WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB EM Validation Report (i)

Oct 14, 2024 – 01:38 AM EDT

PDB ID	:	7UFG
EMDB ID	:	EMD-26475
Title	:	Cryo-EM structure of PAPP-A in complex with IGFBP5
Authors	:	Judge, R.A.; Jain, R.; Hao, Q.; Ouch, C.; Sridar, J.; Smith, C.L.; Wang, J.C.K.; Eaton, D.
Deposited on	:	2022-03-22
Resolution	:	3.28 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.dev113
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 3.28 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	Percentile Ranks	Value
Clashscore		11
Ramachandran outliers		0
Sidechain outliers		0.2%

Worse   *Better*

■ Percentile relative to all structures

▯ Percentile relative to all EM structures
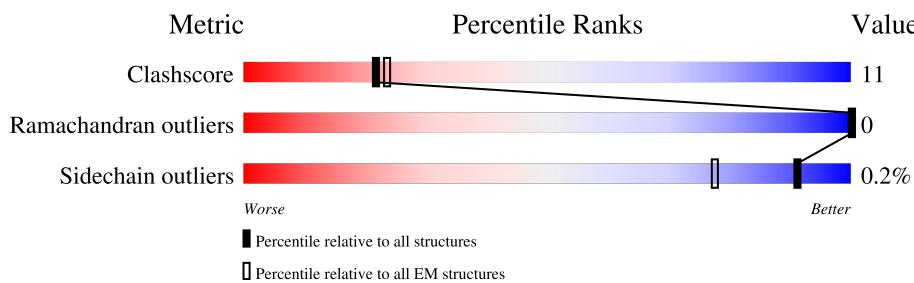
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	1581	57% 15% • 27%
1	B	1581	58% 16% 25%
2	C	272	6% • 93%
2	D	272	8% • 91%

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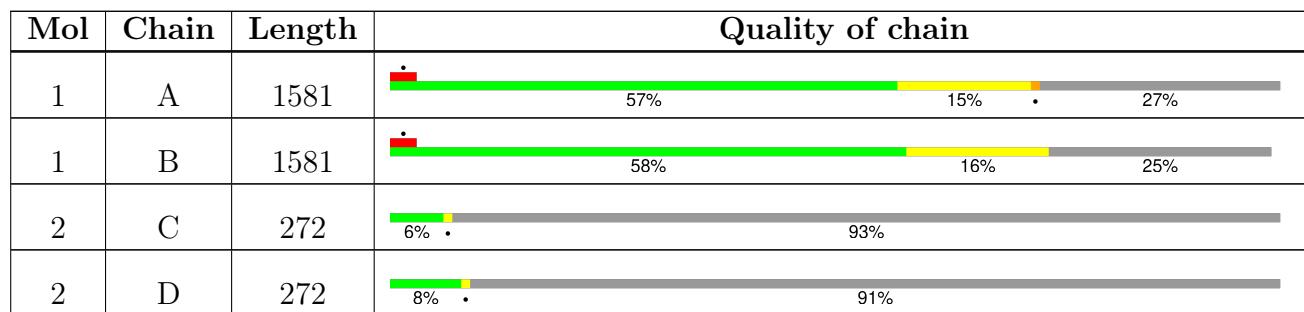
2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 33028 atoms, of which 14783 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 Pappalysin-1.

Mol	Chain	Residues	Atoms						AltConf	Trace
1	A	1151	Total	C	H	N	O	S	0	0
			15782	5542	7002	1505	1670	63		
1	B	1182	Total	C	H	N	O	S	0	0
			16506	5734	7411	1549	1746	66		

There are 72 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	483	ALA	GLU	engineered mutation	UNP Q13219
A	1144	TYR	SER	engineered mutation	UNP Q13219
A	1548	SER	-	expression tag	UNP Q13219
A	1549	GLY	-	expression tag	UNP Q13219
A	1550	PRO	-	expression tag	UNP Q13219
A	1551	THR	-	expression tag	UNP Q13219
A	1552	ARG	-	expression tag	UNP Q13219
A	1553	THR	-	expression tag	UNP Q13219
A	1554	ARG	-	expression tag	UNP Q13219
A	1555	PRO	-	expression tag	UNP Q13219
A	1556	LEU	-	expression tag	UNP Q13219
A	1557	GLU	-	expression tag	UNP Q13219
A	1558	GLN	-	expression tag	UNP Q13219
A	1559	LYS	-	expression tag	UNP Q13219
A	1560	LEU	-	expression tag	UNP Q13219
A	1561	ILE	-	expression tag	UNP Q13219
A	1562	SER	-	expression tag	UNP Q13219
A	1563	GLU	-	expression tag	UNP Q13219
A	1564	GLU	-	expression tag	UNP Q13219
A	1565	ASP	-	expression tag	UNP Q13219
A	1566	LEU	-	expression tag	UNP Q13219
A	1567	ALA	-	expression tag	UNP Q13219
A	1568	ALA	-	expression tag	UNP Q13219
A	1569	ASN	-	expression tag	UNP Q13219
A	1570	ASP	-	expression tag	UNP Q13219
A	1571	ILE	-	expression tag	UNP Q13219

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Chain	Residue	Modelled	Actual	Comment	Reference
A	1572	LEU	-	expression tag	UNP Q13219
A	1573	ASP	-	expression tag	UNP Q13219
A	1574	TYR	-	expression tag	UNP Q13219
A	1575	LYS	-	expression tag	UNP Q13219
A	1576	ASP	-	expression tag	UNP Q13219
A	1577	ASP	-	expression tag	UNP Q13219
A	1578	ASP	-	expression tag	UNP Q13219
A	1579	ASP	-	expression tag	UNP Q13219
A	1580	LYS	-	expression tag	UNP Q13219
A	1581	VAL	-	expression tag	UNP Q13219
B	483	ALA	GLU	engineered mutation	UNP Q13219
B	1144	TYR	SER	engineered mutation	UNP Q13219
B	1548	SER	-	expression tag	UNP Q13219
B	1549	GLY	-	expression tag	UNP Q13219
B	1550	PRO	-	expression tag	UNP Q13219
B	1551	THR	-	expression tag	UNP Q13219
B	1552	ARG	-	expression tag	UNP Q13219
B	1553	THR	-	expression tag	UNP Q13219
B	1554	ARG	-	expression tag	UNP Q13219
B	1555	PRO	-	expression tag	UNP Q13219
B	1556	LEU	-	expression tag	UNP Q13219
B	1557	GLU	-	expression tag	UNP Q13219
B	1558	GLN	-	expression tag	UNP Q13219
B	1559	LYS	-	expression tag	UNP Q13219
B	1560	LEU	-	expression tag	UNP Q13219
B	1561	ILE	-	expression tag	UNP Q13219
B	1562	SER	-	expression tag	UNP Q13219
B	1563	GLU	-	expression tag	UNP Q13219
B	1564	GLU	-	expression tag	UNP Q13219
B	1565	ASP	-	expression tag	UNP Q13219
B	1566	LEU	-	expression tag	UNP Q13219
B	1567	ALA	-	expression tag	UNP Q13219
B	1568	ALA	-	expression tag	UNP Q13219
B	1569	ASN	-	expression tag	UNP Q13219
B	1570	ASP	-	expression tag	UNP Q13219
B	1571	ILE	-	expression tag	UNP Q13219
B	1572	LEU	-	expression tag	UNP Q13219
B	1573	ASP	-	expression tag	UNP Q13219
B	1574	TYR	-	expression tag	UNP Q13219
B	1575	LYS	-	expression tag	UNP Q13219
B	1576	ASP	-	expression tag	UNP Q13219
B	1577	ASP	-	expression tag	UNP Q13219

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Chain	Residue	Modelled	Actual	Comment	Reference
B	1578	ASP	-	expression tag	UNP Q13219
B	1579	ASP	-	expression tag	UNP Q13219
B	1580	LYS	-	expression tag	UNP Q13219
B	1581	VAL	-	expression tag	UNP Q13219

- Molecule 2 is a protein called Insulin-like growth factor-binding protein 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	D	25	Total 403	C 127	H 197	N 43	O 36	0	0
2	C	20	Total 335	C 100	H 173	N 32	O 30	0	0

There are 40 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	-8	HIS	-	expression tag	UNP P24593
D	-7	HIS	-	expression tag	UNP P24593
D	-6	HIS	-	expression tag	UNP P24593
D	-5	HIS	-	expression tag	UNP P24593
D	-4	HIS	-	expression tag	UNP P24593
D	-3	HIS	-	expression tag	UNP P24593
D	-2	ALA	-	expression tag	UNP P24593
D	-1	ALA	-	expression tag	UNP P24593
D	0	ALA	-	expression tag	UNP P24593
D	253	ALA	-	expression tag	UNP P24593
D	254	ALA	-	expression tag	UNP P24593
D	255	ALA	-	expression tag	UNP P24593
D	256	ASP	-	expression tag	UNP P24593
D	257	TYR	-	expression tag	UNP P24593
D	258	LYS	-	expression tag	UNP P24593
D	259	ASP	-	expression tag	UNP P24593
D	260	ASP	-	expression tag	UNP P24593
D	261	ASP	-	expression tag	UNP P24593
D	262	ASP	-	expression tag	UNP P24593
D	263	LYS	-	expression tag	UNP P24593
C	-8	HIS	-	expression tag	UNP P24593
C	-7	HIS	-	expression tag	UNP P24593
C	-6	HIS	-	expression tag	UNP P24593
C	-5	HIS	-	expression tag	UNP P24593
C	-4	HIS	-	expression tag	UNP P24593
C	-3	HIS	-	expression tag	UNP P24593

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-2	ALA	-	expression tag	UNP P24593
C	-1	ALA	-	expression tag	UNP P24593
C	0	ALA	-	expression tag	UNP P24593
C	253	ALA	-	expression tag	UNP P24593
C	254	ALA	-	expression tag	UNP P24593
C	255	ALA	-	expression tag	UNP P24593
C	256	ASP	-	expression tag	UNP P24593
C	257	TYR	-	expression tag	UNP P24593
C	258	LYS	-	expression tag	UNP P24593
C	259	ASP	-	expression tag	UNP P24593
C	260	ASP	-	expression tag	UNP P24593
C	261	ASP	-	expression tag	UNP P24593
C	262	ASP	-	expression tag	UNP P24593
C	263	LYS	-	expression tag	UNP P24593

- Molecule 3 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
3	A	1	Total 1	Zn 1	0
3	B	1	Total 1	Zn 1	0

