WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB EM Validation Report (i)

Aug 14, 2025 – 01:48 PM EDT

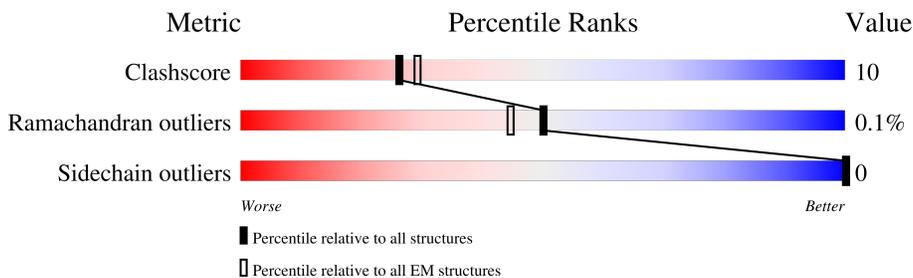|		
PDB ID	:	9BMD / pdb_00009bmd
EMDB ID	:	EMD-44696
Title	:	Motor domain from full-length human dynein-1 bound to microtubules in 5mM AMPPNP condition
Authors	:	Chai, P.; Zhang, K.
Deposited on	:	2024-05-02
Resolution	:	2.90 Å(reported)

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 2.90 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	Percentile Ranks	Value
Clashscore		10
Ramachandran outliers		0.1%
Sidechain outliers		0

Worse .... *Better*

▮ Percentile relative to all structures

▯ Percentile relative to all EM structures

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 <=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	21% / 49% 17% 35%

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 24603 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	3038	Total 24479	C 15591	N 4228	O 4538	S 122	1	0

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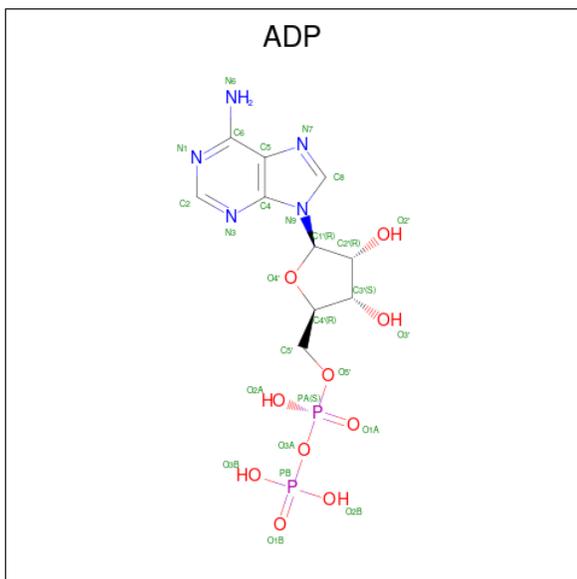
Mol	Chain	Residues	Atoms					AltConf
2	A	1	Total 27	C 10	N 5	O 10	P 2	0

- 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).
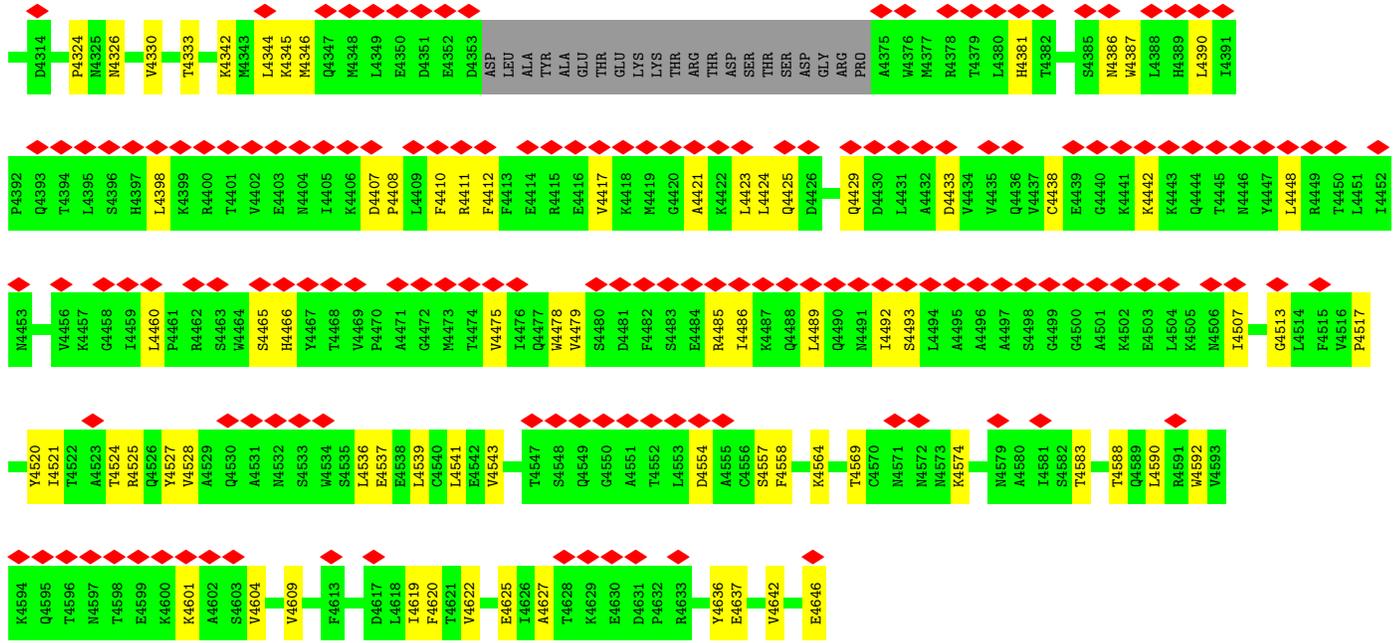
ATP

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

- Molecule 4 is PHOSPHOAMINOPHOSPHONIC ACID-ADENYLATE ESTER (CCD ID: ANP) (formula: $C_{10}H_{17}N_6O_{12}P_3$) (labeled as "Ligand of Interest" by depositor).

ANP

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

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

Mol	Chain	Residues	Atoms		AltConf
5	A	4	Total 4	Mg 4	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Cytoplasmic dynein 1 heavy chain 1

Chain A:
21%
49%　　17%　　35%

MET SER GLU PRO GLY GLY GLY GLY GLU GLU ASP GLY SER ALA GLY LEU GLU VAL SER ALA VAL GLN ASN VAL ALA ASP VAL SER VAL LEU GLN LYS HIS LEU GLU ARG LYS LEU VAL PRO LEU LEU GLU LEU ASP GLY GLU ALA PRO ALA ALA LEU GLU GLU ALA ALA LEU GLU GLU LYS SER

ALA LEU GLU GLN MET ARG LYS PHE LEU SER ASP PRO GLN VAL HIS THR VAL LEU VAL GLU ARG SER THR LEU LYS GLU ASP VAL GLY ASP GLY GLU GLU GLU LYS PHE ILE SER TYR ASN ILE ILE ASP ILE HIS TYR GLY VAL LYS SER ASN SER LEU ALA PHE ILE LYS

ARG THR PRO VAL ILE ASP ALA ASP LYS PRO VAL SER PRO VAL SER GLN LEU ARG VAL LEU THR LEU SER GLU ASP SER PRO TYR GLU THR LEU HIS SER PHE ILE SER ASN ALA VAL ALA PRO PHE LYS SER TYR ILE ARG GLU SER GLY LYS ALA ASP ARG GLY ASP LYS MET ALA PRO

SER VAL GLU LYS LYS ILE ALA GLU LEU GLU MET GLY LEU LEU HIS LEU GLN GLN ASN ILE GLU ILE PRO GLU ILE SER LEU PRO ILE HIS PRO MET ILE THR ASN VAL ALA LYS GLN CYS TYR GLU ARG GLY LYS PRO LYS VAL THR ASP PHE GLY ASP LYS VAL GLU ASP PRO THR

PHE LEU ASN GLN LEU GLN SER GLY VAL ASN ARG TRP ILE ARG GLU ILE GLN LYS VAL THR LYS LEU ASP ARG ASP PRO ALA SER GLY THR ALA LEU GLN GLU ILE SER PHE TRP LEU ASN LEU GLU ARG ALA LEU TYR ARG ILE GLN GLU LYS ARG GLU SER PRO GLU VAL LEU LEU THR

LEU ASP ILE LEU LYS HIS GLY LYS ARG PHE HIS ALA THR VAL SER PHE ASP THR ASP THR GLY LEU LEU GLN ALA LEU GLU GLU THR VAL ASN ASP TYR ASN PRO LEU MET LYS ASP PHE PRO LEU ASN ASP LEU LEU SER ALA THR GLU LEU ASP LYS ILE ARG GLN ALA LEU VAL ALA ILE

PHE THR HIS LEU ARG LYS ILE ARG ASN THR LYS TYR PRO ILE GLN ARG ALA LEU ARG LEU VAL GLU ALA ILE SER ARG ASP LEU SER SER GLN LEU LEU LYS VAL LEU GLY THR ARG LYS LEU MET HIS VAL ALA TYR GLU GLU PHE GLU LYS VAL MET VAL ALA CYS PHE GLU VAL PHE

GLN THR TRP ASP ASP GLU TYR GLU LYS LEU GLN LEU VAL LEU LEU ARG ASP ILE VAL LYS ARG GLU GLN ASN LEU LYS MET VAL TRP ARG ILE ASN PRO ALA HIS ARG LYS LEU ALA ARG LEU ASP GLN MET ARG LYS PHE ARG ARG GLN HIS GLU GLN LEU ARG ALA VAL ILE

VAL ARG VAL LEU ARG PRO GLN VAL THR ALA VAL ALA GLN ASN GLY LEU VAL GLY GLY PRO GLU GLY PRO ASP MET LYS VAL ALA GLU VAL LEU PHE ASP ALA ALA ASP ALA ASN ILE GLU VAL ASN LEU ALA TYR GLU ASN VAL LYS GLU VAL ASP ASP GLY LEU ASP VAL SER LYS

GLU GLY THR GLU ALA TRP GLU ALA ALA MET LYS ARG TYR ASP GLU ILE ASP ARG VAL GLU THR ILE THR ALA ARG ASP ASP GLN LEU GLY THR ALA LYS ASN ALA ASN GLU MET PHE ILE PHE SER ARG PHE ASN ALA LEU PHE VAL ARG PRO HIS ILE ARG GLY ALA

ILE ARG GLU GLY TYR GLN THR GLN LEU ILE GLN ARG VAL LYS ASP ASP ILE SER GLU LEU HIS ASP LYS PHE LYS VAL GLN TYR PRO GLN SER GLN ALA CYS LYS MET SER HIS VAL ARG ASP LEU PRO PRO VAL SER GLY SER ILE ILE TRP ALA LYS GLN ILE ASP ARG GLN LEU THR ALA

TYR MET LYS ARG VAL GLU ASP VAL LEU GLY LYS GLY TRP GLU ASN HIS VAL GLU GLY GLN LYS LEU LYS GLN ASP GLY ASP SER PHE ARG MET LYS LEU ASN THR GLN GLU ILE PHE ASP ASP TRP ALA ARG LYS VAL GLN GLN ARG ASN LEU GLY VAL SER GLY ARG ILE PHE THR ILE

GLU SER THR ARG VAL ARG GLY ARG THR GLY ASN VAL LEU LYS LEU LYS VAL ASN PHE LEU PRO GLU ILE ILE THR LEU SER LYS GLU VAL ARG ASN LEU LYS TRP LEU GLY PHE ARG VAL PRO LEU ALA ILE VAL ASN LYS ALA HIS GLN ALA ASN GLN LEU TYR PRO PHE ALA ILE SER

LEU ILE GLU SER VAL ARG THR TYR GLU ARG THR CYS GLU LYS VAL GLU GLU ARG ASN THR ILE LEU LEU ALA LEU ALA GLY LEU ALA ILE LEU VAL TRP GLU GLN SER TYR LEU SER ASP PRO TYR VAL GLN ARG LEU ALA GLU THR VAL

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	241362	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 $(e^-/\text{Å}^2)$	40	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	105000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	1.441	Depositor
Minimum map value	-0.841	Depositor
Average map value	-0.002	Depositor
Map value standard deviation	0.036	Depositor
Recommended contour level	0.3	Depositor
Map size (Å)	316.8, 316.8, 316.8	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.825, 0.825, 0.825	Depositor

