



Full wwPDB EM Validation Report ⓘ

Aug 14, 2025 – 01:12 PM EDT

PDB ID : 9DH9 / pdb_00009dh9
EMDB ID : EMD-46860
Title : State-7-Post-2 of the motor domain from full-length human dynein-1 in 5mM AMPPNP with 5mM Mg²⁺
Authors : Chai, P.; Zhang, K.
Deposited on : 2024-09-03
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.dev126
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0rc1
buster-report : 1.1.7 (2018)
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) : 2.45.1

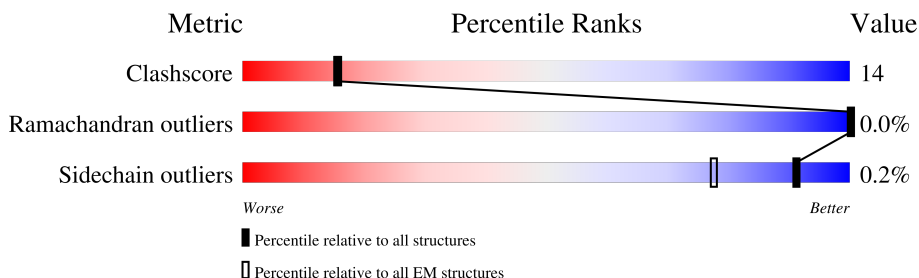
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.40 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	A	4646	

2 Entry composition [i](#)

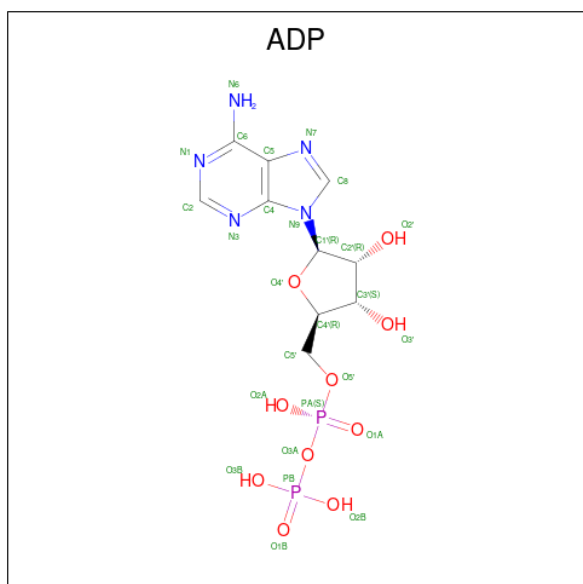
There are 5 unique types of molecules in this entry. The entry contains 23113 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Cytoplasmic dynein 1 heavy chain 1.

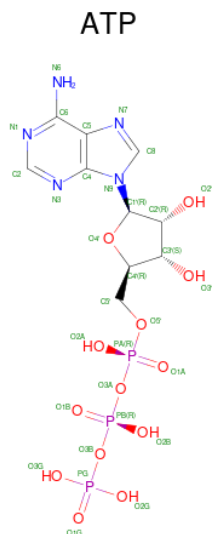
Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	2858	Total	C	N	O	S	0	0
			22994	14663	3967	4249	115		

- Molecule 2 is ADENOSINE-5'-DIPHOSPHATE (CCD ID: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$) (labeled as "Ligand of Interest" by depositor).



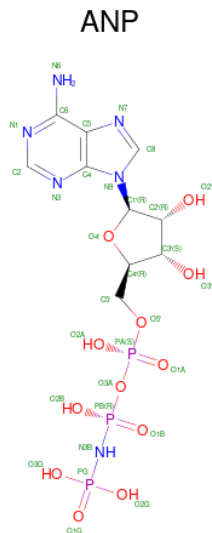
Mol	Chain	Residues	Atoms					AltConf
2	A	1	Total	C	N	O	P	0
			27	10	5	10	2	
2	A	1	Total	C	N	O	P	0
			27	10	5	10	2	

- Molecule 3 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
3	A	1	Total 31	C 10	N 5	O 13	P 3	0

- Molecule 4 is PHOSPHOAMINOPHOSPHONIC ACID-ADENYLATE ESTER (CCD ID: ANP) (formula: $\text{C}_{10}\text{H}_{17}\text{N}_6\text{O}_{12}\text{P}_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
4	A	1	Total 31	C 10	N 6	O 12	P 3	0

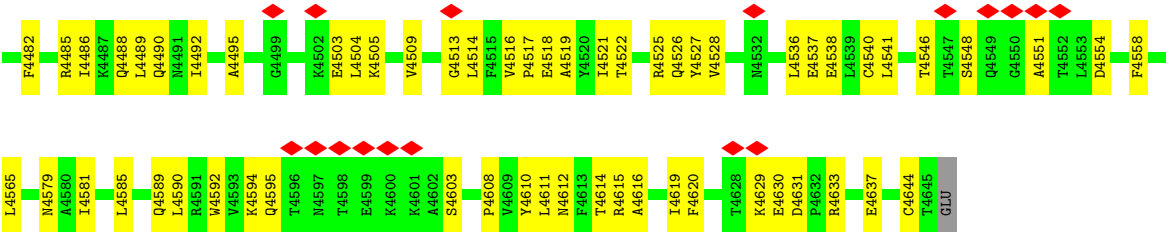
- Molecule 5 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
5	A	3	Total	Mg	0
			3	3	





L4344	I4405	L4243	V4134	F4017	I3924	F3831	G3736	N3631	R3549	ARG
K4346	K4406	K4244	P4135	M4018	Q3925	F3832	E3737	V3635	T3550	SER
Q4347	F4410		L4136	L4027	G3926	F3832	F3738	Q3636	I3550	ILE
MET		M4247	R4140		L3927	I3835	Q3739		LYS	LYS
LEU	F4413	A4248		I4030	T3928	V3839	L3740	E3639	ALA	ASP
GLU	R4143		R4143	V4035	V3929	V3839	R3743	S3640	MET	GLU
ASP	I4144	G4253	I4144	V4036	Q3930			Y3641	ASN	ASN
GLU	F4145	G4254	F4145	K4036	Q3931			L3560	LYS	PHE
ASP	V4146	R4255	F4146	P4037	A3932			R3561	ARG	ILE
ASP	F4147	V4256	F4147	A4043	E3933			VAL	VAL	ARG
LEU		D4257		M4043	A3934			GLU	GLU	PRO
ALA	T4160	I4258			I3935			ALA	ALA	THR
TYR	S4052			S4052	V3936			K3471	PRO	ILE
ALA	R4168	D4261	R4168		R3937			V3472	LEU	VAL
GLU	I4169	Q4262	I4169	V4055	D3946			T3472	ARG	ASN
THR	R4263	R4262		E4056	L3947			N3473	ASN	PHE
GLU	L4264	L4264	S4172	D4057	I3948			R3474	GLU	SER
LYS	L4269		P4173	L4058	F3868			S3475	LEU	ALA
THR	L4272		N4174	I4066	R3870			T3476	GLU	GLU
ARG			E4175	T4066	A3953			A3477	LYS	ILE
THR	L4275		R4178	T4067	D3954			L3478	GLU	SER
ASP	R4276		L4182	S4068	E3955			L3479	ASP	ASP
SER	S4277			I4071	Q3956			K3480	ASP	ALA
SER	F4278			G4072	F3957			R3481	ARG	ARG
GLY	E4281		W4185	S4073	D3962			L3482	LYS	ILE
ARG			F4186	A4074	I3961			S3483	ASP	GLU
PRO	L4284		H4187	E4075	D3966			R3485	LYS	LYS
A4375			A4188					R3486	ASN	ALA
			I4189	Q4079	V3970			E3487	ASN	TYR
			I4190					R3488	GLN	MET
			Q4191	K4082	E3976			W3489	VAL	SER
			E4192	A4083	E3977			E3490	GLU	ASN
			R4193	I4084	F3977			K3491	GLN	PRO
			L4194	A4087	T3978				MET	SER
			R4195	V4088	P3979			E3494	ILE	TYR
				K4089	T3980			T3495	ARG	ASN
			G4200		A3980			R3600	ASP	TYR
			W4201		E3898			N3601	LEU	GLU
			S4202		P3899			N3602	ILE	ILE
			K4203		T3981			E3603	ALA	VAL
					P3982				ASN	ASN
					I3983				ILE	ARG
					G3984				ALA	ALA
					Q3985				ARG	ARG
									SER	SER
									ALA	ALA
									ARG	SER
									TYR	LEU
									LYS	ALA
									GLU	CYS
									GLY	GLY
									TYR	PRO
									ALA	MET
									VAL	VAL
									LEU	LYS
									ILE	TRP
									SER	ILE
									ALA	ALA
							</			



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	87075	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS GLACIOS	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/\text{\AA}^2$)	40	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	45000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	1.822	Depositor
Minimum map value	-0.817	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.044	Depositor
Recommended contour level	0.3	Depositor
Map size (Å)	444.4032, 444.4032, 444.4032	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.1573, 1.1573, 1.1573	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: ANP, MG, ATP, ADP

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	0.23	0/23487	0.45	5/31835 (0.0%)

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	2533	PRO	CA-N-CD	-7.84	101.03	112.00
1	A	2718	PRO	CA-N-CD	-5.99	103.62	112.00
1	A	3125	TYR	CA-C-N	5.68	128.55	123.10
1	A	3125	TYR	C-N-CA	5.68	128.55	123.10
1	A	2859	PRO	CA-N-CD	-5.55	104.24	112.00

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	22994	0	23053	664	0
2	A	54	0	24	5	0
3	A	31	0	12	2	0
4	A	31	0	13	4	0
5	A	3	0	0	0	0
All	All	23113	0	23102	666	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 14.

