



Full wwPDB EM Validation Report ⓘ

Dec 9, 2020 – 10:24 PM EST

PDB ID : 6BFC
EMDB ID : EMD-7041
Title : Cryo-EM structure of human insulin degrading enzyme in complex with insulin
Authors : Liang, W.G.; Zhang, Z.; Bailey, L.J.; Kossiakoff, A.A.; Tan, Y.Z.; Wei, H.; Carragher, B.; Potter, S.C.; Tang, W.J.
Deposited on : 2017-10-26
Resolution : 3.70 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

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

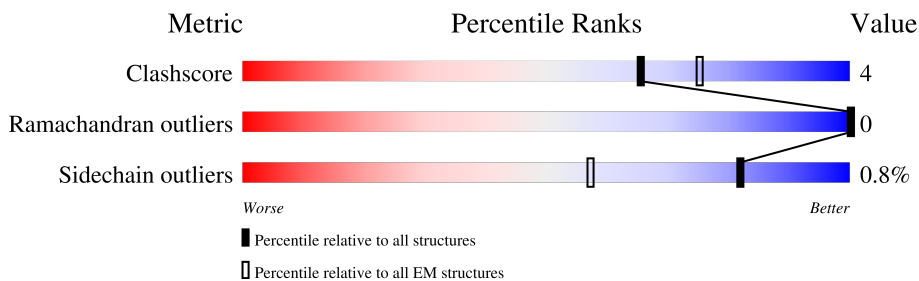
EMDB validation analysis : 0.0.0.dev61
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.15.1

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 3.70 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 $\leq 5\%$. 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	966	<p>76% (Upper red bar)</p> <p>85% (Green)</p> <p>13% (Yellow)</p> <p>• (Grey)</p>
1	B	966	<p>82% (Upper red bar)</p> <p>87% (Green)</p> <p>10% (Yellow)</p> <p>• (Grey)</p>
2	a	110	<p>23% (Upper red bar)</p> <p>25% (Green)</p> <p>75% (Grey)</p>
2	b	110	<p>20% (Upper red bar)</p> <p>20% (Green)</p> <p>80% (Grey)</p>

2 Entry composition [i](#)

There are 2 unique types of molecules in this entry. The entry contains 15762 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 Insulin-degrading enzyme.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	948	7737	4986	1301	1428	22	0	0
1	B	938	7662	4940	1286	1415	21	0	0

There are 22 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	110	LEU	CYS	conflict	UNP P14735
A	171	SER	CYS	conflict	UNP P14735
A	178	ALA	CYS	conflict	UNP P14735
A	257	VAL	CYS	conflict	UNP P14735
A	414	LEU	CYS	conflict	UNP P14735
A	573	ASN	CYS	conflict	UNP P14735
A	590	SER	CYS	conflict	UNP P14735
A	789	SER	CYS	conflict	UNP P14735
A	812	ALA	CYS	conflict	UNP P14735
A	819	ALA	CYS	conflict	UNP P14735
A	904	SER	CYS	conflict	UNP P14735
B	110	LEU	CYS	conflict	UNP P14735
B	171	SER	CYS	conflict	UNP P14735
B	178	ALA	CYS	conflict	UNP P14735
B	257	VAL	CYS	conflict	UNP P14735
B	414	LEU	CYS	conflict	UNP P14735
B	573	ASN	CYS	conflict	UNP P14735
B	590	SER	CYS	conflict	UNP P14735
B	789	SER	CYS	conflict	UNP P14735
B	812	ALA	CYS	conflict	UNP P14735
B	819	ALA	CYS	conflict	UNP P14735
B	904	SER	CYS	conflict	UNP P14735

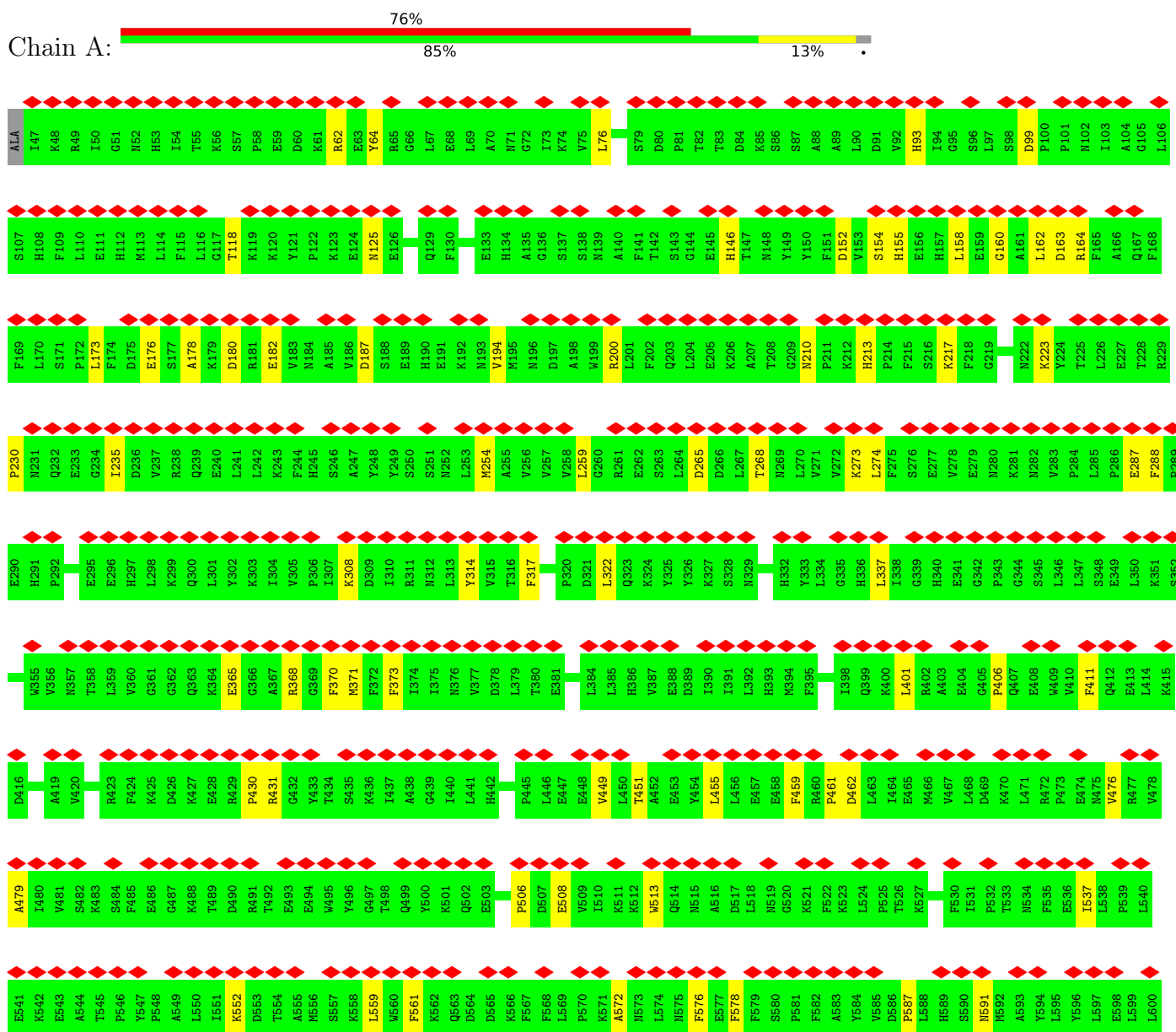
- Molecule 2 is a protein called Insulin.

