



## wwPDB EM Validation Summary Report ⓘ

Mar 18, 2023 – 07:23 am GMT

PDB ID : 8ATO  
EMDB ID : EMD-15654  
Title : Structure of the giant inhibitor of apoptosis, BIRC6 bound to the regulator SMAC  
Authors : Dietz, L.; Elliott, P.R.  
Deposited on : 2022-08-23  
Resolution : 3.00 Å(reported)

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

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

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<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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The following versions of software and data (see [references ⓘ](#)) 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) : 2.32.1

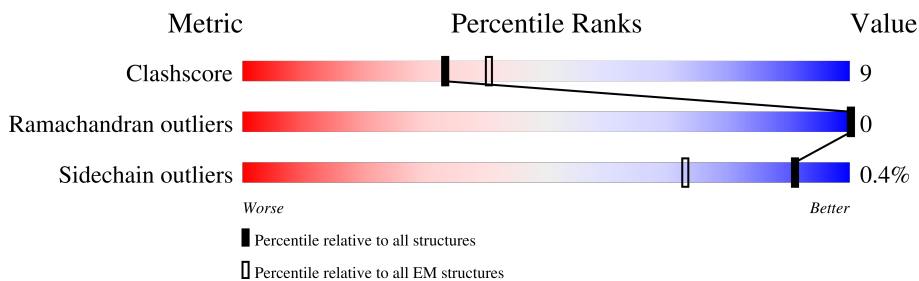
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.00 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  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	4859	20% (Poor fit) 47% (0 outliers) 12% (1 outlier) 41% (2+ outliers)
1	B	4859	17% (Poor fit) 45% (0 outliers) 14% (1 outlier) 40% (2+ outliers)
2	C	184	68% (0 outliers) 61% (1 outlier) 20% (2 outliers) 18% (2+ outliers)
2	D	184	71% (0 outliers) 70% (1 outlier) 11% (2 outliers) 18% (2+ outliers)

## 2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 46909 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 Baculoviral IAP repeat-containing protein 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	2871	Total	C	N	O	S	0	0
			22195	14154	3782	4102	157		
1	B	2892	Total	C	N	O	S	0	0
			22348	14249	3807	4135	157		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	GLY	-	expression tag	UNP Q9NR09
A	0	PRO	-	expression tag	UNP Q9NR09
B	-1	GLY	-	expression tag	UNP Q9NR09
B	0	PRO	-	expression tag	UNP Q9NR09

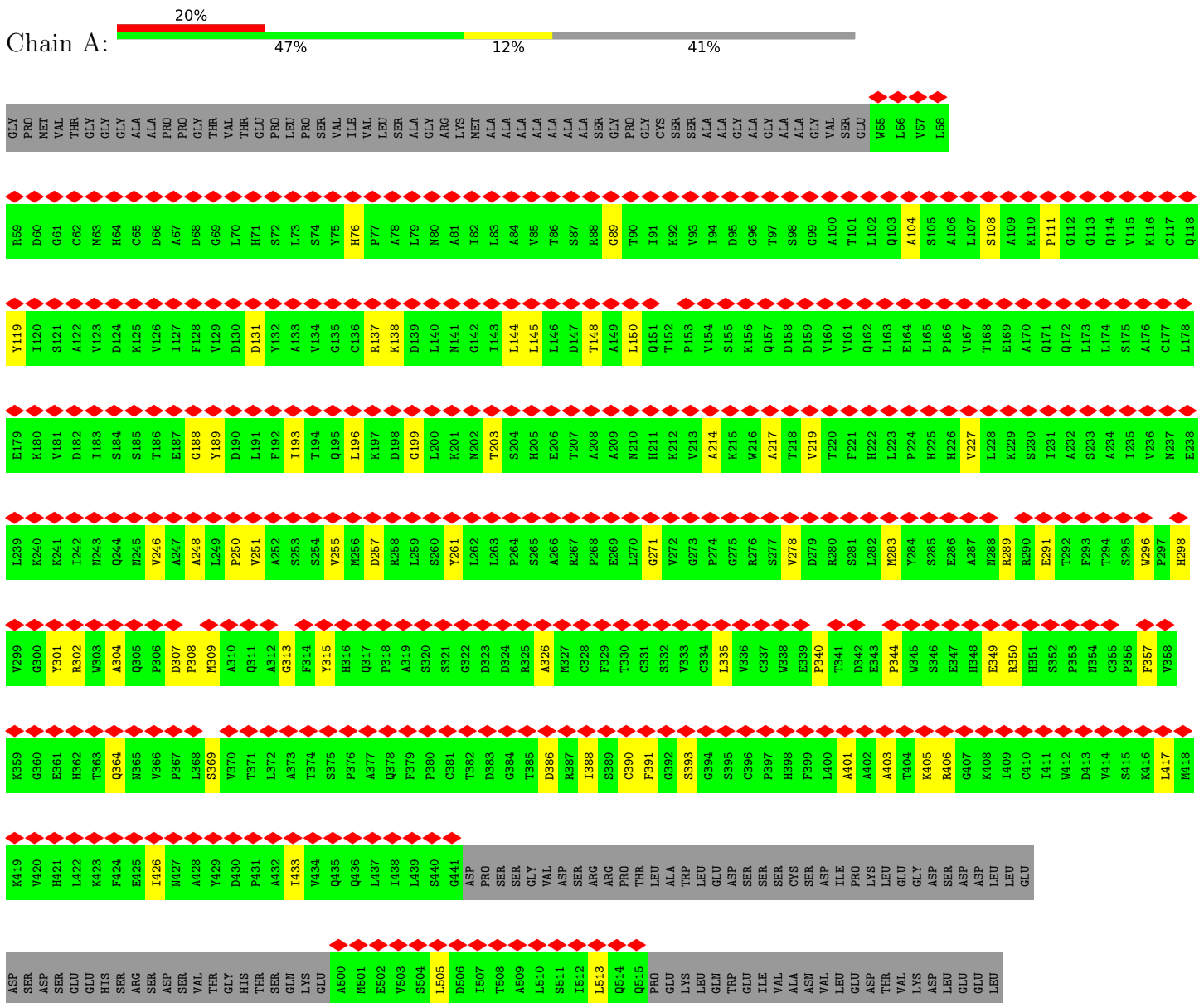
- Molecule 2 is a protein called Diablo IAP-binding mitochondrial protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	C	150	Total	C	N	O	S	0	0
			1183	739	198	241	5		
2	D	150	Total	C	N	O	S	0	0
			1183	739	198	241	5		

### 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.

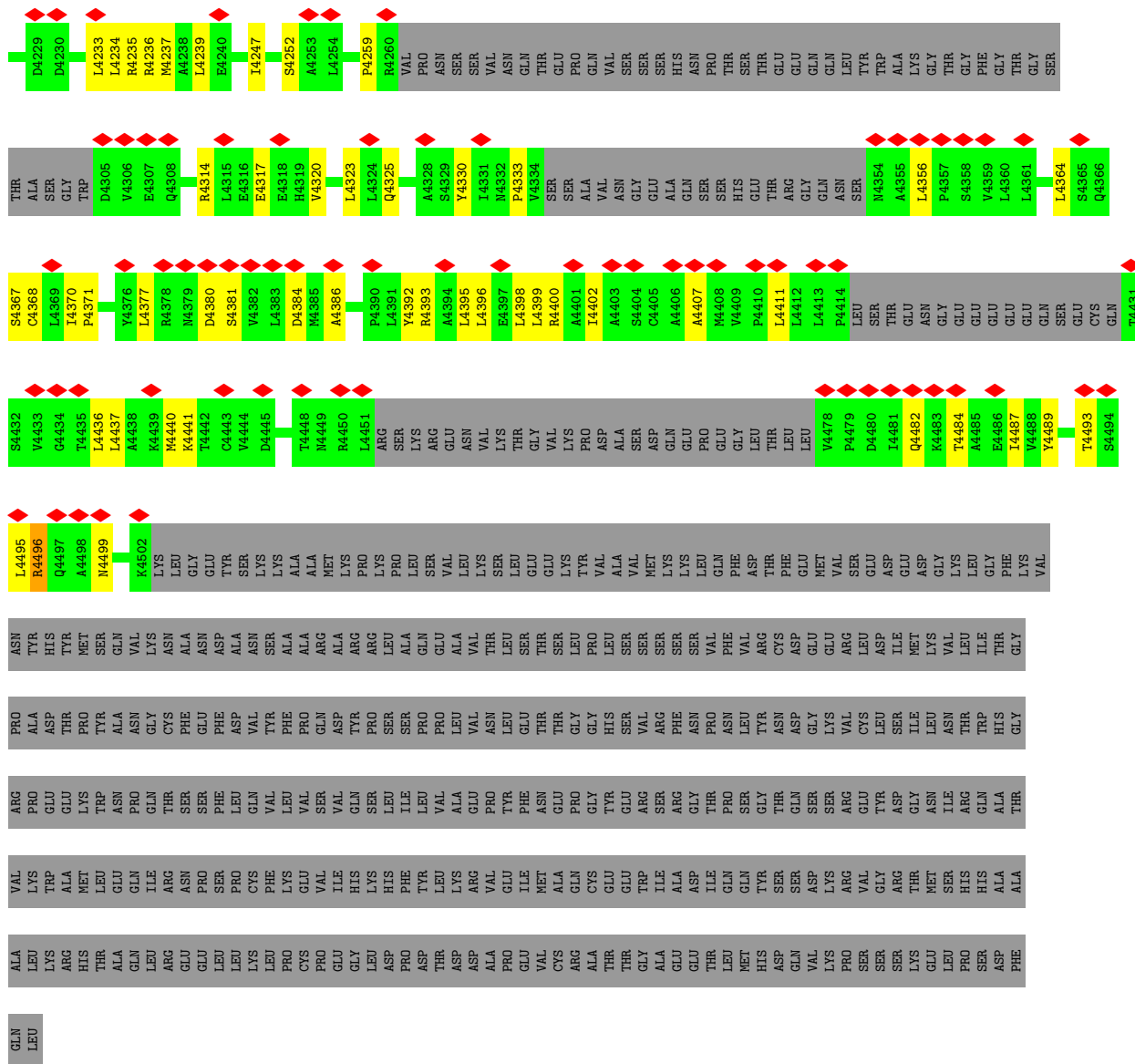
- Molecule 1: Baculoviral IAP repeat-containing protein 6



