



Full wwPDB EM Validation Report ⓘ

Jun 21, 2025 – 08:07 am BST

PDB ID : 9H1L / pdb_00009h1l
EMDB ID : EMD-51767
Title : Methyl-coenzyme M reductase activation complex binding to the A2 component after incubation with ATP
Authors : Ramirez-Amador, F.; Paul, S.; Kumar, A.; Schuller, J.M.
Deposited on : 2024-10-09
Resolution : 2.14 Å(reported)
Based on initial model : .

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

EMDB validation analysis : 0.0.1.dev118
Mogul : 1.8.4, 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) : 2.44

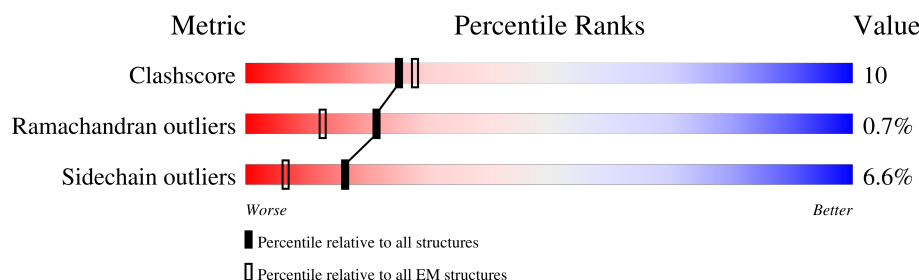
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.14 Å.

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







Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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

Mol	Chain	Length	Quality of chain
1	J	501	<div> <div>29%</div> <div>59%</div> <div>29%</div> <div>10%</div> <div>.</div> </div>
2	A	260	<div> <div>81%</div> <div>17%</div> <div>.</div> </div>
2	B	260	<div> <div>81%</div> <div>19%</div> </div>
3	D	443	<div> <div>84%</div> <div>16%</div> <div>.</div> </div>
3	E	443	<div> <div>84%</div> <div>15%</div> </div>
4	C	553	<div> <div>80%</div> <div>18%</div> <div>...</div> </div>
4	F	553	<div> <div>79%</div> <div>14%</div> <div>.</div> <div>6%</div> </div>
5	G	183	<div> <div>50%</div> <div>12%</div> <div>38%</div> </div>

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Mol	Chain	Length	Quality of chain
6	H	304	
7	I	234	
8	K	531	
9	L	93	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
13	SHT	F	602	X	-	X	-
4	GL3	C	448	-	-	X	-
4	SMC	C	455	-	-	X	-

2 Entry composition

There are 17 unique types of molecules in this entry. The entry contains 32524 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 UPF0288 protein MmarC6_0796.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	J	499	Total	C	N	O	S	0	0
			3962	2517	647	790	8		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
J	500	SER	LYS	variant	UNP A9A8E0

- Molecule 2 is a protein called Methyl-coenzyme M reductase subunit gamma.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	A	259	Total	C	N	O	S	0	0
			2071	1293	369	397	12		
2	B	259	Total	C	N	O	S	0	0
			2071	1293	369	397	12		

- Molecule 3 is a protein called Methyl-coenzyme M reductase subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	E	442	Total	C	N	O	S	0	0
			3263	2066	546	630	21		
3	D	442	Total	C	N	O	S	0	0
			3263	2066	546	630	21		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	173	GLY	SER	conflict	UNP A0A2L1CBB3
D	173	GLY	SER	conflict	UNP A0A2L1CBB3

- Molecule 4 is a protein called Methyl-coenzyme M reductase subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	C	550	Total	C	N	O	S	0	0
			4284	2707	731	826	20		
4	F	520	Total	C	N	O	S	0	0
			4039	2556	684	779	20		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	51	SER	ALA	variant	UNP A0A2L1CBB0
F	51	SER	ALA	variant	UNP A0A2L1CBB0

- Molecule 5 is a protein called Methanogenesis marker protein 17.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	G	114	Total	C	N	O	S	0	0
			931	600	152	172	7		

There are 5 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
G	109	VAL	ILE	variant	UNP G0H411
G	129	ILE	VAL	variant	UNP G0H411
G	167	GLU	GLN	variant	UNP G0H411
G	168	GLU	ASP	variant	UNP G0H411
G	171	ASN	ASP	variant	UNP G0H411

- Molecule 6 is a protein called Methanogenesis marker protein 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	H	296	Total	C	N	O	S	0	0
			2393	1530	411	440	12		

- Molecule 7 is a protein called Methyl-coenzyme M reductase operon protein C.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	I	194	Total	C	N	O	S	0	0
			1469	929	261	271	8		

There are 36 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
I	-35	MET	-	initiating methionine	UNP G0H3B1

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Chain	Residue	Modelled	Actual	Comment	Reference
I	-34	SER	-	expression tag	UNP G0H3B1
I	-33	ALA	-	expression tag	UNP G0H3B1
I	-32	TRP	-	expression tag	UNP G0H3B1
I	-31	SER	-	expression tag	UNP G0H3B1
I	-30	HIS	-	expression tag	UNP G0H3B1
I	-29	PRO	-	expression tag	UNP G0H3B1
I	-28	GLN	-	expression tag	UNP G0H3B1
I	-27	PHE	-	expression tag	UNP G0H3B1
I	-26	GLU	-	expression tag	UNP G0H3B1
I	-25	LYS	-	expression tag	UNP G0H3B1
I	-24	GLY	-	expression tag	UNP G0H3B1
I	-23	GLY	-	expression tag	UNP G0H3B1
I	-22	GLY	-	expression tag	UNP G0H3B1
I	-21	SER	-	expression tag	UNP G0H3B1
I	-20	GLY	-	expression tag	UNP G0H3B1
I	-19	GLY	-	expression tag	UNP G0H3B1
I	-18	GLY	-	expression tag	UNP G0H3B1
I	-17	SER	-	expression tag	UNP G0H3B1
I	-16	GLY	-	expression tag	UNP G0H3B1
I	-15	GLY	-	expression tag	UNP G0H3B1
I	-14	SER	-	expression tag	UNP G0H3B1
I	-13	ALA	-	expression tag	UNP G0H3B1
I	-12	TRP	-	expression tag	UNP G0H3B1
I	-11	SER	-	expression tag	UNP G0H3B1
I	-10	HIS	-	expression tag	UNP G0H3B1
I	-9	PRO	-	expression tag	UNP G0H3B1
I	-8	GLN	-	expression tag	UNP G0H3B1
I	-7	PHE	-	expression tag	UNP G0H3B1
I	-6	GLU	-	expression tag	UNP G0H3B1
I	-5	LYS	-	expression tag	UNP G0H3B1
I	-4	SER	-	expression tag	UNP G0H3B1
I	-3	ALA	-	expression tag	UNP G0H3B1
I	-2	GLY	-	expression tag	UNP G0H3B1
I	-1	SER	-	expression tag	UNP G0H3B1
I	0	GLY	-	expression tag	UNP G0H3B1

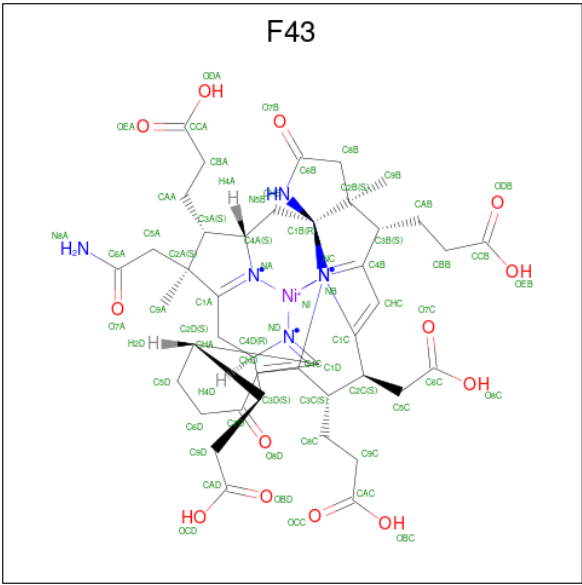
- Molecule 8 is a protein called Glycine betaine/carnitine/choline transport ATP-binding protein OpuCA.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	K	521	Total	C	N	O	S	0	0
			4089	2598	693	774	24		

- Molecule 9 is a protein called DUF2098 domain-containing protein.

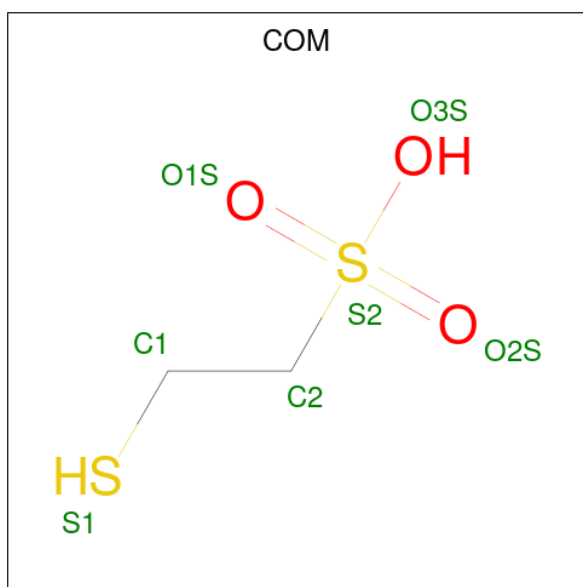
Mol	Chain	Residues	Atoms				AltConf	Trace
9	L	47	Total	C	N	O	0	0
			390	251	61	78		

- Molecule 10 is FACTOR 430 (CCD ID: F43) (formula: C₄₂H₅₁N₆NiO₁₃).



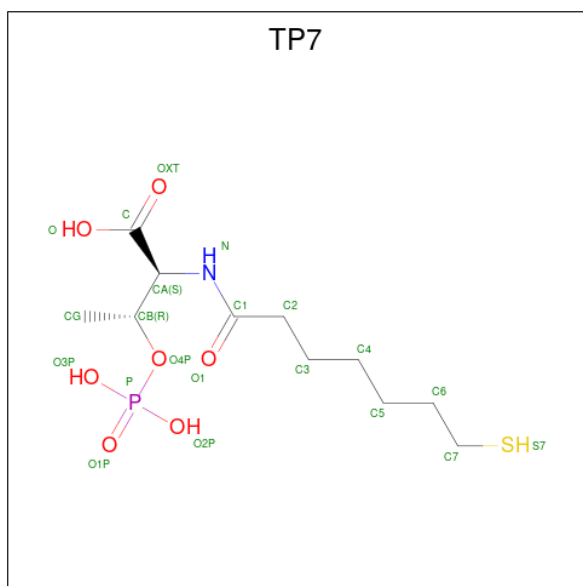
Mol	Chain	Residues	Atoms					AltConf
10	A	1	Total	C	N	Ni	O	0
			62	42	6	1	13	
10	E	1	Total	C	N	Ni	O	0
			62	42	6	1	13	

- Molecule 11 is 1-THIOETHANESULFONIC ACID (CCD ID: COM) (formula: C₂H₆O₃S₂).



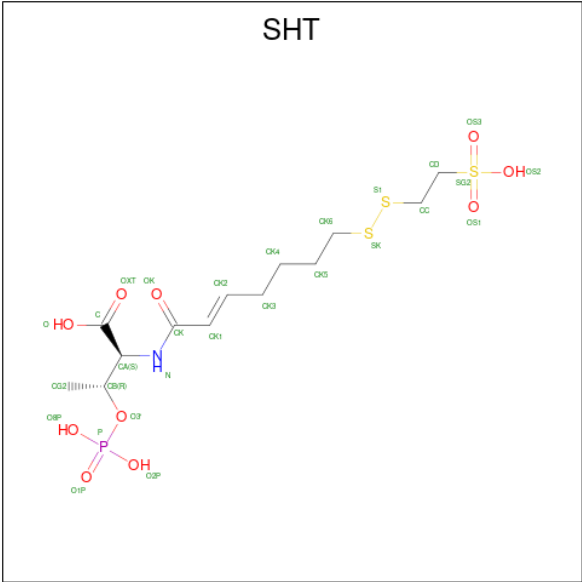
Mol	Chain	Residues	Atoms				AltConf
11	C	1	Total	C	O	S	0
			7	2	3	2	

- Molecule 12 is Coenzyme B (CCD ID: TP7) (formula: $C_{11}H_{22}NO_7PS$).



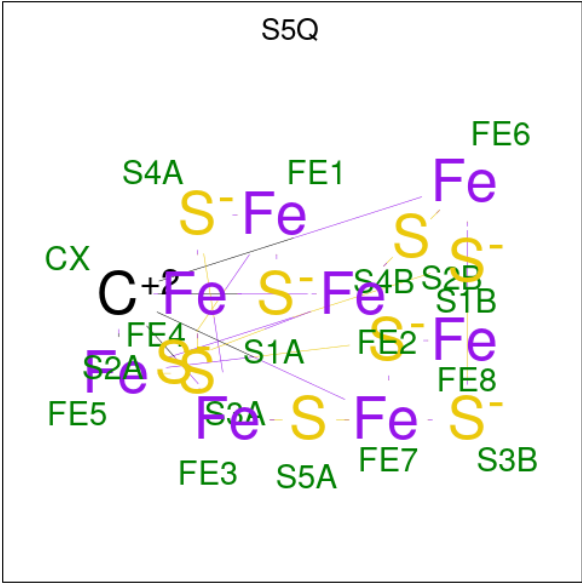
Mol	Chain	Residues	Atoms						AltConf
12	F	1	Total	C	N	O	P	S	0
			21	11	1	7	1	1	

- Molecule 13 is O-PHOSPHONO-N-{(2E)-7-[(2-SULFOETHYL)DITHIO]HEPT-2-ENOYL}-L-THREONINE (CCD ID: SHT) (formula: $C_{13}H_{24}NO_{10}PS_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
13	F	1	28	13	1	10	1	3
								0

- Molecule 14 is FeFe cofactor (CCD ID: S5Q) (formula: CFe₈S₉) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				AltConf
			Total	C	Fe	S	
14	H	1	18	1	8	9	0
14	I	1	18	1	8	9	0

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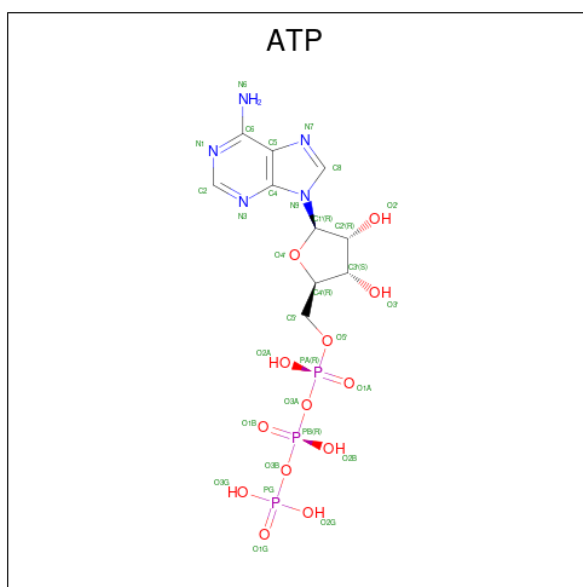
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Mol	Chain	Residues	Atoms				AltConf
14	I	1	Total	C	Fe	S	0
			18	1	8	9	

- Molecule 15 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
15	K	1	Total	Zn	0
			1	1	


- Molecule 16 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: C₁₀H₁₆N₅O₁₃P₃).

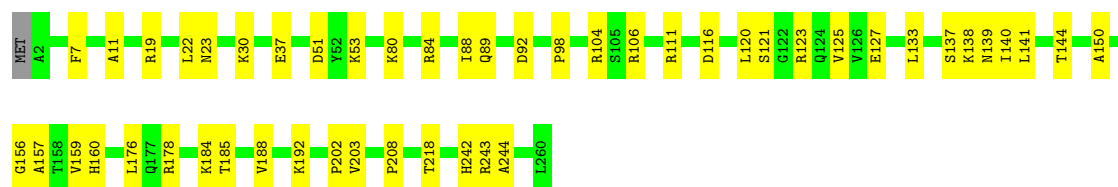


Mol	Chain	Residues	Atoms					AltConf
16	K	1	Total	C	N	O	P	0
			31	10	5	13	3	
16	K	1	Total	C	N	O	P	0
			31	10	5	13	3	


- Molecule 17 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

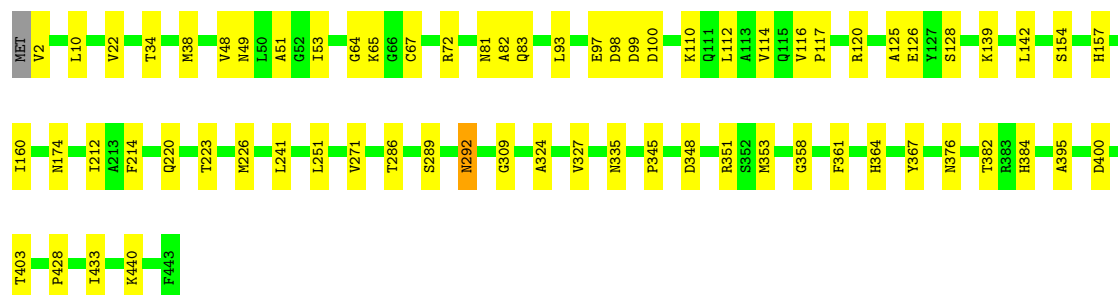
Mol	Chain	Residues	Atoms		AltConf
17	K	2	Total	Mg	0
			2	2	

Chain B:  81% 19%




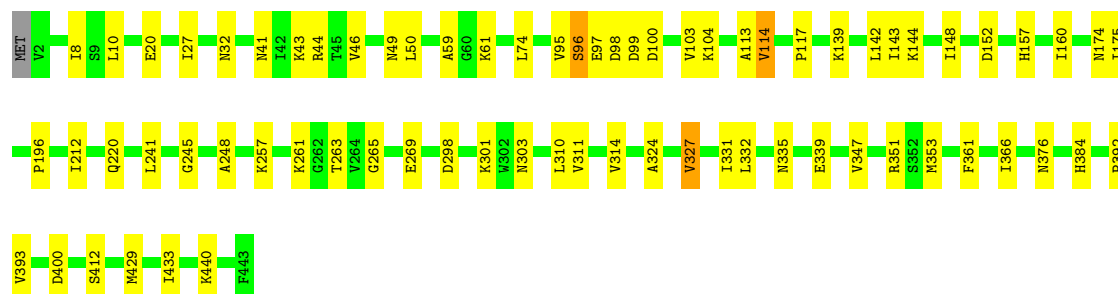
- Molecule 3: Methyl-coenzyme M reductase subunit beta

Chain E:  84% 15%




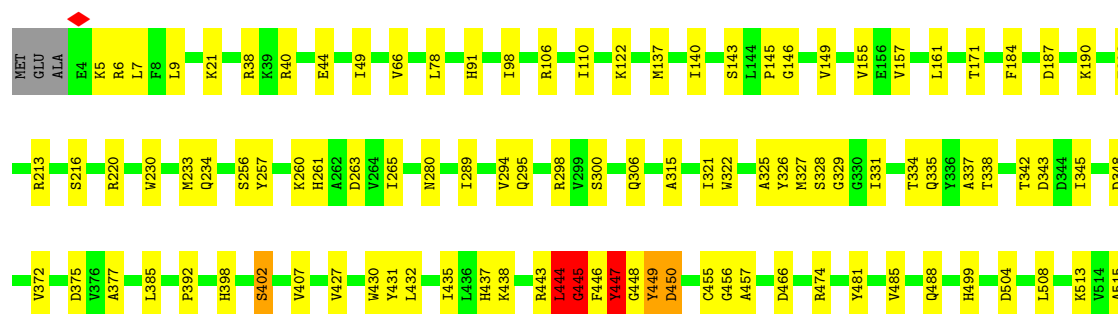
- Molecule 3: Methyl-coenzyme M reductase subunit beta

Chain D:  84% 16%



- Molecule 4: Methyl-coenzyme M reductase subunit alpha

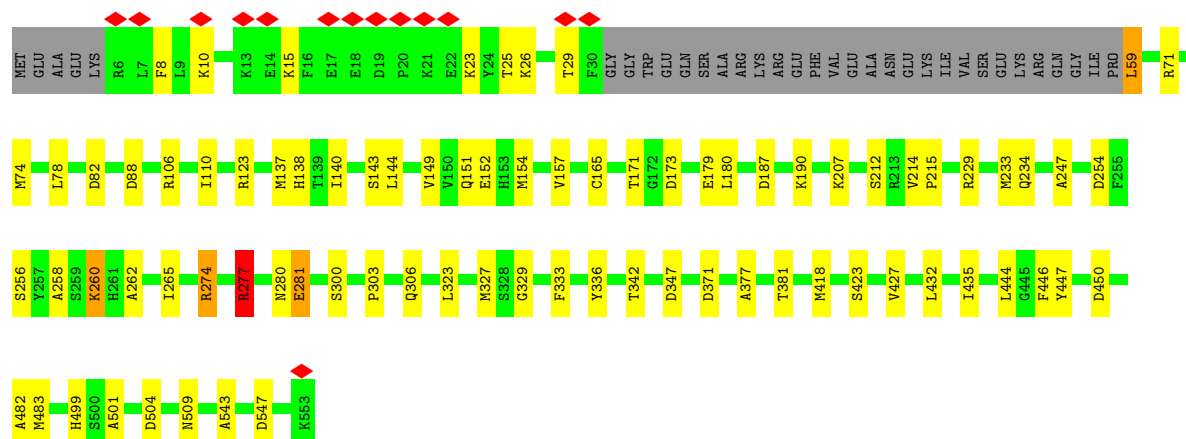
Chain C:  80% 18% ...