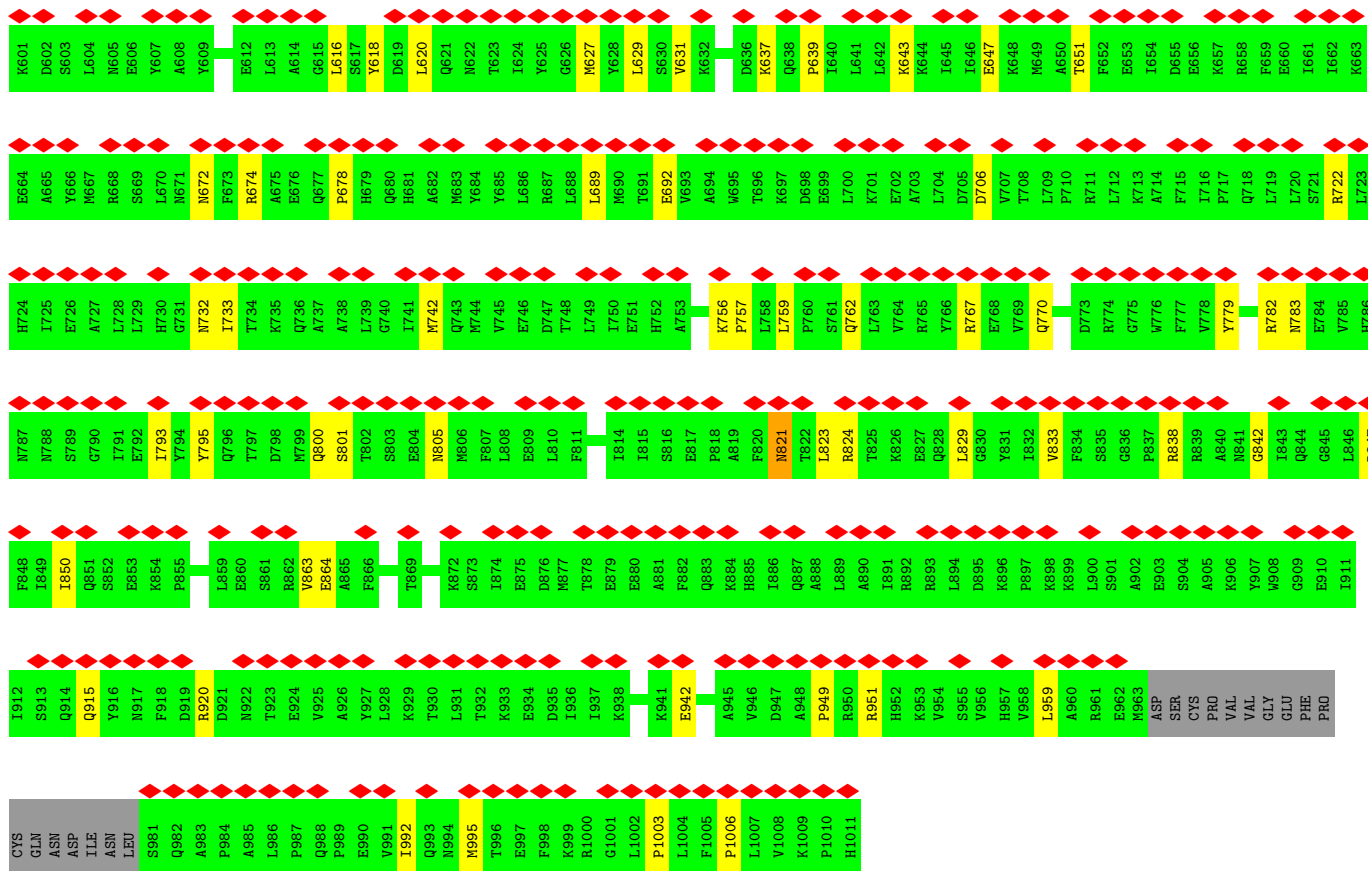
Mol	Chain	Residues	Atoms					AltConf	Trace
2	a	27	Total	C	N	O	S	0	0
			200	124	32	40	4		
2	b	22	Total	C	N	O	S	0	0
			163	104	26	30	3		

3 Residue-property plots

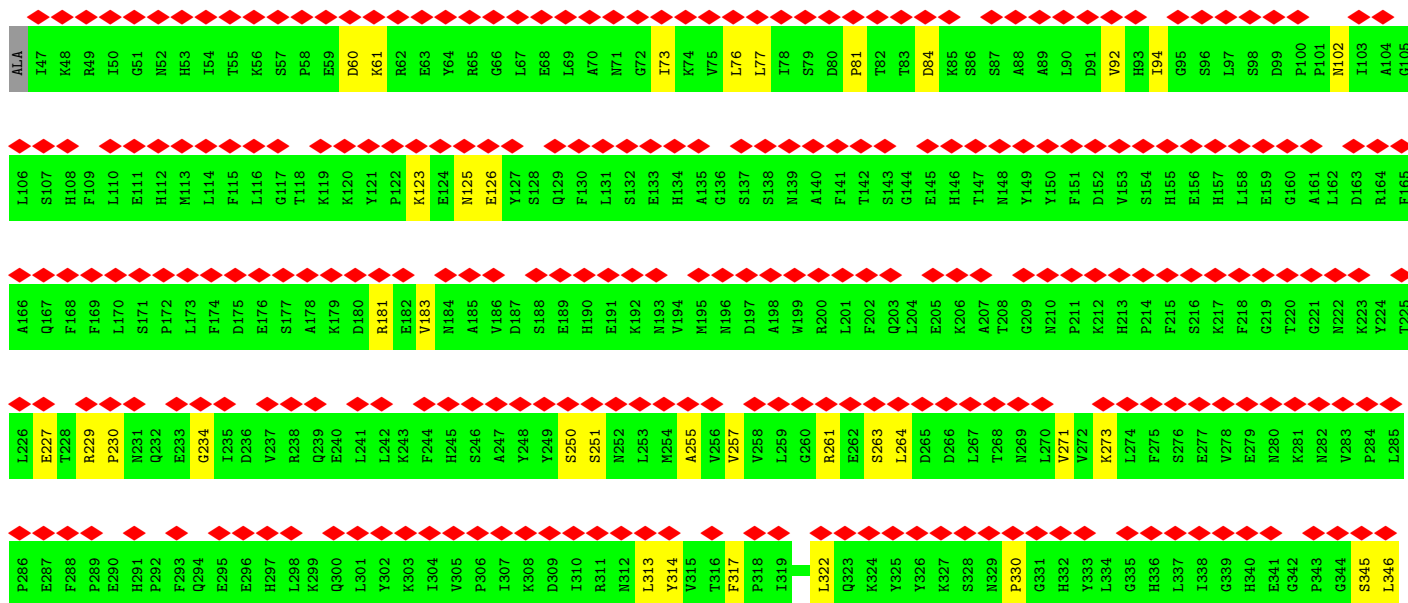
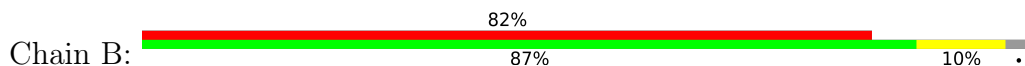
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: Insulin-degrading enzyme