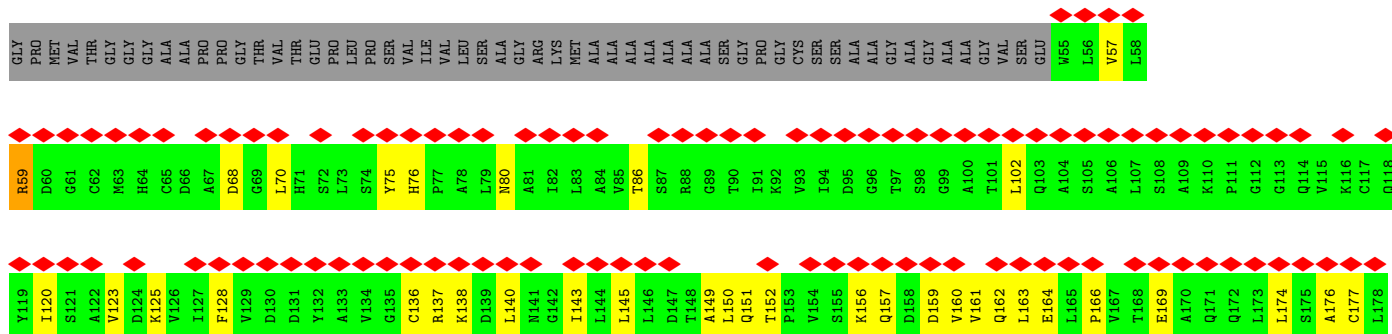






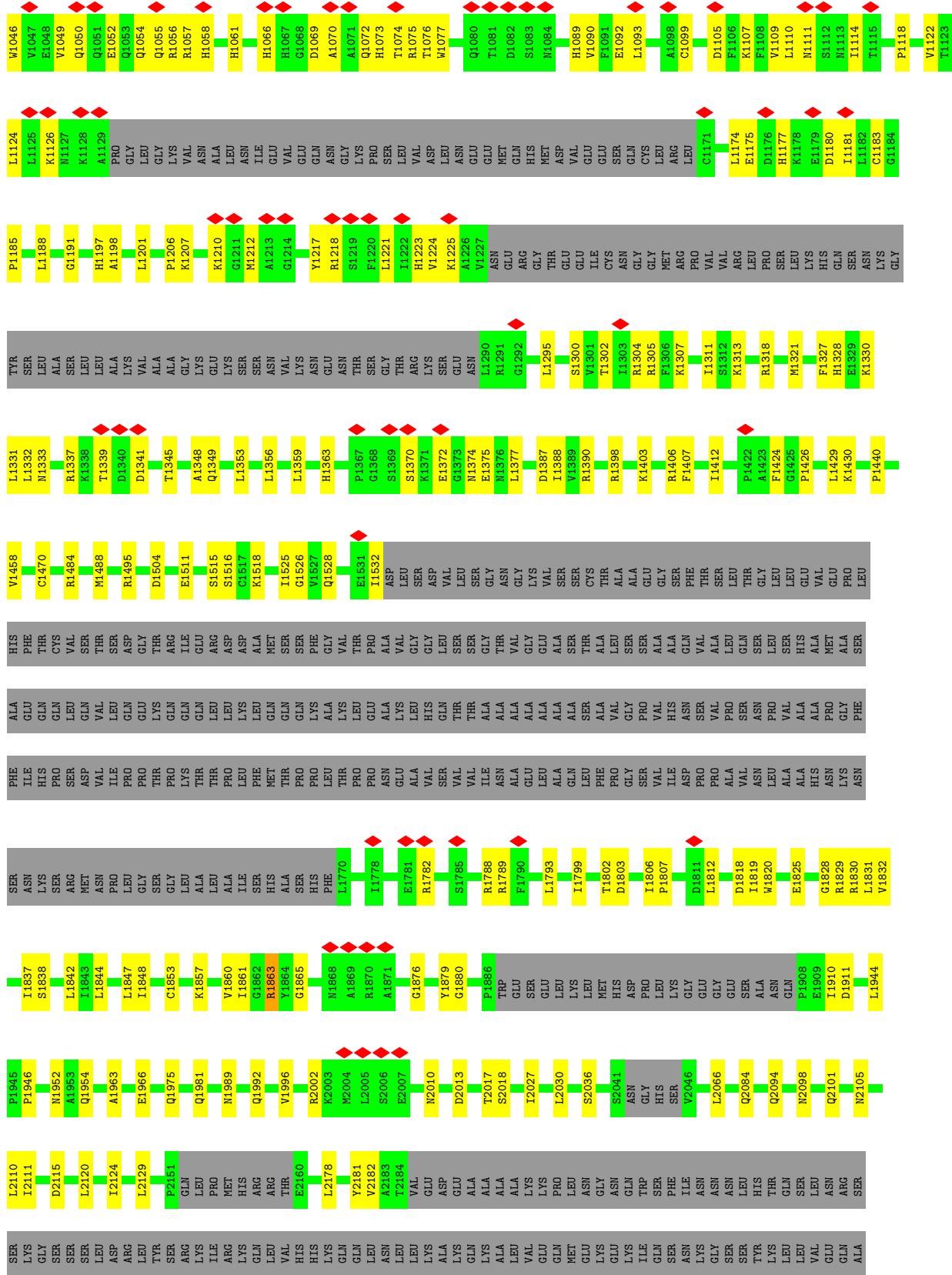


● Molecule 1: Baculoviral IAP repeat-containing protein 6





E179	K180	V181	D182	I183	S184	S185	T186	E187	G188	Y189	D190	L191	F192	I193	T194	Q195	L196	K197	D198	G199	L200	K201	N202	T203	S204	H205	E206	T207	A208	A209	N210	H211	K212	V213	A214	K215	V216	A217	T218	V219	T220	F221	H222	L223	P224	H225	H226	V227	S230	I231	A232	S233	A234	I235	V236	N237	E238	L239		
K240	K241	I242	N243	Q244	Q245	V246	A247	A248	L249	P250	V251	A252	S253	S254	D257	R258	L259	S260	Y261	L262	L263	K264	S265	A266	R267	P268	E269	L270	G271	V272	G273	P274	K275	G276	R276	S277	V278	D279	R280	S281	L282	M283	Y284	R289	R290	E291	T292	F293	T294	V296	P297	H298	V299	G300	I301	R302	W303			
A304	Q305	P306	D307	P308	M309	A310	Q311	F314	Y315	G316	H317	Q317	F318	A319	S320	S321	G322	D323	D324	R325	C328	F329	T330	C331	S332	V333	C334	L335	V336	C337	W338	E339	P340	T341	W345	S346	E347	H348	E349	R350	H351	S352	C353	N354	C355	V358	K359	G360	E361	H362	T363	Q364	N365	V366	P367	L368				
S369	V370	T371	L372	A373	T374	S375	P376	Q377	Q378	F379	P380	C381	T382	G384	D385	T386	R387	I388	S389	C390	F391	G392	S393	G394	S395	C396	P397	H398	F399	L400	A401	A402	A403	T404	K405	R406	G407	K408	I409	C410	I411	W412	D413	V414	S415	H416	K417	W418	K419	W420	H421	L422	K423	F424	E425	I426	W427	A428		
Y429	D430	P431	A432	I433	V434	Q435	Q436	L437	I438	L439	S440	G441	ASP	SER	PRO	SER	GLY	VAL	ASP	ASP	ARG	ARG	PRO	THR	LEU	ALA	TRP	LEU	GLU	SER	GLY	LYS	LEU	VAL	GLY	GLU	LEU	GLU	VAL	GLY	THR	VAL	ASP	ASP	LEU	LEU	GLU	GLY	ALA	ASP	GLY	PRO	CYS	HIS	THR	ASN	ARG	SER	LYS	
ASP	SER	VAL	THR	GLY	HIS	THR	GLN	LYS	GLU	A500	M501	E502	V503	S504	L505	D506	T508	A509	L510	S511	B512	L513	Q514	Q515	PRO	GLY	LYS	LEU	GLN	THR	PHE	ILE	VAL	ASN	ASN	VAL	VAL	HIS	LEU	GLU	GLY	THR	VAL	ASP	ALA	ASP	GLY	PRO	CYS	HIS	THR	ASN	ARG	SER	LYS					
SER	GLY	THR	LYS	GLU	HIS	SER	GLN	GLY	HIS	H561	I562	P563	F564	C566	L567	L568	A569	G570	G571	L572	L573	T574	Y575	K576	S577	P578	A579	THR	SER	PRO	ILE	GLY	ASN	THR	ASN	PHE	GLN	HIS	ARG	LEU	ASP	GLY	THR	ILE	ASP	GLY	THR	PHE	THR	GLY	VAL	PRO	GLN	ILE	THR					
ASP	ASN	GLY	THR	LYS	GLU	ASN	SER	P621	L622	V623	R624	R625	T626	L627	P628	V629	L630	L631	L632	Y633	S634	L635	K636	E637	S638	D639	LYS	GLY	ALA	GLY	VAL	ILE	ASN	THR	ASN	VAL	PHE	GLN	VAL	MET	ASN	ASN	LEU	LEU	MET	SER	LEU	LEU	THR	THR	GLY	VAL	PRO	GLN	ILE	THR				
GLU	MET	LEU	ASP	SER	GLN	SER	GLY	GLY	GLY	ASP	PRO	PRO	VAL	TVR	ILE	GLN	ALA	ALA	ALA	ALA	ASN	LEU	THR	SER	PRO	ASP	GLY	GLY	LYS	TRP	ASN	ASN	ASN	PHE	GLY	ASN	GLY	ASN	LEU	LEU	ASN	ASN	LEU	LEU	GLY	ASN	ASN	ARG	ARG	GLY	GLY	VAL	PRO	GLY	ILE	THR				
E729	N730	L731	C732	I733	D734	S735	I736	T737	P738	C739	A740	D741	G742	I743	H744	L745	L746	V747	G748	L749	R750	I751	C752	P753	VAL	GLU	SER	LEU	ALA	ILE	ASN	ASN	GLN	VAL	VAL	GLU	ALA	ASN	ASN	LEU	GLY	ASN	ASN	LEU	LEU	ASN	ASN	VAL	GLY	VAL	ASN	LEU	ASN	LEU						
ALA	VAL	VAL	ASN	GLY	ALA	ASN	ILE	VAL	VAL	HIS	GLY	GLY	PRO	PRO	ALA	VAL	GLN	THR	LEU	LEU	ILE	ILE	GLN	PRO	PRO	GLY	G822	G823	Y824	L825	W826	L827	Y828	R829	M830	M831	Y832	A833	T834	R835	GLU	ARG	GLY	ARG	LYS	THR	SER	LEU	ASN	ASN	E840	E841	E842	F843	I844	R845	I846	Q847	H848	
I849	K850	D851	P852	Q853	D854	T855	I856	T857	S858	L859	T860	L861	L862	P863	P864	D865	T866	L867	D868	H869	R870	E871	D872	D873	C874	GLY	GLU	PRO	ILE	ASP	MET	GLN	LEU	THR	SER	ASN	ASN	GLY	ARG	ARG	GLY	THR	LYS	THR	ASN	ILE	T899	L900	G901	H902	L903	V904	I905	T906	T907	Q908				
