



Full wwPDB EM Validation Report ⓘ

Jul 27, 2026 – 03:49 PM EDT

PDB ID : 9ZD4 / pdb_00009zd4
EMDB ID : EMD-74051
Title : Cryo-EM structure of symmetric class of ATR-ATRIP-ETAA1 AAD
Authors : Li, B.; Pavletich, N.P.
Deposited on : 2025-11-24
Resolution : 3.30 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.dev133
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.50

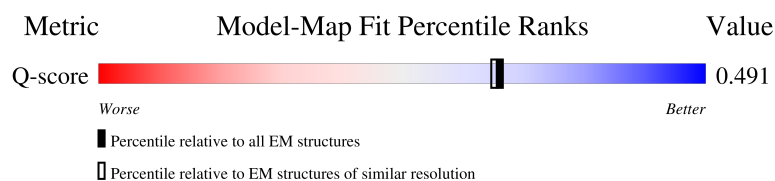
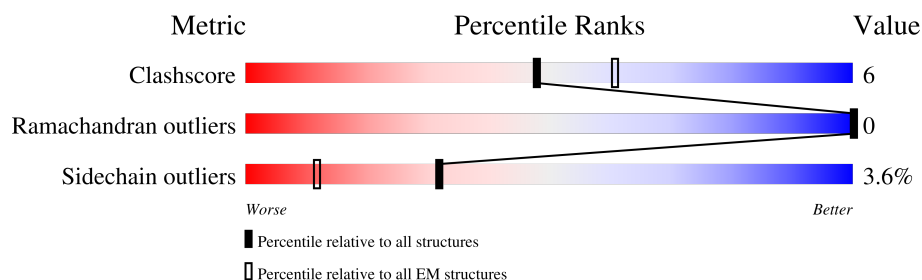
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.30 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	15087 (2.80 - 3.80)

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	2663	 82% 12% • 5%
1	B	2663	 82% 12% • 5%
2	C	810	 42% 6% 52%
2	D	810	 42% 6% 52%

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Mol	Chain	Length	Quality of chain
3	E	205	9%17%11%70%
3	F	205	10%17%10%70%

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 47414 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 Serine/threonine-protein kinase ATR.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	2519	Total 20191	C 12951	N 3423	O 3676	S 141	0	0
1	B	2519	Total 20191	C 12951	N 3423	O 3676	S 141	0	0

There are 38 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-18	MET	-	initiating methionine	UNP Q13535
A	-17	ASP	-	expression tag	UNP Q13535
A	-16	TYR	-	expression tag	UNP Q13535
A	-15	LYS	-	expression tag	UNP Q13535
A	-14	ASP	-	expression tag	UNP Q13535
A	-13	ASP	-	expression tag	UNP Q13535
A	-12	ASP	-	expression tag	UNP Q13535
A	-11	ASP	-	expression tag	UNP Q13535
A	-10	LYS	-	expression tag	UNP Q13535
A	-9	GLU	-	expression tag	UNP Q13535
A	-8	ASN	-	expression tag	UNP Q13535
A	-7	LEU	-	expression tag	UNP Q13535
A	-6	TYR	-	expression tag	UNP Q13535
A	-5	PHE	-	expression tag	UNP Q13535
A	-4	GLN	-	expression tag	UNP Q13535
A	-3	GLY	-	expression tag	UNP Q13535
A	-2	GLY	-	expression tag	UNP Q13535
A	-1	GLY	-	expression tag	UNP Q13535
A	0	ARG	-	expression tag	UNP Q13535
B	-18	MET	-	initiating methionine	UNP Q13535
B	-17	ASP	-	expression tag	UNP Q13535
B	-16	TYR	-	expression tag	UNP Q13535
B	-15	LYS	-	expression tag	UNP Q13535
B	-14	ASP	-	expression tag	UNP Q13535
B	-13	ASP	-	expression tag	UNP Q13535
B	-12	ASP	-	expression tag	UNP Q13535

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-11	ASP	-	expression tag	UNP Q13535
B	-10	LYS	-	expression tag	UNP Q13535
B	-9	GLU	-	expression tag	UNP Q13535
B	-8	ASN	-	expression tag	UNP Q13535
B	-7	LEU	-	expression tag	UNP Q13535
B	-6	TYR	-	expression tag	UNP Q13535
B	-5	PHE	-	expression tag	UNP Q13535
B	-4	GLN	-	expression tag	UNP Q13535
B	-3	GLY	-	expression tag	UNP Q13535
B	-2	GLY	-	expression tag	UNP Q13535
B	-1	GLY	-	expression tag	UNP Q13535
B	0	ARG	-	expression tag	UNP Q13535

- Molecule 2 is a protein called ATR-interacting protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	C	389	Total	C	N	O	S	0	0
			2976	1891	523	537	25		
2	D	389	Total	C	N	O	S	0	0
			2976	1891	523	537	25		

There are 38 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	-18	MET	-	initiating methionine	UNP Q8WXE1
C	-17	ASP	-	expression tag	UNP Q8WXE1
C	-16	TYR	-	expression tag	UNP Q8WXE1
C	-15	LYS	-	expression tag	UNP Q8WXE1
C	-14	ASP	-	expression tag	UNP Q8WXE1
C	-13	ASP	-	expression tag	UNP Q8WXE1
C	-12	ASP	-	expression tag	UNP Q8WXE1
C	-11	ASP	-	expression tag	UNP Q8WXE1
C	-10	LYS	-	expression tag	UNP Q8WXE1
C	-9	GLU	-	expression tag	UNP Q8WXE1
C	-8	ASN	-	expression tag	UNP Q8WXE1
C	-7	LEU	-	expression tag	UNP Q8WXE1
C	-6	TYR	-	expression tag	UNP Q8WXE1
C	-5	PHE	-	expression tag	UNP Q8WXE1
C	-4	GLN	-	expression tag	UNP Q8WXE1
C	-3	GLY	-	expression tag	UNP Q8WXE1
C	-2	GLY	-	expression tag	UNP Q8WXE1
C	-1	GLY	-	expression tag	UNP Q8WXE1

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Chain	Residue	Modelled	Actual	Comment	Reference
C	0	ARG	-	expression tag	UNP Q8WXE1
D	-18	MET	-	initiating methionine	UNP Q8WXE1
D	-17	ASP	-	expression tag	UNP Q8WXE1
D	-16	TYR	-	expression tag	UNP Q8WXE1
D	-15	LYS	-	expression tag	UNP Q8WXE1
D	-14	ASP	-	expression tag	UNP Q8WXE1
D	-13	ASP	-	expression tag	UNP Q8WXE1
D	-12	ASP	-	expression tag	UNP Q8WXE1
D	-11	ASP	-	expression tag	UNP Q8WXE1
D	-10	LYS	-	expression tag	UNP Q8WXE1
D	-9	GLU	-	expression tag	UNP Q8WXE1
D	-8	ASN	-	expression tag	UNP Q8WXE1
D	-7	LEU	-	expression tag	UNP Q8WXE1
D	-6	TYR	-	expression tag	UNP Q8WXE1
D	-5	PHE	-	expression tag	UNP Q8WXE1
D	-4	GLN	-	expression tag	UNP Q8WXE1
D	-3	GLY	-	expression tag	UNP Q8WXE1
D	-2	GLY	-	expression tag	UNP Q8WXE1
D	-1	GLY	-	expression tag	UNP Q8WXE1
D	0	ARG	-	expression tag	UNP Q8WXE1

- Molecule 3 is a protein called Ewing's tumor-associated antigen 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	E	61	Total	C	N	O	S	0	0
			505	312	83	106	4		
3	F	61	Total	C	N	O	S	0	0
			505	312	83	106	4		

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	46	GLY	-	expression tag	UNP Q9NY74
E	47	SER	-	expression tag	UNP Q9NY74
E	48	GLY	-	expression tag	UNP Q9NY74
F	46	GLY	-	expression tag	UNP Q9NY74
F	47	SER	-	expression tag	UNP Q9NY74
F	48	GLY	-	expression tag	UNP Q9NY74

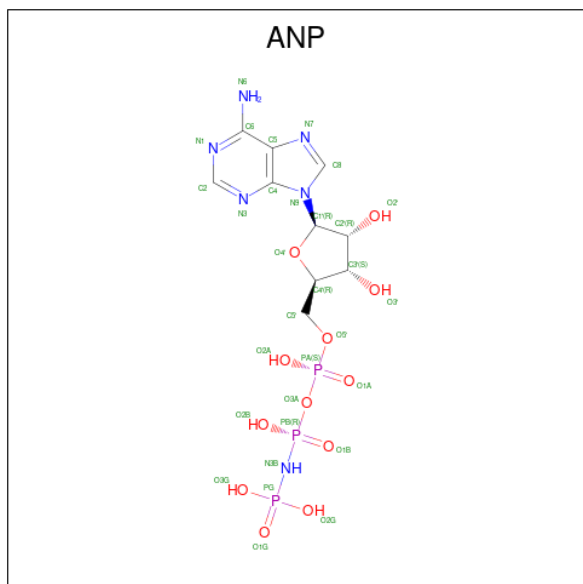
- Molecule 4 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
4	A	1	Total	Zn	0
			1	1	
4	C	1	Total	Zn	0
			1	1	
4	B	1	Total	Zn	0
			1	1	
4	D	1	Total	Zn	0
			1	1	

- Molecule 5 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
5	A	2	Total	Mg	0
			2	2	
5	B	2	Total	Mg	0
			2	2	

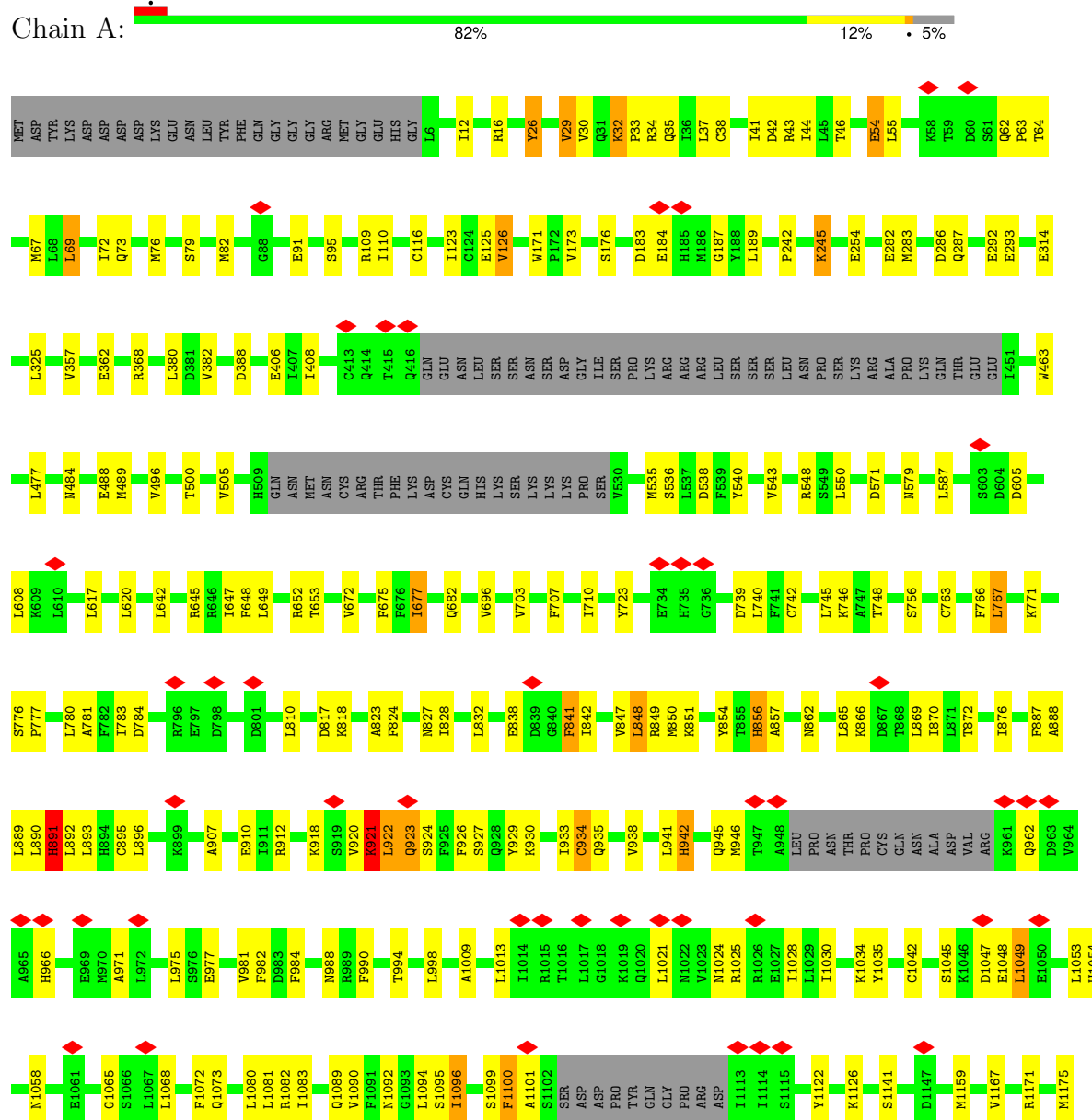
- Molecule 6 is PHOSPHOAMINOPHOSPHONIC ACID-ADENYLATE ESTER (CCD ID: ANP) (formula: C₁₀H₁₇N₆O₁₂P₃).

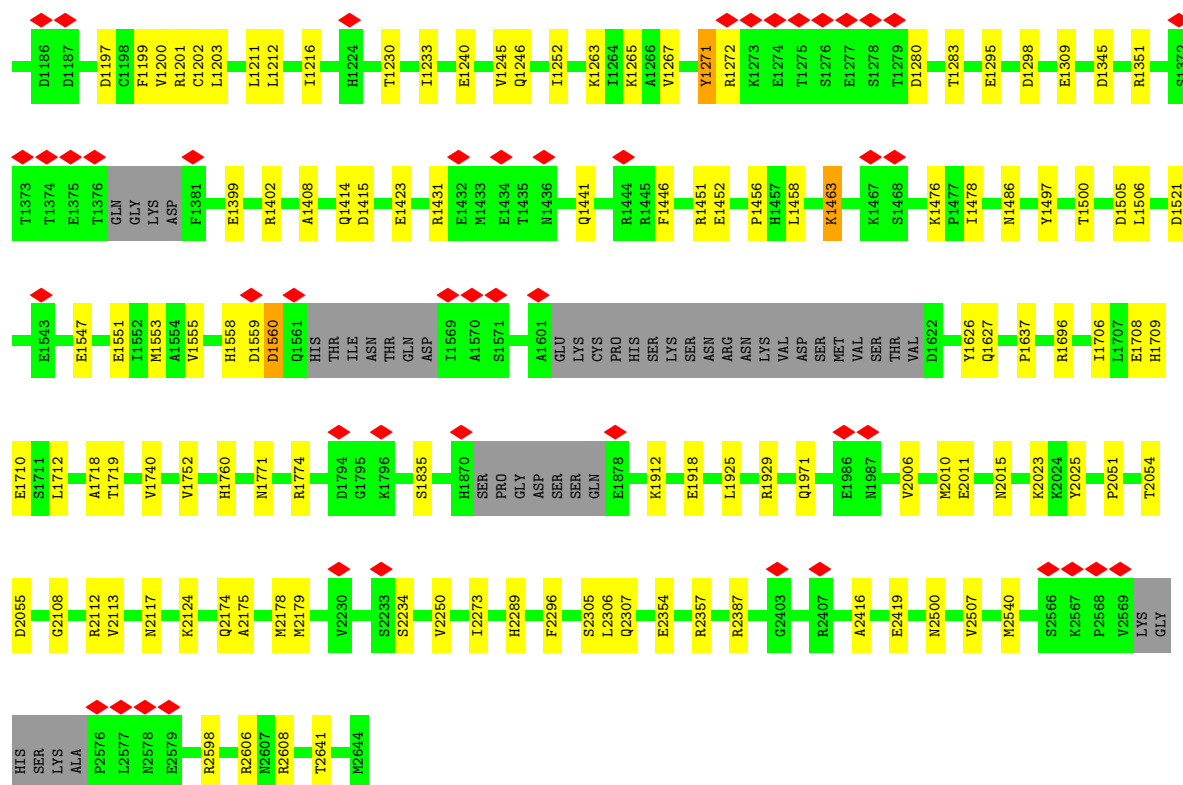


3 Residue-property plots

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.