● Molecule 1: Insulin-degrading enzyme



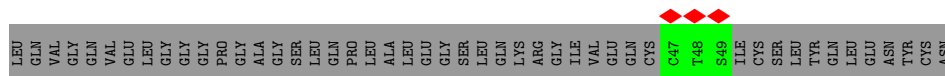
L347	S348	E349	L350	K351	S352	K353	G354	M355	V356	M357	T358	L359	V360	G361	G362	Q363	K364	E365	G366	A367	R368	G369	F370	M371	F372	F373	I374	I375	M376	V377	D378	L379	T380	E381	E382	G383	L384	L385	H386	V387	E388	D389	I390	I391	L392	L393	H393	M394	F395	Q396	Y397	I398	Q399	K400	L401	R402	A403	E404	E408																																		
W409	V410	F411	Q412	E413	L414	K415	D416	L417	M418	A419	V420	A421	F422	R423	F424	K425	D426	K427	E428	R429	P430	R431	G432	Y433	T434	S435	K436	I437	A438	G439	I440	L441	H442	Y443	Y444	P445	L446	E447	E448	V449	L450	T451	A452	E453	Y454	L455	L456	E457	E458	F459	R460	P461	D462	L463	I464	E465	M466	V467	L468																																		
D469	K470	L471	R472	P473	E474	M475	V476	V478	A479	I480	V481	S482	K483	S484	F485	E486	G487	K488	T489	D490	R491	T492	E493	E494	W495	Y496	G497	T498	Q499	Y500	K501	Q502	E503	A504	I505	F506	D507	I510	K511	K512	W513	Q514	N515	A516	D517	L518	N519	G520	K521	F522	K523	L524	P525	T526	K527	N528	E529																																				
F530	I531	P532	T533	N534	F535	E536	I537	L538	P539	L540	E541	K542	E543	A544	T545	P546	Y547	P548	A549	L550	R491	T492	E493	E494	W495	Y496	G497	T498	Q499	Y500	K501	Q502	E503	A504	I505	F506	D507	I510	K511	K512	W513	Q514	N515	A516	D517	L518	N519	G520	K521	F522	K523	L524	P525	T526	K527	N528	E529																																				
M591	M592	A593	Y594	L595	Y596	L597	E598	L599	L600	S603	L604	N605	E606	Y607	A608	Y609	A610	A611	A614	G615	L616	S617	Y618	D619	L620	Q621	N622	G623	T624	I625	G626	M627	Y628	L629	S630	V631	K632	N635	D636	K637	Q638	P639	I640	L641	L642	K643	K644	I645	I646	E647	K648	M649	A650	T651	F652	E653																																					
I654	D655	E656	K657	R658	F659	E660	I661	L662	K663	A664	Y666	M667	R668	L670	M671	N672	F673	R674	Q677	P678	H679	Q680	H681	A682	M683	L686	R687	L688	L689	M690	T691	E692	V693	A694	T696	K697	D698	E699	L700	K701	E702	L704	D705	D706	V707	T708	L709	R710	R711	L712	K713	A714	F715																																								
I716	P717	Q718	L719	L720	S721	R722	L723	H724	L725	E726	A727	L728	L729	H730	G731	N732	I733	T734	K735	Q736	A737	L738	L739	G740	I741	M742	M744	V745	E746	D747	T748	L749	I750	E751	H754	L755	K756	P757	L758	L759	P760	S761	Q762	L763	V764	R765	Y766	R767	E768	V769	L829	L830	Y831	L832	W833	F834	S835	G836																																			
F777	W778	Y779	Q780	Q781	R782	N783	E784	W785	H786	N787	N788	S789	G790	I791	E792	I793	Y794	Y795	Q796	T797	D798	W799	Q800	S801	T802	S803	E804	N805	H806	F807	L808	S809	L810	F811	A812	Q813	L814	L815	S816	E817	P818	A819	F820	N821	T822	L823	R824	T825	K826	E827	Q828	L829	V830	Y831	L832	W833	F834	S835	G836																																		
R837	R838	R839	A840	R841	G842	I843	Q844	G845	L846	R847	F848	I849	I911	K906	Y907	W908	G909	E910	I911	I912	S913	Q914	Q915	Y916	K854	P855	P856	H857	Y858	L859	E860	S861	R862	W863	E864	A865	F866	L867	T868	L810	F811	A812	Q813	L814	L815	S816	E817	P818	A819	F820	N821	T822	L823	R824	T825	K826	E827	Q828	L829	V830	Y831	L832	W833	F834	S835	G836																											
P897	K898	R899	L900	S901	A902	ASP	K906	Y907	W908	G909	E910	I911	I912	S913	Q914	Q915	Y916	K854	P855	P856	H857	Y858	L859	E860	S861	R862	W863	E864	A865	F866	L867	T868	L810	F811	A812	Q813	L814	L815	S816	E817	P818	A819	F820	N821	T822	L823	R824	T825	K826	E827	Q828	L829	V830	Y831	L832	W833	F834	S835	G836																																		
V958	L959	A960	R961	GLU	LEU	MET	ASP	PRO	SER	CYS	PRO	VAL	VAL	GLY	GLY	GLU	PHE	TRP	TRP	GLY	PRO	CYS	ASN	GLN	ASP	PRO	ALA	ALA	LEU	LEU	PRO	LEU	GLN	P897	K898	R899	L900	S901	A902	ASP	K906	Y907	W908	G909	E910	I911	I912	S913	Q914	Q915	Y916	K854	P855	P856	H857	Y858	L859	E860	S861	R862	W863	E864	A865	F866	L867	T868	L810	F811	A812	Q813	L814	L815	S816	E817	P818	A819	F820	N821	T822	L823	R824	T825	K826	E827	Q828	L829	V830	Y831	L832	W833	F834	S835	G836
E990	V991	I992	Q993	N994	M995	T996	E997	F998	K999	R1000	G1001	L1002	P1003	L1004	F1005	P1006	L1007	V1008	K1009	P1010	H1011	V991	I992	Q993	N994	M995	T996	E997	F998	K999	R1000	G1001	L1002	P1003	L1004	F1005	P1006	L1007	V1008	K1009	P1010	H1011	V991	I992	Q993	N994	M995	T996	E997	F998	K999	R1000	G1001	L1002	P1003	L1004	F1005	P1006	L1007	V1008	K1009	P1010	H1011																														

● Molecule 2: Insulin



MET	ALA	TRP	TRP	ARG	LEU	LEU	PRO	SER	LEU	GLY	PRO	GLY	LEU	ALA	VAL	PHE	TRP	TRP	GLY	PRO	CYS	ASN	GLN	ASP	PRO	ALA	ALA	LEU	LEU	PRO	LEU	GLN	P897	K898	R899	L900	S901	A902	ASP	K906	Y907	W908	G909	E910	I911	I912	S913	Q914	Q915	Y916	K854	P855	P856	H857	Y858	L859	E860	S861	R862	W863	E864	A865	F866	L867	T868	L810	F811	A812	Q813	L814	L815	S816	E817	P818	A819	F820	N821	T822	L823	R824	T825	K826	E827	Q828	L829	V830	Y831	L832	W833	F834	S835	G836
GLN	VAL	GLY	GLN	VAL	GLU	LEU	GLY	PRO	GLY	PRO	GLN	LEU	ALA	ALA	VAL	GLY	LEU	TRP	TRP	GLY	PRO	CYS	ASN	GLN	ASP	PRO	ALA	ALA	LEU	LEU	PRO	LEU	GLN	E990	V991	I992	Q993	N994	M995	T996	E997	F998	K999	R1000	G1001	L1002	P1003	L1004	F1005	P1006	L1007	V1008	K1009	P1010	H1011																																					

● Molecule 2: Insulin



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	148392	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 ($e^-/\text{\AA}^2$)	71.4	Depositor
Minimum defocus (nm)	940	Depositor
Maximum defocus (nm)	2200	Depositor
Magnification	46598	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.182	Depositor
Minimum map value	-0.232	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.053	Depositor
Map size (\AA)	343.36, 343.36, 343.36	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.073, 1.073, 1.073	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	0.34	0/7931	0.60	0/10729
1	B	0.32	0/7853	0.59	0/10621
2	a	0.36	0/201	0.91	0/270
2	b	0.32	0/164	0.73	0/221
All	All	0.33	0/16149	0.60	0/21841

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	7737	0	7663	67	0
1	B	7662	0	7584	56	0
2	a	200	0	185	0	0
2	b	163	0	157	0	0
All	All	15762	0	15589	121	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 4.