G909	G910	Y911	V912	K913	T914	L915	D916	L917	S918	N919	F920	E921	I922	L923	A924	V926	E927	P928	P929	K930	R931	E932	G933	T934	E935	E936	Q937	D938	T939	F940	Y941	S942	Y943	Y944	Y945	C946	G947	G948	T949	D950	T1033	L1034	C953	P1036	R1037	I954	C955	T956	K957	G958	G959	E960	L961	H962	F963	L964	Q965	ILE	GLY	GLY
THR	CYS	ASP	ASP	ILE	ASP	ALA	ASP	LEU	VAL	ASP	GLY	SER	LEU	SER	LYS	PRO	SER	GLY	SER	SER	LYS	PRO	LEU	SER	ASN	PRO	SER	SER	PRO	GLY	I1006	S1007	G1008	V1009	D1010	F1017	S1024	L1028	T1029	F1031	E1032	L1034	P1036	R1037	T1041															



L2383	L2384	V2388	L2420	L2597	L2598	L2599	M2600	T2601	S2602	P2603	T2604	L2687	A2688	N2689	R2690	I2691	P2692	V2693	T2694	N2697	Q2698	V2707	L2708	T2714	L2715	L2716	R2717	W2719	V2722	L2728	N2731	Q2732	Q2733	L2734	S2736	N2735	S2736	M2649	L2660	V2655	L2661	Q2662	L2663	S2671	L2689	M2686	T2687	L2688	L2689	E2590	A2591	D2592	S2593	I2594	L2595	Q2596				
L2383	L2384	V2388	L2420	L2597	L2598	L2599	M2600	T2601	S2602	P2603	T2604	L2687	A2688	N2689	R2690	I2691	P2692	V2693	T2694	N2697	Q2698	V2707	L2708	T2714	L2715	L2716	R2717	W2719	V2722	L2728	N2731	Q2732	Q2733	L2734	S2736	N2735	S2736	M2649	L2660	V2655	L2661	Q2662	L2663	S2671	L2689	M2686	T2687	L2688	L2689	E2590	A2591	D2592	S2593	I2594	L2595	Q2596				
L2813	K2814	H2817	T2821	E2822	R2823	Q2827	D2834	K2838	N2847	F2848	E2849	V2850	V2851	I2856	V2859	V2867	Y2870	R2880	S2883	D2884	S2885	S2886	Q2894	L2894	PHE	ALA	ASN	LEU	V2980	N3002	S3003	S3004	A3005	M3006	A3007	M3008	I3009	L3010	G3102	G3103	I3107	R3116	S3124	M3125	V3126	K3131	F3132	L3133	D3134	S3131	P3132	PHE	LEU	D3321	Q3322	T3326	L3359	G3386	C3534	K3539
L2923	L2932	P2933	L2934	S2941	A2942	R2943	V2944	VAL	THR	THR	ASN	L3040	L3058	R3068	T3074	E3079	F3084	D3093	A3094	A3097	M3101	G3102	G3103	I3107	R3116	S3124	M3125	V3126	K3131	F3132	L3133	D3134	S3131	P3132	PHE	LEU	D3321	Q3322	T3326	L3359	G3386	C3534	K3539																	
L3396	I3399	L3400	L3403	P3417	N3424	S3427	T3431	D3432	D3433	Q3437	L3438	G3439	K3467	L3520	I3223	H3224	E3242	N3249	T3255	R2281	L3291	K3297	T3311	VAL	ASN	ASN	PRO	PHE	LEU	PRO	SER	D3321	Q3322	T3326	L3359	G3386	C3534	K3539																						
K3540	D3543	S3544	L3545	P3554	W3563	I3566	T3567	PRO	PRO	PRO	VAL	GLN	CYS	HIS	HIS	HIS	ARG	LEU	SER	LEU	MET	THR	THR	ASP	ASP	SER	SER	LYS	GLN	ASP	LEU	LEU	THR	ASP	M3488	P3489	S3490	H3493	L3494	A3498	A3499	I3500	D3512	E3523	S3529	C3534	K3539													
L3631	L3635	V3636	R3637	S3638	L3639	S3641	P3642	F3643	F3644	HIS	ILE	SER	SER	SER	GLU	ARG	ILE	ALA	GLN	SER	ILE	ILE	ASP	ILE	ILE	ILE	ILE	GLN	GLN	ASN	ASN	ASN	ASN	K3675	M3676	P3677	D3681	A3684	I3685	L3686	L3687	R3688	F3689	L3690	T3691	E3692	V3693													
H3697	I3698	K3699	L3700	Q3701	W3702	S3706	E3707	V3708	W3709	F3710	L3711	W3712	T3713	A3714	L3715	L3716	F3717	L3718	L3719	G3720	H3721	SER	GLY	THR	THR	SER	GLY	SER	GLN	ALA	GLN	THR	ASP	PRO	GLN	ARG	SER	ALA	ALA	SER	SER	LEU	SER	ALA	ALA	THR	G3750	Q3754	Q3755	L3759	E3760	T3763								



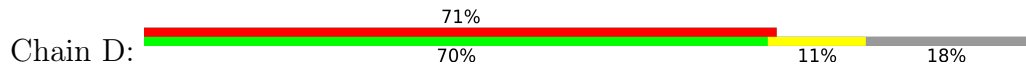
LEU SER ARG ILE THR MET LEU ASN SER ILE ARC THR THR HIS HIS TRP PHE GLY THR ARG PRO LYS LEU GLU TRP ARG GLY ALA VAL THR VAL TRP GLY ALA GLY HIS MET LEU THR GLN ASN LEU SER CYS GLN PHE VAL LEU PRO VAL SER VAL VAL ILE GLU GLY HIS GLN LEU SER LEU LEU ILE PHE ILE LEU ASP TYR LEU VAL VAL ALA LYS ASP ARG GLY PRO VAL PHE ILE GLU MET ASN VAL GLY ALA GLY PRO GLN GLY GLY TYR GLU GLY TRP TRP ARG SER ALA ILE ALA ARG ARG GLY THR THR PRO GLN SER MET GLY TYR HIS HIS SER SER THR SER SER ASP SER VAL LYS SER ARG PRO ARG GLY SER
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• Molecule 2: Diablo IAP-binding mitochondrial protein



