



Full wwPDB EM Validation Report ⓘ

Oct 14, 2024 – 03:23 PM EDT

PDB ID : 9C47
EMDB ID : EMD-45176
Title : TRRAP module of the human TIP60 complex
Authors : Yang, Z.; Mameri, A.; Florez Ariza, A.J.; Cote, J.; Nogales, E.
Deposited on : 2024-06-03
Resolution : 3.40 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.dev113
MolProbity : 4.02b-467
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

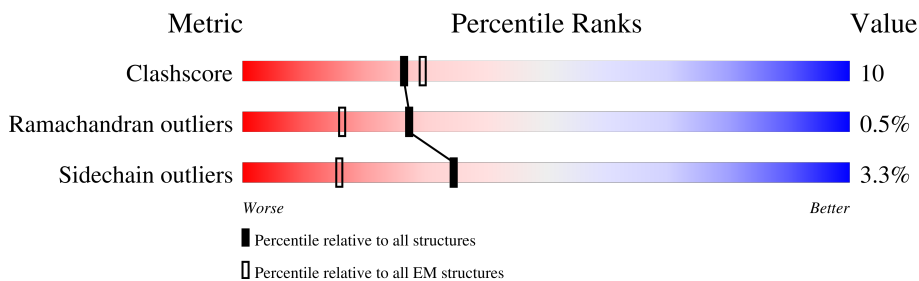
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.40 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	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	C	3859	<p>9% 60% 19% 20%</p>
2	G	3159	<p>96%</p>

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 52167 atoms, of which 26380 are hydrogens and 0 are deuteriums.

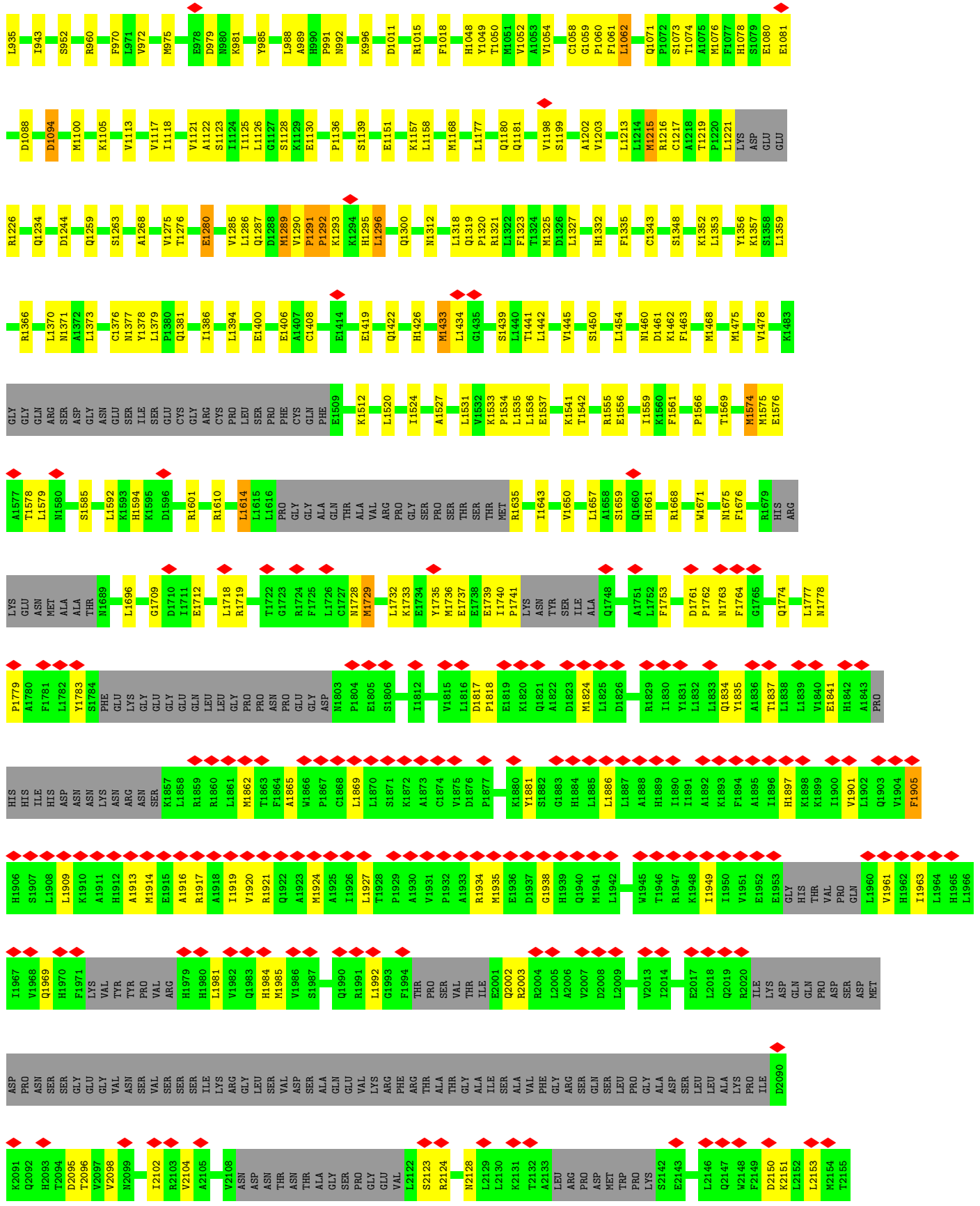
In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Transformation/transcription domain-associated protein.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
1	C	3079	50044	15891	25317	4263	4390	183	0	0

- Molecule 2 is a protein called E1A-binding protein p400.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
2	G	133	2123	669	1063	186	201	4	0	0



ASP	K3415	L3416	F3420	D3423	F3424	S3427	V3428	P3429	G3430	S3431	M3432	K3446	K3464	S3469	N3470	E3479	I3480	P3481	L3485	K3488	P3489	T3490	H3491	Y3492	Y3493	I3494	K3495	K3508	H3509	N3510	L3516	Y3526	P3527	Y3528	L3529	V3530	D3533	A3534	C3535	L3536	T3537	E3538														
Q3307	L3315	L3318	E3319	V3322	D3323	E3330	N3331	H3332	H3333	A3357	V3358	S3359	D3360	A3361	N3369	F3370	K3373	L3374	F3378	V3379	VAL	GLY	LEU	GLU	ASN	VAL	SER	ASN	VAL	SER	THR	THR	PHE	SER	ALA	ALA	SER	GLU	LEU	ALA	ARG	ARG	ALA	ALA	THR	ALA	GLN									
I3180	Y3183	C3187	Q3190	N3191	E3192	S3193	K3194	L3199	L3205	D3210	D3211	K3212	A3218	V3219	C3223	V3226	Q3230	W3231	I3235	P3236	Q3237	L3251	V3257	Y3266	F3267	R3270	T3276	R3283	TYR	LYS	SER	ASP	PRO	GLY	PRO	ILE	ARG	ALA	ALA	ALA	ALA	THR	ALA	GLN												
Y3044	I3047	V3054	L3058	S3062	L3089	ALA	GLY	VAL	MET	GLY	LYS	L3102	I3105	L3110	K3111	K3115	T3118	Y3122	Q3237	L3251	V3257	Y3266	F3267	R3270	T3276	R3283	TYR	LYS	SER	ASP	PRO	GLY	PRO	ILE	ARG	ALA	ALA	ALA	ALA	THR	ALA	GLN														
V2926	P2932	Q2935	A2936	I2940	E2941	E2942	Q2944	E2945	A2946	I2949	T2956	N2957	G2959	R2960	N2961	N2962	S2963	M2967	V2970	R2977	D2983	V2988	S2989	H2998	W3005	M3008	HIS	SER	SER	ILE	VAL	THR	ALA	TYR	GLU	ASN	SER	GLN	HIS	ASP	P3025															
A2796	M2797	D2798	K2799	A2800	H2804	E2805	R2806	A2809	S2810	Q2818	L2819	W2820	E2821	H2823	N2832	Q2833	Y2840	H2846	L2847	N2848	P2849	L2850	L2851	C2855	R2858	M2865	V2872	E2873	V2874	C2876	M2880	K2883	V2884	R2888	L2891	V2908	A2911	S2912	S2913																	
Y2895	T2899	H2700	N2701	L2702	T2707	L2708	E2711	F2715	E2716	GLY	LEU	LEU	SER	LEU	GLN	LYS	PRO	LYS	THR	THR	THR	GLU	PHE	TYR	GLU	GLN	ILE	THR	F2740	Q2741	E2743	D2746	L2751	D2759	R2768	S2772	E2773	T2774	E2781	Q2788	S2792															
L2695	S2696	S2697	T2601	V2615	H2619	T2622	T2628	L2632	L2636	L2639	L2640	Q2645	L2648	L2656	C2657	S2658	G2659	H2661	Q2664	R2665	D2666	C2667	S2670	A2671	L2672	V2676	V2683	P2685	L2686	L2688	V2689	L2692	L2693																							
Q2494	E2497	L2498	L2499	V2502	C2503	I2509	L2521	A2528	ASP	SER	HIS	ASP	ALA	ALA	PHE	ILE	ALA	MET	VAL	THR	HIS	VAL	LYS	GLN	GLU	PRO	ARG	ARG	GLU	GLU	ASN	SER	GLU	ILE	ILE	GLU	LEU	ALA	PRO	GLY	ASP	GLN	THR	F2490	L2491	L2492	K2493									
MET	ALA	ALA	ASN	GLN	THR	P2387	R2390	S2393	V2397	M2400	T2401	L2413	M2414	F2417	L2418	V2421	L2423	Y2424	Y2425	R2426	D2427	GLU	THR	LEU	SER	GLY	SER	GLU	ASN	L2435	C2449	A2450	D2463	M2466	V2470	Y2471	E2472	R2473	L2474	C2479	S2480	H2489	F2490	L2491	L2492	K2493										
L2219	M2220	P2224	THR	GLU	PRO	GLU	SER	THR	SER	THR	VAL	ALA	ALA	L2167	C2168	T2169	G2170	L2171	E2172	L2174	S2175	F2176	L2177	L2178	L2181	Q2182	S2183	F2184	A2185	L2186	L2187	S2188	S2189	F2190	K2191	P2192	L2193	Q2194	R2195	G2196	L2197	A2198	A2199	C2200	T2202	C2203	N2205	T2206	K2207	V2208	L2209	R2210	A2211	V2212	L2215	R2218
E2303	N2306	P2307	GLN	ALA	ALA	ALA	SER	GLY	SER	THR	GLU	A2316	T2317	S2319	G2319	T2320	L2323	S2327	L2328	E2329	L2330	T2333	R2334	L2335	A2336	V2337	M2338	M2340	R2343	K2344	N2345	F2346	I2347	Q2348	I2350	L2351	T2352	D2360	A2361	L2364	V2368	E2372	V2375	K2376	M2377	ASN	SER	PRO								

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	23442	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 ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	2.397	Depositor
Minimum map value	-1.369	Depositor
Average map value	0.003	Depositor
Map value standard deviation	0.073	Depositor
Recommended contour level	0.451	Depositor
Map size (Å)	377.99997, 377.99997, 377.99997	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.05, 1.05, 1.05	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	C	0.24	0/25236	0.46	1/34128 (0.0%)
2	G	0.65	2/1081 (0.2%)	0.57	0/1468
All	All	0.27	2/26317 (0.0%)	0.46	1/35596 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
2	G	0	1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	G	2387	PRO	N-CD	16.70	1.71	1.47
2	G	2386	LEU	C-N	8.85	1.51	1.34

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	1291	PRO	N-CA-C	-5.41	98.02	112.10

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	G	2444	ARG	Sidechain

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	C	24727	25317	25273	480	0
2	G	1060	1063	1062	39	0
All	All	25787	26380	26335	511	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 10.