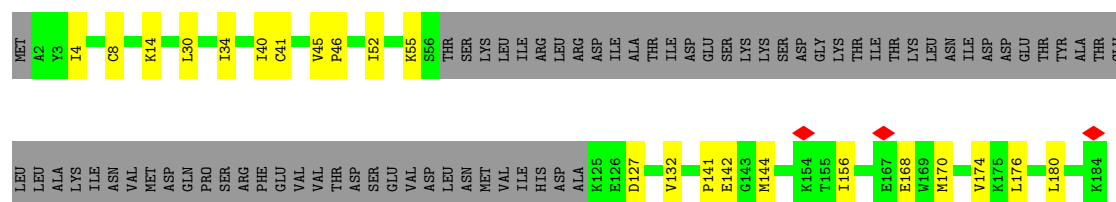
• Molecule 4: Methyl-coenzyme M reductase subunit alpha

Chain F: 79% 14% 6%



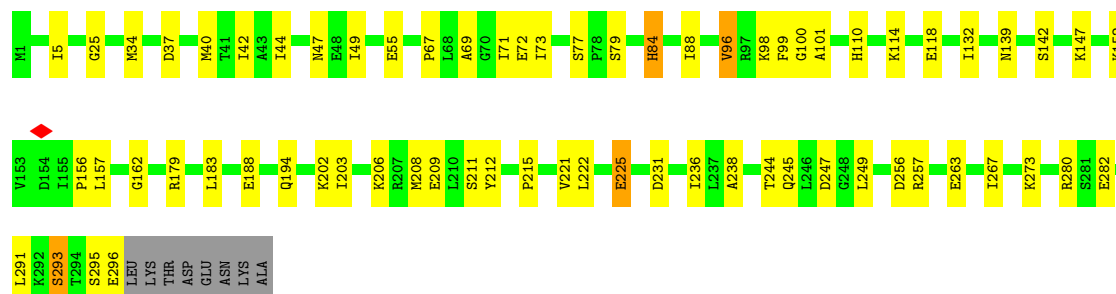
• Molecule 5: Methanogenesis marker protein 17

Chain G: 50% 12% 38%



• Molecule 6: Methanogenesis marker protein 7

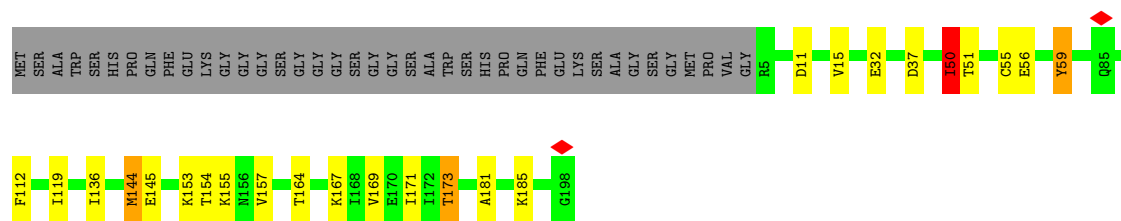
Chain H: 75% 21% 4%



• Molecule 7: Methyl-coenzyme M reductase operon protein C

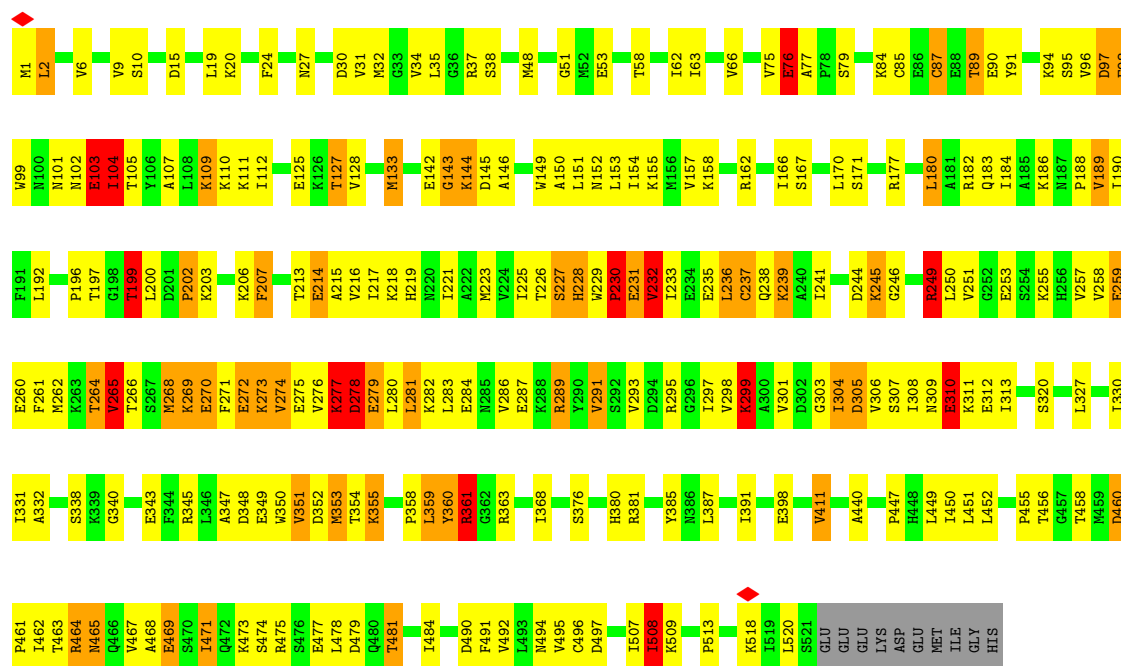
Chain I: 72% 9% 17%





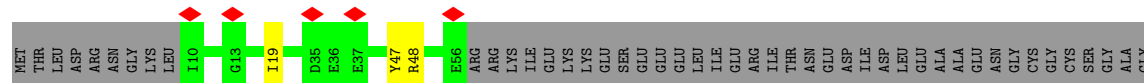
- Molecule 8: Glycine betaine/carnitine/choline transport ATP-binding protein OpuCA

Chain K: 53% 34% 9% . .



- Molecule 9: DUF2098 domain-containing protein

Chain L: 5% 47% 49% .



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	118247	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 ($e^-/\text{\AA}^2$)	60	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	0.175	Depositor
Minimum map value	-0.050	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.0197	Depositor
Map size (Å)	342.0, 342.0, 342.0	wwPDB
Map dimensions	600, 600, 600	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.57, 0.57, 0.57	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: TP7, MG, MGN, COM, GL3, MHS, S5Q, ZN, SHT, SMC, F43, AGM, 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	J	0.54	0/4026	1.02	10/5441 (0.2%)
2	A	0.19	0/2116	0.48	3/2861 (0.1%)
2	B	0.16	0/2116	0.38	1/2861 (0.0%)
3	D	0.21	0/3319	0.43	2/4499 (0.0%)
3	E	0.22	0/3319	0.43	0/4499
4	C	0.21	0/4328	0.60	4/5856 (0.1%)
4	F	0.18	0/4078	0.41	0/5522
5	G	0.16	0/943	0.40	0/1262
6	H	0.20	0/2435	0.40	0/3280
7	I	0.17	0/1490	0.50	4/2006 (0.2%)
8	K	0.72	1/4159 (0.0%)	1.34	56/5613 (1.0%)
9	L	0.16	0/398	0.41	0/542
All	All	0.36	1/32727 (0.0%)	0.72	80/44242 (0.2%)

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	J	0	6
2	A	0	1
4	F	0	2
6	H	0	1
8	K	0	7
All	All	0	17

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	K	230	PRO	N-CD	11.59	1.64	1.47

All (80) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	J	32	ILE	O-C-N	32.64	156.65	123.03
4	C	447	TYR	CB-CA-C	-27.26	58.31	110.10
8	K	228	HIS	N-CA-C	-22.53	81.66	112.30
1	J	32	ILE	CA-C-N	-21.59	87.88	122.64
1	J	32	ILE	C-N-CA	-21.59	87.88	122.64
1	J	179	TYR	CA-C-N	-20.15	91.17	122.81
1	J	179	TYR	C-N-CA	-20.15	91.17	122.81
8	K	354	THR	N-CA-CB	-16.39	83.50	110.22
8	K	232	VAL	N-CA-C	-16.38	96.11	111.67
8	K	230	PRO	N-CA-CB	-14.65	87.86	103.25
8	K	353	MET	N-CA-C	14.04	130.57	113.16
8	K	227	SER	N-CA-C	-13.77	87.59	108.52
1	J	179	TYR	O-C-N	13.67	140.21	123.26
8	K	361	ARG	N-CA-C	-13.61	94.58	112.68
4	C	447	TYR	N-CA-C	13.41	148.54	111.00
8	K	353	MET	CB-CA-C	-13.04	86.54	110.01
8	K	264	THR	N-CA-C	-11.40	93.12	110.10
8	K	275	GLU	N-CA-C	-10.72	93.53	110.14
2	A	8	TYR	N-CA-CB	-9.81	96.80	110.04
2	A	8	TYR	N-CA-C	9.56	124.20	110.24
8	K	360	TYR	N-CA-C	9.43	130.88	110.80
8	K	354	THR	N-CA-C	-9.32	100.05	112.72
8	K	303	GLY	N-CA-C	-9.31	91.11	113.18
8	K	230	PRO	CA-N-CD	-9.23	99.08	112.00
8	K	274	VAL	CB-CA-C	9.15	124.52	111.80
8	K	310	GLU	CA-C-N	-9.12	106.56	122.07
8	K	310	GLU	C-N-CA	-9.12	106.56	122.07
1	J	43	GLU	N-CA-C	-8.62	103.35	114.04
8	K	77	ALA	N-CA-C	-8.41	97.23	110.10
2	A	7	PHE	N-CA-C	-7.90	94.73	108.08
8	K	265	VAL	N-CA-CB	7.79	124.08	111.23
8	K	111	LYS	CA-C-N	-7.77	112.34	123.06
8	K	111	LYS	C-N-CA	-7.77	112.34	123.06
8	K	509	LYS	N-CA-CB	-7.56	98.76	110.85
8	K	89	THR	CB-CA-C	7.50	125.35	110.42
4	C	444	LEU	N-CA-C	-7.43	98.48	108.74
8	K	274	VAL	N-CA-C	-7.42	97.63	107.88
8	K	304	ILE	N-CA-CB	7.36	123.38	111.23
8	K	128	VAL	N-CA-C	-7.08	106.02	111.62
1	J	45	LYS	N-CA-C	-7.03	102.82	111.33
8	K	340	GLY	CA-C-O	-6.99	117.67	122.22
8	K	90	GLU	N-CA-C	-6.88	100.57	111.02

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	K	275	GLU	N-CA-CB	6.79	121.30	110.85
8	K	264	THR	CB-CA-C	6.74	120.41	109.90
8	K	229	TRP	N-CA-C	-6.73	93.99	108.93
8	K	508	ILE	N-CA-C	-6.65	95.51	109.34
3	D	96	SER	N-CA-C	-6.50	99.69	109.96
4	C	445	GLY	N-CA-C	6.45	128.47	113.18
3	D	97	GLU	N-CA-CB	-6.27	100.62	110.46
8	K	277	LYS	N-CA-C	6.07	118.70	107.60
8	K	277	LYS	CB-CA-C	-6.06	102.48	111.70
8	K	347	ALA	N-CA-C	-6.02	107.75	114.62
7	I	144	MET	CA-CB-CG	5.98	126.06	114.10
8	K	127	THR	N-CA-C	5.90	116.73	108.00
1	J	145	ILE	N-CA-C	-5.73	107.26	111.90
8	K	97	ASP	N-CA-C	-5.68	99.27	108.52
8	K	238	GLN	N-CA-C	-5.66	106.92	113.88
8	K	189	VAL	N-CA-C	-5.66	104.73	113.16
8	K	202	PRO	N-CA-CB	-5.63	97.34	103.25
8	K	360	TYR	CB-CA-C	-5.62	99.23	110.42
8	K	259	GLU	CB-CA-C	-5.60	102.02	110.92
8	K	284	GLU	CA-C-N	-5.54	114.89	122.87
8	K	284	GLU	C-N-CA	-5.54	114.89	122.87
2	B	157	ALA	CB-CA-C	-5.50	110.21	116.54
8	K	89	THR	CA-C-N	-5.50	115.89	122.44
8	K	89	THR	C-N-CA	-5.50	115.89	122.44
8	K	199	THR	N-CA-C	-5.46	103.08	110.68
8	K	299	LYS	CA-C-O	-5.45	115.81	122.41
8	K	76	GLU	CB-CA-C	5.44	121.25	110.42
8	K	253	GLU	N-CA-C	-5.28	102.47	110.28
1	J	65	GLU	N-CA-C	-5.24	106.67	114.64
8	K	63	ILE	O-C-N	-5.22	117.69	123.18
8	K	279	GLU	N-CA-C	-5.22	101.20	109.76
8	K	230	PRO	N-CD-CG	-5.21	95.39	103.20
8	K	293	VAL	N-CA-C	-5.13	106.56	112.98
7	I	50	ILE	CA-C-N	5.12	131.33	121.54
7	I	50	ILE	C-N-CA	5.12	131.33	121.54
7	I	59	TYR	CA-CB-CG	5.08	123.04	113.90
8	K	338	SER	N-CA-C	-5.03	105.98	111.82
8	K	207	PHE	CB-CA-C	-5.00	103.03	110.88

There are no chirality outliers.

All (17) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	A	104	ARG	Sidechain
4	F	274	ARG	Sidechain
4	F	277	ARG	Sidechain
6	H	257	ARG	Sidechain
1	J	132	ARG	Sidechain
1	J	153	ARG	Sidechain
1	J	163	ARG	Sidechain
1	J	171	ARG	Sidechain
1	J	179	TYR	Mainchain
1	J	42	GLU	Mainchain
8	K	177	ARG	Sidechain
8	K	249	ARG	Sidechain
8	K	289	ARG	Sidechain
8	K	345	ARG	Sidechain
8	K	361	ARG	Sidechain
8	K	363	ARG	Sidechain
8	K	464	ARG	Sidechain

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	J	3962	0	3996	186	0
2	A	2071	0	2012	28	0
2	B	2071	0	2012	33	0
3	D	3263	0	3260	45	0
3	E	3263	0	3259	37	0
4	C	4284	0	4148	76	0
4	F	4039	0	3904	63	0
5	G	931	0	970	16	0
6	H	2393	0	2475	47	0
7	I	1469	0	1534	15	0
8	K	4089	0	4163	169	0
9	L	390	0	378	3	0
10	A	62	0	43	6	0
10	E	62	0	42	10	0
11	C	7	0	5	3	0
12	F	21	0	19	3	0
13	F	28	0	20	13	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
14	H	18	0	0	1	0
14	I	36	0	0	0	0
15	K	1	0	0	0	0
16	K	62	0	24	2	0
17	K	2	0	0	0	0
All	All	32524	0	32264	662	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 10.

