



Full wwPDB EM Validation Report ⓘ

Jul 7, 2024 – 09:16 am BST

PDB ID : 7OTP
EMDB ID : EMD-13064
Title : DNA-PKcs in complex with ATPgammaS-Mg
Authors : Liang, S.; Thomas, S.E.; Blundell, T.L.
Deposited on : 2021-06-10
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.dev92
Mogul : 1.8.4, CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.37.1

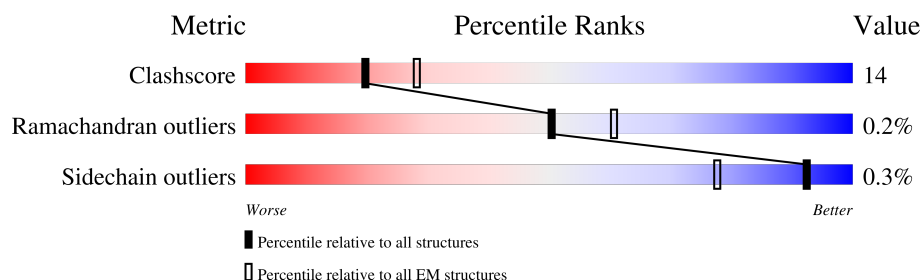
1 Overall quality at a glance

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	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	4148	<div> <div>5%</div> <div>62%</div> <div>26%</div> <div>12%</div> </div>

2 Entry composition [i](#)

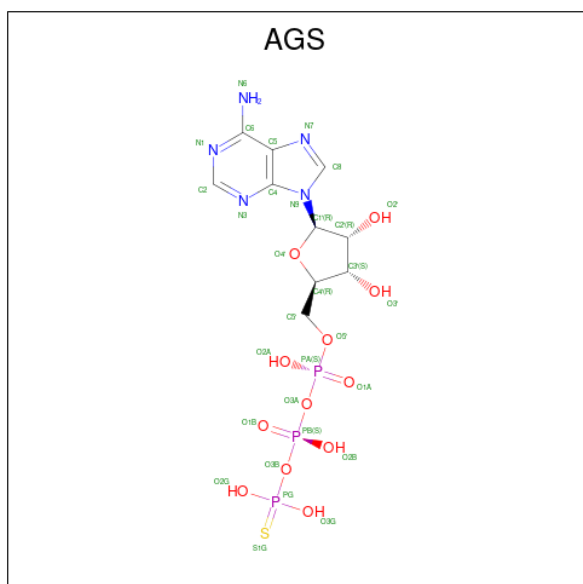
There are 3 unique types of molecules in this entry. The entry contains 29039 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 DNA-dependent protein kinase catalytic subunit,DNA-PKcs.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	3656	29006	18606	4902	5307	191	0	0

- Molecule 2 is PHOSPHOTHIOPHOSPHORIC ACID-ADENYLATE ESTER (three-letter code: AGS) (formula: C₁₀H₁₆N₅O₁₂P₃S) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms						AltConf
			Total	C	N	O	P	S	
2	A	1	31	10	5	12	3	1	0

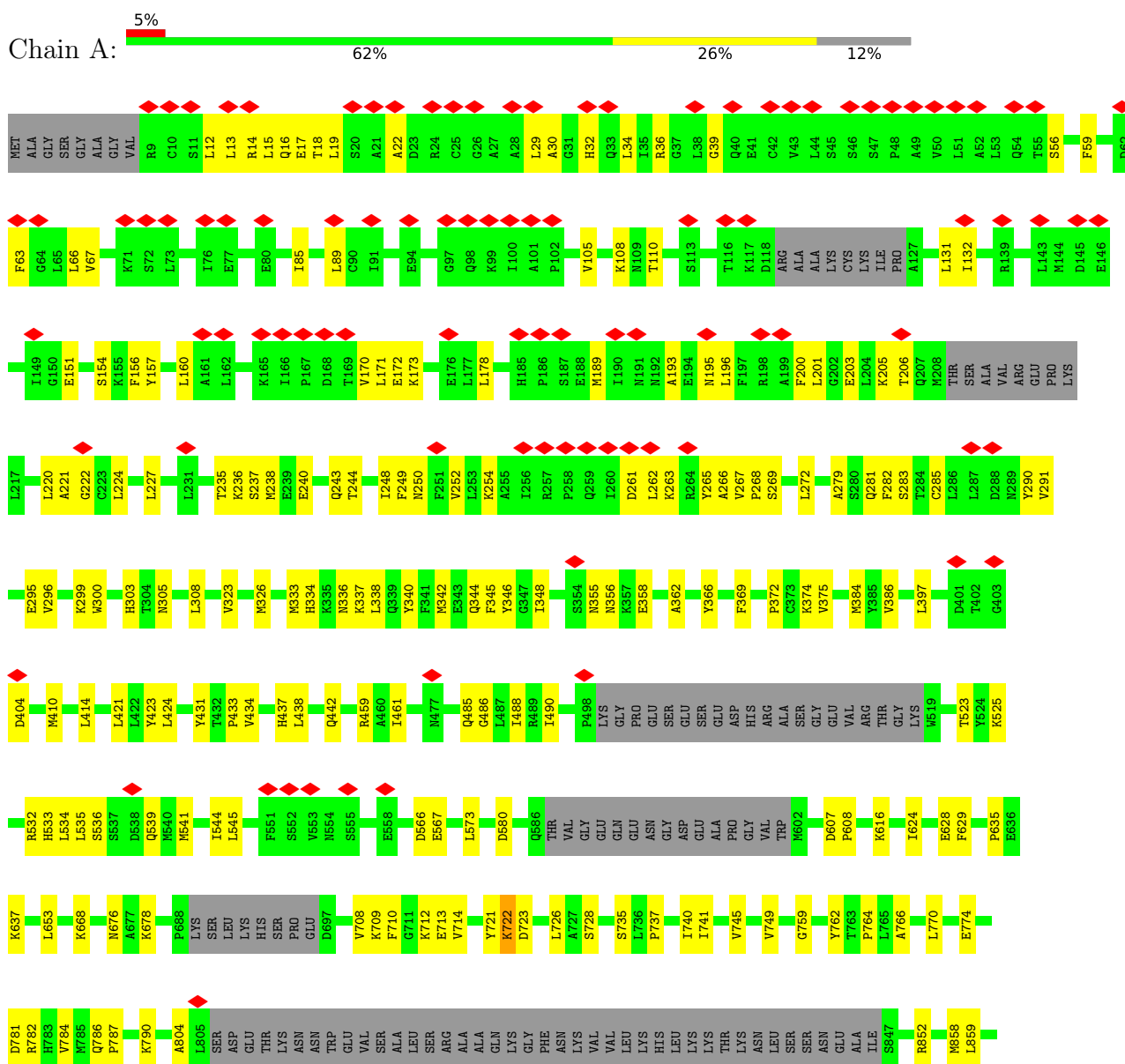
- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
3	A	2	Total	Mg	0
			2	2	

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: DNA-dependent protein kinase catalytic subunit,DNA-PKCs







S3536	K3675	S3779	I3911	R4049	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
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4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	63313	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	46.8	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	2.339	Depositor
Minimum map value	-1.286	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.056	Depositor
Recommended contour level	0.23	Depositor
Map size (\AA)	339.04, 339.04, 339.04	wwPDB
Map dimensions	260, 260, 260	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.304, 1.304, 1.304	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: MG, AGS

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	0.36	0/29498	0.51	0/39889

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	29006	0	29184	761	0
2	A	31	0	11	3	0
3	A	2	0	0	0	0
All	All	29039	0	29195	764	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 (764) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:6101:AGS:C4'	2:A:6101:AGS:O4'	1.63	1.23