All (121) 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:668:ARG:O	1:B:672:ASN:HB2	1.92	0.69
1:A:770:GLN:HB3	1:A:1003:PRO:HG2	1.77	0.66
1:B:920:ARG:O	1:B:924:GLU:HB3	1.98	0.63
1:A:620:LEU:HD12	1:A:629:LEU:HD13	1.80	0.62
1:B:776:TRP:O	1:B:990:GLU:N	2.33	0.61
1:B:728:LEU:HD12	1:B:911:ILE:HD12	1.83	0.61
1:A:800:GLN:NE2	1:A:842:GLY:O	2.35	0.60
1:A:559:LEU:HD11	1:A:742:MET:HG2	1.85	0.59
1:A:1006:PRO:HD3	1:B:1003:PRO:HB3	1.86	0.57
1:A:833:VAL:HG22	1:A:850:ILE:HD13	1.87	0.56
1:A:337:LEU:HB3	1:A:401:LEU:HD11	1.88	0.56
1:B:314:TYR:HB2	1:B:479:ALA:HB3	1.86	0.56
1:A:314:TYR:HB2	1:A:479:ALA:HB3	1.89	0.55
1:A:801:SER:O	1:A:805:ASN:ND2	2.40	0.55
1:B:322:LEU:HD22	1:B:330:PRO:HG2	1.89	0.55
1:A:125:ASN:ND2	1:A:821:ASN:OD1	2.33	0.55
1:A:317:PHE:HB2	1:A:373:PHE:HB3	1.89	0.54
1:B:920:ARG:O	1:B:924:GLU:CB	2.55	0.54
1:B:529:GLU:O	1:B:637:LYS:NZ	2.41	0.54
1:B:92:VAL:HG12	1:B:94:ILE:H	1.73	0.54
1:A:639:PRO:O	1:A:643:LYS:HB2	2.08	0.54
1:A:537:ILE:HA	1:A:732:ASN:HD21	1.72	0.54
1:B:181:ARG:NH1	1:B:826:LYS:O	2.41	0.54
1:A:99:ASP:HB2	1:A:217:LYS:HD3	1.90	0.53
1:B:400:LYS:NZ	1:B:522:PHE:O	2.42	0.53
1:B:402:ARG:HH12	1:B:469:ASP:HA	1.73	0.53
1:B:597:LEU:HD21	1:B:627:MET:HG3	1.91	0.52
1:A:552:LYS:HB3	1:A:559:LEU:HD13	1.91	0.52
1:B:770:GLN:HB3	1:B:1003:PRO:HG2	1.90	0.52
1:A:722:ARG:HG2	1:A:756:LYS:HB2	1.91	0.52
1:A:587:PRO:O	1:A:591:ASN:HB2	2.10	0.52
1:A:616:LEU:HD11	1:A:637:LYS:HB2	1.91	0.52
1:B:668:ARG:O	1:B:672:ASN:CB	2.58	0.51
1:A:793:ILE:HD11	1:A:863:VAL:HG11	1.93	0.51
1:B:123:LYS:HB2	1:B:126:GLU:HB2	1.92	0.51
1:A:692:GLU:HB2	1:A:767:ARG:H	1.75	0.51
1:B:313:LEU:HD11	1:B:387:VAL:HG13	1.92	0.50
1:B:389:ASP:O	1:B:393:HIS:ND1	2.44	0.50
1:A:230:PRO:O	1:A:235:ILE:N	2.41	0.50
1:A:576:PHE:HB2	1:A:629:LEU:HB3	1.94	0.50
1:B:796:GLN:HE21	1:B:843:ILE:HG21	1.77	0.50
1:B:345:SER:OG	1:B:346:LEU:N	2.45	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:689:LEU:HD21	1:A:995:MET:HB3	1.94	0.49
1:B:102:ASN:O	1:B:229:ARG:NH2	2.46	0.49
1:A:365:GLU:HA	1:A:371:MET:HG3	1.94	0.49
1:A:308:LYS:HG3	1:A:672:ASN:HB2	1.94	0.49
1:A:795:TYR:OH	1:A:864:GLU:OE2	2.30	0.49
1:A:476:VAL:HG11	1:A:513:TRP:HZ3	1.77	0.49
1:B:346:LEU:HA	1:B:522:PHE:HE1	1.78	0.48
1:A:62:ARG:NH2	1:A:64:TYR:OH	2.46	0.48
1:A:176:GLU:O	1:A:180:ASP:HB2	2.13	0.48
1:B:76:LEU:HD23	1:B:437:ILE:HD12	1.94	0.48
1:A:194:VAL:O	1:A:200:ARG:NH1	2.46	0.48
1:B:709:LEU:O	1:B:713:LYS:HB2	2.13	0.48
1:B:779:TYR:HB3	1:B:956:VAL:HG12	1.97	0.47
1:A:287:GLU:HB3	1:A:368:ARG:HD3	1.96	0.47
1:A:160:GLY:O	1:A:164:ARG:NH2	2.46	0.47
1:A:178:ALA:O	1:A:182:GLU:HB2	2.15	0.47
1:A:451:THR:HB	1:A:455:LEU:HD13	1.95	0.47
1:B:805:ASN:OD1	1:B:844:GLN:NE2	2.48	0.46
1:A:722:ARG:NH2	1:A:757:PRO:O	2.48	0.46
1:B:81:PRO:HA	1:B:261:ARG:HG3	1.98	0.46
1:A:163:ASP:OD1	1:A:274:LEU:HD11	2.15	0.46
1:B:808:LEU:HD13	1:B:844:GLN:HB3	1.98	0.46
1:A:93:HIS:HA	1:A:146:HIS:HB3	1.98	0.45
1:A:561:PHE:HE1	1:A:733:ILE:HG13	1.80	0.45
1:B:692:GLU:HB3	1:B:766:TYR:HD1	1.81	0.45
1:A:838:ARG:HB2	1:A:847:ARG:HD3	1.98	0.45
1:A:158:LEU:O	1:A:162:LEU:CB	2.65	0.45
1:B:183:VAL:HG11	1:B:227:GLU:HB2	1.98	0.45
1:B:263:SER:OG	1:B:264:LEU:N	2.49	0.45
1:A:823:LEU:HG	1:A:829:LEU:HD12	1.99	0.45
1:B:437:ILE:HA	1:B:440:ILE:HG13	1.99	0.45
1:B:462:ASP:N	1:B:462:ASP:OD1	2.50	0.44
1:A:678:PRO:HG3	1:A:783:ASN:HD22	1.83	0.44
1:B:678:PRO:HG3	1:B:783:ASN:HD22	1.81	0.44
1:A:800:GLN:HG2	1:A:915:GLN:HE22	1.82	0.44
1:B:77:LEU:HD21	1:B:271:VAL:HG21	1.99	0.44
1:A:76:LEU:HD22	1:A:449:VAL:HG11	1.99	0.44
1:A:187:ASP:HB2	1:A:223:LYS:HB2	2.00	0.43
1:B:230:PRO:O	1:B:234:GLY:N	2.48	0.43
1:A:779:TYR:HB3	1:A:992:ILE:HB	2.00	0.43
1:A:647:GLU:O	1:A:651:THR:OG1	2.30	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:60:ASP:OD1	1:B:61:LYS:N	2.51	0.43
1:A:158:LEU:O	1:A:162:LEU:HB2	2.18	0.43
1:A:462:ASP:N	1:A:462:ASP:OD1	2.50	0.43
1:B:570:PRO:HA	1:B:732:ASN:HD22	1.82	0.43
1:A:406:PRO:HG3	1:A:461:PRO:HB3	2.00	0.43
1:B:604:LEU:HD21	1:B:645:ILE:HG12	2.01	0.43
1:A:572:ALA:HB2	1:A:732:ASN:H	1.84	0.43
1:B:250:SER:OG	1:B:251:SER:N	2.51	0.43
1:A:288:PHE:HE2	1:A:370:PHE:HE1	1.67	0.43
1:B:364:LYS:HB2	1:B:374:ILE:HG12	2.00	0.42
1:A:259:LEU:HD13	1:A:430:PRO:HB3	2.01	0.42
1:B:688:LEU:HD12	1:B:694:ALA:HB3	2.01	0.42
1:B:84:ASP:OD1	1:B:84:ASP:N	2.51	0.42
1:B:855:PRO:HA	1:B:856:PRO:HD3	1.88	0.42
1:A:411:PHE:CD2	1:A:459:PHE:HB2	2.53	0.42
1:B:911:ILE:HD11	1:B:918:PHE:HZ	1.84	0.42
1:A:706:ASP:OD1	1:B:756:LYS:NZ	2.37	0.42
1:B:73:ILE:HG23	1:B:255:ALA:HA	2.01	0.42
1:B:887:GLN:O	1:B:891:ILE:HD12	2.20	0.42
1:B:125:ASN:ND2	1:B:821:ASN:OD1	2.33	0.42
1:B:505:ILE:HG13	1:B:510:ILE:HD11	2.01	0.42
1:A:782:ARG:HE	1:A:959:LEU:HD11	1.85	0.41
1:A:118:THR:HA	1:A:173:LEU:H	1.84	0.41
1:B:76:LEU:HB3	1:B:257:VAL:HG12	2.03	0.41
1:A:942:GLU:HA	1:A:949:PRO:HD2	2.01	0.41
1:A:618:TYR:HB2	1:A:631:VAL:HG22	2.02	0.41
1:B:599:LEU:HD21	1:B:654:ILE:HG23	2.03	0.41
1:B:604:LEU:HD13	1:B:648:LYS:HG2	2.03	0.41
1:A:154:SER:OG	1:A:155:HIS:N	2.51	0.40
1:B:625:TYR:HE1	1:B:766:TYR:HD2	1.68	0.40
1:A:152:ASP:HB3	1:A:431:ARG:HB2	2.03	0.40
1:A:210:ASN:HB3	1:A:213:HIS:HB2	2.03	0.40
1:B:317:PHE:HE1	1:B:476:VAL:HG12	1.86	0.40
1:A:506:PRO:HG2	1:A:508:GLU:HG2	2.03	0.40
1:A:265:ASP:HA	1:A:268:THR:HG22	2.03	0.40
1:A:578:PHE:HB2	1:A:627:MET:HG2	2.02	0.40
1:A:759:LEU:H	1:A:762:GLN:HE21	1.68	0.40
1:A:824:ARG:HB2	1:A:833:VAL:HG21	2.04	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	944/966 (98%)	918 (97%)	26 (3%)	0	100	100
1	B	934/966 (97%)	910 (97%)	24 (3%)	0	100	100
2	a	23/110 (21%)	20 (87%)	3 (13%)	0	100	100
2	b	18/110 (16%)	16 (89%)	2 (11%)	0	100	100
All	All	1919/2152 (89%)	1864 (97%)	55 (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	838/861 (97%)	831 (99%)	7 (1%)	81	89
1	B	829/861 (96%)	823 (99%)	6 (1%)	84	91
2	a	23/88 (26%)	23 (100%)	0	100	100
2	b	19/88 (22%)	19 (100%)	0	100	100
All	All	1709/1898 (90%)	1696 (99%)	13 (1%)	82	89

All (13) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	254	MET
1	A	273	LYS

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Mol	Chain	Res	Type
1	A	322	LEU
1	A	674	ARG
1	A	821	ASN
1	A	920	ARG
1	A	951	ARG
1	B	273	LYS
1	B	635	ASN
1	B	774	ARG
1	B	821	ASN
1	B	824	ARG
1	B	838	ARG

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	762	GLN
1	A	915	GLN
1	B	475	ASN
1	B	844	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.

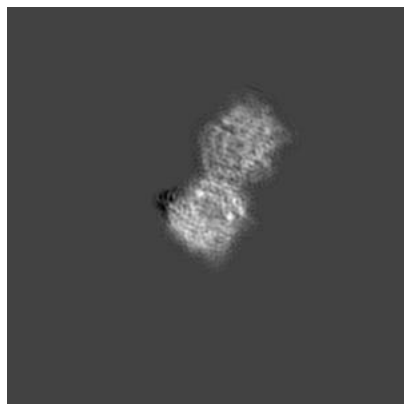
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-7041. These allow visual inspection of the internal detail of the map and identification of artifacts.