5　Model quality ⓘ

5.1　Standard geometry ⓘ

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

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	0.18	0/25000	0.33	0/33870

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2　Too-close contacts ⓘ

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	24479	0	24538	487	0
2	A	27	0	12	2	0
3	A	31	0	12	2	0
4	A	62	0	26	3	0
5	A	4	0	0	0	0
All	All	24603	0	24588	487	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 (487) 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:2598:GLY:H	4:A:4703:ANP:HNB1	1.23	0.82
1:A:3638:VAL:HG12	1:A:3681:THR:HB	1.64	0.80
1:A:2581:LEU:HD21	1:A:2605:LEU:HD23	1.68	0.75
1:A:1397:ASN:O	1:A:1401:ILE:HD12	1.91	0.70
1:A:2506:SER:HB3	1:A:2510:MET:HB2	1.71	0.70
1:A:4079:GLN:HA	1:A:4082:LYS:HE3	1.73	0.69
1:A:1898:ALA:O	1:A:1983:ARG:NH1	2.26	0.68
1:A:2590:PRO:HB2	1:A:2731:VAL:HG12	1.75	0.68
1:A:3691:ASP:OD1	1:A:3695:ARG:NH1	2.28	0.68
1:A:2481:MET:HE2	1:A:2486:LEU:HA	1.76	0.67
1:A:2179:ARG:NH2	1:A:2195:ASP:OD1	2.28	0.67
1:A:3474:ARG:HE	1:A:3764:ASP:HB3	1.59	0.66
1:A:3194:LEU:HD22	1:A:3500:MET:HE3	1.75	0.66
1:A:4408:PRO:HA	1:A:4411:ARG:HE	1.59	0.66
1:A:4541:LEU:HD11	1:A:4590:LEU:HB3	1.77	0.66
1:A:2148:LYS:HG2	1:A:2361:MET:HB3	1.78	0.65
1:A:1462:PHE:HB2	1:A:3628:ARG:HD2	1.79	0.65
1:A:2925:ILE:HG21	1:A:2933:LEU:HB2	1.78	0.65
1:A:4099:VAL:HB	1:A:4106:LEU:HD21	1.78	0.65
1:A:4276:ARG:NH2	1:A:4279:ASP:OD2	2.30	0.65
1:A:3113:MET:HE2	1:A:3184:ALA:HA	1.78	0.65
1:A:2221:MET:HE3	1:A:2343:PHE:HD2	1.61	0.64
1:A:2925:ILE:HG13	1:A:2933:LEU:HD13	1.79	0.64
1:A:2324:LEU:HD11	1:A:2332:ARG:HB3	1.80	0.64
1:A:3820:GLN:HE21	1:A:4345:LYS:HG2	1.62	0.64
1:A:1571:ILE:HG23	1:A:1604:LEU:HD22	1.80	0.63
1:A:2382:LEU:HD23	1:A:2420:ALA:HB2	1.80	0.63
1:A:4574:LYS:HB3	1:A:4627:ALA:HB2	1.80	0.63
1:A:2320:ASP:OD1	1:A:2321:ASP:N	2.31	0.62
1:A:1688:THR:OG1	1:A:1708:GLU:OE2	2.16	0.62
1:A:3113:MET:O	1:A:3140:ARG:NH2	2.32	0.62
1:A:3839:VAL:HG21	1:A:3863:LEU:HA	1.82	0.62
1:A:3871:VAL:HG12	1:A:3875:MET:HE2	1.80	0.62
1:A:3113:MET:HB3	1:A:3115:LEU:HG	1.82	0.62
1:A:4168:ARG:NH2	1:A:4217:ASP:OD1	2.33	0.61
1:A:4172:SER:O	1:A:4176:ARG:NH1	2.33	0.61
1:A:1417:MET:HE1	1:A:1423:ASN:HA	1.83	0.61
1:A:2149:LEU:HD11	1:A:2157:LEU:HD22	1.82	0.61
1:A:2453:ARG:NH1	1:A:2505:ASP:OD2	2.33	0.61
1:A:2889:LEU:HD13	1:A:2920:LEU:HD11	1.82	0.60
1:A:2138:ILE:HG13	1:A:2161:LEU:HD21	1.82	0.60
1:A:2385:ILE:O	1:A:2416:GLN:NE2	2.32	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3749:LEU:HD11	1:A:3770:LEU:HG	1.83	0.60
1:A:4564:LYS:HG3	1:A:4646:GLU:HB2	1.84	0.60
1:A:2290:SER:HB2	1:A:2295:LEU:HD23	1.85	0.59
1:A:4176:ARG:NH2	1:A:4224:ASP:OD1	2.30	0.59
1:A:2728:LEU:HA	1:A:2731:VAL:HG22	1.84	0.59
1:A:4009:VAL:HG13	1:A:4013:LEU:HD12	1.85	0.59
1:A:2230:LYS:NZ	1:A:2345:VAL:O	2.35	0.59
1:A:2433:VAL:HG22	1:A:2498:ILE:HD11	1.85	0.58
1:A:1964:GLU:HG2	1:A:1967:MET:HE2	1.85	0.58
1:A:2605:LEU:HD13	1:A:2662:PHE:HE1	1.67	0.58
1:A:3553:LEU:HB2	1:A:3578:ILE:HD13	1.85	0.58
1:A:4071:ILE:HG13	1:A:4099:VAL:HG12	1.84	0.58
1:A:1419:ARG:HD2	1:A:1445:ILE:HG23	1.86	0.58
1:A:3211:THR:HG21	1:A:3753:LEU:HD11	1.86	0.58
1:A:3488:ARG:HA	1:A:3491:LYS:HE2	1.85	0.57
1:A:2386:PRO:HG3	1:A:2413:LEU:HD22	1.85	0.57
1:A:3624:GLU:HG2	1:A:3664:LEU:HD23	1.87	0.57
1:A:2593:LEU:HD23	1:A:2734:VAL:HB	1.86	0.57
1:A:2776:PHE:HZ	1:A:2846:THR:HG23	1.69	0.57
1:A:3008:MET:HG2	1:A:3066:PHE:HZ	1.69	0.57
1:A:3886:LEU:HD11	1:A:4346:MET:HG3	1.86	0.57
1:A:2914:GLU:O	1:A:2918:HIS:ND1	2.28	0.57
1:A:4300:ILE:HG13	1:A:4301:ARG:HD3	1.85	0.57
1:A:2447:MET:HG3	1:A:2733:VAL:HG11	1.86	0.57
1:A:4193:ARG:NH2	1:A:4637:GLU:O	2.25	0.57
1:A:1961:ASN:ND2	1:A:2019:ASN:O	2.37	0.57
1:A:2968:THR:HG22	1:A:2970:GLU:H	1.70	0.57
1:A:3510:SER:HB3	1:A:3553:LEU:HD21	1.86	0.56
1:A:2324:LEU:HD21	1:A:2332:ARG:HG2	1.87	0.56
1:A:3620:ARG:NH2	1:A:3642:ASP:OD2	2.39	0.56
1:A:3661:LEU:HD12	1:A:3668:ASP:HB3	1.86	0.56
1:A:3771:GLU:OE1	1:A:3774:LYS:NZ	2.34	0.56
1:A:4068:SER:HA	1:A:4095:MET:HB3	1.87	0.56
1:A:2396:ARG:NH1	1:A:2406:GLU:OE2	2.39	0.56
1:A:4386:ASN:O	1:A:4390:LEU:HG	2.05	0.56
1:A:2107:ARG:NH2	1:A:2139:GLN:OE1	2.33	0.56
1:A:4175:GLU:OE1	1:A:4175:GLU:N	2.38	0.56
1:A:2472:TYR:CD1	1:A:2541:ILE:HG21	2.40	0.56
1:A:4088:VAL:HG23	1:A:4118:PRO:HA	1.88	0.56
1:A:1374:PRO:HD2	1:A:1377:LEU:HD12	1.88	0.55
1:A:2188:GLU:OE1	1:A:2243:ARG:NH1	2.39	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2694:ARG:HG3	1:A:2701:VAL:HG21	1.87	0.55
1:A:3931:GLN:O	1:A:3935:VAL:HG23	2.06	0.55
1:A:3889:ARG:HH12	1:A:3909:LEU:HD11	1.71	0.55
1:A:3879:ASP:OD1	1:A:4342:LYS:NZ	2.35	0.55
1:A:2511:ARG:HD3	1:A:2535:ILE:HD13	1.87	0.55
1:A:4424:LEU:HD13	1:A:4486:ILE:HG13	1.89	0.55
1:A:1510:SER:HB2	1:A:3629:PHE:HB3	1.87	0.55
1:A:1925:ARG:HG2	1:A:1954:TRP:CD1	2.42	0.55
1:A:1545:VAL:O	1:A:1548:GLU:HG3	2.06	0.55
1:A:1947:GLY:O	1:A:1951:VAL:HG12	2.07	0.55
1:A:4527:TYR:CD2	1:A:4558:PHE:HZ	2.25	0.55
1:A:2075:LEU:HD11	1:A:4536:LEU:HD22	1.88	0.54
1:A:2965:ARG:HG3	1:A:2966:LYS:HD2	1.89	0.54
1:A:3172:THR:HG21	1:A:3694:SER:HB3	1.89	0.54
1:A:3708:LEU:HD23	1:A:3809:SER:HA	1.87	0.54
1:A:2192:THR:HB	1:A:2373:MET:HG2	1.89	0.54
1:A:2075:LEU:HD11	1:A:4536:LEU:CD2	2.38	0.54
1:A:2081:SER:O	1:A:2083:GLN:HG2	2.08	0.54
1:A:3716:VAL:HG23	1:A:3836:TYR:OH	2.06	0.54
1:A:4271:ARG:NH1	1:A:4284:LEU:O	2.38	0.54
1:A:2374:ILE:HD13	1:A:2452:LEU:HD21	1.89	0.54
1:A:2851:ASP:OD1	1:A:2867:MET:HG2	2.08	0.54
1:A:2557:VAL:O	1:A:2757:ARG:NH2	2.39	0.54
1:A:4398:LEU:HG	1:A:4417:VAL:HG21	1.90	0.54
1:A:2718:PRO:HG2	1:A:3082:SER:HA	1.90	0.54
1:A:3551:GLU:HG3	1:A:3559:ARG:NH1	2.23	0.54
1:A:4465:SER:OG	1:A:4478:TRP:NE1	2.41	0.54
1:A:1765:ALA:O	1:A:1769:MET:HG3	2.08	0.53
1:A:4525:ARG:HE	1:A:4539:LEU:HB2	1.73	0.53
1:A:4160:THR:HG23	1:A:4212:LEU:HD21	1.89	0.53
1:A:2309:PRO:HB3	1:A:2352:THR:HG23	1.90	0.53
1:A:2437:LEU:HD21	1:A:2451:ARG:HG3	1.89	0.53
1:A:2823:ARG:HH12	1:A:2868:SER:H	1.56	0.53
1:A:3499:GLN:O	1:A:3503:ILE:HG13	2.08	0.53
1:A:3835:ILE:HG23	1:A:3866:VAL:HG12	1.90	0.53
1:A:2591:LEU:HA	1:A:2732:PRO:HD2	1.91	0.53
1:A:2910:VAL:HG22	1:A:3108:GLU:HG2	1.90	0.53
1:A:3088:ARG:NH1	4:A:4703:ANP:O1G	2.42	0.53
1:A:3644:VAL:HG22	1:A:3664:LEU:HD12	1.91	0.53
1:A:3659:ARG:HG3	1:A:3661:LEU:HD21	1.90	0.53
1:A:2218:HIS:HA	1:A:2340:ARG:HD3	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1632:VAL:HG12	1:A:1656:LYS:HD2	1.90	0.53
1:A:2104:LYS:HA	1:A:2136:ILE:HD13	1.89	0.53
1:A:2154:ILE:N	1:A:2155:PRO:HD2	2.24	0.53
1:A:2248:GLU:HG2	1:A:2297:LYS:NZ	2.23	0.53
1:A:2936:ILE:HG23	1:A:3093:TRP:HE3	1.73	0.53
1:A:3891:LYS:HD2	1:A:4013:LEU:HD23	1.91	0.53
1:A:1755:GLN:HG3	1:A:1814:GLU:OE2	2.09	0.52
1:A:2747:ILE:O	1:A:2750:THR:OG1	2.27	0.52
1:A:1457:MET:HE2	1:A:3659:ARG:HB3	1.90	0.52
1:A:3194:LEU:HD11	1:A:3499:GLN:HB2	1.89	0.52
1:A:2060:ARG:HG3	1:A:2061:THR:HG23	1.92	0.52
1:A:2446:ILE:HD11	1:A:2714:PRO:HB3	1.91	0.52
1:A:2156:LEU:O	1:A:2160:LEU:HG	2.09	0.52
1:A:2896:ARG:HG3	1:A:2953:MET:HE3	1.92	0.52
1:A:2488:ARG:HH21	1:A:2543:GLY:H	1.57	0.52
1:A:3835:ILE:HG12	1:A:3870:ARG:HG3	1.91	0.52
1:A:2080:LEU:HD12	1:A:2088:PHE:CZ	2.44	0.52
1:A:3593:SER:O	1:A:3682:ARG:NH2	2.43	0.52
1:A:2449:LEU:HD11	1:A:2454:CYS:SG	2.49	0.52
1:A:2797:ARG:NH1	4:A:4703:ANP:O1G	2.36	0.52
1:A:2053:MET:HE1	1:A:2094:LYS:HB3	1.91	0.51
1:A:3581:LYS:NZ	1:A:3582:ARG:HH11	2.06	0.51
1:A:3762:ASP:OD1	1:A:3763:ASP:N	2.43	0.51
1:A:4574:LYS:HE2	1:A:4625:GLU:HG2	1.91	0.51
1:A:1360:ARG:NH2	1:A:2899:VAL:HG22	2.26	0.51
1:A:1825:LEU:HA	1:A:1830:ILE:HD13	1.92	0.51
1:A:4030:ILE:HG21	1:A:4145:PHE:HZ	1.75	0.51
1:A:1882:THR:HG22	1:A:2048:LEU:HD23	1.92	0.51
1:A:1420:LEU:HD13	1:A:1437:VAL:HG11	1.93	0.51
1:A:4520:TYR:O	1:A:4524:THR:HG23	2.10	0.51
1:A:2065:LEU:HD11	1:A:2133:GLU:HB3	1.91	0.51