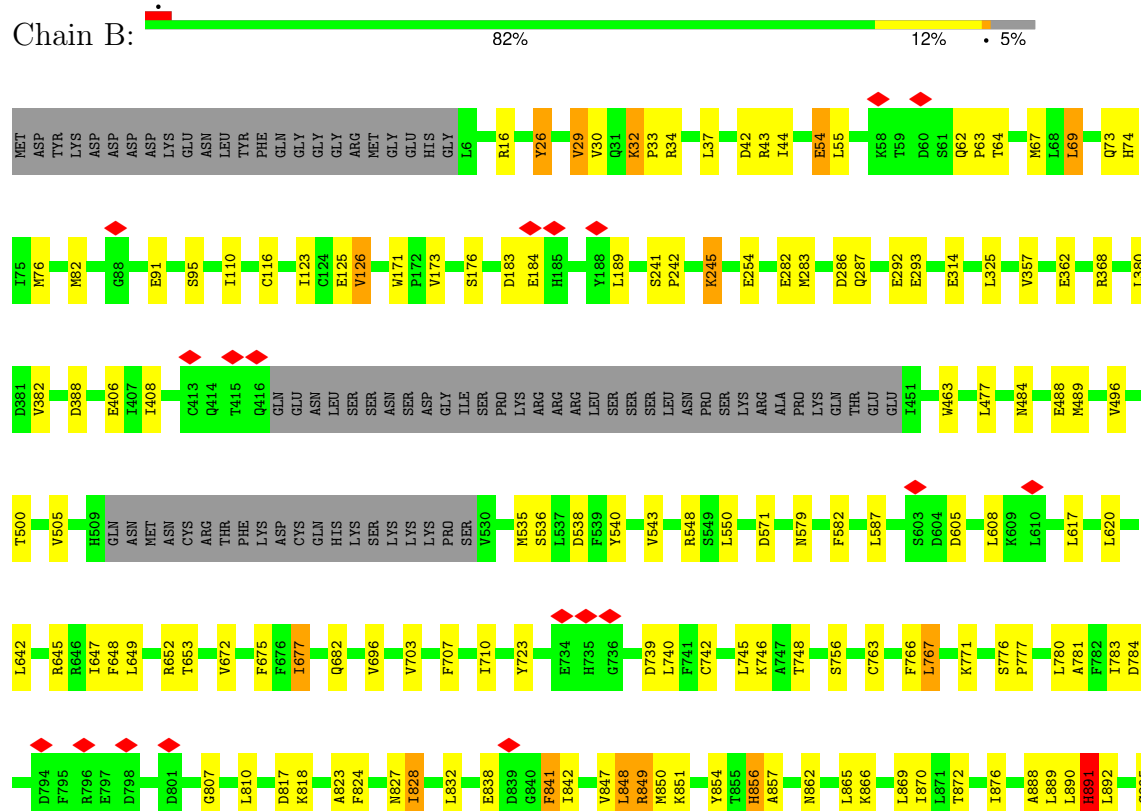
- Molecule 1: Serine/threonine-protein kinase ATR

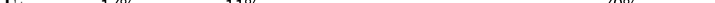


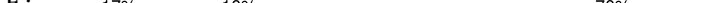


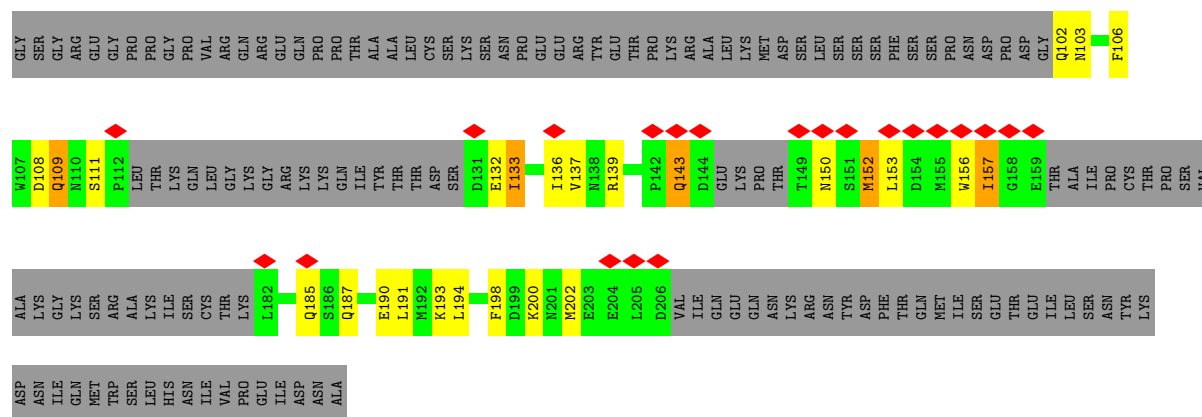
• Molecule 1: Serine/threonine-protein kinase ATR

Chain B:



Chain E:  9% 17% 11% 70%

Chain F: 



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	174280	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	53	Depositor
Minimum defocus (nm)	700	Depositor
Maximum defocus (nm)	1800	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	55.875	Depositor
Minimum map value	-32.874	Depositor
Average map value	0.017	Depositor
Map value standard deviation	1.425	Depositor
Recommended contour level	4	Depositor
Map size (Å)	319.2, 319.2, 319.2	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.064, 1.064, 1.064	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ANP, ZN, 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	0.16	3/20610 (0.0%)	0.31	8/27858 (0.0%)
1	B	0.16	3/20610 (0.0%)	0.31	8/27858 (0.0%)
2	C	0.12	0/3028	0.29	0/4112
2	D	0.12	0/3028	0.29	0/4112
3	E	0.42	0/510	0.82	0/682
3	F	0.42	0/510	0.81	0/682
All	All	0.16	6/48296 (0.0%)	0.32	16/65304 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	4
1	B	0	4
2	C	0	1
2	D	0	1
All	All	0	10

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	891	HIS	CE1-NE2	-5.17	1.27	1.32
1	B	942	HIS	CE1-NE2	-5.16	1.27	1.32
1	A	942	HIS	CE1-NE2	-5.14	1.27	1.32
1	A	891	HIS	CE1-NE2	-5.10	1.27	1.32
1	A	856	HIS	CE1-NE2	-5.07	1.27	1.32
1	B	856	HIS	CE1-NE2	-5.03	1.27	1.32

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	923	GLN	CA-CB-CG	7.73	129.56	114.10
1	B	923	GLN	CA-CB-CG	7.71	129.52	114.10
1	B	891	HIS	ND1-CG-CD2	-6.50	99.60	106.10
1	B	942	HIS	ND1-CG-CD2	-6.48	99.62	106.10
1	A	891	HIS	ND1-CG-CD2	-6.47	99.63	106.10
1	A	942	HIS	ND1-CG-CD2	-6.46	99.64	106.10
1	A	856	HIS	ND1-CG-CD2	-6.36	99.74	106.10
1	B	856	HIS	ND1-CG-CD2	-6.35	99.75	106.10
1	B	923	GLN	N-CA-CB	5.48	119.99	110.39
1	A	923	GLN	N-CA-CB	5.45	119.92	110.39
1	B	891	HIS	CE1-NE2-CD2	-5.33	103.67	109.00
1	A	891	HIS	CE1-NE2-CD2	-5.31	103.69	109.00
1	A	856	HIS	CE1-NE2-CD2	-5.30	103.70	109.00
1	B	856	HIS	CE1-NE2-CD2	-5.29	103.71	109.00
1	A	921	LYS	CG-CD-CE	5.16	123.16	111.30
1	B	921	LYS	CG-CD-CE	5.15	123.14	111.30

There are no chirality outliers.

All (10) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	171	TRP	Peptide
1	A	856	HIS	Sidechain
1	A	891	HIS	Sidechain
1	A	942	HIS	Sidechain
1	B	171	TRP	Peptide
1	B	856	HIS	Sidechain
1	B	891	HIS	Sidechain
1	B	942	HIS	Sidechain
2	C	319	GLN	Peptide
2	D	319	GLN	Peptide

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	20191	0	20473	240	0
1	B	20191	0	20473	246	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	C	2976	0	3063	32	0
2	D	2976	0	3063	31	0
3	E	505	0	470	28	0
3	F	505	0	470	38	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0
4	D	1	0	0	0	0
5	A	2	0	0	0	0
5	B	2	0	0	0	0
6	A	31	0	13	2	0
6	B	31	0	13	2	0
All	All	47414	0	48038	567	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 6.

