



Full wwPDB EM Validation Report ⓘ

May 19, 2024 – 03:19 PM EDT

PDB ID : 7MHS
EMDB ID : EMD-23835
Title : Structure of p97 (subunits A to E) with substrate engaged
Authors : Xu, Y.; Han, H.; Cooney, I.; Hill, C.P.; Shen, P.S.
Deposited on : 2021-04-15
Resolution : 3.60 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.dev92
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

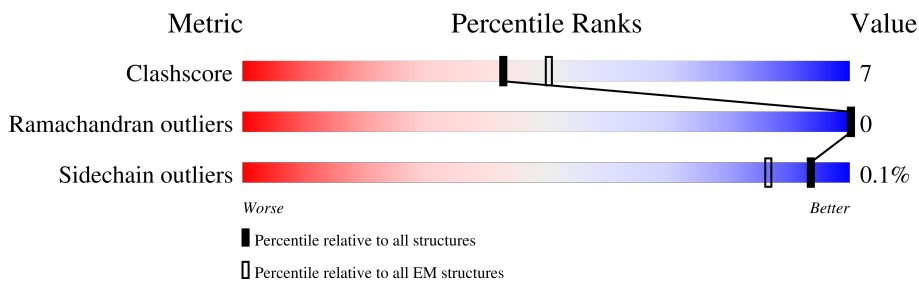
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.60 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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

Mol	Chain	Length	Quality of chain
1	A	806	
1	B	806	
1	C	806	
1	D	806	
1	E	806	
2	G	22	

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
3	ADP	D	901	-	-	X	-

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 21148 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 Transitional endoplasmic reticulum ATPase.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	534	Total 4166	C 2625	N 738	O 781	S 22	0	0
1	B	544	Total 4247	C 2671	N 756	O 798	S 22	0	0
1	C	544	Total 4254	C 2677	N 759	O 796	S 22	0	0
1	D	541	Total 4227	C 2661	N 752	O 792	S 22	0	0
1	E	489	Total 3826	C 2416	N 676	O 713	S 21	0	0

- Molecule 2 is a protein called Unknown substrate.

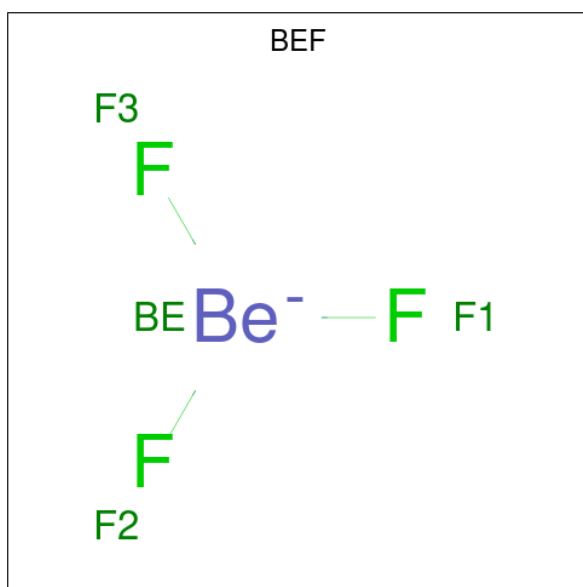
Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
2	G	22	Total 118	C 74	N 22	O 22	0	0

- Molecule 3 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).



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

- Molecule 4 is BERYLLIUM TRIFLUORIDE ION (three-letter code: BEF) (formula: BeF₃).



Mol	Chain	Residues	Atoms			AltConf
			Total	Be	F	
4	A	1	4	1	3	0
4	A	1	4	1	3	0
4	B	1	4	1	3	0
4	B	1	4	1	3	0
4	C	1	4	1	3	0
4	C	1	4	1	3	0
4	D	1	4	1	3	0
4	D	1	4	1	3	0

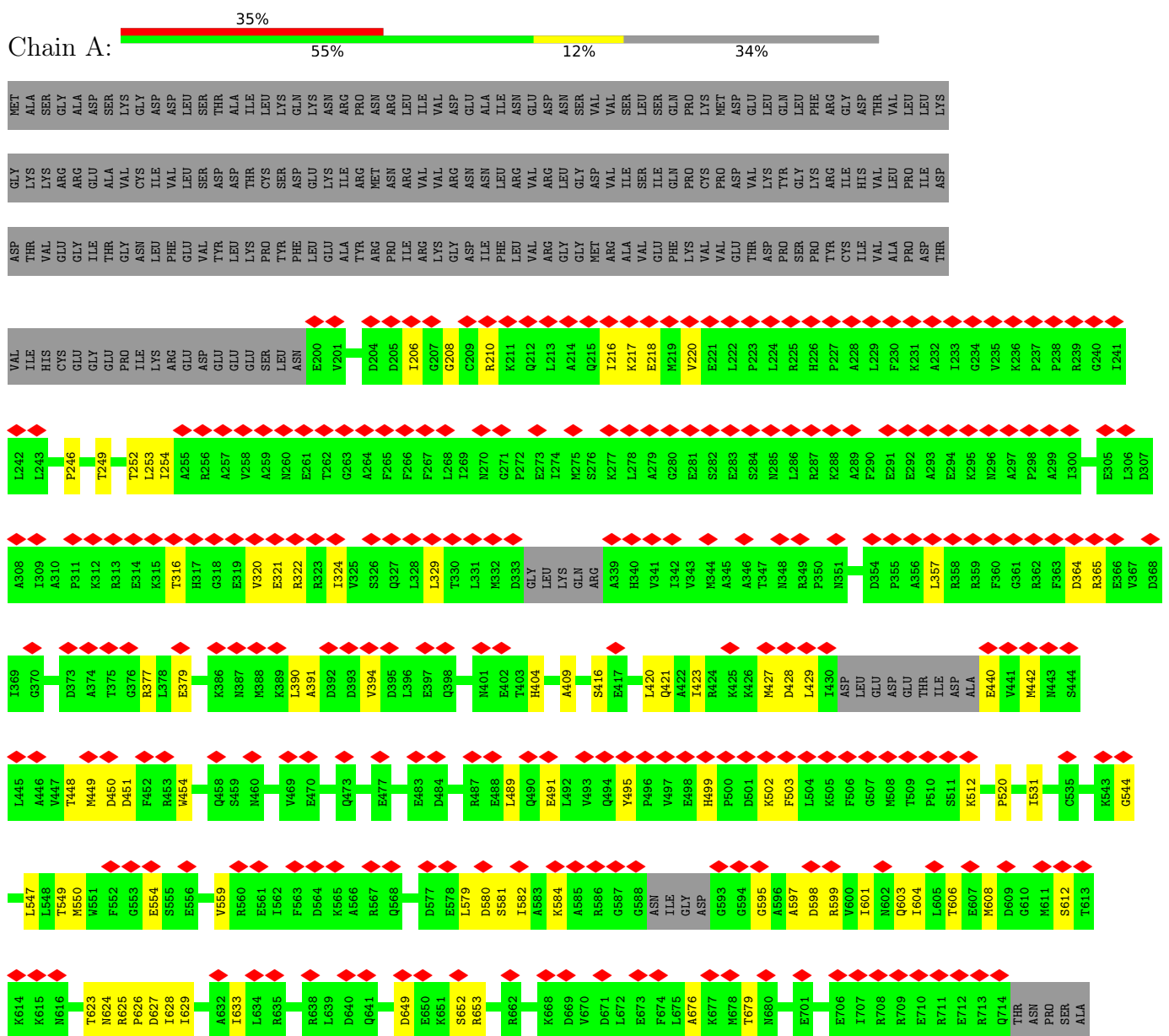
- Molecule 5 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

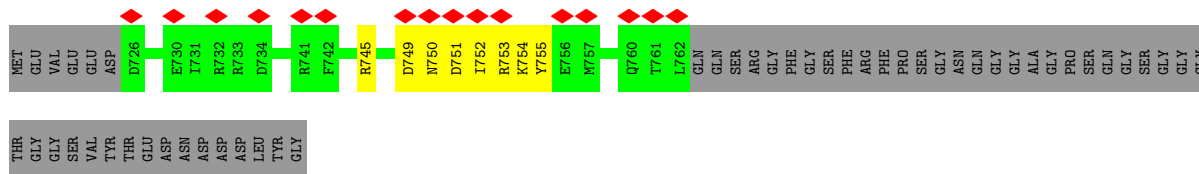
Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
5	A	2	2	2	0
5	B	2	2	2	0
5	C	2	2	2	0
5	D	2	2	2	0

3 Residue-property plots

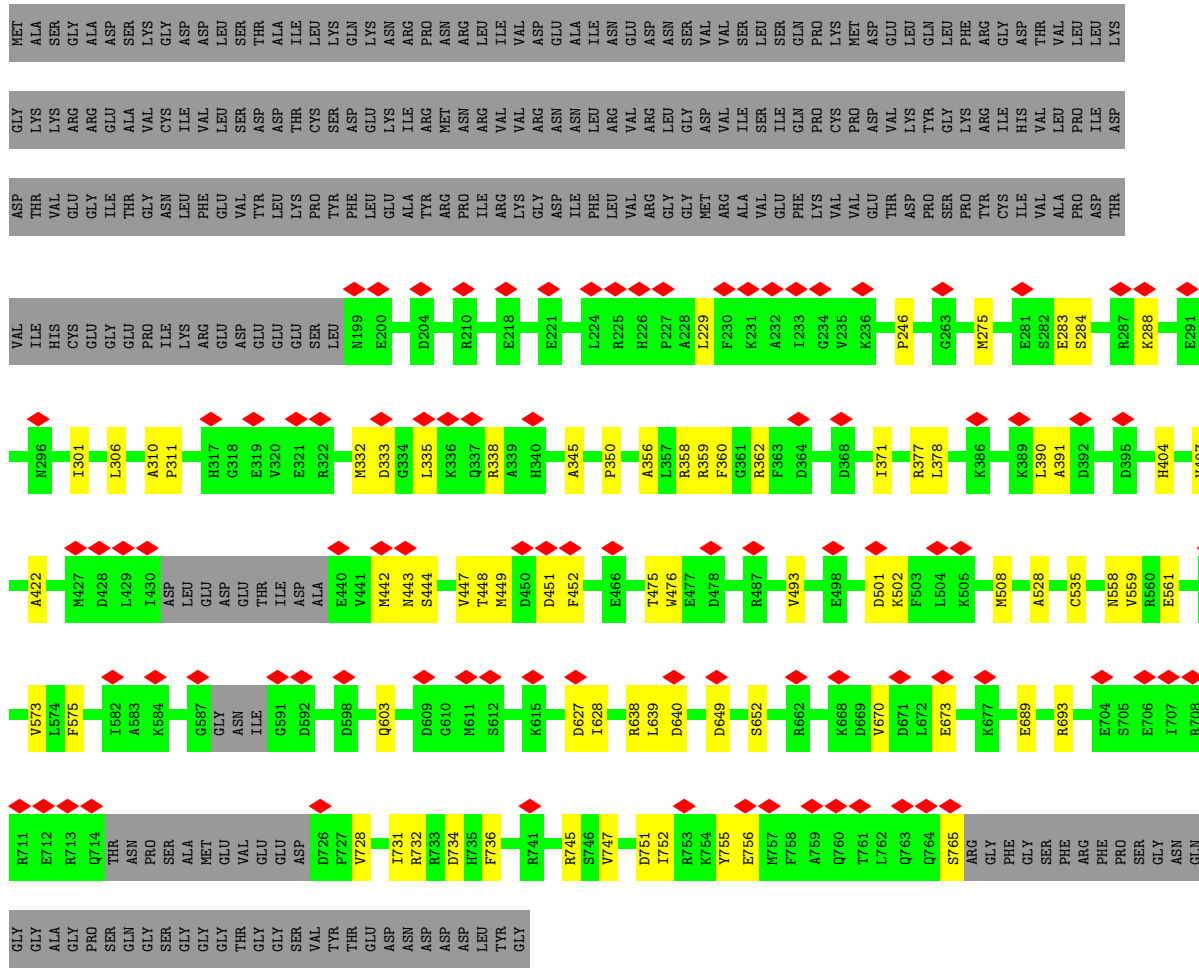
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

- Molecule 1: Transitional endoplasmic reticulum ATPase

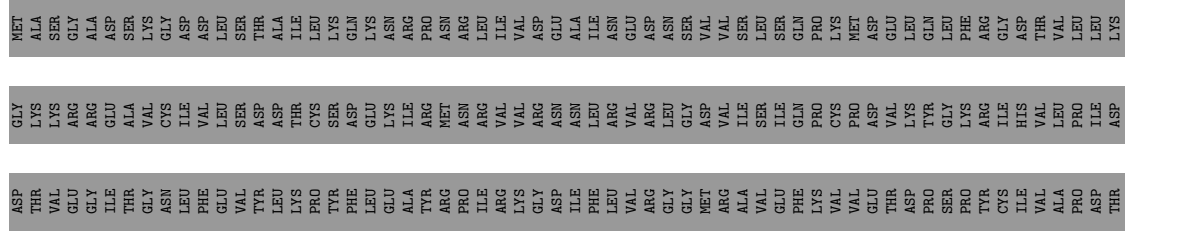




• Molecule 1: Transitional endoplasmic reticulum ATPase



• Molecule 1: Transitional endoplasmic reticulum ATPase



ASP
LEU
TYR
GLY

- Molecule 1: Transitional endoplasmic reticulum ATPase

Chain E: 

