Full wwPDB EM Validation Report

Nov 17, 2025 – 01:30 PM EST

PDB ID	:	9YX2 / pdb_00009yx2
EMDB ID	:	EMD-73585
Title	:	Structure of the long chain acyl-CoA carboxylase complex from Mycobacterium smegmatis with ATP, bicarbonate, and propionyl-CoA
Authors	:	Liang, Y.; Rubinstein, J.L.
Deposited on	:	2025-10-26
Resolution	:	2.80 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:

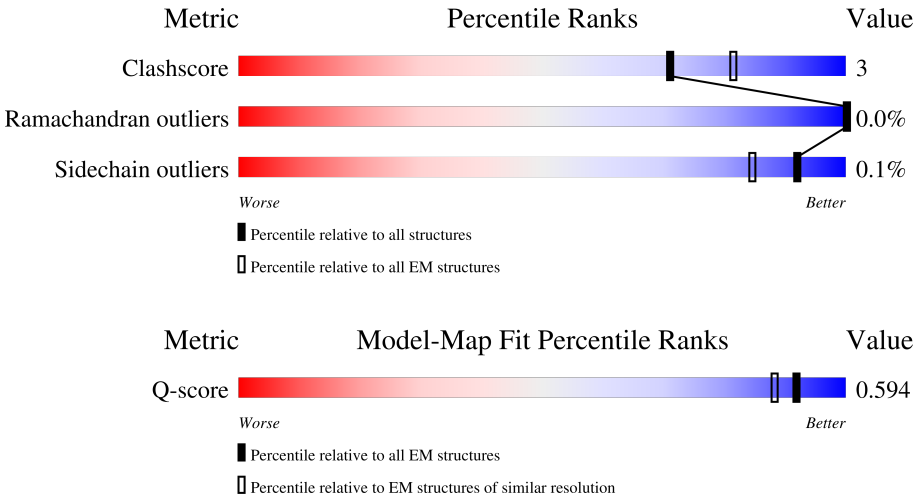
EMDB validation analysis	:	0.0.1.dev129
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.46

1 Overall quality at a glance

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

The reported resolution of this entry is 2.80 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	11806 (2.30 - 3.30)

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	598	94% 5%
1	B	598	75% 6% 19%
1	C	598	5% 73% 8% 19%
1	D	598	75% 5% 20%

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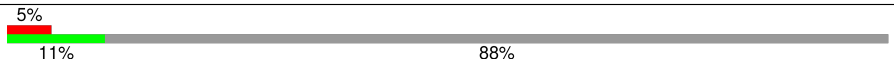
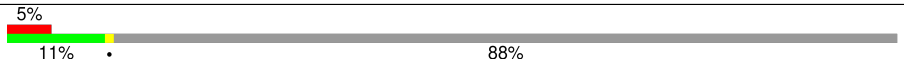
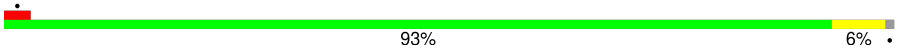
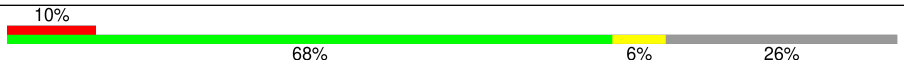
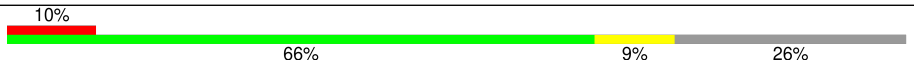
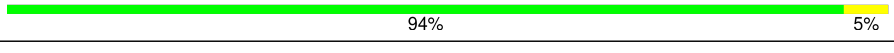
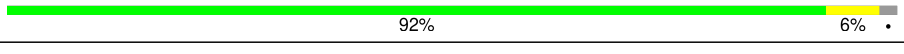
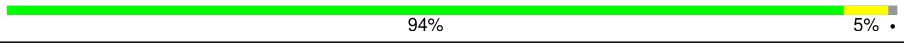
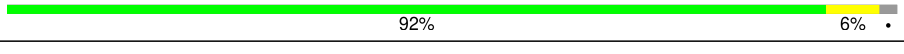
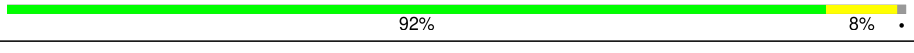
Mol	Chain	Length	Quality of chain
1	I	598	
1	J	598	
1	K	598	
1	L	598	
1	Q	598	
1	R	598	
1	S	598	
1	T	598	
2	E	94	
2	P	94	
3	F	517	
3	O	517	
4	G	542	
4	H	542	
4	M	542	
4	N	542	

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
6	BCT	B	603	-	-	X	-

2 Entry composition (i)

There are 9 unique types of molecules in this entry. The entry contains 54893 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 Biotin-dependent acyl-coenzyme A carboxylase alpha3 subunit.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	592	Total	C	N	O	S	0	0
			4115	2593	748	765	9		
1	B	482	Total	C	N	O	S	0	0
			3423	2173	619	625	6		
1	C	482	Total	C	N	O	S	0	0
			3268	2077	604	583	4		
1	D	481	Total	C	N	O	S	0	0
			3205	2038	596	567	4		
1	I	69	Total	C	N	O	S	0	0
			435	275	75	82	3		
1	J	69	Total	C	N	O	S	0	0
			410	253	75	79	3		
1	K	69	Total	C	N	O	S	0	0
			423	262	75	84	2		
1	L	69	Total	C	N	O	S	0	0
			396	244	72	78	2		
1	Q	592	Total	C	N	O	S	0	0
			4141	2611	754	768	8		
1	R	482	Total	C	N	O	S	0	0
			3348	2119	610	614	5		
1	S	482	Total	C	N	O	S	0	0
			3280	2077	609	590	4		
1	T	478	Total	C	N	O	S	0	0
			3310	2104	606	595	5		

- Molecule 2 is a protein called Acetyl-/propionyl-coenzyme A carboxylase AccE5.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	E	70	Total	C	N	O	S	0	0
			526	332	105	85	4		
2	P	70	Total	C	N	O	S	0	0
			526	332	105	85	4		

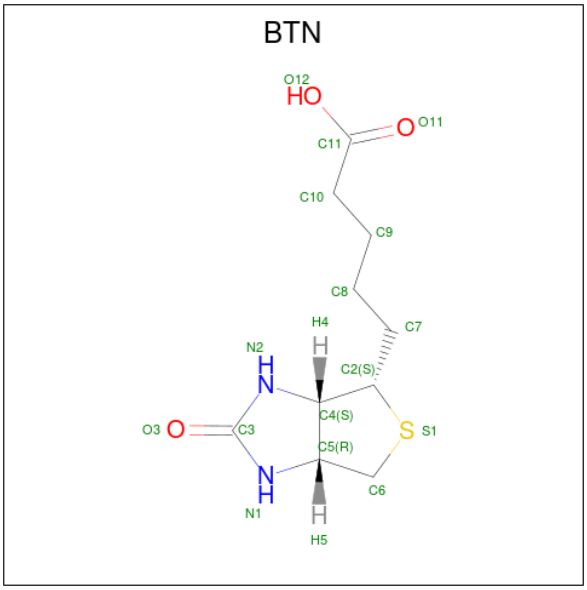
- Molecule 3 is a protein called Propionyl-CoA carboxylase beta chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	F	516	Total	C	N	O	S	0	0
			3848	2445	678	709	16		
3	O	515	Total	C	N	O	S	0	0
			3798	2419	670	694	15		

- Molecule 4 is a protein called Propionyl-CoA carboxylase beta chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	G	531	Total	C	N	O	S	0	0
			3950	2505	684	746	15		
4	H	539	Total	C	N	O	S	0	0
			3991	2530	694	753	14		
4	M	530	Total	C	N	O	S	0	0
			3939	2499	679	746	15		
4	N	539	Total	C	N	O	S	0	0
			3975	2522	689	749	15		

- Molecule 5 is BIOTIN (CCD ID: BTN) (formula: $C_{10}H_{16}N_2O_3S$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
5	A	1	Total	C	N	O	S	0
			15	10	2	2	1	
5	I	1	Total	C	N	O	S	0
			15	10	2	2	1	
5	J	1	Total	C	N	O	S	0
			15	10	2	2	1	