All (567) 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:1072:PHE:CZ	1:A:1101:ALA:CB	2.52	0.93
1:B:1072:PHE:CZ	1:B:1101:ALA:CB	2.55	0.89
1:B:2305:SER:OG	6:B:2704:ANP:O1B	1.95	0.85
1:A:2305:SER:OG	6:A:2704:ANP:O1B	1.95	0.85
1:B:1402:ARG:NH2	1:B:1521:ASP:OD2	2.11	0.83
1:A:1402:ARG:NH2	1:A:1521:ASP:OD2	2.11	0.83
1:A:1399:GLU:OE1	1:A:1402:ARG:NH1	2.15	0.80
1:B:2500:ASN:OD1	1:B:2598:ARG:NH2	2.15	0.79
1:B:1399:GLU:OE1	1:B:1402:ARG:NH1	2.15	0.79
1:A:2500:ASN:OD1	1:A:2598:ARG:NH2	2.15	0.79
1:A:1089:GLN:HG3	3:E:143:GLN:HG3	1.66	0.78
1:A:921:LYS:HD3	1:A:922:LEU:N	1.99	0.77
1:B:921:LYS:HD3	1:B:922:LEU:N	1.98	0.77
1:A:1171:ARG:HD3	1:A:1211:LEU:HD11	1.67	0.76
1:A:54:GLU:OE2	1:A:64:THR:N	2.19	0.75
1:B:54:GLU:OE2	1:B:64:THR:N	2.19	0.75
1:A:69:LEU:HD12	1:A:126:VAL:HG21	1.69	0.75
1:B:1712:LEU:HD12	1:B:1712:LEU:O	1.88	0.74
1:B:1171:ARG:HD3	1:B:1211:LEU:HD11	1.67	0.74
1:B:69:LEU:HD12	1:B:126:VAL:HG21	1.69	0.74
1:A:1712:LEU:O	1:A:1712:LEU:HD12	1.88	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1463:LYS:CE	3:E:108:ASP:OD2	2.37	0.72
1:A:2051:PRO:O	1:A:2055:ASP:N	2.22	0.72
1:A:1463:LYS:HE3	3:E:108:ASP:OD2	1.89	0.72
1:B:2051:PRO:O	1:B:2055:ASP:N	2.22	0.72
1:A:1072:PHE:CZ	1:A:1101:ALA:HB3	2.24	0.71
1:B:912:ARG:NH2	1:B:981:VAL:O	2.24	0.70
1:B:1089:GLN:HG3	3:F:143:GLN:HG3	1.73	0.70
1:B:1072:PHE:CZ	1:B:1101:ALA:HB3	2.26	0.70
1:A:1446:PHE:O	1:A:1451:ARG:NH2	2.26	0.69
1:A:1072:PHE:CE1	1:A:1101:ALA:CB	2.76	0.69
1:B:866:LYS:O	1:B:870:ILE:HD12	1.92	0.69
1:A:647:ILE:O	1:A:652:ARG:NH1	2.26	0.69
1:A:1072:PHE:CE1	1:A:1101:ALA:HB2	2.28	0.69
1:B:890:LEU:HD11	3:F:153:LEU:CD2	2.23	0.69
1:B:647:ILE:O	1:B:652:ARG:NH1	2.26	0.69
1:B:783:ILE:O	1:B:827:ASN:ND2	2.26	0.68
1:B:1446:PHE:O	1:B:1451:ARG:NH2	2.26	0.68
1:B:1073:GLN:OE1	1:B:1126:LYS:NZ	2.27	0.68
1:A:866:LYS:O	1:A:870:ILE:HD12	1.92	0.68
1:B:1345:ASP:O	1:B:1351:ARG:NH1	2.27	0.68
1:A:783:ILE:O	1:A:827:ASN:ND2	2.26	0.68
1:B:1771:ASN:OD1	1:B:1774:ARG:NE	2.27	0.67
1:A:1073:GLN:OE1	1:A:1126:LYS:NZ	2.27	0.67
1:A:1345:ASP:O	1:A:1351:ARG:NH1	2.27	0.67
1:B:921:LYS:NZ	1:B:923:GLN:OE1	2.26	0.67
1:A:1771:ASN:OD1	1:A:1774:ARG:NE	2.27	0.67
1:A:1497:TYR:O	1:A:1500:THR:OG1	2.13	0.66
3:E:150:ASN:HA	3:E:153:LEU:HD12	1.77	0.66
1:B:1497:TYR:O	1:B:1500:THR:OG1	2.13	0.65
3:F:150:ASN:HA	3:F:153:LEU:HD12	1.77	0.65
1:A:971:ALA:O	1:A:975:LEU:HD12	1.97	0.65
2:D:683:ASN:O	2:D:687:VAL:HG23	1.96	0.65
1:B:1072:PHE:CE1	1:B:1101:ALA:HB2	2.31	0.65
2:C:774:ASP:OD1	2:C:775:ASP:N	2.29	0.65
2:C:683:ASN:O	2:C:687:VAL:HG23	1.96	0.65
1:A:496:VAL:O	1:A:500:THR:HG23	1.97	0.65
1:B:496:VAL:O	1:B:500:THR:HG23	1.97	0.65
1:B:69:LEU:CD1	1:B:126:VAL:HG21	2.28	0.64
1:B:971:ALA:O	1:B:975:LEU:HD12	1.97	0.64
1:B:1072:PHE:CE1	1:B:1101:ALA:CB	2.79	0.64
2:D:774:ASP:OD1	2:D:775:ASP:N	2.30	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:12:ILE:HD12	3:E:192:MET:HE2	1.79	0.64
1:A:91:GLU:OE2	1:A:91:GLU:N	2.27	0.64
1:A:857:ALA:HB2	1:A:865:LEU:HD22	1.80	0.64
1:A:912:ARG:NH2	1:A:981:VAL:O	2.30	0.64
1:A:286:ASP:OD1	1:A:287:GLN:N	2.30	0.64
1:B:286:ASP:OD1	1:B:287:GLN:N	2.30	0.64
1:A:488:GLU:N	1:A:488:GLU:OE1	2.31	0.63
1:B:857:ALA:HB2	1:B:865:LEU:HD22	1.80	0.63
1:A:69:LEU:CD1	1:A:126:VAL:HG21	2.28	0.63
1:B:488:GLU:OE1	1:B:488:GLU:N	2.31	0.63
1:A:921:LYS:NZ	1:A:923:GLN:OE1	2.28	0.63
1:B:1089:GLN:CG	3:F:143:GLN:HG3	2.28	0.63
1:B:91:GLU:N	1:B:91:GLU:OE2	2.27	0.62
1:B:2354:GLU:OE2	1:B:2357:ARG:NH2	2.33	0.62
1:A:1175:MET:HE1	1:A:1211:LEU:HD13	1.81	0.61
1:A:2354:GLU:OE2	1:A:2357:ARG:NH2	2.33	0.61
1:B:26:TYR:O	1:B:30:VAL:HG23	2.00	0.61
1:A:26:TYR:O	1:A:30:VAL:HG23	2.00	0.61
1:B:1175:MET:HE1	1:B:1211:LEU:HD13	1.81	0.61
1:B:605:ASP:OD2	1:B:608:LEU:N	2.33	0.61
3:F:133:ILE:HD13	3:F:133:ILE:C	2.26	0.61
2:C:584:GLN:O	2:C:584:GLN:NE2	2.34	0.61
1:B:314:GLU:OE1	2:D:318:LYS:NZ	2.33	0.61
1:A:1505:ASP:OD1	1:A:1506:LEU:N	2.34	0.60
1:A:605:ASP:OD2	1:A:608:LEU:N	2.34	0.60
2:D:584:GLN:O	2:D:584:GLN:NE2	2.34	0.60
1:B:1053:LEU:HD13	3:F:133:ILE:HG12	1.84	0.60
2:D:721:ARG:NH2	2:D:764:ASP:O	2.35	0.60
1:A:463:TRP:CH2	1:A:500:THR:HG22	2.37	0.60
3:E:133:ILE:HD13	3:E:133:ILE:C	2.26	0.60
1:B:463:TRP:CH2	1:B:500:THR:HG22	2.37	0.59
1:B:1505:ASP:OD1	1:B:1506:LEU:N	2.34	0.59
1:A:1200:VAL:HG21	1:A:1233:ILE:HD11	1.84	0.59
1:A:1141:SER:OG	1:A:1408:ALA:O	2.21	0.59
1:B:1200:VAL:HG21	1:B:1233:ILE:HD11	1.84	0.59
3:E:109:GLN:OE1	3:E:109:GLN:N	2.34	0.59
1:A:783:ILE:HG21	1:A:823:ALA:HB1	1.83	0.59
1:B:672:VAL:HG21	1:B:703:VAL:HG13	1.85	0.59
1:B:1053:LEU:CD1	3:F:133:ILE:HD11	2.33	0.59
1:B:783:ILE:HG21	1:B:823:ALA:HB1	1.83	0.59
1:B:1141:SER:OG	1:B:1408:ALA:O	2.21	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:463:TRP:HH2	1:B:500:THR:HG22	1.69	0.58
1:A:314:GLU:OE1	2:C:318:LYS:NZ	2.36	0.58
1:A:929:TYR:O	1:A:933:ILE:HG12	2.04	0.58
1:B:929:TYR:O	1:B:933:ILE:HG12	2.04	0.58
1:A:1072:PHE:CZ	1:A:1101:ALA:HB1	2.36	0.58
2:C:721:ARG:NH2	2:C:764:ASP:O	2.35	0.58
2:C:721:ARG:NH2	2:C:769:GLU:OE1	2.36	0.58
1:A:672:VAL:HG21	1:A:703:VAL:HG13	1.85	0.57
2:C:322:ILE:HD13	2:C:322:ILE:H	1.70	0.57
1:A:463:TRP:HH2	1:A:500:THR:HG22	1.69	0.57
1:A:1263:LYS:O	1:A:1267:VAL:HG23	2.04	0.57
1:B:946:MET:SD	1:B:946:MET:N	2.78	0.57
2:D:721:ARG:NH2	2:D:769:GLU:OE1	2.36	0.57
3:F:109:GLN:N	3:F:109:GLN:OE1	2.36	0.57
1:B:1263:LYS:O	1:B:1267:VAL:HG23	2.04	0.57
1:A:67:MET:HE1	3:E:201:ASN:HB2	1.86	0.57
2:D:322:ILE:H	2:D:322:ILE:HD13	1.70	0.57
1:A:2416:ALA:N	1:A:2419:GLU:OE1	2.38	0.56
1:A:707:PHE:HD1	1:A:710:ILE:HD11	1.69	0.56
1:B:1240:GLU:N	1:B:1240:GLU:OE1	2.38	0.56
1:A:62:GLN:OE1	1:A:62:GLN:N	2.34	0.56
1:B:176:SER:O	1:B:176:SER:OG	2.23	0.56
1:A:890:LEU:C	1:A:890:LEU:HD23	2.30	0.56
1:A:946:MET:SD	1:A:946:MET:N	2.78	0.56
1:A:710:ILE:C	1:A:710:ILE:HD12	2.30	0.56
1:A:1240:GLU:N	1:A:1240:GLU:OE1	2.38	0.56
1:B:1559:ASP:OD1	1:B:1560:ASP:N	2.39	0.56
1:B:707:PHE:HD1	1:B:710:ILE:HD11	1.69	0.56
1:B:817:ASP:OD1	1:B:818:LYS:N	2.39	0.56
1:B:710:ILE:HD12	1:B:710:ILE:C	2.31	0.56
1:A:921:LYS:HD3	1:A:921:LYS:C	2.30	0.56
1:A:1463:LYS:HE2	3:E:108:ASP:OD2	2.05	0.55
1:B:890:LEU:C	1:B:890:LEU:HD23	2.30	0.55
1:B:500:THR:HG21	1:B:535:MET:SD	2.47	0.55
1:A:500:THR:HG21	1:A:535:MET:SD	2.47	0.55
1:B:357:VAL:O	1:B:368:ARG:NH2	2.39	0.55
1:B:921:LYS:HD3	1:B:921:LYS:C	2.30	0.55
1:B:1918:GLU:N	1:B:1918:GLU:OE1	2.39	0.55
1:A:67:MET:HE1	3:E:201:ASN:CB	2.37	0.55
1:A:1918:GLU:OE1	1:A:1918:GLU:N	2.39	0.55
1:B:723:TYR:O	1:B:748:THR:OG1	2.22	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:847:VAL:HG11	3:F:152:MET:HE2	1.89	0.55
1:A:817:ASP:OD1	1:A:818:LYS:N	2.39	0.55
1:A:1559:ASP:OD1	1:A:1560:ASP:N	2.39	0.55
1:B:1053:LEU:HD11	3:F:133:ILE:HD11	1.87	0.55
1:A:357:VAL:O	1:A:368:ARG:NH2	2.39	0.55
2:C:404:GLY:O	2:C:406:ARG:N	2.40	0.55
1:A:1175:MET:CE	1:A:1211:LEU:HD13	2.37	0.54
1:B:1175:MET:HE1	1:B:1211:LEU:HD22	1.89	0.54
1:B:1197:ASP:OD1	1:B:1201:ARG:NE	2.40	0.54
1:A:1100:PHE:CD1	1:A:1100:PHE:C	2.84	0.54
1:B:1100:PHE:CD1	1:B:1100:PHE:C	2.84	0.54
1:A:29:VAL:O	1:A:33:PRO:HD2	2.08	0.54
2:D:404:GLY:O	2:D:406:ARG:N	2.40	0.54
1:B:283:MET:SD	1:B:287:GLN:NE2	2.81	0.54
1:B:1175:MET:CE	1:B:1211:LEU:HD13	2.38	0.54
1:B:990:PHE:CE1	1:B:994:THR:HG21	2.43	0.54
1:A:990:PHE:CE1	1:A:994:THR:HG21	2.43	0.54
1:B:26:TYR:CZ	1:B:30:VAL:HG21	2.43	0.53
1:B:2416:ALA:N	1:B:2419:GLU:OE1	2.38	0.53
1:B:2273:ILE:HD12	1:B:2273:ILE:H	1.73	0.53
1:A:26:TYR:CZ	1:A:30:VAL:HG21	2.43	0.53
1:A:1197:ASP:OD1	1:A:1201:ARG:NE	2.40	0.53
1:B:943:SER:CB	3:F:157:ILE:CG2	2.86	0.53
1:A:824:PHE:HE1	1:A:828:ILE:HD12	1.74	0.53
1:B:1050:GLU:OE1	3:F:137:VAL:HG11	2.08	0.53
1:A:2273:ILE:HD12	1:A:2273:ILE:H	1.73	0.53
1:B:29:VAL:O	1:B:33:PRO:HD2	2.08	0.53
1:B:824:PHE:HE1	1:B:828:ILE:HD12	1.74	0.53
1:B:1072:PHE:CZ	1:B:1101:ALA:HB1	2.40	0.53
1:B:62:GLN:OE1	1:B:62:GLN:N	2.34	0.52
1:A:921:LYS:HD3	1:A:922:LEU:H	1.73	0.52
1:A:1175:MET:HE1	1:A:1211:LEU:HD22	1.89	0.52
1:B:382:VAL:HG22	1:B:382:VAL:O	2.10	0.52
1:B:1049:LEU:HD12	1:B:1053:LEU:HD23	1.91	0.52
1:A:766:PHE:CD1	1:A:766:PHE:C	2.87	0.52
1:B:766:PHE:CD1	1:B:766:PHE:C	2.87	0.52
1:B:1042:CYS:SG	1:B:1082:ARG:NH1	2.82	0.52
1:B:1049:LEU:O	1:B:1053:LEU:HG	2.10	0.52
1:A:283:MET:SD	1:A:287:GLN:NE2	2.81	0.52
1:A:1042:CYS:SG	1:A:1082:ARG:NH1	2.83	0.52
3:E:153:LEU:HA	3:E:156:TRP:HE3	1.75	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1049:LEU:HD12	1:A:1053:LEU:HD23	1.91	0.52
1:B:988:ASN:OD1	1:B:988:ASN:N	2.43	0.52
1:A:1252:ILE:O	1:A:1272:ARG:NH2	2.43	0.52
2:C:774:ASP:OD1	2:C:774:ASP:C	2.53	0.52
1:B:54:GLU:CD	1:B:64:THR:HG1	2.18	0.52
1:B:838:GLU:HA	1:B:842:ILE:HD11	1.92	0.52
1:B:889:LEU:HD23	1:B:889:LEU:O	2.10	0.52
1:B:1053:LEU:HD13	3:F:133:ILE:CG1	2.39	0.52
1:A:889:LEU:O	1:A:889:LEU:HD23	2.10	0.52
1:A:921:LYS:C	1:A:921:LYS:CD	2.83	0.52
1:A:382:VAL:O	1:A:382:VAL:HG22	2.10	0.52
3:F:153:LEU:HA	3:F:156:TRP:HE3	1.74	0.52
1:B:1203:LEU:HD21	1:B:1211:LEU:HD12	1.92	0.51
2:D:774:ASP:OD1	2:D:774:ASP:C	2.53	0.51
1:A:838:GLU:HA	1:A:842:ILE:HD11	1.92	0.51
1:A:1089:GLN:CG	3:E:143:GLN:HG3	2.39	0.51
1:B:921:LYS:C	1:B:921:LYS:CD	2.83	0.51
1:B:1246:GLN:O	1:B:1271:TYR:OH	2.20	0.51
1:B:1252:ILE:O	1:B:1272:ARG:NH2	2.43	0.51
1:B:2175:ALA:O	1:B:2179:MET:HG3	2.11	0.51
2:D:584:GLN:NE2	2:D:622:GLN:OE1	2.40	0.51
1:A:54:GLU:CD	1:A:64:THR:HG1	2.17	0.51
1:A:176:SER:O	1:A:176:SER:OG	2.23	0.51
1:B:1054:HIS:CE1	3:F:133:ILE:HD12	2.45	0.51
1:A:44:ILE:HD12	3:E:198:PHE:HZ	1.76	0.51
1:A:2305:SER:OG	1:A:2306:LEU:N	2.43	0.50
1:B:548:ARG:HE	1:B:620:LEU:HD12	1.76	0.50
1:A:2113:VAL:O	1:A:2117:ASN:OD1	2.29	0.50
1:B:1089:GLN:CD	3:F:143:GLN:HG3	2.36	0.50
1:A:1049:LEU:O	1:A:1053:LEU:HG	2.10	0.50
2:C:584:GLN:NE2	2:C:622:GLN:OE1	2.40	0.50
1:B:675:PHE:CE2	1:B:710:ILE:HD13	2.46	0.50
1:A:2175:ALA:O	1:A:2179:MET:HG3	2.11	0.50
1:B:32:LYS:HD2	1:B:33:PRO:HD3	1.93	0.50
1:A:1203:LEU:HD21	1:A:1211:LEU:HD12	1.92	0.50
2:C:614:ALA:O	2:C:669:GLN:NE2	2.39	0.50
1:B:921:LYS:HD3	1:B:922:LEU:H	1.76	0.50
1:A:1696:ARG:NH2	1:A:1708:GLU:OE2	2.44	0.50
1:B:2113:VAL:O	1:B:2117:ASN:OD1	2.29	0.50
2:C:317:LEU:HD11	2:D:317:LEU:HD11	1.93	0.50
1:A:32:LYS:HD2	1:A:33:PRO:HD3	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:675:PHE:CE2	1:A:710:ILE:HD13	2.46	0.49
1:B:784:ASP:N	1:B:784:ASP:OD1	2.45	0.49
1:B:890:LEU:CD1	3:F:153:LEU:CD2	2.89	0.49
1:B:940:SER:HA	3:F:157:ILE:HG12	1.93	0.49
1:A:988:ASN:OD1	1:A:988:ASN:N	2.43	0.49
1:A:1230:THR:HA	1:A:1233:ILE:HG22	1.95	0.49
1:B:962:GLN:OE1	1:B:962:GLN:N	2.42	0.49
1:B:1696:ARG:NH2	1:B:1708:GLU:OE2	2.44	0.49
1:A:851:LYS:NZ	3:E:155:MET:HE3	2.27	0.49
1:A:1054:HIS:CE1	3:E:133:ILE:HD12	2.48	0.49
1:B:484:ASN:OD1	1:B:484:ASN:N	2.46	0.49
1:A:548:ARG:HE	1:A:620:LEU:HD12	1.76	0.49
1:A:756:SER:O	1:A:756:SER:OG	2.31	0.49
1:A:1463:LYS:HE2	3:E:108:ASP:CG	2.37	0.49
1:B:477:LEU:HD21	1:B:550:LEU:HD11	1.95	0.49
1:B:1054:HIS:O	1:B:1058:ASN:OD1	2.31	0.49
1:A:723:TYR:O	1:A:748:THR:OG1	2.22	0.49
1:A:1141:SER:OG	1:A:1414:GLN:OE1	2.30	0.49
1:A:1431:ARG:HB3	1:A:1458:LEU:HD11	1.95	0.49
1:B:26:TYR:CE2	1:B:30:VAL:HG21	2.48	0.49
1:A:477:LEU:HD21	1:A:550:LEU:HD11	1.95	0.49
1:A:851:LYS:HZ1	3:E:156:TRP:CG	2.30	0.49
1:A:962:GLN:OE1	1:A:962:GLN:N	2.42	0.49
1:A:895:CYS:SG	1:A:907:ALA:HB2	2.53	0.49
1:B:895:CYS:SG	1:B:907:ALA:HB2	2.53	0.49
1:B:2054:THR:O	1:B:2054:THR:HG22	2.13	0.49
1:B:2305:SER:OG	1:B:2306:LEU:N	2.43	0.49
1:B:69:LEU:HD21	1:B:123:ILE:CD1	2.43	0.48
1:B:890:LEU:HD11	3:F:153:LEU:HD23	1.92	0.48
1:B:1230:THR:HA	1:B:1233:ILE:HG22	1.95	0.48
1:B:1047:ASP:OD1	1:B:1048:GLU:N	2.47	0.48
1:A:26:TYR:CE2	1:A:30:VAL:HG21	2.48	0.48
1:A:2608:ARG:NH2	1:B:2011:GLU:O	2.46	0.48
1:B:1200:VAL:HG21	1:B:1233:ILE:CD1	2.43	0.48
1:A:946:MET:HA	1:A:946:MET:HE3	1.95	0.48
1:A:2054:THR:O	1:A:2054:THR:HG22	2.13	0.48
1:B:921:LYS:NZ	1:B:923:GLN:H	2.11	0.48
1:A:1047:ASP:OD1	1:A:1048:GLU:N	2.47	0.48
1:B:1431:ARG:HB3	1:B:1458:LEU:HD11	1.95	0.48
1:A:1200:VAL:HG21	1:A:1233:ILE:CD1	2.43	0.48
3:E:187:GLN:HA	3:E:190:GLU:OE1	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:34:ARG:NH1	1:B:95:SER:OG	2.47	0.48
3:F:187:GLN:HA	3:F:190:GLU:OE1	2.13	0.48
1:A:44:ILE:HD12	3:E:198:PHE:CZ	2.48	0.48
1:A:848:LEU:O	1:A:851:LYS:HB2	2.14	0.48
1:B:649:LEU:O	1:B:649:LEU:HD12	2.14	0.48
1:A:1054:HIS:O	1:A:1058:ASN:OD1	2.31	0.47
1:B:536:SER:OG	1:B:538:ASP:OD2	2.30	0.47
1:A:34:ARG:NH1	1:A:95:SER:OG	2.47	0.47
1:A:484:ASN:OD1	1:A:484:ASN:N	2.46	0.47
1:B:756:SER:O	1:B:756:SER:OG	2.31	0.47
1:B:943:SER:CB	3:F:157:ILE:HG21	2.44	0.47
3:F:185:GLN:N	3:F:185:GLN:OE1	2.47	0.47
1:A:649:LEU:HD12	1:A:649:LEU:O	2.14	0.47
1:B:1089:GLN:HG3	3:F:143:GLN:CG	2.43	0.47
1:A:922:LEU:HD11	1:A:982:PHE:HD1	1.80	0.47
1:A:2011:GLU:O	1:B:2608:ARG:NH2	2.47	0.47
2:C:752:MET:HE3	2:C:752:MET:HA	1.95	0.47
1:B:1280:ASP:O	1:B:1283:THR:OG1	2.28	0.47
2:D:752:MET:HE3	2:D:752:MET:HA	1.95	0.47
1:B:848:LEU:O	1:B:848:LEU:HD12	2.14	0.47
1:B:848:LEU:O	1:B:851:LYS:HB2	2.14	0.47
1:B:927:SER:HA	1:B:930:LYS:HG2	1.97	0.47
1:B:946:MET:HE3	1:B:946:MET:HA	1.95	0.47
