



Full wwPDB EM Validation Report ⓘ

Nov 13, 2022 – 05:42 PM EST

PDB ID : 7JGF
EMDB ID : EMD-22325
Title : Cryo-EM structure of *P. falciparum* VAR2CSA FCR3 domains DBL5 and DBL6 at 4.69 Å
Authors : Ma, R.; Tolia, N.H.
Deposited on : 2020-07-19
Resolution : 4.69 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

EMDB validation analysis : 0.0.1.dev43
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.2

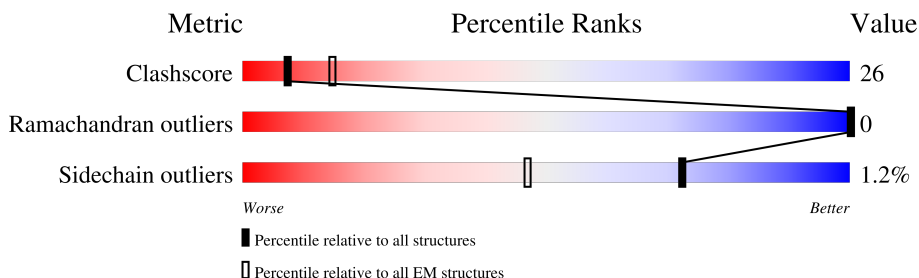
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 4.69 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	2660	

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 4477 atoms, of which 30 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 Erythrocyte membrane protein 1.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
1	A	532	4477	2808	30	770	839	30	4	0

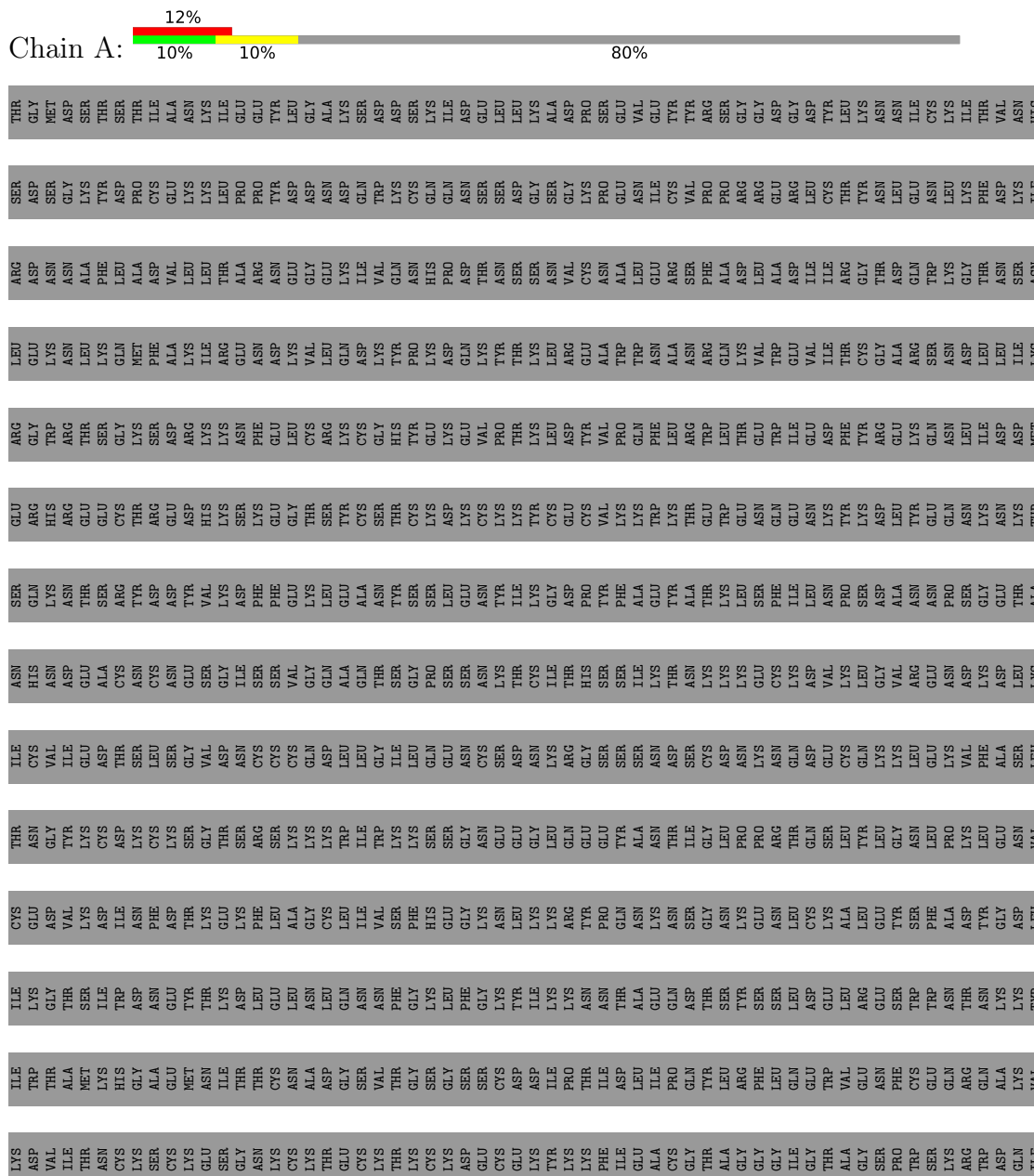
There are 11 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	THR	-	expression tag	UNP Q6UDW7
A	0	GLY	-	expression tag	UNP Q6UDW7
A	2650	GLY	-	expression tag	UNP Q6UDW7
A	2651	THR	-	expression tag	UNP Q6UDW7
A	2652	LYS	-	expression tag	UNP Q6UDW7
A	2653	HIS	-	expression tag	UNP Q6UDW7
A	2654	HIS	-	expression tag	UNP Q6UDW7
A	2655	HIS	-	expression tag	UNP Q6UDW7
A	2656	HIS	-	expression tag	UNP Q6UDW7
A	2657	HIS	-	expression tag	UNP Q6UDW7
A	2658	HIS	-	expression tag	UNP Q6UDW7

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: Erythrocyte membrane protein 1



