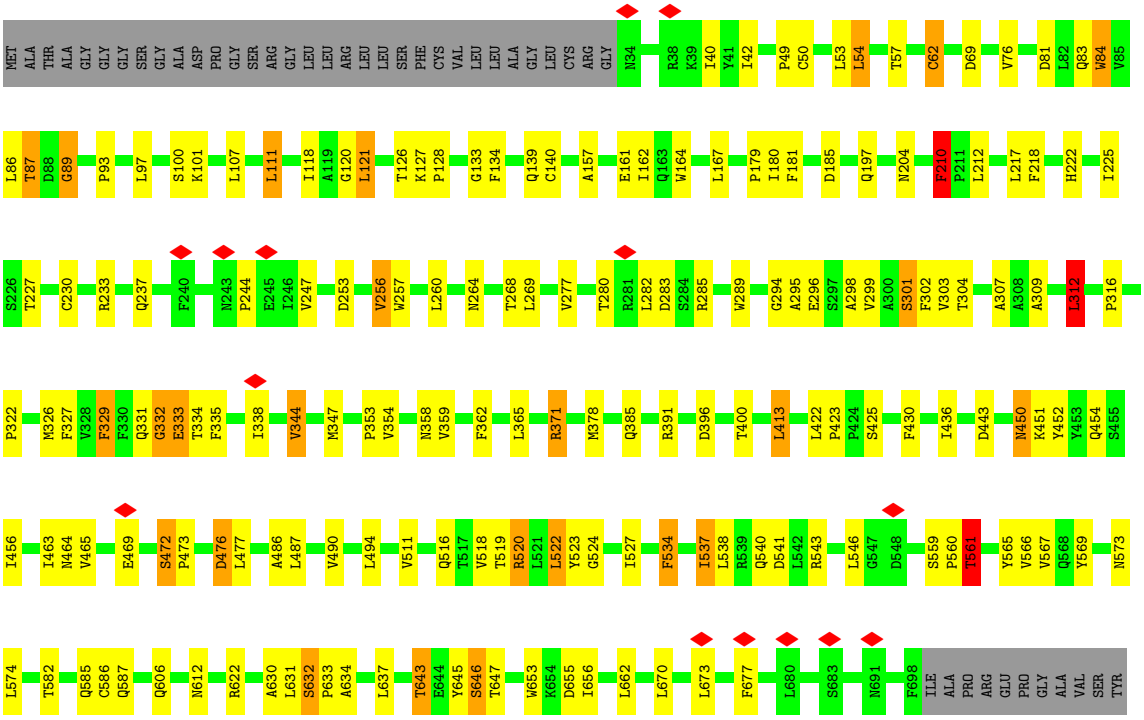
Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
5	G	24	120	72	24	24	0	0

3 Residue-property plots (i)

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

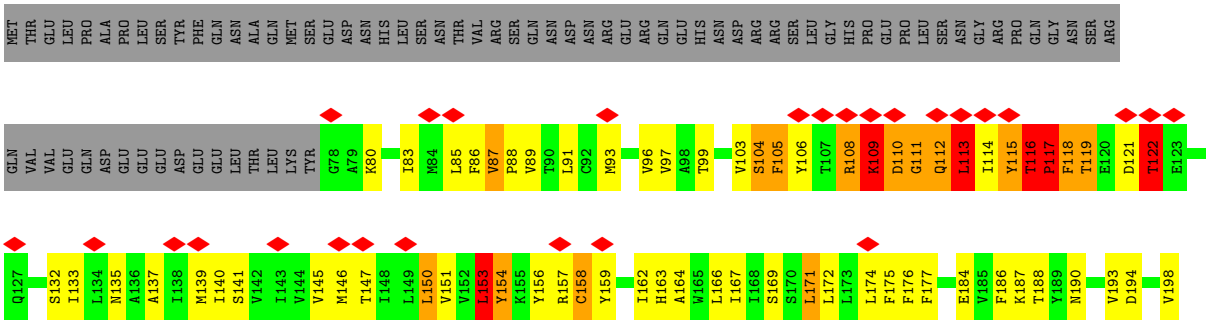
• Molecule 1: Nicastrin

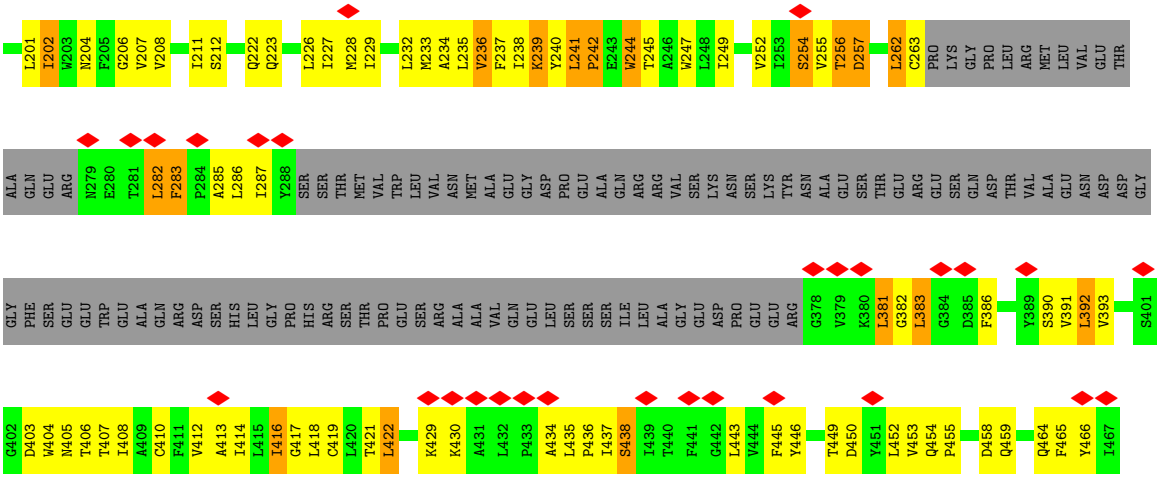
Chain A:



• Molecule 2: Presenilin-1

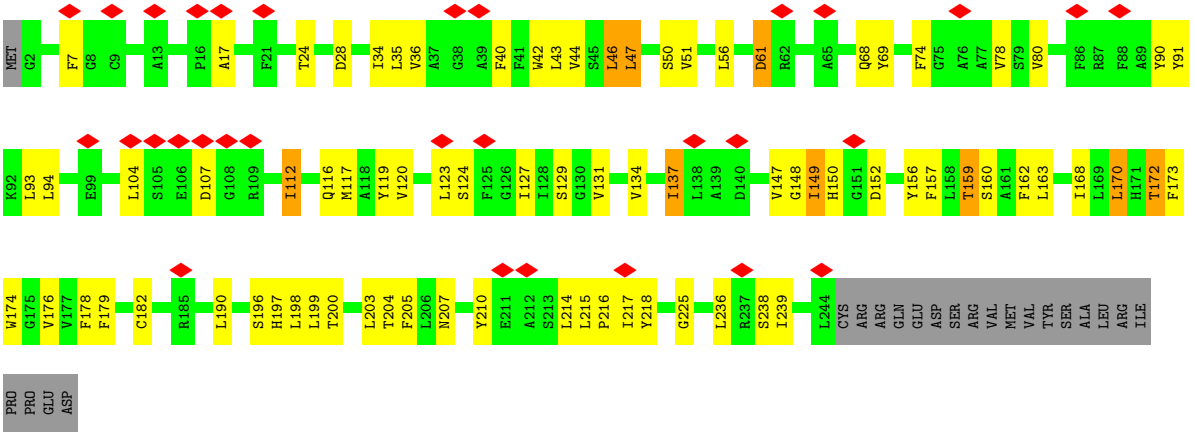
Chain B:





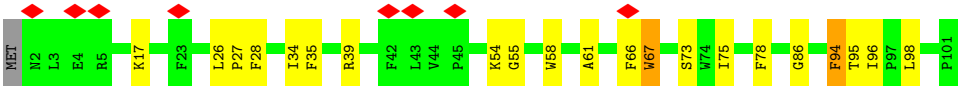
• Molecule 3: Gamma-secretase subunit APH-1A

Chain C:



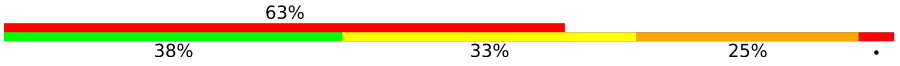
• Molecule 4: Gamma-secretase subunit PEN-2

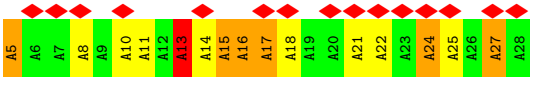
Chain D:



• Molecule 5: POLY ALA CHAIN

Chain G:





4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	63873	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	Not provided	
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	38	Depositor
Minimum defocus (nm)	700	Depositor
Maximum defocus (nm)	3200	Depositor
Magnification	35714	Depositor
Image detector	GATAN K2 QUANTUM (4k x 4k)	Depositor
Maximum map value	0.116	Depositor
Minimum map value	-0.046	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.006	Depositor
Recommended contour level	0.04	Depositor
Map size (Å)	252.0, 252.0, 252.0	wwPDB
Map dimensions	180, 180, 180	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.4, 1.4, 1.4	Depositor

5 Model quality

5.1 Standard geometry

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|>5$	RMSZ	#$\|Z\|>5$
1	A	0.52	1/5345 (0.0%)	0.81	2/7284 (0.0%)
2	B	0.66	1/2291 (0.0%)	0.98	5/3130 (0.2%)
3	C	0.65	0/1920	0.95	2/2619 (0.1%)
4	D	0.66	0/880	0.82	0/1201
5	G	0.20	0/119	0.34	0/165
All	All	0.59	2/10555 (0.0%)	0.87	9/14399 (0.1%)

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	A	0	5
2	B	0	15
5	G	0	8
All	All	0	28

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	257	TRP	CB-CG	-5.53	1.40	1.50
2	B	244	TRP	CB-CG	5.17	1.59	1.50

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	117	PRO	CA-N-CD	-7.03	101.66	111.50
3	C	47	LEU	CA-CB-CG	6.85	131.04	115.30
3	C	69	TYR	CA-CB-CG	6.14	125.07	113.40
2	B	116	THR	C-N-CD	5.95	140.89	128.40
1	A	312	LEU	CA-CB-CG	5.46	127.87	115.30
2	B	153	LEU	CA-CB-CG	5.30	127.48	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	241	LEU	C-N-CD	5.16	139.22	128.40
2	B	256	THR	CB-CA-C	-5.09	97.85	111.60
1	A	573	ASN	N-CA-CB	5.09	119.76	110.60

There are no chirality outliers.