2:D:741:CYS:O	2:D:745:LEU:HD21	2.15	0.47
1:A:848:LEU:O	1:A:848:LEU:HD12	2.14	0.47
3:E:185:GLN:N	3:E:185:GLN:OE1	2.47	0.47
1:B:74:HIS:HD2	3:F:194:LEU:HD11	1.80	0.47
1:A:69:LEU:HD21	1:A:123:ILE:CD1	2.43	0.47
2:C:741:CYS:O	2:C:745:LEU:HD21	2.15	0.47
1:B:1141:SER:OG	1:B:1414:GLN:OE1	2.30	0.47
1:A:46:THR:O	1:A:109:ARG:NH1	2.47	0.47
2:D:739:MET:SD	2:D:739:MET:C	2.98	0.47
1:B:940:SER:HA	3:F:157:ILE:CG1	2.45	0.46
1:B:1706:ILE:O	1:B:1710:GLU:HG3	2.15	0.46
1:A:927:SER:HA	1:A:930:LYS:HG2	1.97	0.46
1:A:1280:ASP:O	1:A:1283:THR:OG1	2.29	0.46
2:C:739:MET:SD	2:C:739:MET:C	2.98	0.46
1:A:1706:ILE:O	1:A:1710:GLU:HG3	2.15	0.46
1:B:922:LEU:HD11	1:B:982:PHE:HD1	1.80	0.46
1:B:1053:LEU:CD1	3:F:133:ILE:CG1	2.93	0.46
1:B:943:SER:HB2	3:F:157:ILE:CG2	2.46	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1159:MET:HE3	1:B:1199:PHE:HA	1.98	0.46
2:D:328:SER:OG	2:D:329:LEU:N	2.49	0.46
1:A:723:TYR:N	1:A:748:THR:O	2.47	0.46
1:B:54:GLU:OE2	1:B:64:THR:OG1	2.30	0.46
1:B:682:GLN:N	1:B:682:GLN:OE1	2.48	0.46
1:B:2054:THR:O	1:B:2054:THR:CG2	2.64	0.46
1:A:682:GLN:OE1	1:A:682:GLN:N	2.48	0.46
2:D:319:GLN:O	2:D:320:PRO:C	2.59	0.46
1:A:55:LEU:HD23	1:A:63:PRO:HG2	1.98	0.46
1:A:921:LYS:NZ	1:A:923:GLN:H	2.13	0.46
3:E:190:GLU:O	3:E:194:LEU:HG	2.16	0.46
1:A:183:ASP:O	1:A:187:GLY:N	2.48	0.45
1:B:32:LYS:HB3	1:B:33:PRO:HD2	1.98	0.45
1:B:55:LEU:HD23	1:B:63:PRO:HG2	1.98	0.45
1:A:242:PRO:HA	1:A:245:LYS:HB2	1.98	0.45
1:A:1072:PHE:HZ	1:A:1101:ALA:HB3	1.78	0.45
1:A:2054:THR:O	1:A:2054:THR:CG2	2.64	0.45
1:B:890:LEU:HD22	3:F:156:TRP:CH2	2.50	0.45
1:B:2011:GLU:OE1	1:B:2025:TYR:OH	2.34	0.45
2:C:328:SER:OG	2:C:329:LEU:N	2.49	0.45
2:D:614:ALA:O	2:D:669:GLN:NE2	2.39	0.45
3:E:190:GLU:HA	3:E:193:LYS:HG2	1.98	0.45
2:C:319:GLN:O	2:C:320:PRO:C	2.59	0.45
1:B:921:LYS:O	1:B:924:SER:HB3	2.17	0.45
3:F:190:GLU:O	3:F:194:LEU:HG	2.16	0.45
1:B:645:ARG:HG3	1:B:649:LEU:HD22	1.99	0.45
1:A:32:LYS:HB3	1:A:33:PRO:HD2	1.97	0.45
1:A:1246:GLN:O	1:A:1271:TYR:OH	2.20	0.45
1:A:1298:ASP:OD1	1:A:1298:ASP:N	2.50	0.45
1:B:810:LEU:O	1:B:810:LEU:HD12	2.17	0.45
1:A:862:ASN:OD1	1:A:862:ASN:C	2.60	0.45
1:A:1083:ILE:CG1	1:A:1090:VAL:HG11	2.47	0.45
1:A:1159:MET:HE3	1:A:1199:PHE:HA	1.98	0.45
1:B:1025:ARG:O	1:B:1028:ILE:HG12	2.17	0.45
3:F:106:PHE:O	3:F:106:PHE:CD1	2.70	0.45
3:F:190:GLU:HA	3:F:193:LYS:HG2	1.98	0.45
1:A:645:ARG:HG3	1:A:649:LEU:HD22	1.99	0.44
1:A:888:ALA:O	1:A:892:LEU:HD23	2.17	0.44
1:A:934:CYS:SG	1:A:935:GLN:N	2.90	0.44
1:B:242:PRO:HA	1:B:245:LYS:HB2	1.98	0.44
1:B:1197:ASP:HA	1:B:1233:ILE:HD13	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1035:TYR:N	1:A:1035:TYR:CD1	2.85	0.44
1:B:648:PHE:CD1	1:B:648:PHE:N	2.85	0.44
1:B:780:LEU:O	1:B:784:ASP:OD1	2.36	0.44
1:B:828:ILE:O	1:B:832:LEU:HD23	2.17	0.44
1:B:912:ARG:NH1	1:B:983:ASP:OD2	2.45	0.44
1:B:1083:ILE:CG1	1:B:1090:VAL:HG11	2.47	0.44
2:D:694:LEU:HD12	2:D:720:LEU:HD23	2.00	0.44
1:A:2250:VAL:HG21	1:A:2296:PHE:CE2	2.53	0.44
1:B:1298:ASP:N	1:B:1298:ASP:OD1	2.50	0.44
1:B:1035:TYR:N	1:B:1035:TYR:CD1	2.85	0.44
1:A:1092:ASN:HB3	3:E:140:ILE:HD12	1.98	0.44
1:B:862:ASN:C	1:B:862:ASN:OD1	2.60	0.44
1:B:1785:ASP:OD1	1:B:1785:ASP:N	2.49	0.44
2:D:701:VAL:HG13	2:D:701:VAL:O	2.17	0.44
1:A:1092:ASN:O	1:A:1096:ILE:CG2	2.66	0.44
1:B:1333:SER:OG	1:B:1369:LEU:O	2.22	0.44
1:A:1740:VAL:HG13	1:A:1752:VAL:HG13	2.00	0.44
1:A:73:GLN:O	1:A:76:MET:HB2	2.18	0.44
1:A:620:LEU:HD23	1:A:620:LEU:O	2.18	0.44
1:A:810:LEU:HD12	1:A:810:LEU:O	2.17	0.44
1:B:742:CYS:O	1:B:745:LEU:CD2	2.66	0.44
1:B:934:CYS:SG	1:B:935:GLN:N	2.90	0.44
1:B:1045:SER:O	1:B:1049:LEU:HB3	2.18	0.44
1:A:37:LEU:HD22	1:A:82:MET:HE1	1.99	0.43
1:A:781:ALA:O	1:A:784:ASP:OD1	2.37	0.43
1:B:37:LEU:HD22	1:B:82:MET:HE1	1.99	0.43
1:B:388:ASP:OD2	1:B:388:ASP:C	2.61	0.43
1:B:781:ALA:O	1:B:784:ASP:OD1	2.37	0.43
1:B:841:PHE:CD1	1:B:841:PHE:N	2.86	0.43
1:B:73:GLN:O	1:B:76:MET:HB2	2.18	0.43
1:B:888:ALA:O	1:B:892:LEU:HD23	2.17	0.43
1:B:1309:GLU:HA	1:B:1309:GLU:OE1	2.18	0.43
1:A:536:SER:OG	1:A:538:ASP:OD2	2.30	0.43
1:A:1025:ARG:O	1:A:1028:ILE:HG12	2.17	0.43
1:A:2108:GLY:HA2	1:A:2112:ARG:HE	1.83	0.43
1:B:923:GLN:HA	1:B:926:PHE:HB3	2.00	0.43
1:B:1092:ASN:O	1:B:1096:ILE:CG2	2.66	0.43
2:D:635:LEU:O	2:D:639:ILE:HG22	2.18	0.43
2:D:759:ILE:HA	2:D:762:LEU:CD1	2.48	0.43
1:A:742:CYS:O	1:A:745:LEU:CD2	2.66	0.43
1:A:1197:ASP:HA	1:A:1233:ILE:HD13	1.99	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1212:LEU:HD22	1:A:1245:VAL:HG13	2.00	0.43
1:A:1551:GLU:O	1:A:1555:VAL:HG23	2.18	0.43
1:A:2011:GLU:OE1	1:A:2025:TYR:OH	2.34	0.43
1:B:723:TYR:N	1:B:748:THR:O	2.47	0.43
1:B:1740:VAL:HG13	1:B:1752:VAL:HG13	2.00	0.43
1:A:828:ILE:O	1:A:832:LEU:HD23	2.17	0.43
1:B:1295:GLU:OE1	1:B:1295:GLU:N	2.51	0.43
1:A:1626:TYR:CD1	1:A:1626:TYR:C	2.96	0.43
2:C:701:VAL:O	2:C:701:VAL:HG13	2.17	0.43
3:E:109:GLN:N	3:E:109:GLN:CD	2.75	0.43
1:B:1050:GLU:CD	3:F:137:VAL:HG11	2.43	0.43
1:B:2250:VAL:HG21	1:B:2296:PHE:CE2	2.53	0.43
1:A:648:PHE:N	1:A:648:PHE:CD1	2.85	0.43
1:A:780:LEU:O	1:A:784:ASP:OD1	2.36	0.43
1:A:2307:GLN:HG3	6:A:2704:ANP:HNB1	1.84	0.43
2:C:683:ASN:OD1	2:C:683:ASN:N	2.52	0.43
1:B:1551:GLU:O	1:B:1555:VAL:HG23	2.18	0.43
1:B:1925:LEU:O	1:B:1929:ARG:HG3	2.19	0.43
1:A:79:SER:O	1:A:79:SER:OG	2.32	0.43
1:A:1045:SER:O	1:A:1049:LEU:HB3	2.18	0.43
1:A:1925:LEU:O	1:A:1929:ARG:HG3	2.19	0.43
2:C:635:LEU:O	2:C:639:ILE:HG22	2.18	0.43
2:C:733:LYS:HD3	2:C:733:LYS:HA	1.89	0.43
2:C:759:ILE:HA	2:C:762:LEU:CD1	2.48	0.43
3:E:109:GLN:CD	3:E:109:GLN:H	2.26	0.43
1:A:841:PHE:N	1:A:841:PHE:CD1	2.86	0.43
1:A:923:GLN:HA	1:A:926:PHE:HB3	2.00	0.43
1:B:125:GLU:HA	1:B:125:GLU:OE1	2.18	0.43
1:B:620:LEU:O	1:B:620:LEU:HD23	2.18	0.43
2:D:683:ASN:OD1	2:D:683:ASN:N	2.52	0.43
1:A:64:THR:HA	1:A:67:MET:SD	2.59	0.43
1:A:1295:GLU:N	1:A:1295:GLU:OE1	2.51	0.43
1:A:1309:GLU:OE1	1:A:1309:GLU:HA	2.19	0.43
1:A:1486:ASN:OD1	1:A:1486:ASN:N	2.52	0.43
1:B:971:ALA:C	1:B:975:LEU:HD12	2.44	0.43
1:B:2015:ASN:O	1:B:2015:ASN:ND2	2.52	0.43
1:A:887:PHE:CE1	3:E:156:TRP:HZ2	2.37	0.42
1:A:1053:LEU:HD11	3:E:133:ILE:HD11	2.01	0.42
1:A:2015:ASN:O	1:A:2015:ASN:ND2	2.52	0.42
2:C:694:LEU:HD12	2:C:720:LEU:HD23	2.00	0.42
1:B:1626:TYR:CD1	1:B:1626:TYR:C	2.96	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:587:LEU:HB3	1:A:647:ILE:CD1	2.49	0.42
1:A:653:THR:HA	1:A:677:ILE:HD11	2.01	0.42
2:C:319:GLN:HG3	2:C:320:PRO:HD3	2.01	0.42
2:C:322:ILE:O	2:C:322:ILE:HG12	2.19	0.42
3:E:198:PHE:CD1	3:E:198:PHE:C	2.97	0.42
1:B:739:ASP:OD1	1:B:740:LEU:N	2.52	0.42
1:B:1212:LEU:HD22	1:B:1245:VAL:HG13	2.00	0.42
2:D:322:ILE:HG12	2:D:322:ILE:O	2.19	0.42
1:A:850:MET:SD	1:A:891:HIS:HD2	2.42	0.42
1:A:918:LYS:CG	1:A:920:VAL:HG22	2.50	0.42
1:A:2174:GLN:O	1:A:2178:MET:HG3	2.19	0.42
1:B:64:THR:HA	1:B:67:MET:SD	2.59	0.42
1:B:922:LEU:HD11	1:B:982:PHE:HA	2.02	0.42
1:B:2307:GLN:HG3	6:B:2704:ANP:HNB1	1.84	0.42
2:D:319:GLN:HG3	2:D:320:PRO:HD3	2.01	0.42
3:F:109:GLN:N	3:F:109:GLN:CD	2.78	0.42
1:A:739:ASP:OD1	1:A:740:LEU:N	2.53	0.42
1:A:1092:ASN:O	1:A:1096:ILE:HG22	2.20	0.42
1:B:44:ILE:O	1:B:44:ILE:CG2	2.68	0.42
1:B:854:TYR:OH	1:B:895:CYS:HB2	2.20	0.42
1:B:2108:GLY:HA2	1:B:2112:ARG:HE	1.83	0.42
1:B:2133:LEU:O	1:B:2166:LYS:NZ	2.49	0.42
1:A:183:ASP:OD1	1:A:184:GLU:N	2.52	0.42
1:A:872:THR:O	1:A:876:ILE:HG13	2.20	0.42
2:C:769:GLU:O	2:C:773:LEU:HG	2.19	0.42
1:B:587:LEU:HB3	1:B:647:ILE:CD1	2.50	0.42
1:B:776:SER:N	1:B:777:PRO:HD2	2.35	0.42
1:B:847:VAL:O	1:B:851:LYS:HG2	2.19	0.42
1:B:918:LYS:CG	1:B:920:VAL:HG22	2.49	0.42
1:A:69:LEU:HD21	1:A:123:ILE:HD13	2.02	0.42
1:A:125:GLU:OE1	1:A:125:GLU:HA	2.18	0.42
1:B:872:THR:O	1:B:876:ILE:HG13	2.20	0.42
1:B:1247:ASP:OD1	1:B:1247:ASP:N	2.45	0.42
1:A:44:ILE:O	1:A:44:ILE:CG2	2.68	0.42
1:A:847:VAL:O	1:A:851:LYS:HG2	2.19	0.42
1:A:945:GLN:C	1:A:945:GLN:OE1	2.63	0.42
1:B:505:VAL:HG22	1:B:579:ASN:HB2	2.01	0.42
1:A:776:SER:N	1:A:777:PRO:HD2	2.35	0.42
1:A:824:PHE:CD1	1:A:824:PHE:C	2.98	0.42
1:A:971:ALA:C	1:A:975:LEU:HD12	2.44	0.42
1:A:1081:LEU:HD23	1:A:1081:LEU:O	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1476:LYS:O	1:A:1478:ILE:N	2.53	0.42
1:B:69:LEU:HD21	1:B:123:ILE:HD13	2.02	0.42
1:B:540:TYR:HA	1:B:543:VAL:HG22	2.02	0.42
1:A:763:CYS:O	1:A:767:LEU:HD22	2.20	0.42
2:C:681:GLN:OE1	2:C:681:GLN:HA	2.20	0.42
1:B:62:GLN:HG2	1:B:67:MET:HG3	2.02	0.42
1:B:183:ASP:OD1	1:B:184:GLU:N	2.52	0.42
1:B:707:PHE:CD1	1:B:710:ILE:HD11	2.54	0.42
1:B:2174:GLN:O	1:B:2178:MET:HG3	2.19	0.42
3:F:109:GLN:CD	3:F:109:GLN:H	2.27	0.42
3:F:198:PHE:CD1	3:F:198:PHE:C	2.97	0.42
1:A:362:GLU:OE2	1:A:368:ARG:NH1	2.53	0.41
1:A:854:TYR:OH	1:A:895:CYS:HB2	2.20	0.41
1:A:2006:VAL:O	1:A:2010:MET:HG3	2.20	0.41
1:B:824:PHE:CD1	1:B:824:PHE:C	2.98	0.41
1:B:1049:LEU:CD1	1:B:1053:LEU:HD23	2.50	0.41
1:B:1092:ASN:O	1:B:1096:ILE:HG22	2.20	0.41
1:B:1212:LEU:O	1:B:1216:ILE:HG12	2.20	0.41
2:D:769:GLU:O	2:D:773:LEU:HG	2.19	0.41
1:A:62:GLN:HG2	1:A:67:MET:HG3	2.02	0.41
1:A:388:ASP:OD2	1:A:388:ASP:C	2.62	0.41
1:A:540:TYR:HA	1:A:543:VAL:HG22	2.02	0.41
1:A:1709:HIS:CE1	1:A:1718:ALA:HB2	2.55	0.41
1:B:767:LEU:O	1:B:771:LYS:NZ	2.53	0.41
1:B:1081:LEU:HD23	1:B:1081:LEU:O	2.20	0.41
1:A:767:LEU:O	1:A:771:LYS:NZ	2.53	0.41
1:A:1049:LEU:CD1	1:A:1053:LEU:HD23	2.50	0.41
1:B:763:CYS:O	1:B:767:LEU:HD22	2.20	0.41
1:B:850:MET:SD	1:B:891:HIS:HD2	2.42	0.41
1:A:922:LEU:HD11	1:A:982:PHE:HA	2.02	0.41
1:A:1452:GLU:O	1:A:1456:PRO:HD2	2.20	0.41
1:B:32:LYS:HB3	1:B:33:PRO:CD	2.50	0.41
1:B:851:LYS:HE3	3:F:152:MET:HB3	2.02	0.41
1:A:696:VAL:HG21	1:A:707:PHE:CD2	2.55	0.41
1:B:653:THR:HA	1:B:677:ILE:HD11	2.01	0.41
1:B:1452:GLU:O	1:B:1456:PRO:HD2	2.20	0.41
1:B:1709:HIS:CE1	1:B:1718:ALA:HB2	2.55	0.41
2:D:672:LEU:C	2:D:674:PRO:CD	2.93	0.41
1:A:707:PHE:CD1	1:A:710:ILE:HD11	2.54	0.41
1:A:934:CYS:O	1:A:938:VAL:HG13	2.21	0.41
1:A:1423:GLU:HA	1:A:1423:GLU:OE1	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2641:THR:HG22	1:A:2641:THR:O	2.21	0.41
2:C:469:CYS:O	2:C:472:GLU:HG2	2.20	0.41
2:C:728:HIS:ND1	2:C:772:ALA:HA	2.36	0.41
1:B:1096:ILE:O	1:B:1096:ILE:HD12	2.21	0.41
2:D:469:CYS:O	2:D:472:GLU:HG2	2.20	0.41
1:A:35:GLN:HA	1:A:38:CYS:SG	2.61	0.41
1:A:46:THR:O	1:A:109:ARG:NH2	2.52	0.41
1:A:505:VAL:HG22	1:A:579:ASN:HB2	2.01	0.41
1:A:1212:LEU:O	1:A:1216:ILE:HG12	2.20	0.41
2:C:672:LEU:C	2:C:674:PRO:CD	2.93	0.41
1:B:943:SER:OG	3:F:157:ILE:HG21	2.20	0.41
1:B:241:SER:O	1:B:245:LYS:N	2.50	0.41
1:B:362:GLU:OE2	1:B:368:ARG:NH1	2.53	0.41
1:B:1167:VAL:HG21	1:B:1202:CYS:SG	2.60	0.41
1:A:841:PHE:N	1:A:841:PHE:HD1	2.19	0.41
1:A:923:GLN:HB2	1:A:926:PHE:HD1	1.86	0.41
1:A:938:VAL:CG1	1:A:998:LEU:HD13	2.51	0.41
2:C:636:TYR:HA	2:C:639:ILE:HG22	2.03	0.41
1:B:945:GLN:OE1	1:B:945:GLN:C	2.63	0.41
1:B:1476:LYS:O	1:B:1478:ILE:N	2.53	0.41
1:B:1887:LEU:O	1:B:1890:THR:OG1	2.36	0.41
1:B:2006:VAL:O	1:B:2010:MET:HG3	2.20	0.41
2:D:632:LEU:O	2:D:636:TYR:CD2	2.74	0.41
2:D:728:HIS:ND1	2:D:772:ALA:HA	2.36	0.41
1:A:54:GLU:OE2	1:A:64:THR:OG1	2.30	0.41
1:A:889:LEU:O	1:A:893:LEU:HG	2.21	0.41
1:A:977:GLU:O	1:A:981:VAL:HG23	2.21	0.41
1:A:1009:ALA:O	1:A:1013:LEU:HG	2.21	0.41
1:B:292:GLU:HG3	1:B:293:GLU:N	2.36	0.41
1:B:938:VAL:CG1	1:B:998:LEU:HD13	2.51	0.41
1:B:1009:ALA:O	1:B:1013:LEU:HG	2.21	0.41
2:D:624:CYS:HA	2:D:630:CYS:SG	2.61	0.41
1:A:1167:VAL:HG21	1:A:1202:CYS:SG	2.60	0.40
1:A:946:MET:SD	1:A:1009:ALA:HB2	2.62	0.40
1:A:1024:ASN:OD1	1:A:1025:ARG:N	2.55	0.40
2:C:632:LEU:O	2:C:636:TYR:CD2	2.74	0.40
1:B:696:VAL:HG21	1:B:707:PHE:CD2	2.55	0.40
1:B:1553:MET:HE1	1:B:1637:PRO:HD2	2.03	0.40
2:D:681:GLN:OE1	2:D:681:GLN:HA	2.20	0.40
1:A:1065:GLY:HA2	1:A:1100:PHE:HZ	1.87	0.40
1:A:1553:MET:HE1	1:A:1637:PRO:HD2	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:943:SER:HB2	3:F:157:ILE:HG21	2.03	0.40
1:B:2544:ARG:HG2	1:B:2599:LEU:O	2.21	0.40
1:A:292:GLU:HG3	1:A:293:GLU:N	2.36	0.40
1:A:896:LEU:HD23	1:A:896:LEU:C	2.47	0.40
1:A:921:LYS:O	1:A:924:SER:HB3	2.21	0.40
1:B:807:GLY:O	1:B:849:ARG:NH2	2.55	0.40
1:B:1083:ILE:HG13	1:B:1090:VAL:HG11	2.03	0.40
1:B:1423:GLU:HA	1:B:1423:GLU:OE1	2.21	0.40
1:A:41:ILE:HG12	1:A:72:ILE:HD11	2.04	0.40
1:A:1230:THR:O	1:A:1233:ILE:HG22	2.22	0.40
1:B:582:PHE:HB2	1:B:587:LEU:HD11	2.03	0.40
1:B:1159:MET:SD	1:B:1174:MET:HE2	2.62	0.40
1:B:1272:ARG:O	1:B:1275:THR:C	2.65	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	2499/2663 (94%)	2429 (97%)	70 (3%)	0	100	100
1	B	2499/2663 (94%)	2430 (97%)	69 (3%)	0	100	100
2	C	379/810 (47%)	355 (94%)	24 (6%)	0	100	100
2	D	379/810 (47%)	354 (93%)	25 (7%)	0	100	100
3	E	53/205 (26%)	50 (94%)	3 (6%)	0	100	100
3	F	53/205 (26%)	49 (92%)	4 (8%)	0	100	100
All	All	5862/7356 (80%)	5667 (97%)	195 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	2248/2379 (94%)	2176 (97%)	72 (3%)	34	60
1	B	2248/2379 (94%)	2178 (97%)	70 (3%)	35	60
2	C	340/694 (49%)	331 (97%)	9 (3%)	40	64
2	D	340/694 (49%)	331 (97%)	9 (3%)	40	64
3	E	58/187 (31%)	44 (76%)	14 (24%)	1	3
3	F	58/187 (31%)	43 (74%)	15 (26%)	0	2
All	All	5292/6520 (81%)	5103 (96%)	189 (4%)	32	58