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:189:MET:HG3	1:A:193:ALA:HB2	1.53	0.90
1:A:3618:GLY:H	1:A:3633:ILE:HD12	1.41	0.85
1:A:3670:MET:O	1:A:3674:SER:HB3	1.76	0.84
1:A:1482:GLU:O	1:A:1486:LEU:HB2	1.77	0.83
1:A:3288:SER:O	1:A:3289:ARG:NH1	2.12	0.83
1:A:3186:ARG:HD3	1:A:3238:MET:HE1	1.60	0.83
1:A:1358:LEU:HD21	1:A:1410:PRO:HD2	1.61	0.82
1:A:348:ILE:HD11	1:A:358:GLU:HB2	1.64	0.80
1:A:3162:ASN:ND2	1:A:3166:ASN:OD1	2.15	0.79
1:A:2887:PRO:HG2	1:A:3895:GLU:HG3	1.65	0.79
1:A:1570:GLU:OE2	1:A:1574:ASN:ND2	2.16	0.78
1:A:917:LEU:O	1:A:921:ALA:HB2	1.83	0.78
1:A:1619:ALA:HA	1:A:1652:ILE:HD11	1.65	0.77
1:A:3622:ALA:HB3	1:A:3625:LEU:HB2	1.67	0.77
1:A:1801:VAL:HA	1:A:1804:MET:SD	2.25	0.77
1:A:3700:GLU:HA	1:A:3718:ARG:HA	1.66	0.75
1:A:1828:LEU:O	1:A:1883:ARG:NH2	2.19	0.75
1:A:240:GLU:HB2	1:A:243:GLN:HE22	1.51	0.74
1:A:1775:GLU:OE1	1:A:1822:ARG:NH1	2.21	0.74
1:A:3243:ILE:HG21	1:A:3259:LEU:HD13	1.69	0.74
1:A:3187:CYS:SG	1:A:3239:LYS:NZ	2.61	0.73
1:A:2300:PHE:HD2	1:A:2341:LEU:HD13	1.53	0.73
1:A:1632:TRP:O	1:A:1637:SER:OG	2.07	0.72
1:A:3684:SER:HB2	1:A:3685:PRO:HD3	1.72	0.72
1:A:1881:TYR:HE1	1:A:1954:CYS:HB3	1.54	0.72
1:A:1718:ILE:HD13	1:A:1761:LEU:HD21	1.72	0.72
1:A:13:LEU:HD23	1:A:14:ARG:HE	1.54	0.71
1:A:2347:LYS:HA	1:A:2350:LYS:HD3	1.71	0.71
1:A:356:ASN:ND2	1:A:404:ASP:O	2.24	0.71
1:A:2786:LYS:NZ	1:A:2788:SER:OG	2.20	0.71
1:A:2194:LEU:HD11	1:A:2241:LEU:HA	1.73	0.70
1:A:3587:ASP:OD2	1:A:3733:ARG:NH2	2.24	0.70
1:A:3985:VAL:HG21	1:A:4101:GLU:HG3	1.72	0.70
1:A:1933:LEU:HD13	1:A:1936:ARG:HB2	1.72	0.69
1:A:3805:TRP:O	1:A:3805:TRP:CD1	2.46	0.69
1:A:3855:TYR:HA	1:A:3858:MET:HG3	1.73	0.69
1:A:254:LYS:NZ	1:A:268:PRO:O	2.26	0.69
1:A:3685:PRO:HB2	1:A:3687:MET:HG3	1.75	0.69
1:A:871:LEU:HD23	1:A:3129:LEU:HD22	1.74	0.69
1:A:1684:LEU:HD23	1:A:1688:LEU:HG	1.74	0.69
1:A:397:LEU:HD11	1:A:437:HIS:HB3	1.74	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1448:LEU:HD21	1:A:1514:LEU:HD11	1.73	0.68
1:A:3687:MET:HB3	1:A:3722:PHE:CD2	2.29	0.68
1:A:1400:VAL:HG11	1:A:1460:ARG:HG2	1.76	0.68
1:A:863:GLY:O	1:A:867:ASN:ND2	2.27	0.68
1:A:2860:ASP:O	1:A:2864:GLN:NE2	2.27	0.67
1:A:2919:ASP:OD1	1:A:2920:VAL:N	2.28	0.67
1:A:3616:ALA:O	1:A:3629:ARG:NH2	2.28	0.67
1:A:2380:ASN:OD1	1:A:2381:ALA:N	2.28	0.66
1:A:1373:VAL:HG11	1:A:1422:LYS:HD3	1.78	0.66
1:A:3298:LEU:HD12	1:A:3333:THR:HG23	1.76	0.66
1:A:2522:ARG:HH22	1:A:2564:GLU:HG3	1.61	0.66
1:A:3596:LEU:HD12	1:A:3601:VAL:HA	1.76	0.66
1:A:3030:ILE:HG23	1:A:3031:TRP:HD1	1.60	0.66
1:A:3580:ASN:HD21	1:A:3734:ARG:HB2	1.61	0.66
1:A:3012:GLU:OE2	1:A:3048:LYS:NZ	2.29	0.66
1:A:12:LEU:HA	1:A:15:LEU:HB3	1.78	0.66
1:A:1445:ARG:HG3	1:A:1510:LEU:HD22	1.78	0.66
1:A:2364:LEU:HG	1:A:2400:VAL:HG21	1.77	0.65
1:A:2459:VAL:HB	1:A:2505:VAL:HG21	1.77	0.65
1:A:1774:MET:SD	1:A:1777:LEU:HB2	2.36	0.65
1:A:1980:ASN:ND2	1:A:2141:ASN:OD1	2.28	0.65
1:A:3137:GLU:OE1	1:A:3186:ARG:NH2	2.24	0.65
1:A:3680:LEU:HD23	1:A:3682:GLU:H	1.62	0.65
1:A:3958:LEU:HD21	1:A:4064:LEU:HD11	1.76	0.65
1:A:372:PRO:HA	1:A:375:VAL:HG12	1.79	0.65
1:A:235:THR:HA	1:A:281:GLN:HE22	1.62	0.64
1:A:1949:ILE:HG23	1:A:2100:LEU:HD12	1.79	0.64
1:A:580:ASP:HB3	1:A:616:LYS:HD2	1.78	0.64
1:A:2216:LEU:HD21	1:A:2249:LEU:HD22	1.79	0.64
1:A:1432:CYS:SG	1:A:1433:ALA:N	2.71	0.64
1:A:1379:PRO:HB3	1:A:1384:PHE:HD2	1.62	0.64
1:A:3281:CYS:HB2	1:A:3329:LEU:HD23	1.80	0.64
1:A:333:MET:HG2	1:A:334:HIS:ND1	2.13	0.63
1:A:2487:PRO:O	1:A:2496:GLN:NE2	2.30	0.63
1:A:3418:ASP:O	1:A:3422:GLN:HG2	1.97	0.63
1:A:265:TYR:O	1:A:269:SER:OG	2.13	0.63
1:A:2223:VAL:HG21	1:A:2276:LEU:HD11	1.79	0.63
1:A:4049:ARG:NH2	1:A:4062:ASP:OD2	2.31	0.63
1:A:3593:ARG:HH21	1:A:3660:ASN:HA	1.63	0.63
1:A:1092:GLU:OE1	1:A:1095:LEU:N	2.32	0.63
1:A:3989:ARG:HA	1:A:4100:GLU:OE2	1.99	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1856:THR:O	1:A:1866:GLN:NE2	2.33	0.62
1:A:1881:TYR:CE1	1:A:1954:CYS:HB3	2.34	0.62
1:A:1459:HIS:HB2	1:A:1464:LEU:HD22	1.80	0.62
1:A:1048:GLN:HE22	1:A:1052:SER:HB2	1.65	0.62
1:A:2174:SER:OG	1:A:2214:ARG:NH2	2.32	0.62
1:A:1240:THR:HG22	1:A:1242:LEU:H	1.64	0.62
1:A:1399:CYS:O	1:A:1403:MET:HG3	2.00	0.62
1:A:2482:ASP:HA	1:A:2485:ARG:HE	1.64	0.62
1:A:709:LYS:NZ	1:A:713:GLU:OE1	2.33	0.62
1:A:2937:ASP:OD1	1:A:3982:SER:OG	2.17	0.62
1:A:3751:LEU:HD22	1:A:3803:ILE:HD11	1.82	0.62
1:A:3843:LEU:HD11	1:A:3858:MET:HG2	1.82	0.61
1:A:2150:VAL:HG13	1:A:2157:PHE:HD2	1.65	0.61
1:A:2478:MET:HG2	1:A:2524:PHE:CE1	2.35	0.61
1:A:1864:ASP:HA	1:A:1867:ILE:HG12	1.82	0.61
1:A:2439:ILE:O	1:A:2443:MET:HG2	1.99	0.61
1:A:3796:MET:CE	1:A:3802:LEU:HG	2.31	0.61
1:A:195:ASN:OD1	1:A:196:LEU:N	2.34	0.60
1:A:238:MET:HE2	1:A:283:SER:H	1.66	0.60
1:A:2088:LEU:HA	1:A:2094:MET:SD	2.41	0.60
1:A:2471:GLU:HA	1:A:2517:LEU:HD11	1.82	0.60
1:A:3295:GLU:OE2	1:A:3295:GLU:N	2.27	0.60
1:A:3296:GLN:NE2	1:A:3352:GLU:OE1	2.34	0.60
1:A:3284:SER:HB3	1:A:3301:LEU:HD12	1.84	0.60
1:A:386:VAL:HG22	1:A:431:TYR:HE2	1.67	0.60
1:A:787:PRO:O	1:A:790:LYS:NZ	2.34	0.60
1:A:1603:GLN:OE1	1:A:1606:ARG:NH1	2.33	0.60
1:A:1819:PHE:O	1:A:1823:SER:OG	2.19	0.60
1:A:4050:LYS:HE3	1:A:4059:ILE:HG21	1.82	0.60
1:A:1724:MET:O	1:A:1768:ARG:NH1	2.35	0.60
1:A:1261:LEU:HG	1:A:1337:VAL:HG22	1.83	0.60
1:A:2183:HIS:CE1	1:A:2186:VAL:HG23	2.36	0.60
1:A:56:SER:HA	1:A:59:PHE:HD2	1.66	0.59
1:A:917:LEU:O	1:A:921:ALA:CB	2.49	0.59
1:A:3535:ILE:HG21	1:A:3759:ARG:HD3	1.83	0.59
1:A:374:LYS:HD2	1:A:423:TYR:HB3	1.83	0.59
1:A:2786:LYS:O	1:A:2789:SER:N	2.30	0.59
1:A:737:PRO:HD2	1:A:740:ILE:HD12	1.84	0.59
1:A:2898:LEU:HG	1:A:3973:PRO:HG3	1.83	0.59
1:A:3515:GLN:NE2	1:A:3551:ASN:OD1	2.35	0.59
1:A:741:ILE:HG22	1:A:745:VAL:HG22	1.84	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1444:ASP:OD1	1:A:1447:ARG:NH1	2.36	0.59
1:A:1476:HIS:HB3	1:A:1479:VAL:HG22	1.85	0.59
1:A:1826:THR:O	1:A:1830:HIS:ND1	2.30	0.59
1:A:1873:TYR:HA	1:A:1876:ILE:HG22	1.83	0.59
1:A:1334:LYS:O	1:A:1338:VAL:HG23	2.02	0.59
1:A:1802:TYR:CE1	1:A:1806:ARG:HD3	2.38	0.59
1:A:2575:PRO:HB2	1:A:2784:GLN:HB3	1.83	0.59
1:A:3154:GLN:HG3	1:A:3227:ILE:HD11	1.85	0.59
1:A:13:LEU:HG	1:A:59:PHE:HZ	1.68	0.59
1:A:154:SER:HA	1:A:157:TYR:HD2	1.68	0.59
1:A:1093:GLU:HA	1:A:1096:VAL:HG12	1.84	0.59
1:A:1357:LYS:HA	1:A:1361:LYS:HB2	1.84	0.58
1:A:1810:PRO:HA	1:A:1816:ARG:HH22	1.68	0.58
1:A:3687:MET:HB3	1:A:3722:PHE:HD2	1.65	0.58
1:A:2330:VAL:HG22	1:A:2334:LYS:HA	1.84	0.58
1:A:3428:GLU:OE2	1:A:3475:TYR:OH	2.15	0.58
1:A:1786:ALA:HB3	1:A:1830:HIS:HB2	1.84	0.58
1:A:3100:LYS:O	1:A:3104:GLN:HG2	2.03	0.58
1:A:1484:LEU:HD13	1:A:1527:ARG:HH22	1.69	0.58
1:A:1664:SER:H	1:A:1668:PHE:HB3	1.68	0.58
1:A:1750:LEU:HD11	1:A:1759:LEU:HA	1.86	0.58
1:A:2227:LYS:HB2	1:A:2230:VAL:HG12	1.85	0.58
1:A:2391:GLY:O	1:A:2431:ARG:NH2	2.36	0.58
1:A:366:TYR:HE1	1:A:384:MET:HG2	1.68	0.58
1:A:1506:SER:O	1:A:1509:GLN:NE2	2.37	0.58
1:A:2412:TYR:HA	1:A:2415:LEU:HB2	1.86	0.58
1:A:1375:THR:O	1:A:1379:PRO:HG3	2.04	0.58
1:A:1640:GLU:HA	1:A:1643:MET:HE3	1.86	0.57
1:A:1751:GLU:HA	1:A:1785:ILE:HD11	1.86	0.57
1:A:3864:ARG:NH1	1:A:3868:VAL:HG21	2.19	0.57
1:A:67:VAL:HG13	1:A:110:THR:HG21	1.86	0.57
1:A:3058:ASP:O	1:A:3059:GLN:NE2	2.36	0.57
1:A:2522:ARG:HG2	1:A:2561:PHE:HE1	1.69	0.57
1:A:745:VAL:O	1:A:749:VAL:HG23	2.04	0.57
1:A:1424:THR:HG23	1:A:1427:SER:H	1.70	0.57
1:A:3031:TRP:CZ3	1:A:3044:MET:HG3	2.40	0.57
1:A:523:THR:HG23	1:A:525:LYS:H	1.70	0.57
1:A:243:GLN:N	1:A:243:GLN:OE1	2.38	0.56
1:A:1358:LEU:HD11	1:A:1410:PRO:HB2	1.86	0.56
1:A:1757:MET:O	1:A:1760:GLU:HG3	2.05	0.56
1:A:2193:ILE:HA	1:A:2196:TRP:CE3	2.40	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2149:LEU:O	1:A:2153:THR:HG22	2.05	0.56
1:A:348:ILE:HG23	1:A:362:ALA:HB2	1.88	0.56
1:A:2190:VAL:HA	1:A:2193:ILE:HG12	1.86	0.56
1:A:3030:ILE:HG23	1:A:3031:TRP:CD1	2.40	0.56
1:A:3108:GLN:O	1:A:3112:GLN:HG2	2.05	0.56
1:A:1697:PRO:HG2	1:A:1752:LEU:HD23	1.88	0.56
1:A:1234:GLY:HA2	1:A:1259:LEU:HD22	1.87	0.56
1:A:2365:ASN:ND2	1:A:2399:GLU:OE2	2.31	0.56
1:A:6012:UNK:O	1:A:6016:UNK:N	2.39	0.56
1:A:1192:TYR:OH	1:A:1273:GLU:OE2	2.23	0.56
1:A:1011:GLU:OE2	1:A:1032:CYS:HB3	2.05	0.56
1:A:2256:ILE:HG22	1:A:2260:PHE:CE1	2.41	0.56
1:A:2491:THR:HA	1:A:2496:GLN:HE22	1.69	0.56
1:A:3723:ASP:OD1	1:A:3724:GLU:N	2.38	0.56
1:A:240:GLU:HB2	1:A:243:GLN:NE2	2.20	0.55
1:A:1572:LEU:HD21	1:A:1600:MET:HB3	1.87	0.55
1:A:1184:ARG:NE	1:A:1265:GLU:OE1	2.32	0.55
1:A:2269:ASP:OD1	1:A:2270:ASN:N	2.39	0.55
1:A:608:PRO:HG2	1:A:721:TYR:HE1	1.71	0.55
1:A:1339:VAL:HG23	1:A:1398:VAL:HG11	1.87	0.55
1:A:2334:LYS:HB2	1:A:2338:GLU:HB2	1.89	0.55
1:A:2785:ILE:O	1:A:2789:SER:HB2	2.07	0.55
1:A:414:LEU:HD22	1:A:442:GLN:HE21	1.72	0.55
1:A:3472:ILE:HD11	1:A:3483:MET:SD	2.47	0.55
1:A:345:PHE:HA	1:A:348:ILE:HG22	1.88	0.55
1:A:2371:PHE:CD2	1:A:2374:LEU:HB2	2.42	0.55