All (28) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	256	VAL	Peptide
1	A	335	PHE	Peptide
1	A	57	THR	Peptide
1	A	62	CYS	Peptide
1	A	622	ARG	Peptide
2	B	108	ARG	Peptide
2	B	109	LYS	Peptide
2	B	110	ASP	Peptide
2	B	111	GLY	Peptide
2	B	112	GLN	Peptide
2	B	113	LEU	Peptide
2	B	115	TYR	Peptide
2	B	116	THR	Peptide
2	B	117	PRO	Peptide
2	B	118	PHE	Peptide
2	B	156	TYR	Peptide
2	B	157	ARG	Peptide
2	B	242	PRO	Peptide
2	B	283	PHE	Peptide
2	B	86	PHE	Peptide
5	G	13	ALA	Peptide
5	G	14	ALA	Peptide
5	G	15	ALA	Peptide
5	G	16	ALA	Peptide
5	G	17	ALA	Peptide
5	G	24	ALA	Peptide
5	G	27	ALA	Peptide
5	G	5	ALA	Peptide

5.2 Too-close contacts (i)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen

atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	5222	0	5120	91	0
2	B	2234	0	2344	261	0
3	C	1868	0	1907	54	0
4	D	847	0	836	11	0
5	G	120	0	119	59	0
All	All	10291	0	10326	412	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 20.

All (412) 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)
5:G:15:ALA:C	5:G:17:ALA:HB3	1.31	1.42
2:B:112:GLN:CD	5:G:15:ALA:HB2	1.61	1.20
5:G:15:ALA:O	5:G:17:ALA:CB	1.89	1.19
2:B:146:MET:CE	5:G:25:ALA:H	1.56	1.18
2:B:146:MET:HE1	5:G:25:ALA:N	1.58	1.17
5:G:15:ALA:O	5:G:17:ALA:HB3	0.98	1.16
5:G:15:ALA:C	5:G:17:ALA:CB	2.17	1.12
2:B:139:MET:CE	5:G:22:ALA:HB1	1.81	1.10
2:B:108:ARG:HG3	2:B:109:LYS:HB3	1.20	1.09
2:B:109:LYS:HG3	2:B:110:ASP:HB2	1.39	1.03
2:B:108:ARG:O	2:B:239:LYS:NZ	1.90	1.03
2:B:139:MET:HE1	5:G:22:ALA:HB1	1.43	1.01
2:B:146:MET:CE	5:G:25:ALA:HB3	1.91	1.00
2:B:117:PRO:CD	2:B:135:ASN:HB2	1.90	1.00
2:B:117:PRO:HD3	2:B:135:ASN:HB2	1.47	0.97
5:G:11:ALA:O	5:G:16:ALA:HB2	1.64	0.97
2:B:146:MET:HE1	5:G:25:ALA:H	0.84	0.96
2:B:108:ARG:CG	2:B:109:LYS:HB3	1.97	0.93
5:G:17:ALA:HB3	5:G:18:ALA:HB2	1.47	0.93
2:B:118:PHE:HB2	2:B:135:ASN:HB3	1.49	0.93
2:B:116:THR:HB	2:B:118:PHE:CE2	2.05	0.92
2:B:242:PRO:HD2	2:B:245:THR:HB	1.52	0.92
5:G:17:ALA:HB3	5:G:18:ALA:CB	1.96	0.92
2:B:233:MET:HG2	2:B:237:PHE:HE2	1.34	0.91
2:B:108:ARG:HG3	2:B:109:LYS:CB	2.01	0.90
2:B:169:SER:OG	5:G:24:ALA:HB1	1.72	0.89