3 Residue-property plots ⓘ

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

• Molecule 1: Pappalysin-1
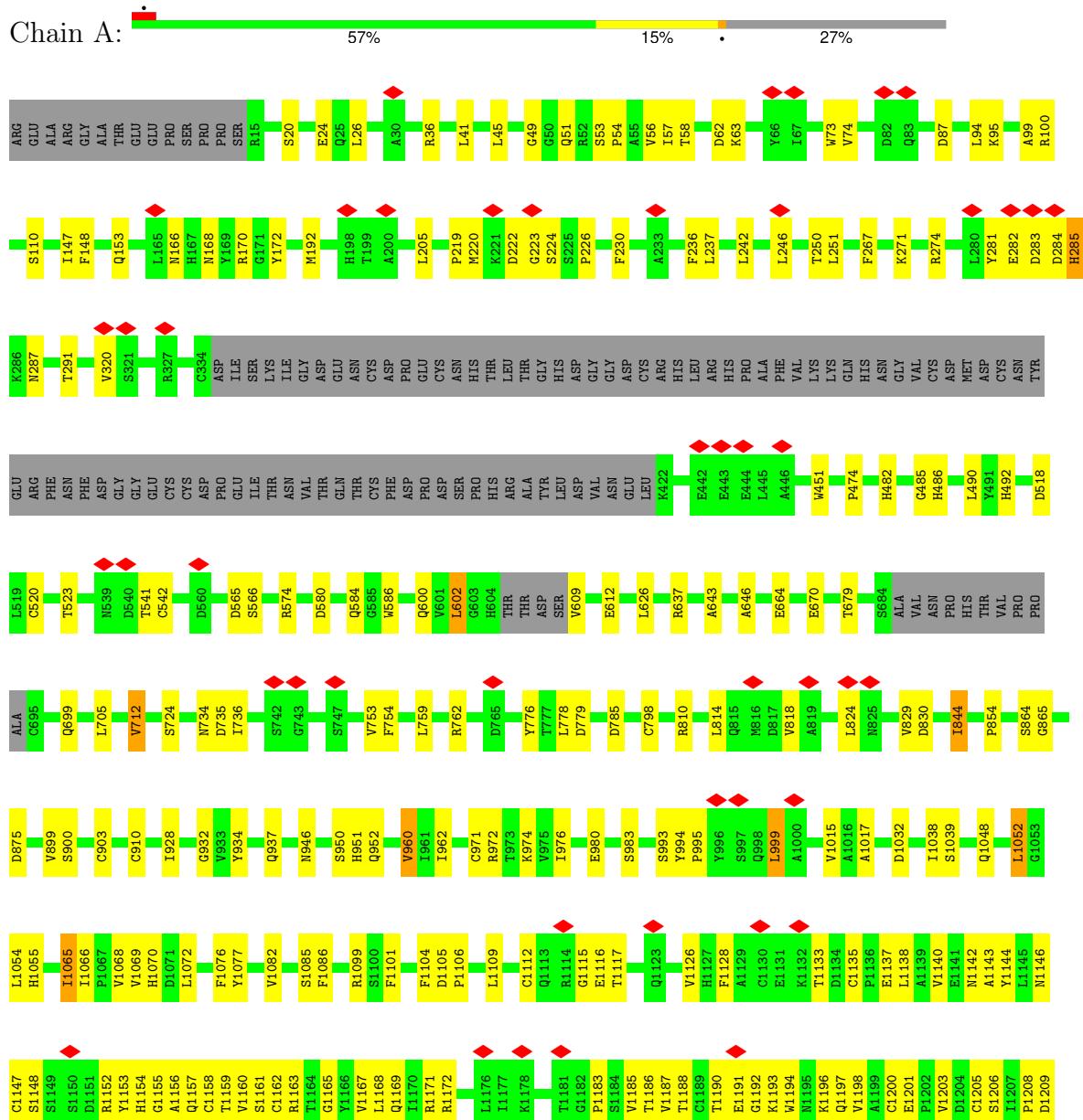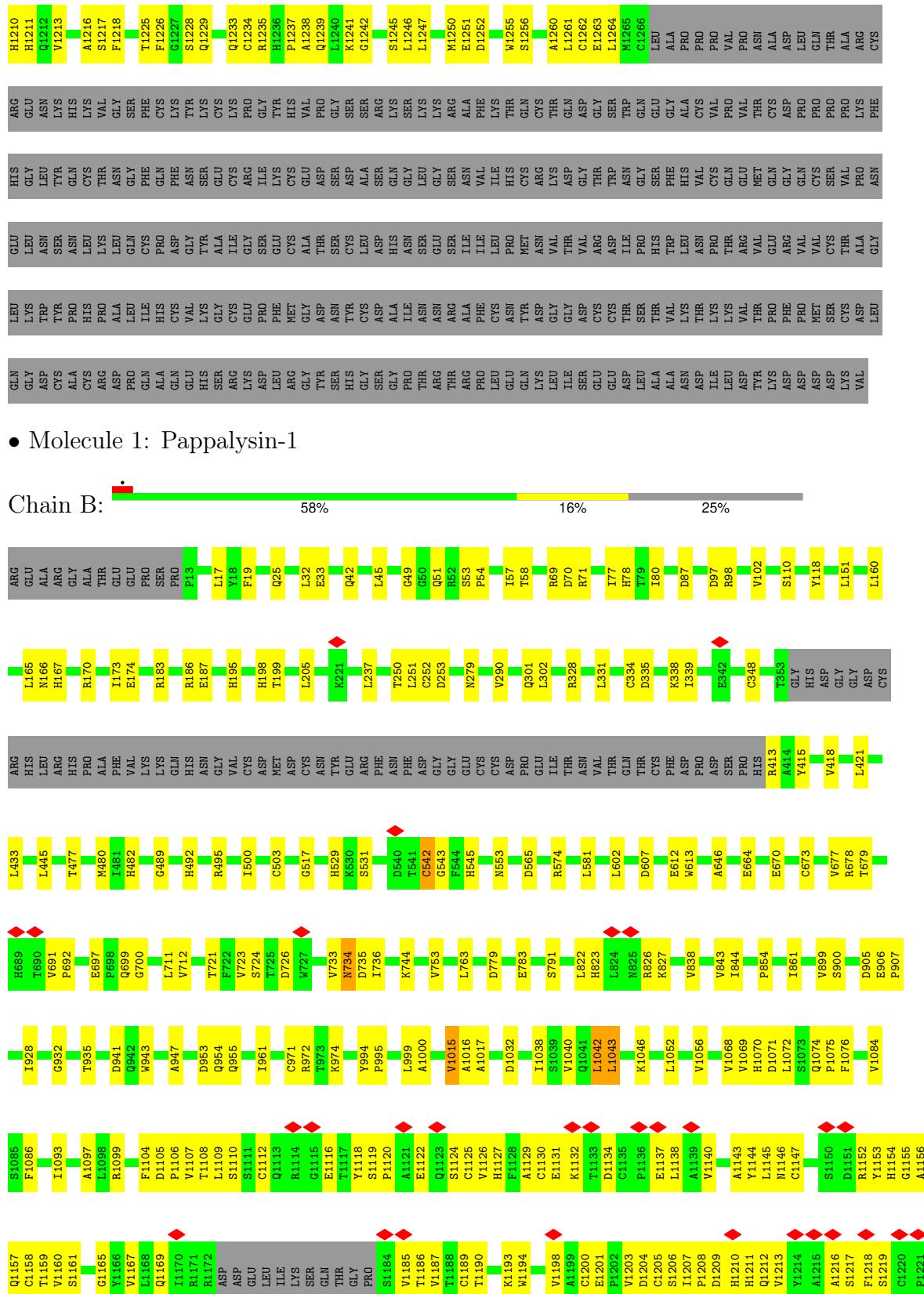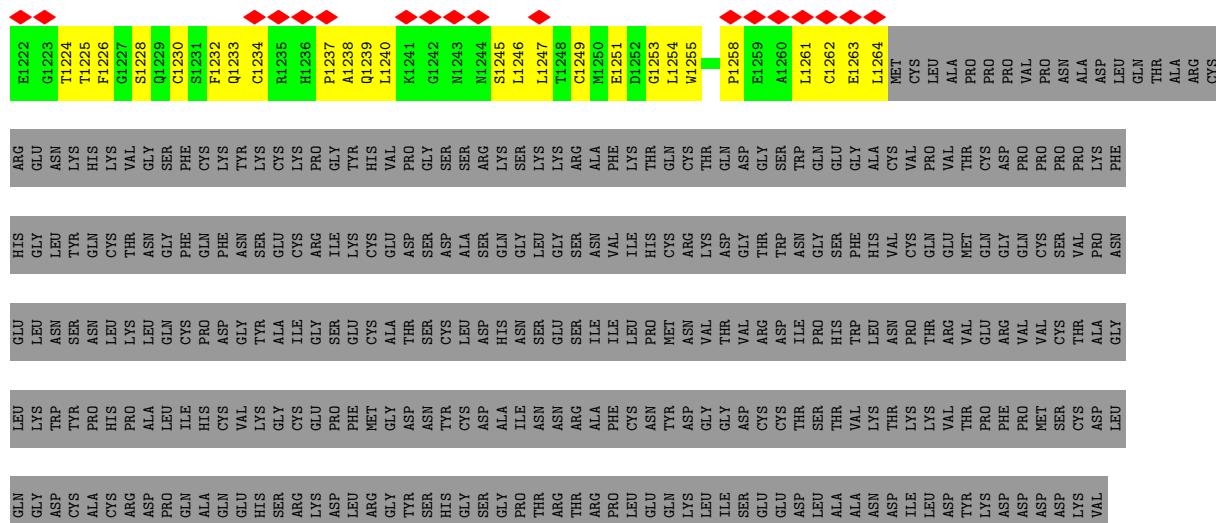
• Molecule 1: Pappalysin-1

Chain B:

58%　　　　　　　16%　　　　　25%

• Molecule 2: Insulin-like growth factor-binding protein 5

Chain D: 8%   ·   91%

• Molecule 2: Insulin-like growth factor-binding protein 5

Chain C: 6%   ·   93%
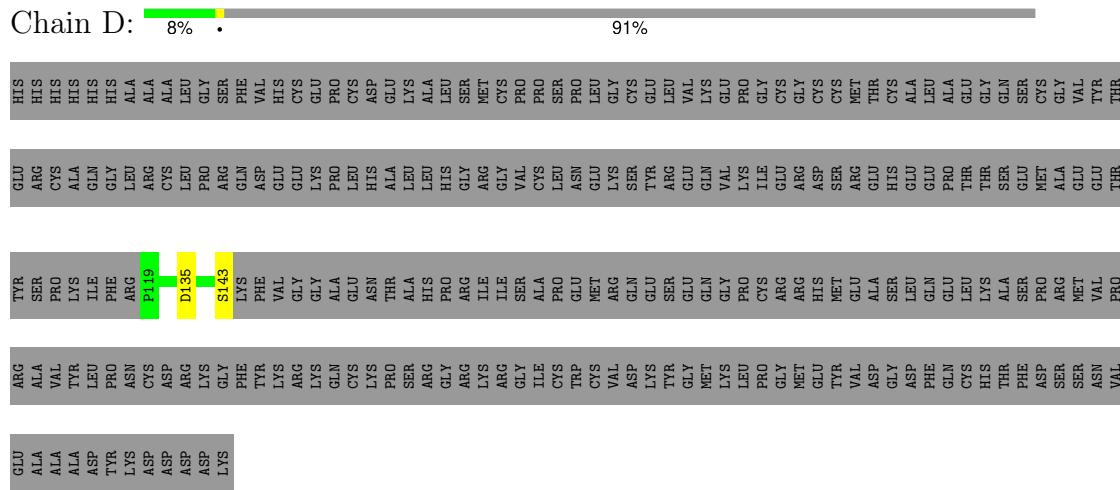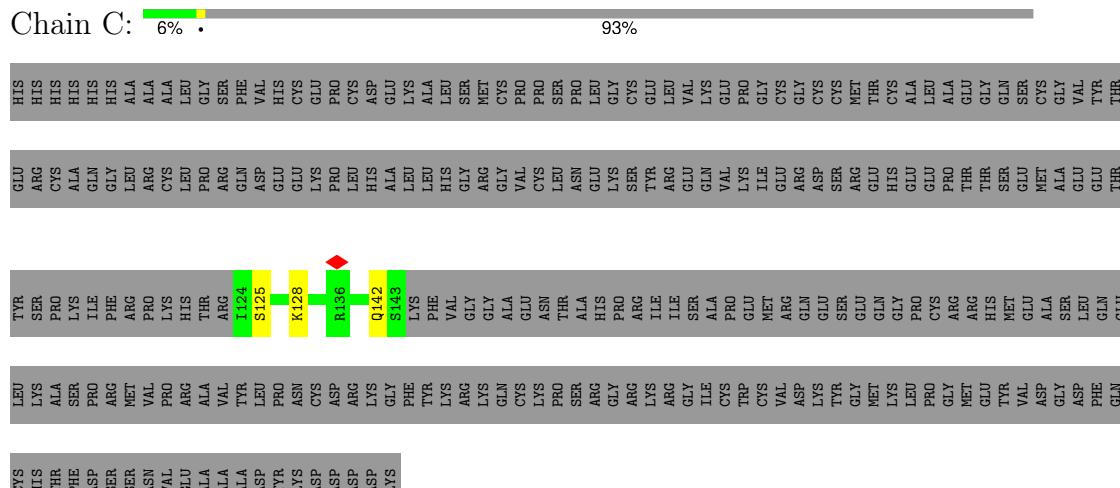
4   Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	245018	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 $(e^-/\text{Å}^2)$	47.6	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	3500	Depositor
Magnification	105000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	2.691	Depositor
Minimum map value	-1.645	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.039	Depositor
Recommended contour level	0.2305	Depositor
Map size (Å)	365.19998, 365.19998, 365.19998	wwPDB
Map dimensions	440, 440, 440	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.83, 0.83, 0.83	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	0.25	0/9019	0.66	41/12321 (0.3%)
1	B	0.25	0/9343	0.53	16/12757 (0.1%)
2	C	0.22	0/161	0.45	0/210
2	D	0.22	0/207	0.52	0/271
All	All	0.25	0/18730	0.59	57/25559 (0.2%)

There are no bond length outliers.

All (57) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	338	LYS	CD-CE-NZ	-11.24	85.85	111.70
1	A	474	PRO	C-N-CA	9.46	142.17	122.30
1	A	284	ASP	C-N-CA	9.06	144.35	121.70
1	B	542	CYS	C-N-CA	8.82	140.83	122.30
1	A	875	ASP	C-N-CA	8.25	142.33	121.70
1	A	1065	ILE	C-N-CA	7.78	141.16	121.70
1	A	192	MET	CB-CG-SD	7.45	134.75	112.40
1	A	946	ASN	C-N-CA	7.16	139.59	121.70
1	B	1015	VAL	C-N-CA	7.12	139.50	121.70
1	A	1077	TYR	C-N-CA	6.99	139.18	121.70
1	B	80	ILE	CG1-CB-CG2	6.86	126.50	111.40
1	A	712	VAL	CG1-CB-CG2	6.81	121.80	110.90
1	A	1015	VAL	CG1-CB-CG2	6.79	121.77	110.90
1	A	230	PHE	C-N-CA	6.79	138.66	121.70
1	A	952	GLN	C-N-CA	6.78	138.64	121.70
1	A	829	VAL	CG1-CB-CG2	6.75	121.70	110.90
1	A	1082	VAL	CG1-CB-CG2	6.70	121.62	110.90
1	A	285	HIS	C-N-CA	6.70	138.44	121.70
1	A	320	VAL	CG1-CB-CG2	6.68	121.59	110.90
1	A	283	ASP	C-N-CA	6.67	138.38	121.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	844	ILE	CG1-CB-CG2	6.65	126.02	111.40
1	A	818	VAL	CG1-CB-CG2	6.64	121.52	110.90
1	B	1015	VAL	CG1-CB-CG2	6.58	121.42	110.90
1	A	976	ILE	CG1-CB-CG2	6.53	125.77	111.40
1	A	962	ILE	CG1-CB-CG2	6.48	125.66	111.40
1	A	960	VAL	CG1-CB-CG2	6.01	120.51	110.90
1	A	937	GLN	C-N-CA	5.98	134.85	122.30
1	B	1043	LEU	CB-CG-CD2	5.93	121.08	111.00
1	A	1054	LEU	C-N-CA	5.87	136.38	121.70
1	B	1042	LEU	CB-CG-CD2	5.84	120.92	111.00
1	B	763	LEU	CB-CG-CD1	5.83	120.92	111.00
1	A	1052	LEU	CB-CG-CD1	5.80	120.86	111.00
1	B	32	LEU	CB-CG-CD2	5.76	120.80	111.00
1	A	242	LEU	CB-CG-CD2	5.76	120.79	111.00
1	A	602	LEU	CB-CG-CD2	5.74	120.75	111.00
1	A	824	LEU	CB-CG-CD2	5.65	120.61	111.00
1	A	626	LEU	CB-CG-CD2	5.64	120.59	111.00
1	A	205	LEU	CB-CG-CD2	5.63	120.58	111.00
1	A	205	LEU	CB-CG-CD1	5.61	120.54	111.00
1	A	246	LEU	CB-CG-CD1	5.61	120.53	111.00
1	B	822	LEU	CB-CG-CD1	5.59	120.50	111.00
1	B	822	LEU	CB-CG-CD2	5.59	120.50	111.00
1	A	246	LEU	CB-CG-CD2	5.59	120.50	111.00
1	A	602	LEU	CB-CG-CD1	5.57	120.46	111.00
1	A	999	LEU	CB-CG-CD2	5.57	120.46	111.00
1	A	824	LEU	CB-CG-CD1	5.56	120.45	111.00
1	A	999	LEU	CB-CG-CD1	5.56	120.45	111.00
1	A	626	LEU	CB-CG-CD1	5.56	120.45	111.00
1	A	983	SER	C-N-CA	5.51	135.48	121.70
1	B	763	LEU	CB-CG-CD2	5.49	120.33	111.00
1	B	32	LEU	CB-CG-CD1	5.48	120.31	111.00
1	A	242	LEU	CB-CG-CD1	5.47	120.30	111.00
1	B	1046	LYS	C-N-CA	5.43	135.27	121.70
1	B	1043	LEU	CB-CG-CD1	5.42	120.21	111.00
1	A	934	TYR	C-N-CA	5.37	135.11	121.70
1	B	1042	LEU	CB-CG-CD1	5.30	120.01	111.00
1	A	1052	LEU	CB-CG-CD2	5.00	119.51	111.00