All (666) 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:3933:GLU:OE1	1:A:3937:ARG:NH1	2.03	0.92
1:A:2227:GLY:HA2	1:A:2452:LEU:HD12	1.54	0.88
1:A:3522:GLN:HE21	1:A:3572:LEU:HB2	1.41	0.86
1:A:2346:GLN:HB2	1:A:2726:ARG:HD3	1.58	0.85
1:A:1512:TYR:HE1	1:A:3659:ARG:HH22	1.28	0.81
1:A:1488:ARG:HE	1:A:1489:GLY:H	1.25	0.80
1:A:2992:PHE:HB3	1:A:3064:VAL:HG12	1.64	0.80
1:A:3540:ASN:O	1:A:3540:ASN:ND2	2.10	0.79
1:A:3012:LEU:HB2	1:A:3088:ARG:HD3	1.65	0.78
1:A:2795:SER:HB3	1:A:3087:ASN:HD21	1.49	0.78
1:A:2923:ASP:OD2	1:A:2927:ARG:NH2	2.17	0.78
1:A:2798:GLU:OE2	1:A:2801:ARG:NH1	2.18	0.77
1:A:2768:PRO:HB2	1:A:2858:PHE:HE1	1.48	0.77
1:A:4546:THR:HG21	1:A:4589:GLN:HE21	1.49	0.76
1:A:3835:ILE:HG12	1:A:3870:ARG:HD3	1.67	0.76
1:A:4394:THR:HA	1:A:4424:LEU:HD21	1.68	0.76
1:A:4326:ASN:ND2	1:A:4579:ASN:O	2.21	0.74
1:A:2861:ILE:HD12	1:A:2865:LYS:HD2	1.70	0.74
1:A:2863:ARG:HD2	1:A:2867:MET:HG2	1.70	0.74
1:A:4068:SER:HA	1:A:4095:MET:HB3	1.68	0.74
1:A:2816:LEU:HD12	1:A:2817:PRO:HD2	1.68	0.73
1:A:3034:LYS:NZ	1:A:3044:LEU:HA	2.03	0.73
1:A:2816:LEU:HD11	1:A:2820:GLY:HA3	1.71	0.72
1:A:3519:TYR:HA	1:A:3700:ASN:HB2	1.71	0.72
1:A:3034:LYS:HZ3	1:A:3044:LEU:HA	1.54	0.71
1:A:4397:HIS:HE1	1:A:4421:ALA:HB3	1.54	0.71
1:A:2726:ARG:NH1	3:A:4702:ATP:O3G	2.24	0.70
1:A:2205:GLU:O	1:A:2209:GLN:HG3	1.93	0.68
1:A:3923:ARG:HH21	1:A:3948:ILE:HD12	1.58	0.68
1:A:2076:CYS:HA	1:A:2080:LEU:HD13	1.76	0.68
1:A:4071:ILE:HG13	1:A:4099:VAL:HG12	1.76	0.68
1:A:2220:LEU:HB2	1:A:2342:MET:HG2	1.76	0.68
1:A:3720:GLU:OE1	1:A:3855:ARG:NH1	2.26	0.67
1:A:2446:ILE:HD11	1:A:2714:PRO:HB3	1.77	0.67
1:A:2461:MET:HG2	1:A:2583:THR:HG21	1.77	0.67
1:A:2934:LEU:HD23	1:A:3091:LEU:HG	1.77	0.67
1:A:2828:GLU:OE1	1:A:2924:ARG:NH1	2.27	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3011:LEU:HB3	1:A:3017:VAL:HG23	1.77	0.67
1:A:1746:GLN:N	1:A:1746:GLN:OE1	2.28	0.67
1:A:3691:ASP:OD1	1:A:3692:LEU:N	2.29	0.66
1:A:2616:GLU:OE2	1:A:2654:GLN:NE2	2.28	0.66
1:A:2889:LEU:HD21	1:A:2920:LEU:HD21	1.78	0.66
1:A:3822:HIS:HE1	1:A:3823:PHE:CE2	2.14	0.66
1:A:2619:GLY:HA2	1:A:2662:PHE:HB3	1.77	0.66
1:A:4030:ILE:HG21	1:A:4145:PHE:HZ	1.60	0.66
1:A:1463:LEU:HD21	1:A:1507:MET:HE1	1.78	0.65
1:A:1498:LYS:HG2	1:A:1531:MET:HE1	1.77	0.65
1:A:4281:GLU:OE2	1:A:4281:GLU:N	2.30	0.65
1:A:2925:ILE:HG21	1:A:2933:LEU:HD13	1.79	0.65
1:A:4439:GLU:OE1	1:A:4439:GLU:N	2.29	0.65
1:A:1460:GLU:N	1:A:1460:GLU:OE1	2.30	0.65
1:A:2932:HIS:CE1	1:A:3066:PHE:HB3	2.32	0.65
1:A:3984:GLY:O	1:A:3988:HIS:ND1	2.26	0.65
1:A:1699:ASN:OD1	1:A:1700:GLU:N	2.31	0.64
1:A:1461:GLU:O	1:A:1464:LYS:HG2	1.96	0.64
1:A:2776:PHE:HE1	1:A:2829:ALA:HB1	1.61	0.64
1:A:2426:TYR:OH	1:A:2491:GLN:OE1	2.15	0.64
1:A:2917:ASP:O	1:A:2921:ARG:HG3	1.98	0.64
1:A:2662:PHE:HE1	1:A:2664:ASP:HB3	1.63	0.64
1:A:2915:VAL:HG23	1:A:2946:LEU:HD11	1.80	0.64
1:A:4009:VAL:HG13	1:A:4013:LEU:HD12	1.80	0.64
1:A:3037:ALA:HB1	1:A:3042:LEU:HB2	1.81	0.63
1:A:4111:LYS:HE3	1:A:4111:LYS:HA	1.78	0.63
1:A:2635:PHE:HE2	1:A:2661:LEU:HD11	1.62	0.63
1:A:4525:ARG:NH2	1:A:4536:LEU:O	2.32	0.63
1:A:1547:LEU:HD13	1:A:1550:ILE:HD11	1.80	0.63
1:A:3035:GLU:O	1:A:3039:LYS:HG3	1.99	0.63
1:A:4387:TRP:O	1:A:4391:ILE:HG12	1.98	0.63
1:A:2536:ASP:OD2	1:A:2576:ARG:NH1	2.32	0.62
1:A:4169:ILE:HG21	1:A:4302:ARG:HB2	1.80	0.62
1:A:4036:LYS:HE3	1:A:4036:LYS:HA	1.80	0.62
1:A:2418:ASP:O	1:A:2422:ILE:HD12	1.99	0.62
1:A:3723:ASP:OD1	1:A:3724:VAL:N	2.31	0.62
1:A:3764:ASP:O	1:A:3768:THR:HG23	1.98	0.62
1:A:2914:GLU:OE1	1:A:2914:GLU:N	2.31	0.62
1:A:2465:ALA:HB2	1:A:2493:TYR:CD1	2.35	0.62
1:A:4391:ILE:HG13	1:A:4428:ARG:HH12	1.65	0.62
1:A:2897:LEU:HD21	1:A:2909:LEU:HB2	1.81	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4231:GLN:N	1:A:4231:GLN:OE1	2.31	0.62
1:A:3096:ASP:OD2	1:A:3097:TRP:N	2.33	0.61
1:A:1595:GLN:OE1	1:A:1595:GLN:N	2.32	0.61
1:A:3191:ARG:O	1:A:3195:GLU:HG2	2.01	0.61
1:A:2949:PHE:CZ	1:A:2953:MET:HE3	2.35	0.61
1:A:3547:ILE:HD11	1:A:3552:TYR:CD1	2.36	0.61
1:A:4443:LYS:HD3	1:A:4444:GLN:H	1.67	0.60
1:A:2223:VAL:HG21	1:A:2348:LEU:HD22	1.81	0.60
1:A:2933:LEU:HB3	1:A:3065:VAL:HG22	1.82	0.60
1:A:1488:ARG:HE	1:A:1489:GLY:N	1.97	0.60
1:A:2776:PHE:HA	1:A:2779:MET:SD	2.42	0.60
1:A:1812:ILE:O	1:A:1816:VAL:HG23	2.01	0.60
1:A:2935:LEU:HB2	1:A:3067:THR:HG22	1.83	0.60
1:A:4257:ASP:OD1	1:A:4258:ASN:N	2.34	0.60
1:A:2415:ILE:HD11	1:A:2473:ASN:HD22	1.67	0.59
1:A:3473:ASN:OD1	1:A:3474:ARG:N	2.35	0.59
1:A:3985:GLN:O	1:A:3989:ARG:HG3	2.01	0.59
1:A:4488:GLN:O	1:A:4492:ILE:HG12	2.02	0.59
1:A:4611:LEU:HA	1:A:4644:CYS:HB2	1.84	0.59
1:A:4528:VAL:HG11	1:A:4592:TRP:HB2	1.84	0.59
1:A:3628:ARG:NH1	1:A:3628:ARG:HA	2.17	0.59
1:A:4230:ARG:HD2	1:A:4230:ARG:O	2.02	0.59
1:A:1728:GLY:O	1:A:1784:ASN:ND2	2.36	0.59
1:A:1548:GLU:OE2	1:A:1552:THR:OG1	2.21	0.59
1:A:2046:ARG:HG2	1:A:2090:LEU:HD13	1.85	0.59
1:A:3927:LEU:HD13	1:A:3931:GLN:HB3	1.83	0.59
1:A:3689:PRO:HD2	1:A:3692:LEU:HB3	1.85	0.58
1:A:3628:ARG:HA	1:A:3628:ARG:HH11	1.66	0.58
1:A:2768:PRO:HB2	1:A:2858:PHE:CE1	2.35	0.58
1:A:4168:ARG:NH2	1:A:4217:ASP:OD1	2.36	0.58
1:A:2179:ARG:NH1	1:A:2195:ASP:OD1	2.36	0.58
1:A:1783:SER:O	1:A:1787:VAL:HG23	2.03	0.58
1:A:4509:VAL:HG22	1:A:4514:LEU:HD11	1.85	0.58
1:A:3729:SER:O	1:A:3733:LYS:HG3	2.04	0.58
1:A:1526:LYS:HA	1:A:1529:ARG:HE	1.68	0.58
1:A:2290:SER:OG	1:A:2295:LEU:HD23	2.04	0.58
1:A:4035:VAL:HG22	1:A:4143:ARG:HD3	1.86	0.58
1:A:2775:GLU:HG2	1:A:2779:MET:HE1	1.86	0.57
1:A:4088:VAL:HG13	1:A:4117:GLN:HE21	1.69	0.57
1:A:2592:VAL:HG22	1:A:2710:GLY:HA3	1.86	0.57
1:A:3022:GLU:N	1:A:3022:GLU:OE2	2.37	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3930:GLU:OE2	1:A:3930:GLU:N	2.35	0.57
1:A:4413:PHE:HD2	1:A:4504:LEU:HD13	1.69	0.57
1:A:4486:ILE:O	1:A:4490:GLN:HG3	2.04	0.57
1:A:1527:LEU:HA	1:A:1530:ILE:HG22	1.86	0.57
1:A:4540:CYS:HB3	1:A:4595:GLN:HG2	1.87	0.57
1:A:2093:LEU:O	1:A:2097:LEU:HG	2.05	0.57
1:A:3641:TYR:HE1	1:A:3645:LEU:HD23	1.70	0.57
1:A:2094:LYS:HE3	2:A:4701:ADP:N3	2.20	0.57
1:A:3488:ARG:HH12	1:A:3773:LEU:HD11	1.70	0.57
1:A:4619:ILE:HG22	1:A:4620:PHE:HD1	1.70	0.57
1:A:2066:ALA:HA	1:A:2069:ILE:HG22	1.87	0.57
1:A:4175:GLU:N	1:A:4175:GLU:OE2	2.37	0.57
1:A:2995:ASP:H	1:A:2998:ASN:HD22	1.53	0.56
1:A:1638:LEU:HD12	1:A:1641:ILE:HD11	1.86	0.56
1:A:1632:VAL:HG12	1:A:1656:LYS:HE3	1.88	0.56
1:A:2940:GLY:N	2:A:4704:ADP:O2B	2.38	0.56
1:A:4193:ARG:NH2	1:A:4637:GLU:O	2.39	0.56
1:A:3822:HIS:CE1	1:A:3823:PHE:CE2	2.93	0.56
1:A:2188:GLU:OE2	1:A:2243:ARG:NH2	2.39	0.56
1:A:4522:THR:O	1:A:4526:GLN:HG3	2.06	0.56
1:A:2049:ILE:HD13	1:A:2090:LEU:HD21	1.87	0.56
1:A:4541:LEU:HD11	1:A:4590:LEU:HB3	1.88	0.56
1:A:2419:ALA:O	1:A:2423:MET:HG3	2.06	0.55
1:A:2932:HIS:ND1	1:A:3064:VAL:HG23	2.21	0.55
1:A:2797:ARG:O	1:A:2801:ARG:HG3	2.06	0.55
1:A:1647:VAL:HG21	1:A:1666:LEU:HD12	1.88	0.55
1:A:1817:HIS:CE1	1:A:1881:GLN:HG2	2.42	0.55
1:A:4194:LEU:HD23	1:A:4201:TRP:CD1	2.41	0.55
1:A:2057:GLN:OE1	1:A:2105:ARG:NH2	2.39	0.55
1:A:2181:GLU:OE2	1:A:2243:ARG:HD2	2.06	0.55
1:A:2605:LEU:O	1:A:2609:LEU:HG	2.07	0.55
1:A:2737:ASP:OD1	1:A:2738:TYR:N	2.34	0.55
1:A:1751:VAL:HG11	1:A:1878:LYS:HE3	1.87	0.54
1:A:1763:GLU:OE2	1:A:1845:TYR:OH	2.22	0.54
1:A:1947:GLY:O	1:A:1951:VAL:HG12	2.07	0.54
1:A:3208:ILE:HA	1:A:3211:THR:HG22	1.88	0.54
1:A:3474:ARG:NH2	1:A:3764:ASP:H	2.05	0.54
1:A:2415:ILE:HD13	1:A:2469:VAL:HG12	1.89	0.54
1:A:2492:ARG:HH12	1:A:2525:PRO:HG2	1.72	0.54
1:A:1486:LEU:HD22	1:A:1541:GLN:HE22	1.72	0.54
1:A:3521:ASP:O	1:A:3525:ARG:HG3	2.08	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2778:THR:O	1:A:2782:GLU:HG2	2.08	0.54
1:A:3033:CYS:SG	1:A:3050:LEU:HB3	2.48	0.54
1:A:3875:MET:HE3	1:A:3879:ASP:HB3	1.90	0.54
1:A:4172:SER:HB3	1:A:4173:PRO:HD3	1.89	0.54
1:A:3708:LEU:HD23	1:A:3809:SER:HA	1.88	0.54
1:A:4027:LEU:HG	1:A:4058:LEU:HD13	1.90	0.54
1:A:4381:HIS:HB2	1:A:4438:CYS:SG	2.47	0.54
4:A:4703:ANP:O2G	4:A:4703:ANP:O1B	2.24	0.54
1:A:2030:ASP:HA	1:A:2033:LYS:HD2	1.90	0.54
1:A:3923:ARG:HG2	1:A:3924:ILE:H	1.73	0.54
1:A:4136:VAL:O	1:A:4140:ARG:HG3	2.08	0.54
1:A:2976:LEU:O	1:A:2980:LEU:HG	2.08	0.54
1:A:4391:ILE:HG13	1:A:4428:ARG:NH1	2.22	0.54
1:A:1500:HIS:O	1:A:1504:VAL:HG23	2.07	0.53
1:A:3491:LYS:O	1:A:3495:THR:HG23	2.08	0.53
1:A:4160:THR:HG23	1:A:4212:LEU:HD21	1.90	0.53
1:A:1509:LEU:HD21	1:A:3624:GLU:HB3	1.89	0.53
1:A:1698:ILE:HD12	1:A:1701:TRP:HE1	1.72	0.53
1:A:2181:GLU:O	1:A:2185:VAL:HG23	2.07	0.53
1:A:2245:GLU:OE2	1:A:2298:ARG:NH2	2.41	0.53
1:A:1523:TRP:HA	1:A:1526:LYS:HG2	1.90	0.53
1:A:1971:VAL:O	1:A:1975:VAL:HG23	2.09	0.53
1:A:2965:ARG:HB2	1:A:3642:ASP:OD1	2.07	0.53
1:A:3763:ASP:HA	1:A:3766:ILE:HG22	1.90	0.53
1:A:1492:ASP:OD1	1:A:1493:LEU:N	2.41	0.53
1:A:2789:GLN:HE21	1:A:2838:VAL:HG21	1.73	0.53
1:A:3966:PRO:HD2	1:A:4000:ARG:HG3	1.91	0.53
1:A:1568:PHE:HA	1:A:1571:ILE:HG22	1.90	0.53
1:A:2271:ASN:OD1	1:A:2272:THR:N	2.41	0.53
1:A:2801:ARG:NH2	1:A:3087:ASN:O	2.37	0.53
1:A:3115:LEU:HD23	1:A:3143:ILE:HD12	1.90	0.53
1:A:3115:LEU:H	1:A:3140:ARG:HH21	1.55	0.53
1:A:3219:ARG:NH1	1:A:3220:ARG:HB2	2.24	0.53
1:A:3935:VAL:HG23	1:A:3947:LEU:HD23	1.90	0.53
1:A:4482:PHE:O	1:A:4486:ILE:HG12	2.07	0.53
1:A:2932:HIS:ND1	1:A:3064:VAL:O	2.41	0.53
1:A:3133:LEU:HB2	1:A:3134:PRO:HD3	1.91	0.53
1:A:1698:ILE:HD12	1:A:1701:TRP:NE1	2.24	0.53
1:A:1721:VAL:HA	1:A:1724:VAL:HG12	1.89	0.53
1:A:2133:GLU:HA	1:A:2136:ILE:HD12	1.90	0.53
1:A:2412:MET:O	1:A:2416:GLN:HG3	2.08	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2932:HIS:HE1	1:A:3066:PHE:HB3	1.72	0.53
1:A:1842:MET:HE3	1:A:1922:GLN:HG2	1.92	0.52
1:A:2564:ALA:HB3	1:A:2567:VAL:HG23	1.91	0.52
1:A:2484:GLU:HG2	1:A:2485:GLN:N	2.24	0.52
1:A:2519:ARG:HG3	1:A:2526:LEU:HD22	1.91	0.52
1:A:3038:GLN:NE2	1:A:3042:LEU:O	2.42	0.52
1:A:4201:TRP:O	1:A:4203:LYS:N	2.41	0.52
1:A:1606:ASP:O	1:A:1610:LYS:HG2	2.09	0.52
1:A:4236:ASP:OD2	1:A:4275:THR:OG1	2.27	0.52
1:A:4394:THR:HA	1:A:4424:LEU:CD2	2.38	0.52
1:A:2329:ASN:OD1	1:A:2330:GLY:N	2.43	0.52
1:A:3113:MET:O	1:A:3140:ARG:NH2	2.39	0.52
1:A:2753:ARG:O	1:A:2757:ARG:HG3	2.10	0.52
1:A:3519:TYR:HB2	1:A:3698:PHE:HB3	1.91	0.52
1:A:3928:THR:HG22	1:A:3929:VAL:H	1.75	0.52
1:A:4172:SER:HB3	1:A:4173:PRO:CD	2.39	0.52
1:A:4175:GLU:HG3	1:A:4278:PHE:HE2	1.75	0.52
1:A:2457:SER:OG	1:A:2732:PRO:HB3	2.10	0.52
1:A:4505:LYS:NZ	1:A:4554:ASP:O	2.33	0.52
1:A:1756:ILE:O	1:A:1760:GLU:HG3	2.10	0.51
1:A:2660:VAL:HG22	1:A:2707:GLN:HB2	1.91	0.51