All (511) 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)
2:G:2387:PRO:N	2:G:2387:PRO:CD	1.71	1.45
2:G:2433:GLU:O	2:G:2444:ARG:NH1	1.83	1.10
1:C:3578:SER:OG	1:C:3581:MET:N	2.08	0.86
2:G:2378:GLN:NE2	2:G:2382:GLN:OE1	2.09	0.86
1:C:1574:MET:HE3	1:C:1579:LEU:HD11	1.62	0.81
1:C:2832:ASN:ND2	1:C:3044:TYR:OH	2.13	0.81
1:C:3617:ASP:OD1	1:C:3618:ARG:N	2.15	0.79
1:C:3544:ARG:NE	1:C:3776:ASP:OD2	2.15	0.79
1:C:2743:GLU:OE1	1:C:2743:GLU:N	2.16	0.79
1:C:1400:GLU:N	1:C:1400:GLU:OE1	2.14	0.78
1:C:3745:SER:O	1:C:3749:THR:OG1	1.99	0.78
1:C:2293:PHE:O	1:C:2296:SER:OG	2.01	0.78
1:C:446:MET:O	1:C:449:LEU:N	2.15	0.78
1:C:366:THR:O	1:C:370:THR:OG1	1.99	0.78
1:C:2335:LEU:O	1:C:2337:VAL:HG23	1.84	0.78
1:C:1381:GLN:N	1:C:1381:GLN:OE1	2.17	0.77
1:C:2348:GLN:O	1:C:2352:THR:OG1	2.01	0.77
1:C:450:GLU:N	1:C:450:GLU:OE2	2.18	0.77
1:C:411:LEU:HB3	1:C:415:ILE:HD11	1.67	0.76
1:C:1594:HIS:O	1:C:1601:ARG:NH2	2.18	0.76
1:C:2818:GLN:NE2	1:C:2822:ASP:OD1	2.18	0.76
1:C:2189:SER:O	1:C:2191:LYS:N	2.19	0.75
1:C:1136:PRO:O	1:C:1139:SER:OG	2.04	0.74
1:C:1217:CYS:O	1:C:1234:GLN:NE2	2.19	0.74
1:C:2303:GLU:O	1:C:2306:ASN:ND2	2.20	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:2400:MET:SD	1:C:2401:THR:N	2.60	0.74
1:C:1168:MET:O	1:C:1216:ARG:NH1	2.20	0.74
1:C:627:GLU:N	1:C:627:GLU:OE1	2.20	0.74
1:C:1100:MET:O	1:C:1105:LYS:NZ	2.20	0.74
1:C:898:PHE:O	1:C:902:ASN:ND2	2.21	0.73
2:G:2376:LEU:HD22	2:G:2408:VAL:HG11	1.71	0.73
1:C:2393:SER:O	1:C:2397:VAL:HG12	1.88	0.73
1:C:565:THR:HG1	1:C:578:ASN:N	1.86	0.73
1:C:3508:LYS:O	1:C:3510:ASN:N	2.22	0.72
2:G:2367:GLU:O	2:G:2416:ARG:NH2	2.22	0.72
1:C:1081:GLU:N	1:C:1081:GLU:OE1	2.22	0.72
1:C:2788:GLN:OE1	1:C:2788:GLN:N	2.22	0.72
1:C:3701:ASP:OD1	1:C:3702:THR:N	2.23	0.71
1:C:2334:ARG:NE	1:C:2334:ARG:O	2.24	0.71
1:C:561:THR:HG22	1:C:589:TYR:OH	1.92	0.70
1:C:3574:VAL:HG22	1:C:3584:VAL:HG23	1.72	0.69
1:C:651:PHE:O	1:C:655:VAL:N	2.24	0.69
1:C:763:LEU:O	1:C:767:ILE:HG22	1.92	0.69
1:C:3357:ALA:O	1:C:3623:GLN:NE2	2.25	0.69
1:C:2699:THR:HG1	1:C:2700:HIS:HD1	1.41	0.69
1:C:705:GLU:OE1	1:C:705:GLU:N	2.26	0.69
1:C:3479:GLU:OE2	1:C:3495:LYS:NZ	2.18	0.69
1:C:673:ASN:OD1	1:C:674:SER:N	2.27	0.68
1:C:2472:GLU:N	1:C:2472:GLU:OE1	2.25	0.68
1:C:2873:GLU:OE2	1:C:2888:ARG:NE	2.27	0.68
1:C:2479:CYS:SG	1:C:2480:SER:N	2.66	0.68
1:C:1735:TYR:O	1:C:1739:GLU:N	2.26	0.67
1:C:2474:LEU:CD1	1:C:2640:LEU:HD11	2.25	0.67
1:C:557:VAL:HG21	1:C:592:LEU:HD11	1.77	0.67
1:C:2338:MET:SD	1:C:2338:MET:N	2.68	0.67
1:C:1215:MET:O	1:C:1219:THR:OG1	2.09	0.67
1:C:437:GLU:OE1	1:C:439:GLY:N	2.28	0.66
1:C:1668:ARG:NH1	1:C:1712:GLU:OE1	2.28	0.66
2:G:2443:LEU:HD22	2:G:2447:GLN:HB2	1.76	0.66
1:C:2935:GLN:NE2	1:C:2983:ASP:OD1	2.30	0.65
1:C:1373:LEU:HD22	1:C:1386:ILE:HG22	1.78	0.65
1:C:1737:GLU:N	1:C:1737:GLU:OE1	2.30	0.65
1:C:724:PHE:O	1:C:728:ASN:ND2	2.29	0.65
1:C:2414:ASN:O	1:C:2418:LEU:HD12	1.97	0.65
1:C:2798:ASP:OD2	2:G:2469:LYS:NZ	2.30	0.65
1:C:2172:GLU:O	1:C:2175:SER:OG	2.15	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1671:TRP:O	1:C:1719:ARG:NH1	2.30	0.64
2:G:2384:LEU:HD13	2:G:2393:VAL:HG23	1.79	0.64
1:C:3360:ASP:OD1	1:C:3361:ALA:N	2.31	0.64
1:C:2340:MET:SD	1:C:2343:ARG:N	2.71	0.64
1:C:3359:SER:N	1:C:3623:GLN:OE1	2.31	0.64
1:C:1048:HIS:O	1:C:1052:VAL:HG23	1.98	0.63
1:C:3838:LEU:O	1:C:3842:ALA:N	2.32	0.63
1:C:1376:CYS:SG	1:C:1379:LEU:HD12	2.37	0.63
1:C:2497:GLU:OE1	1:C:2619:HIS:NE2	2.32	0.63
1:C:1198:VAL:HG11	1:C:1203:VAL:HG22	1.81	0.62
1:C:309:MET:SD	1:C:309:MET:N	2.72	0.62
1:C:2150:ASP:OD1	1:C:2151:LYS:N	2.33	0.62
1:C:2285:TYR:CD2	1:C:2289:LEU:HD21	2.34	0.62
1:C:372:ARG:NH2	1:C:411:LEU:HD11	2.13	0.62
1:C:2197:ILE:O	1:C:2197:ILE:HG22	1.99	0.62
2:G:2386:LEU:HB3	2:G:2387:PRO:CD	2.29	0.62
1:C:2489:HIS:O	1:C:2664:GLN:NE2	2.33	0.62
1:C:583:PRO:O	1:C:586:THR:OG1	2.16	0.62
1:C:3681:PHE:CE2	1:C:3685:VAL:HG21	2.35	0.62
1:C:3707:VAL:HG21	1:C:3710:PHE:CE2	2.34	0.62
1:C:1433:MET:O	1:C:1439:SER:OG	2.13	0.61
1:C:3577:VAL:HG23	1:C:3577:VAL:O	2.00	0.61
1:C:3190:GLN:OE1	1:C:3191:ASN:N	2.32	0.61
1:C:3142:PHE:O	1:C:3146:VAL:HG12	2.00	0.61
1:C:1729:MET:SD	1:C:1729:MET:N	2.72	0.61
1:C:1442:LEU:O	1:C:1512:LYS:NZ	2.34	0.61
1:C:1576:GLU:HA	1:C:1579:LEU:HD12	1.83	0.61
1:C:3481:PRO:O	1:C:3528:TYR:OH	2.10	0.61
1:C:1370:LEU:HA	1:C:1373:LEU:HD12	1.82	0.61
1:C:3538:GLU:OE1	1:C:3711:ARG:NH1	2.34	0.61
1:C:3614:ARG:NE	1:C:3645:MET:SD	2.74	0.60
1:C:1295:HIS:O	1:C:1296:LEU:C	2.40	0.60
1:C:409:GLU:N	1:C:409:GLU:OE1	2.35	0.60
1:C:2299:LYS:NZ	1:C:2303:GLU:OE1	2.34	0.60
1:C:1199:SER:OG	1:C:1202:ALA:N	2.31	0.60
1:C:3782:HIS:O	1:C:3786:GLN:N	2.34	0.60
1:C:427:VAL:HG11	1:C:560:ILE:HG22	1.82	0.60
1:C:2491:TRP:NE1	1:C:2664:GLN:OE1	2.32	0.59
1:C:252:PRO:O	1:C:256:ASN:ND2	2.35	0.59
1:C:1650:VAL:HG21	1:C:1657:LEU:HD12	1.85	0.59
1:C:783:LEU:HD11	1:C:815:VAL:HG21	1.83	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:2880:MET:O	1:C:2883:LYS:N	2.35	0.59
1:C:1054:VAL:HG11	1:C:1125:ILE:HD13	1.84	0.59
1:C:3731:LEU:O	1:C:3732:THR:HG22	2.03	0.59
1:C:1015:ARG:NH1	1:C:1088:ASP:OD1	2.36	0.59
1:C:1286:LEU:HG	1:C:1290:VAL:HG23	1.85	0.58
1:C:1454:LEU:H	1:C:1454:LEU:HD23	1.68	0.58
1:C:423:LEU:O	1:C:427:VAL:HG13	2.03	0.58
1:C:549:LEU:O	1:C:552:THR:OG1	2.21	0.58
1:C:1105:LYS:HD2	1:C:1158:LEU:HD23	1.86	0.58
1:C:1325:MET:O	1:C:1379:LEU:HD11	2.04	0.57
1:C:2942:GLU:OE2	1:C:2977:ARG:NH1	2.37	0.57
1:C:3210:ASP:OD1	1:C:3212:LYS:N	2.37	0.57
1:C:348:ILE:HG23	1:C:349:PRO:HD3	1.86	0.57
1:C:2708:LEU:HD11	1:C:3665:TYR:CD1	2.39	0.57
1:C:877:TRP:CE3	1:C:2926:VAL:HG21	2.40	0.57
1:C:2095:ASP:OD1	1:C:2096:THR:N	2.38	0.57
1:C:1221:LEU:O	1:C:1226:ARG:NH1	2.38	0.57
1:C:2169:THR:O	1:C:2173:VAL:HG22	2.04	0.57
1:C:3494:ILE:N	1:C:3494:ILE:HD12	2.19	0.57
1:C:2194:GLN:O	1:C:2198:ALA:N	2.38	0.57
1:C:2851:LEU:HD12	1:C:2851:LEU:O	2.04	0.56
2:G:2387:PRO:O	2:G:2388:LEU:C	2.44	0.56
1:C:2759:ASP:N	1:C:2759:ASP:OD1	2.39	0.56
1:C:3803:ASP:O	1:C:3804:SER:OG	2.15	0.56
1:C:1080:GLU:N	1:C:1080:GLU:OE1	2.37	0.56
1:C:1419:GLU:N	1:C:1419:GLU:OE1	2.38	0.56
1:C:1475:MET:HE2	1:C:1542:THR:HG21	1.87	0.56
2:G:2388:LEU:HD21	2:G:2401:TRP:HH2	1.70	0.56
2:G:2388:LEU:HD21	2:G:2401:TRP:CH2	2.40	0.56
1:C:2840:TYR:HB2	2:G:2471:THR:HG21	1.88	0.56
1:C:3266:TYR:OH	1:C:3319:GLU:OE1	2.12	0.56
1:C:2463:ASP:OD1	1:C:2473:ARG:NH2	2.37	0.56
1:C:2474:LEU:HD13	1:C:2640:LEU:HD11	1.86	0.56
1:C:2361:ALA:HA	1:C:2364:LEU:HD23	1.87	0.55
1:C:711:LEU:HD12	1:C:711:LEU:O	2.07	0.55
1:C:3237:GLN:OE1	1:C:3547:GLN:NE2	2.38	0.55
1:C:3689:ASN:OD1	1:C:3690:ARG:N	2.40	0.55
1:C:3275:THR:HG23	1:C:3536:LEU:HD11	1.88	0.55
1:C:357:GLU:OE1	1:C:401:LEU:HD23	2.07	0.55
1:C:1897:HIS:O	1:C:1901:VAL:HG23	2.07	0.55
1:C:3331:ASN:OD1	1:C:3333:HIS:N	2.36	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1061:PHE:C	1:C:1062:LEU:HD23	2.27	0.54
1:C:1774:GLN:OE1	1:C:1774:GLN:HA	2.07	0.54
1:C:3177:VAL:HG23	1:C:3218:ALA:CB	2.37	0.54
2:G:2386:LEU:HB3	2:G:2387:PRO:HD3	1.90	0.54
1:C:557:VAL:HG21	1:C:592:LEU:CD1	2.37	0.54
1:C:1353:LEU:O	1:C:1357:LYS:N	2.41	0.54
1:C:1343:CYS:O	1:C:1366:ARG:NH2	2.40	0.54
1:C:2201:MET:O	1:C:2205:ASN:N	2.40	0.54
1:C:671:VAL:O	1:C:675:PHE:N	2.40	0.54
1:C:909:SER:OG	1:C:3704:LYS:NZ	2.41	0.54
1:C:1121:VAL:O	1:C:1125:ILE:HG22	2.08	0.54
1:C:2169:THR:O	1:C:2173:VAL:HG13	2.07	0.54
1:C:279:ASP:OD1	1:C:280:PHE:N	2.40	0.54
1:C:979:ASP:OD2	1:C:2521:ILE:HD12	2.08	0.54
2:G:2389:ASN:O	2:G:2390:LEU:C	2.44	0.54
1:C:554:VAL:HG21	1:C:631:VAL:HG23	1.89	0.54
1:C:2364:LEU:HD22	1:C:2364:LEU:H	1.71	0.54
1:C:3742:ILE:HD12	1:C:3742:ILE:N	2.22	0.54
1:C:1181:GLN:NE2	1:C:1244:ASP:OD2	2.41	0.54
1:C:2683:VAL:HG22	1:C:2684:PRO:HD3	1.89	0.54
1:C:2962:ASN:OD1	1:C:2963:SER:N	2.41	0.54
1:C:2742:GLN:N	1:C:2743:GLU:OE1	2.41	0.54
1:C:2949:ILE:HD13	1:C:2967:MET:SD	2.47	0.53
1:C:2124:ARG:NH1	1:C:2128:ASN:OD1	2.41	0.53
