Full wwPDB EM Validation Report (i)

Sep 8, 2025 – 12:12 PM JST

PDB ID	:	6IG0 / pdb_00006ig0
EMDB ID	:	EMD-9660
Title	:	Type III-A Csm complex, Cryo-EM structure of Csm-CTR1, ATP bound
Authors	:	You, L.; Ma, J.; Wang, J.; Zhang, X.; Wang, Y.
Deposited on	:	2018-09-21
Resolution	:	3.37 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the (i) 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 (i)) were used in the production of this report:

EMDB validation analysis	:	0.0.1.dev126
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0rc1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 3.37 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.

Metric	Percentile Ranks	Value
Clashscore		15
Ramachandran outliers		0.1%
Sidechain outliers		1.4%
RNA backbone		0.37

Worse *Better*

▮ Percentile relative to all structures

▯ Percentile relative to all EM structures
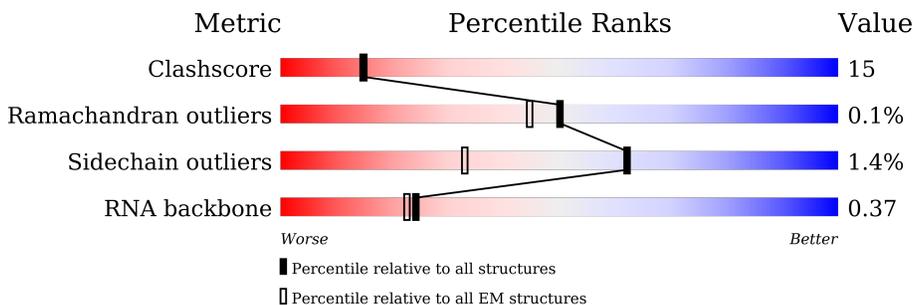
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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	758	28% / 82% 15% ·
2	C	126	10% / 90% 6% ·
2	D	126	10% / 88% 8% ·
3	E	220	8% / 60% 33% · 6%
3	F	220	10% / 77% 20% ··
3	G	220	6% / 61% 36% ··
4	B	299	14% / 74% 23% ··

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Mol	Chain	Length	Quality of chain
5	H	357	15% 66% 26% · · ·
6	N	36	42% 44% 8% 6%
7	J	42	40% 24% 14% 21%

2 Entry composition ⓘ

There are 10 unique types of molecules in this entry. The entry contains 19354 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 Type III-A CRISPR-associated protein Csm1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	737	Total 5812	C 3727	N 977	O 1092	S 16	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	16	ASN	ASP	engineered mutation	UNP A0A2U2M0F3

- Molecule 2 is a protein called Type III-A CRISPR-associated protein Csm2.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	D	121	Total 975	C 631	N 164	O 178	S 2	0	0
2	C	121	Total 975	C 631	N 164	O 178	S 2	0	0

- Molecule 3 is a protein called Type III-A CRISPR-associated RAMP protein Csm3.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	G	217	Total 1695	C 1075	N 291	O 327	S 2	0	0
3	F	216	Total 1697	C 1075	N 290	O 330	S 2	0	0
3	E	207	Total 1626	C 1033	N 279	O 312	S 2	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
G	33	ASN	ASP	engineered mutation	UNP A0A2U2M035
F	33	ASN	ASP	engineered mutation	UNP A0A2U2M035
E	33	ASN	ASP	engineered mutation	UNP A0A2U2M035

- Molecule 4 is a protein called Type III-A CRISPR-associated RAMP protein Csm4.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	B	295	Total	C	N	O	S	0	0
			2334	1492	384	453	5		

- Molecule 5 is a protein called Type III-A CRISPR-associated RAMP protein Csm5.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	H	344	Total	C	N	O	S	0	0
			2748	1765	475	502	6		

- Molecule 6 is a RNA chain called crRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	N	34	Total	C	N	O	P	0	0
			712	321	123	235	33		

- Molecule 7 is a RNA chain called CTR1.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	J	33	Total	C	N	O	P	0	0
			715	320	139	223	33		

- Molecule 8 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
8	A	1	Total	Zn	0
			1	1	

- Molecule 9 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).
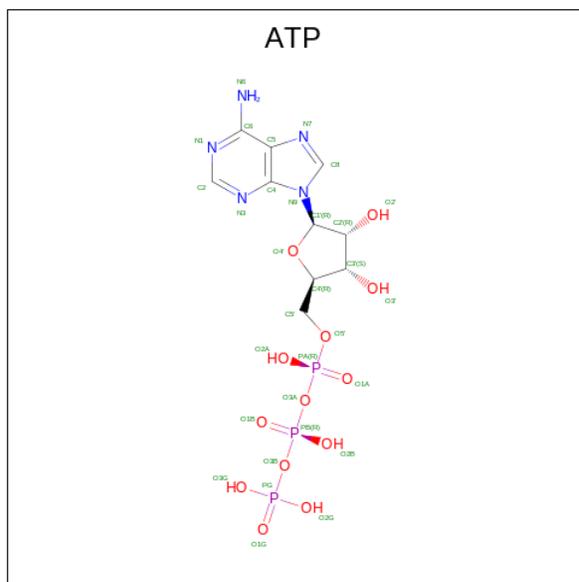
ATP

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

- Molecule 10 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

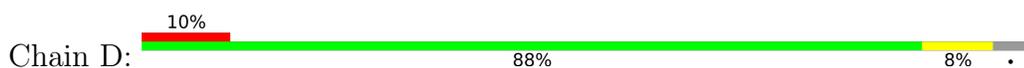| Mol	Chain	Residues	Atoms		AltConf
10	A	2	Total	Mg	0
			2	2	

3 Residue-property plots ⓘ

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

- Molecule 1: Type III-A CRISPR-associated protein Csm1

- Molecule 2: Type III-A CRISPR-associated protein Csm2

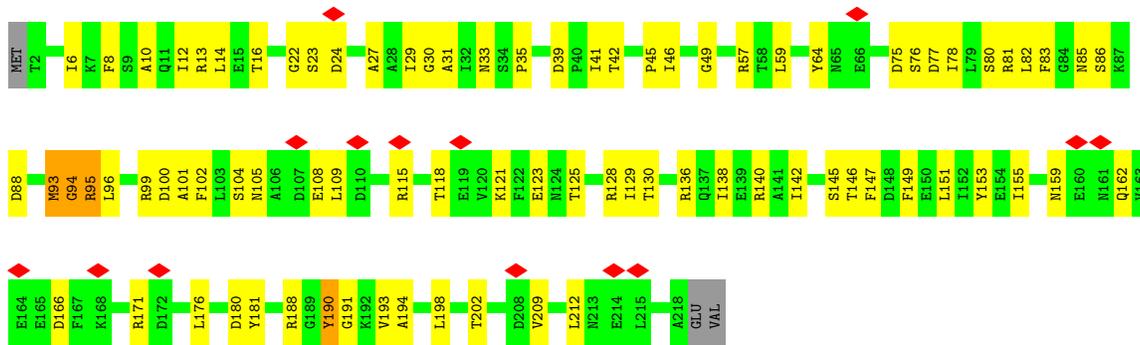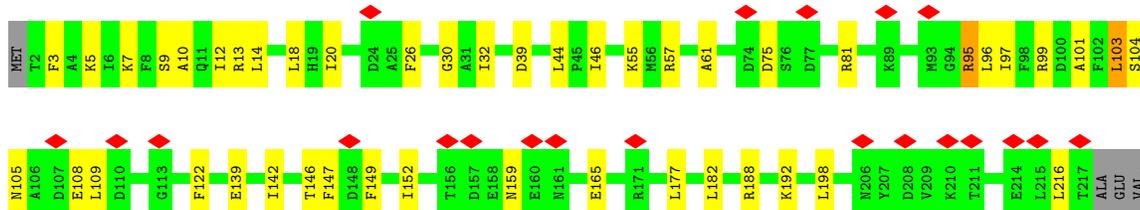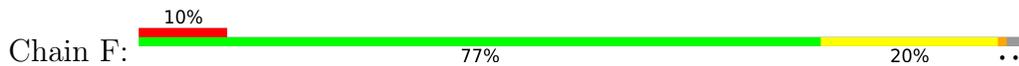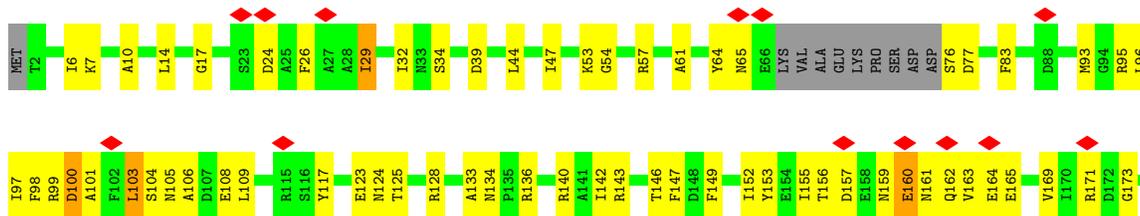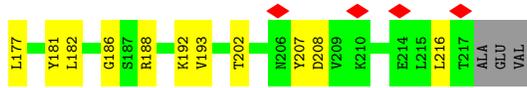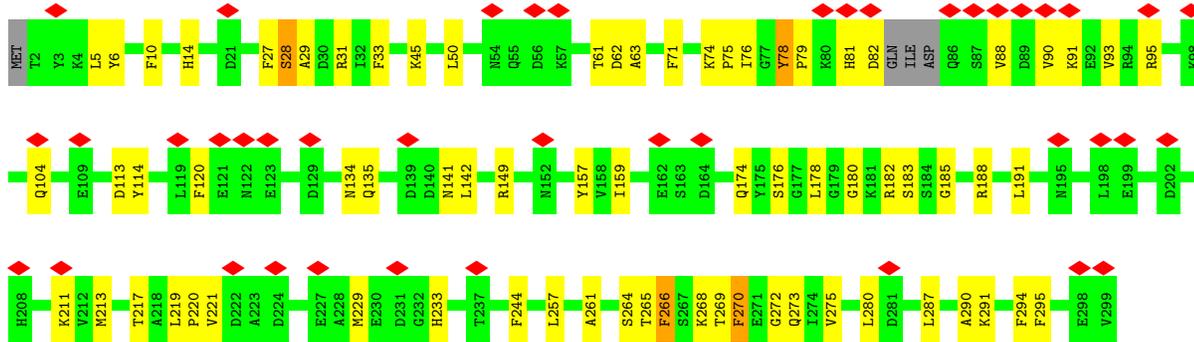MET THR I3 V10 N23 T24 R25 N26 R27 K28 N29 P30 D31 A32 L44 S48 E53 K57 R65 R70 D85 E88 L96 E113 V116 G123 GLY LYS ASP

• Molecule 2: Type III-A CRISPR-associated protein Csm2

Chain C:

10%

90% 6% •

MET THR I3 T24 R25 N26 R27 K28 N29 P30 D31 L44 T47 D52 E53 D60 D64 R65 R70 L96 K100 E103 M112 G123 GLY LYS ASP

• Molecule 3: Type III-A CRISPR-associated RAMP protein Csm3

Chain G:

6%

61% 36% ••

MET T2 I6 K7 F8 S9 A10 Q11 I12 R13 L14 E15 T16 G22 S23 D24 A27 A28 I29 G30 A31 I32 N33 S34 P35 D39 P40 I41 T42 P45 I46 G49 R57 T58 L59 Y64 N65 E66 D75 S76 D77 I78 L79 S80 R81 L82 F83 G84 N85 S86 K87

D88 M93 G94 R95 L96 R99 D100 A101 F102 L103 S104 N105 A106 D107 E108 L109 D110 R115 T118 E119 V120 K121 F122 E123 N124 T125 R128 I129 T130 R136 Q137 I138 E139 R140 A141 I142 S145 T146 F147 D148 F149 E150 L151 I152 Y153 E154 I155 N159 E160 N161 Q162 V163

E164 E165 D166 F167 K168 R171 D172 L176 D180 Y181 R188 G189 Y190 G191 K192 V193 A194 L198 T202 D208 V209 L212 N213 E214 L215 A218 GLU VAL

• Molecule 3: Type III-A CRISPR-associated RAMP protein Csm3

Chain F:

10%

77% 20% ••

MET T2 F3 A4 K5 I6 K7 F8 S9 A10 Q11 I12 R13 L14 L18 H19 I20 D24 A25 F26 G30 A31 I32 D39 L44 P45 I46 K55 M56 R57 A61 D74 D75 S76 D77 R81 K89 M93 G94 R95 L96 I97 F98 R99 D100 A101 F102 L103 S104

N105 A106 D107 E108 L109 D110 G113 F122 E139 I142 T146 F147 D148 F149 I152 T156 D157 E158 N159 E160 N161 E165 R171 L177 L182 R188 K192 L198 N206 Y207 D208 V209 K210 T211 E214 L215 L216 T217 ALA GLU VAL

• Molecule 3: Type III-A CRISPR-associated RAMP protein Csm3

Chain E:

8%

60% 33% • 6%

MET T2 I6 K7 A10 L14 G17 S23 D24 A25 F26 A27 A28 I29 I32 N33 S34 D39 L44 I47 K53 G54 R57 A61 Y64 N65 E66 LYS VAL ALA GLU LYS PRO SER ASP ASP S76 D77 F83 D88 M93 G94 R95 L96