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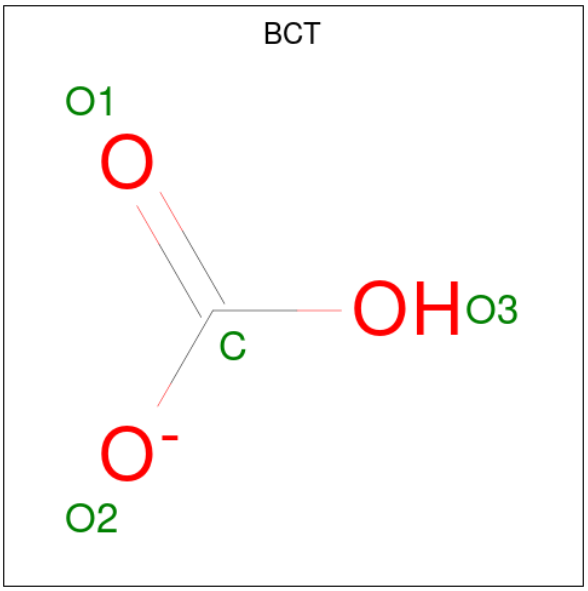
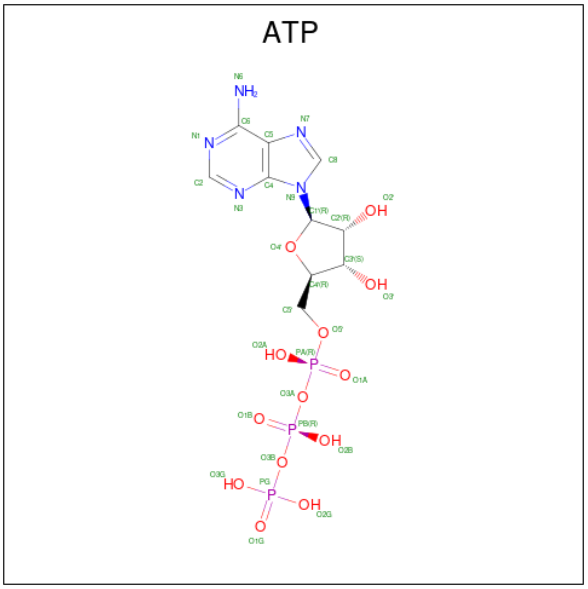
Mol	Chain	Residues	Atoms					AltConf
5	K	1	Total	C	N	O	S	0
			15	10	2	2	1	
5	L	1	Total	C	N	O	S	0
			15	10	2	2	1	
5	Q	1	Total	C	N	O	S	0
			15	10	2	2	1	

- Molecule 6 is BICARBONATE ION (CCD ID: BCT) (formula: CHO_3) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			AltConf
6	A	1	Total	C	O	0
			4	1	3	
6	B	1	Total	C	O	0
			4	1	3	
6	C	1	Total	C	O	0
			4	1	3	
6	D	1	Total	C	O	0
			4	1	3	
6	Q	1	Total	C	O	0
			4	1	3	
6	R	1	Total	C	O	0
			4	1	3	
6	S	1	Total	C	O	0
			4	1	3	
6	T	1	Total	C	O	0
			4	1	3	

- Molecule 7 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
7	A	1	Total	C	N	O	P	0
			31	10	5	13	3	
7	B	1	Total	C	N	O	P	0
			31	10	5	13	3	
7	C	1	Total	C	N	O	P	0
			31	10	5	13	3	
7	D	1	Total	C	N	O	P	0
			31	10	5	13	3	
7	Q	1	Total	C	N	O	P	0
			31	10	5	13	3	
7	R	1	Total	C	N	O	P	0
			31	10	5	13	3	
7	S	1	Total	C	N	O	P	0
			31	10	5	13	3	
7	T	1	Total	C	N	O	P	0
			31	10	5	13	3	

- Molecule 8 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

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

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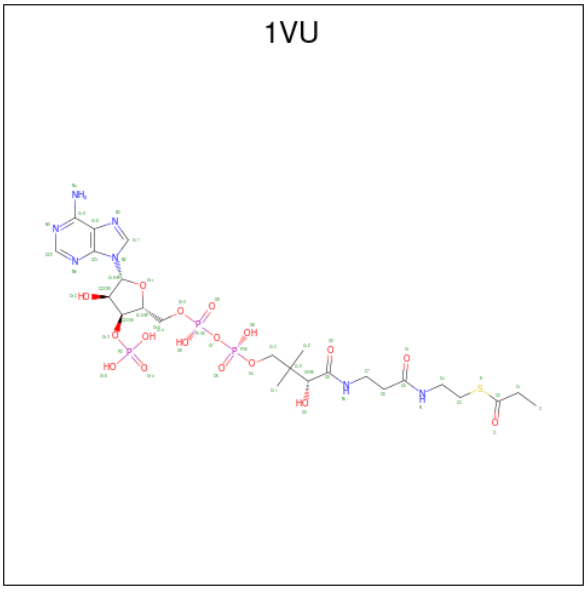
Mol	Chain	Residues	Atoms	AltConf
8	C	1	Total Mg 1 1	0
8	D	1	Total Mg 1 1	0
8	Q	1	Total Mg 1 1	0
8	R	1	Total Mg 1 1	0
8	S	1	Total Mg 1 1	0
8	T	1	Total Mg 1 1	0

- Molecule 9 is propionyl Coenzyme A (CCD ID: 1VU) (formula: $C_{24}H_{40}N_7O_{17}P_3S$) (labeled as "Ligand of Interest" by depositor).



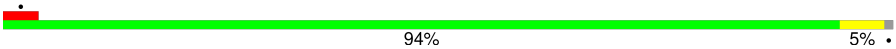
Mol	Chain	Residues	Atoms	AltConf
9	G	1	Total C N O P S 52 24 7 17 3 1	0
9	G	1	Total C N O P S 52 24 7 17 3 1	0
9	H	1	Total C N O P S 52 24 7 17 3 1	0
9	H	1	Total C N O P S 52 24 7 17 3 1	0

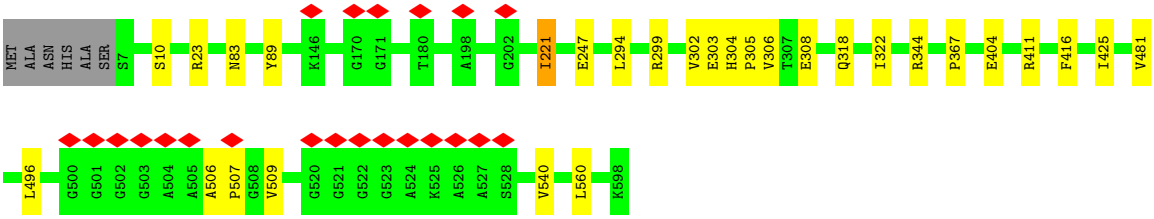
3 Residue-property plots (i)

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: Biotin-dependent acyl-coenzyme A carboxylase alpha3 subunit

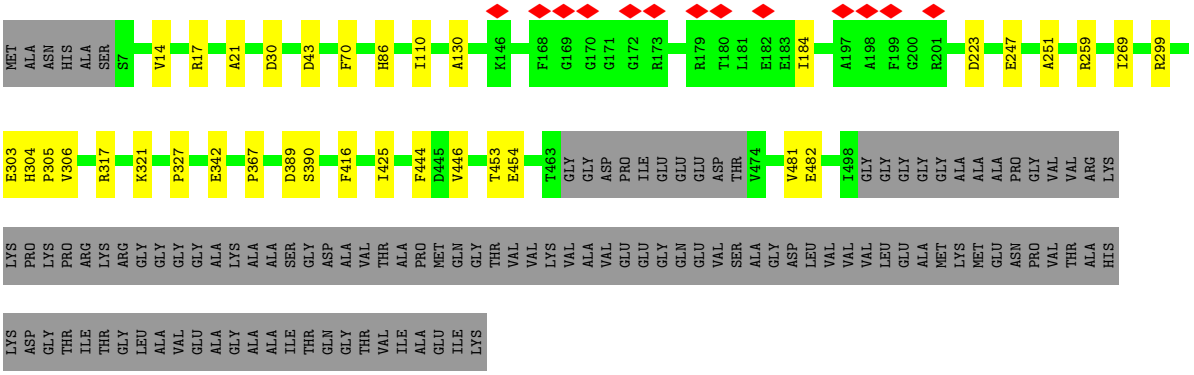
Chain A:





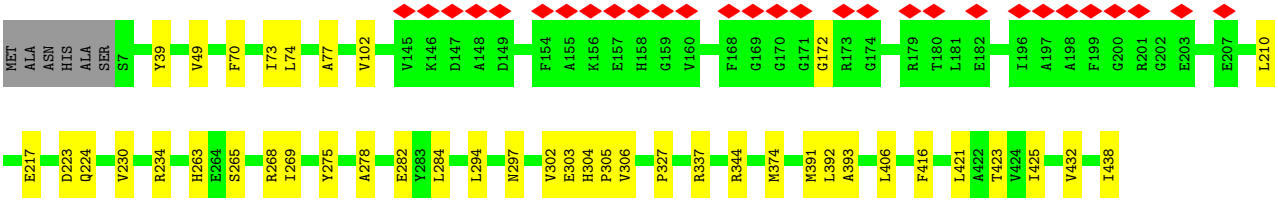
• Molecule 1: Biotin-dependent acyl-coenzyme A carboxylase alpha3 subunit

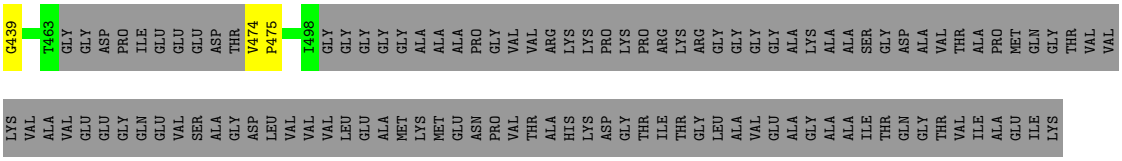
Chain B:



• Molecule 1: Biotin-dependent acyl-coenzyme A carboxylase alpha3 subunit

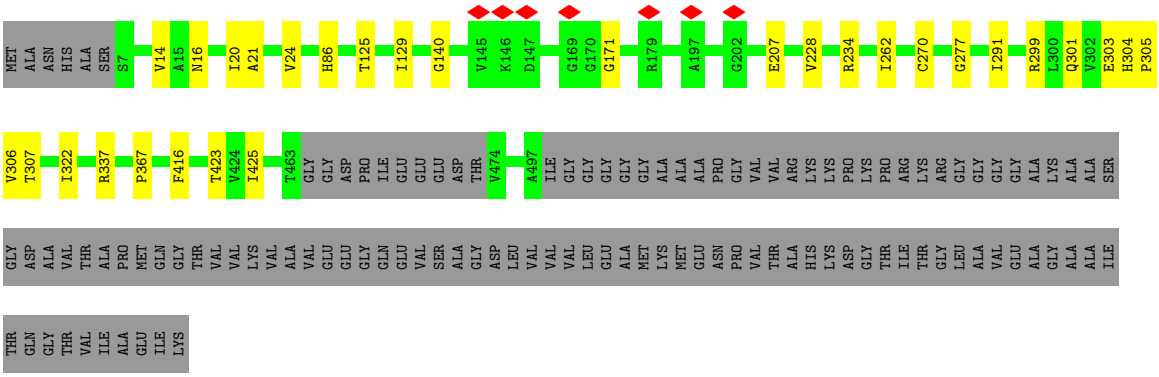
Chain C:





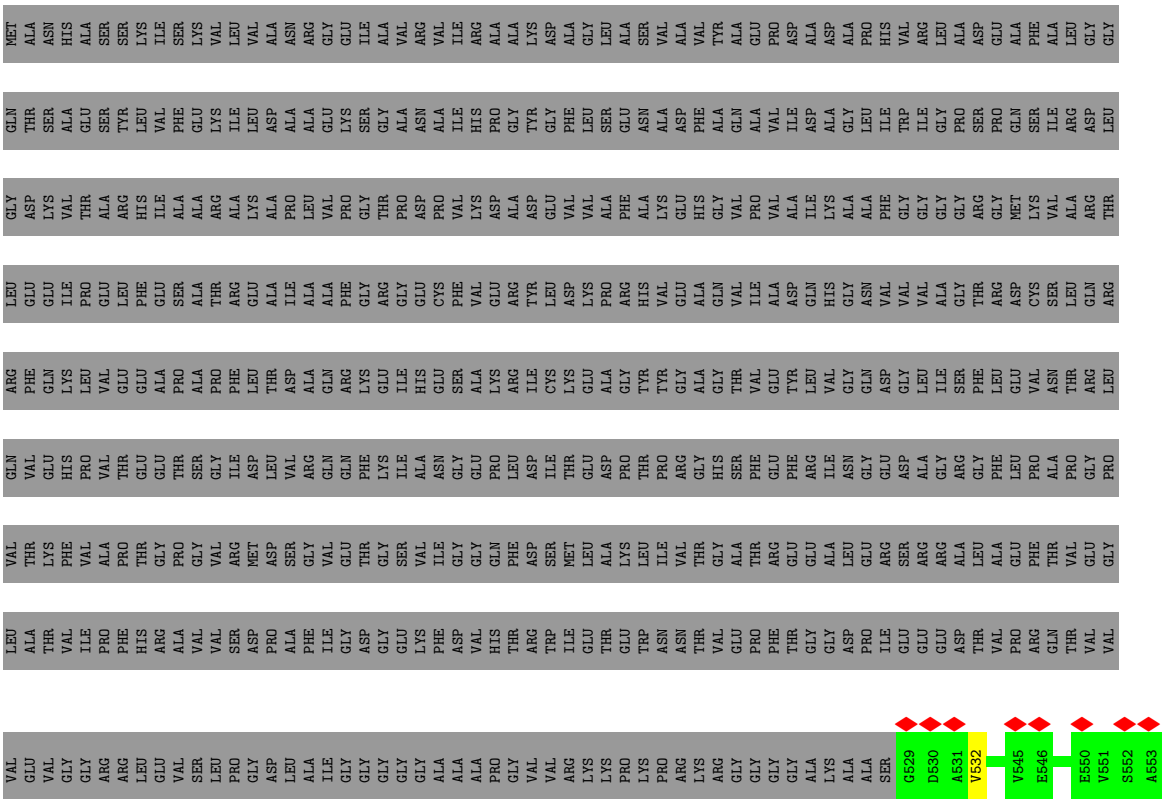
• Molecule 1: Biotin-dependent acyl-coenzyme A carboxylase alpha3 subunit

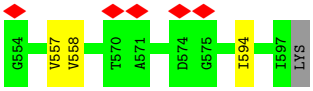
Chain D:



• Molecule 1: Biotin-dependent acyl-coenzyme A carboxylase alpha3 subunit

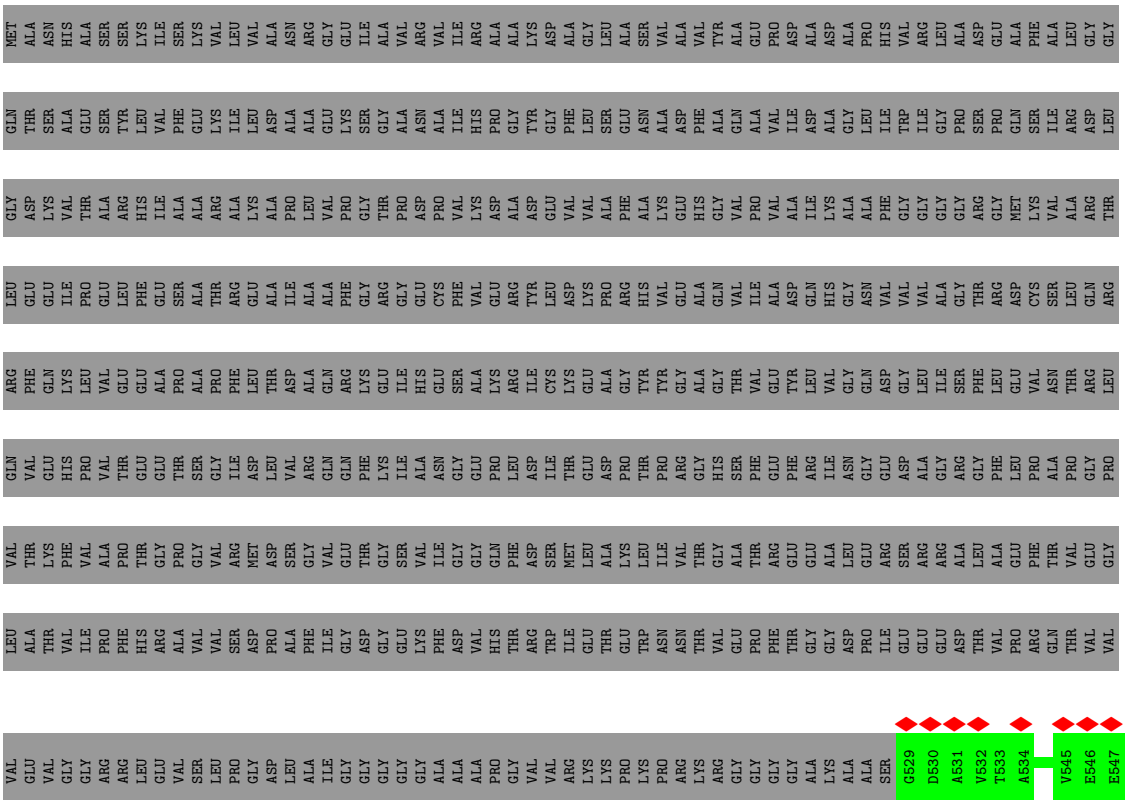
Chain I:





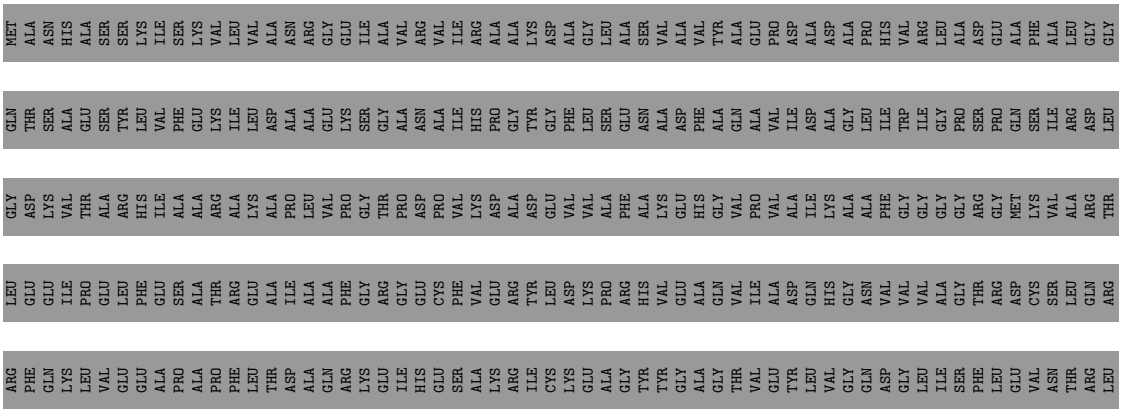
• Molecule 1: Biotin-dependent acyl-coenzyme A carboxylase alpha3 subunit