1:C:3226:VAL:HG13	1:C:3226:VAL:O	2.06	0.53
1:C:775:LEU:O	1:C:779:PHE:N	2.41	0.53
1:C:1373:LEU:CD2	1:C:1386:ILE:HG22	2.37	0.53
1:C:635:PHE:O	1:C:638:VAL:HG12	2.09	0.53
1:C:1113:VAL:O	1:C:1117:VAL:HG23	2.09	0.53
1:C:1913:ALA:O	1:C:1917:ARG:N	2.39	0.53
2:G:2376:LEU:HD11	2:G:2421:CYS:SG	2.48	0.53
1:C:1180:GLN:NE2	1:C:1217:CYS:SG	2.81	0.53
1:C:2203:CYS:O	1:C:2207:LYS:NZ	2.42	0.52
1:C:3267:PHE:CE1	1:C:3318:LEU:HD22	2.44	0.52
1:C:1901:VAL:HG11	1:C:1935:MET:HE1	1.91	0.52
1:C:1592:LEU:O	1:C:1601:ARG:NH1	2.42	0.52
1:C:2418:LEU:HD12	1:C:2418:LEU:H	1.74	0.52
1:C:2640:LEU:O	1:C:2645:GLN:NE2	2.43	0.52
1:C:2676:VAL:HG11	1:C:2702:LEU:HD22	1.92	0.52
1:C:3275:THR:HG23	1:C:3536:LEU:CD1	2.39	0.52
1:C:1198:VAL:HG11	1:C:1203:VAL:CG2	2.40	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:284:GLN:HE22	1:C:285:ILE:HD13	1.75	0.52
1:C:2781:GLU:OE2	1:C:2823:HIS:ND1	2.42	0.52
1:C:3423:ASP:OD1	1:C:3424:PHE:N	2.41	0.52
1:C:1659:SER:O	1:C:1661:HIS:ND1	2.40	0.52
1:C:3146:VAL:HG11	1:C:3159:TRP:CZ3	2.45	0.52
2:G:2392:ILE:HD11	2:G:2398:THR:HA	1.91	0.52
1:C:401:LEU:HD22	1:C:401:LEU:H	1.74	0.51
1:C:1259:GLN:O	1:C:1263:SER:N	2.37	0.51
1:C:1535:LEU:HD12	1:C:1536:LEU:N	2.25	0.51
1:C:1292:PRO:HG2	1:C:1335:PHE:CG	2.45	0.51
1:C:1377:ASN:OD1	1:C:1378:TYR:N	2.44	0.51
1:C:450:GLU:O	1:C:454:LEU:HD23	2.11	0.51
1:C:1078:HIS:N	1:C:1088:ASP:OD2	2.39	0.51
1:C:2449:CYS:SG	1:C:2450:ALA:N	2.83	0.51
1:C:2661:HIS:CD2	1:C:2672:LEU:HD13	2.45	0.51
2:G:2384:LEU:HD13	2:G:2393:VAL:CG2	2.41	0.51
1:C:2499:LEU:O	1:C:2502:VAL:HG12	2.10	0.51
1:C:2872:VAL:O	1:C:2876:CYS:N	2.43	0.51
1:C:446:MET:O	1:C:450:GLU:OE2	2.29	0.51
1:C:1556:GLU:OE2	1:C:1594:HIS:NE2	2.41	0.51
1:C:2285:TYR:CE2	1:C:2289:LEU:HD21	2.46	0.51
1:C:3544:ARG:NH1	1:C:3777:GLU:OE1	2.40	0.51
1:C:3618:ARG:NH1	1:C:3640:GLU:OE2	2.43	0.51
1:C:292:ALA:O	1:C:295:ILE:HD11	2.11	0.50
1:C:408:ASP:HB3	1:C:411:LEU:HD13	1.93	0.50
1:C:601:ASP:OD1	1:C:602:ILE:N	2.42	0.50
1:C:2375:VAL:HG21	1:C:2417:PHE:CE1	2.46	0.50
1:C:1460:ASN:OD1	1:C:1462:LYS:N	2.44	0.50
1:C:1834:GLN:O	1:C:1837:THR:OG1	2.28	0.50
1:C:3648:ARG:O	1:C:3734:ASN:ND2	2.45	0.50
1:C:800:GLN:NE2	1:C:804:ASP:OD1	2.45	0.50
1:C:2908:VAL:HG21	1:C:2944:GLN:HB2	1.93	0.50
1:C:1325:MET:N	1:C:1378:TYR:OH	2.38	0.50
1:C:2494:GLN:OE1	1:C:2494:GLN:N	2.44	0.50
1:C:2865:MET:HG3	1:C:2891:LEU:HD21	1.93	0.50
1:C:2946:ALA:HB1	1:C:2998:HIS:NE2	2.27	0.50
1:C:3306:MET:SD	1:C:3307:GLN:N	2.85	0.50
1:C:418:MET:SD	1:C:419:SER:N	2.84	0.50
1:C:2153:LEU:HD22	1:C:2199:ALA:HB3	1.93	0.50
1:C:3330:GLU:OE1	1:C:3330:GLU:N	2.39	0.50
1:C:592:LEU:C	1:C:592:LEU:HD23	2.32	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:2834:TRP:HZ3	1:C:2855:CYS:HG	1.58	0.50
1:C:1394:LEU:HD23	1:C:1394:LEU:O	2.12	0.50
1:C:581:LEU:H	1:C:646:THR:HG21	1.77	0.49
1:C:952:SER:O	1:C:960:ARG:NH2	2.45	0.49
1:C:1461:ASP:OD1	1:C:1462:LYS:N	2.44	0.49
1:C:1555:ARG:O	1:C:1559:ILE:HG23	2.12	0.49
1:C:1862:MET:CE	1:C:1865:ALA:HB3	2.41	0.49
1:C:2298:GLN:OE1	1:C:2298:GLN:N	2.45	0.49
1:C:811:LEU:O	1:C:812:THR:OG1	2.29	0.49
1:C:1916:ALA:O	1:C:1920:VAL:HG22	2.12	0.49
1:C:3267:PHE:CZ	1:C:3318:LEU:HD22	2.47	0.49
1:C:1527:ALA:HB1	1:C:1531:LEU:HD21	1.93	0.49
1:C:3193:SER:OG	1:C:3194:LYS:N	2.44	0.49
1:C:3133:ASN:OD1	1:C:3134:LYS:N	2.45	0.49
1:C:1981:LEU:O	1:C:1984:HIS:N	2.45	0.49
1:C:2798:ASP:OD1	1:C:2799:LYS:N	2.45	0.49
1:C:3270:ARG:CZ	1:C:3322:VAL:HG11	2.42	0.49
1:C:3494:ILE:HG21	1:C:3526:TYR:HE2	1.78	0.49
1:C:1290:VAL:HG11	1:C:1323:PHE:CB	2.42	0.49
1:C:1934:ARG:O	1:C:1938:GLY:N	2.46	0.49
1:C:2949:ILE:HD11	1:C:2970:VAL:CG1	2.42	0.49
1:C:1061:PHE:O	1:C:1062:LEU:O	2.29	0.49
1:C:3533:ASP:OD1	1:C:3534:ALA:N	2.44	0.49
1:C:933:ALA:HB1	1:C:2639:ILE:HD12	1.94	0.48
1:C:2659:GLY:N	2:G:2398:THR:O	2.42	0.48
1:C:3058:LEU:O	1:C:3062:SER:OG	2.24	0.48
1:C:821:LEU:HD11	1:C:856:LEU:HD11	1.94	0.48
1:C:1348:SER:O	1:C:1352:LYS:N	2.45	0.48
1:C:1921:ARG:NH2	1:C:1924:MET:SD	2.87	0.48
1:C:2466:MET:CE	1:C:2498:LEU:HD22	2.43	0.48
1:C:2291:SER:OG	1:C:2295:ARG:NH1	2.42	0.48
1:C:3177:VAL:HG23	1:C:3218:ALA:HB2	1.94	0.48
1:C:3428:VAL:O	1:C:3430:GLY:N	2.45	0.48
1:C:1531:LEU:HD11	1:C:1561:PHE:CE2	2.49	0.48
1:C:1058:CYS:SG	1:C:1126:LEU:HD11	2.53	0.48
2:G:2393:VAL:O	2:G:2394:SER:C	2.52	0.48
1:C:671:VAL:O	1:C:675:PHE:HB2	2.13	0.48
1:C:3650:MET:HA	1:C:3650:MET:CE	2.43	0.48
1:C:1610:ARG:O	1:C:1614:LEU:HD12	2.14	0.48
1:C:2695:TYR:CE1	1:C:2699:THR:HG21	2.48	0.48
1:C:3187:CYS:SG	1:C:3199:LEU:HD22	2.53	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:3054:VAL:HG11	1:C:3089:LEU:HD23	1.96	0.47
1:C:1865:ALA:HB2	1:C:1886:LEU:HD22	1.97	0.47
1:C:3663:THR:O	1:C:3667:THR:HG22	2.14	0.47
1:C:3685:VAL:CG2	1:C:3825:LEU:HD21	2.43	0.47
1:C:1422:GLN:O	1:C:1426:HIS:ND1	2.47	0.47
1:C:2174:LEU:O	1:C:2178:LEU:HD12	2.14	0.47
1:C:2346:PHE:O	1:C:2350:ILE:N	2.46	0.47
1:C:3322:VAL:HG22	1:C:3577:VAL:HG21	1.95	0.47
1:C:427:VAL:HG11	1:C:560:ILE:CG2	2.44	0.47
1:C:2683:VAL:CG2	1:C:2684:PRO:HD3	2.44	0.47
1:C:2205:ASN:OD1	1:C:2206:THR:N	2.47	0.47
1:C:655:VAL:N	1:C:656:PRO:HD2	2.30	0.47
1:C:1675:ASN:OD1	1:C:1675:ASN:N	2.43	0.47
1:C:3492:TYR:O	1:C:3492:TYR:CD1	2.68	0.47
1:C:1276:THR:O	1:C:1280:GLU:N	2.48	0.47
1:C:1356:TYR:HB3	1:C:1359:LEU:HD12	1.96	0.47
1:C:3679:ILE:HG23	1:C:3707:VAL:HG21	1.96	0.47
1:C:1862:MET:HE3	1:C:1865:ALA:HB3	1.97	0.47
1:C:557:VAL:O	1:C:561:THR:HG23	2.14	0.47
1:C:991:PRO:O	1:C:992:ASN:HB3	2.15	0.47
1:C:2711:GLU:OE2	1:C:3669:ARG:NH2	2.38	0.47
1:C:3102:LEU:HA	1:C:3105:ILE:HG22	1.97	0.47
1:C:3146:VAL:O	1:C:3150:ASP:N	2.47	0.47
1:C:2988:TRP:CE2	1:C:3047:ILE:HD13	2.50	0.47
1:C:3054:VAL:HG12	1:C:3058:LEU:CD2	2.45	0.47
1:C:336:LYS:O	1:C:340:THR:HG23	2.15	0.46
1:C:659:VAL:HG11	1:C:692:TYR:HE2	1.80	0.46
1:C:1151:GLU:O	1:C:1157:LYS:NZ	2.40	0.46
1:C:797:LEU:HD23	1:C:797:LEU:H	1.81	0.46
1:C:1454:LEU:HD23	1:C:1454:LEU:N	2.30	0.46
1:C:1671:TRP:CE3	1:C:1696:LEU:HD22	2.51	0.46
2:G:2392:ILE:HG23	2:G:2392:ILE:O	2.15	0.46
1:C:2956:THR:O	1:C:2960:ARG:NH2	2.48	0.46
1:C:3561:GLU:O	1:C:3565:ARG:NH1	2.49	0.46
1:C:411:LEU:N	1:C:411:LEU:HD12	2.30	0.46
1:C:3223:CYS:O	1:C:3226:VAL:HG12	2.16	0.46
1:C:1061:PHE:O	1:C:1062:LEU:HD23	2.14	0.46
1:C:1614:LEU:HD12	1:C:1614:LEU:H	1.81	0.46
1:C:2197:ILE:O	1:C:2197:ILE:CG2	2.64	0.46
1:C:1992:LEU:O	1:C:2002:GLN:NE2	2.47	0.46
1:C:2774:THR:OG1	1:C:2820:TRP:NE1	2.44	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:3716:ASP:OD1	1:C:3716:ASP:N	2.49	0.46
1:C:2421:VAL:HG12	1:C:2421:VAL:O	2.16	0.46
1:C:2414:ASN:O	1:C:2417:PHE:N	2.49	0.46
1:C:1015:ARG:NH2	1:C:1094:ASP:OD2	2.49	0.45
1:C:1071:GLN:O	1:C:1073:SER:N	2.47	0.45
1:C:1122:ALA:HA	1:C:1125:ILE:HG22	1.99	0.45
1:C:1286:LEU:CG	1:C:1290:VAL:HG23	2.45	0.45
1:C:3150:ASP:OD2	2:G:2521:ARG:NH2	2.49	0.45
2:G:2443:LEU:HD22	2:G:2447:GLN:CB	2.44	0.45
1:C:859:ASP:OD1	1:C:860:PHE:N	2.50	0.45
1:C:1168:MET:SD	1:C:1213:LEU:HA	2.56	0.45
1:C:851:LEU:C	1:C:851:LEU:HD12	2.37	0.45
1:C:868:VAL:HG22	1:C:868:VAL:O	2.16	0.45
1:C:3054:VAL:HG11	1:C:3089:LEU:CD2	2.47	0.45
1:C:3530:VAL:HG22	1:C:3583:LEU:CD2	2.45	0.45
1:C:1566:PRO:HA	1:C:1569:THR:HG22	1.99	0.45
1:C:462:TYR:CD1	1:C:462:TYR:N	2.82	0.45
1:C:2294:MET:HG3	1:C:2347:ILE:HD11	1.99	0.45
1:C:2337:VAL:HG12	1:C:2337:VAL:O	2.16	0.45
1:C:424:LEU:HD21	1:C:555:CYS:HB3	1.98	0.45
1:C:642:MET:CE	1:C:650:ILE:HD12	2.47	0.45
1:C:917:THR:HG23	1:C:917:THR:O	2.17	0.45
1:C:1268:ALA:HB2	1:C:1275:VAL:HG22	1.99	0.45
1:C:1475:MET:O	1:C:1478:VAL:HG12	2.17	0.45
1:C:3744:VAL:O	1:C:3749:THR:HG23	2.16	0.45
1:C:348:ILE:N	1:C:349:PRO:HD2	2.32	0.45
1:C:1327:LEU:HD13	1:C:1379:LEU:HD13	1.98	0.45
1:C:1643:ILE:HD13	1:C:1643:ILE:N	2.32	0.45
1:C:3741:THR:OG1	1:C:3742:ILE:HD12	2.16	0.45
1:C:1290:VAL:O	1:C:1312:ASN:OD1	2.35	0.45
1:C:1537:GLU:O	1:C:1541:LYS:N	2.39	0.45
1:C:2104:VAL:HG21	1:C:2123:SER:HB3	1.98	0.45