1:A:236:LYS:HG2	1:A:243:GLN:NE2	2.22	0.55
1:A:3499:ILE:HG21	1:A:3529:ILE:HG13	1.89	0.55
1:A:3596:LEU:HB2	1:A:3601:VAL:HG22	1.88	0.55
1:A:3186:ARG:CD	1:A:3238:MET:HE1	2.35	0.55
1:A:170:VAL:O	1:A:171:LEU:HD22	2.07	0.55
1:A:566:ASP:OD1	1:A:567:GLU:N	2.40	0.54
1:A:3879:PRO:HB2	1:A:3882:LEU:HG	1.89	0.54
1:A:978:GLN:OE1	1:A:981:ARG:NH2	2.28	0.54
1:A:459:ARG:HH11	1:A:544:ILE:HG13	1.73	0.54
1:A:2999:LEU:HD21	1:A:3015:SER:O	2.07	0.54
1:A:2869:LEU:HB2	1:A:2900:LEU:HD13	1.89	0.54
1:A:2379:MET:HA	1:A:2382:VAL:HG22	1.90	0.54
1:A:3626:GLY:O	1:A:3630:ARG:HB2	2.06	0.54
1:A:1108:MET:HE1	1:A:1190:LEU:HD22	1.90	0.54
1:A:1709:GLU:HA	1:A:1712:ARG:HG2	1.90	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2542:LEU:HD21	1:A:2558:ALA:HA	1.89	0.54
1:A:1820:VAL:O	1:A:1825:LEU:HG	2.07	0.54
1:A:3751:LEU:HD12	1:A:3805:TRP:CE3	2.43	0.54
1:A:1488:TYR:CG	1:A:1531:LEU:HD21	2.43	0.53
1:A:1873:TYR:O	1:A:1876:ILE:HG22	2.08	0.53
1:A:3714:GLU:N	1:A:3714:GLU:OE1	2.41	0.53
1:A:3875:GLU:CG	1:A:3965:ARG:HD3	2.38	0.53
1:A:2148:LYS:HA	1:A:2151:ILE:HD12	1.89	0.53
1:A:3357:ARG:O	1:A:3361:GLU:HG2	2.08	0.53
1:A:1389:VAL:HG23	1:A:1390:GLN:H	1.72	0.53
1:A:1772:HIS:CE1	1:A:1774:MET:HB3	2.44	0.53
1:A:1240:THR:HG23	1:A:1296:PHE:CG	2.44	0.53
1:A:2371:PHE:HD2	1:A:2374:LEU:HB2	1.71	0.53
1:A:355:ASN:OD1	1:A:356:ASN:N	2.37	0.53
1:A:1301:ILE:HG22	1:A:1334:LYS:HE2	1.90	0.53
1:A:2349:LEU:HA	1:A:2352:HIS:CE1	2.43	0.53
1:A:254:LYS:HZ1	1:A:272:LEU:N	2.06	0.53
1:A:1689:LYS:O	1:A:1693:VAL:HG13	2.09	0.53
1:A:3017:ALA:HA	1:A:3031:TRP:CZ2	2.44	0.53
1:A:131:LEU:HD13	1:A:173:LYS:HD2	1.89	0.53
1:A:237:SER:O	1:A:243:GLN:NE2	2.42	0.53
1:A:3506:LEU:HD11	1:A:3518:VAL:HG11	1.89	0.53
1:A:1868:THR:OG1	1:A:1936:ARG:NH2	2.42	0.52
1:A:1876:ILE:HG13	1:A:1880:MET:HE1	1.91	0.52
1:A:303:HIS:CE1	1:A:305:ASN:HB2	2.43	0.52
1:A:334:HIS:HA	1:A:337:LYS:HZ3	1.72	0.52
1:A:338:LEU:O	1:A:342:MET:HG2	2.08	0.52
1:A:774:GLU:HG2	1:A:858:MET:HE3	1.91	0.52
1:A:1825:LEU:HD22	1:A:1879:VAL:HG21	1.91	0.52
1:A:2339:GLU:OE1	1:A:2339:GLU:N	2.41	0.52
1:A:2551:GLU:OE1	1:A:2847:THR:HG23	2.10	0.52
1:A:105:VAL:HA	1:A:108:LYS:HB3	1.91	0.52
1:A:2443:MET:HB3	1:A:2479:TRP:CH2	2.44	0.52
1:A:3699:LEU:HG	1:A:3719:ILE:HD12	1.92	0.52
1:A:3731:SER:OG	1:A:3732:LEU:N	2.42	0.52
1:A:410:MET:HG2	1:A:442:GLN:NE2	2.24	0.52
1:A:2185:MET:HA	1:A:2188:GLU:CD	2.29	0.52
1:A:2234:ASN:HA	1:A:2237:ILE:HD12	1.91	0.52
1:A:3944:HIS:HB3	1:A:3948:SER:HB2	1.91	0.52
1:A:291:VAL:HG12	1:A:340:TYR:CE2	2.45	0.52
1:A:3711:PRO:O	1:A:3713:PRO:HD3	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1897:ASN:HA	1:A:1903:SER:HB2	1.91	0.52
1:A:2443:MET:HB3	1:A:2479:TRP:CZ3	2.44	0.52
1:A:1432:CYS:SG	1:A:1486:LEU:HD11	2.50	0.52
1:A:1751:GLU:HA	1:A:1785:ILE:CD1	2.40	0.52
1:A:2384:PHE:HD2	1:A:2385:LEU:HD22	1.75	0.52
1:A:3353:GLU:O	1:A:3355:LYS:N	2.43	0.52
1:A:3733:ARG:HH21	1:A:4022:LYS:HD3	1.75	0.52
2:A:6101:AGS:O4'	2:A:6101:AGS:C5'	2.49	0.52
1:A:1812:LEU:O	1:A:1815:THR:N	2.33	0.51
1:A:1358:LEU:HD22	1:A:1411:TYR:HE1	1.75	0.51
1:A:3870:SER:OG	1:A:3874:ARG:NH2	2.43	0.51
1:A:1333:SER:O	1:A:1337:VAL:HG23	2.10	0.51
1:A:3499:ILE:O	1:A:3503:VAL:HG22	2.10	0.51
1:A:4004:VAL:O	1:A:4008:GLU:HG3	2.11	0.51
1:A:1069:HIS:CD2	1:A:3741:ARG:HH21	2.29	0.51
1:A:1205:ASN:HA	1:A:1275:THR:HG23	1.92	0.51
1:A:3285:HIS:HE1	1:A:3332:THR:HB	1.75	0.51
1:A:873:VAL:HA	1:A:876:SER:HB2	1.91	0.51
1:A:3487:ILE:HA	1:A:3490:VAL:HG23	1.91	0.51
1:A:3666:LEU:O	1:A:3670:MET:HG3	2.10	0.51
1:A:975:ASP:OD1	1:A:976:VAL:N	2.44	0.51
1:A:2213:ASN:OD1	1:A:2214:ARG:N	2.44	0.51
1:A:2271:SER:HA	1:A:2274:ILE:HD12	1.93	0.51
1:A:2327:LEU:HA	1:A:2330:VAL:HG12	1.93	0.51
1:A:3626:GLY:HA3	1:A:3684:SER:O	2.10	0.51
1:A:3791:TYR:CZ	1:A:3940:ILE:HG22	2.46	0.51
1:A:3844:THR:HB	1:A:3850:HIS:HB3	1.93	0.51
1:A:1716:GLN:HA	1:A:1719:VAL:HG22	1.92	0.51
1:A:36:ARG:HH21	1:A:39:GLY:HA3	1.76	0.51
1:A:678:LYS:NZ	1:A:735:SER:O	2.28	0.51
1:A:1934:LEU:O	1:A:1938:ARG:HB2	2.10	0.51
1:A:3753:LYS:HE3	1:A:3753:LYS:HA	1.92	0.51
1:A:1125:GLN:NE2	1:A:1129:ASP:OD2	2.44	0.51
1:A:3793:VAL:HG22	1:A:3803:ILE:HG22	1.93	0.51
1:A:1525:CYS:HA	1:A:1528:LEU:HB3	1.91	0.50
1:A:1781:SER:O	1:A:1785:ILE:HG12	2.10	0.50
1:A:1871:MET:HA	1:A:1874:TYR:HD2	1.76	0.50
1:A:2165:LEU:HD12	1:A:2166:SER:N	2.26	0.50
1:A:2310:VAL:HA	1:A:2359:LYS:NZ	2.25	0.50
1:A:3439:LEU:HD12	1:A:3439:LEU:O	2.10	0.50
1:A:1007:VAL:O	1:A:1011:GLU:HG3	2.10	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1564:SER:O	1:A:1568:ASN:ND2	2.44	0.50
1:A:1815:THR:HG22	1:A:1819:PHE:CE1	2.47	0.50
1:A:2253:TYR:H	1:A:2256:ILE:HD13	1.76	0.50
1:A:2849:SER:O	1:A:2849:SER:OG	2.29	0.50
1:A:1296:PHE:O	1:A:1299:GLU:HG3	2.11	0.50
1:A:1618:LEU:O	1:A:1622:ILE:HG22	2.11	0.50
1:A:3685:PRO:CB	1:A:3687:MET:HG3	2.42	0.50
1:A:533:HIS:HB3	1:A:541:MET:HE1	1.93	0.50
1:A:3496:ILE:HB	1:A:3707:GLY:HA2	1.93	0.50
1:A:16:GLN:NE2	1:A:17:GLU:OE2	2.44	0.50
1:A:2377:ARG:H	1:A:2377:ARG:HD2	1.76	0.50
1:A:4057:ALA:HB2	1:A:4090:ARG:HD2	1.94	0.50
1:A:131:LEU:HD12	1:A:132:ILE:N	2.26	0.50
1:A:334:HIS:HB3	1:A:337:LYS:HD2	1.93	0.50
1:A:1375:THR:OG1	1:A:1384:PHE:HE2	1.94	0.50
1:A:1482:GLU:HA	1:A:1486:LEU:HD23	1.94	0.50
1:A:1611:GLN:HA	1:A:1613:HIS:CE1	2.46	0.50
1:A:2146:LEU:O	1:A:2150:VAL:HG23	2.12	0.50
1:A:2150:VAL:HG22	1:A:2157:PHE:HE2	1.77	0.50
1:A:1875:LYS:O	1:A:1878:ASP:HB3	2.12	0.50
1:A:2576:MET:HB3	1:A:2787:HIS:NE2	2.27	0.50
1:A:410:MET:HG2	1:A:442:GLN:HE22	1.76	0.50
1:A:1384:PHE:CD2	1:A:1395:LEU:HD21	2.46	0.50
1:A:1575:LEU:HA	1:A:1578:ALA:HB3	1.93	0.50
1:A:1593:VAL:O	1:A:1597:LEU:HD23	2.12	0.50
1:A:2411:LEU:HD23	1:A:2442:MET:HG3	1.93	0.49
1:A:250:ASN:O	1:A:254:LYS:HG2	2.11	0.49
1:A:1244:LEU:H	1:A:1244:LEU:HD23	1.77	0.49
1:A:1812:LEU:HG	1:A:1814:PHE:HB3	1.94	0.49
1:A:2813:PHE:HE1	1:A:2817:LEU:HD11	1.76	0.49
1:A:2884:LEU:HD12	1:A:3116:SER:HB2	1.94	0.49
1:A:3256:MET:SD	1:A:3260:LYS:HD2	2.53	0.49
1:A:3741:ARG:HG2	1:A:3747:GLU:HG2	1.93	0.49
1:A:762:TYR:CD1	1:A:764:PRO:HD2	2.46	0.49
1:A:1607:GLU:O	1:A:1611:GLN:HB2	2.11	0.49
1:A:2166:SER:OG	1:A:2167:PRO:HD3	2.12	0.49
1:A:2464:HIS:CE1	1:A:2466:SER:HB2	2.48	0.49
1:A:340:TYR:O	1:A:344:GLN:HG2	2.13	0.49
1:A:1664:SER:HA	1:A:1669:PRO:HD3	1.93	0.49
1:A:1948:ALA:O	1:A:1952:ILE:HG12	2.13	0.49
1:A:873:VAL:HG11	1:A:3125:ARG:HH12	1.77	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:898:PHE:HB2	1:A:901:MET:O	2.13	0.49
1:A:1975:LEU:HD12	1:A:1976:LEU:HG	1.94	0.49
1:A:2826:LEU:HA	1:A:2829:LYS:HD3	1.95	0.49
1:A:421:LEU:HD12	1:A:424:LEU:HD12	1.95	0.49
1:A:535:LEU:HD23	1:A:637:LYS:HG3	1.94	0.49
1:A:1238:GLN:HG2	1:A:1238:GLN:O	2.11	0.49
1:A:1241:LEU:O	1:A:1244:LEU:HB3	2.13	0.49
1:A:1467:ILE:HG22	1:A:1468:LEU:HD22	1.95	0.49
1:A:203:GLU:O	1:A:206:THR:OG1	2.28	0.49
1:A:915:THR:HB	1:A:968:VAL:HG11	1.94	0.49
1:A:1098:GLN:HG3	1:A:1152:ARG:HG3	1.95	0.49
1:A:2281:MET:CE	1:A:2287:PRO:HG3	2.43	0.49
1:A:3796:MET:HE1	1:A:3802:LEU:HG	1.95	0.49
1:A:1750:LEU:HD23	1:A:1785:ILE:HD11	1.93	0.48
1:A:2530:ARG:NH1	1:A:2530:ARG:HG3	2.28	0.48
1:A:3859:TYR:CD2	1:A:4077:TYR:HE1	2.31	0.48
1:A:1328:GLU:HA	1:A:1331:ASN:HB2	1.95	0.48
1:A:2277:LEU:O	1:A:2280:VAL:HG12	2.13	0.48
1:A:222:GLY:HA3	1:A:266:ALA:HB1	1.95	0.48
1:A:244:THR:O	1:A:248:ILE:HG13	2.12	0.48
1:A:1301:ILE:HG13	1:A:1302:ALA:H	1.78	0.48
1:A:1515:LEU:HG	1:A:1519:PHE:CE2	2.49	0.48
1:A:3252:PHE:O	1:A:3287:ARG:NH2	2.43	0.48
1:A:1696:LEU:O	1:A:1700:THR:HG23	2.13	0.48
1:A:2189:ILE:O	1:A:2193:ILE:HG23	2.13	0.48
1:A:1249:SER:HB3	1:A:1319:GLY:HA3	1.95	0.48
1:A:1273:GLU:OE1	1:A:1273:GLU:N	2.40	0.48
1:A:2169:LEU:HB3	1:A:2211:LEU:HD11	1.95	0.48
1:A:3587:ASP:CG	1:A:3733:ARG:HH22	2.16	0.48
1:A:3726:VAL:HG13	1:A:3736:LYS:HB3	1.96	0.48
1:A:1212:LEU:HD11	1:A:1217:VAL:HA	1.95	0.48
1:A:1238:GLN:C	1:A:1240:THR:H	2.17	0.48
1:A:2348:GLN:HA	1:A:2351:GLN:OE1	2.14	0.48
1:A:2348:GLN:O	1:A:2348:GLN:NE2	2.44	0.48
1:A:2810:SER:HG	1:A:2857:CYS:HG	1.62	0.48
1:A:3182:ILE:HG13	1:A:3183:ILE:N	2.28	0.48
1:A:3613:MET:SD	1:A:3617:LEU:HB2	2.54	0.48
1:A:1127:CYS:O	1:A:1131:ILE:HG13	2.13	0.48
1:A:1267:TYR:HE1	1:A:1281:VAL:HG11	1.78	0.48
1:A:63:PHE:HA	1:A:66:LEU:HD12	1.95	0.48
1:A:397:LEU:HD21	1:A:438:LEU:HD22	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3072:GLU:C	1:A:3074:GLN:H	2.17	0.48
1:A:267:VAL:HG23	1:A:268:PRO:HD3	1.96	0.48
1:A:345:PHE:HE2	1:A:369:PHE:CE2	2.32	0.48
1:A:901:MET:SD	1:A:2819:GLU:HG2	2.54	0.48
1:A:2257:PHE:CE1	1:A:2261:SER:HB2	2.49	0.48
1:A:2397:CYS:HA	1:A:2400:VAL:HG12	1.96	0.48
1:A:3155:VAL:HG12	1:A:3159:ARG:HH21	1.79	0.48
1:A:3710:LYS:HB2	1:A:3711:PRO:HD2	1.95	0.48
1:A:2121:ASP:OD1	1:A:2160:TYR:OH	2.32	0.47
1:A:2281:MET:HE2	1:A:2287:PRO:HG3	1.96	0.47
1:A:2474:TYR:HB3	1:A:2521:ILE:HD11	1.95	0.47
1:A:3484:THR:HG22	1:A:3513:ALA:HB2	1.96	0.47