MET
ALA
SER
GLY
ARG
ALA
ASP
SER
LYS
CYS
ASP
ILE
ASP
LEU
LEU
SER
THR
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CYS
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ILE
ASN
LEU
ASN

GLY
LYS
LYS
ARG
GLY
ARG
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CYS
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LEU
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SER
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TYR
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VAL
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G202
Y203
D204
D206
G207
G208
C209
R210
L213
A214
K217
E218
M219
V220
E221
L222
L224
R225
H226
P227
A228
L229
F230
K231
A232
L233
G234
V236
K236
R239
L242
L243

P247
G250
K251
T252
L253
T254
R256
A257
A259
K260
E261
T262
G263
A264
F265
L266
G271
P272
E273
L274
M275
R276
K277
L278
A279
G280
E281
S282
E283
S284
M285
L286
R287
K288
E291
A292
E294
K295
N296
A297
P298
A299
D304
E305
L306
D307
A308
K312
R313
E314
K315

T316
H317
G318
E319
V320
E321
R322
R323
I324
V325
L329
D333
GLY
LEU
LYS
GLN
ARG
A339
H340
V341
H346
R349
P350
N351
S352
P355
R356
R359
F360
G361
R362
F363
D364
R365
E366
I369
GLY
ILE
F372
D373
A374
T375
G376
R377
L378
E379
H384
T385
K386
D387
K388
L390
A446
V447
R448
M449
D450

A391
D392
D393
V394
D395
L396
E397
Q398
V399
A400
M401
E402
T403
H404
G405
H406
V407
G408
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Q421
A422
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R424
K425
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M427
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A455
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M508
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P510
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I531
A532
M533
E534
C535
Q536
K543
H544
E546
E554
E561
K565
A570
D577
E578
L579
D580
S581
I582
A583
K584
A585
R586
GLY
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D630
R635

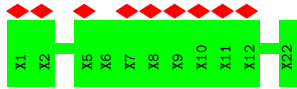
P636
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F682
S683
D686
L687
T688
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C691
Q692
R693
A694
C695
K696
L697
A698

I699
R700
E701
S702
I703
E704
S705
E706
I707
R708
R709
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ARG
GLU
PRO
SER
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SER
ALA
MET
GLU
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SER
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PRO
PRO
PRO
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GLU
GLY
ILE
R732
R733
D734
H735
F736
E737
F738
A739
M740
R741
PHE
ALA
ARG
ARG
SER
SER
V747
S748
D749
N750
D751
I752
R753
K754
Y755
E756
M757
F758

A759
Q760
T761
L762
Q763
Q764
S765
ARG
GLY
PHE
GLY
SER
PHE
ARG
PHE
PRO
SER
SER
GLY
GLM
GLY
ALA
GLY
PRO
GLU
GLM
GLN
GLY
SER
GLY
GLY
VAL
TYR
THR
GLY
SER
SER
VAL
TYR
GLY
SER
ASP
ASP
ASP
ASP
LEU
TYR
GLY

- Molecule 2: Unknown substrate

Chain G: 



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	85965	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 ($e^-/\text{\AA}^2$)	46	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	2.583	Depositor
Minimum map value	-1.547	Depositor
Average map value	0.007	Depositor
Map value standard deviation	0.087	Depositor
Recommended contour level	0.474	Depositor
Map size (Å)	276.48, 276.48, 276.48	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.08, 1.08, 1.08	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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

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	0.25	0/4233	0.51	0/5707
1	B	0.25	0/4315	0.49	0/5817
1	C	0.25	0/4322	0.50	0/5826
1	D	0.25	0/4295	0.49	0/5790
1	E	0.25	0/3885	0.48	0/5228
All	All	0.25	0/21050	0.49	0/28368

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [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	4166	0	4219	79	0
1	B	4247	0	4299	53	0
1	C	4254	0	4315	52	0
1	D	4227	0	4286	78	0
1	E	3826	0	3876	49	0
2	G	118	0	25	0	0
3	A	54	0	24	4	0
3	B	54	0	24	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	C	54	0	24	1	0
3	D	54	0	24	15	0
3	E	54	0	24	2	0
4	A	8	0	0	0	0
4	B	8	0	0	0	0
4	C	8	0	0	0	0
4	D	8	0	0	0	0
5	A	2	0	0	0	0
5	B	2	0	0	0	0
5	C	2	0	0	0	0
5	D	2	0	0	0	0
All	All	21148	0	21140	298	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 7.