I97 F98 R99 D100 A101 F102 L103 S104 N105 A106 D107 E108 L109 R115 S116 Y117 E123 N124 T125 R128 A133 N134 P135 R136 R140 A141 I142 R143 T146 F147 D148 F149 I152 Y153 E154 I155 T156 D157 E158 N159 E160 N161 Q162 V163 E164 E165 V169 I170 R171 D172 G173

L177 Y181 L182 G186 S187 R188 K192 V193 T202 N206 Y207 D208 V209 K210 E214 L215 L216 T217 ALA GLU VAL

• Molecule 4: Type III-A CRISPR-associated RAMP protein Csm4

Chain B:

14%

74% 23%

MET T2 Y3 K4 L5 Y6 F10 H14 D21 F27 S28 A29 D30 R31 I32 F33 K45 L50 N54 Q55 D56 K57 T61 D62 A63 F71 K74 P75 I76 G77 Y78 P79 K80 H81 D82 GLN ILE ASP Q86 S87 V88 D89 V90 K91 E92 V93 R94 R95 K98

Q104 E109 D113 Y114 L119 F120 E121 N122 E123 D129 N134 Q135 D139 D140 N141 L142 R149 N152 Y157 V158 I159 E162 S163 D164 Q174 Y175 S176 G177 L178 G179 G180 K181 R182 S183 S184 G185 R188 L191 N195 L198 E199 D202

H208 K211 V212 M213 T217 A218 L219 P220 V221 D222 A223 D224 E227 A228 M229 E230 D231 G232 H233 T237 F244 L257 A261 S264 T265 F266 S267 K268 T269 F270 E271 Q272 I274 V275 L280 D281 L287 A290 K291 F294 F295 E298 V299

• Molecule 5: Type III-A CRISPR-associated RAMP protein Csm5

Chain H:

15%

66% 26%

MET LYS N3 R6 P17 I18 H19 I20 G21 I32 Y33 E34 Y39 F40 P41 D42 F46 K49 M50 R54 E57 Q65 T66 R67 P68 N69 A70 R71 N72 N73 D81 N82 R83 I84 A85 E86 R87 S88 F89 G90 E96 T97 G98 L99 E100 S101 D102 K103 N104

P105 N106 S107 A108 G109 A110 I111 V114 Y126 S131 L140 M141 N142 T143 T144 P145 K146 W147 N148 N149 E150 N151 A152 V153 N154 D155 F156 G157 R158 F159 P160 K161 E162 N163 L166 I167 K172 K175 F181 R185 D188 S189 K190 S196 L197 I198 L199 V200 Q201

K202 W203 D204 Y205 S206 A207 K208 Y218 R219 E220 S221 I222 S223 K227 T236 D237 E238 R241 E244 E245 R249 K255 K258 L262 S263 E264 D267 D268 K269 I270 N273 L274 Q275 L280 G281 A282 A286 W287 T288 K289 D296 G297 I298 R301 R302

Y303 S304 R305 K309 M310 V311 K312 K313 G314 V315 L316 K317 L318 T319 L323 K324 T325 VAL LYS ILE PRO SER GLY ASN HIS SER L335 V336 K337 N338 H339 Y343 A348 N349 I355 ASP LYS

• Molecule 6: crRNA

Chain N:

42% 44% 8% 6%

A1 C2 G3 A7 C8 G9 C10 U13 C14 U15 A16 G17 C18 U19 U23 A24 U25 A26 A27 A30 C31 C32 C33 A34 U U

• Molecule 7: CTR1

Chain J:

40% 24% 14% 21%

G G U A G G A7 A8 U9 G10 G11 G12 A18 G21 A24 A28 G29 A30 A31 A32 G33 C34 C35 A36 G39 G U C

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	58587	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	60	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.336	Depositor
Minimum map value	-0.157	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.015	Depositor
Recommended contour level	0.056	Depositor
Map size (Å)	208.0, 208.0, 208.0	wwPDB
Map dimensions	200, 200, 200	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.04, 1.04, 1.04	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, ATP

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	0.33	0/5933	0.54	2/8015 (0.0%)
2	C	0.34	0/989	0.53	0/1334
2	D	0.34	0/989	0.53	0/1334
3	E	0.49	0/1649	0.80	0/2218
3	F	0.46	0/1722	0.72	2/2318 (0.1%)
3	G	0.46	0/1720	0.82	6/2316 (0.3%)
4	B	0.45	0/2385	0.75	0/3224
5	H	0.44	0/2810	0.89	10/3786 (0.3%)
6	N	0.53	0/794	0.51	0/1233
7	J	0.41	0/803	0.56	0/1251
All	All	0.41	0/19794	0.69	20/27029 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1

There are no bond length outliers.

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	H	219	ARG	N-CA-C	10.68	126.13	111.39
5	H	160	PRO	N-CA-C	10.68	128.74	113.47
3	G	94	GLY	N-CA-C	8.78	134.00	113.18
5	H	218	TYR	N-CA-C	7.85	123.54	113.88
3	G	95	ARG	N-CA-C	7.19	121.31	111.54
3	G	190	TYR	N-CA-C	6.94	120.97	111.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	G	78	ILE	N-CA-C	-6.82	106.14	112.96
5	H	89	PHE	N-CA-C	6.48	119.64	110.50
5	H	100	GLU	CB-CA-C	-6.28	97.93	110.42
3	G	93	MET	N-CA-C	-6.07	100.85	109.96
5	H	86	GLU	N-CA-C	5.74	117.53	111.28
5	H	199	LEU	CA-CB-CG	5.45	135.36	116.30
5	H	83	ARG	N-CA-C	5.42	119.06	111.74
3	F	95	ARG	CA-C-N	-5.17	112.12	121.69
3	F	95	ARG	C-N-CA	-5.17	112.12	121.69
3	G	181	TYR	N-CA-C	5.05	119.17	112.30
1	A	414	HIS	CA-C-N	5.01	131.12	121.54
1	A	414	HIS	C-N-CA	5.01	131.12	121.54
5	H	162	GLU	CA-C-N	5.00	131.09	121.54
5	H	162	GLU	C-N-CA	5.00	131.09	121.54

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	639	ASN	Peptide

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	5812	0	5522	86	0
2	C	975	0	977	5	0
2	D	975	0	977	8	0
3	E	1626	0	1640	84	0
3	F	1697	0	1710	44	0
3	G	1695	0	1709	80	0
4	B	2334	0	2253	117	0
5	H	2748	0	2721	181	0
6	N	712	0	367	26	0
7	J	715	0	358	14	0
8	A	1	0	0	0	0
9	A	62	0	21	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
10	A	2	0	0	0	0
All	All	19354	0	18255	557	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 15.

All (557) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:749:LEU:HD23	3:E:29:ILE:CD1	1.21	1.55
5:H:159:PHE:CB	5:H:298:ILE:HG23	1.13	1.54
4:B:220:PRO:HG3	4:B:270:PHE:CE2	1.05	1.54
1:A:749:LEU:CD2	3:E:29:ILE:CD1	1.75	1.52
1:A:749:LEU:CD2	3:E:29:ILE:HD12	1.25	1.48
4:B:220:PRO:CG	4:B:270:PHE:CE2	1.96	1.45
3:G:23:SER:CB	3:F:122:PHE:CE2	2.00	1.42
3:G:23:SER:HB2	3:F:122:PHE:CE2	1.56	1.35
4:B:264:SER:O	4:B:266:PHE:CE2	1.80	1.33
5:H:159:PHE:CB	5:H:298:ILE:CG2	2.09	1.30
4:B:220:PRO:HB3	4:B:270:PHE:CD2	1.70	1.27
4:B:264:SER:C	4:B:266:PHE:HE2	1.42	1.26
4:B:220:PRO:HG3	4:B:270:PHE:CD2	1.70	1.26
5:H:151:ASN:OD1	5:H:166:LEU:HD12	1.30	1.23
4:B:264:SER:C	4:B:266:PHE:CE2	2.19	1.19
4:B:220:PRO:CB	4:B:270:PHE:CD2	2.24	1.18
4:B:220:PRO:CB	4:B:270:PHE:HD2	1.57	1.18
5:H:151:ASN:CG	5:H:166:LEU:HD12	1.70	1.16
4:B:28:SER:HA	4:B:62:ASP:CB	1.76	1.16
4:B:264:SER:CB	4:B:266:PHE:CE2	2.30	1.14
5:H:206:SER:HB3	5:H:315:VAL:HG21	1.26	1.14
4:B:220:PRO:CG	4:B:270:PHE:CD2	2.28	1.11
5:H:206:SER:HB3	5:H:315:VAL:CG2	1.80	1.10
1:A:749:LEU:HD22	3:E:29:ILE:CD1	1.74	1.10
3:G:23:SER:HB3	3:F:122:PHE:CE2	1.75	1.08
1:A:749:LEU:HD23	3:E:29:ILE:HD11	1.19	1.07
1:A:749:LEU:HD21	3:E:29:ILE:HD12	1.32	1.07
3:G:23:SER:CB	3:F:122:PHE:HE2	1.49	1.07
4:B:28:SER:HA	4:B:62:ASP:HB3	1.36	1.07
5:H:147:TRP:HD1	5:H:166:LEU:CD2	1.67	1.07
5:H:151:ASN:OD1	5:H:166:LEU:CD1	2.00	1.06
4:B:264:SER:CB	4:B:266:PHE:CZ	2.38	1.06

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:B:264:SER:HB2	4:B:266:PHE:CZ	1.91	1.06
5:H:336:VAL:CG1	5:H:343:TYR:CE1	2.38	1.06
5:H:206:SER:CB	5:H:315:VAL:HG22	1.86	1.05
5:H:147:TRP:HA	5:H:166:LEU:HD21	1.37	1.05
3:G:23:SER:HB2	3:F:122:PHE:CD2	1.91	1.04
3:E:101:ALA:HB1	3:E:147:PHE:HB3	1.35	1.04
4:B:220:PRO:HB3	4:B:270:PHE:HD2	0.87	1.04
4:B:264:SER:O	4:B:266:PHE:CD2	2.12	1.03
5:H:49:LYS:HE3	5:H:86:GLU:HG2	1.40	1.03
1:A:749:LEU:CD2	3:E:29:ILE:HD11	1.62	1.02
5:H:147:TRP:CD1	5:H:166:LEU:CD2	2.42	1.02
4:B:265:THR:C	4:B:266:PHE:CD2	2.39	1.01
5:H:147:TRP:CD1	5:H:166:LEU:HD22	1.95	1.01
5:H:206:SER:CB	5:H:315:VAL:CG2	2.37	1.01
5:H:154:ASN:ND2	5:H:163:ASN:ND2	2.09	1.00
3:E:61:ALA:O	3:E:65:ASN:HB2	1.62	0.99
4:B:264:SER:HB2	4:B:266:PHE:CE2	1.95	0.99
7:J:35:C:H2'	7:J:36:A:C8	1.98	0.99
4:B:27:PHE:CE1	4:B:63:ALA:HB2	1.98	0.98
5:H:336:VAL:HG12	5:H:343:TYR:CE1	1.96	0.98
5:H:157:GLY:C	5:H:160:PRO:HG3	1.89	0.97
5:H:49:LYS:CE	5:H:86:GLU:HG2	1.94	0.96
5:H:84:ILE:O	5:H:87:ARG:NH2	1.98	0.96
5:H:336:VAL:CG1	5:H:343:TYR:HE1	1.80	0.95
3:G:82:LEU:O	3:G:94:GLY:O	1.84	0.94
5:H:205:TYR:C	5:H:315:VAL:HG13	1.92	0.94
5:H:270:ILE:O	5:H:337:LYS:NZ	2.00	0.94
4:B:264:SER:O	4:B:266:PHE:HE2	1.29	0.94
5:H:147:TRP:HA	5:H:166:LEU:CD2	1.97	0.94
3:G:81:ARG:HB2	3:G:95:ARG:NH1	1.82	0.93
5:H:154:ASN:HD21	5:H:163:ASN:ND2	1.64	0.93
4:B:265:THR:C	4:B:266:PHE:HD2	1.74	0.93
4:B:264:SER:HB3	4:B:266:PHE:CZ	2.03	0.92
5:H:151:ASN:HD21	5:H:166:LEU:CB	1.83	0.92
4:B:78:TYR:HD1	4:B:265:THR:HG21	1.34	0.91
5:H:147:TRP:C	5:H:166:LEU:HD11	1.96	0.91
5:H:151:ASN:ND2	5:H:166:LEU:HB2	1.86	0.90
5:H:154:ASN:HD21	5:H:163:ASN:CG	1.79	0.90
7:J:35:C:H2'	7:J:36:A:H8	1.37	0.89
5:H:336:VAL:HG13	5:H:343:TYR:HE1	1.36	0.89
5:H:157:GLY:CA	5:H:160:PRO:CG	2.51	0.89

