



## Full wwPDB EM Validation Report ⓘ

Mar 7, 2026 – 05:34 AM UTC

PDB ID : 8DD0 / pdb\_00008dd0  
EMDB ID : EMD-27331  
Title : The structure of the native cardiac thin filament junction region  
Authors : Galkin, V.E.; Risi, C.M.  
Deposited on : 2022-06-17  
Resolution : 3.50 Å(reported)  
Based on initial model : 7KO4

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto: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>.

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The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

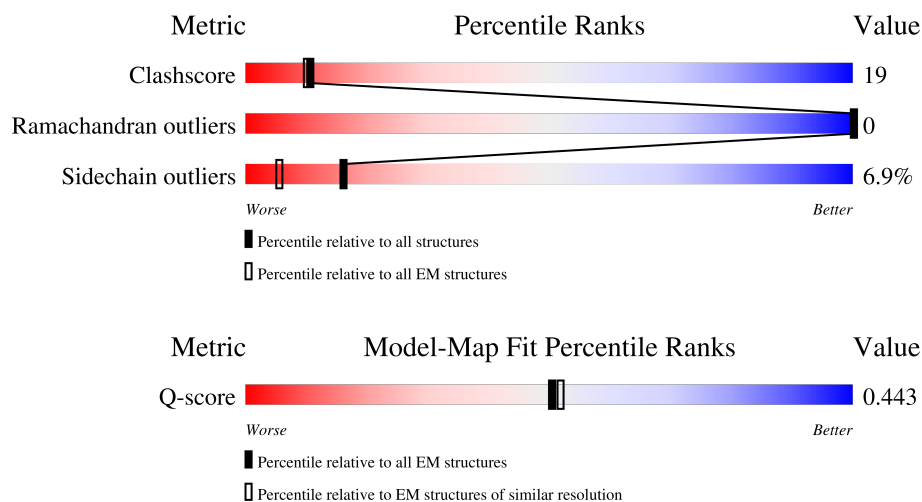
EMDB validation analysis : 0.0.1.dev132  
Mogul : 2022.3.0, CSD as543be (2022)  
MolProbity : 4-5-2 with Phenix2.0  
Buster-report : wwPDB partial adaption of 1.1.7 (2018)  
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)  
EM percentile statistics : 202505.v01 (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) : 2.49

# 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 3.50 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	13950 ( 3.00 - 4.00 )

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  $\geq 3$ , 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	377	
1	B	377	
1	C	377	
1	D	377	

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Mol	Chain	Length	Quality of chain
1	E	377	 79% 17% . .
1	F	377	 80% 15% . .
2	G	284	 12% 7% . 81%
2	H	284	 11% 7% . 81%
2	I	284	 14% 10% 75%
2	J	284	 16% 8% 75%
2	L	284	 10% 8% . 81%
2	M	284	 10% 9% . 81%
2	N	284	 16% 8% 75%
2	O	284	 17% 7% 75%
3	K	295	 13% 11% . 75%
3	P	295	 10% 12% . 75%

## 2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 22892 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 Actin, alpha cardiac muscle 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	371	Total	C	N	O	S	0	0
			2898	1836	489	553	20		
1	B	371	Total	C	N	O	S	0	0
			2898	1836	489	553	20		
1	C	371	Total	C	N	O	S	0	0
			2898	1836	489	553	20		
1	D	371	Total	C	N	O	S	0	0
			2898	1836	489	553	20		
1	E	371	Total	C	N	O	S	0	0
			2898	1836	489	553	20		
1	F	371	Total	C	N	O	S	0	0
			2898	1836	489	553	20		

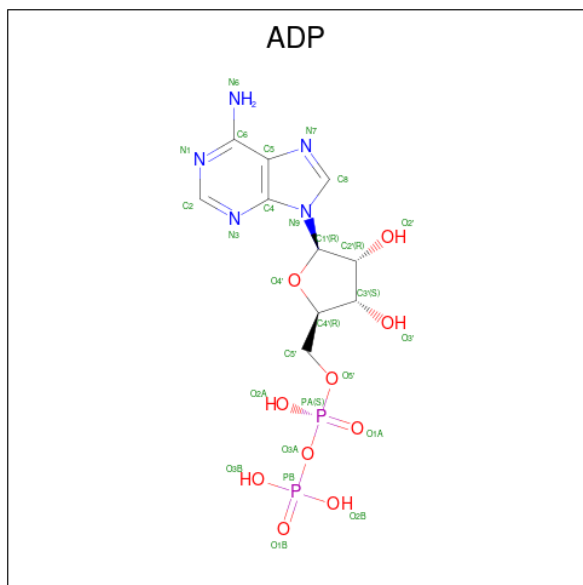
- Molecule 2 is a protein called Tropomyosin alpha-1 chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	G	55	Total	C	N	O	S	0	0
			447	277	72	97	1		
2	H	55	Total	C	N	O	S	0	0
			447	277	72	97	1		
2	I	70	Total	C	N	O	S	0	0
			562	343	98	118	3		
2	J	70	Total	C	N	O	S	0	0
			562	343	98	118	3		
2	L	55	Total	C	N	O	S	0	0
			447	277	72	97	1		
2	M	55	Total	C	N	O	S	0	0
			447	277	72	97	1		
2	N	70	Total	C	N	O	S	0	0
			562	343	98	118	3		
2	O	70	Total	C	N	O	S	0	0
			562	343	98	118	3		

- Molecule 3 is a protein called Troponin T2, cardiac type.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	K	75	Total	C	N	O	S	0	0
			650	394	132	123	1		
3	P	75	Total	C	N	O	S	0	0
			650	394	132	123	1		

- Molecule 4 is ADENOSINE-5'-DIPHOSPHATE (CCD ID: ADP) (formula:  $C_{10}H_{15}N_5O_{10}P_2$ ).



Mol	Chain	Residues	Atoms					AltConf
4	A	1	Total	C	N	O	P	0
			27	10	5	10	2	
4	B	1	Total	C	N	O	P	0
			27	10	5	10	2	
4	C	1	Total	C	N	O	P	0
			27	10	5	10	2	
4	D	1	Total	C	N	O	P	0
			27	10	5	10	2	
4	E	1	Total	C	N	O	P	0
			27	10	5	10	2	
4	F	1	Total	C	N	O	P	0
			27	10	5	10	2	

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

Mol	Chain	Residues	Atoms		AltConf
5	A	1	Total	Mg	0
			1	1	
5	B	1	Total	Mg	0
			1	1	

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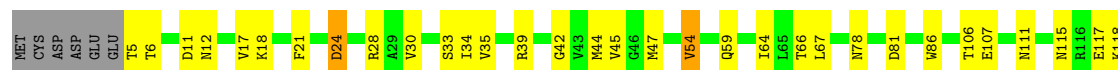
Mol	Chain	Residues	Atoms		AltConf
5	C	1	Total 1	Mg 1	0
5	D	1	Total 1	Mg 1	0
5	E	1	Total 1	Mg 1	0
5	F	1	Total 1	Mg 1	0





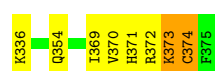
- Molecule 1: Actin, alpha cardiac muscle 1

Chain D: 78% 18% . .



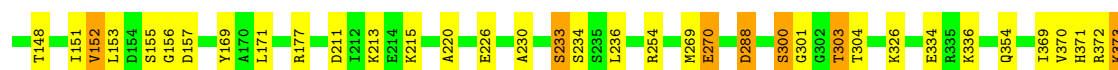
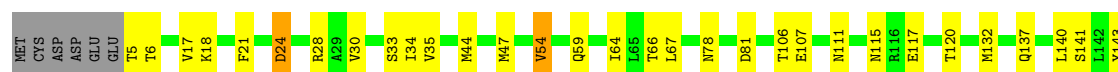
- Molecule 1: Actin, alpha cardiac muscle 1

Chain E: 79% 17% . .



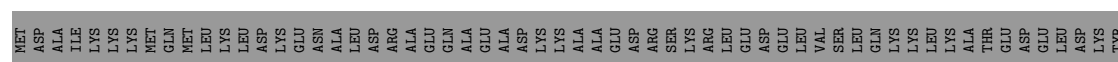
- Molecule 1: Actin, alpha cardiac muscle 1

Chain F: 80% 15% . .

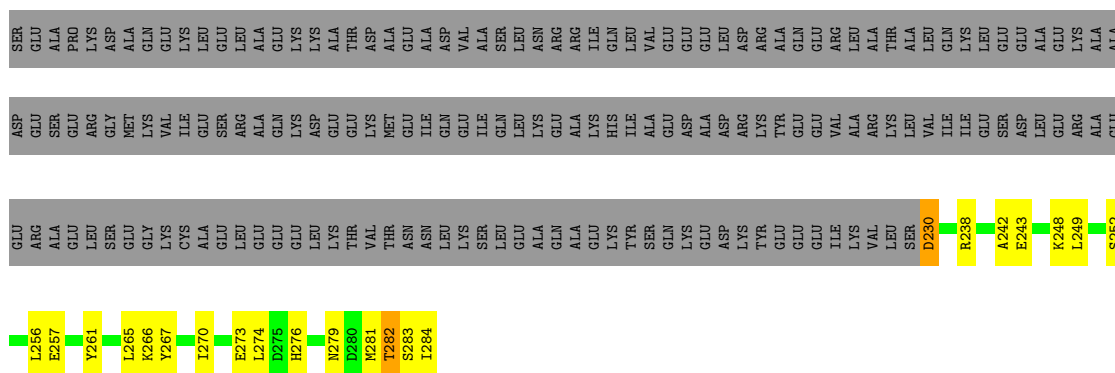


- Molecule 2: Tropomyosin alpha-1 chain

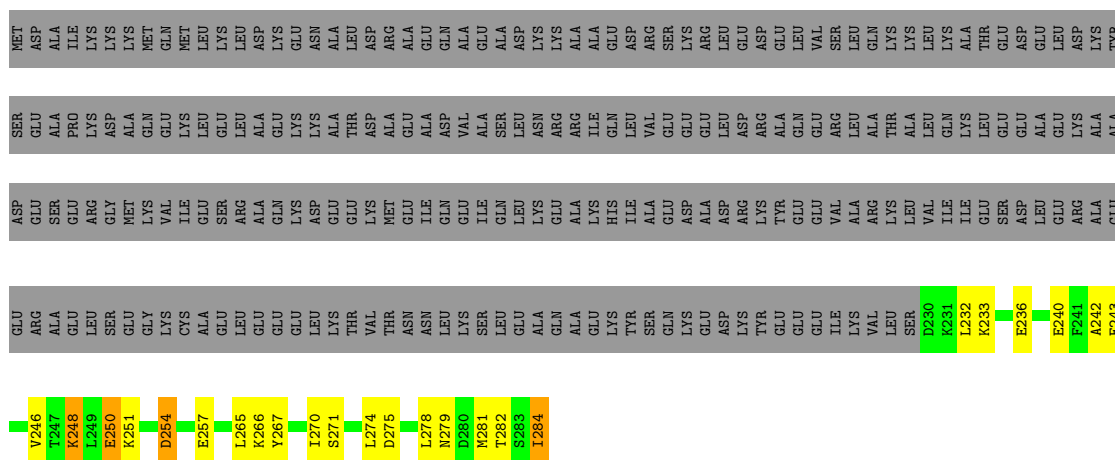
Chain G: 12% 7% . 81%



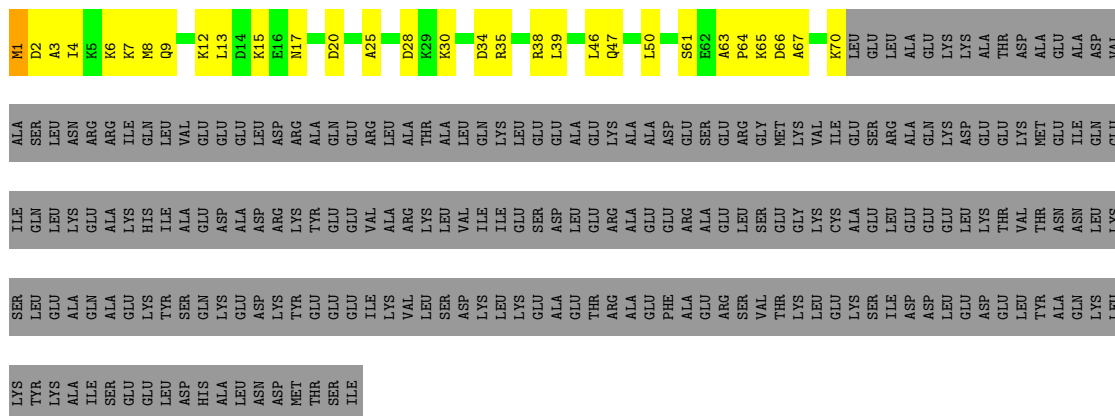




- Molecule 2: Tropomyosin alpha-1 chain



- Molecule 2: Tropomyosin alpha-1 chain



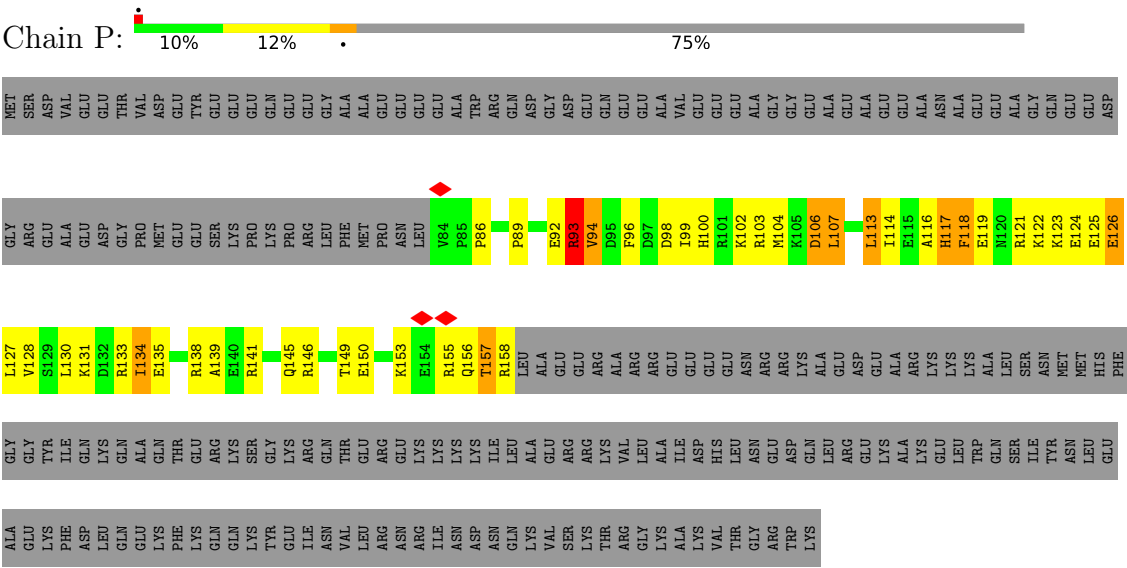
- Molecule 2: Tropomyosin alpha-1 chain





M1	D2	A3	I4	K7	M8	Q9	L13	D14	K15	E16	N17	D20	A25	D28	K29	K30	L43	L46	Q47	L50	K51	S61	A63	P64	K65	D66	K70	LEU	GLU	GLU	LEU	ALA	GLU	GLN	LYS	LYS	LYS	THR	ASP	ALA	GLU	GLN	LYS	ASN	ARG		
ILE	GLN	LEU	VAL	GLU	GLU	GLU	ASP	ARG	ALA	GLN	GLU	ARG	LEU	ALA	THR	ALA	LEU	GLN	LYS	LEU	GLU	GLU	ASP	GLU	SER	GLY	MET	LYS	ILE	GLU	SER	GLU	ARG	ALA	GLN	LYS	LYS	LYS	THR	LYS	MET	GLU	ILE	GLN	LYS	GLU	ALA
LYS	HIS	ILE	ALA	GLU	ASP	ALA	ARG	LYS	TYR	GLU	VAL	ALA	LYS	ILE	GLU	SER	ASP	LEU	ARG	ALA	GLU	GLU	ARG	LEU	GLU	SER	GLU	GLY	CYS	ALA	GLU	GLU	LEU	THR	VAL	THR	ASN	GLN	LYS	LEU	TYR	GLN	ALA	GLN	ALA		
GLU	LYS	TYR	SER	Gln	LYS	GLU	LYS	TYR	GLU	GLU	ILE	VAL	LYS	LEU	VAL	SER	ALA	THR	ALA	ALA	GLU	PHE	ALA	GLU	ARG	VAL	THR	LYS	GLU	GLU	LYS	SER	ILE	ASP	ASP	GLU	LEU	ALA	Gln	LYS	LEU	TYR	LYS	ALA	TYR	SER	

[illegible][illegible]



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	236359	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	34	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	3500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	10.091	Depositor
Minimum map value	-2.821	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	1.000	Depositor
Recommended contour level	0.02	Depositor
Map size (Å)	97.631996, 108.479996, 225.096	wwPDB
Map dimensions	72, 80, 166	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.356, 1.356, 1.356	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, ADP

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z  > 5$	RMSZ	$\# Z  > 5$
1	A	0.36	0/2961	0.45	0/4011
1	B	0.36	0/2961	0.45	0/4011
1	C	0.36	0/2961	0.45	0/4011
1	D	0.36	0/2961	0.45	0/4011
1	E	0.36	0/2961	0.45	0/4011
1	F	0.36	0/2961	0.45	0/4011
2	G	0.32	0/450	0.64	0/600
2	H	0.33	0/450	0.67	0/600
2	I	0.27	0/563	0.49	0/744
2	J	0.26	0/563	0.51	0/744
2	L	0.33	0/450	0.68	0/600
2	M	0.33	0/450	0.67	0/600
2	N	0.30	0/563	0.55	0/744
2	O	0.28	0/563	0.55	0/744
3	K	0.33	0/656	0.73	2/871 (0.2%)
3	P	0.36	0/656	0.78	2/871 (0.2%)
All	All	0.35	0/23130	0.50	4/31184 (0.0%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	P	93	ARG	CA-C-N	9.04	137.96	121.70
3	P	93	ARG	C-N-CA	9.04	137.96	121.70
3	K	93	ARG	CA-C-N	8.32	136.68	121.70
3	K	93	ARG	C-N-CA	8.32	136.68	121.70

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	2898	0	2871	67	0
1	B	2898	0	2871	62	0
1	C	2898	0	2871	89	0
1	D	2898	0	2871	88	0
1	E	2898	0	2871	63	0
1	F	2898	0	2871	58	0
2	G	447	0	441	55	0
2	H	447	0	441	44	0
2	I	562	0	580	67	0
2	J	562	0	580	75	0
2	L	447	0	441	72	0
2	M	447	0	441	77	0
2	N	562	0	580	38	0
2	O	562	0	580	72	0
3	K	650	0	661	118	0
3	P	650	0	661	134	0
4	A	27	0	12	2	0
4	B	27	0	12	2	0
4	C	27	0	12	2	0
4	D	27	0	12	2	0
4	E	27	0	12	3	0
4	F	27	0	12	2	0
5	A	1	0	0	0	0
5	B	1	0	0	0	0
5	C	1	0	0	0	0
5	D	1	0	0	0	0
5	E	1	0	0	0	0
5	F	1	0	0	0	0
All	All	22892	0	22704	853	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 19.