All (298) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:626:PRO:HG2	1:A:754:LYS:HZ2	1.14	1.11
1:A:579:LEU:HD22	1:A:629:ILE:HD13	1.35	1.06
1:A:626:PRO:HG2	1:A:754:LYS:NZ	1.72	1.03
1:D:656:ILE:HD12	3:D:901:ADP:C6	1.96	1.01
1:A:626:PRO:HD3	1:A:755:TYR:HE1	1.36	0.87
1:A:584:LYS:HD3	1:A:628:ILE:CG2	2.07	0.83
1:D:657:LEU:HD21	1:D:687:LEU:HD12	1.60	0.83
1:A:579:LEU:HD22	1:A:629:ILE:CD1	2.09	0.83
1:B:751:ASP:O	1:B:755:TYR:HD2	1.65	0.79
1:A:584:LYS:CD	1:A:628:ILE:CG2	2.61	0.78
1:B:751:ASP:O	1:B:755:TYR:CD2	2.37	0.77
1:D:703:ILE:HG21	1:E:495:TYR:OH	1.85	0.76
1:A:512:LYS:NZ	1:A:612:SER:O	2.20	0.75
1:E:286:LEU:HD11	1:E:324:ILE:HD11	1.69	0.75
1:E:653:ARG:NH1	1:E:679:THR:O	2.20	0.74
1:B:284:SER:OG	1:B:288:LYS:NZ	2.22	0.73
1:C:390:LEU:HD12	1:C:391:ALA:N	2.04	0.73
1:D:656:ILE:CD1	3:D:901:ADP:C6	2.71	0.72
1:A:626:PRO:CD	1:A:755:TYR:HE1	2.02	0.72
3:A:904:ADP:O3B	1:B:359:ARG:NH2	2.22	0.72
1:A:584:LYS:HD3	1:A:628:ILE:HG22	1.71	0.71
1:B:649:ASP:N	1:B:652:SER:OG	2.24	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:333:ASP:OD2	1:D:359:ARG:NH2	2.23	0.71
1:A:595:GLY:O	1:A:599:ARG:NH1	2.23	0.71
1:C:711:ARG:NH1	1:C:712:GLU:OE2	2.24	0.70
1:C:649:ASP:N	1:C:652:SER:OG	2.22	0.70
1:C:321:GLU:N	1:C:321:GLU:OE1	2.25	0.70
1:D:332:MET:O	1:D:338:ARG:NH1	2.25	0.70
1:C:377:ARG:NH1	1:C:404:HIS:O	2.25	0.69
1:B:673:GLU:N	1:B:673:GLU:OE1	2.25	0.69
1:D:656:ILE:HD11	3:D:901:ADP:C4	2.28	0.68
1:B:332:MET:SD	1:B:338:ARG:NH1	2.67	0.68
1:A:598:ASP:OD1	1:A:599:ARG:N	2.27	0.67
1:A:626:PRO:CG	1:A:754:LYS:HZ2	2.00	0.67
1:C:371:ILE:HD12	1:C:407:VAL:HG12	1.75	0.66
1:D:410:ASP:OD2	1:D:462:SER:N	2.29	0.66
1:C:364:ASP:OD1	1:C:365:ARG:N	2.29	0.66
1:E:635:ARG:NH1	1:E:636:PRO:O	2.29	0.66
1:A:377:ARG:NH1	1:A:404:HIS:O	2.29	0.65
1:A:649:ASP:N	1:A:652:SER:OG	2.28	0.65
1:B:422:ALA:HB2	1:B:447:VAL:HG12	1.79	0.65
1:A:208:GLY:N	1:A:379:GLU:OE2	2.29	0.65
1:E:261:GLU:OE2	1:E:262:THR:OG1	2.14	0.65
1:B:350:PRO:O	1:B:358:ARG:NH2	2.29	0.64
1:A:626:PRO:CD	1:A:755:TYR:CE1	2.81	0.64
1:E:425:LYS:NZ	1:E:451:ASP:OD1	2.30	0.64
1:E:252:THR:N	3:E:902:ADP:O1A	2.31	0.64
1:B:371:ILE:HD12	1:B:407:VAL:HG12	1.80	0.64
1:D:737:GLU:O	1:D:741:ARG:NH1	2.31	0.64
1:A:584:LYS:CD	1:A:628:ILE:HG21	2.28	0.64
1:B:732:ARG:NH2	1:B:734:ASP:OD2	2.31	0.63
1:D:649:ASP:N	1:D:652:SER:OG	2.32	0.63
1:A:450:ASP:OD1	1:A:451:ASP:N	2.31	0.63
1:A:627:ASP:HB2	1:A:754:LYS:HZ3	1.64	0.62
1:D:656:ILE:CD1	3:D:901:ADP:C5	2.82	0.62
1:A:627:ASP:H	1:A:754:LYS:HZ1	1.47	0.62
1:E:649:ASP:N	1:E:652:SER:OG	2.32	0.62
1:A:580:ASP:OD1	1:A:581:SER:N	2.33	0.62
1:A:390:LEU:HD11	1:A:394:VAL:HG11	1.81	0.62
1:A:423:ILE:HD12	1:B:229:LEU:HD22	1.82	0.62
1:A:750:ASN:OD1	1:A:751:ASP:N	2.32	0.62
1:D:501:ASP:OD1	1:D:502:LYS:N	2.33	0.62
1:D:450:ASP:OD1	1:D:451:ASP:N	2.33	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:544:GLY:HA2	1:A:582:ILE:HD11	1.81	0.61
1:B:377:ARG:NH1	1:B:404:HIS:O	2.33	0.61
1:A:216:ILE:O	1:A:220:VAL:HG22	2.00	0.61
1:C:348:ASN:OD1	1:C:349:ARG:N	2.33	0.61
1:D:656:ILE:HG13	3:D:901:ADP:C2	2.36	0.61
1:A:427:MET:SD	1:A:428:ASP:N	2.74	0.61
1:B:627:ASP:OD1	1:B:628:ILE:HG23	2.01	0.61
1:A:416:SER:O	1:A:420:LEU:HD23	2.01	0.61
3:D:904:ADP:O1B	1:E:359:ARG:NH1	2.32	0.61
1:A:627:ASP:HB2	1:A:754:LYS:NZ	2.16	0.60
1:D:705:SER:O	1:D:709:ARG:NE	2.33	0.60
1:B:356:ALA:O	1:B:362:ARG:NH1	2.34	0.60
1:A:597:ALA:O	1:A:601:ILE:HD12	2.02	0.60
1:E:364:ASP:OD1	1:E:365:ARG:N	2.34	0.60
1:B:275:MET:SD	1:C:323:ARG:NE	2.75	0.60
1:D:750:ASN:OD1	1:D:751:ASP:N	2.33	0.60
1:C:609:ASP:OD2	1:C:635:ARG:NH2	2.35	0.60
1:D:478:ASP:OD1	1:D:662:ARG:NH1	2.34	0.59
1:E:296:ASN:OD1	1:E:297:ALA:N	2.35	0.59
1:D:656:ILE:HD11	3:D:901:ADP:C5	2.37	0.59
1:E:359:ARG:NE	1:E:360:PHE:O	2.33	0.59
1:E:350:PRO:O	1:E:358:ARG:NH1	2.36	0.59
1:A:629:ILE:CG2	1:A:633:ILE:HD11	2.33	0.58
1:D:650:GLU:N	1:D:650:GLU:OE1	2.37	0.58
1:E:319:GLU:N	1:E:319:GLU:OE1	2.37	0.58
1:A:745:ARG:NH2	1:B:765:SER:O	2.37	0.58
1:D:635:ARG:NH1	1:D:636:PRO:O	2.37	0.57
1:E:325:VAL:O	1:E:329:LEU:HD13	2.04	0.57
1:A:316:THR:HG23	1:A:321:GLU:OE2	2.04	0.57
1:B:745:ARG:NH2	1:B:747:VAL:O	2.38	0.56
1:D:216:ILE:O	1:D:220:VAL:HG22	2.05	0.56
1:D:287:ARG:O	1:D:291:GLU:HG3	2.05	0.56
1:D:703:ILE:HD13	1:D:706:GLU:OE1	2.05	0.56
1:D:547:LEU:HD23	1:D:547:LEU:H	1.71	0.55
1:D:489:LEU:HD22	1:D:531:ILE:CD1	2.35	0.55
1:A:626:PRO:HD3	1:A:755:TYR:CE1	2.28	0.55
1:C:465:ARG:NH1	1:D:358:ARG:O	2.41	0.54
1:C:700:ARG:NE	1:D:491:GLU:OE2	2.40	0.54
1:A:627:ASP:H	1:A:754:LYS:NZ	2.05	0.54
1:A:316:THR:O	1:A:322:ARG:NH2	2.41	0.54
1:A:428:ASP:OD1	1:A:429:LEU:N	2.41	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:547:LEU:HD12	1:D:559:VAL:HG22	1.89	0.53
1:B:448:THR:O	1:B:451:ASP:OD1	2.26	0.53
1:E:653:ARG:O	1:E:657:LEU:HD23	2.09	0.53
1:E:259:ALA:O	1:E:263:GLY:N	2.39	0.53
1:D:523:GLY:HA2	3:D:901:ADP:O1A	2.09	0.53
1:D:243:LEU:HD12	1:D:369:ILE:HD11	1.91	0.53
1:D:283:GLU:OE1	1:D:283:GLU:N	2.41	0.53
1:D:733:ARG:NH2	1:D:737:GLU:OE2	2.42	0.52
1:A:321:GLU:OE2	1:A:322:ARG:NH1	2.42	0.52
1:A:749:ASP:HA	1:A:752:ILE:HG22	1.91	0.52
1:C:442:MET:SD	1:C:442:MET:N	2.82	0.52
1:A:549:THR:HG21	1:A:554:GLU:OE1	2.10	0.52
1:B:638:ARG:O	1:B:639:LEU:HD22	2.10	0.52
1:B:333:ASP:OD2	1:B:359:ARG:NH2	2.43	0.52
1:A:626:PRO:HG3	1:A:755:TYR:CD1	2.44	0.52
1:E:653:ARG:NH1	1:E:676:ALA:O	2.36	0.52
1:A:520:PRO:HD3	1:A:624:ASN:OD1	2.10	0.51
1:A:623:THR:OG1	1:A:629:ILE:HD11	2.10	0.51
1:E:656:ILE:HD11	3:E:901:ADP:C5	2.45	0.51
1:A:604:ILE:HG22	1:A:608:MET:SD	2.50	0.51
1:D:467:THR:HG22	1:D:467:THR:O	2.10	0.51
1:C:640:ASP:OD1	1:C:640:ASP:N	2.44	0.51
1:A:423:ILE:HD12	1:B:229:LEU:CD2	2.40	0.51
1:D:580:ASP:OD1	1:D:581:SER:N	2.44	0.51
1:C:547:LEU:HD13	1:C:559:VAL:CG2	2.42	0.50
1:E:351:ASN:OD1	1:E:352:SER:N	2.45	0.50
1:C:428:ASP:OD1	1:C:429:LEU:N	2.45	0.50
1:E:286:LEU:HD11	1:E:324:ILE:CD1	2.41	0.50
1:B:638:ARG:C	1:B:639:LEU:HD22	2.32	0.50
1:A:364:ASP:OD1	1:A:365:ARG:N	2.45	0.50
1:D:673:GLU:OE1	1:D:673:GLU:N	2.38	0.50
1:C:578:GLU:OE1	1:D:602:ASN:ND2	2.45	0.50
1:E:384:HIS:CE1	1:E:415:CYS:HB2	2.46	0.50
1:D:653:ARG:NE	1:D:679:THR:O	2.44	0.49
1:C:268:LEU:H	1:C:268:LEU:HD23	1.77	0.49
1:C:605:LEU:HD21	1:C:632:ALA:HB1	1.94	0.49
1:D:448:THR:HG22	1:D:449:MET:N	2.27	0.49
1:B:246:PRO:HG3	1:B:371:ILE:HD11	1.94	0.49
1:C:542:ILE:HD11	1:C:547:LEU:HD23	1.93	0.49
1:E:752:ILE:HG22	1:E:756:GLU:OE1	2.13	0.49
1:C:586:ARG:NH2	1:C:602:ASN:OD1	2.46	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:390:LEU:HD23	1:A:390:LEU:H	1.77	0.49
1:B:559:VAL:HG11	1:B:603:GLN:HG3	1.95	0.49
1:D:403:THR:HG23	1:D:406:HIS:CD2	2.47	0.49
1:D:702:SER:OG	1:E:502:LYS:NZ	2.44	0.49
1:E:579:LEU:HA	1:E:582:ILE:HG22	1.95	0.48
1:C:489:LEU:C	1:C:489:LEU:HD23	2.34	0.48
1:A:390:LEU:CD1	1:A:394:VAL:HG11	2.42	0.48
1:A:495:TYR:HB3	1:A:503:PHE:CZ	2.48	0.48
1:C:579:LEU:HA	1:C:582:ILE:HG22	1.95	0.48
1:A:584:LYS:HE2	1:A:628:ILE:HG21	1.94	0.48
1:E:638:ARG:C	1:E:639:LEU:HD22	2.33	0.48
1:E:638:ARG:O	1:E:639:LEU:HD22	2.13	0.48
1:B:731:ILE:HD12	1:B:736:PHE:CE1	2.49	0.48
1:A:653:ARG:NH1	1:A:679:THR:O	2.47	0.48
1:B:442:MET:SD	1:B:442:MET:N	2.87	0.48
1:A:409:ALA:HB2	3:A:904:ADP:H5'1	1.94	0.48
1:A:584:LYS:HD2	1:A:628:ILE:CG2	2.42	0.47
1:C:547:LEU:HD12	1:C:547:LEU:O	2.14	0.47
1:E:229:LEU:HD12	1:E:230:PHE:N	2.29	0.47
1:E:752:ILE:O	1:E:756:GLU:OE1	2.31	0.47
1:D:483:GLU:OE1	1:D:483:GLU:N	2.45	0.47
1:D:489:LEU:HD22	1:D:531:ILE:HD12	1.96	0.47
1:D:391:ALA:HB3	1:D:394:VAL:HG22	1.96	0.47
1:E:233:ILE:HG23	1:E:235:VAL:HG12	1.97	0.47
1:B:728:VAL:HG23	1:B:728:VAL:O	2.14	0.47
1:B:640:ASP:OD1	1:B:640:ASP:N	2.45	0.47
1:C:390:LEU:HD12	1:C:391:ALA:H	1.79	0.47
1:C:758:PHE:O	1:C:761:THR:HG22	2.14	0.47
1:C:381:LEU:HG	1:C:411:LEU:HD12	1.96	0.47
1:C:448:THR:HG22	1:C:449:MET:N	2.30	0.47
1:C:484:ASP:OD1	1:C:485:VAL:N	2.48	0.47
1:D:521:GLY:HA2	3:D:901:ADP:O3B	2.15	0.47
1:B:310:ALA:N	1:B:311:PRO:HD3	2.30	0.46
1:B:528:ALA:HB2	1:B:575:PHE:CE1	2.50	0.46
1:A:252:THR:OG1	3:A:904:ADP:O2B	2.22	0.46
1:B:422:ALA:CB	1:B:447:VAL:HG12	2.44	0.46
1:D:282:SER:OG	1:D:283:GLU:OE1	2.32	0.46
1:D:521:GLY:HA2	3:D:901:ADP:PB	2.55	0.46
1:E:292:GLU:O	1:E:296:ASN:ND2	2.49	0.46
1:A:440:GLU:N	1:A:442:MET:SD	2.89	0.46
1:C:359:ARG:NE	1:C:360:PHE:O	2.42	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:421:GLN:NE2	1:A:454:TRP:CZ3	2.84	0.46
1:B:378:LEU:HD23	1:B:378:LEU:O	2.15	0.46
1:C:744:ARG:NH2	1:D:634:LEU:O	2.43	0.46
1:C:617:VAL:O	1:C:617:VAL:HG23	2.15	0.46
1:D:422:ALA:HB2	1:D:447:VAL:HG12	1.98	0.46
1:E:493:VAL:HG21	1:E:531:ILE:HD11	1.97	0.46
1:B:734:ASP:OD1	1:B:734:ASP:N	2.50	0.45
1:D:523:GLY:CA	3:D:901:ADP:O1A	2.64	0.45
1:D:640:ASP:OD1	1:D:640:ASP:N	2.49	0.45
1:D:648:PRO:O	1:D:653:ARG:NH1	2.48	0.45
1:A:206:ILE:HD13	1:A:254:ILE:HD13	1.98	0.45
1:E:390:LEU:HD23	1:E:390:LEU:H	1.82	0.45
1:A:520:PRO:CD	1:A:624:ASN:OD1	2.65	0.45
1:A:320:VAL:O	1:A:324:ILE:HG12	2.16	0.45
1:C:547:LEU:HD13	1:C:559:VAL:HG23	1.98	0.45
1:C:692:GLN:NE2	1:D:509:THR:O	2.50	0.45
1:D:489:LEU:O	1:D:489:LEU:HD23	2.16	0.45
1:E:649:ASP:N	1:E:652:SER:HG	2.15	0.45
1:D:728:VAL:HG23	1:D:728:VAL:O	2.17	0.44
1:B:443:ASN:OD1	1:B:444:SER:N	2.50	0.44
1:B:508:MET:N	1:B:508:MET:SD	2.91	0.44
1:E:740:MET:SD	1:E:741:ARG:NH1	2.91	0.44
1:D:653:ARG:HA	1:D:656:ILE:HG22	1.99	0.44
1:A:391:ALA:HB3	1:A:394:VAL:HG23	1.98	0.44
1:A:448:THR:HG22	1:A:449:MET:N	2.33	0.44
1:D:215:GLN:O	1:D:218:GLU:HG3	2.17	0.44
1:D:252:THR:OG1	3:D:904:ADP:O2B	2.31	0.44
1:D:656:ILE:HD12	3:D:901:ADP:C5	2.42	0.44
1:A:753:ARG:HD2	1:A:753:ARG:O	2.18	0.44
1:D:403:THR:HG21	1:D:411:LEU:HD21	2.00	0.44
1:D:653:ARG:O	1:D:656:ILE:HG22	2.18	0.44
1:C:605:LEU:HD21	1:C:632:ALA:CB	2.48	0.44
1:D:489:LEU:HD22	1:D:531:ILE:HD11	1.98	0.44
1:D:200:GLU:OE2	1:D:260:ASN:ND2	2.45	0.43
1:D:321:GLU:OE1	1:D:321:GLU:N	2.47	0.43
1:E:233:ILE:CG2	1:E:235:VAL:HG12	2.48	0.43
1:E:495:TYR:N	1:E:496:PRO:HD2	2.34	0.43
1:A:547:LEU:HD13	1:A:559:VAL:HG22	1.99	0.43
1:E:358:ARG:NH2	1:E:366:GLU:OE2	2.51	0.43
1:C:547:LEU:HD11	1:C:582:ILE:HD11	1.99	0.43
1:A:549:THR:HG22	1:A:550:MET:N	2.32	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:501:ASP:OD1	1:B:502:LYS:N	2.50	0.43
1:D:218:GLU:HA	1:D:222:LEU:HD23	1.99	0.43
1:D:364:ASP:OD1	1:D:365:ARG:N	2.49	0.43
1:B:449:MET:HE2	1:B:449:MET:HA	2.00	0.43
1:A:217:LYS:HG3	1:A:218:GLU:N	2.34	0.43
1:C:398:GLN:O	1:C:402:GLU:OE1	2.36	0.43
1:C:583:ALA:HB1	1:C:601:ILE:HD13	2.01	0.43
1:D:692:GLN:HA	1:E:508:MET:HE3	2.01	0.43
1:A:489:LEU:HG	1:A:531:ILE:HD11	2.01	0.43
1:A:499:HIS:HB3	1:A:502:LYS:HB2	2.00	0.43
1:C:221:GLU:O	1:C:225:ARG:N	2.46	0.43
1:A:253:LEU:HD12	3:A:904:ADP:H2'	2.01	0.43
1:A:579:LEU:HB3	1:A:623:THR:OG1	2.18	0.43
1:C:248:GLY:HA3	1:D:359:ARG:HD2	2.01	0.43
1:C:625:ARG:HD2	1:C:628:ILE:HD12	2.00	0.43
1:C:625:ARG:CD	1:C:628:ILE:HD12	2.49	0.43
1:D:204:ASP:OD1	1:D:205:ASP:N	2.52	0.43
1:E:398:GLN:NE2	1:E:399:VAL:HG13	2.34	0.42
1:A:626:PRO:HG3	1:A:755:TYR:HD1	1.84	0.42
1:A:653:ARG:HD2	1:A:676:ALA:HA	2.01	0.42
1:B:451:ASP:OD1	1:B:452:PHE:N	2.52	0.42
1:B:493:VAL:HG21	1:B:535:CYS:SG	2.59	0.42
1:B:306:LEU:CD2	1:B:345:ALA:HB1	2.49	0.42
1:D:333:ASP:OD1	1:D:334:GLY:N	2.53	0.42
1:A:597:ALA:O	1:A:601:ILE:CD1	2.68	0.42
1:B:335:LEU:O	1:B:335:LEU:HD12	2.19	0.42
1:B:752:ILE:O	1:B:756:GLU:HG2	2.19	0.42
1:C:527:LEU:O	1:C:531:ILE:HG12	2.20	0.42
1:D:656:ILE:HD12	3:D:901:ADP:N1	2.30	0.42
1:A:584:LYS:CE	1:A:628:ILE:HG21	2.50	0.42
1:D:304:ASP:OD1	1:D:305:GLU:N	2.52	0.42
1:B:689:GLU:O	1:B:693:ARG:HG2	2.19	0.42
1:E:396:LEU:O	1:E:399:VAL:HG22	2.20	0.42
1:B:359:ARG:HD2	1:B:360:PHE:O	2.20	0.42
1:B:475:THR:HG22	1:B:476:TRP:N	2.34	0.42
1:C:489:LEU:HD22	1:C:531:ILE:HD11	2.02	0.42
1:D:573:VAL:HG23	1:D:573:VAL:O	2.19	0.42
1:A:246:PRO:O	1:A:249:THR:OG1	2.31	0.41
1:B:558:ASN:O	1:B:561:GLU:HG3	2.20	0.41
1:C:627:ASP:OD1	1:C:628:ILE:N	2.53	0.41
1:B:283:GLU:OE1	1:B:283:GLU:N	2.53	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:653:ARG:O	1:E:656:ILE:HG22	2.21	0.41
1:A:625:ARG:HA	1:A:626:PRO:HD2	1.86	0.41
1:B:627:ASP:OD1	1:B:627:ASP:C	2.59	0.41
1:E:497:VAL:HG22	1:E:497:VAL:O	2.19	0.41
1:A:603:GLN:HA	1:A:606:THR:HG22	2.02	0.41
1:D:547:LEU:CD1	1:D:559:VAL:HG22	2.50	0.41
1:E:489:LEU:O	1:E:493:VAL:HG22	2.20	0.41
1:D:696:LYS:O	1:D:699:ILE:HG22	2.20	0.41
1:E:218:GLU:O	1:E:222:LEU:HD23	2.21	0.41
1:A:329:LEU:HD21	1:A:357:LEU:HD22	2.03	0.41
1:C:524:LYS:NZ	3:C:901:ADP:O3B	2.54	0.41
1:C:647:LEU:HD12	1:C:752:ILE:HD12	2.01	0.41
1:D:274:ILE:HG21	1:D:286:LEU:HG	2.02	0.41
1:E:242:LEU:HD23	1:E:243:LEU:N	2.36	0.41
1:B:293:ALA:CB	1:B:301:ILE:HD11	2.50	0.41
1:B:573:VAL:HG13	1:B:573:VAL:O	2.21	0.41
1:C:653:ARG:HA	1:C:656:ILE:HG22	2.03	0.41
1:C:751:ASP:O	1:C:755:TYR:HD2	2.04	0.41
1:D:203:TYR:HA	1:D:206:ILE:HG22	2.02	0.41
1:D:371:ILE:HD12	1:D:407:VAL:HG12	2.01	0.41
1:E:489:LEU:HD21	1:E:531:ILE:HG12	2.02	0.41
1:A:491:GLU:HG2	1:A:495:TYR:CE2	2.56	0.41
1:C:580:ASP:OD1	1:C:580:ASP:N	2.54	0.40
1:C:603:GLN:O	1:C:607:GLU:HG3	2.21	0.40
1:D:392:ASP:OD1	1:D:393:ASP:N	2.54	0.40
1:B:390:LEU:HG	1:B:391:ALA:N	2.37	0.40
1:B:670:VAL:HG21	1:B:736:PHE:CE2	2.57	0.40
1:C:534:GLU:CG	1:C:534:GLU:O	2.70	0.40
3:D:904:ADP:O1B	1:E:362:ARG:NH2	2.54	0.40
1:E:391:ALA:HB3	1:E:394:VAL:HG13	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	A	524/806 (65%)	505 (96%)	19 (4%)	0	100	100
1	B	536/806 (66%)	514 (96%)	22 (4%)	0	100	100
1	C	536/806 (66%)	509 (95%)	27 (5%)	0	100	100
1	D	533/806 (66%)	505 (95%)	28 (5%)	0	100	100
1	E	473/806 (59%)	456 (96%)	17 (4%)	0	100	100
All	All	2602/4030 (65%)	2489 (96%)	113 (4%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	444/678 (66%)	443 (100%)	1 (0%)	93	98
1	B	453/678 (67%)	453 (100%)	0	100	100
1	C	454/678 (67%)	454 (100%)	0	100	100
1	D	451/678 (66%)	450 (100%)	1 (0%)	93	98
1	E	406/678 (60%)	405 (100%)	1 (0%)	93	98
All	All	2208/3390 (65%)	2205 (100%)	3 (0%)	93	98