There are no chirality outliers.

There are no planarity outliers.

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	8780	7002	8123	191	0
1	B	9095	7411	8490	224	0
2	C	162	173	183	2	0
2	D	206	197	231	1	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
All	All	18245	14783	17027	403	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 11.

All (403) 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:1147:CYS:HA	1:A:1158:CYS:HA	1.39	1.03
1:A:1137:GLU:HA	1:A:1152:ARG:HD2	1.43	1.00
1:B:1144:TYR:HB2	1:B:1161:SER:HB3	1.41	0.99
1:B:1118:TYR:H	1:B:1126:VAL:HG12	1.25	0.99
1:A:1135:CYS:HA	1:A:1192:GLY:HA2	1.43	0.98
1:B:1238:ALA:HB1	1:B:1262:CYS:HB2	1.45	0.98
1:B:87:ASP:OD1	1:B:110:SER:OG	1.90	0.88
1:B:1160:VAL:HG21	1:B:1198:VAL:HG21	1.57	0.87
1:B:1247:LEU:HD21	1:B:1258:PRO:HA	1.55	0.87
1:A:1105:ASP:HB2	1:A:1106:PRO:HD2	1.55	0.86
1:A:1133:THR:HG22	1:A:1191:GLU:HB3	1.56	0.86
1:A:45:LEU:HD22	1:A:57:ILE:HD13	1.59	0.85
1:A:1171:ARG:O	1:A:1197:GLN:N	2.12	0.81
1:B:1074:GLN:HB3	1:B:1075:PRO:HD2	1.63	0.79
1:B:1116:GLU:HG2	1:B:1127:HIS:HA	1.63	0.79
1:B:1108:THR:HA	1:B:1112:CYS:HB2	1.66	0.78
1:B:1116:GLU:HA	1:B:1126:VAL:O	1.84	0.78
1:A:518:ASP:OD2	1:A:523:THR:OG1	2.02	0.77
1:A:1128:PHE:HE1	1:A:1154:HIS:HB3	1.49	0.76
1:B:1190:THR:OG1	1:B:1193:LYS:O	2.04	0.76
1:B:495:ARG:NH1	1:B:517:GLY:O	2.20	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:174:GLU:OE2	1:B:195:HIS:NE2	2.20	0.74
1:A:1144:TYR:N	1:A:1161:SER:O	2.15	0.74
1:B:935:THR:OG1	1:B:941:ASP:OD2	2.03	0.73
1:A:100:ARG:NH1	1:B:1212:GLN:OE1	2.20	0.73
1:A:1160:VAL:HG11	1:A:1198:VAL:HG21	1.70	0.73
1:B:1152:ARG:HD3	1:B:1194:TRP:HZ2	1.52	0.73
1:A:974:LYS:NZ	1:A:1032:ASP:O	2.22	0.73
1:A:609:VAL:N	1:A:830:ASP:O	2.22	0.72
1:B:1160:VAL:N	1:B:1185:VAL:O	2.21	0.72
1:B:1144:TYR:O	1:B:1161:SER:N	2.17	0.71
1:A:147:ILE:HG22	1:A:148:PHE:H	1.54	0.71
1:B:723:VAL:HG22	1:B:726:ASP:HB2	1.72	0.71
1:B:670:GLU:OE1	1:B:670:GLU:N	2.23	0.71
1:B:1147:CYS:HA	1:B:1158:CYS:HA	1.73	0.71
1:A:1133:THR:HA	1:A:1191:GLU:HA	1.74	0.69
1:A:1217:SER:N	1:A:1233:GLN:O	2.22	0.69
1:B:1213:VAL:HG23	1:B:1216:ALA:HB3	1.75	0.69
1:B:677:VAL:HG22	2:D:135:ASP:OD2	1.93	0.69
1:A:451:TRP:NE1	2:C:142:GLN:OE1	2.25	0.69
1:A:1148:SER:N	1:A:1157:GLN:O	2.23	0.68
1:B:489:GLY:O	1:B:574:ARG:NH1	2.25	0.68
1:A:679:THR:HG22	1:A:785:ASP:HA	1.75	0.68
1:A:87:ASP:OD1	1:A:110:SER:OG	2.10	0.68
1:B:482:HIS:CE1	1:B:492:HIS:HE2	2.10	0.68
1:B:1146:ASN:HB3	1:B:1159:THR:HB	1.76	0.68
1:A:643:ALA:HB1	1:A:705:LEU:HD12	1.74	0.67
1:A:1208:PRO:HB2	1:A:1218:PHE:CD2	2.30	0.67
1:A:646:ALA:N	1:A:664:GLU:OE2	2.28	0.66
1:A:1128:PHE:HZ	1:A:1153:TYR:HB2	1.61	0.66
1:A:1165:GLY:HA3	1:A:1226:PHE:CE2	2.31	0.66
1:B:328:ARG:NH1	1:B:413:ARG:O	2.29	0.66
1:A:950:SER:OG	1:A:951:HIS:ND1	2.25	0.65
1:B:45:LEU:HD22	1:B:57:ILE:HD13	1.79	0.65
1:A:1252:ASP:OD2	1:B:98:ARG:NH2	2.30	0.65
1:B:1070:HIS:CE1	1:B:1076:PHE:HA	2.31	0.65
1:A:1225:THR:O	1:A:1228:SER:OG	2.14	0.65
1:A:580:ASP:O	1:A:584:GLN:NE2	2.30	0.64
1:A:62:ASP:OD1	1:A:63:LYS:N	2.31	0.64
1:A:1216:ALA:HA	1:A:1234:CYS:HA	1.80	0.64
1:B:237:LEU:HB3	1:B:602:LEU:HD11	1.80	0.64
1:A:1160:VAL:HB	1:A:1185:VAL:HG12	1.80	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:54:PRO:HB3	1:B:78:HIS:HB2	1.80	0.64
1:B:953:ASP:OD1	1:B:954:GLN:N	2.32	0.63
1:A:1133:THR:HG22	1:A:1191:GLU:CB	2.28	0.63
1:B:1208:PRO:HB2	1:B:1218:PHE:CG	2.33	0.63
1:A:1237:PRO:HD2	1:A:1264:LEU:HD11	1.80	0.63
1:B:1216:ALA:HB2	1:B:1234:CYS:SG	2.39	0.62
1:A:1208:PRO:HB2	1:A:1218:PHE:CG	2.35	0.62
1:B:543:GLY:O	1:B:545:HIS:ND1	2.27	0.62
1:B:1206:SER:O	1:B:1255:TRP:NE1	2.31	0.62
1:A:971:CYS:SG	1:A:972:ARG:N	2.72	0.62
1:B:1144:TYR:N	1:B:1161:SER:O	2.26	0.62
1:A:26:LEU:HD11	1:A:226:PRO:HG3	1.81	0.62
1:A:724:SER:HB2	1:A:779:ASP:OD2	2.00	0.62
1:A:1187:VAL:CG2	1:A:1194:TRP:HB3	2.30	0.62
1:B:1239:GLN:O	1:B:1262:CYS:HA	2.00	0.61
1:A:222:ASP:OD1	1:A:223:GLY:N	2.34	0.61
1:A:637:ARG:NH1	1:A:798:CYS:O	2.33	0.61
1:A:1070:HIS:NE2	1:A:1076:PHE:HA	2.14	0.61
1:B:1216:ALA:HA	1:B:1234:CYS:HA	1.81	0.61
1:B:253:ASP:OD1	1:B:574:ARG:NH2	2.33	0.61
1:A:41:LEU:HD21	1:A:58:THR:HG21	1.83	0.61
1:A:1104:PHE:CZ	1:B:1109:LEU:HB2	2.35	0.61
1:A:1241:LYS:O	1:A:1260:ALA:HB1	2.01	0.61
1:A:1160:VAL:HB	1:A:1185:VAL:CG1	2.31	0.61
1:A:1128:PHE:CZ	1:A:1153:TYR:HB2	2.36	0.60
1:B:1167:VAL:N	1:B:1201:GLU:O	2.27	0.60
1:B:1251:GLU:OE1	1:B:1251:GLU:N	2.28	0.60
1:B:1119:SER:HB2	1:B:1124:SER:O	2.01	0.60
1:A:1190:THR:N	1:A:1193:LYS:O	2.33	0.60
1:B:1218:PHE:CE1	1:B:1247:LEU:HD12	2.37	0.60
1:A:267:PHE:O	1:A:271:LYS:NZ	2.34	0.60
1:B:1167:VAL:HG12	1:B:1201:GLU:O	2.02	0.60
1:B:1156:ALA:H	1:B:1189:CYS:HB3	1.65	0.59
1:B:42:GLN:NE2	1:B:118:TYR:OH	2.34	0.59
1:B:838:VAL:HG22	1:B:861:ILE:HG12	1.84	0.59
1:B:999:LEU:HD12	1:B:1000:ALA:N	2.18	0.59
1:B:1126:VAL:HG13	1:B:1129:ALA:HB2	1.82	0.59
1:B:733:VAL:HG12	1:B:733:VAL:O	2.02	0.59
1:A:518:ASP:O	1:A:574:ARG:NH2	2.34	0.59
1:B:971:CYS:SG	1:B:972:ARG:N	2.75	0.59
1:B:1208:PRO:HB2	1:B:1218:PHE:CD2	2.38	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:165:LEU:HD23	1:B:165:LEU:O	2.04	0.58
1:B:553:ASN:O	1:B:565:ASP:N	2.31	0.58
1:B:25:GLN:OE1	1:B:166:ASN:ND2	2.35	0.58
1:B:54:PRO:HD2	1:B:167:HIS:CE1	2.39	0.58
1:A:1137:GLU:HA	1:A:1152:ARG:CD	2.25	0.57
1:A:1172:ARG:HA	1:A:1196:LYS:HA	1.86	0.57
1:B:613:TRP:O	1:B:826:ARG:NH1	2.37	0.57
1:A:220:MET:O	1:A:220:MET:HG2	2.05	0.57
1:B:1106:PRO:O	1:B:1110:SER:N	2.37	0.57
1:B:1118:TYR:N	1:B:1126:VAL:HG12	2.08	0.57
1:B:1238:ALA:HA	1:B:1263:GLU:O	2.05	0.57
1:A:1165:GLY:O	1:A:1203:VAL:HG23	2.05	0.57
1:A:1229:GLN:HB2	1:A:1247:LEU:O	2.05	0.57
1:A:1143:ALA:HB2	1:A:1200:CYS:SG	2.45	0.57
1:B:974:LYS:NZ	1:B:1032:ASP:O	2.35	0.57
1:B:697:GLU:N	1:B:697:GLU:OE1	2.37	0.56
1:B:1118:TYR:HA	1:B:1125:CYS:HA	1.87	0.56
1:B:646:ALA:N	1:B:664:GLU:OE2	2.38	0.56
1:A:600:GLN:N	1:A:612:GLU:O	2.37	0.56
1:B:45:LEU:CD2	1:B:57:ILE:HD13	2.34	0.56
1:A:753:VAL:HG22	1:A:759:LEU:HD12	1.88	0.56
1:B:54:PRO:HB3	1:B:78:HIS:CB	2.35	0.56
1:B:334:CYS:SG	1:B:335:ASP:N	2.78	0.56
1:B:1187:VAL:HG21	1:B:1194:TRP:HB3	1.88	0.56
1:B:1156:ALA:N	1:B:1189:CYS:HB3	2.20	0.56
1:A:1128:PHE:CE1	1:A:1154:HIS:HB3	2.36	0.56
1:A:1239:GLN:O	1:A:1262:CYS:HA	2.06	0.56
1:A:274:ARG:NE	1:A:586:TRP:O	2.35	0.55
1:B:823:HIS:ND1	1:B:827:LYS:O	2.34	0.55
1:B:1204:ASP:HA	1:B:1225:THR:HA	1.88	0.55
1:B:1217:SER:N	1:B:1233:GLN:O	2.32	0.55
1:A:1109:LEU:HD13	1:B:1104:PHE:HE2	1.71	0.55
1:A:1138:LEU:HB3	1:A:1152:ARG:NH1	2.21	0.55
1:A:1017:ALA:HA	1:B:1072:LEU:HD22	1.88	0.55
1:B:1105:ASP:HB3	1:B:1106:PRO:HD2	1.87	0.55
1:A:1117:THR:N	1:A:1126:VAL:O	2.39	0.55
1:B:1208:PRO:HG3	1:B:1255:TRP:NE1	2.22	0.55
1:A:1152:ARG:NH1	1:A:1158:CYS:SG	2.80	0.55
1:A:1101:PHE:CZ	1:B:1072:LEU:HD21	2.42	0.55
1:A:1142:ASN:HA	1:A:1163:ARG:NH1	2.21	0.55
1:A:1261:LEU:HD23	1:B:151:LEU:HD13	1.87	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:947:ALA:HB1	1:B:961:ILE:HD11	1.89	0.55
1:B:1040:VAL:HG22	1:B:1084:VAL:HG22	1.88	0.55
1:B:279:ASN:HB3	1:B:290:VAL:HG12	1.88	0.55
1:B:1169:GLN:O	1:B:1198:VAL:HA	2.07	0.55
1:B:1245:SER:C	1:B:1246:LEU:HD12	2.28	0.55
1:B:1108:THR:HA	1:B:1112:CYS:CB	2.36	0.54
1:B:677:VAL:HG23	1:B:678:ARG:HD2	1.89	0.54
1:B:1119:SER:HB3	1:B:1120:PRO:HD2	1.90	0.54
1:A:1160:VAL:CG1	1:A:1198:VAL:HG21	2.38	0.54
1:A:1210:HIS:HA	1:A:1213:VAL:O	2.07	0.54
1:B:198:HIS:ND1	1:B:199:THR:O	2.41	0.54
1:A:1116:GLU:HB2	1:A:1126:VAL:O	2.08	0.54
1:A:281:TYR:OH	1:A:291:THR:HG21	2.08	0.54
1:A:735:ASP:OD1	1:A:736:ILE:N	2.41	0.54
1:A:1133:THR:O	1:A:1154:HIS:HB2	2.08	0.53
1:B:1126:VAL:CG1	1:B:1129:ALA:HB2	2.38	0.53
1:A:903:CYS:SG	1:A:910:CYS:N	2.81	0.53
1:B:1140:VAL:HG21	1:B:1198:VAL:HG23	1.89	0.53
1:B:928:ILE:O	1:B:932:GLY:N	2.41	0.53
1:A:95:LYS:NZ	1:A:100:ARG:O	2.32	0.53
1:A:1216:ALA:HB2	1:A:1234:CYS:SG	2.49	0.53
1:A:1155:GLY:HA2	1:A:1188:THR:HG23	1.90	0.53
1:B:195:HIS:O	1:B:195:HIS:ND1	2.42	0.53
1:A:670:GLU:N	1:A:670:GLU:OE1	2.42	0.53
1:B:1240:LEU:HA	1:B:1261:LEU:O	2.09	0.52
1:A:1052:LEU:O	1:A:1052:LEU:HG	2.08	0.52
1:A:1162:CYS:SG	1:A:1168:LEU:HA	2.49	0.52
1:A:679:THR:HG22	1:A:785:ASP:CA	2.38	0.52
1:A:1105:ASP:HB2	1:A:1106:PRO:CD	2.33	0.52
1:A:1187:VAL:HG22	1:A:1194:TRP:CE3	2.45	0.52
1:A:1205:CYS:HB3	1:A:1255:TRP:CD1	2.45	0.52
1:A:1133:THR:CA	1:A:1191:GLU:HA	2.40	0.52
1:A:51:GLN:NE2	1:A:170:ARG:O	2.38	0.52
1:B:51:GLN:NE2	1:B:170:ARG:O	2.37	0.52
1:A:1152:ARG:HD3	1:A:1194:TRP:HZ2	1.74	0.51
1:A:520:CYS:SG	1:A:574:ARG:NH2	2.83	0.51
1:A:960:VAL:HG23	1:A:960:VAL:O	2.09	0.51
1:A:166:ASN:OD1	1:A:168:ASN:ND2	2.43	0.51
1:B:237:LEU:HD22	1:B:602:LEU:HD21	1.91	0.51
1:A:899:VAL:O	1:A:900:SER:OG	2.27	0.51
1:B:49:GLY:O	1:B:170:ARG:NH2	2.43	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1072:LEU:HB2	1:B:1068:VAL:HG23	1.93	0.51
1:A:1142:ASN:C	1:A:1163:ARG:HD3	2.30	0.51
1:B:183:ARG:NH1	1:B:187:GLU:OE2	2.44	0.51
1:B:1165:GLY:O	1:B:1203:VAL:HG23	2.11	0.51
1:A:482:HIS:CE1	1:A:492:HIS:HE2	2.28	0.51
1:A:864:SER:OG	1:A:865:GLY:N	2.43	0.51
1:A:993:SER:OG	1:A:994:TYR:N	2.43	0.51
1:A:1167:VAL:HG12	1:A:1201:GLU:O	2.10	0.51
1:A:20:SER:OG	1:A:24:GLU:OE2	2.27	0.51
1:A:1052:LEU:HD11	1:A:1068:VAL:HG22	1.92	0.51
1:B:1132:LYS:O	1:B:1153:TYR:HA	2.11	0.51
1:A:1055:HIS:NE2	1:A:1066:ILE:HG23	2.27	0.50
1:B:723:VAL:CG2	1:B:726:ASP:HB2	2.41	0.50
1:B:1237:PRO:HD2	1:B:1264:LEU:HD12	1.93	0.50
1:A:1245:SER:C	1:A:1246:LEU:HD12	2.31	0.50
1:B:607:ASP:OD1	1:B:607:ASP:N	2.43	0.50
1:A:1112:CYS:HA	1:A:1116:GLU:OE2	2.12	0.50