1:A:1766:LEU:HD12	1:A:1778:PHE:CD2	2.49	0.47
1:A:2395:THR:O	1:A:2398:LEU:N	2.45	0.47
1:A:2451:LEU:HD23	1:A:2484:TYR:HE2	1.79	0.47
1:A:2522:ARG:NH2	1:A:2564:GLU:HG3	2.28	0.47
1:A:2965:TYR:HB2	1:A:3005:LEU:HD21	1.96	0.47
1:A:4076:ASP:O	1:A:4080:VAL:HG12	2.13	0.47
1:A:962:TYR:HA	1:A:965:THR:HG22	1.95	0.47
1:A:1335:CYS:HB3	1:A:1384:PHE:HE1	1.79	0.47
1:A:1920:TYR:O	1:A:1924:THR:CB	2.63	0.47
1:A:3137:GLU:CD	1:A:3186:ARG:HE	2.17	0.47
1:A:3731:SER:O	1:A:3734:ARG:NH2	2.47	0.47
1:A:3791:TYR:CE1	1:A:3940:ILE:HG22	2.49	0.47
1:A:1605:PHE:HB2	1:A:1655:ILE:HG22	1.96	0.47
1:A:3383:GLN:O	1:A:3387:GLU:HG3	2.14	0.47
1:A:14:ARG:O	1:A:18:THR:HG23	2.14	0.47
1:A:131:LEU:HB2	1:A:173:LYS:HD2	1.95	0.47
1:A:1158:PRO:CD	1:A:1159:PRO:HD2	2.45	0.47
1:A:1374:GLN:OE1	1:A:1382:ILE:HD13	2.15	0.47
1:A:1713:VAL:HA	1:A:1716:GLN:NE2	2.29	0.47
1:A:3681:LYS:NZ	1:A:3723:ASP:O	2.31	0.47
1:A:3913:ILE:HG21	1:A:3987:ALA:HB3	1.96	0.47
1:A:221:ALA:HA	1:A:224:LEU:HG	1.96	0.47
1:A:2318:ALA:O	1:A:2321:GLU:HG2	2.13	0.47
1:A:3629:ARG:O	1:A:3633:ILE:HG12	2.15	0.47
1:A:160:LEU:HD21	1:A:178:LEU:HD13	1.97	0.47
1:A:1119:LYS:HD3	1:A:1119:LYS:N	2.30	0.47
1:A:1209:LYS:O	1:A:1213:LYS:HG3	2.15	0.47
1:A:1267:TYR:CD2	1:A:1290:LEU:HD22	2.49	0.47
1:A:1651:LYS:HA	1:A:1651:LYS:HD3	1.79	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1851:LEU:HD22	1:A:1870:LYS:HG2	1.97	0.47
1:A:2376:ASP:HA	1:A:2379:MET:SD	2.55	0.47
1:A:2474:TYR:HD2	1:A:2517:LEU:HD12	1.79	0.47
1:A:3468:LEU:O	1:A:3472:ILE:HG12	2.15	0.47
1:A:3763:ARG:HG3	1:A:4011:PHE:HZ	1.80	0.47
1:A:1458:LEU:HD12	1:A:1463:LEU:HB2	1.96	0.47
1:A:3170:ASP:HB3	1:A:3173:MET:HB3	1.97	0.47
1:A:3285:HIS:CE1	1:A:3332:THR:HB	2.49	0.47
1:A:781:ASP:HB3	1:A:784:VAL:HG12	1.97	0.47
1:A:2398:LEU:HD21	1:A:2435:CYS:SG	2.55	0.47
1:A:461:ILE:HG23	1:A:534:LEU:HD21	1.96	0.47
1:A:1651:LYS:O	1:A:1655:ILE:HG23	2.14	0.47
1:A:1690:GLY:O	1:A:1693:VAL:HG22	2.15	0.47
1:A:3786:LEU:O	1:A:3787:GLN:NE2	2.42	0.47
1:A:238:MET:HE3	1:A:285:CYS:H	1.79	0.46
1:A:1001:PHE:N	1:A:1002:GLU:OE2	2.48	0.46
1:A:1592:MET:O	1:A:1596:VAL:HG23	2.14	0.46
1:A:2233:HIS:O	1:A:2237:ILE:HG13	2.14	0.46
1:A:3156:PRO:O	1:A:3159:ARG:HG2	2.14	0.46
1:A:238:MET:HE2	1:A:283:SER:N	2.30	0.46
1:A:1713:VAL:HA	1:A:1716:GLN:CD	2.36	0.46
1:A:3012:GLU:HB2	1:A:3047:SER:HB2	1.97	0.46
1:A:3033:GLU:HG3	1:A:3034:PRO:HD3	1.97	0.46
1:A:782:ARG:O	1:A:786:GLN:HB2	2.15	0.46
1:A:1045:THR:HG21	1:A:1047:GLN:HE21	1.81	0.46
1:A:1142:HIS:O	1:A:1146:ASN:ND2	2.48	0.46
1:A:1271:ILE:HD12	1:A:1344:PHE:HE1	1.79	0.46
1:A:1764:GLU:O	1:A:1768:ARG:HG3	2.15	0.46
1:A:1915:LEU:HD13	1:A:1951:VAL:HG11	1.97	0.46
1:A:3699:LEU:HD12	1:A:3700:GLU:H	1.80	0.46
1:A:4064:LEU:HD13	1:A:4077:TYR:HB3	1.98	0.46
1:A:1388:ASP:HA	1:A:1392:MET:HE2	1.97	0.46
1:A:1390:GLN:HA	1:A:1393:ALA:HB3	1.97	0.46
1:A:2530:ARG:HG3	1:A:2530:ARG:HH11	1.79	0.46
1:A:3308:ASP:HB3	1:A:3311:ASN:O	2.16	0.46
1:A:3616:ALA:HB1	1:A:3629:ARG:HH22	1.81	0.46
1:A:901:MET:HE1	1:A:2816:ILE:HG12	1.97	0.46
1:A:1839:PHE:O	1:A:1843:ILE:HG12	2.16	0.46
1:A:1877:LEU:HA	1:A:1880:MET:HE2	1.97	0.46
1:A:2313:LYS:HA	1:A:2316:TYR:CE2	2.50	0.46
1:A:3348:LEU:HB2	1:A:3352:GLU:HG2	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1078:ALA:O	1:A:1107:TYR:OH	2.27	0.46
1:A:1357:LYS:HA	1:A:1361:LYS:HD3	1.98	0.46
1:A:2328:ARG:HH11	1:A:2370:SER:HB3	1.81	0.46
1:A:3515:GLN:HG2	1:A:3554:PHE:CE2	2.51	0.46
1:A:886:TRP:HH2	1:A:915:THR:HG21	1.79	0.46
1:A:1853:SER:O	1:A:1855:PHE:N	2.43	0.46
1:A:2953:THR:HB	1:A:2994:TRP:HE1	1.81	0.46
1:A:3157:LEU:O	1:A:3161:LEU:HG	2.15	0.46
1:A:305:ASN:HB3	1:A:308:LEU:HB3	1.98	0.46
1:A:323:VAL:HA	1:A:326:MET:HG3	1.97	0.46
1:A:1797:LEU:O	1:A:1800:SER:OG	2.27	0.46
1:A:3733:ARG:NH2	1:A:4022:LYS:HD3	2.31	0.46
1:A:296:VAL:O	1:A:300:TRP:CD1	2.69	0.46
1:A:1075:ARG:HH12	1:A:1123:THR:HG21	1.81	0.46
1:A:1573:LYS:HA	1:A:1573:LYS:HD3	1.75	0.46
1:A:2514:ASN:HD22	1:A:2517:LEU:HD23	1.81	0.46
1:A:3763:ARG:NH1	1:A:4008:GLU:OE1	2.49	0.46
1:A:3819:THR:HG21	1:A:3886:ALA:HB2	1.96	0.46
1:A:3959:MET:SD	1:A:3959:MET:N	2.76	0.46
1:A:205:LYS:HG2	1:A:249:PHE:CE2	2.50	0.46
1:A:1519:PHE:CE1	1:A:1528:LEU:HD22	2.50	0.46
1:A:1579:VAL:HA	1:A:1582:LEU:HD12	1.97	0.46
1:A:3907:SER:O	1:A:3911:ILE:HG23	2.16	0.46
1:A:342:MET:HB3	1:A:346:TYR:CZ	2.50	0.45
1:A:433:PRO:HB3	1:A:6015:UNK:CB	2.46	0.45
1:A:1334:LYS:NZ	1:A:1382:ILE:HB	2.31	0.45
1:A:2786:LYS:O	1:A:2788:SER:N	2.49	0.45
1:A:3699:LEU:HD12	1:A:3700:GLU:N	2.31	0.45
1:A:3812:LEU:HD12	1:A:3812:LEU:HA	1.81	0.45
1:A:2206:PRO:O	1:A:2210:VAL:HG23	2.16	0.45
1:A:2397:CYS:O	1:A:2400:VAL:HG12	2.16	0.45
1:A:3692:VAL:HG13	1:A:3692:VAL:O	2.16	0.45
1:A:200:PHE:CE1	1:A:224:LEU:HD22	2.51	0.45
1:A:998:ASN:HA	1:A:1001:PHE:CE1	2.51	0.45
1:A:1652:ILE:HD12	1:A:1655:ILE:HD11	1.98	0.45
1:A:1456:LYS:HB3	1:A:1456:LYS:HE2	1.65	0.45
1:A:2389:PHE:HB2	1:A:2394:LYS:HG2	1.99	0.45
1:A:3466:PRO:HG2	1:A:4004:VAL:HG11	1.99	0.45
1:A:291:VAL:O	1:A:295:GLU:HG2	2.15	0.45
1:A:295:GLU:O	1:A:299:LYS:HG3	2.17	0.45
1:A:1075:ARG:NH1	1:A:1123:THR:HG21	2.31	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1813:SER:HA	1:A:1816:ARG:HG3	1.99	0.45
1:A:1919:CYS:SG	1:A:1920:TYR:N	2.89	0.45
1:A:2193:ILE:HA	1:A:2196:TRP:HE3	1.82	0.45
1:A:2310:VAL:HA	1:A:2359:LYS:HZ1	1.80	0.45
1:A:3751:LEU:HD12	1:A:3805:TRP:HE3	1.81	0.45
1:A:3961:PHE:HE2	1:A:4107:LEU:HD13	1.80	0.45
1:A:1440:ASP:HA	1:A:1442:GLN:HE22	1.82	0.45
1:A:3892:THR:OG1	1:A:3893:SER:N	2.49	0.45
1:A:200:PHE:CE2	1:A:227:LEU:HD23	2.52	0.45
1:A:254:LYS:HA	1:A:254:LYS:HD3	1.66	0.45
1:A:3006:ALA:HB3	1:A:3257:LYS:HZ1	1.80	0.45
1:A:3882:LEU:HD23	1:A:3882:LEU:HA	1.80	0.45
1:A:541:MET:O	1:A:545:LEU:HG	2.16	0.45
1:A:3132:VAL:O	1:A:3136:THR:HG23	2.16	0.45
1:A:16:GLN:HB2	1:A:66:LEU:HD11	1.98	0.45
1:A:261:ASP:OD1	1:A:262:LEU:N	2.50	0.45
1:A:804:ALA:HA	1:A:852:ARG:NH2	2.32	0.45
1:A:2215:LEU:O	1:A:2219:LEU:HG	2.17	0.45
1:A:2256:ILE:HG22	1:A:2260:PHE:HE1	1.79	0.45
1:A:2577:PHE:HB2	1:A:2784:GLN:HA	1.99	0.45
1:A:3449:LYS:HA	1:A:3449:LYS:HD3	1.65	0.45
1:A:635:PRO:HA	1:A:676:ASN:HD22	1.82	0.44
1:A:710:PHE:O	1:A:714:VAL:HG12	2.17	0.44
1:A:1224:PHE:HD2	1:A:1267:TYR:CE1	2.34	0.44
1:A:1790:SER:O	1:A:1794:GLN:HG3	2.16	0.44
1:A:3793:VAL:HG13	1:A:3803:ILE:HG22	1.99	0.44
1:A:1813:SER:O	1:A:1816:ARG:HB2	2.16	0.44
1:A:2464:HIS:ND1	1:A:2466:SER:HB2	2.31	0.44
1:A:3779:SER:O	1:A:3783:GLN:HG3	2.18	0.44
1:A:279:ALA:HA	1:A:282:PHE:HD2	1.82	0.44
1:A:1080:LEU:O	1:A:1084:ASN:ND2	2.45	0.44
1:A:1372:LEU:HD12	1:A:1402:LEU:HD23	1.99	0.44
1:A:1737:ASN:HA	1:A:1740:VAL:HG12	2.00	0.44
1:A:1863:PHE:HZ	1:A:1937:ARG:HH11	1.65	0.44
1:A:2371:PHE:CE1	1:A:2373:PRO:HD2	2.53	0.44
1:A:3451:LEU:HA	1:A:3451:LEU:HD23	1.67	0.44
1:A:3646:LYS:HB3	1:A:3650:LYS:HB2	1.99	0.44
1:A:333:MET:HG2	1:A:334:HIS:CE1	2.52	0.44
1:A:607:ASP:N	1:A:607:ASP:OD1	2.39	0.44
1:A:1151:ARG:HD2	1:A:1163:LEU:HB3	1.98	0.44
1:A:2150:VAL:HG22	1:A:2157:PHE:CE2	2.53	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2216:LEU:HA	1:A:2219:LEU:HD12	1.98	0.44
1:A:3227:ILE:HD12	1:A:3227:ILE:H	1.82	0.44
1:A:3564:GLN:HG3	1:A:3565:GLY:N	2.32	0.44
1:A:3681:LYS:O	1:A:3685:PRO:HD2	2.17	0.44
1:A:3763:ARG:HG3	1:A:4011:PHE:CZ	2.53	0.44
1:A:573:LEU:HD23	1:A:573:LEU:HA	1.77	0.44
1:A:1395:LEU:HB3	1:A:1396:PRO:HD3	2.00	0.44
1:A:1793:THR:O	1:A:1797:LEU:HG	2.18	0.44
1:A:1804:MET:O	1:A:1811:ARG:NH2	2.44	0.44
1:A:2319:ALA:O	1:A:2323:LEU:HG	2.18	0.44
1:A:2496:GLN:O	1:A:2500:LYS:HG2	2.18	0.44
1:A:2531:LEU:HA	1:A:2532:PRO:HD3	1.88	0.44
1:A:3805:TRP:O	1:A:3805:TRP:CG	2.69	0.44
1:A:303:HIS:ND1	1:A:308:LEU:HD23	2.32	0.44
1:A:1815:THR:HG22	1:A:1819:PHE:HE1	1.83	0.44
1:A:108:LYS:HZ3	1:A:151:GLU:HA	1.83	0.44
1:A:1086:TYR:C	1:A:1088:GLU:H	2.20	0.44
1:A:1724:MET:HA	1:A:1768:ARG:HH22	1.83	0.44
1:A:3104:GLN:OE1	1:A:3139:GLN:NE2	2.51	0.44
1:A:3269:ARG:C	1:A:3271:ASP:H	2.20	0.44
1:A:3646:LYS:N	1:A:3650:LYS:HB3	2.33	0.44
1:A:336:ASN:OD1	1:A:337:LYS:N	2.51	0.44
1:A:1662:ASN:OD1	1:A:1663:THR:N	2.46	0.44
1:A:2256:ILE:HD12	1:A:2256:ILE:H	1.83	0.44
1:A:2344:LEU:HA	1:A:2347:LYS:NZ	2.33	0.44
1:A:2917:PRO:HB2	1:A:2919:ASP:OD1	2.18	0.44
1:A:3975:LYS:HA	1:A:3975:LYS:HD3	1.86	0.44
1:A:536:SER:O	1:A:539:GLN:HB2	2.18	0.44
1:A:774:GLU:HG2	1:A:858:MET:CE	2.47	0.44
1:A:303:HIS:HE1	1:A:305:ASN:HB2	1.82	0.43
1:A:2233:HIS:HA	1:A:2236:GLU:CD	2.38	0.43
1:A:3859:TYR:HB3	1:A:4076:ASP:OD1	2.18	0.43
1:A:770:LEU:O	1:A:774:GLU:HG3	2.18	0.43
1:A:1452:VAL:HG23	1:A:1517:LEU:HD22	2.00	0.43
1:A:1580:LEU:HD11	1:A:1625:HIS:NE2	2.34	0.43
1:A:2396:LEU:HA	1:A:2399:GLU:OE2	2.18	0.43
1:A:3293:CYS:O	1:A:3297:VAL:HG23	2.18	0.43
1:A:722:LYS:HA	1:A:726:LEU:CB	2.48	0.43
1:A:1664:SER:N	1:A:1668:PHE:HB3	2.33	0.43
1:A:2284:ASP:O	1:A:2285:LEU:HD23	2.18	0.43