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:132:SER:HA	2:B:135:ASN:ND2	1.88	0.89
2:B:117:PRO:CG	2:B:135:ASN:HB2	2.04	0.87
2:B:113:LEU:HD23	2:B:113:LEU:H	1.39	0.87
2:B:106:TYR:HA	2:B:239:LYS:HD2	1.58	0.86
2:B:112:GLN:OE1	5:G:15:ALA:HB2	1.75	0.85
2:B:112:GLN:CG	5:G:15:ALA:HB2	2.06	0.85
2:B:109:LYS:HB2	2:B:110:ASP:CG	1.99	0.83
2:B:113:LEU:HD12	2:B:116:THR:HA	1.60	0.83
2:B:108:ARG:O	2:B:109:LYS:HG2	1.78	0.83
2:B:85:LEU:HD22	2:B:418:LEU:HD21	1.59	0.83
2:B:233:MET:HG2	2:B:237:PHE:CE2	2.13	0.83
2:B:392:LEU:HD22	2:B:414:ILE:HD11	1.60	0.82
2:B:106:TYR:HA	2:B:239:LYS:CD	2.10	0.81
2:B:169:SER:OG	5:G:24:ALA:CB	2.29	0.80
2:B:117:PRO:HA	2:B:118:PHE:HB2	1.63	0.80
2:B:117:PRO:HA	2:B:135:ASN:CB	2.12	0.79
2:B:116:THR:HG22	2:B:118:PHE:N	1.97	0.79
2:B:146:MET:CE	5:G:25:ALA:CB	2.59	0.79
2:B:113:LEU:HA	2:B:114:ILE:O	1.82	0.79
2:B:146:MET:HE3	5:G:25:ALA:HB3	1.65	0.79
2:B:232:LEU:O	2:B:236:VAL:HG23	1.83	0.78
2:B:114:ILE:CB	2:B:115:TYR:HA	2.14	0.77
3:C:17:ALA:HB2	3:C:168:ILE:HG21	1.66	0.77
2:B:177:PHE:CE2	5:G:21:ALA:HB2	2.21	0.76
2:B:113:LEU:HB3	2:B:116:THR:O	1.86	0.75
2:B:112:GLN:CG	5:G:15:ALA:CB	2.64	0.75
2:B:139:MET:CE	5:G:22:ALA:CB	2.62	0.74
2:B:132:SER:HA	2:B:135:ASN:HD21	1.53	0.74
2:B:163:HIS:O	2:B:167:ILE:N	2.19	0.73
2:B:113:LEU:CD1	2:B:116:THR:HG23	2.19	0.73
2:B:108:ARG:NE	2:B:109:LYS:HB3	2.03	0.73
2:B:117:PRO:HA	2:B:135:ASN:HB2	1.70	0.73
2:B:105:PHE:CG	2:B:239:LYS:HE2	2.23	0.72
2:B:174:LEU:HG	2:B:229:ILE:HD11	1.70	0.72
2:B:113:LEU:H	2:B:113:LEU:CD2	2.01	0.72
2:B:113:LEU:HD12	2:B:116:THR:HG23	1.71	0.72
2:B:117:PRO:CA	2:B:135:ASN:HB2	2.19	0.72
2:B:233:MET:HE3	2:B:237:PHE:HZ	1.54	0.72
2:B:113:LEU:CD1	2:B:116:THR:HA	2.19	0.71
2:B:233:MET:CE	2:B:237:PHE:HZ	2.04	0.71
2:B:105:PHE:C	2:B:239:LYS:HE2	2.11	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:256:VAL:HG21	1:A:567:VAL:HG12	1.72	0.71
2:B:237:PHE:HA	2:B:241:LEU:HD13	1.73	0.70
2:B:237:PHE:CA	2:B:241:LEU:HD13	2.21	0.70
2:B:240:TYR:HE2	5:G:15:ALA:HB1	1.55	0.70
2:B:116:THR:HG22	2:B:118:PHE:H	1.56	0.70
2:B:105:PHE:CZ	2:B:239:LYS:HE3	2.27	0.70
2:B:242:PRO:HD2	2:B:245:THR:CB	2.21	0.70
2:B:118:PHE:CB	2:B:135:ASN:HB3	2.21	0.69
2:B:105:PHE:CE2	2:B:239:LYS:HD3	2.28	0.69
2:B:146:MET:HE1	5:G:25:ALA:CB	2.20	0.68
2:B:237:PHE:O	2:B:241:LEU:HD13	1.93	0.68
2:B:146:MET:CE	5:G:25:ALA:N	2.33	0.68
2:B:108:ARG:HG3	2:B:109:LYS:HD3	1.76	0.68
2:B:113:LEU:HD23	2:B:113:LEU:N	2.07	0.68
2:B:283:PHE:HZ	5:G:27:ALA:O	1.77	0.68
2:B:96:VAL:HG21	2:B:390:SER:HB3	1.76	0.68
2:B:285:ALA:HB2	2:B:383:LEU:HB2	1.76	0.67
2:B:177:PHE:HE2	5:G:21:ALA:HB2	1.58	0.67
2:B:116:THR:HB	2:B:118:PHE:CD2	2.29	0.67
1:A:162:ILE:HD11	1:A:164:TRP:CD2	2.29	0.67
1:A:299:VAL:HA	1:A:302:PHE:CE2	2.29	0.67
2:B:112:GLN:HB2	2:B:114:ILE:N	2.10	0.67
2:B:177:PHE:HE2	5:G:21:ALA:CB	2.08	0.66
2:B:238:ILE:HD11	2:B:391:VAL:O	1.96	0.66
2:B:137:ALA:HA	2:B:140:ILE:HD12	1.79	0.65
2:B:105:PHE:CE1	2:B:239:LYS:HE3	2.32	0.65
2:B:177:PHE:CE2	5:G:21:ALA:CB	2.80	0.65
2:B:150:LEU:O	2:B:153:LEU:HG	1.96	0.65
2:B:146:MET:HE1	5:G:25:ALA:CA	2.26	0.64
2:B:112:GLN:HB2	2:B:113:LEU:C	2.18	0.64
2:B:233:MET:O	2:B:236:VAL:HB	1.97	0.64
2:B:153:LEU:HD13	2:B:162:ILE:HG13	1.80	0.63
2:B:112:GLN:CD	5:G:15:ALA:CB	2.54	0.63
1:A:260:LEU:HD22	1:A:312:LEU:HD13	1.81	0.63
2:B:117:PRO:HD3	2:B:135:ASN:CB	2.27	0.62
2:B:207:VAL:HB	4:D:26:LEU:HD21	1.82	0.62
2:B:139:MET:HE1	5:G:22:ALA:CB	2.25	0.62
3:C:170:LEU:HG	3:C:174:TRP:CZ2	2.35	0.61
5:G:5:ALA:O	5:G:8:ALA:N	2.34	0.61
2:B:150:LEU:HD22	2:B:153:LEU:HD21	1.82	0.61
2:B:240:TYR:HE2	5:G:15:ALA:CB	2.14	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:435:LEU:N	2:B:436:PRO:HD2	2.16	0.60
2:B:163:HIS:O	2:B:167:ILE:HG23	2.01	0.60
3:C:40:PHE:O	3:C:44:VAL:HG23	2.02	0.60
2:B:121:ASP:O	2:B:122:THR:OG1	2.17	0.59
2:B:175:PHE:CE1	2:B:206:GLY:HA3	2.37	0.59
2:B:116:THR:CG2	2:B:118:PHE:CD2	2.85	0.59
2:B:240:TYR:CE2	5:G:15:ALA:HB1	2.35	0.59
2:B:153:LEU:HD22	2:B:162:ILE:HG23	1.84	0.59
3:C:116:GLN:O	3:C:120:VAL:HG13	2.02	0.59
5:G:16:ALA:N	5:G:17:ALA:CB	2.64	0.59
2:B:139:MET:HE2	5:G:22:ALA:HB1	1.83	0.59
1:A:280:THR:HG21	1:A:302:PHE:HA	1.84	0.58
2:B:105:PHE:CD2	2:B:239:LYS:CE	2.86	0.58
2:B:105:PHE:CD2	2:B:239:LYS:HE2	2.38	0.58
2:B:283:PHE:CZ	5:G:27:ALA:O	2.57	0.58
1:A:463:ILE:HG23	1:A:465:VAL:HG23	1.85	0.58
2:B:198:VAL:HG21	4:D:94:PHE:CE2	2.38	0.58
1:A:40:ILE:CG1	3:C:147:VAL:HG22	2.33	0.58
2:B:108:ARG:CD	2:B:109:LYS:HB3	2.33	0.58
2:B:233:MET:CE	2:B:237:PHE:CZ	2.86	0.57
2:B:117:PRO:N	2:B:118:PHE:HD2	2.03	0.57
3:C:35:LEU:O	3:C:124:SER:HB2	2.04	0.57
2:B:252:VAL:O	2:B:256:THR:HG23	2.04	0.57
5:G:5:ALA:O	5:G:8:ALA:HB3	2.04	0.57
2:B:233:MET:CG	2:B:237:PHE:CE2	2.85	0.57
2:B:237:PHE:HB3	2:B:241:LEU:HD22	1.86	0.57
2:B:139:MET:HE2	5:G:22:ALA:CB	2.34	0.57
1:A:516:GLN:O	1:A:519:THR:HG22	2.04	0.56
2:B:237:PHE:O	2:B:241:LEU:HB2	2.04	0.56
2:B:85:LEU:HD13	2:B:422:LEU:HD23	1.88	0.56
2:B:108:ARG:C	2:B:109:LYS:HG2	2.25	0.56
2:B:146:MET:CE	5:G:25:ALA:CA	2.81	0.56
2:B:151:VAL:O	2:B:154:TYR:HD1	1.89	0.56
1:A:371:ARG:NH2	1:A:486:ALA:HB1	2.20	0.55
2:B:112:GLN:OE1	2:B:240:TYR:CE2	2.59	0.55
2:B:116:THR:CB	2:B:118:PHE:CE2	2.85	0.55
2:B:111:GLY:CA	2:B:240:TYR:CD2	2.89	0.55
2:B:113:LEU:HA	2:B:114:ILE:C	2.26	0.55
1:A:662:LEU:HD22	3:C:148:GLY:HA3	1.88	0.55
2:B:252:VAL:O	2:B:255:VAL:HG22	2.07	0.55
2:B:223:GLN:O	2:B:227:ILE:HG23	2.07	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:120:GLY:C	1:A:121:LEU:HD23	2.27	0.55
2:B:105:PHE:CE2	2:B:239:LYS:CD	2.89	0.55
2:B:105:PHE:CD2	2:B:239:LYS:HD3	2.41	0.55
2:B:118:PHE:O	2:B:119:THR:OG1	2.24	0.55
2:B:112:GLN:HG2	5:G:15:ALA:CB	2.37	0.55
2:B:240:TYR:OH	5:G:15:ALA:HA	2.07	0.55
1:A:303:VAL:HG11	1:A:522:LEU:HD13	1.88	0.55
1:A:534:PHE:CE2	1:A:566:VAL:HG11	2.42	0.55
1:A:164:TRP:CH2	1:A:423:PRO:HA	2.42	0.54
2:B:93:MET:O	2:B:97:VAL:HG23	2.06	0.54
5:G:16:ALA:C	5:G:18:ALA:HB3	2.28	0.54
1:A:53:LEU:O	1:A:54:LEU:HD23	2.07	0.54
3:C:42:TRP:CH2	3:C:46:LEU:HD12	2.43	0.54
5:G:10:ALA:O	5:G:13:ALA:HB3	2.07	0.54
1:A:40:ILE:HG12	3:C:147:VAL:HG22	1.90	0.54
1:A:233:ARG:HD3	4:D:96:ILE:HG21	1.89	0.54
2:B:117:PRO:HG3	2:B:135:ASN:HB2	1.85	0.54
2:B:158:CYS:HB2	2:B:162:ILE:HG12	1.89	0.54
2:B:109:LYS:CG	2:B:110:ASP:HB2	2.25	0.53
1:A:282:LEU:HD13	1:A:329:PHE:HB3	1.90	0.53
2:B:117:PRO:CD	2:B:118:PHE:HD2	2.20	0.53
2:B:141:SER:O	2:B:145:VAL:HG23	2.08	0.53
5:G:16:ALA:N	5:G:17:ALA:HB3	2.10	0.53
2:B:108:ARG:CZ	2:B:109:LYS:HA	2.37	0.53
3:C:134:VAL:O	3:C:137:ILE:HG13	2.08	0.53
1:A:309:ALA:HA	1:A:327:PHE:CZ	2.43	0.53
2:B:112:GLN:N	2:B:113:LEU:HA	2.24	0.53
2:B:113:LEU:CD1	2:B:116:THR:CG2	2.86	0.53
3:C:200:THR:O	3:C:204:THR:HG23	2.08	0.53
2:B:162:ILE:N	2:B:162:ILE:HD13	2.23	0.53
2:B:105:PHE:CE2	2:B:239:LYS:CE	2.91	0.52
2:B:234:ALA:HA	2:B:391:VAL:HG22	1.91	0.52
2:B:236:VAL:O	2:B:239:LYS:HB3	2.09	0.52
1:A:49:PRO:HB3	1:A:181:PHE:CZ	2.45	0.52
1:A:62:CYS:SG	1:A:180:ILE:HD12	2.49	0.52
2:B:146:MET:HE1	5:G:22:ALA:O	2.08	0.52
3:C:24:THR:HG21	3:C:119:TYR:CE1	2.44	0.52
1:A:222:HIS:HB2	1:A:247:VAL:HG23	1.91	0.52
1:A:299:VAL:O	1:A:303:VAL:HG23	2.09	0.52
1:A:540:GLN:HA	1:A:606:GLN:HE21	1.74	0.52
2:B:166:LEU:HD11	2:B:282:LEU:HB2	1.92	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:256:THR:OG1	2:B:257:ASP:N	2.42	0.52
2:B:99:THR:CG2	2:B:235:LEU:HD21	2.40	0.52
2:B:464:GLN:O	3:C:207:ASN:ND2	2.42	0.52
1:A:303:VAL:HG21	1:A:522:LEU:CD1	2.41	0.51
1:A:347:MET:SD	1:A:354:VAL:O	2.68	0.51
1:A:538:LEU:HD11	1:A:546:LEU:HD11	1.92	0.51
2:B:392:LEU:HD23	2:B:393:VAL:N	2.24	0.51
2:B:108:ARG:HG3	2:B:109:LYS:CG	2.40	0.51
1:A:295:ALA:HA	1:A:299:VAL:HB	1.93	0.51
1:A:653:TRP:CD1	1:A:656:ILE:HG23	2.46	0.51
2:B:283:PHE:HB2	2:B:285:ALA:HB2	1.92	0.51
2:B:117:PRO:HD3	2:B:118:PHE:HD2	1.74	0.51
3:C:236:LEU:HA	3:C:239:ILE:HD12	1.93	0.51
2:B:111:GLY:HA2	2:B:240:TYR:CD2	2.45	0.51
2:B:108:ARG:NE	2:B:109:LYS:CB	2.73	0.51
2:B:117:PRO:CG	2:B:135:ASN:CB	2.86	0.51
3:C:174:TRP:CZ2	3:C:197:HIS:HA	2.45	0.51
1:A:101:LYS:HG3	1:A:126:THR:HG21	1.93	0.51
1:A:463:ILE:CG2	1:A:465:VAL:HG23	2.41	0.51
2:B:186:PHE:HB3	4:D:95:THR:HG21	1.93	0.51
2:B:283:PHE:HB2	2:B:383:LEU:HB2	1.93	0.50
5:G:11:ALA:C	5:G:16:ALA:HB2	2.30	0.50
1:A:167:LEU:HD23	1:A:451:LYS:HA	1.92	0.50
1:A:524:GLY:HA3	1:A:534:PHE:CZ	2.46	0.50
2:B:146:MET:CE	5:G:22:ALA:O	2.60	0.50
1:A:260:LEU:HD13	1:A:312:LEU:CD1	2.42	0.50
2:B:108:ARG:HG3	2:B:109:LYS:CD	2.40	0.50
2:B:233:MET:HE2	2:B:237:PHE:CZ	2.47	0.50
2:B:238:ILE:HD11	2:B:391:VAL:HA	1.93	0.50
2:B:381:LEU:HD22	2:B:382:GLY:N	2.26	0.50
1:A:301:SER:O	1:A:304:THR:OG1	2.23	0.50
2:B:117:PRO:HG3	2:B:135:ASN:CB	2.42	0.50
2:B:237:PHE:C	2:B:241:LEU:HD13	2.32	0.50