1:B:712:VAL:O	1:B:712:VAL:HG13	2.12	0.50
1:A:1115:GLY:HA2	1:A:1154:HIS:CE1	2.47	0.49
1:A:1250:MET:CE	1:A:1256:SER:HB2	2.41	0.49
1:B:602:LEU:HD22	1:B:612:GLU:OE1	2.12	0.49
1:B:1132:LYS:HA	1:B:1153:TYR:HB2	1.94	0.49
1:A:1250:MET:HE3	1:A:1256:SER:HB2	1.94	0.49
1:A:1076:PHE:HB2	1:A:1106:PRO:HB3	1.94	0.49
1:A:1156:ALA:O	1:A:1188:THR:HA	2.13	0.49
1:A:1160:VAL:HG11	1:A:1198:VAL:CG2	2.41	0.49
1:B:339:ILE:HG13	1:B:415:TYR:OH	2.13	0.48
1:A:1187:VAL:HG22	1:A:1194:TRP:HE3	1.77	0.48
1:B:334:CYS:HB2	1:B:348:CYS:HA	1.94	0.48
1:B:1159:THR:HA	1:B:1186:THR:HA	1.95	0.48
1:B:1217:SER:O	1:B:1232:PHE:HA	2.11	0.48
1:B:433:LEU:HD23	1:B:433:LEU:O	2.13	0.48
1:A:49:GLY:O	1:A:170:ARG:NH2	2.47	0.48
1:B:1145:LEU:CD2	1:B:1160:VAL:HG13	2.43	0.48
1:B:1157:GLN:HA	1:B:1187:VAL:O	2.12	0.48
1:A:1052:LEU:CD1	1:A:1068:VAL:HG22	2.44	0.48
1:A:1146:ASN:HB3	1:A:1159:THR:HB	1.94	0.48
1:B:1042:LEU:CD1	1:B:1052:LEU:HD22	2.43	0.48
1:B:1187:VAL:CG2	1:B:1194:TRP:HB3	2.43	0.48
1:A:1144:TYR:HB2	1:A:1161:SER:HB3	1.96	0.48
1:A:1155:GLY:HA2	1:A:1188:THR:CG2	2.44	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:486:HIS:CE1	1:A:492:HIS:NE2	2.81	0.48
1:B:252:CYS:SG	1:B:581:LEU:HD13	2.54	0.48
1:B:1137:GLU:HA	1:B:1152:ARG:NE	2.29	0.48
1:B:1219:SER:O	1:B:1230:CYS:HB3	2.13	0.48
1:B:542:CYS:SG	1:B:1056:VAL:HG11	2.54	0.47
1:A:1208:PRO:HB2	1:A:1218:PHE:CE2	2.49	0.47
1:B:302:LEU:HD11	1:B:480:MET:CE	2.44	0.47
1:A:960:VAL:O	1:A:960:VAL:CG2	2.62	0.47
1:B:1119:SER:HB3	1:B:1120:PRO:CD	2.44	0.47
1:B:1207:ILE:HG13	1:B:1207:ILE:O	2.13	0.47
1:B:418:VAL:O	1:B:421:LEU:N	2.48	0.47
1:B:679:THR:OG1	1:B:783:GLU:OE1	2.31	0.47
1:B:1016:ALA:O	1:B:1068:VAL:HG21	2.15	0.47
1:B:1131:GLU:HG3	1:B:1134:ASP:OD2	2.15	0.47
1:B:1126:VAL:O	1:B:1126:VAL:HG13	2.15	0.47
1:A:1161:SER:HA	1:A:1183:PRO:O	2.14	0.47
1:A:1213:VAL:HG23	1:A:1216:ALA:HB3	1.96	0.47
1:B:1015:VAL:HG22	1:B:1106:PRO:HD3	1.97	0.47
1:B:1145:LEU:HD23	1:B:1160:VAL:HG13	1.97	0.47
1:A:1205:CYS:HB3	1:A:1255:TRP:NE1	2.30	0.46
1:A:1190:THR:O	1:A:1191:GLU:HG2	2.16	0.46
1:A:485:GLY:HA2	1:A:490:LEU:HD12	1.96	0.46
1:A:753:VAL:HG12	1:A:754:PHE:O	2.16	0.46
1:A:250:THR:HG22	1:A:251:LEU:N	2.29	0.46
1:B:1155:GLY:HA2	1:B:1189:CYS:O	2.15	0.46
1:A:1251:GLU:OE1	1:A:1251:GLU:N	2.33	0.46
1:B:999:LEU:HD12	1:B:1000:ALA:HB2	1.98	0.46
1:B:1109:LEU:O	1:B:1109:LEU:HD12	2.15	0.46
1:A:224:SER:O	1:A:224:SER:OG	2.34	0.45
1:A:237:LEU:CD2	1:A:602:LEU:HD11	2.46	0.45
1:B:71:ARG:NH1	1:B:97:ASP:O	2.48	0.45
1:B:994:TYR:N	1:B:995:PRO:HD2	2.31	0.45
1:B:250:THR:HG22	1:B:251:LEU:N	2.31	0.45
1:B:1108:THR:O	1:B:1112:CYS:HB3	2.15	0.45
1:B:1218:PHE:CZ	1:B:1247:LEU:HD12	2.52	0.45
1:A:1138:LEU:HB2	1:A:1194:TRP:NE1	2.31	0.45
1:A:1209:ASP:OD1	1:A:1211:HIS:HB2	2.15	0.45
1:B:711:LEU:HD13	1:B:791:SER:HB2	1.99	0.45
1:B:1074:GLN:HB3	1:B:1075:PRO:CD	2.40	0.45
1:B:1218:PHE:HE1	1:B:1247:LEU:HD12	1.79	0.45
1:B:1226:PHE:HA	1:B:1249:CYS:SG	2.56	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1140:VAL:HG21	1:A:1198:VAL:CG2	2.47	0.45
1:B:691:VAL:CG1	1:B:692:PRO:HD2	2.45	0.45
1:B:1017:ALA:N	1:B:1099:ARG:O	2.45	0.45
1:B:1152:ARG:NH1	1:B:1158:CYS:SG	2.89	0.45
1:B:1247:LEU:HD21	1:B:1258:PRO:CA	2.36	0.45
1:A:1101:PHE:HZ	1:B:1072:LEU:HD21	1.79	0.45
1:A:1140:VAL:HG21	1:A:1198:VAL:HG23	1.99	0.45
1:B:53:SER:HA	1:B:54:PRO:HA	1.69	0.45
1:B:529:HIS:ND1	1:B:531:SER:OG	2.42	0.45
1:A:1226:PHE:CE2	1:A:1251:GLU:HA	2.52	0.45
1:A:565:ASP:OD1	1:A:566:SER:N	2.43	0.45
1:B:1119:SER:OG	1:B:1126:VAL:HA	2.17	0.45
1:B:1205:CYS:O	1:B:1206:SER:OG	2.22	0.45
1:A:1048:GLN:OE1	1:A:1048:GLN:HA	2.16	0.45
1:B:160:LEU:HD11	1:B:173:ILE:HD13	1.99	0.45
1:B:331:LEU:HD13	1:B:334:CYS:HB3	1.99	0.45
1:B:1015:VAL:CG2	1:B:1106:PRO:HD3	2.47	0.45
1:A:282:GLU:OE2	1:A:287:ASN:ND2	2.48	0.44
1:A:1072:LEU:HD21	1:B:1076:PHE:HE1	1.82	0.44
1:A:1133:THR:HB	1:A:1191:GLU:H	1.82	0.44
1:B:250:THR:N	1:B:253:ASP:OD2	2.49	0.44
1:B:1042:LEU:C	1:B:1043:LEU:HD23	2.38	0.44
1:A:844:ILE:HD13	1:A:854:PRO:HA	2.00	0.44
1:B:1138:LEU:HD22	1:B:1194:TRP:CD1	2.52	0.44
1:A:172:TYR:OH	1:A:762:ARG:NE	2.50	0.44
1:B:1038:ILE:HG22	1:B:1086:PHE:HB3	1.98	0.44
1:B:33:GLU:O	1:B:205:LEU:HD11	2.16	0.44
1:A:237:LEU:HD23	1:A:602:LEU:HD11	1.99	0.44
1:A:1039:SER:OG	1:A:1085:SER:OG	2.33	0.44
1:A:734:ASN:HB2	1:A:778:LEU:HD23	2.00	0.44
1:A:1169:GLN:OE1	1:A:1171:ARG:NH2	2.51	0.44
1:A:1242:GLY:HA3	1:A:1260:ALA:HB2	2.00	0.44
1:B:1138:LEU:HB2	1:B:1194:TRP:NE1	2.33	0.44
1:B:1145:LEU:HA	1:B:1159:THR:O	2.16	0.44
1:A:1069:VAL:HG12	1:B:1071:ASP:HA	1.99	0.44
1:A:41:LEU:HD21	1:A:58:THR:CG2	2.47	0.44
1:A:541:THR:OG1	1:A:542:CYS:N	2.51	0.44
1:A:1070:HIS:CE1	1:A:1076:PHE:HA	2.52	0.44
1:B:17:LEU:HD23	1:B:19:PHE:CE1	2.53	0.44
1:B:943:TRP:CE3	1:B:1097:ALA:HB2	2.52	0.44
1:A:147:ILE:HG22	1:A:148:PHE:N	2.25	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1038:ILE:HG22	1:A:1086:PHE:HB3	1.99	0.44
1:B:602:LEU:HD13	1:B:612:GLU:OE1	2.17	0.44
1:B:1120:PRO:O	1:B:1122:GLU:N	2.51	0.44
1:B:1129:ALA:O	1:B:1130:CYS:HB2	2.18	0.44
1:B:1152:ARG:HD3	1:B:1194:TRP:CZ2	2.42	0.44
1:A:699:GLN:HE22	1:A:776:TYR:HE1	1.65	0.43
1:B:733:VAL:CG2	1:B:753:VAL:HG11	2.48	0.43
1:B:1138:LEU:HB2	1:B:1194:TRP:HE1	1.82	0.43
1:B:58:THR:HB	1:B:160:LEU:HD12	2.00	0.43
1:B:1234:CYS:HB3	1:B:1238:ALA:HB3	2.00	0.43
1:A:99:ALA:N	1:B:1254:LEU:HD13	2.33	0.43
1:A:1187:VAL:HG21	1:A:1194:TRP:HB3	1.98	0.43
1:B:70:ASP:OD1	1:B:70:ASP:N	2.44	0.43
1:A:41:LEU:HD22	1:A:73:TRP:CZ3	2.53	0.43
1:B:691:VAL:HG13	1:B:692:PRO:HD2	2.00	0.43
1:B:1042:LEU:HD11	1:B:1052:LEU:HD22	1.99	0.43
1:B:1070:HIS:CG	1:B:1070:HIS:O	2.71	0.43
1:B:1237:PRO:HD2	1:B:1264:LEU:CD1	2.48	0.43
1:B:673:CYS:N	1:B:721:THR:O	2.50	0.43
1:B:1247:LEU:CD2	1:B:1258:PRO:HA	2.39	0.43
1:B:301:GLN:NE2	1:B:477:THR:OG1	2.52	0.43
1:B:1131:GLU:O	1:B:1154:HIS:HB2	2.19	0.43
1:B:1224:THR:HG22	1:B:1255:TRP:HZ2	1.83	0.43
1:A:1251:GLU:HG2	1:A:1252:ASP:N	2.34	0.43
1:B:734:ASN:O	1:B:734:ASN:ND2	2.50	0.43
1:A:928:ILE:O	1:A:932:GLY:N	2.51	0.43
1:B:1143:ALA:HB2	1:B:1200:CYS:SG	2.59	0.43
2:C:125:SER:OG	2:C:128:LYS:HD3	2.18	0.43
1:B:1072:LEU:HD23	1:B:1072:LEU:O	2.19	0.42
1:B:1105:ASP:HB2	1:B:1107:VAL:HG22	2.01	0.42
1:A:1142:ASN:HA	1:A:1163:ARG:HH11	1.84	0.42
1:B:69:ARG:O	1:B:69:ARG:HG2	2.20	0.42
1:B:1146:ASN:N	1:B:1159:THR:O	2.37	0.42
1:B:906:GLU:HB3	1:B:907:PRO:HD3	2.00	0.42
1:A:1186:THR:O	1:A:1196:LYS:HD2	2.19	0.42
1:B:186:ARG:NH1	1:B:905:ASP:OD2	2.52	0.42
1:A:753:VAL:CG2	1:A:759:LEU:HD12	2.49	0.42
1:A:995:PRO:HD2	1:A:999:LEU:HD21	2.00	0.42
1:B:279:ASN:CB	1:B:290:VAL:HG12	2.50	0.42
1:A:1065:ILE:O	1:A:1065:ILE:HG23	2.19	0.42
1:B:1165:GLY:C	1:B:1203:VAL:HG23	2.40	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1209:ASP:CG	1:B:1211:HIS:HD1	2.23	0.42
1:A:810:ARG:CZ	1:A:814:LEU:HD23	2.49	0.42
1:A:1052:LEU:CD2	1:A:1066:ILE:HG21	2.50	0.42
1:A:36:ARG:NH2	1:A:153:GLN:OE1	2.52	0.42
1:A:1135:CYS:CA	1:A:1192:GLY:HA2	2.31	0.42
1:B:961:ILE:HG22	1:B:1093:ILE:O	2.20	0.42
1:B:1070:HIS:NE2	1:B:1076:PHE:HA	2.35	0.42
1:B:734:ASN:C	1:B:734:ASN:HD22	2.23	0.41
1:B:1069:VAL:HG23	1:B:1070:HIS:N	2.35	0.41
1:A:1235:ARG:O	1:A:1238:ALA:HB3	2.20	0.41
1:B:613:TRP:CE3	1:B:843:VAL:HG21	2.55	0.41
1:A:73:TRP:HB3	1:A:94:LEU:HD13	2.02	0.41
1:A:1144:TYR:CE2	1:A:1163:ARG:HG3	2.55	0.41
1:A:1205:CYS:O	1:A:1206:SER:HB2	2.20	0.41
1:B:17:LEU:HD23	1:B:19:PHE:CZ	2.56	0.41
1:B:699:GLN:HG2	1:B:700:GLY:N	2.36	0.41
1:B:1210:HIS:HA	1:B:1213:VAL:O	2.20	0.41
1:B:1234:CYS:HB3	1:B:1238:ALA:CB	2.50	0.41
1:A:712:VAL:O	1:A:712:VAL:HG13	2.21	0.41
1:B:1253:GLY:O	1:B:1254:LEU:HD23	2.20	0.41
1:A:1138:LEU:HD12	1:A:1194:TRP:CD1	2.56	0.41
1:A:1239:GLN:N	1:A:1263:GLU:O	2.40	0.41
1:B:102:VAL:O	1:B:102:VAL:HG13	2.20	0.41
1:A:282:GLU:O	1:A:285:HIS:HA	2.21	0.41
1:A:1017:ALA:N	1:A:1099:ARG:O	2.53	0.41
1:A:1105:ASP:OD1	1:A:1105:ASP:N	2.49	0.41
1:A:1238:ALA:HA	1:A:1263:GLU:O	2.20	0.41
1:B:844:ILE:HD13	1:B:854:PRO:HA	2.03	0.41
1:A:1070:HIS:CE1	1:A:1076:PHE:HD1	2.38	0.41
1:B:1145:LEU:HD22	1:B:1160:VAL:HG22	2.02	0.41
1:A:1104:PHE:O	1:A:1104:PHE:CD2	2.74	0.41
1:A:1168:LEU:HD22	1:A:1183:PRO:O	2.20	0.41
1:B:445:LEU:HD23	1:B:445:LEU:O	2.21	0.41
1:B:724:SER:OG	1:B:779:ASP:OD1	2.39	0.41
1:B:735:ASP:OD1	1:B:736:ILE:N	2.53	0.41
1:B:482:HIS:CE1	1:B:492:HIS:NE2	2.83	0.41
1:A:980:GLU:OE1	1:A:980:GLU:N	2.54	0.40
1:A:1165:GLY:HA3	1:A:1226:PHE:HE2	1.80	0.40
1:B:250:THR:HG22	1:B:251:LEU:H	1.86	0.40
1:B:1137:GLU:HA	1:B:1152:ARG:HD2	2.02	0.40
1:A:219:PRO:O	1:A:220:MET:HB3	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1138:LEU:HD21	1:A:1140:VAL:HG23	2.03	0.40
1:B:57:ILE:HD11	1:B:77:ILE:HD11	2.04	0.40
1:A:236:PHE:CG	1:A:236:PHE:O	2.75	0.40
1:B:953:ASP:OD2	1:B:955:GLN:NE2	2.55	0.40
1:B:1131:GLU:HB3	1:B:1154:HIS:HB2	2.04	0.40
1:B:1138:LEU:H	1:B:1152:ARG:CZ	2.35	0.40
1:B:1158:CYS:C	1:B:1186:THR:HG23	2.41	0.40
1:A:53:SER:HA	1:A:54:PRO:HA	1.83	0.40
1:B:1225:THR:O	1:B:1228:SER:OG	2.36	0.40
1:A:56:VAL:HG13	1:A:74:VAL:CG2	2.52	0.40
1:A:1104:PHE:CE1	1:B:1109:LEU:HB2	2.56	0.40
1:B:500:ILE:HD12	1:B:503:CYS:HA	2.03	0.40
1:B:899:VAL:HG13	1:B:900:SER:N	2.37	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	1143/1581 (72%)	1077 (94%)	66 (6%)	0	100	100
1	B	1176/1581 (74%)	1101 (94%)	75 (6%)	0	100	100
2	C	18/272 (7%)	18 (100%)	0	0	100	100
2	D	23/272 (8%)	21 (91%)	2 (9%)	0	100	100
All	All	2360/3706 (64%)	2217 (94%)	143 (6%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2   Protein sidechains ⓘ