All (189) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	16	ARG
1	A	26	TYR
1	A	29	VAL
1	A	32	LYS
1	A	42	ASP
1	A	43	ARG
1	A	54	GLU
1	A	69	LEU
1	A	110	ILE
1	A	116	CYS
1	A	126	VAL
1	A	173	VAL
1	A	189	LEU
1	A	245	LYS
1	A	254	GLU
1	A	282	GLU
1	A	325	LEU
1	A	380	LEU
1	A	406	GLU
1	A	408	ILE
1	A	489	MET
1	A	571	ASP

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Mol	Chain	Res	Type
1	A	617	LEU
1	A	642	LEU
1	A	677	ILE
1	A	746	LYS
1	A	767	LEU
1	A	841	PHE
1	A	848	LEU
1	A	849	ARG
1	A	869	LEU
1	A	910	GLU
1	A	921	LYS
1	A	922	LEU
1	A	934	CYS
1	A	941	LEU
1	A	966	HIS
1	A	984	PHE
1	A	1021	LEU
1	A	1030	ILE
1	A	1034	LYS
1	A	1049	LEU
1	A	1068	LEU
1	A	1080	LEU
1	A	1094	LEU
1	A	1095	SER
1	A	1096	ILE
1	A	1099	SER
1	A	1100	PHE
1	A	1122	TYR
1	A	1265	LYS
1	A	1271	TYR
1	A	1415	ASP
1	A	1441	GLN
1	A	1463	LYS
1	A	1547	GLU
1	A	1558	HIS
1	A	1560	ASP
1	A	1627	GLN
1	A	1719	THR
1	A	1760	HIS
1	A	1835	SER
1	A	1912	LYS
1	A	1971	GLN