HIS	S2543	R2481	A2421	I2360	F2298	R2236	S2169	D2105	I2039
ILE	K2544	E2482	M2422	S2361	K2299	K2237	W2170	I2106	P2040
ASP	C2545	A2483	K2423	N2362	Q2300	R2238	C2171	I2107	P2041
LYS	T2546	E2484	Y2424	G2363	I2301	S2239	K2172	K2108	R2042
ASN	H2547	G2485	S2425	W2364	K2302	I2240	I2173	D2111	R2043
LYS	A2548	D2486	F2426	L2365	Q2303	R2241	P2179	M2112	R2044
THR	C2549	T2487	T2427	L2366	Q2304	W2242	P2180	L2113	Q2045
TRP	N2550	E2488	D2428	T2367	V2305	E2243	P2182	T2114	L2046
ASN	W2551	T2489	I2429	F2368	K2306	E2244	P2183	T2115	C2047
LYS	Y2552	N2490	G2430	R2369	K2306	T2244	P2184	I2116	F2048
PRO	Y2553	E2491	S2431	R2370	E2310	I2245	P2185	N2115	S2049
GLU	K2554	I2432	I2433	K2371	E2311	L2246	P2186	E2117	R2050
THR	Y2555	I2433	I2433	K2371	L2311	K2247	P2187	F2118	I2051
LEU	L2556	K2434	G2435	W2372	E2312	R2248	P2188	K2119	P2055
GLU	L2557	L2373	F2374	L2373	ASP	Y2249	P2189	D2120	A2056
ASP	L2558	F2374	D2436	F2374	VAL	K2250	P2190	D2121	A2057
THR	W2559	L2375	D2437	L2375	ILE	Y2252	P2191	K2122	L2058
PHE	K2560	D2378	D2497	D2378	THR	Y2253	P2192	K2123	
LYS	T2561	P2379	M2438	S2380	ARG	K2254	P2193	I2123	
SER	E2562	E2440	M2439	K2381	LYS	R2254	P2194	K2124	
LYS	Y2563	E2441	E2440	K2381	ILE	W2255	P2195	L2125	
CYS	E2564	K2441	E2441	K2382	ARG	D2256	P2196	L2126	
CYS	E2565	N2442	E2442	L2382	HIS	D2257	P2197	L2127	
PRO	I2566	M2442	E2442	C2383	HIS	Y2257	P2198	R2127	
PRO	Q2566	S2443	S2443	E2384	GLU	L2258	P2199	L2128	
PRO	T2567	S2444	S2444	E2384	TYR	K2259	P2200	L2129	
LEU	W2568	D2445	D2445	Y2385	ASP	D2260	P2201	L2130	
PRO	K2569	K2446	K2446	K2386	GLY	W2261	P2202	E2130	
SER	W2570	I2447	I2447	K2387	N2327	K2262	P2203	T2133	
PRO	D2571	G2448	G2448	D2388	Y2329	E2263	P2204	N2134	
ILE	D2572	K2449	K2449	P2389	I2330	PRO	P2205	N2135	
LYS	N2573	I2450	I2450	K2390	C2331	ASP	P2206	Q2072	
PRO	E2574	L2451	L2451	N2332	N2332	ALA	P2207	Q2073	
ASP	F2574	G2452	G2452	L2333	K2333	ASN	P2208	K2071	
LEU	K2575	T2392	T2392	Y2334	Y2334	THR	P2209	S2074	
LEU	S2576	K2393	K2393	K2335	K2335	TYR	P2210	K2077	
PRO	N2577	D2453	D2453	M2336	M2336	LEU	P2211	F2078	
PRO	N2578	T2454	T2454	I2337	I2337	ARG	P2212	L2079	
PRO	N2579	D2455	D2455	H2338	H2338	GLU	P2213	G2080	
GLU	N2580	Q2457	Q2457	D2339	D2339	GLU	P2214	N2081	
PRO	D2581	N2458	N2458	ARG	ARG	CYS	P2215	Y2082	
PRO	R2518	E2459	E2459	MET	MET	LYS	P2216	Y2083	
PRO	R2519	K2460	K2460	LYS	LYS	CYS	P2217	K2084	
GLY	K2582	R2461	R2461	ASN	ASN	PRO	P2218	E2085	
THR	D2583	K2462	K2462	LYS	LYS	PRO	P2219	H2086	
LYS	A2584	W2464	W2464	ASN	ASN	CYS	P2220	K2087	
HIS	P2585	K2463	K2463	GLY	GLY	PRO	P2221	D2088	
HIS	D2586	W2464	W2464	ASN	ASN	GLY	P2222	R2089	
HIS	Y2587	W2465	W2465	GLY	GLY	ASN	P2223	E2090	
HIS	L2588	D2466	D2466	PHE	PHE	GLU	P2224	K2091	
HIS	K2589	M2467	M2467	ASN	ASN	GLU	P2225	A2092	
	E2590	N2468	N2468	GLU	GLU	GLU	P2226	L2093	
	K2591	K2469	K2469	MET	MET	GLU	P2227	E2094	
	C2592	Y2470	Y2470	N2351	N2351	ASN	P2228	A2095	
	N2593	H2471	H2471	N2352	N2352	ASN	P2229	K2096	
	D2594	I2472	I2472	F2353	F2353	ASN	P2230	F2100	
	N2595	W2473	W2473	K2356	K2356	GLU	P2231	Y2101	
	K2596	E2474	E2474	S2357	S2357	GLU	P2232	D2102	
	C2597	S2475	S2475	E2358	E2358	GLU	P2233	Y2103	
	E2598	M2476	M2476	E2359	E2359	GLU	P2234	E2104	
	C2599	L2477	L2477	K2356	K2356	GLU	P2235		
	L2600	C2478	C2478	S2357	S2357	GLU			
	N2601	G2479	G2479	E2358	E2358	GLU			
	K2602	Y2480	Y2480	E2359	E2359	GLU			

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	271442	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 ($e^-/\text{\AA}^2$)	71.2	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	49.984	Depositor
Minimum map value	-20.013	Depositor
Average map value	0.000	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	6.73	Depositor
Map size (Å)	270.848, 270.848, 270.848	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.058, 1.058, 1.058	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	0.25	0/4564	0.43	0/6120

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	4447	30	4371	230	0
All	All	4447	30	4371	230	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 26.

All (230) 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:2072:ALA:HB1	1:A:2150:ILE:HD12	1.41	1.01
1:A:2373:LEU:HD22	1:A:2432:ILE:HD13	1.51	0.92
1:A:2165:ILE:HG13	1:A:2173:ILE:HG22	1.49	0.92
1:A:2502:PRO:HD2	1:A:2505:LEU:HD22	1.53	0.91
1:A:2233:GLU:HG3	1:A:2237:LYS:HE2	1.55	0.88

