Full wwPDB EM Validation Report ⓘ

Oct 2, 2023 – 08:11 pm BST

PDB ID	:	8OXP
EMDB ID	:	EMD-17267
Title	:	ATM(Q2971A) in complex with Mg AMP-PNP
Authors	:	Howes, A.C.; Perisic, O.; Williams, R.L.
Deposited on	:	2023-05-02
Resolution	:	2.60 Å(reported)
Based on initial model	:	7SIC

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:

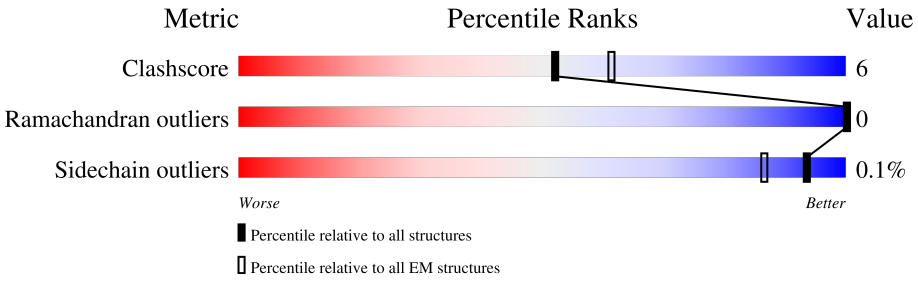
EMDB validation analysis	:	0.0.1.dev50
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35.1

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 2.60 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 <=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	3184	17% 73% 14% 13%
1	B	3184	17% 74% 13% 13%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 44460 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-protein kinase ATM.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	2772	Total 22197	C 14193	N 3772	O 4079	S 153	0	0
1	B	2772	Total 22197	C 14193	N 3772	O 4079	S 153	0	0

There are 258 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-127	MET	-	initiating methionine	UNP Q13315
A	-126	ASP	-	expression tag	UNP Q13315
A	-125	TYR	-	expression tag	UNP Q13315
A	-124	LYS	-	expression tag	UNP Q13315
A	-123	ASP	-	expression tag	UNP Q13315
A	-122	ASP	-	expression tag	UNP Q13315
A	-121	ASP	-	expression tag	UNP Q13315
A	-120	ASP	-	expression tag	UNP Q13315
A	-119	LYS	-	expression tag	UNP Q13315
A	-118	HIS	-	expression tag	UNP Q13315
A	-117	MET	-	expression tag	UNP Q13315
A	-116	GLY	-	expression tag	UNP Q13315
A	-115	VAL	-	expression tag	UNP Q13315
A	-114	GLN	-	expression tag	UNP Q13315
A	-113	VAL	-	expression tag	UNP Q13315
A	-112	GLU	-	expression tag	UNP Q13315
A	-111	THR	-	expression tag	UNP Q13315
A	-110	ILE	-	expression tag	UNP Q13315
A	-109	SER	-	expression tag	UNP Q13315
A	-108	PRO	-	expression tag	UNP Q13315
A	-107	GLY	-	expression tag	UNP Q13315
A	-106	ASP	-	expression tag	UNP Q13315
A	-105	GLY	-	expression tag	UNP Q13315
A	-104	ARG	-	expression tag	UNP Q13315
A	-103	THR	-	expression tag	UNP Q13315
A	-102	PHE	-	expression tag	UNP Q13315

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-101	PRO	-	expression tag	UNP Q13315
A	-100	LYS	-	expression tag	UNP Q13315
A	-99	ARG	-	expression tag	UNP Q13315
A	-98	GLY	-	expression tag	UNP Q13315
A	-97	GLN	-	expression tag	UNP Q13315
A	-96	THR	-	expression tag	UNP Q13315
A	-95	CYS	-	expression tag	UNP Q13315
A	-94	VAL	-	expression tag	UNP Q13315
A	-93	VAL	-	expression tag	UNP Q13315
A	-92	HIS	-	expression tag	UNP Q13315
A	-91	TYR	-	expression tag	UNP Q13315
A	-90	THR	-	expression tag	UNP Q13315
A	-89	GLY	-	expression tag	UNP Q13315
A	-88	MET	-	expression tag	UNP Q13315
A	-87	LEU	-	expression tag	UNP Q13315
A	-86	GLU	-	expression tag	UNP Q13315
A	-85	ASP	-	expression tag	UNP Q13315
A	-84	GLY	-	expression tag	UNP Q13315
A	-83	LYS	-	expression tag	UNP Q13315
A	-82	LYS	-	expression tag	UNP Q13315
A	-81	PHE	-	expression tag	UNP Q13315
A	-80	ASP	-	expression tag	UNP Q13315
A	-79	SER	-	expression tag	UNP Q13315
A	-78	SER	-	expression tag	UNP Q13315
A	-77	ARG	-	expression tag	UNP Q13315
A	-76	ASP	-	expression tag	UNP Q13315
A	-75	ARG	-	expression tag	UNP Q13315
A	-74	ASN	-	expression tag	UNP Q13315
A	-73	LYS	-	expression tag	UNP Q13315
A	-72	PRO	-	expression tag	UNP Q13315
A	-71	PHE	-	expression tag	UNP Q13315
A	-70	LYS	-	expression tag	UNP Q13315
A	-69	PHE	-	expression tag	UNP Q13315
A	-68	MET	-	expression tag	UNP Q13315
A	-67	LEU	-	expression tag	UNP Q13315
A	-66	GLY	-	expression tag	UNP Q13315
A	-65	LYS	-	expression tag	UNP Q13315
A	-64	GLN	-	expression tag	UNP Q13315
A	-63	GLU	-	expression tag	UNP Q13315
A	-62	VAL	-	expression tag	UNP Q13315
A	-61	ILE	-	expression tag	UNP Q13315
A	-60	ARG	-	expression tag	UNP Q13315

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-59	GLY	-	expression tag	UNP Q13315
A	-58	TRP	-	expression tag	UNP Q13315
A	-57	GLU	-	expression tag	UNP Q13315
A	-56	GLU	-	expression tag	UNP Q13315
A	-55	GLY	-	expression tag	UNP Q13315
A	-54	VAL	-	expression tag	UNP Q13315
A	-53	ALA	-	expression tag	UNP Q13315
A	-52	GLN	-	expression tag	UNP Q13315
A	-51	MET	-	expression tag	UNP Q13315
A	-50	SER	-	expression tag	UNP Q13315
A	-49	VAL	-	expression tag	UNP Q13315
A	-48	GLY	-	expression tag	UNP Q13315
A	-47	GLN	-	expression tag	UNP Q13315
A	-46	ARG	-	expression tag	UNP Q13315
A	-45	ALA	-	expression tag	UNP Q13315
A	-44	LYS	-	expression tag	UNP Q13315
A	-43	LEU	-	expression tag	UNP Q13315
A	-42	THR	-	expression tag	UNP Q13315
A	-41	ILE	-	expression tag	UNP Q13315
A	-40	SER	-	expression tag	UNP Q13315
A	-39	PRO	-	expression tag	UNP Q13315
A	-38	ASP	-	expression tag	UNP Q13315
A	-37	TYR	-	expression tag	UNP Q13315
A	-36	ALA	-	expression tag	UNP Q13315
A	-35	TYR	-	expression tag	UNP Q13315
A	-34	GLY	-	expression tag	UNP Q13315
A	-33	ALA	-	expression tag	UNP Q13315
A	-32	THR	-	expression tag	UNP Q13315
A	-31	GLY	-	expression tag	UNP Q13315
A	-30	HIS	-	expression tag	UNP Q13315
A	-29	PRO	-	expression tag	UNP Q13315
A	-28	GLY	-	expression tag	UNP Q13315
A	-27	ILE	-	expression tag	UNP Q13315
A	-26	ILE	-	expression tag	UNP Q13315
A	-25	PRO	-	expression tag	UNP Q13315
A	-24	PRO	-	expression tag	UNP Q13315
A	-23	HIS	-	expression tag	UNP Q13315
A	-22	ALA	-	expression tag	UNP Q13315
A	-21	THR	-	expression tag	UNP Q13315
A	-20	LEU	-	expression tag	UNP Q13315
A	-19	VAL	-	expression tag	UNP Q13315
A	-18	PHE	-	expression tag	UNP Q13315

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-17	ASP	-	expression tag	UNP Q13315
A	-16	VAL	-	expression tag	UNP Q13315
A	-15	GLU	-	expression tag	UNP Q13315
A	-14	LEU	-	expression tag	UNP Q13315
A	-13	LEU	-	expression tag	UNP Q13315
A	-12	LYS	-	expression tag	UNP Q13315
A	-11	LEU	-	expression tag	UNP Q13315
A	-10	GLU	-	expression tag	UNP Q13315
A	-9	GLY	-	expression tag	UNP Q13315
A	-8	GLY	-	expression tag	UNP Q13315
A	-7	SER	-	expression tag	UNP Q13315
A	-6	ALA	-	expression tag	UNP Q13315
A	-5	GLY	-	expression tag	UNP Q13315
A	-4	SER	-	expression tag	UNP Q13315
A	-3	GLY	-	expression tag	UNP Q13315
A	-2	SER	-	expression tag	UNP Q13315
A	-1	ALA	-	expression tag	UNP Q13315
A	0	SER	-	expression tag	UNP Q13315
A	2971	ALA	GLN	engineered mutation	UNP Q13315
B	-127	MET	-	initiating methionine	UNP Q13315
B	-126	ASP	-	expression tag	UNP Q13315
B	-125	TYR	-	expression tag	UNP Q13315
B	-124	LYS	-	expression tag	UNP Q13315
B	-123	ASP	-	expression tag	UNP Q13315
B	-122	ASP	-	expression tag	UNP Q13315
B	-121	ASP	-	expression tag	UNP Q13315
B	-120	ASP	-	expression tag	UNP Q13315
B	-119	LYS	-	expression tag	UNP Q13315
B	-118	HIS	-	expression tag	UNP Q13315
B	-117	MET	-	expression tag	UNP Q13315
B	-116	GLY	-	expression tag	UNP Q13315
B	-115	VAL	-	expression tag	UNP Q13315
B	-114	GLN	-	expression tag	UNP Q13315
B	-113	VAL	-	expression tag	UNP Q13315
B	-112	GLU	-	expression tag	UNP Q13315
B	-111	THR	-	expression tag	UNP Q13315
B	-110	ILE	-	expression tag	UNP Q13315
B	-109	SER	-	expression tag	UNP Q13315
B	-108	PRO	-	expression tag	UNP Q13315
B	-107	GLY	-	expression tag	UNP Q13315
B	-106	ASP	-	expression tag	UNP Q13315
B	-105	GLY	-	expression tag	UNP Q13315

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-104	ARG	-	expression tag	UNP Q13315
B	-103	THR	-	expression tag	UNP Q13315
B	-102	PHE	-	expression tag	UNP Q13315
B	-101	PRO	-	expression tag	UNP Q13315
B	-100	LYS	-	expression tag	UNP Q13315
B	-99	ARG	-	expression tag	UNP Q13315
B	-98	GLY	-	expression tag	UNP Q13315
B	-97	GLN	-	expression tag	UNP Q13315
B	-96	THR	-	expression tag	UNP Q13315
B	-95	CYS	-	expression tag	UNP Q13315
B	-94	VAL	-	expression tag	UNP Q13315
B	-93	VAL	-	expression tag	UNP Q13315
B	-92	HIS	-	expression tag	UNP Q13315
B	-91	TYR	-	expression tag	UNP Q13315
B	-90	THR	-	expression tag	UNP Q13315
B	-89	GLY	-	expression tag	UNP Q13315
B	-88	MET	-	expression tag	UNP Q13315
B	-87	LEU	-	expression tag	UNP Q13315
B	-86	GLU	-	expression tag	UNP Q13315
B	-85	ASP	-	expression tag	UNP Q13315
B	-84	GLY	-	expression tag	UNP Q13315
B	-83	LYS	-	expression tag	UNP Q13315
B	-82	LYS	-	expression tag	UNP Q13315
B	-81	PHE	-	expression tag	UNP Q13315
B	-80	ASP	-	expression tag	UNP Q13315
B	-79	SER	-	expression tag	UNP Q13315
B	-78	SER	-	expression tag	UNP Q13315
B	-77	ARG	-	expression tag	UNP Q13315
B	-76	ASP	-	expression tag	UNP Q13315
B	-75	ARG	-	expression tag	UNP Q13315
B	-74	ASN	-	expression tag	UNP Q13315
B	-73	LYS	-	expression tag	UNP Q13315
B	-72	PRO	-	expression tag	UNP Q13315
B	-71	PHE	-	expression tag	UNP Q13315
B	-70	LYS	-	expression tag	UNP Q13315
B	-69	PHE	-	expression tag	UNP Q13315
B	-68	MET	-	expression tag	UNP Q13315
B	-67	LEU	-	expression tag	UNP Q13315
B	-66	GLY	-	expression tag	UNP Q13315
B	-65	LYS	-	expression tag	UNP Q13315
B	-64	GLN	-	expression tag	UNP Q13315
B	-63	GLU	-	expression tag	UNP Q13315

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-62	VAL	-	expression tag	UNP Q13315
B	-61	ILE	-	expression tag	UNP Q13315
B	-60	ARG	-	expression tag	UNP Q13315
B	-59	GLY	-	expression tag	UNP Q13315
B	-58	TRP	-	expression tag	UNP Q13315
B	-57	GLU	-	expression tag	UNP Q13315
B	-56	GLU	-	expression tag	UNP Q13315
B	-55	GLY	-	expression tag	UNP Q13315
B	-54	VAL	-	expression tag	UNP Q13315
B	-53	ALA	-	expression tag	UNP Q13315
B	-52	GLN	-	expression tag	UNP Q13315
B	-51	MET	-	expression tag	UNP Q13315
B	-50	SER	-	expression tag	UNP Q13315
B	-49	VAL	-	expression tag	UNP Q13315
B	-48	GLY	-	expression tag	UNP Q13315
B	-47	GLN	-	expression tag	UNP Q13315
B	-46	ARG	-	expression tag	UNP Q13315
B	-45	ALA	-	expression tag	UNP Q13315
B	-44	LYS	-	expression tag	UNP Q13315
B	-43	LEU	-	expression tag	UNP Q13315
B	-42	THR	-	expression tag	UNP Q13315
B	-41	ILE	-	expression tag	UNP Q13315
B	-40	SER	-	expression tag	UNP Q13315
B	-39	PRO	-	expression tag	UNP Q13315
B	-38	ASP	-	expression tag	UNP Q13315
B	-37	TYR	-	expression tag	UNP Q13315
B	-36	ALA	-	expression tag	UNP Q13315
B	-35	TYR	-	expression tag	UNP Q13315
B	-34	GLY	-	expression tag	UNP Q13315
B	-33	ALA	-	expression tag	UNP Q13315
B	-32	THR	-	expression tag	UNP Q13315
B	-31	GLY	-	expression tag	UNP Q13315
B	-30	HIS	-	expression tag	UNP Q13315
B	-29	PRO	-	expression tag	UNP Q13315
B	-28	GLY	-	expression tag	UNP Q13315
B	-27	ILE	-	expression tag	UNP Q13315
B	-26	ILE	-	expression tag	UNP Q13315
B	-25	PRO	-	expression tag	UNP Q13315
B	-24	PRO	-	expression tag	UNP Q13315
B	-23	HIS	-	expression tag	UNP Q13315
B	-22	ALA	-	expression tag	UNP Q13315
B	-21	THR	-	expression tag	UNP Q13315

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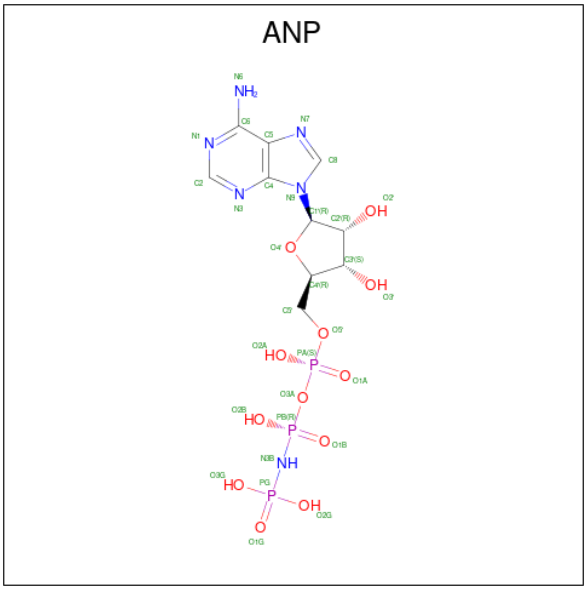
Chain	Residue	Modelled	Actual	Comment	Reference
B	-20	LEU	-	expression tag	UNP Q13315
B	-19	VAL	-	expression tag	UNP Q13315
B	-18	PHE	-	expression tag	UNP Q13315
B	-17	ASP	-	expression tag	UNP Q13315
B	-16	VAL	-	expression tag	UNP Q13315
B	-15	GLU	-	expression tag	UNP Q13315
B	-14	LEU	-	expression tag	UNP Q13315
B	-13	LEU	-	expression tag	UNP Q13315
B	-12	LYS	-	expression tag	UNP Q13315
B	-11	LEU	-	expression tag	UNP Q13315
B	-10	GLU	-	expression tag	UNP Q13315
B	-9	GLY	-	expression tag	UNP Q13315
B	-8	GLY	-	expression tag	UNP Q13315
B	-7	SER	-	expression tag	UNP Q13315
B	-6	ALA	-	expression tag	UNP Q13315
B	-5	GLY	-	expression tag	UNP Q13315
B	-4	SER	-	expression tag	UNP Q13315
B	-3	GLY	-	expression tag	UNP Q13315
B	-2	SER	-	expression tag	UNP Q13315
B	-1	ALA	-	expression tag	UNP Q13315
B	0	SER	-	expression tag	UNP Q13315
B	2971	ALA	GLN	engineered mutation	UNP Q13315

- Molecule 2 is PHOSPHOAMINOPHOSPHONIC ACID-ADENYLATE ESTER (three-letter code: ANP) (formula: $C_{10}H_{17}N_6O_{12}P_3$) (labeled as "Ligand of Interest" by depositor).