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Mol	Chain	Res	Type
1	A	2023	LYS
1	A	2124	LYS
1	A	2234	SER
1	A	2289	HIS
1	A	2387	ARG
1	A	2507	VAL
1	A	2540	MET
1	A	2606	ARG
2	C	304	ARG
2	C	319	GLN
2	C	322	ILE
2	C	411	CYS
2	C	538	LEU
2	C	566	LYS
2	C	604	LEU
2	C	686	VAL
2	C	703	ARG
3	E	103	ASN
3	E	108	ASP
3	E	109	GLN
3	E	111	SER
3	E	132	GLU
3	E	133	ILE
3	E	136	ILE
3	E	139	ARG
3	E	143	GLN
3	E	152	MET
3	E	157	ILE
3	E	191	LEU
3	E	200	LYS
3	E	202	MET
1	B	16	ARG
1	B	26	TYR
1	B	29	VAL
1	B	32	LYS
1	B	42	ASP
1	B	43	ARG
1	B	54	GLU
1	B	69	LEU
1	B	110	ILE
1	B	116	CYS
1	B	126	VAL

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Mol	Chain	Res	Type
1	B	173	VAL
1	B	189	LEU
1	B	245	LYS
1	B	254	GLU
1	B	282	GLU
1	B	325	LEU
1	B	380	LEU
1	B	406	GLU
1	B	408	ILE
1	B	489	MET
1	B	571	ASP
1	B	617	LEU
1	B	642	LEU
1	B	677	ILE
1	B	746	LYS
1	B	767	LEU
1	B	828	ILE
1	B	841	PHE
1	B	848	LEU
1	B	849	ARG
1	B	869	LEU
1	B	921	LYS
1	B	922	LEU
1	B	934	CYS
1	B	941	LEU
1	B	966	HIS
1	B	984	PHE
1	B	1021	LEU
1	B	1030	ILE
1	B	1034	LYS
1	B	1049	LEU
1	B	1068	LEU
1	B	1080	LEU
1	B	1094	LEU
1	B	1095	SER
1	B	1096	ILE
1	B	1099	SER
1	B	1100	PHE
1	B	1122	TYR
1	B	1265	LYS
1	B	1271	TYR
1	B	1415	ASP

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Mol	Chain	Res	Type
1	B	1441	GLN
1	B	1463	LYS
1	B	1547	GLU
1	B	1558	HIS
1	B	1560	ASP
1	B	1627	GLN
1	B	1719	THR
1	B	1760	HIS
1	B	1835	SER
1	B	1912	LYS
1	B	1971	GLN
1	B	2023	LYS
1	B	2124	LYS
1	B	2234	SER
1	B	2387	ARG
1	B	2507	VAL
1	B	2606	ARG
2	D	304	ARG
2	D	319	GLN
2	D	322	ILE
2	D	411	CYS
2	D	538	LEU
2	D	566	LYS
2	D	604	LEU
2	D	686	VAL
2	D	703	ARG
3	F	102	GLN
3	F	103	ASN
3	F	108	ASP
3	F	109	GLN
3	F	111	SER
3	F	132	GLU
3	F	133	ILE
3	F	136	ILE
3	F	139	ARG
3	F	143	GLN
3	F	152	MET
3	F	157	ILE
3	F	191	LEU
3	F	200	LYS
3	F	202	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (43)

such sidechains are listed below:

Mol	Chain	Res	Type
1	A	39	GLN
1	A	279	HIS
1	A	498	GLN
1	A	506	HIS
1	A	681	GLN
1	A	891	HIS
1	A	1032	ASN
1	A	1054	HIS
1	A	1205	HIS
1	A	1344	GLN
1	A	1422	GLN
1	A	1545	GLN
1	A	1587	HIS
1	A	1597	GLN
1	A	1999	HIS
1	A	2077	GLN
1	A	2263	GLN
1	A	2361	HIS
1	A	2621	HIS
2	C	306	ASN
2	C	697	GLN
2	C	747	GLN
2	C	750	GLN
1	B	279	HIS
1	B	498	GLN
1	B	681	GLN
1	B	935	GLN
1	B	1032	ASN
1	B	1054	HIS
1	B	1205	HIS
1	B	1422	GLN
1	B	1545	GLN
1	B	1587	HIS
1	B	1597	GLN
1	B	1942	ASN
1	B	1999	HIS
1	B	2077	GLN
1	B	2263	GLN
1	B	2361	HIS
1	B	2621	HIS
2	D	681	GLN
2	D	697	GLN

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Mol	Chain	Res	Type
2	D	747	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 10 ligands modelled in this entry, 8 are monoatomic - leaving 2 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$
6	ANP	A	2704	5	33,33,33	2.36	6 (18%)	45,52,52	1.20	4 (8%)
6	ANP	B	2704	5	33,33,33	2.34	6 (18%)	45,52,52	1.19	4 (8%)

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
6	ANP	A	2704	5	-	5/18/38/38	0/3/3/3
6	ANP	B	2704	5	-	5/18/38/38	0/3/3/3

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	2704	ANP	PB-O3A	9.23	1.70	1.59
6	B	2704	ANP	PB-O3A	9.16	1.70	1.59
6	A	2704	ANP	PG-N3B	6.32	1.79	1.63
6	B	2704	ANP	PG-N3B	6.29	1.79	1.63
6	A	2704	ANP	PG-O1G	4.83	1.53	1.46
6	B	2704	ANP	PG-O1G	4.82	1.53	1.46
6	A	2704	ANP	PB-O1B	2.82	1.50	1.46
6	B	2704	ANP	PB-O1B	2.80	1.50	1.46
6	A	2704	ANP	PA-O3A	2.12	1.61	1.59
6	B	2704	ANP	PB-O2B	-2.10	1.51	1.56
6	A	2704	ANP	PB-O2B	-2.10	1.51	1.56
6	B	2704	ANP	PA-O3A	2.02	1.61	1.59

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	A	2704	ANP	O2B-PB-O1B	4.84	120.26	109.87
6	B	2704	ANP	O2B-PB-O1B	4.84	120.25	109.87
6	A	2704	ANP	O1G-PG-N3B	-3.91	106.02	111.77
6	B	2704	ANP	O1G-PG-N3B	-3.89	106.04	111.77
6	A	2704	ANP	O2G-PG-O3G	2.56	114.47	107.59
6	B	2704	ANP	O2G-PG-O3G	2.55	114.45	107.59
6	A	2704	ANP	O3A-PB-N3B	-2.18	100.56	106.59
6	B	2704	ANP	O3A-PB-N3B	-2.15	100.61	106.59

There are no chirality outliers.

All (10) torsion outliers are listed below:

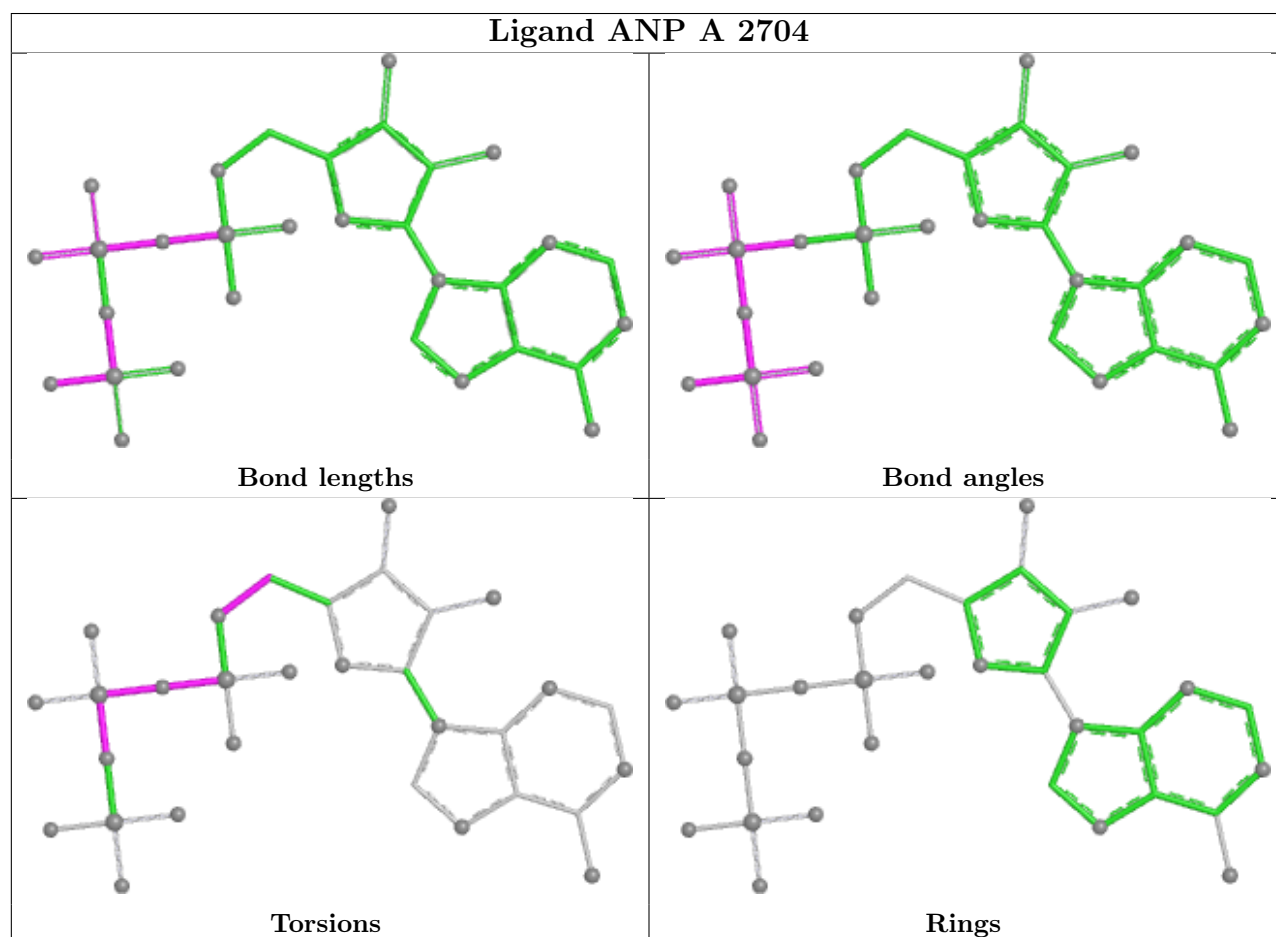
Mol	Chain	Res	Type	Atoms
6	A	2704	ANP	PG-N3B-PB-O1B
6	A	2704	ANP	PA-O3A-PB-O2B
6	B	2704	ANP	PG-N3B-PB-O1B
6	B	2704	ANP	PA-O3A-PB-O2B
6	A	2704	ANP	C4'-C5'-O5'-PA
6	B	2704	ANP	C4'-C5'-O5'-PA
6	A	2704	ANP	PB-O3A-PA-O2A
6	B	2704	ANP	PB-O3A-PA-O2A
6	A	2704	ANP	PA-O3A-PB-O1B
6	B	2704	ANP	PA-O3A-PB-O1B

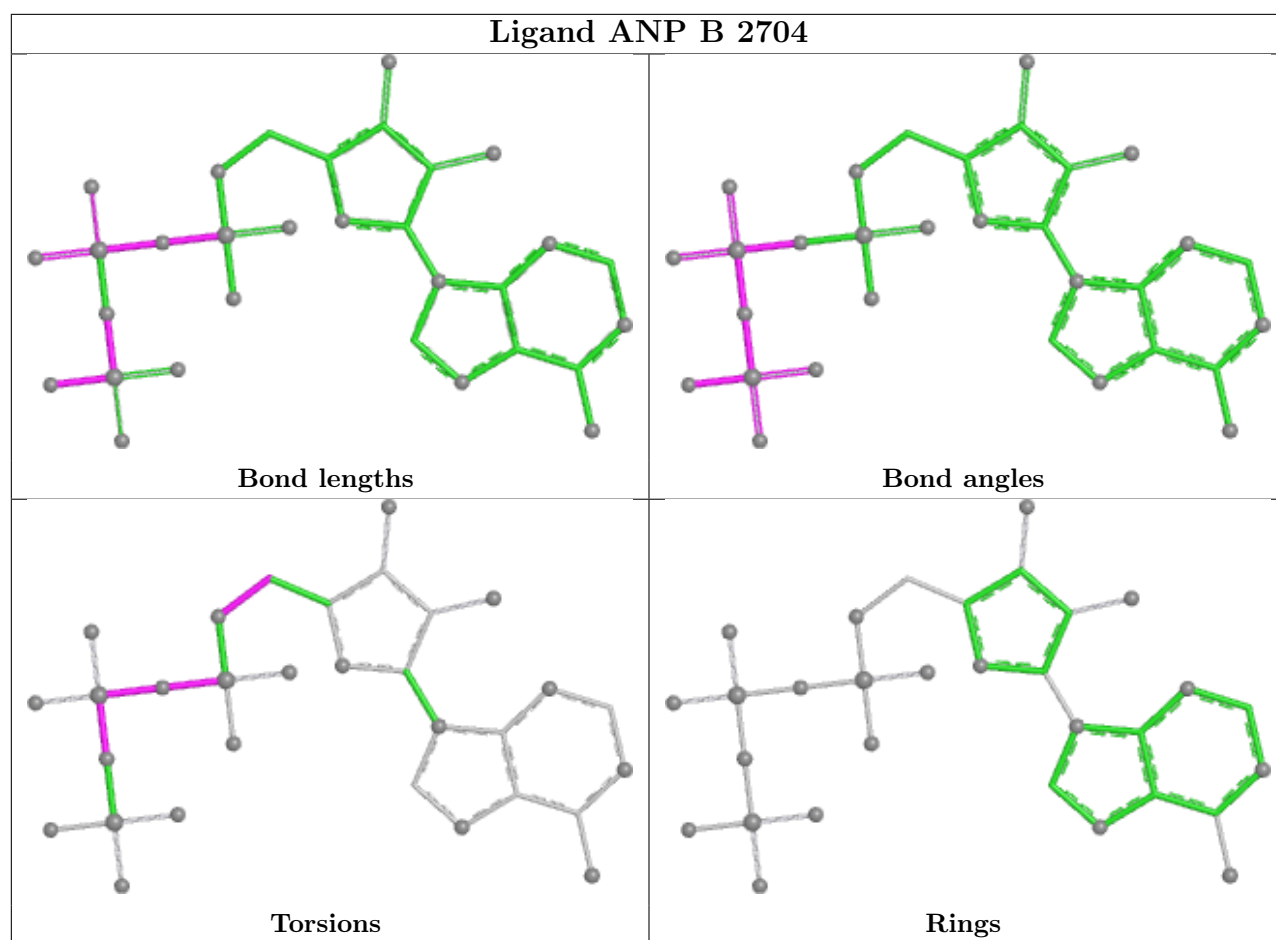
There are no ring outliers.