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2127:ARG:HA	1:A:2135:ASN:HD21	1.38	0.87
1:A:2183:LEU:HD11	1:A:2187:LYS:HE2	1.58	0.84
1:A:2159:LYS:HG2	1:A:2171:CYS:HB3	1.60	0.83
1:A:2022:TRP:HA	1:A:2044:ARG:HH12	1.42	0.83
1:A:2141:ASP:HA	1:A:2144:LYS:HG2	1.63	0.79
1:A:2440:GLU:HG3	1:A:2443:SER:HB2	1.66	0.78
1:A:2450:ILE:HG13	1:A:2451:LEU:HG	1.71	0.73
1:A:2238:ARG:HE	1:A:2241:ARG:HE	1.34	0.72
1:A:2406:ARG:HH12	1:A:2410:ALA:HB2	1.54	0.72
1:A:2104:GLU:HG2	1:A:2147:LYS:HE2	1.72	0.71
1:A:2254:ARG:HG2	1:A:2257:ILE:HG22	1.72	0.71
1:A:2062:ASN:HA	1:A:2065:LYS:HD2	1.73	0.70
1:A:2064:PHE:HA	1:A:2067:GLU:HG2	1.76	0.68
1:A:2164:LYS:HE3	1:A:2173:ILE:HG23	1.75	0.68
1:A:2366:ILE:HD12	1:A:2371:LYS:HD3	1.76	0.68
1:A:2069:LEU:O	1:A:2073:GLN:N	2.26	0.67
1:A:2516:CYS:HA	1:A:2519:ARG:HB3	1.78	0.65
1:A:2066:GLU:O	1:A:2070:LYS:N	2.24	0.65
1:A:2144:LYS:O	1:A:2148:LYS:NZ	2.30	0.64
1:A:2401:PHE:HA	1:A:2404:VAL:HG22	1.78	0.64
1:A:2467:MET:O	1:A:2471:HIS:ND1	2.26	0.64
1:A:2244:THR:HB	1:A:2248:ARG:HH12	1.61	0.64
1:A:2565:ILE:O	1:A:2569:LYS:HG2	1.98	0.63
1:A:2334:TYR:HA	1:A:2337:ILE:HG12	1.79	0.63
1:A:2201:LYS:HA	1:A:2204:VAL:HG12	1.82	0.61
1:A:2033:LYS:HD2	1:A:2035:LYS:HE2	1.81	0.61
1:A:2419:VAL:HA	1:A:2422:MET:SD	2.41	0.60
1:A:2062:ASN:HA	1:A:2065:LYS:CD	2.31	0.60
1:A:2424:TYR:HA	1:A:2427:THR:HG22	1.83	0.60
1:A:2353:PHE:O	1:A:2356:LYS:NZ	2.33	0.60
1:A:2396:ILE:O	1:A:2399:SER:OG	2.11	0.59
1:A:2464:TRP:HA	1:A:2467:MET:CE	2.33	0.59
1:A:2180:PRO:HD2	1:A:2183:LEU:HD23	1.84	0.59
1:A:2243:GLU:O	1:A:2247:LYS:N	2.36	0.59
1:A:2592:CYS:HB3	1:A:2596:LYS:HB3	1.84	0.59
1:A:2433:ILE:HD11	1:A:2465:TRP:CD1	2.38	0.58
1:A:2065:LYS:HG2	1:A:2142:TRP:HZ2	1.69	0.58
1:A:2183:LEU:HD12	1:A:2186:ILE:HD11	1.86	0.58
1:A:2064:PHE:HA	1:A:2067:GLU:CG	2.33	0.58
1:A:2302:LYS:O	1:A:2305:VAL:HG12	2.04	0.57
1:A:2502:PRO:HD2	1:A:2505:LEU:CD2	2.31	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2550:VAL:HA	1:A:2553:LYS:HE2	1.86	0.57
1:A:2443:SER:HA	1:A:2446:LYS:HE3	1.87	0.57
1:A:2502:PRO:HB2	1:A:2505:LEU:HD13	1.87	0.57
1:A:2552:TYR:O	1:A:2556:ILE:HG12	2.05	0.57
1:A:2074:SER:O	1:A:2077:LYS:HG3	2.05	0.56
1:A:2471:HIS:O	1:A:2474:GLU:HG2	2.05	0.56
1:A:2535:CYS:SG	1:A:2540:VAL:HG12	2.45	0.56
1:A:2182:PHE:CE2	1:A:2253:LYS:HG2	2.40	0.56
1:A:2250:LYS:HA	1:A:2253:LYS:NZ	2.21	0.56
1:A:2588:LEU:HD12	1:A:2591:LYS:HE2	1.87	0.56
1:A:2233:GLU:O	1:A:2237:LYS:HG3	2.05	0.56
1:A:2061:LEU:HD12	1:A:2064:PHE:CE1	2.41	0.56
1:A:2385:TYR:O	1:A:2389:PRO:HG3	2.06	0.56
1:A:2403:GLU:HA	1:A:2407:LEU:HD23	1.88	0.55
1:A:2597:CYS:SG	1:A:2600:LEU:HD12	2.46	0.55
1:A:2040:PRO:HG2	1:A:2043:ARG:HB2	1.89	0.55
1:A:2446:LYS:O	1:A:2450:ILE:HG12	2.06	0.55
1:A:2124:LYS:HD2	1:A:2127:ARG:HH21	1.71	0.55
1:A:2050:ARG:HE	1:A:2051:ILE:H	1.55	0.54
1:A:2204:VAL:HB	1:A:2231:TYR:HE1	1.72	0.54
1:A:2083:TYR:CE2	1:A:2092:ALA:HB1	2.43	0.54
1:A:2106:ILE:HG23	1:A:2113:LEU:HG	1.89	0.54
1:A:2192:ASN:O	1:A:2196:GLN:HG2	2.08	0.54
1:A:2563:TYR:O	1:A:2566:GLN:HG3	2.08	0.54
1:A:2224:CYS:O	1:A:2228:ILE:HG12	2.08	0.54
1:A:2197:LYS:O	1:A:2201:LYS:HG2	2.08	0.54
1:A:2303:GLU:HA	1:A:2306:LYS:HG2	1.90	0.53
1:A:2373:LEU:CD2	1:A:2432:ILE:HG21	2.38	0.53
1:A:2039:ILE:HD12	1:A:2043:ARG:O	2.08	0.53
1:A:2061:LEU:HA	1:A:2064:PHE:CE1	2.44	0.53
1:A:2562:GLU:HA	1:A:2565:ILE:HG22	1.90	0.53
1:A:2460:LYS:O	1:A:2463:LYS:HG3	2.09	0.53
1:A:2464:TRP:HA	1:A:2467:MET:HE2	1.91	0.53
1:A:2070:LYS:O	1:A:2074:SER:N	2.37	0.53
1:A:2112:MET:O	1:A:2113:LEU:HD22	2.09	0.53
1:A:2120:ASP:O	1:A:2124:LYS:HD3	2.09	0.52
1:A:2041:PRO:HA	1:A:2044:ARG:CZ	2.39	0.52
1:A:2136:THR:O	1:A:2139:ALA:HB3	2.10	0.52
1:A:2335:LYS:HA	1:A:2338:HIS:ND1	2.24	0.52
1:A:2338:HIS:HA	1:A:2401:PHE:CZ	2.45	0.52
1:A:2137:LYS:HA	1:A:2140:GLU:OE2	2.10	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2198:GLN:NE2	1:A:2199:GLU:HG3	2.25	0.52
1:A:2429:ILE:O	1:A:2433:ILE:HG12	2.09	0.52
1:A:2458:ASN:HB2	1:A:2461:ARG:HB2	1.92	0.52
1:A:2451:LEU:HB2	1:A:2453:ASP:OD1	2.10	0.51
1:A:2141:ASP:O	1:A:2145:THR:N	2.43	0.51
1:A:2400:ALA:HA	1:A:2403:GLU:OE1	2.10	0.51
1:A:2201:LYS:O	1:A:2205:LYS:HE3	2.11	0.51
1:A:2445:ASP:OD1	1:A:2449:LYS:HE3	2.11	0.51
1:A:2250:LYS:HA	1:A:2253:LYS:HZ3	1.75	0.51
1:A:2440:GLU:CG	1:A:2443:SER:HB2	2.40	0.51
1:A:2481:ARG:NH1	1:A:2489:THR:HG21	2.25	0.50
1:A:2179:PRO:HD2	1:A:2184:ARG:HH11	1.77	0.50
1:A:2093:LEU:HA	1:A:2096:MET:HG3	1.92	0.50
1:A:2183:LEU:CD1	1:A:2186:ILE:HD11	2.42	0.50
1:A:2560:LYS:O	1:A:2564:GLU:HG2	2.12	0.50
1:A:2090:GLU:O	1:A:2093:LEU:HG	2.11	0.50
1:A:2124:LYS:O	1:A:2128:LEU:HD23	2.11	0.50
1:A:2140:GLU:HA	1:A:2143:TRP:CD1	2.46	0.50
1:A:2140:GLU:HA	1:A:2143:TRP:HD1	1.77	0.50
1:A:2165:ILE:HB	1:A:2172:THR:O	2.12	0.50
1:A:2404:VAL:HG12	1:A:2476:MET:CE	2.42	0.50
1:A:2505:LEU:HG	1:A:2587:TYR:OH	2.12	0.50
1:A:2257:ILE:O	1:A:2262:LYS:NZ	2.45	0.50
1:A:2260:ASP:OD1	1:A:2260:ASP:N	2.45	0.50
1:A:2496:PRO:O	1:A:2499:GLU:HG3	2.12	0.50
1:A:2373:LEU:HD12	1:A:2374:PHE:H	1.77	0.49
1:A:2201:LYS:O	1:A:2205:LYS:HG2	2.12	0.49
1:A:2225:THR:O	1:A:2229:LYS:HG2	2.12	0.49
1:A:2232:GLN:O	1:A:2236:ARG:HG3	2.12	0.49
1:A:2426:PHE:HA	1:A:2429:ILE:HG12	1.93	0.49
1:A:2232:GLN:HG3	1:A:2236:ARG:HE	1.78	0.49
1:A:2242:TRP:O	1:A:2246:SER:N	2.40	0.49
1:A:2101:TYR:OH	1:A:2184:ARG:HA	2.13	0.49