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

- 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	1	Total	Mg	0
			1	1	
3	B	1	Total	Mg	0
			1	1	

- Molecule 4 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

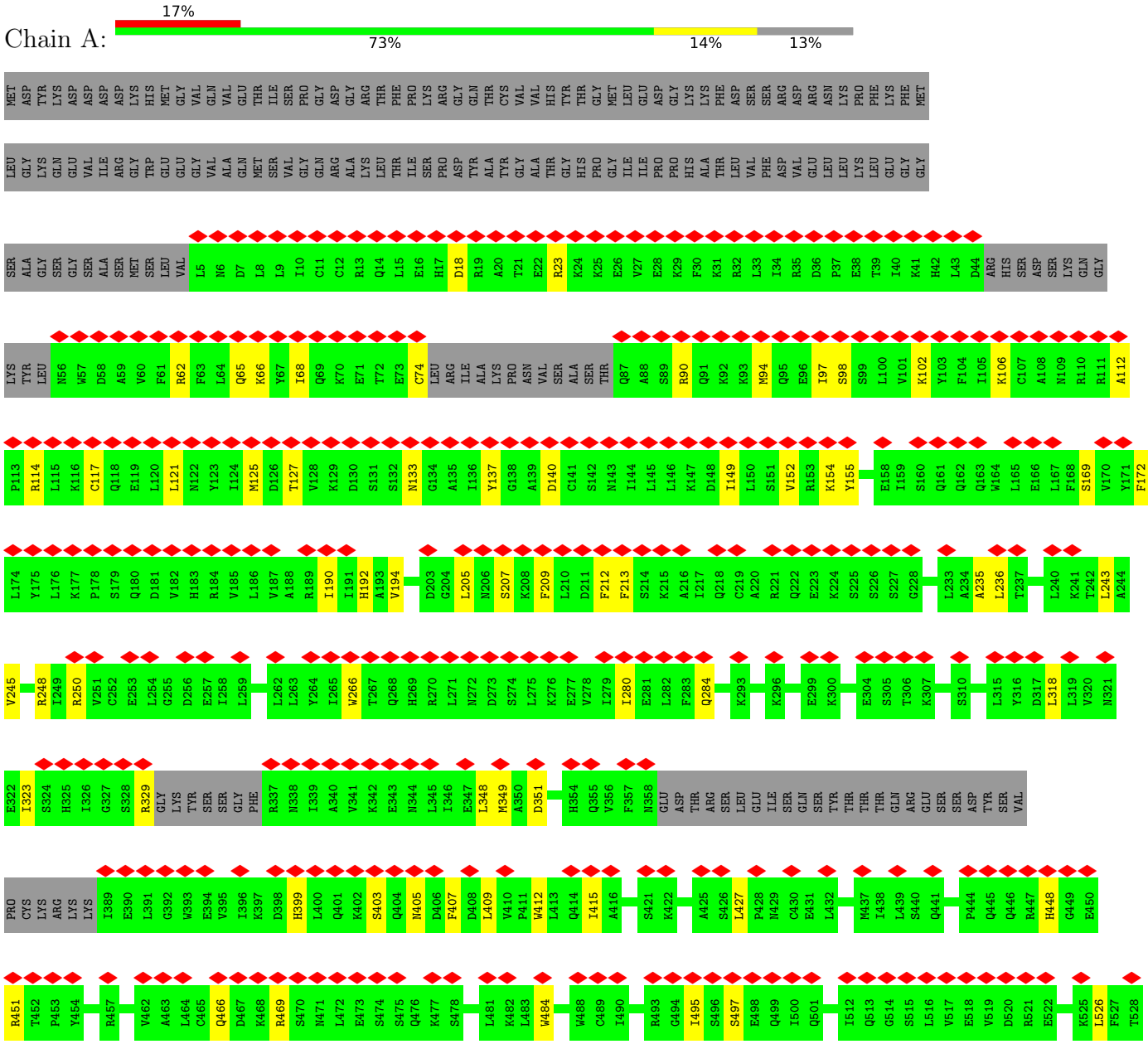
Mol	Chain	Residues	Atoms		AltConf
4	A	1	Total	Zn	0
			1	1	
4	B	1	Total	Zn	0
			1	1	

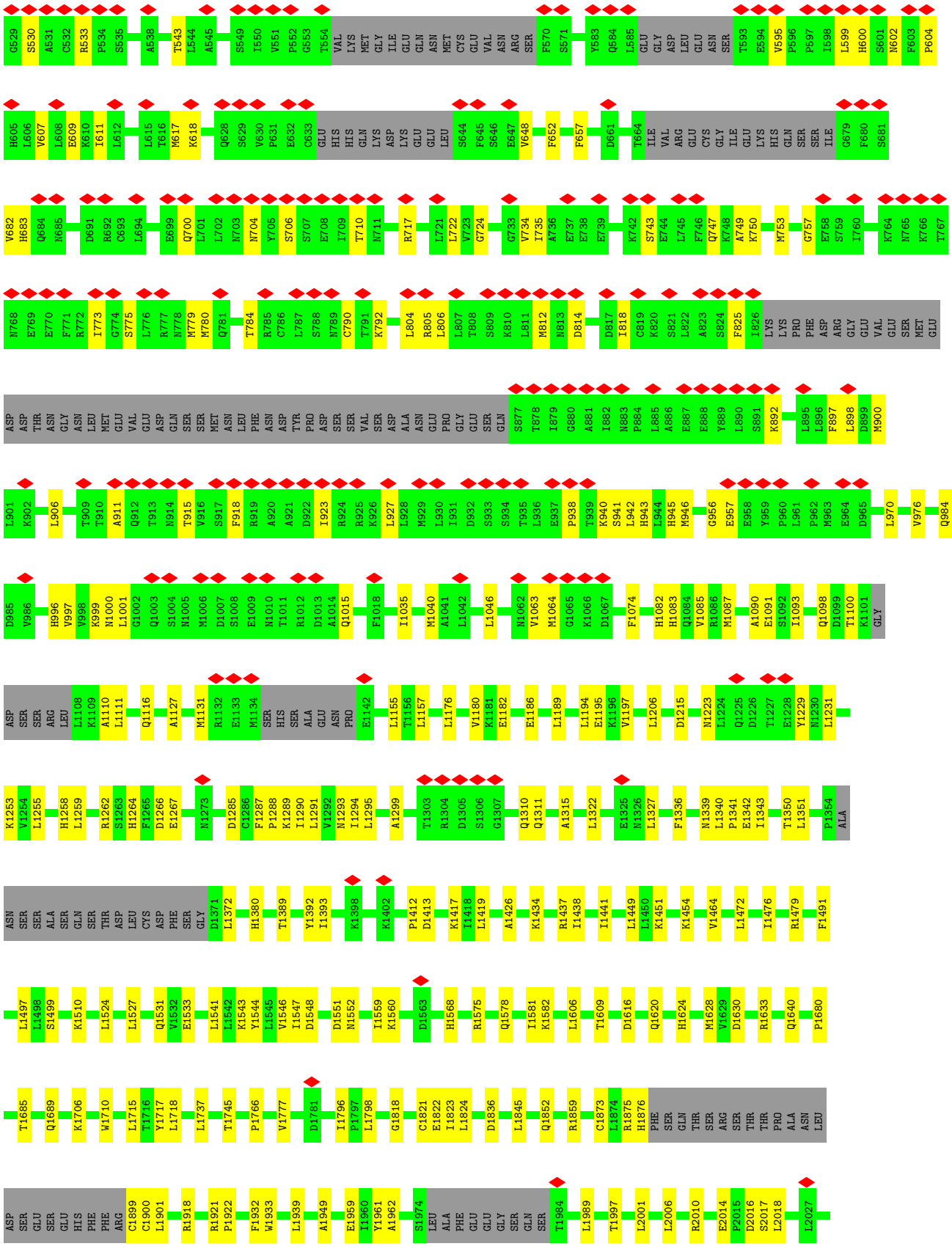
3 Residue-property plots (i)

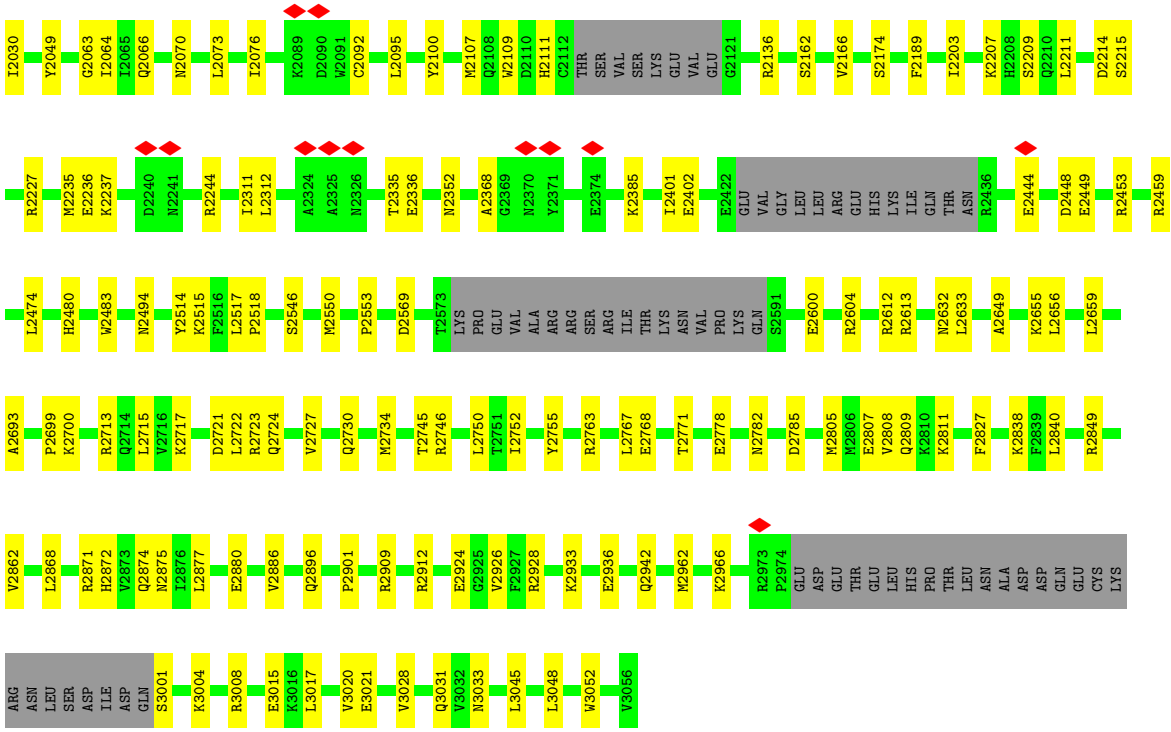
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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-protein kinase ATM

Chain A:

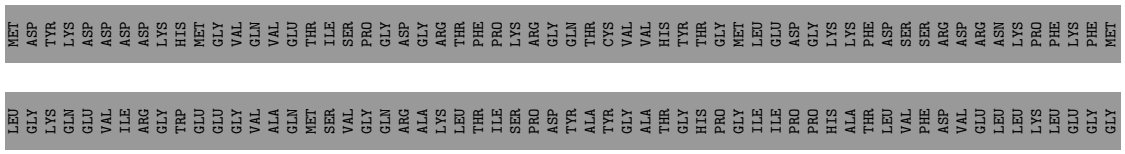


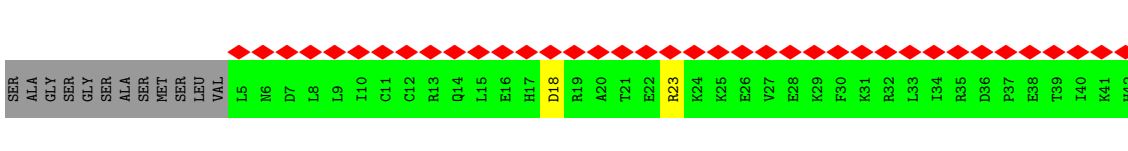

G529 S530 A531 C532 R533 P534 S535 A538 T543 L544 A545 S549 I550 V551 P552 G553 T554 VAL LYS MET GLY ILE GLU GLN ASN MET CYS GLU VAL ASN ARG SER F570 S571 Y583 Q584 L585 GLU GLY ASP LEU GLU ASN SER T593 E594 V595 P596 P597 I598 L599 H600 S601 N602 F603 P604
H605 L606 V607 L608 E609 K610 I611 L612 L615 T616 M617 K618 Q628 S629 V630 P631 E632 C633 GLU HIS HIS GLN LYS ASP LYS GLU GLU LEU S644 F645 S646 E647 V648 F652 F657 D661 T664 ILE VAL ARG GLU CYS GLY ILE GLU LYS HIS GLN SER SER ILE G679 F680 S681
V682 H683 Q684 N685 D691 R692 C693 L694 E699 Q700 L701 L702 N703 N704 Y705 S706 S707 E708 I709 T710 N711 R717 L721 L722 V723 G724 G733 V734 I735 A736 E737 E738 E739 K742 S743 E744 L745 F746 Q747 K748 A749 K750 M753 G757 E758 S759 I760 K764 N765 K766 T767
N768 E769 E770 F771 R772 I773 G774 S775 L776 R777 N778 M779 M780 Q781 T784 R785 C786 L787 S788 N789 C790 T791 K792 L804 R805 L806 L807 T808 S809 K810 L811 M812 N813 D814 D817 I818 C819 K820 S821 L822 A823 S824 F825 I826 LYS LYS PRO PHE ASP ARG GLY GLU VAL GLU SER MET GLU
ASP ASP THR ASN GLY ASN LEU MET GLU VAL GLU ASP GLN SER SER MET ASN LEU PHE ASN ASP TYR PRO ASP SER SER VAL SER ASP ALA ASN GLU PRO GLY GLU SER GLN S877 T878 I879 G880 A881 I882 N883 P884 L885 A886 E887 E888 Y889 L890 S891 K892 L895 L896 F897 L898 D899 M900
L901 K902 L906 T909 T910 A911 Q912 T913 N914 T915 V916 S917 F918 R919 A920 A921 D922 I923 R924 R925 K926 L927 L928 M929 L930 I931 D932 S933 S934 T935 L936 E937 P938 T939 K940 S941 L942 H943 L944 H945 M946 G956 E957 E958 Y959 P960 L961 P962 M963 E964 D965 L970 V976 Q984
D985 V986 H996 V997 V998 K999 N1000 L1001 G1002 Q1003 S1004 N1005 M1006 D1007 S1008 E1009 N1010 T1011 R1012 D1013 A1014 Q1015 F1018 I1035 M1040 A1041 L1042 L1046 N1062 V1063 M1064 G1065 K1066 D1067 F1074 H1082 H1083 Q1084 V1085 R1086 M1087 A1090 E1091 S1092 I1093 Q1098 D1099 T1100 K1101 GLY
ASP SER SER ARG LEU L1108 K1109 A1110 L1111 Q1116 A1127 M1131 R1132 E1133 M1134 SER HIS SER ALA GLU ASN PRO E1142 L1155 T1156 L1157 L1176 V1180 K1181 E1182 E1186 L1189 L1194 E1195 K1196 V1197 L1206 D1215 N1223 L1224 Q1225 D1226 T1227 E1228 Y1229 N1230 L1231
K1253 V1254 L1255 H1258 L1259 R1262 S1263 H1264 F1265 D1266 E1267 N1273 D1285 C1286 F1287 P1288 K1289 I1290 L1291 V1292 N1293 I1294 L1295 A1299 T1303 R1304 D1305 S1306 G1307 Q1310 Q1311 A1315 L1322 E1325 N1326 L1327 F1336 N1339 L1340 P1341 E1342 I1343 T1350 L1351 P1354 ALA
ASN SER SER ALA SER GLN SER THR ASP LEU CYS ASP PHE SER GLY D1371 L1372 H1380 T1389 Y1392 I1393 K1398 K1402 P1412 D1413 K1417 I1418 L1419 A1426 K1434 R1437 I1438 I1441 L1449 L1450 K1451 K1454 V1464 L1472 I1476 R1479 F1491
L1497 L1498 S1499 K1510 L1524 L1527 Q1531 V1532 E1533 L1541 L1542 K1543 Y1544 L1545 V1546 I1547 D1548 D1551 N1552 I1559 K1560 D1563 H1568 R1575 Q1578 I1581 K1582 L1606 T1609 D1616 Q1620 H1624 M1628 V1629 D1630 R1633 Q1640 P1680
T1685 Q1689 K1706 W1710 L1715 T1716 Y1717 L1718 L1737 T1745 P1766 V1777 D1781 I1796 P1797 L1798 G1818 C1821 E1822 I1823 L1824 D1836 L1845 Q1852 R1859 C1873 L1874 R1875 H1876 PHE SER GLN THR SER ARG SER THR THR PRO ALA ASN LEU
ASP SER GLU SER GLU HIS PHE PHE ARG C1899 C1900 L1901 R1918 R1921 P1922 F1932 W1933 L1939 A1949 E1959 I1960 Y1961 A1962 S1974 LEU ALA PHE GLU GLU GLY SER GLN SER T1984 L1989 T1997 L2001 L2006 R2010 E2014 P2015 D2016 S2017 L2018 L2027

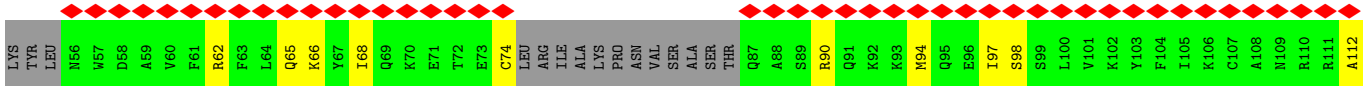


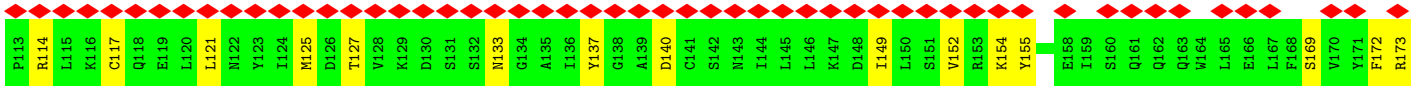
• Molecule 1: Serine-protein kinase ATM

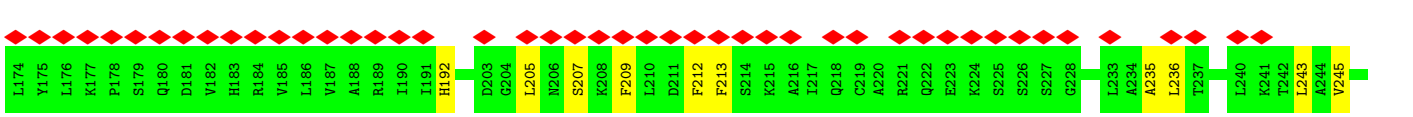
Chain B:

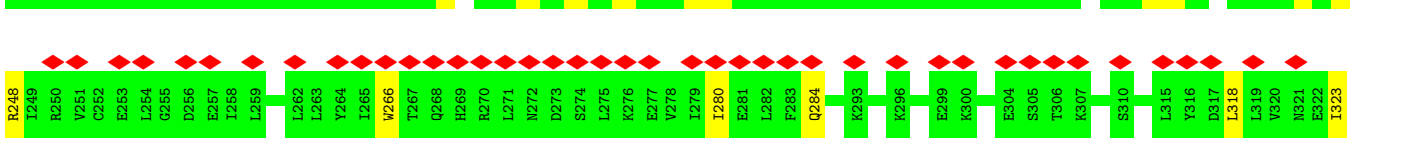


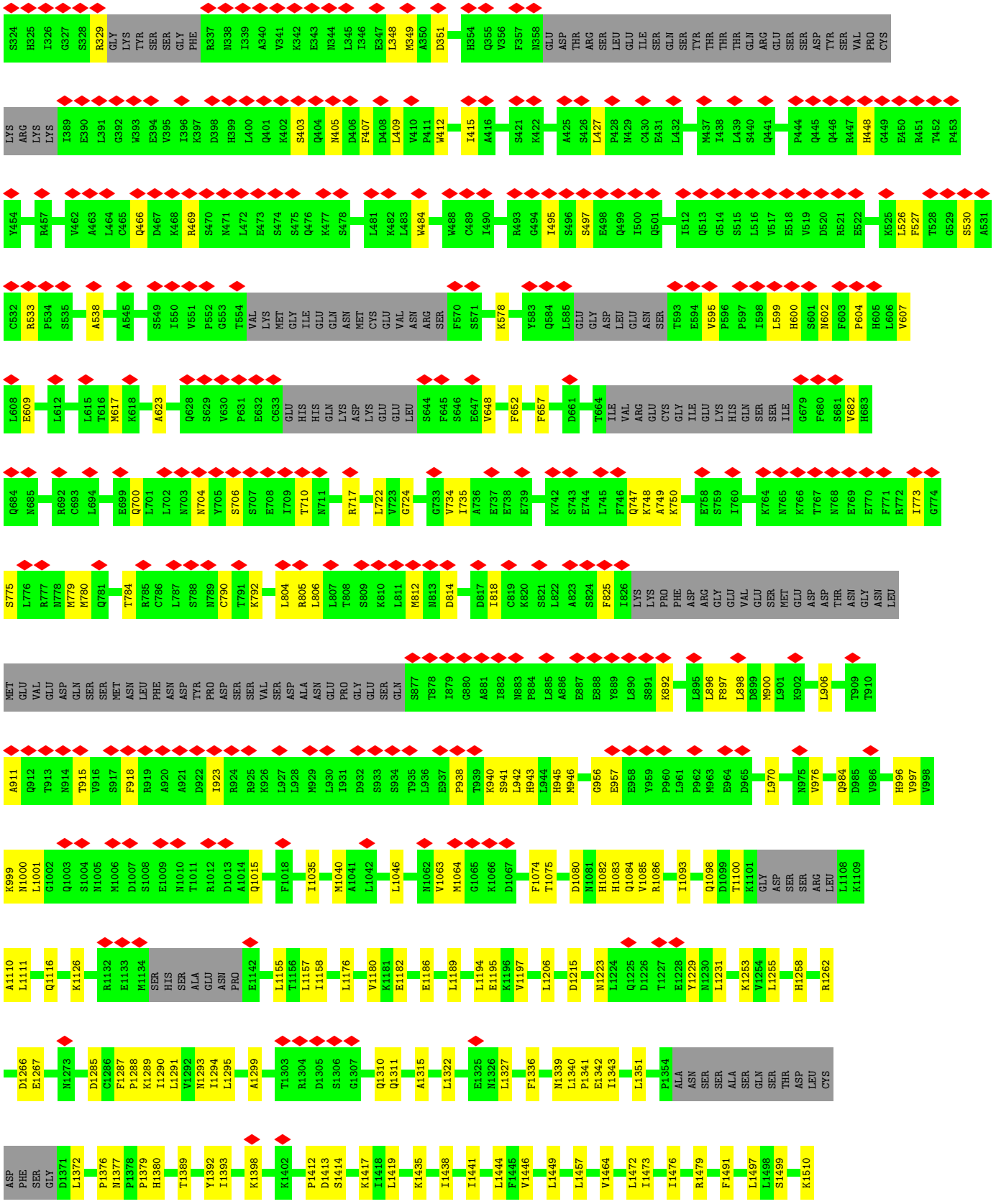








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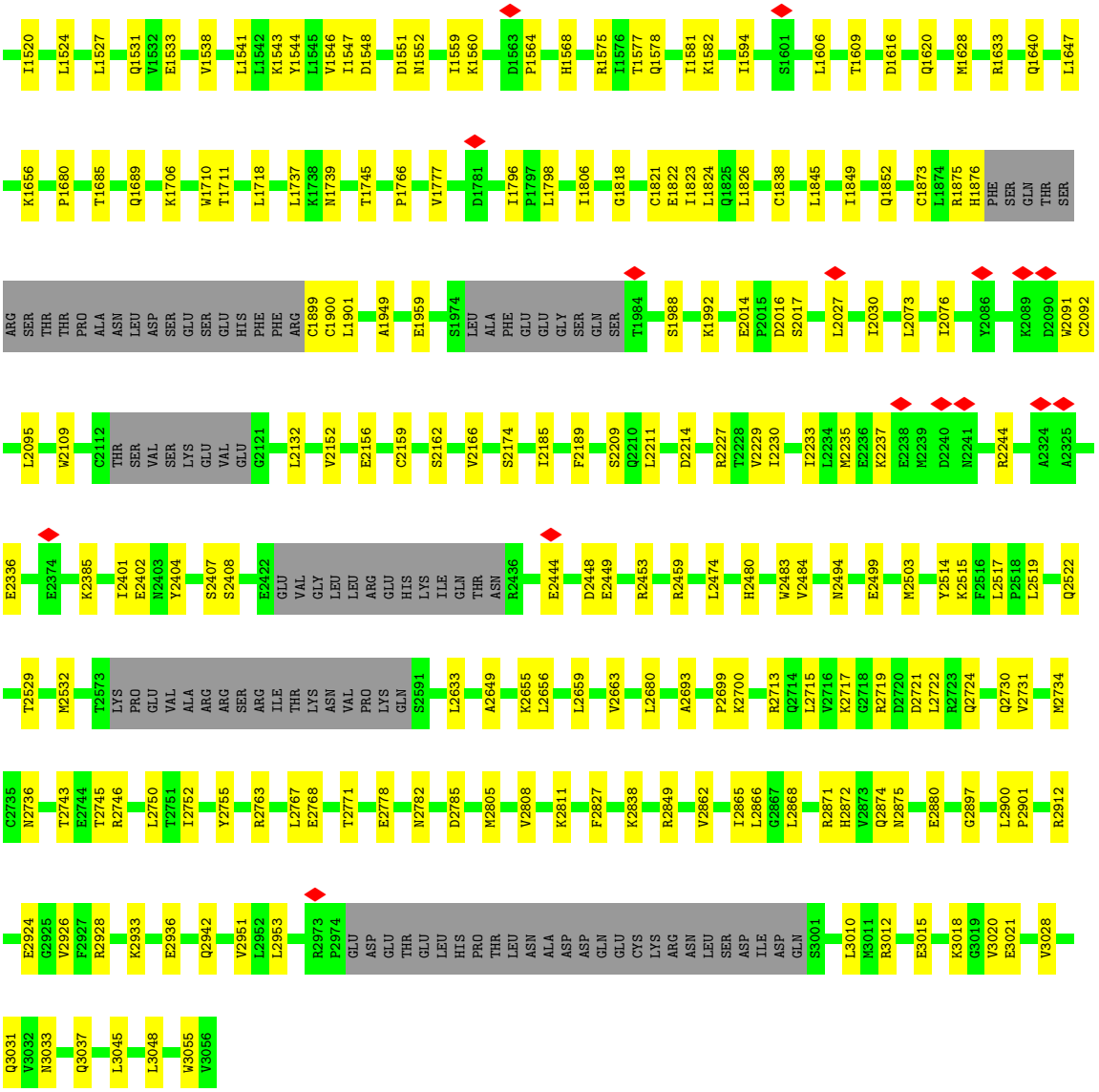
LYS ARG LYS LYS T389 E390 L391 G392 W393 E394 V395 I396 K397 D398 H399 L400 Q401 K402 S403 Q404 N405 D406 F407 D408 L409 V410 P411 W412 T415 A416 S421 K422 A425 S426 L427 P428 N429 C430 E431 L432 M437 I438 L439 S440 Q441 P444 Q445 Q446 R447 H448 G449 E450 R451 T452 P453
Y454 R457 V462 A463 L464 C465 Q466 D467 K468 R469 S470 N471 L472 E473 S474 S475 Q476 K477 S478 L481 K482 L483 W484 W488 C489 I490 R493 G494 I495 S496 S497 E498 Q499 I500 Q501 I512 Q513 G514 S515 L516 V517 E518 V519 D520 R521 E522 K525 L526 F527 T528 G529 S530 A531
C532 R533 P534 S535 A538 A545 S549 I550 V551 P552 G553 T554 VAL LYS MET GLY ILE GLU GLN ASN MET CYS GLU VAL ASN ARG SER F570 S571 K578 Y583 Q584 L585 GLU GLY ASP LEU GLU ASN SER T593 E594 V595 P596 P597 I598 L599 H600 S601 N602 F603 P604 H605 L606 V607
L608 E609 L612 L615 T616 M617 K618 A623 Q628 S629 V630 P631 E632 C633 GLU HIS HIS GLN LYS ASP LYS GLU GLU LEU S644 F645 S646 E647 V648 F652 F657 D661 T664 ILE VAL ARG GLU CYS GLY ILE GLU LYS HIS GLN SER SER ILE G679 F680 S681 V682 H683
Q684 N685 R692 C693 L694 E699 Q700 L701 L702 N703 N704 Y705 S706 S707 E708 I709 T710 N711 R717 L722 V723 G724 G733 V734 I735 A736 E737 E738 E739 K742 S743 E744 L745 F746 Q747 K748 A749 K750 E758 S759 I760 K764 N765 K766 T767 N768 E769 E770 F771 R772 I773 G774
S775 L776 R777 N778 M779 M780 Q781 T784 R785 C786 L787 S788 N789 C790 T791 K792 L804 R805 L806 L807 T808 S809 K810 L811 M812 N813 D814 D817 I818 C819 K820 S821 L822 A823 S824 F825 I826 LYS LYS PRO PHE ASP ARG GLY GLU VAL GLU SER MET GLU ASP THR ASN GLY ASN LEU
MET GLU VAL GLU ASP GLN SER SER MET ASN LEU PHE ASN ASP TYR PRO ASP SER SER VAL SER ASP ALA ASN GLU PRO GLY GLU SER GLN S877 T878 I879 G880 A881 I882 N883 P884 L885 A886 E887 E888 Y889 L890 S891 K892 L895 L896 F897 L898 D899 M900 L901 K902 L906 T909 T910
A911 Q912 T913 N914 T915 V916 S917 F918 R919 A920 A921 D922 I923 R924 R925 K926 L927 L928 M929 L930 I931 D932 S933 S934 T935 L936 E937 P938 T939 K940 S941 L942 H943 L944 H945 M946 G956 E957 E958 Y959 P960 L961 P962 M963 E964 D965 L970 N975 V976 Q984 D985 V986 H996 V997 V998
K999 N1000 L1001 G1002 Q1003 S1004 N1005 M1006 D1007 S1008 E1009 N1010 T1011 R1012 D1013 A1014 Q1015 F1018 I1035 M1040 A1041 L1042 L1046 N1062 V1063 M1064 G1065 K1066 D1067 F1074 T1075 D1080 N1081 H1082 H1083 Q1084 V1085 R1086 I1093 Q1098 D1099 T1100 K1101 GLY ASP SER ARG LEU L1108 K1109
A1110 L1111 Q1116 K1126 R1132 E1133 M1134 SER HIS SER ALA GLU ASN PRO E1142 L1155 T1156 L1157 I1158 L1176 V1180 K1181 E1182 E1186 L1189 L1194 E1195 K1196 V1197 L1206 D1215 N1223 L1224 Q1225 D1226 T1227 E1228 Y1229 N1230 L1231 K1253 V1254 L1255 H1258 R1262
D1266 E1267 N1273 D1285 C1286 F1287 P1288 K1289 I1290 I1291 V1292 N1293 I1294 L1295 A1299 T1303 R1304 D1305 S1306 G1307 Q1310 Q1311 A1315 L1322 E1325 N1326 L1327 F1336 N1339 L1340 P1341 E1342 I1343 L1351 P1354 ALA ASN SER SER ALA SER GLN SER THR ASP LEU CYS
ASP PHE SER GLY D1371 L1372 P1376 N1377 P1378 P1379 H1380 T1389 Y1392 I1393 K1398 K1402 P1412 D1413 S1414 K1417 I1418 L1419 K1435 I1438 I1441 L1444 F1445 V1446 L1449 L1457 V1464 L1472 I1473 I1476 R1479 F1491 L1497 L1498 S1499 K1510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K1656 P1680 T1685 Q1689 K1706 W1710 T1711 L1718 L1737 K1738 N1739 T1745 P1766 V1777 D1781 I1796 P1797 L1798 I1806 G1818 C1821 E1822 I1823 L1824 Q1825 L1826 C1838 L1845 I1849 Q1852 C1873 L1874 R1875 H1876 PHE SER GLN THR SER
ARG SER THR THR PRO ALA ASN LEU ASP SER GLU SER GLU HIS PHE PHE ARG C1899 C1900 L1901 A1949 E1959 S1974 LEU ALA PHE GLU GLU GLY SER GLN SER T1984 S1988 K1992 E2014 P2015 D2016 S2017 L2027 I2030 L2073 I2076 Y2086 K2089 D2090 W2091 C2092
L2095 W2109 C2112 THR SER VAL SER LYS GLU VAL GLU G2121 L2132 V2152 E2156 C2159 S2162 V2166 S2174 I2185 F2189 S2209 Q2210 L2211 D2214 R2227 T2228 V2229 I2230 I2233 L2234 M2235 E2236 K2237 E2238 M2239 D2240 N2241 R2244 A2324 A2325
E2336 E2374 K2385 I2401 E2402 N2403 Y2404 S2407 S2408 E2422 GLU VAL GLY LEU LEU ARG GLU HIS LYS ILE GLN THR ASN R2436 E2444 D2448 E2449 R2453 R2459 L2474 H2480 W2483 V2484 N2494 E2499 M2503 Y2514 K2515 F2516 L2517 P2518 L2519 Q2522
T2529 M2532 T2573 LYS PRO GLU VAL ALA ARG ARG SER ARG ILE THR LYS ASN VAL PRO LYS GLN S2591 L2633 A2649 K2655 L2656 L2659 V2663 L2680 A2693 P2699 K2700 R2713 Q2714 L2715 V2716 K2717 G2718 R2719 D2720 D2721 L2722 R2723 Q2724 Q2730 V2731 M2734
C2735 N2736 T2743 E2744 T2745 R2746 L2750 T2751 I2752 Y2755 R2763 L2767 E2768 T2771 E2778 N2782 D2785 M2805 V2808 K2811 F2827 K2838 R2849 V2862 I2865 L2866 G2867 L2868 R2871 H2872 V2873 Q2874 N2875 E2880 G2897 L2900 P2901 R2912
E2924 G2925 V2926 F2927 R2928 K2933 E2936 Q2942 V2951 L2952 L2953 R2973 P2974 GLU ASP GLU THR GLU LEU HIS PRO THR LEU ASN ALA ASP ASP GLN GLU CYS LYS ARG ASN LEU SER ASP ILE ASP GLN S3001 L3010 M3011 R3012 E3015 K3018 G3019 V3020 E3021 V3028
Q3031 V3032 N3033 Q3037 L3045 L3048 W3055 Y3056

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C2	Depositor
Number of particles used	1207435	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 ($e^-/Å^2$)	39.5	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	105000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.475	Depositor
Minimum map value	-0.192	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.015	Depositor
Recommended contour level	0.06	Depositor
Map size (Å)	330.4, 330.4, 330.4	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.826, 0.826, 0.826	Depositor

5 Model quality

5.1 Standard geometry

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

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	A	0.23	0/22611	0.44	0/30548
1	B	0.23	0/22611	0.44	0/30548
All	All	0.23	0/45222	0.44	0/61096