1:C:2368:VAL:CG2	1:C:2413:LEU:HD22	2.47	0.45
1:C:865:ILE:O	1:C:869:ARG:N	2.50	0.44
1:C:1318:LEU:O	1:C:1321:ARG:N	2.50	0.44
1:C:1441:THR:O	1:C:1445:VAL:HG22	2.16	0.44
1:C:3567:LEU:HD13	1:C:3755:VAL:HG23	2.00	0.44
1:C:3737:GLU:HA	1:C:3740:THR:HG23	1.99	0.44
1:C:1048:HIS:CE1	1:C:2521:ILE:HD11	2.51	0.44
1:C:2699:THR:OG1	1:C:2700:HIS:ND1	2.34	0.44
1:C:838:SER:OG	1:C:840:THR:HG22	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:2162:VAL:O	1:C:2166:ASN:ND2	2.51	0.44
1:C:3690:ARG:NH2	1:C:3852:ASP:OD2	2.42	0.44
1:C:455:LYS:CG	1:C:553:LEU:HD21	2.48	0.44
1:C:2177:LEU:O	1:C:2181:LEU:HG	2.16	0.44
1:C:2177:LEU:HD22	1:C:2218:ARG:NH2	2.32	0.44
1:C:2375:VAL:HG21	1:C:2417:PHE:HE1	1.81	0.44
1:C:2699:THR:HG1	1:C:2700:HIS:CE1	2.32	0.44
1:C:1295:HIS:O	1:C:1296:LEU:O	2.36	0.44
1:C:1533:LYS:HB3	1:C:1534:PRO:HD3	2.00	0.44
1:C:2181:LEU:HD21	1:C:2218:ARG:HG2	1.99	0.44
1:C:2493:LYS:HE3	1:C:2622:THR:HG22	2.00	0.44
1:C:642:MET:HE1	1:C:650:ILE:HD12	1.99	0.44
1:C:3678:LEU:CD1	1:C:3755:VAL:HG21	2.47	0.44
2:G:2506:ASP:N	2:G:2506:ASP:OD1	2.49	0.44
1:C:678:ASN:OD1	1:C:678:ASN:C	2.56	0.44
1:C:3235:ILE:HD11	1:C:3257:VAL:HG11	2.00	0.44
1:C:3266:TYR:CD1	1:C:3315:LEU:HD12	2.52	0.44
1:C:3731:LEU:HD23	1:C:3843:ASN:HB3	1.99	0.44
1:C:879:THR:HG23	1:C:891:ALA:HB1	2.00	0.44
1:C:2327:SER:HA	1:C:2330:LEU:HD23	1.99	0.44
2:G:2384:LEU:CD1	2:G:2393:VAL:HG23	2.46	0.44
1:C:2189:SER:O	1:C:2192:PRO:HD2	2.18	0.43
1:C:1817:ASP:N	1:C:1818:PRO:CD	2.81	0.43
1:C:2707:THR:HG22	1:C:2751:LEU:HD13	2.01	0.43
1:C:988:LEU:HG	1:C:1125:ILE:HD11	2.00	0.43
1:C:1774:GLN:OE1	1:C:1777:LEU:HD22	2.18	0.43
1:C:1319:GLN:N	1:C:1320:PRO:CD	2.82	0.43
1:C:3530:VAL:HG22	1:C:3583:LEU:HD21	1.99	0.43
1:C:1291:PRO:HB3	1:C:1332:HIS:NE2	2.34	0.43
1:C:1579:LEU:O	1:C:1585:SER:OG	2.37	0.43
1:C:2368:VAL:HG23	1:C:2413:LEU:HD22	2.01	0.43
1:C:2686:ILE:O	1:C:2688:ILE:HD12	2.18	0.43
1:C:2809:ALA:O	1:C:2810:SER:OG	2.25	0.43
1:C:3169:LYS:O	1:C:3170:GLU:HG2	2.18	0.43
1:C:1736:MET:SD	1:C:1736:MET:N	2.91	0.43
1:C:3199:LEU:HD12	1:C:3231:TRP:CZ3	2.54	0.43
1:C:2707:THR:CG2	1:C:2751:LEU:HD13	2.48	0.43
1:C:3115:LYS:O	1:C:3118:THR:OG1	2.36	0.43
1:C:3147:GLN:OE1	2:G:2509:LEU:HD13	2.19	0.43
1:C:3578:SER:OG	1:C:3581:MET:O	2.27	0.43
1:C:413:SER:OG	1:C:545:ASP:OD2	2.29	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1059:GLY:N	1:C:1060:PRO:HD3	2.34	0.43
1:C:3488:LYS:O	1:C:3488:LYS:HG3	2.17	0.43
1:C:1778:ASN:HB2	1:C:1779:PRO:HD3	2.01	0.43
1:C:3509:HIS:CG	1:C:3510:ASN:N	2.87	0.43
2:G:2379:ALA:HB2	2:G:2407:VAL:HG11	2.01	0.43
1:C:1824:MET:SD	1:C:1824:MET:N	2.91	0.42
1:C:2656:LEU:HD23	1:C:2672:LEU:HD11	2.01	0.42
1:C:1475:MET:CE	1:C:1542:THR:HG21	2.48	0.42
1:C:2911:ALA:CB	1:C:2940:ILE:HD11	2.49	0.42
1:C:3161:ASP:OD1	1:C:3183:TYR:OH	2.29	0.42
1:C:3304:MET:O	1:C:3308:ARG:N	2.50	0.42
1:C:673:ASN:O	1:C:677:ALA:HB2	2.19	0.42
1:C:2958:LEU:HD11	1:C:3005:TRP:HB2	2.00	0.42
1:C:3516:LEU:HD22	1:C:3530:VAL:HG23	2.00	0.42
1:C:3561:GLU:H	1:C:3561:GLU:CD	2.22	0.42
2:G:2384:LEU:HD11	2:G:2392:ILE:HA	2.01	0.42
2:G:2393:VAL:HG12	2:G:2394:SER:N	2.34	0.42
1:C:2323:LEU:HD12	1:C:2323:LEU:O	2.18	0.42
1:C:3541:ARG:NH2	1:C:3712:PHE:O	2.52	0.42
1:C:817:LEU:HD23	1:C:817:LEU:H	1.85	0.42
1:C:1293:LYS:HA	1:C:1293:LYS:HD2	1.92	0.42
1:C:1371:ASN:ND2	1:C:1408:CYS:SG	2.93	0.42
1:C:1909:LEU:HA	1:C:1963:ILE:HD13	2.01	0.42
1:C:2297:LEU:O	1:C:2301:VAL:N	2.52	0.42
1:C:3591:LEU:H	1:C:3591:LEU:HD23	1.83	0.42
1:C:1718:LEU:HD11	1:C:1764:PHE:CZ	2.54	0.42
1:C:1761:ASP:O	1:C:1763:ASN:ND2	2.52	0.42
1:C:2932:PRO:O	1:C:2936:ALA:N	2.51	0.42
1:C:3192:GLU:N	1:C:3230:GLN:OE1	2.53	0.42
2:G:2387:PRO:HG2	2:G:2390:LEU:HD12	2.02	0.42
2:G:2384:LEU:HD12	2:G:2388:LEU:O	2.18	0.42
1:C:446:MET:O	1:C:447:ARG:C	2.58	0.42
1:C:1406:GLU:OE2	1:C:1450:SER:OG	2.36	0.42
1:C:1524:ILE:HG23	1:C:1524:ILE:O	2.20	0.42
1:C:1728:ASN:HD21	1:C:1732:LEU:HD13	1.85	0.42
2:G:2398:THR:O	2:G:2398:THR:OG1	2.37	0.42
1:C:992:ASN:O	1:C:996:LYS:N	2.34	0.42
1:C:1289:MET:O	1:C:1290:VAL:C	2.59	0.42
1:C:2329:GLU:O	1:C:2333:THR:N	2.46	0.42
1:C:2800:ALA:O	1:C:2804:HIS:ND1	2.42	0.42
1:C:2880:MET:O	1:C:2884:VAL:N	2.43	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:3741:THR:CB	1:C:3742:ILE:HD12	2.50	0.42
1:C:2628:THR:O	1:C:2632:LEU:N	2.52	0.42
1:C:2847:ILE:HG22	1:C:2848:ASN:N	2.35	0.42
1:C:2949:ILE:HD11	1:C:2970:VAL:HG13	2.02	0.42
2:G:2467:LEU:O	2:G:2471:THR:HG23	2.20	0.42
1:C:1434:LEU:HD21	1:C:1463:PHE:CD1	2.55	0.41
1:C:2474:LEU:HB3	1:C:2648:LEU:HD11	2.02	0.41
1:C:2957:ASN:OD1	1:C:2957:ASN:N	2.50	0.41
1:C:1050:THR:OG1	1:C:1118:ILE:HG22	2.20	0.41
1:C:1052:VAL:HG22	1:C:2521:ILE:HG13	2.01	0.41
1:C:1740:ILE:HB	1:C:1741:PRO:HD3	2.02	0.41
1:C:1865:ALA:O	1:C:1869:LEU:N	2.52	0.41
1:C:2248:LYS:HE3	1:C:2249:VAL:HG13	2.01	0.41
1:C:2773:GLU:HB2	1:C:2796:ALA:HB2	2.02	0.41
1:C:554:VAL:HG23	1:C:555:CYS:N	2.36	0.41
1:C:2846:HIS:O	2:G:2413:ARG:NH1	2.51	0.41
1:C:3122:TYR:CZ	2:G:2498:LEU:HD21	2.56	0.41
1:C:3369:ASN:O	1:C:3373:LYS:N	2.48	0.41
1:C:565:THR:OG1	1:C:578:ASN:N	2.50	0.41
1:C:817:LEU:HD23	1:C:817:LEU:N	2.36	0.41
1:C:935:LEU:HD11	1:C:2636:LEU:HB3	2.02	0.41
1:C:1292:PRO:HG2	1:C:1335:PHE:CD1	2.55	0.41
1:C:1881:TYR:HB2	1:C:1919:ILE:HG21	2.02	0.41
1:C:1949:ILE:HG21	1:C:1961:VAL:HG12	2.03	0.41
1:C:2206:THR:O	1:C:2207:LYS:CG	2.68	0.41
1:C:899:GLY:O	1:C:903:ARG:NH2	2.53	0.41
1:C:1177:LEU:HD13	1:C:1234:GLN:HA	2.00	0.41
1:C:1905:PHE:CD1	1:C:1927:LEU:HD21	2.55	0.41
1:C:3370:PHE:O	1:C:3374:LEU:N	2.54	0.41
1:C:3491:HIS:O	1:C:3492:TYR:C	2.58	0.41
1:C:3731:LEU:O	1:C:3732:THR:O	2.39	0.41
1:C:1128:SER:OG	1:C:1130:GLU:OE2	2.32	0.41
1:C:2098:VAL:HG12	1:C:2102:ILE:CD1	2.51	0.41
1:C:2797:MET:HE1	2:G:2468:MET:SD	2.60	0.41
1:C:3574:VAL:CG2	1:C:3584:VAL:HG23	2.47	0.41
1:C:915:VAL:HG23	1:C:915:VAL:O	2.21	0.41
1:C:2850:TYR:CE1	1:C:2872:VAL:HG23	2.56	0.41
1:C:3105:ILE:HD11	1:C:3125:LYS:HB2	2.02	0.41
2:G:2384:LEU:HD11	2:G:2392:ILE:CA	2.51	0.41
1:C:985:TYR:O	1:C:989:ALA:N	2.52	0.41
1:C:1575:MET:O	1:C:1578:THR:OG1	2.35	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:2497:GLU:HB2	1:C:2615:VAL:HG13	2.03	0.41
1:C:2773:GLU:CB	1:C:2796:ALA:HB2	2.51	0.41
1:C:3509:HIS:CG	1:C:3510:ASN:H	2.38	0.41
1:C:3557:GLU:O	1:C:3563:THR:OG1	2.37	0.41
1:C:928:PHE:HE1	1:C:2503:CYS:HG	1.64	0.41
1:C:1290:VAL:HB	1:C:1291:PRO:HD3	2.03	0.41
1:C:1520:LEU:O	1:C:1520:LEU:HD23	2.20	0.41
1:C:2597:LYS:O	1:C:2601:THR:HG23	2.22	0.41
1:C:3485:LEU:HD12	1:C:3573:ARG:HG3	2.04	0.41
2:G:2443:LEU:HB3	2:G:2448:ILE:HG23	2.02	0.41
1:C:438:SER:O	1:C:438:SER:OG	2.38	0.40
1:C:648:LYS:O	1:C:652:GLN:HG2	2.20	0.40
1:C:876:LEU:O	1:C:879:THR:HG22	2.21	0.40
1:C:2219:LEU:HD11	1:C:2243:TYR:CD1	2.56	0.40
1:C:3545:VAL:HG11	1:C:3710:PHE:O	2.21	0.40
1:C:3620:ALA:O	1:C:3624:ALA:N	2.46	0.40
1:C:1709:GLY:O	1:C:1712:GLU:N	2.48	0.40
1:C:2300:MET:C	1:C:2300:MET:SD	3.00	0.40
1:C:3180:ILE:HG21	1:C:3219:VAL:HG23	2.03	0.40
1:C:255:MET:HG3	1:C:256:ASN:H	1.86	0.40
1:C:1917:ARG:HA	1:C:1920:VAL:HG22	2.03	0.40
1:C:2306:ASN:N	1:C:2307:PRO:CD	2.84	0.40
1:C:2368:VAL:O	1:C:2372:GLU:N	2.51	0.40
1:C:3491:HIS:CD2	1:C:3491:HIS:H	2.38	0.40
1:C:972:VAL:HG23	1:C:2509:ILE:HG21	2.03	0.40
1:C:1018:PHE:HE1	1:C:1049:TYR:HH	1.66	0.40
1:C:2287:ASP:N	1:C:2287:ASP:OD1	2.54	0.40
1:C:2858:ARG:NH1	1:C:2989:SER:OG	2.55	0.40
1:C:3567:LEU:CD2	1:C:3674:ILE:HG23	2.52	0.40
1:C:3658:THR:O	1:C:3658:THR:HG22	2.21	0.40
2:G:2433:GLU:O	2:G:2444:ARG:CZ	2.62	0.40
1:C:943:ILE:HD11	1:C:970:PHE:CB	2.51	0.40
1:C:1074:THR:O	1:C:1074:THR:HG22	2.21	0.40
1:C:2470:VAL:HG22	1:C:2502:VAL:HG11	2.04	0.40
1:C:2746:ASP:OD1	1:C:2768:ARG:NH1	2.45	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	C	3015/3859 (78%)	2824 (94%)	179 (6%)	12 (0%)	30	60
2	G	127/3159 (4%)	114 (90%)	9 (7%)	4 (3%)	3	18
All	All	3142/7018 (45%)	2938 (94%)	188 (6%)	16 (0%)	27	54