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

Mol	Chain	Res	Type
1	A	210	ARG
1	D	732	ARG
1	E	323	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 26 ligands modelled in this entry, 8 are monoatomic - leaving 18 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	BEF	D	902	3	0,3,3	-	-	-		
3	ADP	C	901	5,4	24,29,29	0.84	0	29,45,45	0.91	1 (3%)
4	BEF	C	905	3	0,3,3	-	-	-		
4	BEF	B	905	3	0,3,3	-	-	-		
3	ADP	C	904	5,4	24,29,29	0.84	0	29,45,45	0.89	1 (3%)
3	ADP	B	904	5,4	24,29,29	0.84	0	29,45,45	0.92	2 (6%)
3	ADP	E	902	-	24,29,29	0.95	1 (4%)	29,45,45	1.50	5 (17%)
3	ADP	A	904	5,4	24,29,29	0.89	1 (4%)	29,45,45	0.99	1 (3%)
3	ADP	D	904	5,4	24,29,29	0.84	0	29,45,45	0.93	2 (6%)
3	ADP	D	901	5,4	24,29,29	0.78	0	29,45,45	0.92	2 (6%)
3	ADP	B	901	5,4	24,29,29	0.84	0	29,45,45	0.91	2 (6%)
4	BEF	C	902	3	0,3,3	-	-	-		
4	BEF	D	905	3	0,3,3	-	-	-		
4	BEF	A	902	3	0,3,3	-	-	-		
3	ADP	E	901	-	24,29,29	0.94	1 (4%)	29,45,45	1.50	5 (17%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	BEF	B	902	3	0,3,3	-	-	-		
3	ADP	A	901	5,4	24,29,29	0.95	1 (4%)	29,45,45	1.02	3 (10%)
4	BEF	A	905	3	0,3,3	-	-	-		

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
3	ADP	C	901	5,4	-	3/12/32/32	0/3/3/3
3	ADP	C	904	5,4	-	6/12/32/32	0/3/3/3
3	ADP	B	904	5,4	-	6/12/32/32	0/3/3/3
3	ADP	E	902	-	-	2/12/32/32	0/3/3/3
3	ADP	A	904	5,4	-	6/12/32/32	0/3/3/3
3	ADP	D	904	5,4	-	6/12/32/32	0/3/3/3
3	ADP	D	901	5,4	-	5/12/32/32	0/3/3/3
3	ADP	B	901	5,4	-	4/12/32/32	0/3/3/3
3	ADP	E	901	-	-	3/12/32/32	0/3/3/3
3	ADP	A	901	5,4	-	4/12/32/32	0/3/3/3

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	904	ADP	PB-O1B	2.63	1.59	1.50
3	A	901	ADP	PB-O1B	2.62	1.59	1.50
3	E	902	ADP	C5-C4	2.40	1.47	1.40
3	E	901	ADP	C5-C4	2.36	1.47	1.40

All (24) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	901	ADP	PA-O3A-PB	-3.72	120.08	132.83
3	E	902	ADP	N3-C2-N1	-3.67	122.94	128.68
3	E	901	ADP	N3-C2-N1	-3.64	123.00	128.68
3	E	902	ADP	C3'-C2'-C1'	3.54	106.31	100.98
3	E	902	ADP	PA-O3A-PB	-3.40	121.16	132.83
3	E	901	ADP	C3'-C2'-C1'	3.12	105.67	100.98
3	E	901	ADP	C4-C5-N7	-2.63	106.66	109.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	902	ADP	C4-C5-N7	-2.61	106.68	109.40
3	B	904	ADP	C5-C6-N6	2.28	123.82	120.35
3	B	901	ADP	C5-C6-N6	2.26	123.78	120.35
3	D	901	ADP	C5-C6-N6	2.26	123.78	120.35
3	D	904	ADP	C5-C6-N6	2.25	123.78	120.35
3	A	904	ADP	C5-C6-N6	2.25	123.78	120.35
3	C	901	ADP	C5-C6-N6	2.22	123.72	120.35
3	D	901	ADP	O2B-PB-O3A	2.18	111.95	104.64
3	C	904	ADP	C5-C6-N6	2.18	123.67	120.35
3	A	901	ADP	C5-C6-N6	2.16	123.64	120.35
3	A	901	ADP	O2B-PB-O3A	2.11	111.73	104.64
3	E	902	ADP	C2-N1-C6	2.05	122.26	118.75
3	B	904	ADP	O2B-PB-O3A	2.04	111.48	104.64
3	A	901	ADP	O3B-PB-O3A	2.02	111.42	104.64
3	D	904	ADP	O2B-PB-O3A	2.02	111.42	104.64
3	E	901	ADP	C2-N1-C6	2.01	122.20	118.75
3	B	901	ADP	O2B-PB-O3A	2.00	111.35	104.64

There are no chirality outliers.

All (45) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	904	ADP	C5'-O5'-PA-O2A
3	B	901	ADP	C5'-O5'-PA-O1A
3	B	904	ADP	C5'-O5'-PA-O1A
3	C	904	ADP	C5'-O5'-PA-O1A
3	D	901	ADP	C5'-O5'-PA-O2A
3	D	904	ADP	C5'-O5'-PA-O1A
3	D	904	ADP	C5'-O5'-PA-O2A
3	E	901	ADP	C5'-O5'-PA-O1A
3	E	901	ADP	C5'-O5'-PA-O2A
3	E	901	ADP	C5'-O5'-PA-O3A
3	B	904	ADP	C3'-C4'-C5'-O5'
3	A	901	ADP	O4'-C4'-C5'-O5'
3	A	901	ADP	C3'-C4'-C5'-O5'
3	B	904	ADP	O4'-C4'-C5'-O5'
3	D	904	ADP	O4'-C4'-C5'-O5'
3	D	904	ADP	C3'-C4'-C5'-O5'
3	A	904	ADP	O4'-C4'-C5'-O5'
3	A	904	ADP	C3'-C4'-C5'-O5'
3	C	904	ADP	O4'-C4'-C5'-O5'
3	E	902	ADP	PB-O3A-PA-O1A

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Mol	Chain	Res	Type	Atoms
3	A	904	ADP	C4'-C5'-O5'-PA
3	C	904	ADP	C4'-C5'-O5'-PA
3	A	901	ADP	C4'-C5'-O5'-PA
3	B	904	ADP	C4'-C5'-O5'-PA
3	D	904	ADP	C4'-C5'-O5'-PA
3	A	904	ADP	C5'-O5'-PA-O3A
3	B	904	ADP	C5'-O5'-PA-O3A
3	C	904	ADP	C5'-O5'-PA-O3A
3	D	901	ADP	C5'-O5'-PA-O3A
3	C	904	ADP	C3'-C4'-C5'-O5'
3	D	901	ADP	PB-O3A-PA-O2A
3	D	901	ADP	C4'-C5'-O5'-PA
3	B	904	ADP	C5'-O5'-PA-O2A
3	C	904	ADP	C5'-O5'-PA-O2A
3	D	901	ADP	C5'-O5'-PA-O1A
3	A	901	ADP	PA-O3A-PB-O1B
3	C	901	ADP	O4'-C4'-C5'-O5'
3	B	901	ADP	C4'-C5'-O5'-PA
3	C	901	ADP	C4'-C5'-O5'-PA
3	E	902	ADP	PB-O3A-PA-O2A
3	C	901	ADP	C3'-C4'-C5'-O5'
3	B	901	ADP	C5'-O5'-PA-O3A
3	D	904	ADP	C5'-O5'-PA-O3A
3	A	904	ADP	C5'-O5'-PA-O1A
3	B	901	ADP	C5'-O5'-PA-O2A