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:H:337:LYS:HB3	5:H:337:LYS:HZ3	1.37	0.88
5:H:19:HIS:O	5:H:282:ALA:HB3	1.72	0.88
4:B:28:SER:HA	4:B:62:ASP:HB2	1.53	0.88
4:B:264:SER:CA	4:B:266:PHE:HE2	1.87	0.87
4:B:28:SER:CA	4:B:62:ASP:HB3	2.04	0.87
5:H:42:ASP:N	5:H:90:GLY:O	2.06	0.87
5:H:157:GLY:CA	5:H:160:PRO:HG3	2.04	0.87
5:H:21:GLY:HA2	6:N:27:A:H2'	1.57	0.86
5:H:157:GLY:C	5:H:160:PRO:CG	2.48	0.86
3:E:95:ARG:CZ	3:E:159:ASN:OD1	2.24	0.85
4:B:264:SER:HB3	4:B:266:PHE:CE2	2.09	0.85
5:H:157:GLY:HA3	5:H:160:PRO:CG	2.05	0.85
5:H:313:LYS:H	5:H:313:LYS:HD3	1.42	0.85
4:B:264:SER:CB	4:B:266:PHE:HE2	1.79	0.85
5:H:39:TYR:OH	5:H:89:PHE:O	1.95	0.84
4:B:220:PRO:HG3	4:B:270:PHE:HE2	1.02	0.83
5:H:157:GLY:HA3	5:H:160:PRO:HG3	1.58	0.83
5:H:205:TYR:O	5:H:315:VAL:HG13	1.79	0.82
5:H:21:GLY:HA2	6:N:27:A:C2'	2.08	0.82
4:B:78:TYR:HD1	4:B:265:THR:CG2	1.92	0.82
5:H:159:PHE:N	5:H:160:PRO:HD3	1.93	0.82
5:H:151:ASN:HD21	5:H:166:LEU:HB2	1.44	0.82
4:B:269:THR:CB	4:B:294:PHE:CE2	2.63	0.81
4:B:220:PRO:CD	4:B:270:PHE:HE2	1.94	0.80
5:H:206:SER:HB2	5:H:315:VAL:HG22	1.63	0.80
5:H:336:VAL:HG13	5:H:343:TYR:CE1	2.13	0.80
5:H:147:TRP:HD1	5:H:166:LEU:HD21	1.46	0.79
3:G:81:ARG:HB2	3:G:95:ARG:HH12	1.45	0.79
5:H:154:ASN:ND2	5:H:163:ASN:CG	2.42	0.78
4:B:270:PHE:HD1	4:B:270:PHE:H	1.33	0.76
5:H:157:GLY:CA	5:H:160:PRO:HG2	2.14	0.76
1:A:749:LEU:HD22	3:E:29:ILE:HD11	1.49	0.76
4:B:264:SER:CB	4:B:266:PHE:HZ	1.96	0.76
4:B:265:THR:O	4:B:266:PHE:CD2	2.37	0.76
5:H:147:TRP:HA	5:H:166:LEU:HD11	1.68	0.76
4:B:28:SER:CA	4:B:62:ASP:CB	2.61	0.76
5:H:336:VAL:HG12	5:H:343:TYR:CD1	2.20	0.76
4:B:220:PRO:CG	4:B:270:PHE:HE2	1.60	0.75
5:H:151:ASN:ND2	5:H:166:LEU:HD12	2.02	0.75
4:B:78:TYR:CD1	4:B:265:THR:HG21	2.21	0.73
3:E:44:LEU:HD23	3:E:103:LEU:HD12	1.70	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:H:86:GLU:OE1	5:H:87:ARG:N	2.21	0.73
3:F:95:ARG:O	3:F:96:LEU:HG	1.88	0.72
4:B:79:PRO:HG3	4:B:114:TYR:CE2	2.24	0.72
5:H:49:LYS:HD2	5:H:89:PHE:CZ	2.24	0.72
5:H:147:TRP:CA	5:H:166:LEU:HD11	2.18	0.72
4:B:28:SER:C	4:B:62:ASP:HB3	2.13	0.72
3:E:103:LEU:HD13	3:E:103:LEU:O	1.90	0.72
5:H:71:ARG:HH22	5:H:108:ALA:HB3	1.55	0.72
5:H:219:ARG:O	5:H:220:GLU:C	2.31	0.72
3:G:95:ARG:O	3:G:96:LEU:HG	1.89	0.71
5:H:46:PHE:HA	5:H:89:PHE:CE1	2.25	0.71
5:H:147:TRP:HA	5:H:166:LEU:CD1	2.20	0.71
5:H:205:TYR:C	5:H:315:VAL:CG1	2.64	0.70
3:E:155:ILE:HD12	3:E:163:VAL:HG21	1.73	0.70
5:H:143:THR:OG1	5:H:249:ARG:NH2	2.25	0.70
5:H:153:VAL:CB	5:H:160:PRO:HD2	2.21	0.70
5:H:201:GLN:O	5:H:319:THR:HG22	1.92	0.70
1:A:372:ARG:HH12	4:B:81:HIS:HB3	1.57	0.70
3:G:23:SER:CB	3:F:122:PHE:CD2	2.65	0.69
4:B:264:SER:HB2	4:B:266:PHE:HZ	1.49	0.69
5:H:309:LYS:CE	5:H:314:GLY:H	2.04	0.69
3:G:123:GLU:OE2	3:G:190:TYR:OH	2.06	0.69
5:H:49:LYS:HE3	5:H:86:GLU:CG	2.19	0.68
5:H:143:THR:OG1	5:H:249:ARG:CZ	2.41	0.68
5:H:268:ASP:O	5:H:338:ASN:HB3	1.94	0.68
5:H:160:PRO:HB2	5:H:161:LYS:HD2	1.77	0.67
3:E:101:ALA:HB1	3:E:147:PHE:CB	2.20	0.67
4:B:75:PRO:HD2	4:B:114:TYR:CE2	2.30	0.67
4:B:264:SER:C	4:B:266:PHE:CD2	2.69	0.67
3:G:33:ASN:HD22	7:J:18:A:H5"	1.61	0.66
5:H:166:LEU:HD23	5:H:166:LEU:O	1.96	0.66
5:H:313:LYS:H	5:H:313:LYS:CD	2.09	0.66
3:F:188:ARG:NH1	6:N:19:U:OP2	2.28	0.66
3:E:99:ARG:HD2	4:B:188:ARG:HD2	1.77	0.65
5:H:70:ALA:HB2	7:J:10:G:H5'	1.77	0.65
3:E:162:GLN:CB	3:E:165:GLU:OE2	2.44	0.65
1:A:647:PHE:HB3	3:E:26:PHE:CE2	2.32	0.65
5:H:206:SER:CA	5:H:315:VAL:HG22	2.26	0.65
1:A:749:LEU:HD22	3:E:29:ILE:CG1	2.26	0.64
3:G:81:ARG:HD2	3:G:95:ARG:HH12	1.61	0.64
3:F:95:ARG:HH12	3:F:159:ASN:ND2	1.95	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:H:337:LYS:O	5:H:337:LYS:HG2	1.98	0.64
5:H:324:LYS:O	5:H:335:LEU:HD12	1.98	0.64
3:F:101:ALA:HB1	3:F:147:PHE:HB3	1.78	0.63
3:F:198:LEU:HB3	3:F:216:LEU:HD23	1.81	0.63
3:E:160:GLU:OE1	3:E:207:TYR:HE1	1.79	0.63
5:H:206:SER:CB	5:H:315:VAL:HG21	2.09	0.63
1:A:516:VAL:HG21	1:A:592:THR:HG21	1.81	0.63
3:E:162:GLN:O	3:E:165:GLU:HG2	1.99	0.63
4:B:71:PHE:O	4:B:157:TYR:OH	2.17	0.63
4:B:81:HIS:CD2	4:B:81:HIS:H	2.16	0.63
5:H:19:HIS:HB2	5:H:221:SER:HB3	1.80	0.63
5:H:20:ILE:HD11	5:H:280:LEU:HG	1.79	0.63
3:G:188:ARG:NH1	6:N:25:U:OP2	2.32	0.62
5:H:309:LYS:HE3	5:H:314:GLY:H	1.63	0.62
3:G:23:SER:HB3	3:F:122:PHE:CZ	2.30	0.62
3:E:188:ARG:NH1	6:N:13:U:OP2	2.32	0.62
3:F:44:LEU:HD13	3:F:103:LEU:HD12	1.80	0.62
3:E:123:GLU:HA	6:N:15:U:H5"	1.80	0.62
1:A:8:LEU:HA	1:A:51:GLN:HE22	1.65	0.62
4:B:79:PRO:CG	4:B:114:TYR:CE2	2.82	0.61
3:E:162:GLN:HB2	3:E:165:GLU:OE2	2.00	0.61
2:D:48:SER:HB3	3:G:31:ALA:HB2	1.82	0.61
5:H:337:LYS:HZ3	5:H:337:LYS:CB	2.11	0.61
5:H:200:VAL:O	5:H:218:TYR:O	2.18	0.61
4:B:78:TYR:HD1	4:B:265:THR:CB	2.13	0.61
5:H:46:PHE:HA	5:H:89:PHE:CD1	2.35	0.61
5:H:309:LYS:CE	5:H:314:GLY:N	2.64	0.61
3:F:13:ARG:HG2	3:F:146:THR:HG22	1.81	0.61
3:G:13:ARG:O	3:G:193:VAL:HG13	2.02	0.60
3:E:100:ASP:OD1	3:E:100:ASP:N	2.35	0.60
4:B:50:LEU:HD21	4:B:287:LEU:HD11	1.83	0.60
2:D:57:LYS:HE2	3:G:115:ARG:HE	1.65	0.60
4:B:29:ALA:N	4:B:62:ASP:HB3	2.16	0.60
5:H:313:LYS:HD3	5:H:313:LYS:N	2.14	0.60
1:A:749:LEU:HA	3:E:29:ILE:HD11	1.83	0.60
1:A:749:LEU:HD23	3:E:29:ILE:HD12	0.97	0.60
4:B:134:ASN:ND2	6:N:9:G:N3	2.50	0.60
5:H:311:VAL:HG12	5:H:311:VAL:O	2.02	0.60
3:E:47:ILE:HB	3:E:101:ALA:HB3	1.83	0.60
3:E:124:ASN:ND2	6:N:15:U:O2	2.34	0.60
4:B:79:PRO:HG2	4:B:114:TYR:CZ	2.37	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:372:ARG:NH1	4:B:81:HIS:HB3	2.16	0.59
5:H:97:THR:HB	5:H:100:GLU:HB3	1.83	0.59
3:G:14:LEU:HD12	3:G:145:SER:HB2	1.85	0.59
3:G:24:ASP:CB	3:G:35:PRO:HG3	2.31	0.59
5:H:309:LYS:HE3	5:H:314:GLY:N	2.17	0.59
1:A:709:ARG:NH2	7:J:24:A:O3'	2.36	0.59
5:H:21:GLY:HA2	6:N:27:A:C3'	2.33	0.58
3:G:128:ARG:NH2	6:N:26:A:OP2	2.37	0.58
3:F:105:ASN:HB2	3:F:108:GLU:HB3	1.84	0.58
5:H:147:TRP:CA	5:H:166:LEU:HD21	2.23	0.58
5:H:157:GLY:N	5:H:160:PRO:HG2	2.18	0.58
5:H:34:GLU:OE2	5:H:87:ARG:NH1	2.34	0.58
5:H:153:VAL:CA	5:H:160:PRO:HD2	2.34	0.58
5:H:273:ASN:O	5:H:349:ASN:ND2	2.37	0.58
3:G:93:MET:CE	6:N:14:C:H41	2.17	0.58
5:H:86:GLU:OE1	5:H:86:GLU:N	2.37	0.58
5:H:114:VAL:HA	5:H:218:TYR:HB2	1.84	0.58
5:H:104:ASN:HD22	5:H:105:PRO:HD2	1.69	0.58
5:H:146:LYS:HG3	5:H:147:TRP:CD1	2.39	0.58
4:B:78:TYR:CD1	4:B:265:THR:HB	2.39	0.57
1:A:749:LEU:CD2	3:E:29:ILE:CG1	2.76	0.57
3:G:129:ILE:HD11	5:H:161:LYS:N	2.19	0.57
3:E:32:ILE:HG22	3:E:34:SER:H	1.69	0.57
3:E:95:ARG:NH2	3:E:153:TYR:OH	2.37	0.57
1:A:702:ARG:HB3	3:F:26:PHE:HE2	1.69	0.57
5:H:146:LYS:O	5:H:166:LEU:HD21	2.04	0.57
5:H:236:THR:HG22	5:H:238:GLU:H	1.70	0.57
4:B:269:THR:CB	4:B:294:PHE:CZ	2.87	0.57
4:B:219:LEU:H	4:B:290:ALA:HB1	1.70	0.57
1:A:594:GLU:O	1:A:598:ASN:ND2	2.39	0.56
3:F:81:ARG:NH2	3:F:165:GLU:OE2	2.38	0.56
3:F:95:ARG:O	3:F:96:LEU:CG	2.53	0.56
3:G:24:ASP:HB3	3:G:35:PRO:HG3	1.86	0.56
3:G:81:ARG:CB	3:G:95:ARG:HH12	2.16	0.56
3:F:10:ALA:HB3	3:F:149:PHE:HD2	1.71	0.56
4:B:6:TYR:HB3	4:B:191:LEU:HD11	1.87	0.56
4:B:264:SER:CA	4:B:266:PHE:CE2	2.74	0.56
3:F:57:ARG:NH1	3:F:75:ASP:OD2	2.39	0.56
5:H:151:ASN:ND2	5:H:166:LEU:CD1	2.68	0.56
3:G:99:ARG:HD2	3:F:192:LYS:HD2	1.86	0.56
3:G:85:ASN:ND2	3:G:88:ASP:OD2	2.38	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:B:268:LYS:HD2	4:B:268:LYS:O	2.06	0.56