Chain J:



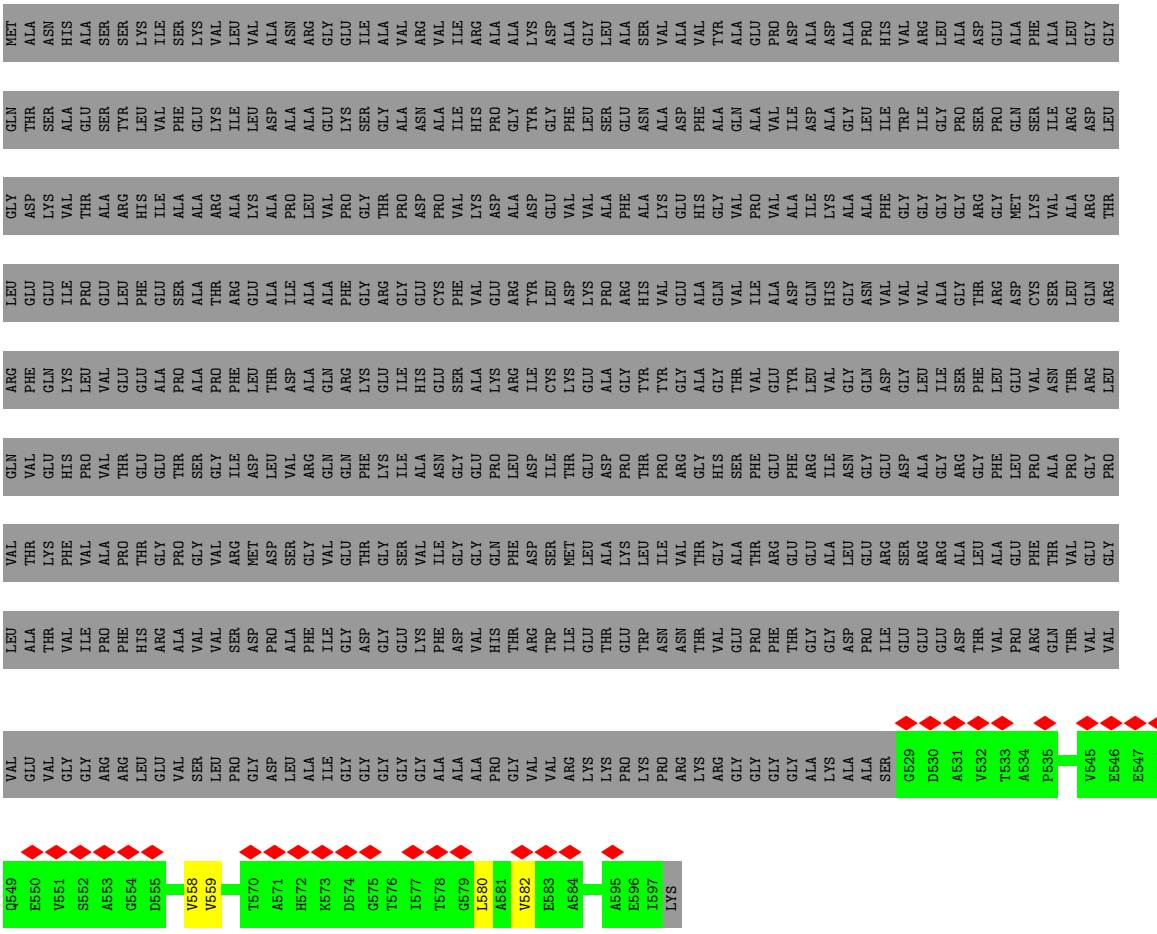
• Molecule 1: Biotin-dependent acyl-coenzyme A carboxylase alpha3 subunit

Chain K:



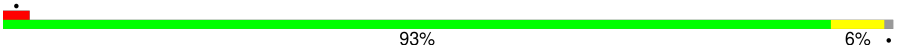
• Molecule 1: Biotin-dependent acyl-coenzyme A carboxylase alpha3 subunit

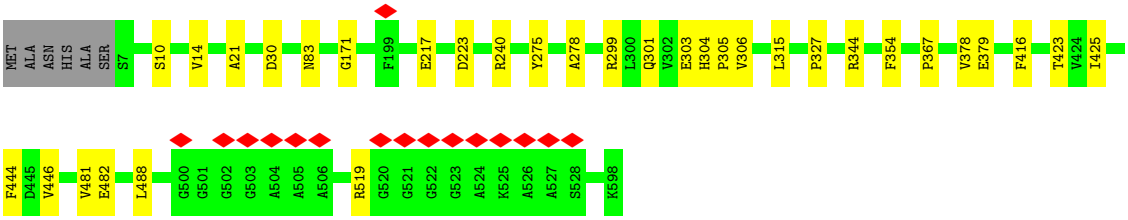
Chain L:



• Molecule 1: Biotin-dependent acyl-coenzyme A carboxylase alpha3 subunit

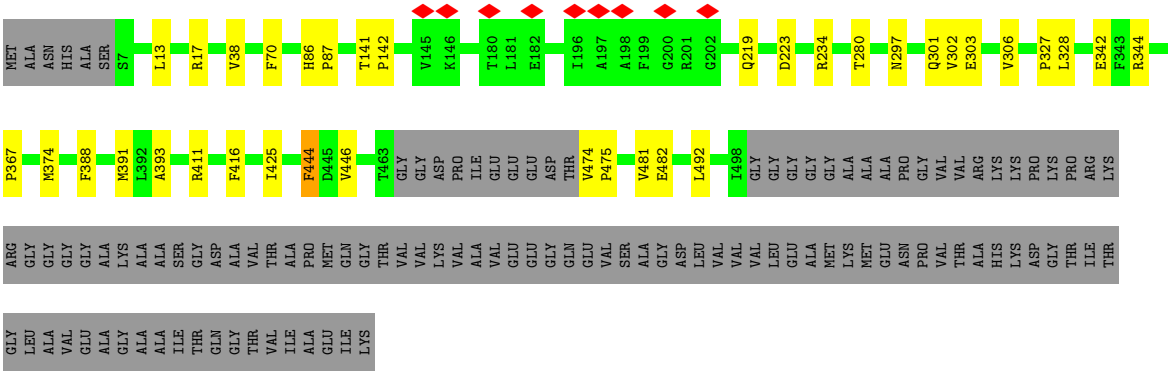
Chain Q:





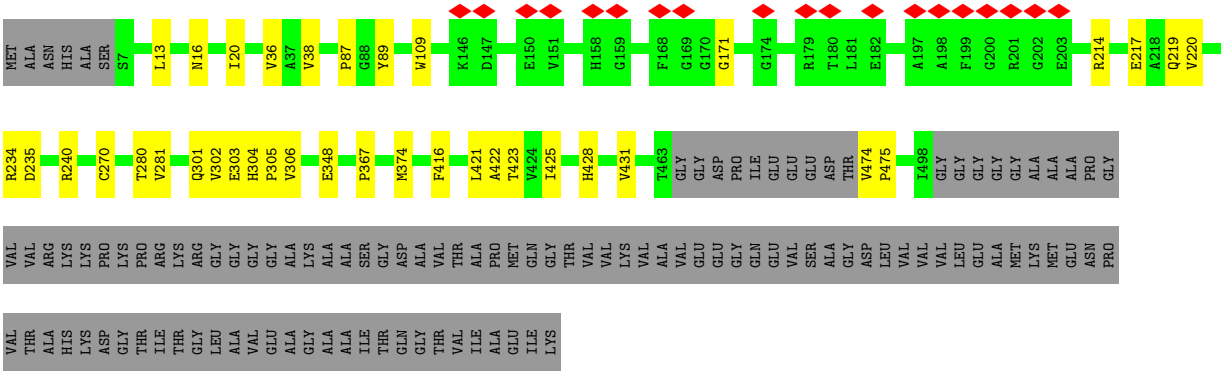
• Molecule 1: Biotin-dependent acyl-coenzyme A carboxylase alpha3 subunit

Chain R:



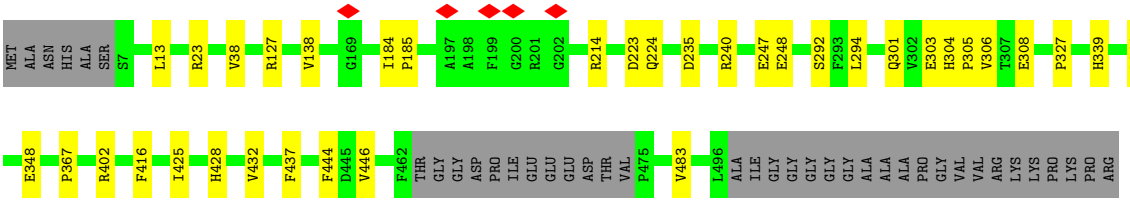
• Molecule 1: Biotin-dependent acyl-coenzyme A carboxylase alpha3 subunit