All (662) 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:J:179:TYR:CE1	1:J:295:PHE:HB3	1.36	1.59
3:E:367:TYR:OH	10:E:601:F43:C5A	1.67	1.40
1:J:179:TYR:CD1	1:J:295:PHE:HB3	1.61	1.33
1:J:179:TYR:CE1	1:J:295:PHE:CB	2.16	1.26
4:F:327:MET:HE2	13:F:602:SHT:O8P	1.34	1.26
1:J:42:GLU:HA	1:J:172:GLU:HB3	1.24	1.13
8:K:196:PRO:HG3	8:K:225:ILE:HD11	1.28	1.08
1:J:96:GLU:HA	1:J:123:SER:HA	1.37	1.07
4:C:448:GL3:S	4:C:449:TYR:HA	1.98	1.03
8:K:351:VAL:HG21	8:K:360:TYR:O	1.59	1.03
1:J:117:VAL:HA	1:J:125:GLY:HA2	1.41	1.02
1:J:170:MET:HE1	1:J:172:GLU:OE1	1.59	1.01
1:J:179:TYR:CZ	1:J:295:PHE:HB3	1.96	1.01
1:J:179:TYR:CD1	1:J:295:PHE:CB	2.40	0.97
1:J:44:THR:HG21	1:J:169:GLN:HB2	1.46	0.96
1:J:33:ILE:HG12	1:J:196:TYR:HE1	1.30	0.95
1:J:99:LEU:HG	1:J:141:GLU:OE2	1.66	0.94
1:J:170:MET:CE	1:J:172:GLU:OE1	2.15	0.93
8:K:351:VAL:CG2	8:K:360:TYR:O	2.16	0.93
4:F:446:PHE:HB2	13:F:602:SHT:OS2	1.72	0.90
4:C:448:GL3:C	4:C:449:TYR:N	2.37	0.88
4:C:448:GL3:S	4:C:449:TYR:CA	2.60	0.88
8:K:278:ASP:O	8:K:309:ASN:O	1.92	0.88
8:K:35:LEU:HD11	8:K:230:PRO:HD3	1.59	0.85
4:F:327:MET:CE	13:F:602:SHT:O8P	2.24	0.85
1:J:42:GLU:CA	1:J:172:GLU:HB3	2.08	0.84
8:K:127:THR:O	8:K:167:SER:HB3	1.79	0.82
1:J:46:LYS:HA	1:J:59:GLY:HA2	1.61	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:K:76:GLU:O	8:K:189:VAL:HG12	1.77	0.82
1:J:99:LEU:HB3	1:J:140:LEU:HD11	1.62	0.81
3:D:384:HIS:HB3	4:C:455:SMC:HCS1	1.62	0.81
1:J:155:LEU:HA	1:J:158:LEU:HD12	1.62	0.80
1:J:168:GLU:HG2	1:J:171:ARG:HH12	1.45	0.80
8:K:196:PRO:HG3	8:K:225:ILE:CD1	2.11	0.80
4:F:482:ALA:O	13:F:602:SHT:P	2.40	0.80
4:C:448:GL3:S	4:C:449:TYR:C	2.65	0.79
1:J:170:MET:HE3	1:J:172:GLU:HB2	1.65	0.78
4:C:257:TYR:HA	4:C:261:MHS:HD2	1.64	0.78
4:F:327:MET:HE2	13:F:602:SHT:P	2.23	0.78
8:K:283:LEU:HD23	8:K:286:VAL:HG21	1.66	0.77
3:D:351:ARG:HG2	4:C:455:SMC:HCS2	1.65	0.77
8:K:281:LEU:HD12	8:K:308:ILE:HG13	1.66	0.77
8:K:76:GLU:O	8:K:189:VAL:CG1	2.32	0.76
1:J:47:TYR:HB2	1:J:58:VAL:HG22	1.68	0.76
1:J:33:ILE:HG12	1:J:196:TYR:CE1	2.18	0.75
1:J:101:VAL:HA	1:J:140:LEU:HA	1.68	0.75
8:K:278:ASP:O	8:K:309:ASN:C	2.30	0.75
1:J:84:TRP:HD1	1:J:86:SER:H	1.35	0.74
1:J:321:LYS:HD3	1:J:331:LEU:HD13	1.68	0.74
4:C:448:GL3:C	4:C:449:TYR:CA	2.66	0.74
1:J:81:SER:HA	1:J:163:ARG:HA	1.70	0.74
8:K:158:LYS:HG3	8:K:207:PHE:CD2	2.23	0.73
1:J:179:TYR:OH	1:J:181:ILE:HB	1.87	0.73
1:J:65:GLU:HG3	1:J:141:GLU:OE2	1.89	0.72
4:F:327:MET:HB2	13:F:602:SHT:HG23	1.71	0.72
3:D:96:SER:O	3:D:99:ASP:OD1	2.07	0.71
1:J:46:LYS:HB2	6:H:212:TYR:OH	1.89	0.71
1:J:179:TYR:CE1	1:J:295:PHE:HB2	2.23	0.71
8:K:301:VAL:HG13	8:K:304:ILE:HD12	1.70	0.71
1:J:179:TYR:CD1	1:J:295:PHE:CG	2.79	0.71
4:F:482:ALA:C	13:F:602:SHT:O1P	2.34	0.71
1:J:33:ILE:CG1	1:J:196:TYR:HE1	2.03	0.70
1:J:404:TYR:OH	4:F:15:LYS:O	2.10	0.70
3:E:367:TYR:OH	10:E:601:F43:H5A1	1.84	0.69
1:J:153:ARG:HE	1:J:154:VAL:HG23	1.57	0.69
8:K:230:PRO:O	8:K:232:VAL:N	2.25	0.69
1:J:82:LEU:HB3	1:J:160:ALA:HA	1.74	0.69
1:J:229:ASN:ND2	6:H:47:ASN:O	2.24	0.69
1:J:22:GLU:HB3	1:J:197:THR:HG21	1.74	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:K:268:MET:HG2	8:K:494:ASN:OD1	1.93	0.69
8:K:230:PRO:HG2	8:K:262:MET:HE3	1.72	0.68
1:J:440:VAL:O	1:J:472:ASN:ND2	2.27	0.68
1:J:170:MET:CE	1:J:172:GLU:HB2	2.23	0.68
1:J:42:GLU:HA	1:J:172:GLU:CB	2.15	0.67
4:F:483:MET:HA	13:F:602:SHT:HCB	1.77	0.67
8:K:343:GLU:HB3	8:K:350:TRP:HB3	1.76	0.66
4:F:482:ALA:O	13:F:602:SHT:O1P	2.13	0.66
1:J:56:PHE:HA	1:J:151:GLY:HA3	1.77	0.65
1:J:179:TYR:CZ	1:J:181:ILE:HB	2.31	0.65
2:B:30:LYS:HA	2:B:144:THR:HA	1.78	0.65
1:J:5:VAL:H	1:J:9:PRO:HA	1.62	0.65
1:J:49:ILE:HA	1:J:168:GLU:H	1.62	0.65
8:K:34:VAL:HB	8:K:226:THR:HG22	1.79	0.65
1:J:96:GLU:CA	1:J:123:SER:HA	2.23	0.64
8:K:268:MET:SD	8:K:494:ASN:ND2	2.70	0.64
8:K:279:GLU:HA	8:K:309:ASN:HA	1.80	0.64
8:K:162:ARG:HH12	8:K:298:VAL:HG22	1.62	0.64
4:F:258:ALA:HA	4:F:262:ALA:HB3	1.79	0.64
8:K:353:MET:O	8:K:361:ARG:CD	2.45	0.64
4:C:446:PHE:CE1	4:C:448:GL3:HA1	2.33	0.64
1:J:97:ILE:HG13	1:J:125:GLY:HA3	1.80	0.63
4:F:482:ALA:O	13:F:602:SHT:O2P	2.17	0.63
1:J:222:LEU:HD23	1:J:301:ILE:HD11	1.79	0.63
8:K:281:LEU:HD21	8:K:449:LEU:HD22	1.81	0.63
8:K:269:LYS:O	8:K:270:GLU:C	2.41	0.63
4:C:213:ARG:NH2	4:C:515:ALA:O	2.32	0.63
8:K:228:HIS:HE1	8:K:458:THR:HA	1.63	0.63
1:J:149:ILE:HG21	6:H:209:GLU:OE2	1.96	0.62
1:J:23:TYR:CE2	1:J:304:LYS:HB2	2.34	0.62
1:J:149:ILE:HG21	6:H:209:GLU:HG3	1.82	0.62
8:K:84:LYS:NZ	8:K:87:CYS:O	2.32	0.62
1:J:110:LYS:HG2	1:J:132:ARG:HA	1.80	0.62
4:C:327:MET:HB3	12:F:601:TP7:H31C	1.81	0.61
4:F:327:MET:CB	13:F:602:SHT:HG23	2.29	0.61
6:H:256:ASP:OD1	6:H:280:ARG:NH2	2.33	0.61
8:K:268:MET:HE1	8:K:464:ARG:HE	1.65	0.61
1:J:101:VAL:HG11	1:J:120:LEU:HA	1.82	0.61
3:D:27:ILE:HA	3:D:32:ASN:HD22	1.66	0.61
6:H:88:ILE:HD11	6:H:179:ARG:HB2	1.83	0.61
1:J:29:ASN:OD1	1:J:300:HIS:O	2.19	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:K:262:MET:HE2	8:K:262:MET:HA	1.82	0.61
8:K:19:LEU:HD23	8:K:246:GLY:HA2	1.81	0.61
2:A:13:LYS:HD2	2:A:216:GLU:HA	1.81	0.61
1:J:112:ASP:HA	1:J:147:ILE:HA	1.81	0.61
2:A:32:ARG:NH2	2:A:144:THR:O	2.34	0.60
8:K:182:ARG:O	8:K:186:LYS:NZ	2.34	0.60
1:J:78:GLU:HA	1:J:167:ILE:HG13	1.82	0.60
4:C:446:PHE:HB2	11:C:601:COM:O3S	2.01	0.60
1:J:79:ASP:HA	1:J:165:ILE:HA	1.82	0.60
1:J:51:THR:HG21	1:J:158:LEU:HD11	1.84	0.60
6:H:44:ILE:HD11	6:H:49:ILE:HD13	1.82	0.60
3:D:314:VAL:HG21	3:D:392:PRO:HB3	1.82	0.60
8:K:97:ASP:H	8:K:102:ASN:HD22	1.50	0.60
6:H:183:LEU:HD22	6:H:188:GLU:HB3	1.84	0.59
1:J:274:ARG:HD2	6:H:25:GLY:HA3	1.84	0.59
10:A:601:F43:HAB2	4:F:247:ALA:HB1	1.84	0.59
8:K:452:LEU:HB3	8:K:455:PRO:HG3	1.83	0.59
1:J:4:LEU:HD12	1:J:9:PRO:HB3	1.83	0.59
1:J:22:GLU:C	1:J:23:TYR:N	2.59	0.59
3:E:376:ASN:O	3:E:382:THR:OG1	2.20	0.59
2:B:156:GLY:O	2:B:178:ARG:NH2	2.35	0.59
10:E:601:F43:N8A	4:C:233:MET:SD	2.76	0.59
8:K:232:VAL:HA	8:K:235:GLU:HG2	1.85	0.59
1:J:41:LYS:O	1:J:172:GLU:O	2.19	0.58
8:K:291:VAL:HB	8:K:297:ILE:HD12	1.85	0.58
1:J:33:ILE:HD11	1:J:196:TYR:OH	2.04	0.58
8:K:6:VAL:HB	8:K:24:PHE:H	1.69	0.58
4:F:377:ALA:HB3	4:F:432:LEU:HD23	1.85	0.57
4:C:155:VAL:HG13	4:F:88:ASP:HA	1.85	0.57
1:J:324:PHE:HD2	1:J:331:LEU:HD21	1.69	0.57
4:C:553:LYS:HG2	5:G:4:ILE:HD12	1.87	0.57
8:K:171:SER:HB3	16:K:603:ATP:H2'	1.86	0.57
8:K:353:MET:O	8:K:361:ARG:HD2	2.05	0.57
4:C:230:TRP:HA	4:F:329:GLY:HA3	1.87	0.57
8:K:1:MET:HE1	8:K:79:SER:HA	1.86	0.57
1:J:445:LYS:NZ	1:J:469:GLU:OE2	2.37	0.57
3:D:303:ASN:ND2	3:D:347:VAL:O	2.37	0.57
5:G:142:GLU:HG3	6:H:84:HIS:CE1	2.40	0.57
2:B:202:PRO:HD3	8:K:358:PRO:HG3	1.87	0.56
2:B:116:ASP:HB3	2:B:127:GLU:HB2	1.87	0.56
8:K:313:ILE:HD13	8:K:471:ILE:HD11	1.86	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:K:276:VAL:CG1	8:K:312:GLU:HB3	2.34	0.56
5:G:46:PRO:HG3	6:H:114:LYS:HD3	1.88	0.56
8:K:6:VAL:HA	8:K:62:ILE:HG22	1.88	0.56
1:J:445:LYS:HE2	1:J:470:GLY:HA3	1.87	0.56
8:K:142:GLU:OE2	8:K:145:ASP:N	2.30	0.56
4:C:322:TRP:O	4:C:326:TYR:HB2	2.06	0.56
8:K:171:SER:HB2	16:K:603:ATP:O1A	2.06	0.56
4:C:438:LYS:HB2	4:C:444:LEU:HD22	1.88	0.56
4:C:91:HIS:NE2	4:C:331:ILE:O	2.37	0.55
2:B:159:VAL:HG22	10:E:601:F43:HBB2	1.88	0.55
4:C:122:LYS:O	8:K:125:GLU:HG2	2.07	0.55
1:J:179:TYR:CG	1:J:295:PHE:HB3	2.33	0.55
1:J:70:TRP:O	1:J:71:ASN:C	2.50	0.55
1:J:148:LEU:HG	1:J:155:LEU:HD22	1.87	0.55
6:H:77:SER:OG	6:H:79:SER:O	2.25	0.55
4:C:448:GL3:C	4:C:449:TYR:HA	2.32	0.55
6:H:71:ILE:HD13	6:H:203:ILE:HG13	1.88	0.55
1:J:441:THR:OG1	1:J:447:TYR:O	2.24	0.55
2:B:188:VAL:HG23	2:B:208:PRO:HD3	1.88	0.55
2:A:120:LEU:HG	4:C:447:TYR:HA	1.89	0.55
8:K:353:MET:O	8:K:361:ARG:HG3	2.07	0.55
1:J:252:ARG:O	1:J:285:LYS:NZ	2.40	0.55
2:A:92:ASP:O	4:C:443:ARG:NH2	2.40	0.55
2:B:23:ASN:O	2:B:111:ARG:NH1	2.40	0.55
2:B:137:SER:HA	2:B:141:LEU:HB2	1.88	0.55
7:I:155:LYS:O	9:L:48:ARG:NH2	2.40	0.55
8:K:213:THR:O	8:K:217:ILE:HG12	2.07	0.55
8:K:112:ILE:HG22	8:K:190:ILE:HG22	1.88	0.54
2:B:150:ALA:HB2	2:B:208:PRO:HB3	1.89	0.54
10:E:601:F43:H5D2	4:F:336:TYR:CE2	2.43	0.54
8:K:102:ASN:O	8:K:103:GLU:C	2.50	0.54
1:J:49:ILE:HG13	1:J:167:ILE:HA	1.88	0.54
1:J:250:ARG:NH1	1:J:270:TYR:OH	2.39	0.54
3:E:49:ASN:HB3	3:E:174:ASN:HB3	1.89	0.54
3:D:196:PRO:HA	3:D:376:ASN:HB3	1.88	0.54
1:J:46:LYS:HE2	6:H:212:TYR:HE1	1.72	0.54
3:E:212:ILE:HD11	3:E:395:ALA:HB2	1.90	0.54
1:J:114:VAL:HG12	1:J:128:ILE:HB	1.90	0.54
1:J:390:VAL:HG23	1:J:416:ASP:HB2	1.88	0.54
3:D:212:ILE:HG22	3:D:245:GLY:HA2	1.89	0.54
8:K:310:GLU:O	8:K:312:GLU:N	2.40	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:7:PHE:HB2	2:A:19:ARG:HG2	1.89	0.54
2:B:139:ASN:OD1	8:K:381:ARG:NH2	2.41	0.54
4:C:143:SER:O	4:C:234:GLN:NE2	2.38	0.54
8:K:310:GLU:O	8:K:481:THR:HB	2.07	0.54
8:K:213:THR:HA	8:K:217:ILE:HG23	1.90	0.53
2:A:39:VAL:HG12	2:A:43:MET:HE2	1.90	0.53
2:B:7:PHE:HB2	2:B:19:ARG:HG2	1.90	0.53
8:K:261:PHE:O	8:K:264:THR:O	2.25	0.53
2:B:140:ILE:O	2:B:144:THR:OG1	2.26	0.53
4:C:377:ALA:HB3	4:C:432:LEU:HD23	1.90	0.53
8:K:250:LEU:HD23	8:K:257:VAL:HG22	1.89	0.53
8:K:269:LYS:HE3	8:K:271:PHE:CE1	2.43	0.53
8:K:283:LEU:HD11	8:K:331:ILE:HD12	1.89	0.53
2:A:200:ASP:OD1	2:A:200:ASP:N	2.42	0.53
1:J:32:ILE:HD11	1:J:195:ILE:HB	1.89	0.53
1:J:336:ASN:HB3	1:J:341:ALA:HB1	1.89	0.53
1:J:388:ARG:NH1	1:J:497:GLU:OE1	2.37	0.53
3:E:64:GLY:H	3:E:67:CYS:HB2	1.73	0.53
1:J:23:TYR:CE2	1:J:304:LYS:HE3	2.44	0.53
8:K:51:GLY:HA2	8:K:99:TRP:CZ2	2.44	0.53
2:B:244:ALA:HB1	3:E:345:PRO:HG3	1.91	0.52
7:I:153:LYS:HB3	7:I:167:LYS:HG3	1.92	0.52
8:K:268:MET:CE	8:K:494:ASN:HD21	2.22	0.52
8:K:490:ASP:OD1	8:K:490:ASP:N	2.42	0.52
2:A:182:ASP:OD1	2:A:182:ASP:N	2.40	0.52
2:A:32:ARG:NH2	2:A:147:PHE:O	2.43	0.52
2:B:11:ALA:HB2	3:E:289:SER:HB3	1.92	0.52
4:F:300:SER:O	4:F:306:GLN:NE2	2.41	0.52
8:K:186:LYS:HG3	8:K:188:PRO:HG3	1.92	0.52
1:J:41:LYS:O	1:J:172:GLU:HB3	2.10	0.52
3:E:367:TYR:CZ	10:E:601:F43:C5A	2.83	0.52
1:J:32:ILE:HD13	1:J:194:LYS:O	2.10	0.52
4:F:171:THR:HG22	4:F:173:ASP:H	1.74	0.52
8:K:277:LYS:HD3	8:K:311:LYS:HE2	1.91	0.52
8:K:447:PRO:HG2	8:K:450:ILE:HG12	1.91	0.52
8:K:475:ARG:O	8:K:479:ASP:HA	2.10	0.52
8:K:492:VAL:HG12	8:K:513:PRO:HB3	1.91	0.52
1:J:149:ILE:CG2	6:H:209:GLU:OE2	2.26	0.52
4:C:171:THR:HB	4:C:208:THR:HG23	1.90	0.52
1:J:238:GLN:HG3	1:J:238:GLN:O	2.10	0.51
1:J:478:VAL:HG11	1:J:498:VAL:HG21	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:44:ARG:NH2	3:D:100:ASP:O	2.42	0.51
5:G:141:PRO:HG2	5:G:144:MET:HG2	1.92	0.51
6:H:96:VAL:HG13	6:H:101:ALA:HB3	1.92	0.51
1:J:405:PHE:CZ	4:F:8:PHE:HE1	2.27	0.51
7:I:112:PHE:HB3	7:I:119:ILE:HG12	1.92	0.51
8:K:76:GLU:O	8:K:189:VAL:HG11	2.10	0.51
1:J:111:TRP:CE3	1:J:155:LEU:HD21	2.44	0.51
3:E:214:PHE:HB2	3:E:428:PRO:HG2	1.93	0.51
3:D:49:ASN:HB3	3:D:174:ASN:HB3	1.92	0.51
3:D:351:ARG:HA	4:C:455:SMC:SG	2.50	0.51
1:J:197:THR:HG23	1:J:198:TYR:HD1	1.74	0.51
1:J:256:THR:HG22	1:J:282:VAL:HG12	1.91	0.51
1:J:324:PHE:HB2	1:J:331:LEU:HD11	1.90	0.51
2:A:30:LYS:NZ	2:A:33:GLU:OE1	2.43	0.51
3:D:324:ALA:HB2	3:D:400:ASP:HB2	1.93	0.51
4:C:161:LEU:HD13	4:C:548:VAL:HG22	1.92	0.51
8:K:353:MET:O	8:K:361:ARG:CG	2.58	0.51
8:K:31:VAL:HB	8:K:237:CYS:HA	1.93	0.51
1:J:324:PHE:HE2	1:J:360:VAL:HG11	1.75	0.51
3:E:48:VAL:HB	3:E:112:LEU:HB2	1.91	0.51
1:J:405:PHE:HZ	4:F:8:PHE:CE1	2.29	0.51
4:F:143:SER:O	4:F:234:GLN:NE2	2.42	0.51
6:H:156:PRO:HB3	6:H:202:LYS:HD3	1.93	0.51
2:A:43:MET:HE1	2:A:134:GLU:HA	1.93	0.51
3:E:220:GLN:HG3	3:E:241:LEU:HB2	1.92	0.51
3:E:324:ALA:HB2	3:E:400:ASP:HB2	1.93	0.51
6:H:72:GLU:OE2	6:H:245:GLN:NE2	2.43	0.51
1:J:48:LEU:HB3	1:J:168:GLU:HB3	1.92	0.51
1:J:70:TRP:HZ3	1:J:127:LEU:HD11	1.75	0.51
4:C:546:ARG:NH2	4:F:543:ALA:O	2.40	0.51
8:K:171:SER:O	8:K:171:SER:OG	2.29	0.51
8:K:276:VAL:HG13	8:K:311:LYS:O	2.11	0.51
1:J:41:LYS:O	1:J:172:GLU:C	2.54	0.50
2:A:74:GLU:HG2	3:D:261:LYS:HG2	1.93	0.50
4:C:315:ALA:HB1	4:C:337:ALA:HB1	1.93	0.50
7:I:56:GLU:OE1	7:I:181:ALA:N	2.43	0.50
4:C:7:LEU:HB2	4:C:348:ASP:HB2	1.92	0.50
1:J:28:SER:HA	1:J:300:HIS:CB	2.42	0.50
3:D:327:VAL:HG11	3:D:393:VAL:HA	1.93	0.50
4:F:144:LEU:HA	4:F:234:GLN:HG3	1.93	0.50
8:K:230:PRO:O	8:K:233:ILE:N	2.44	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:410:ILE:HD11	8:K:398:GLU:OE1	2.12	0.50
8:K:230:PRO:C	8:K:232:VAL:H	2.19	0.50
8:K:491:PHE:O	8:K:495:VAL:HB	2.11	0.50
1:J:377:ASP:OD2	1:J:388:ARG:NH2	2.31	0.50
1:J:405:PHE:CZ	4:F:8:PHE:CE1	3.00	0.50
2:A:140:ILE:O	2:A:144:THR:OG1	2.24	0.50
8:K:142:GLU:O	8:K:143:GLY:C	2.54	0.50
4:F:26:LYS:O	4:F:59:LEU:N	2.45	0.50
1:J:291:GLU:CD	1:J:291:GLU:H	2.19	0.50
2:B:138:LYS:HD2	8:K:381:ARG:HH22	1.76	0.50
10:E:601:F43:H5D2	4:F:336:TYR:CZ	2.46	0.50
8:K:352:ASP:OD2	8:K:355:LYS:HD2	2.12	0.50
1:J:380:ALA:O	1:J:384:SER:OG	2.24	0.49
4:F:110:ILE:HB	4:F:265:ILE:HB	1.93	0.49
6:H:263:GLU:HB3	6:H:273:LYS:HB3	1.94	0.49
8:K:35:LEU:HD12	8:K:228:HIS:HA	1.93	0.49
3:D:103:VAL:HG13	3:D:114:VAL:HG12	1.93	0.49
8:K:127:THR:HA	8:K:166:ILE:HA	1.93	0.49
4:C:21:LYS:HA	4:C:392:PRO:HD2	1.95	0.49
1:J:111:TRP:HA	1:J:130:VAL:O	2.11	0.49
3:D:100:ASP:OD1	3:D:100:ASP:N	2.42	0.49
2:A:245:ARG:NH2	3:D:339:GLU:OE1	2.45	0.49
8:K:107:ALA:HA	8:K:110:LYS:HE2	1.94	0.49
2:A:242:HIS:HB2	4:C:435:ILE:HD11	1.95	0.49
2:B:88:ILE:HG22	2:B:133:LEU:HD11	1.94	0.49
3:E:81:ASN:O	3:E:83:GLN:N	2.45	0.49
1:J:117:VAL:HA	1:J:125:GLY:CA	2.29	0.49
2:A:100:GLN:OE1	4:C:443:ARG:NH1	2.44	0.49
3:E:126:GLU:HG3	3:E:128:SER:H	1.76	0.49
4:F:333:PHE:HB3	4:F:336:TYR:HB2	1.94	0.49
3:E:142:LEU:HD12	3:E:160:ILE:HD11	1.94	0.49
5:G:34:ILE:HD13	5:G:52:ILE:HD12	1.95	0.49
7:I:51:THR:HA	7:I:55:CYS:HB2	1.95	0.49
1:J:66:THR:HB	1:J:145:ILE:HB	1.95	0.49
4:F:187:ASP:HB3	4:F:190:LYS:HB2	1.95	0.49
4:F:277:ARG:HG2	4:F:281:GLU:HG2	1.95	0.49
1:J:46:LYS:O	1:J:46:LYS:HG2	2.12	0.49
4:C:481:TYR:O	4:C:488:GLN:NE2	2.43	0.49
5:G:132:VAL:HG11	5:G:156:ILE:HD12	1.93	0.49
1:J:23:TYR:HE2	1:J:304:LYS:HB2	1.77	0.48
8:K:281:LEU:HD12	8:K:308:ILE:CG1	2.42	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:K:507:ILE:O	8:K:508:ILE:C	2.56	0.48
4:F:229:ARG:O	4:F:233:MET:HG2	2.13	0.48
3:D:220:GLN:HG3	3:D:241:LEU:HB2	1.94	0.48
4:C:300:SER:O	4:C:306:GLN:NE2	2.46	0.48
1:J:92:PHE:HB2	1:J:127:LEU:HB3	1.95	0.48
1:J:68:ASP:OD1	1:J:68:ASP:N	2.45	0.48
10:A:601:F43:OCD	4:C:335:GLN:NE2	2.22	0.48
1:J:31:VAL:HG21	1:J:292:ILE:HA	1.96	0.48
3:E:223:THR:HA	3:E:226:MET:HE3	1.94	0.48
8:K:199:THR:O	8:K:199:THR:OG1	2.27	0.48
8:K:2:LEU:HA	8:K:27:ASN:HA	1.95	0.48
8:K:245:LYS:HA	8:K:245:LYS:HD3	1.60	0.48
8:K:276:VAL:HG12	8:K:277:LYS:H	1.77	0.48
1:J:112:ASP:H	1:J:130:VAL:HB	1.79	0.48
1:J:158:LEU:HD23	1:J:162:ASP:HB2	1.95	0.48
2:A:68:TYR:OH	3:D:257:LYS:NZ	2.45	0.48
2:B:242:HIS:HB2	4:F:435:ILE:HD11	1.96	0.48
4:C:6:ARG:HB2	4:C:9:LEU:HG	1.95	0.48
4:F:23:LYS:HD2	4:F:23:LYS:HA	1.68	0.48
8:K:265:VAL:HG13	8:K:266:THR:N	2.29	0.48
8:K:465:ASN:O	8:K:468:ALA:HB3	2.13	0.48
4:C:187:ASP:HB3	4:C:190:LYS:HG2	1.94	0.47
4:C:456:GLY:O	4:C:457:ALA:C	2.56	0.47
6:H:295:SER:OG	6:H:296:GLU:OE1	2.31	0.47
1:J:91:SER:HA	1:J:128:ILE:HA	1.94	0.47
1:J:404:TYR:CZ	4:F:15:LYS:HG3	2.50	0.47
2:B:53:LYS:HB2	2:B:84:ARG:HD3	1.96	0.47
3:D:74:LEU:HD11	3:D:152:ASP:HB3	1.96	0.47
3:D:361:PHE:HB2	4:C:448:GL3:HA2	1.95	0.47
1:J:92:PHE:HZ	1:J:158:LEU:HD22	1.80	0.47
3:D:10:LEU:HD13	3:D:433:ILE:HG23	1.96	0.47
4:C:450:ASP:N	4:C:450:ASP:OD1	2.47	0.47
1:J:46:LYS:HG3	1:J:57:VAL:HG12	1.95	0.47
1:J:109:LYS:HA	1:J:109:LYS:HD3	1.47	0.47
10:A:601:F43:H9A1	4:C:331:ILE:HB	1.96	0.47
10:A:601:F43:O7B	3:D:366:ILE:HG12	2.14	0.47
3:E:117:PRO:HG2	3:E:120:ARG:HG3	1.97	0.47
3:E:286:THR:HA	3:E:292:ASN:HA	1.95	0.47
4:F:483:MET:HG2	13:F:602:SHT:OXT	2.14	0.47
8:K:149:TRP:O	8:K:150:ALA:C	2.57	0.47
6:H:147:LYS:NZ	14:H:401:S5Q:S5A	2.84	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:K:180:LEU:O	8:K:184:ILE:HD12	2.15	0.47
8:K:241:ILE:HG22	8:K:251:VAL:HG13	1.95	0.47
1:J:30:ILE:HG23	1:J:195:ILE:HD11	1.95	0.47
6:H:215:PRO:HA	6:H:293:SER:HA	1.95	0.47
7:I:136:ILE:HB	7:I:171:ILE:HD13	1.96	0.47
8:K:104:ILE:O	8:K:105:THR:C	2.58	0.47
8:K:109:LYS:HE2	8:K:109:LYS:HB2	1.33	0.47
8:K:235:GLU:HG3	8:K:236:LEU:HD22	1.96	0.47
3:D:104:LYS:HG3	3:D:113:ALA:HB3	1.97	0.47
3:D:335:ASN:HB3	3:D:353:MET:HE2	1.97	0.47
4:F:483:MET:HE3	4:F:483:MET:HB2	1.76	0.47
2:B:51:ASP:HA	8:K:376:SER:HB3	1.96	0.47
3:D:310:LEU:HD11	3:D:331:ILE:HA	1.96	0.47
8:K:277:LYS:O	8:K:278:ASP:HB2	2.14	0.47
1:J:42:GLU:HB2	1:J:172:GLU:H	1.80	0.47
2:B:89:GLN:HE21	2:B:125:VAL:HB	1.80	0.47
8:K:276:VAL:HG12	8:K:309:ASN:O	2.15	0.47
1:J:82:LEU:HD11	1:J:90:VAL:HG22	1.96	0.46
2:B:98:PRO:HA	2:B:218:THR:HA	1.98	0.46
4:C:40:ARG:O	4:C:44:GLU:HG3	2.15	0.46
6:H:110:HIS:HB2	6:H:118:GLU:HG2	1.97	0.46
7:I:154:THR:HG22	7:I:157:VAL:H	1.80	0.46
8:K:273:LYS:C	8:K:274:VAL:HG23	2.40	0.46
1:J:87:ILE:H	1:J:87:ILE:HG13	1.45	0.46
1:J:405:PHE:CE1	4:F:8:PHE:HE1	2.32	0.46
2:A:113:ARG:HG2	3:D:263:THR:HG22	1.97	0.46
3:E:72:ARG:NH2	3:E:154:SER:OG	2.49	0.46
1:J:433:ILE:HD12	1:J:462:GLY:HA2	1.98	0.46
3:D:41:ASN:OD1	3:D:44:ARG:NH1	2.49	0.46
4:F:106:ARG:O	4:F:280:ASN:ND2	2.42	0.46
7:I:145:GLU:OE2	9:L:47:TYR:OH	2.32	0.46
1:J:15:LEU:O	1:J:16:GLU:C	2.59	0.46
3:E:10:LEU:HD13	3:E:433:ILE:HD12	1.98	0.46
8:K:280:LEU:HD22	8:K:481:THR:HG21	1.97	0.46
8:K:352:ASP:OD2	8:K:355:LYS:CD	2.64	0.46
1:J:33:ILE:CD1	1:J:196:TYR:OH	2.64	0.46
1:J:44:THR:O	1:J:45:LYS:C	2.58	0.46
1:J:405:PHE:HZ	4:F:8:PHE:CZ	2.34	0.46
8:K:95:SER:O	8:K:96:VAL:C	2.59	0.46
8:K:265:VAL:HG22	8:K:266:THR:H	1.81	0.46
1:J:13:LYS:HA	1:J:189:ILE:HG22	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:103:SER:O	1:J:104:VAL:C	2.59	0.46
1:J:168:GLU:HG2	1:J:171:ARG:NH1	2.24	0.46
6:H:152:LYS:HA	6:H:152:LYS:HD3	1.69	0.46
3:E:34:THR:O	3:E:38:MET:HG3	2.15	0.46
3:D:46:VAL:HB	3:D:114:VAL:HG22	1.98	0.46
8:K:228:HIS:CE1	8:K:458:THR:HA	2.46	0.46
8:K:474:SER:O	8:K:478:LEU:HB3	2.16	0.46
1:J:63:GLU:O	1:J:64:ASN:C	2.58	0.46
6:H:225:GLU:HG2	6:H:267:ILE:HG22	1.98	0.46
8:K:167:SER:HA	8:K:170:LEU:HG	1.98	0.46
1:J:121:ASP:HB2	1:J:124:GLU:HB2	1.99	0.46
2:B:22:LEU:HD21	2:B:106:ARG:HB3	1.98	0.46
8:K:102:ASN:O	8:K:104:ILE:N	2.49	0.46
3:E:51:ALA:HB2	3:E:110:LYS:HB2	1.98	0.45
3:D:298:ASP:HB3	3:D:301:LYS:HB2	1.98	0.45
8:K:184:ILE:HG21	8:K:215:ALA:HB1	1.98	0.45
8:K:268:MET:HE2	8:K:494:ASN:HD21	1.80	0.45
1:J:11:SER:O	1:J:12:GLY:C	2.59	0.45
1:J:50:LYS:HD2	1:J:50:LYS:HA	1.41	0.45
1:J:217:LEU:HD21	1:J:222:LEU:HD13	1.97	0.45
2:A:116:ASP:HB3	2:A:127:GLU:HB2	1.99	0.45
3:D:99:ASP:HB2	3:D:117:PRO:HB3	1.98	0.45
1:J:48:LEU:HD23	1:J:48:LEU:HA	1.84	0.45
1:J:113:VAL:HG22	1:J:148:LEU:HD22	1.97	0.45
1:J:117:VAL:CA	1:J:125:GLY:HA2	2.30	0.45
10:E:601:F43:HHA2	13:F:602:SHT:S1	2.56	0.45
4:F:499:HIS:HB3	4:F:504:ASP:HB2	1.98	0.45
8:K:51:GLY:HA2	8:K:99:TRP:CH2	2.51	0.45
8:K:188:PRO:HD2	8:K:221:ILE:HD13	1.97	0.45
8:K:268:MET:HG2	8:K:494:ASN:CG	2.41	0.45
1:J:5:VAL:O	1:J:7:ASN:N	2.49	0.45
1:J:30:ILE:HG23	1:J:195:ILE:CD1	2.47	0.45
1:J:343:ILE:HG23	1:J:362:THR:HG23	1.98	0.45
1:J:447:TYR:HB3	1:J:450:TYR:HD2	1.81	0.45
8:K:279:GLU:HG2	8:K:350:TRP:HH2	1.81	0.45
1:J:79:ASP:HB3	1:J:163:ARG:HH12	1.82	0.45
5:G:168:GLU:OE1	5:G:168:GLU:N	2.40	0.45
8:K:10:SER:HA	8:K:20:LYS:HA	1.99	0.45
2:B:160:HIS:ND1	10:E:601:F43:OCC	2.38	0.45
4:C:343:ASP:HB2	4:C:345:ILE:HG13	1.98	0.45
8:K:133:MET:SD	8:K:146:ALA:HB1	2.57	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:K:232:VAL:O	8:K:233:ILE:C	2.59	0.45
1:J:60:ILE:HB	1:J:67:VAL:HG22	1.98	0.45
5:G:8:CYS:HB3	5:G:14:LYS:HG2	1.99	0.45
6:H:247:ASP:N	6:H:247:ASP:OD1	2.48	0.45
8:K:32:MET:HE3	8:K:239:LYS:HE2	1.98	0.45
2:A:88:ILE:HG22	2:A:133:LEU:HD11	1.98	0.45
8:K:271:PHE:HZ	8:K:469:GLU:CD	2.25	0.45
6:H:67:PRO:HD2	6:H:99:PHE:HB3	1.99	0.45
7:I:50:ILE:HD13	7:I:50:ILE:HA	1.80	0.45
3:D:265:GLY:O	3:D:269:GLU:HG2	2.17	0.44
5:G:8:CYS:HB2	5:G:41:CYS:HB2	1.98	0.44
7:I:144:MET:HB2	7:I:171:ILE:HG13	2.00	0.44
1:J:46:LYS:HB2	6:H:212:TYR:CZ	2.53	0.44
3:E:65:LYS:HD3	4:C:263:ASP:HA	1.98	0.44
4:C:5:LYS:HD2	4:C:5:LYS:HA	1.71	0.44
8:K:144:LYS:HA	8:K:144:LYS:HD2	1.35	0.44
1:J:28:SER:HA	1:J:300:HIS:HB2	1.98	0.44
1:J:97:ILE:HG22	1:J:99:LEU:HB2	1.99	0.44
3:D:139:LYS:HD3	3:D:157:HIS:HB2	1.99	0.44
12:F:601:TP7:H42C	12:F:601:TP7:H72C	1.71	0.44
6:H:69:ALA:HB2	6:H:100:GLY:HA3	1.99	0.44
6:H:222:LEU:HD22	6:H:291:LEU:HD21	1.99	0.44
3:E:139:LYS:HD3	3:E:157:HIS:HB2	1.99	0.44
8:K:236:LEU:HD13	8:K:236:LEU:HA	1.74	0.44
1:J:291:GLU:HA	1:J:294:ASP:HB2	2.00	0.44
2:B:92:ASP:OD1	2:B:104:ARG:NH1	2.51	0.44
3:E:403:THR:O	3:E:403:THR:OG1	2.35	0.44
4:C:448:GL3:CA	4:C:449:TYR:N	2.80	0.44
8:K:213:THR:O	8:K:214:GLU:C	2.60	0.44
8:K:213:THR:O	8:K:215:ALA:N	2.51	0.44
1:J:48:LEU:HB3	1:J:168:GLU:CB	2.48	0.44
2:A:6:GLN:O	2:A:7:PHE:C	2.61	0.44
3:D:10:LEU:HD22	3:D:433:ILE:HD12	2.00	0.44
8:K:271:PHE:CE1	8:K:469:GLU:HB2	2.53	0.44
1:J:80:LYS:HD2	1:J:80:LYS:HA	1.64	0.44
1:J:108:PHE:HD2	1:J:134:VAL:HG23	1.83	0.44
1:J:223:GLU:OE2	1:J:300:HIS:NE2	2.37	0.44
10:A:601:F43:C1C	11:C:601:COM:H12	2.47	0.44
3:E:125:ALA:HA	3:D:43:LYS:HD3	1.99	0.44
4:C:328:SER:HB3	12:F:601:TP7:H52C	2.00	0.44
3:D:8:ILE:HB	3:D:248:ALA:HB1	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:C:106:ARG:O	4:C:280:ASN:ND2	2.42	0.44
4:C:446:PHE:CE2	4:C:485:VAL:HG12	2.52	0.44
4:F:123:ARG:NH1	4:F:254:ASP:OD2	2.50	0.44
3:E:22:VAL:HG22	3:E:440:LYS:HD2	1.99	0.43
4:C:466:ASP:OD1	4:C:466:ASP:N	2.40	0.43
8:K:276:VAL:HG11	8:K:312:GLU:HB3	1.99	0.43
1:J:5:VAL:HG21	1:J:10:LYS:HB2	1.99	0.43
1:J:51:THR:HB	1:J:158:LEU:HD21	2.00	0.43
4:C:38:ARG:HA	4:C:38:ARG:HD3	1.68	0.43
4:C:398:HIS:CE1	4:C:407:VAL:HG21	2.53	0.43
5:G:170:MET:O	5:G:174:VAL:HG23	2.19	0.43
6:H:98:LYS:HB2	6:H:98:LYS:HE2	1.83	0.43
7:I:11:ASP:N	7:I:32:GLU:O	2.49	0.43
8:K:456:THR:HG21	8:K:464:ARG:HG3	2.00	0.43
1:J:60:ILE:HA	1:J:146:GLY:HA3	2.00	0.43
1:J:93:GLY:HA3	1:J:94:SER:HA	1.57	0.43
1:J:111:TRP:HE3	1:J:155:LEU:HD21	1.82	0.43
4:C:146:GLY:HA3	4:C:157:VAL:HB	2.00	0.43
1:J:433:ILE:O	1:J:457:SER:OG	2.22	0.43
10:A:601:F43:CHC	11:C:601:COM:H12	2.48	0.43
6:H:206:LYS:HB2	6:H:206:LYS:HE2	1.65	0.43
8:K:103:GLU:O	8:K:104:ILE:C	2.60	0.43
8:K:157:VAL:CG1	8:K:180:LEU:HD23	2.48	0.43
4:C:499:HIS:HB3	4:C:504:ASP:HB2	2.01	0.43
4:F:71:ARG:HA	4:F:74:MET:HG3	2.01	0.43
5:G:142:GLU:HG3	6:H:84:HIS:HE1	1.83	0.43
6:H:40:MET:HB3	6:H:42:ILE:HD11	2.00	0.43
6:H:236:ILE:HG22	6:H:238:ALA:H	1.84	0.43
4:C:66:VAL:N	4:F:149:VAL:O	2.52	0.43
4:F:303:PRO:HB2	4:F:418:MET:HE1	2.01	0.43
8:K:38:SER:N	8:K:460:ASP:OD1	2.51	0.43
7:I:173:THR:O	7:I:185:LYS:NZ	2.42	0.43
8:K:311:LYS:HG2	8:K:475:ARG:HD3	2.00	0.43
1:J:41:LYS:O	1:J:172:GLU:CB	2.67	0.43
2:A:59:LEU:HG	2:A:80:LYS:HA	1.99	0.43
3:D:142:LEU:HD12	3:D:160:ILE:HD11	2.01	0.43
4:F:10:LYS:HD2	4:F:10:LYS:HA	1.81	0.43
4:F:418:MET:HA	4:F:501:ALA:HB2	2.01	0.43
8:K:200:LEU:HD23	8:K:200:LEU:HA	1.87	0.43
8:K:276:VAL:HG12	8:K:277:LYS:N	2.33	0.43
1:J:77:PHE:HE1	1:J:93:GLY:HA3	1.83	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:K:380:HIS:CD2	8:K:380:HIS:H	2.36	0.43
2:A:22:LEU:HD21	2:A:106:ARG:HB3	2.01	0.43
3:E:335:ASN:HB3	3:E:353:MET:HE2	2.01	0.43
8:K:244:ASP:OD2	8:K:249:ARG:NH1	2.51	0.43
1:J:32:ILE:HD13	1:J:195:ILE:HA	2.01	0.42
1:J:325:GLU:OE1	1:J:325:GLU:HA	2.19	0.42
5:G:40:ILE:HD12	5:G:176:LEU:HD22	2.01	0.42
8:K:332:ALA:HB2	8:K:451:LEU:HD13	2.02	0.42
1:J:404:TYR:HB2	1:J:414:GLU:HG2	2.01	0.42
2:A:148:ASP:HB2	2:A:209:ILE:HD12	2.00	0.42
3:D:27:ILE:H	3:D:27:ILE:HG13	1.73	0.42
4:C:256:SER:O	4:C:260:LYS:HG2	2.19	0.42
4:F:179:GLU:OE1	4:F:179:GLU:N	2.47	0.42
1:J:168:GLU:CG	1:J:171:ARG:HH12	2.23	0.42
1:J:376:TYR:OH	1:J:476:LYS:HD3	2.19	0.42
2:A:45:HIS:NE2	2:A:87:TYR:O	2.44	0.42
3:E:348:ASP:HB3	3:E:351:ARG:HB2	2.00	0.42
4:C:216:SER:O	4:C:220:ARG:HG2	2.19	0.42
4:F:323:LEU:HA	4:F:323:LEU:HD23	1.75	0.42
6:H:203:ILE:HD13	6:H:203:ILE:HA	1.87	0.42
8:K:299:LYS:HB2	8:K:299:LYS:HE2	1.39	0.42
8:K:518:LYS:HB2	8:K:518:LYS:HE2	1.77	0.42
1:J:121:ASP:O	1:J:122:THR:C	2.62	0.42
4:F:547:ASP:O	5:G:55:LYS:NZ	2.41	0.42
6:H:73:ILE:HG23	6:H:132:ILE:HG23	2.00	0.42
8:K:273:LYS:HA	8:K:273:LYS:HD3	1.26	0.42
8:K:276:VAL:HG13	8:K:312:GLU:HB3	2.01	0.42
1:J:241:PHE:CD1	1:J:241:PHE:C	2.97	0.42
3:D:59:ALA:HB3	3:D:61:LYS:HG2	2.01	0.42
4:C:448:GL3:N	4:C:449:TYR:N	2.67	0.42
8:K:149:TRP:HE3	8:K:153:LEU:HD11	1.84	0.42
1:J:153:ARG:H	1:J:153:ARG:HG3	1.43	0.42
2:B:176:LEU:O	2:B:192:LYS:NZ	2.47	0.42
4:F:256:SER:O	4:F:260:LYS:HB2	2.19	0.42
4:F:277:ARG:NH1	4:F:327:MET:SD	2.93	0.42
6:H:244:THR:HA	6:H:249:LEU:HD23	2.01	0.42
1:J:75:LYS:O	1:J:78:GLU:HB2	2.20	0.42
3:E:292:ASN:OD1	3:E:292:ASN:N	2.53	0.42
3:D:144:LYS:HB3	3:D:144:LYS:HE3	1.85	0.42
4:C:289:ILE:HG12	4:C:508:LEU:HD23	2.01	0.42
8:K:305:ASP:N	8:K:305:ASP:OD1	2.52	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:45:LYS:HD2	6:H:208:MET:HE1	1.89	0.42
1:J:170:MET:HE3	1:J:170:MET:HB3	1.65	0.42
2:A:148:ASP:OD2	2:A:151:THR:OG1	2.33	0.42
4:F:165:CYS:HB2	4:F:215:PRO:HG3	2.02	0.42
5:G:14:LYS:HB3	5:G:14:LYS:HE3	1.76	0.42
7:I:153:LYS:NZ	7:I:164:THR:O	2.43	0.42
8:K:269:LYS:HE3	8:K:269:LYS:HB3	1.51	0.42
8:K:473:LYS:HG2	8:K:477:GLU:OE2	2.19	0.42
2:B:243:ARG:NH2	4:F:371:ASP:OD1	2.39	0.42
4:C:474:ARG:NH1	4:C:481:TYR:OH	2.53	0.42
4:C:553:LYS:HE2	5:G:4:ILE:HB	2.00	0.42
7:I:155:LYS:HE2	7:I:155:LYS:HB3	1.85	0.42
8:K:381:ARG:HB3	8:K:385:TYR:HB3	2.02	0.42
8:K:467:VAL:O	8:K:471:ILE:HG22	2.20	0.42
8:K:496:CYS:SG	8:K:497:ASP:N	2.92	0.42
4:C:110:ILE:HB	4:C:265:ILE:HB	2.02	0.42
6:H:157:LEU:HD23	6:H:157:LEU:HA	1.88	0.42
2:B:37:GLU:HG2	8:K:391:ILE:HA	2.02	0.41
5:G:30:LEU:HD23	5:G:30:LEU:HA	1.92	0.41
6:H:34:MET:HE2	6:H:34:MET:HB2	1.88	0.41
8:K:353:MET:C	8:K:355:LYS:H	2.28	0.41
2:A:171:MET:HE3	2:A:171:MET:HB3	1.83	0.41
2:B:184:LYS:HE2	4:F:25:THR:HG23	2.02	0.41
3:D:50:LEU:HD23	3:D:50:LEU:HA	1.95	0.41
6:H:139:ASN:HA	6:H:162:GLY:HA3	2.02	0.41
8:K:84:LYS:NZ	8:K:85:CYS:O	2.53	0.41
8:K:180:LEU:O	8:K:183:GLN:N	2.53	0.41
1:J:417:TRP:HE1	2:B:185:THR:HA	1.86	0.41
6:H:263:GLU:HB3	6:H:273:LYS:HE3	2.00	0.41
8:K:468:ALA:HB2	8:K:491:PHE:CE1	2.55	0.41
1:J:110:LYS:HD3	1:J:111:TRP:NE1	2.35	0.41
3:D:95:VAL:HG23	3:D:117:PRO:HG2	2.02	0.41
8:K:30:ASP:OD1	8:K:30:ASP:N	2.54	0.41
1:J:170:MET:O	1:J:171:ARG:C	2.63	0.41
3:E:93:LEU:HD13	3:E:116:VAL:HG12	2.03	0.41
4:C:294:VAL:O	4:C:513:LYS:NZ	2.50	0.41
6:H:49:ILE:HD13	6:H:49:ILE:HA	1.90	0.41
6:H:282:GLU:H	6:H:282:GLU:HG2	1.71	0.41
1:J:19:ILE:HA	1:J:22:GLU:HB2	2.01	0.41
1:J:99:LEU:HD12	1:J:99:LEU:HA	1.73	0.41
1:J:448:LYS:HE2	1:J:448:LYS:HB3	1.89	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:98:PRO:HA	2:A:218:THR:HA	2.03	0.41
8:K:452:LEU:HB2	8:K:484:ILE:HD13	2.03	0.41
1:J:64:ASN:CG	1:J:142:ASN:HB3	2.45	0.41
1:J:83:ILE:HD13	1:J:83:ILE:HA	1.88	0.41
2:B:121:SER:OG	10:E:601:F43:O7C	2.27	0.41
3:E:364:HIS:O	4:F:447:TYR:OH	2.39	0.41
4:F:180:LEU:HD23	4:F:180:LEU:HA	1.91	0.41
4:F:347:ASP:OD1	4:F:347:ASP:N	2.54	0.41
1:J:69:PHE:O	1:J:70:TRP:C	2.63	0.41
1:J:72:LYS:HZ2	1:J:72:LYS:H	1.69	0.41
2:B:80:LYS:NZ	8:K:53:GLU:OE1	2.51	0.41
3:D:143:ILE:HD13	3:D:148:ILE:HB	2.03	0.41
4:F:137:MET:HA	4:F:140:ILE:HG22	2.03	0.41
8:K:213:THR:OG1	8:K:214:GLU:N	2.53	0.41
8:K:286:VAL:HG11	8:K:330:ILE:HG21	2.02	0.41
8:K:411:VAL:HG21	8:K:440:ALA:HB2	2.03	0.41
1:J:434:ASP:OD1	1:J:434:ASP:N	2.31	0.41
2:B:138:LYS:HD2	8:K:381:ARG:NH2	2.36	0.41
3:E:271:VAL:HG21	3:E:309:GLY:HA3	2.03	0.41
3:D:20:GLU:O	3:D:440:LYS:NZ	2.42	0.41
3:D:384:HIS:HB3	4:C:455:SMC:CS	2.41	0.41
4:C:98:ILE:HG22	4:C:321:ILE:HD11	2.01	0.41
7:I:56:GLU:HG2	7:I:59:TYR:OH	2.21	0.41
8:K:37:ARG:NH1	8:K:462:ILE:HD13	2.35	0.41
8:K:62:ILE:CD1	8:K:98:PHE:HB2	2.51	0.41
8:K:460:ASP:O	8:K:461:PRO:C	2.61	0.41
1:J:412:MET:HE3	1:J:412:MET:HB3	1.91	0.41
4:C:338:THR:HB	4:C:342:THR:HG23	2.03	0.41
4:C:447:TYR:HB3	4:C:448:GL3:N	2.35	0.41
8:K:520:LEU:HD23	8:K:520:LEU:HA	1.90	0.41
9:L:19:ILE:H	9:L:19:ILE:HG12	1.72	0.41
1:J:31:VAL:HG11	1:J:292:ILE:HA	2.03	0.40
1:J:81:SER:HA	1:J:163:ARG:CA	2.47	0.40
4:C:402:SER:HA	4:C:445:GLY:CA	2.51	0.40
4:C:430:TRP:HD1	4:C:431:TYR:CD1	2.40	0.40
4:F:444:LEU:HD23	4:F:450:ASP:HB3	2.04	0.40
6:H:231:ASP:OD1	6:H:231:ASP:N	2.38	0.40
8:K:203:LYS:HB2	8:K:203:LYS:HE2	1.91	0.40
8:K:272:GLU:H	8:K:272:GLU:HG2	1.49	0.40
8:K:332:ALA:HA	8:K:368:ILE:HG21	2.02	0.40
1:J:111:TRP:CE3	1:J:131:GLN:HA	2.56	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:250:ARG:HD2	1:J:270:TYR:CZ	2.56	0.40
3:E:358:GLY:HA2	3:E:361:PHE:CE2	2.57	0.40
8:K:359:LEU:HD13	8:K:359:LEU:HA	1.88	0.40
1:J:439:ALA:HB1	1:J:471:THR:HG23	2.02	0.40
3:E:53:ILE:HG13	3:E:174:ASN:HB2	2.03	0.40
4:C:385:LEU:HD21	4:C:437:HIS:CD2	2.57	0.40
8:K:170:LEU:HD23	8:K:170:LEU:HA	1.94	0.40
8:K:271:PHE:HE1	8:K:469:GLU:HB2	1.87	0.40
8:K:304:ILE:HD13	8:K:327:LEU:HD22	2.03	0.40
1:J:170:MET:HE3	1:J:172:GLU:OE1	2.16	0.40
2:B:120:LEU:HB2	2:B:123:ARG:HB3	2.03	0.40
3:E:384:HIS:HE2	4:F:483:MET:HE1	1.86	0.40
4:C:137:MET:HA	4:C:140:ILE:HG22	2.04	0.40
4:C:295:GLN:HB3	4:C:298:ARG:HD3	2.03	0.40
4:F:377:ALA:O	4:F:381:THR:OG1	2.32	0.40
6:H:114:LYS:NZ	6:H:142:SER:OG	2.42	0.40
8:K:184:ILE:HD12	8:K:184:ILE:H	1.85	0.40
4:C:233:MET:HB2	4:C:233:MET:HE2	1.79	0.40
4:C:325:ALA:HA	4:C:329:GLY:HA2	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	J	493/501 (98%)	435 (88%)	47 (10%)	11 (2%)	5	1
2	A	257/260 (99%)	253 (98%)	4 (2%)	0	100	100
2	B	257/260 (99%)	252 (98%)	5 (2%)	0	100	100
3	D	440/443 (99%)	422 (96%)	18 (4%)	0	100	100
3	E	440/443 (99%)	422 (96%)	17 (4%)	1 (0%)	44	43