1:A:630:ALA:O	1:A:632:SER:N	2.45	0.50
2:B:208:VAL:O	2:B:211:ILE:HG13	2.11	0.50
2:B:112:GLN:HB2	2:B:113:LEU:CA	2.42	0.49
2:B:106:TYR:HA	2:B:239:LYS:HD3	1.89	0.49
2:B:237:PHE:HB3	2:B:241:LEU:CD2	2.42	0.49
2:B:104:SER:O	2:B:106:TYR:N	2.46	0.49
2:B:453:VAL:HA	3:C:50:SER:CB	2.42	0.49
3:C:42:TRP:CZ2	3:C:129:SER:HA	2.47	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:111:GLY:HA3	2:B:240:TYR:CD2	2.47	0.49
3:C:90:TYR:CZ	3:C:94:LEU:HD21	2.47	0.49
3:C:112:ILE:HD13	3:C:112:ILE:N	2.26	0.49
1:A:42:ILE:HD12	3:C:149:ILE:HG12	1.93	0.49
2:B:117:PRO:HA	2:B:135:ASN:HB3	1.92	0.49
2:B:105:PHE:CG	2:B:239:LYS:CE	2.94	0.49
1:A:230:CYS:HA	1:A:233:ARG:HG2	1.95	0.49
3:C:47:LEU:O	3:C:51:VAL:HG23	2.13	0.49
2:B:186:PHE:O	2:B:190:ASN:N	2.46	0.48
1:A:268:THR:HG23	1:A:353:PRO:O	2.13	0.48
1:A:283:ASP:OD1	1:A:334:THR:HG22	2.13	0.48
1:A:338:ILE:HG22	1:A:646:SER:OG	2.14	0.48
2:B:404:TRP:O	2:B:407:THR:HG22	2.13	0.48
3:C:74:PHE:O	3:C:78:VAL:HG23	2.14	0.48
5:G:15:ALA:HB1	5:G:18:ALA:CB	2.44	0.48
1:A:294:GLY:O	1:A:298:ALA:N	2.47	0.48
3:C:168:ILE:O	3:C:172:THR:OG1	2.32	0.48
2:B:113:LEU:HD12	2:B:116:THR:CA	2.40	0.47
2:B:113:LEU:CD1	2:B:116:THR:CA	2.92	0.47
2:B:208:VAL:HG13	4:D:26:LEU:HD23	1.96	0.47
2:B:247:TRP:CZ2	2:B:446:TYR:CE2	3.02	0.47
5:G:15:ALA:O	5:G:17:ALA:CA	2.60	0.47
1:A:126:THR:HG22	1:A:128:PRO:HG2	1.97	0.47
1:A:227:THR:HG21	1:A:647:THR:HB	1.97	0.47
1:A:385:GLN:O	1:A:391:ARG:HB2	2.14	0.47
2:B:116:THR:CB	2:B:118:PHE:CD2	2.96	0.47
2:B:118:PHE:HB2	2:B:135:ASN:CB	2.32	0.47
2:B:238:ILE:CG1	2:B:391:VAL:HG13	2.45	0.47
2:B:117:PRO:HD3	2:B:118:PHE:CD2	2.48	0.47
2:B:416:ILE:CD1	3:C:36:VAL:HG12	2.45	0.47
1:A:396:ASP:O	1:A:400:THR:HG23	2.15	0.47
2:B:113:LEU:HD13	2:B:118:PHE:H	1.80	0.47
2:B:140:ILE:HG12	2:B:252:VAL:HG11	1.97	0.47
2:B:153:LEU:CD2	2:B:162:ILE:HG23	2.44	0.47
2:B:392:LEU:HD21	2:B:410:CYS:HB3	1.96	0.46
2:B:392:LEU:HD22	2:B:414:ILE:CD1	2.36	0.46
3:C:90:TYR:CE2	3:C:94:LEU:HD21	2.49	0.46
1:A:83:GLN:O	1:A:87:THR:N	2.37	0.46
1:A:162:ILE:HD11	1:A:164:TRP:CG	2.51	0.46
2:B:186:PHE:CE1	2:B:193:VAL:HG21	2.51	0.46
1:A:365:LEU:N	1:A:365:LEU:HD12	2.30	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:115:TYR:O	2:B:116:THR:OG1	2.26	0.46
2:B:177:PHE:CZ	5:G:21:ALA:HB2	2.50	0.46
1:A:127:LYS:N	1:A:128:PRO:HD2	2.31	0.46
1:A:133:GLY:CA	1:A:167:LEU:HD21	2.45	0.46
1:A:450:ASN:O	1:A:452:TYR:N	2.45	0.46
1:A:632:SER:OG	1:A:634:ALA:N	2.48	0.46
2:B:109:LYS:HB2	2:B:110:ASP:OD1	2.15	0.46
2:B:175:PHE:HD1	2:B:202:ILE:HG23	1.81	0.46
1:A:277:VAL:HG11	1:A:362:PHE:CD2	2.51	0.46
2:B:445:PHE:O	2:B:449:THR:OG1	2.24	0.46
2:B:453:VAL:HA	3:C:50:SER:HB2	1.96	0.46
2:B:466:TYR:HB2	3:C:204:THR:HG21	1.98	0.46
2:B:108:ARG:CG	2:B:109:LYS:HD3	2.45	0.46
2:B:117:PRO:O	2:B:119:THR:N	2.48	0.46
2:B:118:PHE:CG	2:B:135:ASN:HB3	2.51	0.46
2:B:174:LEU:HD22	2:B:206:GLY:HA2	1.97	0.46
2:B:383:LEU:O	2:B:386:PHE:HB3	2.16	0.46
2:B:113:LEU:HD13	2:B:116:THR:O	2.15	0.45
1:A:365:LEU:HD11	1:A:494:LEU:HD11	1.97	0.45
2:B:108:ARG:HA	2:B:108:ARG:HD2	1.66	0.45
2:B:413:ALA:HB2	2:B:445:PHE:CD2	2.51	0.45
3:C:200:THR:HA	3:C:203:LEU:HD12	1.97	0.45
2:B:236:VAL:O	2:B:239:LYS:N	2.49	0.45
1:A:329:PHE:N	1:A:329:PHE:CD1	2.85	0.45
2:B:105:PHE:CE2	2:B:239:LYS:HE3	2.52	0.45
2:B:240:TYR:CE2	5:G:15:ALA:CB	2.98	0.45
2:B:421:THR:HG23	2:B:434:ALA:HB3	1.98	0.45
2:B:118:PHE:CD2	2:B:135:ASN:CB	2.99	0.45
2:B:449:THR:HA	2:B:453:VAL:HB	1.99	0.45
3:C:163:LEU:HD11	3:C:217:ILE:HD13	1.99	0.45
2:B:454:GLN:N	2:B:455:PRO:CD	2.79	0.45
1:A:212:LEU:O	1:A:662:LEU:HA	2.16	0.45
2:B:112:GLN:CG	5:G:15:ALA:HB3	2.45	0.45
1:A:181:PHE:CD1	1:A:217:LEU:HD21	2.52	0.45
1:A:560:PRO:HG2	1:A:565:TYR:CZ	2.51	0.45
3:C:80:VAL:HG11	3:C:198:LEU:HD12	2.00	0.44
2:B:85:LEU:CD1	2:B:422:LEU:HD23	2.48	0.44
2:B:172:LEU:O	2:B:176:PHE:N	2.48	0.44
1:A:237:GLN:O	1:A:244:PRO:HB3	2.17	0.44
3:C:163:LEU:HD11	3:C:204:THR:HG22	2.00	0.44
1:A:76:VAL:HG13	1:A:81:ASP:HB2	1.98	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:523:TYR:CE1	1:A:527:ILE:HG21	2.53	0.44
2:B:194:ASP:HB3	4:D:78:PHE:CE1	2.52	0.44
3:C:215:LEU:N	3:C:216:PRO:HD2	2.32	0.44
1:A:282:LEU:HD12	1:A:302:PHE:CD2	2.52	0.44
2:B:117:PRO:CB	2:B:135:ASN:HB2	2.48	0.44
3:C:159:THR:HG21	3:C:210:TYR:CE1	2.52	0.44
3:C:196:SER:O	3:C:200:THR:HG23	2.18	0.44
4:D:27:PRO:HG3	4:D:67:TRP:CG	2.52	0.44
1:A:210:PHE:CE1	1:A:212:LEU:HD12	2.52	0.44
2:B:103:VAL:HG13	2:B:188:THR:OG1	2.18	0.44
2:B:116:THR:HG22	2:B:118:PHE:CD2	2.53	0.44
2:B:392:LEU:HD12	2:B:443:LEU:HD23	2.00	0.44
1:A:476:ASP:OD1	1:A:476:ASP:N	2.50	0.44
2:B:87:VAL:N	2:B:88:PRO:CD	2.81	0.44
2:B:114:ILE:CB	2:B:115:TYR:CA	2.93	0.44
2:B:164:ALA:HA	2:B:167:ILE:HG13	2.00	0.44
1:A:282:LEU:HD12	1:A:302:PHE:CG	2.53	0.43
2:B:238:ILE:HG12	2:B:391:VAL:HG13	2.01	0.43
2:B:435:LEU:N	2:B:436:PRO:CD	2.80	0.43
1:A:303:VAL:HG21	1:A:522:LEU:HD12	1.99	0.43
2:B:117:PRO:HA	2:B:118:PHE:CB	2.39	0.43
2:B:187:LYS:HE3	4:D:95:THR:HG23	1.99	0.43
1:A:546:LEU:HD21	1:A:566:VAL:HG22	2.00	0.43
1:A:560:PRO:O	1:A:561:THR:HG22	2.18	0.43
2:B:113:LEU:HD13	2:B:116:THR:C	2.39	0.43
2:B:381:LEU:HD11	2:B:386:PHE:HD2	1.82	0.43
3:C:34:ILE:O	3:C:90:TYR:OH	2.31	0.43
4:D:34:ILE:HD11	4:D:61:ALA:HA	2.01	0.43
1:A:256:VAL:HG21	1:A:567:VAL:CG1	2.43	0.43
1:A:456:ILE:HD12	1:A:456:ILE:N	2.33	0.43
2:B:105:PHE:O	2:B:239:LYS:HE2	2.18	0.43
2:B:118:PHE:CD2	2:B:135:ASN:HB3	2.54	0.43
3:C:199:LEU:O	3:C:203:LEU:HG	2.19	0.43
2:B:412:VAL:HG11	3:C:43:LEU:HD12	2.01	0.43
1:A:662:LEU:CD1	3:C:149:ILE:HD12	2.48	0.42
2:B:112:GLN:HB2	2:B:114:ILE:O	2.19	0.42
2:B:234:ALA:O	2:B:238:ILE:HG13	2.19	0.42
2:B:416:ILE:HD12	3:C:36:VAL:HG12	2.01	0.42
2:B:117:PRO:C	2:B:119:THR:H	2.23	0.42
2:B:241:LEU:HD12	2:B:241:LEU:N	2.34	0.42
2:B:465:PHE:HB3	3:C:205:PHE:HA	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:179:PRO:HG2	1:A:217:LEU:HD22	2.01	0.42
2:B:417:GLY:HA3	2:B:438:SER:HA	2.00	0.42
2:B:381:LEU:HD22	2:B:382:GLY:H	1.83	0.42
2:B:405:ASN:O	2:B:408:ILE:HG22	2.20	0.42
3:C:35:LEU:HA	3:C:124:SER:HB3	2.02	0.42
3:C:162:PHE:HB3	3:C:214:LEU:HD11	2.00	0.42
1:A:120:GLY:HA2	1:A:179:PRO:O	2.19	0.42
1:A:477:LEU:HB3	1:A:520:ARG:HD2	2.02	0.42
2:B:147:THR:HG22	5:G:27:ALA:CB	2.49	0.42
3:C:90:TYR:CE2	3:C:94:LEU:HD11	2.54	0.42
3:C:94:LEU:HD12	3:C:179:PHE:HE2	1.85	0.42
3:C:137:ILE:C	3:C:137:ILE:HD12	2.39	0.42
3:C:170:LEU:HG	3:C:174:TRP:CH2	2.55	0.42
3:C:173:PHE:CG	3:C:225:GLY:HA2	2.54	0.42
3:C:178:PHE:CE1	3:C:182:CYS:SG	3.13	0.42
1:A:537:ILE:HG21	1:A:569:TYR:O	2.20	0.42
1:A:378:MET:CE	1:A:413:LEU:HD22	2.50	0.42
5:G:15:ALA:HB1	5:G:18:ALA:HB1	2.01	0.42
2:B:113:LEU:HB2	2:B:114:ILE:HA	2.01	0.42
2:B:167:ILE:O	2:B:171:LEU:N	2.32	0.42
2:B:113:LEU:HD12	2:B:116:THR:CG2	2.43	0.41
2:B:416:ILE:HG12	3:C:40:PHE:CG	2.55	0.41
3:C:112:ILE:HG13	3:C:117:MET:CG	2.50	0.41
2:B:113:LEU:HB2	2:B:116:THR:HA	2.02	0.41
3:C:148:GLY:O	3:C:150:HIS:N	2.53	0.41
1:A:307:ALA:HB2	1:A:518:VAL:HG22	2.01	0.41
2:B:117:PRO:C	2:B:119:THR:N	2.73	0.41
2:B:228:MET:O	2:B:232:LEU:HD13	2.19	0.41
2:B:452:LEU:O	2:B:455:PRO:HD2	2.20	0.41
4:D:55:GLY:O	4:D:58:TRP:HB3	2.19	0.41
1:A:164:TRP:CZ2	1:A:423:PRO:HA	2.55	0.41
2:B:262:LEU:HB2	2:B:263:CYS:HA	2.02	0.41
1:A:53:LEU:C	1:A:54:LEU:HD23	2.41	0.41
2:B:406:THR:HA	2:B:449:THR:HG21	2.03	0.41
3:C:172:THR:O	3:C:176:VAL:HG23	2.20	0.41
1:A:111:LEU:CD2	1:A:118:ILE:HG21	2.51	0.41
1:A:260:LEU:CD2	1:A:312:LEU:HD13	2.49	0.41
2:B:167:ILE:O	2:B:171:LEU:HB3	2.21	0.41
1:A:283:ASP:OD2	1:A:332:GLY:N	2.51	0.41
1:A:164:TRP:CH2	1:A:423:PRO:CA	3.04	0.40
1:A:344:VAL:HG21	1:A:430:PHE:HA	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:582:THR:HG22	1:A:585:GLN:OE1	2.21	0.40
2:B:204:ASN:O	2:B:208:VAL:HG22	2.20	0.40
1:A:486:ALA:O	1:A:490:VAL:HG23	2.21	0.40
1:A:540:GLN:HA	1:A:606:GLN:NE2	2.35	0.40
2:B:381:LEU:HD11	2:B:386:PHE:CD2	2.56	0.40
1:A:40:ILE:HD11	3:C:157:PHE:CZ	2.56	0.40
2:B:89:VAL:HG22	2:B:386:PHE:CD2	2.56	0.40
2:B:241:LEU:N	2:B:241:LEU:CD1	2.85	0.40
2:B:416:ILE:HG21	3:C:40:PHE:CE1	2.56	0.40
5:G:17:ALA:CB	5:G:18:ALA:CB	2.78	0.40
1:A:84:TRP:O	1:A:89:GLY:N	2.54	0.40
1:A:633:PRO:HG2	1:A:645:TYR:HB3	2.04	0.40
2:B:204:ASN:HB3	4:D:28:PHE:HB2	2.04	0.40
2:B:233:MET:HA	2:B:236:VAL:CG2	2.51	0.40
2:B:254:SER:HA	2:B:436:PRO:HB3	2.03	0.40
2:B:434:ALA:O	2:B:437:ILE:HG22	2.21	0.40
5:G:16:ALA:CA	5:G:18:ALA:HB3	2.51	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	663/709 (94%)	534 (80%)	99 (15%)	30 (4%)	2 23
2	B	280/467 (60%)	248 (89%)	16 (6%)	16 (6%)	1 20
3	C	241/265 (91%)	221 (92%)	16 (7%)	4 (2%)	9 42
4	D	98/101 (97%)	89 (91%)	8 (8%)	1 (1%)	15 52
5	G	22/24 (92%)	20 (91%)	1 (4%)	1 (4%)	2 23
All	All	1304/1566 (83%)	1112 (85%)	140 (11%)	52 (4%)	5 25