1:A:502:SER:O	1:A:586:GLN:NE2	2.35	0.56
3:G:93:MET:HE2	6:N:14:C:N4	2.22	0.56
2:D:10:VAL:HB	2:C:70:ARG:HH21	1.71	0.55
3:E:53:LYS:NZ	4:B:183:SER:O	2.39	0.55
3:E:97:ILE:HD13	4:B:176:SER:HA	1.87	0.55
5:H:18:ILE:HD11	5:H:348:ALA:HB2	1.89	0.55
5:H:97:THR:OG1	5:H:198:ILE:O	2.23	0.55
5:H:206:SER:HA	5:H:315:VAL:HG22	1.87	0.55
1:A:756:ARG:NH2	7:J:30:A:OP1	2.40	0.55
4:B:266:PHE:CD2	4:B:266:PHE:N	2.72	0.55
4:B:31:ARG:HG3	6:N:2:C:H1'	1.88	0.55
3:E:95:ARG:NH2	3:E:159:ASN:OD1	2.38	0.55
4:B:78:TYR:CD1	4:B:265:THR:CB	2.89	0.55
5:H:151:ASN:HD21	5:H:166:LEU:HB3	1.69	0.55
3:E:95:ARG:NH2	3:E:159:ASN:CG	2.65	0.55
3:E:164:GLU:OE2	3:E:207:TYR:OH	2.25	0.55
1:A:372:ARG:NH1	4:B:81:HIS:CB	2.70	0.54
3:G:81:ARG:CB	3:G:95:ARG:NH1	2.63	0.54
4:B:10:PHE:HZ	4:B:178:LEU:HD12	1.73	0.54
7:J:35:C:O2'	7:J:36:A:H5'	2.08	0.54
1:A:126:THR:OG1	1:A:135:ASN:ND2	2.41	0.54
5:H:6:ARG:NH1	5:H:244:GLU:OE2	2.39	0.54
6:N:10:C:N3	7:J:33:G:O6	2.40	0.54
3:E:156:THR:HG22	3:E:157:ASP:N	2.23	0.54
5:H:18:ILE:HG21	5:H:280:LEU:HD23	1.89	0.54
5:H:147:TRP:CD1	5:H:166:LEU:HD21	2.29	0.54
5:H:158:ARG:N	5:H:160:PRO:HG3	2.23	0.54
1:A:19:LYS:O	1:A:23:ARG:NH1	2.40	0.54
3:G:101:ALA:HB1	3:G:147:PHE:HB3	1.89	0.54
1:A:312:ASN:ND2	1:A:347:SER:OG	2.41	0.54
4:B:78:TYR:CE1	4:B:265:THR:HB	2.43	0.54
5:H:151:ASN:CG	5:H:166:LEU:CD1	2.60	0.53
5:H:201:GLN:C	5:H:319:THR:HG22	2.32	0.53
1:A:682:LYS:NZ	7:J:29:G:OP2	2.39	0.53
3:F:7:LYS:NZ	3:F:9:SER:OG	2.42	0.53
3:F:103:LEU:HD23	3:F:147:PHE:HE1	1.73	0.53
3:G:8:PHE:HB2	3:G:151:LEU:HB3	1.90	0.53
3:G:140:ARG:NH2	5:H:126:TYR:OH	2.41	0.53
3:E:160:GLU:H	3:E:163:VAL:HG23	1.74	0.53
2:C:53:GLU:OE1	2:C:65:ARG:NH2	2.34	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:H:309:LYS:HE2	5:H:314:GLY:N	2.23	0.53
2:D:53:GLU:OE1	2:D:65:ARG:NH2	2.34	0.53
3:G:129:ILE:HD12	3:G:130:THR:HG23	1.91	0.53
4:B:28:SER:CA	4:B:62:ASP:HB2	2.32	0.52
1:A:253:ASP:O	1:A:338:ARG:NH1	2.43	0.52
3:G:59:LEU:HB3	3:G:176:LEU:HD22	1.91	0.52
3:G:93:MET:CE	6:N:14:C:N4	2.73	0.52
5:H:206:SER:HA	5:H:315:VAL:HG13	1.90	0.52
2:D:44:LEU:HD21	3:G:30:GLY:HA3	1.92	0.52
4:B:220:PRO:CB	4:B:270:PHE:CE2	2.66	0.52
5:H:206:SER:N	5:H:315:VAL:HG13	2.22	0.52
3:G:130:THR:HB	5:H:302:ARG:HD2	1.90	0.52
3:E:125:THR:HB	3:E:134:ASN:HB3	1.92	0.52
5:H:201:GLN:OE1	5:H:218:TYR:CZ	2.63	0.52
3:F:95:ARG:HH12	3:F:159:ASN:CG	2.17	0.52
3:E:156:THR:HB	3:E:159:ASN:ND2	2.24	0.52
4:B:27:PHE:CE1	4:B:63:ALA:CB	2.85	0.52
5:H:166:LEU:HD23	5:H:166:LEU:C	2.35	0.52
3:G:23:SER:HB2	3:F:122:PHE:HE2	1.13	0.52
4:B:219:LEU:HG	4:B:257:LEU:HD11	1.92	0.52
5:H:21:GLY:HA2	6:N:27:A:H3'	1.91	0.52
3:E:97:ILE:HA	4:B:183:SER:HA	1.92	0.52
5:H:172:LYS:HB3	5:H:175:LYS:HB2	1.91	0.52
2:D:113:GLU:HB3	3:G:29:ILE:HD12	1.92	0.51
5:H:258:LYS:HA	5:H:262:LEU:HB2	1.92	0.51
3:G:22:GLY:O	3:G:35:PRO:HD2	2.10	0.51
4:B:174:GLN:HE21	4:B:191:LEU:HB3	1.76	0.51
3:E:95:ARG:NH1	3:E:159:ASN:OD1	2.43	0.51
1:A:50:ASP:OD1	1:A:53:ARG:NH1	2.42	0.51
3:G:16:THR:OG1	5:H:188:ASP:OD2	2.26	0.51
3:E:177:LEU:HD22	3:E:182:LEU:HB2	1.92	0.51
5:H:161:LYS:HD2	5:H:161:LYS:N	2.25	0.51
1:A:473:ASN:ND2	1:A:487:VAL:O	2.39	0.51
4:B:27:PHE:CZ	4:B:63:ALA:HB2	2.43	0.51
3:G:12:ILE:HB	3:G:147:PHE:HB2	1.93	0.51
5:H:41:PRO:HA	5:H:90:GLY:O	2.10	0.51
1:A:167:GLN:HA	1:A:170:ILE:HB	1.92	0.51
1:A:647:PHE:HB3	3:E:26:PHE:CZ	2.46	0.51
5:H:161:LYS:NZ	5:H:161:LYS:HB3	2.26	0.51
3:F:18:LEU:HD12	3:F:20:ILE:HG13	1.92	0.51
4:B:266:PHE:HD2	4:B:266:PHE:N	2.06	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:677:GLN:OE1	1:A:680:ARG:N	2.42	0.51
3:G:95:ARG:O	3:G:96:LEU:CG	2.59	0.51
5:H:206:SER:CA	5:H:315:VAL:HG13	2.41	0.51
1:A:616:PHE:HB3	1:A:620:THR:HG21	1.92	0.50
4:B:272:GLY:HA3	4:B:291:LYS:HA	1.93	0.50
4:B:287:LEU:N	4:B:287:LEU:HD23	2.25	0.50
5:H:49:LYS:HD2	5:H:89:PHE:HZ	1.76	0.50
3:G:138:ILE:HD11	3:G:190:TYR:OH	2.11	0.50
3:F:95:ARG:NH1	3:F:159:ASN:ND2	2.59	0.50
5:H:83:ARG:HB3	5:H:83:ARG:HH21	1.74	0.50
1:A:8:LEU:HD13	1:A:69:LEU:HB3	1.94	0.50
1:A:80:ALA:O	1:A:543:SER:OG	2.28	0.50
3:G:180:ASP:OD1	5:H:185:ARG:NH1	2.38	0.50
1:A:263:ASN:ND2	1:A:416:GLN:OE1	2.42	0.50
3:E:156:THR:HG22	3:E:157:ASP:H	1.77	0.50
4:B:74:LYS:HE3	4:B:104:GLN:H	1.76	0.50
4:B:79:PRO:CG	4:B:114:TYR:CZ	2.95	0.50
1:A:396:SER:HB2	4:B:280:LEU:HB3	1.94	0.50
3:E:162:GLN:HB3	3:E:165:GLU:OE2	2.12	0.49
5:H:275:GLN:HB2	5:H:349:ASN:HB3	1.93	0.49
1:A:700:MET:HE1	1:A:736:LYS:HD3	1.94	0.49
3:F:32:ILE:HG21	3:F:139:GLU:HB2	1.94	0.49
3:E:7:LYS:HB3	3:E:152:ILE:HD13	1.93	0.49
3:E:76:SER:OG	3:E:77:ASP:N	2.45	0.49
4:B:50:LEU:CD2	4:B:287:LEU:HD11	2.42	0.49
5:H:147:TRP:CA	5:H:166:LEU:CD1	2.85	0.49
5:H:159:PHE:N	5:H:160:PRO:CD	2.67	0.49
3:G:105:ASN:HB2	3:G:108:GLU:HB3	1.95	0.49
5:H:335:LEU:C	5:H:335:LEU:CD2	2.86	0.49
5:H:151:ASN:HD21	5:H:166:LEU:CD1	2.26	0.49
3:G:82:LEU:C	3:G:94:GLY:O	2.55	0.49
3:F:97:ILE:HB	3:F:152:ILE:HB	1.94	0.49
5:H:166:LEU:CD2	5:H:166:LEU:C	2.86	0.49
1:A:431:GLU:HB3	1:A:455:GLY:HA3	1.95	0.49
3:E:53:LYS:NZ	4:B:183:SER:OG	2.46	0.49
3:E:171:ARG:HD3	3:E:216:LEU:HD23	1.95	0.49
3:E:181:TYR:CG	3:E:186:GLY:HA3	2.48	0.49
5:H:104:ASN:HD22	5:H:105:PRO:CD	2.25	0.49
3:G:10:ALA:HB3	3:G:149:PHE:HD2	1.78	0.49
3:G:93:MET:HE1	6:N:14:C:H41	1.78	0.49
1:A:749:LEU:HD22	3:E:29:ILE:HG13	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:657:ARG:HB2	1:A:661:ASN:HD22	1.78	0.48
3:F:57:ARG:O	3:F:61:ALA:N	2.45	0.48
5:H:50:MET:HB3	5:H:50:MET:HE3	1.70	0.48
1:A:510:ILE:HG12	1:A:512:ARG:HG2	1.94	0.48
5:H:151:ASN:ND2	5:H:166:LEU:CB	2.53	0.48
1:A:106:ASN:ND2	1:A:141:TYR:O	2.42	0.48
7:J:32:A:C6	7:J:33:G:C8	3.02	0.48
1:A:106:ASN:ND2	1:A:143:PRO:O	2.46	0.48
3:G:153:TYR:OH	3:G:166:ASP:OD2	2.31	0.48
1:A:525:ALA:HB1	4:B:91:LYS:HA	1.95	0.48
3:E:109:LEU:HD13	3:E:142:ILE:HD11	1.95	0.48
3:E:182:LEU:HD23	3:E:193:VAL:HG11	1.95	0.48
5:H:337:LYS:NZ	5:H:337:LYS:HB3	2.18	0.48
1:A:51:GLN:HA	1:A:70:ALA:HB2	1.95	0.48
3:G:24:ASP:O	3:G:27:ALA:HB2	2.13	0.48
3:G:57:ARG:NH1	3:G:75:ASP:OD2	2.47	0.48
3:F:99:ARG:HD2	3:E:192:LYS:HB2	1.96	0.48
1:A:723:LYS:HA	1:A:726:LYS:HG2	1.95	0.48
3:G:6:ILE:HG22	3:G:202:THR:HG22	1.95	0.48
3:E:6:ILE:HG22	3:E:202:THR:HB	1.96	0.48
1:A:587:ASP:O	1:A:591:PHE:N	2.46	0.48
3:G:77:ASP:HA	3:G:80:SER:HB2	1.96	0.48
3:E:54:GLY:HA3	6:N:8:C:H5'	1.95	0.48
5:H:309:LYS:HE3	5:H:314:GLY:CA	2.44	0.48
1:A:446:PRO:HA	1:A:452:CYS:HA	1.96	0.47
3:E:64:TYR:CZ	3:E:169:VAL:HG22	2.50	0.47
5:H:131:SER:HA	6:N:26:A:H1'	1.96	0.47
5:H:153:VAL:CB	5:H:160:PRO:CD	2.92	0.47
3:G:39:ASP:HB2	3:G:46:ILE:HD11	1.95	0.47
3:G:193:VAL:HG12	3:G:194:ALA:N	2.29	0.47
3:E:105:ASN:HB2	3:E:108:GLU:HB3	1.96	0.47
5:H:17:PRO:HG2	5:H:200:VAL:HG11	1.97	0.47
5:H:140:LEU:HA	5:H:249:ARG:HH21	1.80	0.47
1:A:504:ASN:ND2	1:A:508:LEU:O	2.48	0.47
5:H:309:LYS:HE3	5:H:314:GLY:HA3	1.96	0.47
4:B:62:ASP:N	4:B:62:ASP:OD1	2.43	0.47
4:B:257:LEU:HD13	4:B:275:VAL:HG11	1.95	0.47
1:A:75:ILE:HD13	1:A:228:LEU:HB3	1.96	0.46
3:E:95:ARG:CZ	3:E:159:ASN:CG	2.86	0.46
3:E:99:ARG:HA	4:B:185:GLY:HA2	1.97	0.46
3:E:169:VAL:O	3:E:173:GLY:N	2.47	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:H:83:ARG:HB3	5:H:83:ARG:NH2	2.30	0.46
3:F:109:LEU:HD13	3:F:142:ILE:HD11	1.96	0.46