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	22197	0	22381	261	0
1	B	22197	0	22381	252	0
2	A	31	0	13	0	0
2	B	31	0	13	0	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
All	All	44460	0	44788	508	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 (508) 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:B:2514:TYR:HA	1:B:2517:LEU:HD23	1.65	0.78
1:A:2514:TYR:HA	1:A:2517:LEU:HD23	1.66	0.77
1:B:941:SER:O	1:B:945:HIS:ND1	2.22	0.71
1:B:940:LYS:HE2	1:B:942:LEU:HB3	1.73	0.71
1:A:1818:GLY:O	1:A:1852:GLN:NE2	2.24	0.70
1:B:1341:PRO:HG2	1:B:1417:LYS:HD2	1.73	0.70
1:B:1685:THR:HG23	1:B:2166:VAL:HG21	1.74	0.69
1:B:1739:ASN:HB3	1:B:1826:LEU:HD13	1.74	0.69
1:A:1685:THR:HG23	1:A:2166:VAL:HG21	1.75	0.68
1:A:940:LYS:HE2	1:A:942:LEU:HB3	1.75	0.68
1:B:3045:LEU:HA	1:B:3048:LEU:HD12	1.76	0.68
1:A:3045:LEU:HA	1:A:3048:LEU:HD12	1.76	0.68
1:A:1546:VAL:HG13	1:A:1559:ILE:HD11	1.75	0.68
1:B:2719:ARG:HA	1:B:2763:ARG:HE	1.58	0.67
1:A:2656:LEU:HD13	1:A:2659:LEU:HD11	1.76	0.67
1:B:1818:GLY:O	1:B:1852:GLN:NE2	2.25	0.67
1:A:349:MET:HG2	1:A:415:ILE:HG12	1.77	0.66
1:B:2649:ALA:O	1:B:2655:LYS:NZ	2.29	0.66
1:B:412:TRP:HA	1:B:415:ILE:HD12	1.78	0.66
1:B:2656:LEU:HD13	1:B:2659:LEU:HD11	1.76	0.66
1:A:412:TRP:HA	1:A:415:ILE:HD12	1.78	0.66
1:A:2136:ARG:NH1	1:A:2236:GLU:OE2	2.30	0.65
1:A:1294:ILE:HG23	1:A:1315:ALA:HB1	1.79	0.65
1:A:2649:ALA:O	1:A:2655:LYS:NZ	2.29	0.65
1:B:349:MET:HG2	1:B:415:ILE:HG12	1.77	0.65
1:A:2569:ASP:HB3	1:A:2763:ARG:HH21	1.62	0.65
1:B:2942:GLN:HE22	1:B:3018:LYS:HG3	1.62	0.64
1:B:2752:ILE:HD11	1:B:2862:VAL:HG21	1.80	0.64
1:A:2480:HIS:HB3	1:A:2483:TRP:HD1	1.63	0.64
1:B:1294:ILE:HG23	1:B:1315:ALA:HB1	1.79	0.64
1:A:722:LEU:HD22	1:A:749:ALA:HB2	1.79	0.64
1:A:1875:ARG:O	1:A:1876:HIS:ND1	2.31	0.64
1:B:722:LEU:HD22	1:B:749:ALA:HB2	1.79	0.64
1:A:280:ILE:HG23	1:A:348:LEU:HD22	1.81	0.63
1:B:2897:GLY:HA2	1:B:2900:LEU:HD23	1.79	0.63
1:B:897:PHE:HD1	1:B:900:MET:HE2	1.64	0.63
1:B:1546:VAL:HG13	1:B:1559:ILE:HD11	1.81	0.63
1:B:805:ARG:NH1	1:B:915:THR:O	2.32	0.62
1:B:2717:LYS:HD2	1:B:2722:LEU:HD21	1.79	0.62
1:B:1419:LEU:HD11	1:B:1464:VAL:HG23	1.80	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1875:ARG:O	1:B:1876:HIS:ND1	2.31	0.62
1:A:2752:ILE:HD11	1:A:2862:VAL:HG21	1.81	0.62
1:A:805:ARG:NH1	1:A:915:THR:O	2.32	0.62
1:A:2100:TYR:HE1	1:A:2111:HIS:HE1	1.48	0.62
1:B:169:SER:OG	1:B:173:ARG:NH1	2.33	0.62
1:B:329:ARG:NH2	1:B:407:PHE:O	2.33	0.62
1:A:169:SER:OG	1:A:173:ARG:NH1	2.33	0.61
1:B:2448:ASP:OD1	1:B:2449:GLU:N	2.33	0.61
1:A:1419:LEU:HD11	1:A:1464:VAL:HG23	1.81	0.61
1:B:280:ILE:HG23	1:B:348:LEU:HD22	1.81	0.61
1:B:1524:LEU:HD22	1:B:1538:VAL:HG23	1.81	0.61
1:A:2448:ASP:OD1	1:A:2449:GLU:N	2.33	0.61
1:A:1341:PRO:HG2	1:A:1417:LYS:HD2	1.82	0.61
1:A:329:ARG:NH2	1:A:407:PHE:O	2.33	0.61
1:B:1351:LEU:HB3	1:B:1441:ILE:HG22	1.83	0.61
1:B:1377:ASN:OD1	1:B:1379:PRO:HD2	2.01	0.60
1:B:1876:HIS:CE1	1:B:1900:CYS:H	2.20	0.60
1:B:825:PHE:O	1:B:940:LYS:NZ	2.34	0.60
1:B:1988:SER:OG	1:B:1992:LYS:NZ	2.34	0.60
1:B:248:ARG:HD2	1:B:652:PHE:CE1	2.37	0.59
1:B:2474:LEU:O	1:B:2515:LYS:NZ	2.35	0.59
1:A:248:ARG:HD2	1:A:652:PHE:CE1	2.37	0.59
1:A:2214:ASP:OD1	1:A:2746:ARG:NH1	2.36	0.59
1:B:617:MET:HA	1:B:682:VAL:HA	1.84	0.59
1:B:602:ASN:OD1	1:B:717:ARG:NH1	2.36	0.59
1:A:1876:HIS:CE1	1:A:1900:CYS:H	2.20	0.59
1:B:1412:PRO:HB2	1:B:1766:PRO:HA	1.85	0.58
1:A:2553:PRO:HG3	1:A:2613:ARG:NH1	2.18	0.58
1:B:205:LEU:HD12	1:B:209:PHE:HD2	1.68	0.58
1:B:1288:PRO:HA	1:B:1343:ILE:HG22	1.84	0.58
1:A:2474:LEU:O	1:A:2515:LYS:NZ	2.37	0.58
1:A:602:ASN:OD1	1:A:717:ARG:NH1	2.36	0.58
1:A:2896:GLN:HB3	1:A:2962:MET:HG2	1.84	0.58
1:B:1110:ALA:HB3	1:B:1372:LEU:HD21	1.86	0.58
1:B:1543:LYS:HG2	1:B:1547:ILE:HD12	1.85	0.58
1:B:1594:ILE:HG23	1:B:1647:LEU:HD12	1.84	0.58
1:A:205:LEU:HD12	1:A:209:PHE:HD2	1.68	0.57
1:A:1543:LYS:HG2	1:A:1547:ILE:HD12	1.86	0.57
1:B:938:PRO:HB3	1:B:976:VAL:HG22	1.86	0.57
1:B:2928:ARG:NH1	1:B:3033:ASN:OD1	2.37	0.57
1:A:1110:ALA:HB3	1:A:1372:LEU:HD21	1.86	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:2871:ARG:NH2	1:B:2875:ASN:O	2.37	0.57
1:A:2612:ARG:NH1	1:A:2613:ARG:HH21	2.03	0.57
1:B:898:LEU:HD21	1:B:945:HIS:HB3	1.86	0.57
1:A:2632:ASN:OD1	1:A:2763:ARG:NH2	2.36	0.57
1:A:941:SER:O	1:A:945:HIS:ND1	2.38	0.57
1:A:2871:ARG:NH2	1:A:2875:ASN:O	2.38	0.56
1:A:825:PHE:O	1:A:940:LYS:NZ	2.38	0.56
1:A:956:GLY:O	1:A:1000:ASN:ND2	2.30	0.56
1:A:2066:GLN:NE2	1:A:2070:ASN:OD1	2.37	0.56
1:B:956:GLY:O	1:B:1000:ASN:ND2	2.30	0.56
1:B:1223:ASN:OD1	1:B:1262:ARG:NH2	2.38	0.56
1:B:1446:VAL:HG11	1:B:1497:LEU:HD21	1.86	0.56
1:B:1499:SER:HA	1:B:1541:LEU:HD13	1.86	0.56
1:A:1098:GLN:HG3	1:A:1100:THR:HG23	1.88	0.56
1:A:773:ILE:HG21	1:A:892:LYS:HB3	1.87	0.56
1:B:609:GLU:HG2	1:B:724:GLY:HA3	1.88	0.56
1:B:957:GLU:HB2	1:B:999:LYS:HD3	1.87	0.56
1:A:609:GLU:HG2	1:A:724:GLY:HA3	1.88	0.56
1:A:617:MET:HA	1:A:682:VAL:HA	1.89	0.55
1:A:2693:ALA:HB3	1:A:2699:PRO:HG2	1.88	0.55
1:B:2827:PHE:O	1:B:2912:ARG:NH1	2.34	0.55
1:A:1351:LEU:HB3	1:A:1441:ILE:HG22	1.89	0.55
1:B:747:GLN:HA	1:B:750:LYS:HZ3	1.71	0.55
1:B:1476:ILE:O	1:B:1479:ARG:NH1	2.38	0.55
1:A:2827:PHE:O	1:A:2912:ARG:NH1	2.34	0.55
1:A:2928:ARG:NH1	1:A:3033:ASN:OD1	2.37	0.55
1:B:1438:ILE:HA	1:B:1441:ILE:HG12	1.89	0.55
1:A:1223:ASN:OD1	1:A:1262:ARG:NH2	2.40	0.55
1:B:2092:CYS:SG	1:B:2095:LEU:HD23	2.46	0.55
1:A:599:LEU:O	1:A:717:ARG:NE	2.39	0.55
1:B:747:GLN:OE1	1:B:750:LYS:NZ	2.38	0.55
1:A:747:GLN:OE1	1:A:750:LYS:NZ	2.38	0.55
1:A:1544:TYR:HA	1:A:1548:ASP:HB2	1.89	0.55
1:A:1680:PRO:O	1:A:2215:SER:OG	2.24	0.55
1:B:1098:GLN:HG3	1:B:1100:THR:HG23	1.88	0.55
1:B:2480:HIS:HB3	1:B:2483:TRP:HD1	1.72	0.55
1:A:812:MET:SD	1:A:918:PHE:HB2	2.47	0.54
1:A:127:THR:O	1:A:133:ASN:ND2	2.40	0.54
1:A:938:PRO:HB3	1:A:976:VAL:HG22	1.88	0.54
1:B:127:THR:O	1:B:133:ASN:ND2	2.40	0.54
1:B:599:LEU:O	1:B:717:ARG:NE	2.39	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:734:VAL:HG12	1:B:735:ILE:HG13	1.88	0.54
1:B:812:MET:SD	1:B:918:PHE:HB2	2.47	0.54
1:B:2808:VAL:HG23	1:B:2811:LYS:HD2	1.90	0.54
1:A:2336:GLU:OE2	1:A:2385:LYS:NZ	2.39	0.54
1:B:1568:HIS:H	1:B:1575:ARG:NH2	2.06	0.54
1:B:2693:ALA:HB3	1:B:2699:PRO:HG2	1.89	0.54
1:A:2633:LEU:HB3	1:A:2700:LYS:HE2	1.89	0.54
1:A:1472:LEU:HD21	1:A:1497:LEU:HD23	1.89	0.54
1:A:747:GLN:HA	1:A:750:LYS:HZ2	1.73	0.54
1:B:2091:TRP:CZ2	1:B:2095:LEU:HB3	2.43	0.54
1:B:2336:GLU:OE2	1:B:2385:LYS:NZ	2.41	0.54
1:A:734:VAL:HG12	1:A:735:ILE:HG13	1.89	0.54
1:B:1253:LYS:HZ2	1:B:1285:ASP:HB3	1.72	0.53
1:B:1310:GLN:HE21	1:B:1311:GLN:NE2	2.06	0.53
1:A:1310:GLN:HE21	1:A:1311:GLN:NE2	2.06	0.53
1:B:1875:ARG:HD2	1:B:1899:CYS:HB2	1.91	0.53
1:A:957:GLU:HB2	1:A:999:LYS:HD3	1.91	0.53
1:A:1568:HIS:H	1:A:1575:ARG:NH2	2.07	0.53
1:A:1231:LEU:HD11	1:A:1255:LEU:HD22	1.91	0.53
1:A:1875:ARG:HD2	1:A:1899:CYS:HB2	1.91	0.53
1:A:2203:ILE:HG22	1:A:2207:LYS:HE2	1.90	0.53
1:B:1718:LEU:HB3	1:B:1737:LEU:HD21	1.90	0.53
1:A:1082:HIS:HB3	1:A:1085:VAL:HG23	1.91	0.53
1:A:1438:ILE:HA	1:A:1441:ILE:HG12	1.90	0.53
1:A:2073:LEU:HD22	1:A:2076:ILE:HD12	1.89	0.53
1:B:2014:GLU:OE1	1:B:2017:SER:N	2.39	0.53
1:A:2612:ARG:HH12	1:A:2613:ARG:HH21	1.56	0.53
1:A:2715:LEU:HD23	1:A:2767:LEU:HD11	1.91	0.53
1:A:2868:LEU:HG	1:A:2871:ARG:HD3	1.91	0.53
1:B:98:SER:OG	1:B:140:ASP:OD2	2.26	0.53
1:B:617:MET:SD	1:B:623:ALA:HB2	2.49	0.53
1:A:98:SER:OG	1:A:140:ASP:OD2	2.26	0.53
1:A:780:MET:HG2	1:A:900:MET:HA	1.91	0.53
1:A:1560:LYS:HG3	1:A:1582:LYS:HA	1.91	0.53
1:B:2745:THR:HG22	1:B:2750:LEU:HD12	1.91	0.53
1:B:466:GLN:OE1	1:B:484:TRP:NE1	2.38	0.52
1:B:2715:LEU:HD23	1:B:2767:LEU:HD11	1.90	0.52
1:A:530:SER:HA	1:A:533:ARG:HH22	1.74	0.52
1:B:1578:GLN:HA	1:B:1581:ILE:HG22	1.91	0.52
1:A:2235:MET:O	1:A:2244:ARG:NH2	2.42	0.52
1:B:2713:ARG:HD3	1:B:2771:THR:HG22	1.90	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:2073:LEU:HD22	1:B:2076:ILE:HD12	1.91	0.52
1:A:2713:ARG:HD3	1:A:2771:THR:HG22	1.91	0.52
1:B:2633:LEU:HB3	1:B:2700:LYS:HE2	1.91	0.52
1:A:1551:ASP:OD1	1:A:1551:ASP:N	2.42	0.52
1:B:2214:ASP:OD1	1:B:2746:ARG:NH1	2.42	0.52
1:A:2838:LYS:HE2	1:A:2880:GLU:HG2	1.92	0.52
1:A:1288:PRO:HA	1:A:1343:ILE:HG22	1.92	0.52
1:A:1340:LEU:HD23	1:A:1341:PRO:HD3	1.91	0.52
1:A:1253:LYS:HZ2	1:A:1285:ASP:HB3	1.73	0.51
1:B:1547:ILE:HG12	1:B:1577:THR:HG21	1.91	0.51
1:B:2484:VAL:HG13	1:B:2519:LEU:HD21	1.92	0.51
1:B:1291:LEU:HD12	1:B:1343:ILE:HG21	1.93	0.51
1:B:1544:TYR:HA	1:B:1548:ASP:HB2	1.92	0.51
1:A:245:VAL:HG12	1:A:1083:HIS:HB3	1.92	0.51
1:B:2402:GLU:OE2	1:B:2459:ARG:NE	2.34	0.51
1:B:2185:ILE:HG13	1:B:2230:ILE:HD12	1.92	0.51
1:B:1706:LYS:HE3	1:B:1710:TRP:HE1	1.75	0.51
1:B:1215:ASP:OD1	1:B:1258:HIS:NE2	2.32	0.51
1:B:2868:LEU:HG	1:B:2871:ARG:HD3	1.93	0.51
1:A:112:ALA:H	1:A:114:ARG:NH1	2.09	0.50
1:A:1087:MET:HA	1:A:1090:ALA:HB3	1.94	0.50
1:A:2401:ILE:HG21	1:A:2459:ARG:HB2	1.92	0.50
1:A:1628:MET:HE2	1:A:2211:LEU:HD13	1.94	0.50
1:B:112:ALA:H	1:B:114:ARG:NH1	2.09	0.50
1:A:2546:SER:O	1:A:2550:MET:HG2	2.12	0.50
1:B:780:MET:HG2	1:B:900:MET:HA	1.93	0.50
1:B:1551:ASP:OD1	1:B:1551:ASP:N	2.42	0.50
1:B:1082:HIS:HB3	1:B:1085:VAL:HG23	1.94	0.50
1:B:1063:VAL:HG13	1:B:1064:MET:SD	2.52	0.50
1:B:1231:LEU:HD11	1:B:1255:LEU:HD22	1.94	0.50
1:A:466:GLN:OE1	1:A:484:TRP:NE1	2.39	0.49
1:A:1182:GLU:OE2	1:A:1229:TYR:OH	2.30	0.49
1:B:1472:LEU:HD11	1:B:1497:LEU:HD22	1.94	0.49
1:B:530:SER:HA	1:B:533:ARG:HH22	1.77	0.49
1:B:2730:GLN:O	1:B:2734:MET:HG2	2.11	0.49
1:A:1426:ALA:HB2	1:A:1438:ILE:HG21	1.95	0.49
1:A:1195:GLU:HG2	1:A:1206:LEU:HD22	1.95	0.49
1:A:1859:ARG:NE	1:A:1933:TRP:O	2.42	0.49
1:A:1706:LYS:HE3	1:A:1710:TRP:HE1	1.76	0.49
1:A:1063:VAL:HG13	1:A:1064:MET:SD	2.52	0.49
1:B:1195:GLU:HG2	1:B:1206:LEU:HD22	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1351:LEU:HD12	1:B:1444:LEU:HD22	1.94	0.49
1:B:2152:VAL:O	1:B:2156:GLU:HG3	2.13	0.49
1:B:2719:ARG:HG3	1:B:2763:ARG:HH21	1.78	0.49
1:A:192:HIS:HA	1:A:235:ALA:HB2	1.95	0.49
1:A:1680:PRO:HG3	1:A:2174:SER:HB2	1.94	0.49
1:B:773:ILE:HG21	1:B:892:LYS:HB3	1.94	0.49
1:B:1182:GLU:OE2	1:B:1229:TYR:OH	2.30	0.49
1:A:18:ASP:O	1:A:23:ARG:NH1	2.46	0.49
1:A:2014:GLU:OE1	1:A:2017:SER:N	2.44	0.49
1:B:2401:ILE:HG21	1:B:2459:ARG:HB2	1.95	0.49
1:A:1322:LEU:HA	1:A:1327:LEU:HD12	1.95	0.49
1:A:2189:PHE:CE1	1:A:2237:LYS:HD3	2.48	0.49
1:B:942:LEU:HG	1:B:946:MET:HE1	1.94	0.49
1:B:1322:LEU:HA	1:B:1327:LEU:HD12	1.95	0.49
1:B:1339:ASN:HB2	1:B:1342:GLU:OE1	2.13	0.49
1:A:94:MET:CE	1:A:137:TYR:HB2	2.43	0.48
1:A:970:LEU:HD11	1:A:997:VAL:HG11	1.95	0.48
1:A:1412:PRO:HB2	1:A:1766:PRO:HA	1.95	0.48
1:B:1949:ALA:HB1	1:B:2162:SER:HB2	1.96	0.48
1:B:2189:PHE:CE1	1:B:2237:LYS:HD3	2.48	0.48
1:A:284:GLN:NE2	1:A:351:ASP:OD2	2.45	0.48
1:A:1959:GLU:OE2	1:A:2849:ARG:NH1	2.44	0.48
1:B:94:MET:CE	1:B:137:TYR:HB2	2.43	0.48
1:A:2942:GLN:HA	1:A:3017:LEU:HD13	1.96	0.48
1:B:18:ASP:O	1:B:23:ARG:NH1	2.46	0.48
1:B:970:LEU:HD11	1:B:997:VAL:HG11	1.96	0.48
1:B:2229:VAL:O	1:B:2233:ILE:HG12	2.12	0.48
1:A:1295:LEU:HD13	1:A:1393:ILE:HD11	1.95	0.48
1:A:2722:LEU:HD13	1:A:2767:LEU:HD23	1.95	0.48
1:B:2838:LYS:HE2	1:B:2880:GLU:HG2	1.94	0.48
1:B:192:HIS:HA	1:B:235:ALA:HB2	1.95	0.48
1:A:2924:GLU:OE2	1:A:2928:ARG:NH2	2.44	0.48
1:B:1824:LEU:HD13	1:B:1845:LEU:HD23	1.96	0.48
1:B:2924:GLU:OE2	1:B:2928:ARG:NH2	2.44	0.48
1:A:3015:GLU:HB2	1:A:3020:VAL:HB	1.95	0.48
1:B:1560:LYS:HG3	1:B:1582:LYS:HA	1.95	0.48
1:A:2402:GLU:OE2	1:A:2459:ARG:NE	2.39	0.48
1:A:2721:ASP:OD2	1:A:2724:GLN:NE2	2.43	0.48
1:B:1340:LEU:HD12	1:B:1343:ILE:HD11	1.94	0.48
1:A:1087:MET:O	1:A:1091:GLU:N	2.35	0.48
1:A:2444:GLU:OE1	1:B:2901:PRO:HB3	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1376:PRO:HG2	1:B:1380:HIS:CD2	2.49	0.48
1:B:1796:ILE:HG23	1:B:1798:LEU:HD23	1.96	0.47
1:B:2778:GLU:O	1:B:2782:ASN:HB2	2.14	0.47
1:A:706:SER:N	1:A:710:THR:OG1	2.47	0.47
1:B:1295:LEU:HD13	1:B:1393:ILE:HD11	1.95	0.47
1:B:1491:PHE:HZ	1:B:1527:LEU:HD22	1.79	0.47
1:A:2745:THR:HG22	1:A:2750:LEU:HD12	1.95	0.47
1:B:1680:PRO:HG3	1:B:2174:SER:HB2	1.96	0.47
1:B:2404:TYR:O	1:B:2407:SER:OG	2.28	0.47