All (16) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	1062	LEU
1	C	2190	PHE
1	C	2449	CYS
1	C	3509	HIS
2	G	2393	VAL
1	C	678	ASN
1	C	1296	LEU
2	G	2386	LEU
2	G	2387	PRO
2	G	2388	LEU
1	C	1292	PRO
1	C	857	GLN
1	C	981	LYS
1	C	1285	VAL
1	C	1762	PRO
1	C	3732	THR

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	C	2742/3423 (80%)	2658 (97%)	84 (3%)	35 60
2	G	119/2663 (4%)	109 (92%)	10 (8%)	9 29
All	All	2861/6086 (47%)	2767 (97%)	94 (3%)	35 58

All (94) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	250	PHE
1	C	309	MET
1	C	352	ASP
1	C	368	ARG
1	C	409	GLU
1	C	418	MET
1	C	625	MET
1	C	647	PHE
1	C	648	LYS
1	C	703	ASN
1	C	852	CYS
1	C	882	ASN
1	C	975	MET
1	C	1011	ASP
1	C	1076	MET
1	C	1094	ASP
1	C	1123	SER
1	C	1215	MET
1	C	1280	GLU
1	C	1287	GLN
1	C	1289	MET
1	C	1300	GLN
1	C	1433	MET
1	C	1468	MET
1	C	1574	MET
1	C	1614	LEU
1	C	1635	ARG
1	C	1676	PHE
1	C	1729	MET
1	C	1733	LYS
1	C	1753	PHE
1	C	1783	TYR
1	C	1835	TYR
1	C	1841	GLU
1	C	1905	PHE

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Mol	Chain	Res	Type
1	C	1914	MET
1	C	1969	GLN
1	C	1985	MET
1	C	2003	ARG
1	C	2190	PHE
1	C	2195	ARG
1	C	2248	LYS
1	C	2289	LEU
1	C	2294	MET
1	C	2338	MET
1	C	2390	ARG
1	C	2417	PHE
1	C	2418	LEU
1	C	2423	TYR
1	C	2425	TYR
1	C	2466	MET
1	C	2479	CYS
1	C	2657	CYS
1	C	2666	ASP
1	C	2667	CYS
1	C	2670	SER
1	C	2715	PHE
1	C	2772	SER
1	C	2792	SER
1	C	2799	LYS
1	C	2875	SER
1	C	2913	SER
1	C	3128	PHE
1	C	3164	GLU
1	C	3174	HIS
1	C	3205	LEU
1	C	3251	LEU
1	C	3323	ASP
1	C	3378	PHE
1	C	3446	LYS
1	C	3469	SER
1	C	3470	ASN
1	C	3492	TYR
1	C	3555	CYS
1	C	3591	LEU
1	C	3640	GLU
1	C	3650	MET

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Mol	Chain	Res	Type
1	C	3706	ASN
1	C	3710	PHE
1	C	3738	PHE
1	C	3776	ASP
1	C	3806	GLN
1	C	3819	MET
1	C	3828	PHE
2	G	2384	LEU
2	G	2386	LEU
2	G	2389	ASN
2	G	2390	LEU
2	G	2392	ILE
2	G	2394	SER
2	G	2402	ASP
2	G	2424	ARG
2	G	2446	SER
2	G	2506	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (32) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	284	GLN
1	C	405	ASN
1	C	425	ASN
1	C	652	GLN
1	C	801	HIS
1	C	836	ASN
1	C	855	ASN
1	C	920	GLN
1	C	1005	HIS
1	C	1078	HIS
1	C	1287	GLN
1	C	1312	ASN
1	C	1328	ASN
1	C	1371	ASN
1	C	1443	ASN
1	C	1652	ASN
1	C	1707	ASN
1	C	1728	ASN
1	C	1763	ASN
1	C	1803	ASN
1	C	2166	ASN

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Mol	Chain	Res	Type
1	C	2377	ASN
1	C	2464	ASN
1	C	2832	ASN
1	C	2928	HIS
1	C	2935	GLN
1	C	3088	GLN
1	C	3435	HIS
1	C	3474	GLN
2	G	2378	GLN
2	G	2382	GLN
2	G	2427	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 oligosaccharides 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.

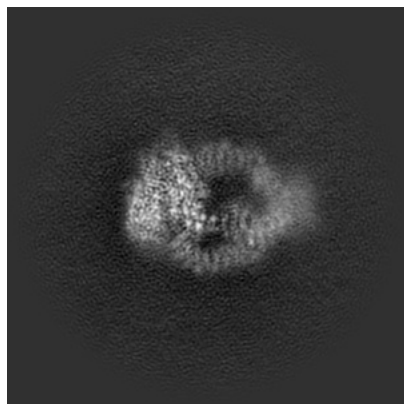
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-45176. These allow visual inspection of the internal detail of the map and identification of artifacts.

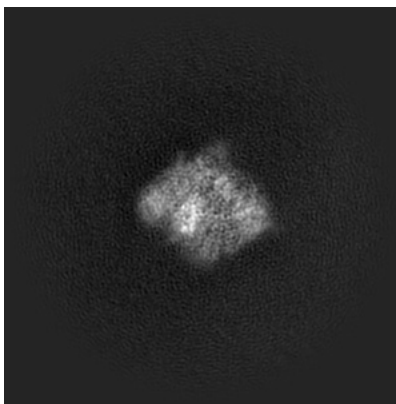
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

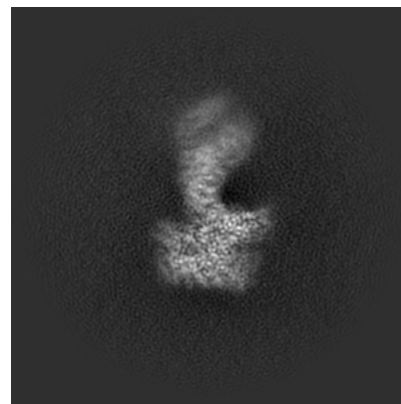
6.1.1 Primary map



X

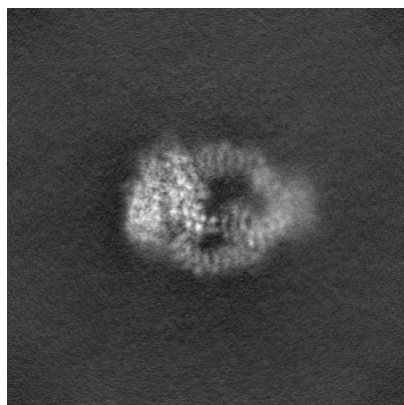


Y

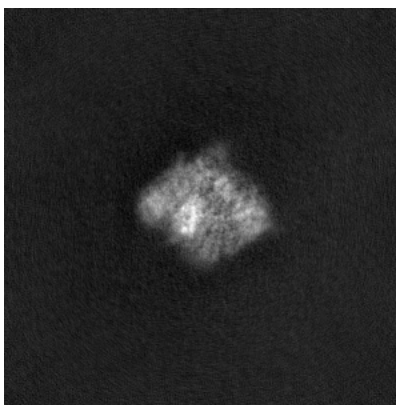


Z

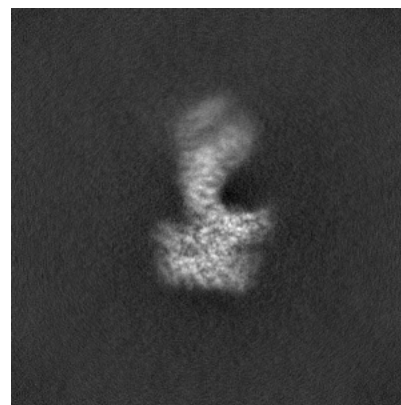
6.1.2 Raw map



X



Y

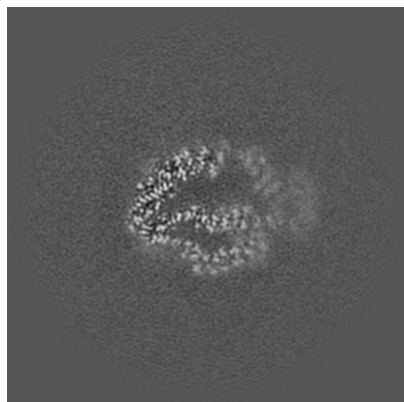


Z

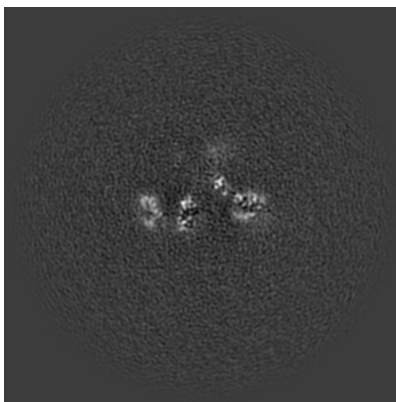
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