1:A:4079:GLN:HA	1:A:4082:LYS:HE3	1.92	0.51
1:A:4187:HIS:NE2	1:A:4191:GLN:OE1	2.43	0.51
1:A:2979:VAL:HG13	1:A:2990:ILE:HG21	1.92	0.51
1:A:2982:ARG:HG2	1:A:2988:GLU:OE1	2.10	0.51
1:A:1488:ARG:NE	1:A:1489:GLY:H	2.02	0.51
1:A:2295:LEU:HA	1:A:2338:ASN:HD21	1.75	0.51
1:A:3788:ASP:OD1	1:A:3789:ILE:HD12	2.11	0.51
1:A:3932:ALA:O	1:A:3936:VAL:HG23	2.10	0.51
1:A:4565:LEU:HB2	1:A:4585:LEU:HD11	1.91	0.51
1:A:1684:VAL:HG22	1:A:1746:GLN:HE21	1.75	0.51
1:A:2265:TYR:OH	1:A:2315:LEU:HG	2.10	0.51
1:A:3580:LEU:HD23	1:A:3600:ILE:HD13	1.92	0.51
1:A:3876:LEU:HD23	1:A:4146:VAL:HG11	1.91	0.51
1:A:1912:LYS:HE2	1:A:2017:THR:CG2	2.41	0.51
1:A:4485:ARG:O	1:A:4489:LEU:HG	2.11	0.51
1:A:1727:PHE:HE1	1:A:1738:TYR:HA	1.76	0.51
1:A:2667:ASN:HB3	1:A:2723:LEU:HD11	1.92	0.51
1:A:2691:GLY:HA2	1:A:2703:LEU:HD13	1.93	0.51
1:A:2914:GLU:O	1:A:2918:HIS:CD2	2.64	0.51
1:A:2307:VAL:HG13	1:A:2345:VAL:HG11	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4378:ARG:HD3	1:A:4378:ARG:N	2.26	0.51
1:A:2791:HIS:HB2	1:A:3091:LEU:HD23	1.93	0.51
1:A:2500:TRP:CE3	1:A:2580:LEU:HD11	2.46	0.50
1:A:2464:GLN:HG2	1:A:2583:THR:HG23	1.92	0.50
1:A:4185:TRP:O	1:A:4189:ILE:HG12	2.10	0.50
1:A:1479:ASN:OD1	1:A:1480:TYR:N	2.44	0.50
1:A:3103:TYR:CE2	1:A:3107:LYS:HE2	2.46	0.50
1:A:4202:SER:OG	1:A:4261:ASP:OD2	2.29	0.50
1:A:1782:LEU:HD22	1:A:1827:LYS:HE3	1.93	0.50
1:A:1668:GLU:OE2	1:A:1668:GLU:N	2.38	0.50
1:A:2324:LEU:HD11	1:A:2332:ARG:HB3	1.92	0.50
1:A:3731:LEU:HD21	1:A:3787:THR:HG23	1.93	0.50
1:A:3612:THR:HG23	1:A:3635:VAL:HG23	1.93	0.50
1:A:4443:LYS:HD3	1:A:4444:GLN:N	2.25	0.50
1:A:1466:ILE:HG22	1:A:1523:TRP:CZ3	2.47	0.50
1:A:2060:ARG:HG2	1:A:2061:THR:HG23	1.94	0.49
1:A:2533:PRO:HD2	1:A:2533:PRO:O	2.12	0.49
1:A:3206:ARG:HA	1:A:3206:ARG:NE	2.27	0.49
1:A:3474:ARG:HE	1:A:3763:ASP:HB3	1.75	0.49
1:A:3520:PHE:CD1	1:A:3524:MET:HG2	2.48	0.49
1:A:4316:GLN:HG3	1:A:4320:TRP:CE3	2.47	0.49
1:A:2444:GLU:HB2	1:A:2510:MET:HE3	1.95	0.49
1:A:2571:THR:H	1:A:2574:THR:HB	1.77	0.49
1:A:2631:LEU:HD13	1:A:2686:MET:HE1	1.95	0.49
1:A:2969:GLY:HA2	1:A:3004:PHE:HE1	1.78	0.49
1:A:3113:MET:SD	1:A:3184:ALA:HA	2.53	0.49
1:A:3723:ASP:HA	1:A:3726:GLU:HG2	1.93	0.49
1:A:1907:PRO:HD2	1:A:2042:THR:HA	1.95	0.49
1:A:2315:LEU:HD13	1:A:2343:PHE:HZ	1.78	0.49
1:A:3006:GLU:HA	1:A:3009:ASN:HD22	1.77	0.49
1:A:4388:LEU:HD21	1:A:4431:LEU:HB3	1.94	0.49
1:A:3574:THR:O	1:A:3578:ILE:HG12	2.13	0.49
1:A:1508:LYS:HA	1:A:1513:TYR:CD1	2.48	0.49
1:A:2220:LEU:N	1:A:2341:ILE:O	2.43	0.49
1:A:2569:VAL:HG11	1:A:2747:ILE:HA	1.95	0.49
1:A:3559:ARG:O	1:A:3563:GLN:HG2	2.13	0.49
1:A:3776:GLU:O	1:A:3780:VAL:HG23	2.12	0.49
1:A:4193:ARG:NH1	1:A:4200:GLY:O	2.46	0.49
1:A:4485:ARG:HD3	1:A:4513:GLY:O	2.12	0.49
1:A:1853:VAL:HA	1:A:1856:GLN:HG3	1.95	0.49
1:A:1910:THR:HA	1:A:2044:PRO:HG3	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3821:ILE:HD11	1:A:4346:MET:HE2	1.93	0.49
1:A:4284:LEU:HD21	1:A:4296:MET:SD	2.53	0.49
1:A:4444:GLN:NE2	1:A:4449:ARG:HB2	2.28	0.49
1:A:1672:VAL:HG12	1:A:1691:SER:HA	1.95	0.49
1:A:1799:GLU:HB2	1:A:2109:GLN:NE2	2.28	0.49
1:A:2096:VAL:HG11	1:A:2141:VAL:HG22	1.95	0.49
1:A:2138:ILE:HD11	1:A:2161:LEU:HD13	1.94	0.49
1:A:2867:MET:HA	1:A:2867:MET:HE3	1.95	0.49
1:A:1799:GLU:HB2	1:A:2109:GLN:HE22	1.77	0.48
1:A:2285:ARG:HG3	1:A:2285:ARG:HH11	1.78	0.48
1:A:3128:VAL:HB	1:A:3145:ASN:OD1	2.13	0.48
1:A:1506:ALA:O	1:A:3667:GLN:NE2	2.45	0.48
1:A:2789:GLN:HB2	1:A:2792:TYR:CG	2.48	0.48
1:A:3190:LYS:HA	1:A:3193:GLU:HG2	1.95	0.48
1:A:1985:HIS:CE1	1:A:2010:PRO:HB3	2.49	0.48
1:A:3999:ASP:OD2	1:A:4000:ARG:HG2	2.14	0.48
1:A:3736:GLY:O	1:A:3740:LEU:HD23	2.13	0.48
1:A:2813:LEU:HD13	1:A:2816:LEU:HD22	1.95	0.48
1:A:3471:LYS:HB2	1:A:3474:ARG:HG2	1.94	0.48
1:A:3583:PHE:CD1	1:A:3587:PRO:HD3	2.49	0.48
1:A:3691:ASP:O	1:A:3695:ARG:HG3	2.14	0.48
1:A:3811:ILE:HD11	1:A:3864:PHE:CE1	2.48	0.48
1:A:4192:GLU:OE2	1:A:4195:ARG:NH2	2.46	0.48
1:A:1466:ILE:HA	1:A:1469:VAL:HG12	1.95	0.48
1:A:3154:LEU:HB3	1:A:3171:ILE:CD1	2.44	0.48
1:A:4128:MET:SD	1:A:4134:VAL:HG21	2.53	0.48
1:A:4226:THR:HG21	1:A:4239:PRO:HD3	1.94	0.48
1:A:1769:MET:HE1	1:A:1778:LEU:HG	1.96	0.48
1:A:2720:ARG:HG2	1:A:2720:ARG:HH11	1.79	0.48
1:A:4097:LYS:HA	1:A:4127:THR:HB	1.96	0.48
1:A:4179:LEU:HD12	1:A:4223:LEU:HD22	1.96	0.48
1:A:4211:ASP:OD2	1:A:4255:ARG:NH1	2.46	0.48
1:A:1467:ARG:HD3	1:A:1523:TRP:HZ2	1.79	0.47
1:A:1941:MET:HE2	1:A:1941:MET:HA	1.95	0.47
1:A:1959:GLU:HB3	1:A:1962:ARG:HG3	1.95	0.47
1:A:3561:ARG:NH1	1:A:3603:GLU:OE1	2.44	0.47
1:A:3907:HIS:HA	1:A:3911:GLY:HA3	1.96	0.47
1:A:4017:PHE:HD2	1:A:4018:MET:HE2	1.79	0.47
1:A:4055:VAL:CG1	1:A:4095:MET:HE1	2.44	0.47
1:A:4521:ILE:O	1:A:4525:ARG:HG3	2.13	0.47
1:A:2191:LEU:HD22	3:A:4702:ATP:C6	2.49	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2435:LYS:HA	1:A:2438:GLU:HG3	1.95	0.47
1:A:3868:PHE:HA	1:A:3883:PHE:HE2	1.79	0.47
1:A:1462:PHE:O	1:A:1466:ILE:HG12	2.14	0.47
1:A:4186:PHE:O	1:A:4190:ILE:HG12	2.14	0.47
1:A:4240:TRP:O	1:A:4244:LYS:HG3	2.14	0.47
1:A:4474:THR:HB	1:A:4477:GLN:OE1	2.14	0.47
1:A:2776:PHE:CE1	1:A:2829:ALA:HB1	2.47	0.47
1:A:2387:LEU:HD21	1:A:2463:HIS:ND1	2.30	0.47
1:A:2791:HIS:HB2	1:A:3091:LEU:CD2	2.44	0.47
1:A:2911:LEU:HD12	1:A:2915:VAL:HG13	1.97	0.47
1:A:1709:MET:O	1:A:1713:LEU:HD23	2.15	0.47
1:A:2838:VAL:O	1:A:2843:ARG:NH2	2.48	0.47
1:A:4305:PHE:O	1:A:4309:VAL:HG23	2.14	0.47
1:A:1805:ARG:HG3	1:A:1805:ARG:HH11	1.79	0.47
1:A:2492:ARG:HH22	1:A:2525:PRO:HG2	1.78	0.47
1:A:2623:SER:N	1:A:2626:THR:OG1	2.48	0.47
1:A:2826:ALA:O	1:A:2830:LEU:HD23	2.15	0.47
1:A:2994:MET:SD	1:A:3066:PHE:HB2	2.55	0.47
1:A:3154:LEU:HG	1:A:3516:TYR:CD1	2.49	0.47
1:A:3923:ARG:NH1	1:A:3923:ARG:HB2	2.29	0.47
1:A:4248:ALA:HB2	1:A:4269:LEU:HD12	1.97	0.47
1:A:1477:LEU:HB2	1:A:1485:ARG:NH1	2.30	0.47
1:A:2495:VAL:HG21	1:A:2524:VAL:HG11	1.96	0.47
1:A:1887:ARG:NH2	1:A:4253:GLY:O	2.48	0.47
1:A:1925:ARG:HG2	1:A:1925:ARG:HH11	1.79	0.47
1:A:2109:GLN:OE1	1:A:2109:GLN:HA	2.15	0.47
1:A:2751:PHE:HZ	4:A:4703:ANP:H2	1.79	0.47
1:A:3642:ASP:OD2	1:A:3644:VAL:HG12	2.14	0.47
1:A:4192:GLU:CD	1:A:4316:GLN:HE22	2.21	0.47
1:A:1571:ILE:HD11	1:A:1604:LEU:HA	1.97	0.46
1:A:1600:SER:O	1:A:1604:LEU:HG	2.15	0.46
1:A:3126:MET:N	1:A:3127:PRO:HD3	2.29	0.46
1:A:4614:THR:O	1:A:4616:ALA:N	2.48	0.46
1:A:1777:PRO:O	1:A:1780:SER:OG	2.22	0.46
1:A:4100:HIS:CE1	1:A:4101:LEU:HD23	2.51	0.46
1:A:2060:ARG:NH1	1:A:2133:GLU:OE1	2.48	0.46
1:A:2275:TRP:CG	1:A:2329:ASN:HD22	2.33	0.46
1:A:2668:LEU:CD2	1:A:3006:GLU:HG3	2.45	0.46
1:A:3892:LEU:HD11	1:A:3983:ILE:HG21	1.98	0.46
1:A:3570:ASP:OD1	1:A:3571:ASP:N	2.48	0.46
1:A:3770:LEU:O	1:A:3774:LYS:HG2	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2592:VAL:HB	1:A:2733:VAL:HG12	1.98	0.46
1:A:3908:PHE:HE1	1:A:3990:LEU:HD11	1.80	0.46
1:A:4326:ASN:HD21	1:A:4581:ILE:HG23	1.81	0.46
1:A:1914:GLU:HG3	2:A:4701:ADP:H3'	1.97	0.46
1:A:3125:TYR:O	1:A:3126:MET:HG2	2.15	0.46
1:A:3186:LEU:HD11	1:A:3553:LEU:HD22	1.97	0.46
1:A:3916:LEU:HD12	1:A:3937:ARG:HA	1.97	0.46
1:A:3928:THR:HG22	1:A:3929:VAL:N	2.31	0.46
1:A:1487:ILE:O	1:A:2271:ASN:ND2	2.49	0.46
1:A:1527:LEU:O	1:A:1530:ILE:HG22	2.16	0.46
1:A:1542:ARG:HA	1:A:1542:ARG:HD3	1.79	0.46
1:A:1697:LYS:O	1:A:1701:TRP:HD1	1.98	0.46
1:A:3520:PHE:HB3	1:A:3524:MET:HB3	1.98	0.46
1:A:4095:MET:HE2	1:A:4095:MET:HB2	1.78	0.46
1:A:2292:ARG:HB3	1:A:2292:ARG:NH1	2.31	0.46
1:A:2526:LEU:HD23	1:A:2534:ILE:HD12	1.96	0.46
1:A:2767:GLU:HB2	1:A:2768:PRO:HD3	1.97	0.46
1:A:3601:MET:HE2	1:A:3611:ARG:NH2	2.31	0.46
1:A:4516:VAL:O	1:A:4516:VAL:HG23	2.16	0.46
1:A:4631:ASP:OD1	1:A:4631:ASP:N	2.47	0.46
1:A:2577:HIS:NE2	1:A:2736:VAL:HG12	2.31	0.46
1:A:1853:VAL:HG23	1:A:1854:LEU:HD12	1.98	0.46
1:A:2718:PRO:HD2	1:A:2718:PRO:O	2.16	0.46
1:A:4608:PRO:HG2	1:A:4610:TYR:HE2	1.81	0.46
1:A:1543:ARG:HB2	1:A:1608:LEU:HD13	1.97	0.45
1:A:3207:LYS:HZ2	1:A:3754:ASN:HB2	1.81	0.45
1:A:1465:GLN:HA	1:A:1468:GLU:HG3	1.98	0.45
1:A:1844:PHE:CD2	1:A:1859:ILE:HG12	2.50	0.45
1:A:2185:VAL:HA	1:A:2188:GLU:HG2	1.98	0.45
1:A:2511:ARG:NH2	1:A:2735:TYR:O	2.48	0.45
1:A:2581:LEU:HD11	1:A:2605:LEU:HD23	1.98	0.45
1:A:4243:LEU:HB3	1:A:4247:MET:HE2	1.99	0.45
1:A:4087:ALA:HA	1:A:4092:ARG:HG2	1.97	0.45
1:A:2018:MET:HE3	1:A:2018:MET:HB3	1.79	0.45
1:A:4470:PRO:HG3	1:A:4612:ASN:HD22	1.82	0.45
1:A:1839:LEU:O	1:A:1843:ARG:NH1	2.49	0.45
1:A:2248:GLU:HB3	1:A:2297:LYS:HG2	1.99	0.45
1:A:2999:VAL:HA	1:A:3004:PHE:HD2	1.81	0.45
1:A:3562:TRP:HB3	1:A:3567:LEU:HD22	1.98	0.45
1:A:1513:TYR:CZ	1:A:1517:GLU:HG2	2.52	0.45
1:A:1574:GLU:OE2	1:A:1603:ARG:NH1	2.50	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1967:MET:O	1:A:1971:VAL:HG23	2.17	0.45
1:A:3036:GLY:HA2	1:A:3039:LYS:HE3	1.97	0.45
1:A:2179:ARG:HG2	1:A:2193:TYR:OH	2.16	0.45
1:A:2304:ASP:OD1	1:A:2684:ARG:NH2	2.49	0.45
1:A:3191:ARG:HE	1:A:3500:MET:CE	2.30	0.45
1:A:3551:GLU:OE2	1:A:3551:GLU:N	2.43	0.45
1:A:4192:GLU:OE2	1:A:4316:GLN:NE2	2.32	0.45
1:A:4548:SER:HB3	1:A:4551:ALA:HB2	1.99	0.45
1:A:1469:VAL:O	1:A:1473:TYR:HB2	2.17	0.45
1:A:1477:LEU:HB2	1:A:1485:ARG:HH12	1.82	0.45
1:A:2960:GLN:HB2	1:A:2962:LYS:NZ	2.32	0.45
1:A:2465:ALA:HB2	1:A:2493:TYR:CE1	2.51	0.45
1:A:2568:VAL:HG22	1:A:2603:MET:SD	2.56	0.45
1:A:4395:LEU:H	1:A:4395:LEU:HD23	1.81	0.45
1:A:1903:SER:HA	1:A:2016:ILE:O	2.17	0.45
1:A:1912:LYS:O	1:A:1916:VAL:HG23	2.17	0.45
1:A:3518:GLY:O	1:A:3519:TYR:HB3	2.17	0.45
1:A:3875:MET:HE1	1:A:3883:PHE:HB2	1.98	0.44
1:A:3913:GLU:HG3	1:A:3913:GLU:O	2.17	0.44
1:A:3961:LEU:O	1:A:3997:ARG:HD2	2.17	0.44
1:A:4037:PRO:HB2	1:A:4117:GLN:OE1	2.17	0.44
1:A:4517:PRO:HG2	1:A:4619:ILE:HD12	1.99	0.44
1:A:1513:TYR:OH	1:A:1517:GLU:HG2	2.17	0.44
1:A:2225:PRO:HD2	1:A:2364:PHE:O	2.17	0.44
1:A:3208:ILE:O	1:A:3212:VAL:HG23	2.17	0.44
1:A:4052:SER:O	1:A:4056:GLU:HB2	2.18	0.44
1:A:4631:ASP:OD2	1:A:4633:ARG:NH1	2.50	0.44
4:A:4703:ANP:N3B	4:A:4703:ANP:O1A	2.49	0.44
1:A:1571:ILE:HD11	1:A:1604:LEU:HD23	1.99	0.44
1:A:1640:ILE:HG23	1:A:1650:LEU:HD21	1.99	0.44
1:A:1735:PRO:O	1:A:1739:ILE:HG12	2.17	0.44
1:A:1836:PHE:CE1	1:A:1840:SER:HB2	2.52	0.44
1:A:4518:GLU:OE2	1:A:4518:GLU:N	2.46	0.44
1:A:1698:ILE:HA	1:A:1701:TRP:NE1	2.32	0.44
1:A:3568:PRO:HG2	1:A:3573:CYS:SG	2.57	0.44
1:A:3739:GLN:O	1:A:3743:ARG:HG2	2.17	0.44
1:A:4516:VAL:HG23	1:A:4519:ALA:HB3	1.99	0.44
1:A:1521:LEU:HA	1:A:1524:GLU:HG2	1.99	0.44
1:A:2518:ILE:O	1:A:2522:THR:HG22	2.17	0.44
1:A:2963:VAL:HG21	1:A:2998:ASN:HA	2.00	0.44