1:A:1215:ASP:OD1	1:A:1258:HIS:NE2	2.40	0.47
1:B:3012:ARG:NH1	1:B:3015:GLU:OE2	2.45	0.47
1:A:427:LEU:O	1:A:469:ARG:NH2	2.35	0.47
1:A:700:GLN:NE2	1:A:704:ASN:OD1	2.47	0.47
1:A:898:LEU:HD21	1:A:945:HIS:HB3	1.97	0.47
1:A:1413:ASP:OD1	1:A:1413:ASP:N	2.46	0.47
1:A:1796:ILE:HG23	1:A:1798:LEU:HD23	1.96	0.47
1:A:2352:ASN:HB3	1:B:3037:GLN:NE2	2.29	0.47
1:B:700:GLN:NE2	1:B:704:ASN:OD1	2.47	0.47
1:A:2449:GLU:OE1	1:A:2453:ARG:NH2	2.36	0.47
1:A:3021:GLU:OE2	1:A:3031:GLN:NE2	2.44	0.47
1:A:2962:MET:SD	1:A:2966:LYS:HD2	2.54	0.47
1:A:1259:LEU:HB3	1:A:1264:HIS:HB2	1.96	0.47
1:A:1640:GLN:O	1:A:1689:GLN:NE2	2.48	0.47
1:B:284:GLN:NE2	1:B:351:ASP:OD2	2.46	0.47
1:B:1473:ILE:HD11	1:B:1520:ILE:HG22	1.96	0.47
1:A:2311:ILE:HD11	1:B:2027:LEU:HD11	1.97	0.46
1:B:1821:CYS:SG	1:B:1823:ILE:HG12	2.54	0.46
1:A:1491:PHE:HZ	1:A:1527:LEU:HD22	1.80	0.46
1:A:1339:ASN:HB2	1:A:1342:GLU:OE1	2.14	0.46
1:A:2335:THR:HG21	1:A:2368:ALA:HB2	1.97	0.46
1:A:2778:GLU:O	1:A:2782:ASN:HB2	2.15	0.46
1:B:706:SER:N	1:B:710:THR:OG1	2.47	0.46
1:A:207:SER:HB2	1:A:243:LEU:HD21	1.97	0.46
1:B:1711:THR:HG22	1:B:1823:ILE:HG21	1.97	0.46
1:B:448:HIS:CE1	1:B:497:SER:HG	2.28	0.46
1:B:1413:ASP:N	1:B:1413:ASP:OD1	2.47	0.46
1:B:1640:GLN:O	1:B:1689:GLN:NE2	2.48	0.46
1:B:2936:GLU:HG3	1:B:3028:VAL:HG11	1.97	0.46
1:A:448:HIS:CE1	1:A:497:SER:HG	2.30	0.46
1:A:1499:SER:HA	1:A:1541:LEU:HD13	1.96	0.46
1:B:1457:LEU:HD22	1:B:1464:VAL:HG11	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1606:LEU:HD23	1:B:1609:THR:HG23	1.98	0.46
1:A:1451:LYS:O	1:A:1454:LYS:NZ	2.42	0.46
1:A:399:HIS:O	1:A:403:SER:OG	2.22	0.46
1:A:2209:SER:HG	1:A:2227:ARG:HH12	1.63	0.46
1:A:943:HIS:HA	1:A:946:MET:HE1	1.99	0.45
1:A:1578:GLN:HA	1:A:1581:ILE:HG22	1.97	0.45
1:A:2936:GLU:HG3	1:A:3028:VAL:HG11	1.98	0.45
1:B:1336:PHE:HZ	1:B:1393:ILE:HG23	1.80	0.45
1:B:1568:HIS:H	1:B:1575:ARG:HH22	1.64	0.45
1:B:2522:GLN:HG2	1:B:2951:VAL:HG12	1.98	0.45
1:A:2808:VAL:HG23	1:A:2811:LYS:HD2	1.98	0.45
1:A:604:PRO:HB2	1:A:607:VAL:HG21	1.97	0.45
1:B:1628:MET:HE2	1:B:2211:LEU:HD13	1.99	0.45
1:B:1656:LYS:NZ	1:B:2159:CYS:O	2.34	0.45
1:A:1949:ALA:HB1	1:A:2162:SER:HB2	1.98	0.45
1:B:172:PHE:CE2	1:B:212:PHE:HB3	2.52	0.45
1:B:1040:MET:SD	1:B:1085:VAL:HG22	2.57	0.45
1:B:1435:LYS:HA	1:B:1438:ILE:HG12	1.98	0.45
1:B:773:ILE:HG12	1:B:896:LEU:HD22	1.99	0.45
1:B:1389:THR:O	1:B:1393:ILE:HG12	2.16	0.45
1:A:1921:ARG:HA	1:A:1933:TRP:CZ2	2.51	0.45
1:B:3021:GLU:OE2	1:B:3031:GLN:NE2	2.46	0.45
1:A:172:PHE:CE2	1:A:212:PHE:HB3	2.52	0.45
1:A:1821:CYS:SG	1:A:1823:ILE:HG12	2.57	0.45
1:B:323:ILE:O	1:B:329:ARG:NH1	2.50	0.45
1:B:604:PRO:HB2	1:B:607:VAL:HG21	1.97	0.45
1:B:2755:TYR:HB2	1:B:2768:GLU:HB3	1.98	0.45
1:A:543:THR:HB	1:A:611:ILE:HD11	1.99	0.45
1:A:648:VAL:HG12	1:A:652:PHE:CE2	2.52	0.45
1:A:1568:HIS:H	1:A:1575:ARG:HH22	1.64	0.45
1:A:2459:ARG:NH2	1:A:2494:ASN:OD1	2.50	0.45
1:B:2721:ASP:OD2	1:B:2724:GLN:NE2	2.47	0.45
1:A:1291:LEU:HD12	1:A:1343:ILE:HG21	1.99	0.44
1:A:1434:LYS:O	1:A:1437:ARG:HG2	2.16	0.44
1:B:1633:ARG:HG2	1:B:1633:ARG:HH11	1.82	0.44
1:B:1745:THR:OG1	1:B:1822:GLU:OE2	2.28	0.44
1:A:1718:LEU:HB3	1:A:1737:LEU:HD21	1.99	0.44
1:A:2755:TYR:HB2	1:A:2768:GLU:HB3	1.98	0.44
1:B:207:SER:HB2	1:B:243:LEU:HD21	1.98	0.44
1:A:1336:PHE:HZ	1:A:1393:ILE:HG23	1.82	0.44
1:A:2901:PRO:HB3	1:B:2444:GLU:OE1	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:648:VAL:HG12	1:B:652:PHE:CE2	2.52	0.44
1:B:1564:PRO:HA	1:B:1578:GLN:OE1	2.17	0.44
1:B:2736:ASN:OD1	1:B:2752:ILE:N	2.45	0.44
1:A:266:TRP:CG	1:A:318:LEU:HD21	2.52	0.44
1:A:323:ILE:O	1:A:329:ARG:NH1	2.50	0.44
1:A:530:SER:O	1:A:530:SER:OG	2.33	0.44
1:B:2953:LEU:HD12	1:B:3010:LEU:HG	1.99	0.44
1:A:117:CYS:HB2	1:A:155:TYR:CD1	2.53	0.44
1:A:749:ALA:HB1	1:A:806:LEU:HD11	2.00	0.44
1:A:1745:THR:OG1	1:A:1822:GLU:OE2	2.28	0.44
1:B:266:TRP:CG	1:B:318:LEU:HD21	2.52	0.44
1:A:1476:ILE:O	1:A:1479:ARG:NH1	2.44	0.44
1:A:1717:TYR:OH	1:A:1836:ASP:OD2	2.27	0.44
1:B:495:ILE:HG21	1:B:526:LEU:HD21	1.99	0.44
1:A:1389:THR:O	1:A:1393:ILE:HG12	2.17	0.44
1:A:1176:LEU:O	1:A:1180:VAL:HG23	2.19	0.43
1:B:117:CYS:HB2	1:B:155:TYR:CD1	2.53	0.43
1:B:149:ILE:HA	1:B:155:TYR:HD2	1.83	0.43
1:B:996:HIS:O	1:B:999:LYS:HG2	2.18	0.43
1:B:1194:LEU:HA	1:B:1197:VAL:HG12	2.00	0.43
1:A:403:SER:HB2	1:A:409:LEU:HD13	2.01	0.43
1:A:775:SER:O	1:A:779:MET:HG2	2.18	0.43
1:A:1510:LYS:HG2	1:A:1552:ASN:HD21	1.81	0.43
1:B:595:VAL:HG13	1:B:600:HIS:HB2	2.00	0.43
1:B:749:ALA:HB1	1:B:806:LEU:HD11	2.00	0.43
1:B:1080:ASP:O	1:B:1086:ARG:NE	2.52	0.43
1:B:1176:LEU:O	1:B:1180:VAL:HG23	2.18	0.43
1:A:2600:GLU:OE2	1:A:2604:ARG:NH2	2.51	0.43
1:B:527:PHE:HE1	1:B:538:ALA:HB1	1.82	0.43
1:A:213:PHE:CG	1:A:236:LEU:HD13	2.53	0.43
1:A:1961:TYR:CE2	1:A:2001:LEU:HD12	2.54	0.43
1:A:1873:CYS:HA	1:A:1901:LEU:HD13	2.01	0.43
1:A:1918:ARG:HG2	1:A:2840:LEU:HD13	2.01	0.43
1:A:2092:CYS:SG	1:A:2095:LEU:HD23	2.58	0.43
1:A:3004:LYS:HD2	1:A:3008:ARG:HH21	1.83	0.43
1:A:2730:GLN:O	1:A:2734:MET:HG2	2.19	0.43
1:B:2722:LEU:HD13	1:B:2767:LEU:HD23	2.00	0.43
1:A:2872:HIS:CE1	1:A:2874:GLN:HB2	2.54	0.43
1:B:74:CYS:O	1:B:90:ARG:NH1	2.45	0.43
1:B:213:PHE:CG	1:B:236:LEU:HD13	2.53	0.43
1:B:403:SER:HB2	1:B:409:LEU:HD13	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:775:SER:O	1:B:779:MET:HG2	2.19	0.43
1:B:1873:CYS:HA	1:B:1901:LEU:HD13	2.01	0.43
1:A:996:HIS:O	1:A:999:LYS:HG2	2.18	0.43
1:B:248:ARG:HD2	1:B:652:PHE:CD1	2.54	0.43
1:B:1287:PHE:HD1	1:B:1290:ILE:HD11	1.84	0.43
1:B:2459:ARG:NH2	1:B:2494:ASN:OD1	2.51	0.43
1:B:3015:GLU:HB2	1:B:3020:VAL:HB	1.99	0.43
1:A:405:ASN:OD1	1:A:405:ASN:N	2.52	0.43
1:A:2312:LEU:HD12	1:A:2312:LEU:HA	1.88	0.43
1:B:1093:ILE:HG21	1:B:1157:LEU:HD12	2.01	0.43
1:B:2109:TRP:HH2	1:B:2132:LEU:HD13	1.84	0.43
1:B:405:ASN:OD1	1:B:405:ASN:N	2.52	0.42
1:B:1510:LYS:HG2	1:B:1552:ASN:HD21	1.83	0.42
1:B:2731:VAL:HG11	1:B:2866:LEU:HD11	2.01	0.42
1:A:1194:LEU:HA	1:A:1197:VAL:HG12	2.00	0.42
1:A:1266:ASP:OD1	1:A:1267:GLU:N	2.52	0.42
1:A:1630:ASP:OD1	1:A:1633:ARG:NH2	2.46	0.42
1:B:2942:GLN:NE2	1:B:3018:LYS:HG3	2.30	0.42
1:A:68:ILE:HD12	1:A:97:ILE:HD12	2.01	0.42
1:A:1299:ALA:HB2	1:A:1392:TYR:HB2	2.02	0.42
1:A:2107:MET:HG2	1:A:2109:TRP:CZ2	2.54	0.42
1:B:814:ASP:O	1:B:818:ILE:HG13	2.20	0.42
1:B:1531:GLN:OE1	1:B:1533:GLU:HB3	2.18	0.42
1:A:248:ARG:HD2	1:A:652:PHE:CD1	2.55	0.42
1:A:657:PHE:CZ	1:A:1155:LEU:HB3	2.54	0.42
1:A:1111:LEU:H	1:A:1116:GLN:HE21	1.67	0.42
1:A:1859:ARG:NH2	1:A:1932:PHE:O	2.45	0.42
1:A:1922:PRO:HD3	1:A:1933:TRP:CH2	2.55	0.42
1:A:2717:LYS:HD3	1:A:2722:LEU:HD21	2.01	0.42
1:B:748:LYS:HA	1:B:748:LYS:HD3	1.88	0.42
1:B:1398:LYS:H	1:B:1398:LYS:HG2	1.69	0.42
1:B:2872:HIS:CE1	1:B:2874:GLN:HB2	2.54	0.42
1:B:2529:THR:O	1:B:2532:MET:HG2	2.20	0.42
1:A:804:LEU:HD13	1:A:911:ALA:HA	2.01	0.42
1:A:1350:THR:HB	1:A:1380:HIS:HA	2.00	0.42
1:A:2006:LEU:O	1:A:2010:ARG:HG3	2.19	0.42
1:A:2933:LYS:HA	1:A:2933:LYS:HD3	1.85	0.42
1:B:62:ARG:HA	1:B:65:GLN:HB2	2.01	0.42
1:B:68:ILE:HD12	1:B:97:ILE:HD12	2.01	0.42
1:A:595:VAL:HG13	1:A:600:HIS:HB2	2.01	0.42
1:A:814:ASP:O	1:A:818:ILE:HG13	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1127:ALA:O	1:A:1131:MET:HG2	2.20	0.42
1:A:2010:ARG:HG2	1:A:2018:LEU:HD11	2.02	0.42
1:B:657:PHE:CZ	1:B:1155:LEU:HB3	2.54	0.42
1:B:1777:VAL:HG21	1:B:1822:GLU:HB2	2.02	0.42
1:A:618:LYS:HG2	1:A:683:HIS:CD2	2.55	0.42
1:A:1989:LEU:HD22	1:A:2001:LEU:HD13	2.02	0.42
1:A:2723:ARG:O	1:A:2727:VAL:HG23	2.19	0.42
1:B:1449:LEU:HD22	1:B:1457:LEU:HD21	2.01	0.42
1:B:2209:SER:HG	1:B:2227:ARG:HH12	1.64	0.42
1:B:2235:MET:O	1:B:2244:ARG:NH2	2.53	0.42
1:A:149:ILE:HA	1:A:155:TYR:HD2	1.83	0.42
1:A:495:ILE:HG21	1:A:526:LEU:HD21	2.00	0.42
1:A:1093:ILE:HG21	1:A:1157:LEU:HD12	2.01	0.42
1:A:2517:LEU:N	1:A:2518:PRO:HD2	2.35	0.42
1:A:2909:ARG:HG3	1:A:3052:TRP:CZ2	2.55	0.42
1:B:1959:GLU:OE2	1:B:2849:ARG:NH1	2.44	0.42
1:A:1531:GLN:OE1	1:A:1533:GLU:HB3	2.20	0.41
1:A:1606:LEU:HD23	1:A:1609:THR:HG23	2.02	0.41
1:A:1777:VAL:HG21	1:A:1822:GLU:HB2	2.02	0.41
1:A:2016:ASP:HB3	1:A:2926:VAL:HA	2.02	0.41
1:B:2663:VAL:HG21	1:B:2680:LEU:HD13	2.02	0.41
1:B:2865:ILE:HD13	1:B:2865:ILE:HA	1.92	0.41
1:B:2933:LYS:HA	1:B:2933:LYS:HD3	1.85	0.41
1:A:984:GLN:HB3	1:A:1035:ILE:HG12	2.02	0.41
1:A:1046:LEU:HD22	1:A:1074:PHE:HD1	1.84	0.41
1:A:1289:LYS:O	1:A:1293:ASN:ND2	2.52	0.41
1:A:1524:LEU:HD23	1:A:1527:LEU:HD12	2.02	0.41
1:A:3001:SER:HB3	1:A:3004:LYS:HG2	2.01	0.41
1:B:245:VAL:HG12	1:B:1083:HIS:HB3	2.02	0.41
1:B:1299:ALA:HB2	1:B:1392:TYR:HB2	2.01	0.41
1:B:1449:LEU:HD23	1:B:1449:LEU:HA	1.91	0.41
1:A:250:ARG:HA	1:A:250:ARG:HD2	1.84	0.41
1:A:2807:GLU:O	1:A:2811:LYS:NZ	2.53	0.41
1:A:3008:ARG:HH12	1:B:2408:SER:CB	2.33	0.41
1:B:940:LYS:HD3	1:B:943:HIS:CD2	2.55	0.41
1:B:2743:THR:HG22	1:B:2746:ARG:HH12	1.85	0.41
1:A:62:ARG:HA	1:A:65:GLN:HB2	2.02	0.41
1:A:1001:LEU:HD21	1:A:1015:GLN:HA	2.01	0.41
1:A:1287:PHE:HD1	1:A:1290:ILE:HD11	1.85	0.41
1:A:1962:ALA:HB2	1:A:2001:LEU:HD11	2.01	0.41
1:B:790:CYS:SG	1:B:792:LYS:HG2	2.60	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1046:LEU:HD22	1:B:1074:PHE:HD1	1.85	0.41
1:B:2449:GLU:OE1	1:B:2453:ARG:NH2	2.38	0.41
1:B:2499:GLU:O	1:B:2503:MET:HG3	2.21	0.41
1:A:790:CYS:SG	1:A:792:LYS:HG2	2.60	0.41
1:A:2877:LEU:HB2	1:A:2886:VAL:HB	2.03	0.41
1:A:74:CYS:O	1:A:90:ARG:NH1	2.45	0.41
1:A:121:LEU:O	1:A:125:MET:HG2	2.20	0.41
1:A:784:THR:HG23	1:A:906:LEU:HD12	2.03	0.41
1:A:1040:MET:SD	1:A:1085:VAL:HG22	2.60	0.41
1:A:1715:LEU:HD22	1:A:1737:LEU:HD13	2.02	0.41
1:A:1961:TYR:CD2	1:A:2001:LEU:HD12	2.55	0.41
1:A:2782:ASN:ND2	1:A:2785:ASP:OD1	2.54	0.41
1:B:427:LEU:O	1:B:469:ARG:NH2	2.34	0.41
1:B:804:LEU:HD13	1:B:911:ALA:HA	2.02	0.41
1:B:1289:LYS:O	1:B:1293:ASN:ND2	2.52	0.41
1:A:409:LEU:HD23	1:A:451:ARG:HD3	2.03	0.41
1:A:1449:LEU:HD23	1:A:1449:LEU:HA	1.90	0.41
1:B:784:THR:HG23	1:B:906:LEU:HD12	2.03	0.41
1:B:984:GLN:HB3	1:B:1035:ILE:HG12	2.02	0.41
1:A:1620:GLN:O	1:A:1624:HIS:HB2	2.21	0.41
1:B:1075:THR:O	1:B:1126:LYS:HG2	2.20	0.41
1:B:1158:ILE:HG21	1:B:1176:LEU:HB2	2.03	0.41
1:B:1186:GLU:HB2	1:B:1189:LEU:HB2	2.02	0.41
1:B:2805:MET:HG3	1:B:3055:TRP:CZ3	2.56	0.41
1:B:812:MET:HB2	1:B:923:ILE:HD11	2.03	0.41
1:B:1111:LEU:H	1:B:1116:GLN:HE21	1.67	0.41
1:B:2016:ASP:HB3	1:B:2926:VAL:HA	2.02	0.41
1:B:2030:ILE:HD12	1:B:2030:ILE:H	1.86	0.41
1:A:102:LYS:HZ1	1:A:106:LYS:HD3	1.85	0.41
1:A:1824:LEU:HD13	1:A:1845:LEU:HD23	2.02	0.41
1:A:2805:MET:O	1:A:2809:GLN:HG2	2.21	0.41
1:B:1001:LEU:HD21	1:B:1015:GLN:HA	2.01	0.41
1:A:152:VAL:HG12	1:A:154:LYS:H	1.86	0.40
1:A:897:PHE:HA	1:A:900:MET:SD	2.61	0.40
1:A:923:ILE:O	1:A:927:LEU:HG	2.20	0.40
1:A:1186:GLU:HB2	1:A:1189:LEU:HB2	2.03	0.40
1:B:152:VAL:HG12	1:B:154:LYS:H	1.86	0.40
1:B:1706:LYS:HE3	1:B:1710:TRP:NE1	2.36	0.40
1:A:743:SER:O	1:A:747:GLN:HG2	2.22	0.40
1:A:812:MET:HB2	1:A:923:ILE:HD11	2.04	0.40
1:A:1939:LEU:HD23	1:A:1997:THR:HG21	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:942:LEU:HG	1:B:946:MET:CE	2.51	0.40
1:B:1266:ASP:OD1	1:B:1267:GLU:N	2.54	0.40
1:B:1845:LEU:O	1:B:1849:ILE:HG12	2.21	0.40
1:A:190:ILE:O	1:A:194:VAL:HG23	2.22	0.40
1:A:753:MET:O	1:A:757:GLY:N	2.55	0.40
1:A:1291:LEU:O	1:A:1295:LEU:HB2	2.22	0.40
1:B:2782:ASN:ND2	1:B:2785:ASP:OD1	2.54	0.40
1:A:1616:ASP:O	1:A:1620:GLN:HG2	2.21	0.40
1:A:2030:ILE:H	1:A:2030:ILE:HD12	1.87	0.40
1:A:2049:TYR:CZ	1:A:2063:GLY:HA3	2.56	0.40
1:A:2049:TYR:HB3	1:A:2064:ILE:HG13	2.04	0.40
1:B:121:LEU:O	1:B:125:MET:HG2	2.21	0.40
1:B:1082:HIS:HD2	1:B:1084:GLN:HB3	1.86	0.40
1:B:1341:PRO:HG3	1:B:1414:SER:HB2	2.03	0.40
1:B:1472:LEU:HD11	1:B:1497:LEU:CD2	2.51	0.40
1:B:1616:ASP:O	1:B:1620:GLN:HG2	2.21	0.40
1:B:1806:ILE:HG13	1:B:1838:CYS:HB3	2.04	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	2734/3184 (86%)	2684 (98%)	50 (2%)	0	100	100
1	B	2734/3184 (86%)	2687 (98%)	47 (2%)	0	100	100
All	All	5468/6368 (86%)	5371 (98%)	97 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	2467/2883 (86%)	2466 (100%)	1 (0%)	100 100
1	B	2467/2883 (86%)	2465 (100%)	2 (0%)	93 98
All	All	4934/5766 (86%)	4931 (100%)	3 (0%)	93 98

