Full wwPDB EM Validation Report ⓘ

Oct 27, 2024 – 05:07 PM JST

PDB ID	:	7ELL
EMDB ID	:	EMD-31184
Title	:	In situ structure of capping enzyme lambda2, penetration protein mu1 of mammalian reovirus capsid asymmetric unit.
Authors	:	Zhou, Z.H.; Pan, M.
Deposited on	:	2021-04-12
Resolution	:	3.80 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

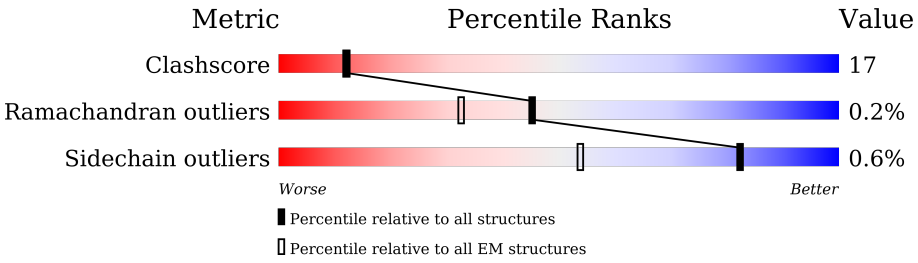
EMDB validation analysis	:	0.0.1.dev113
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.80 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 <=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	41	24% 71% 22% 7%
1	B	41	15% 71% 10% 20%
1	C	41	10% 71% 10% 20%
1	D	41	10% 73% 7% 20%
1	E	41	10% 73% 7% 20%
1	F	41	10% 78% • 20%
1	G	41	12% 73% 7% 20%
1	H	41	10% 78% • 20%

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Mol	Chain	Length	Quality of chain
1	I	41	15% 76% 22%
1	J	41	7% 71% 10% 20%
2	a	666	11% 91% 8%
2	b	666	12% 93% 5%
2	c	666	12% 94% 5%
2	d	666	13% 93% 5%
2	e	666	11% 94% 5%
2	f	666	13% 94% 5%
2	g	666	11% 94% 5%
2	h	666	15% 93% 6%
2	i	666	14% 94% 5%
2	j	666	12% 94% 5%
3	K	1289	12% 64% 35%

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
4	MYR	A	801	-	-	X	-

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 60584 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 Mu1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	41	Total	C	N	O	S	0	0
			282	172	47	62	1		
1	B	33	Total	C	N	O	S	0	0
			229	141	37	50	1		
1	C	33	Total	C	N	O	S	0	0
			229	141	37	50	1		
1	D	33	Total	C	N	O	S	0	0
			229	141	37	50	1		
1	E	33	Total	C	N	O	S	0	0
			229	141	37	50	1		
1	F	33	Total	C	N	O	S	0	0
			229	141	37	50	1		
1	G	33	Total	C	N	O	S	0	0
			229	141	37	50	1		
1	H	33	Total	C	N	O	S	0	0
			229	141	37	50	1		
1	I	32	Total	C	N	O	S	0	0
			222	137	36	48	1		
1	J	33	Total	C	N	O	S	0	0
			229	141	37	50	1		

- Molecule 2 is a protein called Mu1.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	a	610	Total	C	N	O	S	0	0
			4662	2960	775	908	19		
2	b	633	Total	C	N	O	S	0	0
			4820	3056	800	945	19		
2	c	633	Total	C	N	O	S	0	0
			4820	3056	800	945	19		
2	d	633	Total	C	N	O	S	0	0
			4820	3056	800	945	19		
2	e	633	Total	C	N	O	S	0	0
			4820	3056	800	945	19		

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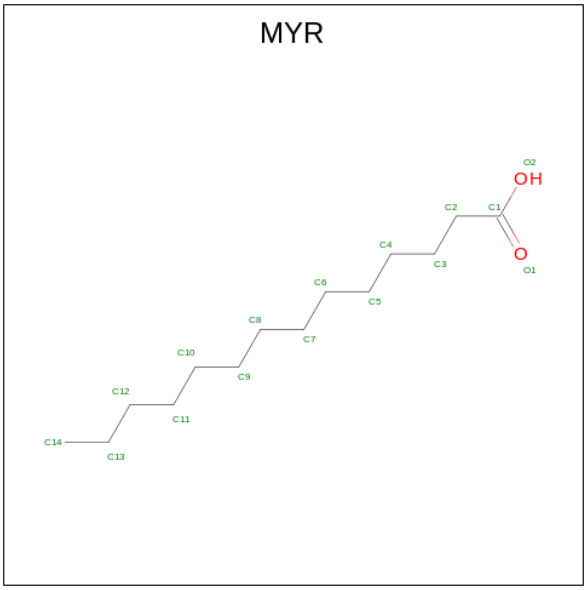
Mol	Chain	Residues	Atoms					AltConf	Trace
2	f	633	Total	C	N	O	S	0	0
			4820	3056	800	945	19		
2	g	633	Total	C	N	O	S	0	0
			4820	3056	800	945	19		
2	h	623	Total	C	N	O	S	1	0
			4761	3023	790	929	19		
2	i	633	Total	C	N	O	S	0	0
			4820	3056	800	945	19		
2	j	633	Total	C	N	O	S	0	0
			4820	3056	800	945	19		

- Molecule 3 is a protein called mRNA (guanine-N(7)-)-methyltransferase.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	K	1283	Total	C	N	O	S	0	0
			10115	6461	1696	1916	42		

- Molecule 4 is MYRISTIC ACID (three-letter code: MYR) (formula: $C_{14}H_{28}O_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				AltConf
4	A	1	Total	C	O		0
			15	14	1		
4	b	1	Total	C	O		0
			15	14	1		
4	c	1	Total	C	O		0
			15	14	1		

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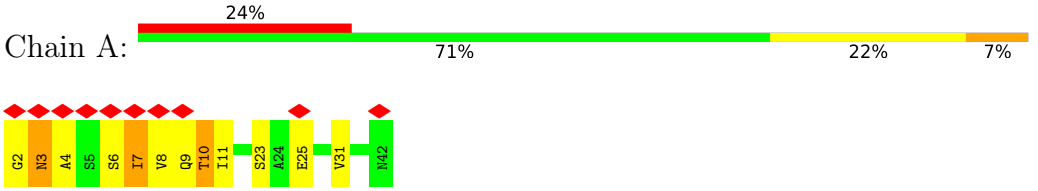
Mol	Chain	Residues	Atoms			AltConf
4	d	1	Total	C	O	0
			15	14	1	
4	e	1	Total	C	O	0
			15	14	1	
4	f	1	Total	C	O	0
			15	14	1	
4	g	1	Total	C	O	0
			15	14	1	
4	h	1	Total	C	O	0
			15	14	1	
4	i	1	Total	C	O	0
			15	14	1	
4	j	1	Total	C	O	0
			15	14	1	

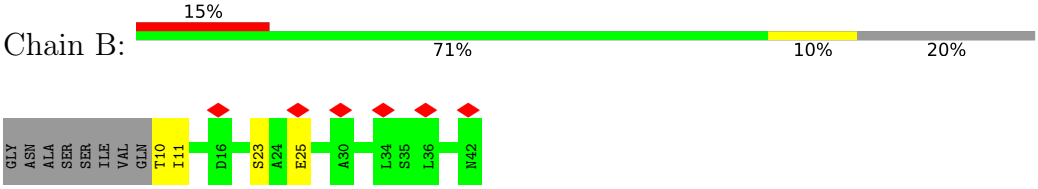
3 Residue-property plots (i)

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

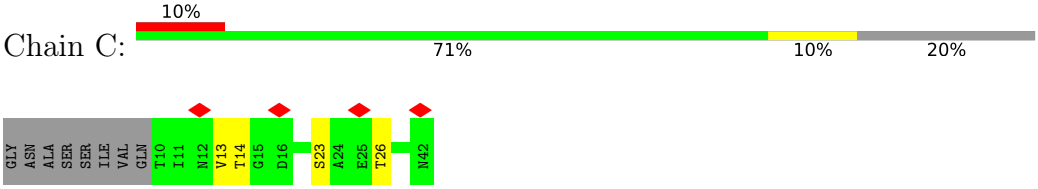
• Molecule 1: Mu1



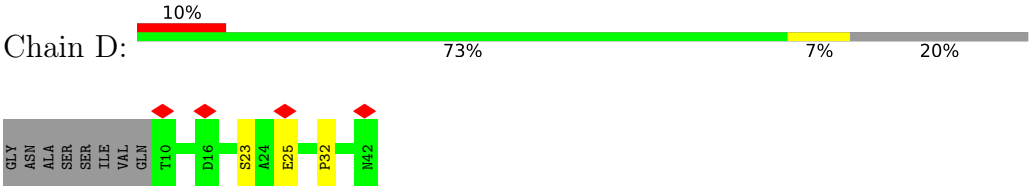
• Molecule 1: Mu1



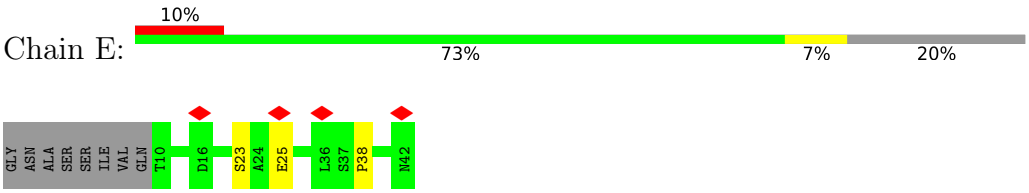
• Molecule 1: Mu1



• Molecule 1: Mu1

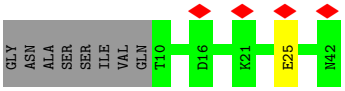


• Molecule 1: Mu1



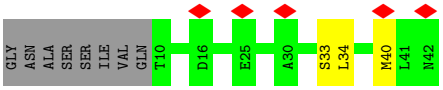
• Molecule 1: Mu1

Chain F:



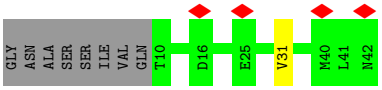
• Molecule 1: Mu1

Chain G:



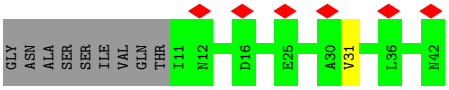
• Molecule 1: Mu1

Chain H:



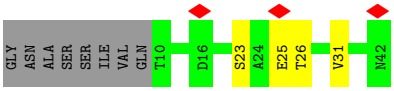
• Molecule 1: Mu1

Chain I:



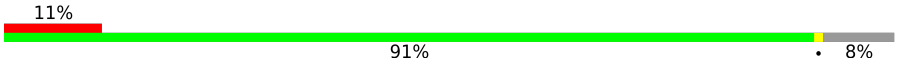
• Molecule 1: Mu1

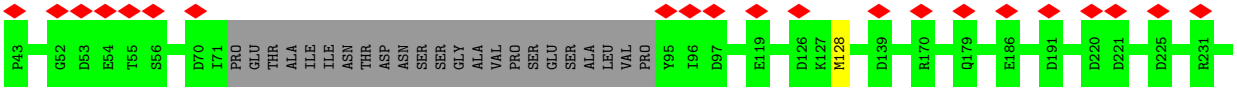
Chain J:

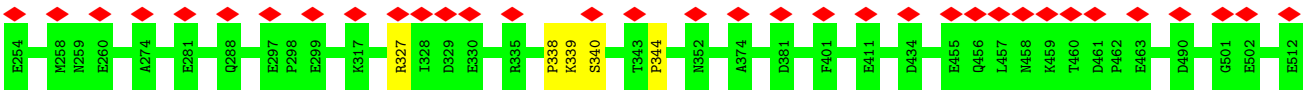


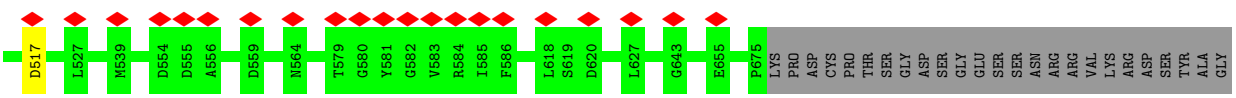
• Molecule 2: Mu1

Chain a:



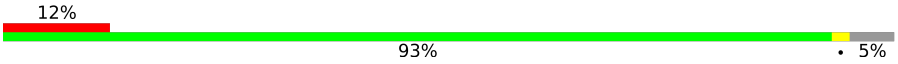


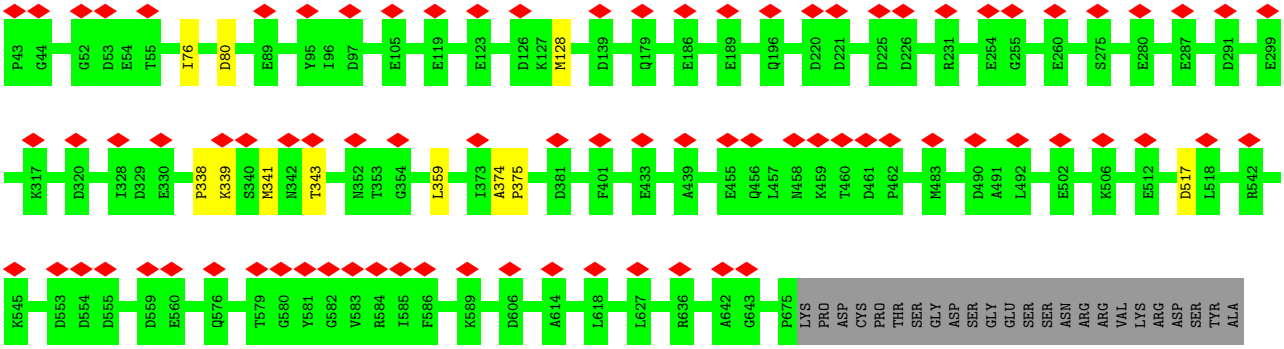




• Molecule 2: Mu1

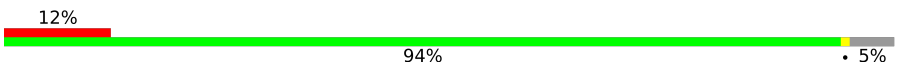
Chain b:

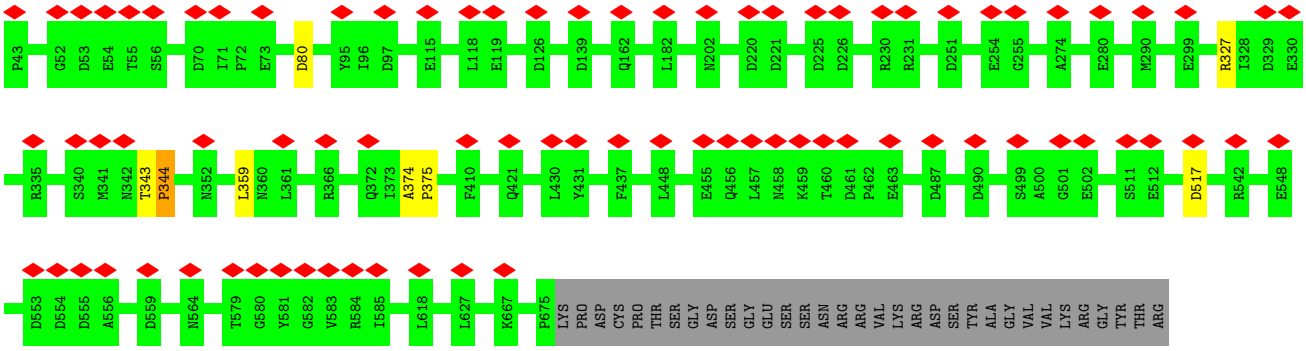




• Molecule 2: Mu1

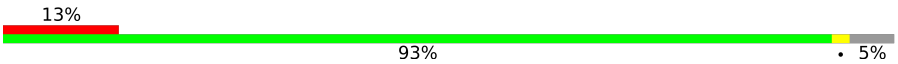
Chain c:

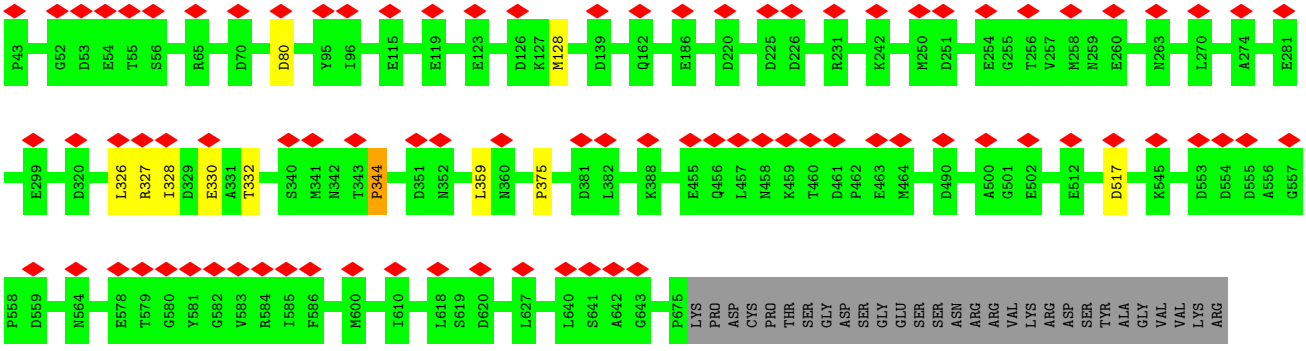




• Molecule 2: Mu1

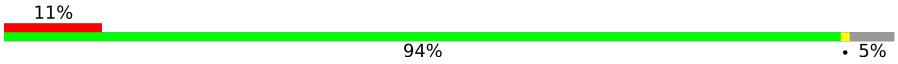
Chain d:

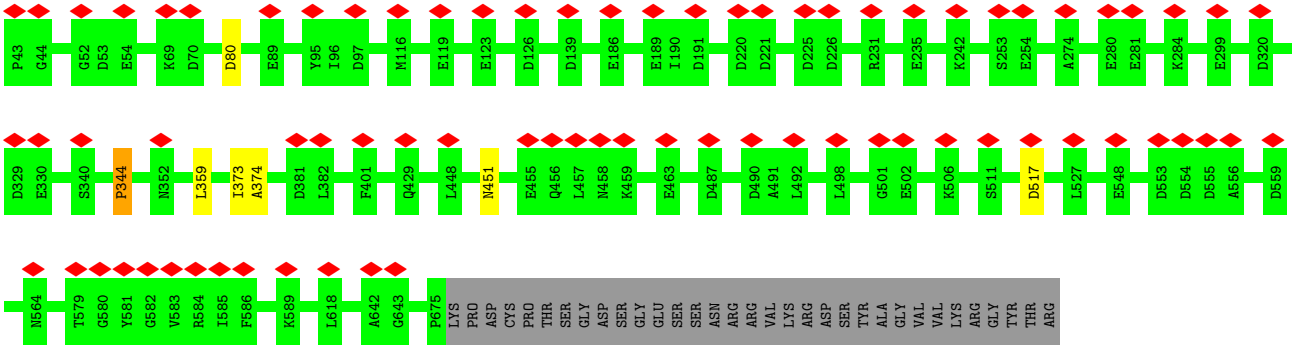




• Molecule 2: Mu1

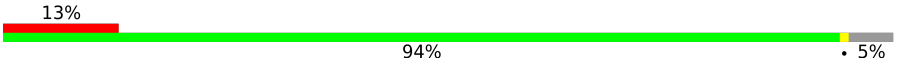
Chain e:

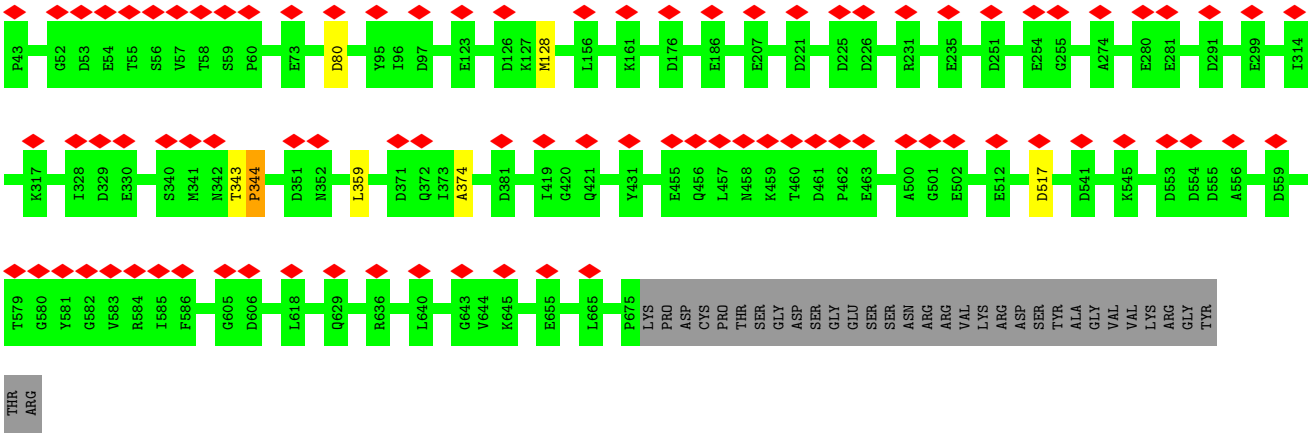




• Molecule 2: Mu1

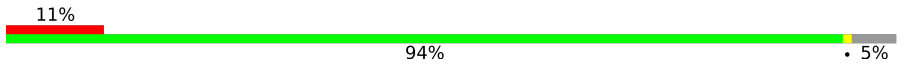
Chain f:

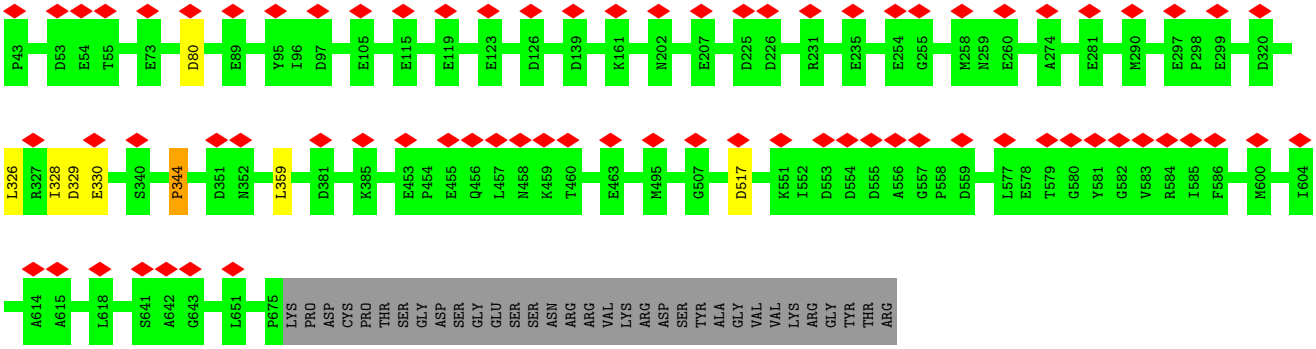




• Molecule 2: Mu1

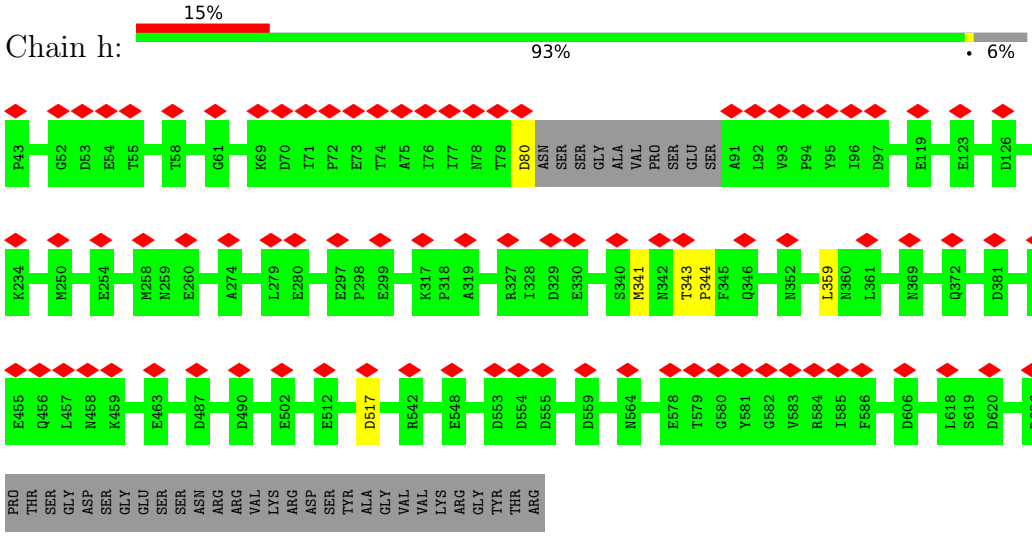
Chain g:





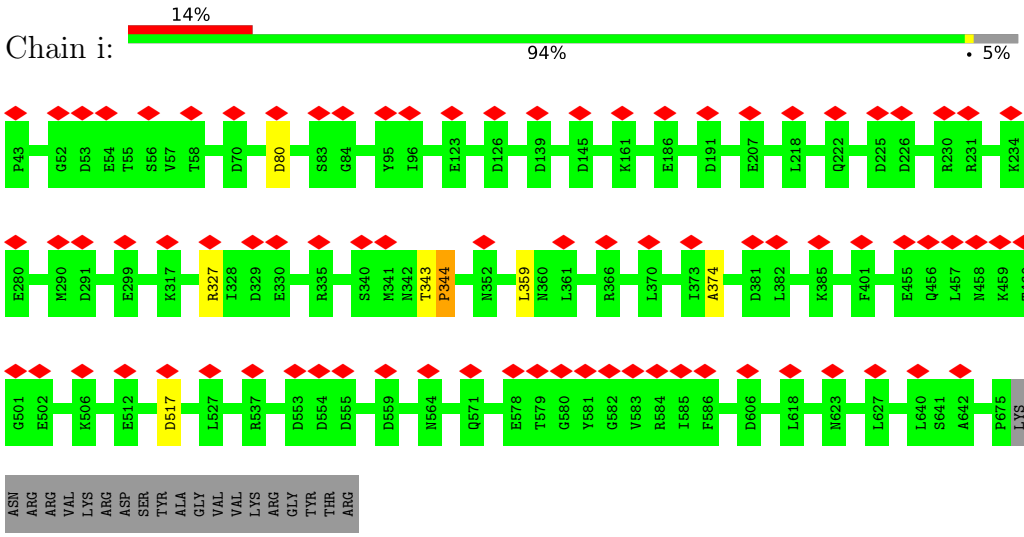
• Molecule 2: Mu1

Chain h:



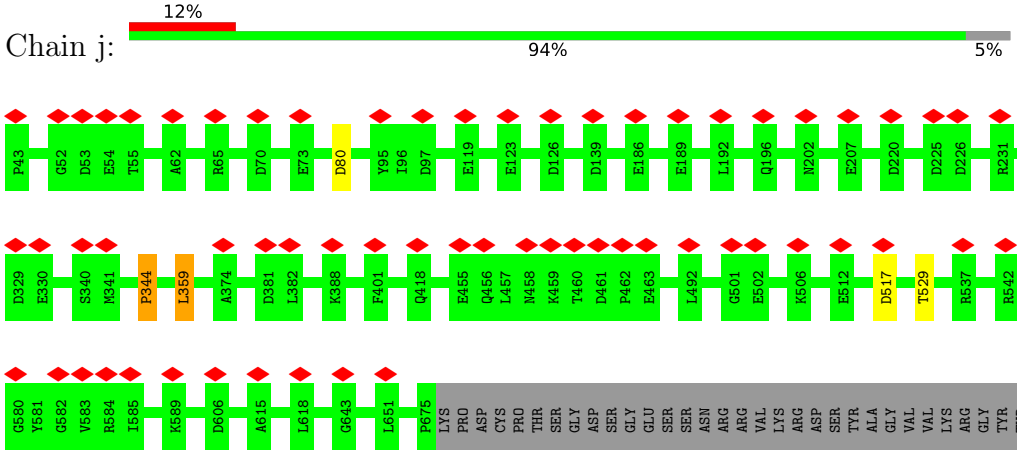
• Molecule 2: Mu1

Chain i:



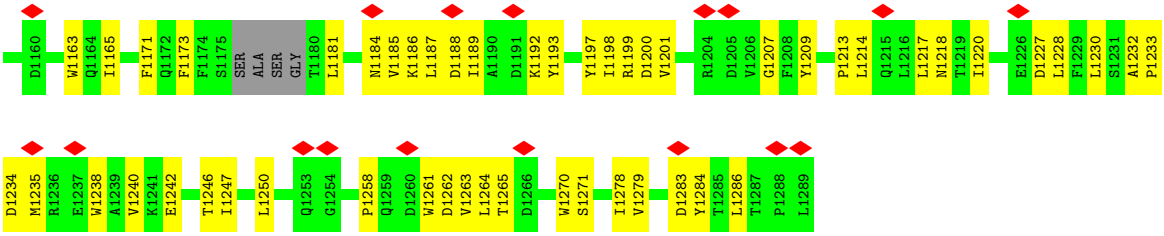
• Molecule 2: Mu1

Chain j:



• Molecule 3: mRNA (guanine-N(7)-)-methyltransferase

Chain K:


D1160
W1163
Q1164
I1165
F1171
Q1172
F1173
F1174
S1175
SER
ALA
SER
GLY
T1180
L1181
N1184
V1185
K1186
L1187
D1188
I1189
A1190
D1191
K1192
Y1193
Y1197
I1198
R1199
D1200
V1201
R1204
D1205
V1206
G1207
F1208
Y1209
P1213
L1214
Q1215
L1216
L1217
N1218
T1219
I1220
E1226
D1227
L1228
F1229
L1230
S1231
A1232
P1233
D1234
M1235
R1236
E1237
W1238
A1239
V1240
K1241
E1242
T1246
I1247
L1250
Q1253
G1254
P1258
Q1259
D1260
W1261
D1262
V1263
L1264
T1265
D1266
W1270
S1271
I1278
V1279
D1283
Y1284
T1285
L1286
T1287
P1288
L1289

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	61861	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	56	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	0.037	Depositor
Minimum map value	-0.019	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.013	Depositor
Map size (Å)	642.00006, 642.00006, 642.00006	wwPDB
Map dimensions	600, 600, 600	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.07, 1.07, 1.07	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: MYR

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	0.30	0/285	0.57	0/389
1	B	0.30	0/232	0.63	0/317
1	C	0.30	0/232	0.56	0/317
1	D	0.30	0/232	0.59	0/317
1	E	0.33	0/232	0.58	0/317
1	F	0.33	0/232	0.57	0/317
1	G	0.34	0/232	0.70	0/317
1	H	0.32	0/232	0.61	0/317
1	I	0.30	0/225	0.54	0/307
1	J	0.32	0/232	0.53	0/317
2	a	0.33	0/4759	0.50	1/6498 (0.0%)
2	b	0.33	0/4921	0.52	2/6725 (0.0%)
2	c	0.33	0/4921	0.53	4/6725 (0.1%)
2	d	0.35	0/4921	0.53	3/6725 (0.0%)
2	e	0.35	0/4921	0.53	3/6725 (0.0%)
2	f	0.34	0/4921	0.52	4/6725 (0.1%)
2	g	0.34	0/4921	0.52	3/6725 (0.0%)
2	h	0.34	0/4860	0.53	2/6640 (0.0%)
2	i	0.34	0/4921	0.54	4/6725 (0.1%)
2	j	0.34	0/4921	0.54	4/6725 (0.1%)
3	K	0.38	0/10373	0.53	1/14156 (0.0%)
All	All	0.35	0/61726	0.53	31/84326 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
2	b	0	2
2	c	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
2	e	0	2
2	f	0	1
2	i	0	1
All	All	0	7

There are no bond length outliers.