1:A:3131:ASP:OD1	1:A:3132:LYS:N	2.44	0.51
1:A:2775:GLU:OE1	1:A:2857:HIS:NE2	2.40	0.51
1:A:1513:TYR:CZ	1:A:1517:GLU:HG2	2.45	0.51
1:A:2072:PHE:HE2	1:A:2141:VAL:HG11	1.75	0.51
1:A:2181:GLU:HG3	1:A:2244:LEU:HB2	1.92	0.51
1:A:3561:ARG:NH1	1:A:3603:GLU:OE1	2.44	0.51
1:A:2644:THR:OG1	1:A:2647:GLY:O	2.26	0.50
1:A:3520:PHE:HB3	1:A:3524:MET:HB3	1.93	0.50
1:A:3679:LEU:HD12	1:A:3696:VAL:HG11	1.93	0.50
1:A:3143:ILE:HD13	1:A:3541:ILE:HD13	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4071:ILE:HD11	1:A:4096:LEU:HD22	1.93	0.50
1:A:2666:ILE:HB	1:A:2712:CYS:SG	2.52	0.50
1:A:3044:LEU:HD22	1:A:3049:GLU:HG2	1.93	0.50
1:A:2808:GLU:OE1	1:A:2811:ARG:NH2	2.43	0.50
1:A:4342:LYS:O	1:A:4346:MET:HG2	2.12	0.50
1:A:3133:LEU:HD21	1:A:3137:PRO:HB3	1.93	0.50
1:A:3024:ASP:O	1:A:3028:THR:HG23	2.12	0.50
1:A:4460:LEU:HA	1:A:4475:VAL:HG22	1.93	0.50
1:A:1425:VAL:HB	1:A:1428:GLU:HB2	1.94	0.50
1:A:2231:SER:HA	1:A:2234:TRP:CD1	2.46	0.50
1:A:3191:ARG:O	1:A:3195:GLU:HG3	2.12	0.50
1:A:4045:SER:HB3	1:A:4049:TYR:HB3	1.93	0.50
1:A:4398:LEU:HD21	1:A:4493:SER:HA	1.93	0.50
1:A:4099:VAL:HG21	1:A:4126:LEU:HB3	1.94	0.50
1:A:4442:LYS:HE2	1:A:4448:LEU:HD11	1.94	0.50
1:A:4601:LYS:HB2	1:A:4604:VAL:HG23	1.93	0.50
1:A:1339:VAL:HG11	1:A:1370:LEU:HD21	1.94	0.49
1:A:2179:ARG:HD3	1:A:2208:LEU:HD11	1.94	0.49
1:A:2434:THR:O	1:A:2438:GLU:HG2	2.12	0.49
1:A:1964:GLU:OE2	1:A:1966:ARG:NH1	2.45	0.49
1:A:2787:ASP:OD1	1:A:2788:THR:N	2.45	0.49
1:A:3580:LEU:HD13	1:A:3600:ILE:HD11	1.93	0.49
1:A:3127:PRO:HG3	1:A:3538:GLN:HB3	1.94	0.49
1:A:3551:GLU:HG3	1:A:3559:ARG:HH12	1.77	0.49
1:A:2495:VAL:HG21	1:A:2524:VAL:HG11	1.95	0.49
1:A:1751:VAL:HG11	1:A:1878:LYS:HD2	1.94	0.49
1:A:2527:PRO:HD3	1:A:2545:TRP:CE2	2.48	0.49
1:A:3591:ASP:OD2	1:A:3596:ALA:HB3	2.12	0.49
1:A:2209:GLN:O	1:A:2212:GLN:HG2	2.13	0.49
1:A:3194:LEU:HD13	1:A:3500:MET:HE2	1.94	0.49
1:A:4288:VAL:HG21	1:A:4294:ILE:HG13	1.94	0.49
1:A:3597:THR:O	1:A:3601:MET:HG2	2.13	0.49
1:A:2919:VAL:HG13	1:A:2950:VAL:HG22	1.94	0.49
1:A:3767:ILE:HA	1:A:3770:LEU:HD13	1.94	0.49
1:A:2446:ILE:HG23	1:A:2447:MET:HG2	1.95	0.48
1:A:2844:ARG:O	1:A:2848:GLU:HG3	2.13	0.48
1:A:2918:HIS:O	1:A:2922:ILE:HG13	2.13	0.48
1:A:4069:ILE:HD13	1:A:4079:GLN:HG2	1.95	0.48
1:A:1540:VAL:HG13	1:A:1608:LEU:HD12	1.94	0.48
1:A:3888:ALA:O	1:A:4012:ASN:ND2	2.46	0.48
1:A:1332:VAL:HB	1:A:1377:LEU:HD22	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1661:VAL:HG22	1:A:1676:ILE:HD12	1.94	0.48
1:A:2872:LEU:HD13	1:A:2889:LEU:HD12	1.95	0.48
1:A:2223:VAL:HG11	1:A:2348:LEU:HG	1.94	0.48
1:A:2248:GLU:HG2	1:A:2297:LYS:HZ2	1.76	0.48
1:A:2472:TYR:HB2	1:A:2541:ILE:HD12	1.95	0.48
1:A:1721:VAL:HA	1:A:1724:VAL:HG12	1.94	0.48
1:A:1816:VAL:HG11	1:A:2052:VAL:HG22	1.93	0.48
1:A:2053:MET:SD	1:A:2094:LYS:HG2	2.54	0.48
1:A:2094:LYS:NZ	2:A:4701:ADP:O2'	2.32	0.48
1:A:1556:ASP:O	1:A:1560:LEU:HG	2.13	0.48
1:A:2232:MET:HG3	3:A:4702:ATP:C8	2.48	0.48
1:A:2499:LEU:O	1:A:2503:SER:OG	2.25	0.48
1:A:2666:ILE:HG22	1:A:2723:LEU:HD21	1.94	0.48
1:A:3193:GLU:O	1:A:3196:GLU:HG3	2.13	0.48
1:A:2206:LYS:NZ	1:A:2363:TRP:O	2.32	0.48
1:A:2415:ILE:HD11	1:A:2473:ASN:HD22	1.79	0.48
1:A:3659:ARG:HG3	1:A:3661:LEU:CD2	2.44	0.48
1:A:3817:SER:C	1:A:4346:MET:HE1	2.39	0.48
1:A:2760:PRO:HB3	1:A:2763:ARG:HH21	1.79	0.48
1:A:3575:GLU:O	1:A:3579:MET:HG3	2.14	0.48
1:A:4081:ASP:OD1	1:A:4082:LYS:N	2.47	0.48
1:A:2534:ILE:HD12	1:A:2534:ILE:H	1.79	0.47
1:A:2465:ALA:HB2	1:A:2493:TYR:CD1	2.49	0.47
1:A:2484:GLU:O	1:A:2488:ARG:HG3	2.14	0.47
1:A:2965:ARG:HE	1:A:2966:LYS:HD2	1.78	0.47
1:A:3591:ASP:O	1:A:3682:ARG:HA	2.15	0.47
1:A:3972:TYR:OH	1:A:3976:GLU:OE1	2.30	0.47
1:A:4055:VAL:HB	1:A:4095:MET:HE1	1.96	0.47
1:A:1628:ARG:NH2	1:A:1871:GLU:OE1	2.47	0.47
1:A:2956:LEU:HG	1:A:2989:LYS:HB3	1.97	0.47
1:A:3488:ARG:HH12	1:A:3773:LEU:HB3	1.79	0.47
1:A:3935:VAL:HG22	1:A:3996:PHE:HE1	1.79	0.47
1:A:4302:ARG:O	1:A:4306:VAL:HG23	2.14	0.47
1:A:3194:LEU:HD13	1:A:3500:MET:CE	2.44	0.47
1:A:4178:ARG:NH2	1:A:4299:GLY:O	2.46	0.47
1:A:3766:ILE:O	1:A:3769:THR:HG22	2.14	0.47
1:A:4044:CYS:HB3	1:A:4130:ILE:HG12	1.96	0.47
1:A:2268:LEU:HB3	1:A:2275:TRP:HE3	1.79	0.47
1:A:2371:THR:HG22	1:A:2451:ARG:HD2	1.97	0.47
1:A:2454:CYS:HB3	1:A:2502:LEU:HD23	1.97	0.47
1:A:3724:VAL:HG13	1:A:3794:VAL:HG12	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3909:LEU:HB3	1:A:4344:LEU:HD21	1.97	0.47
1:A:1403:LEU:HD23	1:A:1450:LEU:HD11	1.96	0.47
1:A:3157:ALA:HB1	1:A:3524:MET:HE2	1.96	0.47
1:A:4027:LEU:HD11	1:A:4043:MET:HE1	1.96	0.47
1:A:1667:ASN:HB2	1:A:1672:VAL:HB	1.97	0.47
1:A:1571:ILE:HD11	1:A:1607:LEU:HB3	1.97	0.47
1:A:3915:VAL:HG21	1:A:4390:LEU:HD22	1.97	0.47
1:A:4137:ASN:OD1	1:A:4138:LEU:N	2.48	0.46
1:A:4543:VAL:HG21	1:A:4622:VAL:HG12	1.96	0.46
1:A:1336:LEU:HD11	1:A:1386:VAL:HG21	1.97	0.46
1:A:1701:TRP:O	1:A:1705:VAL:HG23	2.15	0.46
1:A:1847:ASP:OD1	1:A:1849:LYS:HG2	2.15	0.46
1:A:1859:ILE:HD11	1:A:1868:TYR:HD1	1.80	0.46
1:A:2884:VAL:HG13	1:A:2889:LEU:HD11	1.98	0.46
1:A:3044:LEU:HD13	1:A:3049:GLU:HG3	1.97	0.46
1:A:2135:GLU:HA	1:A:2138:ILE:HG22	1.97	0.46
1:A:2445:HIS:NE2	1:A:2449:LEU:HD22	2.31	0.46
1:A:2726:ARG:NH1	3:A:4702:ATP:O3G	2.48	0.46
1:A:3178:ASP:OD1	1:A:3584:ASN:HB2	2.15	0.46
1:A:2227:GLY:HA3	1:A:2452:LEU:HD12	1.97	0.46
1:A:2924:ARG:O	1:A:2928:GLN:HG2	2.16	0.46
1:A:3099:THR:HG23	1:A:3148:VAL:HG11	1.98	0.46
1:A:2453:ARG:HD3	1:A:2728:LEU:O	2.16	0.46
1:A:3196:GLU:HA	1:A:3199:MET:HG3	1.97	0.46
1:A:4267:THR:HG21	1:A:4636:TYR:HD2	1.79	0.46
1:A:1769:MET:SD	1:A:1775:ALA:HA	2.56	0.46
1:A:3123:PRO:HG2	1:A:3126:MET:HG3	1.96	0.46
1:A:1469:VAL:HG11	1:A:1500:HIS:CE1	2.50	0.46
1:A:2936:ILE:HA	1:A:3068:MET:O	2.16	0.46
1:A:2191:LEU:HD12	1:A:2236:VAL:HG21	1.98	0.46
1:A:2934:LEU:HD23	1:A:3091:LEU:CD2	2.46	0.46
1:A:4554:ASP:H	1:A:4557:SER:HB2	1.81	0.46
1:A:1456:GLU:HG2	1:A:1512:TYR:HB3	1.97	0.45
1:A:2080:LEU:HD22	1:A:2153:ASP:HB3	1.97	0.45
1:A:4214:SER:HB2	1:A:4251:ILE:HG23	1.98	0.45
1:A:2135:GLU:HG2	1:A:2168:VAL:HG13	1.97	0.45
1:A:2323:LYS:HB3	1:A:2335:LEU:HB3	1.98	0.45
1:A:2935:LEU:HD23	1:A:3092:ASN:HB3	1.99	0.45
1:A:4094:VAL:HB	1:A:4124:LEU:HD12	1.98	0.45
1:A:3876:LEU:HD23	1:A:4146:VAL:HG11	1.98	0.45
1:A:2748:TYR:CD2	1:A:2799:MET:HE3	2.51	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4429:GLN:NE2	1:A:4433:ASP:OD1	2.48	0.45
1:A:1599:ARG:HG3	1:A:1599:ARG:HH11	1.81	0.45
1:A:2093:LEU:O	1:A:2097:LEU:HG	2.17	0.45
1:A:2369:LEU:HD12	1:A:2373:MET:HE2	1.99	0.45
1:A:2643:ARG:HE	1:A:2648:VAL:HG22	1.80	0.45
1:A:2996:GLU:HA	1:A:2999:VAL:HB	1.99	0.45
1:A:4407:ASP:HB3	1:A:4410:PHE:HB3	1.99	0.45
1:A:1619:LEU:HD22	1:A:1637:LEU:HD23	1.97	0.45
1:A:2065:LEU:HD21	1:A:2134:GLN:HG2	1.99	0.45
1:A:3568:PRO:HG2	1:A:3573:CYS:SG	2.56	0.45
1:A:1721:VAL:O	1:A:1725:GLU:HG3	2.17	0.45
1:A:1850:GLN:HB2	1:A:1856:GLN:HG2	1.97	0.45
1:A:2560:HIS:O	1:A:2561:LYS:HG2	2.17	0.45
1:A:2775:GLU:O	1:A:2778:THR:OG1	2.35	0.45
1:A:1459:LEU:HD22	1:A:1507:MET:HG3	1.99	0.45
1:A:2072:PHE:CE2	1:A:2141:VAL:HG11	2.52	0.45
1:A:3801:TYR:HD1	1:A:3856:LEU:HD13	1.80	0.45
1:A:1635:GLU:HG2	1:A:1636:ASP:N	2.32	0.45
1:A:1687:LYS:HG3	1:A:1715:LYS:HD2	1.97	0.45
1:A:2798:GLU:HG3	1:A:2801:ARG:HH21	1.81	0.45
1:A:3692:LEU:O	1:A:3696:VAL:HG22	2.16	0.45
1:A:3821:ILE:HD12	1:A:4342:LYS:HG2	1.97	0.45
1:A:1408:LEU:HD12	1:A:1408:LEU:HA	1.87	0.45
1:A:1793:ALA:HA	1:A:1796:VAL:HG12	1.98	0.45
1:A:1468:GLU:O	1:A:1472:THR:HG22	2.17	0.44
1:A:2202:MET:O	1:A:2205:GLU:HG2	2.18	0.44
1:A:2905:LEU:HD23	1:A:2948:ARG:HH22	1.82	0.44
1:A:2346:GLN:HB2	1:A:2726:ARG:HD2	1.97	0.44
1:A:2778:THR:O	1:A:2782:GLU:HG3	2.17	0.44
1:A:3057:GLN:O	1:A:3061:ASN:HB2	2.16	0.44
1:A:4423:LEU:HD13	1:A:4466:HIS:ND1	2.32	0.44
1:A:2211:TYR:O	1:A:2214:THR:OG1	2.29	0.44
1:A:3008:MET:HE2	1:A:3064:VAL:HG21	1.99	0.44