3:G:24:ASP:HB2	3:G:35:PRO:HG3	1.96	0.46
1:A:408:GLU:OE1	1:A:409:ASN:ND2	2.47	0.46
1:A:522:ASP:OD2	4:B:95:ARG:NH2	2.48	0.46
5:H:32:ILE:HB	5:H:39:TYR:HB3	1.96	0.46
5:H:147:TRP:C	5:H:166:LEU:CD1	2.79	0.46
1:A:236:TYR:HA	1:A:350:ALA:HB3	1.98	0.46
3:G:46:ILE:HD12	3:G:102:PHE:HD1	1.80	0.46
5:H:99:LEU:O	5:H:101:SER:N	2.49	0.46
3:G:64:TYR:O	3:G:76:SER:OG	2.26	0.45
3:G:193:VAL:CG1	3:G:194:ALA:N	2.78	0.45
1:A:736:LYS:H	1:A:741:ARG:HH22	1.63	0.45
2:C:44:LEU:HD21	3:F:30:GLY:HA3	1.97	0.45
3:G:109:LEU:HD13	3:G:142:ILE:HD11	1.99	0.45
1:A:360:PRO:O	1:A:365:GLN:NE2	2.49	0.45
3:G:57:ARG:HH21	3:G:83:PHE:HB2	1.81	0.45
3:G:41:ILE:HG23	3:G:42:THR:HG23	1.99	0.45
3:E:160:GLU:CD	3:E:207:TYR:HE1	2.25	0.45
4:B:217:THR:HG22	4:B:261:ALA:HA	1.98	0.45
5:H:323:LEU:HD21	5:H:336:VAL:HG22	1.98	0.45
3:G:171:ARG:HH21	3:G:198:LEU:HB3	1.81	0.45
1:A:364:ARG:O	1:A:368:GLN:N	2.50	0.45
3:E:162:GLN:CA	3:E:165:GLU:HG2	2.46	0.45
4:B:33:PHE:CE2	4:B:287:LEU:HD12	2.51	0.45
4:B:269:THR:CB	4:B:294:PHE:CD2	3.00	0.45
1:A:515:VAL:HG12	1:A:629:THR:HG21	1.99	0.45
4:B:265:THR:CA	4:B:266:PHE:HD2	2.30	0.45
5:H:309:LYS:HE2	5:H:314:GLY:H	1.75	0.45
3:G:159:ASN:HD22	3:G:162:GLN:HB2	1.83	0.44
3:G:209:VAL:HG12	3:G:212:LEU:HD12	1.99	0.44
4:B:5:LEU:HB3	4:B:159:ILE:HG12	1.99	0.44
3:F:55:LYS:HB3	3:F:177:LEU:HD21	1.98	0.44
4:B:270:PHE:CD1	4:B:270:PHE:N	2.81	0.44
5:H:85:ALA:HA	5:H:87:ARG:NH2	2.32	0.44
5:H:203:TRP:HD1	5:H:319:THR:HA	1.81	0.44
5:H:206:SER:HB2	5:H:315:VAL:CG2	2.26	0.44
1:A:498:TYR:OH	1:A:570:SER:OG	2.30	0.44
5:H:131:SER:OG	6:N:27:A:OP1	2.33	0.44
5:H:201:GLN:O	5:H:203:TRP:CD1	2.71	0.44
1:A:259:ASN:OD1	1:A:262:THR:OG1	2.33	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:E:53:LYS:HE3	3:E:83:PHE:HD1	1.82	0.44
4:B:74:LYS:HE3	4:B:104:GLN:HA	2.00	0.44
7:J:32:A:C6	7:J:33:G:N7	2.85	0.44
1:A:46:GLN:HA	1:A:49:SER:HB3	1.99	0.44
1:A:522:ASP:HB3	1:A:525:ALA:HB3	2.00	0.44
1:A:691:LEU:HD13	1:A:703:LEU:HD23	1.98	0.44
1:A:195:ASP:OD1	1:A:195:ASP:N	2.51	0.44
5:H:154:ASN:HD21	5:H:163:ASN:CB	2.30	0.44
1:A:352:ASP:OD1	1:A:352:ASP:N	2.51	0.44
1:A:653:PHE:HE2	1:A:746:LEU:HG	1.82	0.44
5:H:49:LYS:HE2	5:H:86:GLU:HG2	1.91	0.44
5:H:151:ASN:HB3	5:H:162:GLU:HA	2.00	0.44
3:G:82:LEU:HD21	3:G:166:ASP:HB3	2.00	0.43
3:F:3:PHE:HZ	3:F:5:LYS:HE3	1.83	0.43
3:E:14:LEU:HD23	3:E:193:VAL:HG23	2.00	0.43
3:E:208:ASP:N	3:E:208:ASP:OD1	2.49	0.43
4:B:244:PHE:O	6:N:1:A:O2'	2.30	0.43
3:E:39:ASP:OD1	4:B:149:ARG:NE	2.40	0.43
3:G:125:THR:OG1	3:G:136:ARG:NH1	2.50	0.43
3:F:159:ASN:OD1	3:F:159:ASN:N	2.48	0.43
3:E:10:ALA:HB3	3:E:149:PHE:HD2	1.83	0.43
4:B:268:LYS:HE3	4:B:268:LYS:HB3	1.77	0.43
1:A:257:ASN:HD21	1:A:404:CYS:HA	1.84	0.43
3:E:93:MET:HE2	4:B:182:ARG:NH1	2.34	0.43
4:B:78:TYR:N	4:B:79:PRO:CD	2.81	0.43
4:B:220:PRO:CA	4:B:270:PHE:CD2	2.96	0.43
3:G:45:PRO:HG3	3:G:118:THR:HG22	2.00	0.43
3:E:133:ALA:O	7:J:28:A:O2'	2.34	0.43
5:H:87:ARG:HA	5:H:87:ARG:HD3	1.72	0.43
1:A:622:ILE:HA	1:A:625:MET:HB3	2.01	0.43
5:H:154:ASN:HD22	5:H:163:ASN:ND2	2.11	0.43
5:H:196:SER:O	5:H:223:SER:N	2.47	0.43
3:G:104:SER:HB3	3:G:146:THR:HG23	1.99	0.43
5:H:202:LYS:NZ	5:H:317:LYS:HG2	2.34	0.43
5:H:289:LYS:HG3	6:N:26:A:C6	2.54	0.43
5:H:302:ARG:NH1	5:H:303:TYR:OH	2.52	0.43
1:A:282:TYR:HE2	1:A:448:GLY:HA3	1.84	0.43
5:H:146:LYS:HD2	5:H:147:TRP:NE1	2.33	0.43
3:G:12:ILE:HG23	3:G:193:VAL:HG11	2.01	0.42
3:G:96:LEU:HD22	3:G:151:LEU:HD21	2.00	0.42
1:A:387:LEU:HD13	4:B:229:MET:HE1	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:14:LEU:HG	3:F:18:LEU:HD23	2.01	0.42
3:E:155:ILE:HD12	3:E:163:VAL:CG2	2.46	0.42
1:A:176:LEU:O	1:A:180:THR:OG1	2.28	0.42
4:B:90:VAL:HA	4:B:93:VAL:HG22	2.01	0.42
4:B:213:MET:O	4:B:295:PHE:N	2.52	0.42
5:H:21:GLY:CA	6:N:27:A:H3'	2.49	0.42
3:G:81:ARG:CD	3:G:95:ARG:HH12	2.30	0.42
3:G:86:SER:HB3	6:N:17:G:H21	1.84	0.42
5:H:147:TRP:HA	5:H:166:LEU:CG	2.48	0.42
1:A:272:ARG:HH22	1:A:403:ILE:HG21	1.84	0.42
3:E:123:GLU:O	3:E:136:ARG:N	2.49	0.42
3:E:156:THR:HB	3:E:159:ASN:HD22	1.83	0.42
3:G:23:SER:OG	3:F:122:PHE:HE2	1.95	0.42
1:A:615:LEU:HD13	1:A:647:PHE:CE1	2.54	0.42
3:G:14:LEU:HD23	3:G:193:VAL:HG22	2.01	0.42
7:J:32:A:N6	7:J:33:G:N7	2.68	0.42
1:A:662:VAL:HG11	1:A:746:LEU:HD12	2.01	0.42
3:E:104:SER:OG	3:E:146:THR:OG1	2.36	0.42
1:A:472:LYS:NZ	1:A:489:ASP:OD2	2.43	0.41
3:F:104:SER:OG	3:F:146:THR:OG1	2.31	0.41
3:E:162:GLN:HB2	3:E:165:GLU:CG	2.50	0.41
5:H:49:LYS:HB3	5:H:89:PHE:HE1	1.84	0.41
5:H:142:ASN:O	5:H:148:ASN:ND2	2.47	0.41
2:D:70:ARG:HB2	2:D:96:LEU:HD12	2.02	0.41
4:B:221:VAL:HA	4:B:273:GLN:HE21	1.85	0.41
5:H:323:LEU:HD23	5:H:336:VAL:HG13	2.02	0.41
2:C:70:ARG:HB2	2:C:96:LEU:HD12	2.02	0.41
4:B:78:TYR:CD1	4:B:265:THR:CG2	2.84	0.41
4:B:113:ASP:HB2	4:B:120:PHE:HZ	1.85	0.41
4:B:264:SER:O	4:B:266:PHE:HD2	1.92	0.41
5:H:111:ILE:HG22	5:H:218:TYR:CE1	2.55	0.41
5:H:287:TRP:NE1	5:H:309:LYS:HZ3	2.18	0.41
1:A:616:PHE:CD2	1:A:625:MET:HG3	2.56	0.41
1:A:736:LYS:HA	1:A:736:LYS:HD2	1.85	0.41
3:F:12:ILE:HB	3:F:147:PHE:HB2	2.01	0.41
3:E:96:LEU:HB3	3:E:98:PHE:HE1	1.85	0.41
4:B:76:ILE:HB	4:B:233:HIS:O	2.20	0.41
4:B:135:GLN:O	4:B:141:ASN:ND2	2.54	0.41
5:H:114:VAL:HG12	5:H:218:TYR:CB	2.50	0.41
3:G:81:ARG:CG	3:G:95:ARG:NH1	2.83	0.41
3:E:17:GLY:HA3	3:E:140:ARG:HD2	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:E:24:ASP:OD1	3:E:24:ASP:N	2.45	0.41
4:B:33:PHE:HE2	4:B:287:LEU:HD12	1.85	0.41
1:A:108:ALA:HB1	1:A:112:ASN:HD22	1.85	0.41
3:G:155:ILE:HG23	3:G:159:ASN:HB2	2.01	0.41
5:H:111:ILE:HB	5:H:218:TYR:CZ	2.56	0.41
5:H:258:LYS:O	5:H:263:SER:N	2.51	0.41
5:H:286:ALA:N	6:N:30:A:OP1	2.54	0.41
1:A:15:HIS:HD2	1:A:55:HIS:CD2	2.39	0.41
3:G:121:LYS:HZ2	3:G:123:GLU:HG2	1.85	0.41
3:F:57:ARG:HE	3:E:128:ARG:NH2	2.19	0.41
3:E:57:ARG:NH2	6:N:7:A:OP1	2.44	0.41
4:B:14:HIS:O	4:B:180:GLY:N	2.54	0.41
4:B:142:LEU:HD11	7:J:34:C:O2	2.20	0.41
5:H:86:GLU:OE2	5:H:89:PHE:CE2	2.74	0.41
3:F:177:LEU:HD22	3:F:182:LEU:HB2	2.03	0.41
1:A:259:ASN:O	1:A:262:THR:OG1	2.39	0.40
1:A:25:THR:HG23	1:A:27:GLU:HG3	2.03	0.40
1:A:242:LEU:HG	1:A:312:ASN:HA	2.02	0.40
1:A:428:PHE:HB2	1:A:445:LEU:HD13	2.03	0.40
2:C:47:THR:HG21	2:C:112:MET:HG3	2.03	0.40
3:E:106:ALA:O	3:E:117:TYR:OH	2.31	0.40
4:B:61:THR:HB	4:B:159:ILE:H	1.87	0.40
4:B:78:TYR:OH	4:B:211:LYS:HG2	2.22	0.40
1:A:119:ASP:N	1:A:119:ASP:OD1	2.53	0.40
5:H:67:ARG:O	5:H:73:ASN:ND2	2.42	0.40
1:A:13:LEU:HD12	1:A:202:SER:HB3	2.04	0.40
3:G:49:GLY:N	3:G:100:ASP:OD1	2.38	0.40
5:H:167:ILE:HD13	5:H:181:PHE:HE2	1.86	0.40
2:D:44:LEU:HD13	2:D:116:VAL:HG21	2.04	0.40
3:F:10:ALA:HB2	3:F:198:LEU:HG	2.04	0.40
3:F:39:ASP:OD2	3:E:143:ARG:NH1	2.54	0.40
4:B:50:LEU:HD23	4:B:50:LEU:HA	1.91	0.40
5:H:202:LYS:HZ1	5:H:317:LYS:HG2	1.87	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	731/758 (96%)	666 (91%)	65 (9%)	0	100	100
2	C	119/126 (94%)	109 (92%)	10 (8%)	0	100	100
2	D	119/126 (94%)	109 (92%)	10 (8%)	0	100	100
3	E	203/220 (92%)	179 (88%)	23 (11%)	1 (0%)	25	54
3	F	214/220 (97%)	193 (90%)	21 (10%)	0	100	100
3	G	215/220 (98%)	186 (86%)	28 (13%)	1 (0%)	25	54
4	B	291/299 (97%)	253 (87%)	38 (13%)	0	100	100
5	H	340/357 (95%)	301 (88%)	38 (11%)	1 (0%)	37	66
All	All	2232/2326 (96%)	1996 (89%)	233 (10%)	3 (0%)	50	77