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
4	C	539/553 (98%)	515 (96%)	22 (4%)	2 (0%)	30	26
4	F	511/553 (92%)	490 (96%)	20 (4%)	1 (0%)	44	43
5	G	110/183 (60%)	107 (97%)	3 (3%)	0	100	100
6	H	294/304 (97%)	283 (96%)	11 (4%)	0	100	100
7	I	192/234 (82%)	183 (95%)	9 (5%)	0	100	100
8	K	519/531 (98%)	450 (87%)	57 (11%)	12 (2%)	5	1
9	L	45/93 (48%)	45 (100%)	0	0	100	100
All	All	4097/4358 (94%)	3857 (94%)	213 (5%)	27 (1%)	21	13

All (27) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	C	445	GLY
8	K	103	GLU
8	K	231	GLU
8	K	265	VAL
8	K	270	GLU
8	K	310	GLU
1	J	6	ASN
1	J	71	ASN
1	J	170	MET
1	J	133	ASP
1	J	136	GLU
1	J	165	ILE
8	K	76	GLU
8	K	348	ASP
1	J	11	SER
1	J	104	VAL
3	E	82	ALA
8	K	278	ASP
8	K	508	ILE
1	J	12	GLY
4	F	152	GLU
8	K	104	ILE
8	K	143	GLY
8	K	214	GLU
1	J	167	ILE
1	J	117	VAL
4	C	145	PRO

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	J	452/454 (100%)	378 (84%)	74 (16%)	2	0
2	A	223/224 (100%)	215 (96%)	8 (4%)	30	28
2	B	223/224 (100%)	222 (100%)	1 (0%)	89	92
3	D	341/342 (100%)	333 (98%)	8 (2%)	45	47
3	E	341/342 (100%)	332 (97%)	9 (3%)	41	41
4	C	437/439 (100%)	423 (97%)	14 (3%)	34	33
4	F	412/439 (94%)	393 (95%)	19 (5%)	23	19
5	G	104/168 (62%)	101 (97%)	3 (3%)	37	36
6	H	264/271 (97%)	254 (96%)	10 (4%)	28	26
7	I	160/186 (86%)	155 (97%)	5 (3%)	35	34
8	K	449/458 (98%)	373 (83%)	76 (17%)	1	0
9	L	43/81 (53%)	43 (100%)	0	100	100
All	All	3449/3628 (95%)	3222 (93%)	227 (7%)	16	8