All (52) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	157	ALA
1	A	333	GLU
1	A	473	PRO
1	A	643	THR
2	B	116	THR
2	B	117	PRO
2	B	122	THR
2	B	236	VAL
3	C	156	TYR
5	G	13	ALA
1	A	89	GLY
1	A	371	ARG
1	A	436	ILE
1	A	511	VAL
1	A	543	ARG
1	A	561	THR
1	A	632	SER
1	A	646	SER
2	B	286	LEU
2	B	287	ILE
3	C	61	ASP
3	C	149	ILE
1	A	358	ASN
1	A	464	ASN
1	A	472	SER
1	A	631	LEU
2	B	105	PHE
2	B	109	LYS
2	B	239	LYS
2	B	262	LEU
1	A	225	ILE
1	A	332	GLY
1	A	422	LEU
2	B	159	TYR
2	B	403	ASP
2	B	429	LYS
2	B	430	LYS
4	D	86	GLY
1	A	185	ASP
1	A	210	PHE
1	A	253	ASP
1	A	289	TRP

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Mol	Chain	Res	Type
1	A	322	PRO
1	A	612	ASN
2	B	104	SER
2	B	119	THR
3	C	107	ASP
1	A	161	GLU
1	A	359	VAL
1	A	93	PRO
1	A	316	PRO
1	A	559	SER

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	583/612 (95%)	530 (91%)	53 (9%)	9 33
2	B	240/408 (59%)	206 (86%)	34 (14%)	3 19
3	C	192/214 (90%)	170 (88%)	22 (12%)	5 24
4	D	87/89 (98%)	77 (88%)	10 (12%)	5 24
All	All	1102/1323 (83%)	983 (89%)	119 (11%)	10 26

All (119) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	50	CYS
1	A	54	LEU
1	A	69	ASP
1	A	84	TRP
1	A	86	LEU
1	A	87	THR
1	A	97	LEU
1	A	100	SER
1	A	107	LEU
1	A	111	LEU
1	A	121	LEU