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
5	H	100	GLU
3	E	29	ILE
3	G	191	GLY

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	581/651 (89%)	577 (99%)	4 (1%)	81	89
2	C	99/112 (88%)	99 (100%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	D	99/112 (88%)	99 (100%)	0	100	100
3	E	175/188 (93%)	171 (98%)	4 (2%)	45	68
3	F	184/188 (98%)	182 (99%)	2 (1%)	70	82
3	G	182/188 (97%)	182 (100%)	0	100	100
4	B	253/263 (96%)	246 (97%)	7 (3%)	38	63
5	H	285/312 (91%)	276 (97%)	9 (3%)	34	60
All	All	1858/2014 (92%)	1832 (99%)	26 (1%)	62	78

All (26) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	75	ILE
1	A	192	GLU
1	A	212	ILE
1	A	746	LEU
3	F	46	ILE
3	F	103	LEU
3	E	100	ASP
3	E	103	LEU
3	E	160	GLU
3	E	161	ASN
4	B	28	SER
4	B	45	LYS
4	B	78	TYR
4	B	82	ASP
4	B	88	VAL
4	B	266	PHE
4	B	270	PHE
5	H	83	ARG
5	H	86	GLU
5	H	87	ARG
5	H	104	ASN
5	H	158	ARG
5	H	161	LYS
5	H	166	LEU
5	H	335	LEU
5	H	337	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (42) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	15	HIS
1	A	22	GLN
1	A	51	GLN
1	A	78	ASN
1	A	135	ASN
1	A	167	GLN
1	A	252	GLN
1	A	312	ASN
1	A	436	HIS
1	A	561	ASN
1	A	639	ASN
1	A	661	ASN
1	A	675	ASN
2	D	23	ASN
2	D	76	GLN
2	C	23	ASN
2	C	76	GLN
3	G	65	ASN
3	G	124	ASN
3	G	134	ASN
3	G	159	ASN
3	G	197	ASN
3	F	11	GLN
3	F	213	ASN
3	E	134	ASN
3	E	213	ASN
4	B	67	GLN
4	B	81	HIS
4	B	125	HIS
4	B	134	ASN
4	B	144	GLN
4	B	174	GLN
4	B	233	HIS
4	B	246	HIS
4	B	284	HIS
4	B	288	ASN
5	H	104	ASN
5	H	151	ASN
5	H	154	ASN
5	H	163	ASN
5	H	271	GLN
5	H	338	ASN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
6	N	33/36 (91%)	7 (21%)	0
7	J	32/42 (76%)	10 (31%)	1 (3%)
All	All	65/78 (83%)	17 (26%)	1 (1%)

All (17) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
6	N	2	C
6	N	3	G
6	N	9	G
6	N	15	U
6	N	18	C
6	N	23	U
6	N	32	C
7	J	10	G
7	J	11	G
7	J	12	G
7	J	18	A
7	J	21	G
7	J	24	A
7	J	30	A
7	J	33	G
7	J	34	C
7	J	39	G

All (1) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
7	J	9	U

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

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

5.5　Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 5 ligands modelled in this entry, 3 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	#$|Z| > 2$
9	ATP	A	803	10	26,33,33	0.86	1 (3%)	31,52,52	1.36	4 (12%)
9	ATP	A	802	10	26,33,33	0.91	1 (3%)	31,52,52	1.48	5 (16%)

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
9	ATP	A	803	10	-	5/18/38/38	0/3/3/3
9	ATP	A	802	10	-	2/18/38/38	0/3/3/3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	A	802	ATP	C5-C4	2.41	1.47	1.40
9	A	803	ATP	C5-C4	2.15	1.46	1.40

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	A	803	ATP	N3-C2-N1	-3.60	123.05	128.68
9	A	802	ATP	C3'-C2'-C1'	3.32	105.98	100.98
9	A	802	ATP	PA-O3A-PB	-3.26	121.65	132.83
9	A	802	ATP	N3-C2-N1	-3.00	123.99	128.68
9	A	802	ATP	C4-C5-N7	-3.00	106.28	109.40
9	A	803	ATP	C4-C5-N7	-2.84	106.44	109.40
9	A	802	ATP	PB-O3B-PG	-2.65	123.73	132.83
9	A	803	ATP	PA-O3A-PB	-2.58	123.96	132.83
9	A	803	ATP	C3'-C2'-C1'	2.46	104.68	100.98

There are no chirality outliers.

All (7) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
9	A	802	ATP	O4'-C4'-C5'-O5'
9	A	803	ATP	C5'-O5'-PA-O1A
9	A	803	ATP	C5'-O5'-PA-O2A
9	A	802	ATP	C3'-C4'-C5'-O5'
9	A	803	ATP	C4'-C5'-O5'-PA
9	A	803	ATP	PB-O3A-PA-O5'
9	A	803	ATP	C5'-O5'-PA-O3A

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 ATP A 803

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP A 802
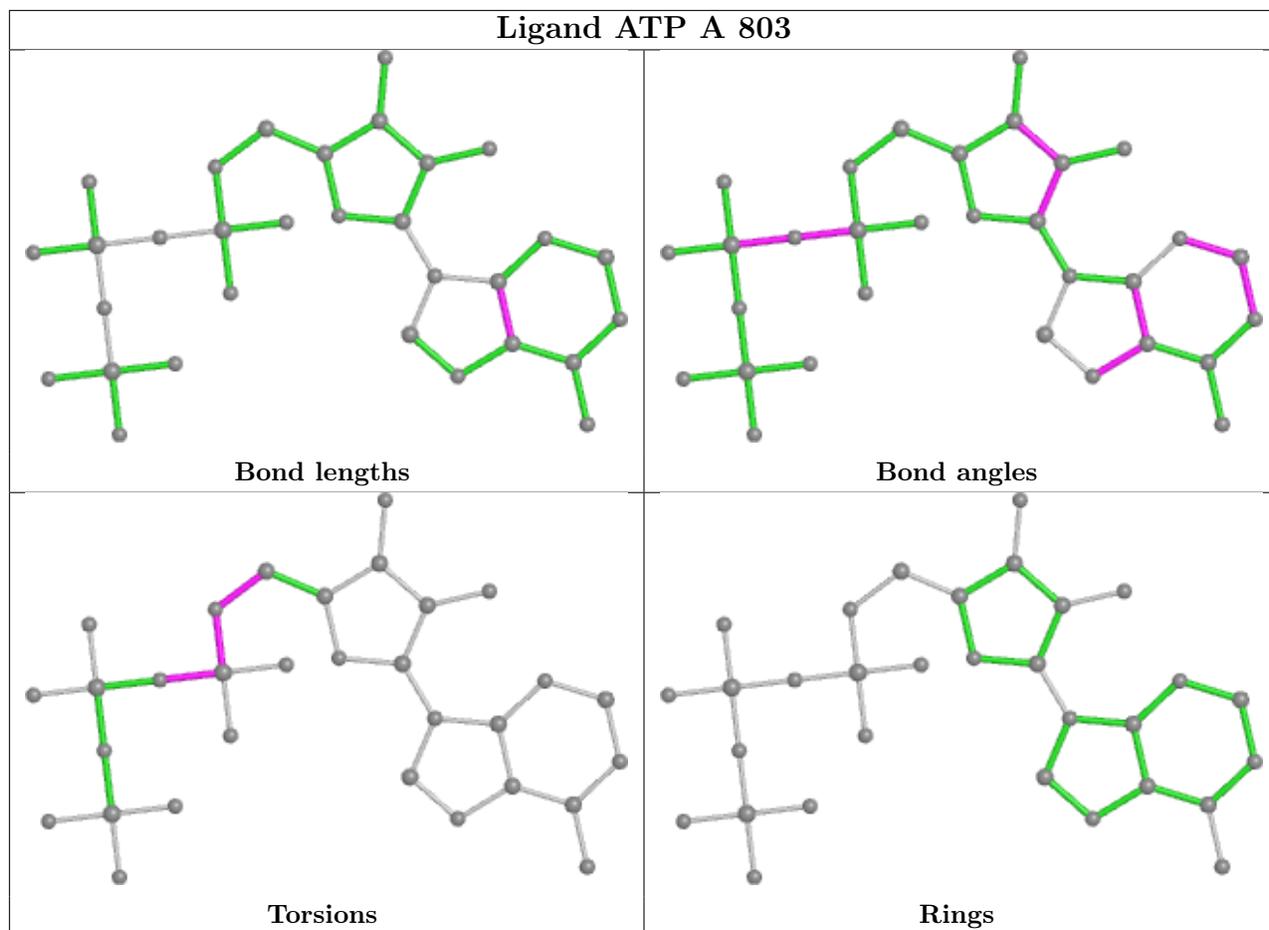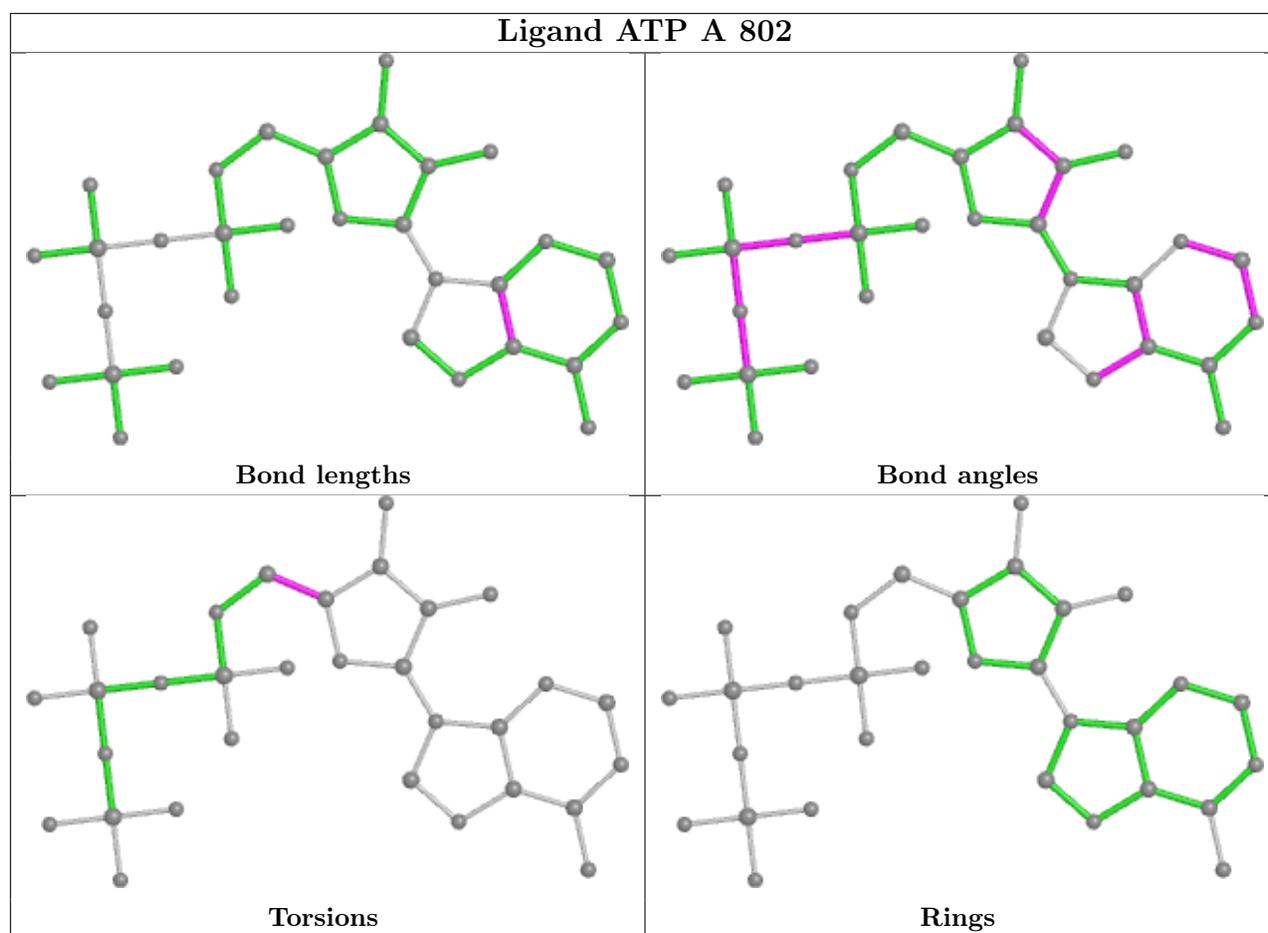
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6　Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-9660. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