1:A:2982:ARG:NH1	1:A:2988:GLU:OE1	2.51	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4418:LYS:O	1:A:4422:LYS:HG2	2.18	0.44
1:A:1666:LEU:HD23	1:A:1673:VAL:HA	1.99	0.44
1:A:1703:THR:O	1:A:1706:GLU:HG2	2.18	0.44
1:A:2113:ARG:HG2	1:A:2113:ARG:O	2.17	0.44
1:A:2578:GLU:OE2	1:A:2582:TYR:OH	2.34	0.44
1:A:3474:ARG:HH21	1:A:3763:ASP:HB3	1.82	0.44
1:A:4066:ILE:HD13	1:A:4095:MET:HE2	1.99	0.44
1:A:4378:ARG:HD3	1:A:4378:ARG:H	1.82	0.44
1:A:1639:GLU:O	1:A:1643:ASN:HB2	2.17	0.44
1:A:1803:LEU:HG	1:A:1807:LYS:HE3	1.99	0.44
1:A:1857:LEU:HD23	1:A:1868:TYR:HB2	2.00	0.44
1:A:2793:ILE:HD13	1:A:3087:ASN:HB2	1.99	0.44
1:A:3764:ASP:O	1:A:3767:ILE:HG22	2.18	0.44
1:A:4614:THR:O	1:A:4614:THR:OG1	2.36	0.44
1:A:2238:LEU:HB2	1:A:2300:TRP:CZ3	2.53	0.44
1:A:3839:VAL:HG21	1:A:3863:LEU:HA	2.00	0.44
1:A:4537:GLU:HG3	1:A:4538:GLU:HG3	1.99	0.44
1:A:4603:SER:O	1:A:4603:SER:OG	2.36	0.44
1:A:4610:TYR:CE1	1:A:4615:ARG:HB3	2.53	0.44
1:A:1604:LEU:O	1:A:1608:LEU:HG	2.18	0.43
1:A:1782:LEU:O	1:A:1786:GLU:HG2	2.17	0.43
1:A:3191:ARG:HH21	1:A:3500:MET:HE3	1.83	0.43
1:A:3478:LEU:O	1:A:3482:LEU:HD23	2.17	0.43
1:A:3540:ASN:HD22	1:A:3540:ASN:C	2.04	0.43
1:A:4431:LEU:HA	1:A:4434:VAL:HG22	1.99	0.43
1:A:2658:TRP:CD2	1:A:2705:ARG:HA	2.53	0.43
1:A:3788:ASP:HA	1:A:3791:MET:HG3	2.00	0.43
1:A:3886:LEU:HD11	1:A:4346:MET:HE3	1.99	0.43
1:A:3981:THR:O	1:A:3982:PRO:C	2.61	0.43
1:A:4413:PHE:CE2	1:A:4504:LEU:HD22	2.53	0.43
1:A:2777:TYR:CE1	1:A:2781:GLN:HG3	2.52	0.43
1:A:2845:TRP:CE2	1:A:2849:ASN:ND2	2.81	0.43
1:A:3614:PHE:HD2	1:A:3640:SER:O	2.00	0.43
1:A:3899:PRO:HG2	1:A:3901:TYR:CZ	2.53	0.43
1:A:1690:VAL:HG21	1:A:1704:LEU:HB3	2.01	0.43
1:A:3691:ASP:HB2	1:A:3695:ARG:HH12	1.84	0.43
1:A:4518:GLU:H	1:A:4518:GLU:CD	2.26	0.43
1:A:1574:GLU:OE1	1:A:1603:ARG:NH2	2.52	0.43
1:A:1755:GLN:NE2	1:A:1814:GLU:OE1	2.52	0.43
1:A:2486:LEU:O	1:A:2490:ILE:HG12	2.18	0.43
1:A:2518:ILE:HA	1:A:2521:ILE:HG12	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2736:VAL:HG23	1:A:2736:VAL:O	2.19	0.43
1:A:2923:ASP:OD1	1:A:2954:ASN:ND2	2.36	0.43
1:A:3733:LYS:HB3	1:A:3737:GLU:HB3	2.01	0.43
1:A:3966:PRO:CD	1:A:4000:ARG:HG3	2.48	0.43
1:A:4431:LEU:O	1:A:4435:VAL:HG23	2.19	0.43
1:A:4444:GLN:OE1	1:A:4449:ARG:NH2	2.39	0.43
1:A:1878:LYS:HE2	1:A:1878:LYS:HB2	1.75	0.43
1:A:2454:CYS:HB2	1:A:2502:LEU:HD12	2.00	0.43
1:A:2762:LEU:HD13	1:A:2821:LEU:HD22	2.00	0.43
1:A:4336:GLY:O	1:A:4340:ILE:HG12	2.19	0.43
1:A:4400:ARG:HH21	1:A:4405:ILE:HD11	1.84	0.43
1:A:4611:LEU:HB2	1:A:4619:ILE:HD11	2.00	0.43
1:A:1512:TYR:HE1	1:A:3659:ARG:NH2	2.07	0.43
1:A:3167:ARG:HG3	1:A:3519:TYR:OH	2.18	0.43
1:A:3851:ASP:O	1:A:3855:ARG:HG3	2.18	0.43
1:A:4594:LYS:HE3	1:A:4594:LYS:HB3	1.88	0.43
1:A:1853:VAL:HA	1:A:1856:GLN:HE21	1.84	0.43
1:A:1879:LEU:HD22	2:A:4701:ADP:C4	2.54	0.43
1:A:2590:PRO:HB3	1:A:2708:PHE:HB2	2.01	0.43
1:A:1590:ASP:HA	1:A:1593:ASN:OD1	2.19	0.43
1:A:2739:PRO:HD2	1:A:2796:PRO:HG3	2.01	0.43
1:A:4084:ILE:HA	1:A:4094:VAL:HG21	2.01	0.43
1:A:4193:ARG:NH1	1:A:4264:LEU:HD21	2.34	0.43
1:A:1518:GLU:H	1:A:1518:GLU:CD	2.23	0.43
1:A:2043:LYS:HE2	1:A:2043:LYS:HB3	1.93	0.43
1:A:2581:LEU:HD21	1:A:2609:LEU:HD23	2.01	0.43
1:A:2795:SER:OG	1:A:2797:ARG:HB2	2.19	0.43
1:A:3031:THR:O	1:A:3034:LYS:HB2	2.19	0.43
1:A:3103:TYR:CZ	1:A:3107:LYS:HE2	2.54	0.43
1:A:3537:GLN:OE1	1:A:3537:GLN:HA	2.19	0.43
1:A:4055:VAL:HG11	1:A:4095:MET:HE1	2.00	0.43
1:A:1547:LEU:HA	1:A:1550:ILE:HG12	2.01	0.42
1:A:2538:GLU:HG2	1:A:2539:VAL:N	2.34	0.42
1:A:3653:VAL:HG21	1:A:3655:ARG:HH12	1.84	0.42
1:A:3707:SER:O	1:A:3711:GLN:HG3	2.19	0.42
1:A:4189:ILE:O	1:A:4193:ARG:HG3	2.19	0.42
1:A:2797:ARG:HA	1:A:2800:THR:HG22	1.99	0.42
1:A:2318:VAL:HG13	1:A:2319:LEU:HD12	2.00	0.42
1:A:2590:PRO:HG2	1:A:2731:VAL:HG12	2.01	0.42
1:A:2872:LEU:HD12	1:A:2889:LEU:HD23	2.00	0.42
1:A:3212:VAL:HA	1:A:3215:VAL:HG12	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3749:LEU:HD13	1:A:3773:LEU:HD22	2.01	0.42
1:A:4043:MET:HE2	1:A:4147:PHE:HE2	1.84	0.42
1:A:4306:VAL:O	1:A:4309:VAL:N	2.52	0.42
1:A:4504:LEU:HD23	1:A:4504:LEU:HA	1.88	0.42
1:A:2065:LEU:HD23	1:A:2065:LEU:HA	1.89	0.42
1:A:3098:SER:OG	1:A:3099:THR:N	2.52	0.42
1:A:3502:THR:HG23	1:A:3502:THR:O	2.19	0.42
1:A:3558:GLU:OE2	1:A:3581:LYS:HE3	2.20	0.42
1:A:1827:LYS:HE2	1:A:1827:LYS:HB2	1.85	0.42
1:A:1887:ARG:NH2	1:A:4262:GLN:OE1	2.52	0.42
1:A:2201:GLY:O	1:A:2205:GLU:HG2	2.19	0.42
1:A:2231:SER:HA	1:A:2234:TRP:NE1	2.34	0.42
1:A:2777:TYR:HE1	1:A:2794:TYR:HB3	1.84	0.42
1:A:2828:GLU:OE1	1:A:2828:GLU:HA	2.20	0.42
1:A:2948:ARG:HH11	1:A:2948:ARG:HG2	1.84	0.42
1:A:3162:ALA:HA	1:A:3166:GLY:HA2	2.01	0.42
1:A:4096:LEU:HB3	1:A:4099:VAL:HG11	2.01	0.42
1:A:2605:LEU:HD22	1:A:2709:VAL:HG11	2.01	0.42
1:A:3132:LYS:NZ	1:A:3137:PRO:HB3	2.33	0.42
1:A:3491:LYS:HB3	1:A:3491:LYS:HE3	1.77	0.42
1:A:3591:ASP:OD1	1:A:3596:ALA:HB3	2.20	0.42
1:A:3831:PHE:HZ	1:A:3870:ARG:HB3	1.84	0.42
1:A:4629:LYS:HG2	1:A:4630:GLU:OE1	2.20	0.42
1:A:1651:GLN:OE1	1:A:1663:SER:OG	2.29	0.42
1:A:2041:MET:HE2	1:A:2041:MET:HB3	1.83	0.42
1:A:2822:ILE:CG2	1:A:2865:LYS:HD3	2.50	0.42
1:A:3046:SER:O	1:A:3050:LEU:HG	2.19	0.42
1:A:3822:HIS:HE1	1:A:3823:PHE:CZ	2.36	0.42
1:A:1623:ARG:NE	1:A:1637:LEU:HD22	2.35	0.42
1:A:2603:MET:HE1	4:A:4703:ANP:H2'	2.01	0.42
1:A:3970:VAL:HB	1:A:3989:ARG:HD3	2.02	0.42
1:A:4096:LEU:HB3	1:A:4099:VAL:CG1	2.50	0.42
1:A:2590:PRO:HG3	1:A:2687:VAL:HG21	2.01	0.42
1:A:3626:ALA:HB1	1:A:3631:ASN:O	2.19	0.42
1:A:1594:ILE:HG13	1:A:1597:VAL:HB	2.02	0.42
1:A:1998:THR:HG23	1:A:2006:VAL:C	2.45	0.42
1:A:1599:ARG:HH11	1:A:1603:ARG:HE	1.68	0.41
1:A:2613:PRO:HD2	1:A:2614:ASP:H	1.84	0.41
1:A:3101:ALA:O	1:A:3105:VAL:HG23	2.19	0.41
1:A:4410:PHE:O	1:A:4414:GLU:OE2	2.37	0.41
1:A:1558:LYS:N	1:A:1558:LYS:HD3	2.35	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1620:GLU:OE1	1:A:1620:GLU:HA	2.20	0.41
1:A:1992:LYS:HD2	1:A:1992:LYS:HA	1.67	0.41
1:A:2247:VAL:HG13	1:A:2298:ARG:HH12	1.84	0.41
1:A:3708:LEU:HD22	1:A:3812:TYR:CD2	2.54	0.41
1:A:4446:ASN:N	1:A:4446:ASN:OD1	2.53	0.41
1:A:1571:ILE:HD13	1:A:1607:LEU:HD12	2.03	0.41
1:A:2195:ASP:O	1:A:2198:GLU:HG2	2.21	0.41
1:A:2562:VAL:HG11	1:A:2807:PHE:CD1	2.55	0.41
1:A:2783:ARG:HD3	1:A:2845:TRP:CH2	2.55	0.41
1:A:2872:LEU:HD12	1:A:2920:LEU:HD11	2.01	0.41
1:A:4182:LEU:HD11	1:A:4277:SER:OG	2.21	0.41
1:A:4384:ALA:O	1:A:4388:LEU:HD23	2.21	0.41
1:A:1475:LEU:HD12	1:A:1591:VAL:HG21	2.01	0.41
1:A:1940:ALA:O	1:A:1944:ILE:HG13	2.21	0.41
1:A:2922:ILE:HG12	1:A:2933:LEU:HD21	2.02	0.41
1:A:3614:PHE:HE2	1:A:3641:TYR:HA	1.86	0.41
1:A:3815:MET:HE2	1:A:3832:PHE:HB2	2.01	0.41
1:A:3989:ARG:HB2	1:A:4004:MET:CE	2.50	0.41
1:A:1938:PHE:CE2	1:A:1967:MET:HG2	2.56	0.41
1:A:2042:THR:HG21	1:A:4257:ASP:HB2	2.02	0.41
1:A:2527:PRO:HD3	1:A:2545:TRP:CD1	2.56	0.41
1:A:2974:GLU:HA	1:A:2977:ARG:HH11	1.85	0.41
1:A:2992:PHE:HE2	1:A:3008:MET:HE1	1.86	0.41
1:A:3614:PHE:CE2	1:A:3641:TYR:HA	2.56	0.41
1:A:4431:LEU:HD21	1:A:4464:TRP:HH2	1.86	0.41
1:A:4460:LEU:HA	1:A:4475:VAL:HG22	2.02	0.41
1:A:1591:VAL:O	1:A:1594:ILE:HG12	2.20	0.41
1:A:2461:MET:CE	1:A:2497:ALA:HA	2.51	0.41
1:A:2924:ARG:O	1:A:2927:ARG:HG2	2.21	0.41
1:A:3123:PRO:HG2	1:A:3126:MET:HE1	2.03	0.41
1:A:4201:TRP:O	1:A:4202:SER:OG	2.38	0.41
1:A:4223:LEU:HD12	1:A:4223:LEU:HA	1.88	0.41
1:A:1579:MET:HA	1:A:1582:VAL:HG12	2.03	0.41
1:A:2137:LEU:O	1:A:2141:VAL:HG23	2.21	0.41
1:A:2495:VAL:O	1:A:2499:LEU:HD23	2.21	0.41
1:A:2728:LEU:HD23	1:A:2728:LEU:HA	1.92	0.41
1:A:3636:GLN:HA	1:A:3680:SER:O	2.19	0.41
1:A:3909:LEU:C	1:A:4344:LEU:HD21	2.46	0.41
1:A:4185:TRP:HD1	1:A:4272:LEU:HD11	1.85	0.41
1:A:1508:LYS:HG2	1:A:1513:TYR:CE1	2.56	0.41
1:A:2073:PHE:HZ	1:A:2096:VAL:HG21	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2347:ASP:OD2	1:A:2348:LEU:N	2.53	0.41
1:A:2995:ASP:CG	1:A:2996:GLU:H	2.29	0.41
1:A:3923:ARG:HG2	1:A:3924:ILE:N	2.35	0.41
1:A:1498:LYS:HA	1:A:1501:ILE:HG12	2.02	0.41
1:A:1539:ASP:O	1:A:1543:ARG:HG2	2.21	0.41
1:A:1661:VAL:HG22	1:A:1676:ILE:HD12	2.01	0.41
1:A:2175:MET:HE2	1:A:2175:MET:HB3	1.81	0.41
1:A:2320:ASP:OD1	1:A:2358:ARG:NH1	2.54	0.41
1:A:2679:VAL:O	1:A:2683:ILE:HG13	2.21	0.41
1:A:2920:LEU:HD23	1:A:2920:LEU:HA	1.94	0.41
1:A:3513:PHE:HZ	1:A:3575:GLU:HB3	1.86	0.41
1:A:3549:ARG:H	1:A:3549:ARG:HG2	1.56	0.41
1:A:3892:LEU:HD12	1:A:3892:LEU:HA	1.81	0.41
1:A:3957:PHE:CE2	1:A:3961:LEU:HD21	2.55	0.41
1:A:4027:LEU:H	1:A:4027:LEU:HD23	1.86	0.41
1:A:2230:LYS:HE3	1:A:2345:VAL:O	2.21	0.41
1:A:2285:ARG:HG3	1:A:2285:ARG:NH1	2.36	0.41
1:A:2484:GLU:O	1:A:2488:ARG:HG3	2.21	0.41
1:A:3923:ARG:HD2	1:A:3927:LEU:HG	2.02	0.41
1:A:4448:LEU:O	1:A:4452:ILE:HG12	2.21	0.41
1:A:1587:LEU:O	1:A:1591:VAL:HG23	2.21	0.40
1:A:3141:GLU:H	1:A:3141:GLU:HG3	1.67	0.40
1:A:3474:ARG:NH2	1:A:3764:ASP:N	2.67	0.40
1:A:3566:SER:OG	1:A:3602:ASN:ND2	2.50	0.40
1:A:3639:GLU:OE2	1:A:3681:THR:OG1	2.39	0.40
1:A:3873:ARG:HD3	1:A:3873:ARG:HA	1.82	0.40
1:A:4248:ALA:O	1:A:4262:GLN:NE2	2.48	0.40
1:A:4297:PRO:HB3	1:A:4308:TRP:CD1	2.56	0.40
1:A:4401:THR:HG22	1:A:4403:GLU:HG3	2.03	0.40
1:A:1912:LYS:NZ	2:A:4701:ADP:O2B	2.53	0.40
1:A:2797:ARG:O	1:A:2800:THR:HG22	2.22	0.40
1:A:3881:ILE:HD13	1:A:4006:HIS:ND1	2.36	0.40
1:A:4379:THR:HA	1:A:4382:THR:HG22	2.02	0.40
1:A:4527:TYR:HD2	1:A:4558:PHE:HZ	1.70	0.40
1:A:1556:ASP:OD2	1:A:1644:SER:OG	2.36	0.40
1:A:1557:ILE:HG23	1:A:1558:LYS:HD3	2.02	0.40
1:A:1565:THR:O	1:A:1569:GLN:HG3	2.21	0.40
1:A:2759:ILE:HG13	1:A:2759:ILE:O	2.21	0.40
1:A:2819:GLU:HA	1:A:2865:LYS:NZ	2.37	0.40
1:A:2890:ARG:HG2	1:A:2894:LYS:HE3	2.02	0.40
1:A:3586:TYR:HA	1:A:3587:PRO:HD3	1.97	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4178:ARG:NH1	1:A:4296:MET:HE2	2.36	0.40
1:A:4445:THR:HG23	1:A:4448:LEU:H	1.86	0.40
1:A:2464:GLN:CB	1:A:2583:THR:HG23	2.51	0.40
1:A:2471:GLN:OE1	1:A:2471:GLN:HA	2.22	0.40
1:A:3128:VAL:HG11	1:A:3148:VAL:HG13	2.04	0.40
1:A:3215:VAL:HG21	1:A:3478:LEU:HD23	2.04	0.40
1:A:3485:GLU:O	1:A:3489:TRP:CD1	2.75	0.40
1:A:1506:ALA:HB1	1:A:3667:GLN:NE2	2.36	0.40
1:A:2016:ILE:HD12	1:A:2036:PHE:CZ	2.57	0.40
1:A:2561:LYS:O	1:A:2567:VAL:HG21	2.21	0.40
1:A:2823:ARG:NH2	1:A:2871:ILE:HA	2.37	0.40
1:A:2914:GLU:O	1:A:2918:HIS:HD2	2.03	0.40
1:A:3779:GLU:HG2	1:A:3782:ARG:HH12	1.85	0.40
1:A:4495:ALA:HB1	1:A:4503:GLU:OE1	2.22	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	2844/4646 (61%)	2751 (97%)	92 (3%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	4172	SER