All (853) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:G:284:ILE:CG2	2:J:12:LYS:CE	1.76	1.57
2:G:281:MET:SD	2:I:7:LYS:HE3	1.44	1.56
2:L:281:MET:SD	2:N:7:LYS:HE3	1.44	1.56
2:G:284:ILE:HG21	2:J:12:LYS:CE	1.35	1.45
2:G:284:ILE:CG2	2:J:12:LYS:HE3	0.98	1.43
1:C:375:PHE:CB	3:K:86:PRO:HG3	1.52	1.39
2:L:284:ILE:CD1	2:O:8:MET:HE1	1.57	1.32
2:G:284:ILE:CD1	2:J:8:MET:HE1	1.57	1.32
2:M:257:GLU:OE1	3:P:138:ARG:HG2	1.34	1.27
1:C:375:PHE:HB2	3:K:86:PRO:CG	1.65	1.25
2:N:28:ASP:CB	2:O:29:LYS:HD2	1.66	1.24
2:I:8:MET:CE	2:I:9:GLN:HE21	1.48	1.23
2:O:13:LEU:CD2	3:P:103:ARG:HH21	1.52	1.23
2:I:28:ASP:CB	2:J:29:LYS:HD2	1.68	1.21
1:D:375:PHE:HB2	3:P:86:PRO:CD	1.69	1.21
2:M:257:GLU:OE2	3:P:134:ILE:CG2	1.91	1.19
2:I:28:ASP:HB2	2:J:29:LYS:CD	1.74	1.17
3:K:123:LYS:O	3:K:123:LYS:HD3	1.42	1.17
2:G:284:ILE:HG22	2:J:12:LYS:CE	1.54	1.16
2:N:28:ASP:HB2	2:O:29:LYS:CD	1.74	1.16
2:L:284:ILE:HG21	2:O:12:LYS:CE	1.75	1.15
2:M:275:ASP:OD1	3:P:117:HIS:HE1	1.28	1.14
2:O:13:LEU:HD21	3:P:103:ARG:HE	1.08	1.14
3:K:148:ARG:O	3:K:151:ARG:HG2	1.42	1.14
2:G:284:ILE:HD13	2:J:8:MET:HE1	1.22	1.14
2:I:8:MET:HE3	2:I:9:GLN:NE2	1.63	1.14
2:I:8:MET:HE3	2:I:9:GLN:HE21	1.04	1.14
2:L:281:MET:SD	2:N:7:LYS:CE	2.37	1.13
3:P:122:LYS:HD3	3:P:122:LYS:O	1.48	1.12
2:G:281:MET:SD	2:I:7:LYS:CE	2.37	1.12
2:M:275:ASP:OD1	3:P:117:HIS:CE1	2.02	1.12
3:P:123:LYS:O	3:P:123:LYS:HD3	1.44	1.12
2:L:284:ILE:HD13	2:O:8:MET:HE1	1.22	1.11
2:M:257:GLU:OE2	3:P:134:ILE:HG23	0.94	1.10
1:C:375:PHE:HB2	3:K:86:PRO:HG3	1.12	1.10
2:J:13:LEU:HD22	3:K:103:ARG:NH2	1.67	1.08
2:G:284:ILE:HG21	2:J:12:LYS:CD	1.81	1.08
2:L:231:LYS:O	2:L:231:LYS:HD3	1.53	1.08
2:L:284:ILE:HD11	2:O:8:MET:HE1	1.34	1.08
2:L:284:ILE:HG21	2:O:12:LYS:HE2	1.35	1.07
2:I:28:ASP:HB2	2:J:29:LYS:HD2	1.30	1.07
2:H:254:ASP:OD1	3:K:138:ARG:HD3	1.54	1.05

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:M:257:GLU:CD	3:P:134:ILE:HG23	1.82	1.05
2:O:13:LEU:HD22	3:P:103:ARG:HH21	1.16	1.05
1:D:375:PHE:CB	3:P:86:PRO:HD3	1.87	1.04
3:K:144:GLN:HE21	3:K:148:ARG:NH2	1.54	1.04
2:O:13:LEU:HD21	3:P:103:ARG:NE	1.73	1.03
2:M:278:LEU:HD23	3:P:114:ILE:HD13	1.35	1.02
2:G:284:ILE:HG22	2:J:12:LYS:HE2	1.40	1.01
2:G:284:ILE:HD11	2:J:8:MET:HE1	1.34	1.01
2:J:13:LEU:CD2	3:K:103:ARG:NH2	2.23	1.01
2:M:254:ASP:OD1	3:P:138:ARG:HD3	1.58	1.01
1:A:373:LYS:HD2	1:A:373:LYS:N	1.76	1.00
1:E:373:LYS:HD2	1:E:373:LYS:N	1.76	1.00
1:D:373:LYS:HD2	1:D:373:LYS:N	1.76	0.99
2:G:284:ILE:HG22	2:J:12:LYS:HE3	1.10	0.99
2:I:35:ARG:HH22	2:J:40:GLU:HB2	1.28	0.99
2:N:28:ASP:HB2	2:O:29:LYS:HD2	1.27	0.98
1:C:373:LYS:HD2	1:C:373:LYS:N	1.76	0.98
2:G:248:LYS:HZ1	3:K:141:ARG:HH12	1.02	0.97
1:B:373:LYS:N	1:B:373:LYS:HD2	1.76	0.97
2:L:284:ILE:HG21	2:O:12:LYS:CD	1.93	0.97
1:C:375:PHE:CG	3:K:86:PRO:HG3	1.98	0.97
1:C:373:LYS:N	1:C:373:LYS:HZ3	1.63	0.97
2:H:278:LEU:HD23	3:K:114:ILE:HD13	1.46	0.97
2:I:15:LYS:NZ	2:J:14:ASP:HB3	1.80	0.96
1:F:373:LYS:HD2	1:F:373:LYS:N	1.76	0.96
1:A:373:LYS:N	1:A:373:LYS:HZ3	1.63	0.96
2:O:10:MET:HE2	3:P:106:ASP:OD2	1.65	0.96
1:C:373:LYS:H	1:C:373:LYS:NZ	1.63	0.96
1:D:373:LYS:H	1:D:373:LYS:NZ	1.63	0.96
2:O:13:LEU:CD2	3:P:103:ARG:NH2	2.27	0.96
1:D:373:LYS:N	1:D:373:LYS:HZ3	1.63	0.96
1:E:373:LYS:N	1:E:373:LYS:HZ3	1.62	0.96
1:F:373:LYS:H	1:F:373:LYS:NZ	1.63	0.96
2:L:264:LYS:NZ	2:M:263:GLN:HG3	1.81	0.96
1:F:373:LYS:N	1:F:373:LYS:HZ3	1.64	0.95
1:A:373:LYS:H	1:A:373:LYS:NZ	1.63	0.95
1:D:47:MET:HE2	1:F:148:THR:OG1	1.65	0.95
1:B:373:LYS:N	1:B:373:LYS:HZ2	1.63	0.95
1:B:373:LYS:H	1:B:373:LYS:NZ	1.63	0.94
1:E:373:LYS:H	1:E:373:LYS:NZ	1.63	0.94
1:C:47:MET:HE2	1:E:148:THR:OG1	1.65	0.94

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:P:124:GLU:OE2	3:P:127:LEU:HD22	1.67	0.94
1:D:375:PHE:HB2	3:P:86:PRO:HD3	0.93	0.93
2:O:13:LEU:HD22	3:P:103:ARG:NH2	1.83	0.93
2:I:35:ARG:HG3	2:I:38:ARG:NH2	1.84	0.93
2:L:264:LYS:CE	2:M:263:GLN:HG3	1.98	0.93
2:H:250:GLU:OE1	2:H:250:GLU:O	1.87	0.92
2:L:264:LYS:NZ	2:M:263:GLN:CD	2.28	0.92
2:H:257:GLU:OE1	3:K:138:ARG:HG2	1.70	0.92
2:O:13:LEU:CD2	3:P:103:ARG:HE	1.83	0.91
2:L:264:LYS:HE2	2:M:263:GLN:HG3	1.52	0.91
2:L:231:LYS:HE3	2:M:236:GLU:OE2	1.70	0.91
3:P:100:HIS:O	3:P:104:MET:HG3	1.70	0.90
2:J:10:MET:HE2	3:K:106:ASP:OD2	1.69	0.90
3:K:142:ALA:O	3:K:146:ARG:HD2	1.72	0.90
2:I:8:MET:CE	2:I:9:GLN:NE2	2.30	0.89
2:I:35:ARG:HG3	2:I:38:ARG:HH21	1.37	0.89
2:I:30:LYS:NZ	2:I:34:ASP:OD2	2.06	0.89
2:H:281:MET:HE1	2:I:8:MET:SD	2.13	0.89
2:I:8:MET:HE1	2:I:9:GLN:HE21	1.38	0.89
2:M:281:MET:HE1	2:N:8:MET:SD	2.13	0.89
2:G:261:TYR:CE2	2:G:265:LEU:HD11	2.08	0.88
2:L:261:TYR:CE2	2:L:265:LEU:HD11	2.08	0.88
2:G:284:ILE:CD1	2:J:8:MET:CE	2.49	0.87
2:G:284:ILE:CG2	2:J:12:LYS:HE2	1.95	0.87
2:J:3:ALA:HB2	3:K:113:LEU:HB3	1.56	0.87
2:L:284:ILE:CD1	2:O:8:MET:CE	2.49	0.87
2:O:3:ALA:HB2	3:P:113:LEU:HB3	1.57	0.87
1:C:375:PHE:HB2	3:K:86:PRO:CB	2.05	0.86
2:I:15:LYS:HZ1	2:J:14:ASP:HB3	1.38	0.86
2:M:257:GLU:OE1	3:P:138:ARG:CG	2.22	0.86
3:K:148:ARG:O	3:K:151:ARG:CG	2.24	0.85
3:K:148:ARG:HG2	3:K:151:ARG:CZ	2.06	0.85
2:N:28:ASP:HB3	2:O:29:LYS:HD2	1.59	0.85
2:J:13:LEU:HD22	3:K:103:ARG:HH21	1.35	0.85
2:L:264:LYS:HZ3	2:M:263:GLN:CD	1.85	0.85
3:P:124:GLU:CD	3:P:127:LEU:HD13	2.03	0.84
2:J:10:MET:HG3	3:K:106:ASP:OD2	1.76	0.84
2:L:264:LYS:NZ	2:M:263:GLN:CG	2.40	0.84
1:B:47:MET:HE2	1:D:148:THR:OG1	1.77	0.84
2:I:28:ASP:HB2	2:J:29:LYS:HD3	1.58	0.84
1:C:375:PHE:CB	3:K:86:PRO:CG	2.34	0.83