1:A:3708:LEU:HD13	1:A:3829:LEU:HD11	1.99	0.44
1:A:3878:GLN:HG3	1:A:3879:ASP:OD1	2.17	0.44
1:A:2134:GLN:HE21	1:A:2168:VAL:HG21	1.82	0.44
1:A:2671:MET:HB3	1:A:2675:GLY:HA2	1.99	0.44
1:A:1561:LEU:HB3	1:A:1564:GLU:HB2	2.00	0.44
1:A:2049:ILE:HD13	1:A:2090:LEU:HD21	2.00	0.44
1:A:2204:VAL:O	1:A:2207:VAL:HG12	2.18	0.44
1:A:3724:VAL:HG21	1:A:3797:VAL:HG21	1.98	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4093:TRP:CD1	1:A:4123:ARG:HB2	2.53	0.44
1:A:4191:GLN:O	1:A:4194:LEU:HB2	2.18	0.44
1:A:4485:ARG:NH1	1:A:4513:GLY:O	2.51	0.44
1:A:4517:PRO:O	1:A:4521:ILE:HG12	2.17	0.44
1:A:1409:LYS:O	1:A:1413:TRP:HD1	2.01	0.44
1:A:2938:VAL:O	1:A:2943:LYS:NZ	2.51	0.44
1:A:4277:SER:HA	1:A:4282:PHE:CG	2.52	0.44
1:A:4324:PRO:HB2	1:A:4326:ASN:OD1	2.18	0.44
1:A:1646:ASN:ND2	1:A:1649:LYS:HE2	2.33	0.44
1:A:2915:VAL:HG13	1:A:2946:LEU:HD21	2.00	0.44
1:A:1911:GLY:N	2:A:4701:ADP:O1B	2.47	0.44
1:A:1974:GLN:O	1:A:1978:ILE:HG13	2.18	0.44
1:A:3643:PRO:O	1:A:3646:ASN:ND2	2.50	0.44
1:A:3581:LYS:HZ2	1:A:3582:ARG:HH11	1.65	0.43
1:A:3922:PRO:HD2	1:A:3936:VAL:HG21	1.99	0.43
1:A:2232:MET:HE2	1:A:2232:MET:HA	1.99	0.43
1:A:2620:LEU:HD11	1:A:2634:THR:HG21	2.00	0.43
1:A:2828:GLU:OE1	1:A:2924:ARG:NH1	2.50	0.43
1:A:2923:ASP:OD1	1:A:2927:ARG:NH2	2.50	0.43
1:A:4086:THR:HG23	1:A:4089:LYS:HZ3	1.83	0.43
1:A:2288:ILE:HD12	1:A:2333:LEU:HD22	2.00	0.43
1:A:2309:PRO:HB3	1:A:2352:THR:CG2	2.49	0.43
1:A:2884:VAL:HG11	1:A:2889:LEU:HD21	1.99	0.43
1:A:2219:GLY:HA2	1:A:2341:ILE:O	2.19	0.43
1:A:2319:LEU:HD13	1:A:2359:CYS:SG	2.58	0.43
1:A:4330:VAL:O	1:A:4333:THR:HG22	2.18	0.43
1:A:4492:ILE:HD12	1:A:4507:ILE:HD13	2.01	0.43
1:A:1350:PRO:O	1:A:1354:VAL:HG23	2.18	0.43
1:A:2468:ASN:HA	1:A:2471:GLN:HG2	1.99	0.43
1:A:4209:GLU:O	1:A:4213:ARG:HG3	2.19	0.43
1:A:2467:ARG:NH1	1:A:2587:GLU:OE2	2.51	0.43
1:A:2895:ALA:O	1:A:2899:VAL:HG23	2.19	0.43
1:A:2388:ASP:OD1	1:A:2389:GLU:N	2.52	0.43
1:A:2905:LEU:HD23	1:A:2948:ARG:NH2	2.32	0.43
1:A:2936:ILE:HG23	1:A:3093:TRP:CE3	2.54	0.43
1:A:3648:VAL:HA	1:A:3662:ILE:HD11	2.01	0.43
1:A:1547:LEU:HD22	1:A:1608:LEU:HD22	2.00	0.43
1:A:2483:ILE:O	1:A:2487:GLU:HG3	2.19	0.43
1:A:3008:MET:HE3	1:A:3011:LEU:HD23	2.01	0.43
1:A:4100:HIS:CD2	1:A:4129:GLU:HG2	2.54	0.43
1:A:1741:TRP:CH2	1:A:1750:VAL:HG13	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2221:MET:HE3	1:A:2343:PHE:CD2	2.48	0.43
1:A:2460:SER:OG	1:A:2589:LYS:HD2	2.18	0.43
1:A:4096:LEU:HD13	1:A:4105:TRP:HH2	1.84	0.43
1:A:4489:LEU:O	1:A:4492:ILE:HG22	2.19	0.43
1:A:2413:LEU:HG	1:A:2417:ARG:HE	1.84	0.43
1:A:1370:LEU:HD11	1:A:1390:LEU:HD12	2.01	0.42
1:A:1927:VAL:HG22	1:A:1954:TRP:HB2	2.02	0.42
1:A:3576:ASN:ND2	1:A:3700:ASN:O	2.50	0.42
1:A:4097:LYS:HA	1:A:4127:THR:OG1	2.18	0.42
1:A:2982:ARG:HA	1:A:2986:LYS:HD2	2.00	0.42
1:A:4087:ALA:HB1	1:A:4092:ARG:O	2.18	0.42
1:A:2514:LEU:O	1:A:2518:ILE:HG12	2.19	0.42
1:A:3500:MET:HE2	1:A:3503:ILE:HD12	2.01	0.42
1:A:4087:ALA:O	1:A:4091:GLY:N	2.51	0.42
1:A:4381:HIS:HB2	1:A:4438:CYS:HB3	2.00	0.42
1:A:4421:ALA:O	1:A:4425:GLN:HG2	2.19	0.42
1:A:2071:PRO:O	1:A:2075:LEU:HG	2.19	0.42
1:A:2668:LEU:HD23	1:A:2668:LEU:HA	1.88	0.42
1:A:2175:MET:HE1	1:A:2211:TYR:HD2	1.84	0.42
1:A:2559:THR:HG22	1:A:2757:ARG:HB3	2.02	0.42
1:A:1408:LEU:O	1:A:1412:HIS:HB2	2.19	0.42
1:A:1952:GLY:HA2	1:A:2012:MET:HB3	2.01	0.42
1:A:2925:ILE:HD11	1:A:3090:VAL:HG11	2.01	0.42
1:A:3113:MET:HE2	1:A:3184:ALA:CA	2.48	0.42
1:A:1356:PRO:CB	1:A:1401:ILE:HG13	2.49	0.42
1:A:1411:ARG:O	1:A:1415:GLN:HG3	2.19	0.42
1:A:1838:TRP:CZ2	1:A:1843:ARG:HG2	2.55	0.42
1:A:1481:GLN:N	1:A:2271:ASN:O	2.51	0.42
1:A:2278:GLY:N	1:A:2281:THR:OG1	2.53	0.42
1:A:2999:VAL:HG13	1:A:3005:LEU:HD21	2.02	0.42
1:A:3620:ARG:O	1:A:3624:GLU:HG3	2.20	0.42
1:A:1454:GLN:NE2	1:A:3671:LEU:O	2.41	0.42
1:A:1910:THR:HG22	1:A:2044:PRO:HD3	2.02	0.42
1:A:3605:LYS:HE3	1:A:3605:LYS:HB2	1.86	0.42
1:A:3787:THR:O	1:A:3791:MET:HG3	2.19	0.42
1:A:3944:PHE:CE1	1:A:3974:TRP:HB3	2.55	0.42
1:A:4043:MET:HE2	1:A:4147:PHE:CE1	2.54	0.42
1:A:4460:LEU:HD21	1:A:4465:SER:OG	2.20	0.42
1:A:2449:LEU:HA	1:A:2449:LEU:HD12	1.79	0.42
1:A:2863:ARG:CZ	1:A:2867:MET:HB2	2.50	0.42
1:A:3140:ARG:O	1:A:3144:VAL:HG23	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1414:LYS:O	1:A:1417:MET:HB3	2.20	0.41
1:A:1511:PRO:O	1:A:1514:LYS:NZ	2.37	0.41
1:A:1873:LEU:HD13	1:A:1921:HIS:HB3	2.01	0.41
1:A:2068:LYS:HG2	1:A:4537:GLU:OE2	2.20	0.41
1:A:2440:ALA:HB2	1:A:2502:LEU:HB3	2.02	0.41
1:A:3767:ILE:O	1:A:3771:GLU:HG2	2.19	0.41
1:A:2571:THR:H	1:A:2574:THR:HB	1.85	0.41
1:A:2836:ARG:NH1	1:A:3091:LEU:HD12	2.35	0.41
1:A:3740:LEU:O	1:A:3743:ARG:HG2	2.20	0.41
1:A:3927:LEU:HD11	1:A:3957:PHE:HE2	1.85	0.41
1:A:4412:PHE:CZ	1:A:4520:TYR:HB2	2.55	0.41
1:A:2214:THR:HG22	1:A:2220:LEU:HD21	2.03	0.41
1:A:2593:LEU:HD12	1:A:2605:LEU:HG	2.03	0.41
1:A:3123:PRO:HB3	1:A:3540:ASN:OD1	2.20	0.41
1:A:3739:GLN:HB3	1:A:3743:ARG:HH21	1.85	0.41
1:A:3972:TYR:C	1:A:3973:LEU:HD12	2.45	0.41
1:A:2175:MET:O	1:A:2179:ARG:HG2	2.21	0.41
1:A:2529:ALA:HB1	1:A:2532:ILE:HB	2.02	0.41
1:A:2802:TRP:CZ2	1:A:2829:ALA:HB2	2.56	0.41
1:A:4028:THR:HA	1:A:4058:LEU:HD11	2.01	0.41
1:A:1425:VAL:O	1:A:1429:LEU:N	2.53	0.41
1:A:1990:TYR:HE2	1:A:1995:ALA:HA	1.85	0.41
1:A:4239:PRO:HB2	1:A:4242:ALA:HB3	2.03	0.41
1:A:1484:CYS:HB3	1:A:1576:LEU:HD22	2.03	0.41
1:A:1738:TYR:HE2	1:A:1792:LEU:HD21	1.86	0.41
1:A:1878:LYS:HE3	1:A:1878:LYS:HB3	1.84	0.41
1:A:2115:LYS:HE2	1:A:2127:ILE:HD11	2.02	0.41
1:A:2668:LEU:HD21	1:A:2720:ARG:HH11	1.85	0.41
1:A:3158:ASN:OD1	1:A:3168:THR:HB	2.21	0.41
1:A:4086:THR:O	1:A:4090:SER:OG	2.26	0.41
1:A:1464:LYS:HB2	1:A:1464:LYS:HE3	1.78	0.41
1:A:2077:ASP:OD2	1:A:2088:PHE:HB2	2.21	0.41
1:A:2103:VAL:O	1:A:2106:GLU:HG2	2.21	0.41
1:A:3966:PRO:HD2	1:A:4000:ARG:HG3	2.03	0.41
1:A:4543:VAL:HG13	1:A:4588:THR:HG23	2.02	0.41
1:A:4609:VAL:HG22	1:A:4642:VAL:HB	2.02	0.41
1:A:1397:ASN:O	1:A:1400:VAL:HB	2.20	0.41
1:A:1987:ASN:OD1	1:A:1987:ASN:N	2.54	0.41
1:A:2231:SER:HA	1:A:2234:TRP:NE1	2.36	0.41
1:A:2673:LYS:NZ	1:A:2674:TYR:OH	2.53	0.41
1:A:3013:ALA:HB2	1:A:3088:ARG:NE	2.36	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3103:TYR:OH	1:A:3141:GLU:HG2	2.20	0.41
1:A:3114:ASP:O	1:A:3140:ARG:NH2	2.54	0.41
1:A:3523:GLN:HG2	1:A:3706:SER:CB	2.50	0.41
1:A:4248:ALA:O	1:A:4253:GLY:HA3	2.21	0.41
1:A:4387:TRP:NE1	1:A:4479:VAL:HG21	2.35	0.41
1:A:4485:ARG:HG2	1:A:4513:GLY:HA2	2.03	0.41
1:A:1698:ILE:O	1:A:1702:LEU:HB2	2.20	0.41
1:A:2518:ILE:O	1:A:2522:THR:HG22	2.21	0.41
1:A:3007:ARG:HH21	1:A:3020:LEU:HD13	1.85	0.41
1:A:3550:THR:O	1:A:3554:SER:OG	2.35	0.41
1:A:3645:LEU:HG	1:A:3649:LEU:HG	2.02	0.41
1:A:4619:ILE:HG22	1:A:4620:PHE:HD1	1.84	0.41
1:A:2577:HIS:CD2	1:A:2736:VAL:HG22	2.56	0.40
1:A:2590:PRO:HA	1:A:2708:PHE:O	2.21	0.40
1:A:2667:ASN:HB3	1:A:2720:ARG:HB3	2.02	0.40
1:A:2854:ALA:O	1:A:2858:PHE:HB2	2.21	0.40
1:A:2920:LEU:HD23	1:A:2920:LEU:HA	1.86	0.40
1:A:3508:LEU:HD22	1:A:3536:LEU:HD11	2.02	0.40
1:A:1461:GLU:O	1:A:1465:GLN:HG3	2.21	0.40
1:A:2445:HIS:CD2	1:A:2449:LEU:HD22	2.56	0.40
1:A:4528:VAL:HG21	1:A:4592:TRP:HB2	2.03	0.40
1:A:1354:VAL:HG21	1:A:1431:LEU:HB2	2.03	0.40
1:A:1810:HIS:NE2	1:A:1876:GLN:O	2.52	0.40
1:A:1876:GLN:HG2	1:A:1921:HIS:CD2	2.57	0.40
1:A:1899:ARG:HD3	1:A:1899:ARG:HA	1.86	0.40
1:A:1912:LYS:HE3	1:A:1912:LYS:HB2	1.84	0.40
1:A:3548:ALA:HB1	1:A:3551:GLU:OE1	2.22	0.40
1:A:3756:VAL:HG12	1:A:3760:ILE:HD13	2.03	0.40
1:A:4307:GLN:O	1:A:4311:LEU:HG	2.21	0.40
1:A:1359:LEU:HD11	1:A:1435:TRP:CZ2	2.57	0.40
1:A:1698:ILE:HD13	1:A:1701:TRP:HE1	1.86	0.40
1:A:1713:LEU:HD23	1:A:1713:LEU:HA	1.92	0.40
1:A:3012:LEU:HD11	1:A:3066:PHE:HE2	1.87	0.40
1:A:3143:ILE:HG23	1:A:3508:LEU:HD12	2.04	0.40
1:A:4569:THR:HG22	1:A:4583:THR:HG21	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	3029/4646 (65%)	2974 (98%)	53 (2%)	2 (0%)	48	77