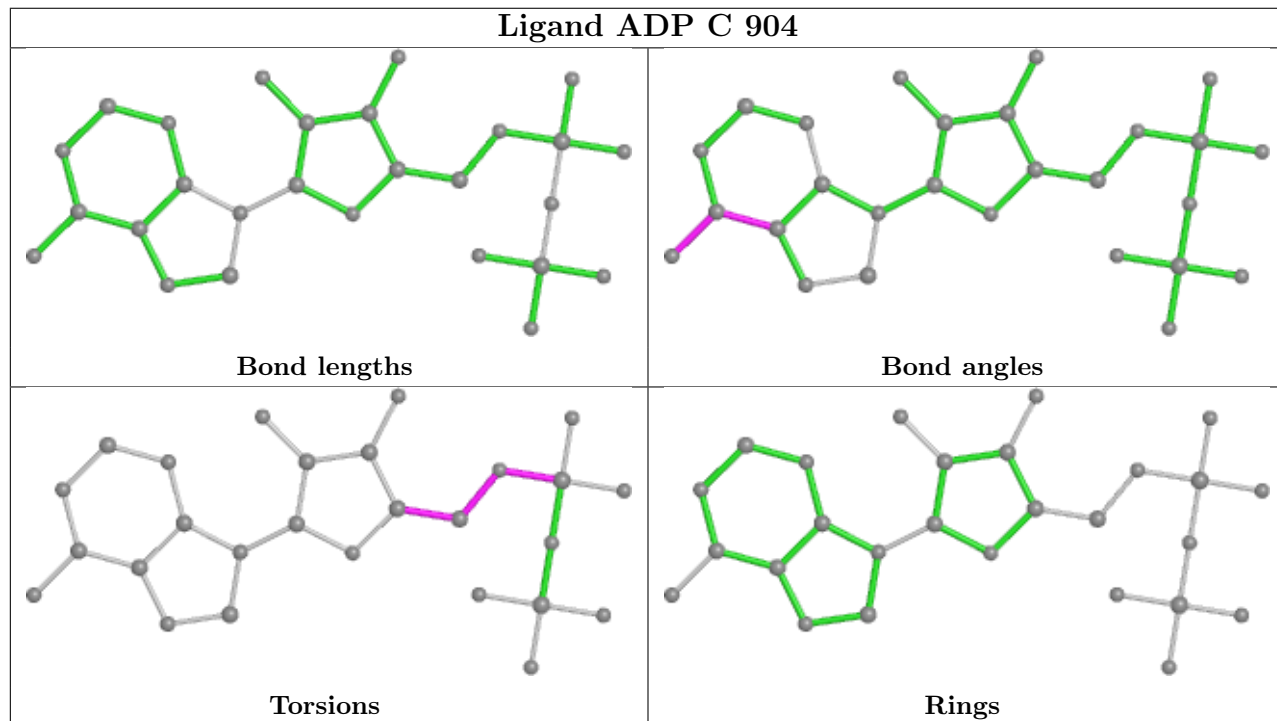
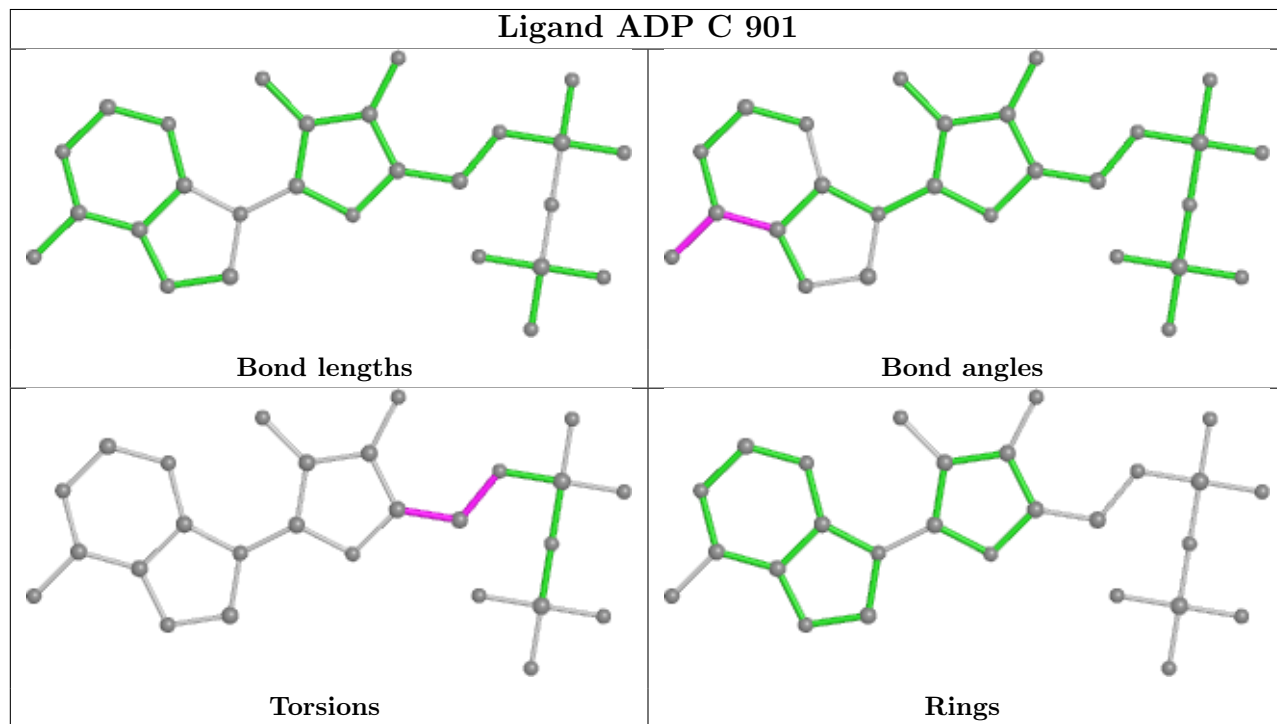
There are no ring outliers.

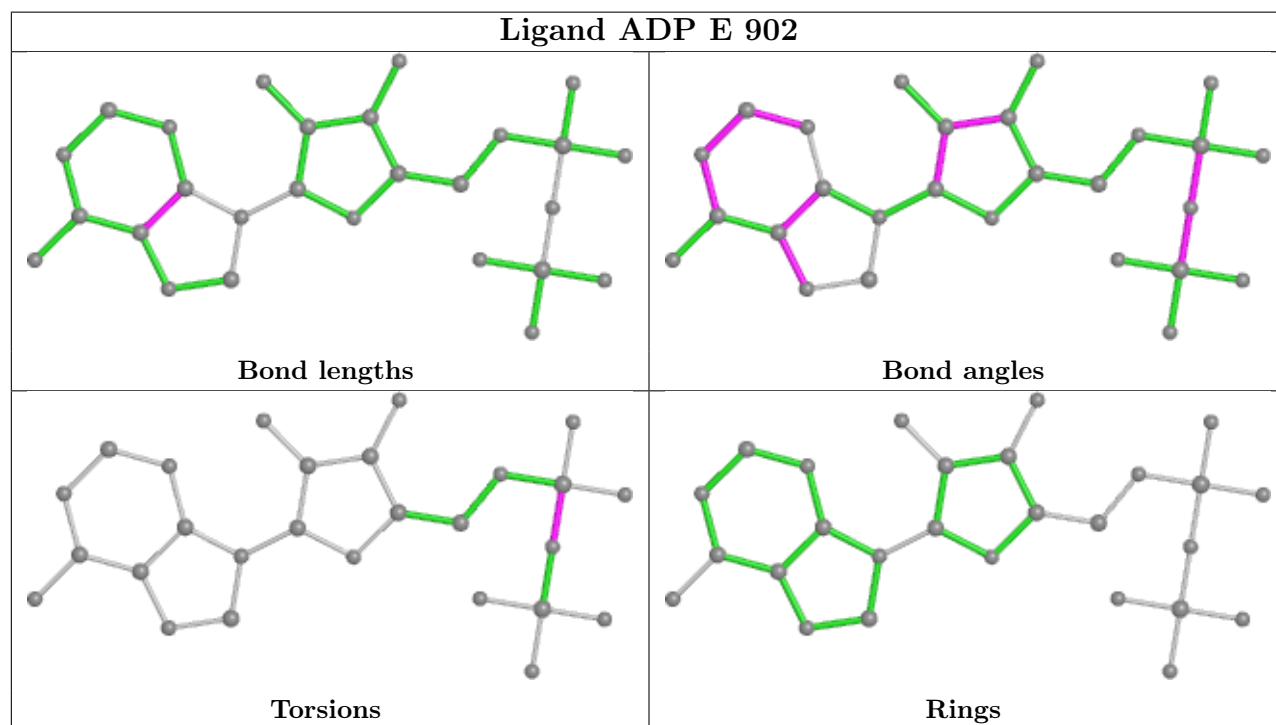
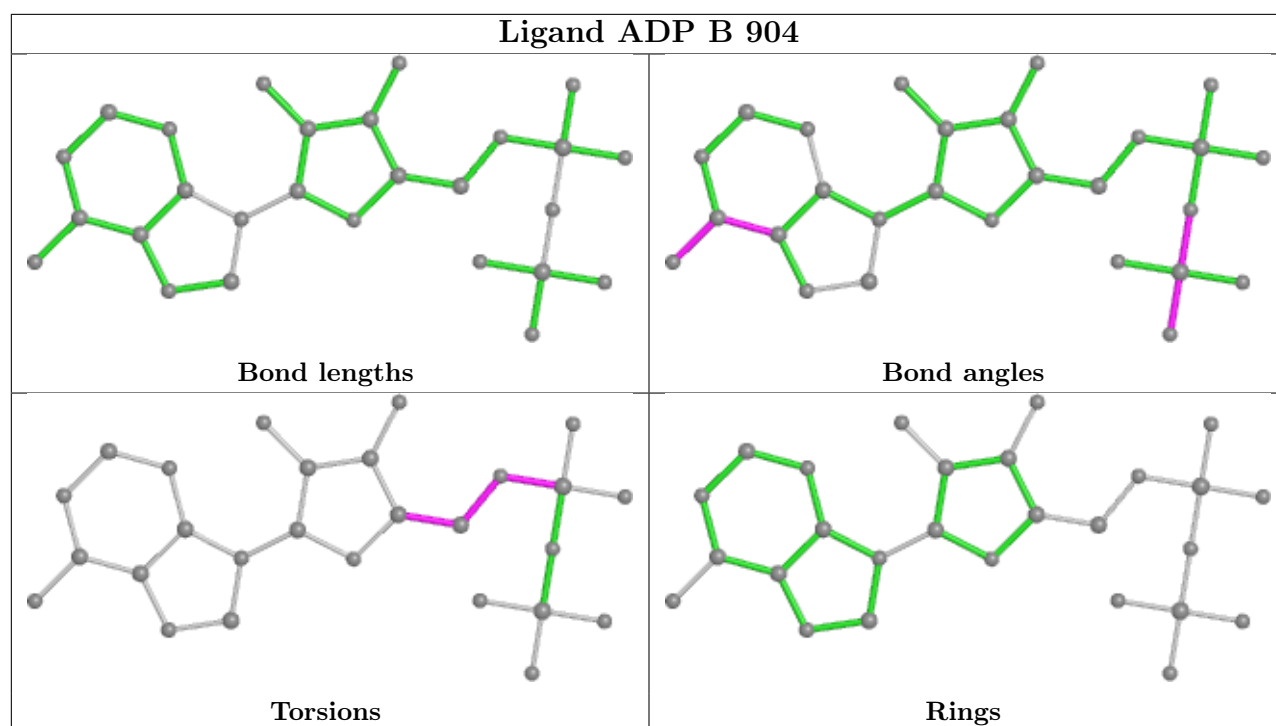
6 monomers are involved in 22 short contacts:

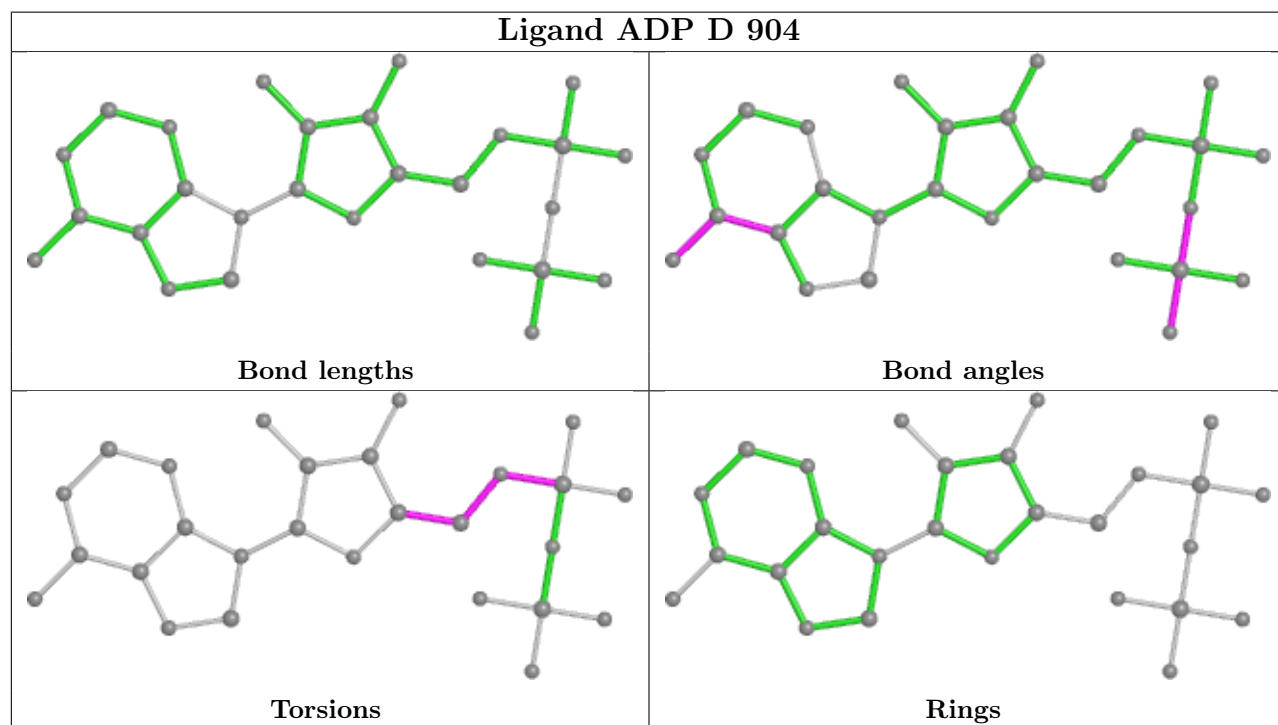
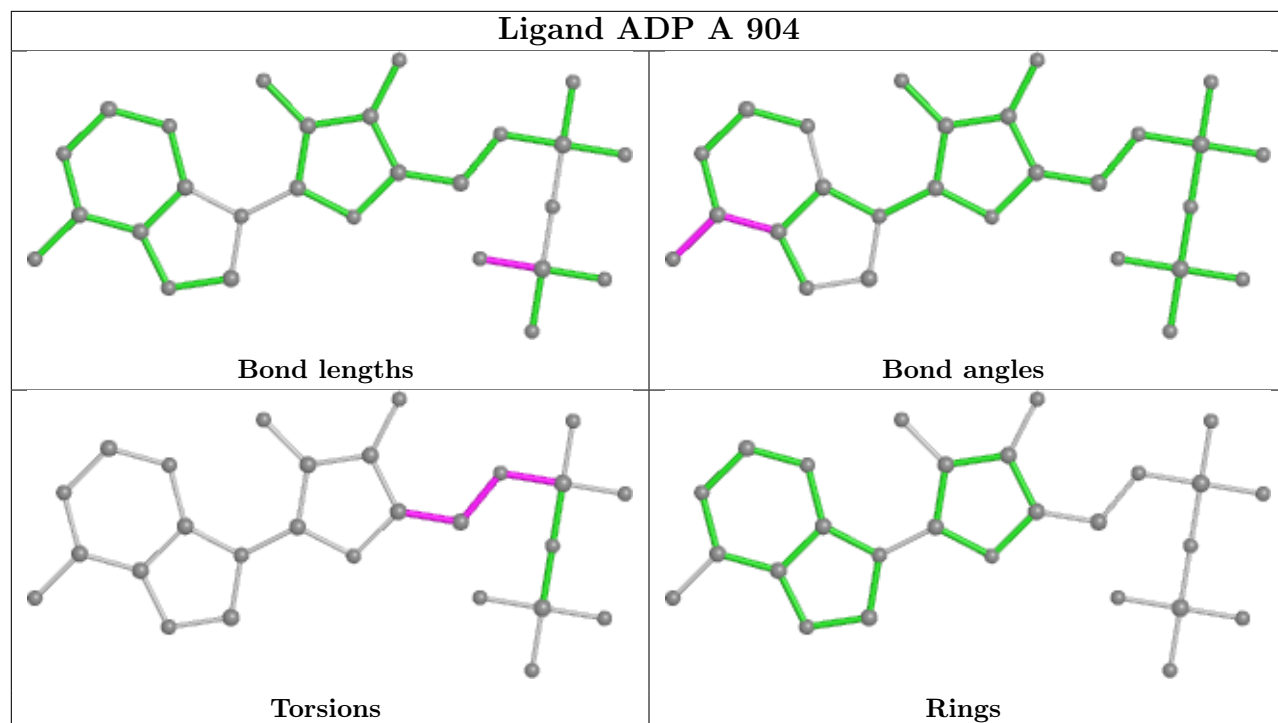
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	C	901	ADP	1	0
3	E	902	ADP	1	0
3	A	904	ADP	4	0
3	D	904	ADP	3	0
3	D	901	ADP	12	0
3	E	901	ADP	1	0