1:A:2389:PHE:O	1:A:2390:HIS:ND1	2.50	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3498:TRP:O	1:A:3502:MET:HG3	2.18	0.43
1:A:1291:LEU:HA	1:A:1294:VAL:HG22	1.99	0.43
1:A:1921:ASP:OD1	1:A:1922:ALA:N	2.52	0.43
1:A:2183:HIS:CE1	1:A:2185:MET:HB2	2.53	0.43
1:A:2960:GLU:HG3	1:A:2965:TYR:HE1	1.83	0.43
1:A:3156:PRO:HA	1:A:3159:ARG:HE	1.84	0.43
1:A:3466:PRO:HB2	1:A:4004:VAL:HG11	2.00	0.43
1:A:3744:ASP:OD1	1:A:3744:ASP:N	2.51	0.43
1:A:3880:ALA:HA	1:A:3965:ARG:NH2	2.33	0.43
1:A:899:ARG:HH21	1:A:2568:MET:HB3	1.83	0.43
1:A:1413:ASP:O	1:A:1417:THR:HG23	2.17	0.43
1:A:1626:TRP:HZ2	1:A:1674:THR:HG21	1.83	0.43
1:A:1672:PHE:O	1:A:1676:ILE:HG12	2.18	0.43
1:A:2296:SER:HA	1:A:2299:TYR:HD2	1.83	0.43
1:A:2376:ASP:OD1	1:A:2377:ARG:HD2	2.19	0.43
1:A:3481:SER:HA	1:A:3484:THR:OG1	2.19	0.43
1:A:3685:PRO:HB2	1:A:3687:MET:H	1.83	0.43
1:A:4076:ASP:OD1	1:A:4077:TYR:N	2.51	0.43
1:A:290:TYR:CZ	1:A:337:LYS:HB3	2.53	0.43
1:A:759:GLY:HA3	1:A:766:ALA:HB2	1.99	0.43
1:A:2325:LEU:O	1:A:2328:ARG:HG2	2.19	0.43
1:A:3288:SER:OG	1:A:3294:SER:HB2	2.18	0.43
1:A:3809:THR:HG22	1:A:3931:ALA:HA	1.99	0.43
1:A:997:ASN:OD1	1:A:998:ASN:N	2.47	0.43
1:A:1086:TYR:CD2	1:A:1087:ARG:HG3	2.54	0.43
1:A:1217:VAL:O	1:A:1221:ILE:HD12	2.18	0.43
1:A:1617:LYS:O	1:A:1621:THR:HG22	2.19	0.43
1:A:2462:VAL:O	1:A:2463:SER:OG	2.28	0.43
1:A:2936:TYR:O	1:A:2940:ARG:HD3	2.18	0.43
1:A:3066:ASP:HA	1:A:3069:MET:HB2	2.01	0.43
1:A:3077:ILE:HG13	1:A:3078:LEU:N	2.34	0.43
1:A:3416:LEU:HG	1:A:3445:LEU:HD21	1.99	0.43
1:A:3582:GLU:HG2	1:A:3583:LEU:N	2.33	0.43
1:A:967:PRO:O	1:A:971:ARG:HG3	2.18	0.43
1:A:1376:LEU:HD13	1:A:1403:MET:HE3	2.00	0.43
1:A:1605:PHE:HD2	1:A:1651:LYS:HZ2	1.65	0.43
1:A:1945:TYR:O	1:A:1949:ILE:HG12	2.18	0.43
1:A:2270:ASN:N	1:A:2270:ASN:HD22	2.16	0.43
1:A:2548:PRO:HB2	1:A:2848:PHE:CE2	2.53	0.43
1:A:3012:GLU:HG3	1:A:3048:LYS:HG3	2.00	0.43
1:A:3090:TYR:HE2	1:A:3102:TYR:HE2	1.67	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1149:LYS:N	1:A:1162:SER:OG	2.51	0.43
1:A:1655:ILE:HG13	1:A:1656:ASP:N	2.34	0.43
1:A:2478:MET:HG2	1:A:2524:PHE:CD1	2.54	0.43
1:A:2539:LEU:HD13	1:A:2562:LEU:HD11	2.01	0.43
1:A:156:PHE:O	1:A:160:LEU:HG	2.18	0.42
1:A:2371:PHE:CD1	1:A:2373:PRO:HD2	2.54	0.42
1:A:532:ARG:HD3	1:A:637:LYS:HD3	2.00	0.42
1:A:1257:LEU:HD22	1:A:1337:VAL:HG21	2.01	0.42
1:A:1362:ASP:OD1	1:A:1362:ASP:N	2.52	0.42
1:A:1881:TYR:CD2	1:A:1951:VAL:HG23	2.54	0.42
1:A:3031:TRP:CD1	1:A:3031:TRP:N	2.87	0.42
1:A:434:VAL:O	1:A:438:LEU:HD23	2.18	0.42
1:A:624:ILE:O	1:A:628:GLU:HG2	2.20	0.42
1:A:911:LEU:O	1:A:915:THR:HG23	2.19	0.42
1:A:1157:PHE:HE1	1:A:1171:TRP:CD1	2.37	0.42
1:A:1538:LEU:HD12	1:A:1553:PHE:CE2	2.54	0.42
1:A:3632:PHE:HD1	1:A:3633:ILE:HD13	1.84	0.42
1:A:29:LEU:HA	1:A:32:HIS:HB2	2.02	0.42
1:A:485:GLN:O	1:A:488:ILE:HG22	2.19	0.42
1:A:1086:TYR:CE1	1:A:1133:HIS:CD2	3.08	0.42
1:A:1718:ILE:HG13	1:A:1719:VAL:N	2.34	0.42
1:A:2097:LEU:HD12	1:A:2145:PHE:HZ	1.84	0.42
1:A:2466:SER:C	1:A:2468:THR:H	2.23	0.42
1:A:3381:ALA:O	1:A:3385:LEU:HD23	2.20	0.42
1:A:534:LEU:HD23	1:A:534:LEU:HA	1.83	0.42
1:A:1179:PRO:HG3	1:A:3694:PHE:CD2	2.54	0.42
1:A:1275:THR:HG22	1:A:1276:VAL:HG23	2.01	0.42
1:A:1301:ILE:HG22	1:A:1334:LYS:HG3	2.02	0.42
1:A:1525:CYS:HB3	1:A:1574:ASN:HD21	1.83	0.42
1:A:1678:LEU:HD12	1:A:1679:LEU:N	2.34	0.42
1:A:4027:TRP:CD2	1:A:4030:GLU:HB3	2.54	0.42
1:A:1385:ASN:HA	1:A:1392:MET:CE	2.49	0.42
1:A:1627:LYS:HD2	1:A:1627:LYS:HA	1.80	0.42
1:A:2894:GLU:HB3	1:A:3973:PRO:HG2	2.02	0.42
1:A:3492:CYS:SG	1:A:3521:ILE:HD13	2.60	0.42
1:A:3580:ASN:ND2	1:A:3734:ARG:HB2	2.30	0.42
1:A:1562:LEU:HD23	1:A:1562:LEU:HA	1.86	0.42
1:A:1794:GLN:O	1:A:1798:LEU:HG	2.19	0.42
1:A:2531:LEU:HD21	1:A:2538:ARG:HG3	2.02	0.42
1:A:2884:LEU:HD11	1:A:3113:ASN:OD1	2.20	0.42
1:A:3031:TRP:HZ3	1:A:3044:MET:HB2	1.84	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:6101:AGS:O4'	2:A:6101:AGS:O5'	2.36	0.42
1:A:85:ILE:O	1:A:89:LEU:HG	2.19	0.42
1:A:290:TYR:CE1	1:A:337:LYS:HE3	2.55	0.42
1:A:1368:LEU:HA	1:A:1371:VAL:HG12	2.02	0.42
1:A:1526:GLU:OE1	1:A:1526:GLU:N	2.47	0.42
1:A:3095:ASP:OD1	1:A:3095:ASP:N	2.53	0.42
1:A:3169:PRO:HD3	1:A:3182:ILE:HD11	2.01	0.42
1:A:490:ILE:HD11	1:A:629:PHE:CE2	2.54	0.42
1:A:901:MET:HB3	1:A:2823:PHE:CE2	2.55	0.42
1:A:1324:PRO:C	1:A:1327:GLY:H	2.22	0.42
1:A:1436:LEU:HD23	1:A:1436:LEU:H	1.84	0.42
1:A:2455:LEU:HD22	1:A:2498:ILE:HG23	2.02	0.42
1:A:172:GLU:HB3	1:A:220:LEU:HD12	2.01	0.42
1:A:653:LEU:HD23	1:A:653:LEU:HA	1.77	0.42
1:A:1046:PRO:HA	1:A:1049:GLN:HB2	2.01	0.42
1:A:1240:THR:HG23	1:A:1296:PHE:CD2	2.54	0.42
1:A:1265:GLU:HG2	1:A:1340:ARG:HD3	2.02	0.42
1:A:2216:LEU:O	1:A:2220:MET:HE2	2.20	0.42
1:A:2251:ILE:HB	1:A:2253:TYR:CZ	2.55	0.42
1:A:3014:CYS:C	1:A:3016:THR:H	2.23	0.42
1:A:19:LEU:HG	1:A:34:LEU:HD23	2.01	0.41
1:A:486:GLY:O	1:A:490:ILE:HG23	2.20	0.41
1:A:1086:TYR:O	1:A:1087:ARG:HB2	2.20	0.41
1:A:1427:SER:O	1:A:1430:GLU:HG3	2.19	0.41
1:A:2899:ARG:HE	1:A:2899:ARG:HB3	1.70	0.41
1:A:3051:LEU:HD23	1:A:3051:LEU:HA	1.89	0.41
1:A:3759:ARG:O	1:A:3763:ARG:HG2	2.20	0.41
1:A:1195:VAL:HG11	1:A:1204:PRO:HA	2.01	0.41
1:A:2095:ALA:HB3	1:A:2096:PRO:HD3	2.01	0.41
1:A:3913:ILE:HD12	1:A:3913:ILE:HA	1.85	0.41
1:A:971:ARG:HH22	1:A:1018:VAL:HG11	1.86	0.41
1:A:1265:GLU:CG	1:A:1340:ARG:HD3	2.50	0.41
1:A:1576:ASP:O	1:A:1580:LEU:HD13	2.19	0.41
1:A:2098:THR:HA	1:A:2101:VAL:HG22	2.02	0.41
1:A:2142:ILE:O	1:A:2146:LEU:HG	2.20	0.41
1:A:2164:TRP:O	1:A:2167:PRO:HD2	2.20	0.41
1:A:2548:PRO:HB2	1:A:2848:PHE:CD2	2.55	0.41
1:A:3328:ILE:HG13	1:A:3329:LEU:HD12	2.02	0.41
1:A:3499:ILE:CG2	1:A:3529:ILE:HG13	2.50	0.41
1:A:2477:LEU:HA	1:A:2477:LEU:HD23	1.70	0.41
1:A:2540:LEU:HD21	1:A:2832:ILE:HG23	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3026:ASP:O	1:A:3030:ILE:HG22	2.20	0.41
1:A:668:LYS:HE2	1:A:728:SER:OG	2.21	0.41
1:A:1301:ILE:HG13	1:A:1302:ALA:N	2.36	0.41
1:A:2242:VAL:HA	1:A:2249:LEU:HD21	2.02	0.41
1:A:2554:PHE:C	1:A:2556:SER:H	2.24	0.41
1:A:3531:TYR:HB2	1:A:3532:PRO:HD3	2.02	0.41
1:A:3975:LYS:HB2	1:A:3977:THR:HG22	2.03	0.41
1:A:2186:VAL:HA	1:A:2189:ILE:HG22	2.02	0.41
1:A:2813:PHE:CE1	1:A:2817:LEU:HD11	2.54	0.41
1:A:3033:GLU:OE2	1:A:3034:PRO:HG3	2.20	0.41
1:A:3422:GLN:O	1:A:3426:LYS:HG2	2.21	0.41
1:A:3791:TYR:OH	1:A:3940:ILE:HG22	2.20	0.41
1:A:1324:PRO:O	1:A:1327:GLY:N	2.51	0.41
1:A:1389:VAL:HG23	1:A:1390:GLN:N	2.36	0.41
1:A:2325:LEU:HA	1:A:2328:ARG:HG2	2.03	0.41
1:A:1733:THR:HG22	1:A:1735:ARG:H	1.85	0.41
1:A:1774:MET:HG3	1:A:1778:PHE:CD1	2.56	0.41
1:A:2231:PHE:O	1:A:2235:LEU:HG	2.21	0.41
1:A:22:ALA:O	1:A:30:ALA:HB1	2.21	0.41
1:A:263:LYS:HA	1:A:263:LYS:HD2	1.91	0.41
1:A:459:ARG:NH1	1:A:545:LEU:HD23	2.35	0.41
1:A:708:VAL:O	1:A:712:LYS:HG2	2.21	0.41
1:A:1012:ALA:O	1:A:1013:ILE:HD13	2.20	0.41
1:A:1030:GLY:O	1:A:1033:ILE:HG22	2.21	0.41
1:A:1157:PHE:CE2	1:A:1163:LEU:HD11	2.56	0.41
1:A:1173:LEU:HD12	1:A:1191:PHE:CE1	2.56	0.41
1:A:1335:CYS:HB3	1:A:1384:PHE:CE1	2.55	0.41
1:A:1770:GLN:N	1:A:1770:GLN:OE1	2.54	0.41
1:A:1797:LEU:O	1:A:1801:VAL:HG22	2.20	0.41
1:A:1854:ARG:O	1:A:1870:LYS:NZ	2.53	0.41
1:A:2134:GLY:O	1:A:2136:PRO:HD3	2.21	0.41
1:A:2168:LEU:HD12	1:A:2169:LEU:N	2.35	0.41
1:A:2254:ARG:HH12	1:A:2292:CYS:N	2.19	0.41
1:A:2392:VAL:O	1:A:2396:LEU:HG	2.21	0.41
1:A:2555:LEU:HD11	1:A:2854:PHE:HA	2.03	0.41
1:A:3024:PRO:HA	1:A:3025:PRO:HD3	1.94	0.41
1:A:3797:THR:HG22	1:A:3798:SER:N	2.35	0.41
1:A:3992:ARG:HH12	1:A:4053:GLY:HA2	1.86	0.41
1:A:249:PHE:O	1:A:252:VAL:HG12	2.20	0.41
1:A:1862:THR:O	1:A:1865:THR:HG22	2.20	0.41
1:A:2318:ALA:HA	1:A:2321:GLU:HG2	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2361:ILE:HD11	1:A:2393:LEU:HD23	2.03	0.41
1:A:201:LEU:O	1:A:205:LYS:HG3	2.21	0.40
1:A:931:CYS:O	1:A:984:TYR:OH	2.26	0.40
1:A:2301:GLN:HA	1:A:2344:LEU:HD21	2.03	0.40
1:A:2477:LEU:HD22	1:A:2502:ALA:HA	2.03	0.40
1:A:3194:GLU:HB2	1:A:3231:ILE:CD1	2.51	0.40
1:A:3925:LEU:HA	1:A:3925:LEU:HD23	1.87	0.40
1:A:967:PRO:HD3	1:A:1010:LEU:HD12	2.03	0.40
1:A:3141:PHE:HE1	1:A:3193:ILE:HG13	1.87	0.40
1:A:3772:ASN:OD1	1:A:3788:LEU:HB2	2.21	0.40
1:A:4020:MET:HB2	1:A:4020:MET:HE2	1.92	0.40
1:A:1066:LEU:HB3	1:A:1078:ALA:HB2	2.03	0.40
1:A:1181:THR:HG22	1:A:1184:ARG:HH12	1.86	0.40
1:A:1334:LYS:HZ1	1:A:1382:ILE:HB	1.86	0.40
1:A:3536:SER:HB3	1:A:3540:TYR:HE2	1.86	0.40
1:A:3617:LEU:HA	1:A:3633:ILE:HD11	2.04	0.40
1:A:637:LYS:HA	1:A:637:LYS:HD2	1.74	0.40
1:A:1681:ASP:HB3	1:A:1684:LEU:HD13	2.03	0.40
1:A:2193:ILE:HD12	1:A:2245:TRP:HH2	1.87	0.40
1:A:2251:ILE:HB	1:A:2253:TYR:CE2	2.56	0.40
1:A:859:LEU:HD21	1:A:870:LEU:HD13	2.02	0.40
1:A:1106:ILE:HD13	1:A:1106:ILE:HA	1.89	0.40
1:A:1874:TYR:CE2	1:A:1944:ALA:HB2	2.57	0.40
1:A:2575:PRO:O	1:A:2576:MET:HG2	2.21	0.40
1:A:3683:CYS:SG	1:A:3684:SER:N	2.95	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	3602/4148 (87%)	3284 (91%)	311 (9%)	7 (0%)	47	78