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	2544/4125 (62%)	2538 (100%)	6 (0%)	92 96

All (6) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2572	LEU
1	A	2901	TYR
1	A	2904	GLU
1	A	3540	ASN
1	A	3978	THR
1	A	4391	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (28) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1748	GLN
1	A	1881	GLN
1	A	1979	GLN
1	A	1985	HIS
1	A	2003	ASN
1	A	2067	ASN
1	A	2139	GLN
1	A	2263	HIS
1	A	2414	GLN
1	A	2476	HIS
1	A	2685	GLN
1	A	2789	GLN
1	A	2827	HIS
1	A	3087	ASN
1	A	3104	GLN
1	A	3185	ASN
1	A	3188	HIS
1	A	3538	GLN
1	A	3584	ASN
1	A	3667	GLN
1	A	3799	GLN
1	A	3822	HIS
1	A	3956	GLN

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Mol	Chain	Res	Type
1	A	4029	HIS
1	A	4117	GLN
1	A	4404	ASN
1	A	4526	GLN
1	A	4566	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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 7 ligands modelled in this entry, 3 are monoatomic - leaving 4 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
4	ANP	A	4703	5	29,33,33	1.14	4 (13%)	31,52,52	0.91	1 (3%)
3	ATP	A	4702	5	28,33,33	0.66	0	34,52,52	0.60	1 (2%)
2	ADP	A	4701	5	24,29,29	0.87	0	29,45,45	1.23	2 (6%)
2	ADP	A	4704	-	24,29,29	0.87	0	29,45,45	1.22	2 (6%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns.

'-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	ANP	A	4703	5	-	3/14/38/38	0/3/3/3
3	ATP	A	4702	5	-	7/18/38/38	0/3/3/3
2	ADP	A	4701	5	-	2/12/32/32	0/3/3/3
2	ADP	A	4704	-	-	3/12/32/32	0/3/3/3

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	4703	ANP	PB-O3A	-2.53	1.55	1.59
4	A	4703	ANP	PG-O1G	2.49	1.49	1.46
4	A	4703	ANP	PG-N3B	2.38	1.69	1.63
4	A	4703	ANP	PB-O1B	2.24	1.49	1.46

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	4701	ADP	N3-C2-N1	-3.73	123.61	128.67
2	A	4704	ADP	N3-C2-N1	-3.65	123.71	128.67
2	A	4701	ADP	C4-C5-N7	-2.73	106.45	109.34
2	A	4704	ADP	C4-C5-N7	-2.59	106.60	109.34
4	A	4703	ANP	C5-C6-N6	2.35	123.89	120.31
3	A	4702	ATP	C5-C6-N6	2.34	123.87	120.31

There are no chirality outliers.

All (15) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	4701	ADP	C5'-O5'-PA-O2A
2	A	4704	ADP	C5'-O5'-PA-O1A
3	A	4702	ATP	PB-O3B-PG-O3G
3	A	4702	ATP	C5'-O5'-PA-O1A
3	A	4702	ATP	C5'-O5'-PA-O3A
4	A	4703	ANP	PB-N3B-PG-O1G
4	A	4703	ANP	PG-N3B-PB-O1B
4	A	4703	ANP	PG-N3B-PB-O3A
2	A	4704	ADP	C3'-C4'-C5'-O5'
2	A	4704	ADP	O4'-C4'-C5'-O5'
3	A	4702	ATP	PB-O3B-PG-O1G
2	A	4701	ADP	C5'-O5'-PA-O3A
3	A	4702	ATP	C5'-O5'-PA-O2A

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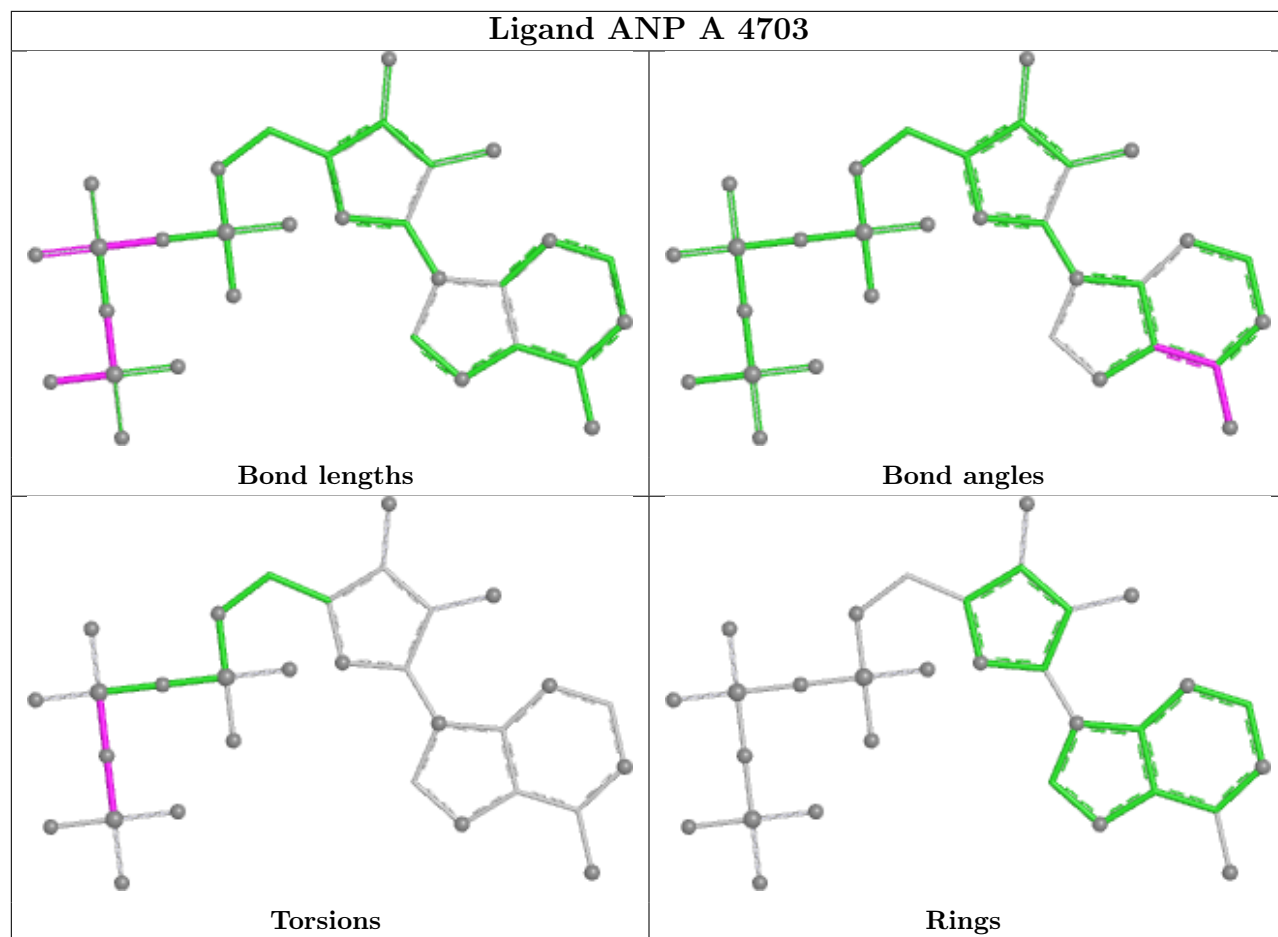
Mol	Chain	Res	Type	Atoms
3	A	4702	ATP	PG-O3B-PB-O2B
3	A	4702	ATP	PA-O3A-PB-O2B

There are no ring outliers.

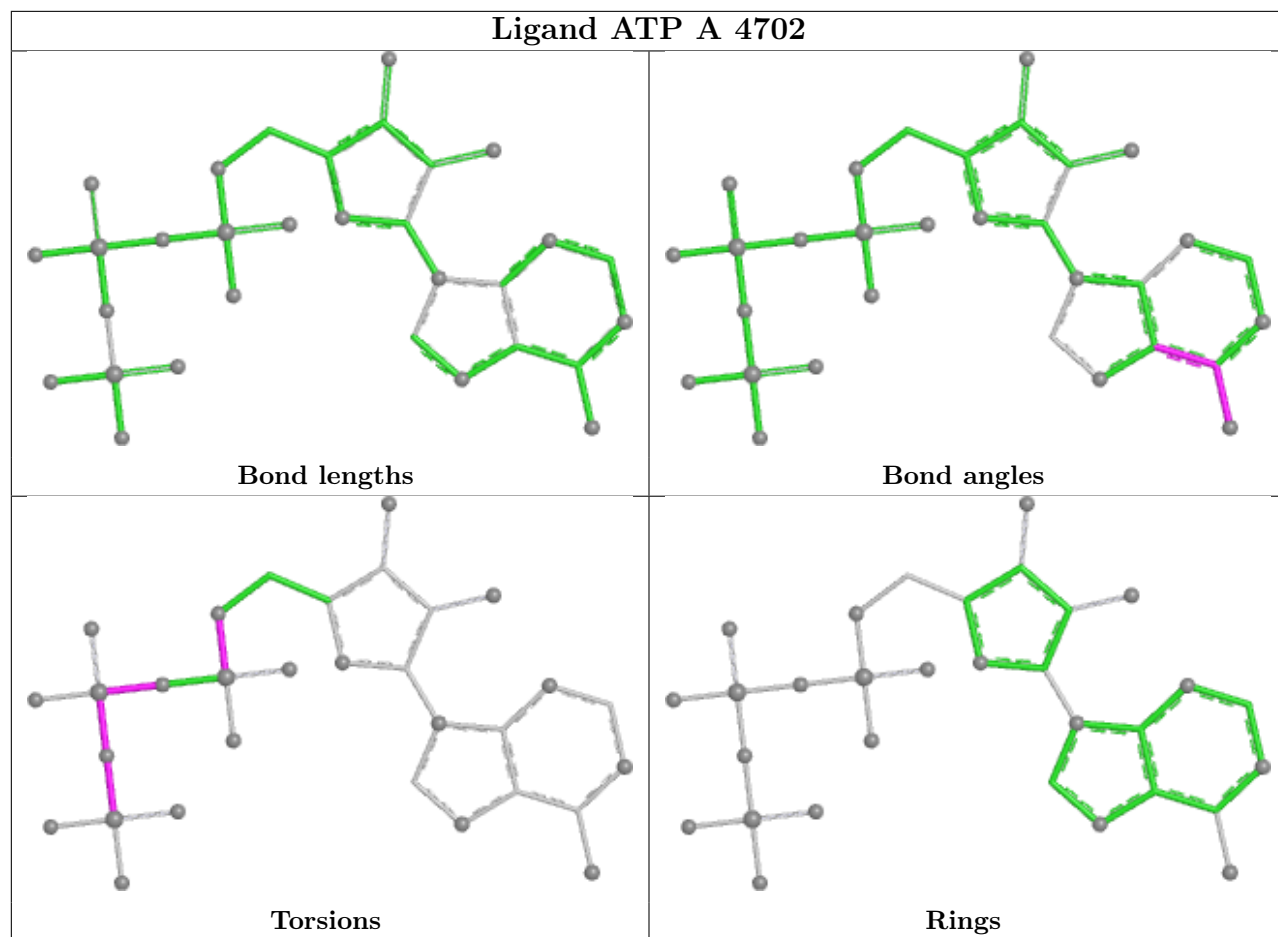
4 monomers are involved in 11 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	4703	ANP	4	0
3	A	4702	ATP	2	0
2	A	4701	ADP	4	0
2	A	4704	ADP	1	0