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	938/1386 (68%)	938 (100%)	0	100	100
1	B	993/1386 (72%)	991 (100%)	2 (0%)	92	96
2	C	18/234 (8%)	18 (100%)	0	100	100
2	D	23/234 (10%)	22 (96%)	1 (4%)	25	52
All	All	1972/3240 (61%)	1969 (100%)	3 (0%)	91	96

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	734	ASN
1	B	744	LYS
2	D	143	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	529	HIS
1	A	1154	HIS
1	B	42	GLN
1	B	1050	HIS

5.3.3   RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 2 ligands modelled in this entry, 2 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-26475. 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 ⓘ
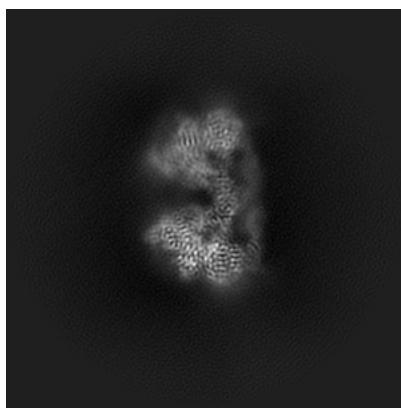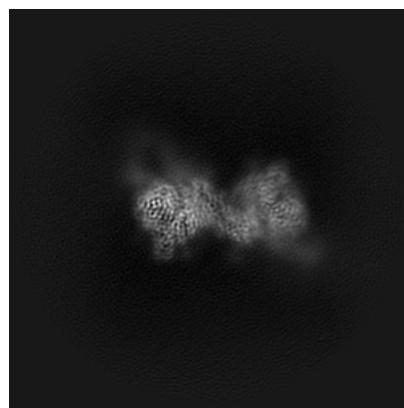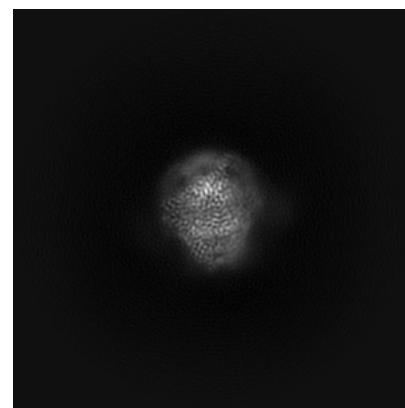
6.1.1 Primary map

X   Y   Z

6.1.2 Raw map

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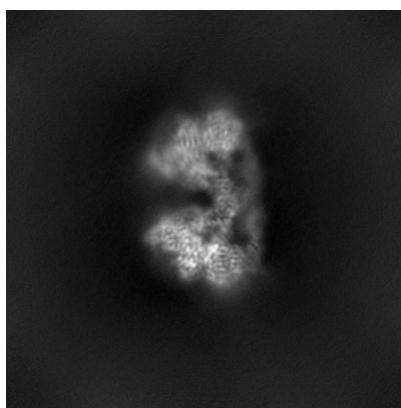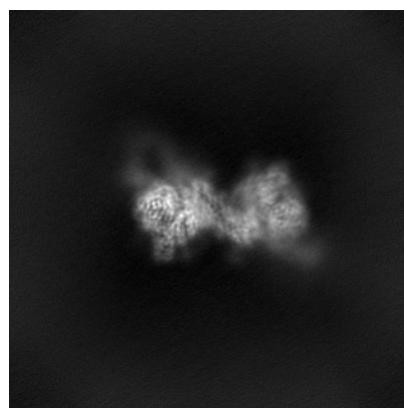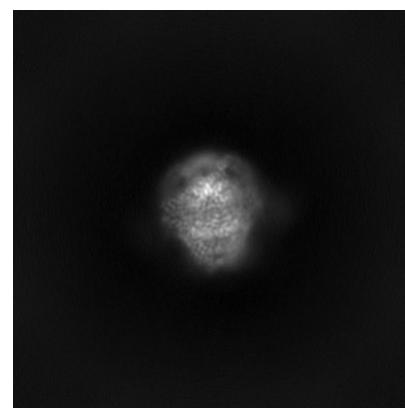
The images above show the map projected in three orthogonal directions.