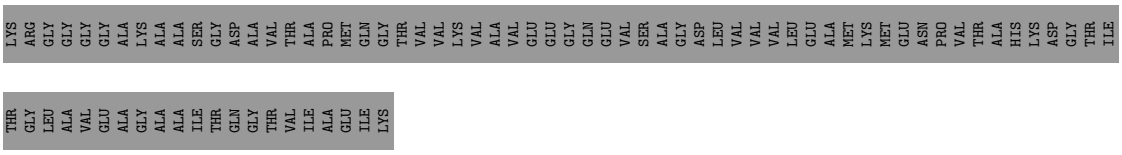
Chain S:



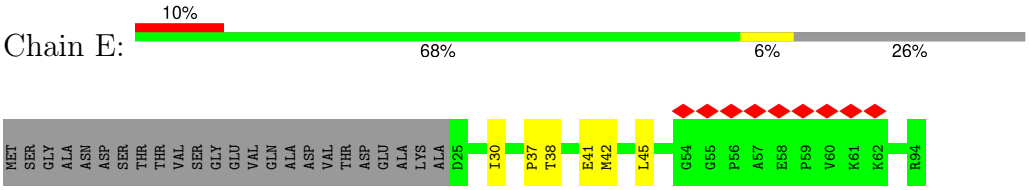
• Molecule 1: Biotin-dependent acyl-coenzyme A carboxylase alpha3 subunit

Chain T:

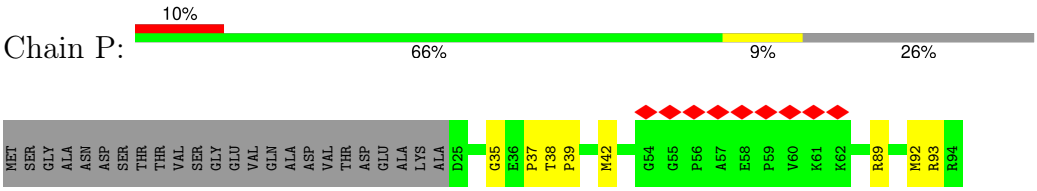




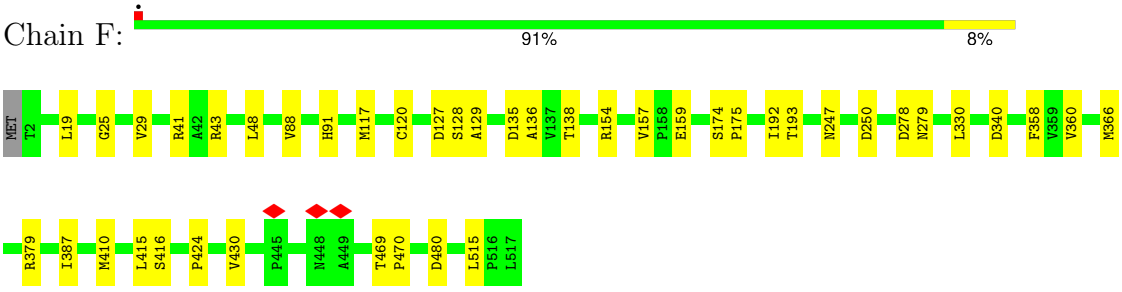
• Molecule 2: Acetyl-/propionyl-coenzyme A carboxylase AccE5



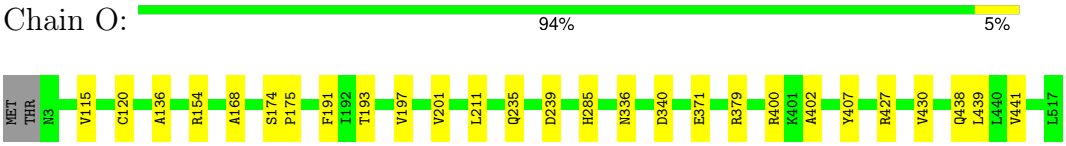
• Molecule 2: Acetyl-/propionyl-coenzyme A carboxylase AccE5



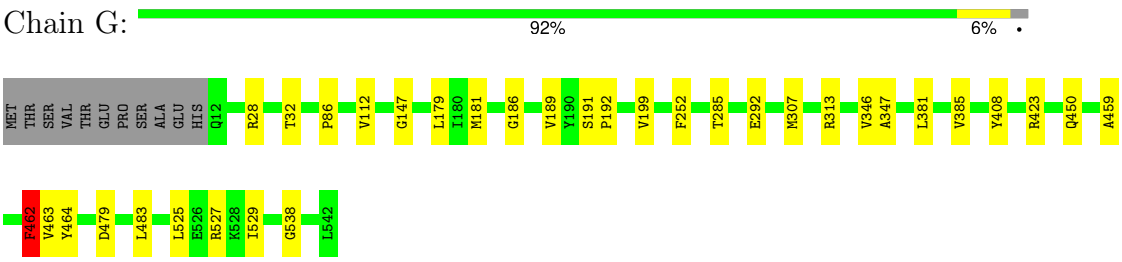
• Molecule 3: Propionyl-CoA carboxylase beta chain



• Molecule 3: Propionyl-CoA carboxylase beta chain

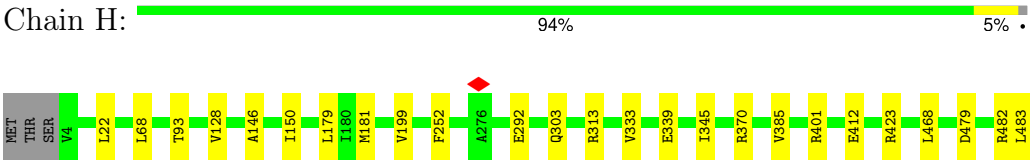


• Molecule 4: Propionyl-CoA carboxylase beta chain



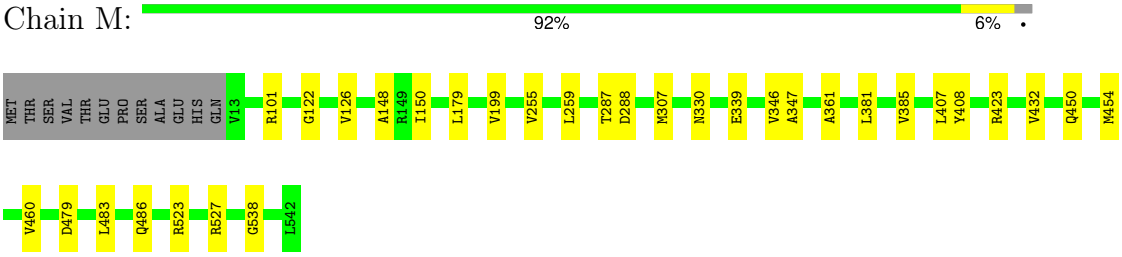
• Molecule 4: Propionyl-CoA carboxylase beta chain

Chain H:



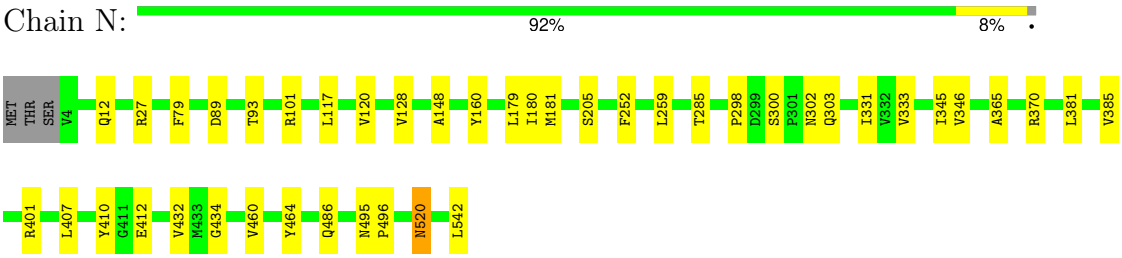
• Molecule 4: Propionyl-CoA carboxylase beta chain

Chain M:



• Molecule 4: Propionyl-CoA carboxylase beta chain

Chain N:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	46806	Depositor
Resolution determination method	OTHER	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	40	Depositor
Minimum defocus (nm)	1100	Depositor
Maximum defocus (nm)	20000	Depositor
Magnification	130000	Depositor
Image detector	TFS FALCON 4i (4k x 4k)	Depositor
Maximum map value	1.179	Depositor
Minimum map value	-0.060	Depositor
Average map value	0.013	Depositor
Map value standard deviation	0.031	Depositor
Recommended contour level	0.16	Depositor
Map size (Å)	446.4, 446.4, 446.4	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.93, 0.93, 0.93	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: MG, 1VU, BTN, ATP, BCT