2 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	2704	ANP	2	0
6	B	2704	ANP	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 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 [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

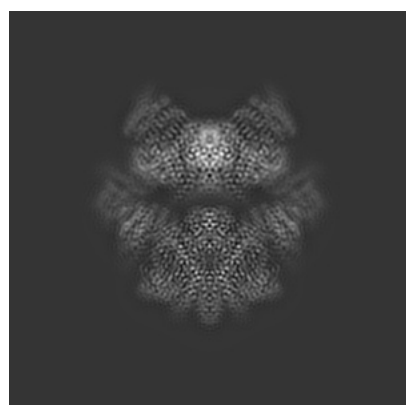
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-74051. These allow visual inspection of the internal detail of the map and identification of artifacts.

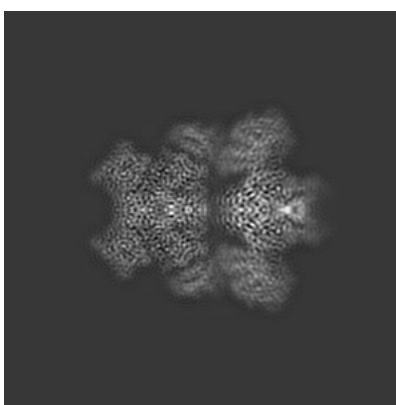
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

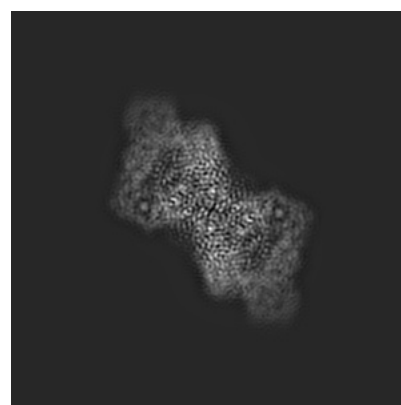
6.1.1 Primary map



X



Y

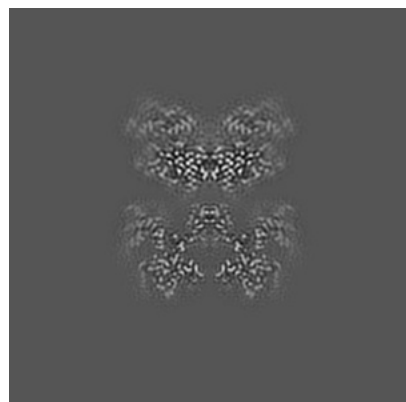


Z

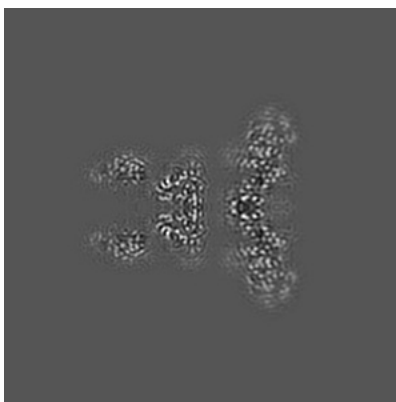
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

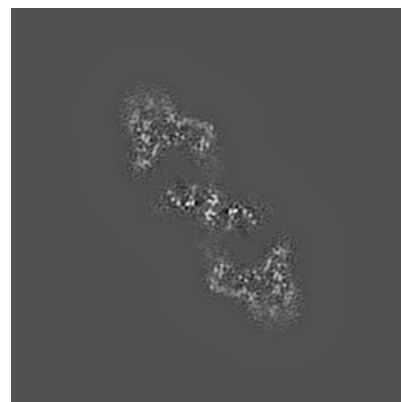
6.2.1 Primary map



X Index: 150



Y Index: 150

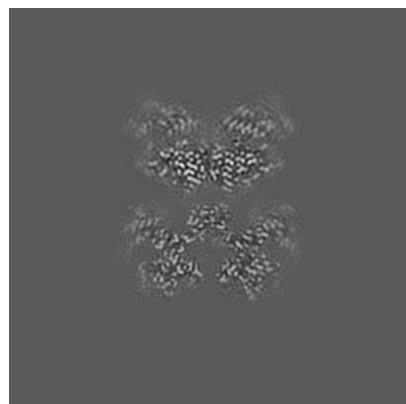


Z Index: 150

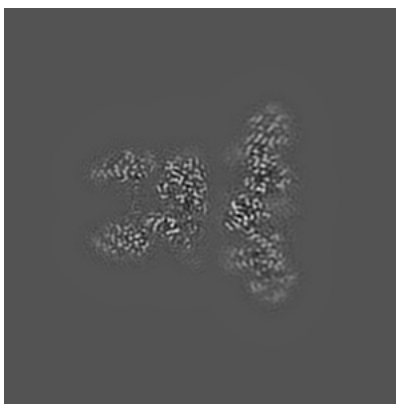
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

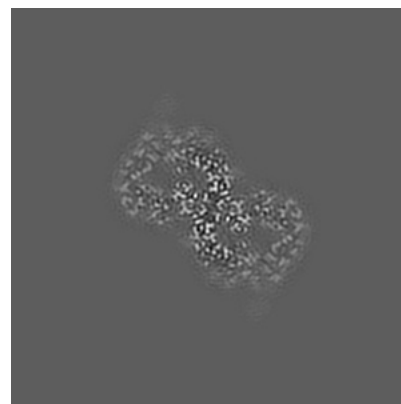
6.3.1 Primary map



X Index: 149



Y Index: 146

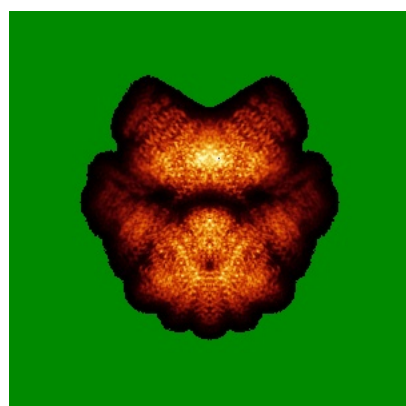


Z Index: 186

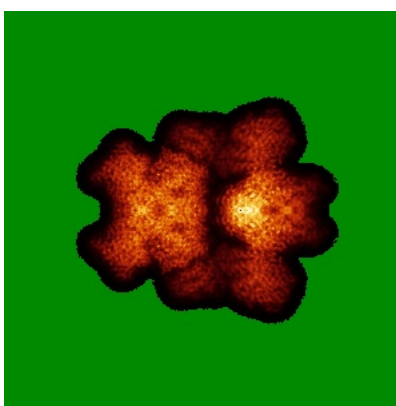
The images above show the largest variance slices of the map in three orthogonal directions.

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

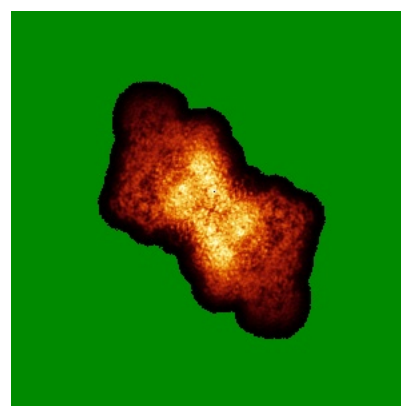
6.4.1 Primary map



X



Y

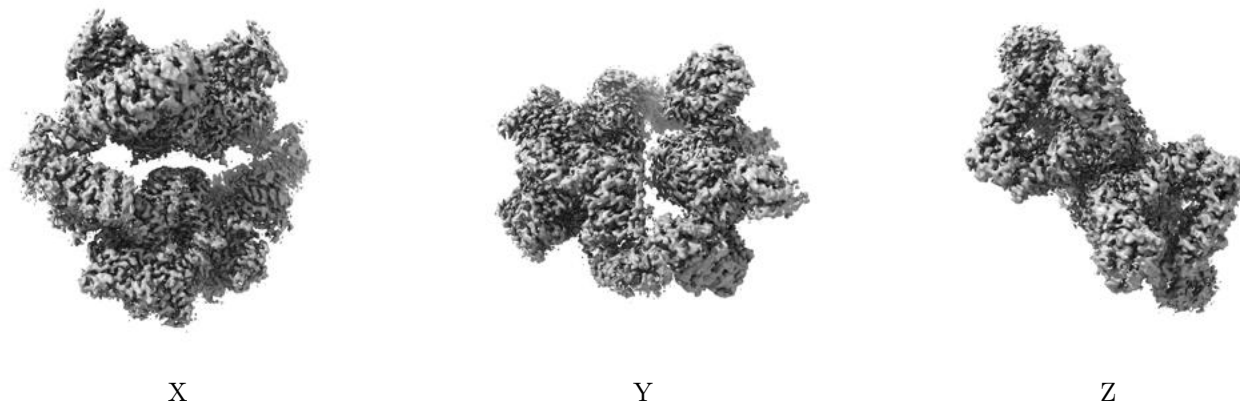


Z

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



The images above show the 3D surface view of the map at the recommended contour level 4.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

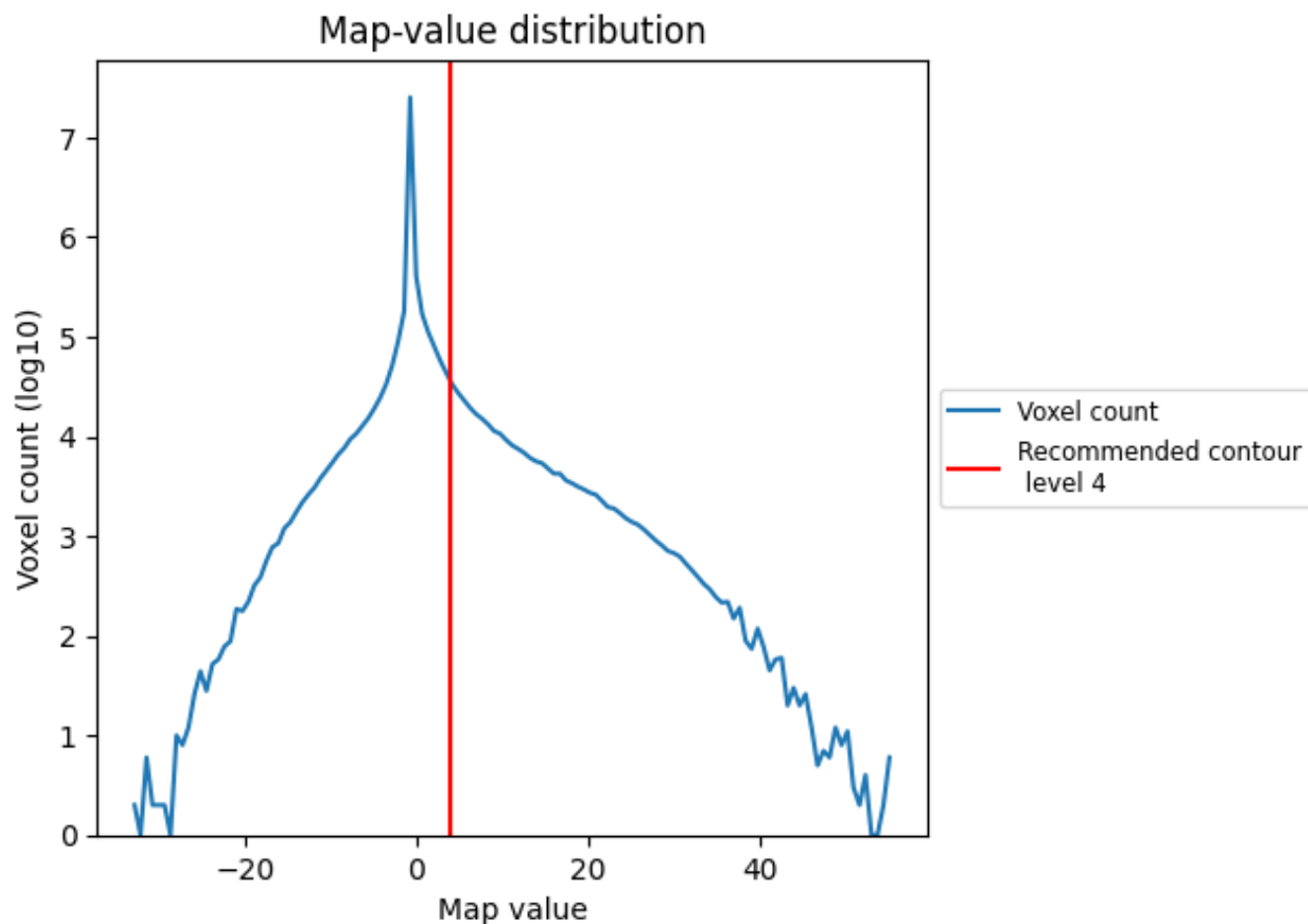
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

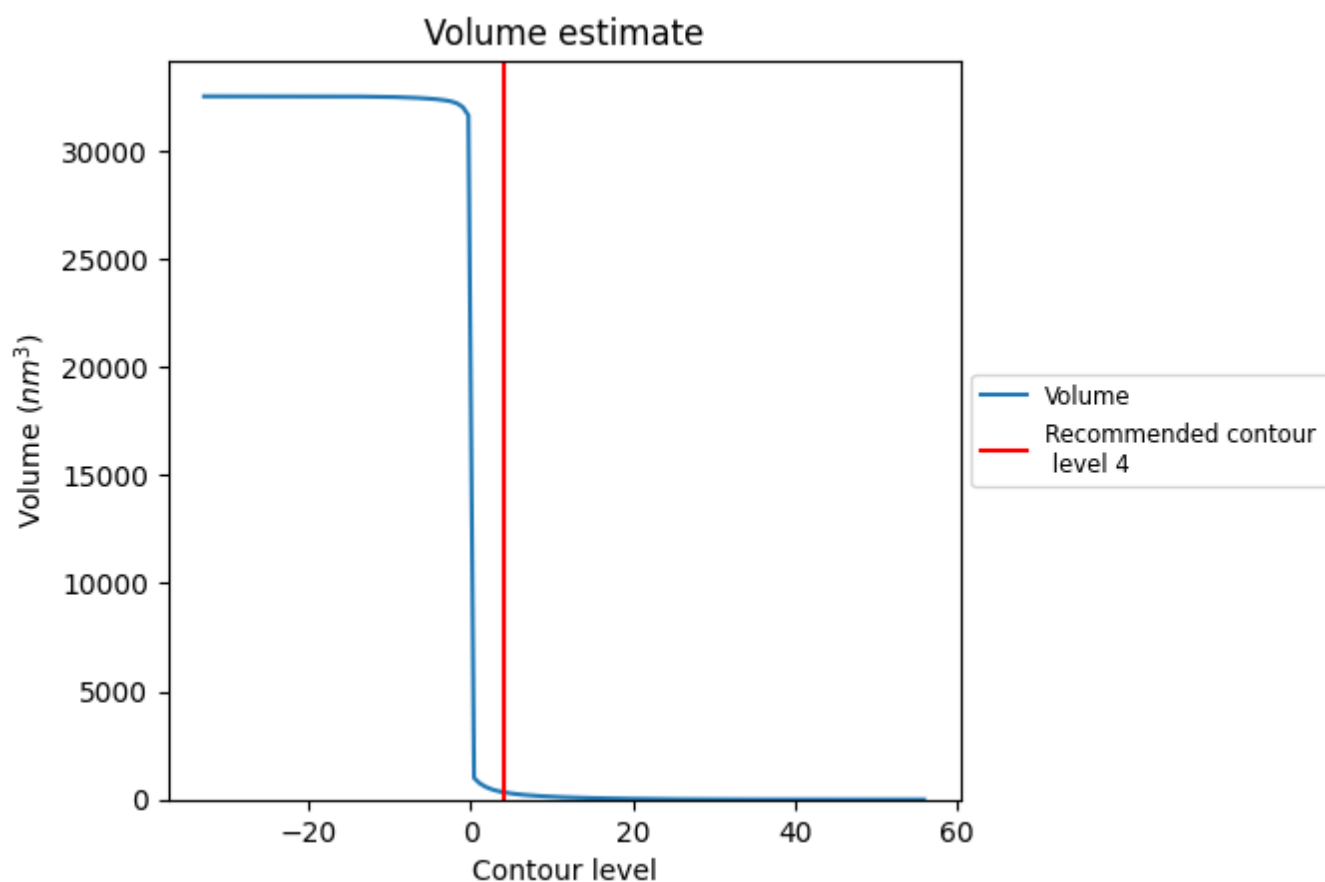
This section contains the results of statistical analysis of the map.