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	3714	GLU
1	A	3354	ASP
1	A	3406	ALA
1	A	723	ASP
1	A	2787	HIS
1	A	4024	GLY
1	A	4025	GLY

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	3195/3671 (87%)	3185 (100%)	10 (0%)	92 97

All (10) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	722	LYS
1	A	1321	ARG
1	A	1811	ARG
1	A	3355	LYS
1	A	3696	ARG
1	A	3714	GLU
1	A	3733	ARG
1	A	3753	LYS
1	A	3864	ARG
1	A	3959	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	394	GLN
1	A	1048	GLN
1	A	1083	ASN

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Mol	Chain	Res	Type
1	A	2496	GLN
1	A	3162	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 ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 3 ligands modelled in this entry, 2 are monoatomic - leaving 1 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	AGS	A	6101	3	26,33,33	3.77	8 (30%)	26,52,52	1.62	4 (15%)

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	AGS	A	6101	3	-	3/17/38/38	0/3/3/3

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	6101	AGS	PG-S1G	10.31	2.13	1.90
2	A	6101	AGS	O4'-C4'	8.47	1.63	1.45
2	A	6101	AGS	O4'-C1'	-7.98	1.29	1.41
2	A	6101	AGS	C3'-C4'	-7.49	1.33	1.53
2	A	6101	AGS	O2'-C2'	-3.77	1.34	1.43
2	A	6101	AGS	C6-N6	3.72	1.47	1.34
2	A	6101	AGS	C2'-C1'	3.21	1.58	1.53
2	A	6101	AGS	O3'-C3'	2.03	1.47	1.43

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	6101	AGS	N3-C2-N1	-4.43	121.75	128.68
2	A	6101	AGS	C3'-C2'-C1'	3.49	106.24	100.98
2	A	6101	AGS	PA-O3A-PB	-3.12	122.13	132.83
2	A	6101	AGS	C2'-C3'-C4'	2.57	107.64	102.64

There are no chirality outliers.

All (3) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	6101	AGS	O4'-C4'-C5'-O5'
2	A	6101	AGS	C3'-C4'-C5'-O5'
2	A	6101	AGS	PB-O3A-PA-O1A

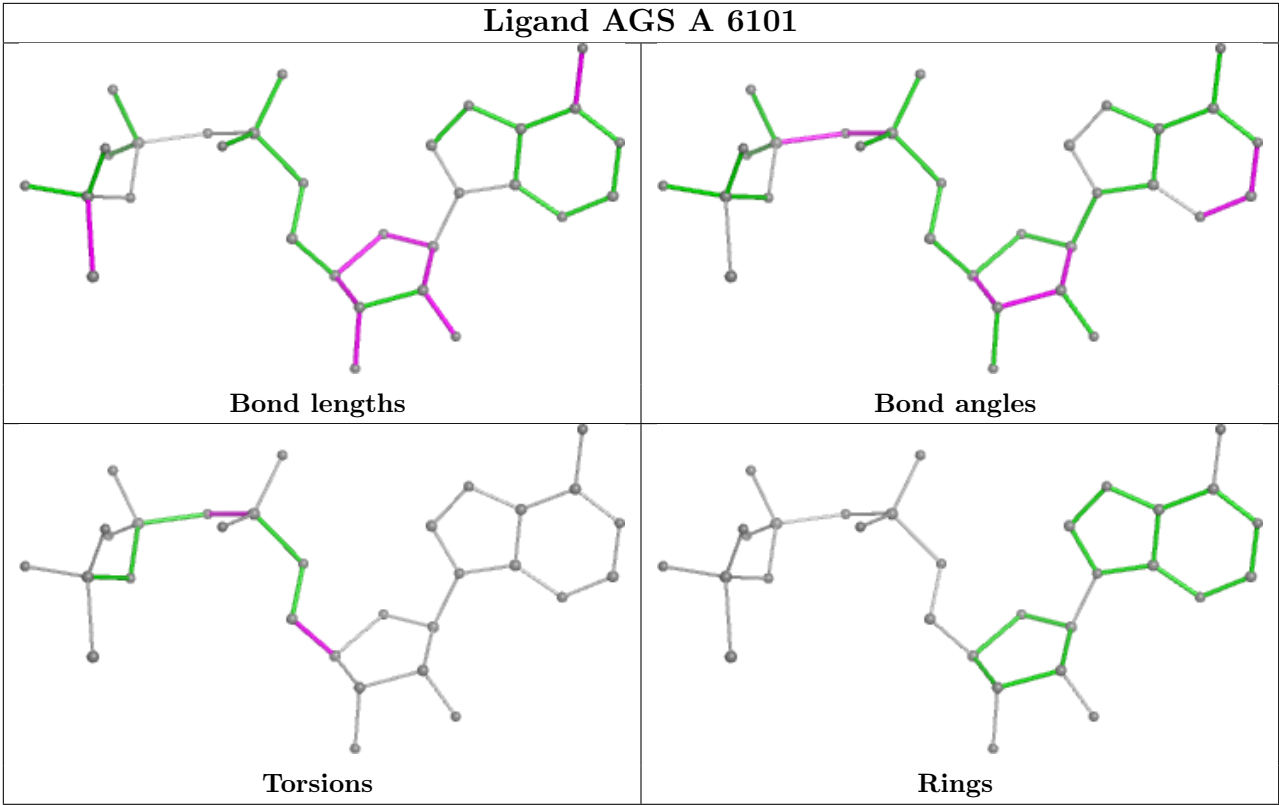
There are no ring outliers.

1 monomer is involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	6101	AGS	3	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.



5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	4128:MET	C	6001:UNK	N	81.75

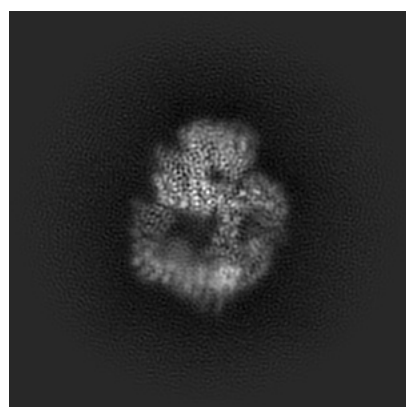
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-13064. These allow visual inspection of the internal detail of the map and identification of artifacts.