All (31) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	c	344	PRO	CA-N-CD	-8.27	99.93	111.50
2	i	344	PRO	CA-N-CD	-8.21	100.00	111.50
2	g	344	PRO	CA-N-CD	-8.20	100.02	111.50
2	j	344	PRO	CA-N-CD	-8.09	100.17	111.50
2	d	344	PRO	CA-N-CD	-8.04	100.24	111.50
2	e	344	PRO	CA-N-CD	-8.03	100.26	111.50
2	f	344	PRO	CA-N-CD	-7.97	100.34	111.50
2	f	343	THR	C-N-CD	-7.74	103.57	120.60
2	i	343	THR	C-N-CD	-7.51	104.07	120.60
2	j	359	LEU	CA-CB-CG	6.41	130.03	115.30
2	c	343	THR	C-N-CD	-5.44	108.62	120.60
3	K	583	ASP	CB-CG-OD2	5.26	123.03	118.30
2	b	80	ASP	CB-CG-OD2	5.25	123.03	118.30
2	d	517	ASP	CB-CG-OD2	5.23	123.01	118.30
2	j	80	ASP	CB-CG-OD2	5.22	123.00	118.30
2	f	80	ASP	CB-CG-OD2	5.22	123.00	118.30
2	a	517	ASP	CB-CG-OD2	5.22	123.00	118.30
2	h	517	ASP	CB-CG-OD2	5.21	122.99	118.30
2	d	80	ASP	CB-CG-OD2	5.21	122.99	118.30
2	j	517	ASP	CB-CG-OD2	5.20	122.98	118.30
2	b	517	ASP	CB-CG-OD2	5.20	122.98	118.30
2	g	517	ASP	CB-CG-OD2	5.19	122.97	118.30
2	c	517	ASP	CB-CG-OD2	5.19	122.97	118.30
2	g	80	ASP	CB-CG-OD2	5.19	122.97	118.30
2	i	517	ASP	CB-CG-OD2	5.18	122.96	118.30
2	e	517	ASP	CB-CG-OD2	5.18	122.96	118.30
2	f	517	ASP	CB-CG-OD2	5.17	122.96	118.30
2	i	80	ASP	CB-CG-OD2	5.17	122.95	118.30
2	h	80	ASP	CB-CG-OD2	5.16	122.94	118.30
2	c	80	ASP	CB-CG-OD2	5.15	122.93	118.30
2	e	80	ASP	CB-CG-OD2	5.14	122.92	118.30

There are no chirality outliers.

All (7) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	b	374	ALA	Peptide
2	b	76	ILE	Peptide
2	c	374	ALA	Peptide
2	e	373	ILE	Peptide
2	e	374	ALA	Peptide
2	f	374	ALA	Peptide
2	i	374	ALA	Peptide

5.2 Too-close contacts (i)

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	282	0	279	23	0
1	B	229	0	227	2	0
1	C	229	0	227	2	0
1	D	229	0	227	2	0
1	E	229	0	227	2	0
1	F	229	0	227	1	0
1	G	229	0	227	2	0
1	H	229	0	227	1	0
1	I	222	0	220	1	0
1	J	229	0	227	3	0
2	a	4662	0	4685	0	0
2	b	4820	0	4841	0	0
2	c	4820	0	4841	0	0
2	d	4820	0	4841	0	0
2	e	4820	0	4841	0	0
2	f	4820	0	4841	0	0
2	g	4820	0	4841	0	0
2	h	4761	0	4788	0	0
2	i	4820	0	4841	0	0
2	j	4820	0	4841	0	0
3	K	10115	0	9895	347	0
4	A	15	0	27	10	0
4	b	15	0	27	0	0
4	c	15	0	27	0	0
4	d	15	0	27	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	e	15	0	27	0	0
4	f	15	0	27	0	0
4	g	15	0	27	0	0
4	h	15	0	27	0	0
4	i	15	0	27	0	0
4	j	15	0	27	0	0
All	All	60584	0	60681	368	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 17.