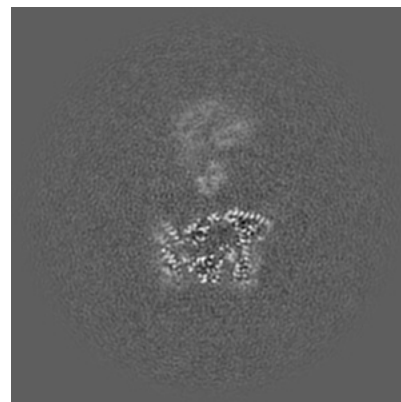
6.2.1 Primary map



X Index: 180

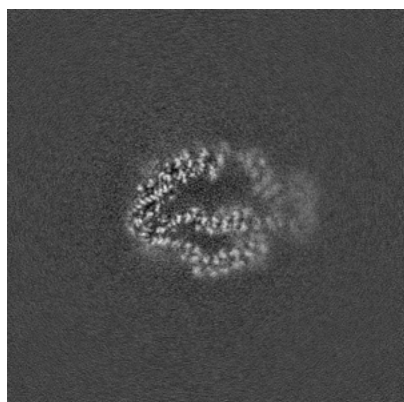


Y Index: 180

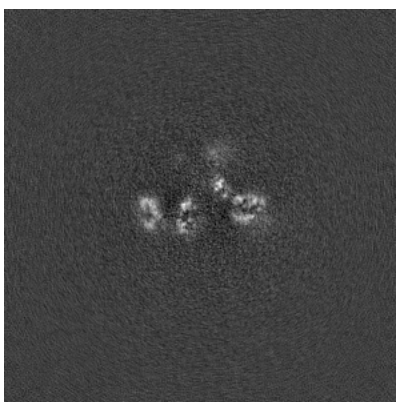


Z Index: 180

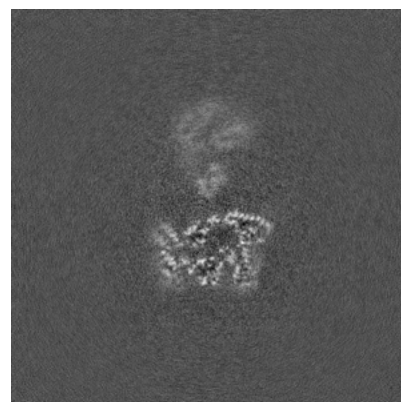
6.2.2 Raw map



X Index: 180



Y Index: 180

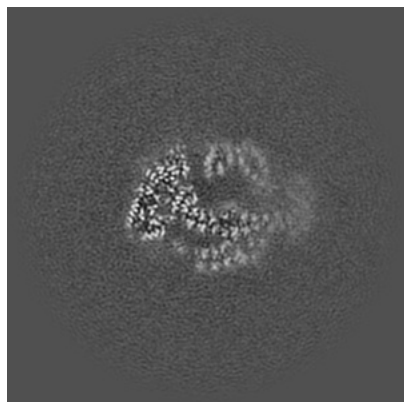


Z Index: 180

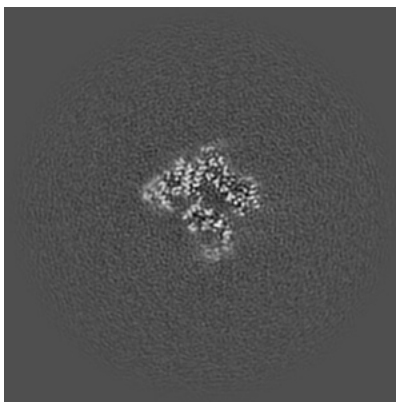
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

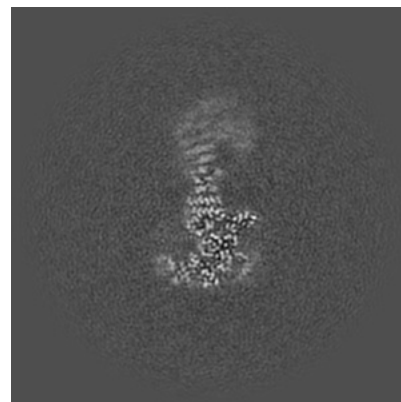
6.3.1 Primary map



X Index: 173

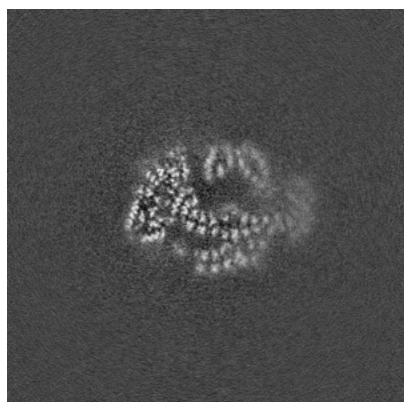


Y Index: 162

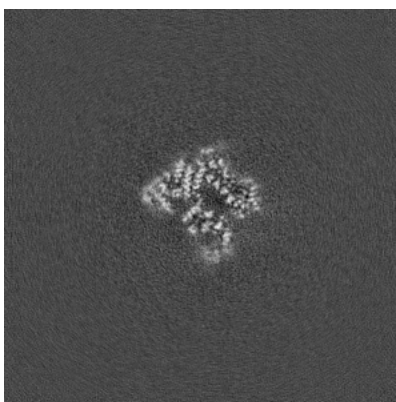


Z Index: 170

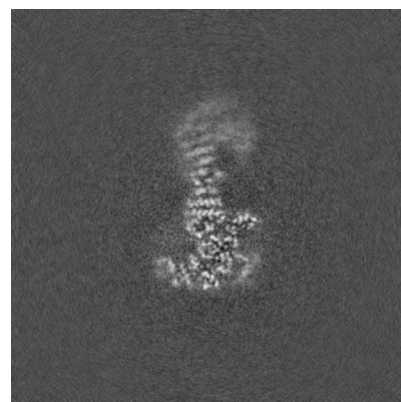
6.3.2 Raw map



X Index: 173



Y Index: 162

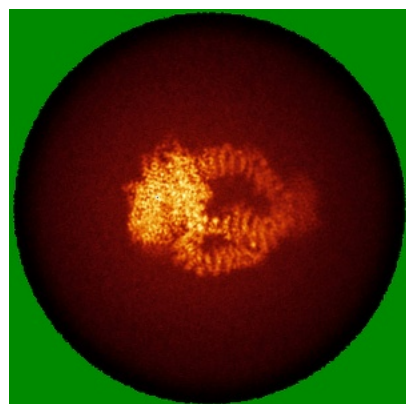


Z Index: 170

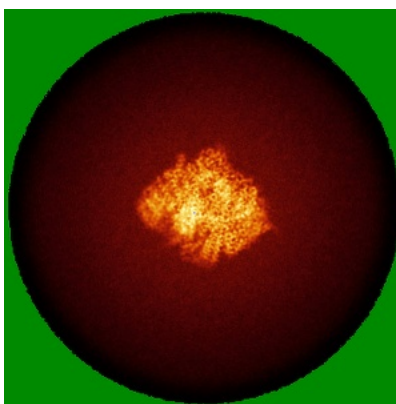
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

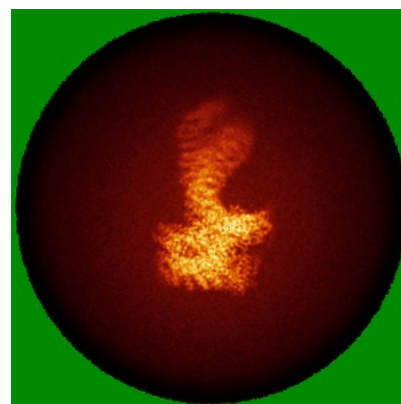
6.4.1 Primary map



X

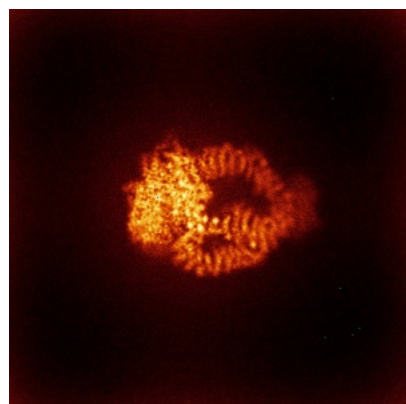


Y

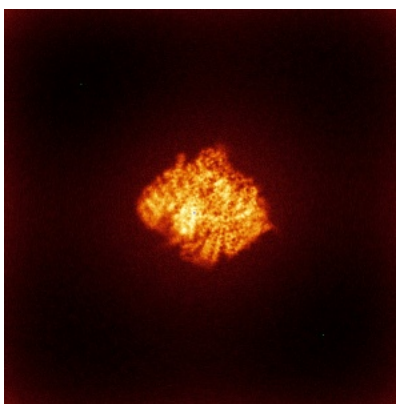


Z

6.4.2 Raw map



X



Y

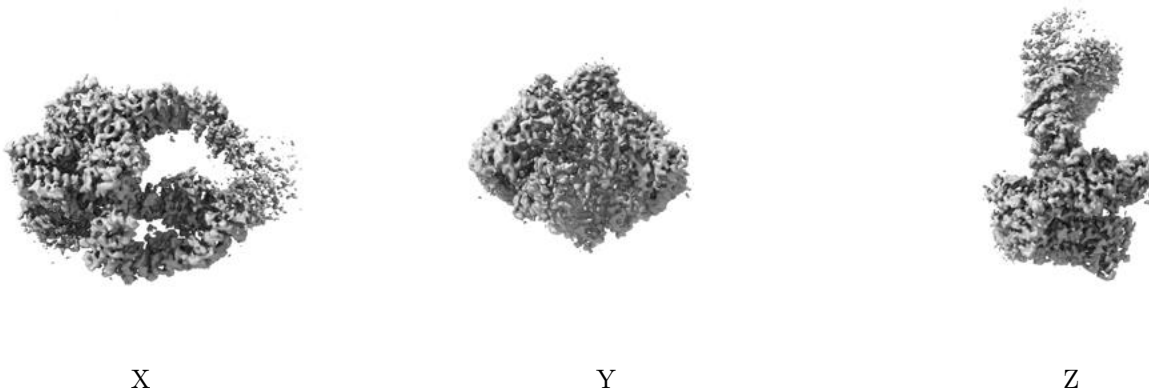


Z

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

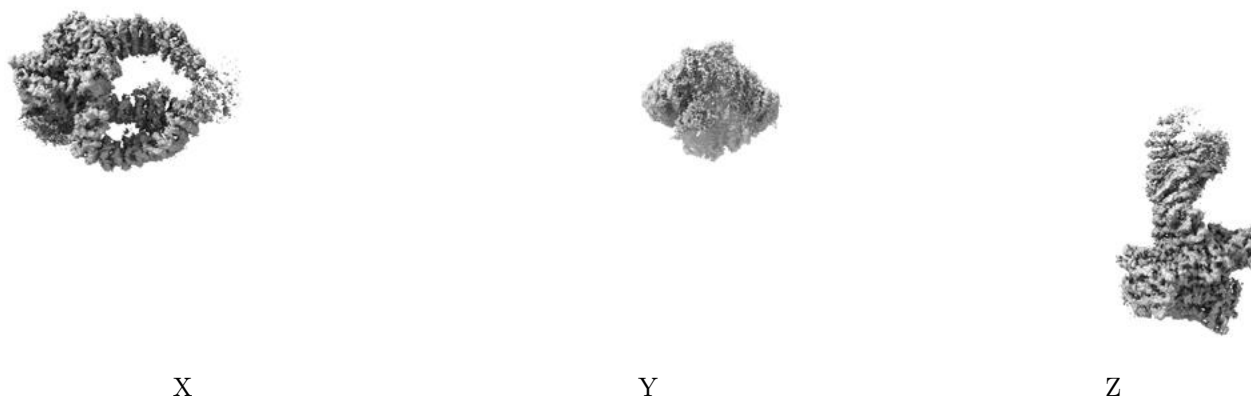
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.451. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