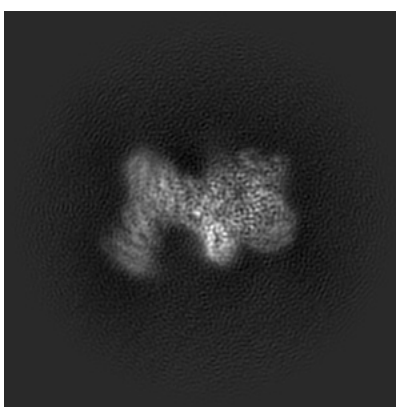
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

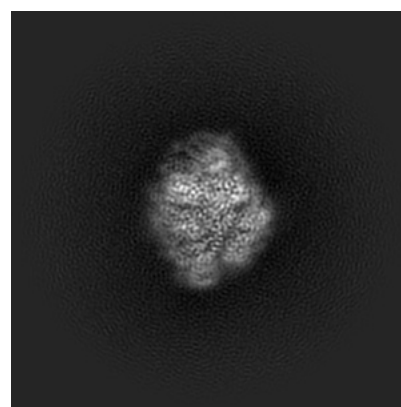
6.1.1 Primary map



X



Y

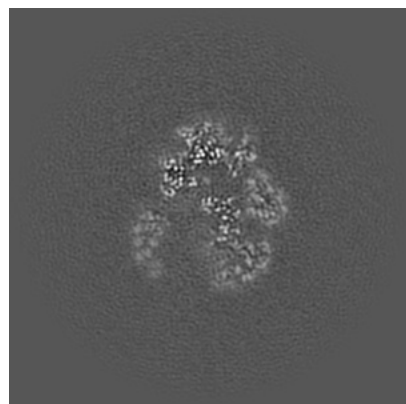


Z

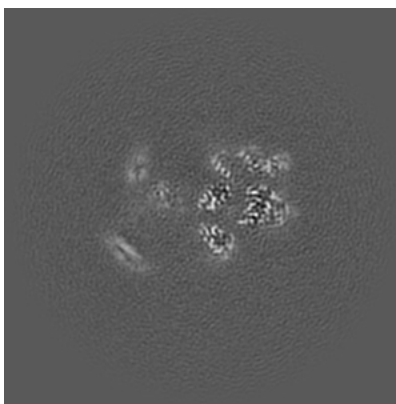
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

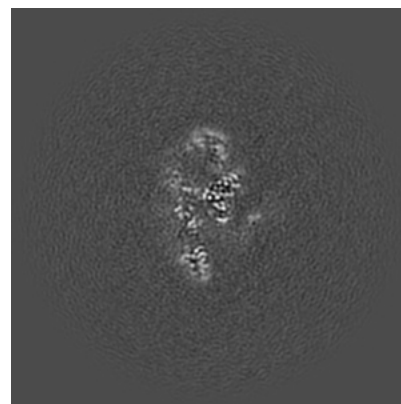
6.2.1 Primary map



X Index: 130



Y Index: 130

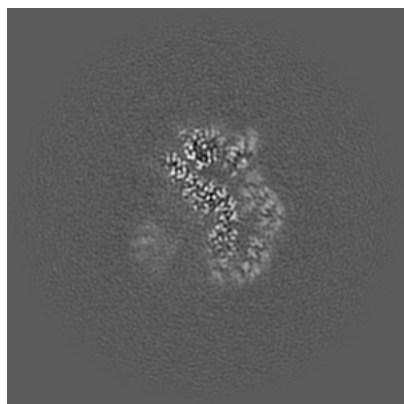


Z Index: 130

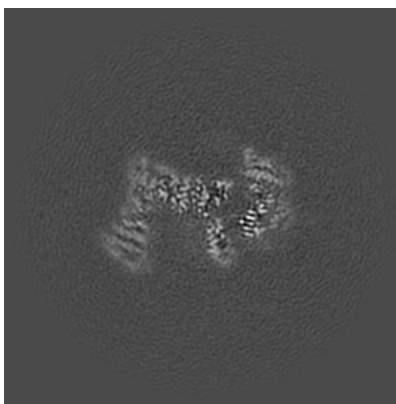
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

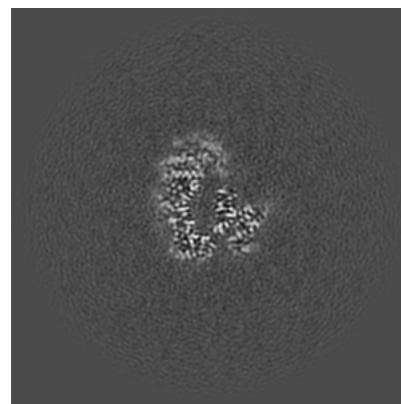
6.3.1 Primary map



X Index: 135



Y Index: 138

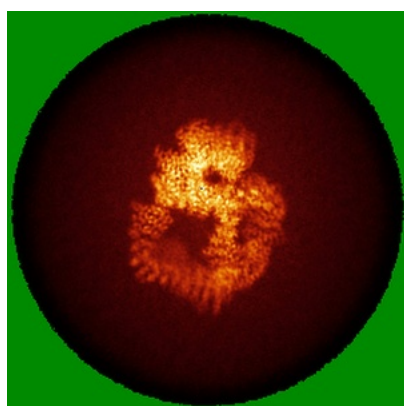


Z Index: 141

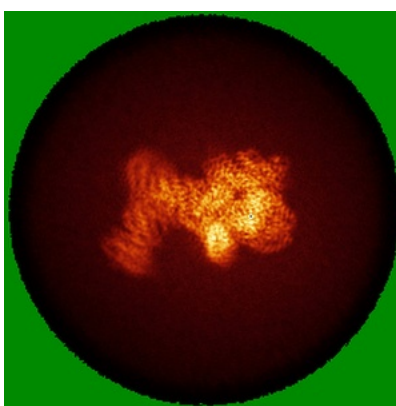
The images above show the largest variance slices of the map in three orthogonal directions.

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

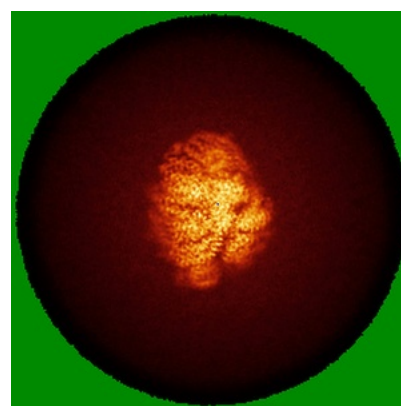
6.4.1 Primary map



X



Y



Z

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 0.23. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

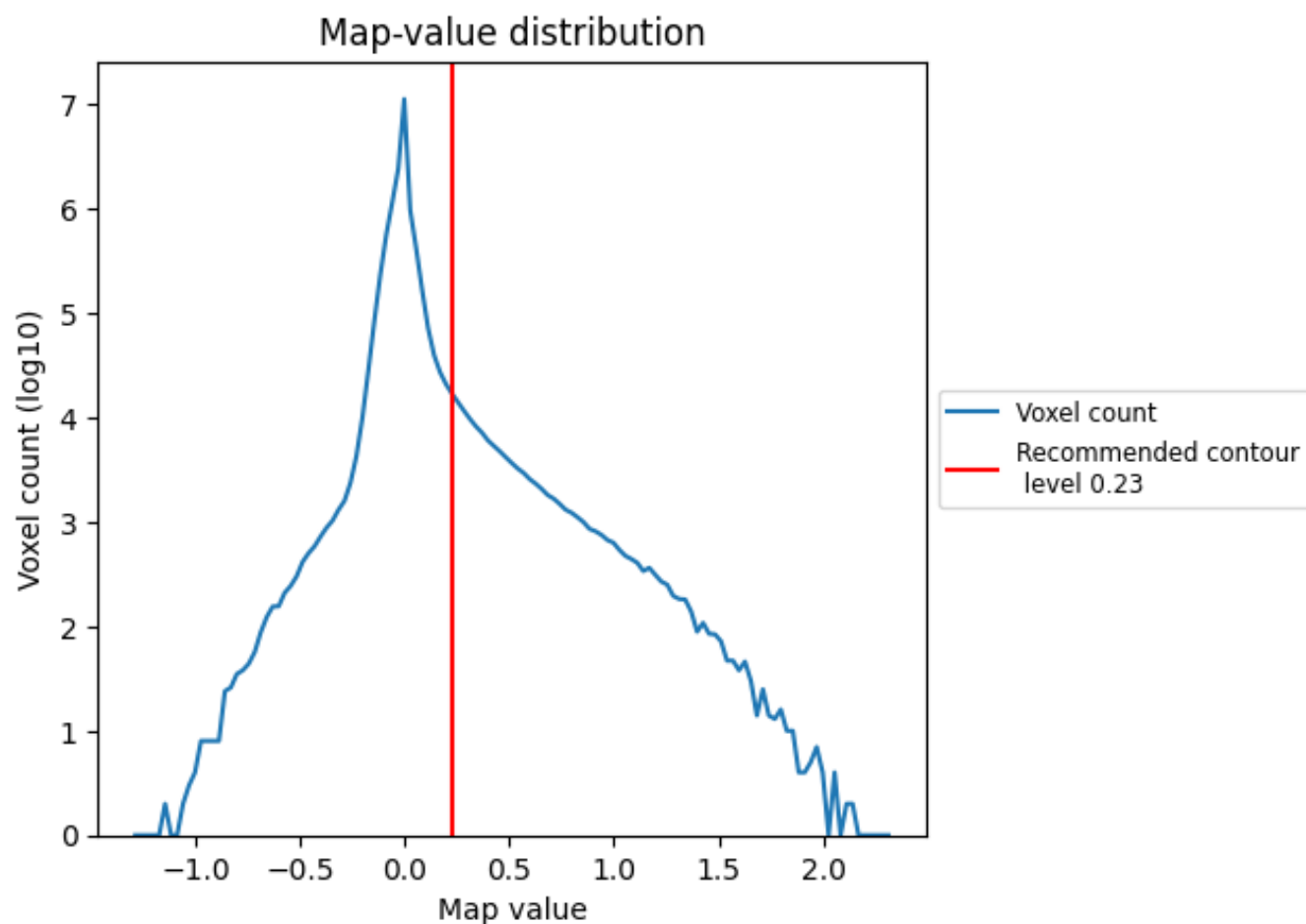
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

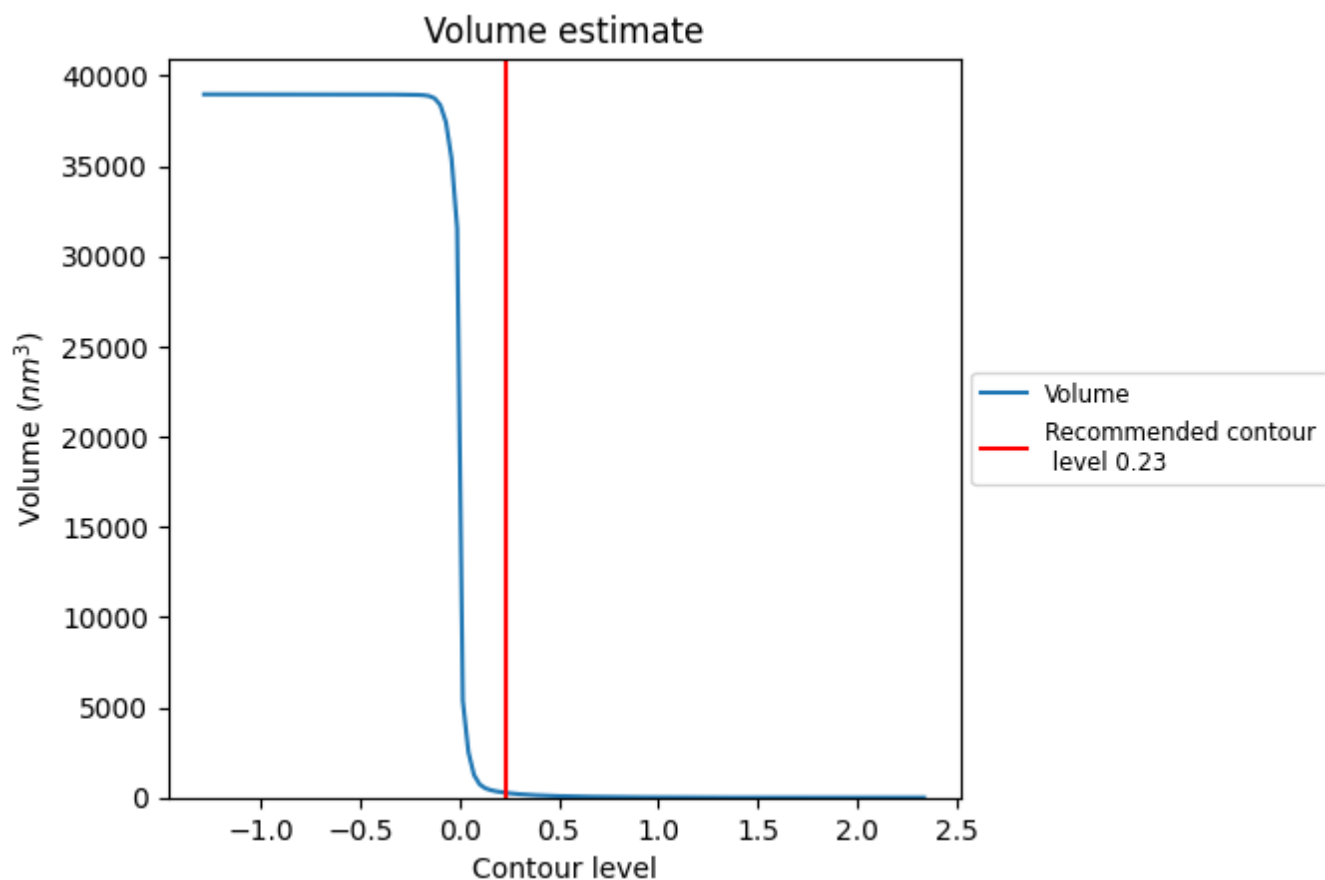
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