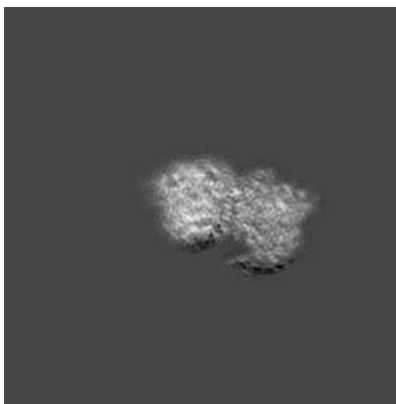
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

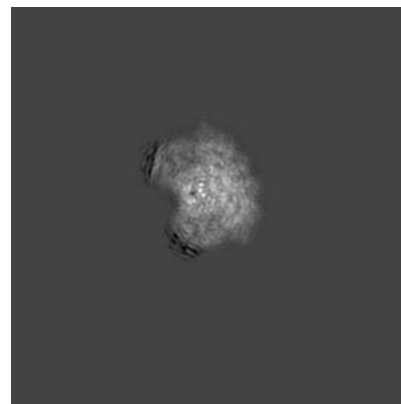
6.1.1 Primary map



X

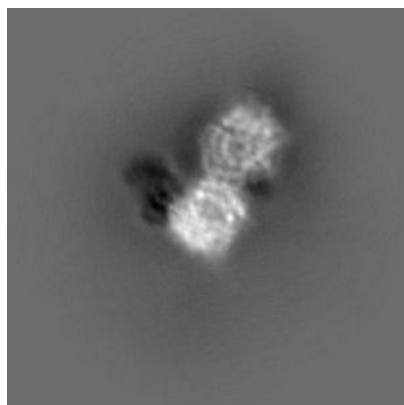


Y

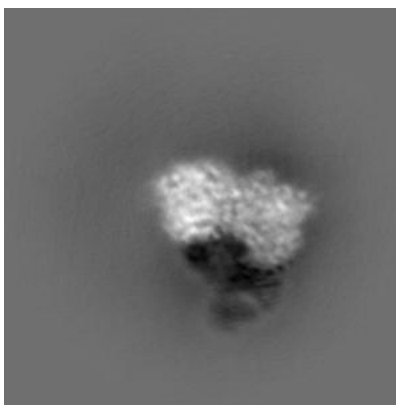


Z

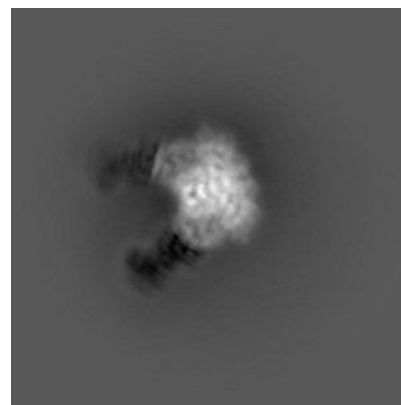
6.1.2 Raw map



X



Y

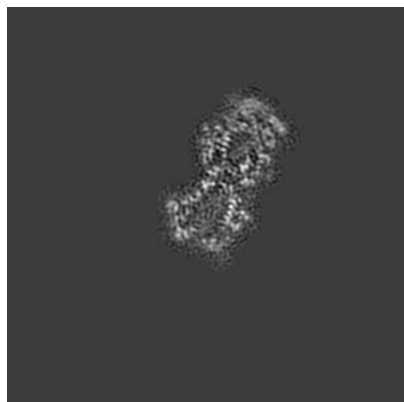


Z

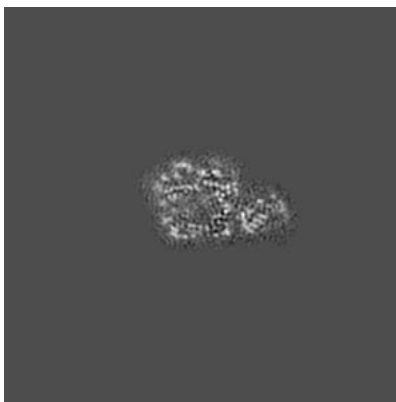
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

6.2.1 Primary map



X Index: 160

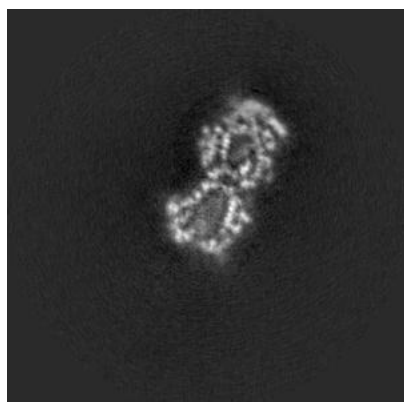


Y Index: 160

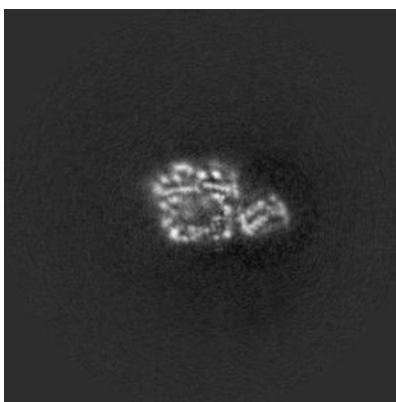


Z Index: 160

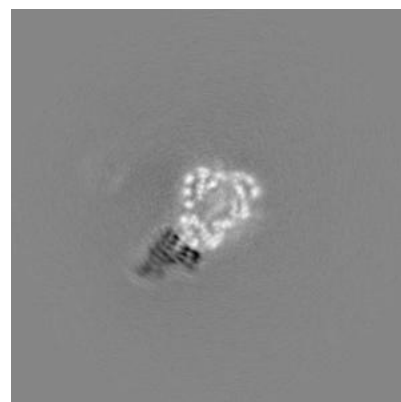
6.2.2 Raw map



X Index: 160



Y Index: 160

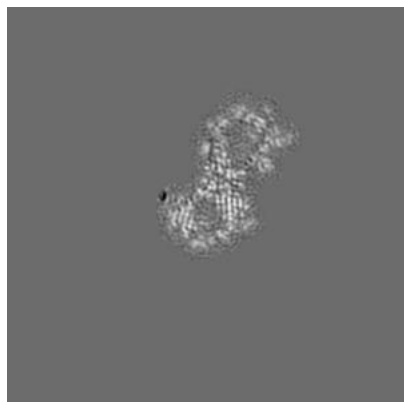


Z Index: 160

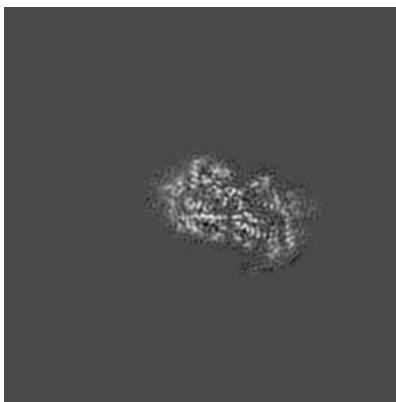
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