All (368) 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)
4:A:801:MYR:C2	3:K:588:LEU:HD21	1.34	1.57
1:A:4:ALA:CB	3:K:587:ASP:CA	1.82	1.56
1:A:4:ALA:CB	3:K:587:ASP:HA	1.32	1.56
1:A:4:ALA:HB3	3:K:586:ASP:C	1.17	1.51
1:A:4:ALA:HB2	3:K:587:ASP:CA	0.96	1.43
1:A:4:ALA:CB	3:K:587:ASP:N	1.80	1.42
4:A:801:MYR:H21	3:K:588:LEU:CD2	1.54	1.36
1:A:4:ALA:CB	3:K:586:ASP:C	1.98	1.31
1:A:4:ALA:HB3	3:K:586:ASP:O	1.28	1.30
4:A:801:MYR:H22	3:K:588:LEU:HD21	1.31	1.06
4:A:801:MYR:C2	3:K:588:LEU:CD2	2.23	1.02
4:A:801:MYR:H21	3:K:588:LEU:HD21	0.97	0.96
1:A:4:ALA:HB2	3:K:587:ASP:C	1.92	0.90
1:A:2:GLY:O	3:K:587:ASP:HB2	1.72	0.89
1:A:4:ALA:CA	3:K:587:ASP:HA	2.06	0.85
4:A:801:MYR:H21	3:K:588:LEU:HD22	1.57	0.84
3:K:420:LEU:HD21	3:K:698:ASP:OD2	1.83	0.79
3:K:241:MET:HB3	3:K:249:ILE:HB	1.64	0.77
1:A:3:ASN:OD1	1:A:3:ASN:O	2.01	0.77
1:A:4:ALA:HB3	3:K:587:ASP:N	1.61	0.77
1:A:4:ALA:CB	3:K:586:ASP:O	2.22	0.76
3:K:832:PRO:HA	3:K:854:THR:HG22	1.70	0.74
3:K:1198:ILE:HG13	3:K:1214:LEU:HD21	1.71	0.73
3:K:974:TRP:HB2	3:K:977:CYS:HB3	1.70	0.73
1:A:4:ALA:HB1	3:K:587:ASP:N	1.97	0.72
3:K:1189:ILE:HD13	3:K:1230:LEU:HD12	1.72	0.72
3:K:1188:ASP:OD1	3:K:1189:ILE:N	2.23	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:K:1234:ASP:OD1	3:K:1235:MET:N	2.20	0.71
3:K:940:LEU:HG	3:K:942:ILE:HD11	1.73	0.70
3:K:706:ILE:HD12	3:K:706:ILE:O	1.92	0.70
3:K:811:TYR:OH	3:K:1016:MET:O	2.09	0.69
3:K:1147:VAL:HG21	3:K:1153:LEU:HD11	1.75	0.68
3:K:259:SER:HB3	3:K:282:CYS:HA	1.76	0.68
3:K:263:GLN:O	3:K:267:ASN:ND2	2.26	0.68
3:K:204:TYR:HD2	3:K:233:TYR:HE1	1.41	0.67
3:K:1262:ASP:O	3:K:1278:ILE:N	2.28	0.67
3:K:1189:ILE:HD11	3:K:1228:LEU:HD13	1.76	0.66
3:K:510:GLN:O	3:K:512:VAL:HG23	1.96	0.66
3:K:840:ILE:HD12	3:K:844:SER:HB2	1.77	0.65
3:K:49:GLN:HE21	3:K:321:GLN:HG2	1.61	0.65
3:K:923:LEU:HD21	3:K:1020:ARG:HD3	1.78	0.65
3:K:934:ARG:HE	3:K:1209:TYR:HA	1.62	0.65
3:K:140:ASP:OD1	3:K:141:THR:N	2.30	0.64
3:K:708:THR:HA	3:K:754:ILE:O	1.98	0.64
3:K:188:PHE:CD1	3:K:258:GLU:HG2	2.33	0.64
3:K:950:ARG:HG2	3:K:957:ASP:OD1	1.98	0.64
3:K:181:ASP:OD1	3:K:182:ASP:N	2.30	0.63
3:K:350:TYR:CE2	3:K:370:VAL:HB	2.33	0.63
3:K:181:ASP:N	3:K:184:ASP:OD1	2.31	0.63
3:K:989:ARG:O	3:K:992:ARG:HG2	1.99	0.63
3:K:836:ILE:H	3:K:836:ILE:HD12	1.64	0.62
3:K:1234:ASP:CG	3:K:1235:MET:H	2.02	0.62
4:A:801:MYR:C3	3:K:588:LEU:HD21	2.26	0.62
3:K:4:VAL:O	3:K:4:VAL:HG23	2.00	0.62
3:K:420:LEU:CD2	3:K:698:ASP:OD2	2.46	0.62
3:K:1188:ASP:OD1	3:K:1230:LEU:HA	1.99	0.62
3:K:12:SER:O	3:K:313:GLN:NE2	2.33	0.62
3:K:1129:ALA:HB3	3:K:1144:ASP:HB2	1.82	0.61
3:K:969:ILE:O	3:K:972:THR:OG1	2.17	0.61
1:C:13:VAL:HG13	1:C:14:THR:HG23	1.83	0.61
3:K:452:GLU:OE1	3:K:452:GLU:N	2.33	0.61
3:K:827:ASP:OD1	3:K:887:THR:OG1	2.18	0.61
3:K:987:ASP:OD1	3:K:989:ARG:NE	2.34	0.61
3:K:696:TYR:HE2	3:K:698:ASP:HB2	1.64	0.61
3:K:221:LEU:HB2	3:K:234:LEU:HB3	1.84	0.60
3:K:635:ILE:HG13	3:K:664:LEU:HD12	1.82	0.60
1:F:25:GLU:OE1	1:F:25:GLU:N	2.34	0.60
3:K:257:LEU:HD21	3:K:327:LEU:HD11	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:K:576:SER:HB3	3:K:614:VAL:HA	1.83	0.60
3:K:54:ILE:HG21	3:K:79:PHE:CD1	2.37	0.60
3:K:1048:ASN:OD1	3:K:1049:ALA:N	2.34	0.60
3:K:848:CYS:HB3	3:K:867:PHE:HA	1.84	0.59
3:K:1192:LYS:O	3:K:1218:ASN:ND2	2.35	0.59
1:J:23:SER:HB3	1:J:26:THR:HG22	1.84	0.59
3:K:445:HIS:HB2	3:K:667:THR:HB	1.84	0.59
3:K:932:VAL:HG11	3:K:1124:VAL:HG13	1.85	0.59
1:J:25:GLU:OE1	1:J:25:GLU:N	2.34	0.58
3:K:1217:LEU:HD12	3:K:1220:ILE:HD11	1.85	0.58
3:K:280:ASP:OD1	3:K:281:GLN:N	2.36	0.58
3:K:1103:ALA:HB3	3:K:1112:VAL:CG1	2.34	0.58
3:K:188:PHE:HE2	3:K:327:LEU:HD22	1.67	0.58
3:K:877:TRP:H	3:K:878:ILE:HD12	1.69	0.57
3:K:1197:TYR:CE1	3:K:1213:PRO:HB3	2.39	0.57
3:K:514:TYR:HE2	3:K:517:ALA:HA	1.69	0.57
3:K:1240:VAL:O	3:K:1246:THR:HA	2.03	0.57
3:K:764:ARG:O	3:K:767:SER:OG	2.20	0.57
3:K:686:THR:HG22	3:K:689:ARG:HH22	1.69	0.57
3:K:421:PRO:HB3	3:K:699:ASP:HB3	1.87	0.57
3:K:101:TYR:CE2	3:K:137:ILE:HG23	2.40	0.56
3:K:506:LEU:HD11	3:K:573:PHE:CD2	2.40	0.56
3:K:182:ASP:HA	3:K:324:ASN:HB2	1.88	0.56
1:A:4:ALA:HB2	3:K:587:ASP:HA	0.56	0.56
3:K:932:VAL:O	3:K:1015:TYR:OH	2.23	0.56
1:A:2:GLY:O	3:K:587:ASP:CB	2.52	0.56
1:D:32:PRO:HG2	1:E:38:PRO:HG2	1.86	0.56
3:K:810:MET:HG2	3:K:984:LEU:HD13	1.88	0.55
3:K:907:PHE:O	3:K:911:ILE:HG12	2.06	0.55
3:K:374:GLN:OE1	3:K:376:ARG:NH2	2.34	0.55
3:K:1233:PRO:HD2	3:K:1238:TRP:CD1	2.42	0.55
4:A:801:MYR:H22	3:K:588:LEU:CD2	2.15	0.55
3:K:95:TYR:O	3:K:99:ARG:HG2	2.06	0.55
3:K:154:SER:HB3	3:K:158:GLN:HG2	1.89	0.55
3:K:188:PHE:CE2	3:K:327:LEU:HD22	2.40	0.55
3:K:779:SER:O	3:K:783:GLN:NE2	2.40	0.54
3:K:41:GLU:N	3:K:41:GLU:OE2	2.40	0.54
3:K:209:ARG:HH21	3:K:212:TRP:HE1	1.54	0.54
3:K:435:LEU:HD11	3:K:1003:SER:HB2	1.90	0.54
1:D:23:SER:OG	1:D:25:GLU:OE1	2.25	0.54
3:K:412:LEU:HD11	3:K:416:ARG:HH21	1.72	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:K:948:ARG:HB2	3:K:950:ARG:HH12	1.73	0.54
3:K:265:SER:O	3:K:269:ARG:NE	2.41	0.53
3:K:410:GLY:O	3:K:414:VAL:HG23	2.08	0.53
3:K:830:THR:HG23	3:K:836:ILE:HD13	1.90	0.53
3:K:772:LEU:HD12	3:K:773:PRO:HD2	1.91	0.53
3:K:550:PHE:HE1	3:K:571:TYR:HH	1.55	0.53
3:K:299:TYR:O	3:K:303:VAL:HG23	2.09	0.53
3:K:795:PHE:HA	3:K:998:SER:HB2	1.91	0.53
3:K:73:TYR:HB3	3:K:75:PHE:CE1	2.44	0.53
3:K:621:ARG:HA	3:K:624:TRP:CE3	2.44	0.53
3:K:1034:PHE:HZ	3:K:1042:LEU:HD11	1.74	0.53
1:A:11:ILE:O	1:A:11:ILE:HG13	2.08	0.53
3:K:80:ASP:OD1	3:K:81:ASP:N	2.42	0.53
3:K:350:TYR:HB2	3:K:368:GLY:O	2.08	0.53
3:K:205:GLU:O	3:K:209:ARG:HG2	2.08	0.52
3:K:438:TYR:OH	3:K:1201:VAL:O	2.27	0.52
3:K:498:ASP:O	3:K:502:GLY:N	2.41	0.52
3:K:947:LYS:O	3:K:960:TYR:N	2.42	0.52
3:K:441:TYR:CE2	3:K:664:LEU:HD22	2.44	0.52
3:K:946:ASN:O	3:K:948:ARG:N	2.42	0.52
3:K:45:PRO:HB3	3:K:79:PHE:CE1	2.45	0.52
3:K:835:LYS:O	3:K:839:LEU:HG	2.10	0.52
3:K:409:GLU:HG3	3:K:725:ILE:HG21	1.90	0.52
3:K:1232:ALA:HB2	3:K:1250:LEU:HD12	1.91	0.52
3:K:333:GLN:NE2	3:K:750:ARG:HB2	2.25	0.52
3:K:628:GLU:HA	3:K:632:LEU:HD12	1.91	0.52
3:K:1171:PHE:HA	3:K:1184:ASN:O	2.10	0.52
3:K:104:SER:OG	3:K:105:ASN:N	2.43	0.52
3:K:1004:ALA:O	3:K:1008:ILE:HG12	2.10	0.52
3:K:1134:LEU:HD12	3:K:1187:LEU:HD11	1.92	0.52
3:K:580:GLN:NE2	3:K:615:LYS:O	2.43	0.52
3:K:49:GLN:OE1	3:K:49:GLN:HA	2.09	0.52
3:K:926:VAL:O	3:K:1017:PRO:HD2	2.10	0.52
3:K:50:ARG:HB2	3:K:183:ASP:OD2	2.09	0.51
3:K:734:VAL:HG21	3:K:756:SER:HB3	1.93	0.51
3:K:795:PHE:CZ	3:K:998:SER:HA	2.46	0.51
3:K:55:VAL:HG12	3:K:177:ASN:HB2	1.93	0.51
3:K:119:LEU:HD12	3:K:132:LEU:HB2	1.92	0.51
3:K:696:TYR:CE2	3:K:698:ASP:HB2	2.46	0.51
3:K:44:LYS:HD3	3:K:45:PRO:O	2.11	0.51
3:K:317:PRO:HG2	3:K:786:THR:OG1	2.10	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:23:SER:OG	1:A:25:GLU:OE1	2.29	0.51
3:K:5:TRP:O	3:K:336:SER:HB2	2.10	0.51
3:K:628:GLU:OE1	3:K:629:GLN:NE2	2.44	0.51
3:K:1081:ASP:O	3:K:1085:GLY:N	2.41	0.51
1:A:31:VAL:HG23	1:A:31:VAL:O	2.10	0.50
3:K:221:LEU:HD12	3:K:283:TYR:HB3	1.94	0.50
3:K:1227:ASP:OD1	3:K:1228:LEU:N	2.44	0.50
3:K:1184:ASN:OD1	3:K:1185:VAL:N	2.45	0.50
3:K:498:ASP:OD2	3:K:500:ASN:ND2	2.45	0.50
3:K:679:TYR:O	3:K:683:THR:HG23	2.11	0.50
3:K:907:PHE:CD2	3:K:966:LEU:HD22	2.46	0.50
3:K:101:TYR:CE2	3:K:136:LEU:HB3	2.47	0.50
3:K:492:HIS:HD2	3:K:641:ILE:HD11	1.76	0.50
3:K:512:VAL:HA	3:K:573:PHE:O	2.11	0.50
3:K:710:SER:HA	3:K:752:LEU:O	2.12	0.50
3:K:8:ARG:NH2	3:K:783:GLN:O	2.45	0.50
3:K:188:PHE:HD1	3:K:258:GLU:HG2	1.75	0.50
3:K:196:ALA:HA	3:K:236:GLY:HA2	1.92	0.50
3:K:849:VAL:HG22	3:K:868:LEU:HD12	1.94	0.49
3:K:197:LYS:O	3:K:234:LEU:HD12	2.12	0.49
3:K:1034:PHE:HA	3:K:1040:CYS:SG	2.53	0.49
3:K:1264:LEU:HD12	3:K:1265:THR:H	1.76	0.49
3:K:183:ASP:HA	3:K:323:THR:HB	1.94	0.49
3:K:5:TRP:CH2	3:K:340:ASN:HB2	2.48	0.49
3:K:982:VAL:O	3:K:1013:TYR:OH	2.30	0.49
3:K:1029:GLU:HG3	3:K:1031:ARG:HH21	1.78	0.49
3:K:101:TYR:HE2	3:K:137:ILE:HG23	1.77	0.49
3:K:613:VAL:HG22	3:K:654:VAL:HG22	1.95	0.48
3:K:709:ILE:HG12	3:K:730:LEU:HD13	1.93	0.48
3:K:141:THR:HG22	3:K:143:ILE:H	1.79	0.48
3:K:377:LEU:O	3:K:379:MET:N	2.45	0.48
3:K:828:LEU:HD13	3:K:886:VAL:HG13	1.96	0.48
3:K:1063:PHE:HB3	3:K:1071:ALA:HB1	1.94	0.48
3:K:940:LEU:HD13	3:K:951:PHE:CE1	2.48	0.48
1:A:2:GLY:HA2	3:K:588:LEU:CD2	2.43	0.48
1:G:40:MET:HG3	1:G:40:MET:O	2.14	0.48
1:J:31:VAL:HG13	1:J:31:VAL:O	2.13	0.48
3:K:12:SER:OG	3:K:382:SER:N	2.46	0.48
3:K:514:TYR:CE2	3:K:517:ALA:HA	2.48	0.48
3:K:172:TYR:HD2	3:K:190:LYS:HB2	1.77	0.48
3:K:192:LEU:HD23	3:K:193:SER:N	2.28	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:K:628:GLU:HB2	3:K:666:TRP:HE1	1.78	0.48
3:K:45:PRO:HB3	3:K:79:PHE:HE1	1.78	0.48
3:K:1193:TYR:HE1	3:K:1286:LEU:HB2	1.77	0.48
3:K:761:ALA:O	3:K:838:GLU:HG3	2.13	0.48
3:K:307:LEU:HD21	3:K:342:THR:HG21	1.97	0.47
3:K:1067:ASP:OD1	3:K:1070:ALA:N	2.47	0.47
3:K:1262:ASP:OD1	3:K:1263:VAL:N	2.47	0.47
1:I:31:VAL:HG13	1:I:31:VAL:O	2.14	0.47
3:K:46:LEU:HD23	3:K:57:VAL:HA	1.95	0.47
3:K:429:ILE:HG22	3:K:795:PHE:CZ	2.49	0.47
3:K:1055:CYS:HB3	3:K:1062:ALA:HB3	1.97	0.47
3:K:1103:ALA:HB3	3:K:1112:VAL:HG12	1.96	0.47
1:B:23:SER:OG	1:B:25:GLU:OE1	2.32	0.47
3:K:1242:GLU:HA	3:K:1283:ASP:O	2.14	0.47
3:K:28:HIS:O	3:K:32:SER:OG	2.23	0.47
3:K:516:GLY:N	3:K:550:PHE:O	2.43	0.47
3:K:674:LEU:HD23	3:K:674:LEU:HA	1.67	0.47
3:K:1156:PHE:CD1	3:K:1199:ARG:HD3	2.49	0.47
1:A:2:GLY:HA2	3:K:588:LEU:HD23	1.97	0.47
3:K:48:ASN:ND2	3:K:184:ASP:OD2	2.48	0.47
3:K:61:ARG:NH1	3:K:61:ARG:O	2.47	0.47
3:K:583:ASP:OD1	3:K:584:GLY:N	2.48	0.47
3:K:729:GLY:O	3:K:733:ASN:ND2	2.45	0.47
3:K:795:PHE:CE2	3:K:998:SER:HA	2.48	0.47
3:K:278:ARG:NH2	3:K:281:GLN:OE1	2.38	0.47
3:K:529:VAL:C	3:K:532:PRO:HD2	2.35	0.47
3:K:905:ALA:O	3:K:908:GLN:HG3	2.15	0.47
3:K:1131:PRO:HD2	3:K:1143:VAL:HG12	1.97	0.47
3:K:923:LEU:CD2	3:K:1020:ARG:HD3	2.43	0.47
3:K:420:LEU:CD2	3:K:698:ASP:O	2.63	0.46
1:G:33:SER:O	1:G:34:LEU:HD23	2.14	0.46
3:K:603:MET:HE3	3:K:658:VAL:HG13	1.96	0.46
3:K:329:SER:O	3:K:333:GLN:HG3	2.15	0.46
3:K:480:ASP:HB3	3:K:483:LEU:HB3	1.96	0.46
3:K:613:VAL:HG22	3:K:654:VAL:HG13	1.97	0.46
4:A:801:MYR:H122	4:A:801:MYR:H91	1.38	0.46
3:K:963:MET:HG3	3:K:981:TRP:CH2	2.51	0.46
3:K:512:VAL:HG22	3:K:573:PHE:HB3	1.95	0.46
3:K:1075:GLN:HB2	3:K:1092:VAL:HB	1.98	0.46
1:H:31:VAL:HG23	1:H:31:VAL:O	2.16	0.46
3:K:221:LEU:HD11	3:K:256:LEU:HD21	1.96	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:K:909:GLN:O	3:K:913:VAL:HG23	2.16	0.46
3:K:253:ASP:OD1	3:K:298:THR:HG22	2.16	0.46
3:K:978:SER:OG	3:K:1022:ASP:HB2	2.16	0.46
3:K:489:VAL:HG11	3:K:575:TYR:OH	2.16	0.45
3:K:535:GLN:HB3	3:K:537:LYS:NZ	2.31	0.45
3:K:764:ARG:HD3	3:K:840:ILE:O	2.16	0.45
3:K:5:TRP:CZ2	3:K:340:ASN:HB2	2.51	0.45
3:K:776:ASP:OD2	3:K:778:ARG:HG3	2.15	0.45
1:C:23:SER:HB3	1:C:26:THR:HG23	1.98	0.45
3:K:30:LEU:HD23	3:K:34:LEU:HD13	1.98	0.45
3:K:47:ARG:HD2	3:K:52:ASN:C	2.37	0.45
3:K:1049:ALA:HA	3:K:1087:TRP:CZ2	2.52	0.45
3:K:448:VAL:HG13	3:K:666:TRP:HB2	1.98	0.45
3:K:483:LEU:HD13	3:K:528:LEU:O	2.16	0.45
3:K:810:MET:HG3	3:K:990:TRP:CG	2.52	0.45
3:K:1156:PHE:HB3	3:K:1163:TRP:CE3	2.52	0.45
3:K:403:ASP:O	3:K:774:LEU:HB2	2.16	0.45
3:K:676:ASP:OD1	3:K:677:HIS:N	2.49	0.45
3:K:903:PHE:HD2	3:K:961:SER:HG	1.61	0.45
3:K:715:GLY:C	3:K:716:PHE:HD2	2.20	0.45
3:K:202:ASP:OD1	3:K:203:THR:N	2.50	0.45
3:K:530:ILE:HD13	3:K:549:GLN:HE21	1.81	0.45
3:K:1200:ASP:OD2	3:K:1209:TYR:HB2	2.17	0.45
3:K:588:LEU:HD23	3:K:588:LEU:H	1.82	0.45
3:K:872:TYR:HA	3:K:877:TRP:CZ2	2.52	0.45
3:K:548:ARG:NH1	3:K:549:GLN:H	2.15	0.45
3:K:903:PHE:CE1	3:K:927:ASN:HB2	2.52	0.45
3:K:98:LEU:HD12	3:K:99:ARG:HD3	1.98	0.44
3:K:47:ARG:HH11	3:K:53:ASN:HA	1.81	0.44
3:K:833:GLU:HG2	3:K:835:LYS:HD3	1.97	0.44
3:K:1234:ASP:CG	3:K:1235:MET:N	2.69	0.44
3:K:79:PHE:O	3:K:83:GLU:HG3	2.17	0.44
3:K:1199:ARG:NH2	3:K:1207:GLY:HA3	2.32	0.44
3:K:217:SER:HA	3:K:291:TYR:CE1	2.52	0.44
3:K:221:LEU:HD21	3:K:252:THR:HG23	1.99	0.44
3:K:264:PHE:HA	3:K:267:ASN:HD22	1.82	0.44
3:K:737:ALA:O	3:K:739:LYS:HG3	2.18	0.44
3:K:1110:ASN:HA	3:K:1111:PRO:HD3	1.81	0.44
3:K:420:LEU:HD22	3:K:698:ASP:O	2.18	0.44
3:K:496:ALA:N	3:K:504:GLU:OE1	2.42	0.44
3:K:573:PHE:HE1	3:K:575:TYR:HB2	1.82	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4:ALA:N	3:K:587:ASP:HA	2.33	0.44
3:K:48:ASN:OD1	3:K:51:THR:N	2.37	0.44
3:K:483:LEU:O	3:K:487:THR:HG23	2.18	0.44
3:K:871:ASP:O	3:K:874:SER:OG	2.26	0.44
1:B:10:THR:OG1	1:B:11:ILE:N	2.51	0.44
3:K:112:ASN:OD1	3:K:114:PHE:N	2.49	0.44
3:K:182:ASP:O	3:K:323:THR:HB	2.18	0.44
3:K:476:ARG:NH2	3:K:478:ILE:HD12	2.33	0.44
3:K:983:PRO:HB3	3:K:1098:ILE:HD12	2.00	0.44
3:K:486:ASP:HA	3:K:489:VAL:HG12	1.99	0.43
3:K:743:ILE:HD12	3:K:751:VAL:O	2.18	0.43
3:K:478:ILE:HD13	3:K:645:VAL:HG13	2.01	0.43
3:K:494:TYR:CE1	3:K:541:VAL:HG13	2.52	0.43
3:K:761:ALA:HB1	3:K:838:GLU:HG2	2.00	0.43
1:A:7:ILE:HG23	1:A:7:ILE:O	2.17	0.43
3:K:258:GLU:O	3:K:261:LEU:HG	2.17	0.43
3:K:1083:THR:OG1	3:K:1084:LYS:HG3	2.18	0.43
3:K:811:TYR:HB3	3:K:889:MET:CE	2.47	0.43
3:K:266:ALA:HA	3:K:269:ARG:HH21	1.82	0.43
3:K:720:THR:OG1	3:K:721:GLN:N	2.51	0.43
3:K:992:ARG:HH11	3:K:992:ARG:HG3	1.84	0.43
3:K:628:GLU:HB2	3:K:666:TRP:NE1	2.33	0.43
3:K:658:VAL:HG12	3:K:659:HIS:ND1	2.34	0.43
3:K:713:ASN:N	3:K:750:ARG:O	2.46	0.43
3:K:811:TYR:HB3	3:K:889:MET:HE1	2.01	0.43
3:K:59:LEU:HD23	3:K:63:LEU:O	2.19	0.43
3:K:141:THR:HB	3:K:144:GLY:H	1.83	0.43
3:K:481:ARG:O	3:K:485:LYS:HG3	2.18	0.43
3:K:93:LEU:HD12	3:K:93:LEU:HA	1.78	0.43
3:K:828:LEU:HD23	3:K:872:TYR:HB2	2.01	0.43
3:K:687:ILE:HD13	3:K:992:ARG:HB3	2.00	0.43
3:K:915:SER:HA	3:K:974:TRP:CH2	2.54	0.43
3:K:539:SER:OG	3:K:1165:ILE:N	2.52	0.42
3:K:1045:PRO:HA	3:K:1086:GLU:HG2	2.01	0.42
3:K:7:VAL:HG23	3:K:7:VAL:O	2.19	0.42
3:K:758:ARG:HE	3:K:763:ALA:HB2	1.84	0.42
3:K:43:TRP:HB2	3:K:57:VAL:CG2	2.49	0.42
3:K:871:ASP:OD1	3:K:872:TYR:N	2.52	0.42
3:K:958:GLU:N	3:K:958:GLU:OE1	2.52	0.42
3:K:968:LYS:O	3:K:972:THR:HG23	2.18	0.42
3:K:165:GLU:HG3	3:K:199:PHE:CE2	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:K:683:THR:O	3:K:686:THR:OG1	2.32	0.42
3:K:1173:PHE:CD2	3:K:1181:LEU:HD21	2.54	0.42
3:K:426:TYR:O	3:K:795:PHE:HB2	2.19	0.42
3:K:464:ASP:OD2	3:K:689:ARG:HD2	2.20	0.42
3:K:924:VAL:HG12	3:K:926:VAL:HG23	2.01	0.42
3:K:706:ILE:H	3:K:706:ILE:HG13	1.68	0.42
3:K:1069:ASN:O	3:K:1071:ALA:N	2.51	0.42
4:A:801:MYR:C3	3:K:588:LEU:HD11	2.50	0.42
3:K:46:LEU:HB2	3:K:56:ALA:O	2.20	0.42
3:K:1270:TRP:CZ3	3:K:1271:SER:HB3	2.54	0.42
3:K:1227:ASP:OD1	3:K:1278:ILE:HG23	2.19	0.42
3:K:986:TYR:CZ	3:K:1058:ASN:HA	2.55	0.41
3:K:1020:ARG:NH1	3:K:1022:ASP:OD2	2.53	0.41
3:K:1258:PRO:HG2	3:K:1261:TRP:CD2	2.55	0.41
3:K:1279:VAL:HB	3:K:1284:TYR:CZ	2.55	0.41
3:K:330:PHE:O	3:K:334:ILE:HG13	2.20	0.41
3:K:112:ASN:OD1	3:K:113:VAL:N	2.54	0.41
3:K:757:ARG:NE	3:K:998:SER:OG	2.54	0.41
3:K:828:LEU:HD23	3:K:872:TYR:CD1	2.55	0.41
3:K:256:LEU:HD13	3:K:256:LEU:HA	1.94	0.41
3:K:803:PRO:HB3	3:K:1008:ILE:HD12	2.01	0.41
3:K:1047:PHE:HE2	3:K:1105:VAL:HG22	1.86	0.41
3:K:1143:VAL:HG23	3:K:1145:ILE:HD11	2.01	0.41
3:K:593:GLY:HA2	3:K:596:GLU:OE1	2.20	0.41
3:K:100:ILE:HG22	3:K:101:TYR:CD1	2.56	0.41
3:K:473:SER:HB2	3:K:646:THR:HG21	2.01	0.41
3:K:1063:PHE:HE1	3:K:1101:MET:HE1	1.85	0.41
3:K:498:ASP:OD2	3:K:500:ASN:N	2.49	0.41
3:K:535:GLN:HB3	3:K:537:LYS:HG2	2.03	0.41
3:K:1052:VAL:HB	3:K:1104:LEU:HB2	2.03	0.41
3:K:1186:LYS:HB2	3:K:1186:LYS:HE2	1.89	0.41
3:K:596:GLU:HG2	3:K:626:TYR:CG	2.56	0.41
3:K:1193:TYR:CE1	3:K:1286:LEU:HB2	2.55	0.41
3:K:1240:VAL:HG23	3:K:1247:ILE:HB	2.03	0.41
3:K:44:LYS:HG2	3:K:45:PRO:HD2	2.02	0.41
3:K:404:GLN:OE1	3:K:860:CYS:HB3	2.21	0.41
3:K:620:THR:HG23	3:K:622:PRO:HD2	2.02	0.41
3:K:1007:ARG:CZ	3:K:1007:ARG:HB3	2.51	0.41
3:K:188:PHE:CE1	3:K:261:LEU:HD21	2.56	0.40
3:K:566:PHE:HA	3:K:567:PRO:HD3	1.87	0.40
3:K:883:GLY:O	3:K:919:ALA:HA	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:K:1073:ILE:HG23	3:K:1075:GLN:H	1.86	0.40
3:K:223:HIS:NE2	3:K:283:TYR:CE1	2.88	0.40
3:K:238:LEU:HD23	3:K:238:LEU:HA	1.93	0.40
3:K:492:HIS:CD2	3:K:641:ILE:HD11	2.56	0.40
3:K:494:TYR:CE2	3:K:506:LEU:HB3	2.56	0.40
3:K:1035:ILE:HG12	3:K:1120:ASP:OD1	2.22	0.40
3:K:252:THR:O	3:K:256:LEU:HD23	2.21	0.40
3:K:297:LEU:O	3:K:301:LEU:HD23	2.21	0.40
3:K:1073:ILE:HD12	3:K:1074:PRO:HD2	2.03	0.40
1:E:23:SER:OG	1:E:25:GLU:OE1	2.37	0.40
3:K:12:SER:HA	3:K:380:ARG:O	2.22	0.40
3:K:373:ASN:O	3:K:376:ARG:NH2	2.55	0.40
3:K:988:LEU:O	3:K:991:THR:OG1	2.31	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	39/41 (95%)	32 (82%)	5 (13%)	2 (5%)	1 17
1	B	31/41 (76%)	28 (90%)	3 (10%)	0	100 100
1	C	31/41 (76%)	27 (87%)	4 (13%)	0	100 100
1	D	31/41 (76%)	25 (81%)	6 (19%)	0	100 100
1	E	31/41 (76%)	26 (84%)	5 (16%)	0	100 100
1	F	31/41 (76%)	26 (84%)	5 (16%)	0	100 100
1	G	31/41 (76%)	26 (84%)	5 (16%)	0	100 100
1	H	31/41 (76%)	27 (87%)	4 (13%)	0	100 100
1	I	30/41 (73%)	25 (83%)	5 (17%)	0	100 100
1	J	31/41 (76%)	27 (87%)	4 (13%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	a	606/666 (91%)	548 (90%)	56 (9%)	2 (0%)	37	69
2	b	631/666 (95%)	574 (91%)	55 (9%)	2 (0%)	37	69
2	c	631/666 (95%)	569 (90%)	60 (10%)	2 (0%)	37	69
2	d	631/666 (95%)	582 (92%)	46 (7%)	3 (0%)	25	58
2	e	631/666 (95%)	572 (91%)	58 (9%)	1 (0%)	44	74
2	f	631/666 (95%)	583 (92%)	47 (7%)	1 (0%)	44	74
2	g	631/666 (95%)	581 (92%)	49 (8%)	1 (0%)	44	74
2	h	620/666 (93%)	559 (90%)	60 (10%)	1 (0%)	44	74
2	i	631/666 (95%)	578 (92%)	52 (8%)	1 (0%)	44	74
2	j	631/666 (95%)	583 (92%)	47 (7%)	1 (0%)	44	74
3	K	1279/1289 (99%)	1151 (90%)	127 (10%)	1 (0%)	48	79
All	All	7870/8359 (94%)	7149 (91%)	703 (9%)	18 (0%)	45	74