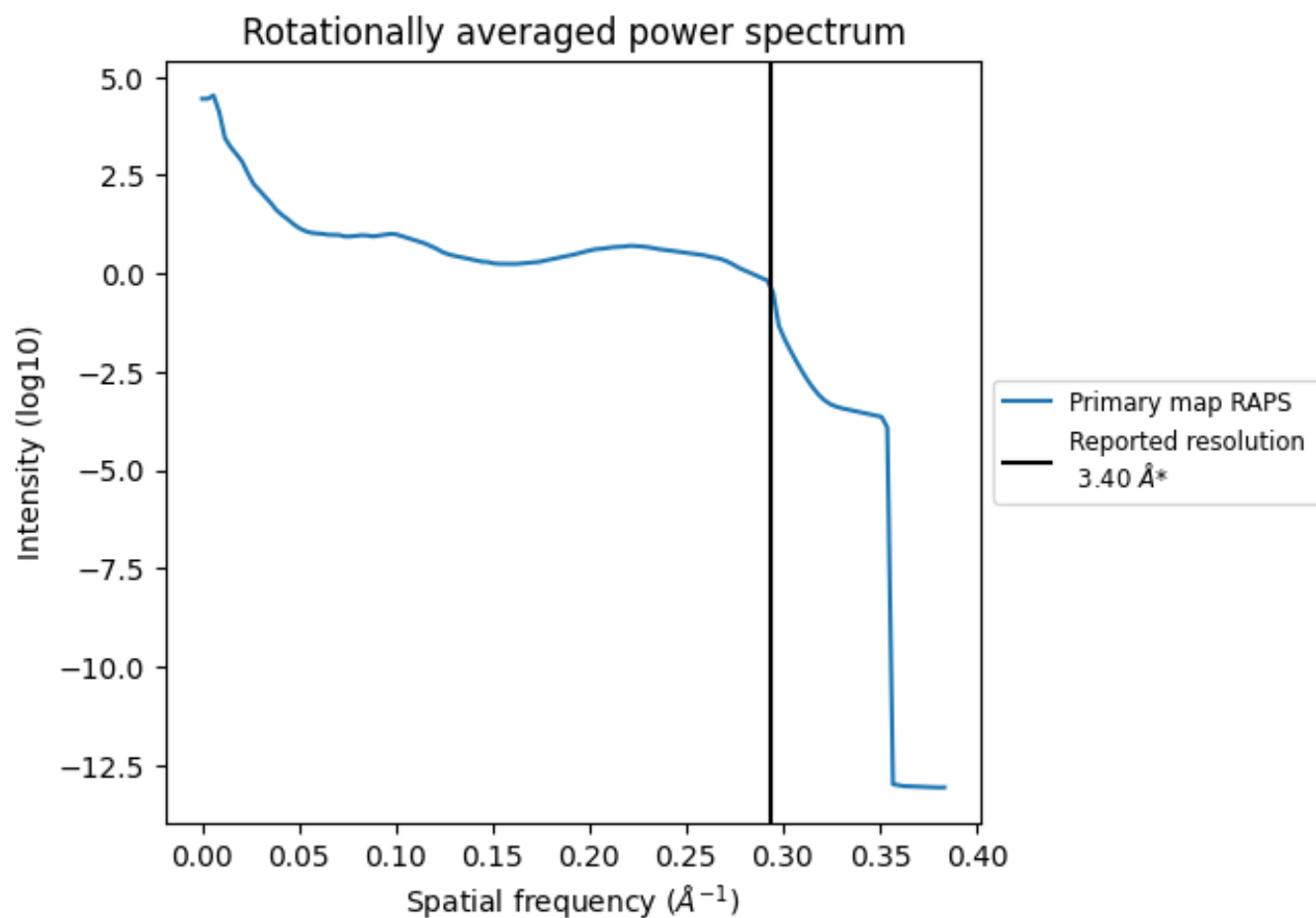
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 269 nm³; this corresponds to an approximate mass of 243 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

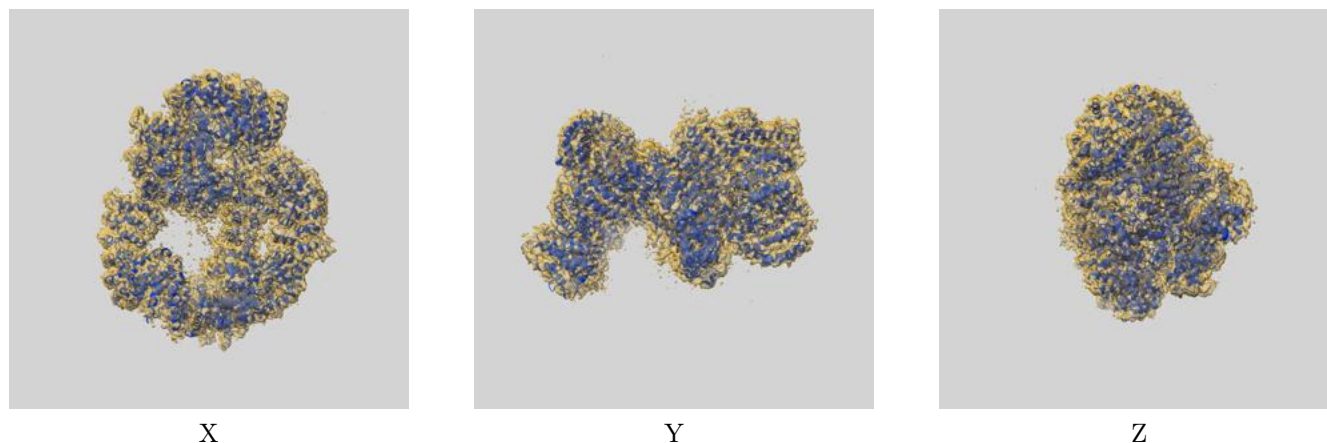
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

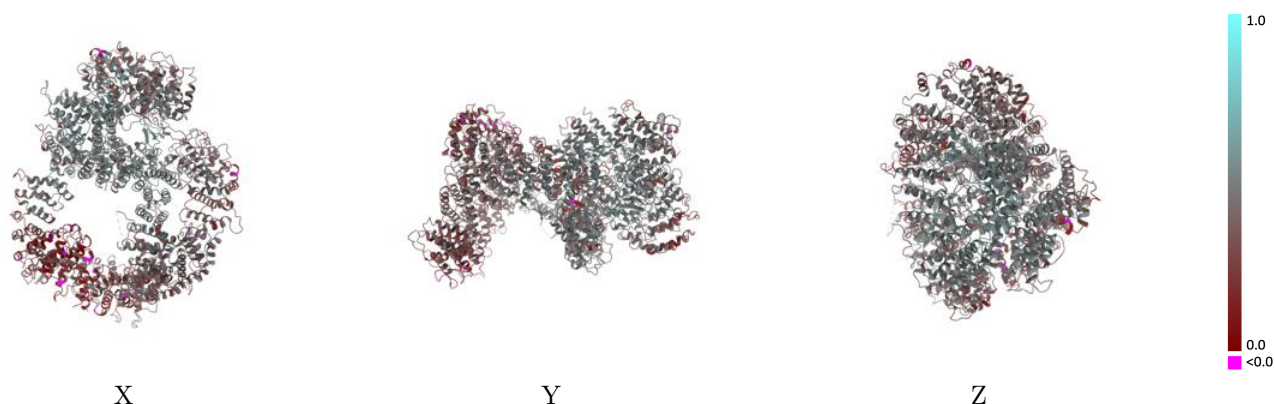
This section contains information regarding the fit between EMDB map EMD-13064 and PDB model 7OTP. Per-residue inclusion information can be found in [section 3](#) on [page 4](#).

9.1 Map-model overlay [i](#)



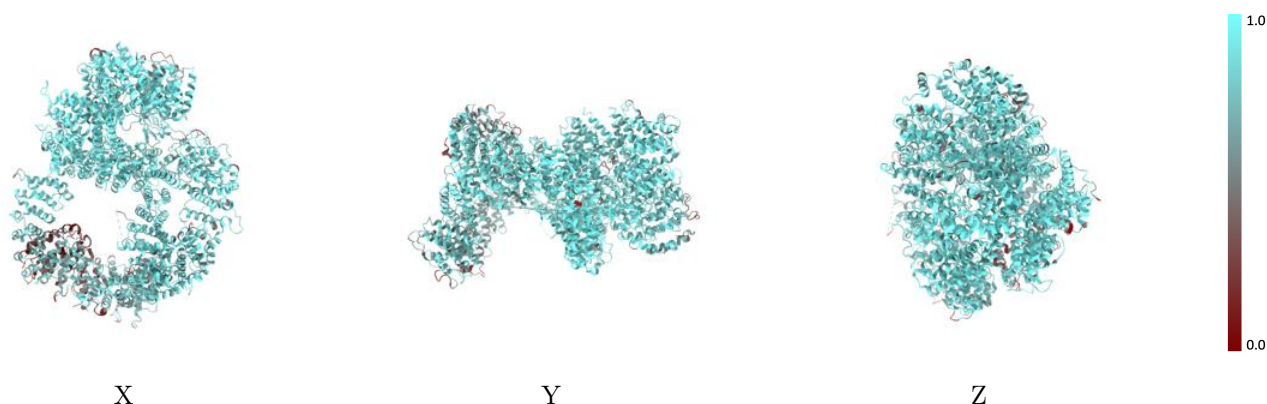
The images above show the 3D surface view of the map at the recommended contour level 0.23 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



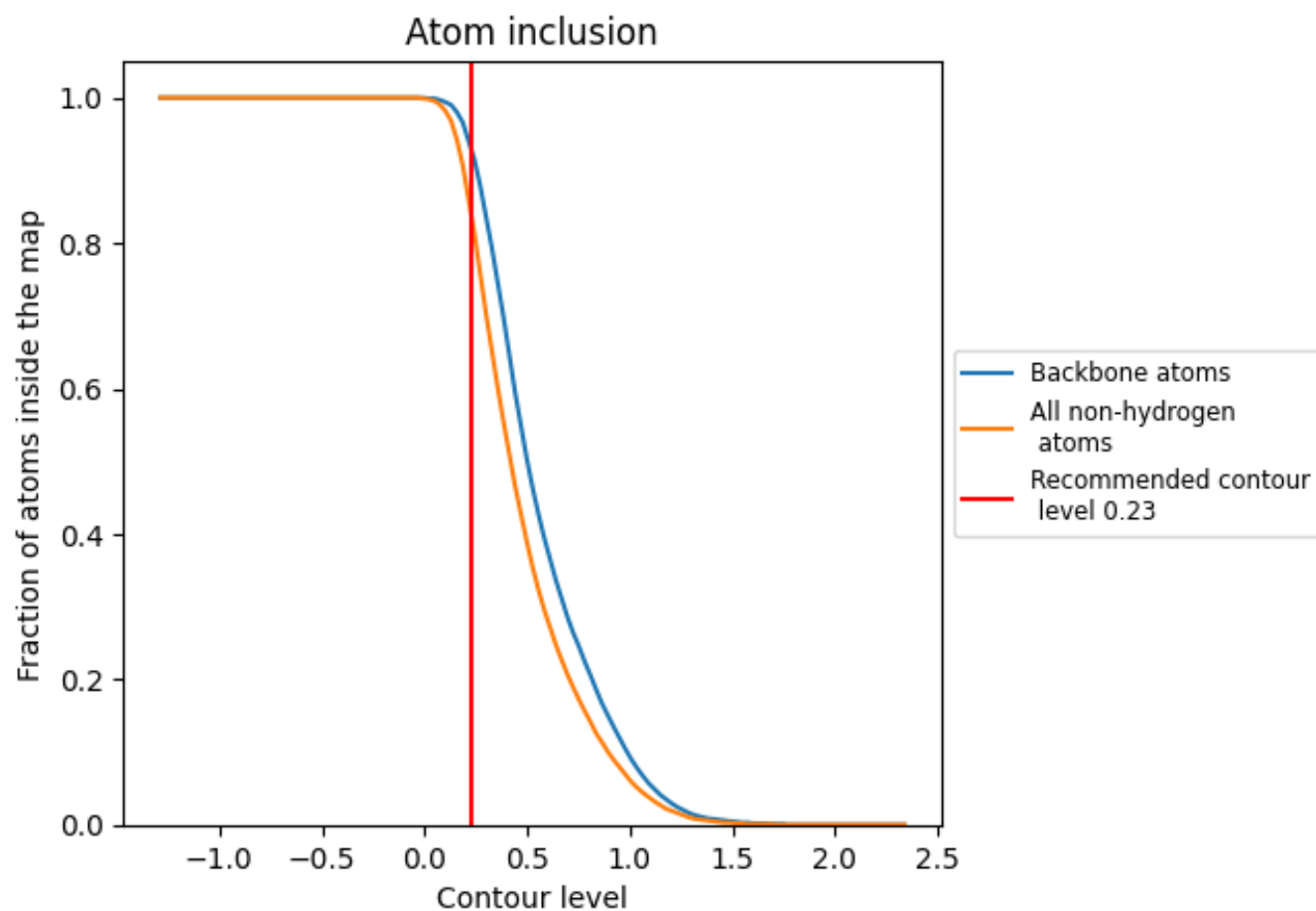
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.23).

9.4 Atom inclusion [i](#)



At the recommended contour level, 93% of all backbone atoms, 84% 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 (0.23) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	<div><div></div></div> 0.8360	<div><div></div></div> 0.4140
A	<div><div></div></div> 0.8360	<div><div></div></div> 0.4140