ALA VAL PRO ILE ALA GLN GLY SER GLY PRO HIS SER L1 S2 S3 E4 A5 L6 M7 R8 R9 A10 V11 S12 S13 V14 V15 D16 S17 T18 S19 T20 F21 L22 S23 Q24 T25 T26 Y27 A28 L29 I30 E31 A32 I33 T34 E35 Y36 T37 K38 A39 V40 Y41 T42 L43 T44 S45 L46 Y47 R48
Q49 Y50 T51 S52 L53 L54 G55 K56 M57 M58 S59 E60 E61 E62 D63 E64 V65 W66 Q67 V68 I69 I70 G71 A72 R73 A74 E75 M76 T77 S78 K79 H80 Q81 E82 Y83 L84 K85 L86 E87 T88 T89 W90 M91 T92 A93 L96 S97 F98 M99 A100 A101 Y105 Q106 T107 G108 A109 D110 Q111
A112 T115 A116 R117 N118 H119 I120 Q121 L122 V123 K124 L125 Q126 V127 E128 E129 V130 H131 Q132 L133 S134 R135 K136 A137 E138 T139 K140 L141 A142 E143 A144 Q145 I146 E147 E148 L149 R150 GLN LYS THR GLN GLU GLU GLY GLU GLU ARG ALA GLU SER GLU GLN GLU GLU TYR LEU ARG ASP

• Molecule 2: Diablo IAP-binding mitochondrial protein



ALA VAL PRO ILE ALA GLN GLY SER GLU PRO HIS SER L1 S2 S3 E4 A5 L6 M7 R8 R9 A10 V11 S12 S13 V14 V15 D16 T20 F21 L22 S23 Q24 Y27 A28 L29 I30 E31 A32 I33 T34 E35 Y36 T37 K38 A39 V40 Y41 T42 L43 T44 S45 L46 Y47 R48 Q49 Y50 T51
S52 L53 L54 G55 K56 M57 M58 S59 E60 E61 E62 D63 E64 V65 W66 Q67 V68 I69 I70 G71 A72 R73 A74 E75 M76 T77 S78 K79 H80 Q81 E82 Y83 L84 K85 L86 E87 T88 T89 W90 M91 T92 A93 V94 G95 L96 S97 E98 M99 A100 A101 E102 A103 A104 Y105 Q106 T107 G108 A109 D110
S113 A116 R117 H119 I120 Q121 L122 V123 K124 L125 Q126 E128 E129 V130 H131 Q132 L133 S134 R135 K136 A137 E138 T139 K140 L141 A142 E143 A144 Q145 I146 E147 E148 L149 R150 GLN LYS THR GLN GLU GLU GLY GLU GLU ARG ALA GLU SER GLU GLN GLU GLU TYR LEU ARG GLU ASP

## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	36872	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 ( $e^-/\text{\AA}^2$ )	47.27	Depositor
Minimum defocus (nm)	750	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	105000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	1.429	Depositor
Minimum map value	-0.750	Depositor
Average map value	0.006	Depositor
Map value standard deviation	0.070	Depositor
Recommended contour level	0.144	Depositor
Map size ( $\text{\AA}$ )	248.7, 248.7, 248.7	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles ( $^\circ$ )	90.0, 90.0, 90.0	wwPDB
Pixel spacing ( $\text{\AA}$ )	0.829, 0.829, 0.829	Depositor

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

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	0.24	0/22620	0.47	0/30734
1	B	0.24	0/22774	0.47	0/30945
2	C	0.23	0/1197	0.46	0/1620
2	D	0.24	0/1197	0.44	0/1620
All	All	0.24	0/47788	0.47	0/64919

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [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	22195	0	22593	384	0
1	B	22348	0	22749	463	0
2	C	1183	0	1185	23	0
2	D	1183	0	1185	15	0
All	All	46909	0	47712	860	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 9.

The worst 5 of 860 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1818:ASP:HB2	1:B:1857:LYS:HB3	1.62	0.81
1:B:1032:GLU:HB3	1:B:1307:LYS:HG3	1.66	0.76
1:A:1052:GLU:OE1	1:A:1056:ARG:NH1	2.17	0.76
1:A:1103:HIS:O	1:A:1305:ARG:NH2	2.18	0.76
1:A:1806:ILE:HG12	1:A:1876:GLY:HA3	1.68	0.75

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	2799/4859 (58%)	2712 (97%)	87 (3%)	0	100	100
1	B	2820/4859 (58%)	2741 (97%)	79 (3%)	0	100	100
2	C	148/184 (80%)	146 (99%)	2 (1%)	0	100	100
2	D	148/184 (80%)	147 (99%)	1 (1%)	0	100	100
All	All	5915/10086 (59%)	5746 (97%)	169 (3%)	0	100	100

There are no Ramachandran outliers to report.

#### 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	2517/4217 (60%)	2509 (100%)	8 (0%)	92	97
1	B	2534/4217 (60%)	2523 (100%)	11 (0%)	91	97

*Continued on next page...*



Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	C	128/157 (82%)	127 (99%)	1 (1%)	81	93
2	D	128/157 (82%)	128 (100%)	0	100	100
All	All	5307/8748 (61%)	5287 (100%)	20 (0%)	91	97

5 of 20 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	3131	LYS
1	B	3779	LYS
2	C	9	ARG
1	B	3970	LYS
1	A	4218	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 14 such sidechains are listed below:

Mol	Chain	Res	Type
1	B	1058	HIS
1	B	2370	HIS
1	B	3997	GLN
1	B	3493	HIS
1	B	3790	GLN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

There are no ligands in this entry.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

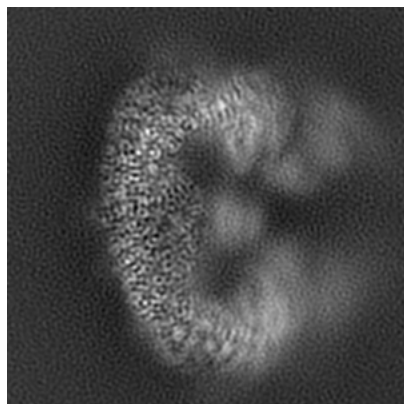
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-15654. These allow visual inspection of the internal detail of the map and identification of artifacts.

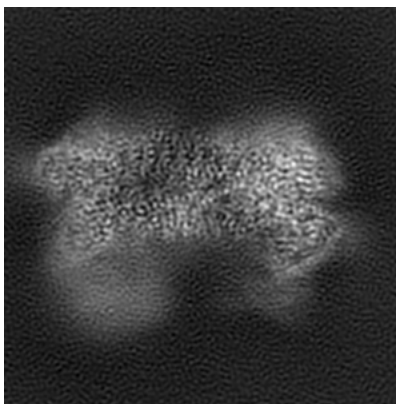
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

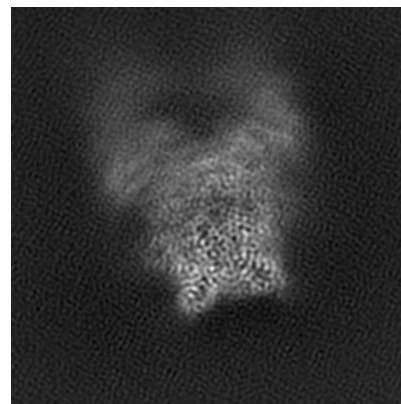
#### 6.1.1 Primary map



X

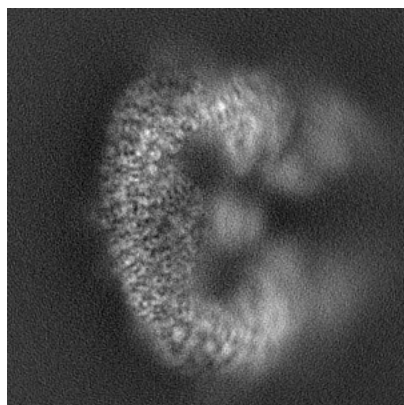


Y

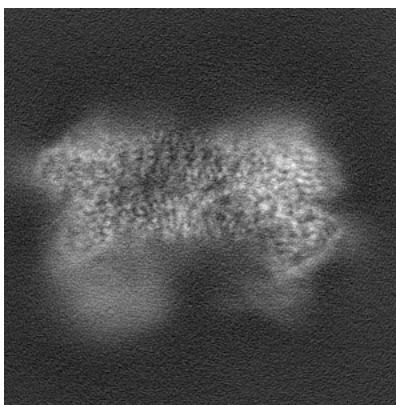


Z

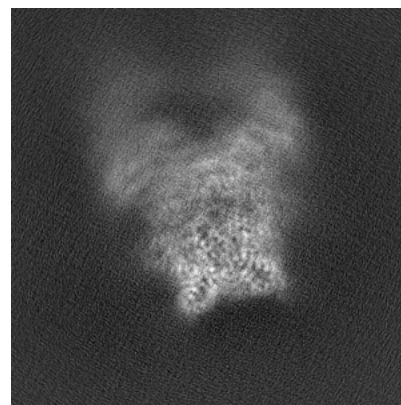
#### 6.1.2 Raw map



X



Y

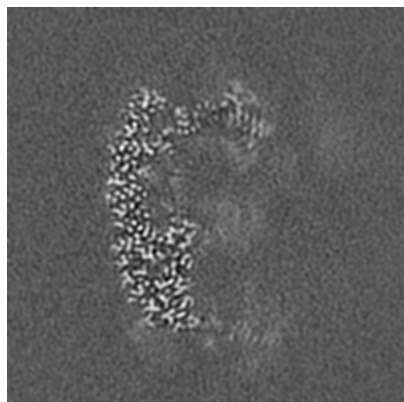


Z

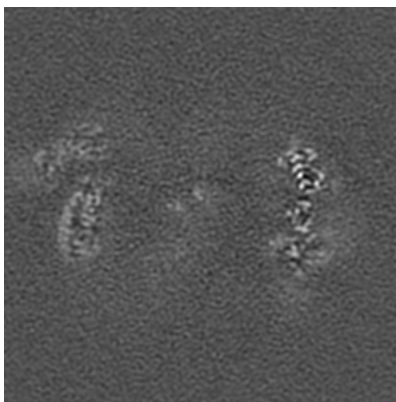
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