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:G:284:ILE:HD13	2:J:8:MET:CE	2.06	0.83
2:L:274:LEU:HD11	2:N:1:MET:CE	2.08	0.83
2:M:278:LEU:HD23	3:P:114:ILE:CD1	2.06	0.83
1:B:373:LYS:HZ2	1:B:373:LYS:H	0.84	0.83
2:G:274:LEU:HD11	2:I:1:MET:CE	2.08	0.83
2:G:248:LYS:HZ1	3:K:141:ARG:NH1	1.77	0.83
2:L:284:ILE:CG2	2:O:12:LYS:HD2	2.10	0.82
1:A:47:MET:HE2	1:C:148:THR:OG1	1.78	0.82
2:I:28:ASP:HB3	2:J:29:LYS:HD2	1.61	0.82
2:N:28:ASP:HB2	2:O:29:LYS:HD3	1.61	0.82
2:G:248:LYS:NZ	3:K:141:ARG:HH12	1.78	0.82
2:H:278:LEU:HD11	2:J:4:ILE:HB	1.62	0.82
2:M:278:LEU:HD11	2:O:4:ILE:HB	1.62	0.81
1:F:373:LYS:H	1:F:373:LYS:HZ3	0.86	0.81
3:K:148:ARG:HD3	3:K:151:ARG:NH2	1.95	0.81
2:L:284:ILE:HD13	2:O:8:MET:CE	2.06	0.81
2:J:19:LEU:HD13	2:J:19:LEU:C	2.06	0.80
1:D:373:LYS:H	1:D:373:LYS:HZ3	0.84	0.80
1:D:375:PHE:CB	3:P:86:PRO:CD	2.52	0.80
1:C:373:LYS:NZ	3:K:84:VAL:HG21	1.97	0.79
2:I:28:ASP:CB	2:J:29:LYS:CD	2.45	0.79
2:L:231:LYS:HG2	2:L:234:GLU:OE2	1.83	0.79
1:E:373:LYS:HZ3	1:E:373:LYS:H	0.82	0.79
2:J:10:MET:SD	3:K:106:ASP:CG	2.66	0.79
3:K:93:ARG:HB3	3:K:94:VAL:HG12	1.65	0.78
2:N:28:ASP:CB	2:O:29:LYS:CD	2.45	0.78
2:L:284:ILE:CG2	2:O:12:LYS:CD	2.61	0.78
1:E:326:LYS:HD2	2:G:257:GLU:HG2	1.65	0.78
3:K:148:ARG:C	3:K:151:ARG:HG2	2.08	0.78
2:N:15:LYS:HE3	2:O:14:ASP:HB3	1.64	0.77
3:K:144:GLN:HE21	3:K:148:ARG:HH21	1.28	0.77
1:F:326:LYS:HD2	2:L:257:GLU:HG2	1.65	0.77
3:K:93:ARG:HB3	3:K:94:VAL:CG1	2.14	0.77
3:P:124:GLU:HG3	3:P:124:GLU:O	1.83	0.77
1:A:45:VAL:HA	3:K:88:ILE:HG21	1.66	0.77
3:P:124:GLU:OE2	3:P:127:LEU:CD2	2.33	0.77
1:C:373:LYS:HZ3	1:C:373:LYS:H	0.82	0.76
3:P:121:ARG:O	3:P:125:GLU:HG3	1.85	0.76
3:P:123:LYS:O	3:P:123:LYS:CD	2.32	0.76
2:M:251:LYS:C	2:M:251:LYS:HD2	2.10	0.76
2:O:30:LYS:HD2	2:O:30:LYS:C	2.11	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:P:155:ARG:HG3	3:P:155:ARG:O	1.86	0.76
1:A:373:LYS:HZ3	1:A:373:LYS:H	0.83	0.76
3:P:93:ARG:HB3	3:P:94:VAL:HG22	1.67	0.76
1:B:48:GLY:HA3	3:P:93:ARG:HH21	1.50	0.76
2:L:248:LYS:C	2:L:248:LYS:HD2	2.11	0.75
1:D:146:GLY:O	3:P:96:PHE:HD1	1.68	0.75
2:O:13:LEU:HD21	3:P:103:ARG:CZ	2.16	0.75
3:P:135:GLU:OE2	3:P:138:ARG:NH2	2.20	0.75
2:L:284:ILE:HD11	2:O:8:MET:CE	2.14	0.75
3:P:92:GLU:O	3:P:93:ARG:NE	2.19	0.75
2:G:248:LYS:C	2:G:248:LYS:HD2	2.11	0.75
1:C:373:LYS:N	1:C:373:LYS:CD	2.50	0.74
3:K:123:LYS:O	3:K:123:LYS:CD	2.30	0.74
2:M:241:PHE:HD1	2:M:244:ARG:HD2	1.50	0.74
1:E:211:ASP:OD1	1:E:215:LYS:HE2	1.87	0.74
1:E:373:LYS:N	1:E:373:LYS:CD	2.50	0.74
1:A:211:ASP:OD1	1:A:215:LYS:HE2	1.87	0.74
1:B:373:LYS:N	1:B:373:LYS:CD	2.50	0.74
1:C:211:ASP:OD1	1:C:215:LYS:HE2	1.87	0.74
1:A:373:LYS:N	1:A:373:LYS:CD	2.50	0.74
2:J:48:LYS:HD2	2:J:48:LYS:C	2.11	0.74
2:M:241:PHE:CD1	2:M:244:ARG:HD2	2.22	0.74
1:B:211:ASP:OD1	1:B:215:LYS:HE2	1.87	0.73
2:H:257:GLU:CD	3:K:138:ARG:HG2	2.13	0.73
1:D:211:ASP:OD1	1:D:215:LYS:HE2	1.87	0.73
2:G:284:ILE:HD11	2:J:8:MET:CE	2.14	0.73
1:C:375:PHE:HB3	3:K:86:PRO:HG3	1.65	0.73
1:D:354:GLN:HE21	3:P:89:PRO:CB	2.02	0.73
1:D:373:LYS:N	1:D:373:LYS:CD	2.50	0.73
2:G:284:ILE:HG21	2:J:12:LYS:HE3	0.73	0.73
2:L:264:LYS:HZ3	2:M:263:GLN:CG	1.98	0.73
2:M:281:MET:CE	2:N:8:MET:SD	2.77	0.73
1:C:373:LYS:O	3:K:86:PRO:HB3	1.89	0.73
2:H:248:LYS:HA	2:H:248:LYS:HE2	1.70	0.73
1:F:373:LYS:N	1:F:373:LYS:CD	2.50	0.72
2:L:284:ILE:HG21	2:O:12:LYS:HD2	1.71	0.72
1:D:107:GLU:OE2	1:D:115:ASN:ND2	2.23	0.72
2:H:281:MET:CE	2:I:8:MET:SD	2.77	0.72
1:B:107:GLU:OE2	1:B:115:ASN:ND2	2.23	0.72
2:H:257:GLU:OE2	3:K:134:ILE:HG22	1.89	0.72
1:F:107:GLU:OE2	1:F:115:ASN:ND2	2.23	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:211:ASP:OD1	1:F:215:LYS:HE2	1.87	0.72
1:A:107:GLU:OE2	1:A:115:ASN:ND2	2.23	0.72
2:J:13:LEU:HD21	3:K:103:ARG:NH2	2.04	0.72
3:P:122:LYS:O	3:P:122:LYS:CD	2.35	0.72
2:L:231:LYS:HE3	2:M:236:GLU:CD	2.14	0.72
2:M:248:LYS:O	2:M:248:LYS:HD3	1.88	0.72
2:M:250:GLU:OE1	3:P:141:ARG:CZ	2.37	0.71
1:C:107:GLU:OE2	1:C:115:ASN:ND2	2.23	0.71
1:C:288:ASP:OD1	1:C:288:ASP:N	2.24	0.71
1:C:341:ILE:HG21	3:K:102:LYS:NZ	2.04	0.71
1:D:288:ASP:N	1:D:288:ASP:OD1	2.24	0.71
1:E:107:GLU:OE2	1:E:115:ASN:ND2	2.23	0.71
3:P:138:ARG:HD2	3:P:139:ALA:N	2.04	0.71
1:B:288:ASP:N	1:B:288:ASP:OD1	2.24	0.70
2:N:15:LYS:CE	2:O:14:ASP:HB3	2.21	0.70
2:O:13:LEU:HD21	3:P:103:ARG:NH2	2.05	0.70
2:L:264:LYS:HZ1	2:M:263:GLN:CD	1.97	0.70
2:I:15:LYS:NZ	2:J:14:ASP:CB	2.53	0.70
1:A:288:ASP:OD1	1:A:288:ASP:N	2.24	0.70
2:J:19:LEU:HD13	2:J:19:LEU:O	1.91	0.70
2:M:261:TYR:HD1	3:P:131:LYS:HB3	1.57	0.69
3:K:148:ARG:HA	3:K:151:ARG:CD	2.22	0.69
1:F:288:ASP:OD1	1:F:288:ASP:N	2.24	0.69
3:P:135:GLU:O	3:P:138:ARG:HG3	1.91	0.69
3:K:148:ARG:CG	3:K:151:ARG:CZ	2.70	0.68
2:O:10:MET:HG3	3:P:106:ASP:OD1	1.93	0.68
1:A:45:VAL:HG23	3:K:88:ILE:CG2	2.23	0.68
1:D:146:GLY:O	3:P:96:PHE:CD1	2.47	0.68
1:C:375:PHE:HB2	3:K:86:PRO:HB3	1.76	0.68
1:E:288:ASP:OD1	1:E:288:ASP:N	2.24	0.68
2:I:35:ARG:O	2:I:38:ARG:HG2	1.93	0.68
3:K:144:GLN:NE2	3:K:148:ARG:NH2	2.35	0.68
3:K:144:GLN:NE2	3:K:148:ARG:HH21	1.90	0.68
3:P:121:ARG:HG2	3:P:125:GLU:CD	2.17	0.68
2:H:250:GLU:OE1	2:H:250:GLU:C	2.37	0.67
2:G:281:MET:CG	2:J:8:MET:HE3	2.24	0.67
2:J:10:MET:CE	3:K:106:ASP:OD2	2.41	0.67
2:L:274:LEU:HD11	2:N:1:MET:HE3	1.76	0.67
3:P:124:GLU:OE2	3:P:127:LEU:HD13	1.94	0.67
1:C:373:LYS:CD	1:C:374:CYS:H	2.08	0.67
1:A:46:GLY:HA2	3:K:91:GLY:HA3	1.75	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:373:LYS:CD	1:B:374:CYS:H	2.08	0.67
1:D:373:LYS:CD	1:D:374:CYS:H	2.08	0.67
1:F:373:LYS:CD	1:F:374:CYS:H	2.08	0.67
1:D:39:ARG:NH2	1:E:270:GLU:OE1	2.28	0.66
2:L:281:MET:CG	2:O:8:MET:HE3	2.24	0.66
1:A:333:PRO:HG2	2:I:47:GLN:HE21	1.60	0.66
1:B:300:SER:OG	1:B:301:GLY:N	2.28	0.66
2:L:264:LYS:HZ3	2:M:263:GLN:HG3	1.58	0.66
2:N:70:LYS:O	2:N:70:LYS:HG2	1.95	0.66
1:D:375:PHE:HB3	3:P:86:PRO:HG3	1.76	0.66
1:A:373:LYS:CD	1:A:374:CYS:H	2.08	0.66
1:E:373:LYS:CD	1:E:374:CYS:H	2.08	0.66
1:C:341:ILE:HG21	3:K:102:LYS:HZ2	1.60	0.66
2:G:274:LEU:HD11	2:I:1:MET:HE3	1.76	0.66
2:I:25:ALA:HA	2:J:29:LYS:HD3	1.78	0.65
3:K:144:GLN:HE21	3:K:148:ARG:CZ	2.09	0.65
1:A:300:SER:OG	1:A:301:GLY:N	2.28	0.65
2:N:25:ALA:HA	2:O:29:LYS:HD3	1.77	0.65
2:L:231:LYS:CE	2:M:236:GLU:OE2	2.45	0.65
3:P:138:ARG:HD2	3:P:138:ARG:C	2.22	0.65
1:B:333:PRO:HG2	2:N:47:GLN:HE21	1.60	0.65
2:H:254:ASP:OD1	3:K:138:ARG:CD	2.37	0.65
2:J:10:MET:HG3	3:K:106:ASP:CG	2.22	0.65
2:H:257:GLU:OE2	3:K:135:GLU:HA	1.96	0.65
1:D:42:GLY:HA2	1:F:169:TYR:HA	1.79	0.64
2:L:261:TYR:HE2	2:L:265:LEU:HD11	1.60	0.64
1:C:300:SER:OG	1:C:301:GLY:N	2.28	0.64
2:J:13:LEU:HD22	3:K:103:ARG:HH22	1.61	0.64
2:O:34:ASP:O	2:O:37:LYS:HG3	1.97	0.64
2:I:35:ARG:HG3	2:I:38:ARG:CZ	2.27	0.64
1:D:355:MET:SD	3:P:89:PRO:HD3	2.37	0.64
1:A:373:LYS:HD2	1:A:373:LYS:H	1.63	0.63
3:P:121:ARG:CG	3:P:125:GLU:OE2	2.46	0.63
1:C:42:GLY:HA2	1:E:169:TYR:HA	1.79	0.63
2:J:10:MET:CG	3:K:106:ASP:OD2	2.46	0.63
3:K:135:GLU:OE2	3:K:138:ARG:NH2	2.31	0.63
1:D:146:GLY:O	3:P:96:PHE:HB2	1.97	0.63
1:F:300:SER:OG	1:F:301:GLY:N	2.28	0.63
1:E:300:SER:OG	1:E:301:GLY:N	2.28	0.63
1:D:300:SER:OG	1:D:301:GLY:N	2.28	0.63
1:F:213:LYS:NZ	4:F:401:ADP:O2'	2.27	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:L:281:MET:HG2	2:O:8:MET:HE3	1.81	0.62
2:M:281:MET:SD	2:N:8:MET:SD	2.97	0.62
2:J:10:MET:CG	3:K:106:ASP:CG	2.73	0.62
2:O:30:LYS:HD3	2:O:34:ASP:OD2	1.99	0.62
1:E:213:LYS:NZ	4:E:401:ADP:O2'	2.27	0.62
2:H:271:SER:OG	3:K:121:ARG:CD	2.48	0.61
2:H:281:MET:SD	2:I:8:MET:SD	2.97	0.61
1:A:233:SER:OG	1:A:234:SER:N	2.33	0.61
3:K:148:ARG:HG2	3:K:151:ARG:NH1	2.14	0.61
2:O:13:LEU:CD2	3:P:103:ARG:NE	2.51	0.61
1:C:375:PHE:CB	3:K:86:PRO:CB	2.74	0.61
2:G:281:MET:HG2	2:J:8:MET:HE3	1.81	0.61
2:O:13:LEU:CD1	3:P:103:ARG:HH21	2.12	0.61
1:B:233:SER:OG	1:B:234:SER:N	2.33	0.61
1:F:373:LYS:HD2	1:F:373:LYS:H	1.63	0.61
2:L:261:TYR:CE2	2:L:265:LEU:CD1	2.83	0.61
2:O:10:MET:HE2	3:P:106:ASP:CG	2.25	0.61
2:I:35:ARG:NH2	2:J:40:GLU:OE1	2.34	0.61
2:M:278:LEU:HB3	3:P:114:ILE:HD11	1.83	0.61
2:M:261:TYR:HE1	3:P:128:VAL:O	1.83	0.61
1:F:373:LYS:HD2	1:F:374:CYS:H	1.66	0.61
2:I:35:ARG:CG	2:I:38:ARG:HH21	2.13	0.61
1:D:47:MET:CE	1:F:148:THR:OG1	2.46	0.60
1:B:39:ARG:NH2	1:C:270:GLU:OE1	2.34	0.60
1:C:375:PHE:HB2	3:K:86:PRO:CD	2.30	0.60
2:J:13:LEU:CD2	3:K:103:ARG:HH22	2.12	0.60
1:A:373:LYS:HD2	1:A:374:CYS:H	1.66	0.60
1:F:233:SER:OG	1:F:234:SER:N	2.33	0.60
2:O:3:ALA:CB	3:P:113:LEU:HB3	2.31	0.60
1:C:213:LYS:NZ	4:C:401:ADP:O2'	2.27	0.60
1:F:157:ASP:HB2	4:F:401:ADP:H4'	1.84	0.60
2:G:261:TYR:HE2	2:G:265:LEU:HD11	1.60	0.60
2:M:268:LYS:HD2	3:P:128:VAL:HG21	1.84	0.60
1:B:42:GLY:HA2	1:D:169:TYR:HA	1.83	0.60
1:D:157:ASP:HB2	4:D:401:ADP:H4'	1.84	0.60
1:D:233:SER:OG	1:D:234:SER:N	2.33	0.60
2:L:231:LYS:HD3	2:L:231:LYS:C	2.26	0.60
1:D:373:LYS:HD2	1:D:374:CYS:H	1.67	0.60
2:I:15:LYS:CE	2:J:14:ASP:HB3	2.31	0.60
2:G:261:TYR:CE2	2:G:265:LEU:CD1	2.83	0.59
2:O:3:ALA:HB2	3:P:113:LEU:HD12	1.83	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:117:GLU:OE2	1:D:371:HIS:NE2	2.35	0.59
1:C:373:LYS:HD2	1:C:374:CYS:H	1.66	0.59
1:B:157:ASP:HB2	4:B:401:ADP:H4'	1.84	0.59
1:C:233:SER:OG	1:C:234:SER:N	2.33	0.59
1:E:233:SER:OG	1:E:234:SER:N	2.33	0.59
2:H:257:GLU:OE1	3:K:138:ARG:CG	2.49	0.59
2:M:265:LEU:CD2	3:P:128:VAL:CG1	2.80	0.59
1:E:39:ARG:NH2	1:F:270:GLU:OE1	2.35	0.59
3:K:92:GLU:O	3:K:93:ARG:NE	2.33	0.59
2:L:284:ILE:HG22	2:L:284:ILE:O	2.02	0.59
2:M:232:LEU:O	2:M:236:GLU:HG2	2.02	0.59
1:A:157:ASP:HB2	4:A:401:ADP:H4'	1.84	0.59
1:A:45:VAL:HG23	3:K:88:ILE:HG23	1.83	0.59
1:A:117:GLU:OE2	1:A:371:HIS:NE2	2.35	0.59
1:B:117:GLU:OE2	1:B:371:HIS:NE2	2.36	0.59
1:E:157:ASP:HB2	4:E:401:ADP:H4'	1.84	0.59
3:K:148:ARG:HA	3:K:151:ARG:HD3	1.83	0.59
1:B:373:LYS:HD2	1:B:374:CYS:H	1.66	0.59
1:D:373:LYS:HD2	1:D:373:LYS:H	1.63	0.59
2:G:284:ILE:HG22	2:G:284:ILE:O	2.02	0.59
2:H:232:LEU:O	2:H:236:GLU:HG2	2.02	0.59
3:P:121:ARG:CG	3:P:125:GLU:CD	2.76	0.58
1:A:42:GLY:HA2	1:C:169:TYR:HA	1.83	0.58
1:F:300:SER:O	1:F:304:THR:OG1	2.20	0.58
2:L:281:MET:CE	2:N:7:LYS:HE3	2.32	0.58
1:C:157:ASP:HB2	4:C:401:ADP:H4'	1.84	0.58
2:O:3:ALA:HB2	3:P:113:LEU:CB	2.31	0.58
1:D:213:LYS:NZ	4:D:401:ADP:O2'	2.27	0.58
1:E:220:ALA:HB1	1:E:226:GLU:HG3	1.85	0.58
1:E:373:LYS:HD2	1:E:374:CYS:H	1.67	0.58
1:B:220:ALA:HB1	1:B:226:GLU:HG3	1.85	0.58
1:E:326:LYS:HD2	2:G:257:GLU:CG	2.33	0.58
2:J:12:LYS:NZ	2:J:16:GLU:OE2	2.37	0.58
2:M:254:ASP:OD1	3:P:138:ARG:CD	2.42	0.58
2:O:13:LEU:CD2	3:P:103:ARG:CZ	2.77	0.58
2:M:250:GLU:OE1	3:P:141:ARG:NH2	2.37	0.58
1:B:213:LYS:NZ	4:B:401:ADP:O2'	2.27	0.58
1:C:117:GLU:OE2	1:C:371:HIS:NE2	2.36	0.58
1:C:220:ALA:HB1	1:C:226:GLU:HG3	1.85	0.58
2:M:251:LYS:HD2	2:M:251:LYS:O	2.03	0.58
2:M:257:GLU:OE2	3:P:134:ILE:HD12	2.03	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:354:GLN:HE21	3:P:89:PRO:HB2	1.68	0.57
2:L:270:ILE:HG13	2:M:267:TYR:CE1	2.39	0.57
1:F:326:LYS:HD2	2:L:257:GLU:CG	2.33	0.57
1:F:220:ALA:HB1	1:F:226:GLU:HG3	1.85	0.57
1:C:373:LYS:NZ	3:K:84:VAL:CG2	2.67	0.57
2:J:48:LYS:HD2	2:J:48:LYS:O	2.03	0.57
2:M:278:LEU:O	2:M:282:THR:N	2.38	0.57
1:A:220:ALA:HB1	1:A:226:GLU:HG3	1.85	0.57
2:I:35:ARG:HH22	2:J:40:GLU:CB	2.10	0.57
2:H:278:LEU:O	2:H:282:THR:N	2.38	0.57
1:A:373:LYS:H	1:A:373:LYS:CD	2.15	0.57
1:B:373:LYS:H	1:B:373:LYS:CD	2.15	0.57
2:G:270:ILE:HG13	2:H:267:TYR:CE1	2.39	0.57
2:M:248:LYS:HD3	2:M:248:LYS:C	2.30	0.57
1:D:220:ALA:HB1	1:D:226:GLU:HG3	1.85	0.57
1:D:300:SER:O	1:D:304:THR:OG1	2.20	0.57
1:E:373:LYS:H	1:E:373:LYS:CD	2.15	0.57
2:J:34:ASP:HA	2:J:37:LYS:HE2	1.86	0.57
1:C:373:LYS:H	1:C:373:LYS:CD	2.15	0.56
1:C:373:LYS:O	3:K:86:PRO:CB	2.53	0.56
3:K:142:ALA:O	3:K:146:ARG:CD	2.51	0.56
1:C:111:ASN:OD1	1:C:177:ARG:NH1	2.38	0.56
1:E:117:GLU:OE2	1:E:371:HIS:NE2	2.35	0.56
2:O:10:MET:CG	3:P:106:ASP:OD1	2.53	0.56
2:O:13:LEU:CD1	3:P:103:ARG:NH2	2.68	0.56
1:C:47:MET:CE	1:E:148:THR:OG1	2.46	0.56
1:E:372:ARG:HB3	1:E:373:LYS:NZ	2.20	0.56
1:F:372:ARG:HB3	1:F:373:LYS:NZ	2.20	0.56
3:K:152:GLU:HA	3:K:155:ARG:HG2	1.87	0.56
2:G:267:TYR:CE1	2:H:266:LYS:HG2	2.41	0.56
2:G:281:MET:CE	2:I:7:LYS:HE3	2.32	0.56
1:D:372:ARG:HB3	1:D:373:LYS:NZ	2.20	0.56
1:C:156:GLY:O	1:C:303:THR:OG1	2.24	0.56
1:D:5:THR:OG1	1:D:6:THR:N	2.39	0.56
1:F:111:ASN:OD1	1:F:177:ARG:NH1	2.38	0.56
1:F:156:GLY:O	1:F:303:THR:OG1	2.24	0.56
1:A:372:ARG:HB3	1:A:373:LYS:NZ	2.20	0.56
1:D:156:GLY:O	1:D:303:THR:OG1	2.24	0.56
2:J:19:LEU:C	2:J:19:LEU:CD1	2.78	0.56
1:A:5:THR:OG1	1:A:6:THR:N	2.39	0.56
1:C:5:THR:OG1	1:C:6:THR:N	2.39	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:P:124:GLU:OE2	3:P:127:LEU:CD1	2.53	0.56
1:A:111:ASN:OD1	1:A:177:ARG:NH1	2.38	0.55
1:B:111:ASN:OD1	1:B:177:ARG:NH1	2.38	0.55
1:C:372:ARG:HB3	1:C:373:LYS:NZ	2.20	0.55
2:J:10:MET:SD	3:K:106:ASP:OD2	2.64	0.55
3:K:133:ARG:O	3:K:136:LYS:HG3	2.05	0.55
1:B:372:ARG:HB3	1:B:373:LYS:NZ	2.20	0.55
1:F:5:THR:OG1	1:F:6:THR:N	2.39	0.55
1:E:300:SER:O	1:E:304:THR:OG1	2.20	0.55
1:A:156:GLY:O	1:A:303:THR:OG1	2.24	0.55
2:G:243:GLU:OE1	2:G:243:GLU:HA	2.05	0.55
3:P:122:LYS:HD3	3:P:122:LYS:C	2.28	0.55
1:D:373:LYS:H	1:D:373:LYS:CD	2.15	0.55
1:D:21:PHE:HD2	1:D:28:ARG:HH21	1.55	0.55
3:K:145:GLN:HA	3:K:145:GLN:OE1	2.07	0.55
1:A:213:LYS:NZ	4:A:401:ADP:O2'	2.27	0.55
2:G:282:THR:O	2:G:283:SER:OG	2.23	0.55
2:L:264:LYS:NZ	2:M:263:GLN:OE1	2.35	0.55
2:M:265:LEU:HD22	3:P:128:VAL:CG1	2.36	0.55
1:A:21:PHE:HD2	1:A:28:ARG:HH21	1.55	0.55
1:B:21:PHE:HD2	1:B:28:ARG:HH21	1.55	0.55
1:F:21:PHE:HD2	1:F:28:ARG:HH21	1.55	0.54
1:E:111:ASN:OD1	1:E:177:ARG:NH1	2.38	0.54
1:B:373:LYS:HD2	1:B:373:LYS:H	1.63	0.54
1:C:373:LYS:O	3:K:86:PRO:HA	2.06	0.54
1:D:111:ASN:OD1	1:D:177:ARG:NH1	2.38	0.54
3:K:135:GLU:O	3:K:138:ARG:HG3	2.07	0.54
3:P:124:GLU:CD	3:P:127:LEU:CD1	2.78	0.54
1:A:300:SER:O	1:A:304:THR:OG1	2.20	0.54
1:D:375:PHE:CB	3:P:86:PRO:HG3	2.36	0.54
1:C:21:PHE:HD2	1:C:28:ARG:HH21	1.55	0.54
1:C:375:PHE:CB	3:K:86:PRO:HB3	2.37	0.54
2:O:30:LYS:HD2	2:O:30:LYS:O	2.06	0.54
2:H:275:ASP:OD1	3:K:118:PHE:CE1	2.61	0.54
2:O:13:LEU:CG	3:P:103:ARG:HH21	2.17	0.54
3:P:146:ARG:O	3:P:150:GLU:HG2	2.08	0.54
1:B:156:GLY:O	1:B:303:THR:OG1	2.24	0.54
1:B:300:SER:O	1:B:304:THR:OG1	2.20	0.54
1:E:21:PHE:HD2	1:E:28:ARG:HH21	1.55	0.54
1:A:39:ARG:NH2	1:B:270:GLU:OE1	2.41	0.54
1:E:156:GLY:O	1:E:303:THR:OG1	2.24	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:G:279:ASN:HA	2:G:282:THR:HG23	1.89	0.54
1:F:117:GLU:OE2	1:F:371:HIS:NE2	2.36	0.53
1:C:39:ARG:NH2	1:D:270:GLU:OE1	2.40	0.53
2:G:281:MET:HG3	2:J:8:MET:HE3	1.90	0.53
2:L:279:ASN:HA	2:L:282:THR:HG23	1.89	0.53
1:C:300:SER:O	1:C:304:THR:OG1	2.20	0.53
1:B:333:PRO:HG2	2:N:47:GLN:NE2	2.24	0.53
2:I:3:ALA:HA	2:I:6:LYS:HE2	1.91	0.53
1:B:5:THR:OG1	1:B:6:THR:N	2.39	0.53
1:D:375:PHE:CB	3:P:86:PRO:CG	2.87	0.53
2:H:257:GLU:OE2	3:K:134:ILE:C	2.51	0.53
2:I:12:LYS:NZ	2:I:12:LYS:HB3	2.24	0.53
2:M:265:LEU:CD2	3:P:128:VAL:HG13	2.39	0.53
3:K:84:VAL:O	3:K:84:VAL:HG23	2.08	0.53
1:A:333:PRO:HG2	2:I:47:GLN:NE2	2.24	0.52
2:I:35:ARG:HG3	2:I:38:ARG:NE	2.24	0.52
2:M:275:ASP:CG	3:P:117:HIS:HE1	2.13	0.52
2:I:35:ARG:HA	2:I:38:ARG:HE	1.73	0.52
1:B:372:ARG:HB3	1:B:373:LYS:CE	2.40	0.52
1:F:373:LYS:H	1:F:373:LYS:CD	2.15	0.52
2:I:15:LYS:HZ1	2:J:14:ASP:CB	2.14	0.52
1:A:372:ARG:HB3	1:A:373:LYS:CE	2.40	0.52
1:C:372:ARG:HB3	1:C:373:LYS:CE	2.40	0.52
1:E:372:ARG:HB3	1:E:373:LYS:CE	2.40	0.52
2:J:13:LEU:CD2	3:K:103:ARG:HH21	2.06	0.52
3:P:123:LYS:HD3	3:P:123:LYS:C	2.28	0.52
2:L:231:LYS:HE3	2:M:236:GLU:OE1	2.10	0.52
1:F:372:ARG:HB3	1:F:373:LYS:CE	2.40	0.52
2:L:249:LEU:HD11	2:M:246:VAL:HG13	1.92	0.52
2:L:277:ALA:HB1	2:O:5:LYS:HD3	1.91	0.52
2:M:261:TYR:HD1	3:P:131:LYS:CB	2.22	0.52
1:E:5:THR:OG1	1:E:6:THR:N	2.39	0.52
2:L:232:LEU:CD2	2:M:231:LYS:HD3	2.40	0.52
2:H:275:ASP:OD1	3:K:117:HIS:CE1	2.62	0.52
2:L:281:MET:HG3	2:O:8:MET:HE3	1.90	0.52
2:G:284:ILE:CG2	2:J:12:LYS:CD	2.59	0.51
2:J:3:ALA:HB1	3:K:110:LEU:HD12	1.92	0.51