6.3.1 Primary map



X Index: 152

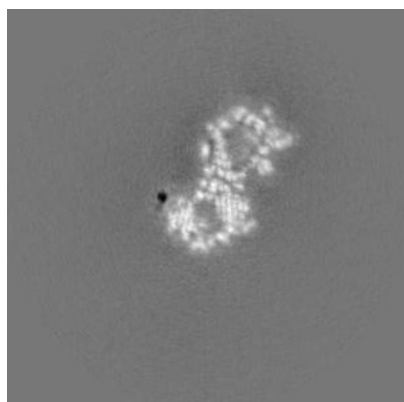


Y Index: 177

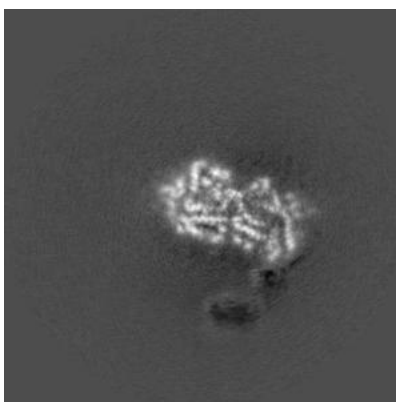


Z Index: 160

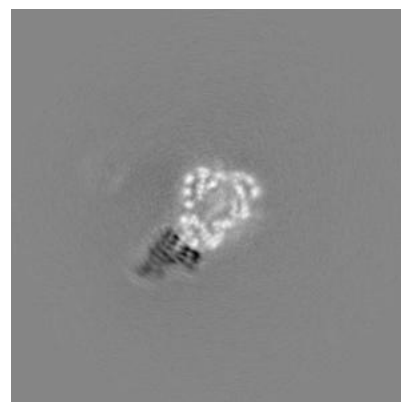
6.3.2 Raw map



X Index: 152



Y Index: 177

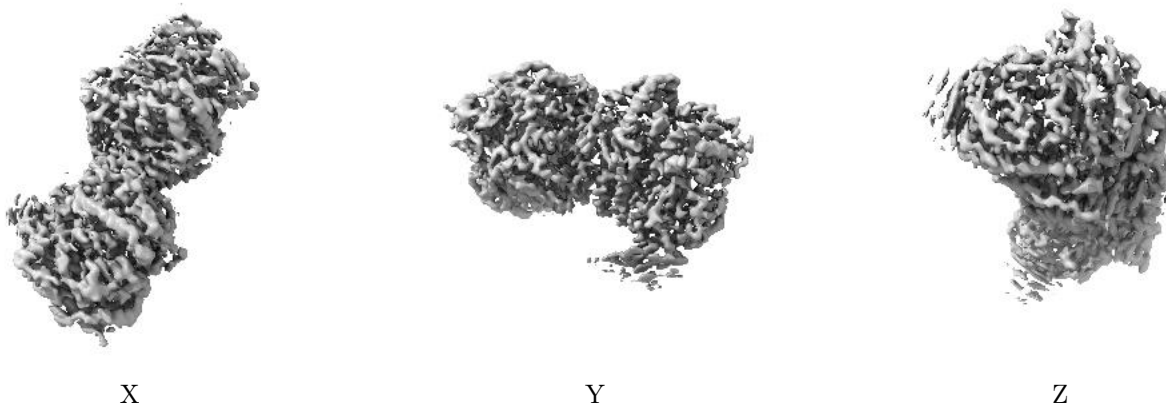


Z Index: 160

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

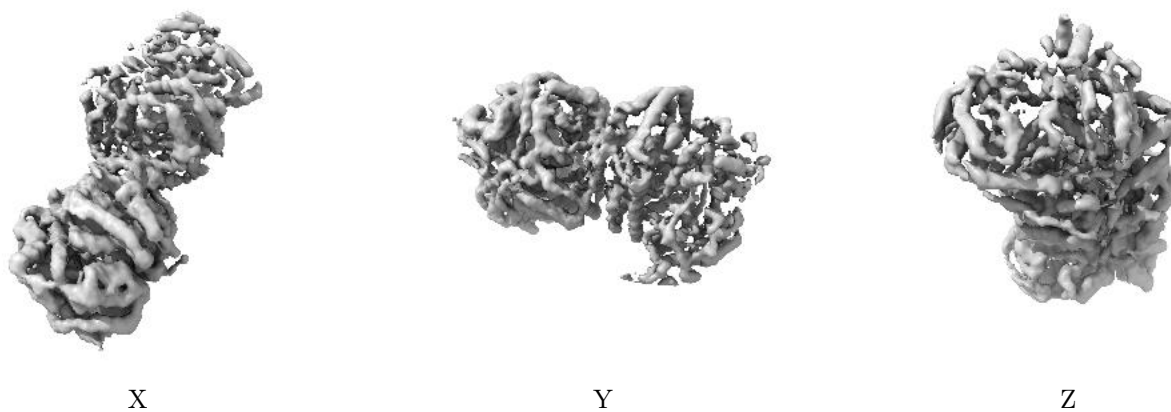
6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.053. 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.

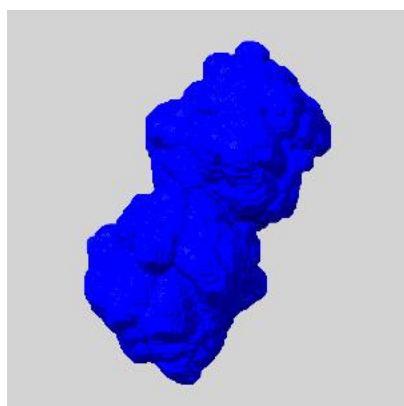
6.5 Mask visualisation [i](#)

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

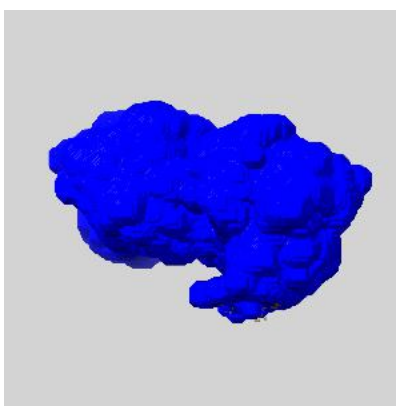
A mask typically either:

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

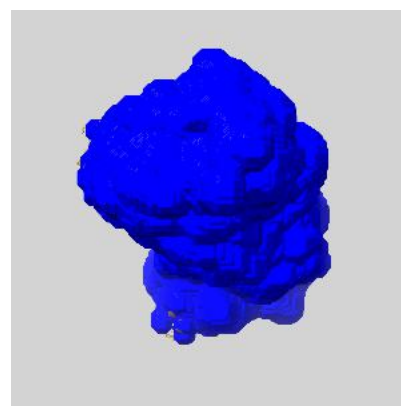
6.5.1 emd_7041_msk_1.map [i](#)