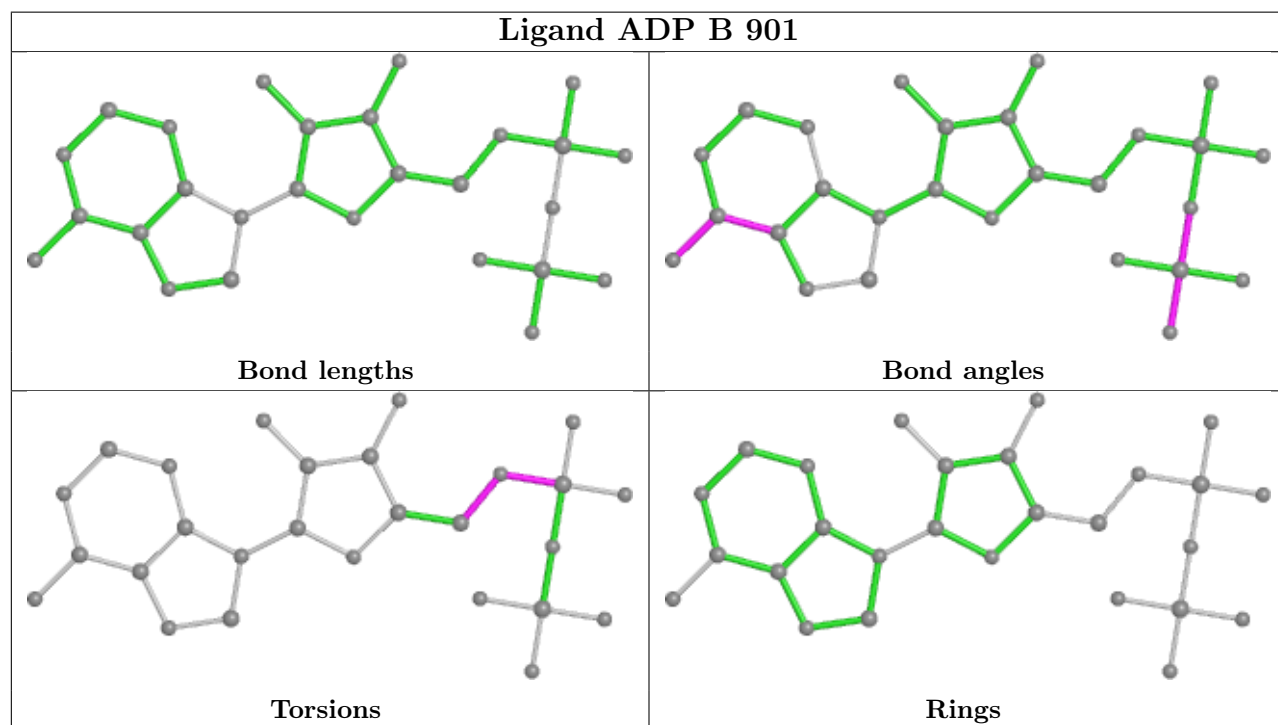
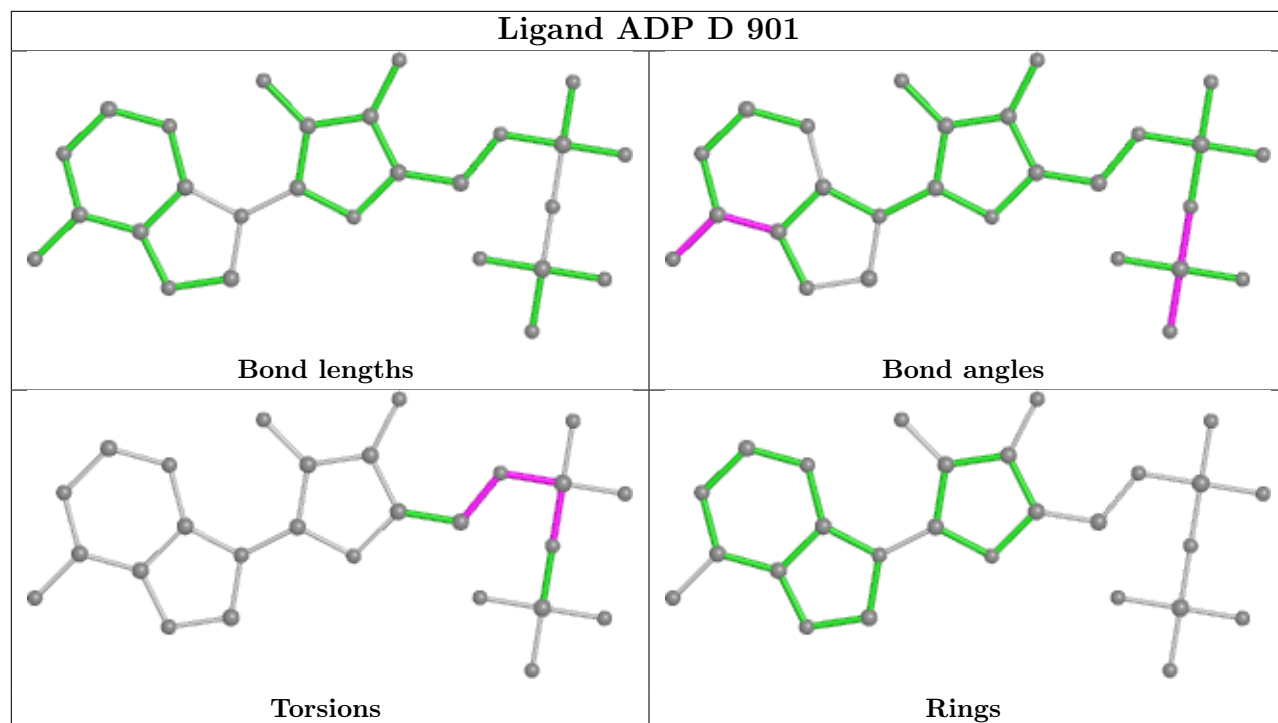
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier.

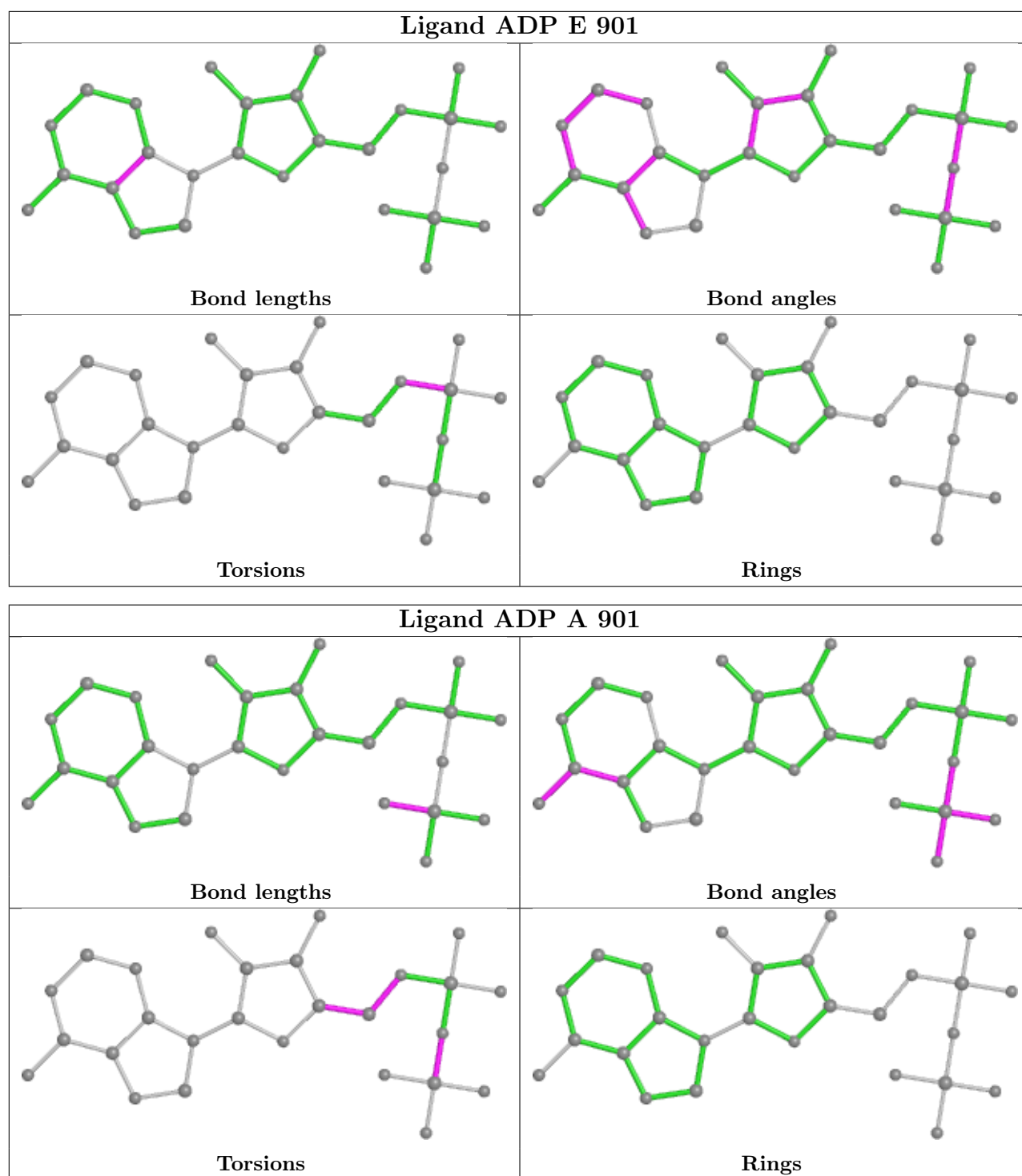
Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.











5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

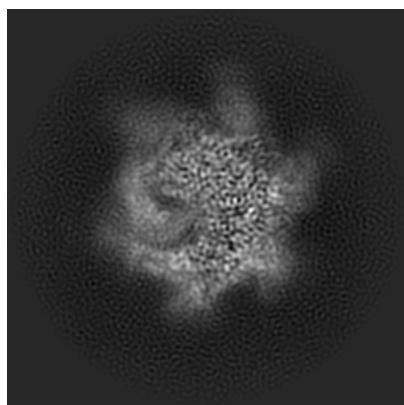
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-23835. These allow visual inspection of the internal detail of the map and identification of artifacts.