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	66	LYS
1	B	66	LYS
1	B	578	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1310	GLN
1	A	1578	GLN
1	A	2066	GLN
1	A	2111	HIS
1	A	2714	GLN
1	A	3014	GLN
1	B	1310	GLN
1	B	2942	GLN
1	B	3014	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 monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 6 ligands modelled in this entry, 4 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	$\#\|Z\| > 2$
2	ANP	B	3101	-	29,33,33	1.09	4 (13%)	31,52,52	1.10	2 (6%)
2	ANP	A	3101	-	29,33,33	1.09	4 (13%)	31,52,52	1.12	2 (6%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	ANP	B	3101	-	-	1/14/38/38	0/3/3/3
2	ANP	A	3101	-	-	1/14/38/38	0/3/3/3

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	3101	ANP	PG-O1G	2.46	1.50	1.46
2	B	3101	ANP	PG-O1G	2.45	1.50	1.46
2	A	3101	ANP	PG-N3B	2.43	1.69	1.63
2	B	3101	ANP	PG-N3B	2.43	1.69	1.63
2	B	3101	ANP	PB-O1B	2.33	1.49	1.46
2	A	3101	ANP	PB-O1B	2.33	1.49	1.46
2	B	3101	ANP	PB-O3A	-2.27	1.56	1.59
2	A	3101	ANP	PB-O3A	-2.27	1.56	1.59

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	3101	ANP	PB-O3A-PA	-3.76	119.37	132.62
2	A	3101	ANP	PB-O3A-PA	-3.73	119.48	132.62
2	A	3101	ANP	C5-C6-N6	2.41	124.01	120.35
2	B	3101	ANP	C5-C6-N6	2.28	123.82	120.35

There are no chirality outliers.

All (2) torsion outliers are listed below:

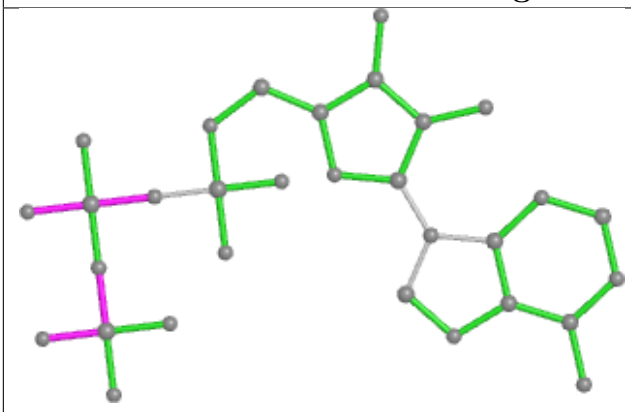
Mol	Chain	Res	Type	Atoms
2	A	3101	ANP	C4'-C5'-O5'-PA
2	B	3101	ANP	C4'-C5'-O5'-PA

There are no ring outliers.

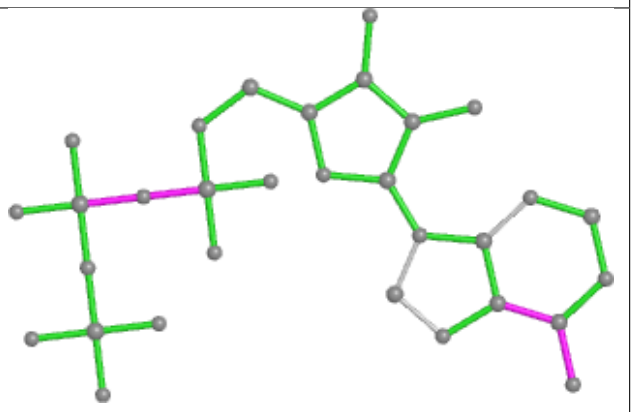
No monomer is involved in short contacts.

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

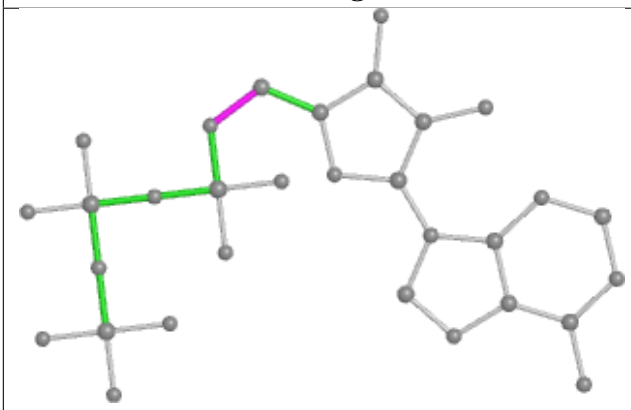
Ligand ANP B 3101



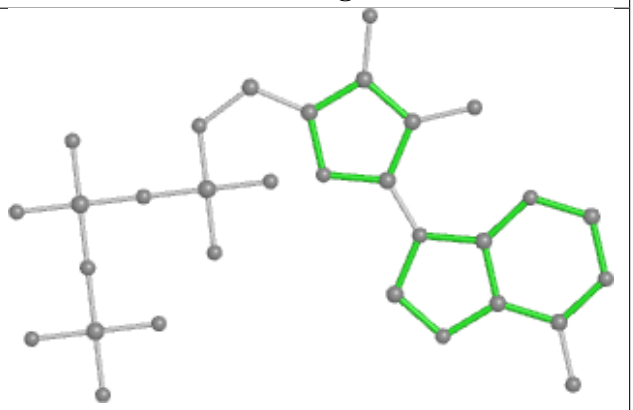
Bond lengths



Bond angles

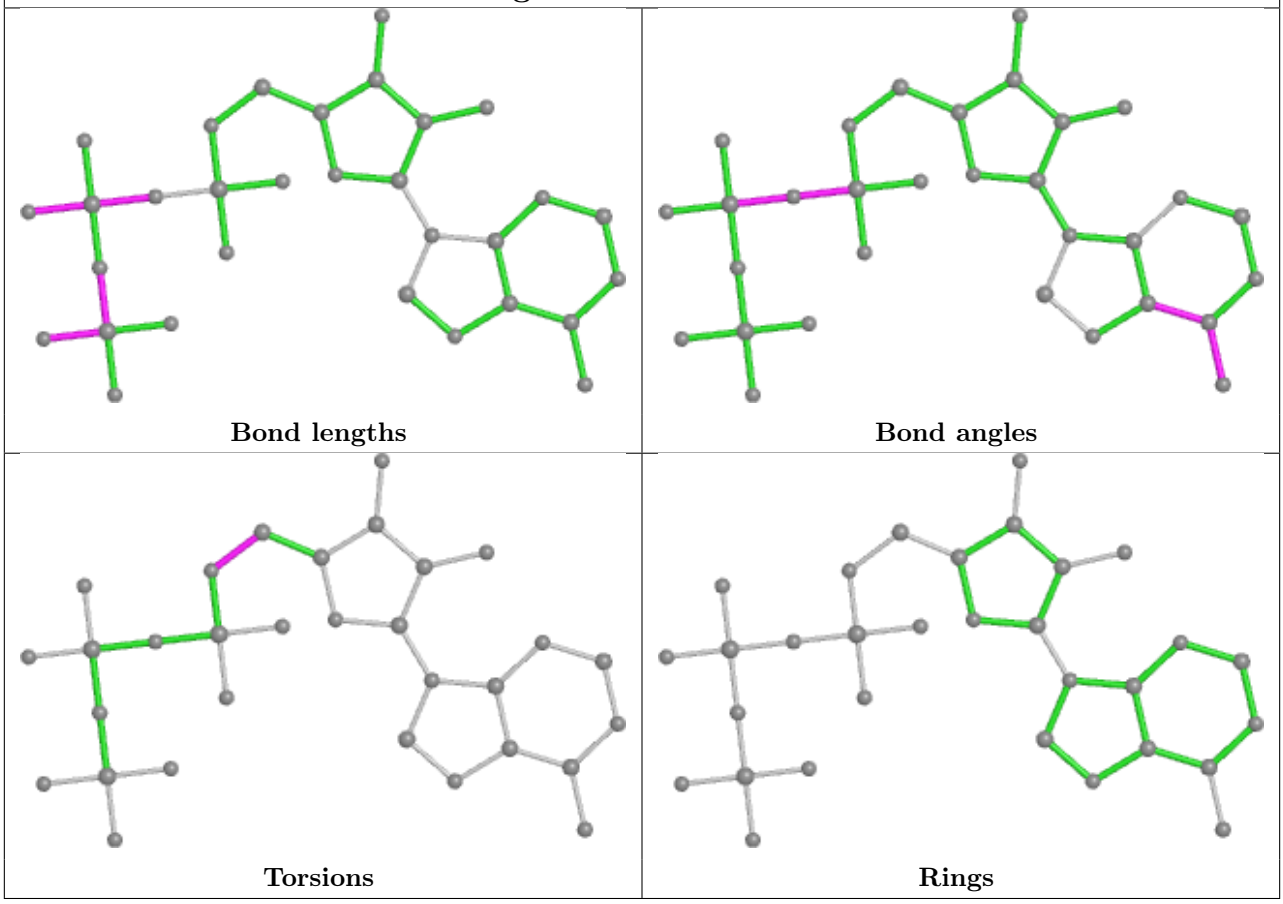


Torsions



Rings

Ligand ANP A 3101



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.

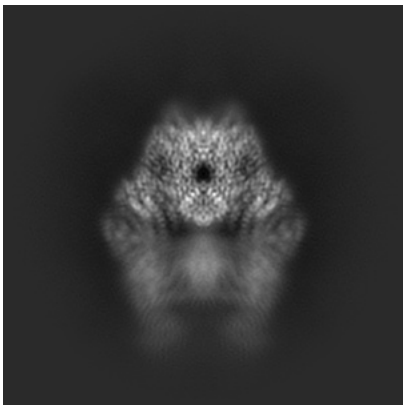
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-17267. These allow visual inspection of the internal detail of the map and identification of artifacts.

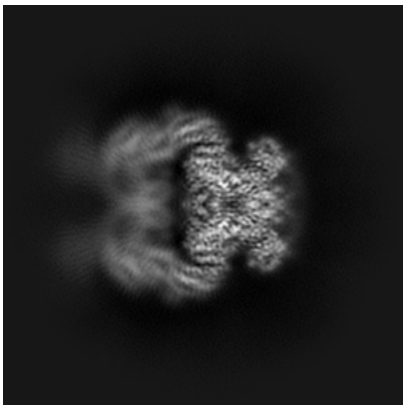
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

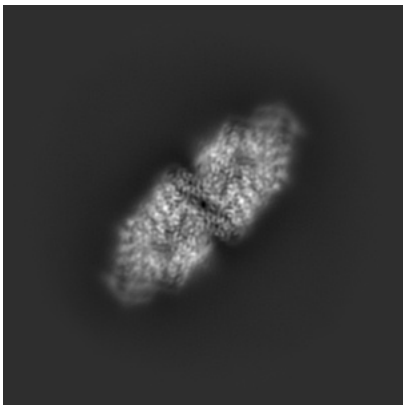
6.1.1 Primary map



X

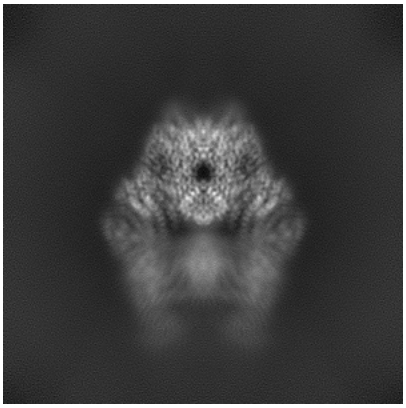


Y

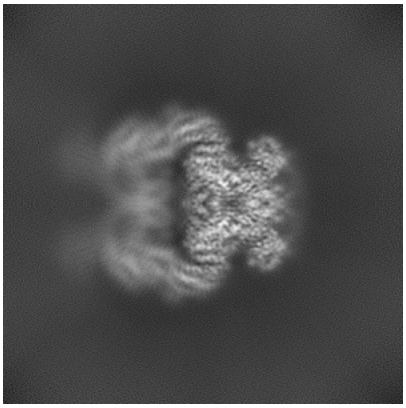


Z

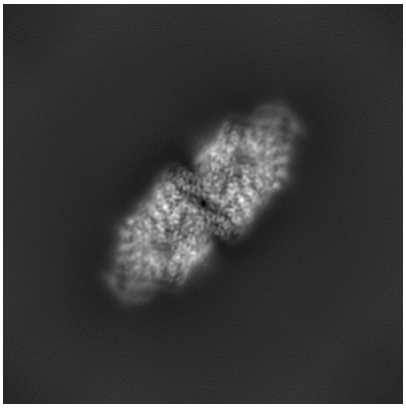
6.1.2 Raw map



X



Y

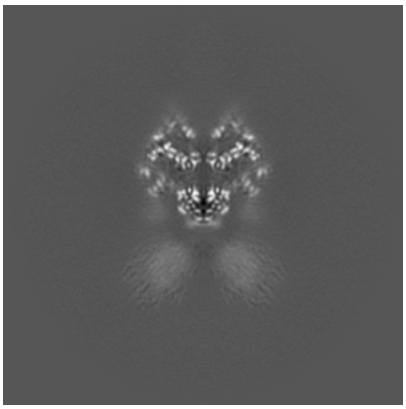


Z

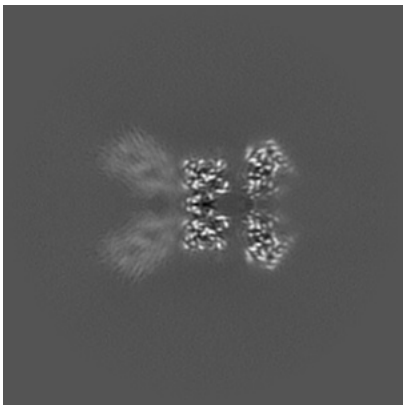
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