All (227) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	J	8	ASN
1	J	11	SER
1	J	13	LYS
1	J	14	THR
1	J	15	LEU
1	J	17	ASP
1	J	20	LYS
1	J	21	ASP
1	J	23	TYR
1	J	44	THR
1	J	45	LYS
1	J	46	LYS
1	J	48	LEU
1	J	49	ILE

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Mol	Chain	Res	Type
1	J	50	LYS
1	J	52	THR
1	J	53	LYS
1	J	57	VAL
1	J	58	VAL
1	J	60	ILE
1	J	65	GLU
1	J	66	THR
1	J	68	ASP
1	J	72	LYS
1	J	75	LYS
1	J	77	PHE
1	J	78	GLU
1	J	80	LYS
1	J	85	LYS
1	J	87	ILE
1	J	88	SER
1	J	90	VAL
1	J	99	LEU
1	J	101	VAL
1	J	105	LYS
1	J	109	LYS
1	J	110	LYS
1	J	113	VAL
1	J	114	VAL
1	J	116	SER
1	J	121	ASP
1	J	124	GLU
1	J	126	ASN
1	J	127	LEU
1	J	128	ILE
1	J	132	ARG
1	J	133	ASP
1	J	134	VAL
1	J	135	LEU
1	J	137	LEU
1	J	141	GLU
1	J	145	ILE
1	J	148	LEU
1	J	153	ARG
1	J	155	LEU
1	J	156	LYS

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Mol	Chain	Res	Type
1	J	161	ASP
1	J	163	ARG
1	J	164	ILE
1	J	165	ILE
1	J	168	GLU
1	J	169	GLN
1	J	170	MET
1	J	171	ARG
1	J	209	SER
1	J	337	ILE
1	J	338	ASP
1	J	339	GLU
1	J	344	VAL
1	J	362	THR
1	J	408	ASP
1	J	434	ASP
1	J	441	THR
1	J	472	ASN
2	A	4	THR
2	A	30	LYS
2	A	36	ASP
2	A	54	THR
2	A	103	ASP
2	A	172	MET
2	A	182	ASP
2	A	203	VAL
2	B	203	VAL
3	E	2	VAL
3	E	97	GLU
3	E	98	ASP
3	E	99	ASP
3	E	100	ASP
3	E	114	VAL
3	E	251	LEU
3	E	292	ASN
3	E	327	VAL
3	D	98	ASP
3	D	114	VAL
3	D	175	ILE
3	D	311	VAL
3	D	327	VAL
3	D	332	LEU

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Mol	Chain	Res	Type
3	D	412	SER
3	D	429	MET
4	C	49	ILE
4	C	78	LEU
4	C	149	VAL
4	C	184	PHE
4	C	334	THR
4	C	372	VAL
4	C	375	ASP
4	C	402	SER
4	C	427	VAL
4	C	444	LEU
4	C	447	TYR
4	C	449	TYR
4	C	450	ASP
4	C	522	VAL
4	F	29	THR
4	F	59	LEU
4	F	78	LEU
4	F	82	ASP
4	F	138	HIS
4	F	151	GLN
4	F	154	MET
4	F	157	VAL
4	F	207	LYS
4	F	212	SER
4	F	214	VAL
4	F	260	LYS
4	F	274	ARG
4	F	277	ARG
4	F	281	GLU
4	F	342	THR
4	F	423	SER
4	F	427	VAL
4	F	509	ASN
5	G	45	VAL
5	G	127	ASP
5	G	180	LEU
6	H	5	ILE
6	H	37	ASP
6	H	55	GLU
6	H	84	HIS

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Mol	Chain	Res	Type
6	H	96	VAL
6	H	194	GLN
6	H	211	SER
6	H	221	VAL
6	H	225	GLU
6	H	293	SER
7	I	15	VAL
7	I	37	ASP
7	I	50	ILE
7	I	169	VAL
7	I	173	THR
8	K	2	LEU
8	K	9	VAL
8	K	15	ASP
8	K	48	MET
8	K	58	THR
8	K	66	VAL
8	K	75	VAL
8	K	76	GLU
8	K	87	CYS
8	K	89	THR
8	K	91	TYR
8	K	94	LYS
8	K	98	PHE
8	K	101	ASN
8	K	103	GLU
8	K	104	ILE
8	K	109	LYS
8	K	133	MET
8	K	144	LYS
8	K	151	LEU
8	K	152	ASN
8	K	154	ILE
8	K	155	LYS
8	K	180	LEU
8	K	192	LEU
8	K	197	THR
8	K	199	THR
8	K	202	PRO
8	K	206	LYS
8	K	216	VAL
8	K	218	LYS

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Mol	Chain	Res	Type
8	K	219	HIS
8	K	223	MET
8	K	227	SER
8	K	230	PRO
8	K	231	GLU
8	K	232	VAL
8	K	236	LEU
8	K	237	CYS
8	K	239	LYS
8	K	245	LYS
8	K	249	ARG
8	K	255	LYS
8	K	258	VAL
8	K	259	GLU
8	K	260	GLU
8	K	268	MET
8	K	269	LYS
8	K	272	GLU
8	K	273	LYS
8	K	277	LYS
8	K	278	ASP
8	K	281	LEU
8	K	282	LYS
8	K	287	GLU
8	K	289	ARG
8	K	291	VAL
8	K	295	ARG
8	K	299	LYS
8	K	305	ASP
8	K	306	VAL
8	K	307	SER
8	K	320	SER
8	K	349	GLU
8	K	351	VAL
8	K	355	LYS
8	K	359	LEU
8	K	361	ARG
8	K	387	LEU
8	K	411	VAL
8	K	460	ASP
8	K	463	THR
8	K	465	ASN

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Mol	Chain	Res	Type
8	K	469	GLU
8	K	471	ILE
8	K	481	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (43) such sidechains are listed below:

Mol	Chain	Res	Type
1	J	64	ASN
1	J	106	GLN
1	J	190	GLN
1	J	306	ASN
2	A	47	GLN
2	B	89	GLN
3	E	107	ASN
3	E	207	ASN
3	E	259	ASN
3	E	325	GLN
3	D	83	GLN
3	D	174	ASN
3	D	207	ASN
3	D	300	ASN
4	C	61	ASN
4	C	196	GLN
4	C	459	ASN
4	C	509	ASN
4	F	196	GLN
4	F	234	GLN
4	F	459	ASN
4	F	480	ASN
4	F	487	HIS
6	H	14	ASN
6	H	51	ASN
6	H	104	ASN
6	H	115	ASN
6	H	175	ASN
6	H	194	GLN
6	H	245	GLN
6	H	259	HIS
7	I	85	GLN
7	I	111	HIS
8	K	61	GLN
8	K	100	ASN

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Mol	Chain	Res	Type
8	K	102	ASN
8	K	176	GLN
8	K	210	ASN
8	K	220	ASN
8	K	228	HIS
8	K	309	ASN
8	K	494	ASN
9	L	34	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

10 non-standard protein/DNA/RNA residues are modelled in this entry.

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	MGN	F	403	4	6,9,10	0.68	0	5,12,14	0.76	0
4	SMC	F	455	4	5,6,7	0.71	0	2,6,8	0.81	0
4	MHS	C	261	4	7,11,12	0.78	0	6,14,16	1.00	0
4	GL3	C	448	-	2,3,4	1.40	0	1,2,4	0.17	0
4	MGN	C	403	-	6,9,10	0.69	0	5,12,14	0.74	0
4	AGM	C	275	3,4	10,11,12	0.36	0	6,13,15	0.69	0
4	GL3	F	448	4	2,3,4	0.48	0	1,2,4	0.35	0
4	MHS	F	261	4	7,11,12	0.78	0	6,14,16	0.87	0
4	SMC	C	455	4	5,6,7	0.80	0	2,6,8	1.69	0
4	AGM	F	275	4	10,11,12	0.45	0	6,13,15	0.26	0

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	MGN	F	403	4	-	0/7/9/12	-
4	SMC	F	455	4	-	2/3/5/7	-
4	MHS	C	261	4	-	2/5/6/8	0/1/1/1
4	GL3	C	448	-	-	1/1/1/2	-
4	MGN	C	403	-	-	1/7/9/12	-
4	AGM	C	275	3,4	-	1/10/11/13	-
4	GL3	F	448	4	-	1/1/1/2	-
4	MHS	F	261	4	-	2/5/6/8	0/1/1/1
4	SMC	C	455	4	-	2/3/5/7	-
4	AGM	F	275	4	-	6/10/11/13	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (18) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	C	261	MHS	O-C-CA-CB
4	C	448	GL3	S-C-CA-N
4	C	455	SMC	N-CA-CB-SG
4	C	455	SMC	CA-CB-SG-CS
4	F	261	MHS	N-CA-CB-CG
4	F	261	MHS	C-CA-CB-CG
4	F	275	AGM	N-CA-CB-CG
4	F	275	AGM	C-CA-CB-CG
4	F	275	AGM	NH1-CZ-NE1-CD
4	F	275	AGM	NH2-CZ-NE1-CD
4	F	448	GL3	S-C-CA-N
4	F	455	SMC	N-CA-CB-SG
4	F	455	SMC	CA-CB-SG-CS
4	F	275	AGM	CE2-CD-NE1-CZ
4	C	275	AGM	CE2-CD-NE1-CZ
4	C	261	MHS	N-CA-CB-CG
4	C	403	MGN	O-C-CA-CB2
4	F	275	AGM	NE1-CD-CG-CB

There are no ring outliers.

3 monomers are involved in 16 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	C	261	MHS	1	0
4	C	448	GL3	11	0
4	C	455	SMC	4	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 13 ligands modelled in this entry, 3 are monoatomic - leaving 10 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
10	F43	A	601	4,11	61,71,71	2.04	4 (6%)	64,118,118	1.11	4 (6%)
12	TP7	F	601	-	19,20,20	0.68	0	24,26,26	0.58	0
16	ATP	K	603	17	26,33,33	0.88	0	31,52,52	0.81	1 (3%)
13	SHT	F	602	-	26,27,27	2.04	7 (26%)	30,36,36	2.00	6 (20%)
14	S5Q	I	201	7	18,30,30	2.59	11 (61%)	-		
14	S5Q	H	401	6	18,30,30	2.60	12 (66%)	-		
14	S5Q	I	202	7	18,30,30	2.61	11 (61%)	-		
10	F43	E	601	-	61,71,71	1.96	4 (6%)	64,118,118	1.03	5 (7%)
11	COM	C	601	10	6,6,6	1.81	3 (50%)	7,8,8	2.81	4 (57%)
16	ATP	K	602	17	26,33,33	0.97	2 (7%)	31,52,52	0.75	1 (3%)

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
10	F43	A	601	4,11	-	14/28/185/185	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
12	TP7	F	601	-	-	5/24/24/24	-
16	ATP	K	603	17	-	4/18/38/38	0/3/3/3
13	SHT	F	602	-	1/1/6/9	17/31/31/31	-
10	F43	E	601	-	-	9/28/185/185	-
11	COM	C	601	10	-	0/4/4/4	-
16	ATP	K	602	17	-	3/18/38/38	0/3/3/3

All (54) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
10	A	601	F43	NI-NA	9.76	2.10	1.89
10	E	601	F43	NI-NA	9.38	2.09	1.89
10	A	601	F43	NI-NB	9.21	2.09	1.89
10	E	601	F43	NI-NB	9.08	2.09	1.89
10	A	601	F43	NI-ND	7.16	2.04	1.89
10	E	601	F43	NI-ND	6.82	2.04	1.89
13	F	602	SHT	CK-N	5.81	1.48	1.34
14	H	401	S5Q	S3B-FE6	-4.33	2.21	2.32
14	I	202	S5Q	S4B-FE7	-4.33	2.21	2.32
14	H	401	S5Q	S4B-FE7	-4.32	2.21	2.32
14	I	201	S5Q	S4B-FE7	-4.30	2.21	2.32
14	I	202	S5Q	S3B-FE6	-4.27	2.21	2.32
14	I	201	S5Q	S3B-FE6	-4.23	2.22	2.32
13	F	602	SHT	CD-SG2	3.94	1.83	1.77
13	F	602	SHT	P-O3'	3.75	1.66	1.59
14	I	201	S5Q	S1B-FE6	-3.47	2.23	2.32
14	H	401	S5Q	S1B-FE6	-3.44	2.23	2.32
13	F	602	SHT	CK1-CK	3.39	1.55	1.48
14	I	202	S5Q	S1B-FE6	-3.37	2.24	2.32
14	H	401	S5Q	S2A-FE2	-3.20	2.24	2.32
14	I	202	S5Q	S2A-FE2	-3.18	2.24	2.32
14	I	202	S5Q	S3B-FE7	-3.17	2.24	2.32
11	C	601	COM	C2-S2	3.15	1.82	1.77
14	I	201	S5Q	S3B-FE7	-3.15	2.24	2.32
14	I	201	S5Q	S2A-FE2	-3.08	2.24	2.32
14	H	401	S5Q	S3B-FE7	-3.08	2.24	2.32
14	I	201	S5Q	S2B-FE6	-3.01	2.17	2.24
14	I	201	S5Q	S4A-FE3	-2.96	2.25	2.32
14	H	401	S5Q	S2B-FE6	-2.95	2.17	2.24
14	I	202	S5Q	S2B-FE6	-2.92	2.18	2.24
14	I	202	S5Q	S4A-FE3	-2.92	2.25	2.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
14	H	401	S5Q	S4A-FE3	-2.87	2.25	2.32
13	F	602	SHT	OK-CK	-2.70	1.19	1.24
14	I	202	S5Q	S4B-FE5	-2.64	2.25	2.32
14	I	202	S5Q	S1B-FE5	-2.63	2.25	2.32
14	I	201	S5Q	S4B-FE5	-2.61	2.25	2.32
14	H	401	S5Q	S1B-FE5	-2.60	2.26	2.32
14	I	201	S5Q	S1B-FE5	-2.58	2.26	2.32
10	A	601	F43	C4C-NC	2.56	1.39	1.35
14	H	401	S5Q	S4B-FE5	-2.56	2.26	2.32
10	E	601	F43	C4C-NC	2.53	1.39	1.35
14	I	202	S5Q	S2A-FE3	-2.44	2.26	2.32
14	H	401	S5Q	S2A-FE3	-2.43	2.26	2.32
14	I	201	S5Q	S2A-FE3	-2.30	2.26	2.32
14	I	202	S5Q	S1A-FE2	-2.30	2.26	2.32
13	F	602	SHT	OS1-SG2	2.27	1.51	1.45
14	H	401	S5Q	S1A-FE2	-2.25	2.26	2.32
13	F	602	SHT	OS3-SG2	2.20	1.51	1.45
14	I	201	S5Q	S1A-FE2	-2.20	2.26	2.32
11	C	601	COM	O1S-S2	2.10	1.51	1.45
16	K	602	ATP	PG-O3G	-2.07	1.46	1.54
16	K	602	ATP	PG-O2G	-2.05	1.46	1.54
14	H	401	S5Q	S2B-FE2	-2.05	2.20	2.24
11	C	601	COM	O2S-S2	2.03	1.51	1.45

All (21) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
13	F	602	SHT	CK3-CK2-CK1	-6.48	111.95	125.85
13	F	602	SHT	OS1-SG2-CD	4.10	111.85	106.92
11	C	601	COM	O2S-S2-C2	3.90	111.61	106.92
11	C	601	COM	O1S-S2-C2	3.80	111.49	106.92
11	C	601	COM	O2S-S2-O1S	-3.77	100.91	113.95
13	F	602	SHT	OS1-SG2-OS3	-3.64	101.36	113.95
13	F	602	SHT	OS3-SG2-CD	3.62	111.27	106.92
10	A	601	F43	C2B-C1B-NB	3.45	107.01	101.84
10	A	601	F43	C3D-C4D-ND	3.24	107.38	102.34
10	E	601	F43	C2A-C3A-C4A	-3.22	97.45	102.36
10	E	601	F43	C3D-C4D-ND	3.14	107.22	102.34
11	C	601	COM	O3S-S2-C2	3.03	110.67	105.77
13	F	602	SHT	CK1-CK-N	2.99	120.30	114.56
10	E	601	F43	C2B-C3B-C4B	-2.80	98.47	101.63
10	A	601	F43	C4B-CHC-C1C	2.69	130.24	125.84

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
10	A	601	F43	C2A-C3A-C4A	-2.43	98.65	102.36
10	E	601	F43	C9D-C3D-C4D	-2.38	108.39	114.67
13	F	602	SHT	OS2-SG2-CD	2.35	109.57	105.77
16	K	602	ATP	C5-C6-N6	2.24	123.76	120.35
10	E	601	F43	C3D-C2D-C1D	2.06	106.17	102.69
16	K	603	ATP	C5-C6-N6	2.05	123.47	120.35

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
13	F	602	SHT	CB

All (52) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
10	A	601	F43	C2A-C3A-CAA-CBA
10	A	601	F43	C4A-C3A-CAA-CBA
10	E	601	F43	C1A-C2A-C5A-C6A
10	E	601	F43	C9A-C2A-C5A-C6A
10	E	601	F43	C2A-C3A-CAA-CBA
13	F	602	SHT	CD-CC-S1-SK
13	F	602	SHT	CC-CD-SG2-OS3
13	F	602	SHT	CC-CD-SG2-OS1
13	F	602	SHT	CC-CD-SG2-OS2
13	F	602	SHT	S1-CC-CD-SG2
13	F	602	SHT	O-C-CA-N
13	F	602	SHT	C-CA-CB-CG2
13	F	602	SHT	C-CA-CB-O3'
12	F	601	TP7	O1-C1-N-CA
12	F	601	TP7	C2-C3-C4-C5
12	F	601	TP7	C2-C1-N-CA
13	F	602	SHT	CK3-CK4-CK5-CK6
10	A	601	F43	C3C-C8C-C9C-CAC
13	F	602	SHT	CK5-CK6-SK-S1
13	F	602	SHT	CK2-CK3-CK4-CK5
12	F	601	TP7	C3-C4-C5-C6
13	F	602	SHT	OXT-C-CA-N
13	F	602	SHT	N-CA-CB-CG2
13	F	602	SHT	N-CA-CB-O3'
12	F	601	TP7	C4-C5-C6-C7
10	A	601	F43	C2C-C3C-C8C-C9C
10	A	601	F43	C3C-C2C-C5C-C6C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
10	A	601	F43	C2C-C5C-C6C-O8C
16	K	602	ATP	PB-O3B-PG-O3G
16	K	602	ATP	PG-O3B-PB-O2B
13	F	602	SHT	N-CK-CK1-CK2
13	F	602	SHT	OK-CK-CK1-CK2
10	A	601	F43	C1C-C2C-C5C-C6C
10	E	601	F43	C4A-C3A-CAA-CBA
10	E	601	F43	C1C-C2C-C5C-C6C
10	A	601	F43	C2C-C5C-C6C-O7C
10	E	601	F43	C2B-C3B-CAB-CBB
16	K	603	ATP	PG-O3B-PB-O2B
10	E	601	F43	CAB-CBB-CCB-ODB
10	A	601	F43	C4C-C3C-C8C-C9C
10	A	601	F43	C8C-C9C-CAC-OCC
10	A	601	F43	C8C-C9C-CAC-OBC
16	K	602	ATP	PG-O3B-PB-O1B
10	A	601	F43	CAA-CBA-CCA-ODA
10	E	601	F43	CAB-CBB-CCB-OEB
10	A	601	F43	CAB-CBB-CCB-ODB
16	K	603	ATP	PB-O3B-PG-O2G
10	A	601	F43	CAA-CBA-CCA-OEA
13	F	602	SHT	CB-O3'-P-O2P
16	K	603	ATP	PG-O3B-PB-O1B
16	K	603	ATP	PA-O3A-PB-O1B
10	E	601	F43	C3A-CAA-CBA-CCA

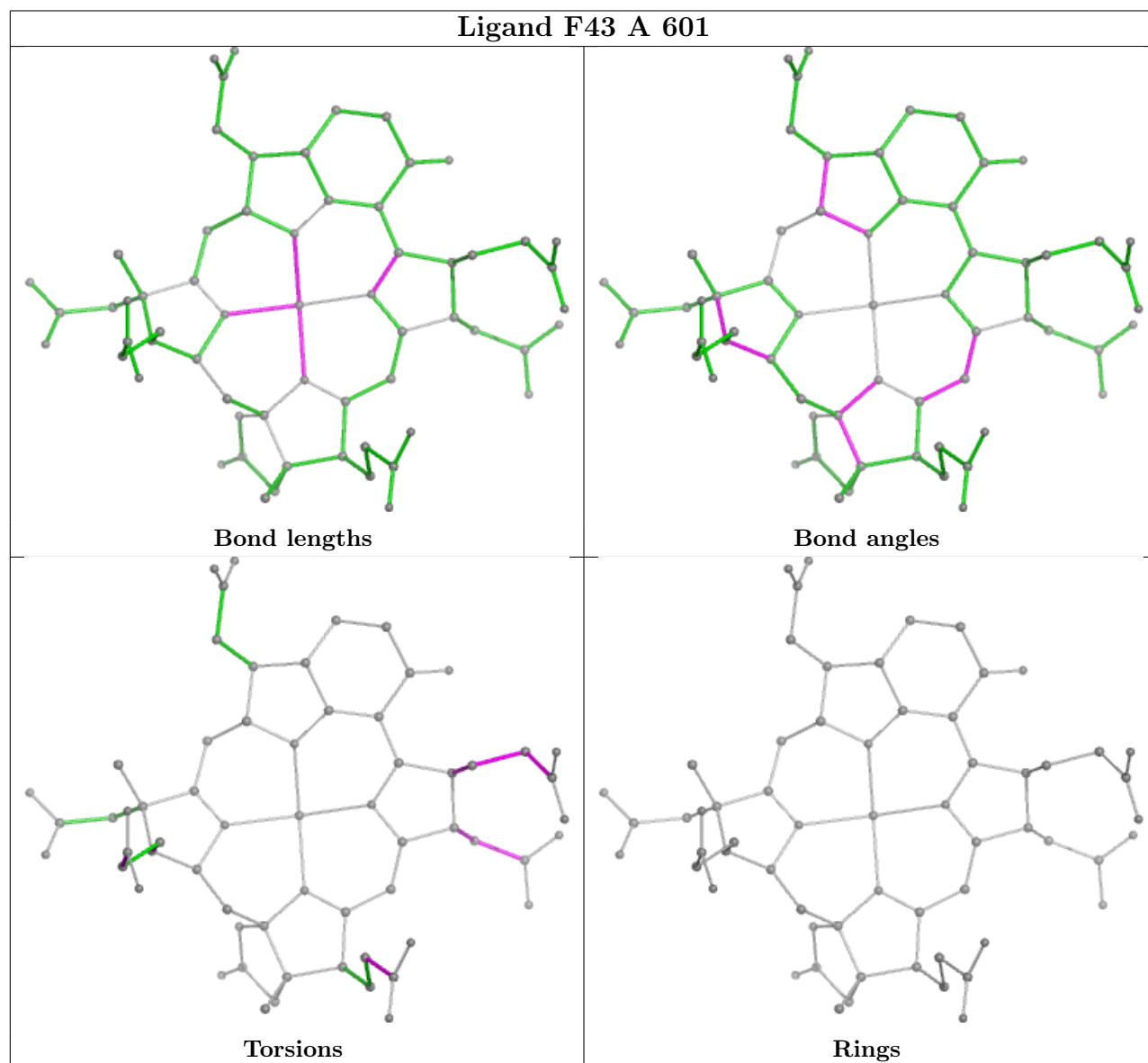
There are no ring outliers.