2:L:266:LYS:HE2	2:M:267:TYR:OH	2.11	0.51
2:L:279:ASN:O	2:L:282:THR:OG1	2.19	0.51
2:M:278:LEU:HA	2:M:281:MET:HB2	1.92	0.51
2:G:249:LEU:HD11	2:H:246:VAL:HG13	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:17:VAL:HG23	1:B:33:SER:HB3	1.93	0.51
2:G:266:LYS:HE2	2:H:267:TYR:OH	2.11	0.51
2:M:275:ASP:OD2	3:P:121:ARG:NE	2.44	0.51
2:O:61:SER:C	2:O:64:PRO:HD2	2.36	0.51
1:D:17:VAL:HG23	1:D:33:SER:HB3	1.93	0.51
2:H:271:SER:OG	3:K:121:ARG:HD3	2.10	0.51
2:J:61:SER:C	2:J:64:PRO:HD2	2.36	0.51
1:D:372:ARG:HB3	1:D:373:LYS:CE	2.40	0.51
1:E:373:LYS:H	1:E:373:LYS:CE	2.24	0.51
2:I:50:LEU:HD13	2:J:50:LEU:HA	1.92	0.51
2:L:282:THR:O	2:L:283:SER:OG	2.23	0.51
2:I:28:ASP:CG	2:J:29:LYS:HD2	2.34	0.51
2:L:284:ILE:N	2:L:284:ILE:HD12	2.26	0.51
2:M:275:ASP:OD1	3:P:118:PHE:CE1	2.64	0.51
1:C:373:LYS:H	1:C:373:LYS:CE	2.24	0.50
1:A:354:GLN:N	1:A:354:GLN:OE1	2.44	0.50
1:C:17:VAL:HG23	1:C:33:SER:HB3	1.93	0.50
2:G:284:ILE:N	2:G:284:ILE:HD12	2.26	0.50
2:H:257:GLU:CD	3:K:134:ILE:HG22	2.36	0.50
2:O:37:LYS:HD2	2:O:37:LYS:C	2.36	0.50
1:A:17:VAL:HG23	1:A:33:SER:HB3	1.93	0.50
1:B:354:GLN:N	1:B:354:GLN:OE1	2.44	0.50
1:C:354:GLN:N	1:C:354:GLN:OE1	2.44	0.50
1:E:373:LYS:CG	1:E:374:CYS:N	2.75	0.50
3:P:155:ARG:O	3:P:155:ARG:CG	2.58	0.50
1:A:35:VAL:HG13	1:A:54:VAL:HG12	1.94	0.50
1:D:354:GLN:HE21	3:P:89:PRO:CG	2.25	0.50
1:D:354:GLN:N	1:D:354:GLN:OE1	2.44	0.50
1:D:373:LYS:CG	1:D:374:CYS:N	2.75	0.50
1:E:35:VAL:HG13	1:E:54:VAL:HG12	1.94	0.50
1:C:35:VAL:HG13	1:C:54:VAL:HG12	1.94	0.50
1:F:373:LYS:CG	1:F:374:CYS:N	2.75	0.50
2:M:265:LEU:HD22	3:P:128:VAL:HG11	1.94	0.50
1:C:373:LYS:CG	1:C:374:CYS:N	2.75	0.50
1:C:373:LYS:HZ1	3:K:84:VAL:HG21	1.74	0.50
2:H:275:ASP:OD1	3:K:118:PHE:CD1	2.65	0.50
2:H:278:LEU:HA	2:H:281:MET:HB2	1.92	0.50
2:L:248:LYS:HD2	2:L:248:LYS:O	2.12	0.50
2:N:50:LEU:HD13	2:O:50:LEU:HA	1.92	0.50
1:A:373:LYS:H	1:A:373:LYS:CE	2.24	0.50
1:B:373:LYS:H	1:B:373:LYS:CE	2.24	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:45:VAL:HG12	1:E:143:TYR:OH	2.12	0.50
1:F:17:VAL:HG23	1:F:33:SER:HB3	1.93	0.50
1:F:354:GLN:N	1:F:354:GLN:OE1	2.44	0.50
2:N:28:ASP:CG	2:O:29:LYS:HD2	2.33	0.50
1:D:45:VAL:HG12	1:F:143:TYR:OH	2.12	0.50
1:D:373:LYS:H	1:D:373:LYS:CE	2.24	0.50
1:E:17:VAL:HG23	1:E:33:SER:HB3	1.93	0.50
1:B:47:MET:CE	1:D:148:THR:OG1	2.57	0.49
1:D:44:MET:HB3	1:D:47:MET:CG	2.42	0.49
1:E:354:GLN:OE1	1:E:354:GLN:N	2.44	0.49
1:A:44:MET:HB3	1:A:47:MET:CG	2.42	0.49
1:E:44:MET:HB3	1:E:47:MET:CG	2.42	0.49
2:L:230:ASP:OD1	2:L:230:ASP:N	2.44	0.49
2:N:66:ASP:O	2:N:70:LYS:N	2.45	0.49
1:B:373:LYS:CG	1:B:374:CYS:N	2.75	0.49
1:F:373:LYS:H	1:F:373:LYS:CE	2.24	0.49
2:J:10:MET:CG	3:K:106:ASP:OD1	2.61	0.49
2:I:35:ARG:CG	2:I:38:ARG:NH2	2.69	0.49
3:K:123:LYS:HD3	3:K:123:LYS:C	2.28	0.49
2:M:275:ASP:CG	3:P:121:ARG:HE	2.20	0.49
1:A:373:LYS:HG2	1:A:374:CYS:N	2.28	0.49
1:C:373:LYS:HG2	1:C:374:CYS:N	2.28	0.49
1:E:230:ALA:HB2	1:E:236:LEU:HD12	1.95	0.49
2:I:35:ARG:HA	2:I:38:ARG:NE	2.27	0.49
2:L:283:SER:C	2:L:284:ILE:HD12	2.38	0.49
1:A:230:ALA:HB2	1:A:236:LEU:HD12	1.95	0.49
1:A:373:LYS:CG	1:A:374:CYS:N	2.75	0.49
1:B:44:MET:HB3	1:B:47:MET:CG	2.42	0.49
3:P:107:LEU:HD13	3:P:107:LEU:HA	1.66	0.49
3:P:130:LEU:HD12	3:P:133:ARG:HE	1.78	0.49
1:A:47:MET:CE	1:C:148:THR:OG1	2.57	0.49
1:C:44:MET:HB3	1:C:47:MET:CG	2.42	0.49
1:B:373:LYS:HG2	1:B:374:CYS:N	2.28	0.49
1:C:230:ALA:HB2	1:C:236:LEU:HD12	1.95	0.49
1:F:44:MET:HB3	1:F:47:MET:CG	2.42	0.49
1:F:35:VAL:HG13	1:F:54:VAL:HG12	1.94	0.48
2:G:283:SER:C	2:G:284:ILE:HD12	2.38	0.48
2:I:66:ASP:O	2:I:70:LYS:N	2.45	0.48
2:L:249:LEU:HD21	3:P:141:ARG:HH22	1.78	0.48
2:L:270:ILE:HG13	2:M:267:TYR:HE1	1.78	0.48
1:D:35:VAL:HG13	1:D:54:VAL:HG12	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:155:SER:HB3	1:E:304:THR:HG23	1.95	0.48
1:F:155:SER:HB3	1:F:304:THR:HG23	1.95	0.48
2:H:275:ASP:CG	3:K:118:PHE:CE1	2.91	0.48
3:K:151:ARG:HG3	3:K:152:GLU:N	2.27	0.48
2:L:266:LYS:HE2	2:M:267:TYR:CZ	2.48	0.48
3:P:135:GLU:HG2	3:P:138:ARG:HE	1.77	0.48
2:H:279:ASN:HB2	3:K:118:PHE:HZ	1.78	0.48
3:P:102:LYS:HG2	3:P:102:LYS:O	2.12	0.48
1:C:155:SER:HB3	1:C:304:THR:HG23	1.95	0.48
2:G:266:LYS:HE2	2:H:267:TYR:CZ	2.48	0.48
2:L:264:LYS:HZ1	2:M:263:GLN:CG	2.23	0.48
1:B:24:ASP:N	1:B:24:ASP:OD1	2.47	0.48
1:B:35:VAL:HG13	1:B:54:VAL:HG12	1.94	0.48
1:D:373:LYS:CA	3:P:86:PRO:HA	2.44	0.48
1:E:373:LYS:HG2	1:E:374:CYS:N	2.28	0.48
2:G:248:LYS:HD2	2:G:248:LYS:O	2.12	0.48
3:P:98:ASP:N	3:P:98:ASP:OD1	2.44	0.48
1:D:155:SER:HB3	1:D:304:THR:HG23	1.95	0.48
1:D:373:LYS:HG2	1:D:374:CYS:N	2.28	0.48
2:H:274:LEU:HD21	2:I:1:MET:HG2	1.96	0.48
2:L:284:ILE:HG22	2:O:12:LYS:HD2	1.94	0.48
2:L:232:LEU:HD21	2:M:231:LYS:HD3	1.96	0.48
1:A:155:SER:HB3	1:A:304:THR:HG23	1.95	0.48
1:D:146:GLY:O	3:P:96:PHE:CB	2.60	0.48
2:N:8:MET:HG3	2:O:11:LEU:HD13	1.96	0.48
1:D:230:ALA:HB2	1:D:236:LEU:HD12	1.95	0.48
3:P:121:ARG:HG3	3:P:125:GLU:OE2	2.12	0.48
1:B:155:SER:HB3	1:B:304:THR:HG23	1.95	0.47
1:B:230:ALA:HB2	1:B:236:LEU:HD12	1.95	0.47
1:F:373:LYS:HG2	1:F:374:CYS:N	2.28	0.47
2:G:270:ILE:HG13	2:H:267:TYR:HE1	1.78	0.47
2:L:231:LYS:O	2:L:231:LYS:CD	2.43	0.47
1:F:230:ALA:HB2	1:F:236:LEU:HD12	1.95	0.47
2:I:8:MET:HG3	2:J:11:LEU:HD13	1.96	0.47
2:I:35:ARG:NH2	2:J:40:GLU:HB2	2.12	0.47
2:M:274:LEU:HD21	2:N:1:MET:HG2	1.96	0.47
2:N:17:ASN:HA	2:N:20:ASP:OD2	2.15	0.47
1:C:373:LYS:O	3:K:86:PRO:CA	2.63	0.47
1:E:24:ASP:OD1	1:E:24:ASP:N	2.47	0.47
2:G:230:ASP:OD1	2:G:230:ASP:N	2.44	0.47
3:K:148:ARG:HB3	3:K:151:ARG:NE	2.30	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:M:257:GLU:CD	3:P:134:ILE:CG2	2.68	0.47
1:C:33:SER:O	1:C:33:SER:OG	2.32	0.47
1:F:34:ILE:HD11	1:F:59:GLN:HG2	1.97	0.47
2:I:17:ASN:HA	2:I:20:ASP:OD2	2.15	0.47
3:K:143:GLU:OE1	3:K:143:GLU:HA	2.14	0.47
1:C:120:THR:OG1	1:C:132:MET:SD	2.67	0.47
1:A:44:MET:HB2	1:A:47:MET:HG3	1.97	0.47
1:D:34:ILE:HD11	1:D:59:GLN:HG2	1.97	0.47
1:E:34:ILE:HD11	1:E:59:GLN:HG2	1.97	0.47
3:K:148:ARG:CD	3:K:151:ARG:NH2	2.73	0.47
1:F:24:ASP:OD1	1:F:24:ASP:N	2.47	0.46
1:C:34:ILE:HD11	1:C:59:GLN:HG2	1.97	0.46
2:H:257:GLU:OE2	3:K:135:GLU:CA	2.61	0.46
3:P:153:LYS:O	3:P:157:THR:OG1	2.19	0.46
1:B:326:LYS:HZ3	2:N:65:LYS:HE3	1.80	0.46
1:C:24:ASP:OD1	1:C:24:ASP:N	2.47	0.46
1:C:44:MET:HB2	1:C:47:MET:HG3	1.97	0.46
1:E:44:MET:HB2	1:E:47:MET:HG3	1.98	0.46
1:A:33:SER:O	1:A:33:SER:OG	2.32	0.46
1:B:34:ILE:HD11	1:B:59:GLN:HG2	1.97	0.46
2:L:274:LEU:HD11	2:N:1:MET:SD	2.55	0.46
1:A:326:LYS:HZ3	2:I:65:LYS:HE3	1.81	0.46
1:B:12:ASN:OD1	1:B:86:TRP:NE1	2.42	0.46
2:G:274:LEU:HD11	2:I:1:MET:SD	2.55	0.46
2:M:275:ASP:OD1	3:P:118:PHE:CD1	2.68	0.46
3:P:124:GLU:O	3:P:124:GLU:CG	2.58	0.46
1:B:48:GLY:HA3	3:P:93:ARG:NH2	2.26	0.46
1:E:34:ILE:HD12	1:E:67:LEU:HD13	1.98	0.46
1:F:78:ASN:ND2	1:F:81:ASP:OD2	2.49	0.46
2:H:251:LYS:C	2:H:251:LYS:HD2	2.40	0.46
2:H:275:ASP:HA	3:K:117:HIS:HE1	1.81	0.46
1:A:78:ASN:ND2	1:A:81:ASP:OD2	2.49	0.46
1:B:373:LYS:NZ	1:B:373:LYS:HB3	2.31	0.46
1:C:78:ASN:ND2	1:C:81:ASP:OD2	2.49	0.46
1:D:354:GLN:NE2	3:P:89:PRO:CG	2.79	0.46
2:N:8:MET:CE	2:N:9:GLN:HG3	2.46	0.46
2:O:30:LYS:C	2:O:30:LYS:CD	2.86	0.46
1:B:78:ASN:ND2	1:B:81:ASP:OD2	2.49	0.46
1:C:12:ASN:OD1	1:C:86:TRP:NE1	2.42	0.46
1:C:146:GLY:HA3	3:K:99:ILE:HG21	1.97	0.46
1:F:120:THR:OG1	1:F:132:MET:SD	2.67	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:34:ILE:HD12	1:A:67:LEU:HD13	1.98	0.45
1:E:373:LYS:NZ	1:E:373:LYS:HB3	2.31	0.45
2:G:284:ILE:CB	2:J:12:LYS:CE	2.80	0.45
2:I:67:ALA:HA	2:I:70:LYS:HD2	1.98	0.45
1:A:34:ILE:HD11	1:A:59:GLN:HG2	1.97	0.45
1:B:44:MET:HB2	1:B:47:MET:HG3	1.97	0.45
1:C:373:LYS:NZ	1:C:373:LYS:HB3	2.31	0.45
1:F:373:LYS:NZ	1:F:373:LYS:HB3	2.31	0.45
3:P:106:ASP:OD2	3:P:107:LEU:HD22	2.16	0.45
2:N:63:ALA:HB3	2:N:64:PRO:HD3	1.98	0.45
1:D:24:ASP:OD1	1:D:24:ASP:N	2.47	0.45
1:E:336:LYS:HE2	1:E:336:LYS:HB3	1.81	0.45
2:G:284:ILE:CG2	2:G:284:ILE:O	2.65	0.45
2:I:15:LYS:HZ2	2:J:14:ASP:CB	2.26	0.45
2:O:10:MET:SD	3:P:106:ASP:CG	2.99	0.45
1:D:33:SER:O	1:D:33:SER:OG	2.32	0.45
1:E:78:ASN:ND2	1:E:81:ASP:OD2	2.49	0.45
1:F:44:MET:HB2	1:F:47:MET:HG3	1.97	0.45
1:A:373:LYS:HD2	1:A:374:CYS:N	2.31	0.45
1:A:373:LYS:NZ	1:A:373:LYS:HB3	2.31	0.45
1:D:78:ASN:ND2	1:D:81:ASP:OD2	2.49	0.45
1:D:373:LYS:NZ	1:D:373:LYS:HB3	2.31	0.45
1:F:336:LYS:HE2	1:F:336:LYS:HB3	1.81	0.45
2:M:265:LEU:CD2	3:P:128:VAL:HG11	2.46	0.45
3:P:146:ARG:O	3:P:149:THR:HG22	2.17	0.45
1:A:24:ASP:OD1	1:A:24:ASP:N	2.47	0.45
1:C:341:ILE:HG21	3:K:102:LYS:HZ3	1.82	0.45
2:I:38:ARG:HG3	2:I:39:LEU:N	2.31	0.45
3:K:100:HIS:CE1	3:K:104:MET:HE2	2.51	0.45
3:K:148:ARG:CB	3:K:151:ARG:NE	2.80	0.45
1:C:373:LYS:HD2	1:C:374:CYS:N	2.31	0.45
2:I:63:ALA:HB3	2:I:64:PRO:HD3	1.98	0.45
3:P:116:ALA:O	3:P:119:GLU:HG3	2.16	0.45
2:L:284:ILE:CG2	2:O:12:LYS:HE2	2.26	0.44
2:M:250:GLU:OE2	3:P:141:ARG:HD3	2.17	0.44
1:C:34:ILE:HD12	1:C:67:LEU:HD13	1.98	0.44
1:F:33:SER:O	1:F:33:SER:OG	2.33	0.44
3:K:131:LYS:HD3	3:K:131:LYS:HA	1.76	0.44
2:M:257:GLU:OE2	3:P:134:ILE:C	2.61	0.44
1:B:34:ILE:HD12	1:B:67:LEU:HD13	1.98	0.44
2:N:30:LYS:HD3	2:N:30:LYS:C	2.42	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:373:LYS:HD3	1:A:374:CYS:SG	2.58	0.44
1:F:34:ILE:HD12	1:F:67:LEU:HD13	1.98	0.44
2:I:35:ARG:HH11	2:J:36:SER:HB3	1.83	0.44
2:I:35:ARG:NH1	2:I:39:LEU:HD11	2.33	0.44
1:D:44:MET:HB2	1:D:47:MET:HG3	1.97	0.44
1:E:373:LYS:HD2	1:E:373:LYS:H	1.63	0.44
1:B:44:MET:CB	1:B:47:MET:HG3	2.48	0.44
2:H:275:ASP:OD2	3:K:118:PHE:HE1	1.99	0.44
1:C:373:LYS:HD3	1:C:374:CYS:SG	2.58	0.44
1:D:34:ILE:HD12	1:D:67:LEU:HD13	1.98	0.44
1:E:373:LYS:HD3	1:E:374:CYS:SG	2.58	0.44
1:A:120:THR:OG1	1:A:132:MET:SD	2.67	0.44
1:B:373:LYS:CD	1:B:374:CYS:N	2.80	0.44
1:B:373:LYS:HD3	1:B:374:CYS:SG	2.58	0.44
1:D:118:LYS:HB3	1:D:118:LYS:HE3	1.82	0.44
1:F:44:MET:CB	1:F:47:MET:HG3	2.48	0.44
1:F:373:LYS:HD3	1:F:374:CYS:SG	2.58	0.44
1:A:44:MET:CB	1:A:47:MET:HG3	2.48	0.44
1:D:375:PHE:H	3:P:86:PRO:HG3	1.83	0.44
1:B:373:LYS:HD2	1:B:374:CYS:N	2.31	0.43
1:E:373:LYS:HD2	1:E:374:CYS:N	2.31	0.43
2:M:248:LYS:C	2:M:248:LYS:CD	2.91	0.43
3:P:153:LYS:HA	3:P:153:LYS:HD3	1.70	0.43
2:I:30:LYS:HD3	2:I:30:LYS:C	2.42	0.43
2:L:238:ARG:HH21	2:M:243:GLU:CG	2.31	0.43
2:O:69:GLU:O	2:O:69:GLU:HG3	2.17	0.43
1:A:373:LYS:CD	1:A:374:CYS:N	2.80	0.43
1:C:341:ILE:CG2	3:K:102:LYS:HZ3	2.31	0.43
1:C:341:ILE:CG2	3:K:102:LYS:NZ	2.79	0.43
1:C:373:LYS:CD	1:C:374:CYS:N	2.80	0.43
2:O:13:LEU:HD13	3:P:103:ARG:NH2	2.33	0.43
1:A:18:LYS:HG2	1:A:30:VAL:HG22	2.01	0.43
1:D:44:MET:CB	1:D:47:MET:HG3	2.48	0.43
3:K:135:GLU:HG2	3:K:138:ARG:HE	1.83	0.43
3:P:133:ARG:HH22	3:P:134:ILE:HG12	1.83	0.43
1:F:373:LYS:HD2	1:F:374:CYS:N	2.31	0.43
1:D:336:LYS:HE2	1:D:336:LYS:HB3	1.81	0.43
1:D:373:LYS:HD2	1:D:374:CYS:N	2.31	0.43
1:E:44:MET:CB	1:E:47:MET:HG3	2.48	0.43
1:C:44:MET:CB	1:C:47:MET:HG3	2.48	0.43
2:G:238:ARG:HH21	2:H:243:GLU:CG	2.31	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:K:148:ARG:CA	3:K:151:ARG:HG2	2.48	0.43
2:L:252:SER:O	2:L:256:LEU:HG	2.19	0.43
1:B:369:ILE:HD12	1:B:372:ARG:HD3	2.01	0.43
1:D:369:ILE:HD12	1:D:372:ARG:HD3	2.01	0.43
1:D:373:LYS:HD3	1:D:374:CYS:SG	2.58	0.43
2:L:284:ILE:CG2	2:L:284:ILE:O	2.65	0.43
2:O:3:ALA:HB2	3:P:113:LEU:CG	2.48	0.43
3:P:126:GLU:H	3:P:126:GLU:HG3	1.53	0.43
1:E:11:ASP:OD1	1:E:106:THR:OG1	2.36	0.42
1:E:18:LYS:HG2	1:E:30:VAL:HG22	2.01	0.42
1:F:369:ILE:HD12	1:F:372:ARG:HD3	2.01	0.42
2:I:35:ARG:NH1	2:J:36:SER:O	2.48	0.42
2:I:35:ARG:CZ	2:I:39:LEU:HD11	2.49	0.42
2:H:278:LEU:HD23	3:K:114:ILE:CD1	2.32	0.42
2:N:51:LYS:HE3	2:N:51:LYS:HB3	1.88	0.42
1:B:18:LYS:HG2	1:B:30:VAL:HG22	2.01	0.42
1:D:373:LYS:CD	1:D:374:CYS:N	2.80	0.42
2:G:252:SER:O	2:G:256:LEU:HG	2.19	0.42
2:H:275:ASP:OD2	3:K:118:PHE:CE1	2.72	0.42
3:K:145:GLN:CG	3:K:146:ARG:HH21	2.32	0.42
1:C:373:LYS:HD2	1:C:373:LYS:H	1.63	0.42
1:D:11:ASP:OD1	1:D:106:THR:OG1	2.36	0.42
1:D:375:PHE:HB3	3:P:86:PRO:CG	2.45	0.42
2:I:8:MET:CE	2:I:9:GLN:HG2	2.49	0.42
2:O:30:LYS:CD	2:O:34:ASP:OD2	2.66	0.42
1:E:12:ASN:OD1	1:E:86:TRP:NE1	2.42	0.42
1:E:373:LYS:CD	1:E:374:CYS:N	2.80	0.42
2:I:35:ARG:HG3	2:I:38:ARG:HE	1.85	0.42
2:O:37:LYS:HD2	2:O:38:ARG:N	2.35	0.42
1:C:18:LYS:HG2	1:C:30:VAL:HG22	2.01	0.42
1:D:18:LYS:HG2	1:D:30:VAL:HG22	2.01	0.42
2:H:257:GLU:OE2	3:K:135:GLU:N	2.52	0.42
3:K:131:LYS:NZ	3:K:134:ILE:HG13	2.34	0.42
3:P:138:ARG:C	3:P:138:ARG:CD	2.90	0.42
1:A:369:ILE:HD12	1:A:372:ARG:HD3	2.01	0.42
3:K:148:ARG:HA	3:K:151:ARG:HG2	2.02	0.42
2:M:257:GLU:CG	3:P:134:ILE:HG23	2.48	0.42
3:P:131:LYS:HA	3:P:131:LYS:HD3	1.50	0.42
1:B:336:LYS:HE2	1:B:336:LYS:HB3	1.81	0.42
1:C:351:THR:HG21	3:K:91:GLY:HA3	2.02	0.42
1:D:215:LYS:O	2:L:276:HIS:HE1	2.03	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:P:121:ARG:HD2	3:P:125:GLU:OE2	2.19	0.42
1:C:193:LEU:HD23	1:C:193:LEU:HA	1.83	0.41
1:F:18:LYS:HG2	1:F:30:VAL:HG22	2.01	0.41
2:N:2:ASP:OD1	2:N:2:ASP:N	2.53	0.41
3:P:156:GLN:O	3:P:158:ARG:N	2.53	0.41
1:B:106:THR:HB	1:B:137:GLN:HG2	2.02	0.41
1:C:73:HIS:O	1:C:75:ILE:N	2.50	0.41
1:E:369:ILE:HD12	1:E:372:ARG:HD3	2.01	0.41
2:J:7:LYS:HD3	3:K:110:LEU:HD21	2.01	0.41
2:M:278:LEU:CD2	3:P:114:ILE:CD1	2.89	0.41
1:C:215:LYS:O	2:G:276:HIS:HE1	2.03	0.41
1:C:369:ILE:HD12	1:C:372:ARG:HD3	2.01	0.41
1:D:106:THR:HB	1:D:137:GLN:HG2	2.02	0.41
1:D:120:THR:OG1	1:D:132:MET:SD	2.67	0.41
2:M:268:LYS:HE2	3:P:125:GLU:HB3	2.03	0.41
1:D:141:SER:OG	1:D:152:VAL:HG21	2.21	0.41
2:J:1:MET:HA	2:J:1:MET:HE2	2.03	0.41
2:J:39:LEU:HD23	2:J:39:LEU:HA	1.95	0.41
3:K:151:ARG:CG	3:K:152:GLU:N	2.83	0.41
1:A:12:ASN:OD1	1:A:86:TRP:NE1	2.42	0.41
1:A:118:LYS:HB3	1:A:118:LYS:HE3	1.82	0.41
1:C:141:SER:OG	1:C:152:VAL:HG21	2.21	0.41
1:E:120:THR:OG1	1:E:132:MET:SD	2.67	0.41
1:F:106:THR:HB	1:F:137:GLN:HG2	2.02	0.41
2:G:248:LYS:HE3	2:G:249:LEU:HD23	2.02	0.41
2:N:61:SER:HA	2:O:60:TYR:CD1	2.55	0.41
2:N:70:LYS:O	2:N:70:LYS:CG	2.64	0.41
2:O:10:MET:CE	3:P:106:ASP:CG	2.93	0.41
1:B:242:LEU:HD23	1:D:287:ILE:HD11	2.03	0.41
1:E:141:SER:OG	1:E:152:VAL:HG21	2.20	0.41
2:I:2:ASP:OD1	2:I:2:ASP:N	2.53	0.41
2:I:30:LYS:CE	2:I:34:ASP:OD2	2.68	0.41
2:J:6:LYS:HE2	2:J:6:LYS:HB2	1.83	0.41
3:K:93:ARG:HD3	3:K:93:ARG:HA	1.72	0.41
2:M:257:GLU:CG	3:P:134:ILE:CG2	2.97	0.41
1:A:73:HIS:O	1:A:75:ILE:N	2.49	0.41
1:E:33:SER:O	1:E:33:SER:OG	2.33	0.41
1:F:141:SER:OG	1:F:152:VAL:HG21	2.20	0.41
2:I:61:SER:HA	2:J:60:TYR:CD1	2.55	0.41
3:K:148:ARG:HA	3:K:151:ARG:CG	2.50	0.41
1:B:11:ASP:OD1	1:B:106:THR:OG1	2.36	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:141:SER:OG	1:B:152:VAL:HG21	2.20	0.41
1:C:372:ARG:HE	1:C:373:LYS:HE2	1.86	0.41
2:I:8:MET:HE3	2:I:9:GLN:CD	2.39	0.41
2:L:242:ALA:CB	2:M:242:ALA:HB1	2.51	0.41
1:A:106:THR:HB	1:A:137:GLN:HG2	2.02	0.41
1:A:372:ARG:HE	1:A:373:LYS:HE2	1.86	0.41
1:D:12:ASN:OD1	1:D:86:TRP:NE1	2.42	0.41
1:E:106:THR:HB	1:E:137:GLN:HG2	2.02	0.41
2:L:259:GLU:C	2:L:259:GLU:CD	2.89	0.41
2:N:15:LYS:HE2	2:O:14:ASP:HB3	2.02	0.41
2:O:1:MET:HE2	2:O:1:MET:HA	2.03	0.41
2:O:65:LYS:N	2:O:65:LYS:HD2	2.36	0.41
3:P:133:ARG:HE	3:P:133:ARG:HB3	1.52	0.41
1:A:11:ASP:OD1	1:A:106:THR:OG1	2.36	0.41
1:F:372:ARG:HE	1:F:373:LYS:HE2	1.86	0.41
2:L:248:LYS:HE3	2:L:249:LEU:HD23	2.02	0.41
1:A:349:LEU:HD23	1:A:349:LEU:HA	1.91	0.40
1:E:372:ARG:HE	1:E:373:LYS:HE2	1.86	0.40
2:G:242:ALA:CB	2:H:242:ALA:HB1	2.51	0.40
2:M:257:GLU:HG3	3:P:134:ILE:CG2	2.51	0.40
2:H:284:ILE:HD11	2:I:8:MET:SD	2.61	0.40
3:K:100:HIS:CE1	3:K:104:MET:CE	3.04	0.40
2:M:284:ILE:HD11	2:N:8:MET:SD	2.61	0.40
2:N:43:LEU:HG	2:O:46:LEU:HD23	2.03	0.40
1:D:354:GLN:NE2	3:P:89:PRO:HB2	2.36	0.40
1:E:14:SER:N	4:E:401:ADP:O3B	2.33	0.40
1:C:106:THR:HB	1:C:137:GLN:HG2	2.02	0.40
1:D:355:MET:HE1	3:P:86:PRO:HB2	2.04	0.40
1:D:372:ARG:HE	1:D:373:LYS:HE2	1.86	0.40
2:J:23:GLU:CD	2:J:23:GLU:C	2.89	0.40
1:A:141:SER:OG	1:A:152:VAL:HG21	2.21	0.40
1:D:355:MET:SD	3:P:89:PRO:CD	3.08	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles

### 5.3.1 Protein backbone

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

entries.

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	369/377 (98%)	351 (95%)	18 (5%)	0	100	100
1	B	369/377 (98%)	350 (95%)	19 (5%)	0	100	100
1	C	369/377 (98%)	350 (95%)	19 (5%)	0	100	100
1	D	369/377 (98%)	351 (95%)	18 (5%)	0	100	100
1	E	369/377 (98%)	351 (95%)	18 (5%)	0	100	100
1	F	369/377 (98%)	350 (95%)	19 (5%)	0	100	100
2	G	53/284 (19%)	50 (94%)	3 (6%)	0	100	100
2	H	53/284 (19%)	51 (96%)	2 (4%)	0	100	100
2	I	68/284 (24%)	68 (100%)	0	0	100	100
2	J	68/284 (24%)	68 (100%)	0	0	100	100
2	L	53/284 (19%)	50 (94%)	3 (6%)	0	100	100
2	M	53/284 (19%)	51 (96%)	2 (4%)	0	100	100
2	N	68/284 (24%)	68 (100%)	0	0	100	100
2	O	68/284 (24%)	68 (100%)	0	0	100	100
3	K	73/295 (25%)	69 (94%)	4 (6%)	0	100	100
3	P	73/295 (25%)	70 (96%)	3 (4%)	0	100	100
All	All	2844/5124 (56%)	2716 (96%)	128 (4%)	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	314/320 (98%)	294 (94%)	20 (6%)	16	42
1	B	314/320 (98%)	294 (94%)	20 (6%)	16	42

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	C	314/320 (98%)	294 (94%)	20 (6%)	16	42
1	D	314/320 (98%)	294 (94%)	20 (6%)	16	42
1	E	314/320 (98%)	294 (94%)	20 (6%)	16	42
1	F	314/320 (98%)	294 (94%)	20 (6%)	16	42
2	G	49/245 (20%)	46 (94%)	3 (6%)	17	43
2	H	49/245 (20%)	41 (84%)	8 (16%)	2	14
2	I	60/245 (24%)	56 (93%)	4 (7%)	15	41
2	J	60/245 (24%)	59 (98%)	1 (2%)	53	70
2	L	49/245 (20%)	46 (94%)	3 (6%)	17	43
2	M	49/245 (20%)	43 (88%)	6 (12%)	5	22
2	N	60/245 (24%)	56 (93%)	4 (7%)	15	41
2	O	60/245 (24%)	59 (98%)	1 (2%)	53	70
3	K	71/257 (28%)	64 (90%)	7 (10%)	7	29
3	P	71/257 (28%)	59 (83%)	12 (17%)	2	13
All	All	2462/4394 (56%)	2293 (93%)	169 (7%)	16	39

All (169) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	24	ASP
1	A	54	VAL
1	A	64	ILE
1	A	66	THR
1	A	140	LEU
1	A	151	ILE
1	A	152	VAL
1	A	153	LEU
1	A	171	LEU
1	A	233	SER
1	A	254	ARG
1	A	269	MET
1	A	270	GLU
1	A	288	ASP
1	A	300	SER
1	A	303	THR
1	A	334	GLU
1	A	370	VAL

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Mol	Chain	Res	Type
1	A	373	LYS
1	A	374	CYS
1	B	24	ASP
1	B	54	VAL
1	B	64	ILE
1	B	66	THR
1	B	140	LEU
1	B	151	ILE
1	B	152	VAL
1	B	153	LEU
1	B	171	LEU
1	B	233	SER
1	B	254	ARG
1	B	269	MET
1	B	270	GLU
1	B	288	ASP
1	B	300	SER
1	B	303	THR
1	B	334	GLU
1	B	370	VAL
1	B	373	LYS
1	B	374	CYS
1	C	24	ASP
1	C	54	VAL
1	C	64	ILE
1	C	66	THR
1	C	140	LEU
1	C	151	ILE
1	C	152	VAL
1	C	153	LEU
1	C	171	LEU
1	C	233	SER
1	C	254	ARG
1	C	269	MET
1	C	270	GLU
1	C	288	ASP
1	C	300	SER
1	C	303	THR
1	C	334	GLU
1	C	370	VAL
1	C	373	LYS
1	C	374	CYS

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Mol	Chain	Res	Type
1	D	24	ASP
1	D	54	VAL
1	D	64	ILE
1	D	66	THR
1	D	140	LEU
1	D	151	ILE
1	D	152	VAL
1	D	153	LEU
1	D	171	LEU
1	D	233	SER
1	D	254	ARG
1	D	269	MET
1	D	270	GLU
1	D	288	ASP
1	D	300	SER
1	D	303	THR
1	D	334	GLU
1	D	370	VAL
1	D	373	LYS
1	D	374	CYS
1	E	24	ASP
1	E	54	VAL
1	E	64	ILE
1	E	66	THR
1	E	140	LEU
1	E	151	ILE
1	E	152	VAL
1	E	153	LEU
1	E	171	LEU
1	E	233	SER
1	E	254	ARG
1	E	269	MET
1	E	270	GLU
1	E	288	ASP
1	E	300	SER
1	E	303	THR
1	E	334	GLU
1	E	370	VAL
1	E	373	LYS
1	E	374	CYS
1	F	24	ASP
1	F	54	VAL

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Mol	Chain	Res	Type
1	F	64	ILE
1	F	66	THR
1	F	140	LEU
1	F	151	ILE
1	F	152	VAL
1	F	153	LEU
1	F	171	LEU
1	F	233	SER
1	F	254	ARG
1	F	269	MET
1	F	270	GLU
1	F	288	ASP
1	F	300	SER
1	F	303	THR
1	F	334	GLU
1	F	370	VAL
1	F	373	LYS
1	F	374	CYS
2	G	230	ASP
2	G	273	GLU
2	G	282	THR
2	H	233	LYS
2	H	240	GLU
2	H	248	LYS
2	H	250	GLU
2	H	254	ASP
2	H	265	LEU
2	H	270	ILE
2	H	284	ILE
2	I	1	MET
2	I	4	ILE
2	I	13	LEU
2	I	46	LEU
2	J	4	ILE
3	K	93	ARG
3	K	99	ILE
3	K	106	ASP
3	K	113	LEU
3	K	127	LEU
3	K	136	LYS
3	K	146	ARG
2	L	230	ASP