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Mol	Chain	Res	Type
1	A	134	PHE
1	A	139	GLN
1	A	140	CYS
1	A	197	GLN
1	A	204	ASN
1	A	210	PHE
1	A	218	PHE
1	A	264	ASN
1	A	269	LEU
1	A	285	ARG
1	A	296	GLU
1	A	301	SER
1	A	312	LEU
1	A	326	MET
1	A	329	PHE
1	A	331	GLN
1	A	333	GLU
1	A	344	VAL
1	A	413	LEU
1	A	425	SER
1	A	443	ASP
1	A	450	ASN
1	A	454	GLN
1	A	469	GLU
1	A	472	SER
1	A	476	ASP
1	A	487	LEU
1	A	520	ARG
1	A	522	LEU
1	A	534	PHE
1	A	537	ILE
1	A	541	ASP
1	A	561	THR
1	A	574	LEU
1	A	586	CYS
1	A	587	GLN
1	A	637	LEU
1	A	643	THR
1	A	655	ASP
1	A	670	LEU
1	A	673	LEU
1	A	677	PHE

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Mol	Chain	Res	Type
2	B	80	LYS
2	B	83	ILE
2	B	87	VAL
2	B	91	LEU
2	B	113	LEU
2	B	117	PRO
2	B	122	THR
2	B	133	ILE
2	B	150	LEU
2	B	153	LEU
2	B	154	TYR
2	B	158	CYS
2	B	171	LEU
2	B	184	GLU
2	B	201	LEU
2	B	202	ILE
2	B	212	SER
2	B	222	GLN
2	B	226	LEU
2	B	244	TRP
2	B	249	ILE
2	B	254	SER
2	B	257	ASP
2	B	282	LEU
2	B	381	LEU
2	B	383	LEU
2	B	392	LEU
2	B	416	ILE
2	B	419	CYS
2	B	422	LEU
2	B	438	SER
2	B	450	ASP
2	B	458	ASP
2	B	459	GLN
3	C	7	PHE
3	C	28	ASP
3	C	46	LEU
3	C	56	LEU
3	C	61	ASP
3	C	68	GLN
3	C	91	TYR
3	C	93	LEU

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Mol	Chain	Res	Type
3	C	104	LEU
3	C	112	ILE
3	C	123	LEU
3	C	127	ILE
3	C	131	VAL
3	C	137	ILE
3	C	152	ASP
3	C	159	THR
3	C	160	SER
3	C	170	LEU
3	C	172	THR
3	C	190	LEU
3	C	218	TYR
3	C	238	SER
4	D	17	LYS
4	D	35	PHE
4	D	39	ARG
4	D	54	LYS
4	D	66	PHE
4	D	67	TRP
4	D	73	SER
4	D	75	ILE
4	D	94	PHE
4	D	98	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	34	ASN
1	A	313	GLN
1	A	367	GLN
1	A	450	ASN
1	A	454	GLN
1	A	606	GLN
2	B	112	GLN
2	B	454	GLN
2	B	464	GLN
3	C	68	GLN
3	C	207	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

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

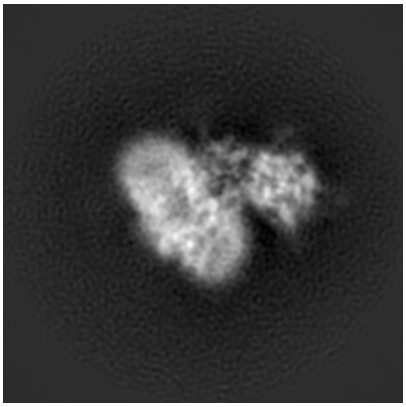
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-3238. These allow visual inspection of the internal detail of the map and identification of artifacts.

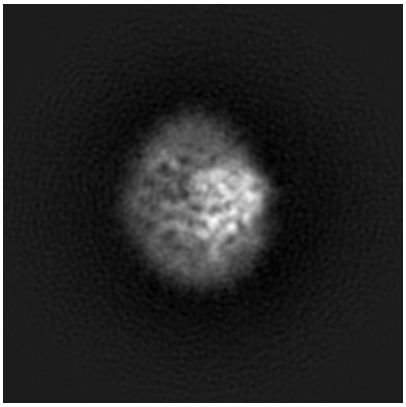
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

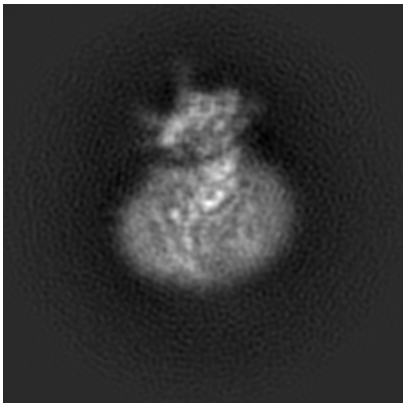
6.1.1 Primary map



X



Y

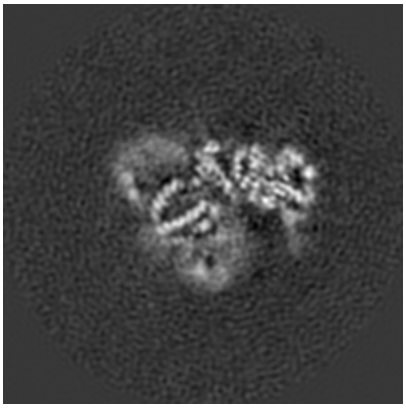


Z

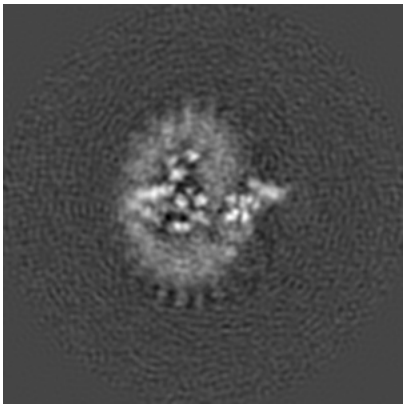
The images above show the map projected in three orthogonal directions.

6.2 Central slices

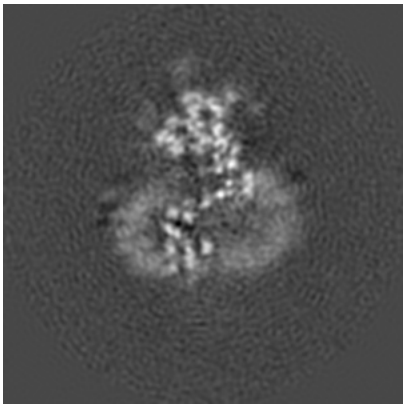
6.2.1 Primary map



X Index: 90



Y Index: 90

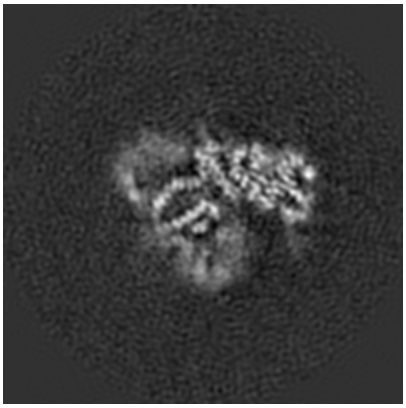


Z Index: 90

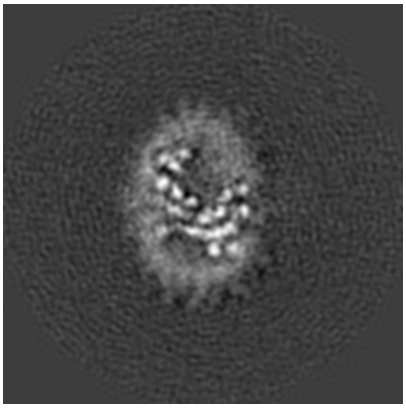
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

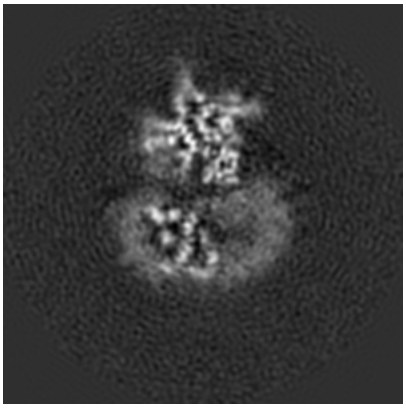
6.3.1 Primary map



X Index: 91



Y Index: 84



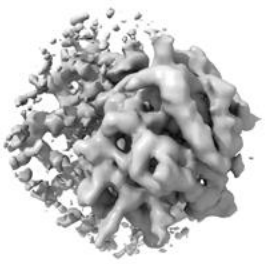
Z Index: 95

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

6.4 Orthogonal surface views (i)

6.4.1 Primary map

X



Y

Z

The images above show the 3D surface view of the map at the recommended contour level 0.04. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