1:A:2107:ILE:HB	1:A:2143:TRP:CZ3	2.48	0.48
1:A:2349:VAL:CG1	1:A:2406:ARG:HD3	2.43	0.48
1:A:2531:ILE:H	1:A:2531:ILE:HD12	1.78	0.48
1:A:2086:HIS:CD2	1:A:2092:ALA:HA	2.48	0.48
1:A:2307:ILE:H	1:A:2307:ILE:HD12	1.78	0.48
1:A:2473:TRP:CZ3	1:A:2495:PHE:HA	2.49	0.47
1:A:2502:PRO:CG	1:A:2505:LEU:HD13	2.44	0.47
1:A:2246:SER:O	1:A:2250:LYS:HG3	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2472:ILE:O	1:A:2476:MET:HG2	2.14	0.47
1:A:2039:ILE:HG13	1:A:2044:ARG:HD2	1.96	0.47
1:A:2417:LYS:HE3	1:A:2418:VAL:HG23	1.96	0.47
1:A:2469:LYS:HA	1:A:2472:ILE:HG22	1.96	0.47
1:A:2291:GLU:N	1:A:2291:GLU:OE1	2.47	0.47
1:A:2510:GLU:O	1:A:2513:GLU:HG3	2.15	0.47
1:A:2108:LYS:HE2	1:A:2147:LYS:HB2	1.96	0.47
1:A:2183:LEU:CD1	1:A:2187:LYS:HE2	2.38	0.47
1:A:2115:ASN:HB3	1:A:2118:PHE:CD1	2.49	0.47
1:A:2430:GLY:O	1:A:2434:LYS:HG2	2.15	0.47
1:A:2257:ILE:O	1:A:2259:LYS:HG2	2.15	0.46
1:A:2508:PHE:CZ	1:A:2588:LEU:HD13	2.50	0.46
1:A:2031:TYR:HD2	1:A:2033:LYS:HE3	1.80	0.46
1:A:2040:PRO:HB3	1:A:2192:ASN:OD1	2.15	0.46
1:A:2312:GLU:N	1:A:2312:GLU:OE1	2.49	0.46
1:A:2406:ARG:NH1	1:A:2410:ALA:HB2	2.25	0.46
1:A:2547:HIS:O	1:A:2550:VAL:HG22	2.15	0.46
1:A:2332:ASN:HA	1:A:2335:LYS:HG2	1.97	0.46
1:A:2447:ILE:HA	1:A:2450:ILE:HG12	1.98	0.46
1:A:2104:GLU:HA	1:A:2107:ILE:HG12	1.97	0.46
1:A:2065:LYS:HG2	1:A:2142:TRP:CZ2	2.49	0.46
1:A:2236:ARG:HG2	1:A:2299:LYS:NZ	2.31	0.46
1:A:2414:ALA:HB3	1:A:2417:LYS:CG	2.46	0.46
1:A:2358:TRP:HH2	1:A:2368:PRO:HD3	1.79	0.46
1:A:2183:LEU:O	1:A:2187:LYS:HG2	2.16	0.46
1:A:2379:PRO:HA	1:A:2382:ILE:HG12	1.98	0.45
1:A:2443:SER:O	1:A:2446:LYS:HG2	2.15	0.45
1:A:2077:LYS:HE3	1:A:2078:PHE:CE1	2.52	0.45
1:A:2329:TYR:HA	1:A:2332:ASN:OD1	2.16	0.45
1:A:2207:LYS:HB3	1:A:2207:LYS:HE2	1.72	0.45
1:A:2366:ILE:HG13	1:A:2366:ILE:O	2.17	0.45
1:A:2350:THR:HA	1:A:2406:ARG:NH2	2.32	0.45
1:A:2502:PRO:CB	1:A:2505:LEU:HD13	2.45	0.45
1:A:2062:ASN:OD1	1:A:2065:LYS:HD2	2.16	0.45
1:A:2120:ASP:OD2	1:A:2124:LYS:NZ	2.47	0.45
1:A:2237:LYS:O	1:A:2240:ILE:HG12	2.17	0.45
1:A:2403:GLU:HG3	1:A:2407:LEU:HD23	1.97	0.45
1:A:2375:LEU:HD21	1:A:2446:LYS:HE2	1.99	0.44
1:A:2101:TYR:O	1:A:2184:ARG:NH2	2.51	0.44
1:A:2163:ASN:O	1:A:2164:LYS:HD2	2.17	0.44
1:A:2516:CYS:HB2	1:A:2599:CYS:HB2	1.50	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2392:PHE:CE2	1:A:2396:ILE:HD11	2.52	0.44
1:A:2502:PRO:HD2	1:A:2505:LEU:HD13	1.99	0.44
1:A:2208:CYS:HB2	1:A:2224:CYS:HB3	1.61	0.44
1:A:2241:ARG:NH1	1:A:2245:ILE:HD12	2.33	0.44
1:A:2123:ILE:HG22	1:A:2127:ARG:CZ	2.48	0.44
1:A:2041:PRO:HA	1:A:2044:ARG:NH2	2.33	0.44
1:A:2476:MET:HB3	1:A:2480:TYR:CE2	2.53	0.44
1:A:2108:LYS:HD3	1:A:2143:TRP:HB3	1.99	0.44
1:A:2063:GLU:O	1:A:2067:GLU:HG2	2.18	0.43
1:A:2558:THR:O	1:A:2561:THR:HG22	2.19	0.43
1:A:2086:HIS:HD2	1:A:2092:ALA:HA	1.81	0.43
1:A:2023:ASN:O	1:A:2027:LEU:HB2	2.18	0.43
1:A:2498:ILE:HD13	1:A:2596:LYS:NZ	2.32	0.43
1:A:2061:LEU:HD12	1:A:2064:PHE:HE1	1.84	0.43
1:A:2383:CYS:O	1:A:2387:LYS:HG2	2.18	0.43
1:A:2529:GLU:HB3	1:A:2531:ILE:CD1	2.48	0.43
1:A:2093:LEU:HD12	1:A:2094:GLU:N	2.33	0.43
1:A:2101:TYR:OH	1:A:2179:PRO:HG2	2.19	0.43
1:A:2115:ASN:HB3	1:A:2118:PHE:HD1	1.82	0.43
1:A:2417:LYS:CE	1:A:2418:VAL:HG23	2.49	0.43
1:A:2024:ASP:O	1:A:2028:ARG:HG2	2.18	0.43
1:A:2525:LYS:HE2	1:A:2525:LYS:HB3	1.85	0.43
1:A:2416:ALA:HA	1:A:2419:VAL:HG12	2.00	0.42
1:A:2498:ILE:O	1:A:2501:VAL:HG13	2.19	0.42
1:A:2521:LYS:HB3	1:A:2521:LYS:HE2	1.88	0.42
1:A:2392:PHE:O	1:A:2395:PHE:HB3	2.19	0.42
1:A:2411:TYR:HB3	1:A:2418:VAL:HG22	2.01	0.42
1:A:2045:GLN:HE22	1:A:2082:TYR:HE1	1.68	0.42
1:A:2033:LYS:HD2	1:A:2035:LYS:CE	2.49	0.42
1:A:2311:LEU:HD23	1:A:2312:GLU:N	2.34	0.42
1:A:2469:LYS:O	1:A:2472:ILE:HG22	2.20	0.42
1:A:2143:TRP:O	1:A:2147:LYS:N	2.42	0.42
1:A:2382:ILE:HD13	1:A:2385:TYR:CE2	2.55	0.42
1:A:2093:LEU:HA	1:A:2096:MET:CG	2.50	0.42
1:A:2244:THR:HB	1:A:2248:ARG:NH1	2.31	0.42
1:A:2195:ILE:O	1:A:2198:GLN:HG3	2.19	0.41
1:A:2381:LYS:HB2	1:A:2384:GLU:OE1	2.20	0.41
1:A:2090:GLU:O	1:A:2094:GLU:HG2	2.20	0.41
1:A:2398:TRP:O	1:A:2401:PHE:HB3	2.20	0.41
1:A:2328:ASP:OD2	1:A:2331:CYS:HB3	2.21	0.41
1:A:2430:GLY:HA3	1:A:2465:TRP:CE2	2.56	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2566:GLN:HA	1:A:2569:LYS:HG2	2.02	0.41
1:A:2586:ASP:O	1:A:2590:GLU:HG2	2.21	0.41
1:A:2356:LYS:HZ1	1:A:2368:PRO:HB3	1.86	0.41
1:A:2414:ALA:HB3	1:A:2417:LYS:HG3	2.03	0.41
1:A:2503:GLN:HE21	1:A:2506:ARG:NH2	2.19	0.41
1:A:2165:ILE:CG1	1:A:2173:ILE:HG22	2.36	0.41
1:A:2236:ARG:HG2	1:A:2299:LYS:HZ3	1.85	0.41
1:A:2502:PRO:CD	1:A:2505:LEU:HD13	2.50	0.41
1:A:2582:LYS:HE2	1:A:2587:TYR:HD1	1.86	0.41
1:A:2350:THR:HA	1:A:2406:ARG:HH21	1.86	0.41
1:A:2522:LEU:HD12	1:A:2555:TYR:CD1	2.55	0.41
1:A:2064:PHE:O	1:A:2067:GLU:HB2	2.21	0.40
1:A:2431:SER:HB2	1:A:2506:ARG:NH1	2.36	0.40
1:A:2043:ARG:C	1:A:2044:ARG:HD3	2.41	0.40
1:A:2104:GLU:HA	1:A:2107:ILE:CG1	2.51	0.40
1:A:2379:PRO:O	1:A:2382:ILE:HG12	2.21	0.40
1:A:2194:CYS:HA	1:A:2197:LYS:NZ	2.36	0.40
1:A:2488:GLU:OE2	1:A:2490:ASN:HB3	2.22	0.40
1:A:2041:PRO:HA	1:A:2044:ARG:NE	2.37	0.40
1:A:2334:TYR:HE1	1:A:2404:VAL:HG21	1.87	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	529/2660 (20%)	505 (96%)	24 (4%)	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	493/2412 (20%)	486 (99%)	7 (1%)	67 81