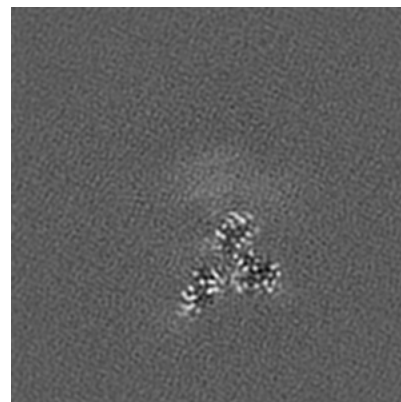
### 6.2.1 Primary map



X Index: 150

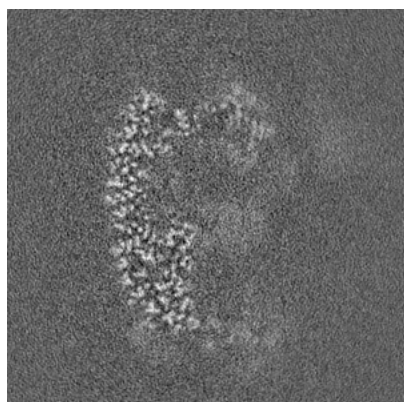


Y Index: 150

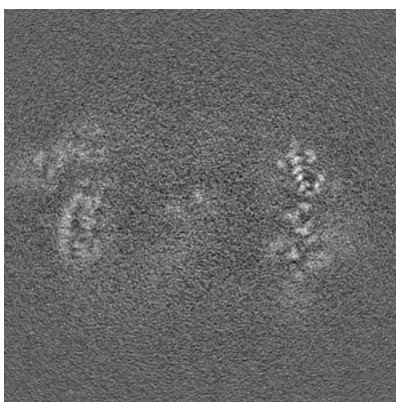


Z Index: 150

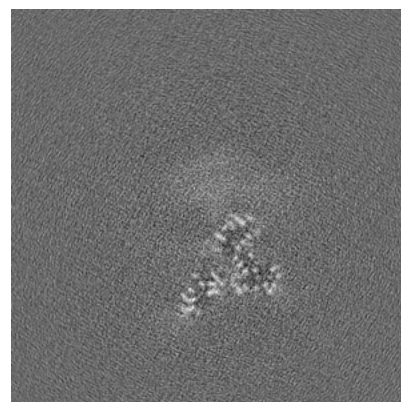
### 6.2.2 Raw map



X Index: 150



Y Index: 150

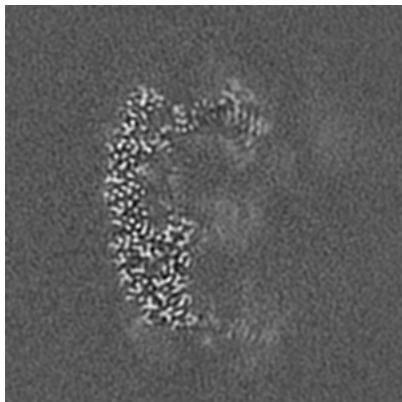


Z Index: 150

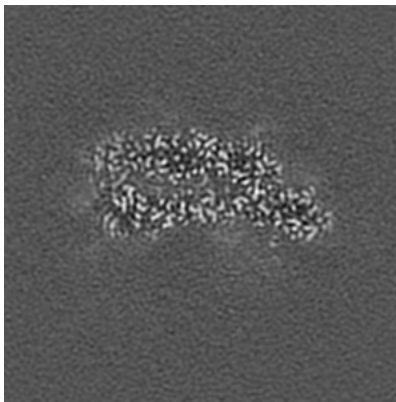
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

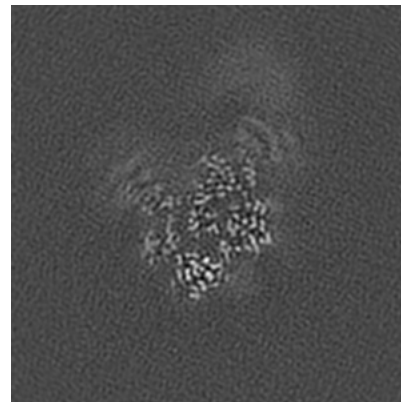
### 6.3.1 Primary map



X Index: 150

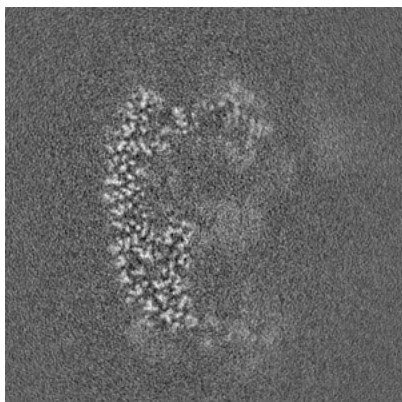


Y Index: 99

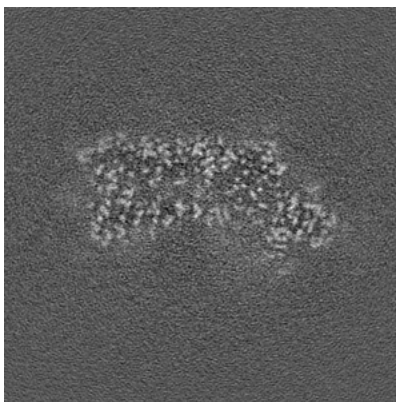


Z Index: 217

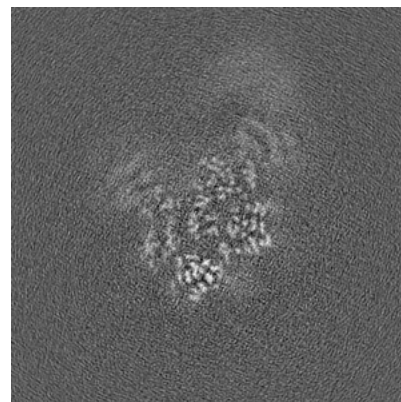
### 6.3.2 Raw map



X Index: 150



Y Index: 104

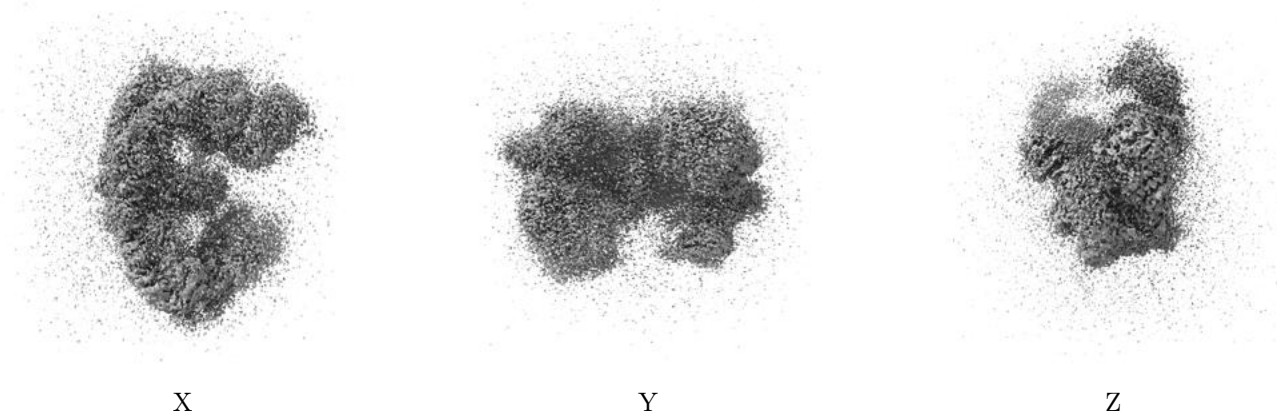


Z Index: 217

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

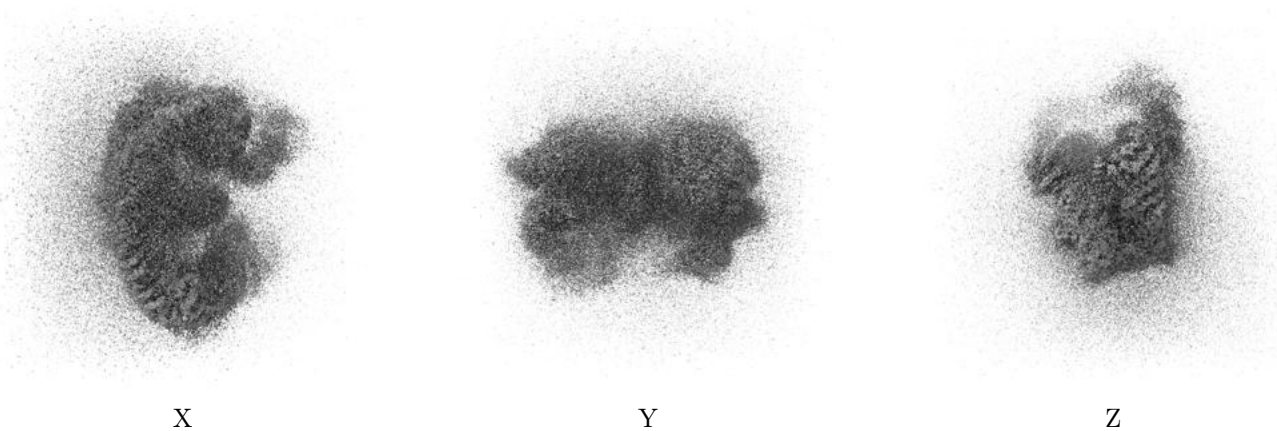
## 6.4 Orthogonal surface views [i](#)

### 6.4.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.144. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.4.2 Raw map



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.