6.1　Orthogonal projections ⓘ

6.1.1　Primary map

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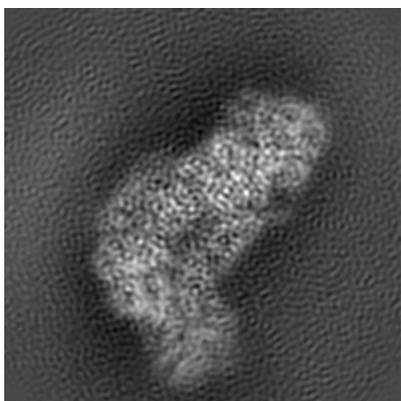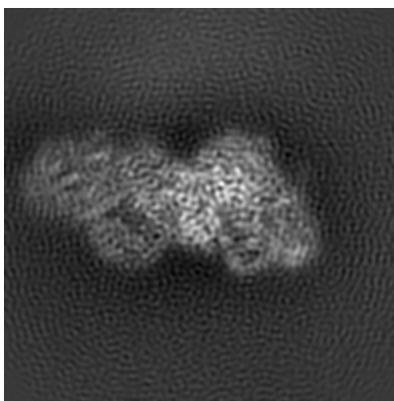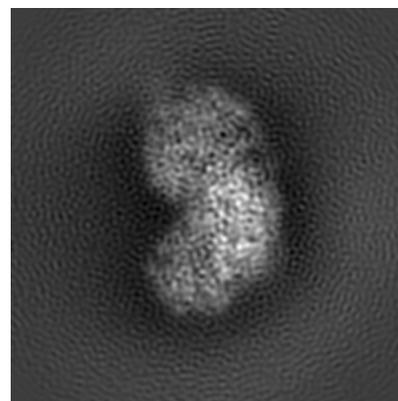
The images above show the map projected in three orthogonal directions.

6.2　Central slices ⓘ
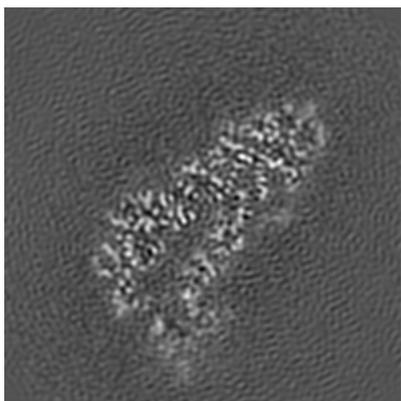
6.2.1　Primary map
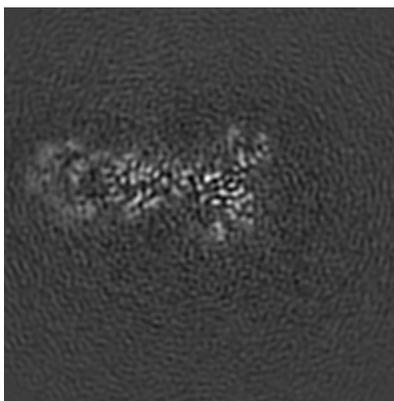
| X Index: 100 | Y Index: 100 | Z Index: 100 |
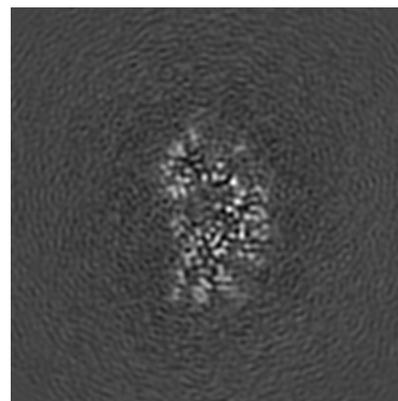
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices ⓘ
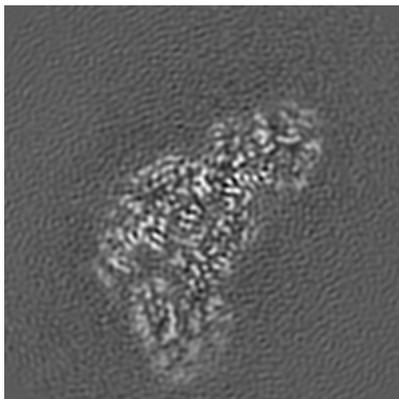
6.3.1 Primary map
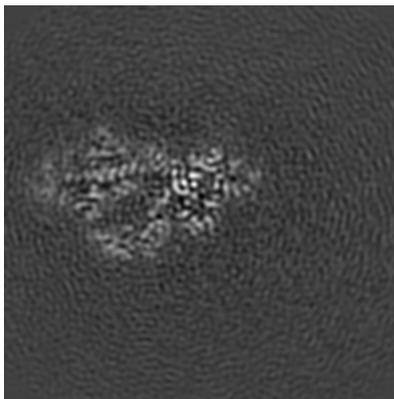
| X Index: 106 | Y Index: 79 | Z Index: 113 |
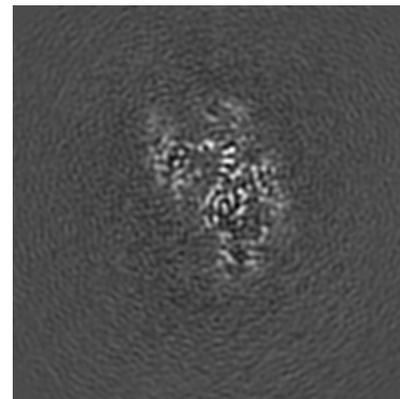
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map

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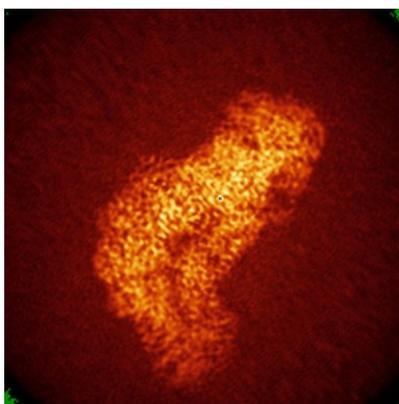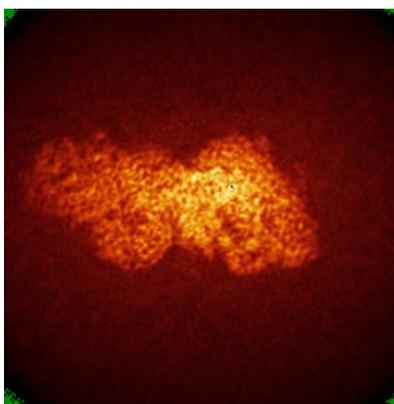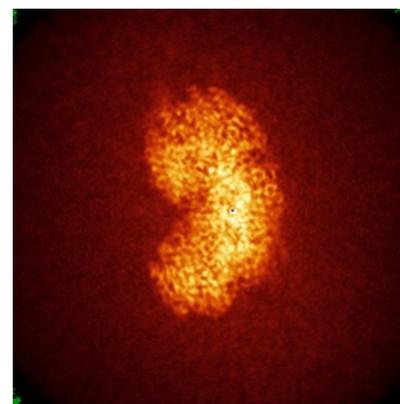
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5　Orthogonal surface views ⓘ
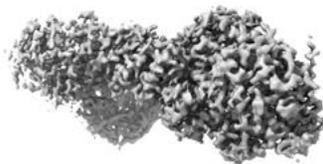
6.5.1　Primary map

X　　　　　　　　　　　　　　Y　　　　　　　　　　　　　　Z

The images above show the 3D surface view of the map at the recommended contour level 0.056. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.6　Mask visualisation ⓘ

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

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 (i)
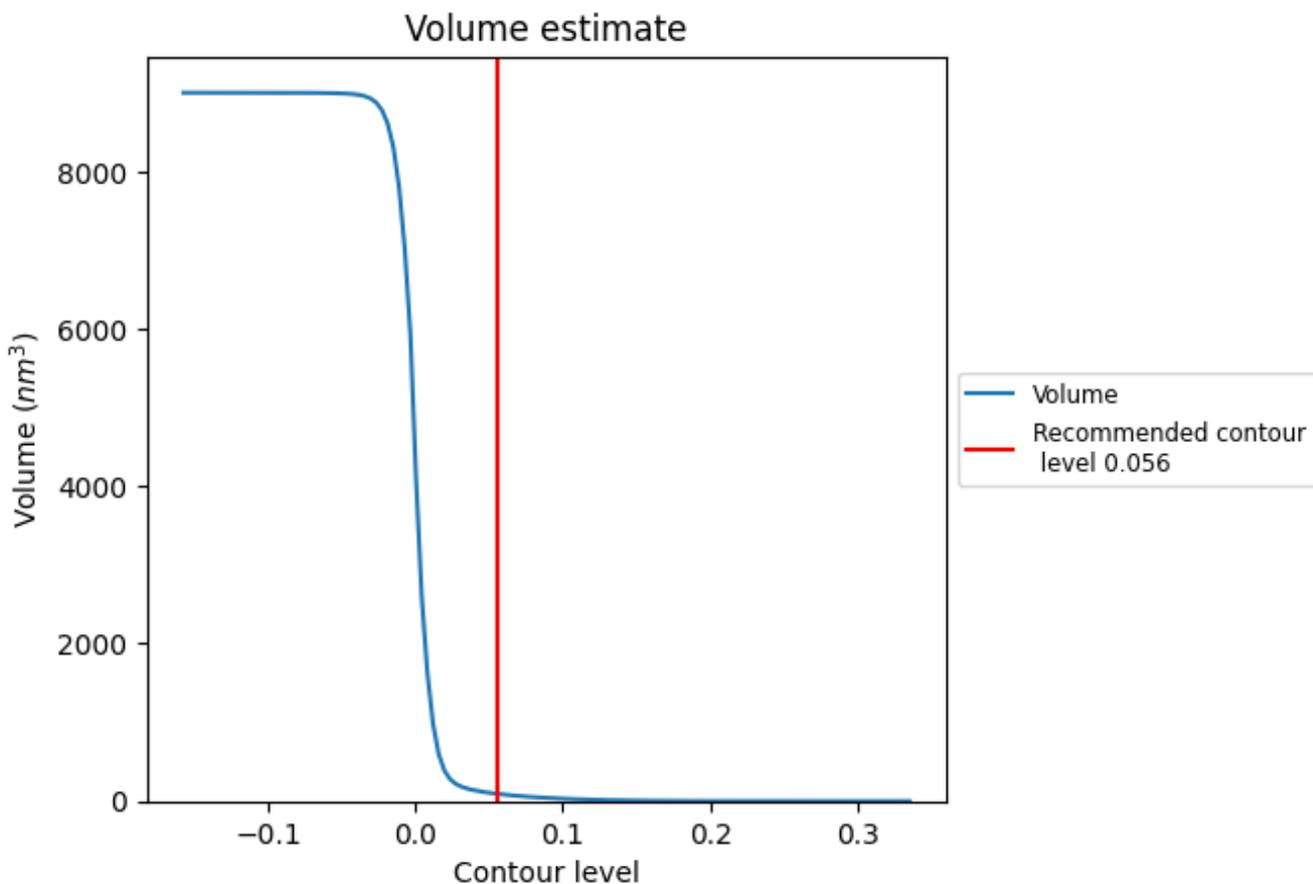
The volume at the recommended contour level is 92 nm^3; this corresponds to an approximate mass of 83 kDa.