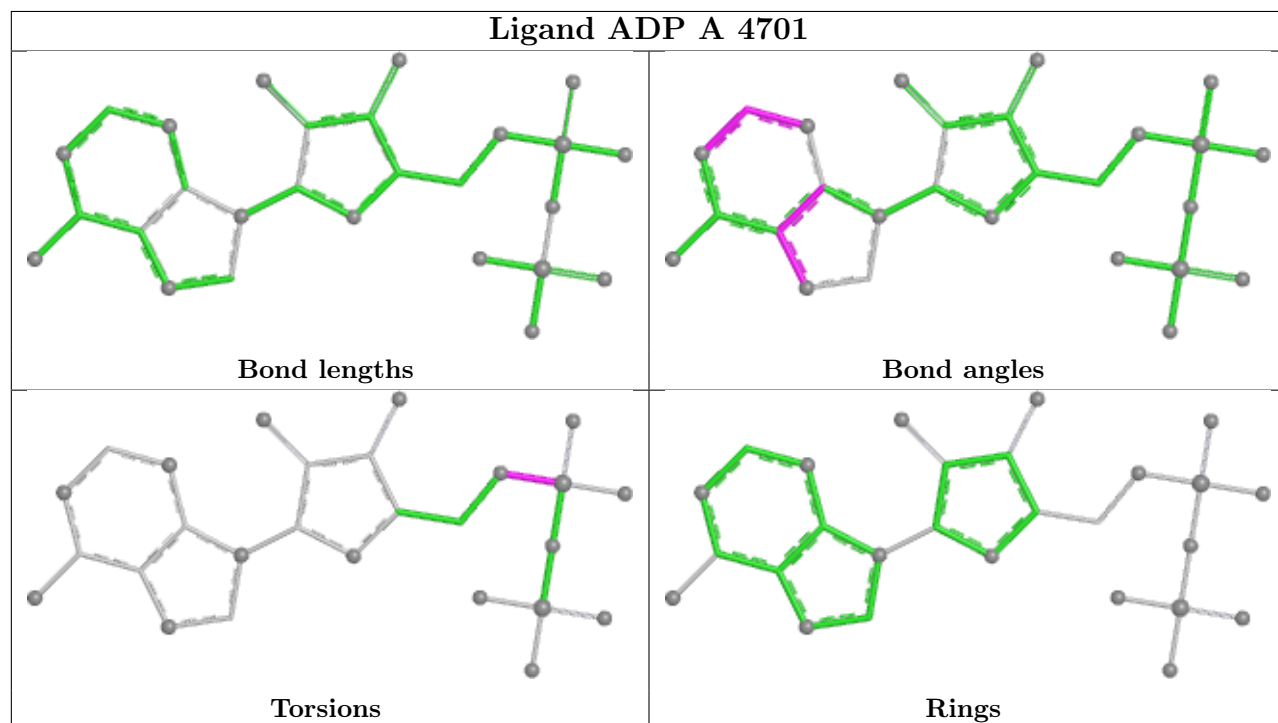
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

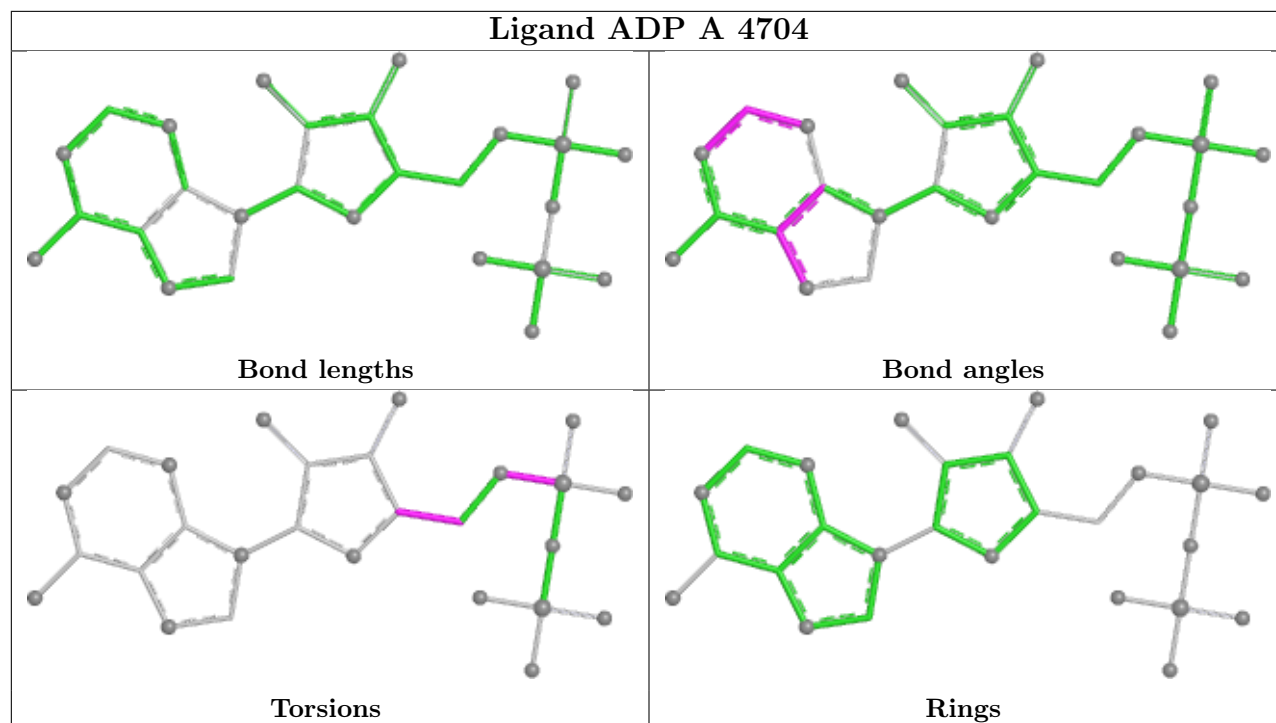


Ligand ATP A 4702



Ligand ADP A 4701





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.

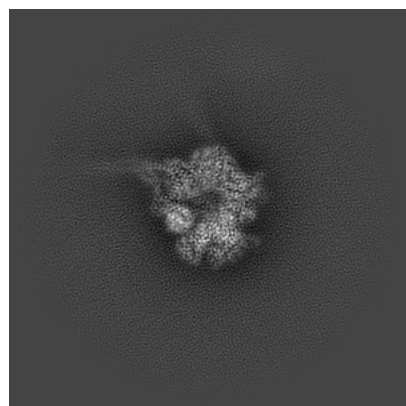
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-46860. These allow visual inspection of the internal detail of the map and identification of artifacts.

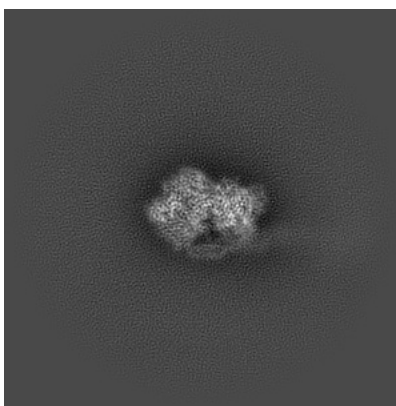
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

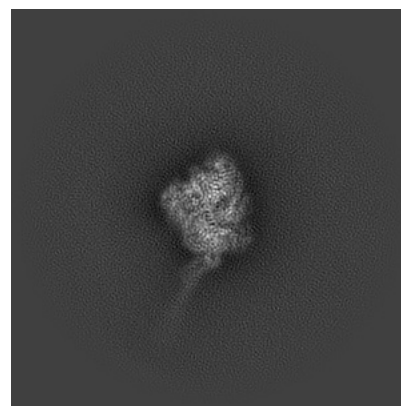
6.1.1 Primary map



X

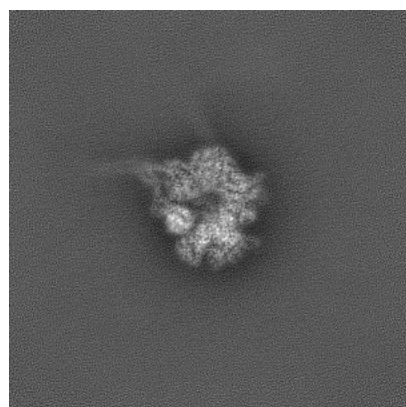


Y

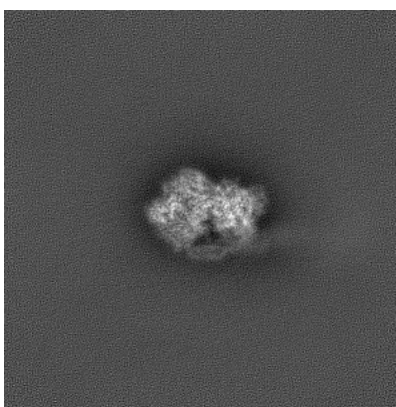


Z

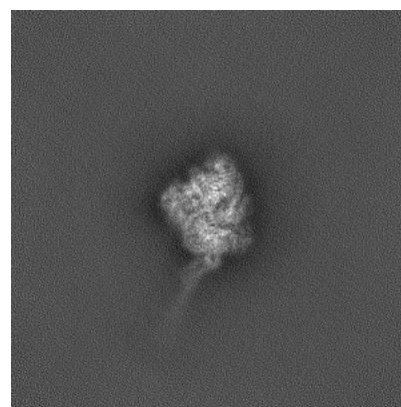
6.1.2 Raw map



X



Y

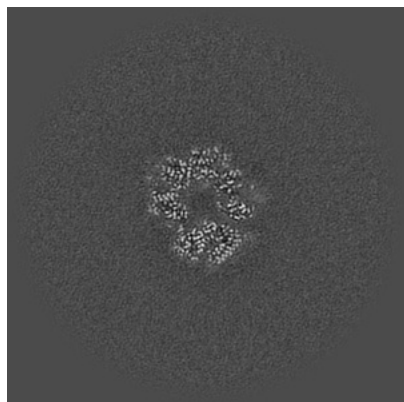


Z

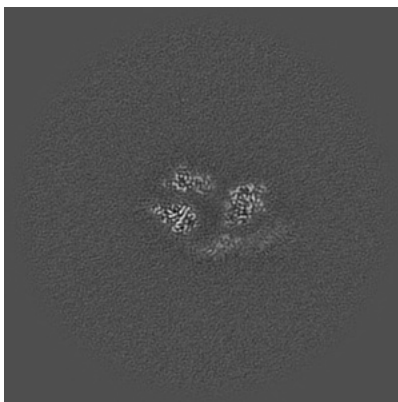
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

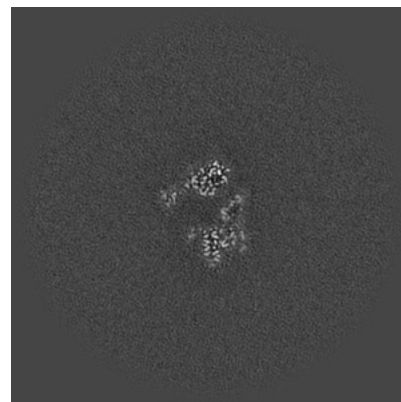
6.2.1 Primary map



X Index: 192

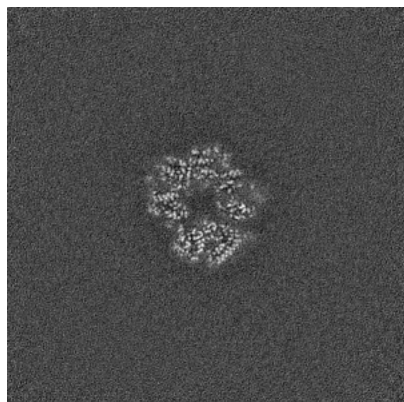


Y Index: 192

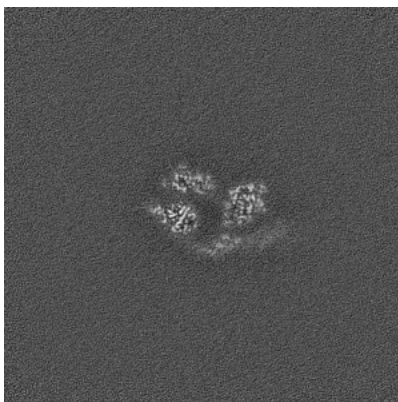


Z Index: 192

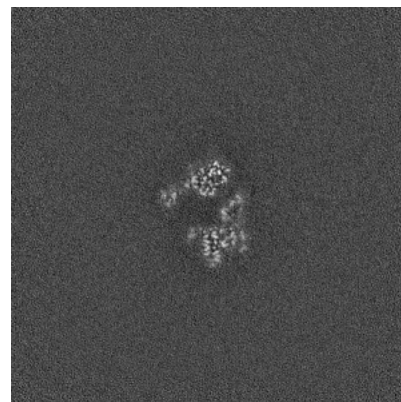
6.2.2 Raw map



X Index: 192



Y Index: 192

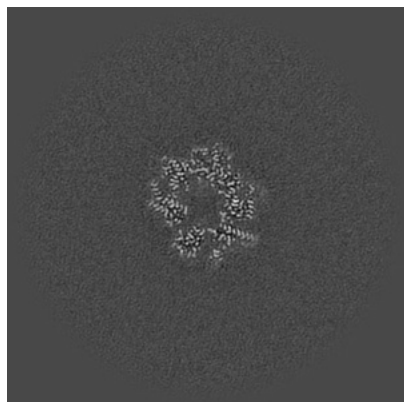


Z Index: 192

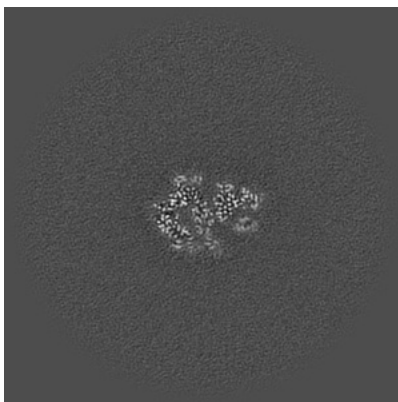
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

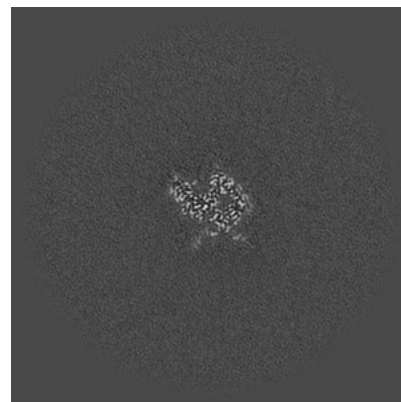
6.3.1 Primary map



X Index: 196

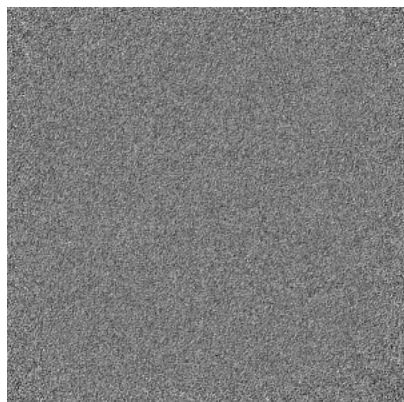


Y Index: 209

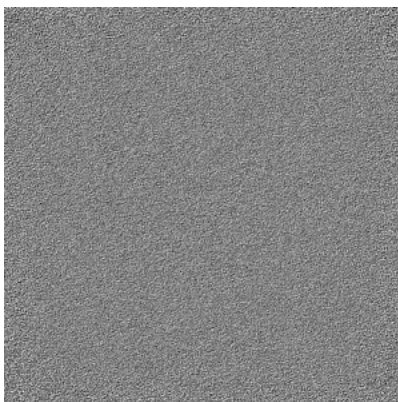


Z Index: 169

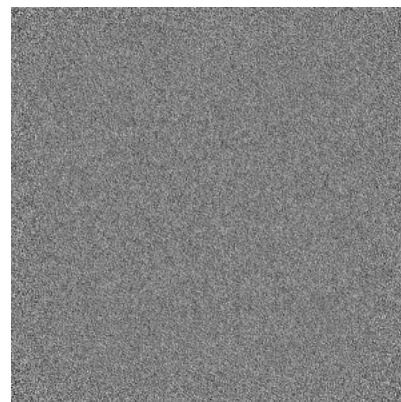
6.3.2 Raw map



X Index: 0



Y Index: 0

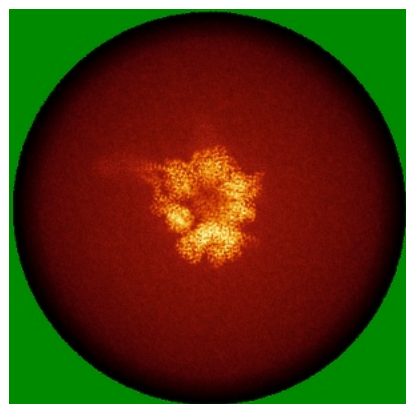


Z Index: 0

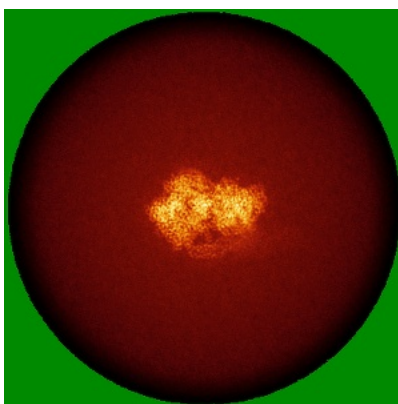
The images above show the largest variance slices of the map in three orthogonal directions.