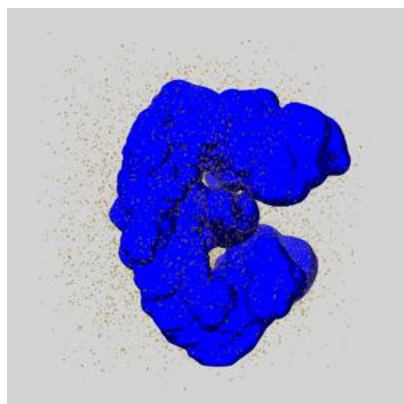
## 6.5 Mask visualisation [i](#)

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

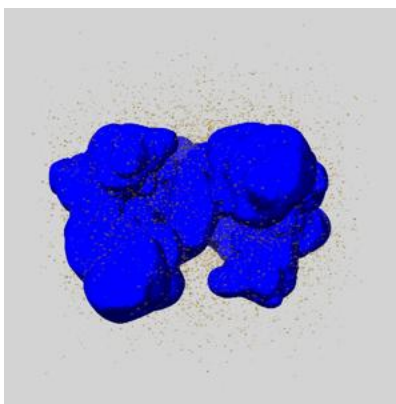
A mask typically either:

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

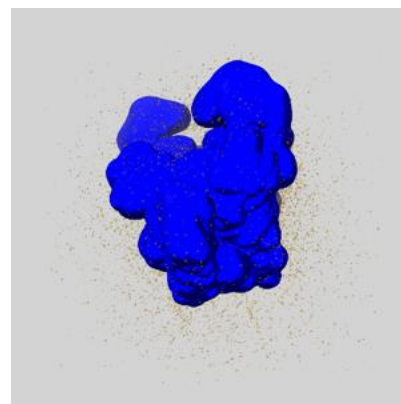
### 6.5.1 emd\_15654\_msk\_1.map [i](#)



X



Y

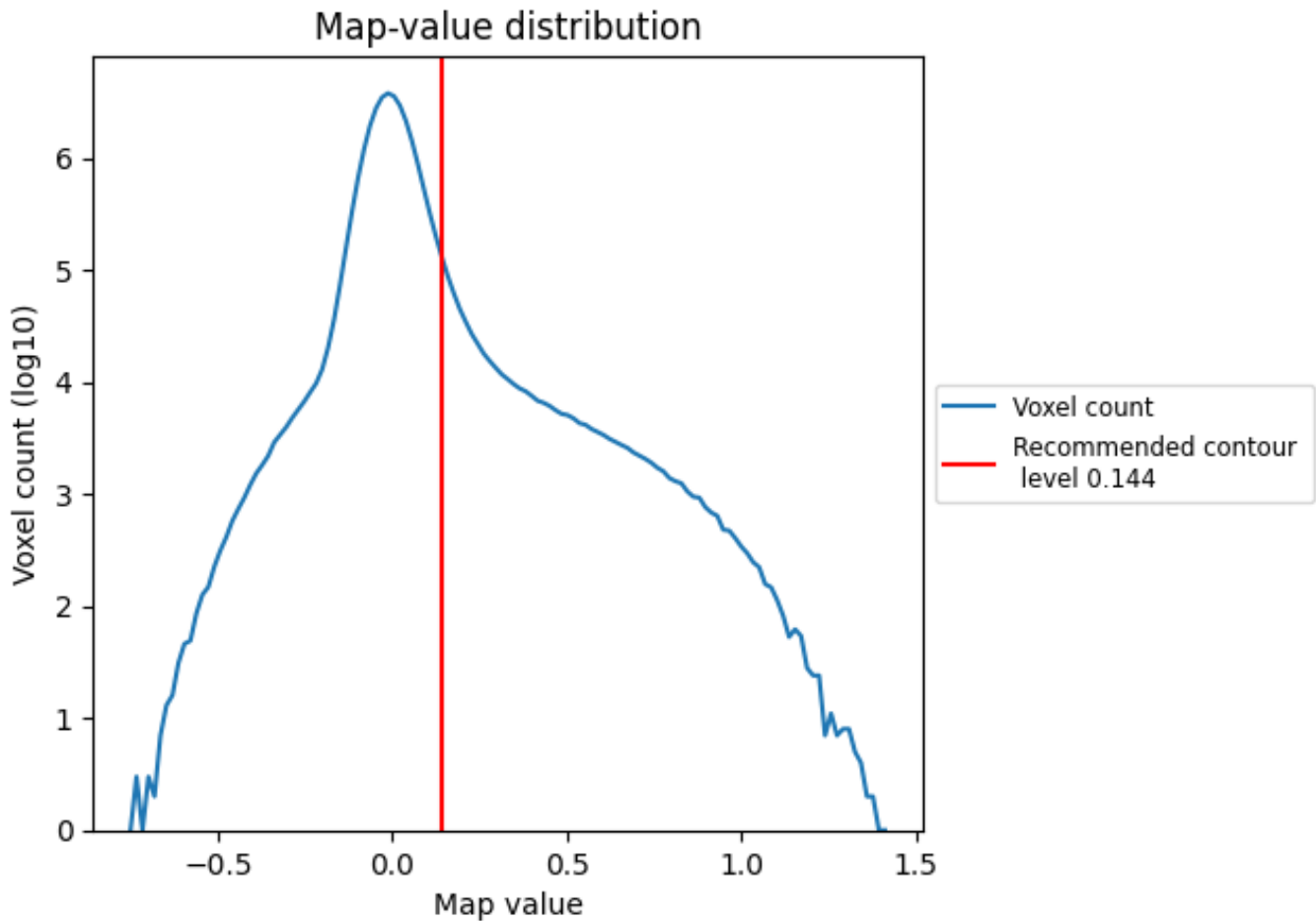


Z

## 7 Map analysis [i](#)

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

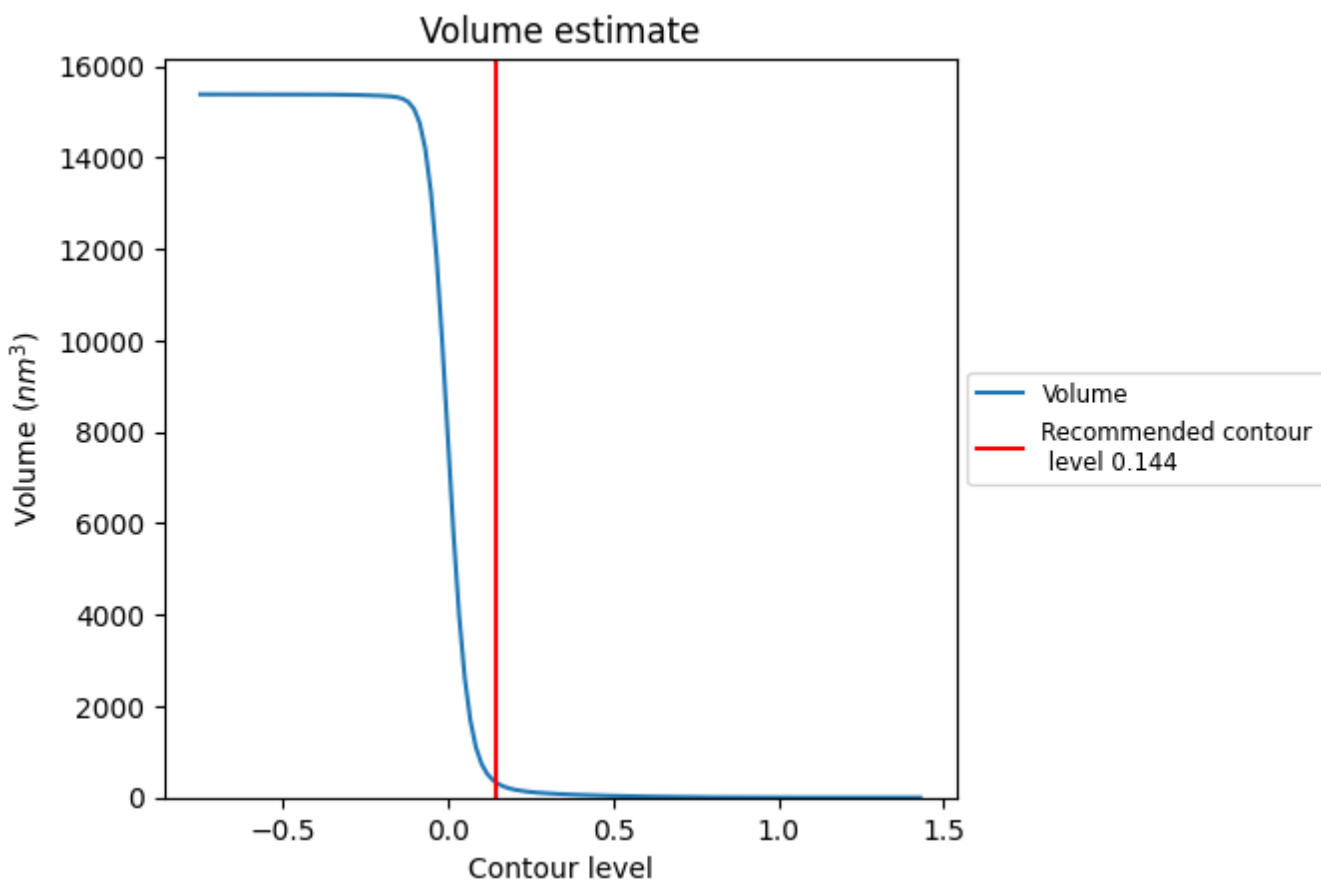
### 7.1 Map-value distribution [i](#)