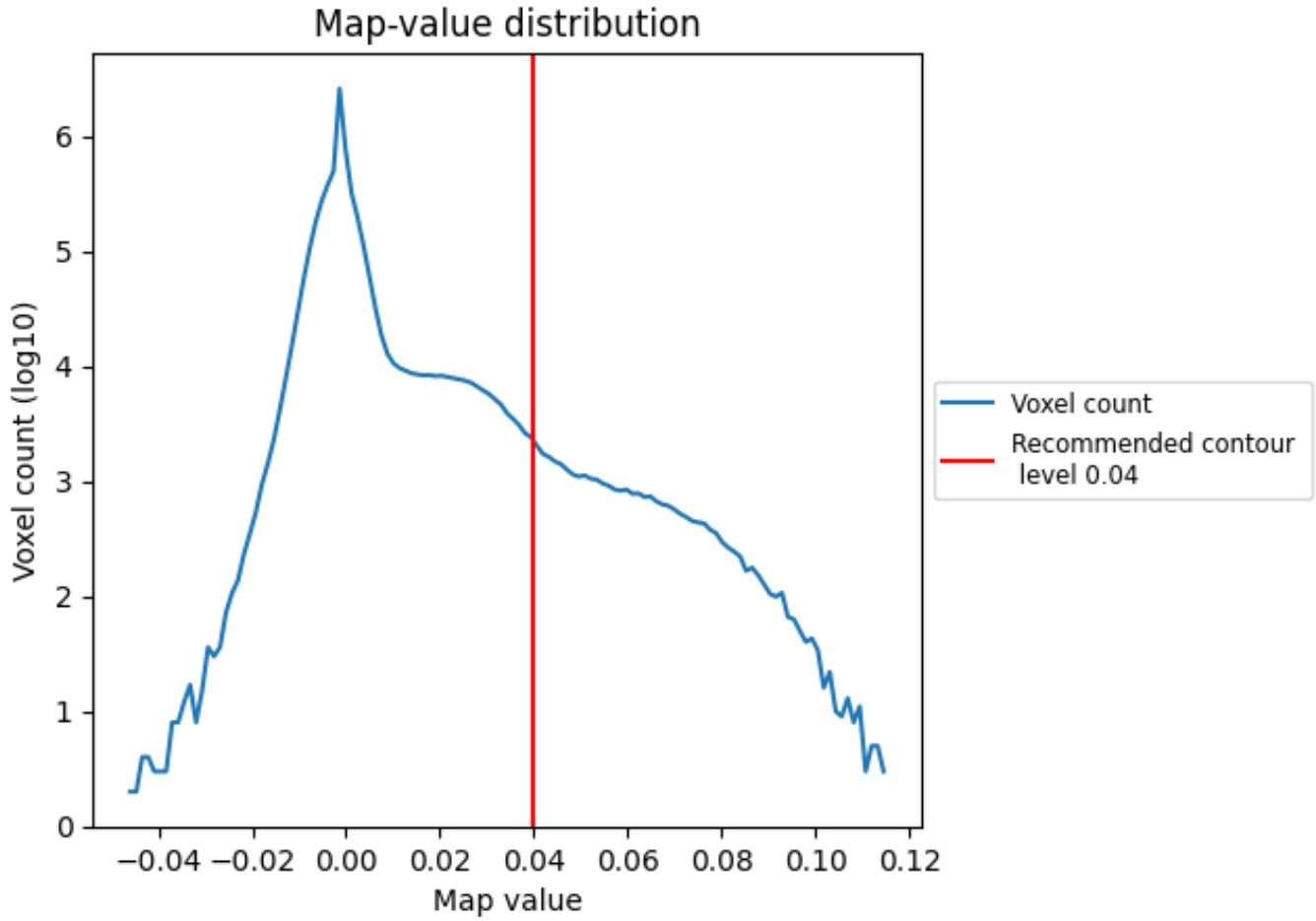
6.5 Mask visualisation (i)

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

7 Map analysis

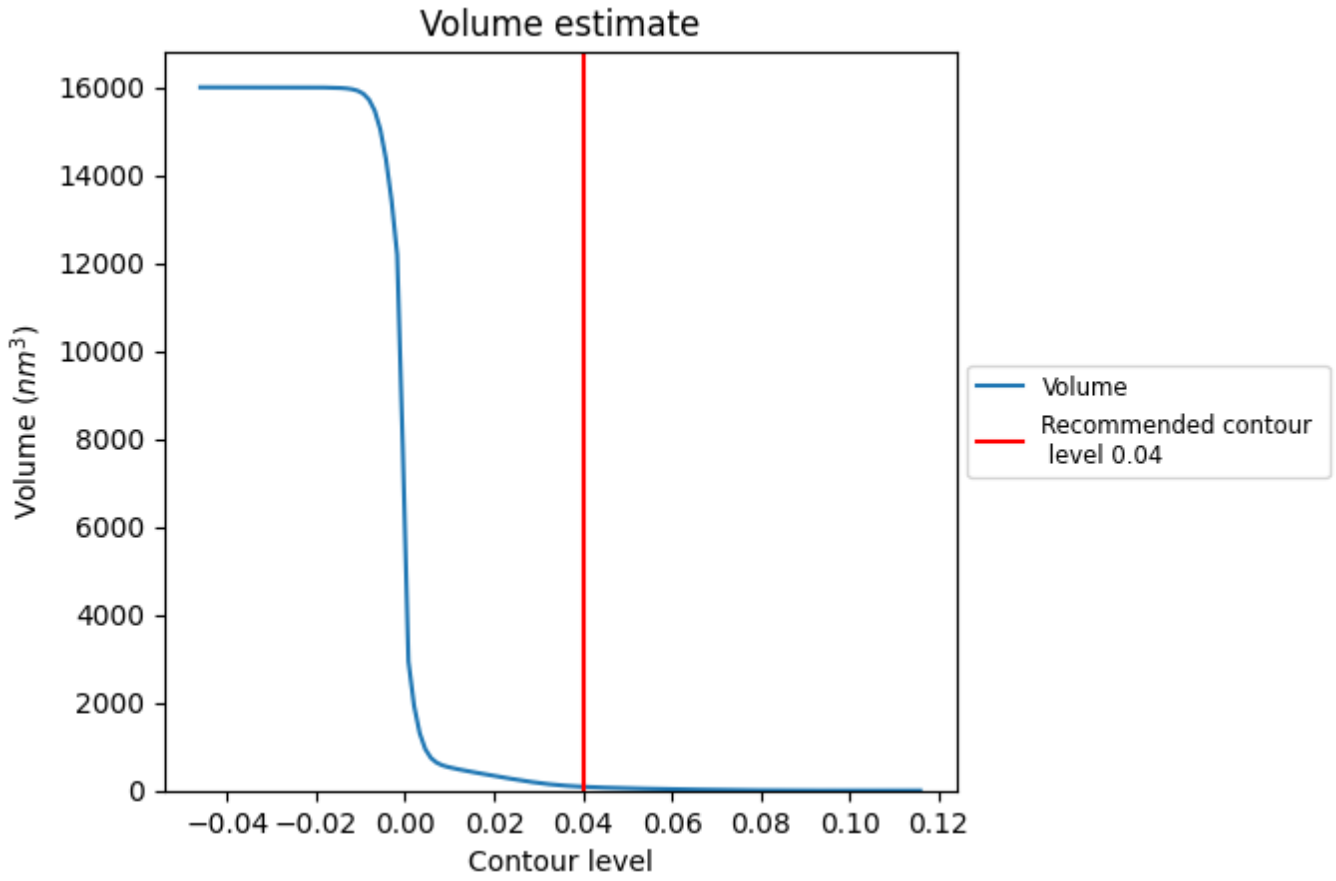
This section contains the results of statistical analysis of the map.

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.

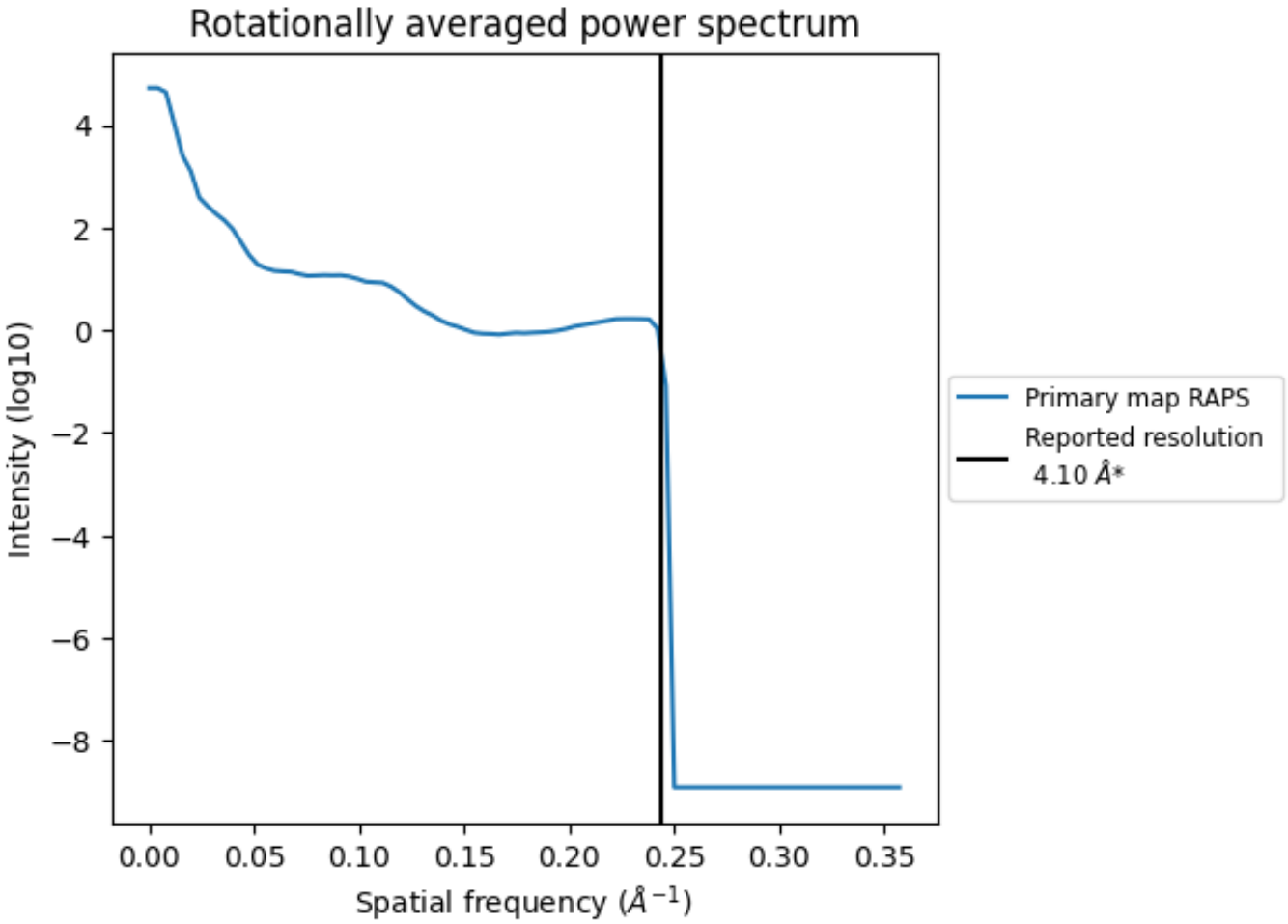
7.2 Volume estimate



The volume at the recommended contour level is 86 nm^3; this corresponds to an approximate mass of 78 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 0.244 Å^{-1}