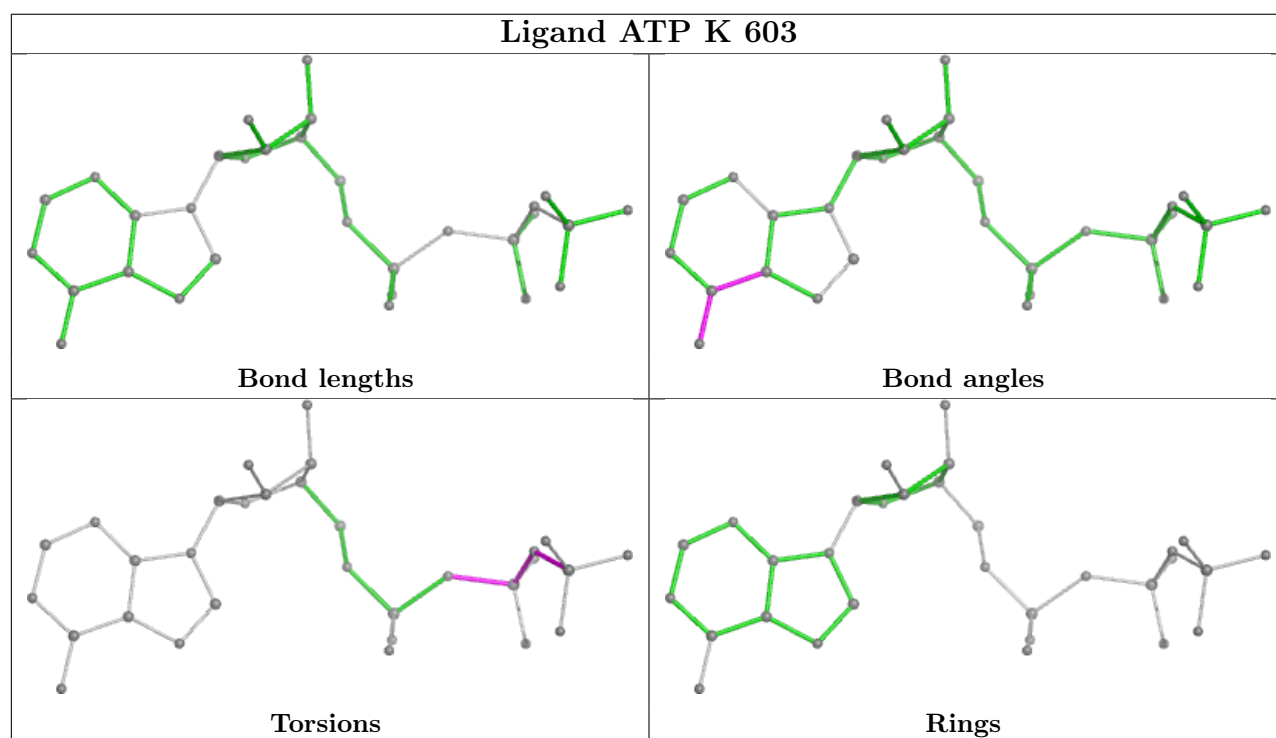
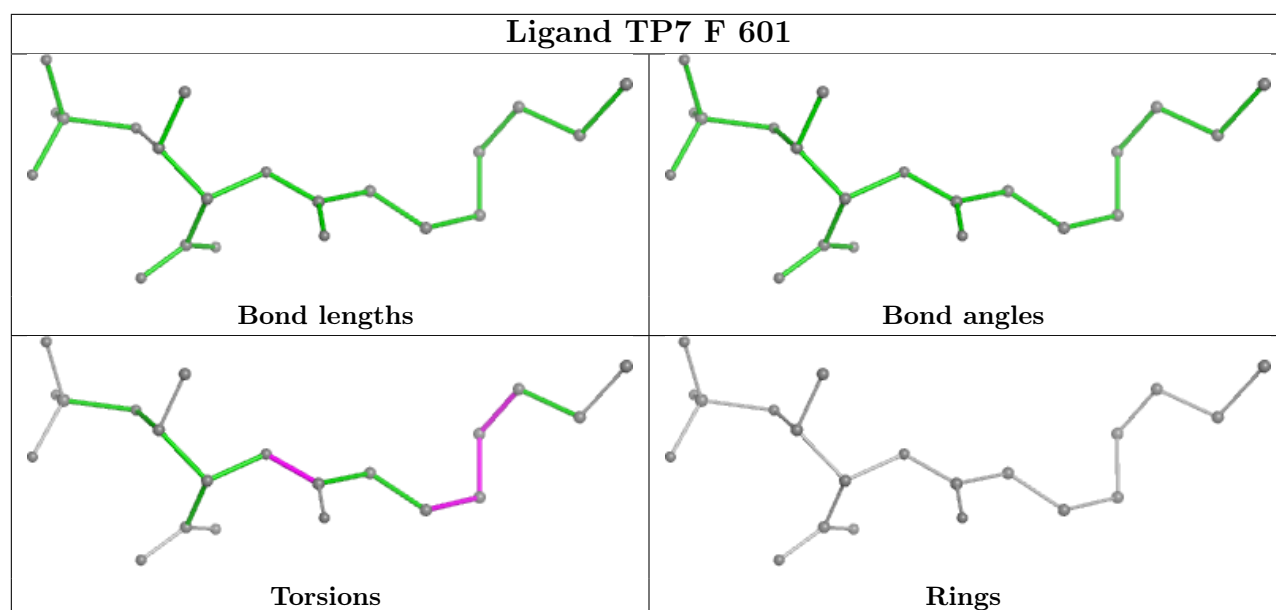
7 monomers are involved in 35 short contacts:

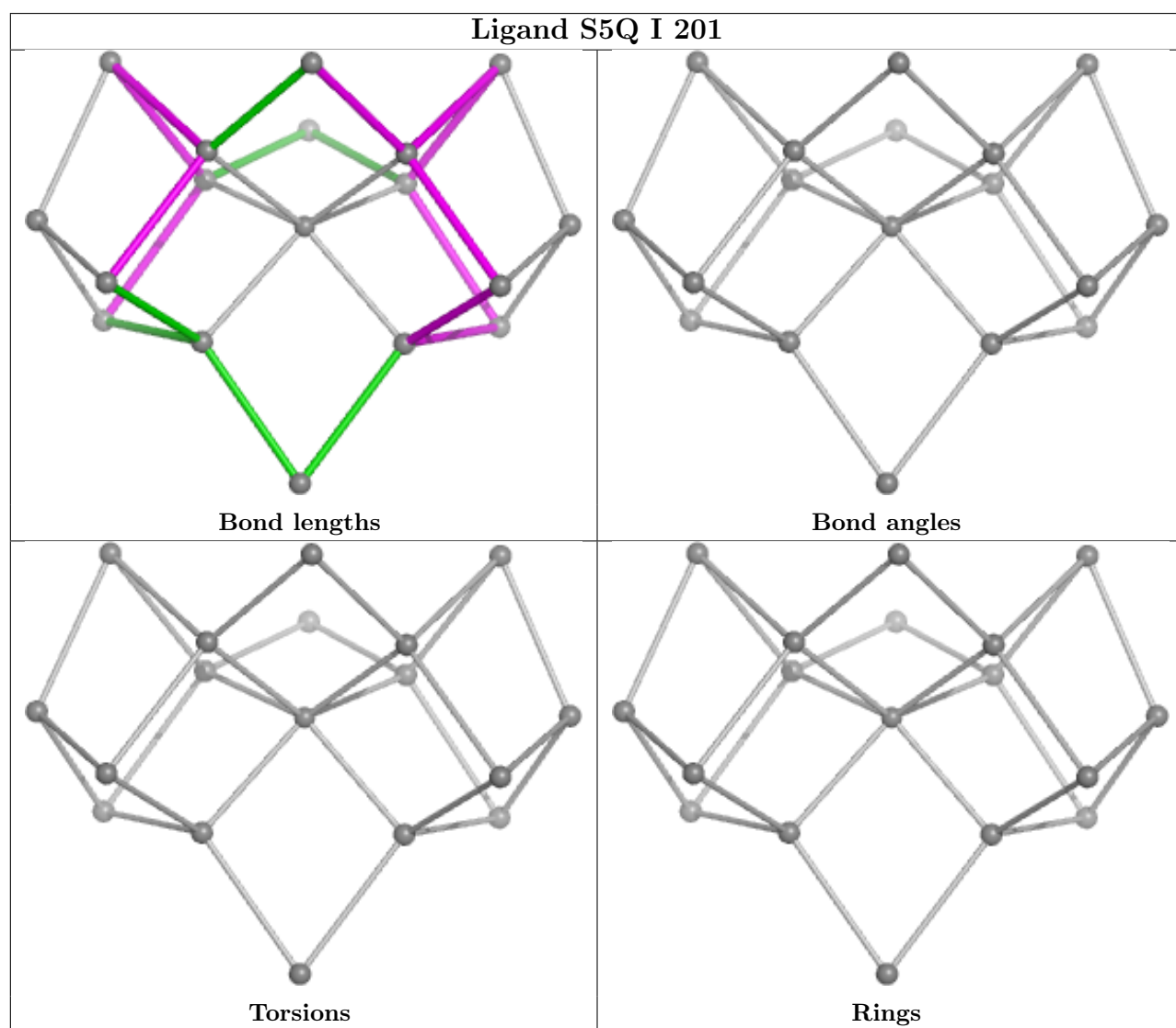
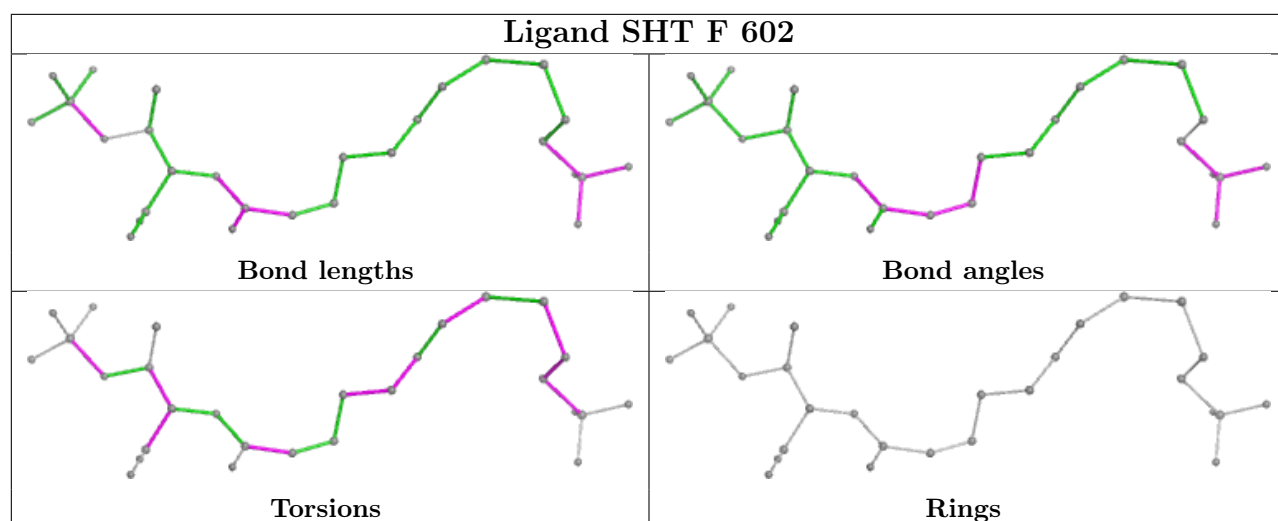
Mol	Chain	Res	Type	Clashes	Symm-Clashes
10	A	601	F43	6	0
12	F	601	TP7	3	0
16	K	603	ATP	2	0
13	F	602	SHT	13	0
14	H	401	S5Q	1	0
10	E	601	F43	10	0
11	C	601	COM	3	0

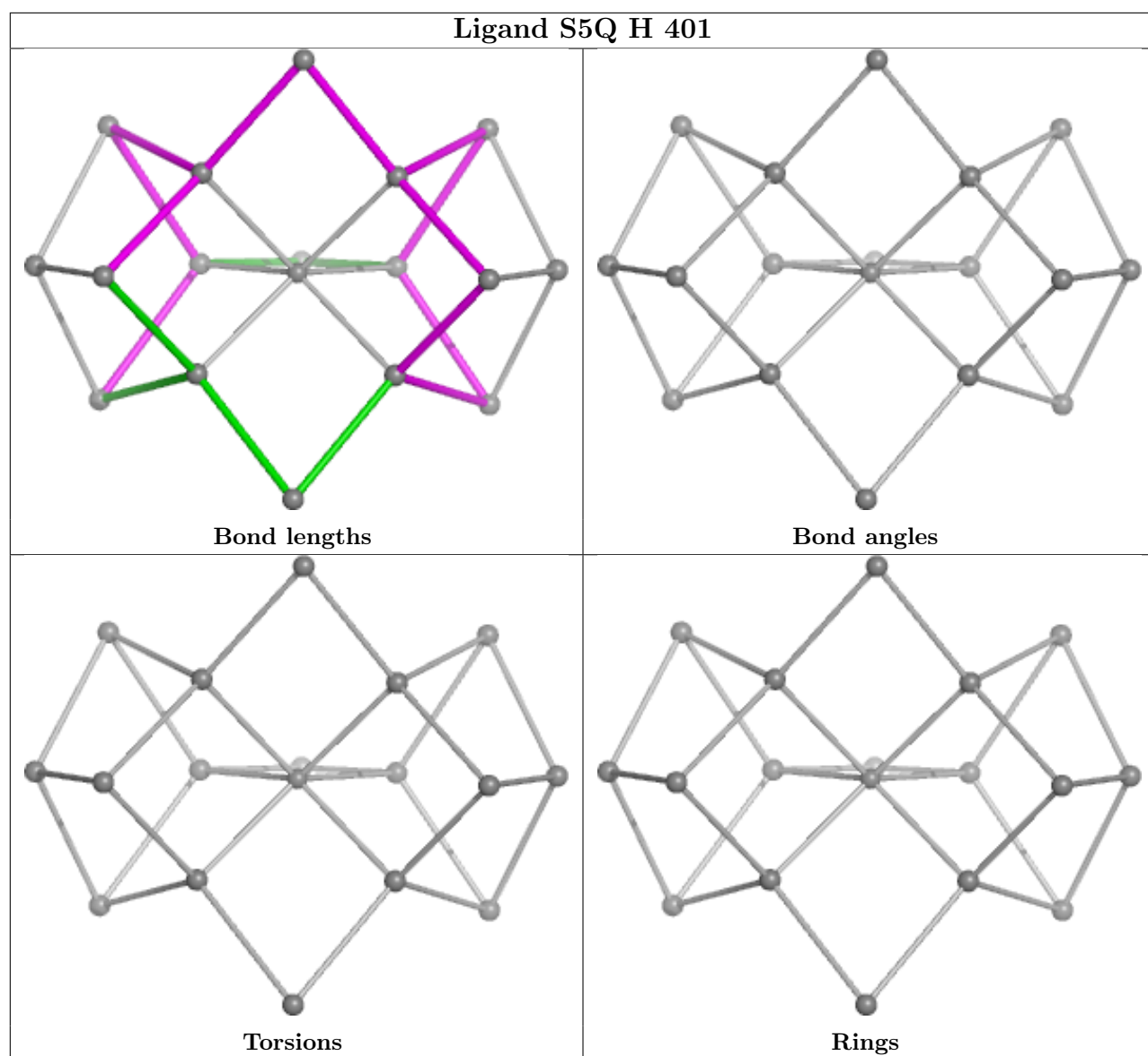
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is

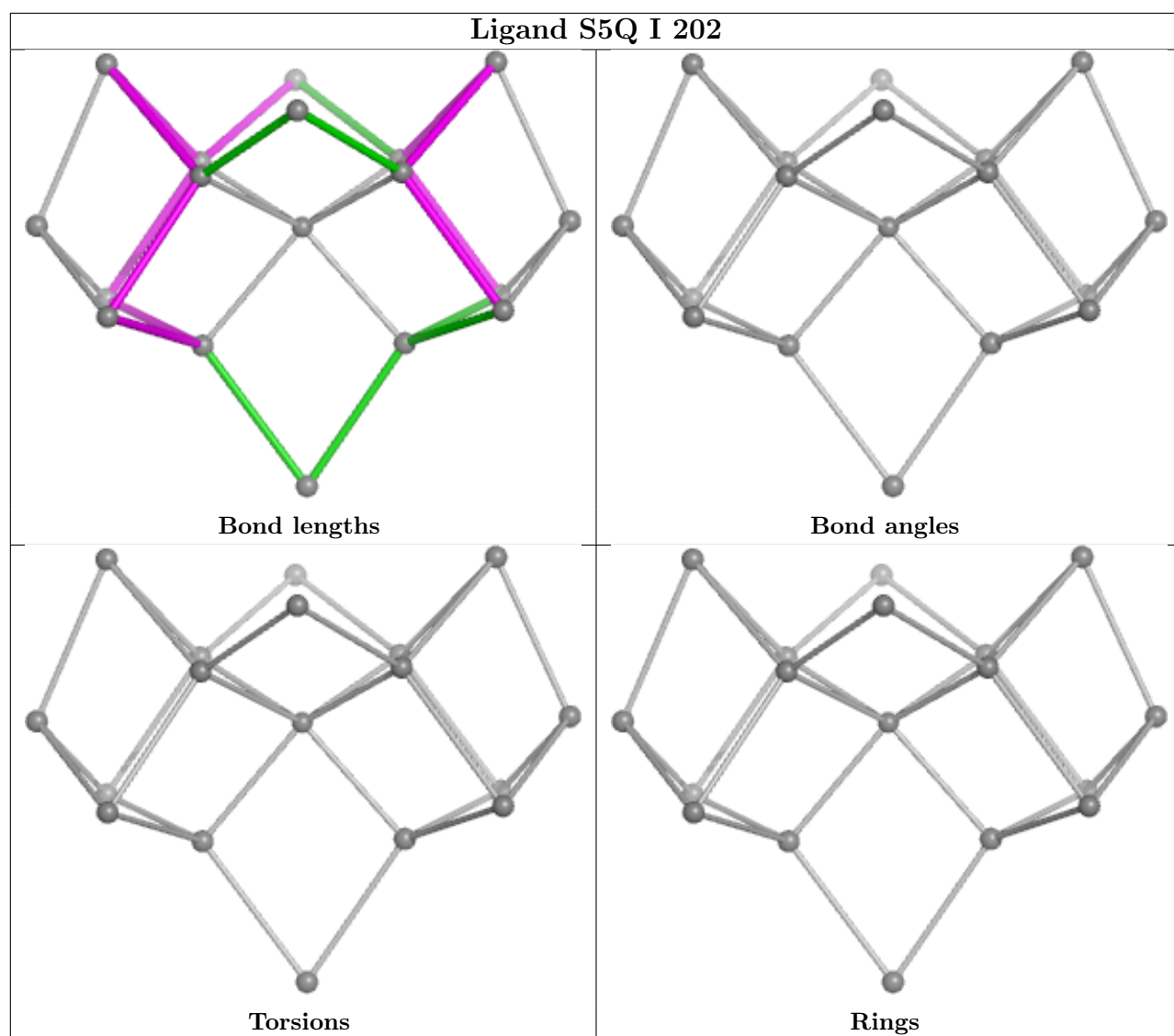
within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question 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.