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



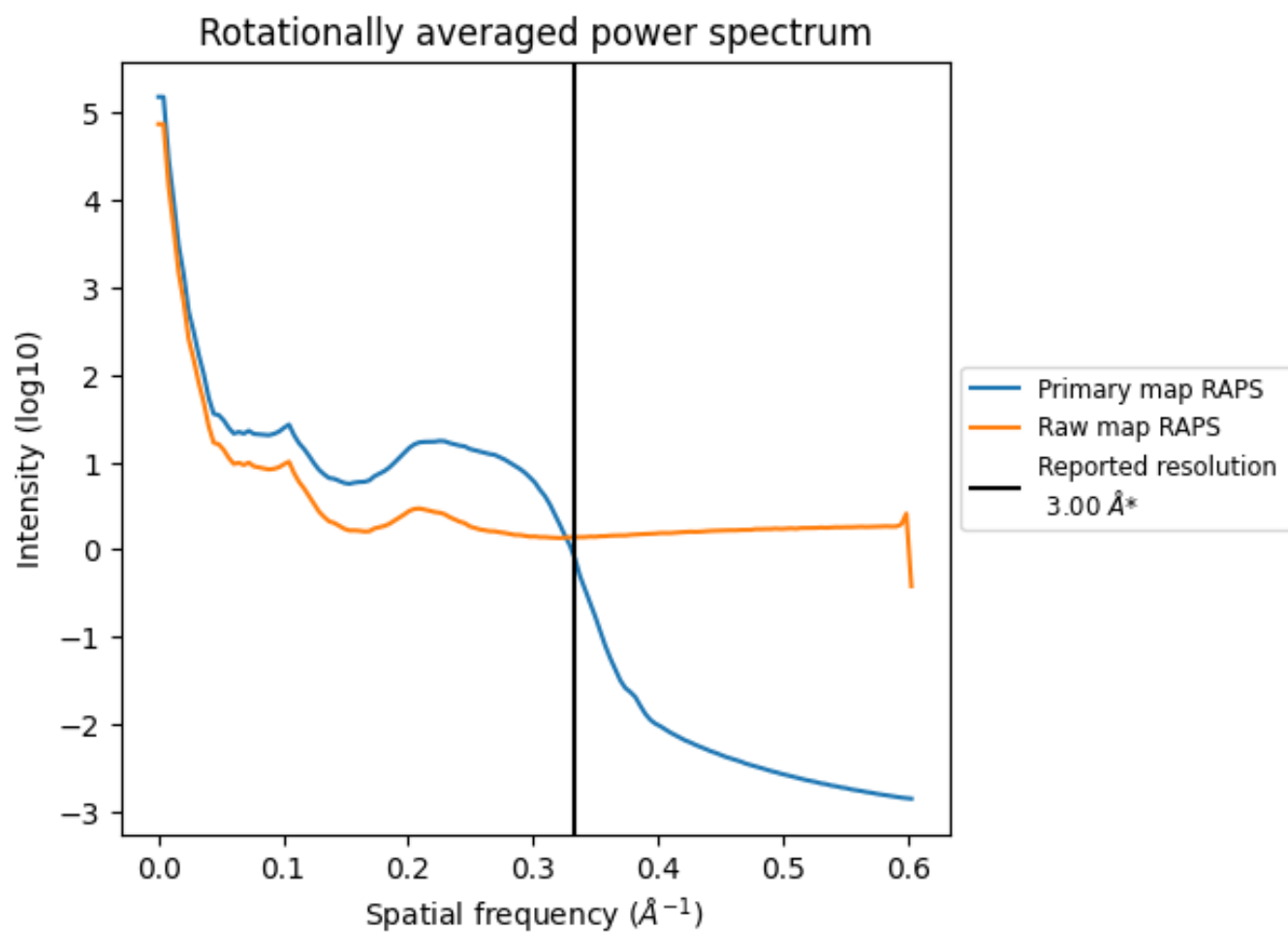
## 7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 339 nm<sup>3</sup>; this corresponds to an approximate mass of 307 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](#)