6.2   Central slices ⓘ
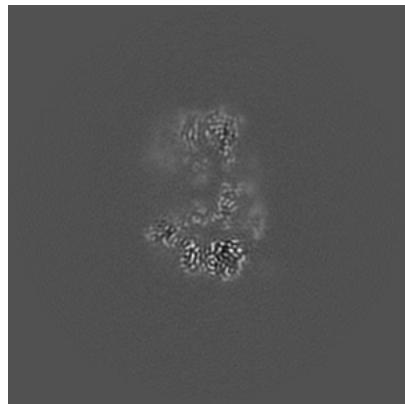
6.2.1   Primary map
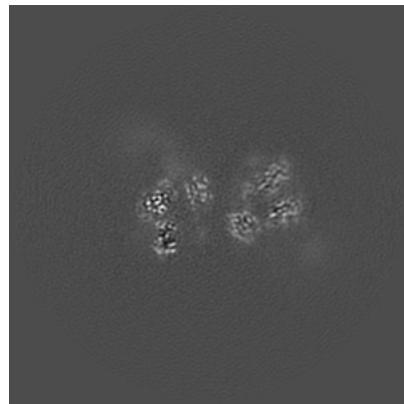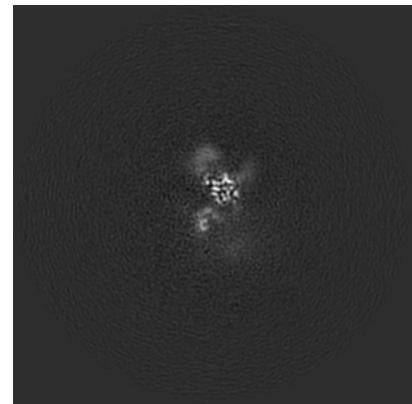
| X Index: 220 | Y Index: 220 | Z Index: 220 |

6.2.2   Raw map
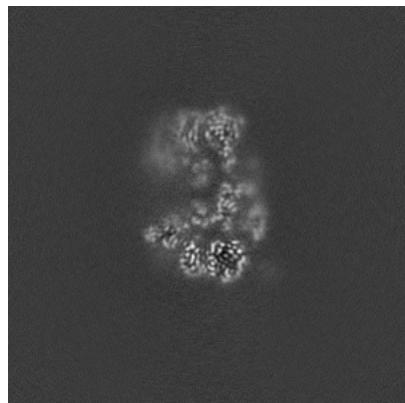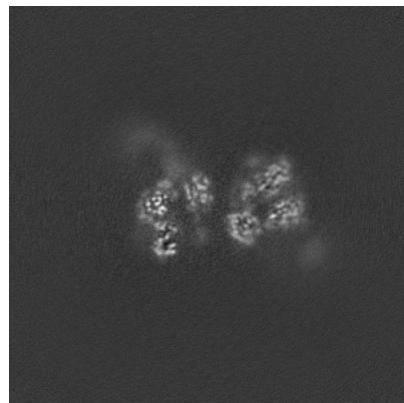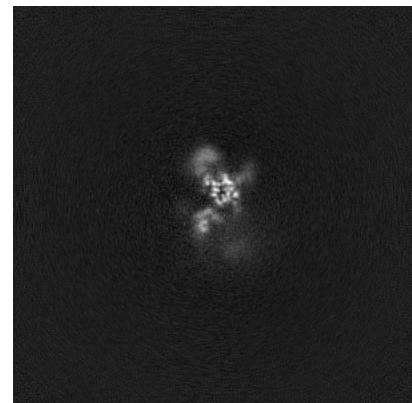
| X Index: 220 | Y Index: 220 | Z Index: 220 |

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

6.3 Largest variance slices ⓘ

6.3.1 Primary map
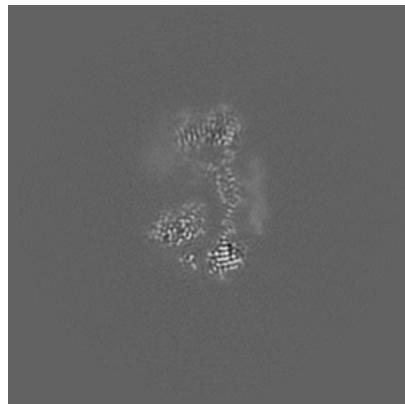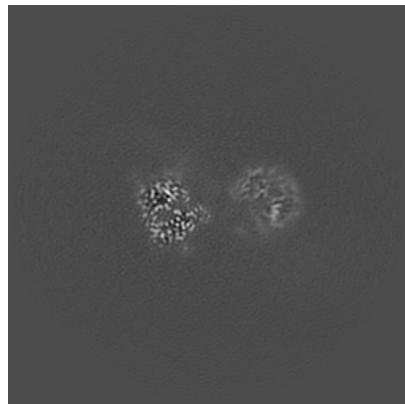
X Index: 212	Y Index: 199	Z Index: 165
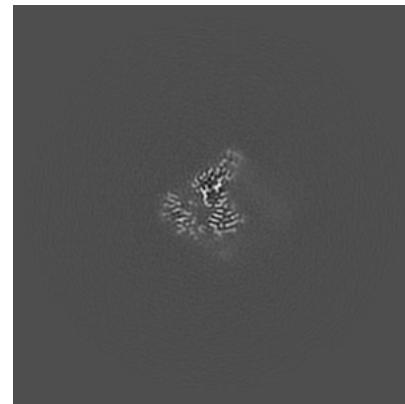
6.3.2 Raw map
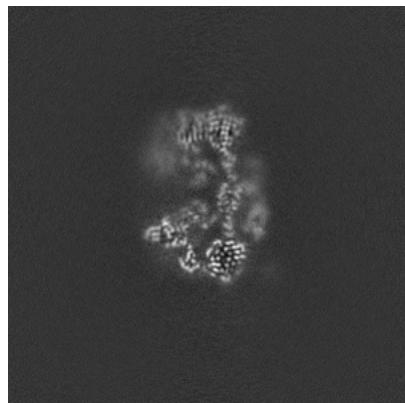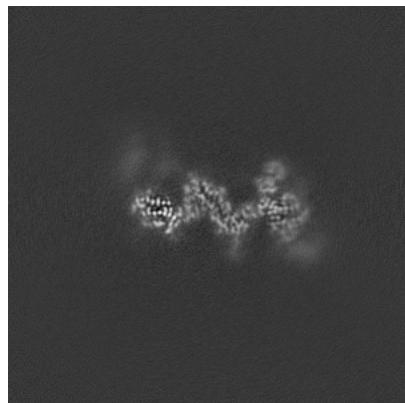
X Index: 217	Y Index: 240	Z Index: 177
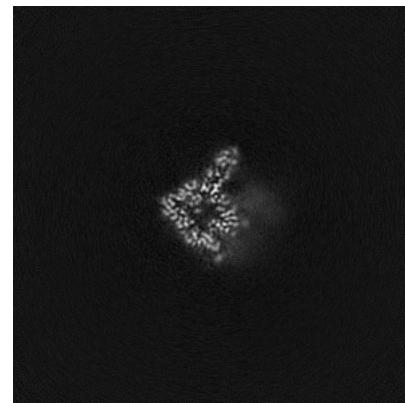
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map
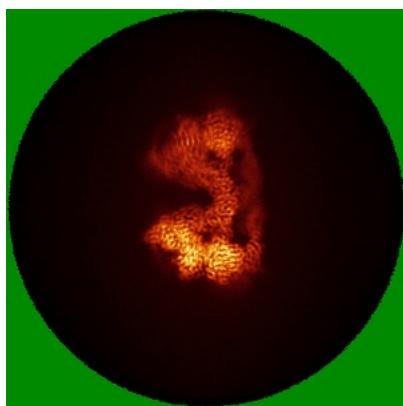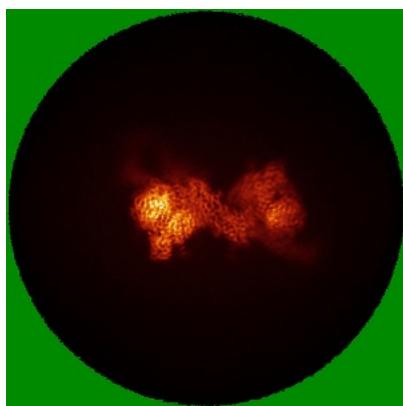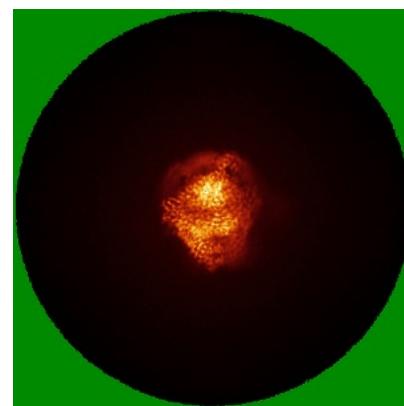
| X | Y | Z |

6.4.2 Raw map

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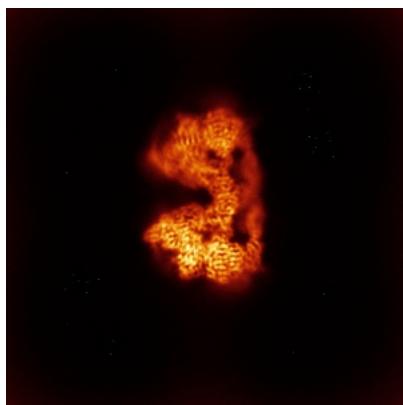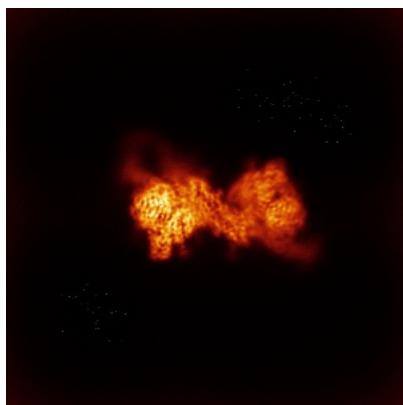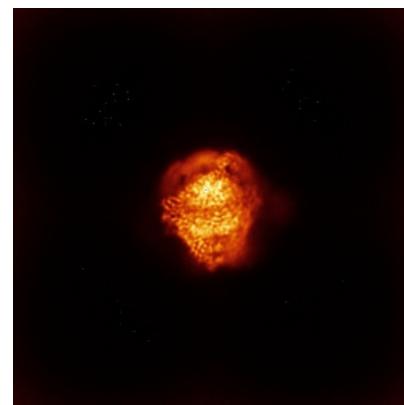
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

| X | Y | Z |
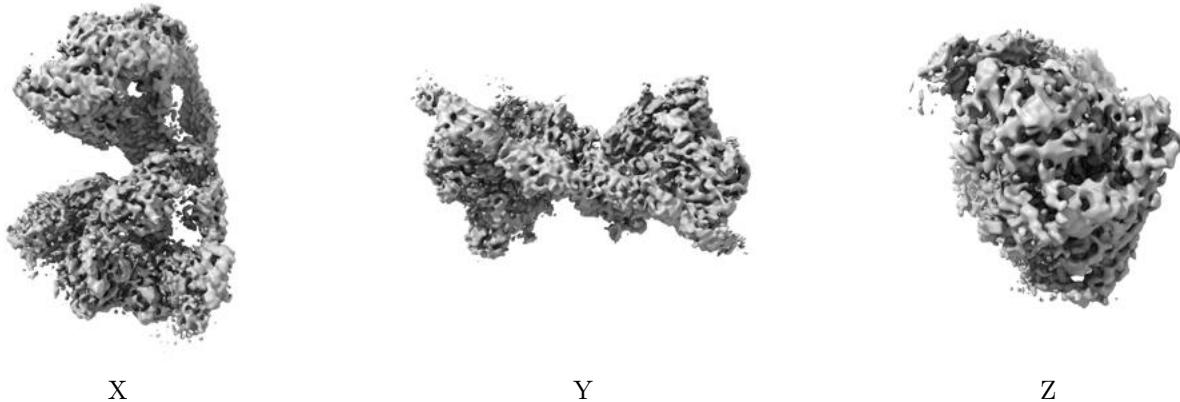
The images above show the 3D surface view of the map at the recommended contour level 0.2305. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