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Mol	Chain	Res	Type
2	L	273	GLU
2	L	282	THR
2	M	233	LYS
2	M	240	GLU
2	M	265	LEU
2	M	270	ILE
2	M	276	HIS
2	M	284	ILE
2	N	1	MET
2	N	4	ILE
2	N	13	LEU
2	N	46	LEU
2	O	4	ILE
3	P	93	ARG
3	P	94	VAL
3	P	99	ILE
3	P	106	ASP
3	P	107	LEU
3	P	113	LEU
3	P	117	HIS
3	P	118	PHE
3	P	126	GLU
3	P	134	ILE
3	P	145	GLN
3	P	157	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (21) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	115	ASN
1	B	115	ASN
1	C	115	ASN
1	D	115	ASN
1	D	354	GLN
1	E	115	ASN
1	F	115	ASN
2	G	263	GLN
2	G	276	HIS
2	G	279	ASN
2	H	276	HIS
2	I	9	GLN
2	I	47	GLN

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Mol	Chain	Res	Type
3	K	100	HIS
3	K	117	HIS
3	K	144	GLN
2	L	263	GLN
2	L	276	HIS
2	L	279	ASN
2	N	47	GLN
3	P	117	HIS

### 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 12 ligands modelled in this entry, 6 are monoatomic - leaving 6 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z  > 2$	Counts	RMSZ	$\# Z  > 2$
4	ADP	B	401	5	28,29,29	1.38	5 (17%)	43,45,45	1.81	9 (20%)
4	ADP	C	401	5	28,29,29	1.38	5 (17%)	43,45,45	1.80	9 (20%)
4	ADP	F	401	5	28,29,29	1.39	6 (21%)	43,45,45	1.81	9 (20%)
4	ADP	A	401	5	28,29,29	1.38	5 (17%)	43,45,45	1.80	9 (20%)
4	ADP	D	401	5	28,29,29	1.38	4 (14%)	43,45,45	1.81	9 (20%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
4	ADP	E	401	5	28,29,29	1.39	5 (17%)	43,45,45	1.81	9 (20%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	ADP	B	401	5	-	3/16/32/32	0/3/3/3
4	ADP	C	401	5	-	3/16/32/32	0/3/3/3
4	ADP	F	401	5	-	3/16/32/32	0/3/3/3
4	ADP	A	401	5	-	3/16/32/32	0/3/3/3
4	ADP	D	401	5	-	3/16/32/32	0/3/3/3
4	ADP	E	401	5	-	3/16/32/32	0/3/3/3

All (30) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	F	401	ADP	C5-C4	4.26	1.46	1.39
4	D	401	ADP	C5-C4	4.26	1.46	1.39
4	E	401	ADP	C5-C4	4.26	1.46	1.39
4	C	401	ADP	C5-C4	4.25	1.46	1.39
4	B	401	ADP	C5-C4	4.24	1.46	1.39
4	A	401	ADP	C5-C4	4.22	1.46	1.39
4	A	401	ADP	C5-N7	-2.85	1.33	1.39
4	B	401	ADP	C5-N7	-2.84	1.33	1.39
4	C	401	ADP	C5-N7	-2.84	1.33	1.39
4	F	401	ADP	C5-N7	-2.83	1.33	1.39
4	E	401	ADP	C5-N7	-2.82	1.33	1.39
4	D	401	ADP	C5-N7	-2.80	1.34	1.39
4	D	401	ADP	C5-C6	2.37	1.47	1.41
4	B	401	ADP	C5-C6	2.37	1.47	1.41
4	E	401	ADP	C5-C6	2.35	1.47	1.41
4	A	401	ADP	C5-C6	2.35	1.47	1.41
4	F	401	ADP	C5-C6	2.35	1.47	1.41
4	C	401	ADP	C5-C6	2.35	1.47	1.41
4	E	401	ADP	C4-N9	-2.33	1.32	1.37
4	D	401	ADP	C4-N9	-2.32	1.32	1.37
4	F	401	ADP	C4-N9	-2.28	1.32	1.37
4	C	401	ADP	C4-N9	-2.28	1.33	1.37
4	B	401	ADP	C4-N9	-2.25	1.33	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	401	ADP	C4-N9	-2.25	1.33	1.37
4	E	401	ADP	C8-N7	2.09	1.35	1.31
4	B	401	ADP	C8-N7	2.08	1.35	1.31
4	A	401	ADP	C8-N7	2.07	1.35	1.31
4	F	401	ADP	C8-N7	2.06	1.35	1.31
4	C	401	ADP	C8-N7	2.05	1.35	1.31
4	F	401	ADP	C8-N9	-2.02	1.34	1.37

All (54) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	E	401	ADP	C5-C4-N3	-5.77	118.77	126.72
4	D	401	ADP	C5-C4-N3	-5.76	118.79	126.72
4	F	401	ADP	C5-C4-N3	-5.75	118.80	126.72
4	C	401	ADP	C5-C4-N3	-5.72	118.84	126.72
4	A	401	ADP	C5-C4-N3	-5.71	118.86	126.72
4	B	401	ADP	C5-C4-N3	-5.71	118.86	126.72
4	F	401	ADP	N3-C4-N9	4.63	135.04	127.17
4	B	401	ADP	N3-C4-N9	4.62	135.03	127.17
4	E	401	ADP	N3-C4-N9	4.62	135.03	127.17
4	C	401	ADP	N3-C4-N9	4.61	135.01	127.17
4	A	401	ADP	N3-C4-N9	4.61	135.00	127.17
4	D	401	ADP	N3-C4-N9	4.61	135.00	127.17
4	F	401	ADP	C2-N3-C4	3.44	120.24	111.83
4	D	401	ADP	C2-N3-C4	3.44	120.22	111.83
4	A	401	ADP	C2-N3-C4	3.43	120.21	111.83
4	E	401	ADP	C2-N3-C4	3.43	120.21	111.83
4	B	401	ADP	C2-N3-C4	3.42	120.19	111.83
4	C	401	ADP	C2-N3-C4	3.41	120.17	111.83
4	E	401	ADP	C4-C5-N7	-3.27	106.85	110.58
4	D	401	ADP	C4-C5-N7	-3.25	106.87	110.58
4	F	401	ADP	C4-C5-N7	-3.25	106.87	110.58
4	C	401	ADP	C4-C5-N7	-3.22	106.91	110.58
4	B	401	ADP	C4-C5-N7	-3.18	106.94	110.58
4	A	401	ADP	C4-C5-N7	-3.18	106.95	110.58
4	A	401	ADP	N3-C2-N1	-2.78	124.38	128.58
4	B	401	ADP	N3-C2-N1	-2.78	124.38	128.58
4	D	401	ADP	N3-C2-N1	-2.74	124.43	128.58
4	F	401	ADP	N3-C2-N1	-2.74	124.43	128.58
4	B	401	ADP	C4-N9-C8	2.74	108.61	105.74
4	E	401	ADP	C4-N9-C8	2.72	108.60	105.74
4	C	401	ADP	N3-C2-N1	-2.72	124.47	128.58

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	F	401	ADP	C4-N9-C8	2.70	108.57	105.74
4	E	401	ADP	N3-C2-N1	-2.69	124.50	128.58
4	C	401	ADP	C4-N9-C8	2.69	108.57	105.74
4	A	401	ADP	C4-N9-C8	2.68	108.56	105.74
4	D	401	ADP	C4-N9-C8	2.64	108.51	105.74
4	D	401	ADP	C3'-C2'-C1'	2.58	106.34	101.46
4	E	401	ADP	C3'-C2'-C1'	2.57	106.32	101.46
4	C	401	ADP	C3'-C2'-C1'	2.57	106.32	101.46
4	B	401	ADP	C3'-C2'-C1'	2.56	106.31	101.46
4	A	401	ADP	C3'-C2'-C1'	2.56	106.30	101.46
4	F	401	ADP	C3'-C2'-C1'	2.56	106.30	101.46
4	C	401	ADP	C5-N7-C8	2.38	107.19	103.45
4	E	401	ADP	C5-N7-C8	2.38	107.19	103.45
4	B	401	ADP	C5-N7-C8	2.38	107.19	103.45
4	F	401	ADP	C5-N7-C8	2.38	107.19	103.45
4	D	401	ADP	C5-N7-C8	2.37	107.17	103.45
4	A	401	ADP	C5-N7-C8	2.35	107.15	103.45
4	F	401	ADP	C2'-C1'-N9	-2.18	107.88	113.30
4	D	401	ADP	C2'-C1'-N9	-2.18	107.88	113.30
4	E	401	ADP	C2'-C1'-N9	-2.16	107.94	113.30
4	A	401	ADP	C2'-C1'-N9	-2.16	107.95	113.30
4	C	401	ADP	C2'-C1'-N9	-2.15	107.95	113.30
4	B	401	ADP	C2'-C1'-N9	-2.14	107.99	113.30

There are no chirality outliers.

All (18) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	401	ADP	C5'-O5'-PA-O1A
4	A	401	ADP	C5'-O5'-PA-O2A
4	A	401	ADP	C5'-O5'-PA-O3A
4	B	401	ADP	C5'-O5'-PA-O1A
4	B	401	ADP	C5'-O5'-PA-O2A
4	B	401	ADP	C5'-O5'-PA-O3A
4	C	401	ADP	C5'-O5'-PA-O1A
4	C	401	ADP	C5'-O5'-PA-O2A
4	C	401	ADP	C5'-O5'-PA-O3A
4	D	401	ADP	C5'-O5'-PA-O1A
4	D	401	ADP	C5'-O5'-PA-O2A
4	D	401	ADP	C5'-O5'-PA-O3A
4	E	401	ADP	C5'-O5'-PA-O1A
4	E	401	ADP	C5'-O5'-PA-O2A

*Continued on next page...*

*Continued from previous page...*

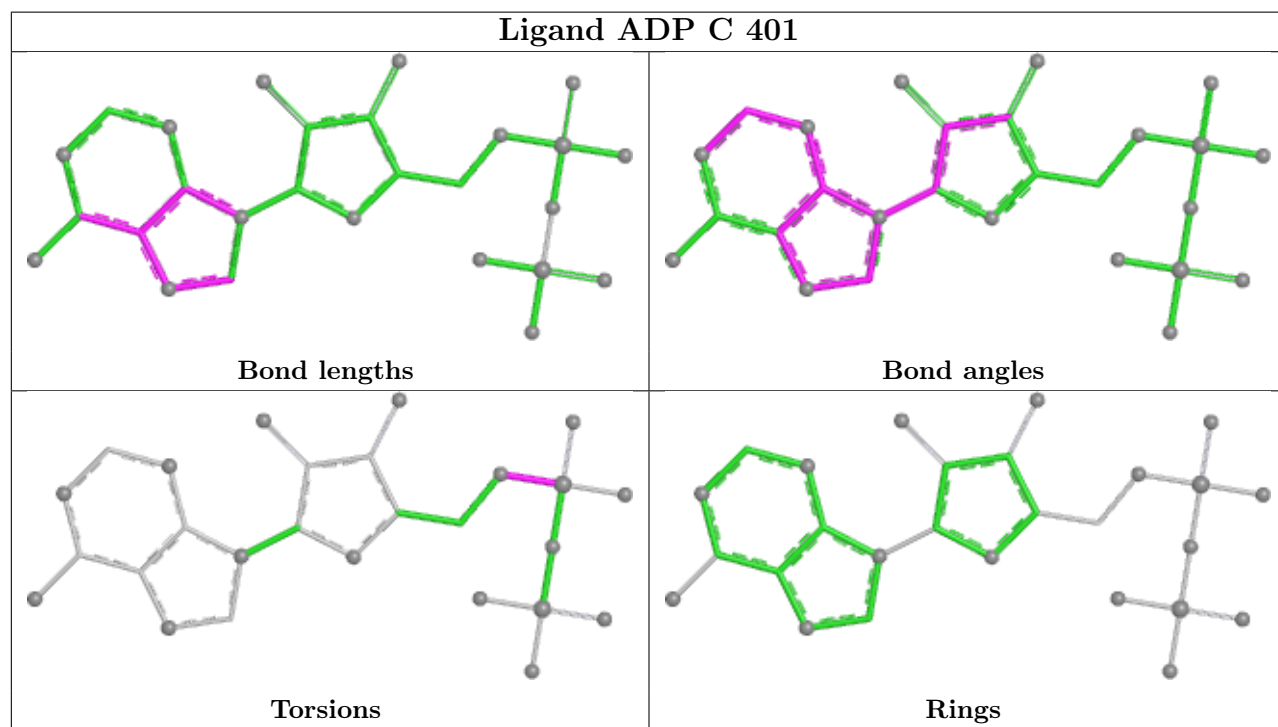
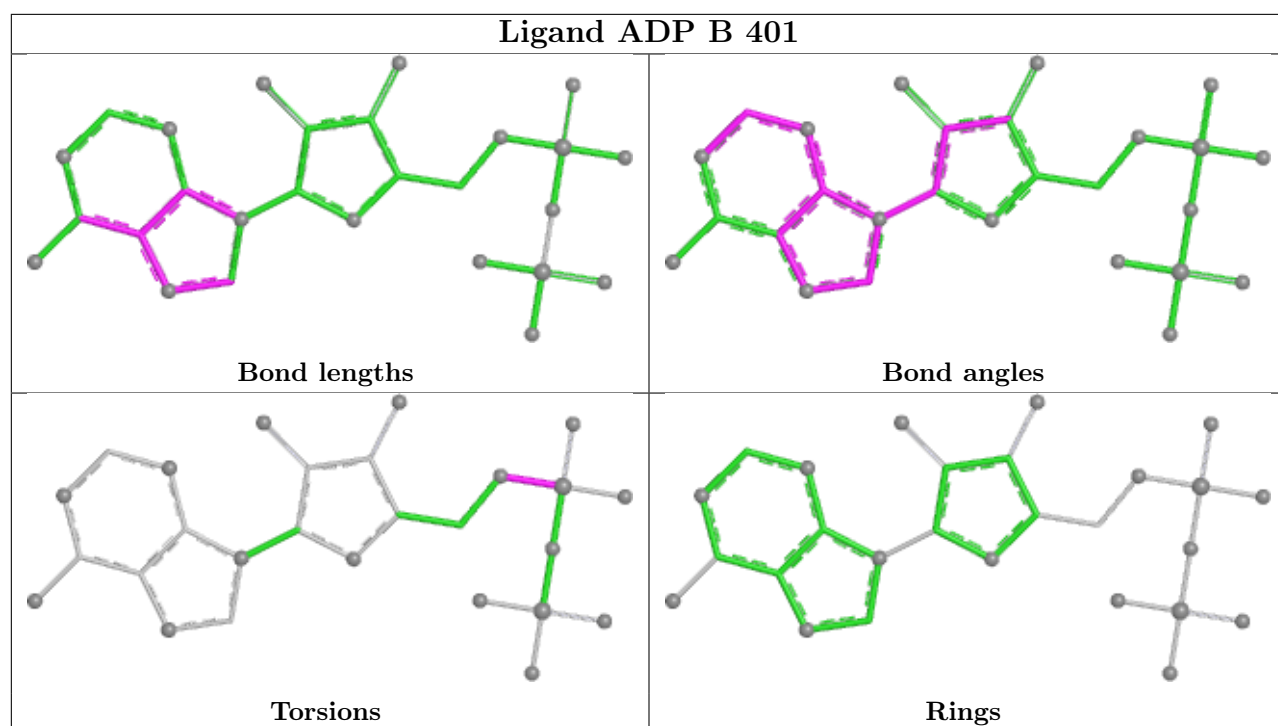
Mol	Chain	Res	Type	Atoms
4	E	401	ADP	C5'-O5'-PA-O3A
4	F	401	ADP	C5'-O5'-PA-O1A
4	F	401	ADP	C5'-O5'-PA-O2A
4	F	401	ADP	C5'-O5'-PA-O3A

There are no ring outliers.

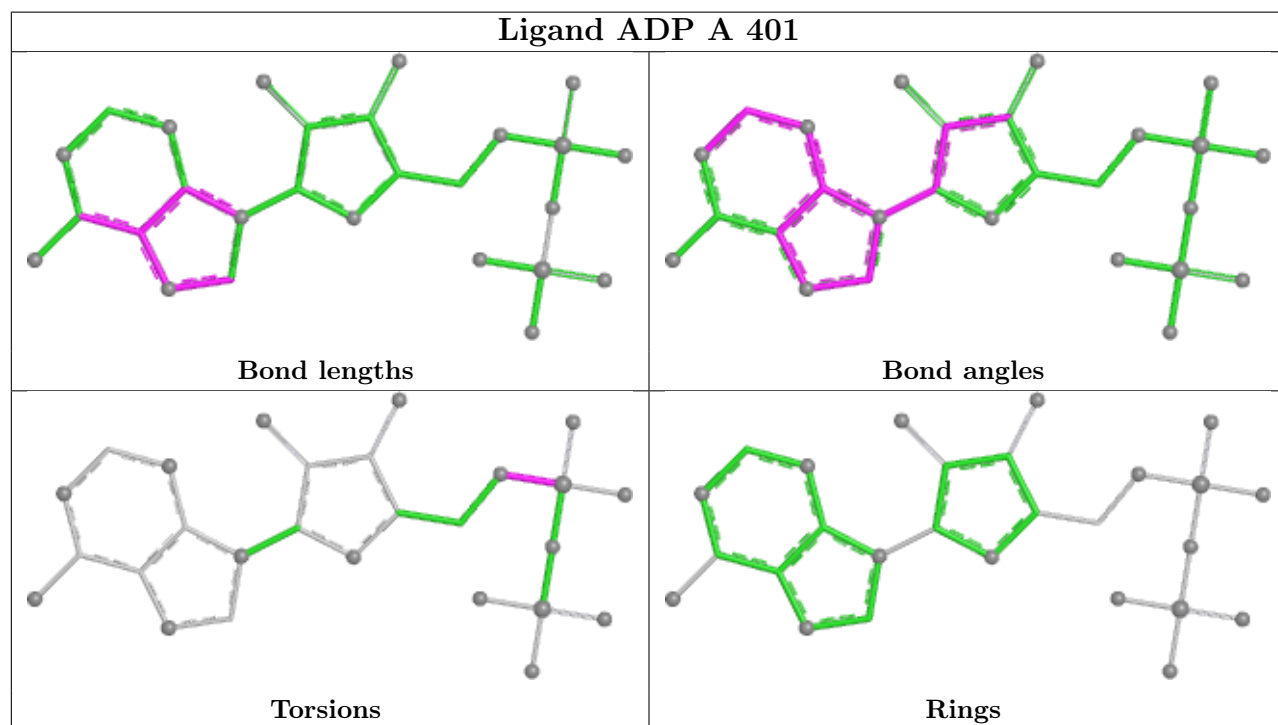
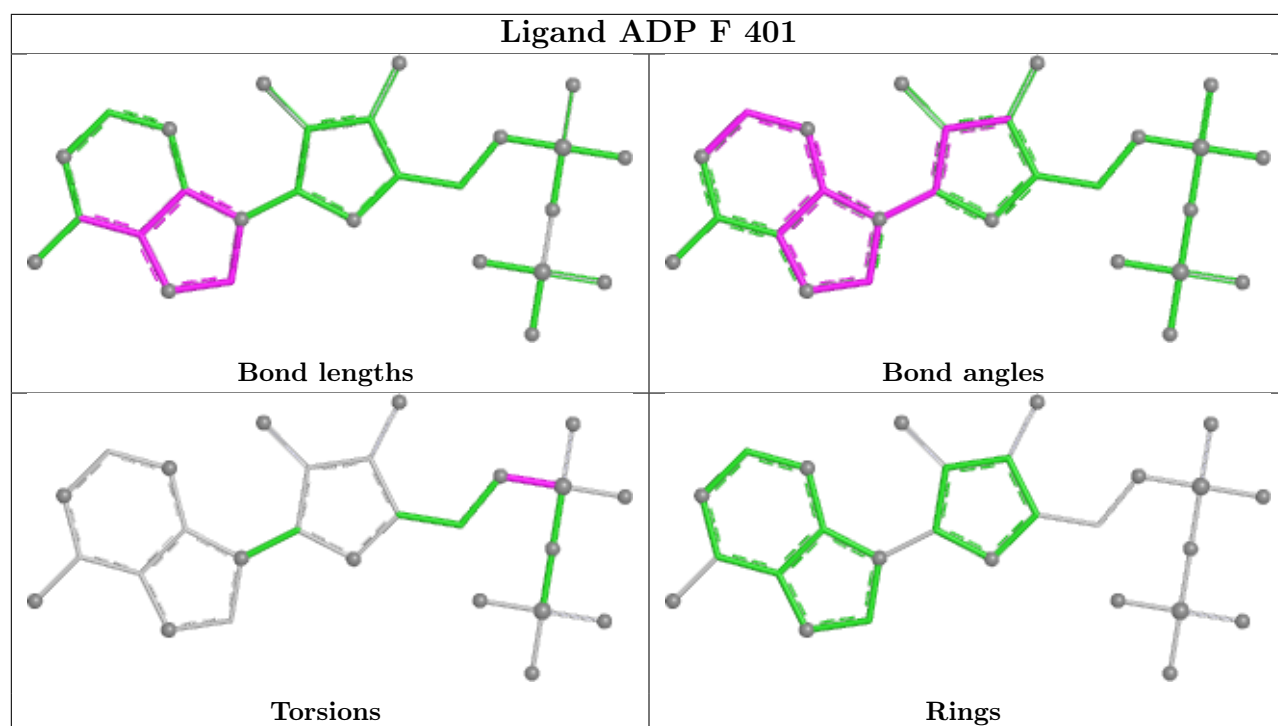
6 monomers are involved in 13 short contacts:

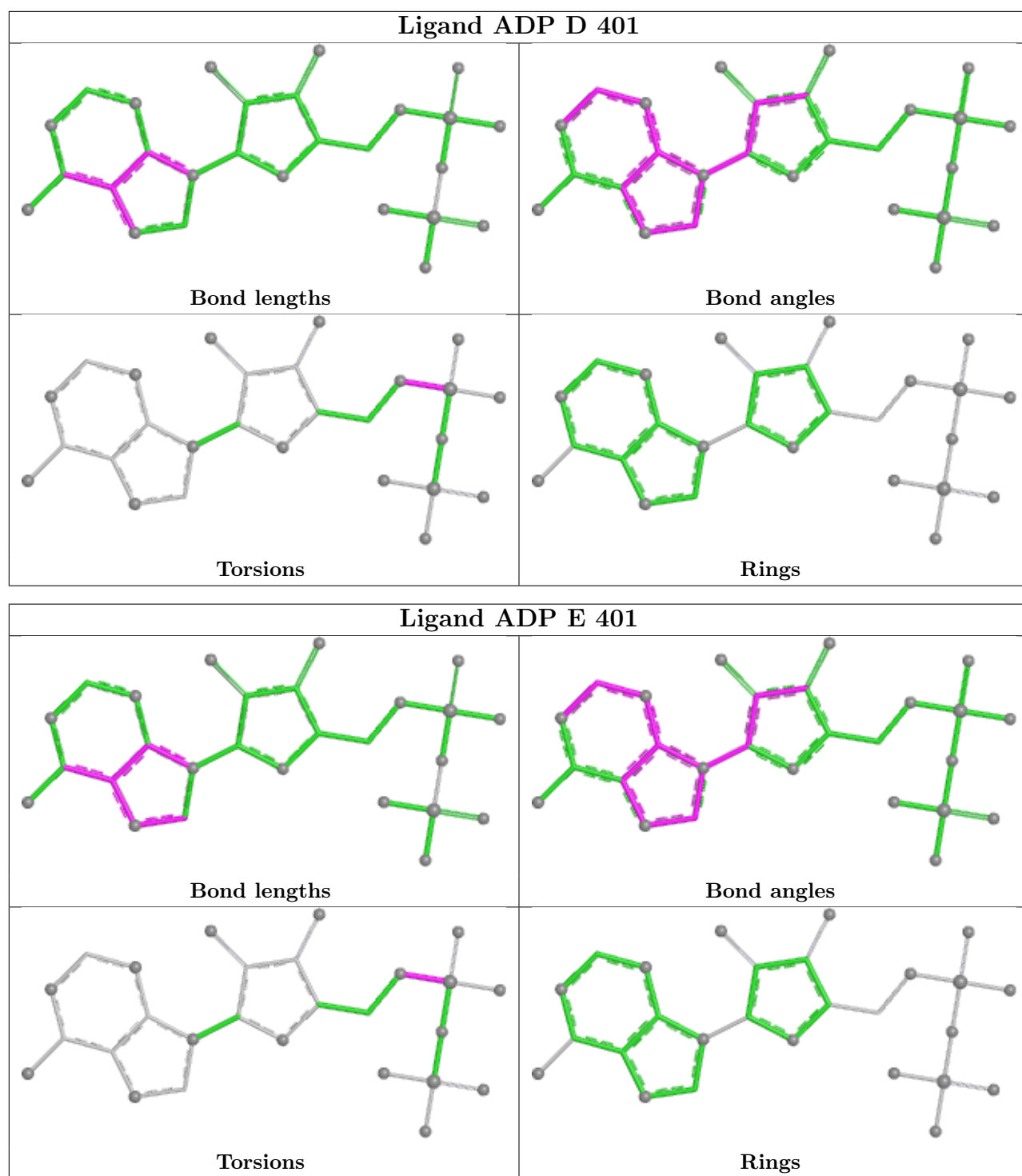
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	401	ADP	2	0
4	C	401	ADP	2	0
4	F	401	ADP	2	0
4	A	401	ADP	2	0
4	D	401	ADP	2	0
4	E	401	ADP	3	0

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









## 5.7 Other polymers ⓘ

There are no such residues in this entry.

## 5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

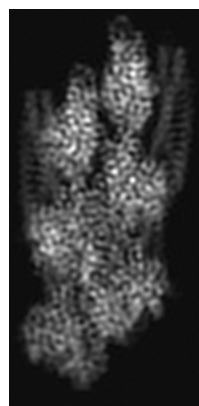
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-27331. These allow visual inspection of the internal detail of the map and identification of artifacts.

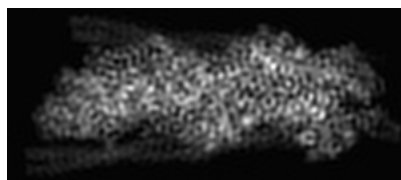
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

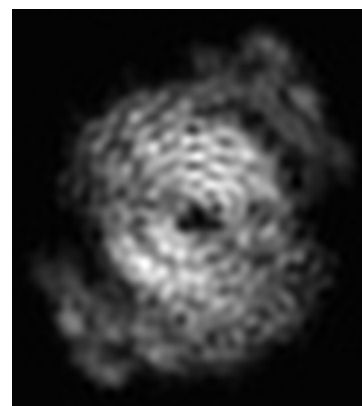
#### 6.1.1 Primary map



X

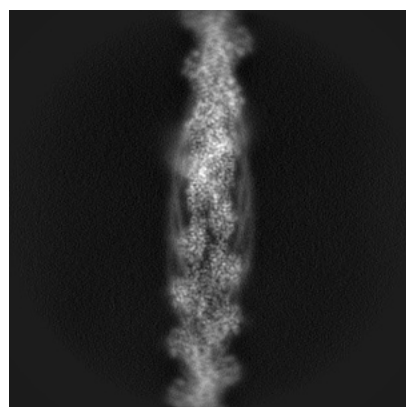


Y

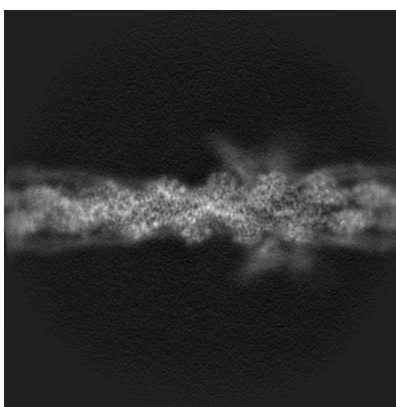


Z

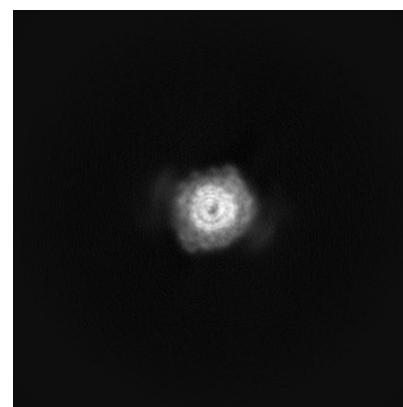
#### 6.1.2 Raw map



X



Y

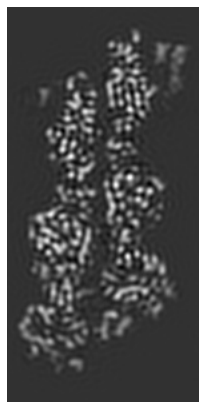


Z

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

## 6.2 Central slices [i](#)

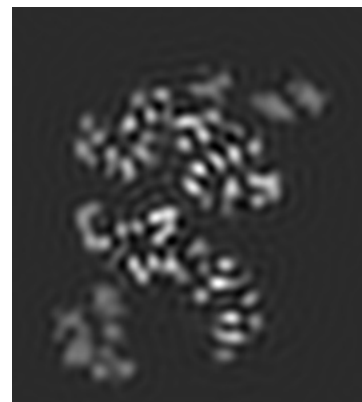
### 6.2.1 Primary map



X Index: 36

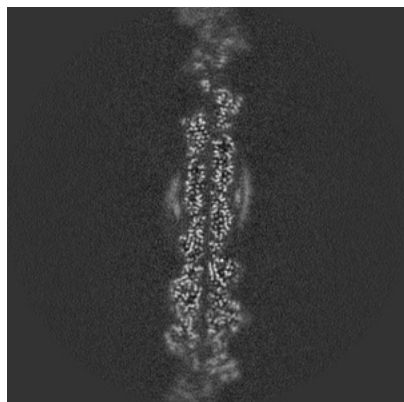


Y Index: 40

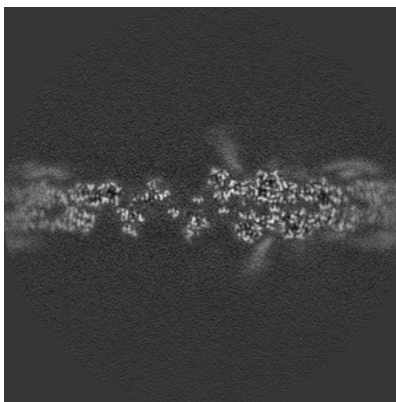


Z Index: 83

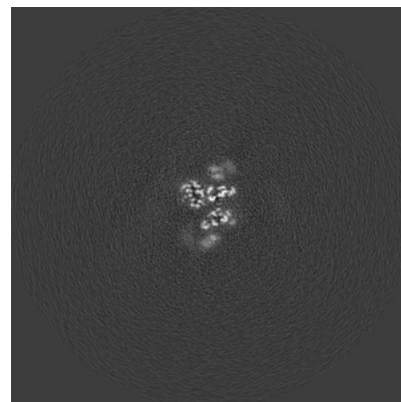
### 6.2.2 Raw map



X Index: 162



Y Index: 162



Z Index: 162

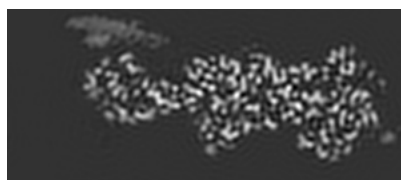
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

### 6.3.1 Primary map



X Index: 34

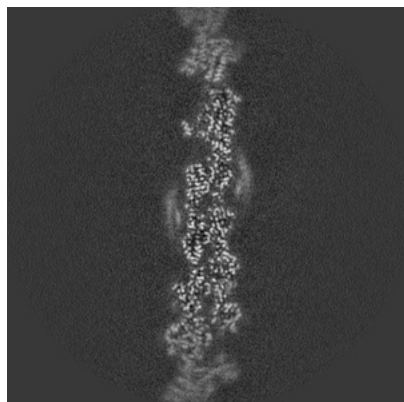


Y Index: 50

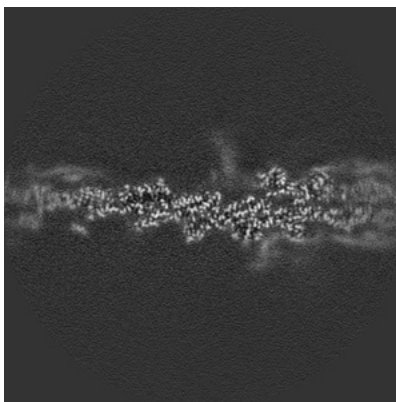


Z Index: 107

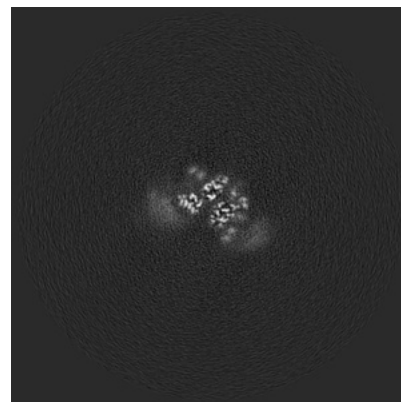
### 6.3.2 Raw map



X Index: 158



Y Index: 169

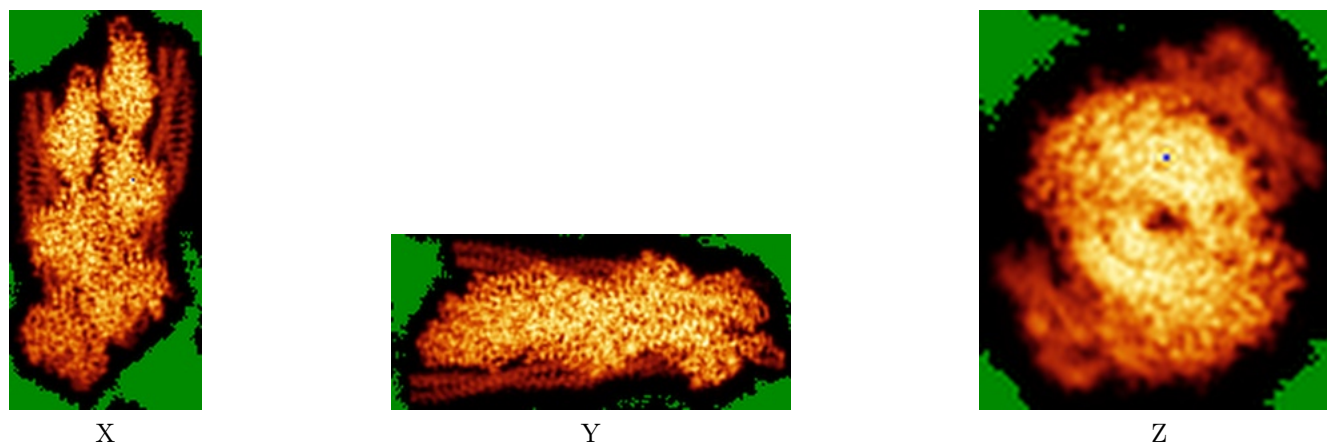


Z Index: 206

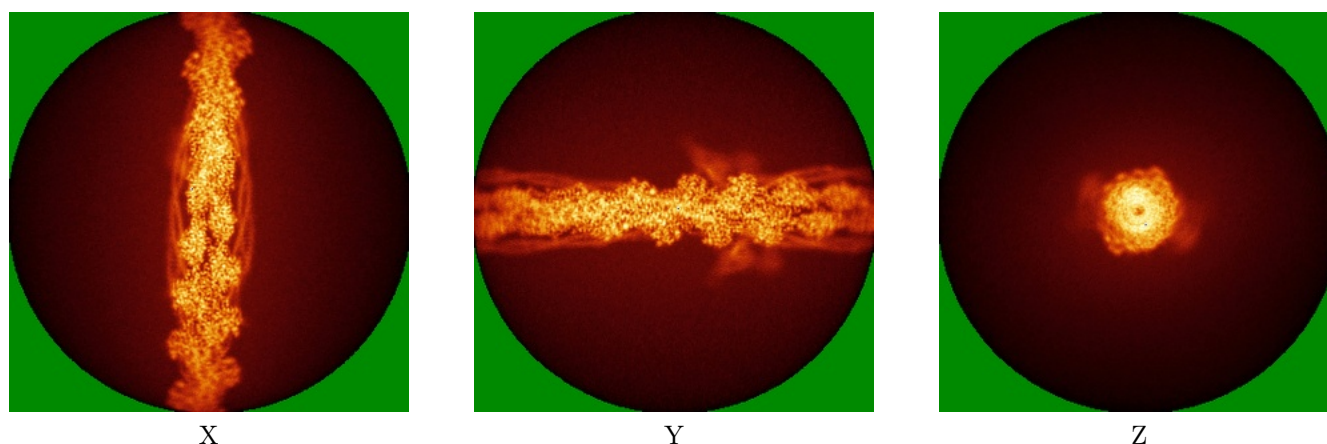
The images above show the largest variance slices of the map in three orthogonal directions.

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

### 6.4.1 Primary map



### 6.4.2 Raw map



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](#)

This section was not generated.