X



Y

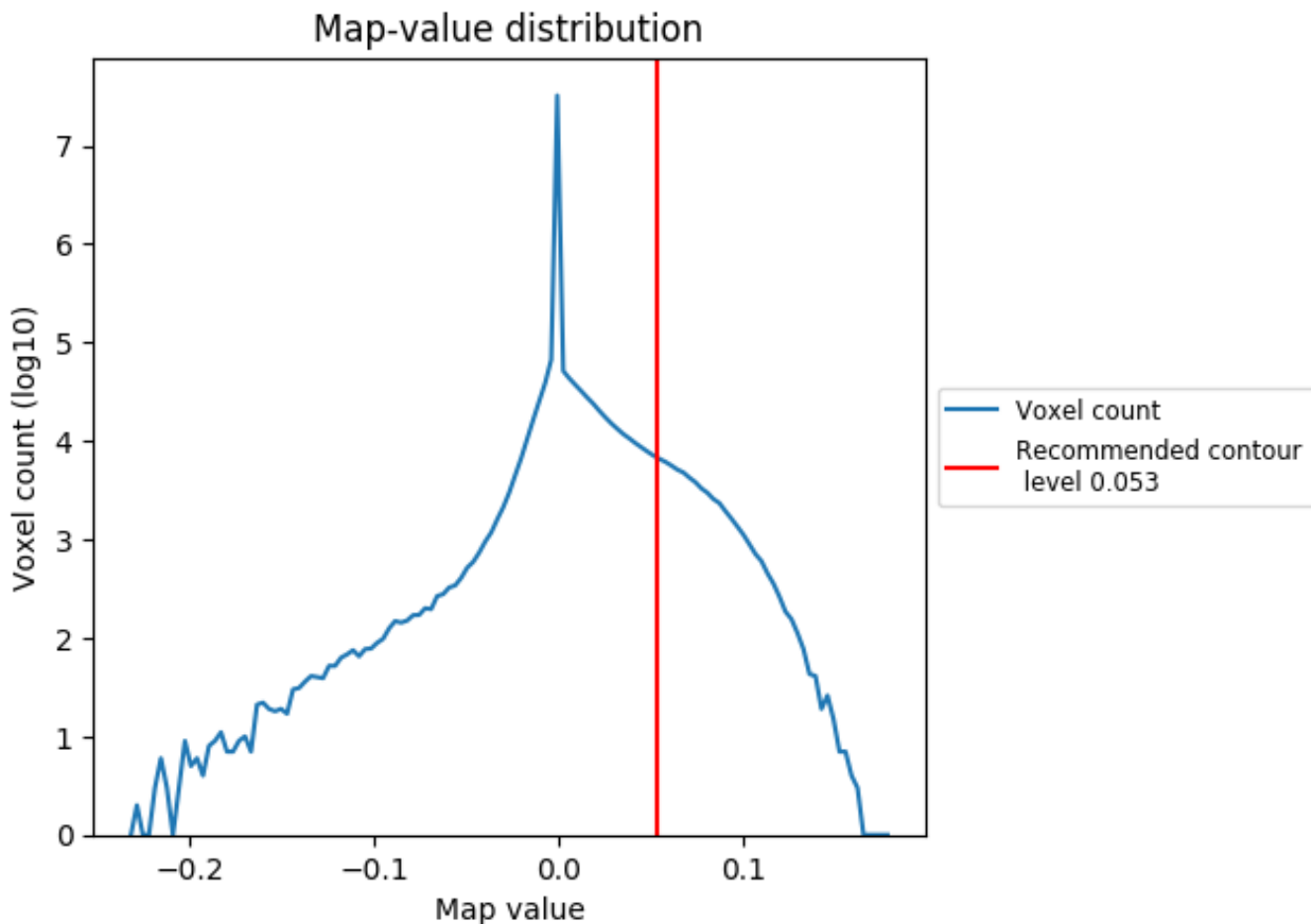


Z

7 Map analysis [i](#)

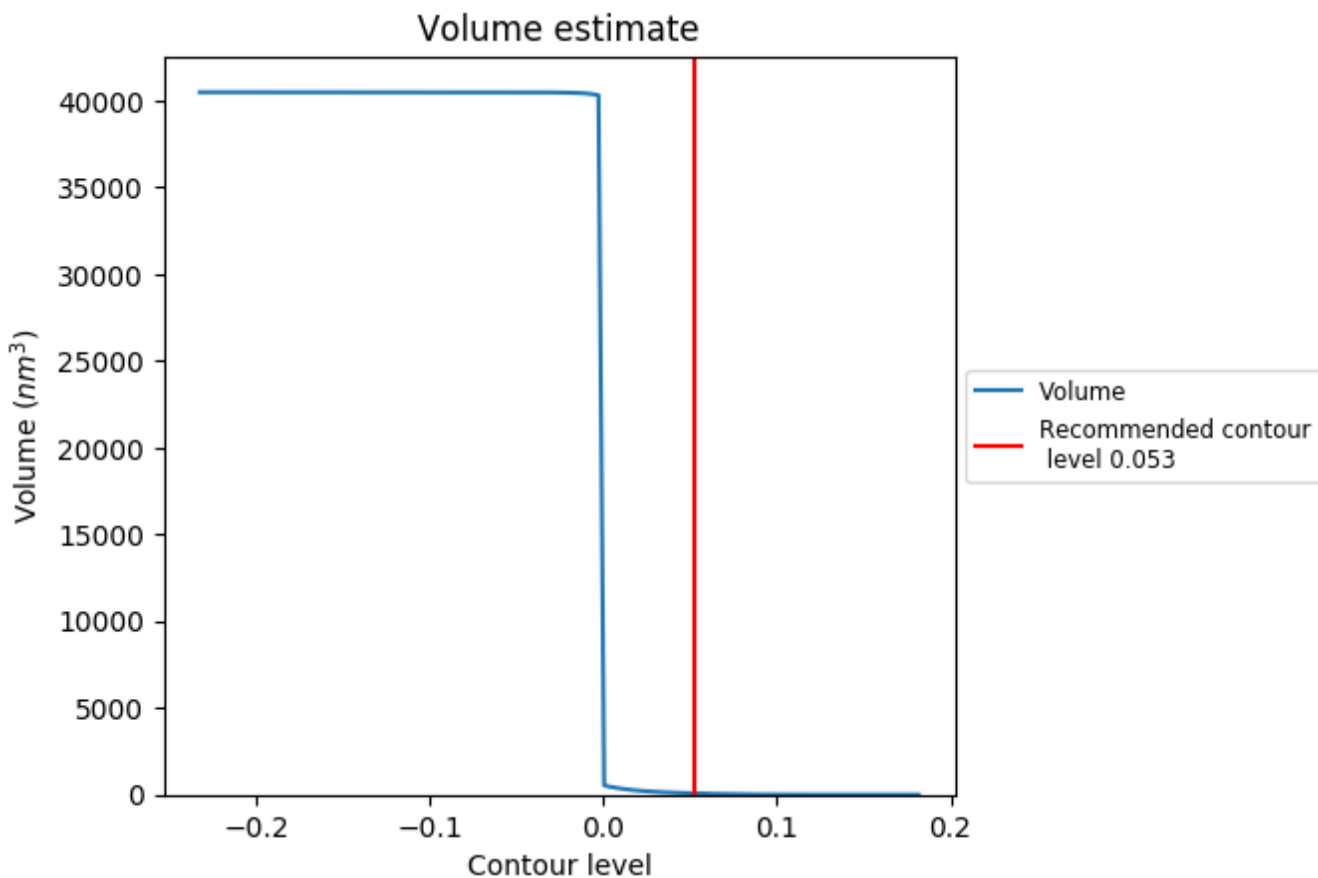
This section contains the results of statistical analysis of the map.

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.

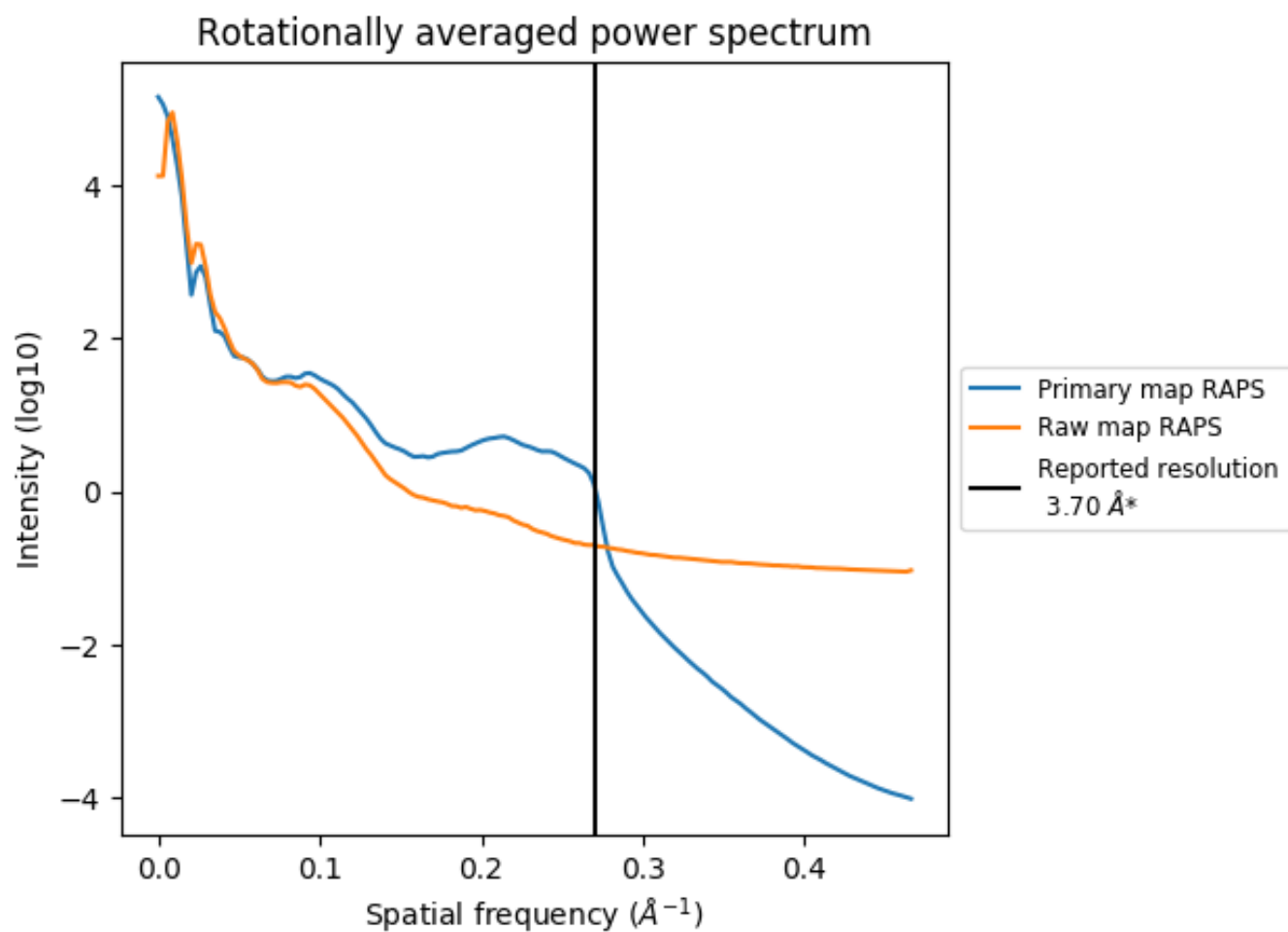
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 75 nm³; this corresponds to an approximate mass of 68 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