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	4292	LYS
1	A	4130	ILE

5.3.2 Protein sidechains ⓘ

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	2704/4125 (66%)	2704 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (37) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1368	ASN
1	A	1421	HIS
1	A	1482	ASN
1	A	1528	ASN
1	A	1646	ASN
1	A	1670	ASN
1	A	1755	GLN

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Mol	Chain	Res	Type
1	A	1817	HIS
1	A	1863	ASN
1	A	1876	GLN
1	A	1894	GLN
1	A	1922	GLN
1	A	2215	GLN
1	A	2263	HIS
1	A	2377	ASN
1	A	2476	HIS
1	A	2482	GLN
1	A	2637	HIS
1	A	2685	GLN
1	A	2752	ASN
1	A	2786	GLN
1	A	2834	GLN
1	A	2849	ASN
1	A	2886	GLN
1	A	3057	GLN
1	A	3473	ASN
1	A	3535	HIS
1	A	3584	ASN
1	A	3772	ASN
1	A	3799	GLN
1	A	3820	GLN
1	A	4012	ASN
1	A	4054	HIS
1	A	4078	ASN
1	A	4131	ASN
1	A	4174	ASN
1	A	4579	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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 8 ligands modelled in this entry, 4 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	$\#|Z| > 2$
2	ADP	A	4701	-	24,29,29	0.88	0	29,45,45	1.22	2 (6%)
4	ANP	A	4703	5	29,33,33	2.49	6 (20%)	31,52,52	1.46	3 (9%)
4	ANP	A	4704	5	29,33,33	2.51	6 (20%)	31,52,52	1.50	4 (12%)
3	ATP	A	4702	5	28,33,33	0.71	0	34,52,52	0.58	1 (2%)

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
2	ADP	A	4701	-	-	3/12/32/32	0/3/3/3
4	ANP	A	4703	5	-	4/14/38/38	0/3/3/3
4	ANP	A	4704	5	-	8/14/38/38	0/3/3/3
3	ATP	A	4702	5	-	3/18/38/38	0/3/3/3

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	4704	ANP	PB-O3A	8.86	1.70	1.59
4	A	4703	ANP	PB-O3A	8.78	1.70	1.59
4	A	4703	ANP	PG-N3B	6.25	1.79	1.63
4	A	4704	ANP	PG-N3B	6.20	1.79	1.63
4	A	4704	ANP	PG-O1G	4.70	1.53	1.46
4	A	4703	ANP	PG-O1G	4.64	1.53	1.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	4704	ANP	PB-O1B	2.65	1.50	1.46
4	A	4703	ANP	PB-O1B	2.61	1.50	1.46
4	A	4703	ANP	C8-N7	-2.36	1.30	1.34
4	A	4704	ANP	C8-N7	-2.31	1.30	1.34
4	A	4703	ANP	PB-O2B	-2.23	1.50	1.56
4	A	4704	ANP	PB-O2B	-2.22	1.50	1.56

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	4703	ANP	O2B-PB-O1B	4.89	120.35	109.87
4	A	4704	ANP	O2B-PB-O1B	4.81	120.17	109.87
4	A	4704	ANP	O1G-PG-N3B	-4.10	105.73	111.77
4	A	4703	ANP	O1G-PG-N3B	-3.87	106.07	111.77
2	A	4701	ADP	N3-C2-N1	-3.72	123.62	128.67
4	A	4704	ANP	O2G-PG-O3G	2.56	114.47	107.59
2	A	4701	ADP	C4-C5-N7	-2.54	106.65	109.34
4	A	4703	ANP	O2G-PG-O3G	2.47	114.23	107.59
3	A	4702	ATP	C5-C6-N6	2.30	123.81	120.31
4	A	4704	ANP	C4'-O4'-C1'	-2.05	108.05	109.92

There are no chirality outliers.

All (18) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	4703	ANP	PB-N3B-PG-O1G
4	A	4703	ANP	PA-O3A-PB-O2B
4	A	4704	ANP	PB-N3B-PG-O1G
4	A	4704	ANP	PG-N3B-PB-O1B
4	A	4704	ANP	C5'-O5'-PA-O2A
4	A	4704	ANP	C5'-O5'-PA-O3A
4	A	4704	ANP	O4'-C4'-C5'-O5'
4	A	4704	ANP	C3'-C4'-C5'-O5'
2	A	4701	ADP	O4'-C4'-C5'-O5'
3	A	4702	ATP	PB-O3B-PG-O1G
3	A	4702	ATP	PB-O3B-PG-O2G
2	A	4701	ADP	PB-O3A-PA-O2A
2	A	4701	ADP	PB-O3A-PA-O1A
4	A	4703	ANP	O4'-C4'-C5'-O5'
4	A	4704	ANP	PB-O3A-PA-O2A
4	A	4703	ANP	PA-O3A-PB-O1B
4	A	4704	ANP	PG-N3B-PB-O3A

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

There are no ring outliers.

3 monomers are involved in 7 short contacts:

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

Bond lengths

Bond angles

Torsions

Rings

Ligand ANP A 4703

Bond lengths

Bond angles

Torsions

Rings

Ligand ANP A 4704

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP A 4702

Bond lengths

Bond angles

Torsions

Rings
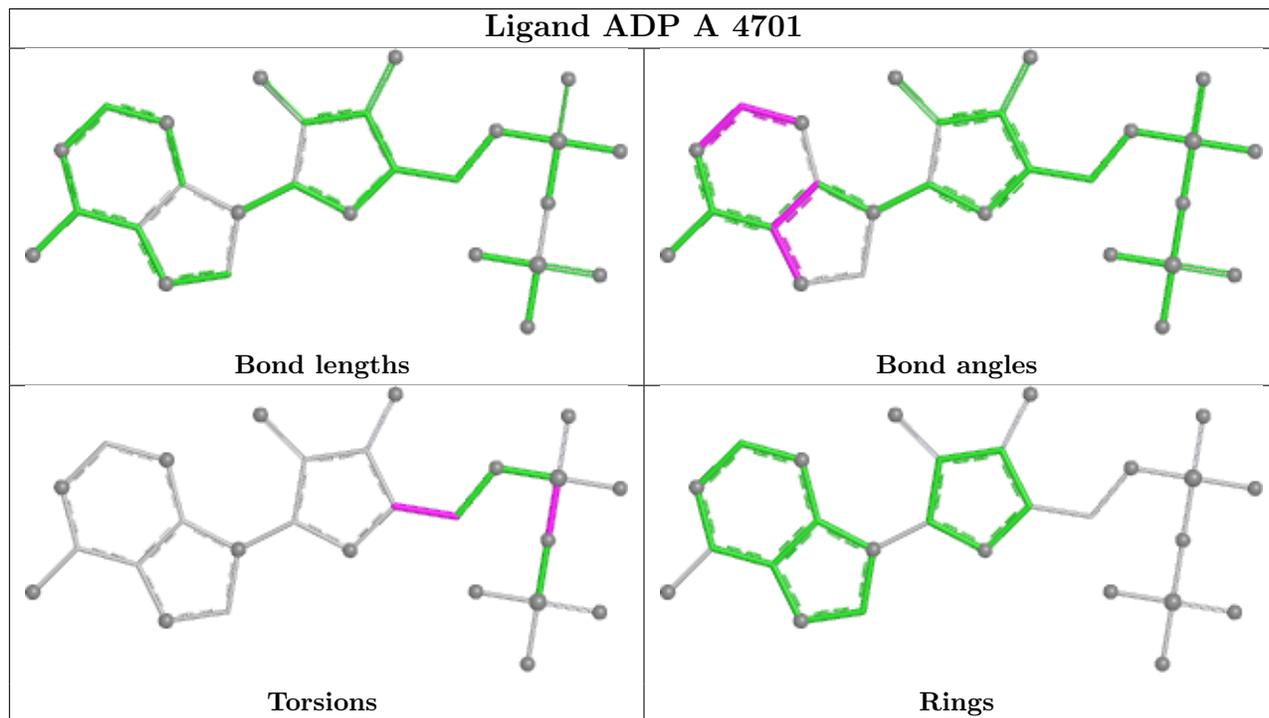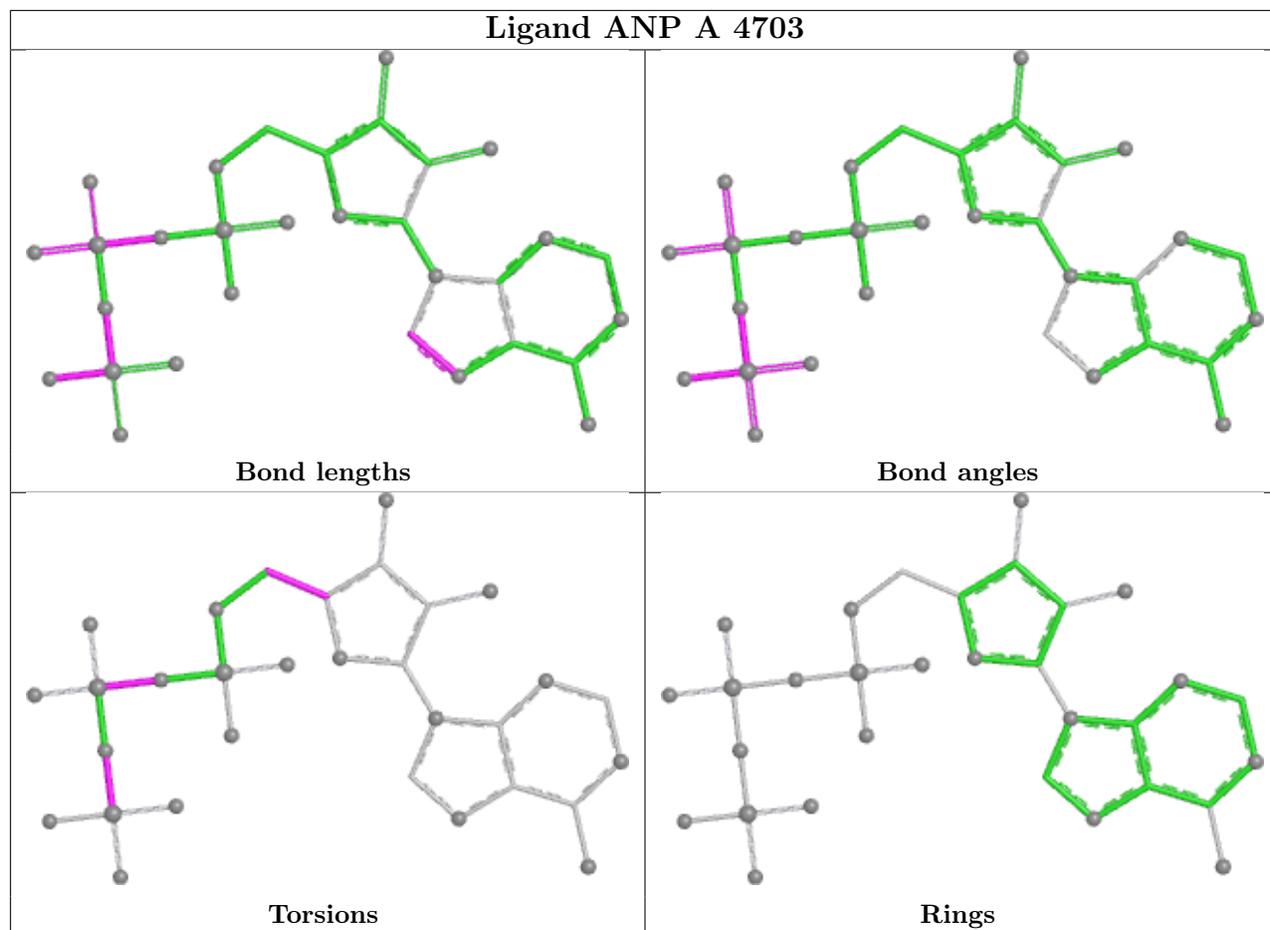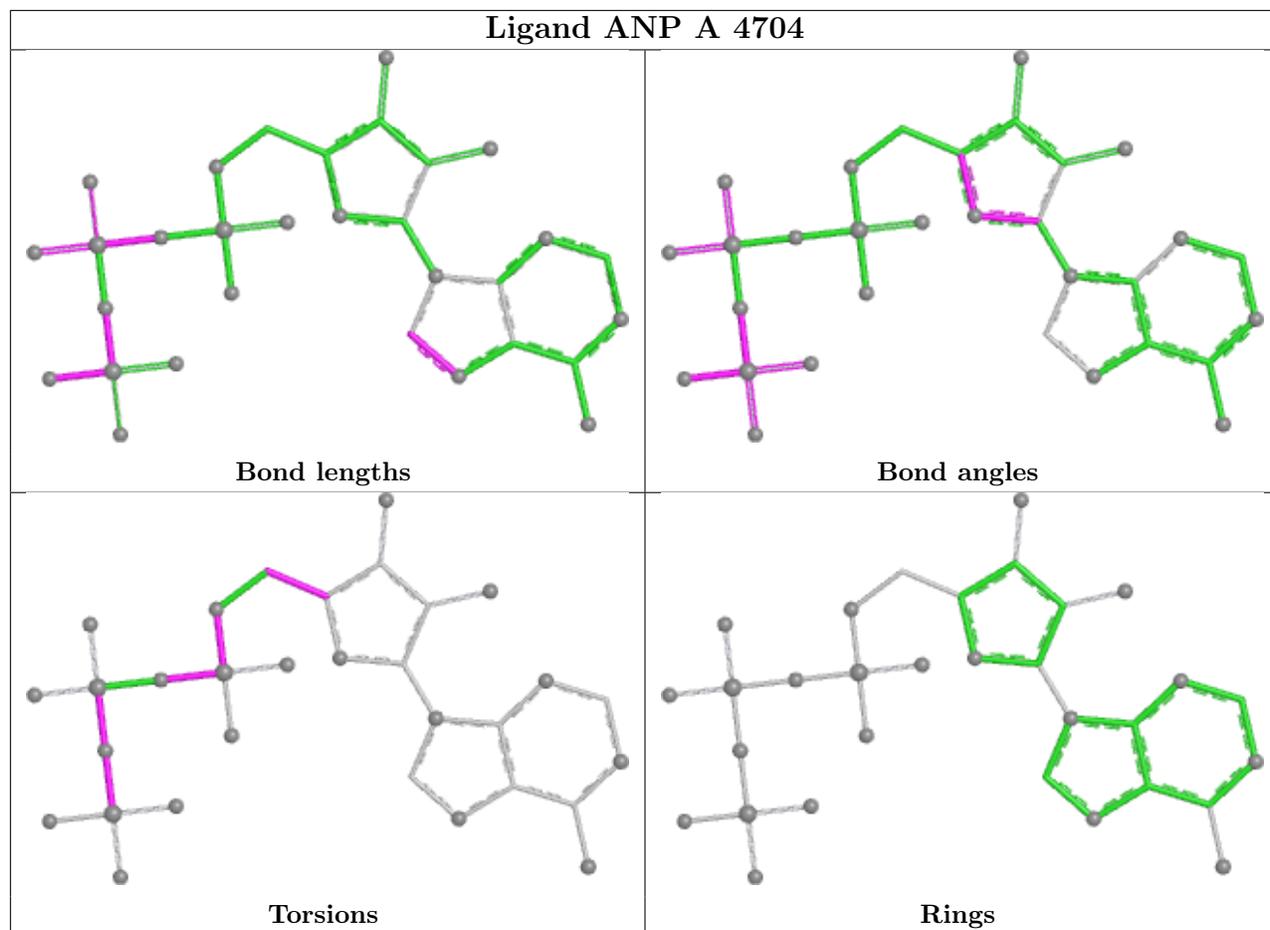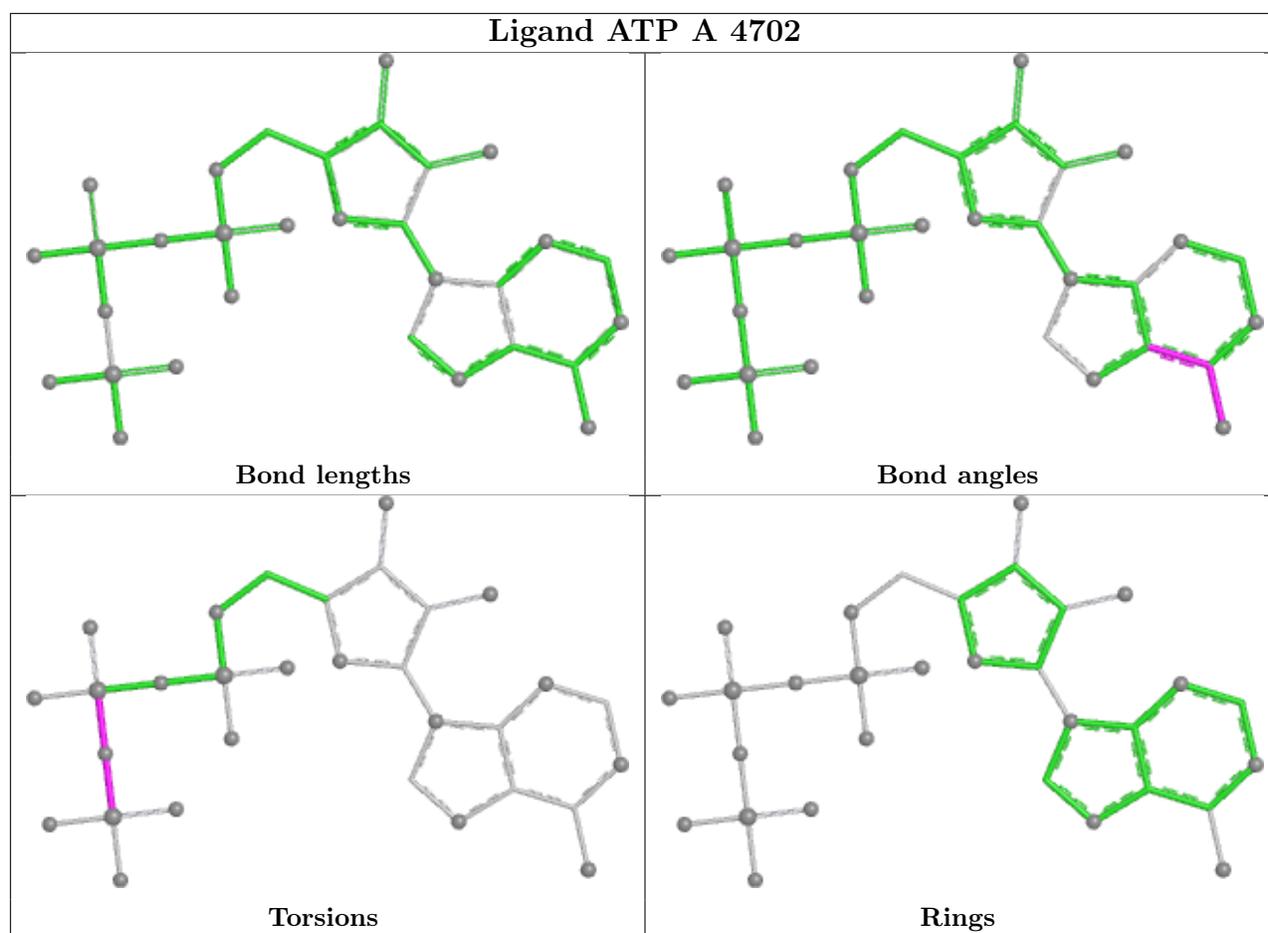
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-44696. 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 ⓘ