All (18) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	a	344	PRO
2	c	344	PRO
2	d	328	ILE
2	d	344	PRO
2	e	344	PRO
2	f	344	PRO
2	h	344	PRO
2	i	344	PRO
2	j	344	PRO
3	K	1111	PRO
2	b	338	PRO
1	A	10	THR
2	d	375	PRO
1	A	3	ASN
2	g	344	PRO
2	b	375	PRO
2	c	375	PRO
2	a	338	PRO

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	34/34 (100%)	29 (85%)	5 (15%)	2 15
1	B	28/34 (82%)	28 (100%)	0	100 100
1	C	28/34 (82%)	28 (100%)	0	100 100
1	D	28/34 (82%)	28 (100%)	0	100 100
1	E	28/34 (82%)	28 (100%)	0	100 100
1	F	28/34 (82%)	28 (100%)	0	100 100
1	G	28/34 (82%)	28 (100%)	0	100 100
1	H	28/34 (82%)	28 (100%)	0	100 100
1	I	27/34 (79%)	27 (100%)	0	100 100
1	J	28/34 (82%)	28 (100%)	0	100 100
2	a	517/564 (92%)	513 (99%)	4 (1%)	79 84
2	b	536/564 (95%)	531 (99%)	5 (1%)	75 82
2	c	536/564 (95%)	534 (100%)	2 (0%)	89 91
2	d	536/564 (95%)	530 (99%)	6 (1%)	70 79
2	e	536/564 (95%)	534 (100%)	2 (0%)	89 91
2	f	536/564 (95%)	534 (100%)	2 (0%)	89 91
2	g	536/564 (95%)	531 (99%)	5 (1%)	75 82
2	h	528/564 (94%)	525 (99%)	3 (1%)	84 88
2	i	536/564 (95%)	534 (100%)	2 (0%)	89 91
2	j	536/564 (95%)	534 (100%)	2 (0%)	89 91
3	K	1117/1120 (100%)	1112 (100%)	5 (0%)	89 91
All	All	6735/7100 (95%)	6692 (99%)	43 (1%)	82 88

All (43) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	6	SER

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Mol	Chain	Res	Type
1	A	7	ILE
1	A	8	VAL
1	A	9	GLN
1	A	10	THR
2	a	128	MET
2	a	327	ARG
2	a	339	LYS
2	a	340	SER
2	b	128	MET
2	b	339	LYS
2	b	341	MET
2	b	343	THR
2	b	359	LEU
2	c	327	ARG
2	c	359	LEU
2	d	128	MET
2	d	326	LEU
2	d	327	ARG
2	d	330	GLU
2	d	332	THR
2	d	359	LEU
2	e	359	LEU
2	e	451	ASN
2	f	128	MET
2	f	359	LEU
2	g	326	LEU
2	g	328	ILE
2	g	329	ASP
2	g	330	GLU
2	g	359	LEU
2	h	341	MET
2	h	343	THR
2	h	359	LEU
2	i	327	ARG
2	i	359	LEU
2	j	359	LEU
2	j	529	THR
3	K	21	ARG
3	K	698	ASP
3	K	703	VAL
3	K	704	THR
3	K	1108	ASN

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	3	ASN
2	a	110	ASN
2	a	160	GLN
2	a	179	GLN
2	a	196	GLN
2	a	213	GLN
2	a	288	GLN
2	b	106	HIS
2	c	106	HIS
2	c	154	GLN
2	c	179	GLN
2	c	346	GLN
2	c	440	GLN
2	d	81	ASN
2	d	154	GLN
2	d	322	ASN
2	d	601	GLN
2	d	629	GLN
2	e	154	GLN
2	e	179	GLN
2	e	358	HIS
2	e	429	GLN
2	e	571	GLN
2	f	106	HIS
2	f	244	ASN
2	f	564	ASN
2	g	154	GLN
2	g	601	GLN
2	h	154	GLN
2	h	288	GLN
2	h	369	ASN
2	h	629	GLN
2	i	179	GLN
2	i	263	ASN
2	j	81	ASN
2	j	348	GLN
2	j	405	GLN
3	K	49	GLN
3	K	263	GLN
3	K	267	ASN
3	K	572	GLN

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Mol	Chain	Res	Type
3	K	1110	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

10 ligands 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	MYR	c	801	-	14,14,15	0.36	0	13,13,15	0.69	0
4	MYR	g	801	-	14,14,15	0.40	0	13,13,15	0.59	0
4	MYR	b	801	-	14,14,15	0.35	0	13,13,15	0.76	0
4	MYR	e	801	-	14,14,15	0.36	0	13,13,15	0.65	0
4	MYR	j	801	-	14,14,15	0.36	0	13,13,15	0.71	0
4	MYR	f	801	-	14,14,15	0.35	0	13,13,15	0.74	0
4	MYR	i	801	-	14,14,15	0.34	0	13,13,15	0.73	0
4	MYR	A	801	1	14,14,15	0.36	0	13,13,15	0.78	0
4	MYR	d	801	-	14,14,15	0.37	0	13,13,15	0.68	0
4	MYR	h	801	-	14,14,15	0.37	0	13,13,15	0.71	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	MYR	c	801	-	-	5/11/12/13	-
4	MYR	g	801	-	-	4/11/12/13	-
4	MYR	b	801	-	-	3/11/12/13	-
4	MYR	e	801	-	-	1/11/12/13	-
4	MYR	j	801	-	-	1/11/12/13	-
4	MYR	f	801	-	-	3/11/12/13	-
4	MYR	i	801	-	-	3/11/12/13	-
4	MYR	A	801	1	-	5/11/12/13	-
4	MYR	d	801	-	-	3/11/12/13	-
4	MYR	h	801	-	-	2/11/12/13	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (30) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	g	801	MYR	C1-C2-C3-C4
4	A	801	MYR	C9-C10-C11-C12
4	c	801	MYR	C5-C6-C7-C8
4	c	801	MYR	C6-C7-C8-C9
4	h	801	MYR	C5-C6-C7-C8
4	i	801	MYR	C11-C10-C9-C8
4	A	801	MYR	C10-C11-C12-C13
4	g	801	MYR	C4-C5-C6-C7
4	e	801	MYR	C5-C6-C7-C8
4	A	801	MYR	C6-C7-C8-C9
4	A	801	MYR	C11-C10-C9-C8
4	i	801	MYR	C9-C10-C11-C12
4	f	801	MYR	C9-C10-C11-C12
4	d	801	MYR	C2-C3-C4-C5
4	f	801	MYR	C11-C10-C9-C8
4	i	801	MYR	C7-C8-C9-C10
4	b	801	MYR	C5-C6-C7-C8
4	d	801	MYR	C6-C7-C8-C9
4	d	801	MYR	C9-C10-C11-C12
4	g	801	MYR	C11-C12-C13-C14

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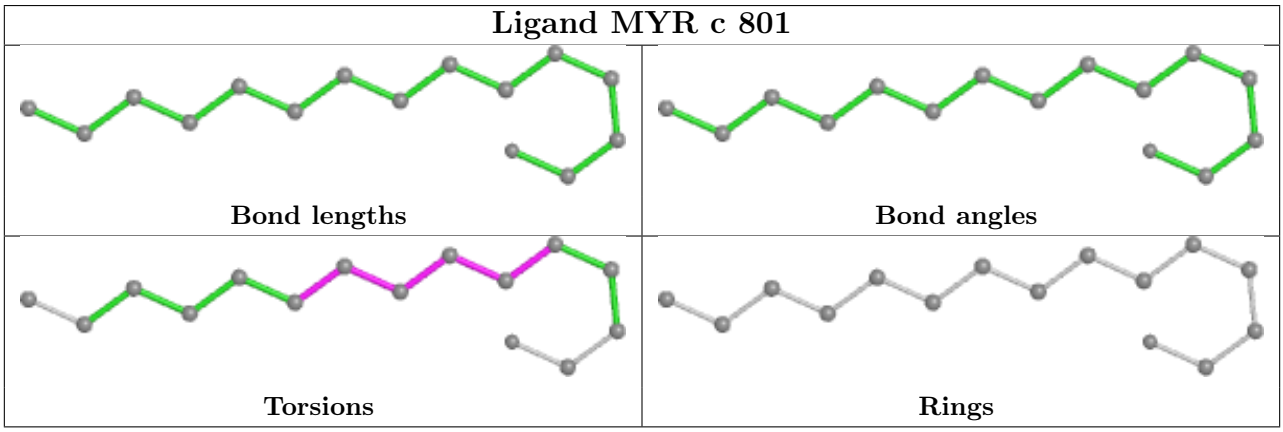
Mol	Chain	Res	Type	Atoms
4	c	801	MYR	C7-C8-C9-C10
4	A	801	MYR	C4-C5-C6-C7
4	c	801	MYR	C3-C4-C5-C6
4	j	801	MYR	C10-C11-C12-C13
4	g	801	MYR	C9-C10-C11-C12
4	b	801	MYR	C4-C5-C6-C7
4	h	801	MYR	C6-C7-C8-C9
4	f	801	MYR	C7-C8-C9-C10
4	b	801	MYR	C10-C11-C12-C13
4	c	801	MYR	C4-C5-C6-C7

There are no ring outliers.