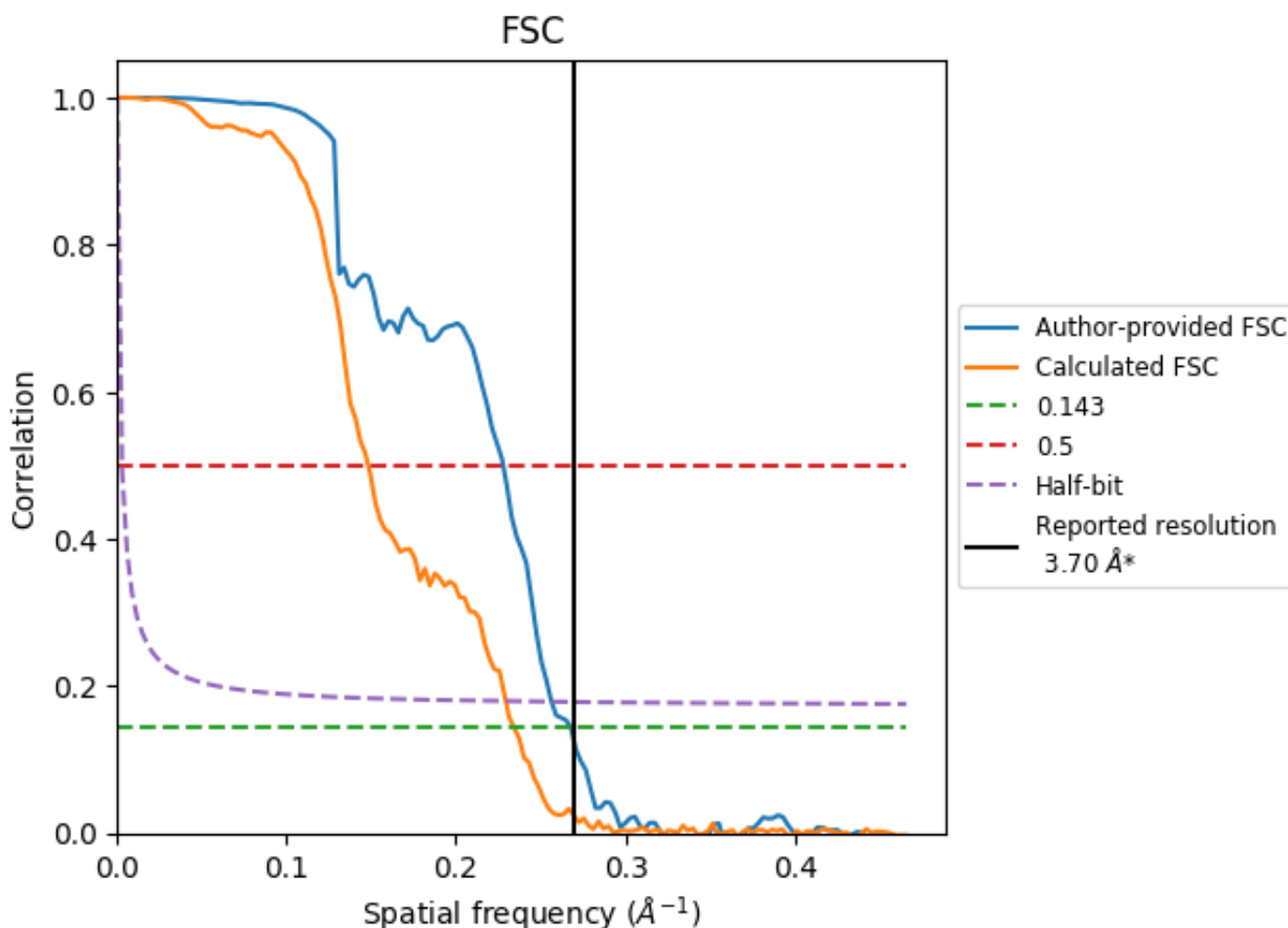


*Reported resolution corresponds to spatial frequency of 0.270 Å⁻¹

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 0.270 Å⁻¹

8.2 Resolution estimates [i](#)

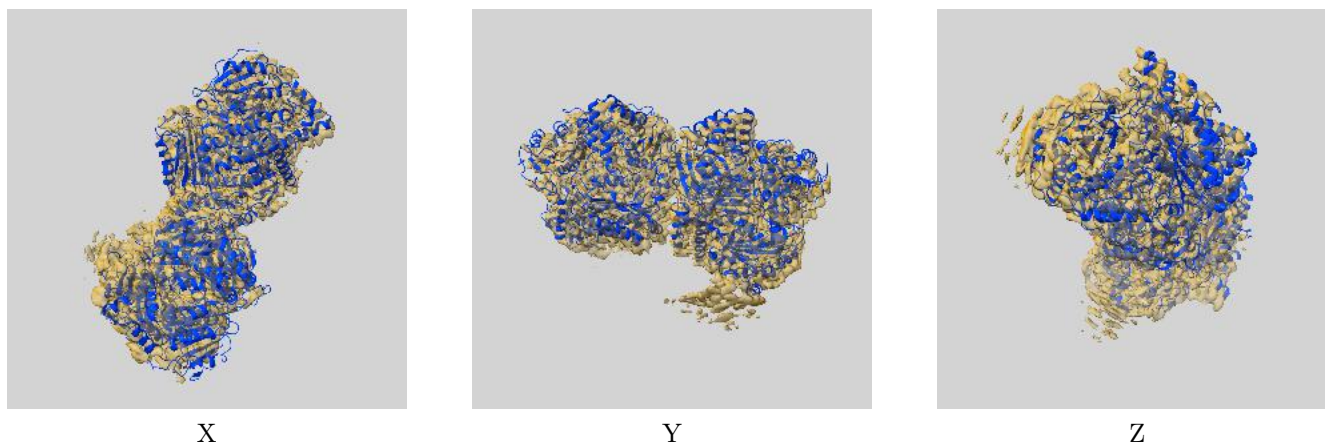
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.70	-	-
Author-provided FSC curve	3.77	4.44	3.94
Calculated*	4.32	6.88	4.41

*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 4.32 differs from the reported value 3.7 by more than 10 %

9 Map-model fit [i](#)

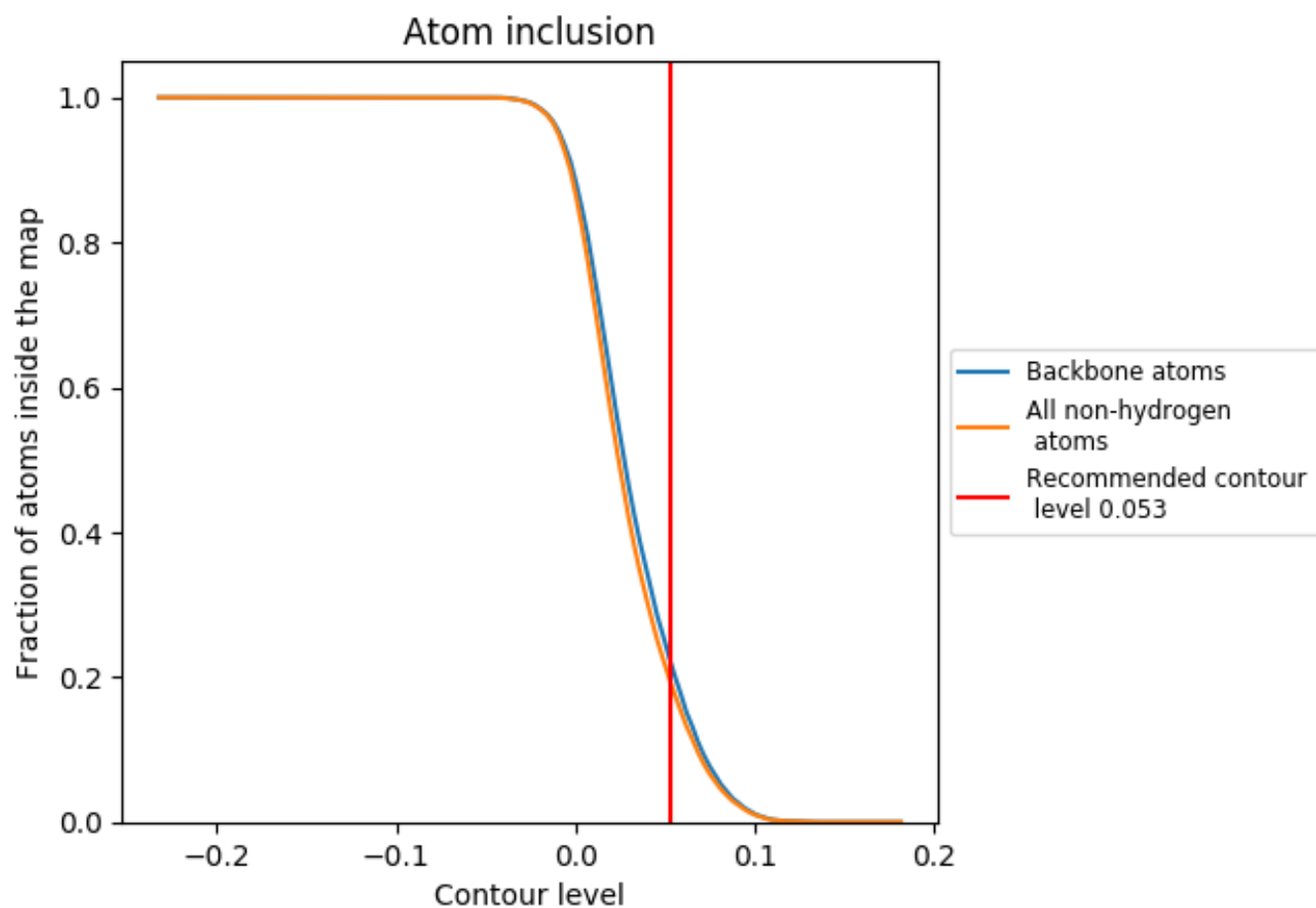
This section contains information regarding the fit between EMDB map EMD-7041 and PDB model 6BFC. Per-residue inclusion information can be found in section 3 on page 5.

9.1 Map-model overlay [i](#)



The images above show the 3D surface view of the map at the recommended contour level 0.053 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 Atom inclusion [i](#)



At the recommended contour level, 22% of all backbone atoms, 19% of all non-hydrogen atoms, are inside the map.