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	A	0.33	0/4191	0.34	0/5721
1	B	0.33	0/3494	0.33	0/4772
1	C	0.29	0/3335	0.36	0/4573
1	D	0.28	0/3271	0.33	0/4490
1	I	0.18	0/437	0.29	0/600
1	J	0.19	0/412	0.36	0/566
1	K	0.19	0/425	0.34	0/585
1	L	0.18	0/397	0.32	0/547
1	Q	0.34	0/4219	0.33	0/5761
1	R	0.35	0/3416	0.38	0/4672
1	S	0.32	0/3347	0.33	0/4587
1	T	0.33	0/3380	0.36	0/4624
2	E	0.39	0/540	0.34	0/733
2	P	0.39	0/540	0.36	0/733
3	F	0.44	0/3928	0.40	0/5341
3	O	0.44	0/3878	0.39	0/5279
4	G	0.45	0/4026	0.41	0/5483
4	H	0.44	0/4069	0.41	0/5546
4	M	0.45	0/4015	0.38	0/5469
4	N	0.45	0/4053	0.41	0/5525
All	All	0.38	0/55373	0.37	0/75607

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	4115	0	3930	27	0
1	B	3423	0	3261	28	0
1	C	3268	0	3007	29	0
1	D	3205	0	2913	20	0
1	I	435	0	426	2	0
1	J	410	0	352	1	0
1	K	423	0	380	2	0
1	L	396	0	329	2	0
1	Q	4141	0	3991	25	0
1	R	3348	0	3131	27	0
1	S	3280	0	3016	28	0
1	T	3310	0	3099	24	0
2	E	526	0	509	5	0
2	P	526	0	509	6	0
3	F	3848	0	3797	29	0
3	O	3798	0	3728	16	0
4	G	3950	0	3906	25	0
4	H	3991	0	3927	16	0
4	M	3939	0	3891	22	0
4	N	3975	0	3906	26	0
5	A	15	0	15	0	0
5	I	15	0	15	0	0
5	J	15	0	15	0	0
5	K	15	0	15	0	0
5	L	15	0	15	0	0
5	Q	15	0	15	0	0
6	A	4	0	1	1	0
6	B	4	0	1	2	0
6	C	4	0	1	0	0
6	D	4	0	1	1	0
6	Q	4	0	1	1	0
6	R	4	0	1	1	0
6	S	4	0	1	0	0
6	T	4	0	1	1	0
7	A	31	0	12	1	0
7	B	31	0	12	0	0
7	C	31	0	12	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	D	31	0	12	1	0
7	Q	31	0	12	1	0
7	R	31	0	12	1	0
7	S	31	0	12	1	0
7	T	31	0	12	1	0
8	A	1	0	0	0	0
8	B	1	0	0	0	0
8	C	1	0	0	0	0
8	D	1	0	0	0	0
8	Q	1	0	0	0	0
8	R	1	0	0	0	0
8	S	1	0	0	0	0
8	T	1	0	0	0	0
9	G	104	0	76	7	0
9	H	104	0	76	12	0
All	All	54893	0	52354	351	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 3.