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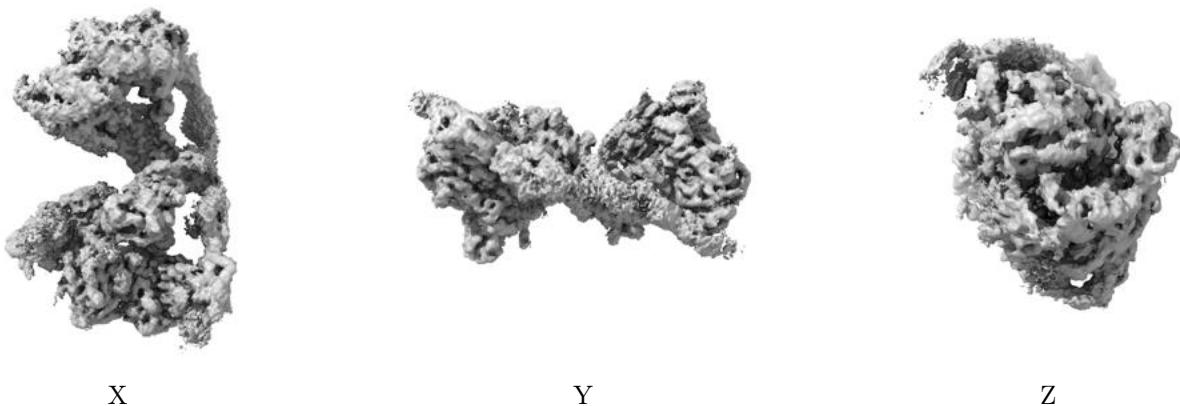
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6 Mask visualisation ⓘ

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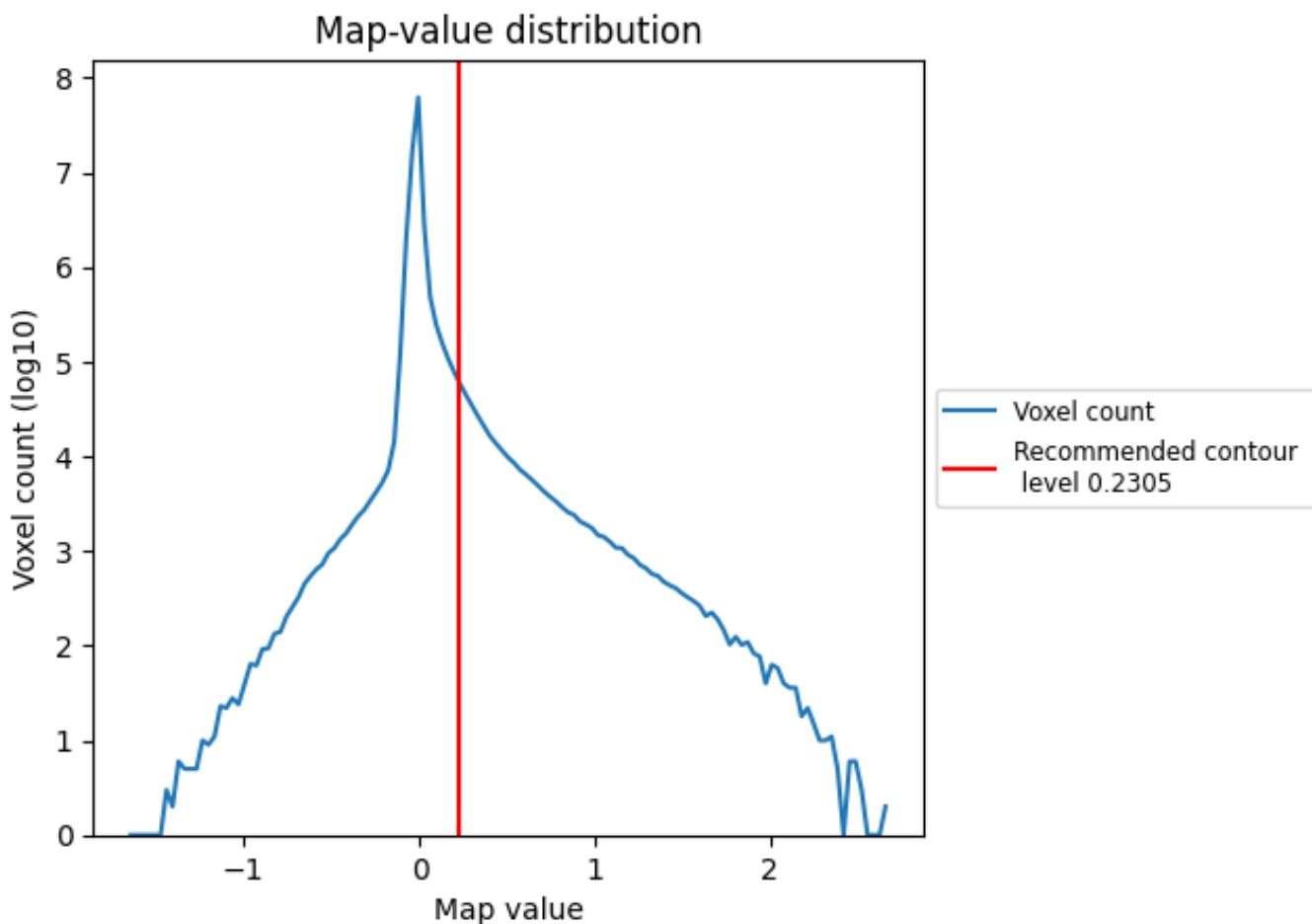
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate (i)
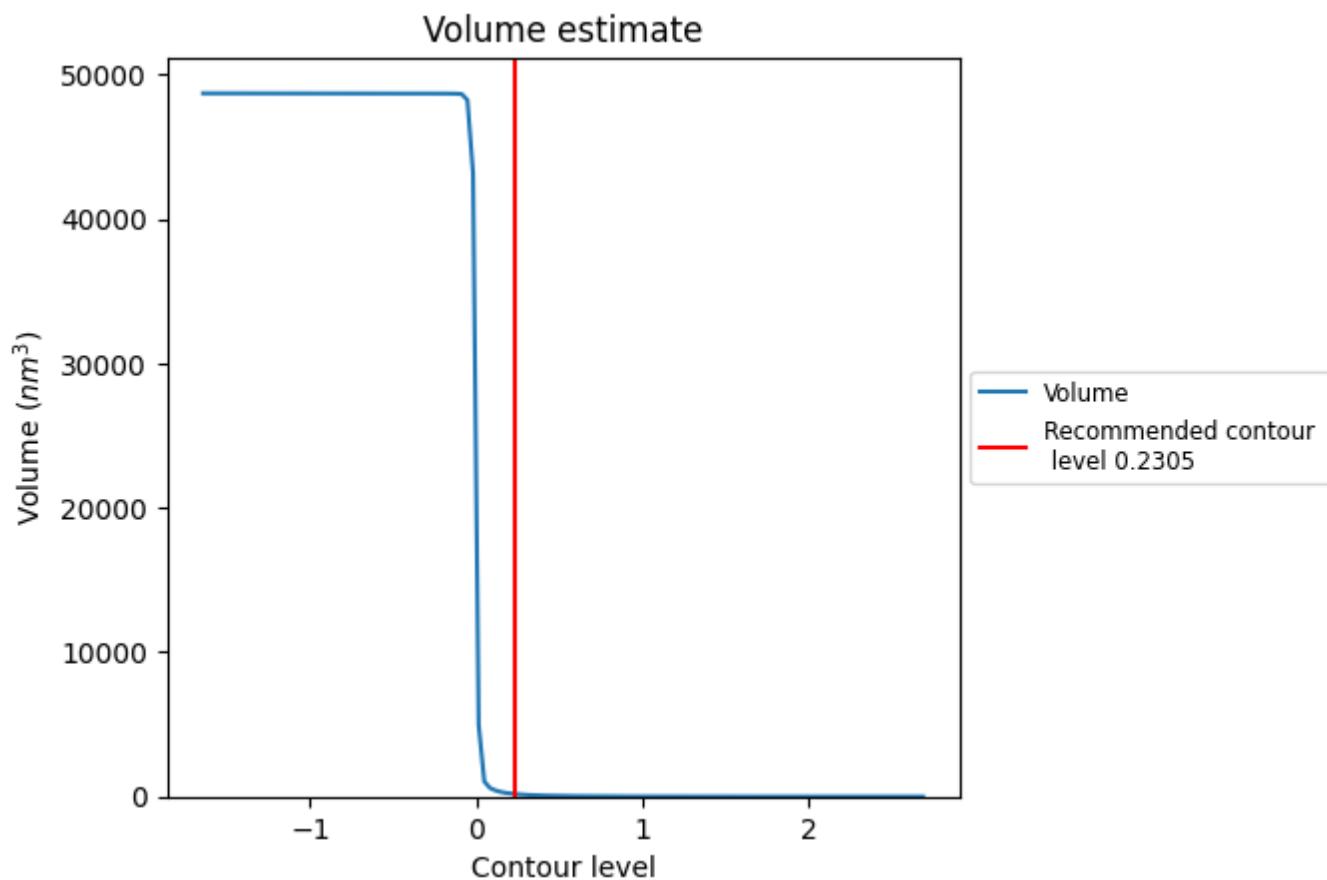
The volume at the recommended contour level is 180 nm^3; this corresponds to an approximate mass of 163 kDa.

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 ⓘ
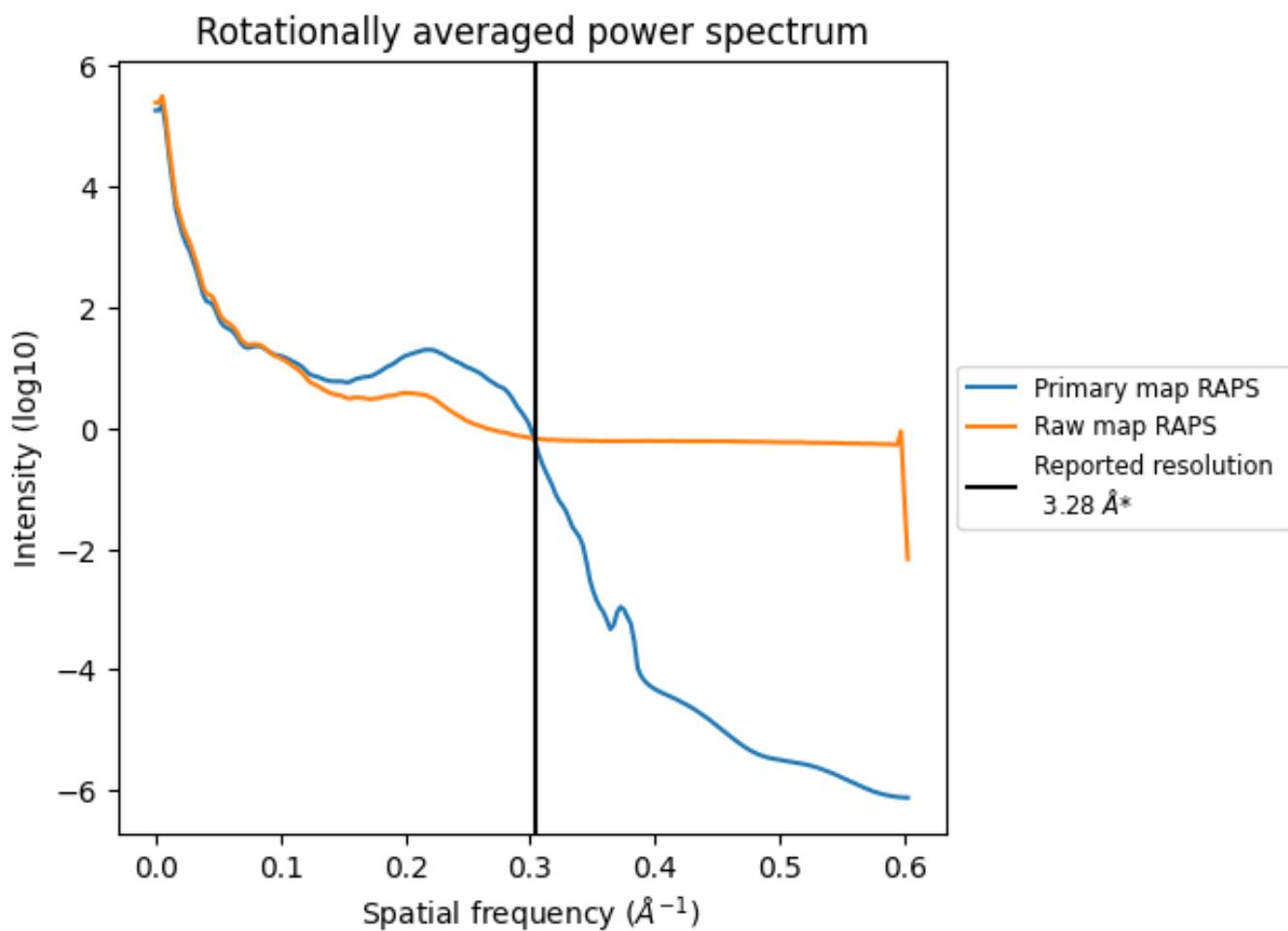
*Reported resolution corresponds to spatial frequency of 0.305 Å^{-1}