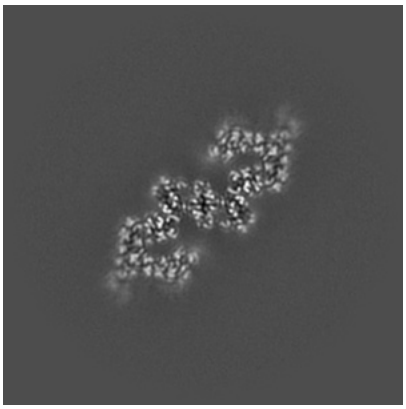
6.2.1 Primary map



X Index: 200

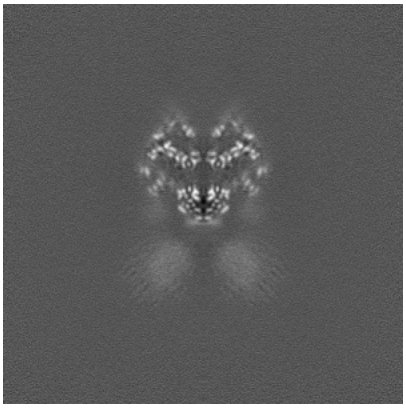


Y Index: 200

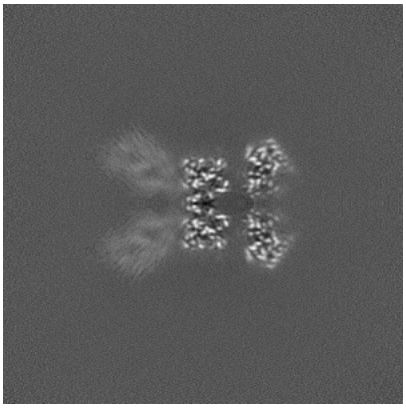


Z Index: 200

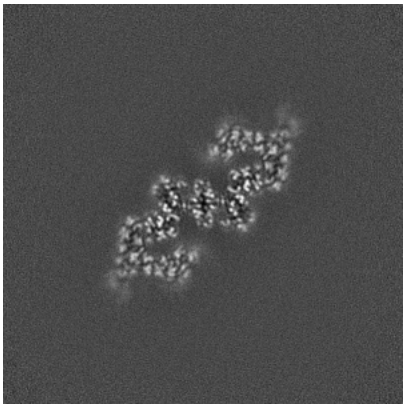
6.2.2 Raw map



X Index: 200



Y Index: 200

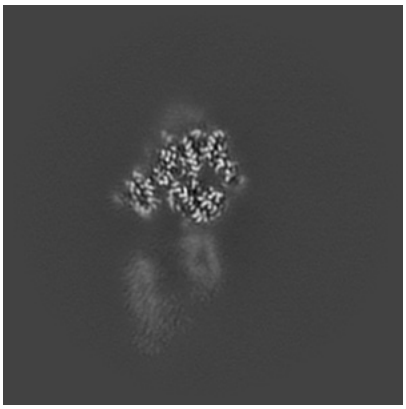


Z Index: 200

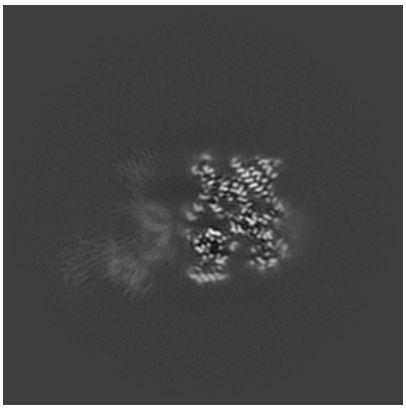
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

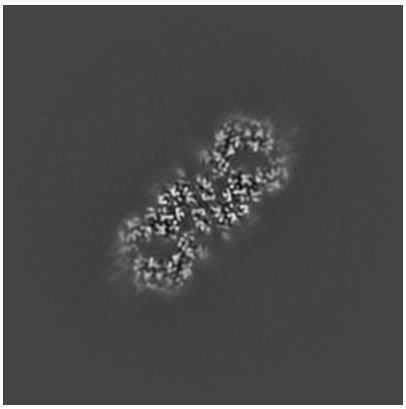
6.3.1 Primary map



X Index: 171

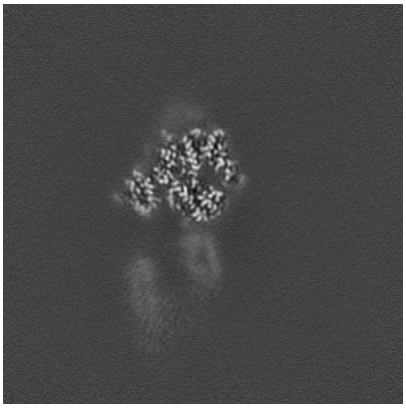


Y Index: 182

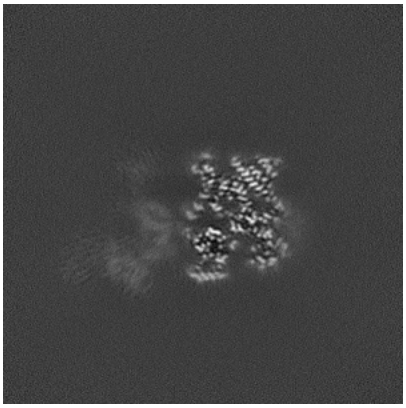


Z Index: 211

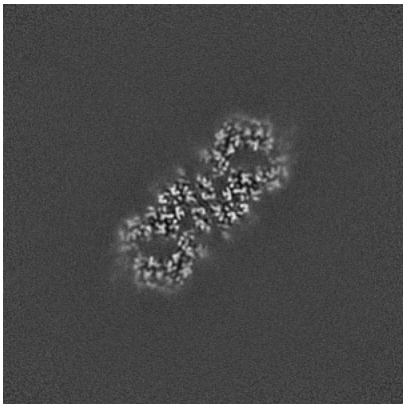
6.3.2 Raw map



X Index: 171



Y Index: 182

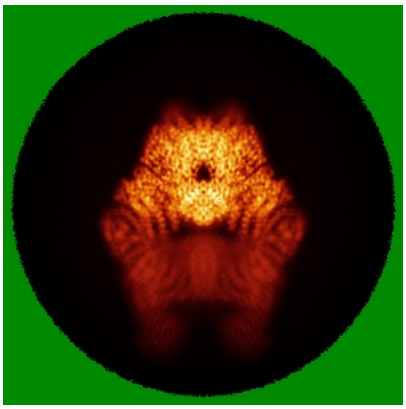


Z Index: 211

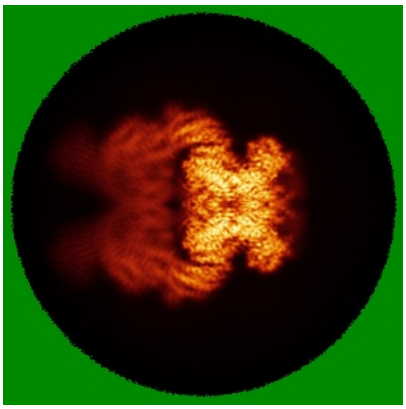
The images above show the largest variance slices of the map in three orthogonal directions.

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

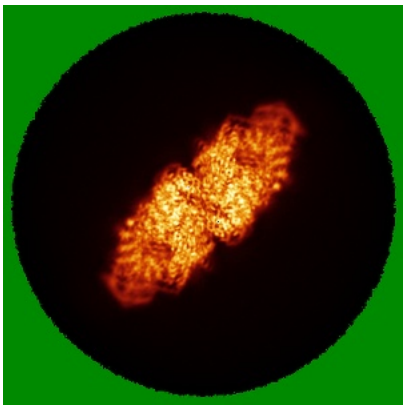
6.4.1 Primary map



X

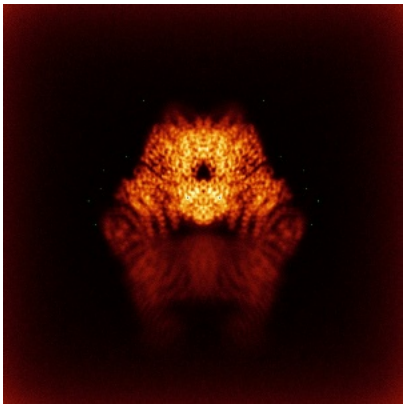


Y

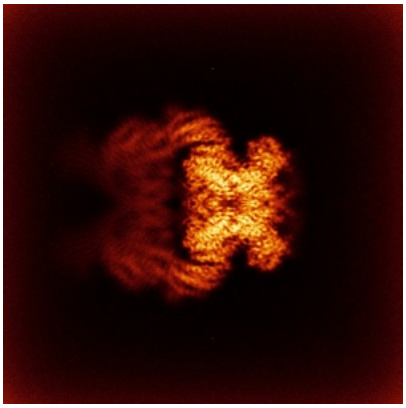


Z

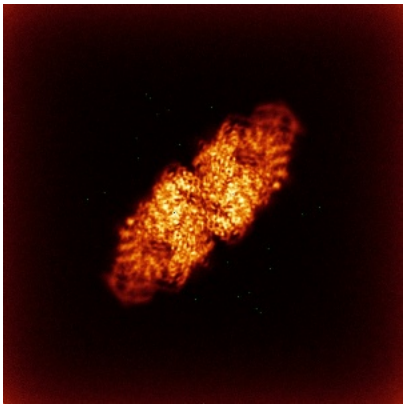
6.4.2 Raw map



X



Y



Z

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

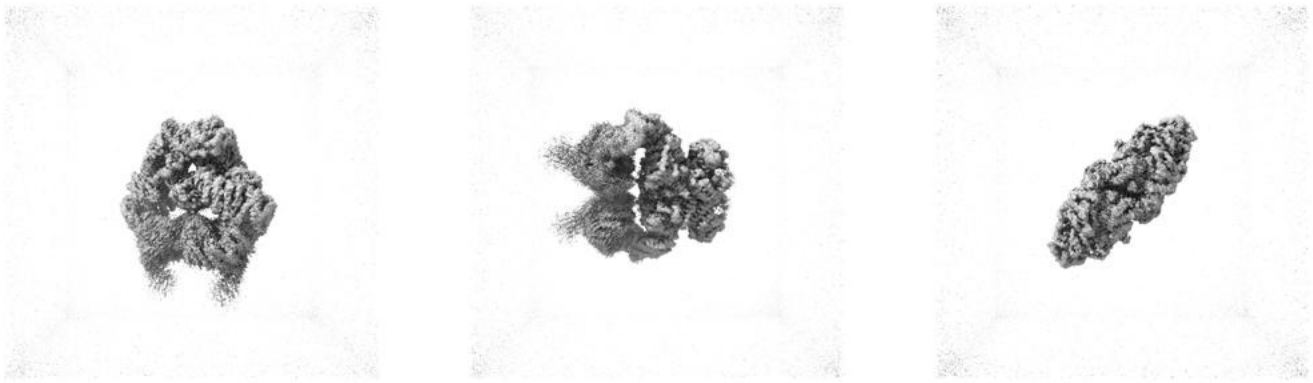
6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.06. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

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

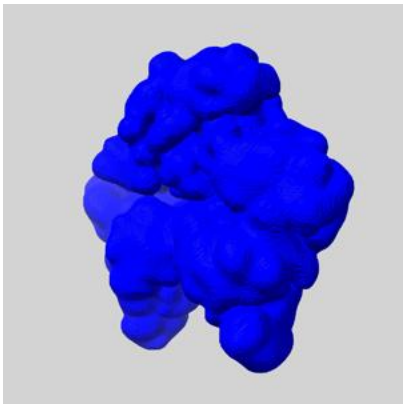
6.6 Mask visualisation

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

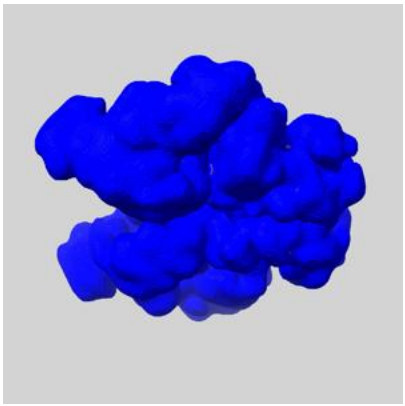
A mask typically either:

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

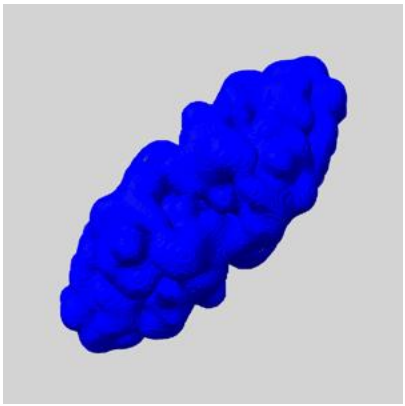
6.6.1 emd_17267_msk_1.map



X



Y

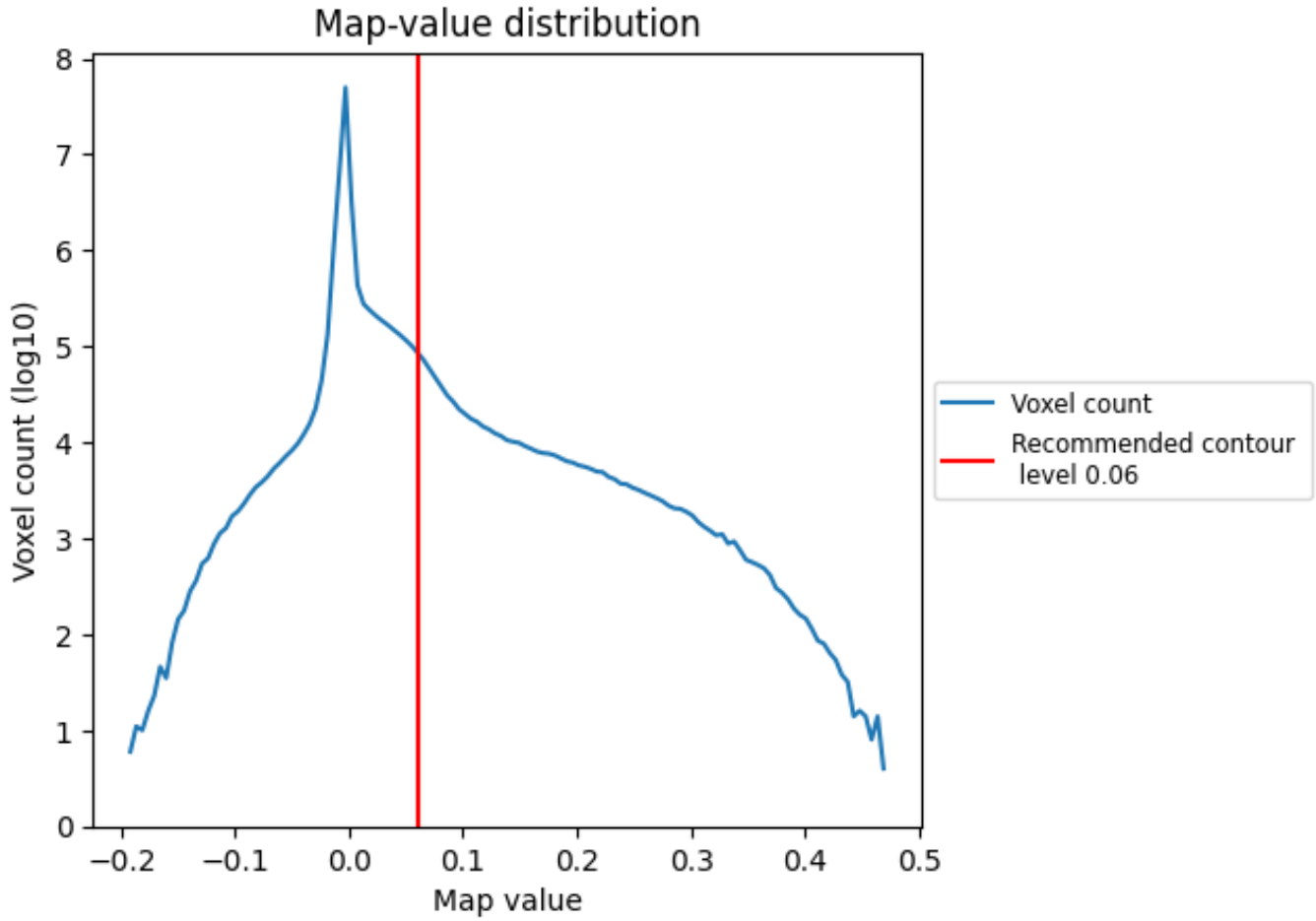


Z

7 Map analysis

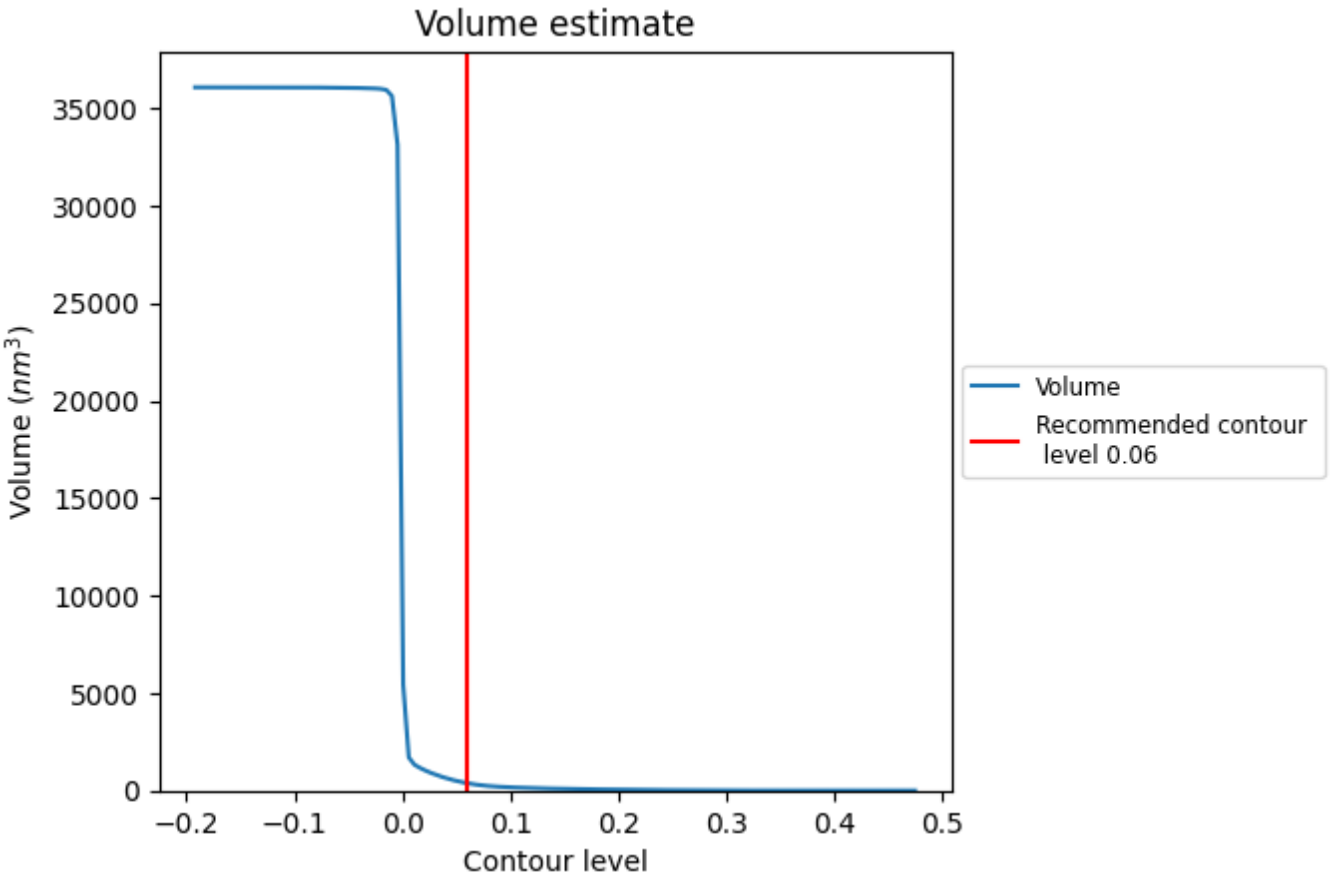
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