## 6.6 Mask visualisation [i](#)

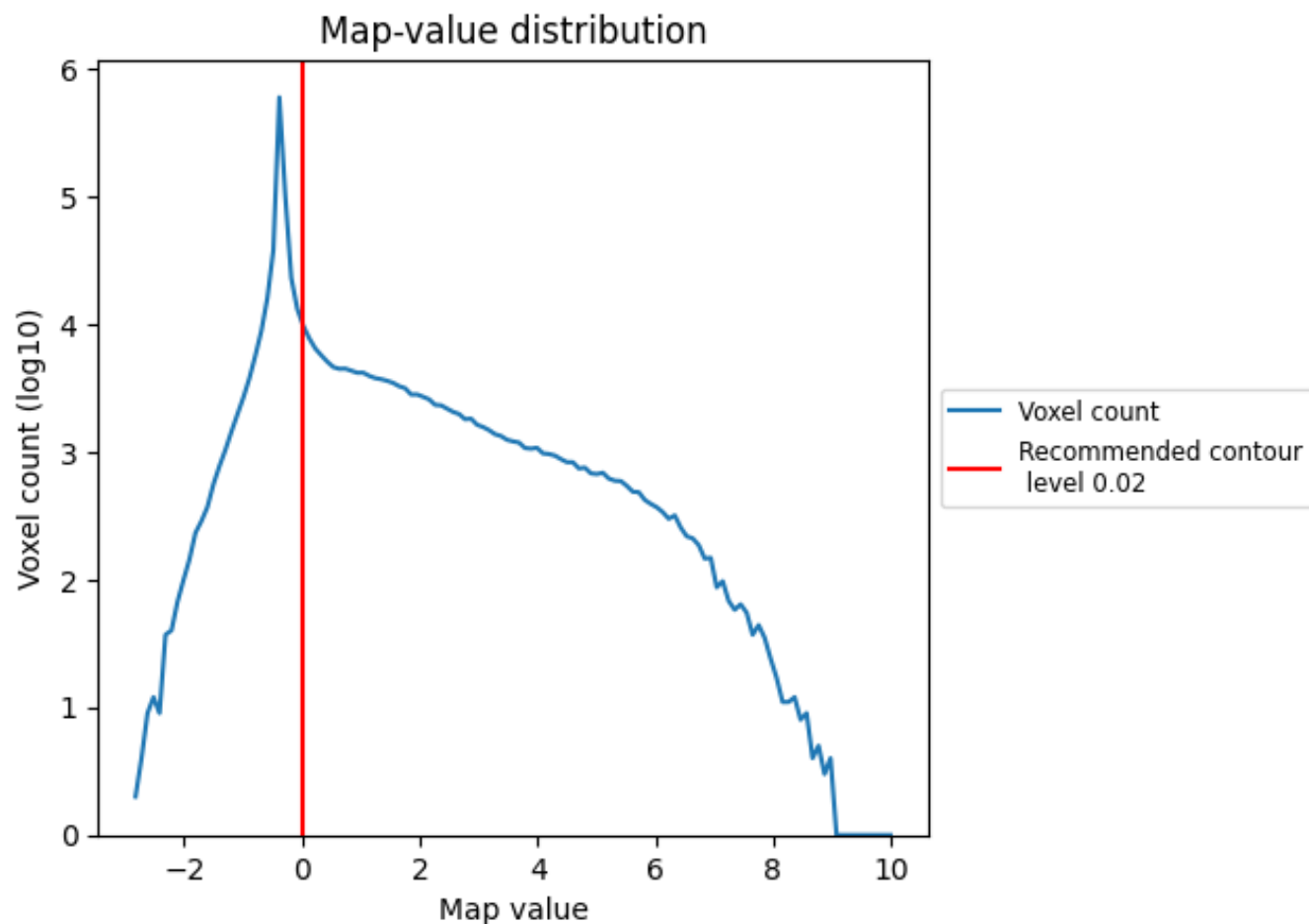
This section was not generated. No masks/segmentation were deposited.



## 7 Map analysis [i](#)

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

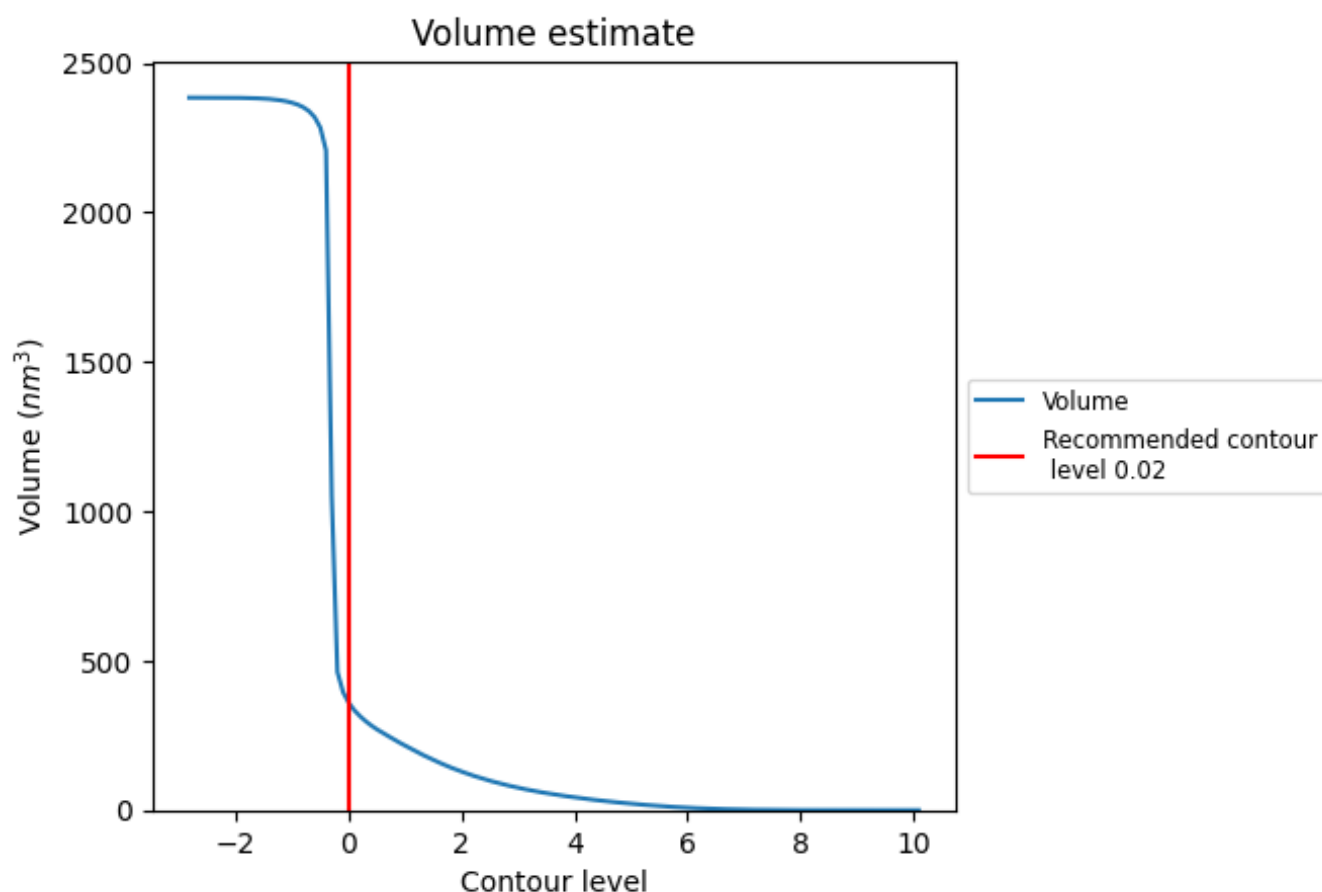
### 7.1 Map-value distribution [i](#)



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 355 nm<sup>3</sup>; this corresponds to an approximate mass of 320 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.

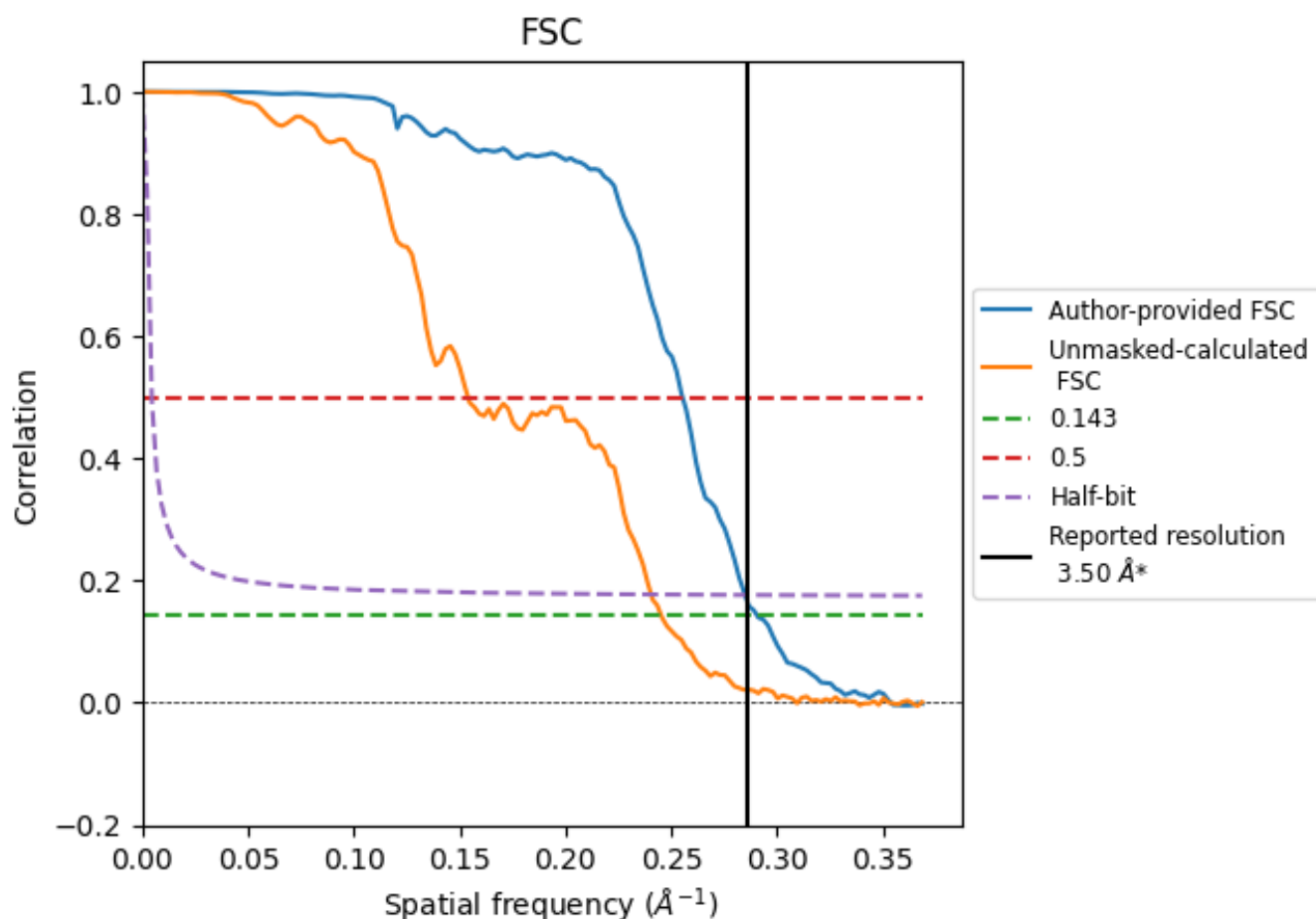
## 7.3 Rotationally averaged power spectrum [i](#)

This section was not generated. The rotationally averaged power spectrum is only generated for cubic maps.

## 8 Fourier-Shell correlation [i](#)

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

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of 0.286  $\text{\AA}^{-1}$

## 8.2 Resolution estimates [i](#)

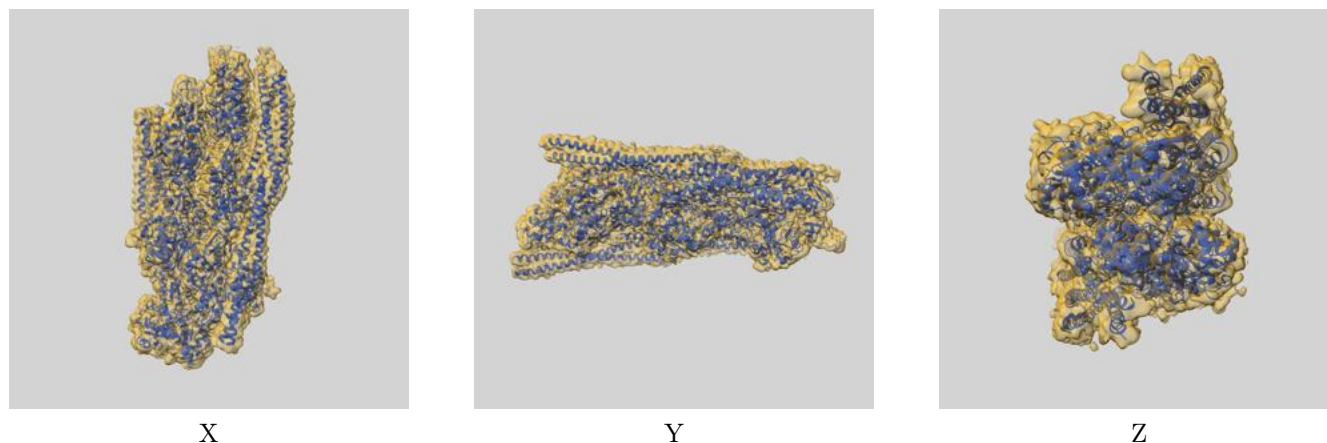
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.50	-	-
Author-provided FSC curve	3.44	3.92	3.51
Unmasked-calculated*	4.08	6.49	4.16

\*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 4.08 differs from the reported value 3.5 by more than 10 %

## 9 Map-model fit [i](#)

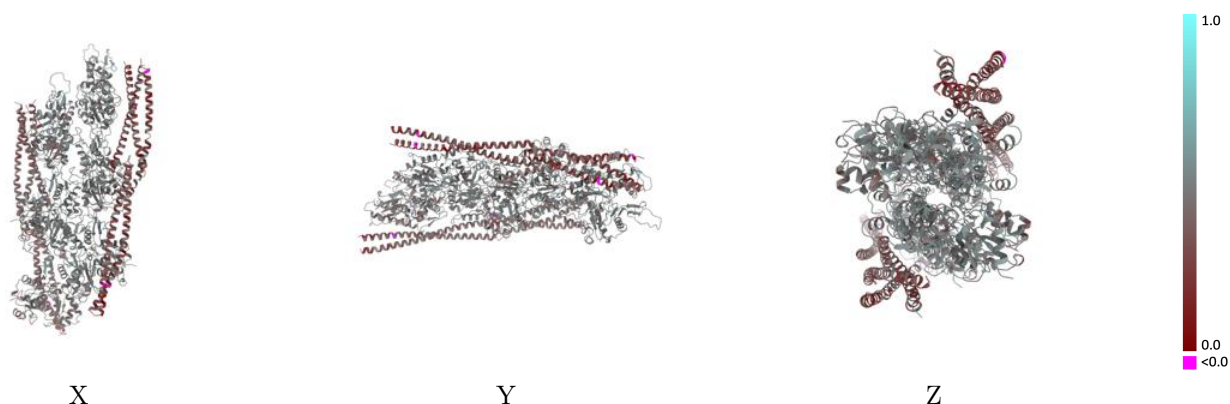
This section contains information regarding the fit between EMDB map EMD-27331 and PDB model 8DD0. Per-residue inclusion information can be found in [section 3](#) on [page 7](#).

### 9.1 Map-model overlay [i](#)



The images above show the 3D surface view of the map at the recommended contour level 0.02 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](#)

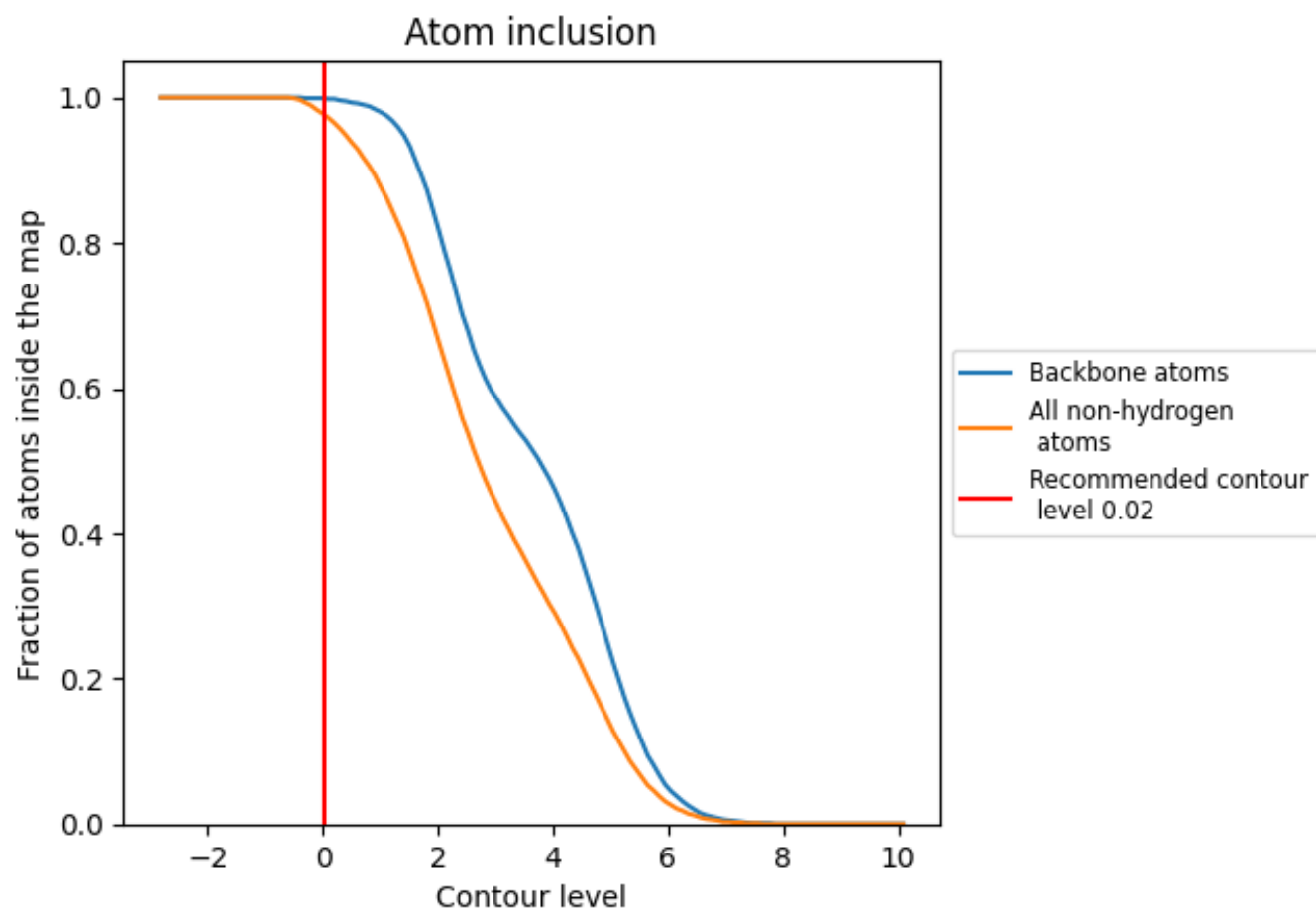


The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

This section was not generated.



































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 100% of all backbone atoms, 98% 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 (0.02) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9770	 0.4430
A	 0.9880	 0.4650
B	 0.9900	 0.4820
C	 0.9940	 0.4900
D	 0.9920	 0.4910
E	 0.9930	 0.4900
F	 0.9900	 0.4840
G	 0.9590	 0.3200
H	 0.9840	 0.3420
I	 0.9210	 0.2980
J	 0.9440	 0.3300
K	 0.9210	 0.3360
L	 0.9340	 0.2880
M	 0.9660	 0.2870
N	 0.8920	 0.2860
O	 0.9440	 0.3120
P	 0.8800	 0.3050