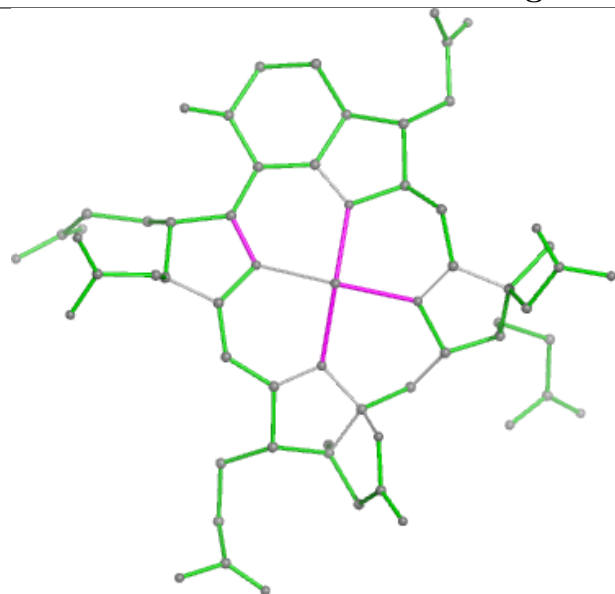




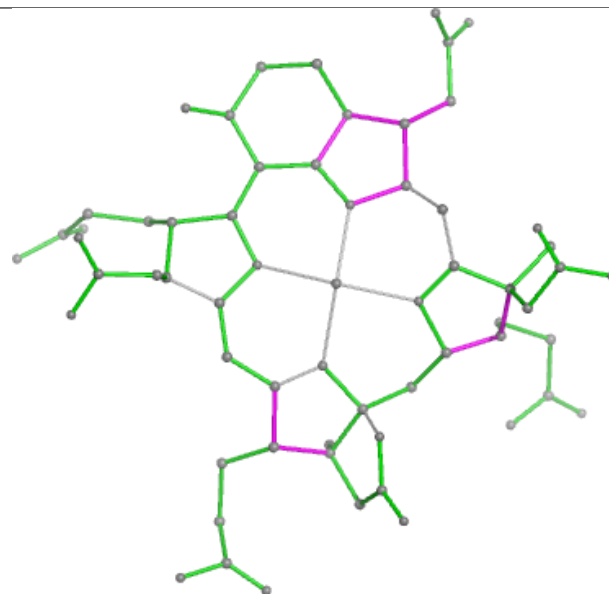




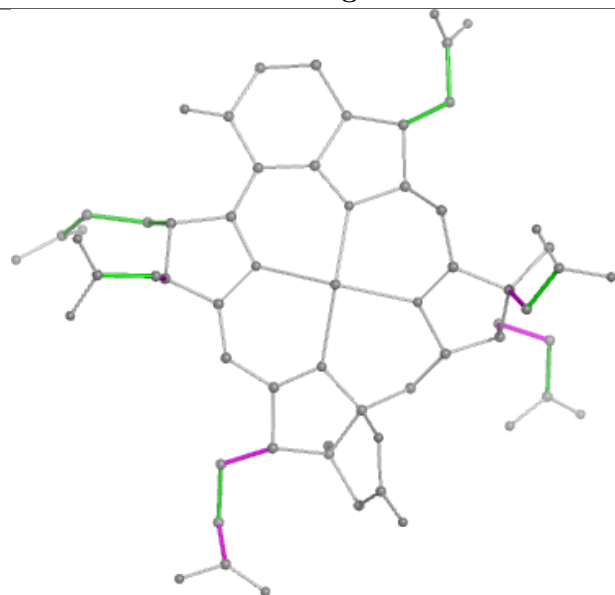
Ligand F43 E 601



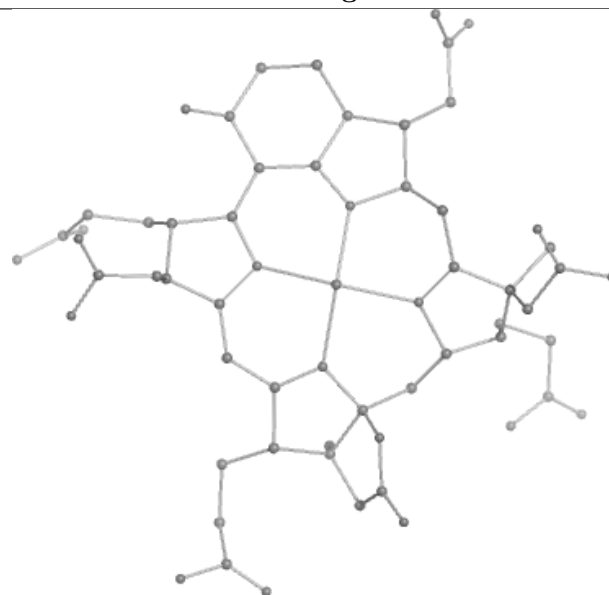
Bond lengths



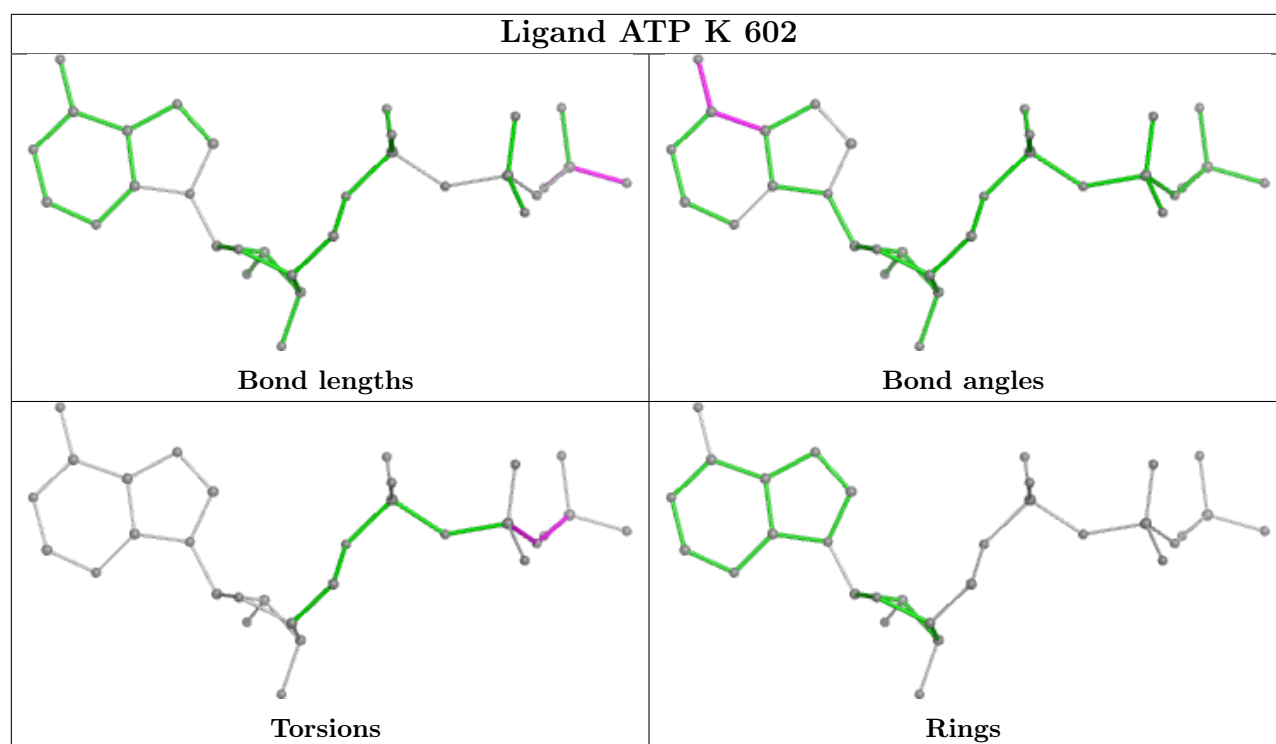
Bond angles



Torsions



Rings



5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
4	C	4
1	J	2

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	J	183:THR	C	184:ASN	N	3.52
1	C	402:SER	C	403:MGN	N	3.12
1	C	403:MGN	C	404:ARG	N	3.07
1	C	447:TYR	C	448:GL3	N	3.00
1	J	22:GLU	C	23:TYR	N	2.59
1	C	448:GL3	C	449:TYR	N	2.37

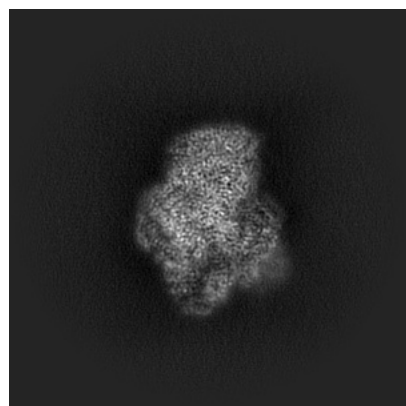
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-51767. These allow visual inspection of the internal detail of the map and identification of artifacts.

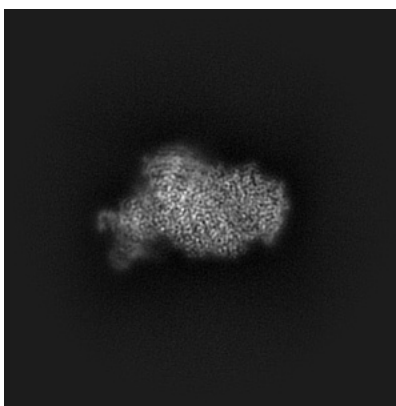
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

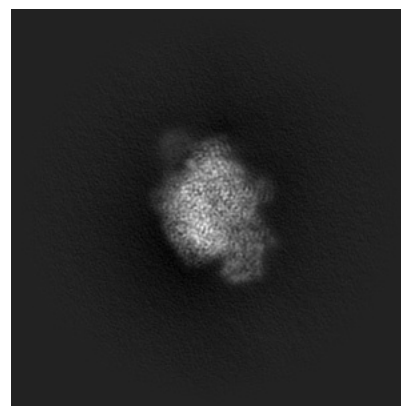
6.1.1 Primary map



X

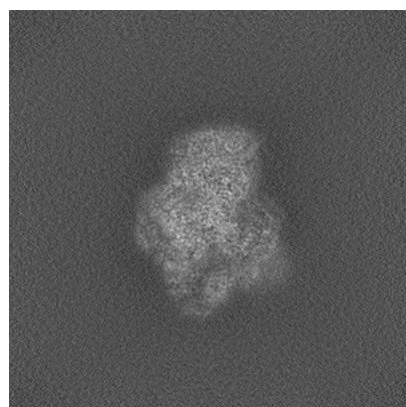


Y

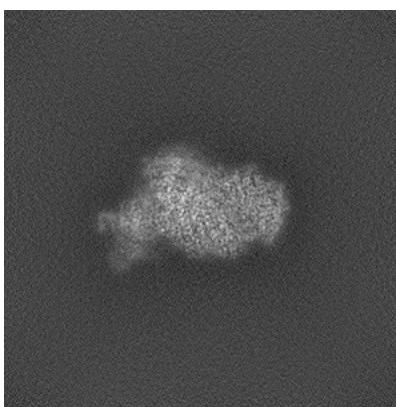


Z

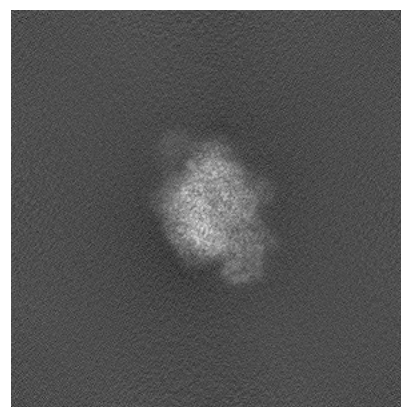
6.1.2 Raw map



X



Y

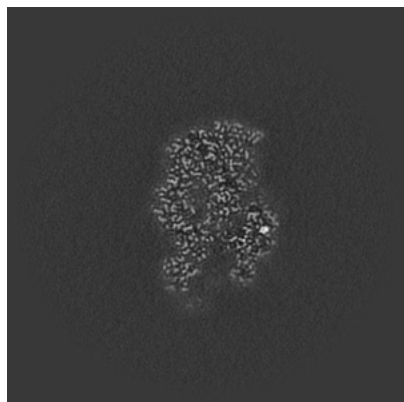


Z

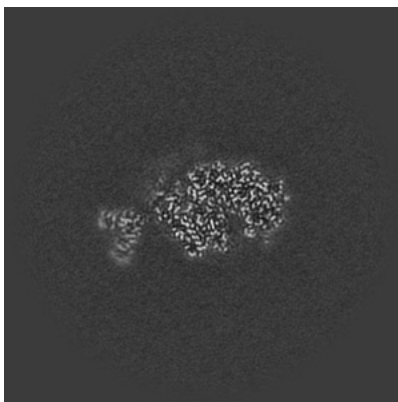
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

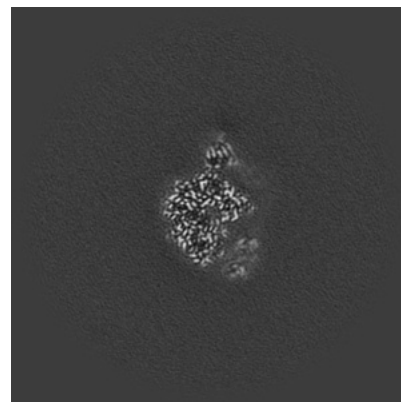
6.2.1 Primary map



X Index: 300

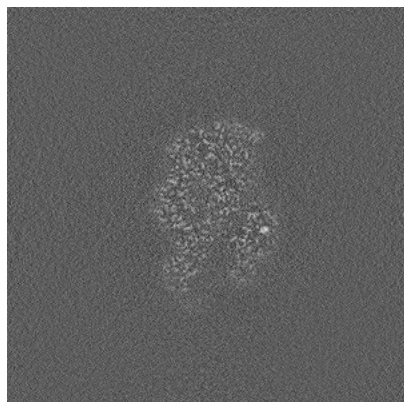


Y Index: 300

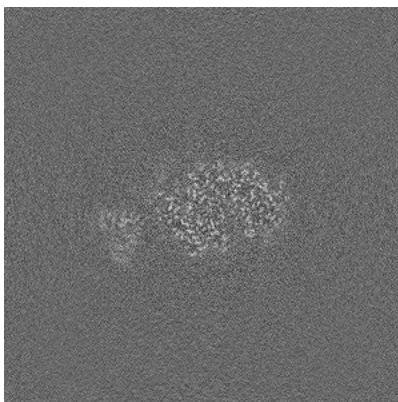


Z Index: 300

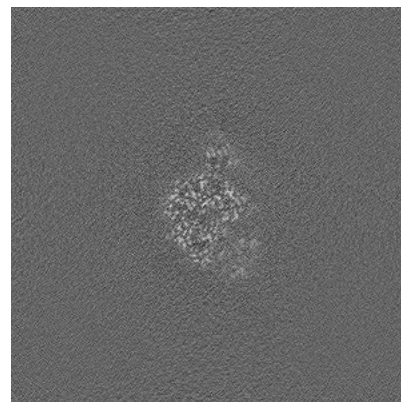
6.2.2 Raw map



X Index: 300



Y Index: 300

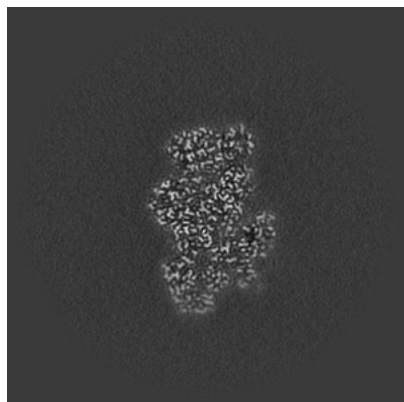


Z Index: 300

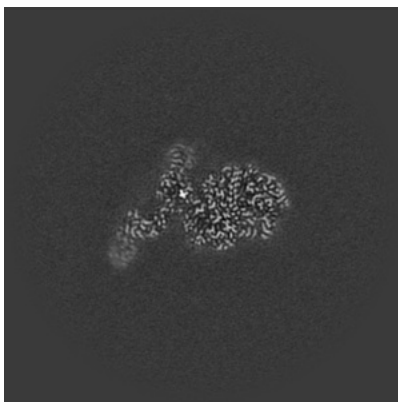
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

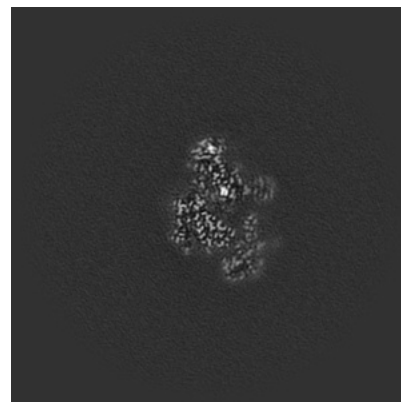
6.3.1 Primary map



X Index: 286

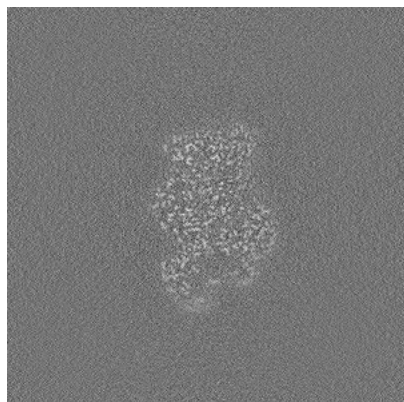


Y Index: 325

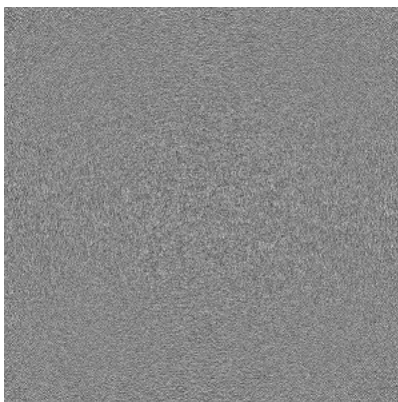


Z Index: 267

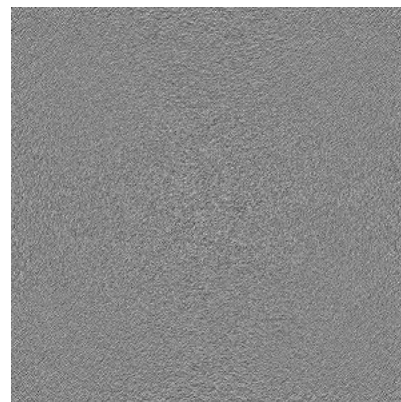
6.3.2 Raw map



X Index: 294



Y Index: 0

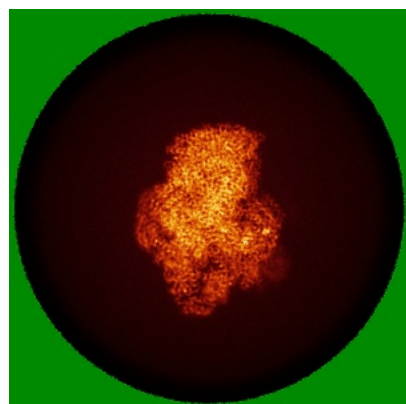


Z Index: 0

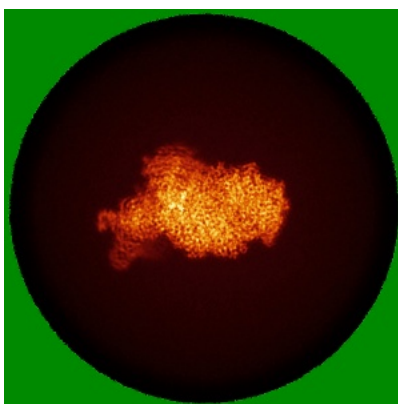
The images above show the largest variance slices of the map in three orthogonal directions.

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

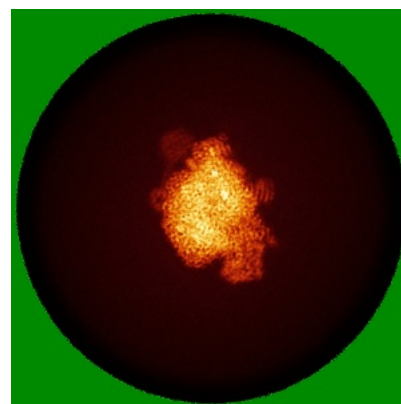
6.4.1 Primary map



X

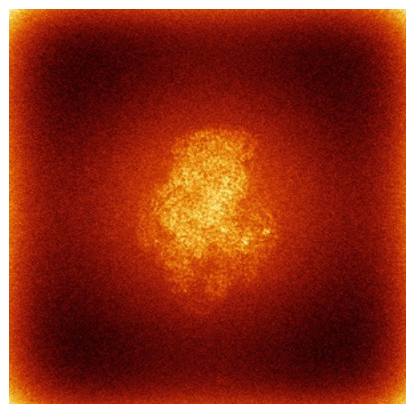


Y

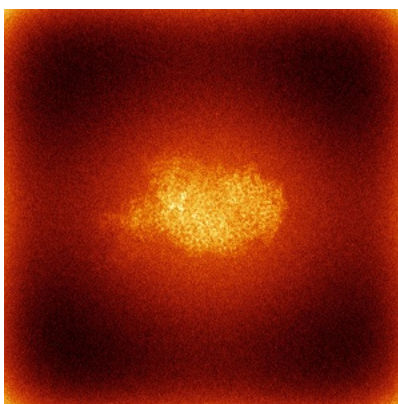


Z

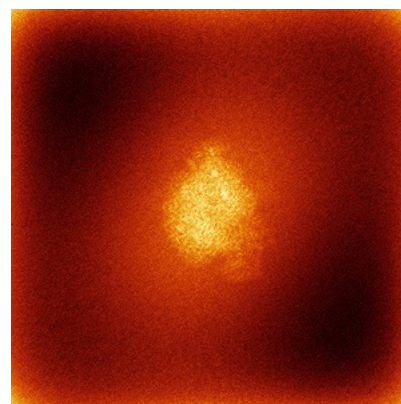
6.4.2 Raw map



X



Y

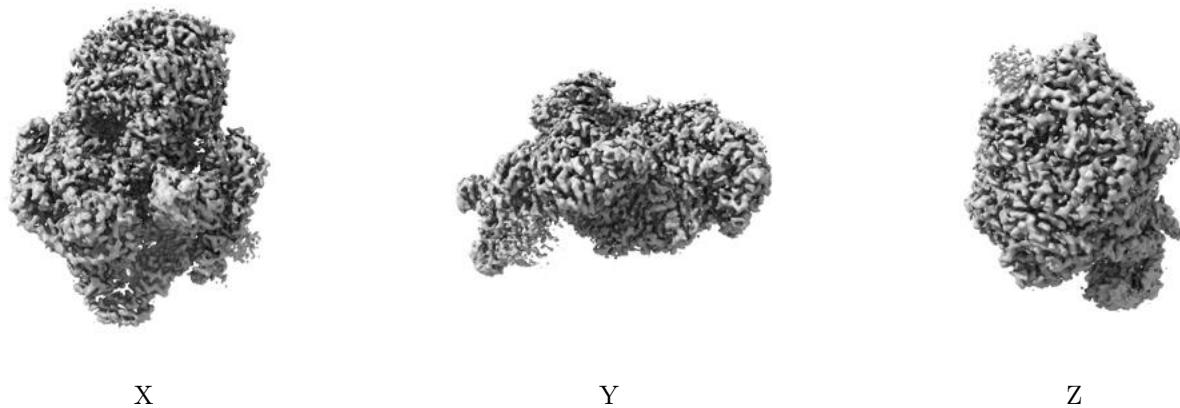


Z

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

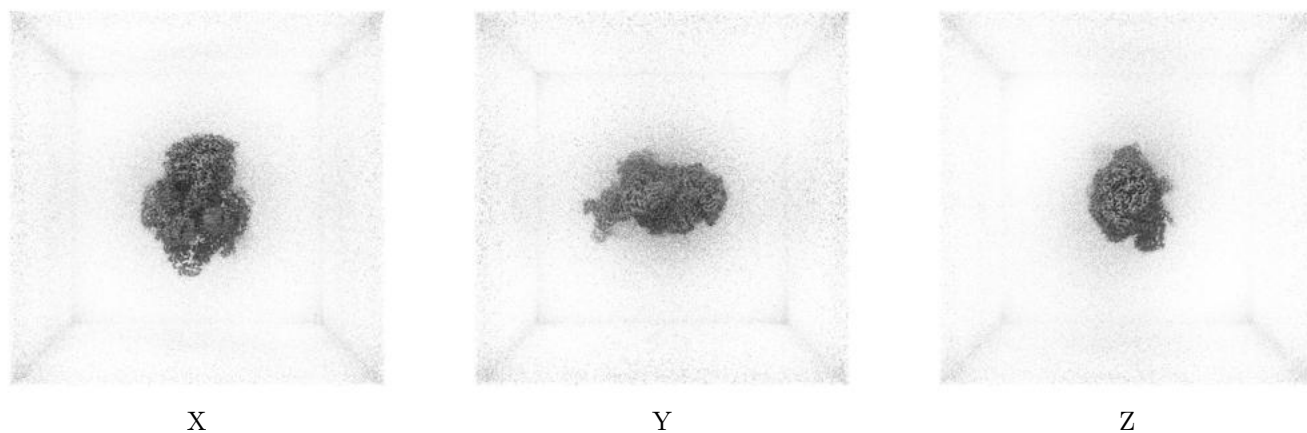
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.0197. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



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

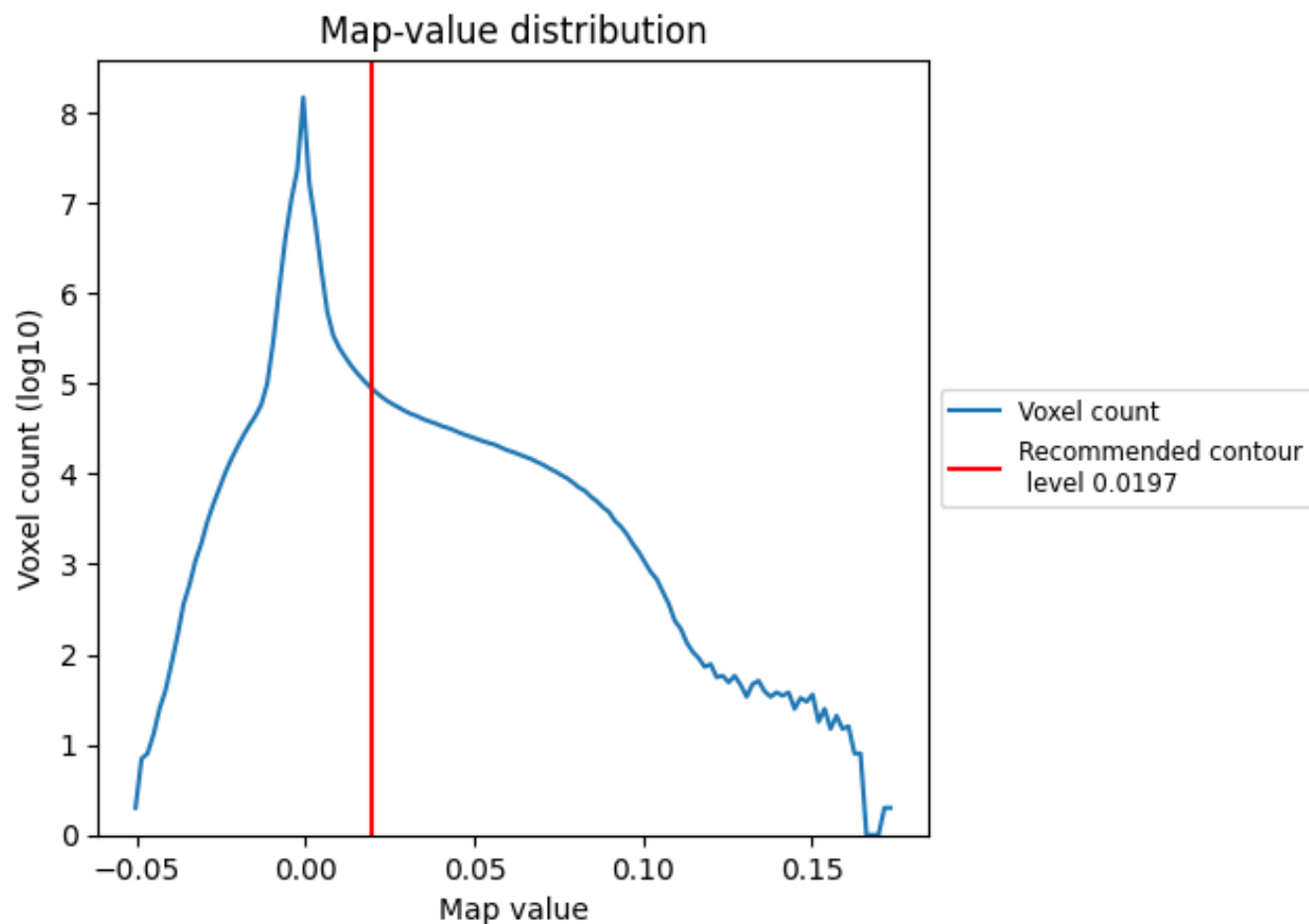
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