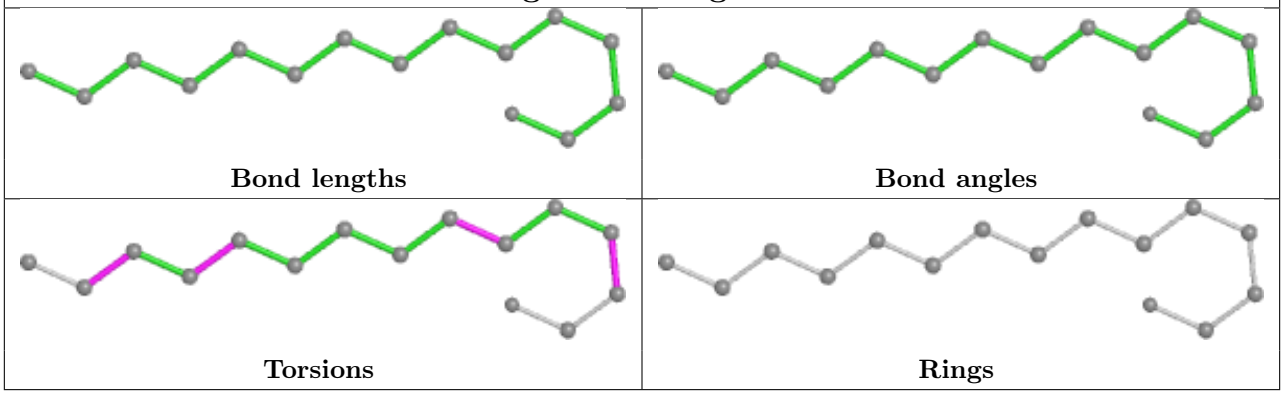
1 monomer is involved in 10 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	801	MYR	10	0

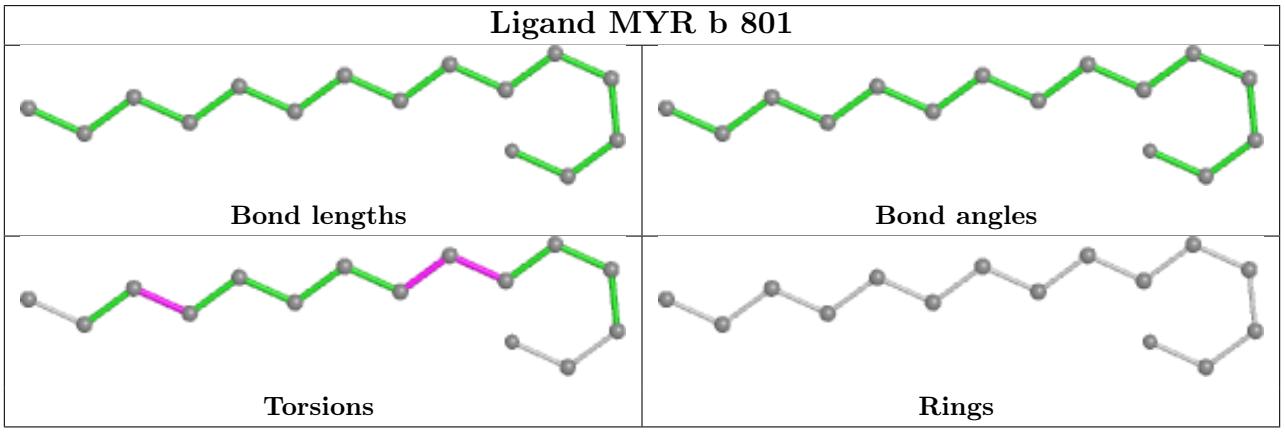
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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



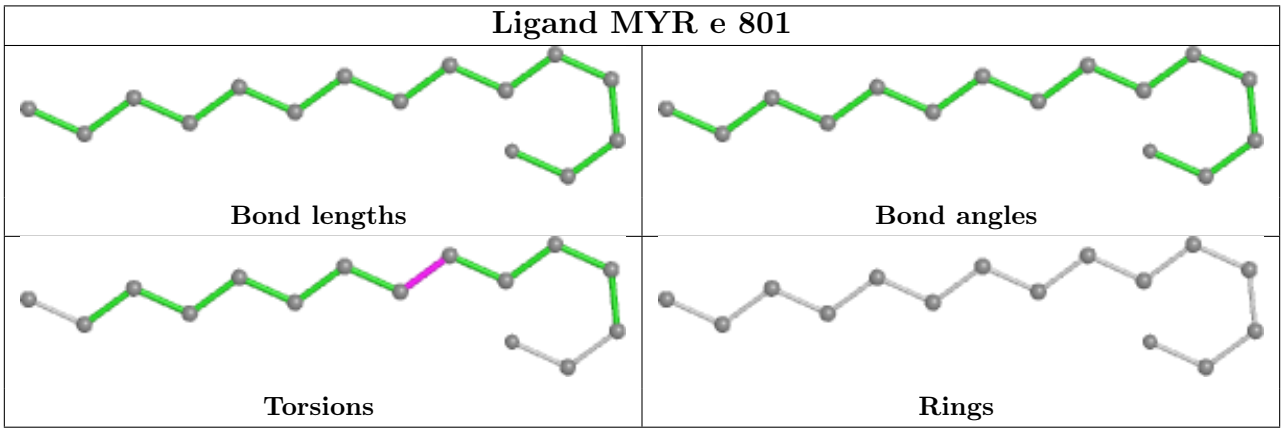
Ligand MYR g 801



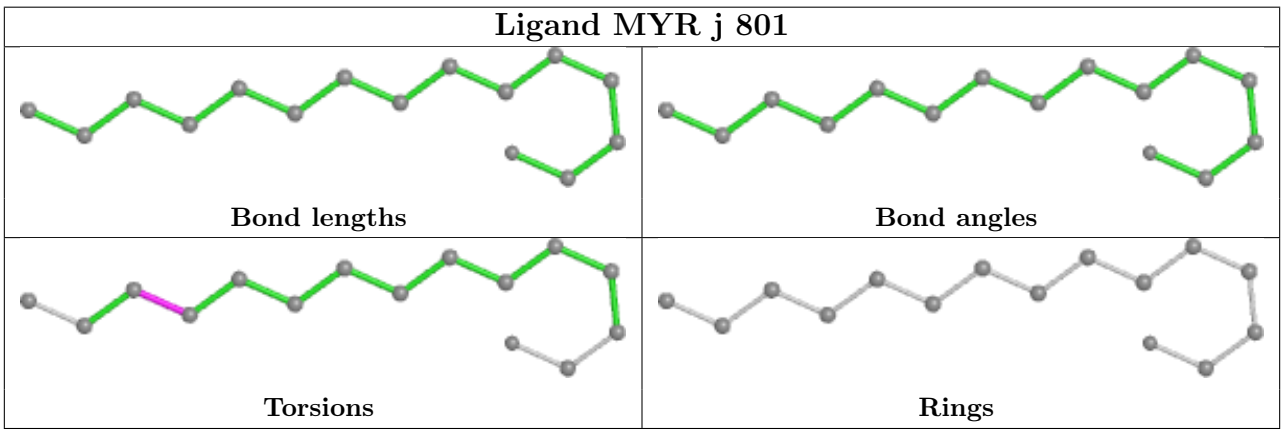
Ligand MYR b 801



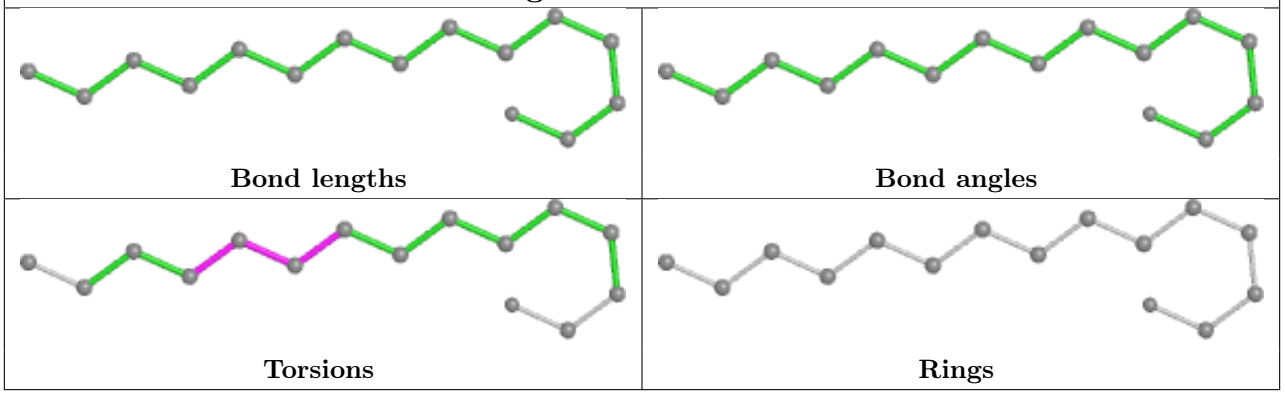
Ligand MYR e 801



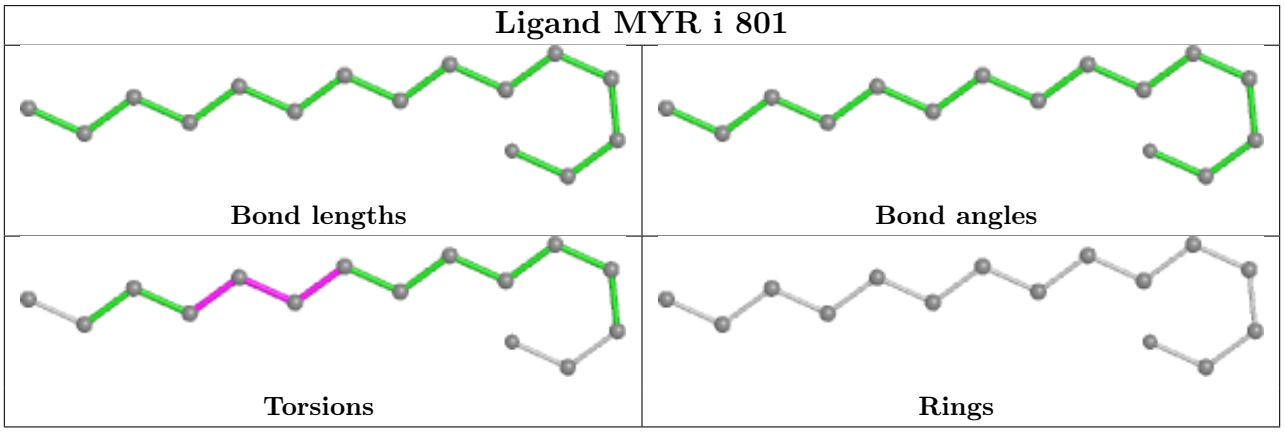
Ligand MYR j 801



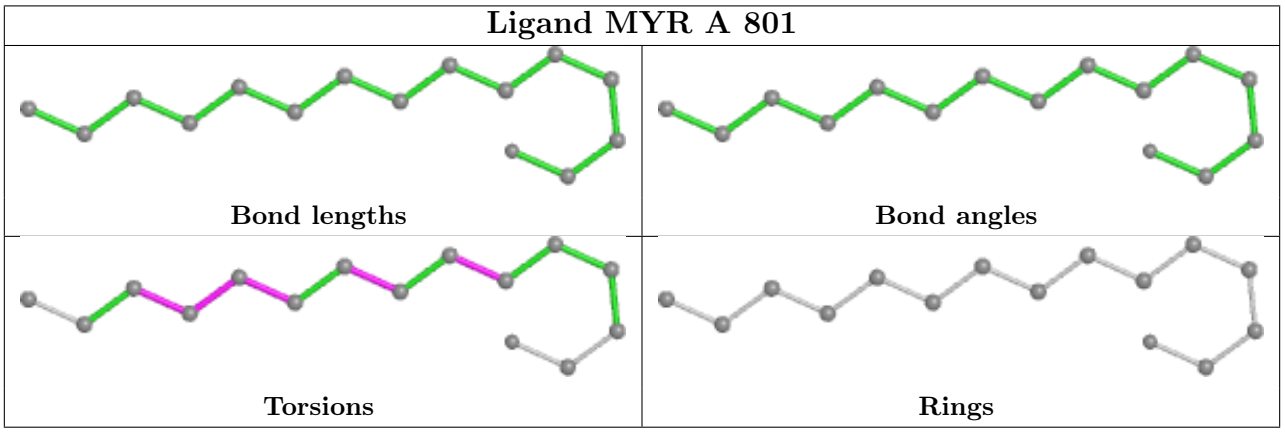
Ligand MYR f 801



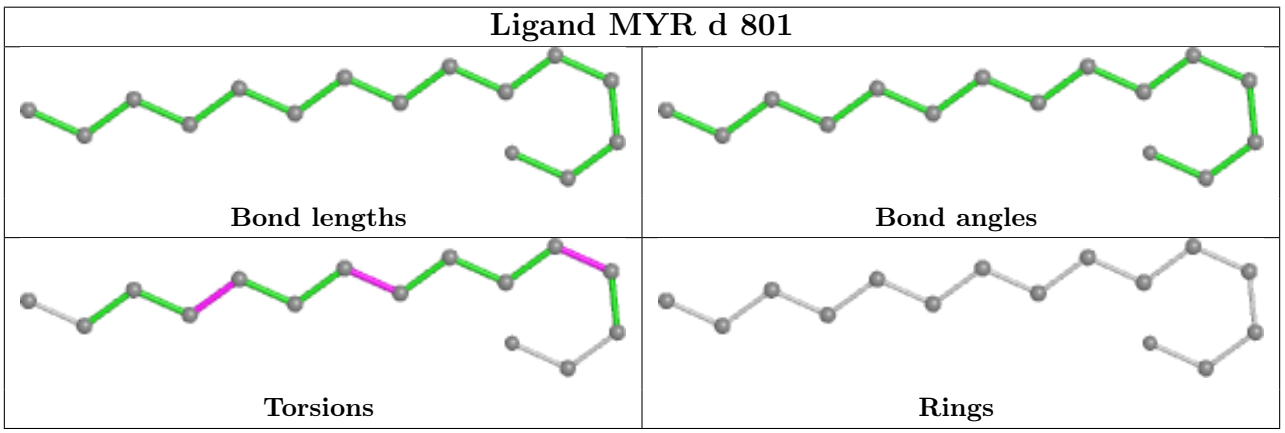
Ligand MYR i 801

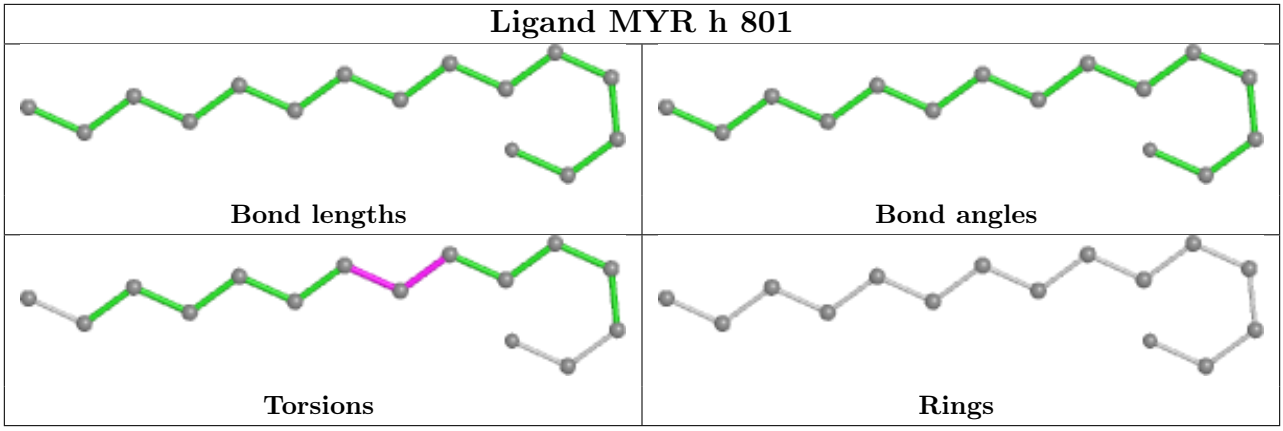


Ligand MYR A 801



Ligand MYR d 801





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.

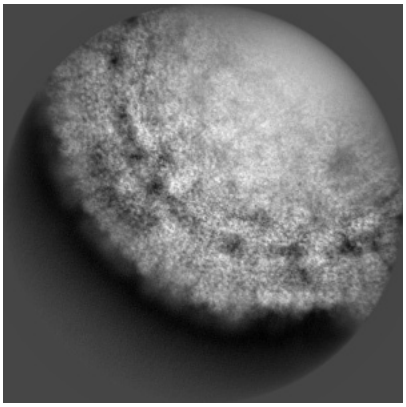
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-31184. These allow visual inspection of the internal detail of the map and identification of artifacts.