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)
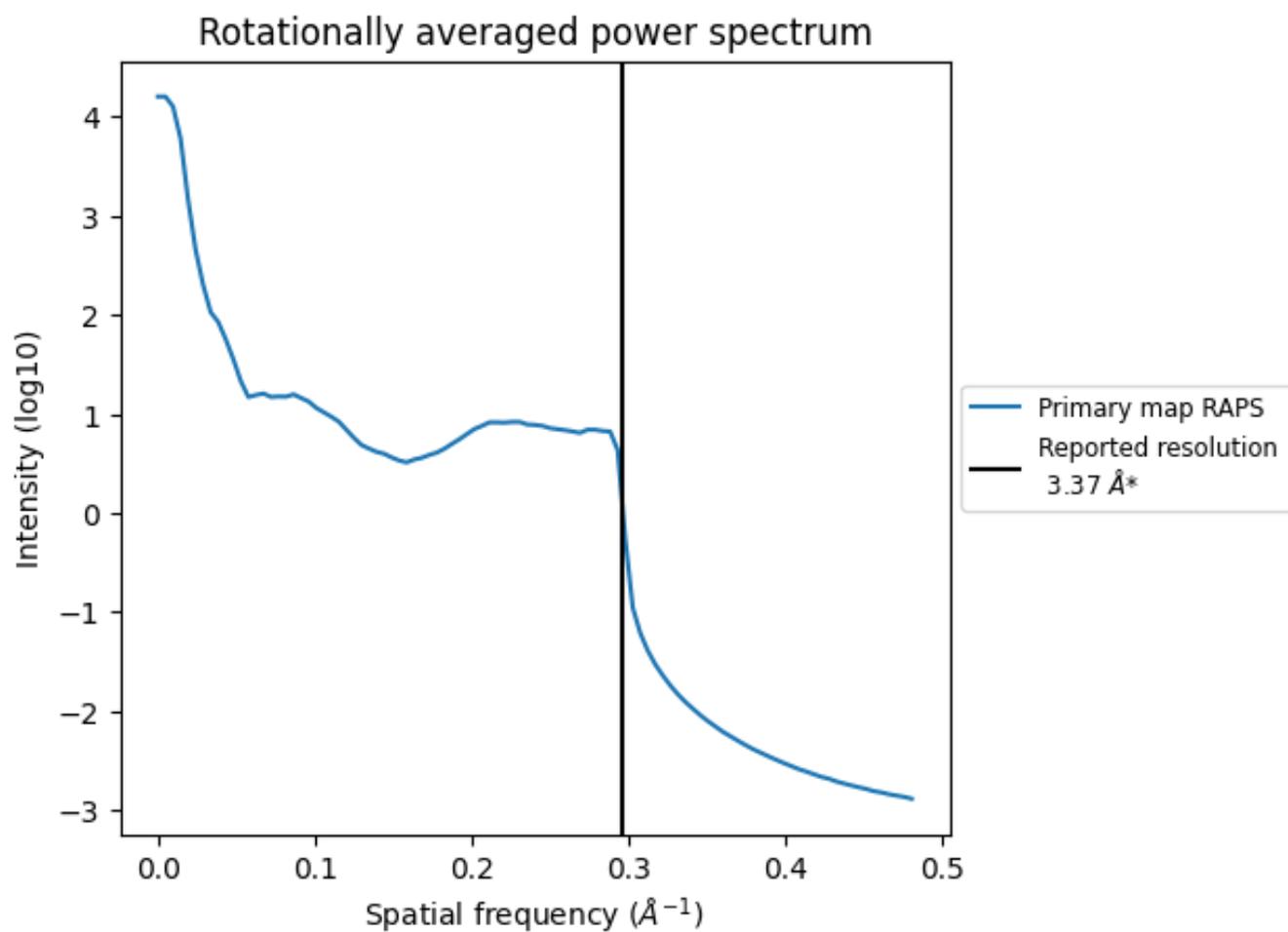
*Reported resolution corresponds to spatial frequency of 0.297 Å^{-1}

8 Fourier-Shell correlation (i)

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

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-9660 and PDB model 6IG0. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay ⓘ

| X | Y | Z |
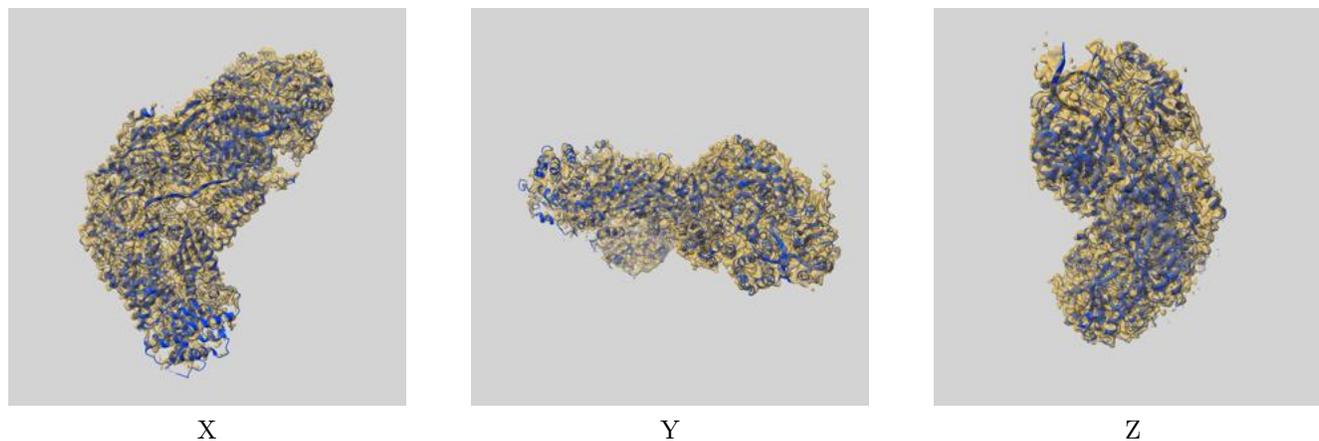
The images above show the 3D surface view of the map at the recommended contour level 0.056 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2   Q-score mapped to coordinate model (i)

X   Y   Z
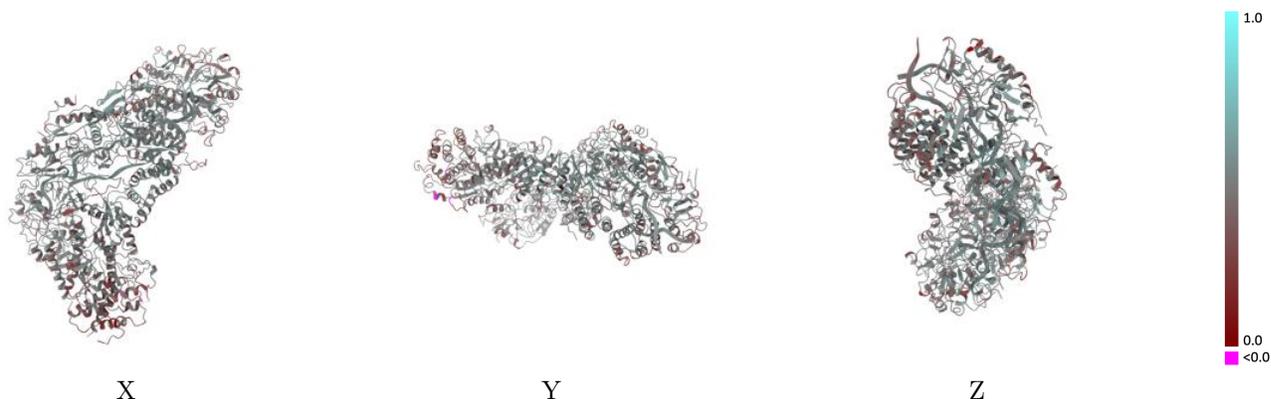
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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
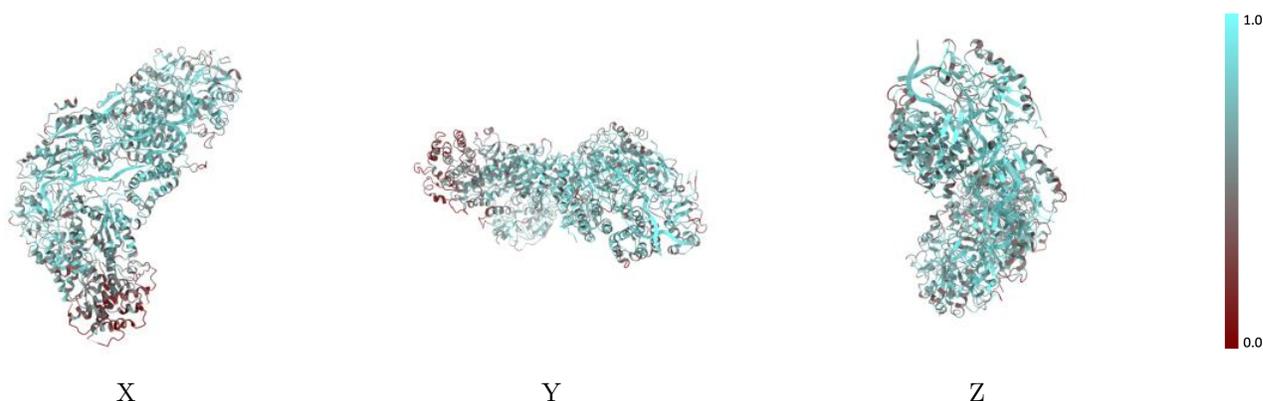
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.056).

9.4 Atom inclusion ⓘ
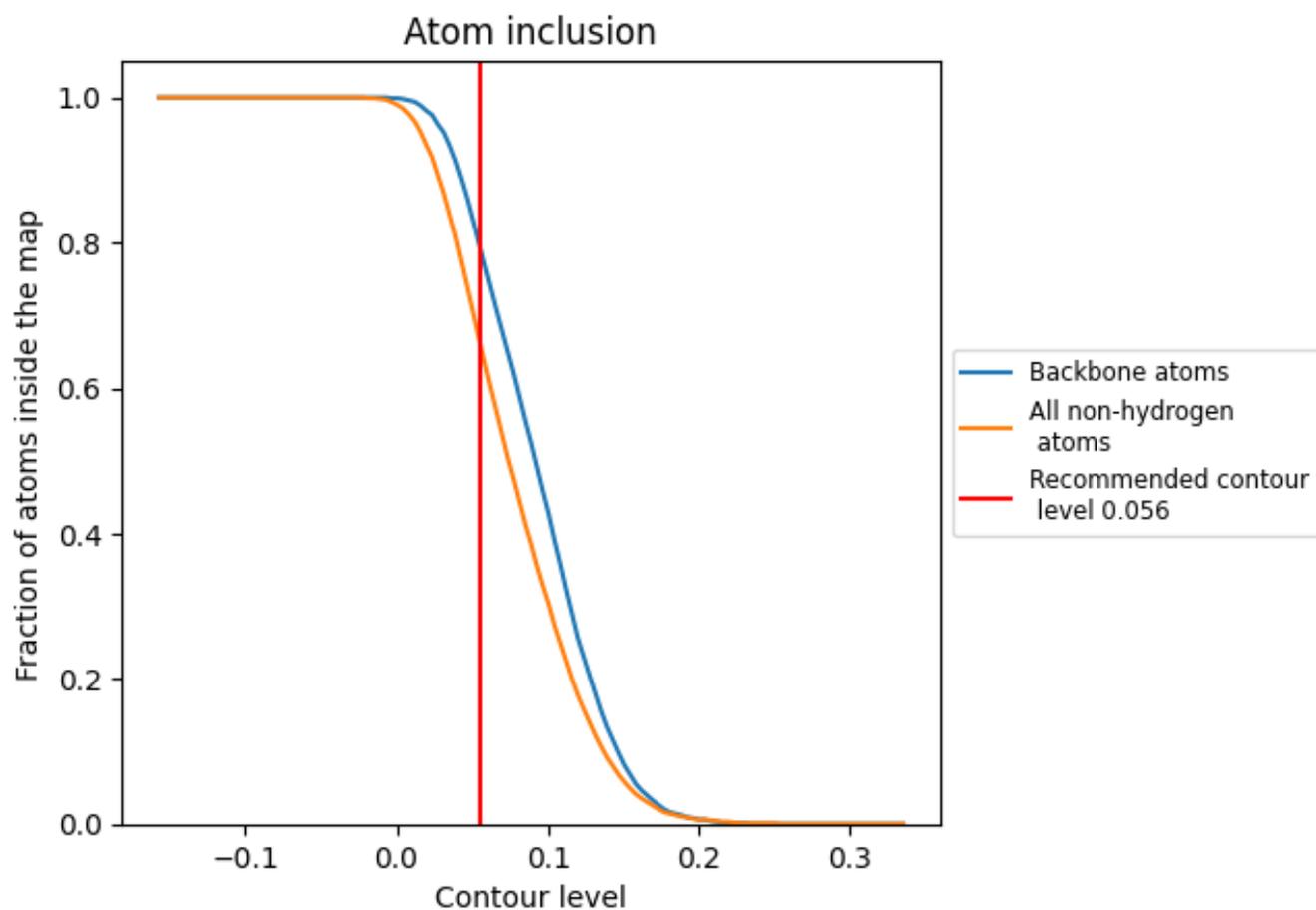
At the recommended contour level, 79% of all backbone atoms, 65% of all non-hydrogen atoms, are inside the map.

9.5   Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.056) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6540	0.4610
A	0.5540	0.4320
B	0.6550	0.4570
C	0.6950	0.4660
D	0.6630	0.4330
E	0.6900	0.4860
F	0.7040	0.4930
G	0.7010	0.4880
H	0.6500	0.4510
J	0.8360	0.5030
N	0.9100	0.5380

1.0

0.0
<0.0