All (7) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2077	LYS
1	A	2241	ARG
1	A	2370	ARG
1	A	2417	LYS
1	A	2463	LYS
1	A	2518[A]	ARG
1	A	2518[B]	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	2135	ASN

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.

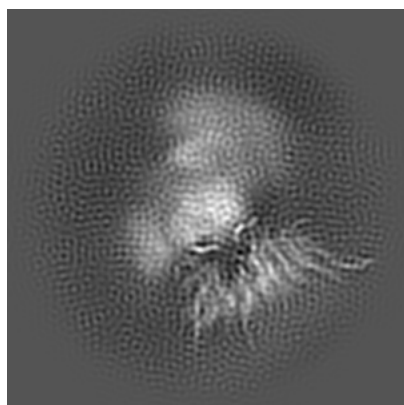
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-22325. These allow visual inspection of the internal detail of the map and identification of artifacts.

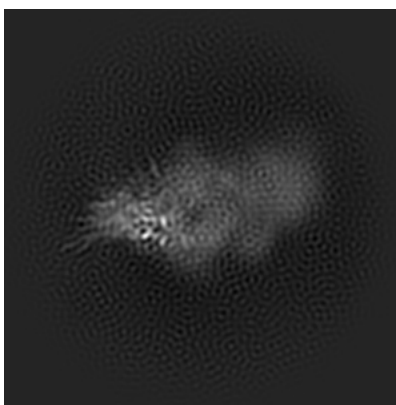
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

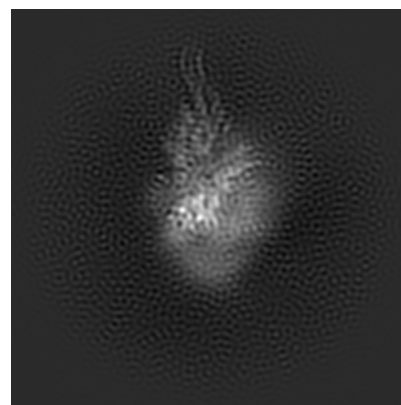
6.1.1 Primary map



X



Y

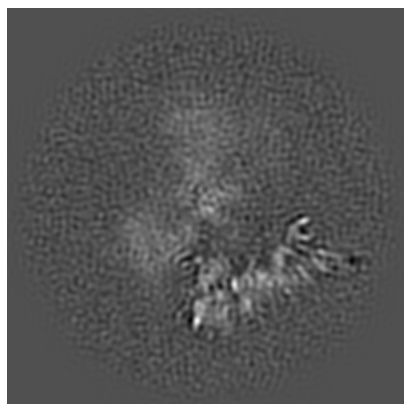


Z

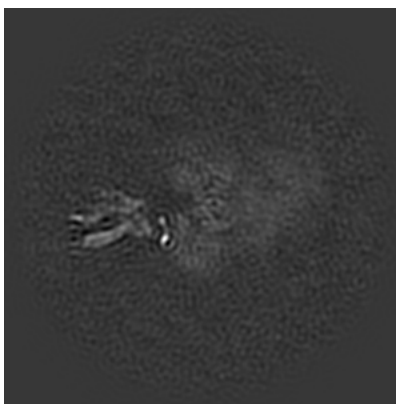
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