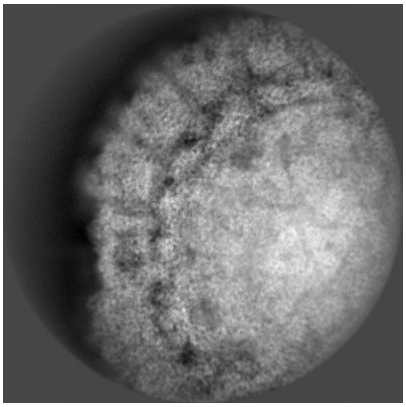
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

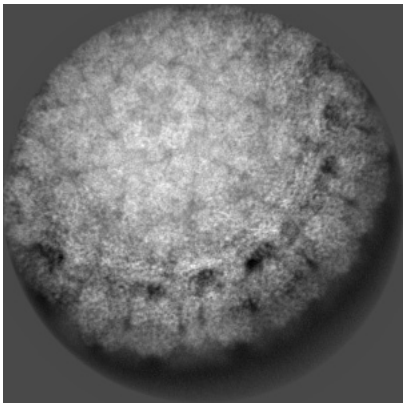
6.1.1 Primary map



X



Y

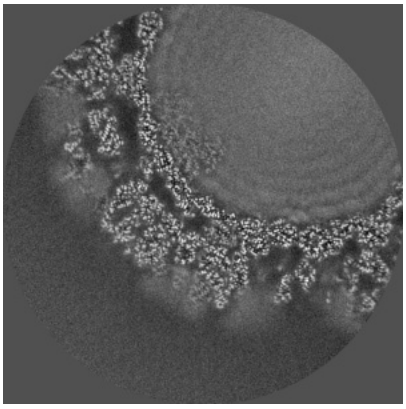


Z

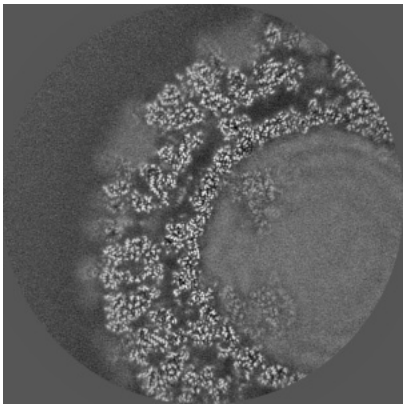
The images above show the map projected in three orthogonal directions.

6.2 Central slices

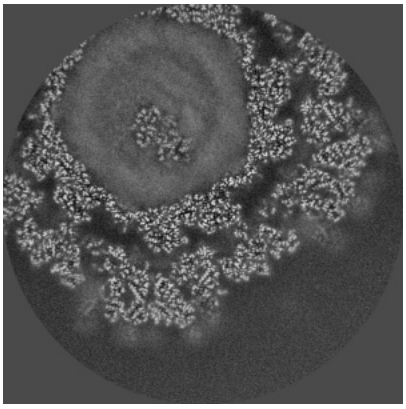
6.2.1 Primary map



X Index: 300



Y Index: 300

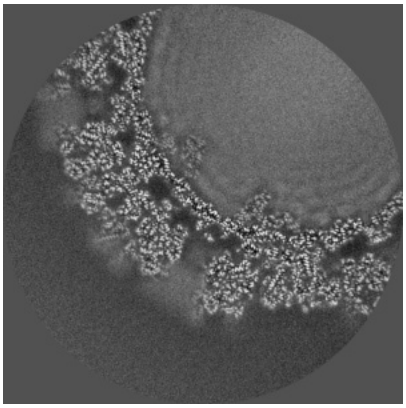


Z Index: 300

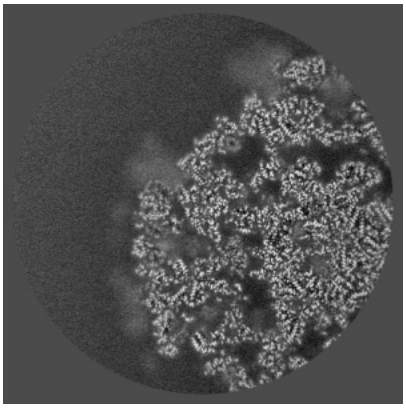
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

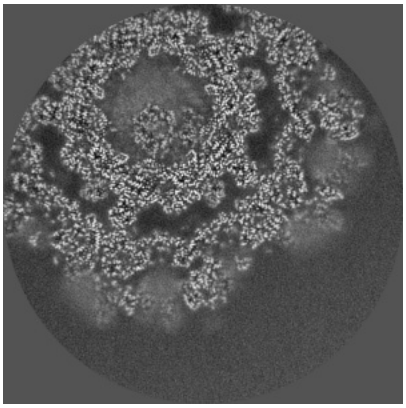
6.3.1 Primary map



X Index: 273



Y Index: 204

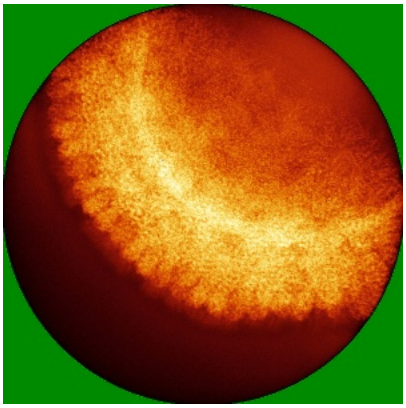


Z Index: 270

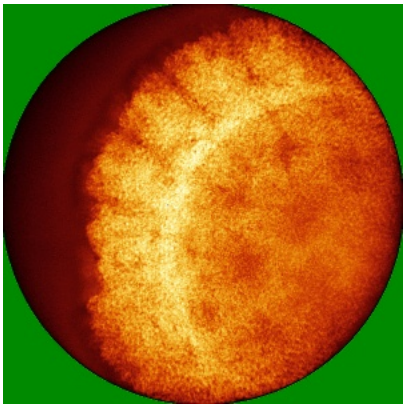
The images above show the largest variance slices of the map in three orthogonal directions.

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

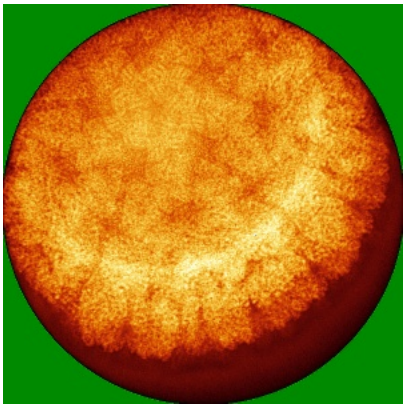
6.4.1 Primary map



X



Y

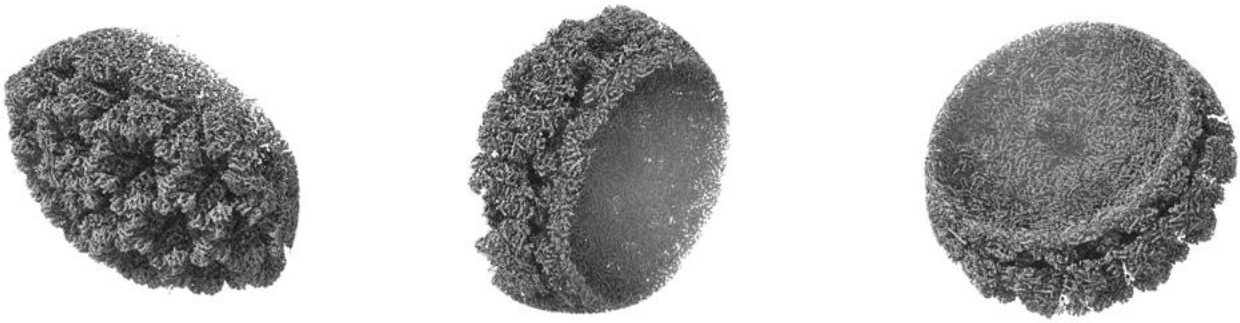


Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.013. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

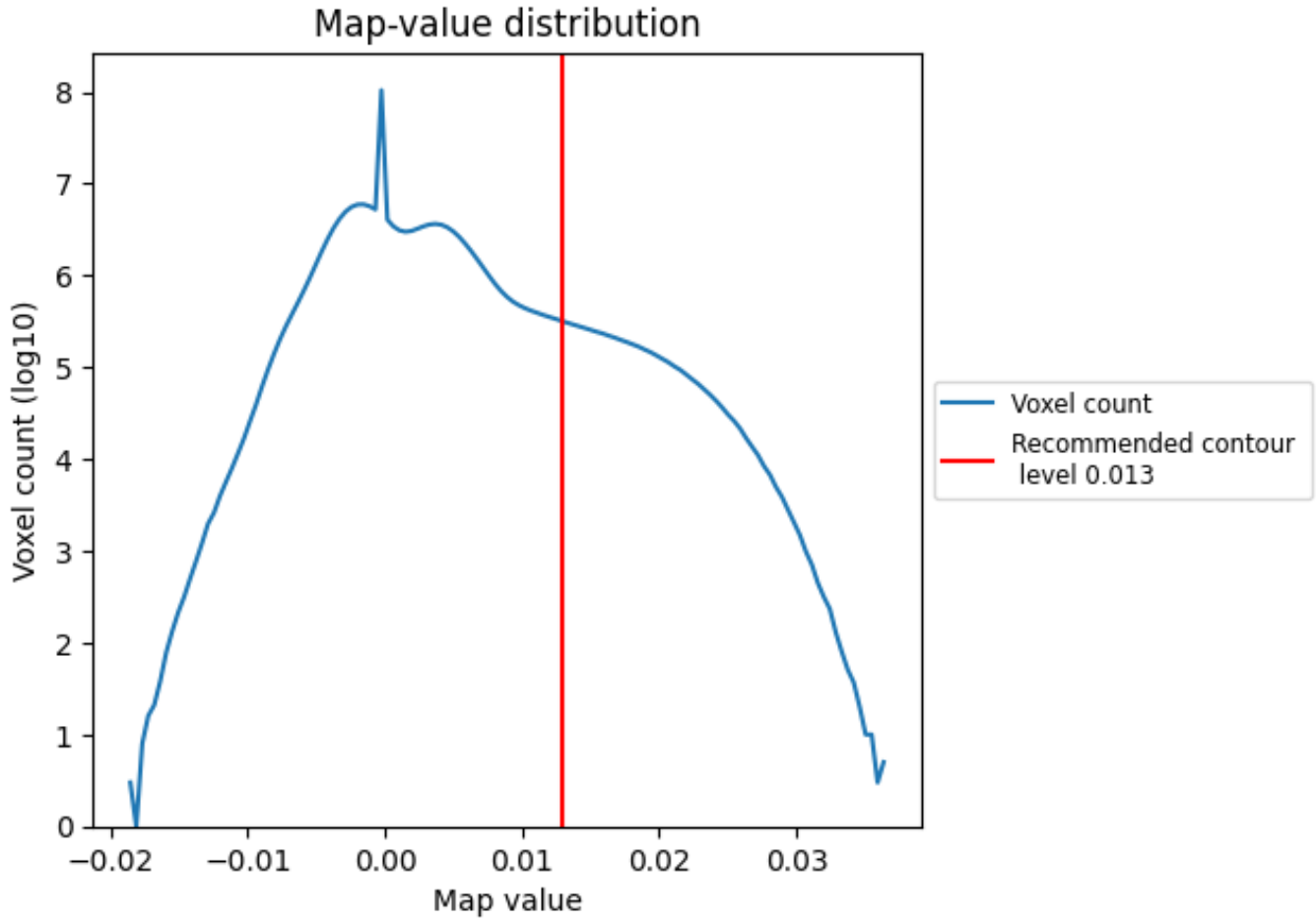
6.6 Mask visualisation (i)

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

7 Map analysis

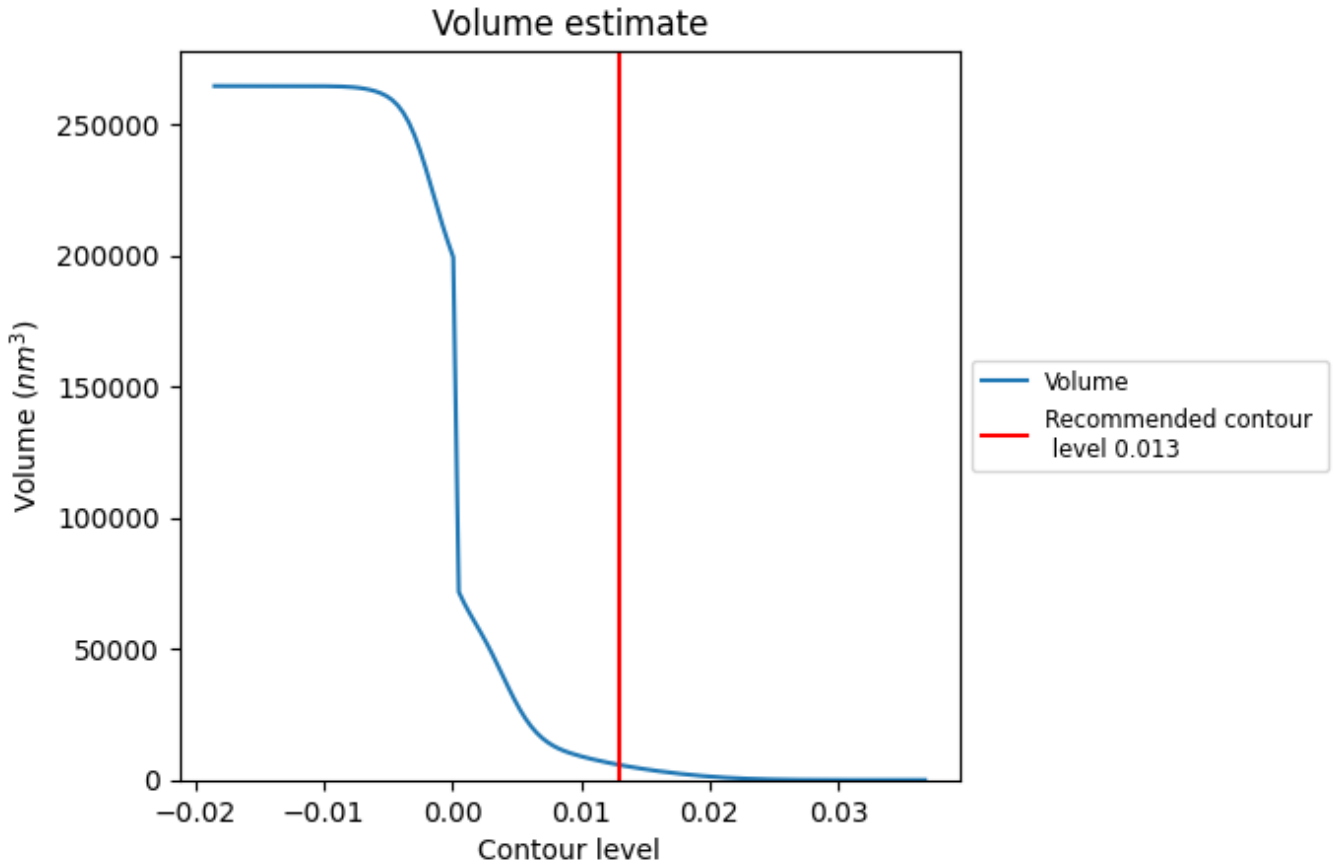
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