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

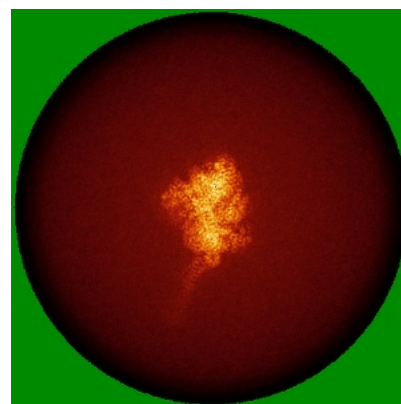
6.4.1 Primary map



X

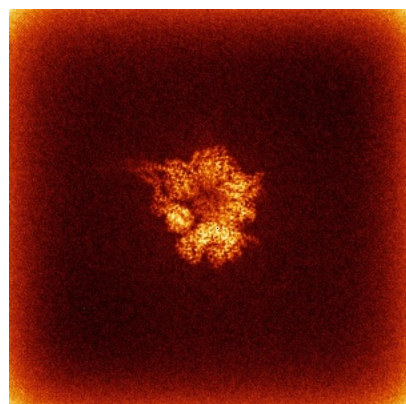


Y

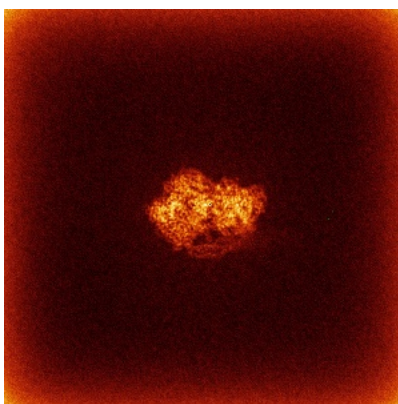


Z

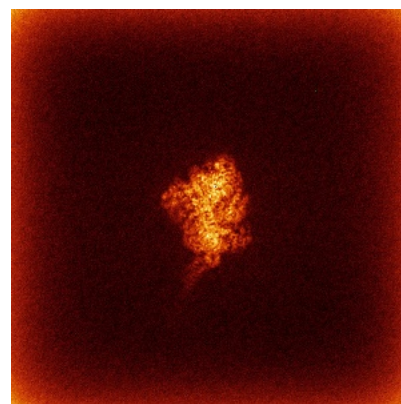
6.4.2 Raw map



X



Y

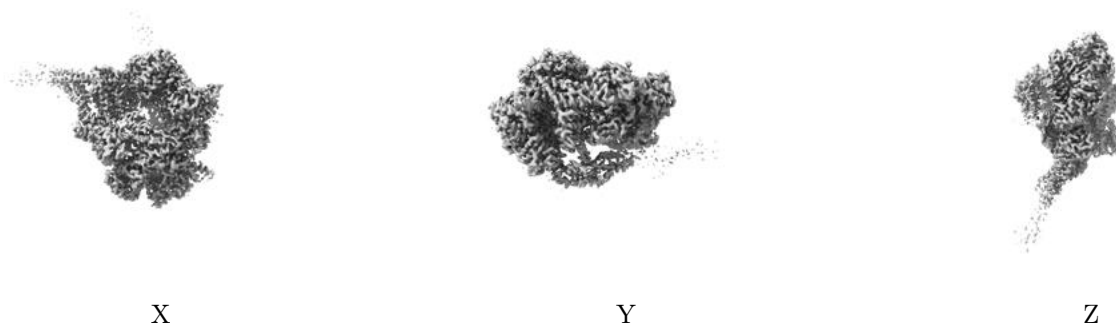


Z

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 0.3. 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.

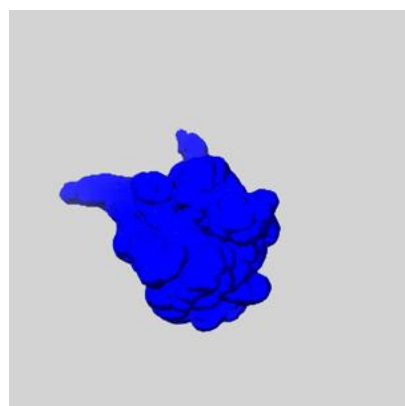
6.6 Mask visualisation [i](#)

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

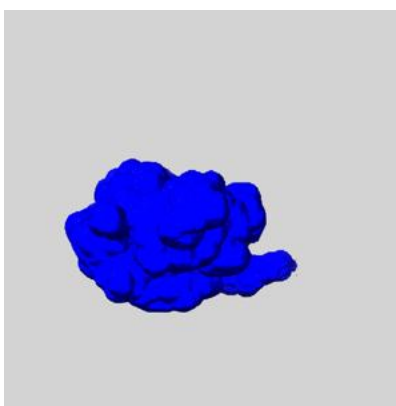
A mask typically either:

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

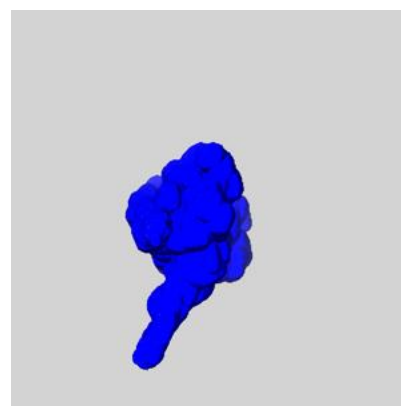
6.6.1 emd_46860_msk_1.map [i](#)



X



Y

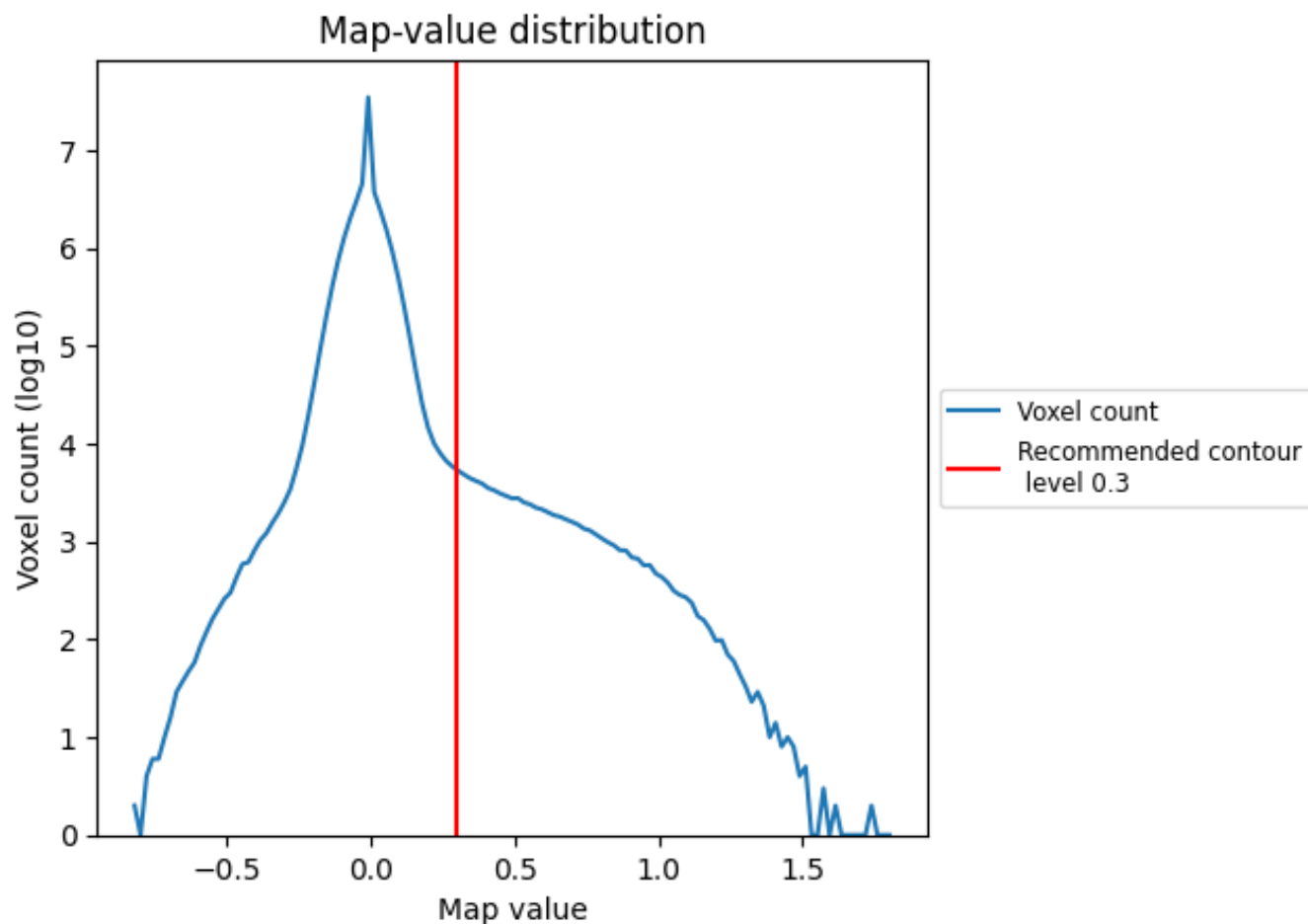


Z

7 Map analysis [i](#)

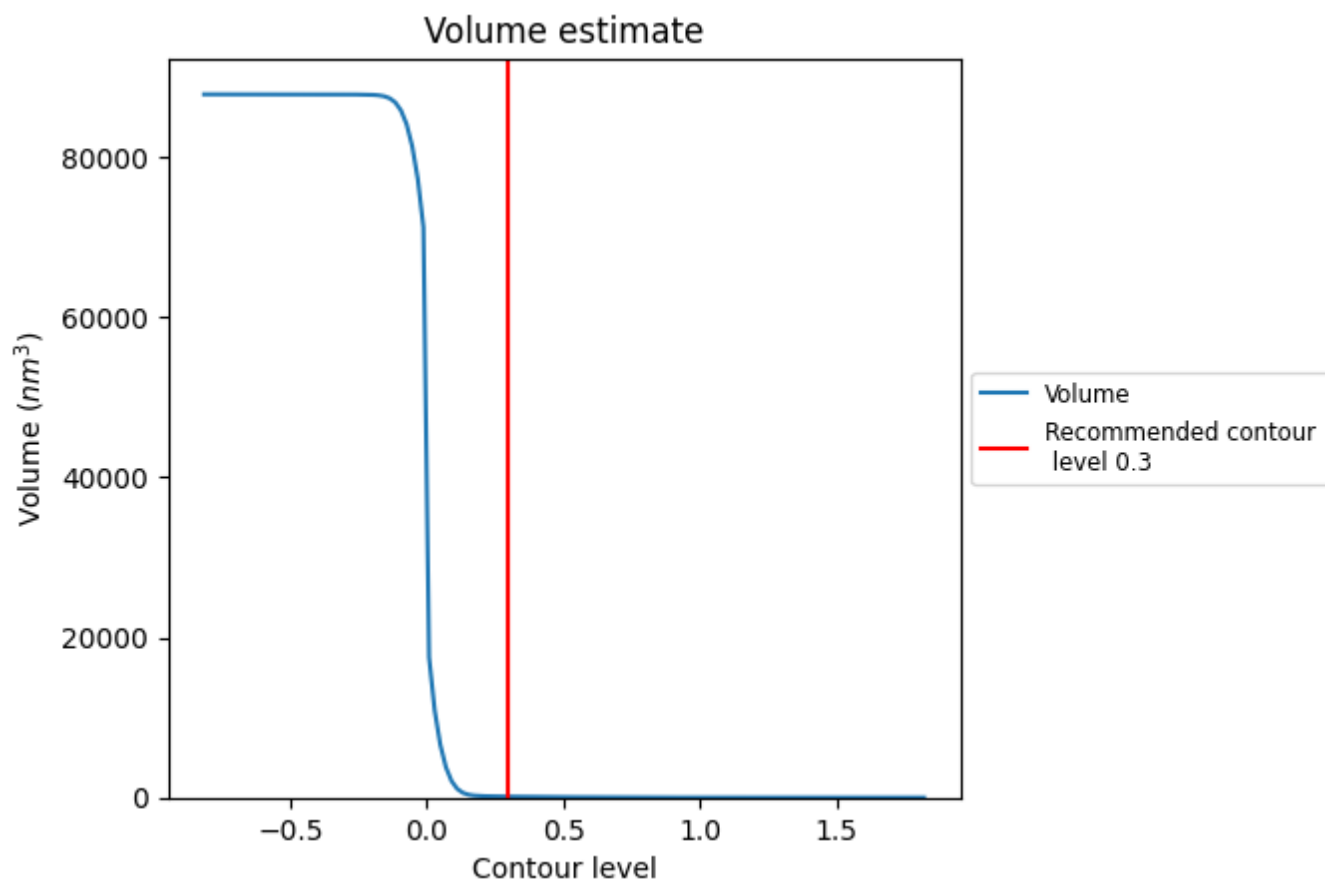
This section contains the results of statistical analysis of the map.

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.