All (351) 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:B:453:THR:OG1	1:B:454:GLU:OE1	1.84	0.96
1:T:301:GLN:OE1	6:T:602:BCT:O3	1.88	0.90
1:C:337:ARG:HH21	1:D:337:ARG:HB3	1.37	0.90
9:H:602:1VU:H37	4:M:148:ALA:H	1.36	0.90
1:T:127:ARG:NH2	1:T:138:VAL:O	2.09	0.86
1:Q:171:GLY:N	7:Q:603:ATP:O2B	2.09	0.84
4:H:370:ARG:NH1	4:H:412:GLU:OE2	2.14	0.81
9:G:602:1VU:H37	4:N:148:ALA:H	1.46	0.80
3:F:135:ASP:OD2	3:F:138:THR:OG1	2.00	0.78
3:O:340:ASP:OD2	3:O:379:ARG:NH1	2.18	0.77
4:N:300:SER:OG	4:N:302:ASN:OD1	2.02	0.76
2:E:38:THR:OG1	2:E:41:GLU:OE1	2.05	0.75
1:S:217:GLU:OE2	1:S:234:ARG:NH1	2.20	0.75
9:H:602:1VU:H32	9:H:602:1VU:N4	2.03	0.73
1:S:20:ILE:HB	1:S:89:TYR:CZ	2.22	0.73
1:C:432:VAL:O	1:C:438:ILE:HD11	1.89	0.72
3:O:197:VAL:O	3:O:201:VAL:HG22	1.90	0.72
3:F:340:ASP:OD2	3:F:379:ARG:NH1	2.23	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:G:186:GLY:HA3	9:G:601:1VU:O	1.93	0.69
1:S:171:GLY:N	7:S:601:ATP:O1B	2.26	0.69
1:S:240:ARG:NH2	1:S:348:GLU:OE2	2.26	0.69
4:H:181:MET:HE1	4:H:252:PHE:CE1	2.27	0.68
1:C:275:TYR:OH	1:C:278:ALA:O	2.11	0.68
3:F:247:ASN:ND2	3:F:250:ASP:OD2	2.27	0.67
1:T:240:ARG:NH2	1:T:348:GLU:OE1	2.27	0.66
1:A:89:TYR:CE2	1:A:302:VAL:HG12	2.30	0.66
3:O:400:ARG:O	3:O:427:ARG:N	2.28	0.66
4:M:423:ARG:O	4:M:450:GLN:N	2.28	0.66
1:C:406:LEU:HD13	1:C:438:ILE:HD12	1.78	0.66
1:T:303:GLU:O	1:T:306:VAL:HG22	1.96	0.65
1:C:282:GLU:OE2	1:C:297:ASN:ND2	2.28	0.65
4:G:181:MET:HE1	4:G:252:PHE:CE1	2.31	0.65
1:R:86:HIS:ND1	1:R:87:PRO:O	2.29	0.64
2:E:38:THR:N	2:E:41:GLU:OE1	2.30	0.64
1:B:444:PHE:CD2	1:B:446:VAL:HG22	2.32	0.64
3:O:336:ASN:ND2	3:O:371:GLU:OE1	2.31	0.64
9:H:601:1VU:S	4:M:454:MET:HE2	2.39	0.62
3:F:360:VAL:HG22	3:F:410:MET:HB3	1.82	0.62
3:F:48:LEU:HD21	3:F:88:VAL:HG21	1.82	0.61
1:C:217:GLU:OE2	1:C:234:ARG:NH1	2.33	0.60
4:G:423:ARG:O	4:G:450:GLN:N	2.34	0.60
4:N:460:VAL:HG21	4:N:486:GLN:HA	1.81	0.60
1:J:557:VAL:HG22	1:J:569:VAL:O	2.02	0.60
1:A:89:TYR:CZ	1:A:302:VAL:HG12	2.36	0.60
1:A:496:LEU:HD21	2:E:30:ILE:HD11	1.84	0.59
1:S:367:PRO:HD3	1:S:416:PHE:HD1	1.68	0.59
3:O:115:VAL:HG13	3:O:120:CYS:O	2.03	0.59
9:H:602:1VU:H33	4:M:150:ILE:HD11	1.86	0.58
1:S:303:GLU:N	1:S:303:GLU:OE1	2.36	0.58
1:T:223:ASP:OD1	1:T:224:GLN:N	2.36	0.58
1:B:317:ARG:O	1:B:321:LYS:HG3	2.03	0.58
9:H:601:1VU:O1	9:H:601:1VU:N1	2.37	0.58
1:T:444:PHE:CD2	1:T:446:VAL:HG22	2.39	0.58
1:S:219:GLN:OE1	1:S:234:ARG:NH2	2.37	0.58
1:R:297:ASN:ND2	7:R:601:ATP:O1G	2.37	0.57
4:G:147:GLY:HA3	9:G:601:1VU:O	2.04	0.57
9:H:602:1VU:H32	9:H:602:1VU:H9	1.68	0.57
4:N:181:MET:HE1	4:N:252:PHE:CE1	2.39	0.57
1:S:303:GLU:O	1:S:306:VAL:HG22	2.05	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:74:LEU:HD21	1:C:102:VAL:HG22	1.88	0.56
1:A:367:PRO:HD3	1:A:416:PHE:HD1	1.70	0.56
4:G:463:VAL:HG21	4:N:79:PHE:CE1	2.41	0.56
1:Q:444:PHE:CD2	1:Q:446:VAL:HG22	2.40	0.56
1:B:454:GLU:OE1	1:B:454:GLU:N	2.38	0.55
1:A:221:ILE:CD1	1:A:318:GLN:HB3	2.36	0.55
1:B:299:ARG:NH2	6:B:603:BCT:O3	2.35	0.55
1:Q:223:ASP:OD2	1:Q:327:PRO:HA	2.07	0.55
4:G:479:ASP:O	4:G:483:LEU:HD23	2.08	0.54
1:B:247:GLU:HG2	1:B:303:GLU:HG2	1.88	0.54
1:C:392:LEU:HD11	1:C:421:LEU:HD23	1.89	0.54
2:P:37:PRO:HG2	2:P:42:MET:HE2	1.89	0.54
1:R:367:PRO:HD3	1:R:416:PHE:HD1	1.73	0.54
4:M:179:LEU:HD23	4:M:199:VAL:HB	1.90	0.54
3:O:235:GLN:NE2	3:O:239:ASP:OD1	2.41	0.54
1:Q:367:PRO:HD3	1:Q:416:PHE:HD1	1.73	0.54
1:C:284:LEU:CD1	1:C:294:LEU:HD13	2.38	0.53
4:G:459:ALA:O	4:G:463:VAL:HG12	2.08	0.53
1:D:277:GLY:HA2	1:D:322:ILE:HG21	1.91	0.53
1:Q:416:PHE:HE2	1:Q:425:ILE:HD11	1.73	0.53
1:T:416:PHE:CE2	1:T:425:ILE:HD11	2.43	0.53
1:C:374:MET:HE3	1:C:393:ALA:HB1	1.90	0.53
4:H:292:GLU:OE1	4:H:313:ARG:NH2	2.37	0.53
1:C:337:ARG:NH2	1:D:337:ARG:HB3	2.17	0.53
4:G:463:VAL:CG2	4:N:79:PHE:CD1	2.92	0.53
4:M:527:ARG:NH1	2:P:92:MET:O	2.41	0.52
1:Q:444:PHE:CE2	1:Q:446:VAL:HG22	2.44	0.52
1:S:367:PRO:CD	1:S:416:PHE:HD1	2.22	0.52
1:C:423:THR:OG1	1:C:425:ILE:HD12	2.09	0.52
4:M:287:THR:HG22	4:M:288:ASP:N	2.25	0.52
1:Q:275:TYR:OH	1:Q:278:ALA:O	2.25	0.52
1:C:230:VAL:HG11	1:C:263:HIS:ND1	2.24	0.52
1:A:221:ILE:HD13	1:A:318:GLN:HB3	1.91	0.52
1:B:251:ALA:O	1:B:259:ARG:NH2	2.39	0.52
4:G:527:ARG:HH12	4:G:529:ILE:HD11	1.74	0.52
1:Q:240:ARG:HD2	1:Q:354:PHE:CB	2.40	0.52
4:M:460:VAL:HG21	4:M:486:GLN:HA	1.91	0.51
4:H:479:ASP:O	4:H:483:LEU:HD23	2.10	0.51
1:S:214:ARG:NH1	1:S:235:ASP:OD2	2.38	0.51
1:C:172:GLY:N	7:C:601:ATP:O2B	2.35	0.51
1:B:17:ARG:NH1	1:B:43:ASP:OD2	2.44	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:M:179:LEU:HD21	4:M:255:VAL:HG21	1.92	0.51
4:M:385:VAL:HG13	4:M:385:VAL:O	2.11	0.51
1:T:13:LEU:HD11	1:T:38:VAL:HG13	1.92	0.51
4:H:303:GLN:O	4:H:423:ARG:NH2	2.43	0.51
1:A:299:ARG:NH2	6:A:602:BCT:O2	2.44	0.51
1:A:506:ALA:HB1	1:A:507:PRO:HD2	1.94	0.50
4:N:93:THR:HB	4:N:128:VAL:HG11	1.93	0.50
1:R:223:ASP:OD2	1:R:327:PRO:HA	2.11	0.50
1:D:262:ILE:HG13	1:D:291:ILE:HD13	1.94	0.50
1:C:302:VAL:HG21	1:C:391:MET:HE1	1.92	0.50
1:D:303:GLU:O	1:D:306:VAL:HG22	2.12	0.50
1:A:506:ALA:HB3	1:A:509:VAL:HG23	1.94	0.49
3:O:154:ARG:HA	3:O:154:ARG:NE	2.26	0.49
4:M:339:GLU:OE1	4:M:523:ARG:NH1	2.42	0.49
1:A:411:ARG:NE	1:B:30:ASP:OD1	2.42	0.49
1:C:303:GLU:O	1:C:306:VAL:HG22	2.11	0.49
1:A:247:GLU:HG2	1:A:303:GLU:HG2	1.95	0.49
1:A:404:GLU:OE2	1:B:317:ARG:NH1	2.44	0.49
3:F:154:ARG:NH1	3:F:159:GLU:OE2	2.41	0.49
4:G:179:LEU:HD23	4:G:199:VAL:HB	1.94	0.49
4:M:407:LEU:HG	4:M:432:VAL:HG22	1.93	0.49
1:S:13:LEU:HD11	1:S:38:VAL:HG13	1.95	0.49
1:A:416:PHE:CE2	1:A:425:ILE:HD11	2.47	0.49
4:H:468:LEU:HD11	4:H:482:ARG:CZ	2.42	0.49
3:F:279:ASN:C	3:F:279:ASN:OD1	2.55	0.49
4:H:146:ALA:HB2	9:H:601:1VU:H20	1.95	0.49
1:T:214:ARG:NH1	1:T:235:ASP:OD2	2.45	0.49
1:I:532:VAL:O	1:I:594:ILE:N	2.42	0.49
1:T:303:GLU:OE2	1:T:344:ARG:NH2	2.42	0.49
1:B:223:ASP:OD2	1:B:327:PRO:HA	2.13	0.49
1:B:303:GLU:O	1:B:306:VAL:HG22	2.13	0.49
1:T:138:VAL:HG23	1:T:292:SER:HB2	1.95	0.49
9:G:601:1VU:H26	9:G:601:1VU:H18	1.78	0.48
3:F:117:MET:HE3	4:G:525:LEU:CD2	2.44	0.48
3:F:430:VAL:HG21	3:O:136:ALA:HB1	1.95	0.48
1:T:23:ARG:NH2	1:T:308:GLU:OE2	2.46	0.48
1:D:423:THR:OG1	1:D:425:ILE:HD12	2.14	0.48
3:F:136:ALA:HB1	3:O:430:VAL:HG21	1.95	0.48
3:O:439:LEU:C	3:O:439:LEU:HD23	2.39	0.48
4:N:331:ILE:HD13	4:N:365:ALA:HB2	1.96	0.48