6.1.1 Primary map

| X | Y | Z |

6.1.2 Raw map

| X | Y | Z |
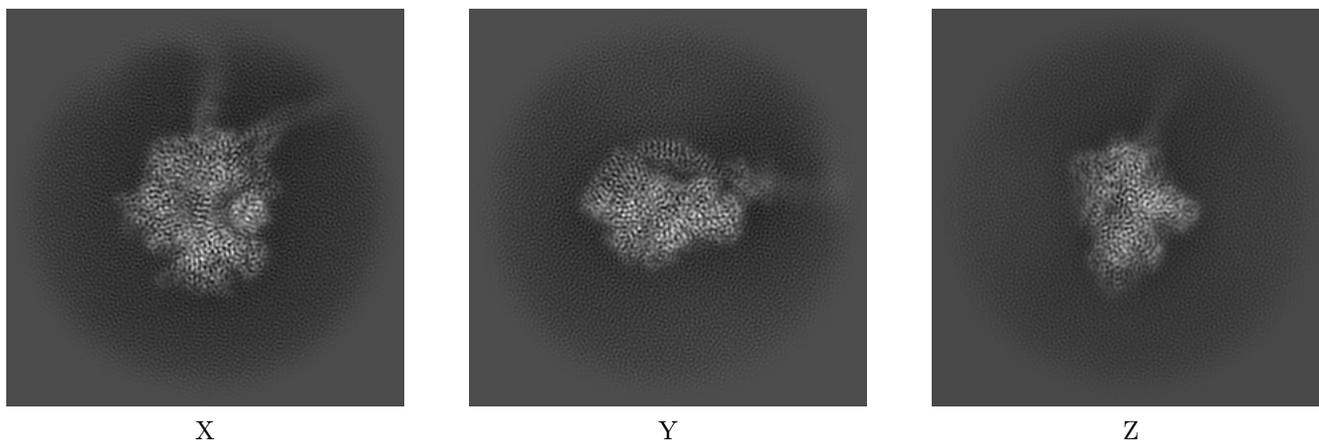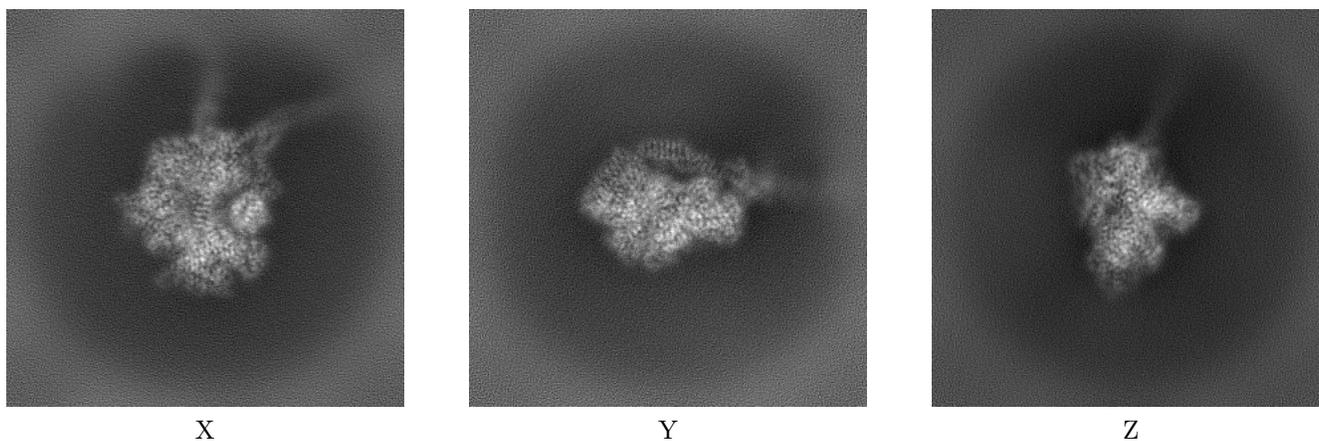
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

6.2.1 Primary map
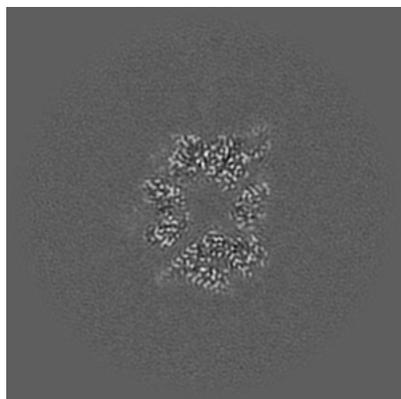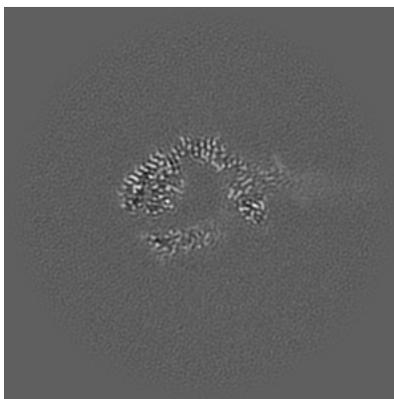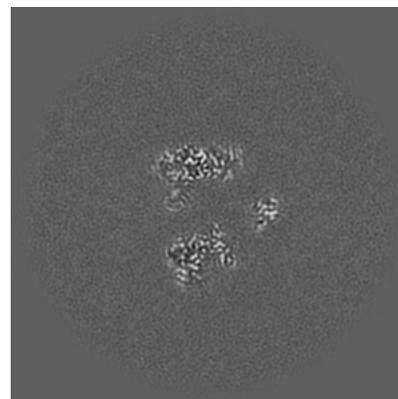
| X Index: 192 | Y Index: 192 | Z Index: 192 |

6.2.2 Raw map
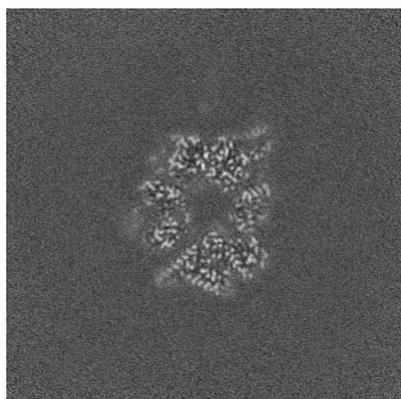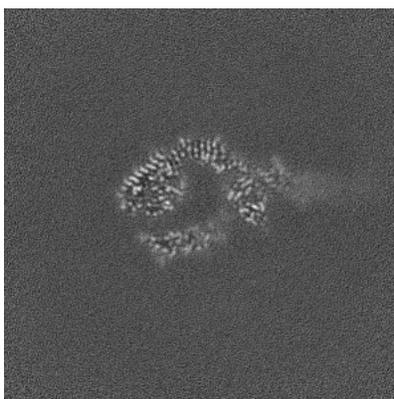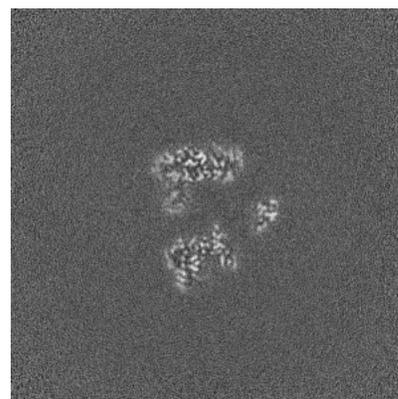
| X Index: 192 | Y Index: 192 | Z Index: 192 |

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

6.3 Largest variance slices (i)

6.3.1 Primary map
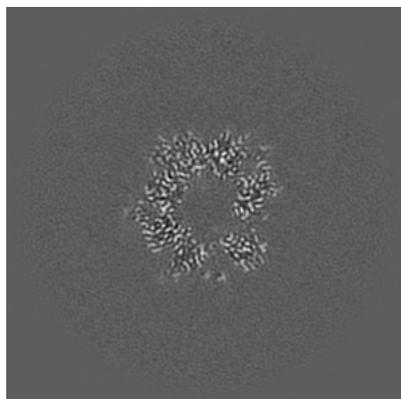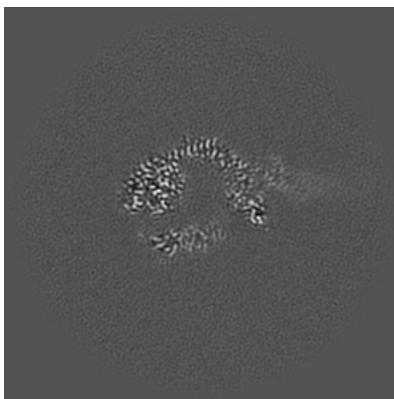
| X Index: 184 | Y Index: 194 | Z Index: 154 |
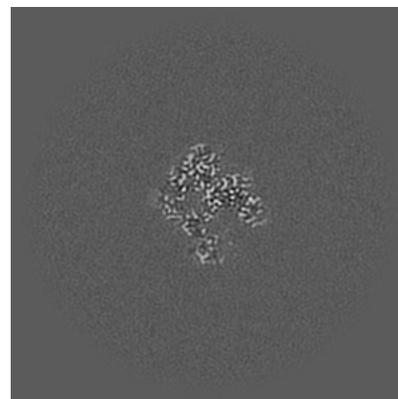
6.3.2 Raw map
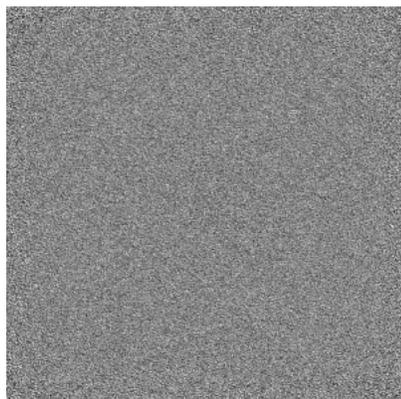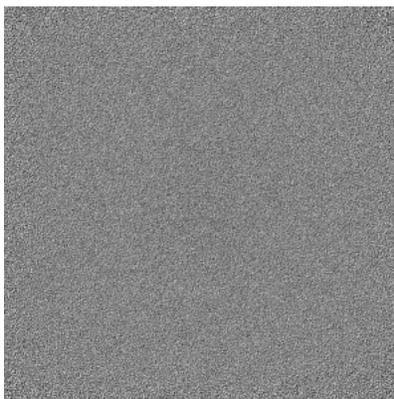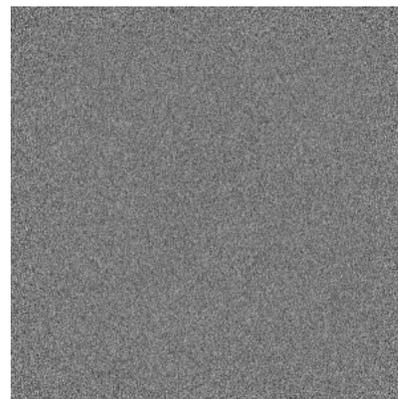
| X Index: 0 | Y Index: 0 | Z Index: 0 |