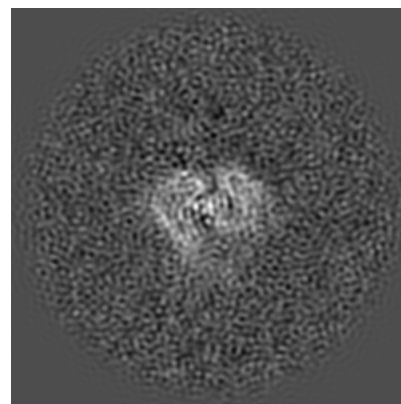
6.2.1 Primary map



X Index: 128



Y Index: 128

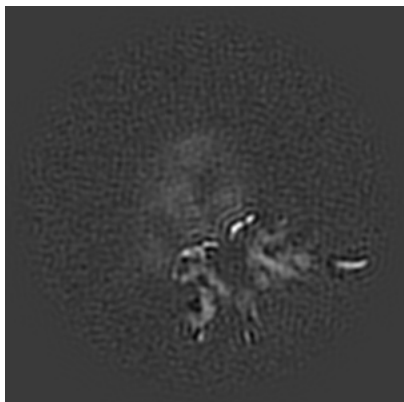


Z Index: 128

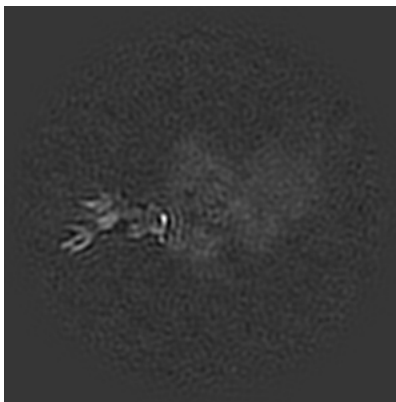
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

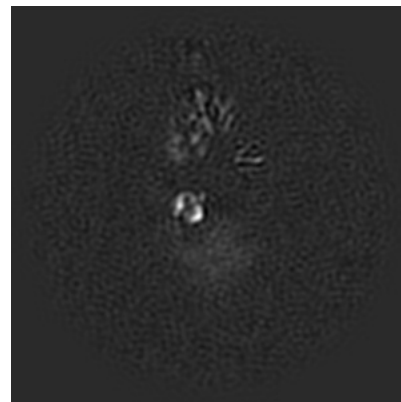
6.3.1 Primary map



X Index: 110



Y Index: 121



Z Index: 102

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

6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 6.73. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