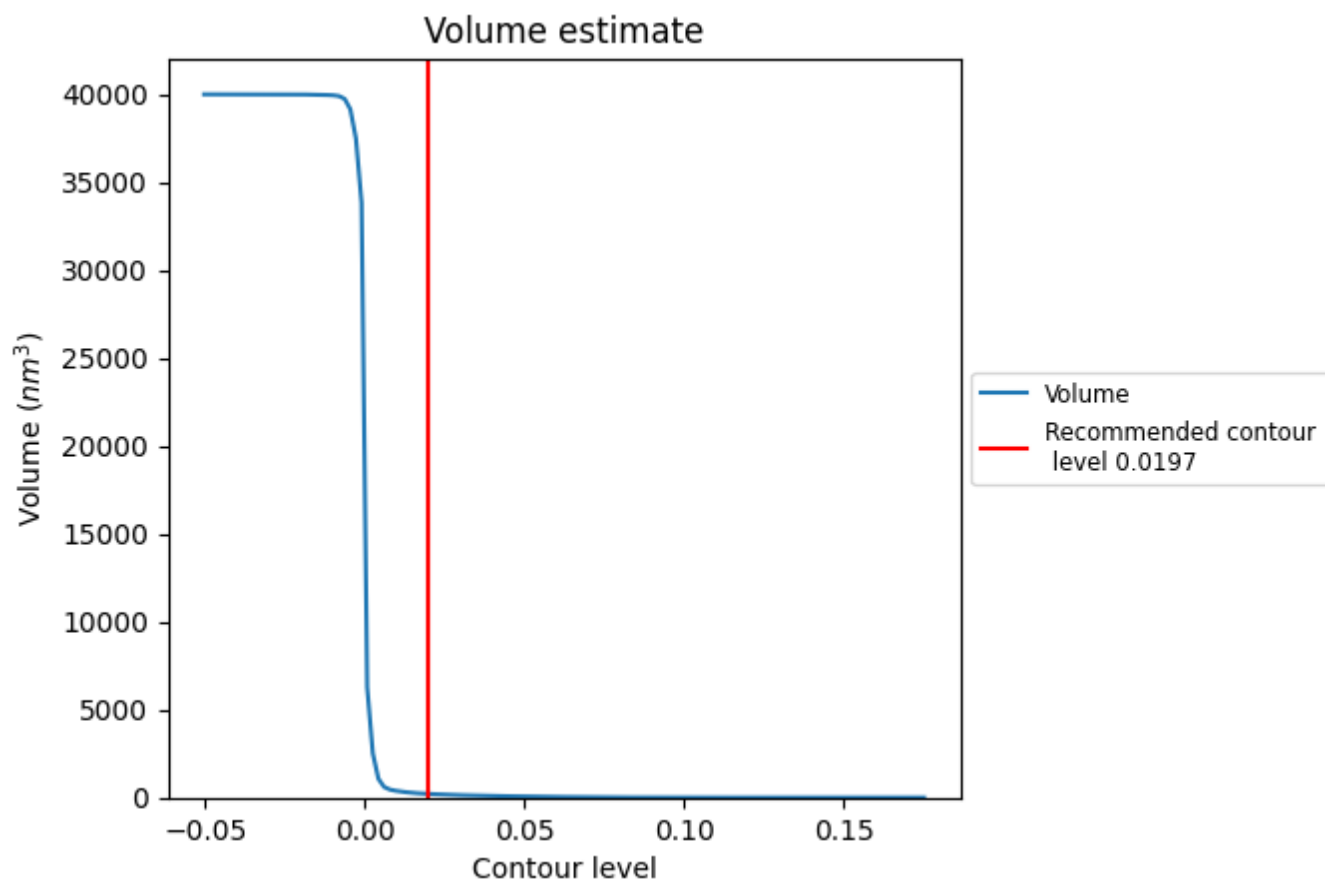
This section contains the results of statistical analysis of the map.

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.

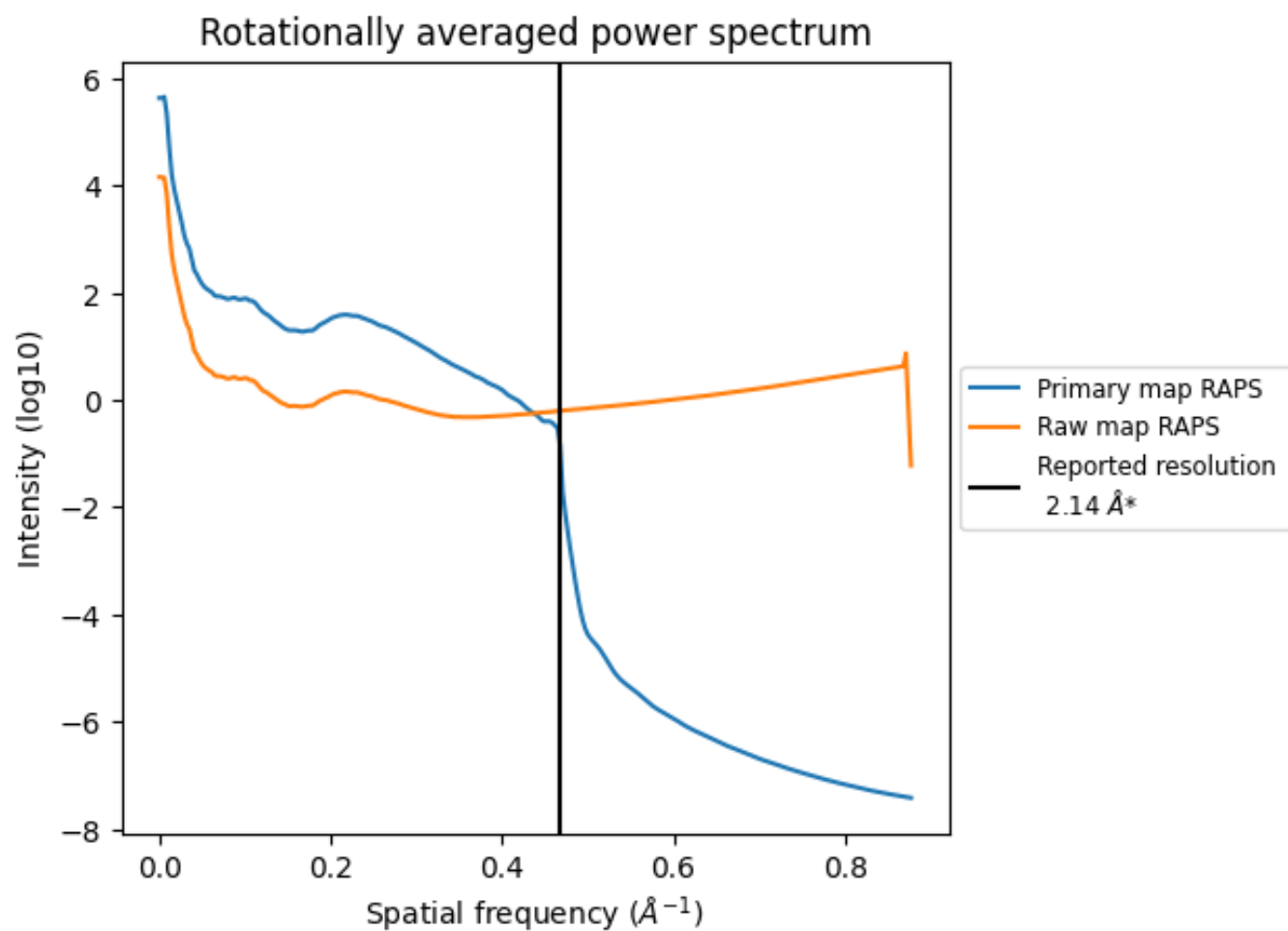
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 209 nm^3 ; this corresponds to an approximate mass of 189 kDa.

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

7.3 Rotationally averaged power spectrum ⓘ

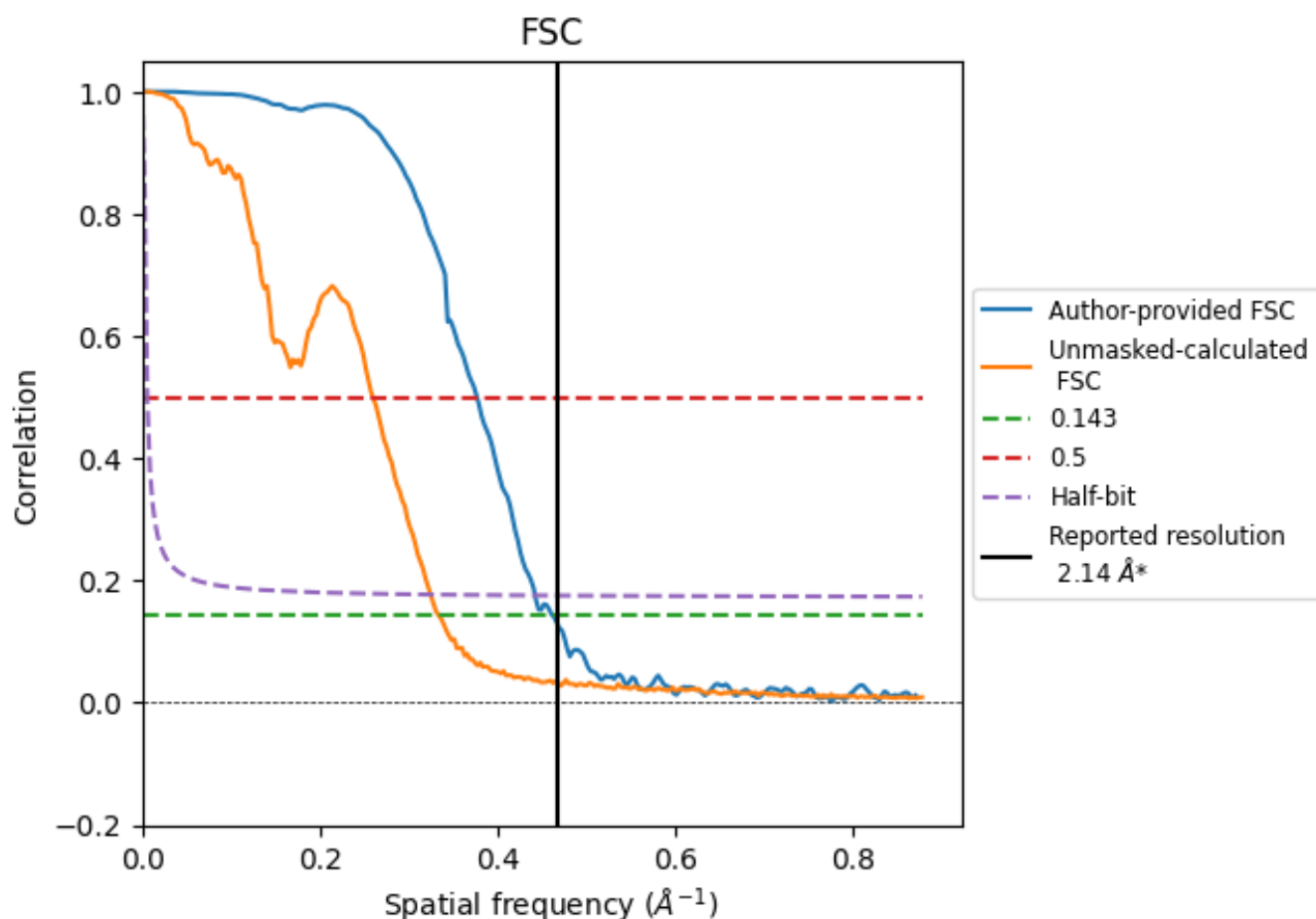


*Reported resolution corresponds to spatial frequency of 0.467 \AA^{-1}

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 0.467 \AA^{-1}

8.2 Resolution estimates [i](#)

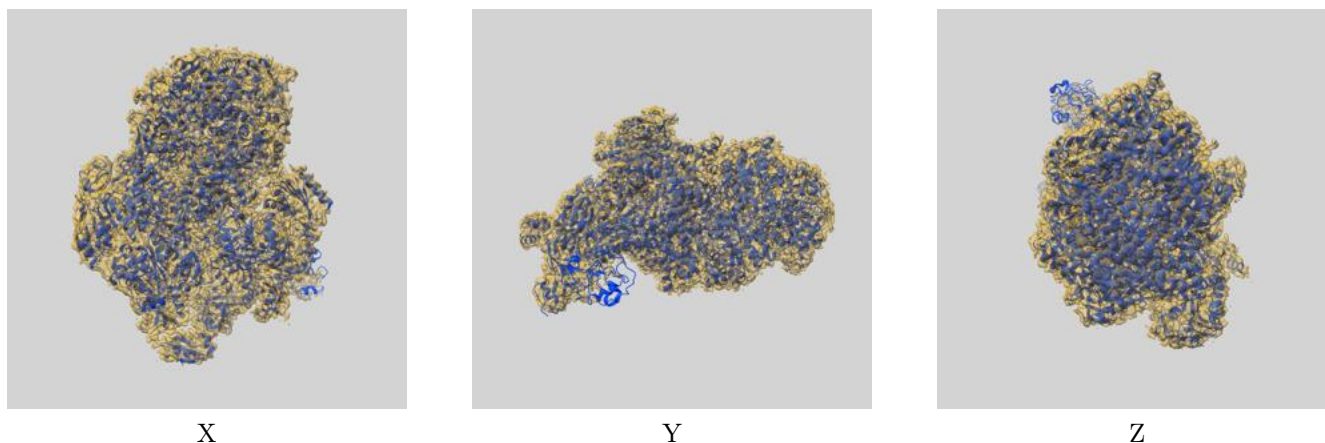
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.14	-	-
Author-provided FSC curve	2.17	2.66	2.26
Unmasked-calculated*	3.00	3.86	3.08

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.00 differs from the reported value 2.14 by more than 10 %

9 Map-model fit [i](#)

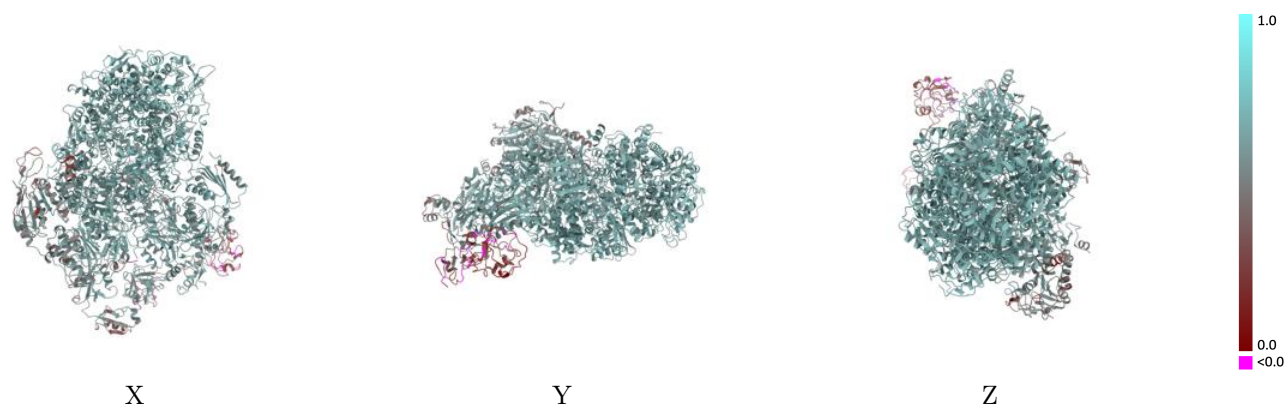
This section contains information regarding the fit between EMDB map EMD-51767 and PDB model 9H1L. Per-residue inclusion information can be found in section [3](#) on page [11](#).

9.1 Map-model overlay [i](#)



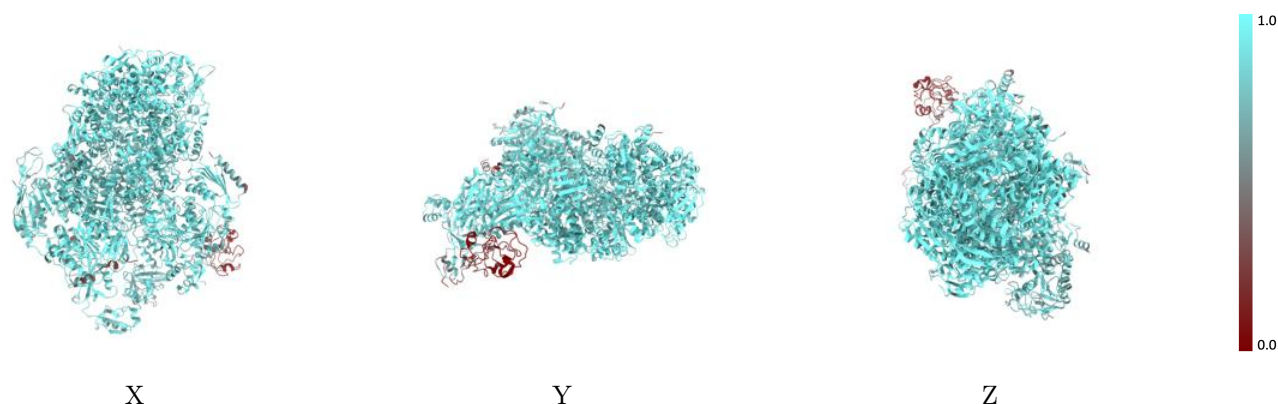
The images above show the 3D surface view of the map at the recommended contour level 0.0197 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



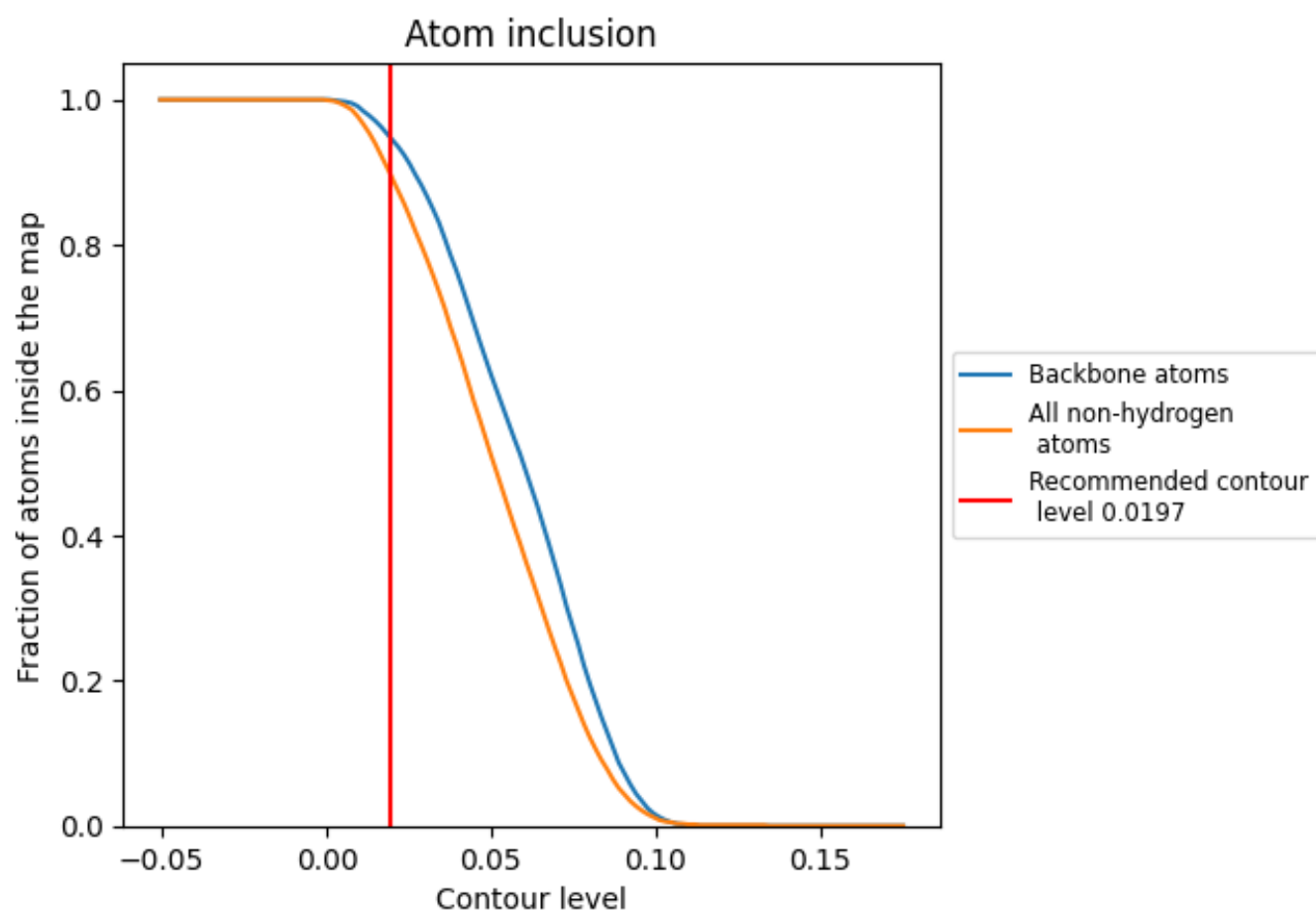
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0197).

9.4 Atom inclusion ⓘ



At the recommended contour level, 95% of all backbone atoms, 90% 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 (0.0197) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	<div></div> 0.8950	<div></div> 0.5990
A	<div></div> 0.9520	<div></div> 0.6390
B	<div></div> 0.9640	<div></div> 0.6610
C	<div></div> 0.9530	<div></div> 0.6540
D	<div></div> 0.9690	<div></div> 0.6510
E	<div></div> 0.9650	<div></div> 0.6530
F	<div></div> 0.9370	<div></div> 0.6490
G	<div></div> 0.8790	<div></div> 0.6090
H	<div></div> 0.9200	<div></div> 0.6020
I	<div></div> 0.9340	<div></div> 0.6260
J	<div></div> 0.6300	<div></div> 0.4090
K	<div></div> 0.8570	<div></div> 0.5370
L	<div></div> 0.7400	<div></div> 0.4770