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.

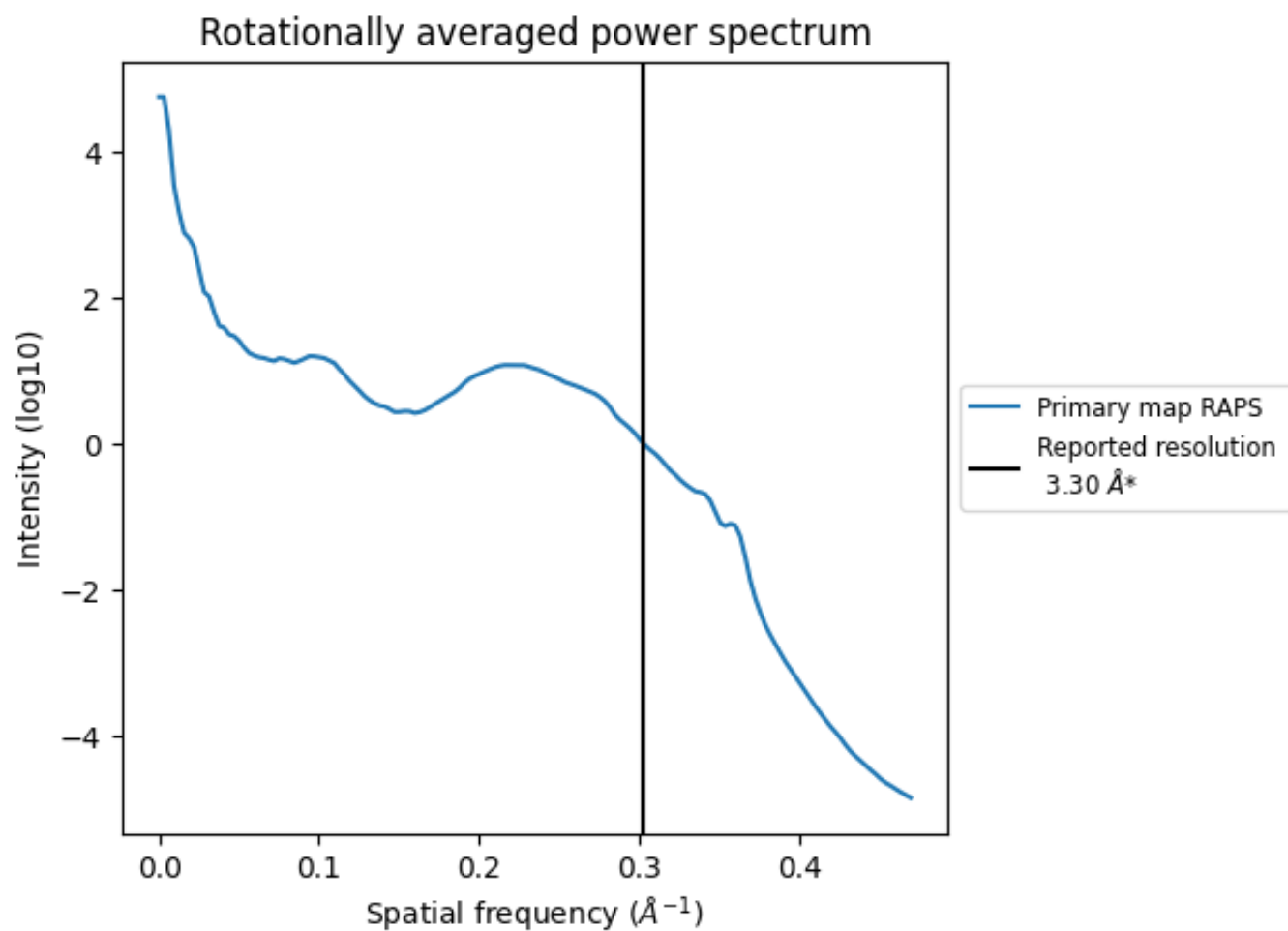
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 341 nm³; this corresponds to an approximate mass of 308 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 0.303 Å⁻¹

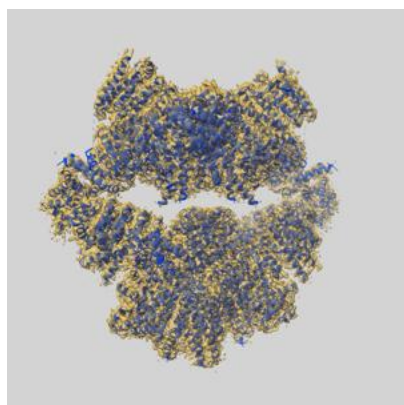
8 Fourier-Shell correlation

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

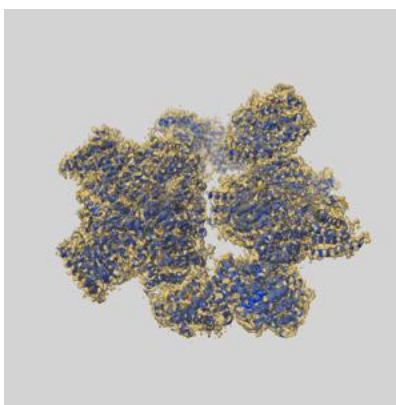
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-74051 and PDB model 9ZD4. Per-residue inclusion information can be found in section [3](#) on page [8](#).

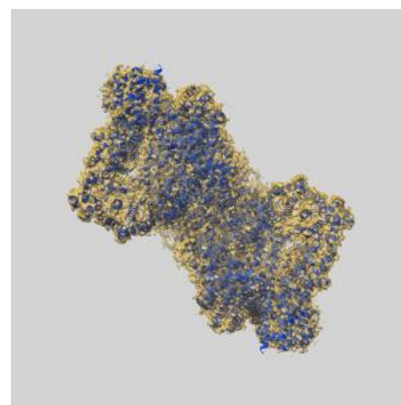
9.1 Map-model overlay [i](#)



X



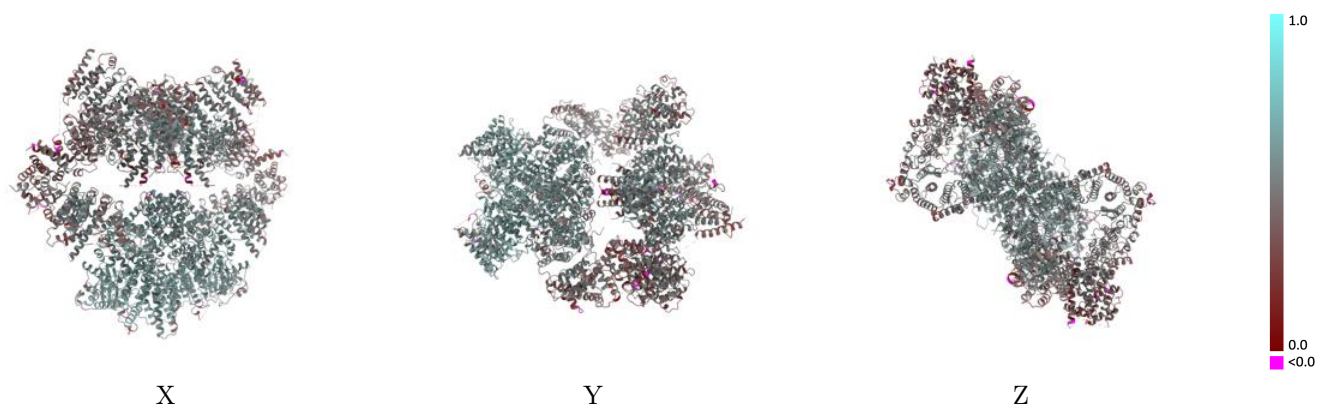
Y



Z

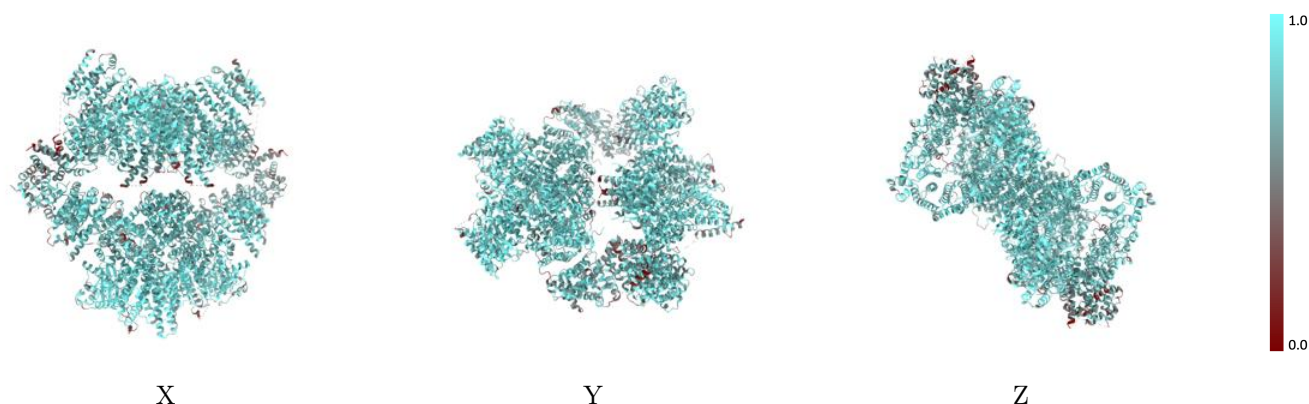
The images above show the 3D surface view of the map at the recommended contour level 4.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



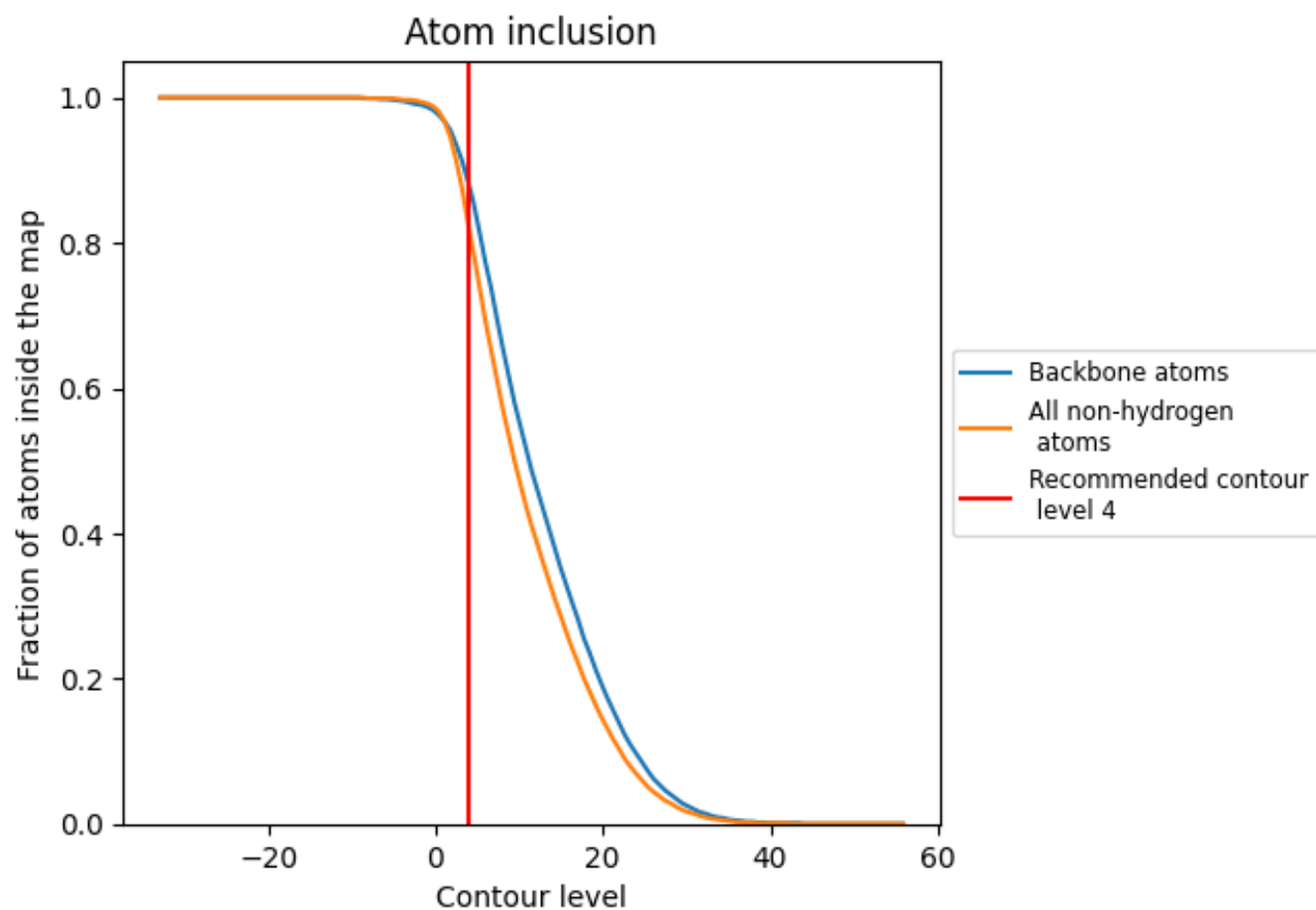
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (4).

9.4 Atom inclusion [i](#)



At the recommended contour level, 88% of all backbone atoms, 82% 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 (4) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8200	0.4910
A	0.8250	0.4960
B	0.8240	0.4960
C	0.8370	0.4750
D	0.8360	0.4760
E	0.5590	0.3800
F	0.5370	0.3370

1.0

0.0

<0.0