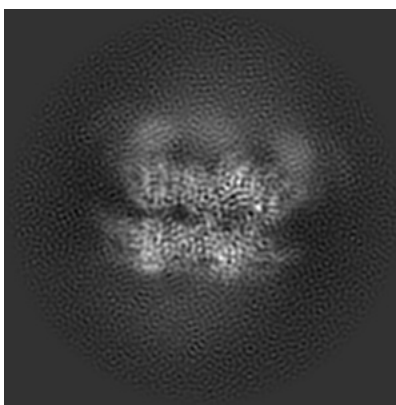
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

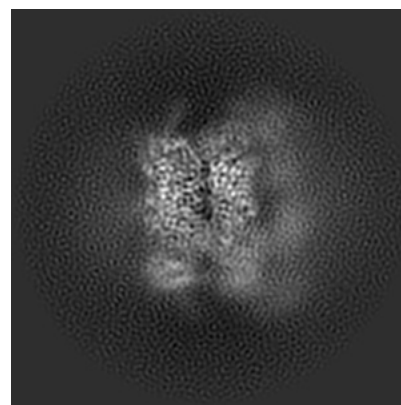
6.1.1 Primary map



X



Y

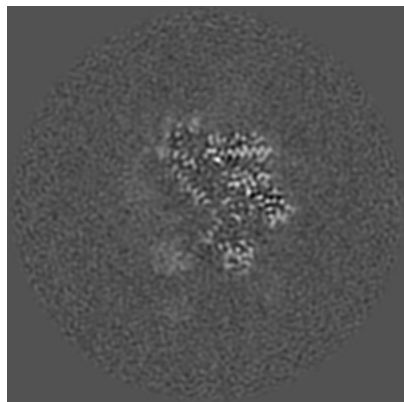


Z

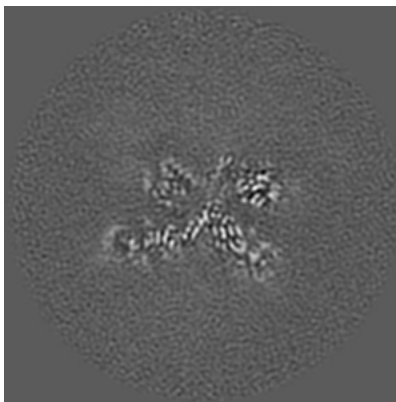
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

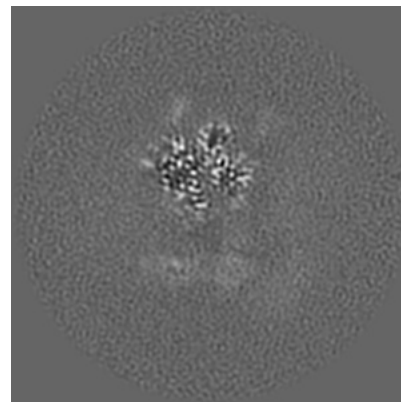
6.2.1 Primary map



X Index: 128



Y Index: 128

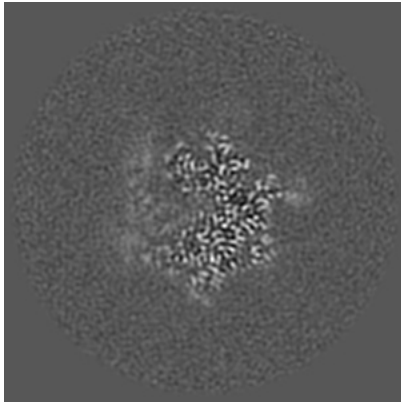


Z Index: 128

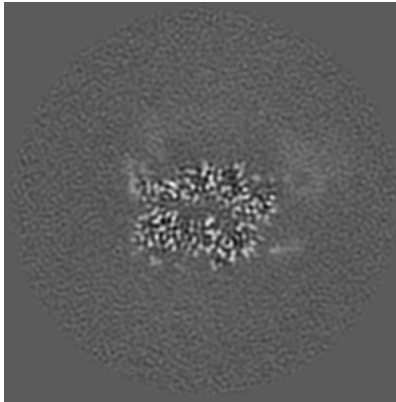
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

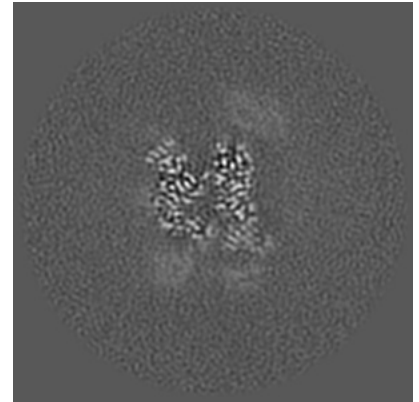
6.3.1 Primary map



X Index: 105



Y Index: 145

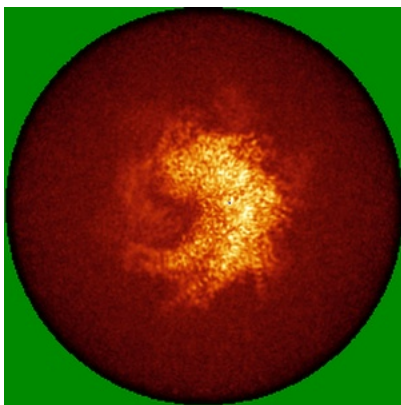


Z Index: 150

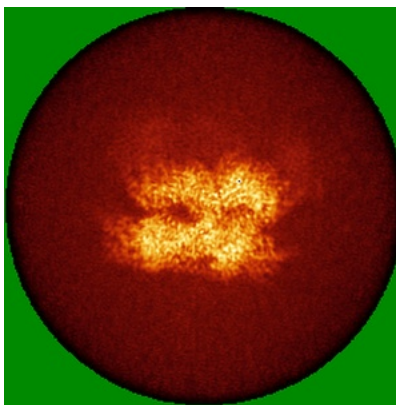
The images above show the largest variance slices of the map in three orthogonal directions.

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

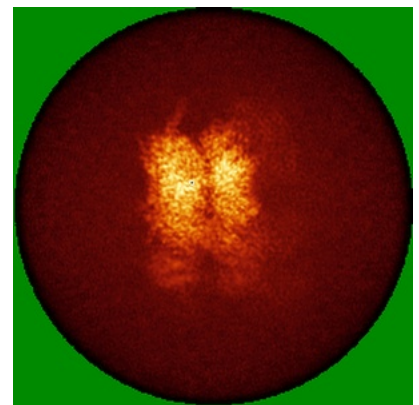
6.4.1 Primary map



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



The images above show the 3D surface view of the map at the recommended contour level 0.474. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

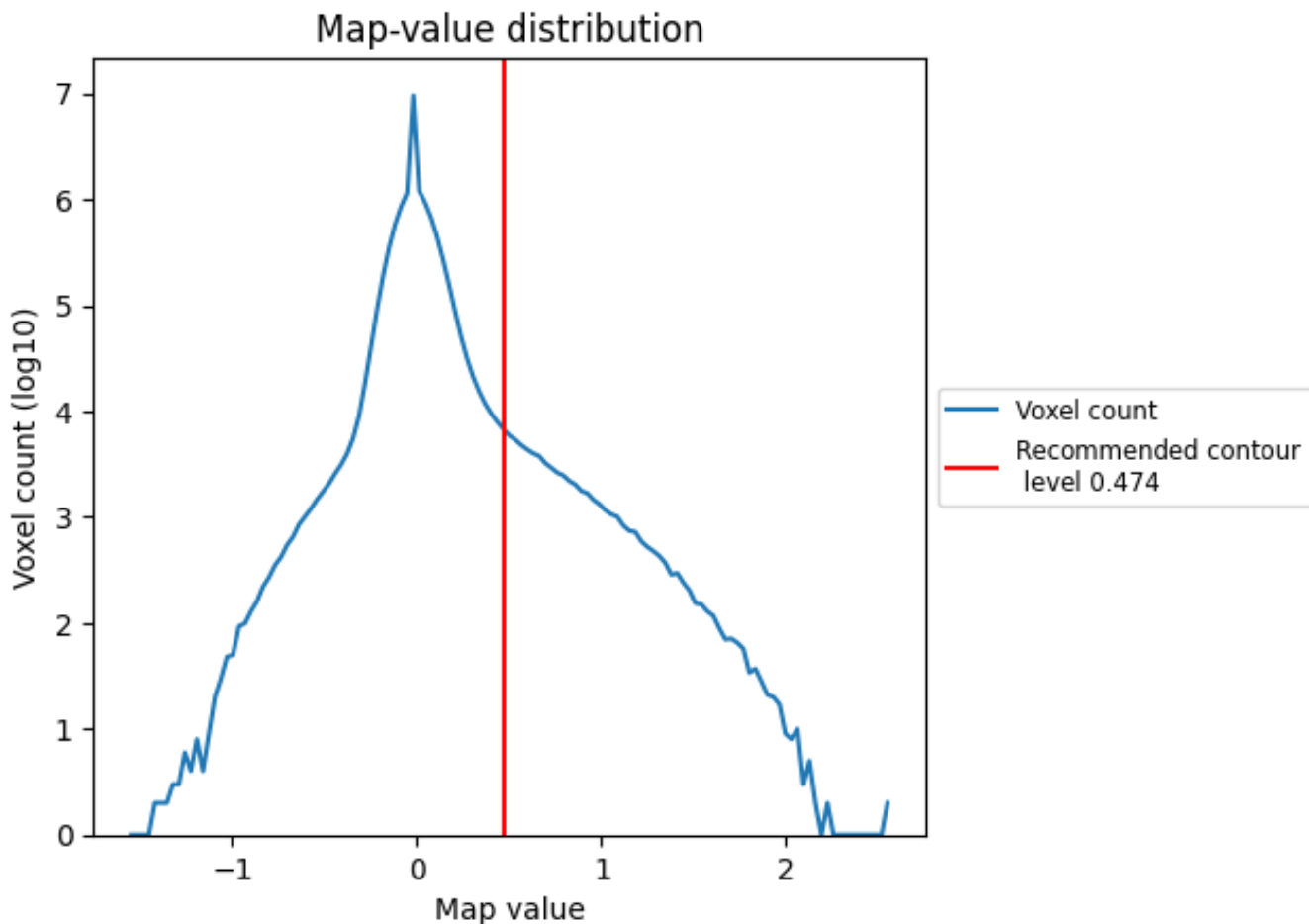
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

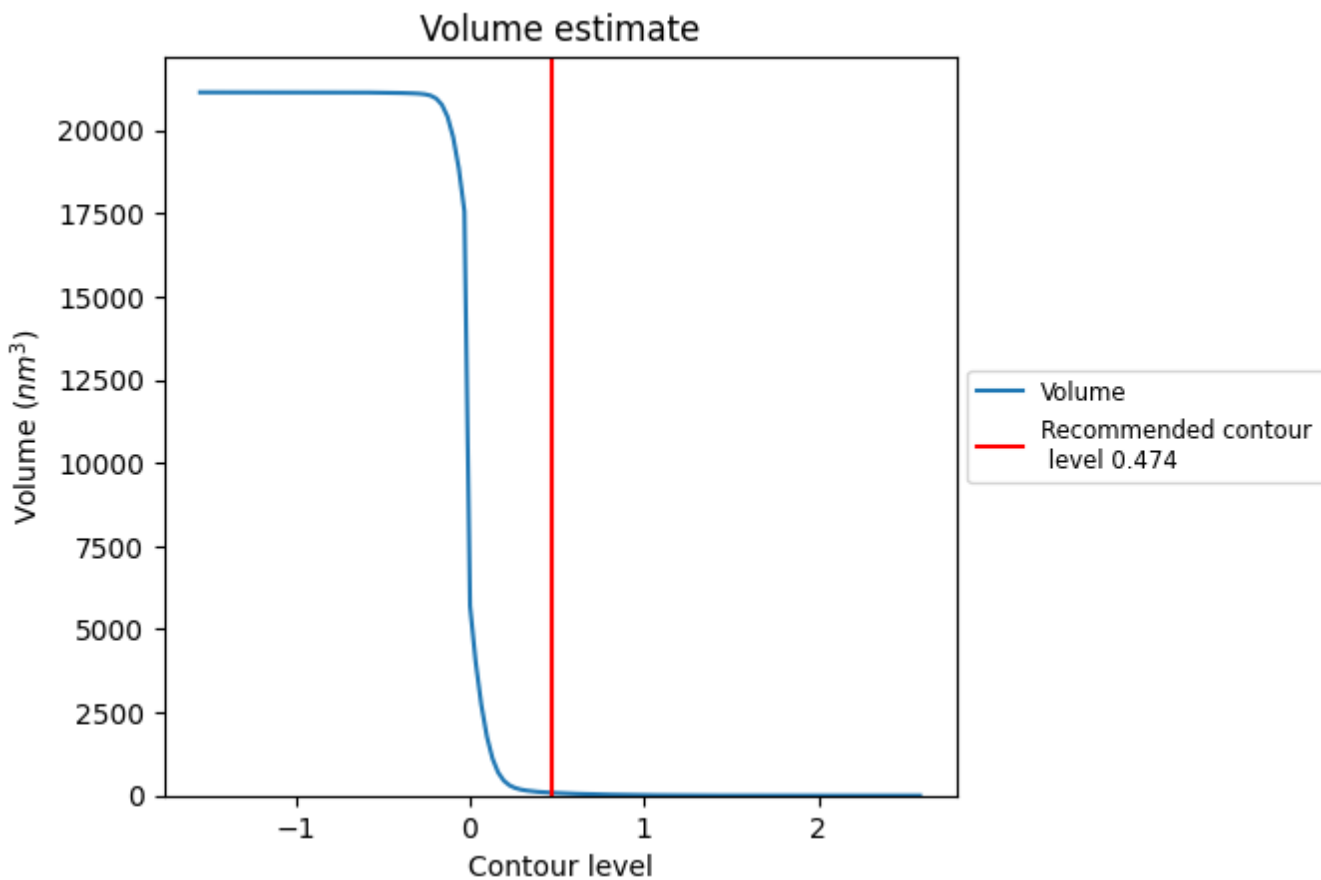
This section contains the results of statistical analysis of the map.

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.