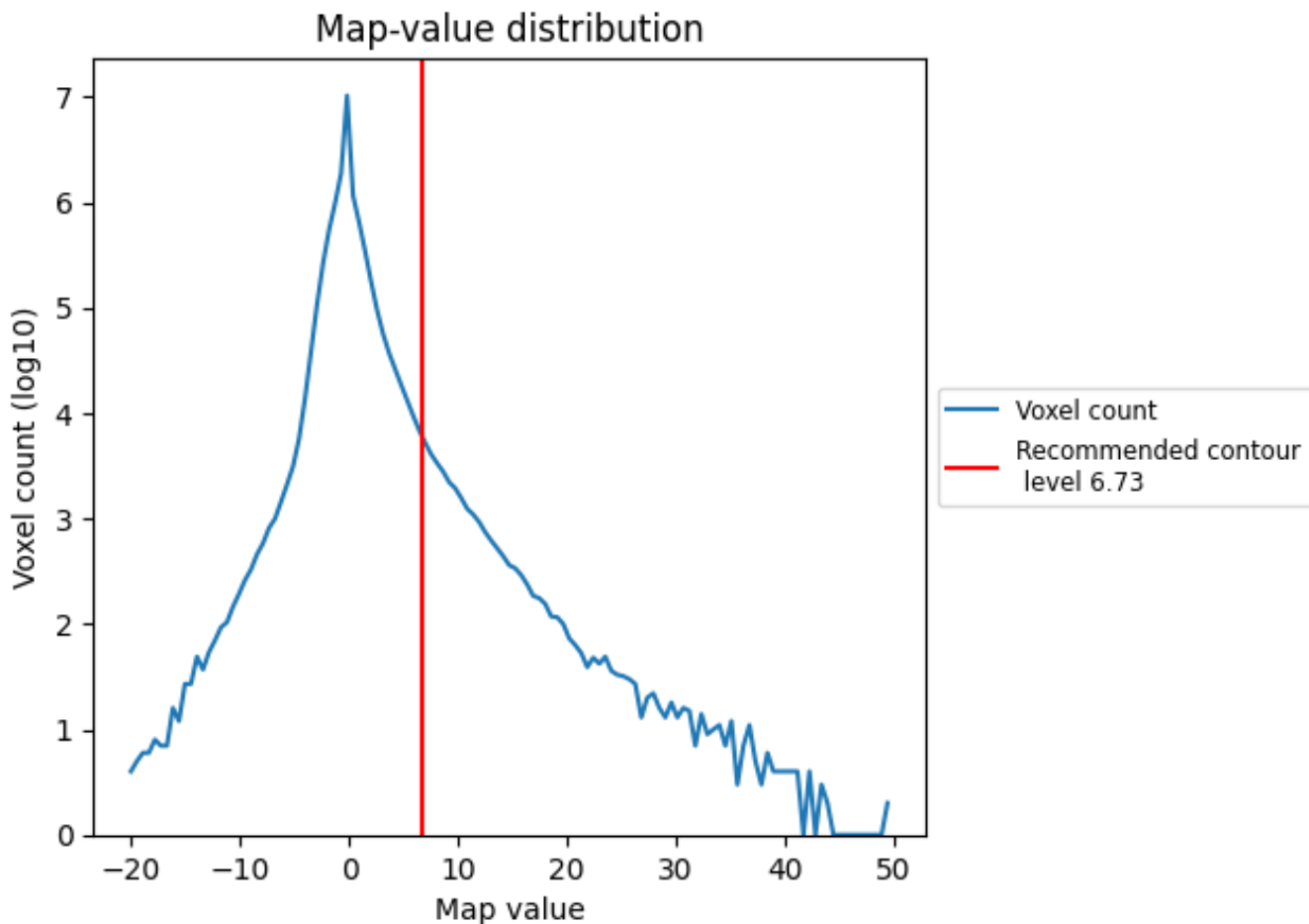
6.5 Mask visualisation

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

7 Map analysis [i](#)

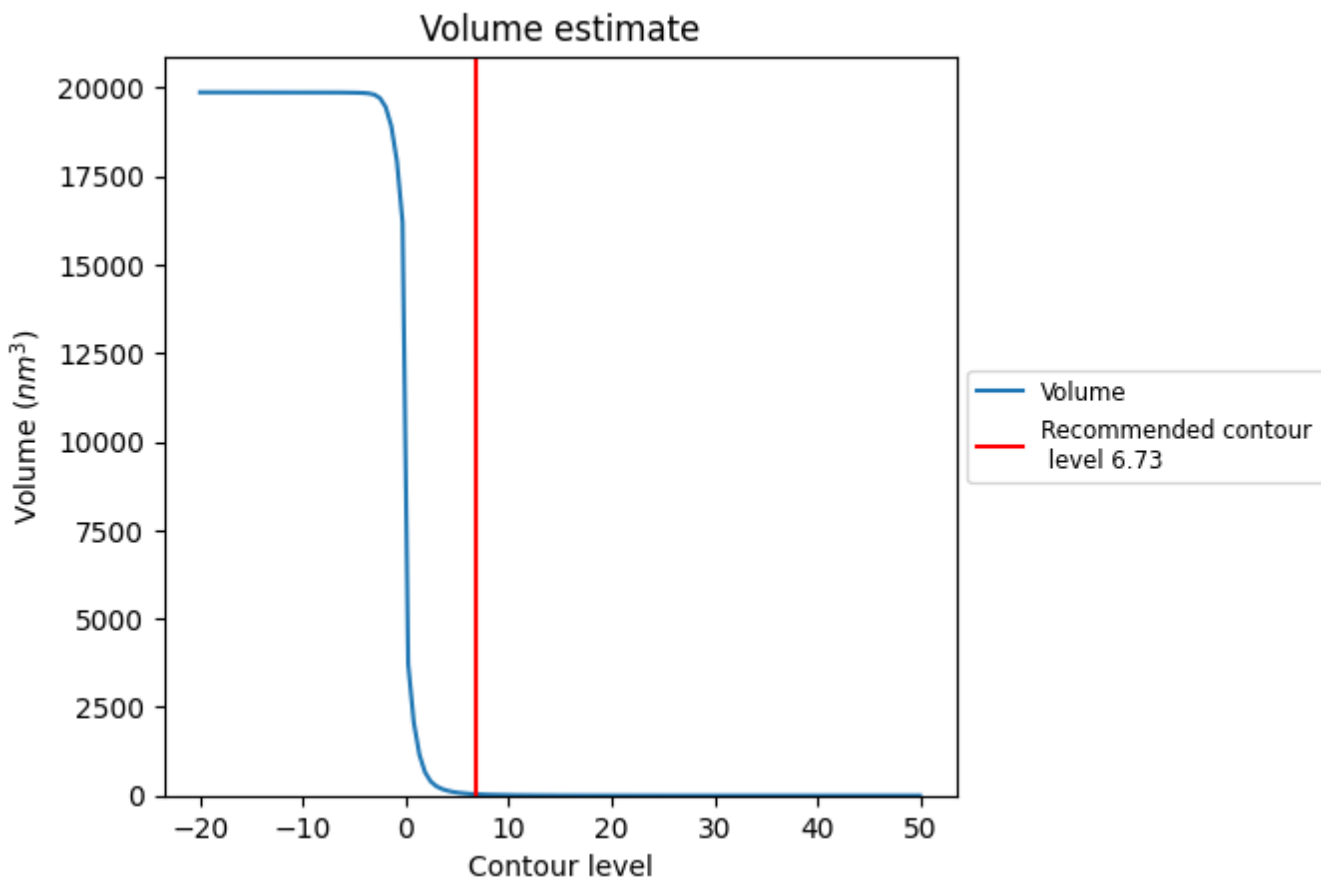
This section contains the results of statistical analysis of the map.

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.

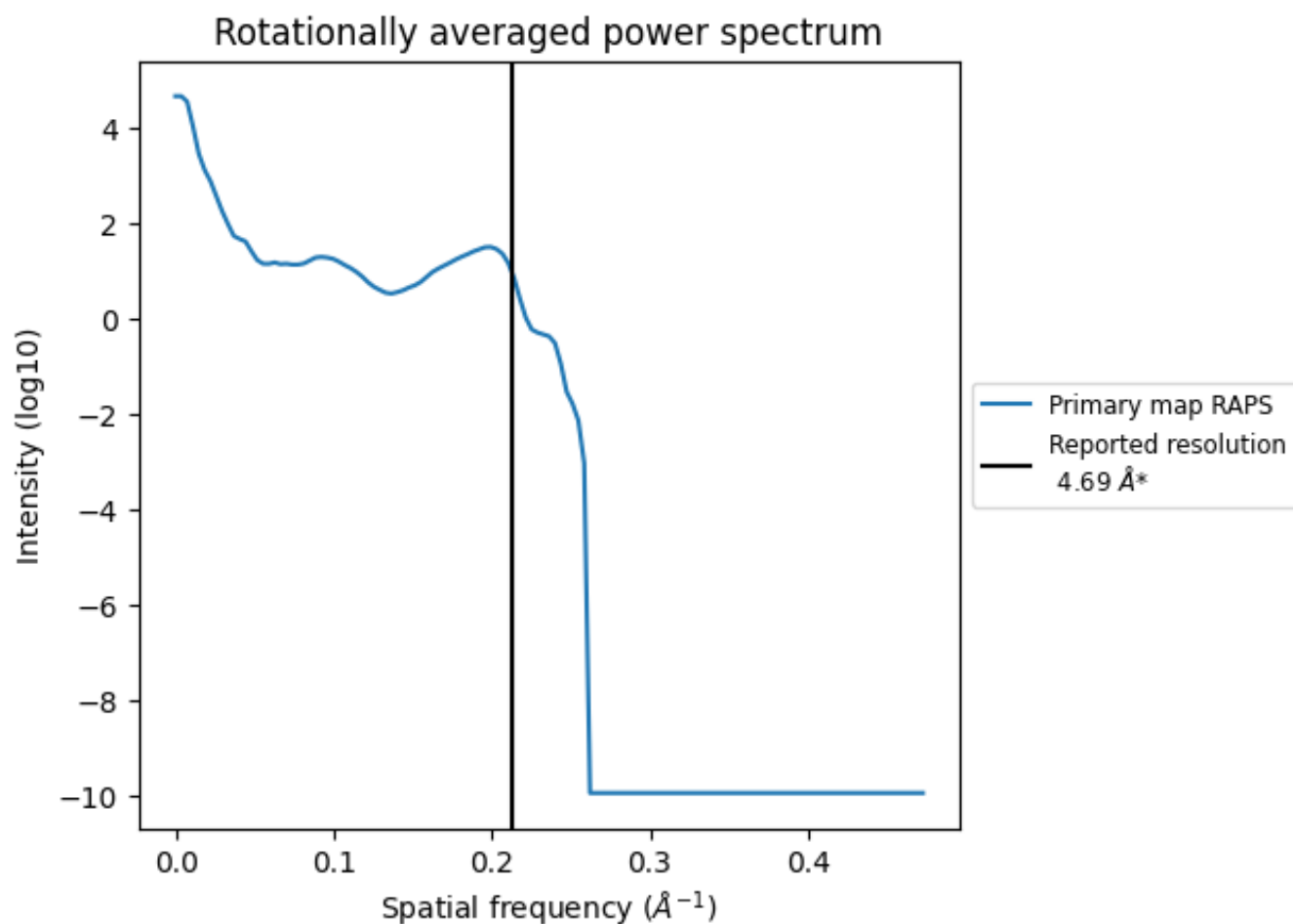
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 39 nm³; this corresponds to an approximate mass of 35 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 0.213\AA^{-1}