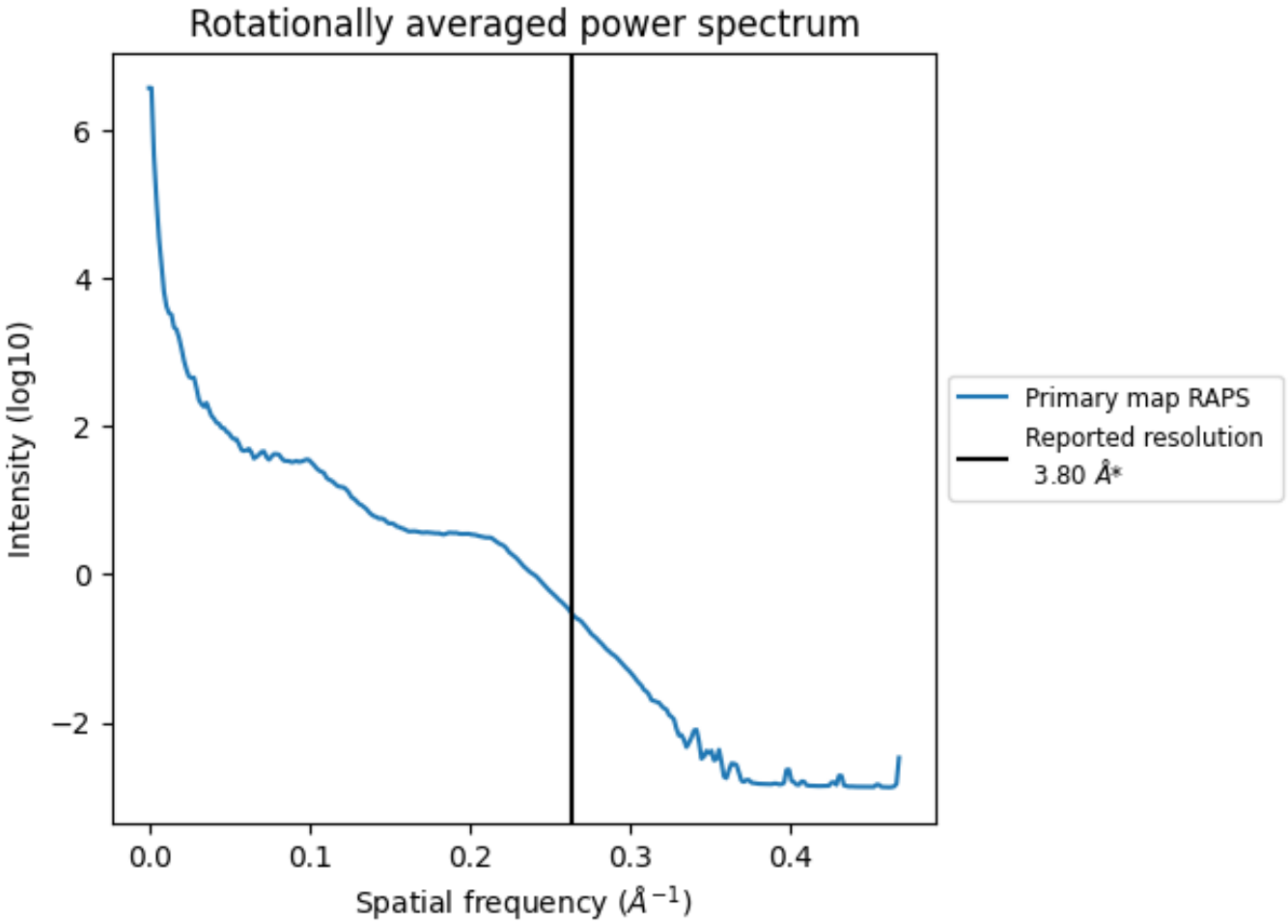
7.2 Volume estimate



The volume at the recommended contour level is 5737 nm^3; this corresponds to an approximate mass of 5182 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)

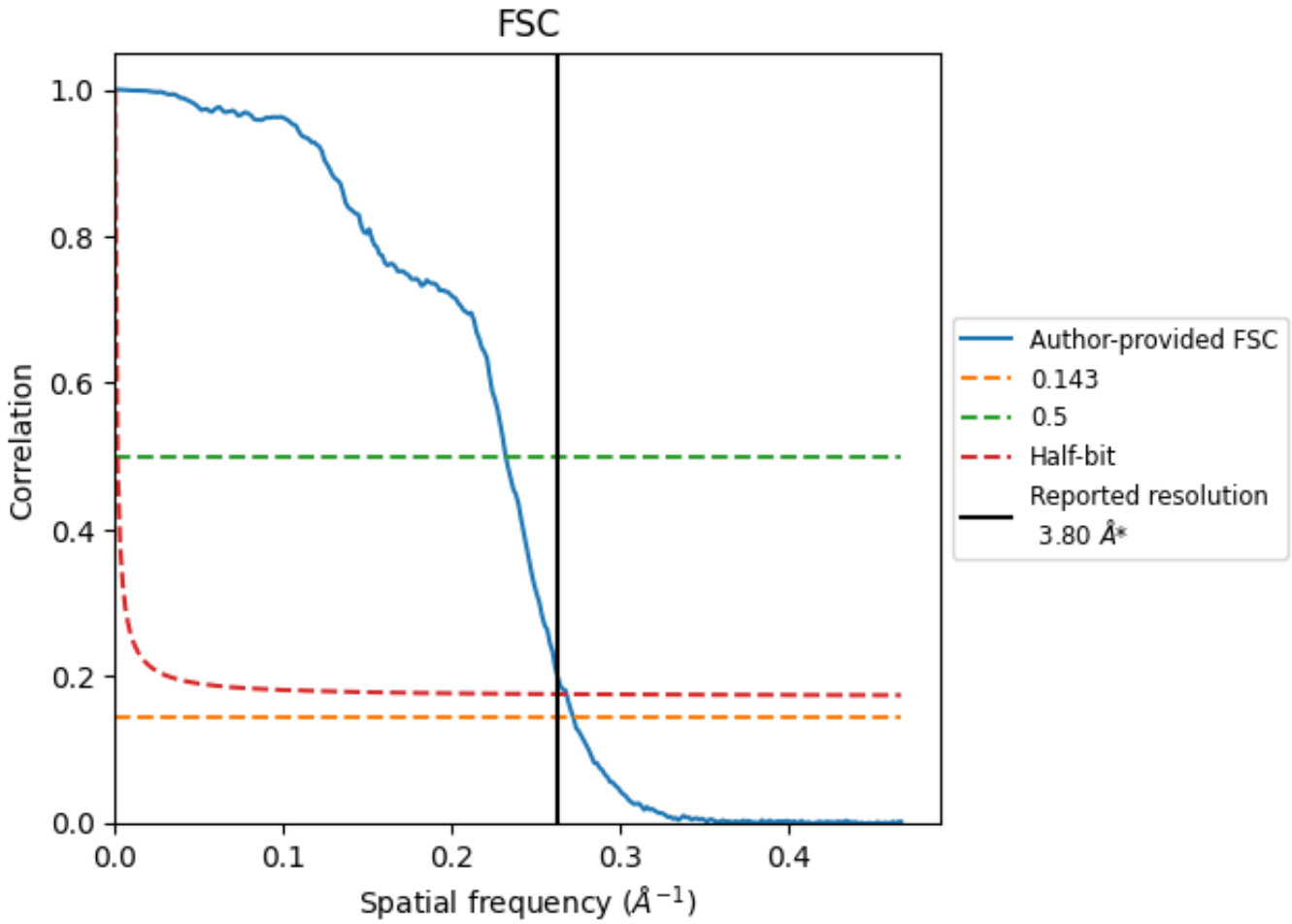


*Reported resolution corresponds to spatial frequency of 0.263 Å^{-1}

8 Fourier-Shell correlation

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

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.263 Å^{-1}

8.2 Resolution estimates (i)

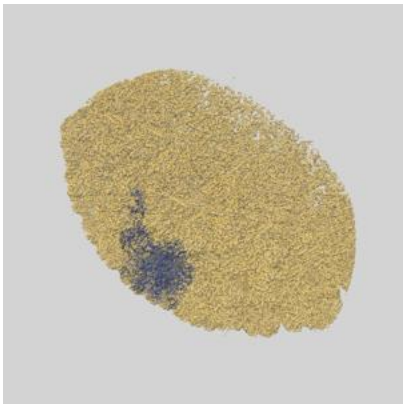
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.80	-	-
Author-provided FSC curve	3.67	4.30	3.73
Unmasked-calculated*	-	-	-

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

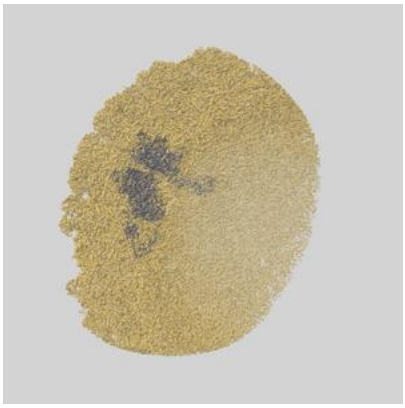
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-31184 and PDB model 7ELL. Per-residue inclusion information can be found in section 3 on page 7.

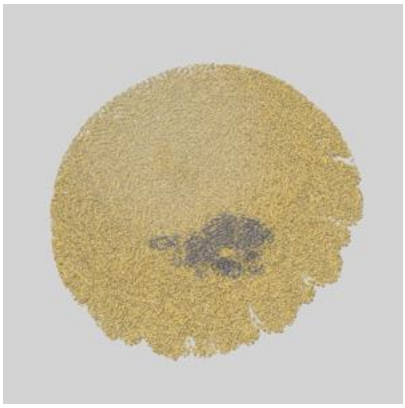
9.1 Map-model overlay



X



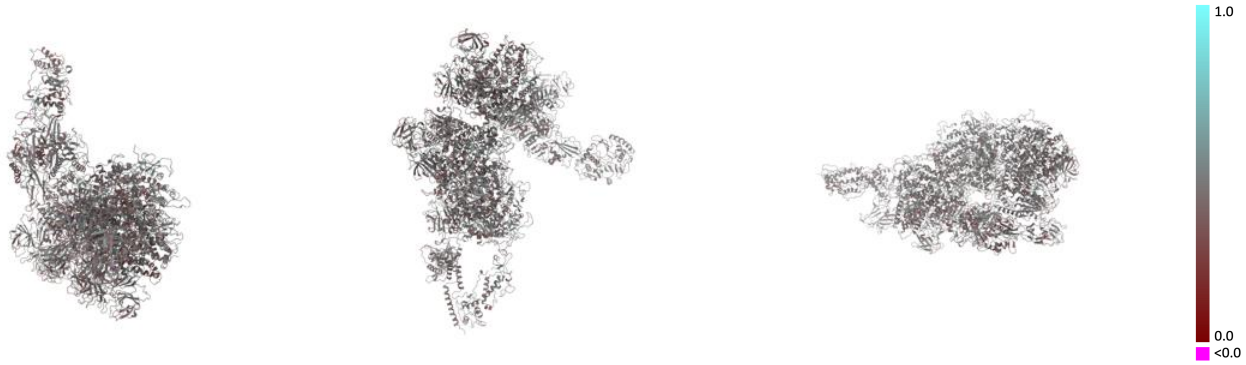
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.013 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.

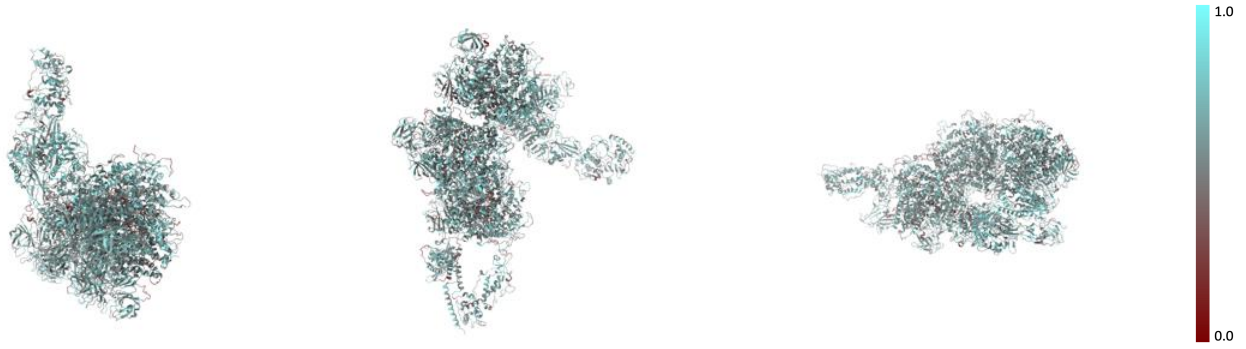
9.2 Q-score mapped to coordinate model



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.

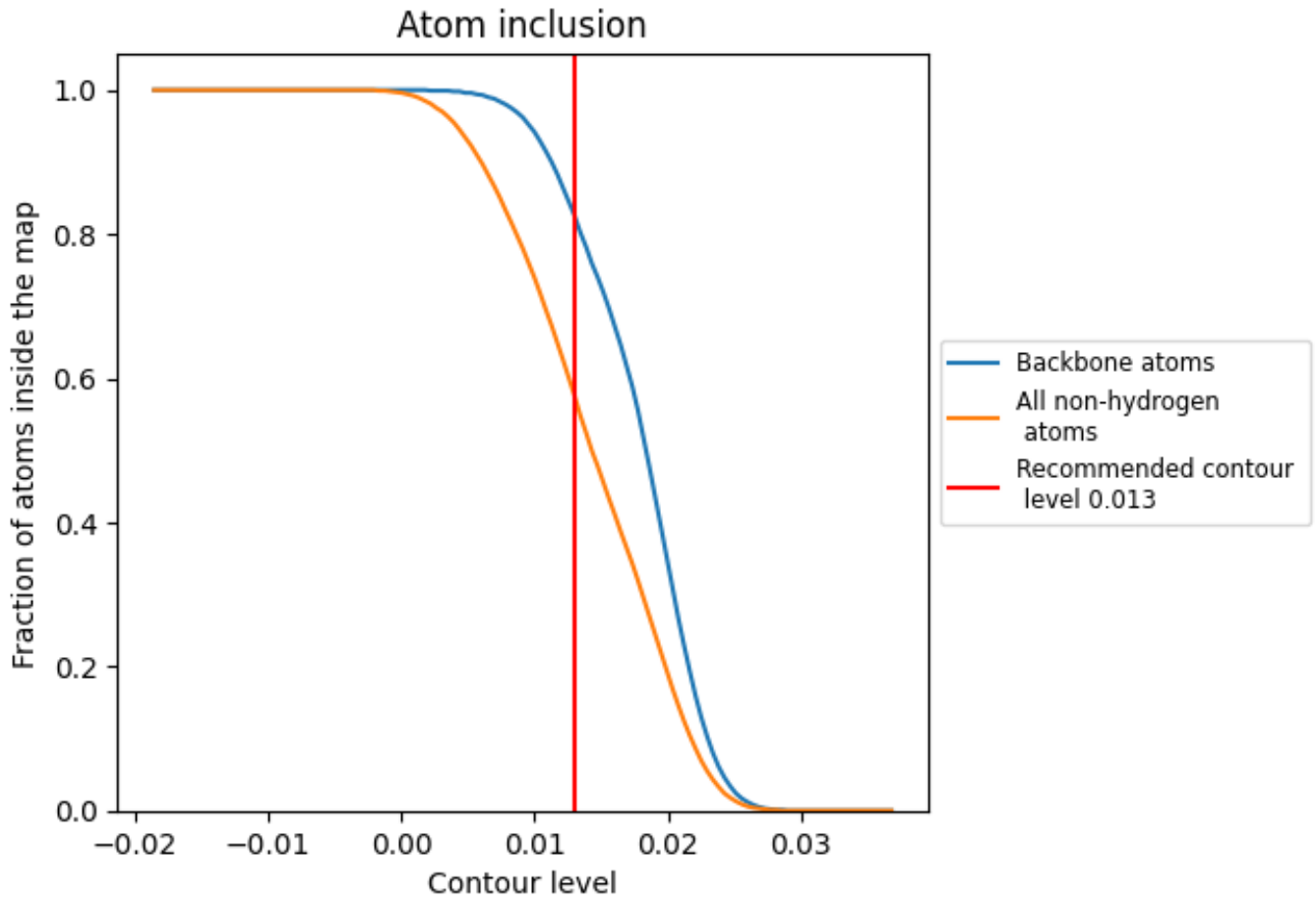
9.3 Atom inclusion mapped to coordinate model



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 (0.013).

9.4 Atom inclusion (i)



At the recommended contour level, 83% of all backbone atoms, 58% 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 (0.013) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.5760	0.4410
A	0.4750	0.4320
B	0.5460	0.4620
C	0.5500	0.4780
D	0.5370	0.4680
E	0.5500	0.4730
F	0.5590	0.4720
G	0.5680	0.4700
H	0.5550	0.4570
I	0.5680	0.4720
J	0.5550	0.4770
K	0.6020	0.4370
a	0.5780	0.4370
b	0.5860	0.4380
c	0.5740	0.4410
d	0.5740	0.4420
e	0.5830	0.4460
f	0.5650	0.4440
g	0.5700	0.4390
h	0.5570	0.4350
i	0.5640	0.4400
j	0.5680	0.4400