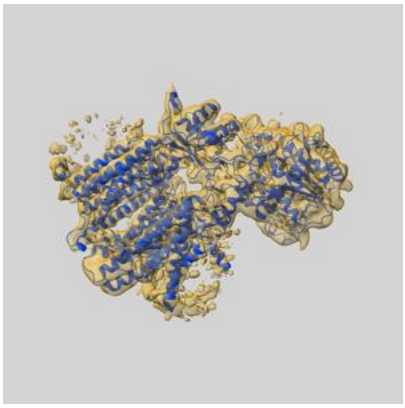
8 Fourier-Shell correlation (i)

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

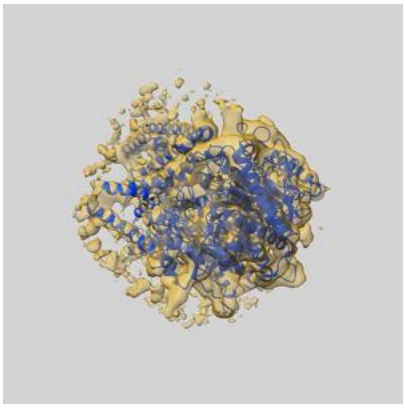
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-3238 and PDB model 5FN3. Per-residue inclusion information can be found in section 3 on page 4.

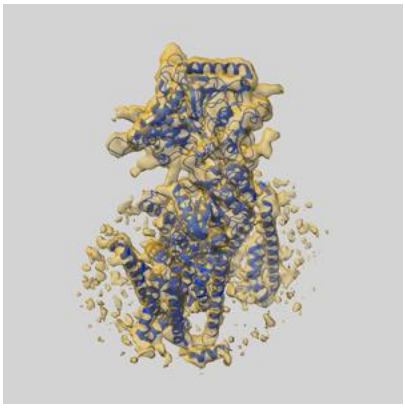
9.1 Map-model overlay



X



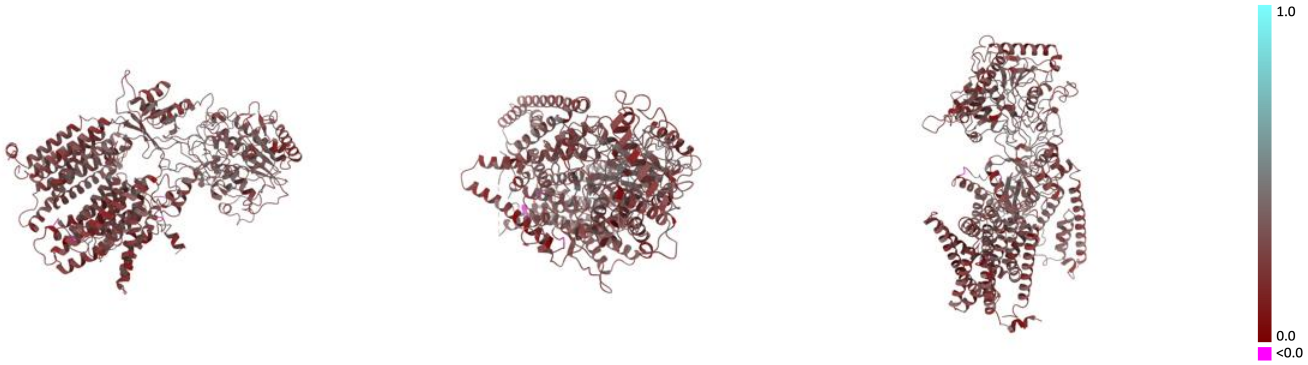
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.04 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.

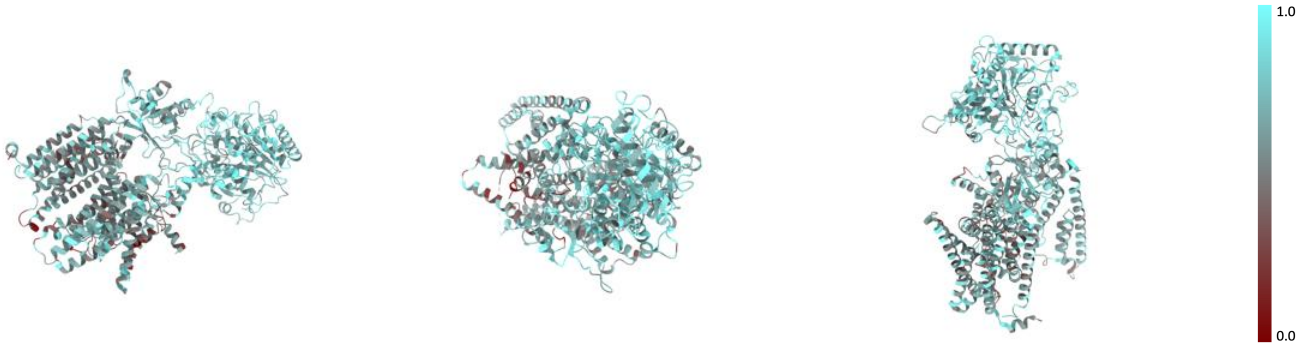
9.2 Q-score mapped to coordinate model



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.

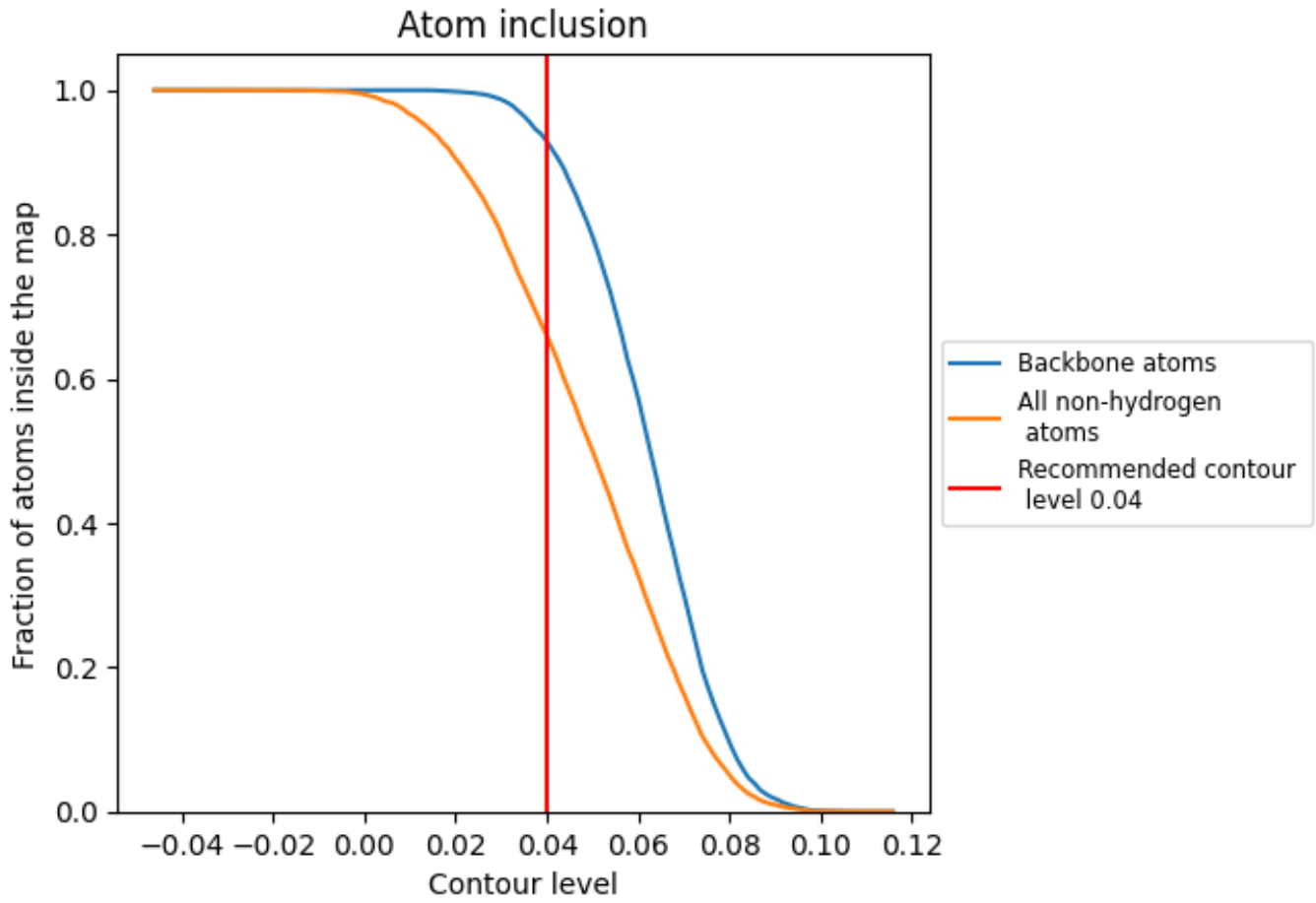
9.3 Atom inclusion mapped to coordinate model



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 (0.04).

9.4 Atom inclusion (i)



At the recommended contour level, 93% of all backbone atoms, 66% 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 (0.04) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6598	0.2910
A	0.7372	0.3200
B	0.5543	0.2630
C	0.5969	0.2580
D	0.6440	0.2560
G	0.3667	0.3380