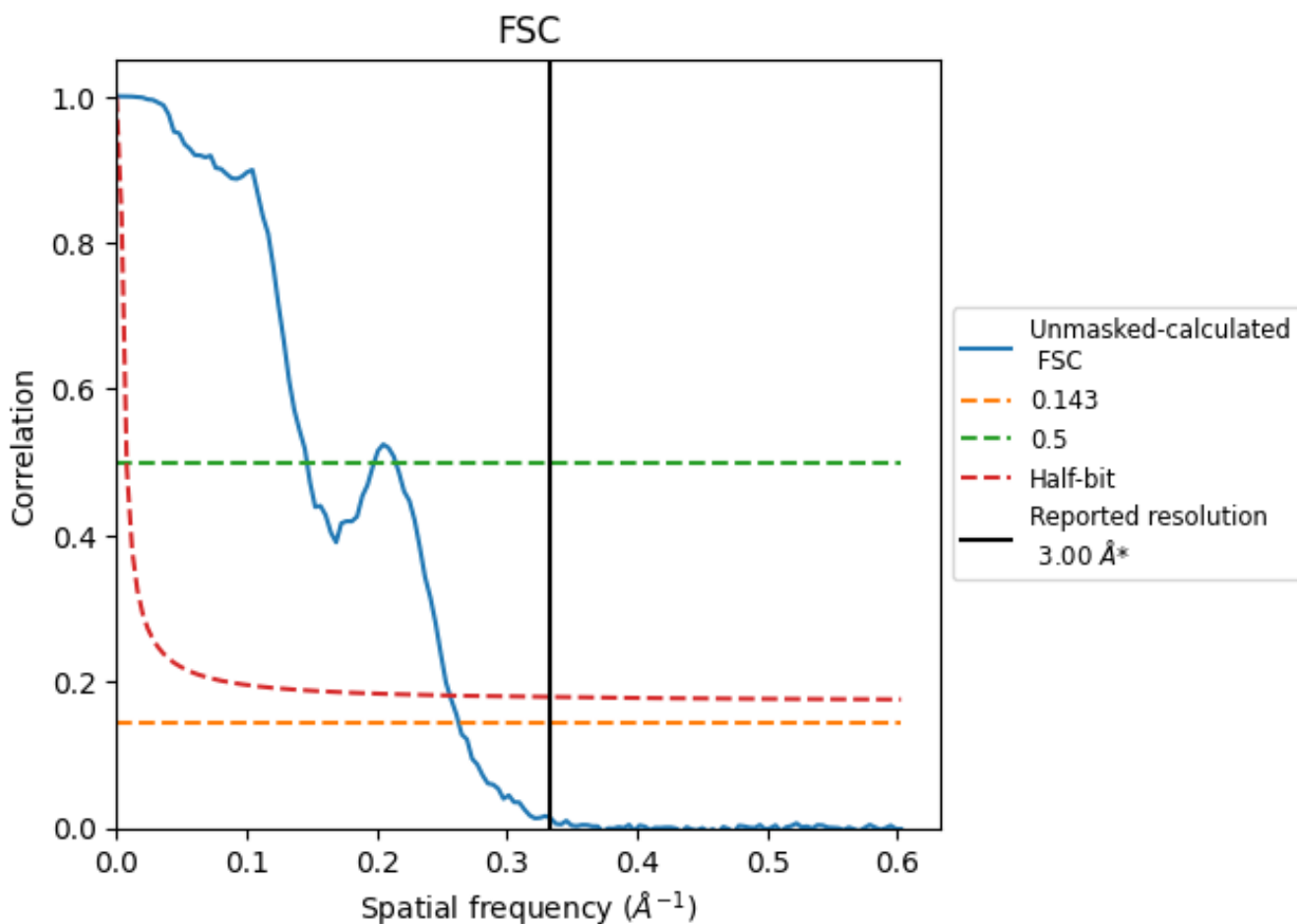


\*Reported resolution corresponds to spatial frequency of 0.333 Å<sup>-1</sup>

## 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  $0.333 \text{\AA}^{-1}$

## 8.2 Resolution estimates [i](#)

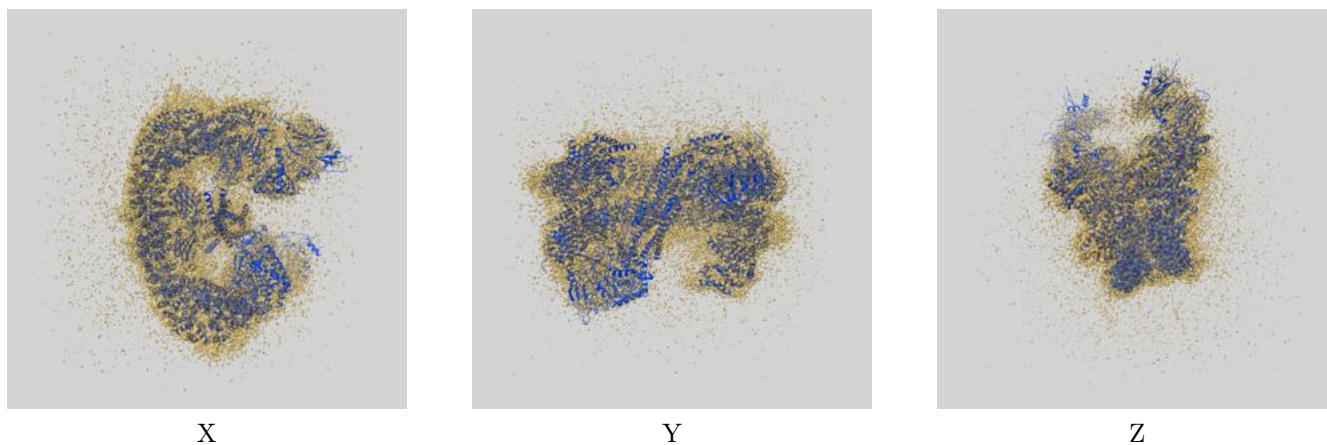
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.00	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	3.80	6.83	3.90

\*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 3.80 differs from the reported value 3.0 by more than 10 %

## 9 Map-model fit [i](#)

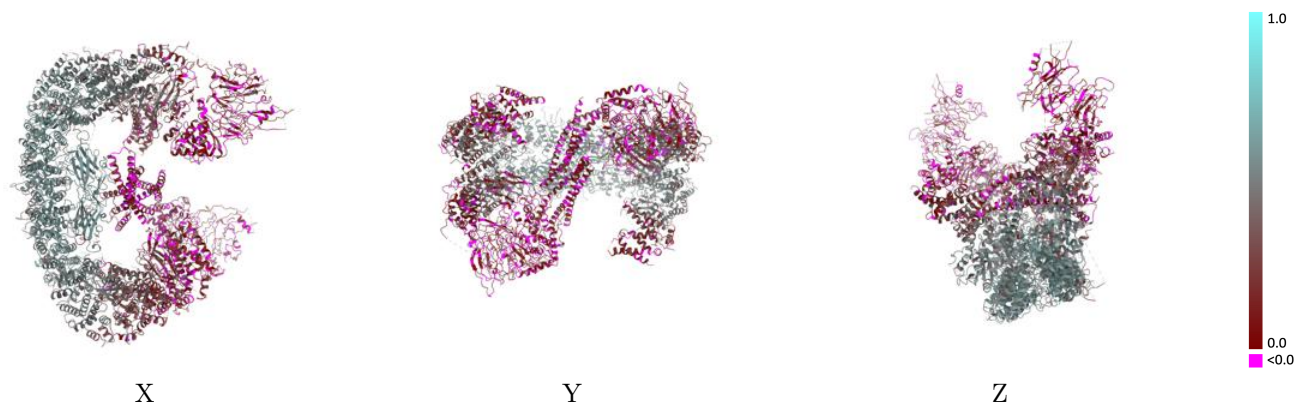
This section contains information regarding the fit between EMDB map EMD-15654 and PDB model 8ATO. Per-residue inclusion information can be found in section 3 on page 4.

### 9.1 Map-model overlay [i](#)



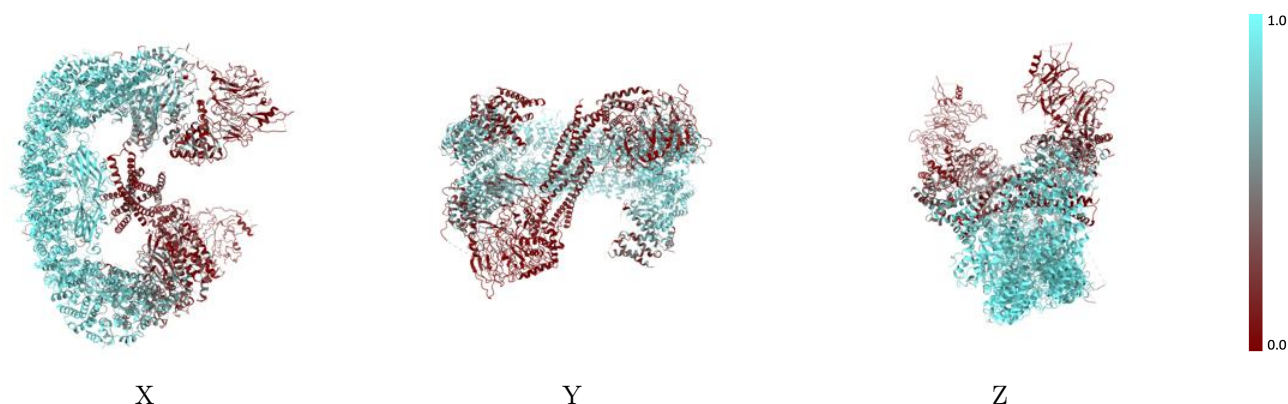
The images above show the 3D surface view of the map at the recommended contour level 0.144 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



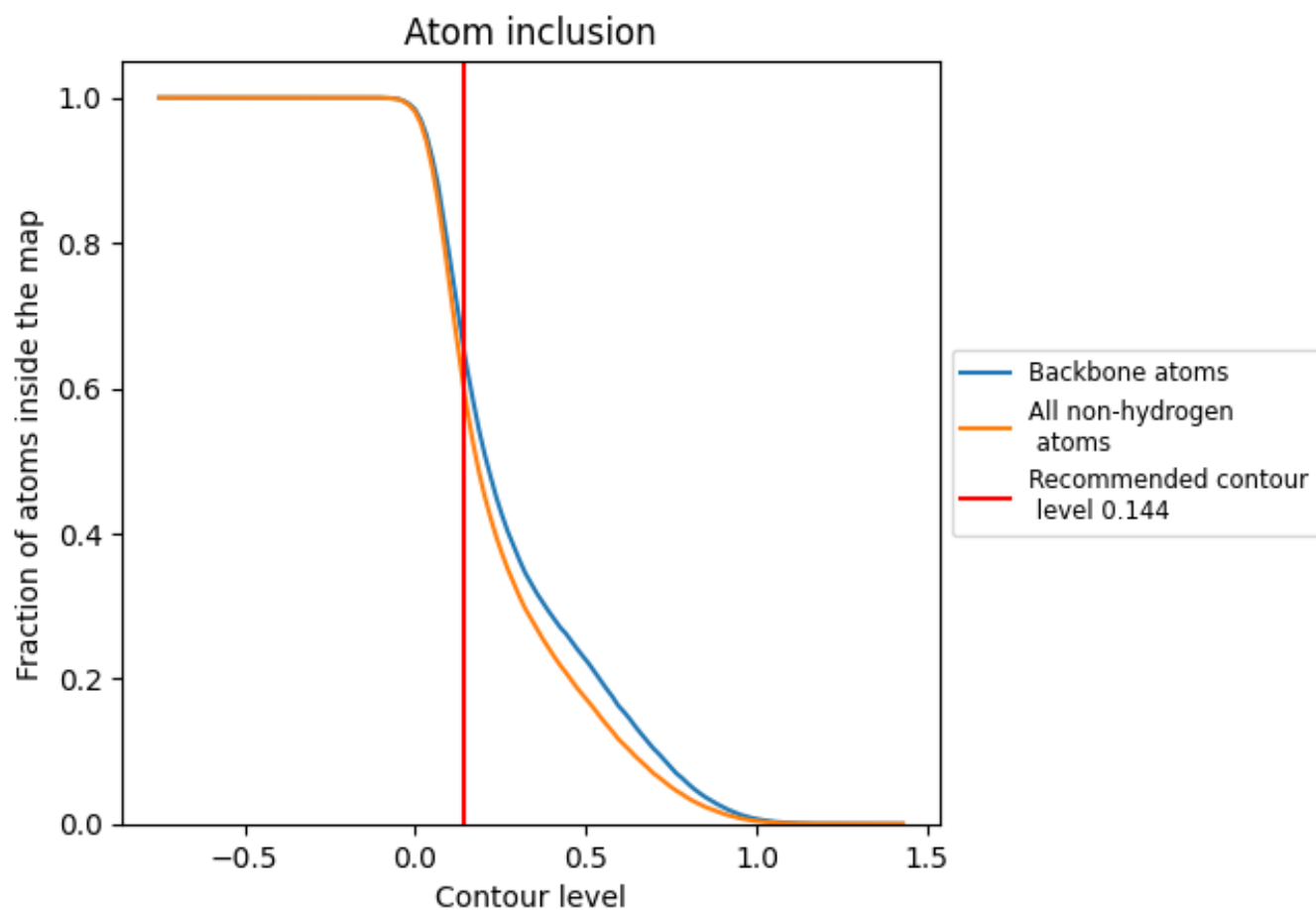
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

## 9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.144).











## 9.4 Atom inclusion [i](#)



At the recommended contour level, 65% of all backbone atoms, 59% 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 (0.144) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5934	 0.3340
A	 0.5922	 0.3380
B	 0.6391	 0.3550
C	 0.1931	 0.0830
D	 0.1491	 0.0780