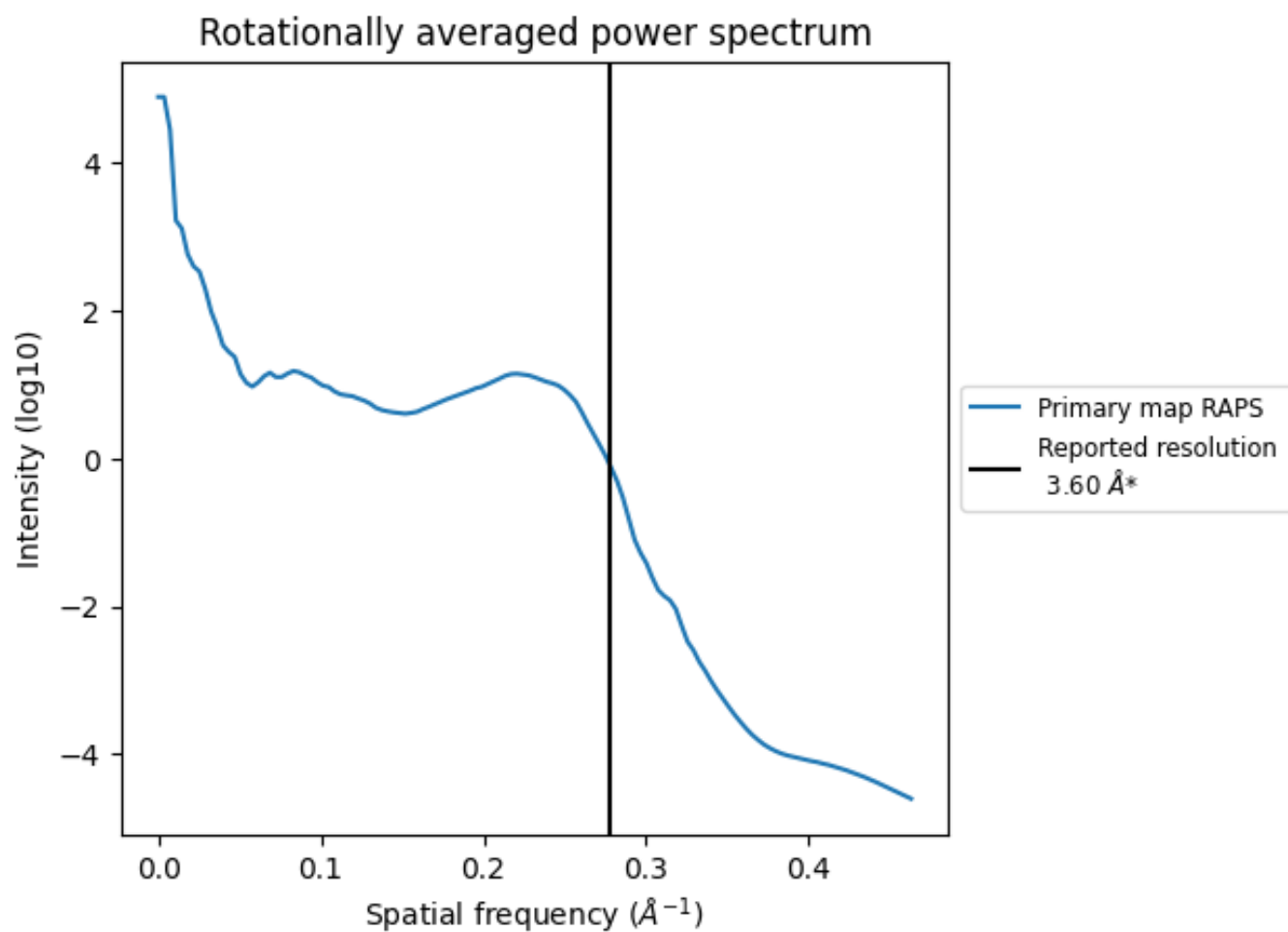
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 83 nm^3 ; this corresponds to an approximate mass of 75 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 0.278\AA^{-1}

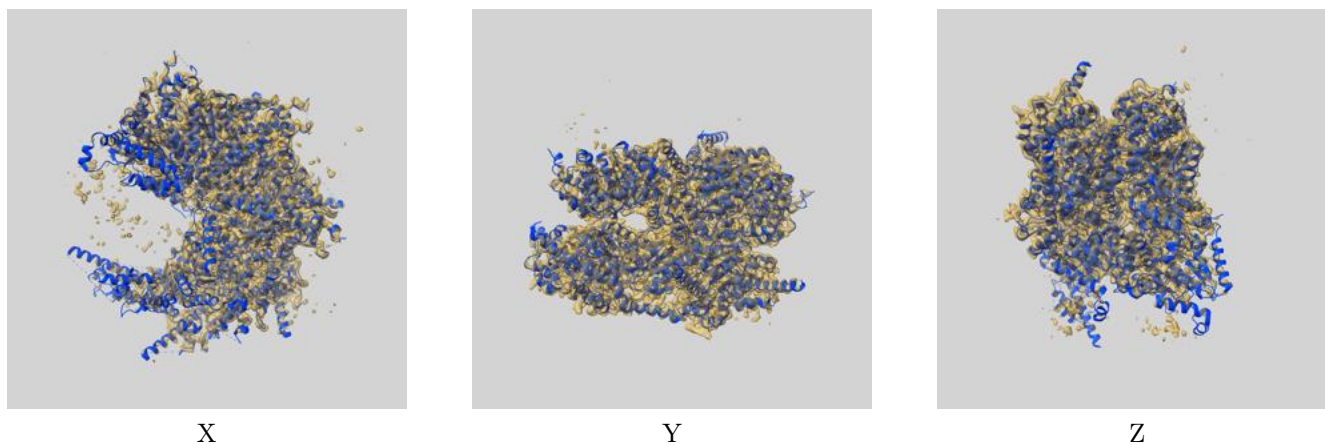
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

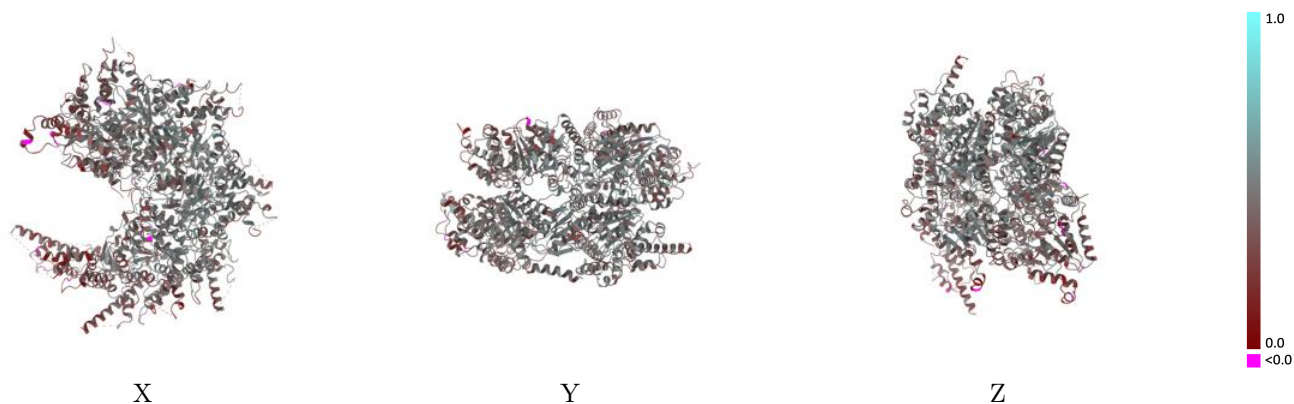
This section contains information regarding the fit between EMDB map EMD-23835 and PDB model 7MHS. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay [i](#)



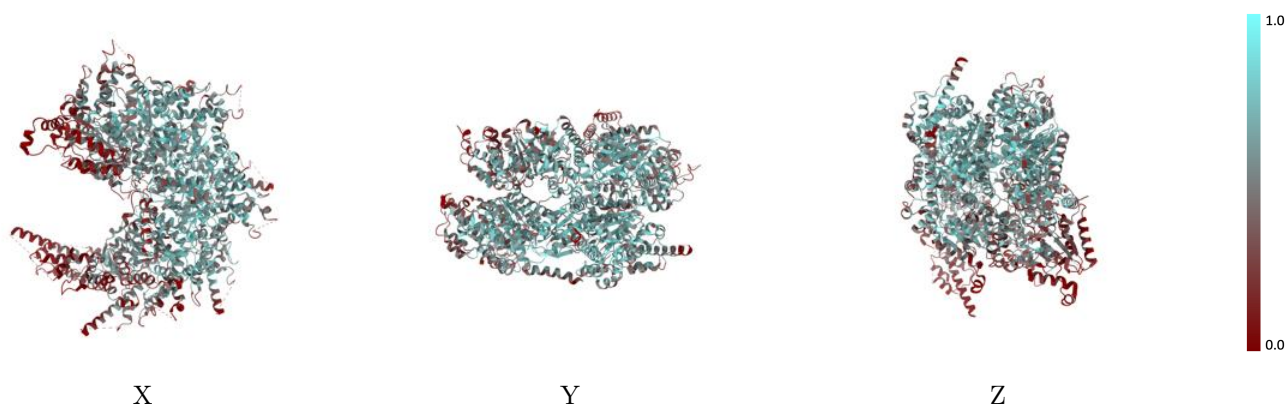
The images above show the 3D surface view of the map at the recommended contour level 0.474 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



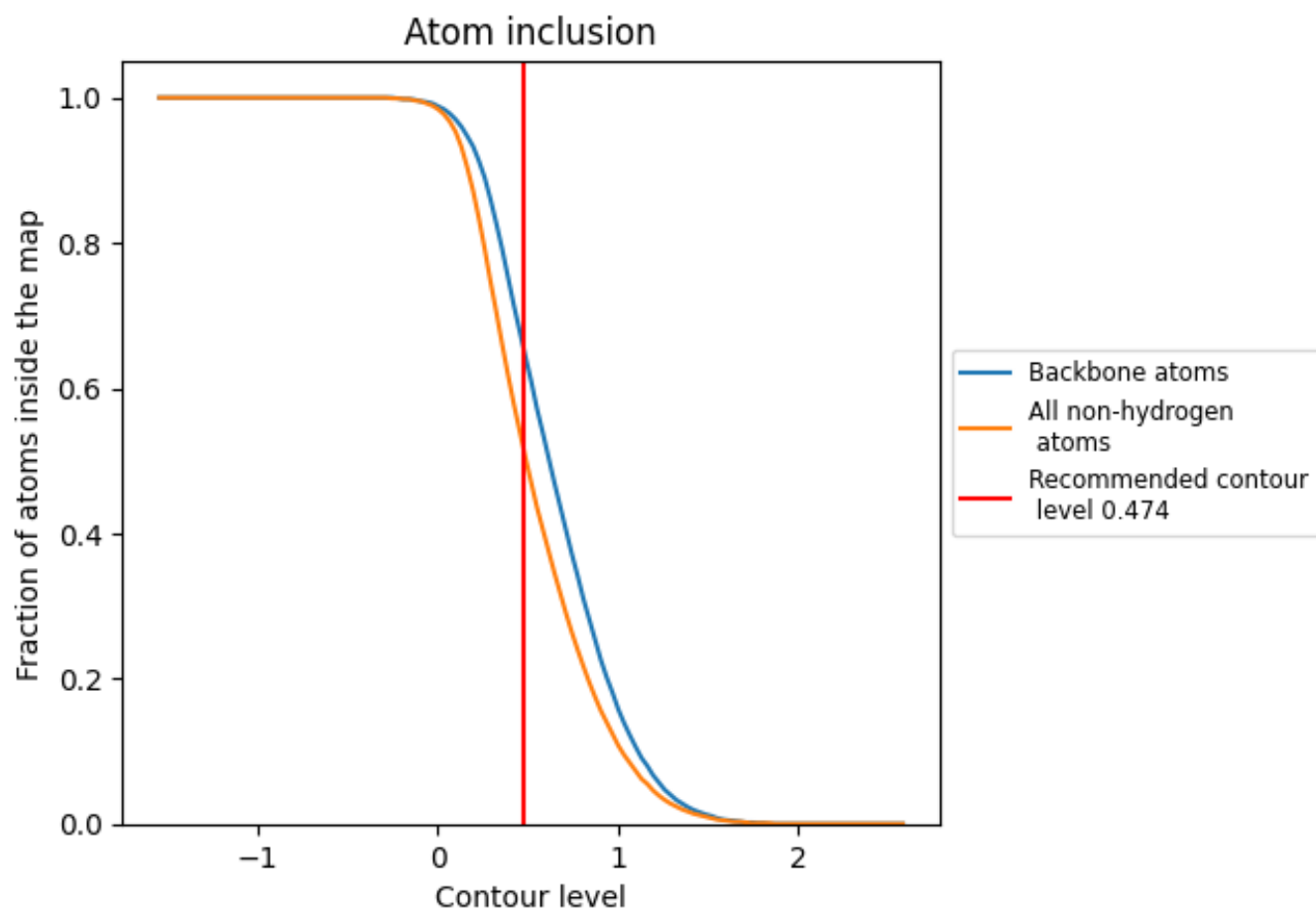
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.474).















9.4 Atom inclusion [i](#)



At the recommended contour level, 66% of all backbone atoms, 52% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary [i](#)

The table lists the average atom inclusion at the recommended contour level (0.474) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5190	 0.4250
A	 0.3830	 0.3940
B	 0.6140	 0.4500
C	 0.6490	 0.4620
D	 0.5900	 0.4430
E	 0.3400	 0.3690
G	 0.4910	 0.4900