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

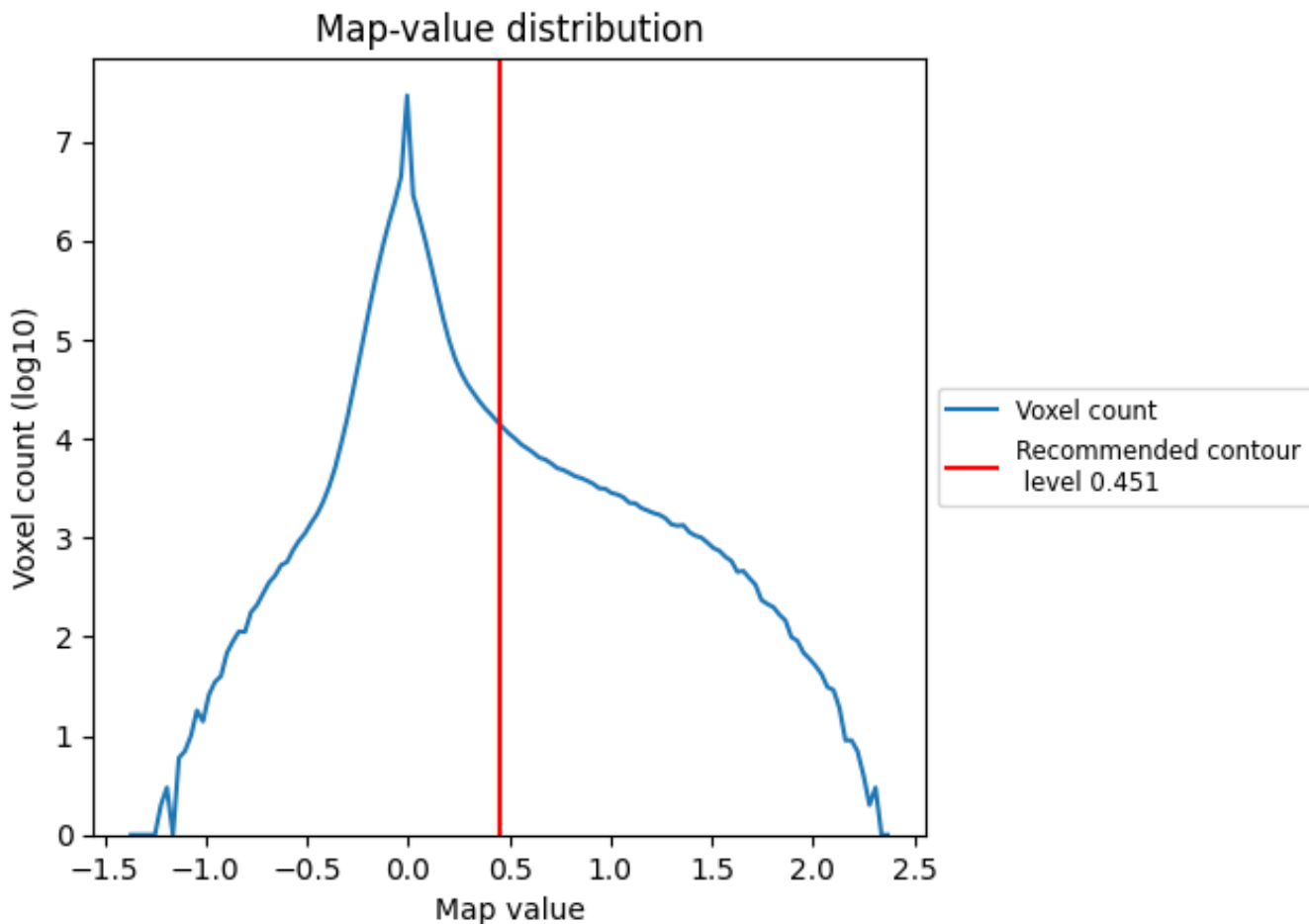
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

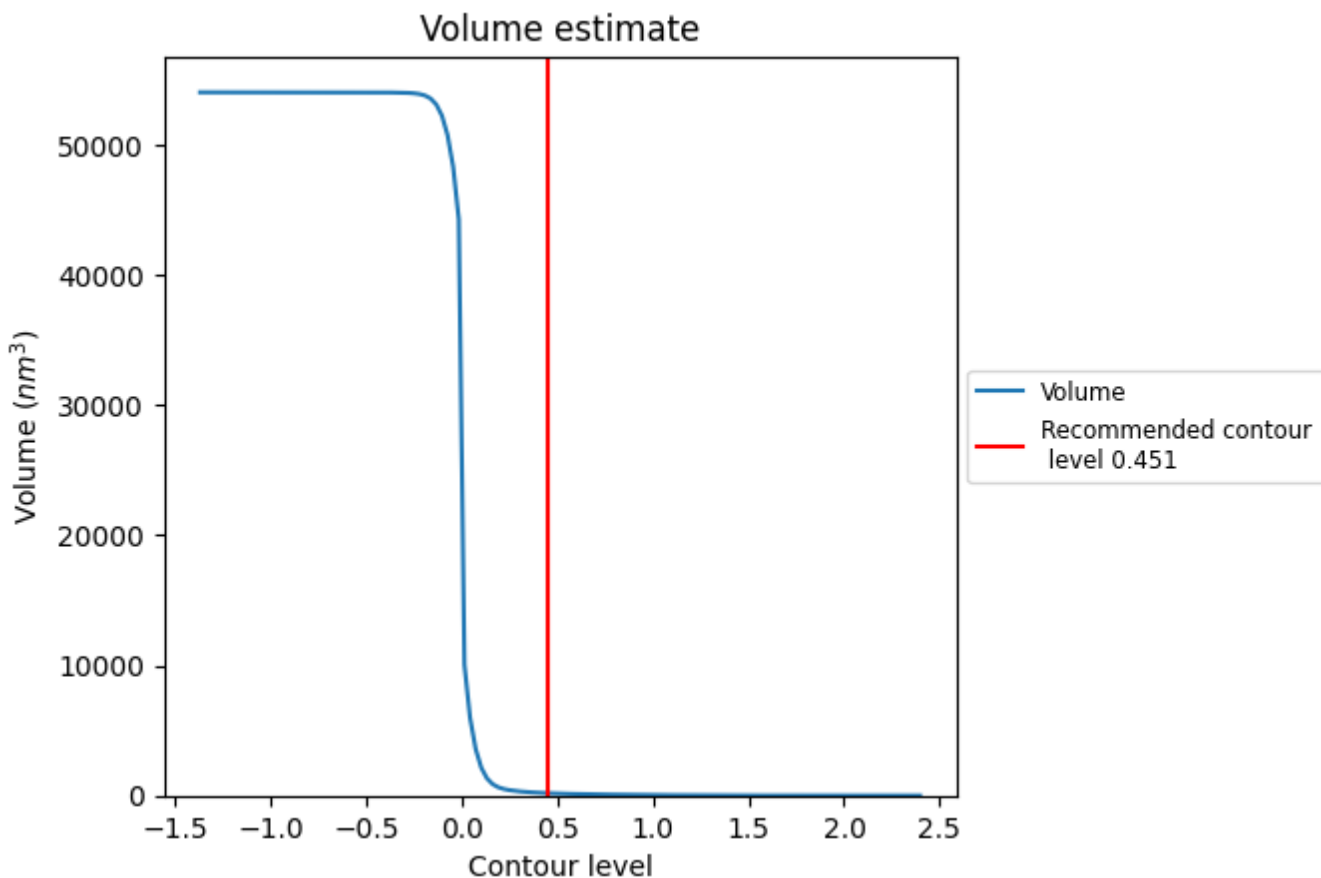
This section contains the results of statistical analysis of the map.

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.

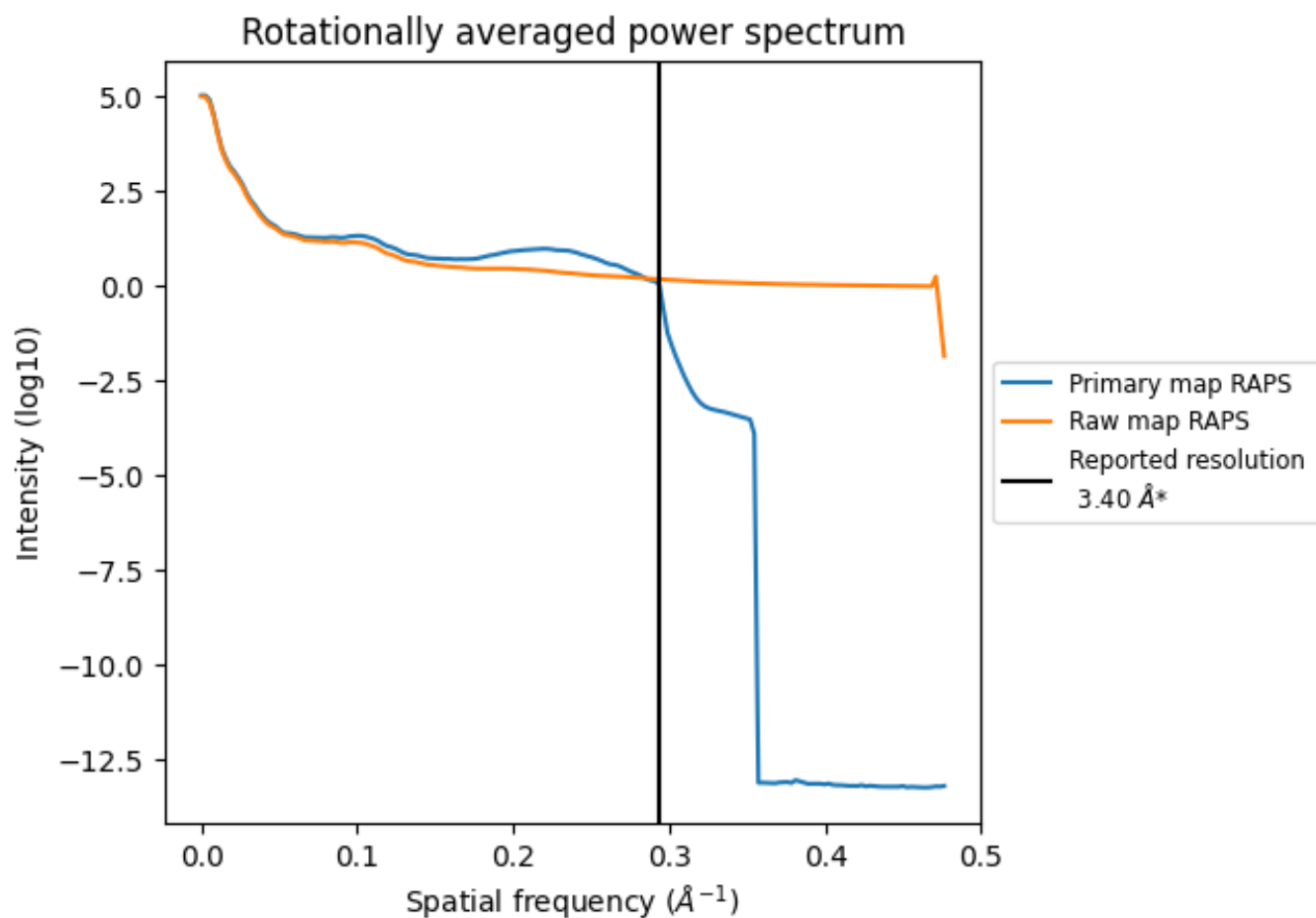
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 182 nm³; this corresponds to an approximate mass of 164 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](#)