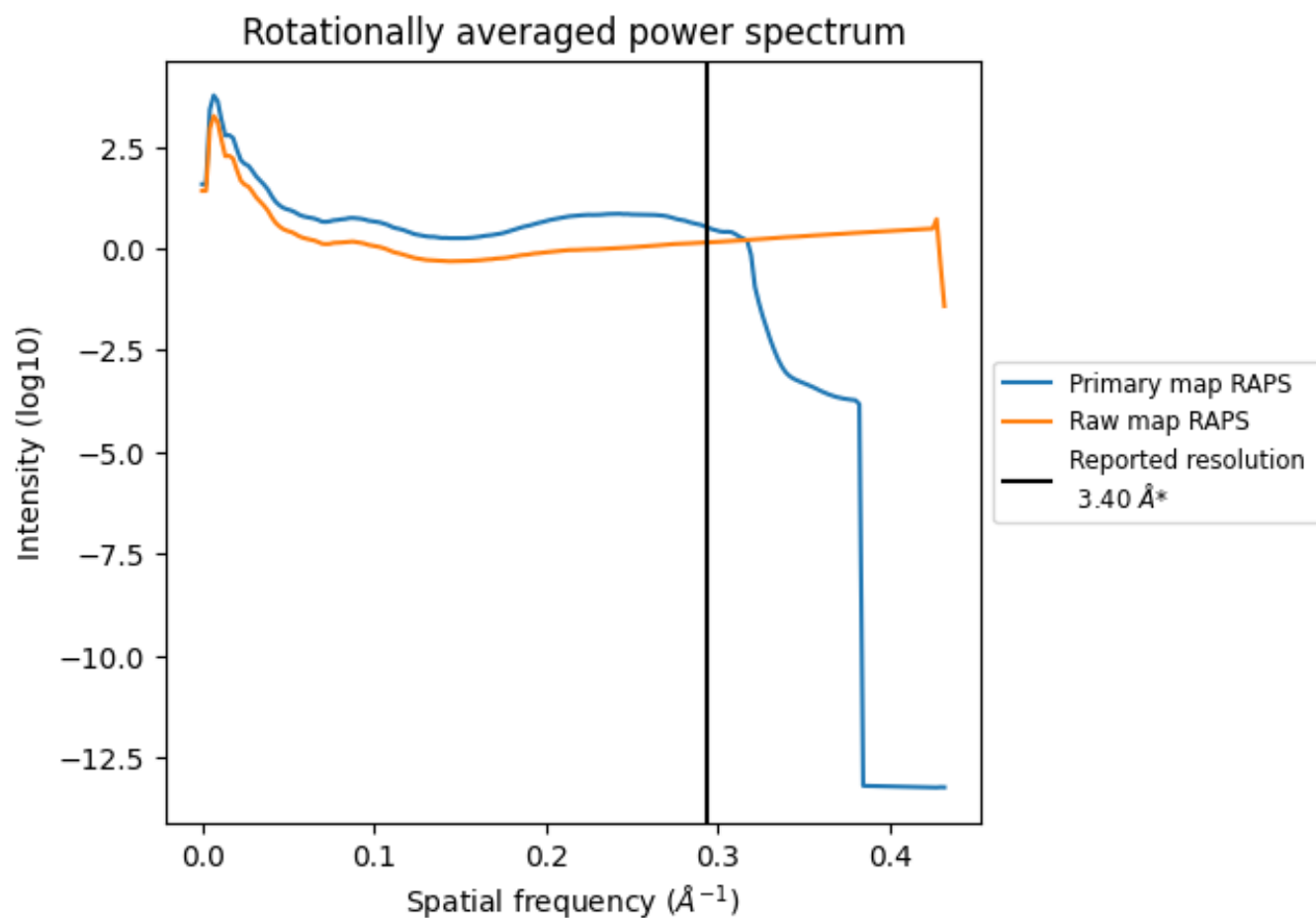
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 118 nm³; this corresponds to an approximate mass of 107 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ

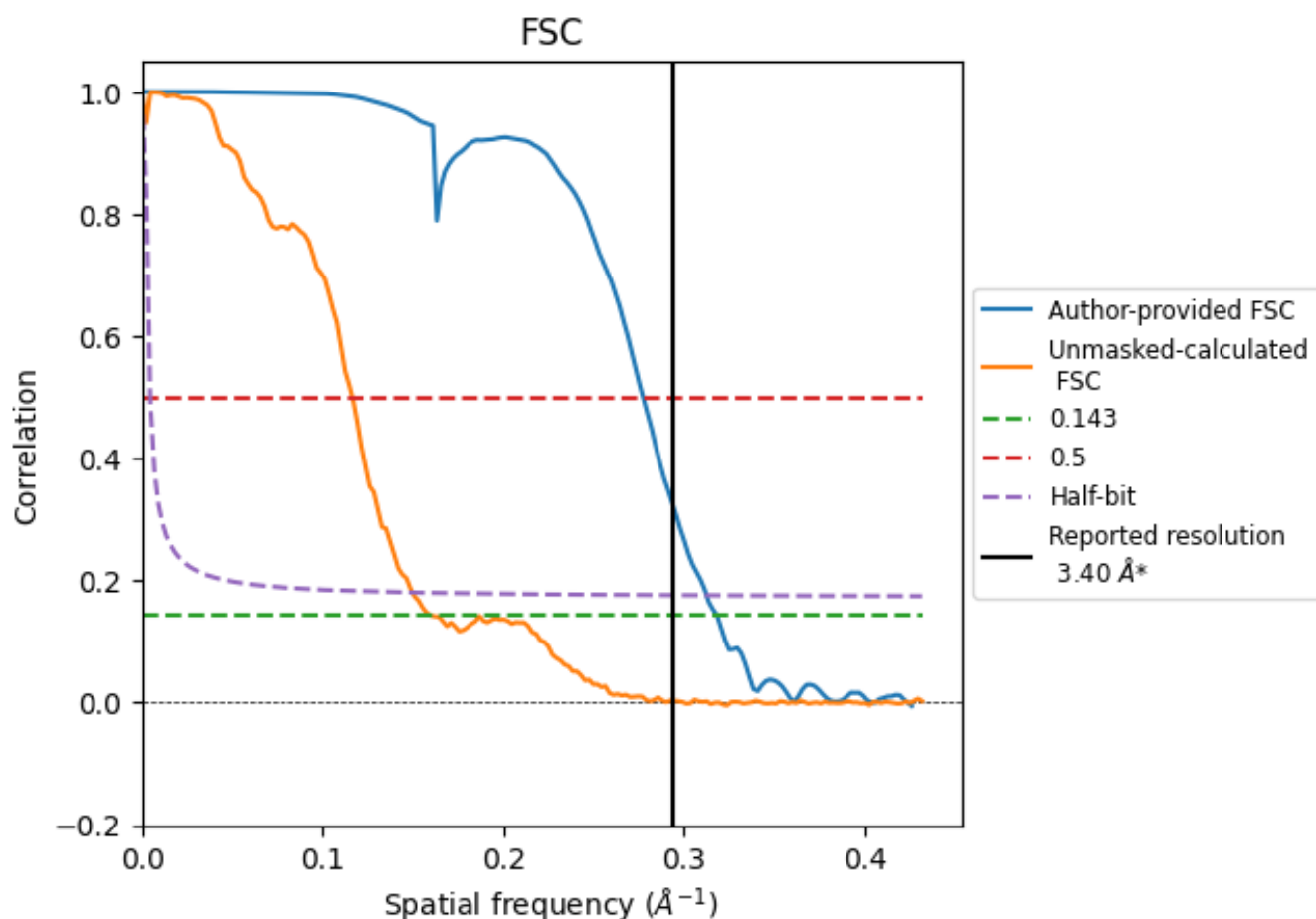


*Reported resolution corresponds to spatial frequency of 0.294 Å⁻¹

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 Å⁻¹

8.2 Resolution estimates [i](#)

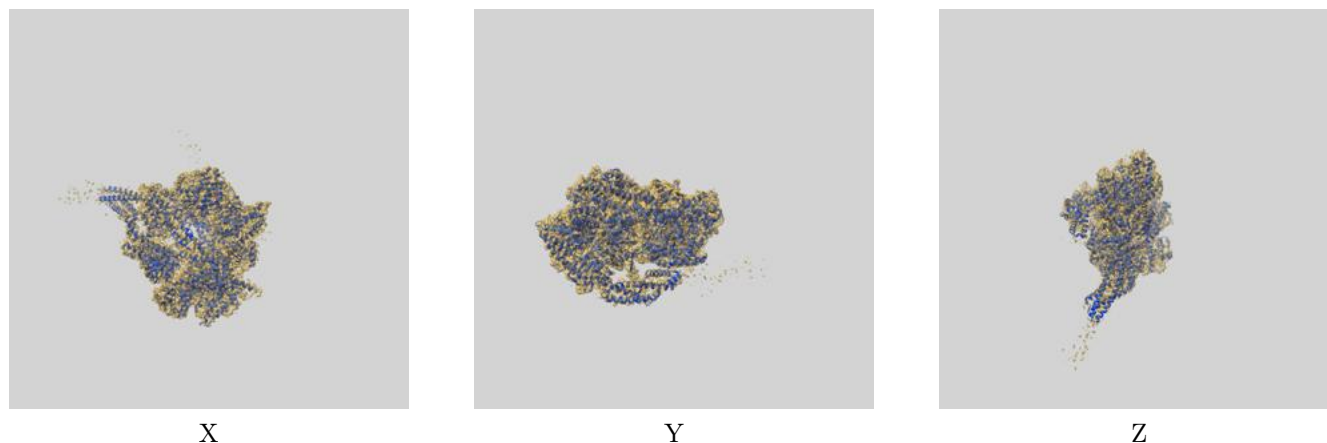
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.40	-	-
Author-provided FSC curve	3.14	3.60	3.20
Unmasked-calculated*	6.27	8.58	6.68

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

9 Map-model fit [i](#)

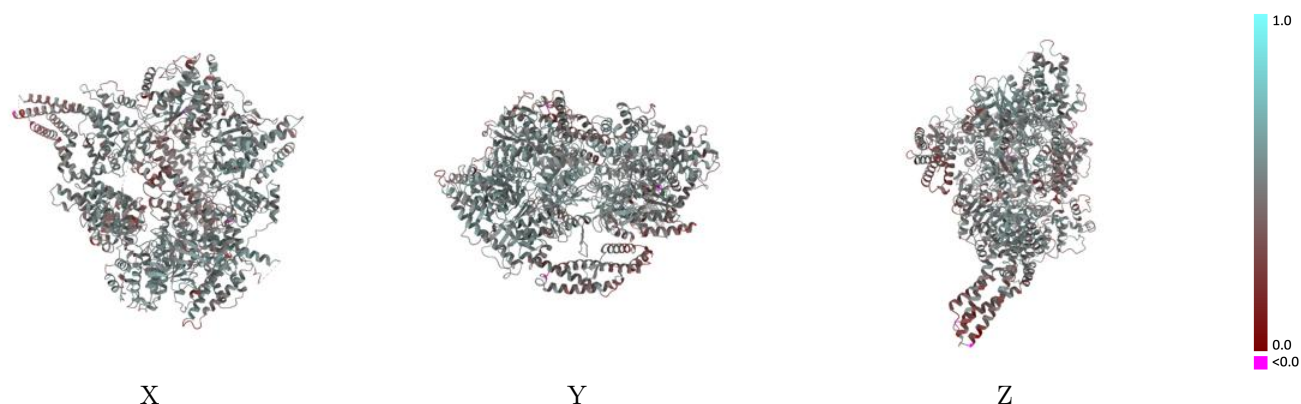
This section contains information regarding the fit between EMDB map EMD-46860 and PDB model 9DH9. Per-residue inclusion information can be found in section [3](#) on page [6](#).

9.1 Map-model overlay [i](#)



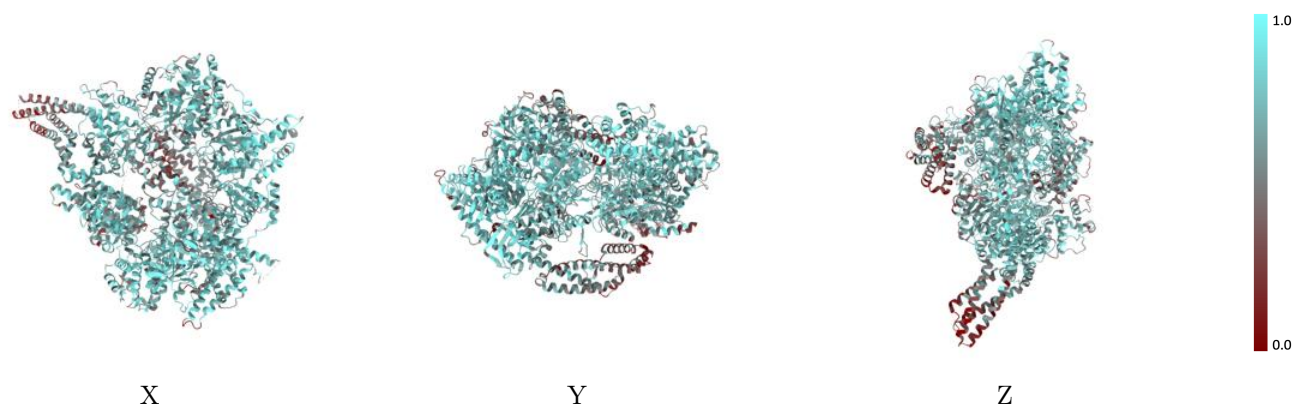
The images above show the 3D surface view of the map at the recommended contour level 0.3 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



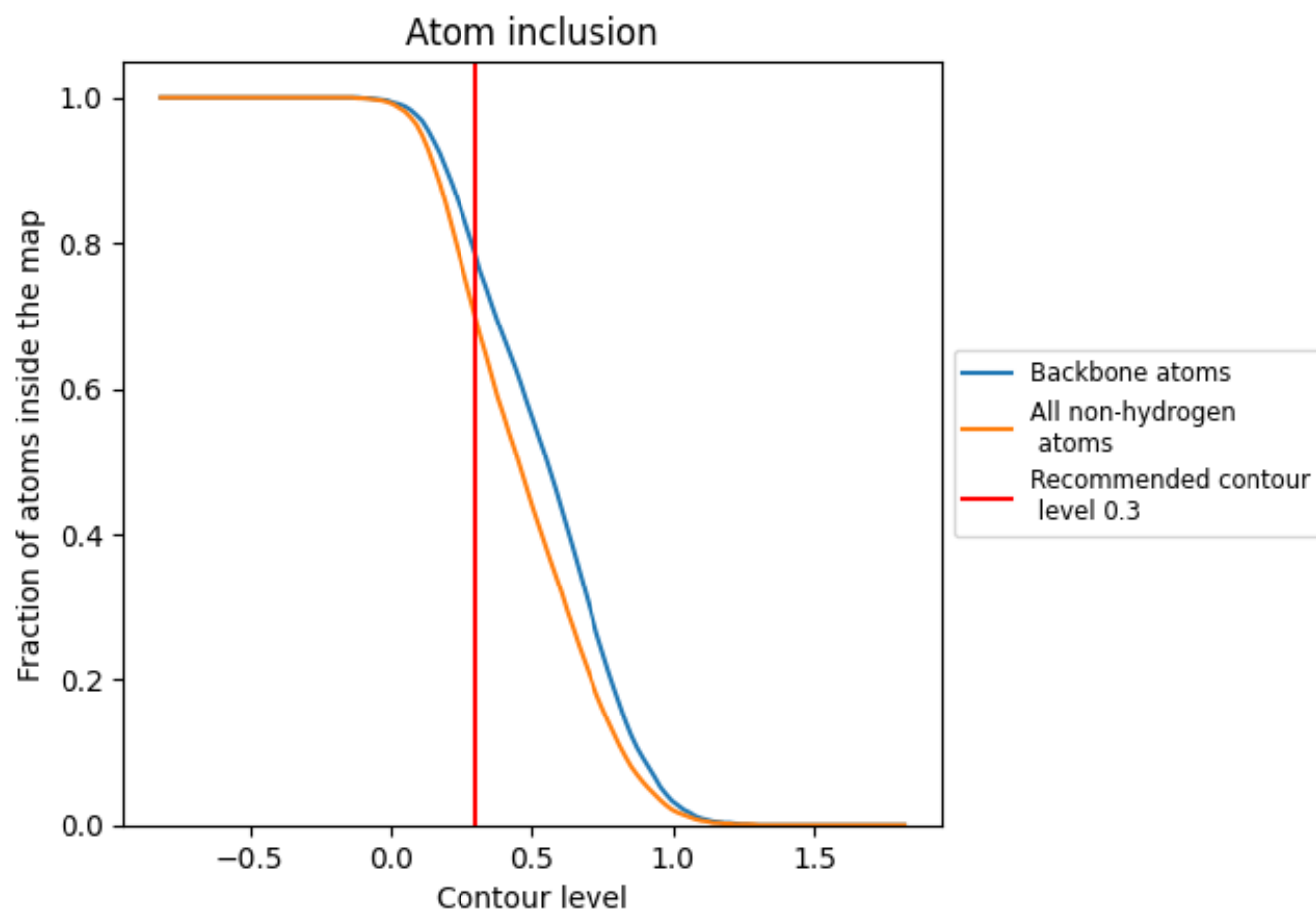
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.3).

9.4 Atom inclusion [i](#)



At the recommended contour level, 78% of all backbone atoms, 70% 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 (0.3) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7000	0.4880
A	0.7000	0.4880