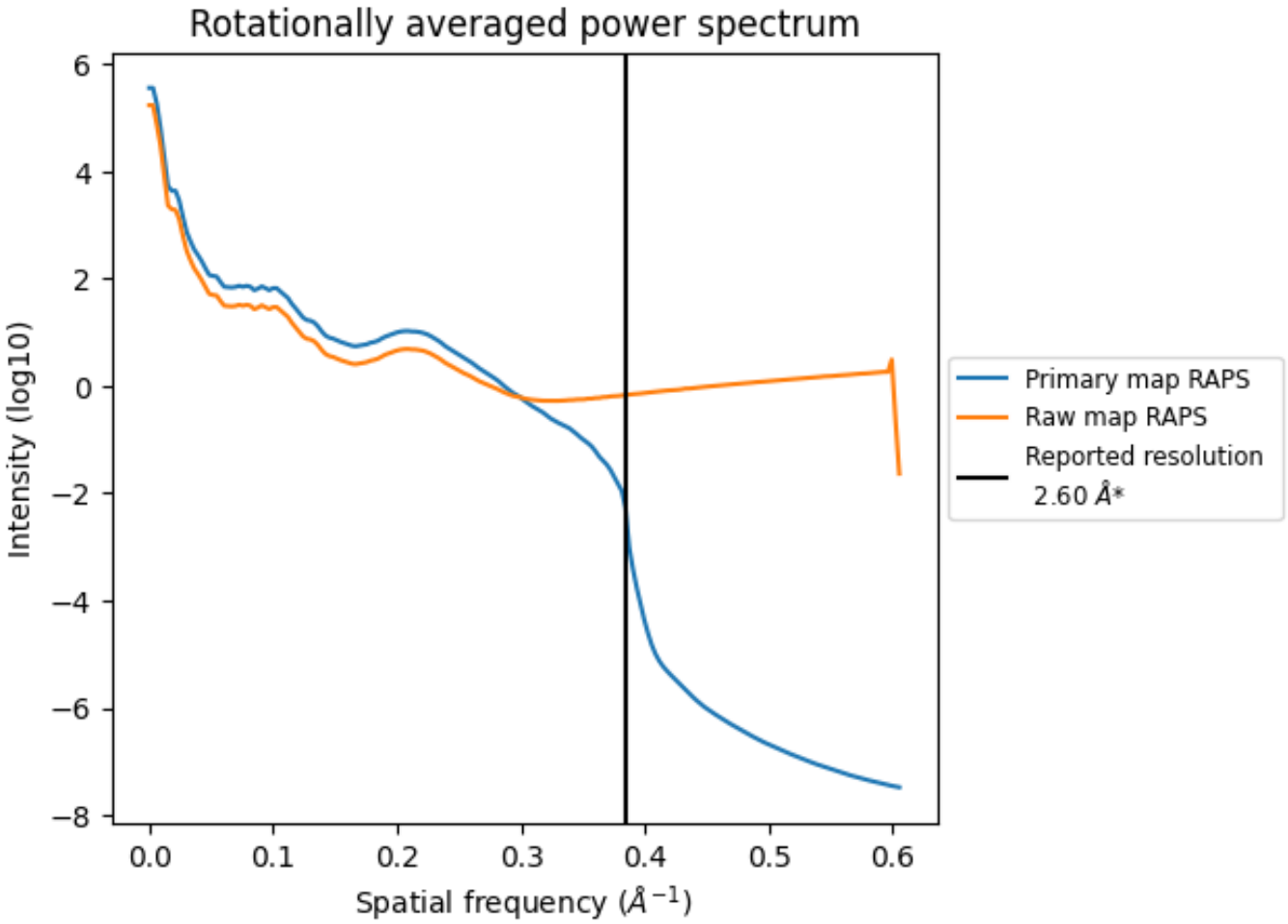
7.2 Volume estimate



The volume at the recommended contour level is 378 nm^3; this corresponds to an approximate mass of 342 kDa.

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

7.3 Rotationally averaged power spectrum (i)

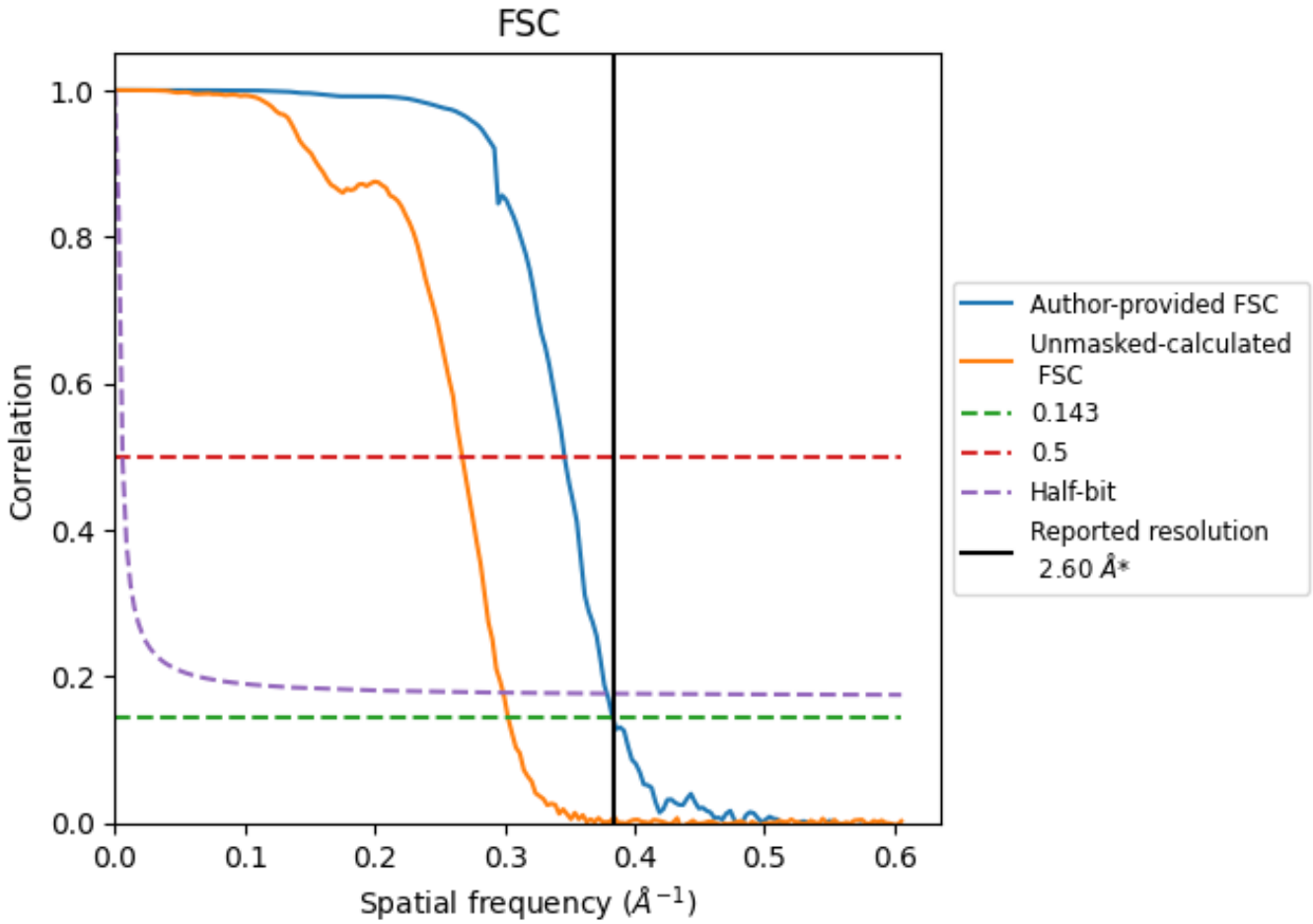


*Reported resolution corresponds to spatial frequency of 0.385 $Å^{-1}$

8 Fourier-Shell correlation

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.385 Å^{-1}

8.2 Resolution estimates (i)

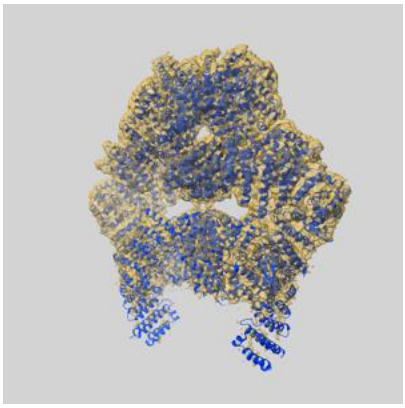
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.60	-	-
Author-provided FSC curve	2.61	2.89	2.64
Unmasked-calculated*	3.30	3.74	3.35

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.30 differs from the reported value 2.6 by more than 10 %

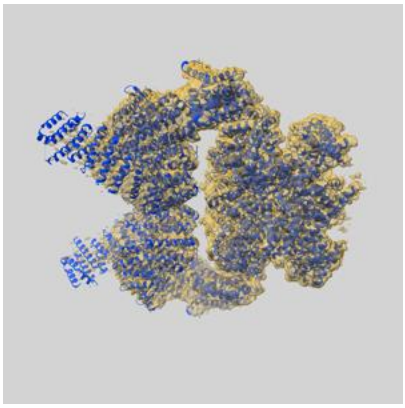
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-17267 and PDB model 8OXP. Per-residue inclusion information can be found in section 3 on page 11.

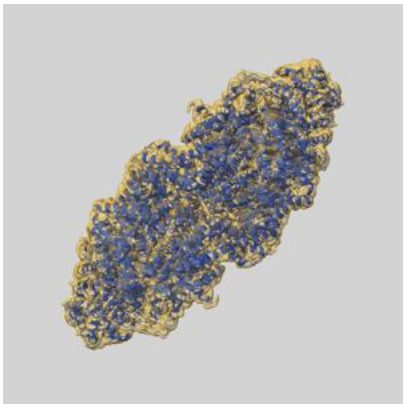
9.1 Map-model overlay



X



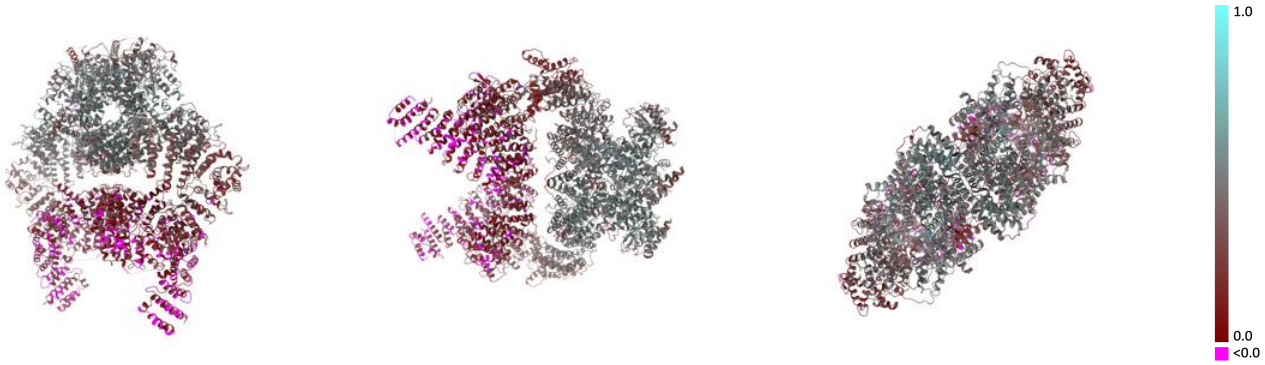
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.06 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.

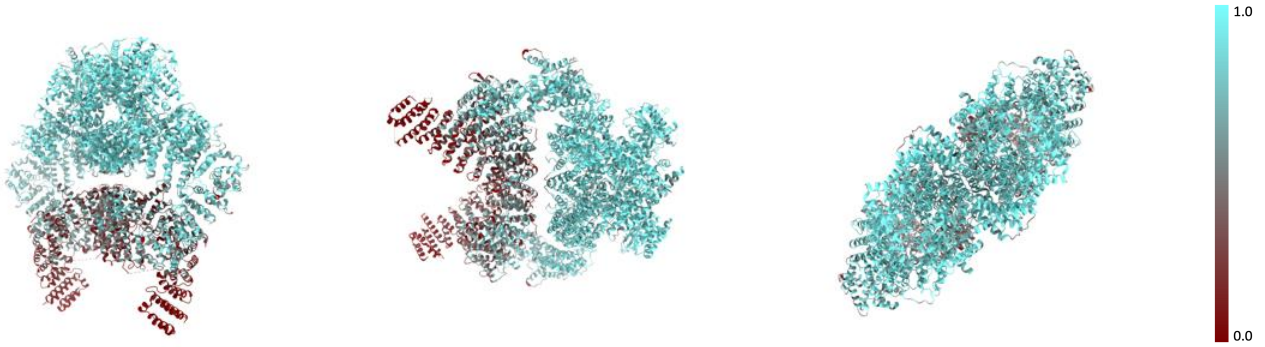
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

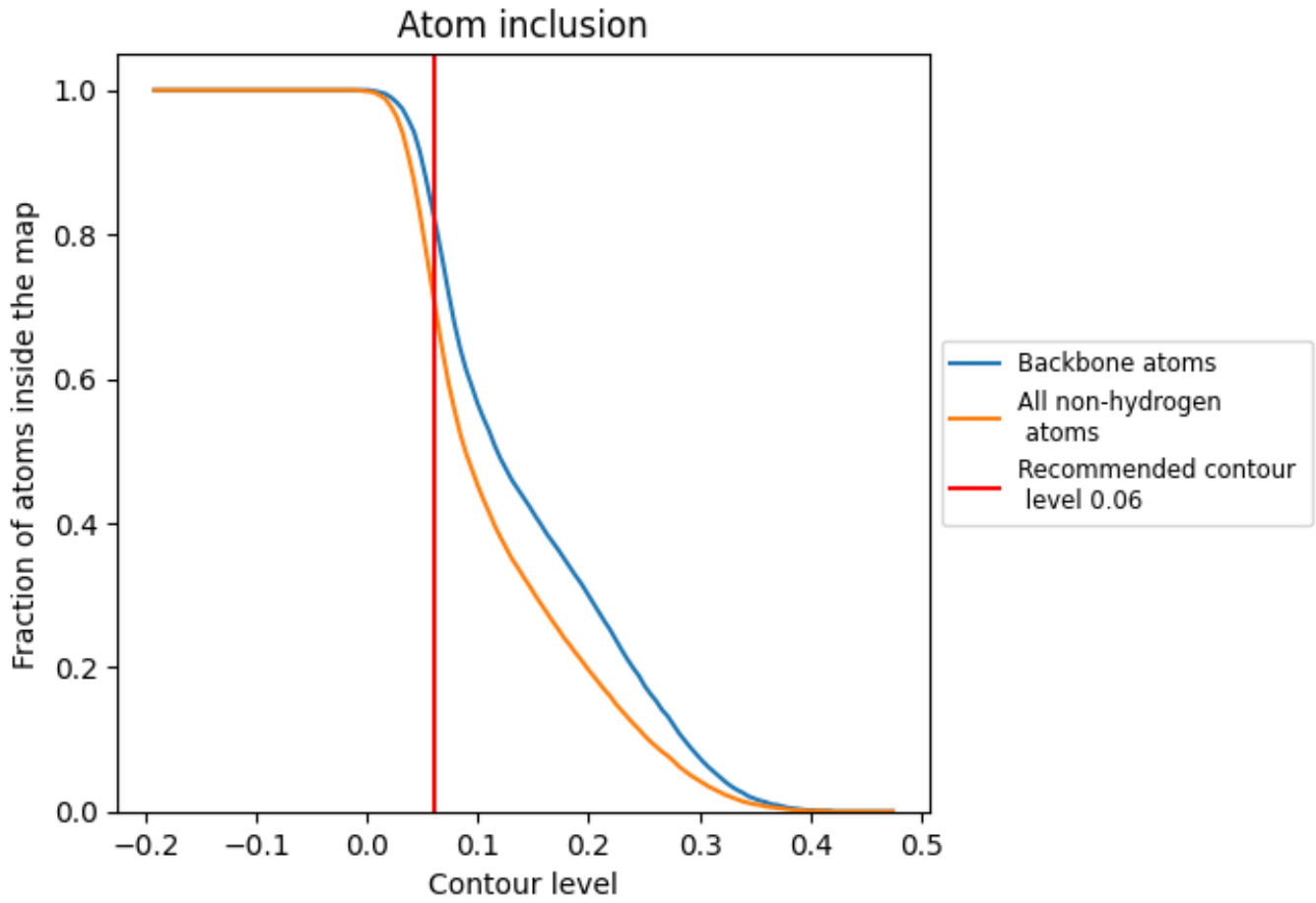
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.06).

9.4 Atom inclusion (i)



At the recommended contour level, 83% of all backbone atoms, 71% 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 (0.06) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7110	0.3200
A	0.7140	0.3250
B	0.7090	0.3140