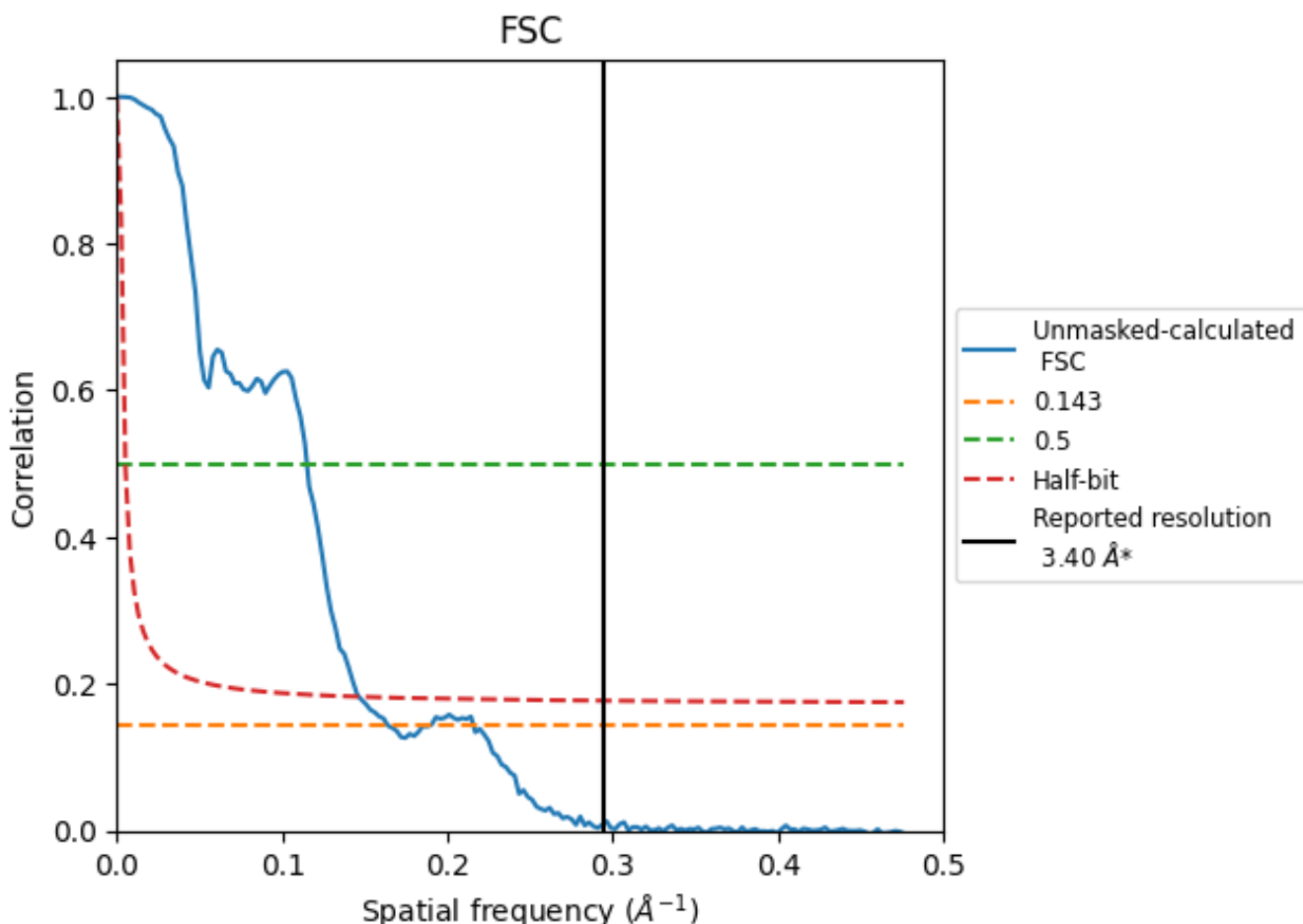


*Reported resolution corresponds to spatial frequency of 0.294 Å⁻¹

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 0.294 \AA^{-1}

8.2 Resolution estimates [i](#)

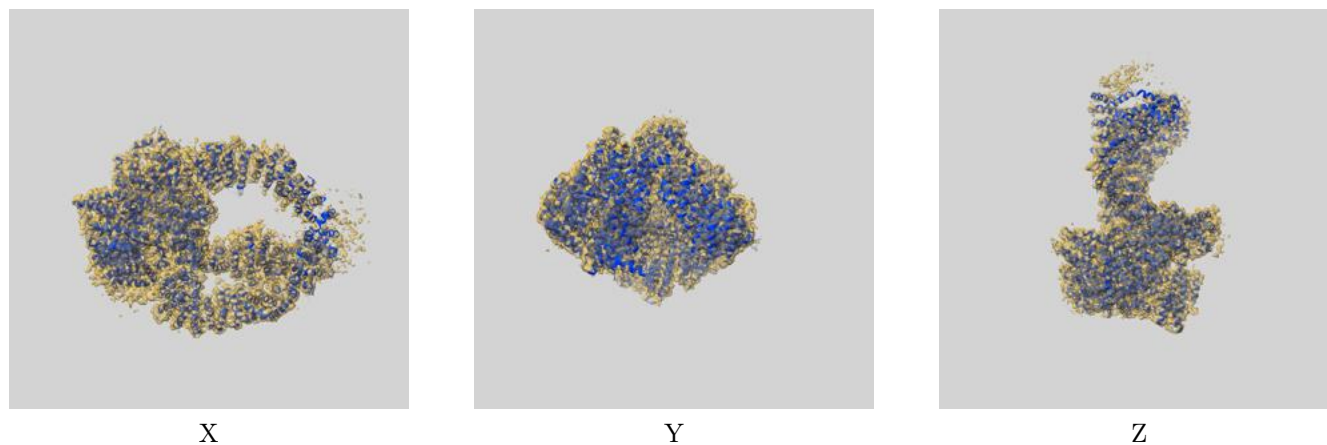
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.40	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	6.10	8.70	6.83

*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 6.10 differs from the reported value 3.4 by more than 10 %

9 Map-model fit [i](#)

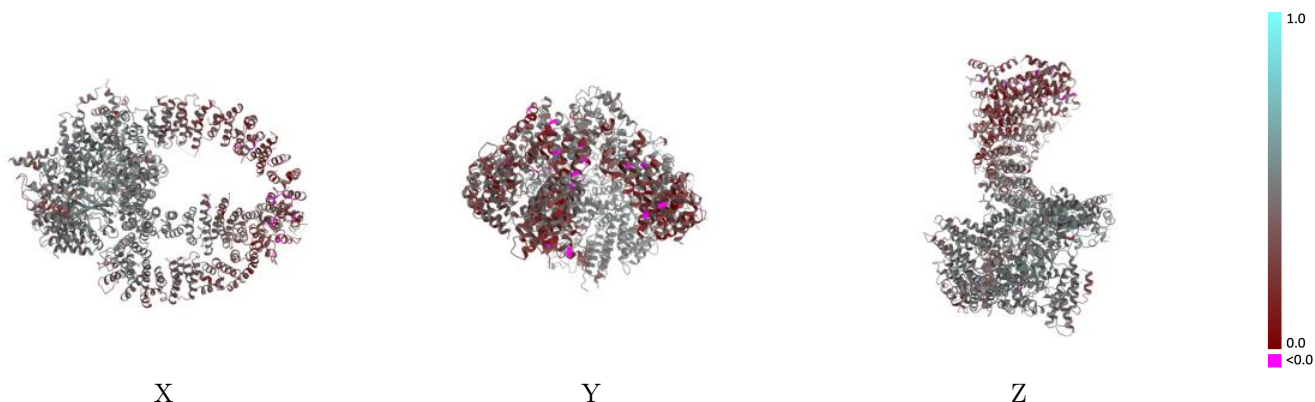
This section contains information regarding the fit between EMDB map EMD-45176 and PDB model 9C47. Per-residue inclusion information can be found in section 3 on page 4.

9.1 Map-model overlay [i](#)



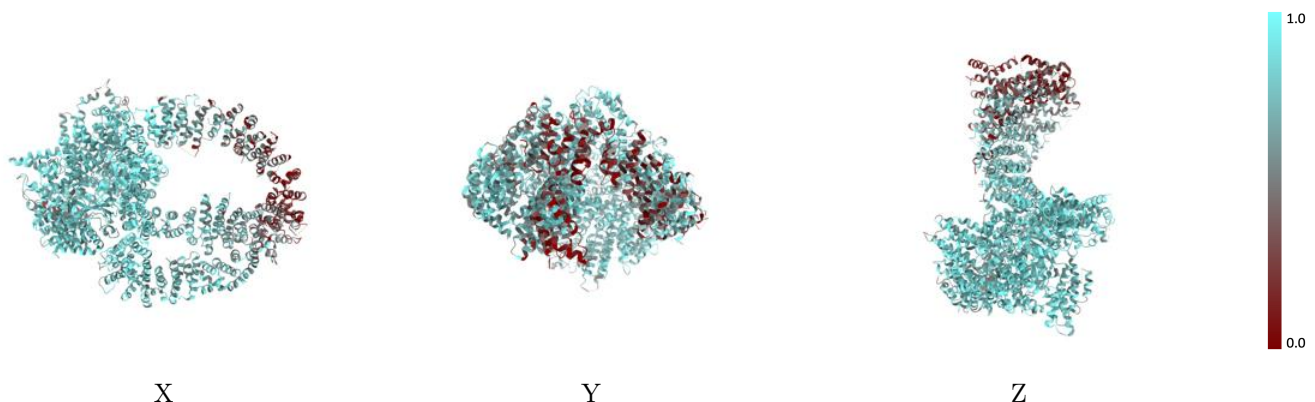
The images above show the 3D surface view of the map at the recommended contour level 0.451 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



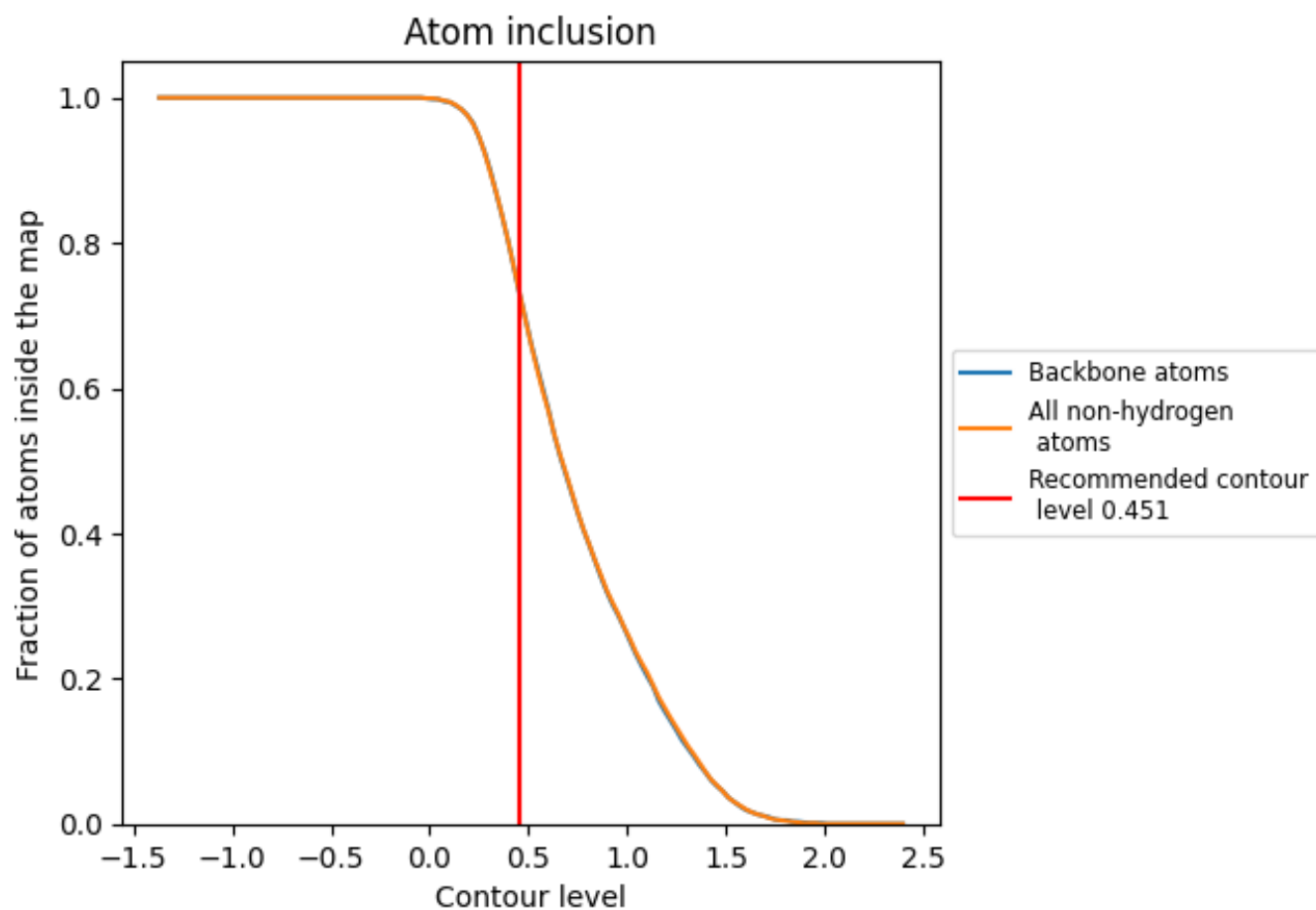
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.451).







9.4 Atom inclusion [i](#)



At the recommended contour level, 73% of all backbone atoms, 74% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.451) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7360	 0.4200
C	 0.7460	 0.4200
G	 0.7250	 0.4210