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

6.4 Orthogonal standard-deviation projections (False-color) ⓘ

6.4.1 Primary map
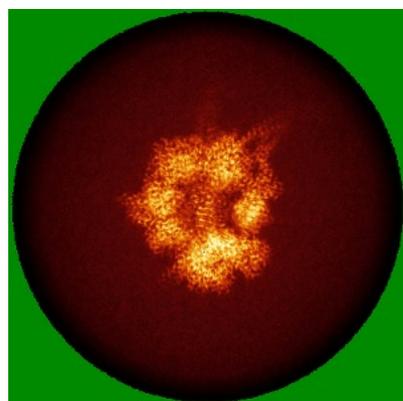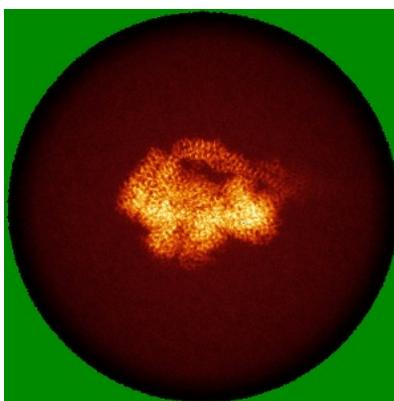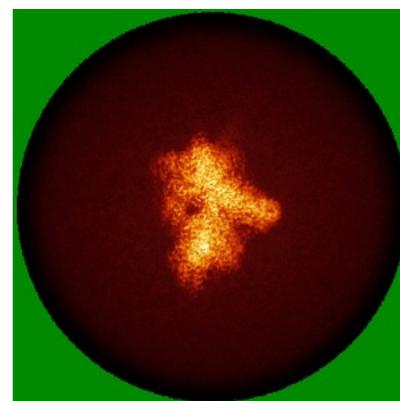
X　　　　　　　　　Y　　　　　　　　　Z

6.4.2 Raw map

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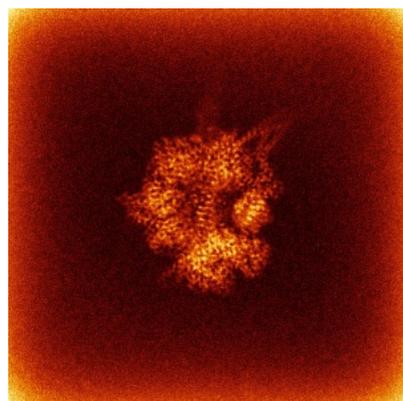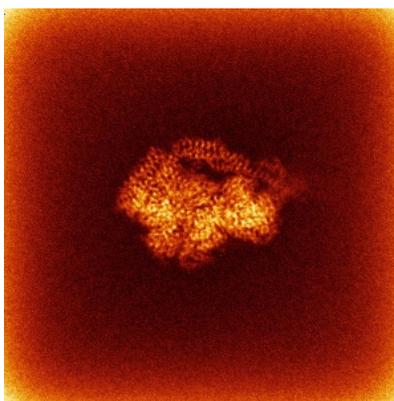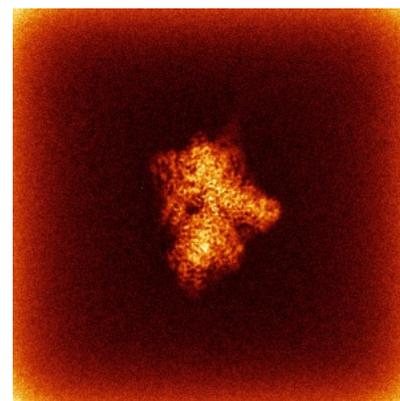
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X	Y	Z
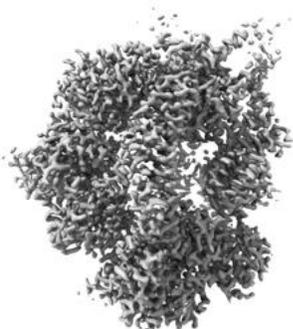
The images above show the 3D surface view of the map at the recommended contour level 0.3. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

X	Y	Z

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 ⓘ

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_44696_msk_1.map ⓘ

X　　　　　　　　　　　　　Y　　　　　　　　　　　　　Z
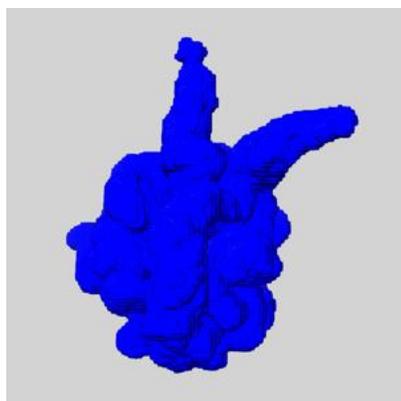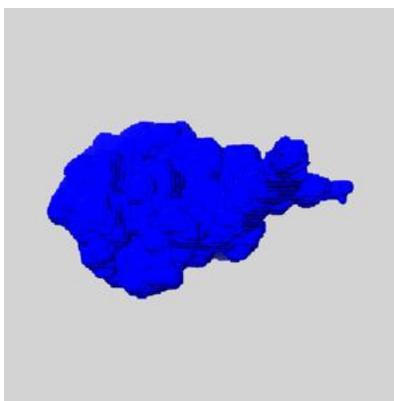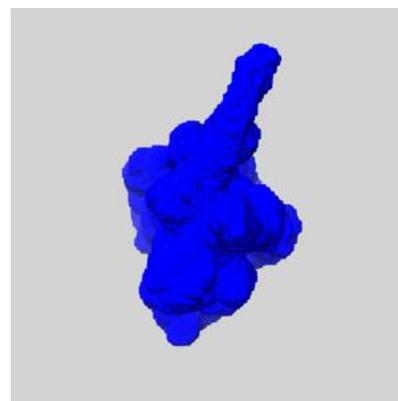
7 Map analysis ⓘ

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

7.1 Map-value distribution ⓘ

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 ⓘ
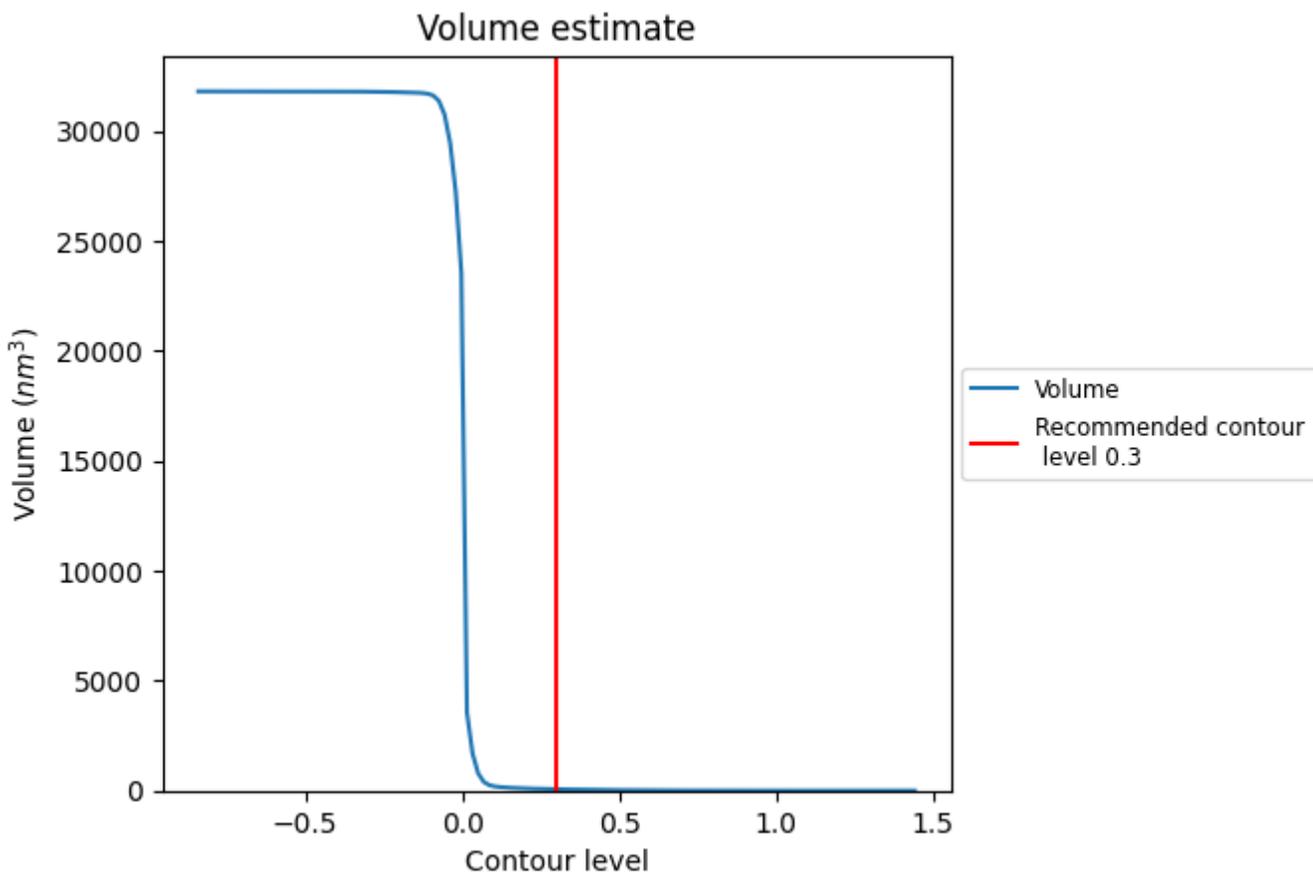
The volume at the recommended contour level is 64 nm^3; this corresponds to an approximate mass of 58 kDa.

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 ⓘ
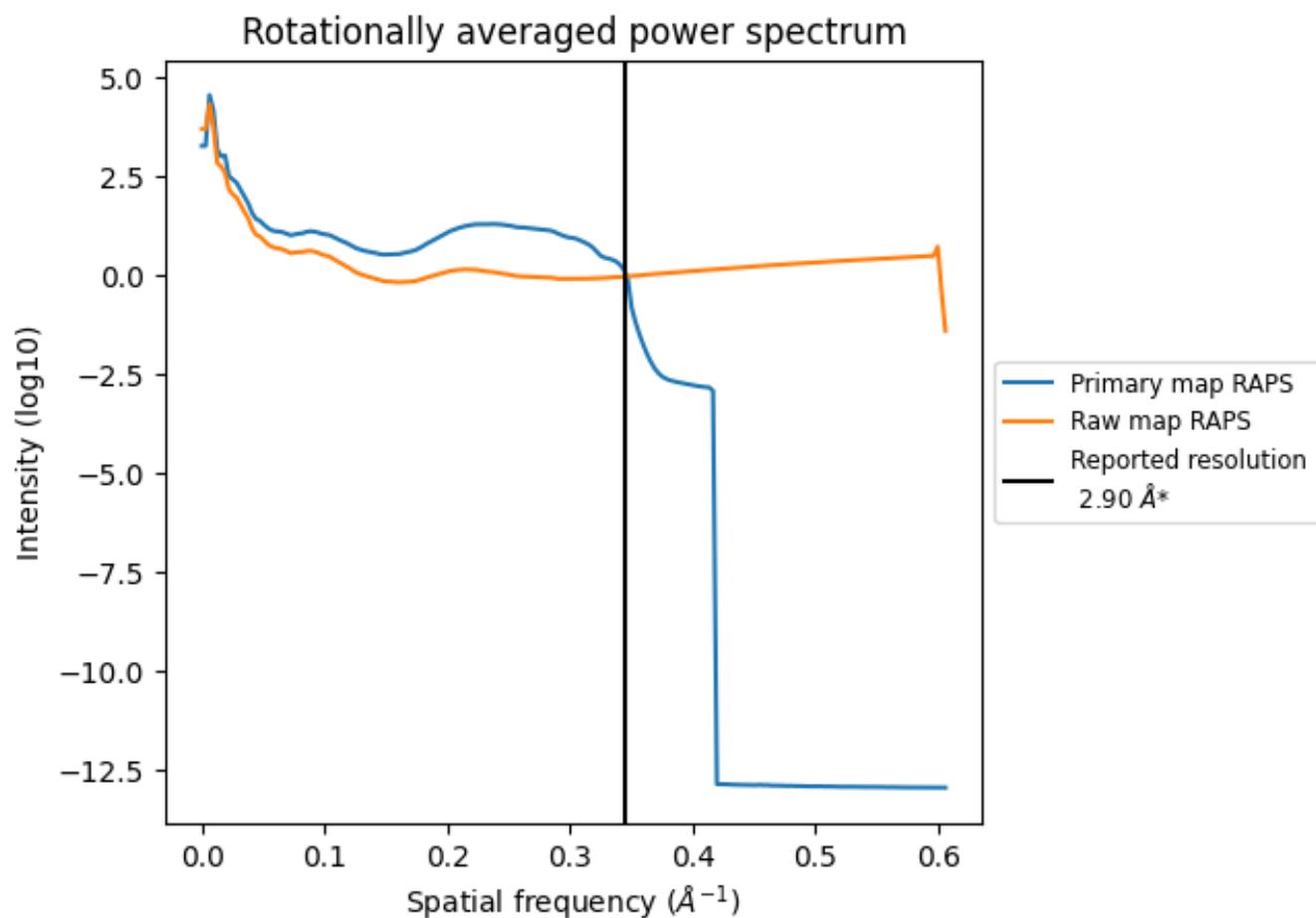
*Reported resolution corresponds to spatial frequency of 0.345 Å^{-1}