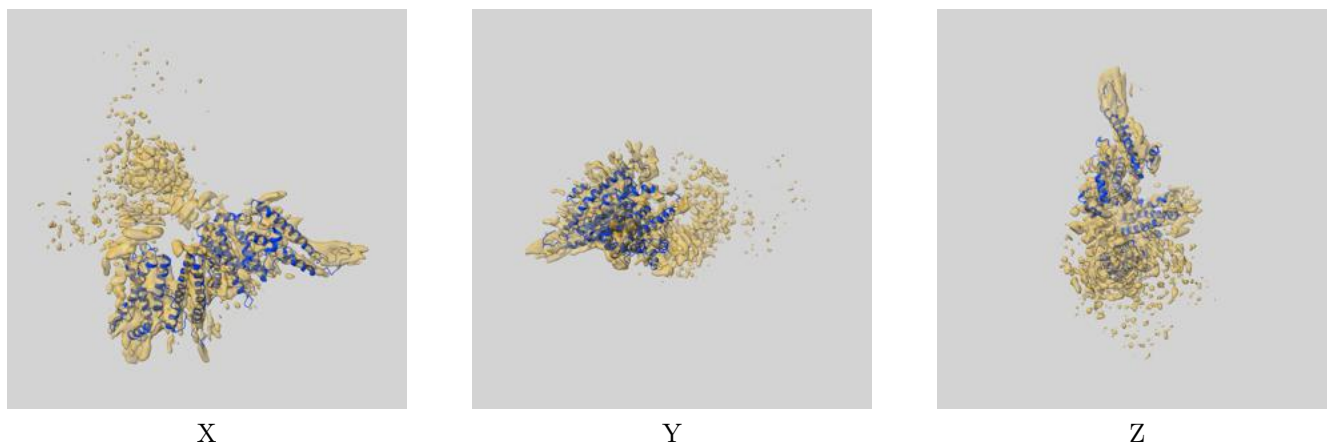
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-22325 and PDB model 7JGF. Per-residue inclusion information can be found in section [3](#) on page [4](#).

9.1 Map-model overlay [i](#)



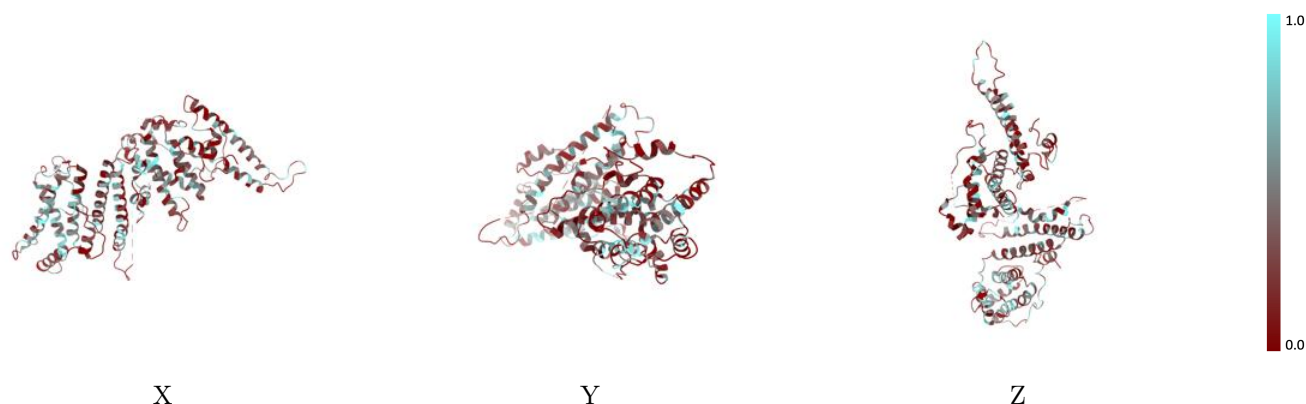
The images above show the 3D surface view of the map at the recommended contour level 6.73 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



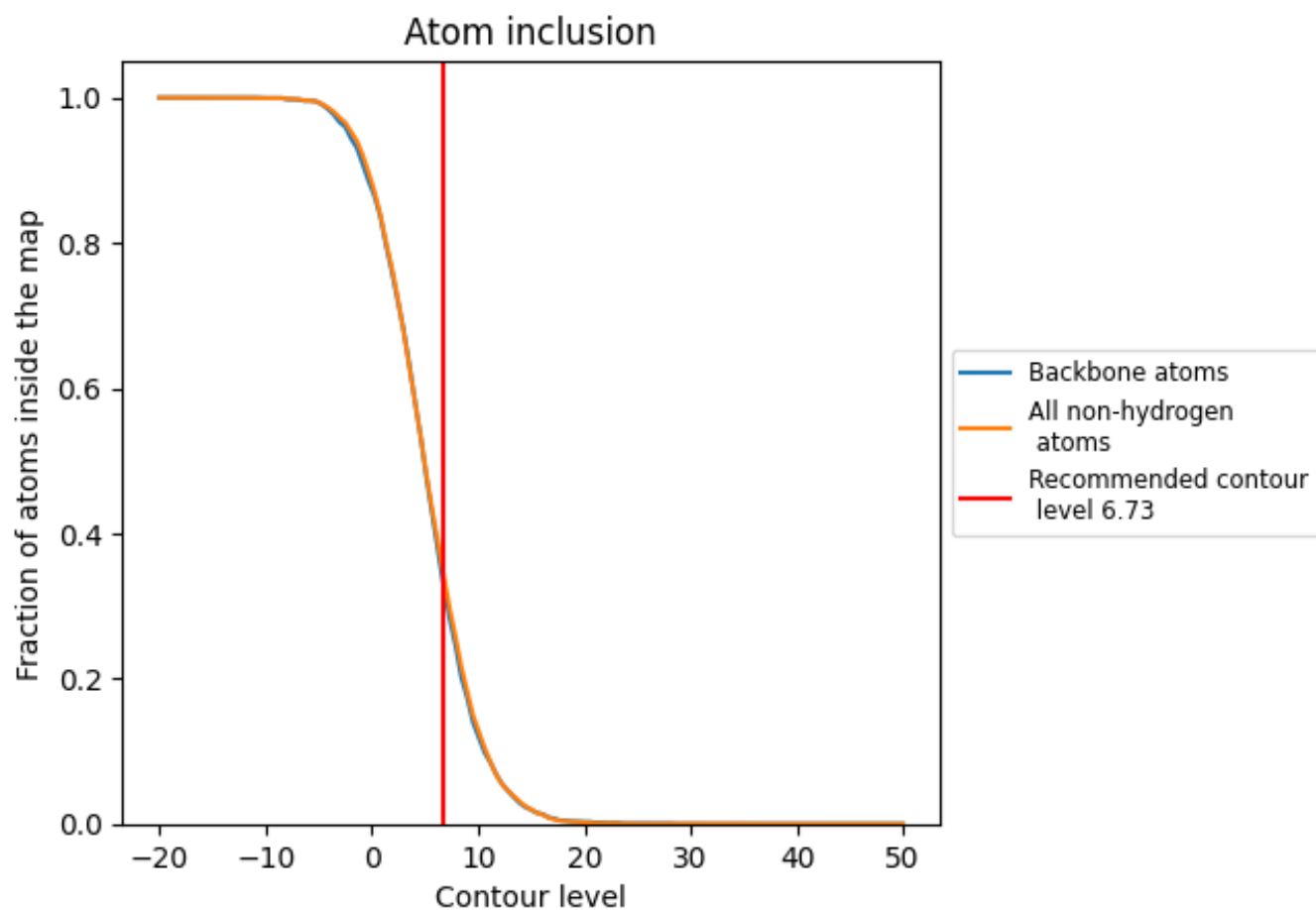
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (6.73).





9.4 Atom inclusion [i](#)



At the recommended contour level, 33% of all backbone atoms, 34% 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 (6.73) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.3428	 0.1460
A	 0.3448	 0.1460