8 Fourier-Shell correlation (i)

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 (i)
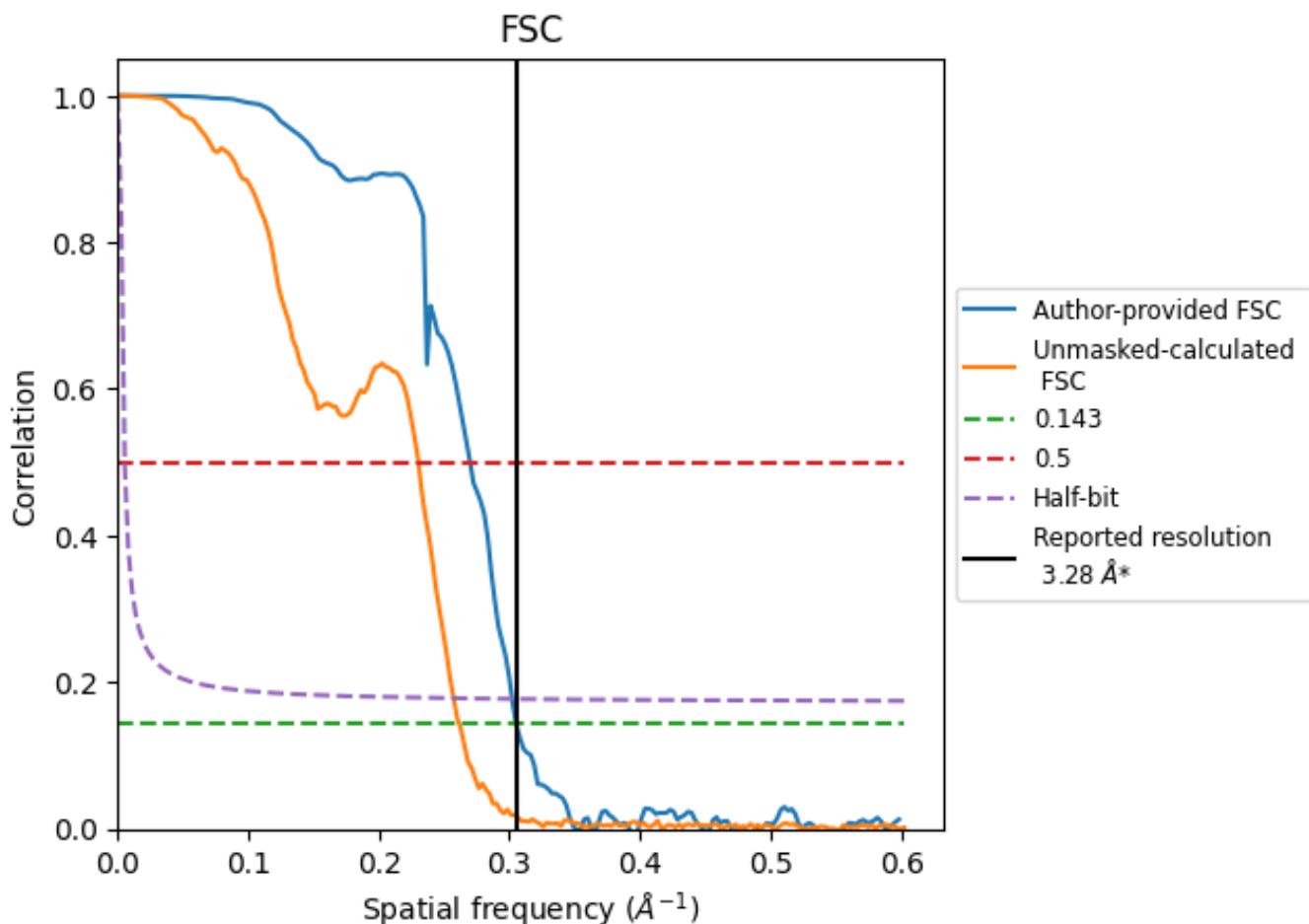
*Reported resolution corresponds to spatial frequency of 0.305 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.28	-	-
Author-provided FSC curve	3.28	3.71	3.31
Unmasked-calculated*	3.82	4.34	3.89

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.82 differs from the reported value 3.28 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-26475 and PDB model 7UFG. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay ⓘ
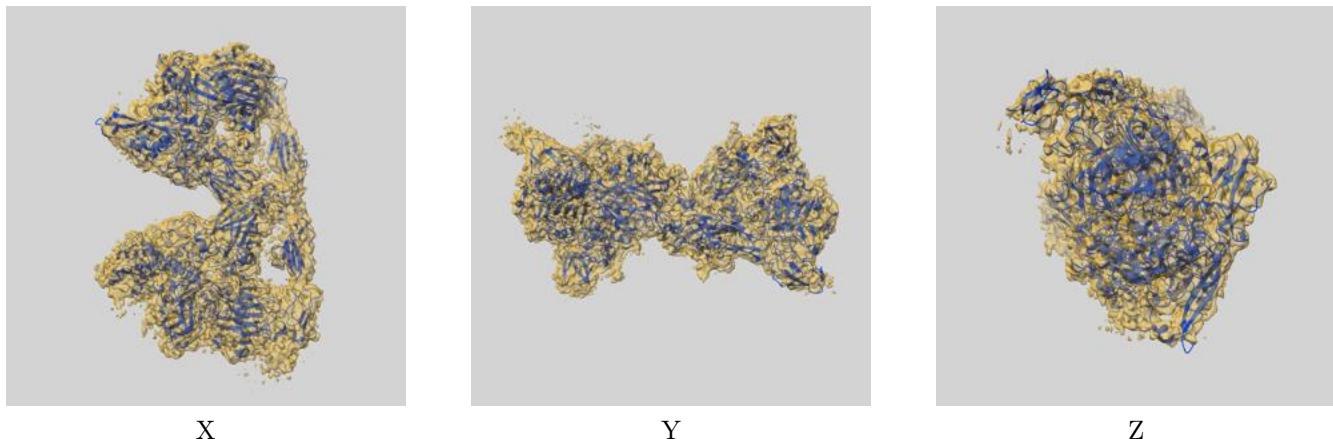
X	Y	Z

The images above show the 3D surface view of the map at the recommended contour level 0.2305 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
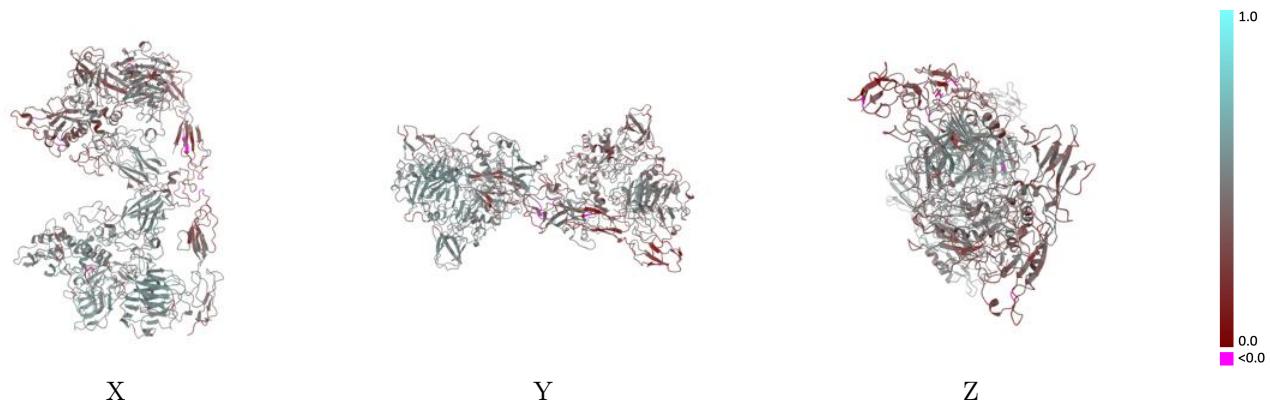
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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
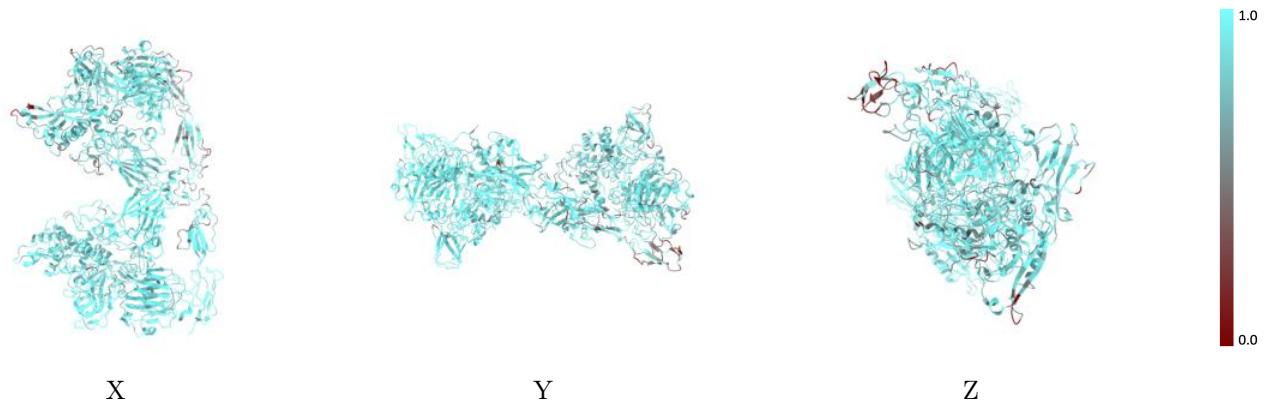
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.2305).

9.4 Atom inclusion ⓘ
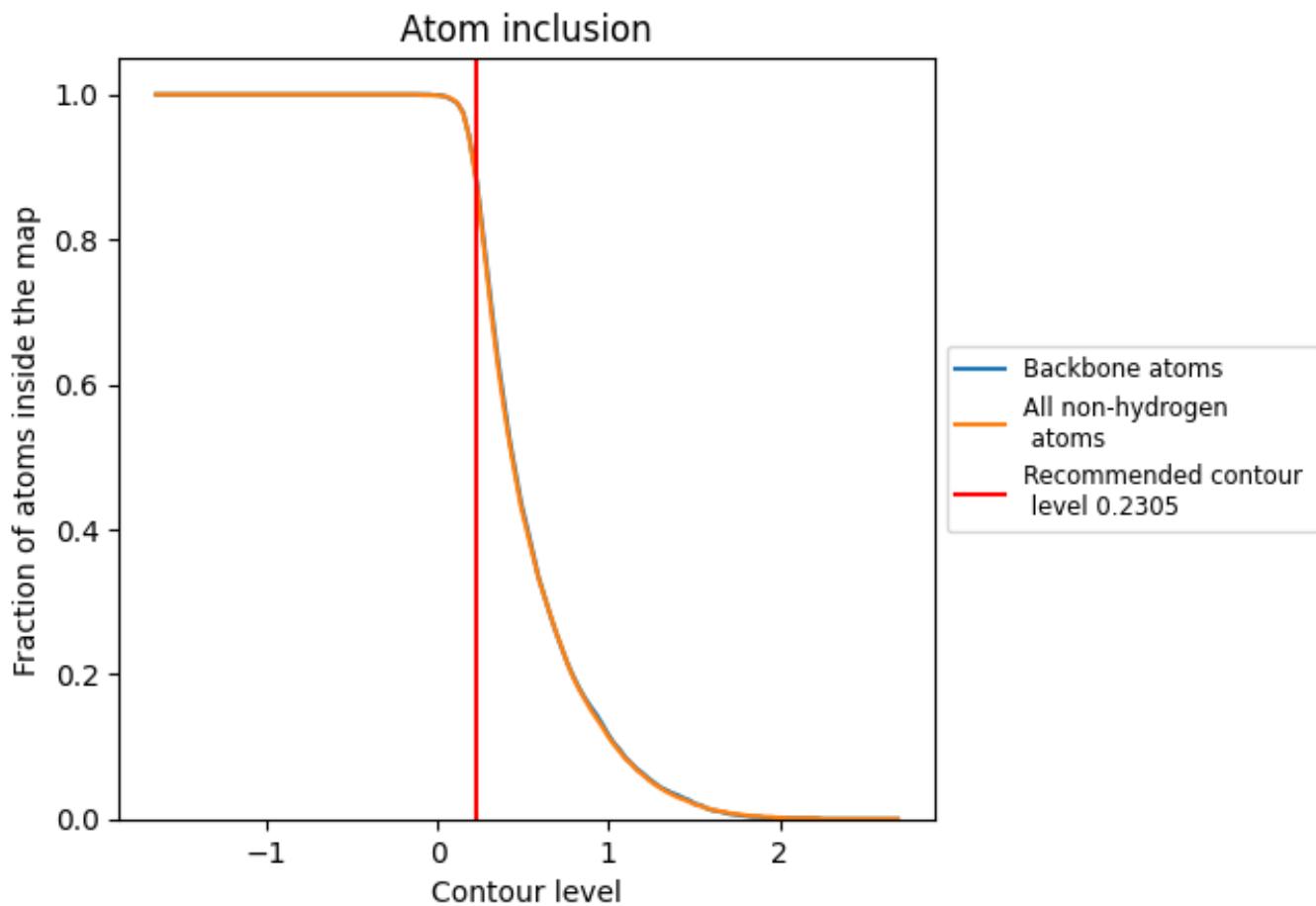
At the recommended contour level, 88% of all backbone atoms, 88% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.2305) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8750	0.4430
A	0.8450	0.4040
B	0.9020	0.4810
C	0.6830	0.3650
D	0.9000	0.4870

1.0

0.0
<0.0