8 Fourier-Shell correlation ⓘ

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 ⓘ
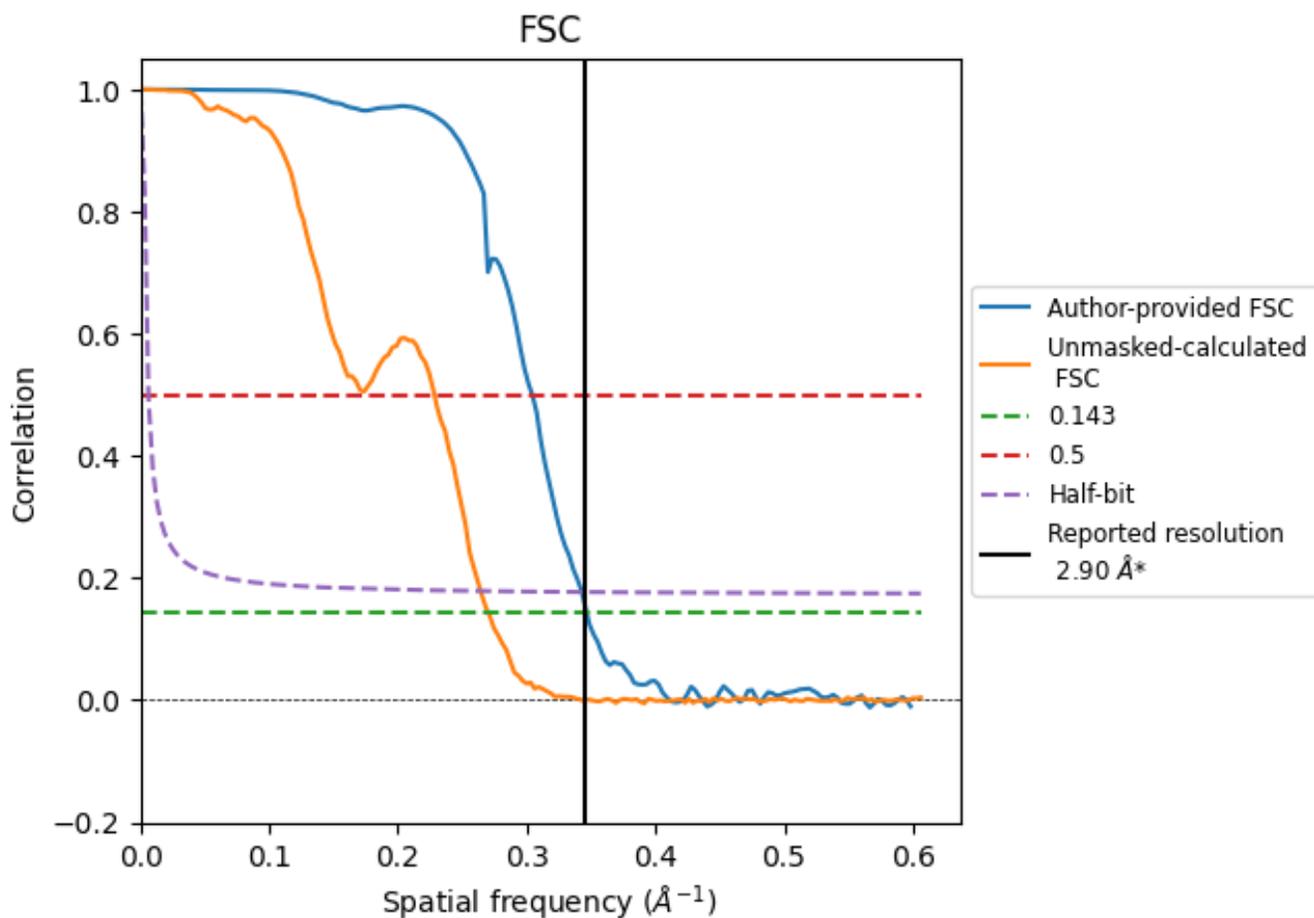
*Reported resolution corresponds to spatial frequency of 0.345 Å⁻¹

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.90	-	-
Author-provided FSC curve	2.88	3.29	2.92
Unmasked-calculated*	3.70	4.38	3.79

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.70 differs from the reported value 2.9 by more than 10 %

9　Map-model fit　ⓘ

This section contains information regarding the fit between EMDB map EMD-44696 and PDB model 9BMD. Per-residue inclusion information can be found in section 3 on page 6.

9.1　Map-model overlay　ⓘ


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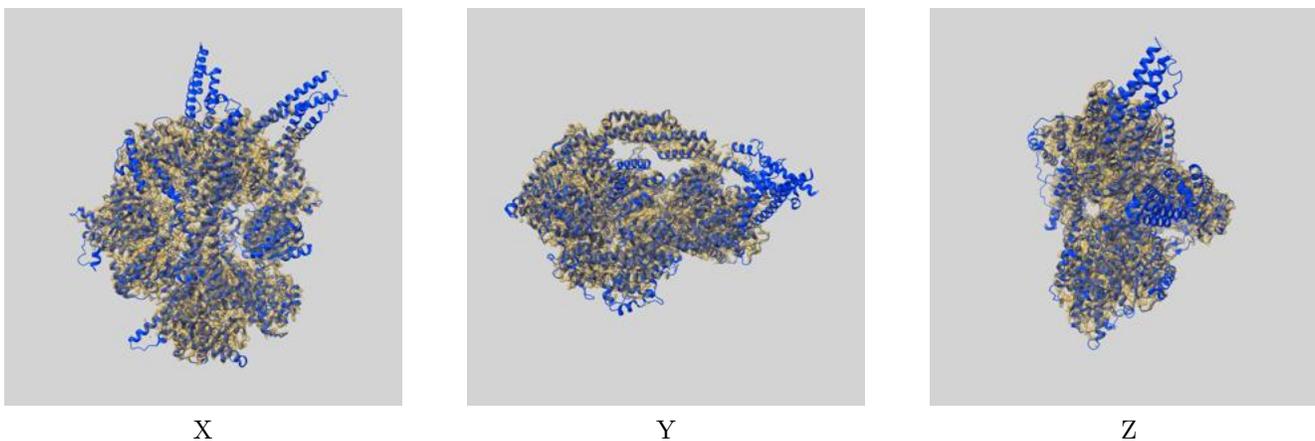
The images above show the 3D surface view of the map at the recommended contour level 0.3 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2　Q-score mapped to coordinate model ⓘ

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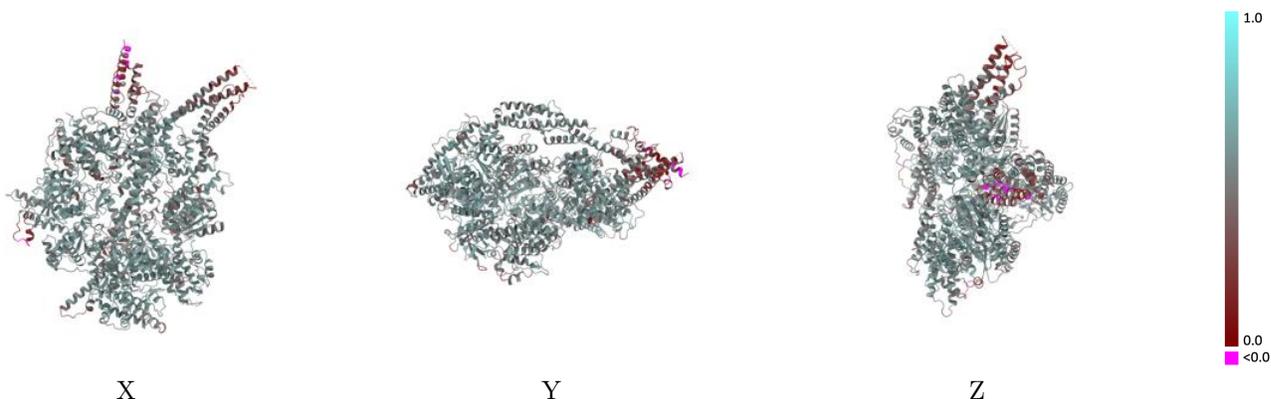
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

X　　　　　　　　　　　　Y　　　　　　　　　　　　Z
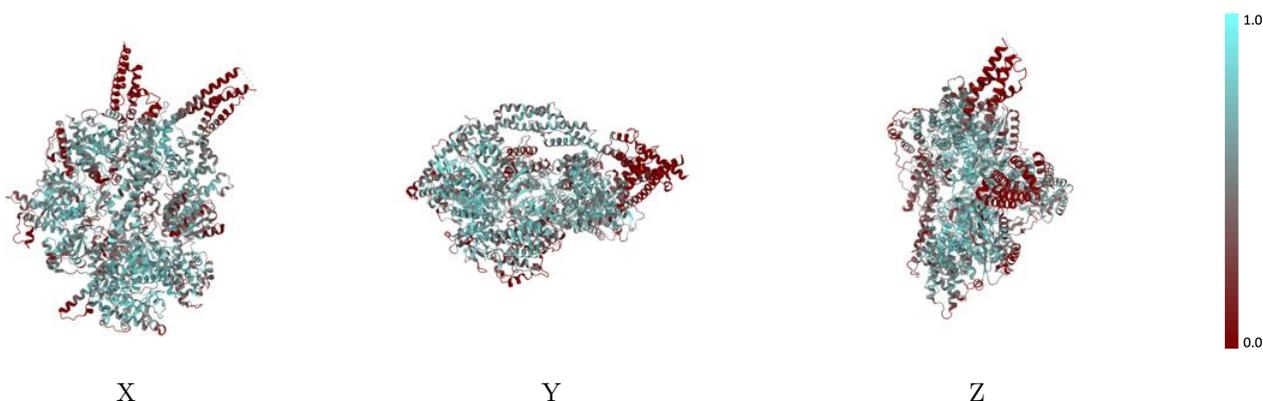
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.3).

9.4　Atom inclusion　ⓘ
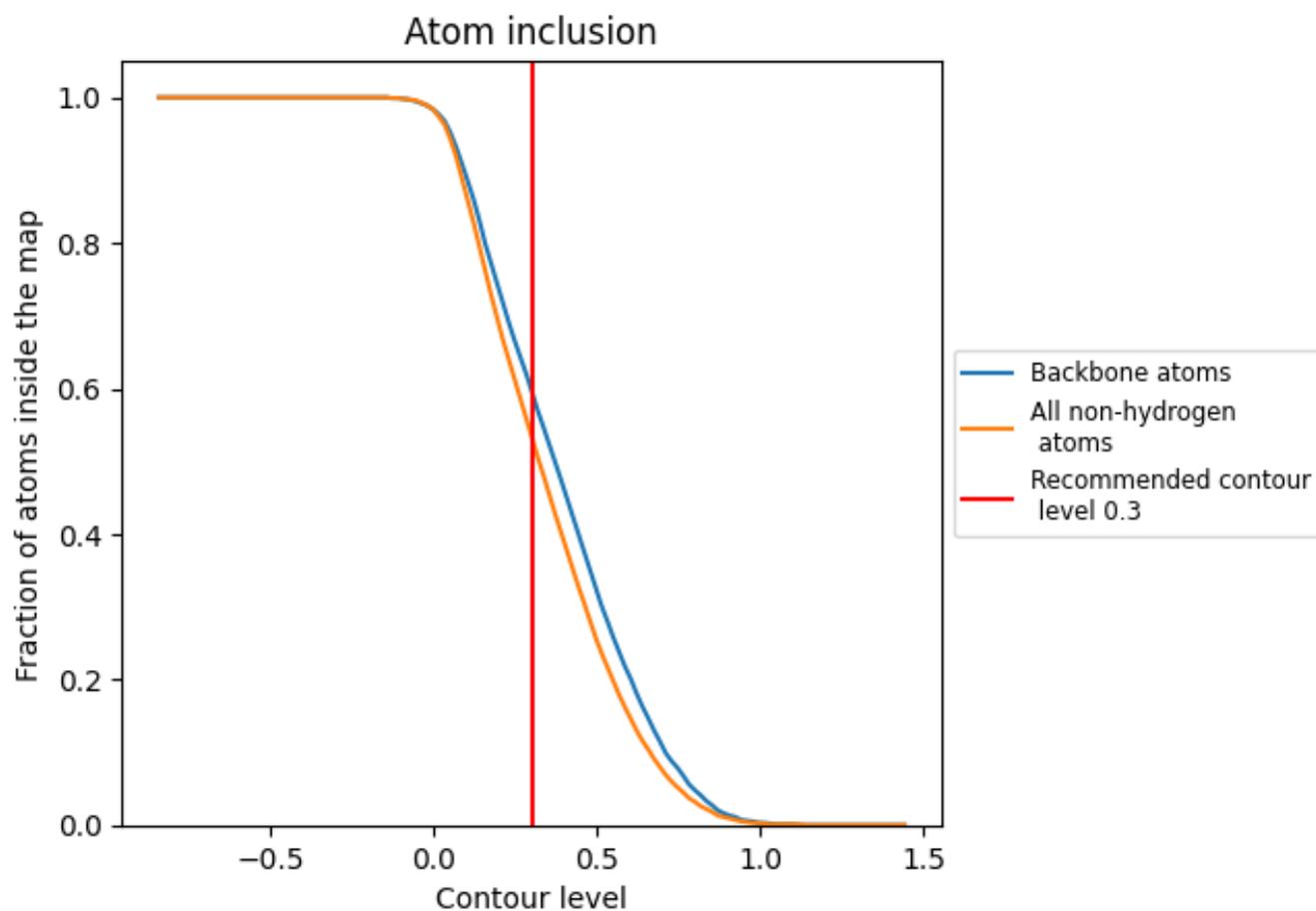
At the recommended contour level, 60% of all backbone atoms, 53% of all non-hydrogen atoms, are inside the map.

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	▬ 0.5330	▬ 0.5260
A	▬ 0.5330	▬ 0.5260

1.0

0.0
<0.0