1:A:304:HIS:N	1:A:305:PRO:HD2	2.29	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:506:ALA:HB1	1:A:507:PRO:CD	2.43	0.48
4:N:285:THR:HG22	4:N:285:THR:O	2.12	0.48
1:T:248:GLU:OE1	1:T:339:HIS:NE2	2.40	0.47
1:A:221:ILE:HD12	1:A:322:ILE:HD11	1.96	0.47
1:C:74:LEU:HA	1:C:77:ALA:HB3	1.96	0.47
1:C:223:ASP:OD1	1:C:224:GLN:N	2.48	0.47
1:D:304:HIS:N	1:D:305:PRO:HD2	2.29	0.47
4:H:179:LEU:HD23	4:H:199:VAL:HB	1.97	0.47
1:T:184:ILE:N	1:T:185:PRO:HD2	2.29	0.47
1:C:416:PHE:HE1	1:C:425:ILE:HD11	1.80	0.47
3:F:278:ASP:O	3:F:279:ASN:CG	2.58	0.47
1:T:444:PHE:CE2	1:T:446:VAL:HG22	2.50	0.47
1:A:10:SER:OG	1:A:83:ASN:ND2	2.48	0.47
1:D:171:GLY:N	7:D:601:ATP:O1B	2.47	0.47
4:H:401:ARG:NH1	4:H:542:LEU:O	2.47	0.47
4:N:180:ILE:HG22	4:N:205:SER:HB2	1.96	0.47
1:C:284:LEU:HD12	1:C:294:LEU:HD13	1.97	0.46
1:C:304:HIS:N	1:C:305:PRO:CD	2.78	0.46
3:F:25:GLY:O	3:F:29:VAL:HG23	2.15	0.46
1:Q:240:ARG:HD2	1:Q:354:PHE:HB3	1.97	0.46
4:G:285:THR:O	4:G:285:THR:HG22	2.15	0.46
4:G:292:GLU:OE1	4:G:313:ARG:NE	2.43	0.46
9:G:602:1VU:H10	9:G:602:1VU:O2	2.15	0.46
1:A:23:ARG:NH2	1:A:308:GLU:OE2	2.46	0.46
1:A:481:VAL:HG11	2:E:45:LEU:CD1	2.45	0.46
1:A:302:VAL:HG21	1:A:344:ARG:NH2	2.30	0.46
1:C:223:ASP:OD2	1:C:327:PRO:HA	2.15	0.46
4:G:346:VAL:HB	4:G:381:LEU:HD22	1.98	0.46
4:H:150:ILE:HG12	4:M:454:MET:HE3	1.96	0.46
1:Q:299:ARG:NH2	6:Q:602:BCT:O2	2.40	0.46
1:S:280:THR:HG21	1:S:301:GLN:OE1	2.16	0.46
1:B:416:PHE:CE2	1:B:425:ILE:HD11	2.50	0.46
4:M:479:ASP:O	4:M:483:LEU:HD23	2.15	0.46
1:R:374:MET:CE	1:R:393:ALA:HB1	2.46	0.46
4:H:93:THR:HB	4:H:128:VAL:HG11	1.98	0.46
1:S:374:MET:HE1	1:S:416:PHE:CE1	2.50	0.46
1:A:303:GLU:O	1:A:306:VAL:HG22	2.15	0.46
1:D:140:GLY:HA2	1:D:207:GLU:HA	1.98	0.46
1:D:367:PRO:HD3	1:D:416:PHE:HD1	1.81	0.46
4:G:179:LEU:HD22	4:G:181:MET:HE3	1.98	0.46
4:N:407:LEU:HG	4:N:432:VAL:HG22	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:N:401:ARG:NH1	4:N:542:LEU:O	2.42	0.46
1:D:16:ASN:ND2	1:D:20:ILE:HG21	2.31	0.45
3:F:358:PHE:CZ	3:F:387:ILE:HD13	2.51	0.45
1:Q:416:PHE:CE2	1:Q:425:ILE:HD11	2.50	0.45
1:S:220:VAL:HG11	1:S:270:CYS:SG	2.56	0.45
1:D:416:PHE:HE2	1:D:425:ILE:HD11	1.82	0.45
4:N:179:LEU:HD22	4:N:181:MET:HE3	1.97	0.45
1:B:367:PRO:HD3	1:B:416:PHE:HD1	1.81	0.45
3:F:91:HIS:CE1	3:F:129:ALA:HB2	2.52	0.45
4:N:495:ASN:HB2	4:N:496:PRO:HD2	1.99	0.45
1:R:13:LEU:HD11	1:R:38:VAL:HG13	1.98	0.45
4:N:12:GLN:OE1	4:N:27:ARG:CZ	2.65	0.45
1:D:234:ARG:NH1	1:D:301:GLN:OE1	2.50	0.45
1:I:557:VAL:HG12	1:I:558:VAL:HG23	1.99	0.45
3:O:438:GLN:HA	3:O:441:VAL:HG12	1.99	0.45
1:L:558:VAL:HG22	1:L:559:VAL:N	2.32	0.45
1:S:374:MET:CE	1:S:416:PHE:HE1	2.30	0.45
1:D:367:PRO:CD	1:D:416:PHE:HD1	2.29	0.45
1:B:444:PHE:HD2	1:B:446:VAL:HG22	1.78	0.45
4:H:339:GLU:OE1	4:H:523:ARG:NH1	2.45	0.45
1:B:299:ARG:NH1	6:B:603:BCT:O3	2.46	0.44
4:H:385:VAL:HG13	4:H:385:VAL:O	2.17	0.44
9:H:602:1VU:H18	9:H:602:1VU:H26	1.81	0.44
4:M:346:VAL:HB	4:M:381:LEU:CD2	2.47	0.44
4:N:385:VAL:O	4:N:385:VAL:HG13	2.16	0.44
1:R:280:THR:HG21	1:R:301:GLN:OE1	2.17	0.44
1:S:367:PRO:HD3	1:S:416:PHE:CD1	2.51	0.44
1:C:265:SER:O	1:C:269:ILE:HG13	2.17	0.44
3:O:168:ALA:HA	3:O:191:PHE:O	2.16	0.44
1:Q:10:SER:OG	1:Q:83:ASN:ND2	2.50	0.44
1:Q:303:GLU:O	1:Q:306:VAL:HG22	2.17	0.44
1:Q:423:THR:OG1	1:Q:425:ILE:HD12	2.18	0.44
1:S:302:VAL:O	1:S:302:VAL:HG22	2.18	0.44
1:B:14:VAL:HG11	1:B:21:ALA:HA	2.00	0.44
4:G:28:ARG:O	4:G:32:THR:HG23	2.16	0.44
1:K:532:VAL:O	1:K:594:ILE:N	2.46	0.44
1:S:423:THR:OG1	1:S:425:ILE:HD12	2.17	0.44
1:T:428:HIS:O	1:T:432:VAL:HG23	2.17	0.44
1:B:184:ILE:H	1:B:184:ILE:HD12	1.82	0.44
1:R:374:MET:HE3	1:R:393:ALA:HB1	1.99	0.44
3:F:127:ASP:C	3:F:128:SER:HG	2.19	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:N:117:LEU:HD13	4:N:160:TYR:CE1	2.53	0.44
2:P:42:MET:HE1	1:T:483:VAL:HG21	1.99	0.44
1:D:228:VAL:HG11	1:D:270:CYS:SG	2.58	0.44
9:H:602:1VU:H18	9:H:602:1VU:N1	2.33	0.44
1:A:303:GLU:C	1:A:305:PRO:HD2	2.42	0.44
3:F:415:LEU:O	3:F:416:SER:OG	2.35	0.44
1:C:474:VAL:N	1:C:475:PRO:CD	2.80	0.44
3:F:424:PRO:HG3	4:H:22:LEU:HD23	1.99	0.44
4:N:346:VAL:HB	4:N:381:LEU:HD22	1.99	0.44
3:O:285:HIS:CG	1:Q:519:ARG:HH12	2.36	0.44
1:C:39:TYR:HB3	1:C:49:VAL:HG22	2.00	0.43
1:C:268:ARG:O	1:C:269:ILE:C	2.60	0.43
4:G:86:PRO:HG2	4:G:112:VAL:HG13	2.00	0.43
1:Q:30:ASP:CG	1:R:411:ARG:HE	2.26	0.43
1:T:247:GLU:HG2	1:T:303:GLU:HG2	1.99	0.43
4:M:330:ASN:OD1	4:M:361:ALA:HB2	2.18	0.43
1:R:303:GLU:OE2	6:R:603:BCT:O3	2.36	0.43
1:S:304:HIS:N	1:S:305:PRO:CD	2.81	0.43
1:A:540:VAL:HG22	1:A:560:LEU:CD2	2.48	0.43
3:F:43:ARG:NH1	3:F:127:ASP:OD2	2.47	0.43
2:P:35:GLY:HA3	1:Q:488:LEU:HD23	2.00	0.43
9:H:601:1VU:N1	9:H:601:1VU:H18	2.33	0.43
1:L:580:LEU:HD23	1:L:582:VAL:H	1.83	0.43
1:A:247:GLU:HG2	1:A:303:GLU:CG	2.49	0.43
4:G:462:PHE:CE2	9:G:602:1VU:H29	2.54	0.43
4:N:101:ARG:NH2	4:N:259:LEU:O	2.52	0.43
3:O:174:SER:HB2	3:O:175:PRO:HD3	2.01	0.43
1:C:210:LEU:H	7:C:601:ATP:HN62	1.65	0.43
1:R:223:ASP:OD2	1:R:328:LEU:N	2.41	0.43
1:C:302:VAL:HG11	1:C:344:ARG:CZ	2.49	0.43
3:O:402:ALA:HB1	3:O:407:TYR:HB2	1.99	0.43
1:R:303:GLU:O	1:R:306:VAL:HG22	2.18	0.43
1:R:416:PHE:CE2	1:R:425:ILE:HD11	2.54	0.43
1:R:444:PHE:CE2	1:R:446:VAL:HG22	2.54	0.43
3:F:480:ASP:HB3	4:H:68:LEU:HD22	2.00	0.43
4:N:333:VAL:HA	4:N:345:ILE:O	2.19	0.43
1:Q:217:GLU:OE2	1:Q:301:GLN:NE2	2.51	0.43
1:R:367:PRO:HD3	1:R:416:PHE:CD1	2.54	0.43
1:D:14:VAL:HG11	1:D:21:ALA:HA	2.01	0.43
1:B:304:HIS:N	1:B:305:PRO:CD	2.81	0.43
1:B:481:VAL:HG12	1:B:482:GLU:N	2.34	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:278:ASP:O	3:F:279:ASN:OD1	2.36	0.43
4:G:385:VAL:HG13	4:G:385:VAL:O	2.19	0.42
3:F:41:ARG:HG3	3:F:41:ARG:HH11	1.84	0.42
4:G:408:TYR:OH	4:G:538:GLY:HA3	2.18	0.42
1:Q:304:HIS:N	1:Q:305:PRO:CD	2.82	0.42
1:T:304:HIS:N	1:T:305:PRO:CD	2.82	0.42
1:T:367:PRO:CD	1:T:416:PHE:HD1	2.31	0.42
3:F:19:LEU:C	3:F:19:LEU:HD23	2.44	0.42
1:R:416:PHE:HE2	1:R:425:ILE:HD11	1.84	0.42
4:M:408:TYR:OH	4:M:538:GLY:HA3	2.20	0.42
1:Q:481:VAL:HG12	1:Q:482:GLU:N	2.34	0.42
1:R:17:ARG:NH1	1:R:388:PHE:CD2	2.87	0.42
1:R:141:THR:N	1:R:142:PRO:HD3	2.35	0.42
1:K:555:ASP:OD1	1:K:556:LEU:N	2.52	0.42
1:R:481:VAL:HG12	1:R:482:GLU:N	2.35	0.42
9:H:601:1VU:H10	9:H:601:1VU:H13	2.01	0.42
1:S:280:THR:HG22	1:S:281:VAL:N	2.34	0.42
1:D:299:ARG:NH2	6:D:603:BCT:O1	2.48	0.42
4:G:307:MET:HG2	4:G:347:ALA:HB1	2.02	0.42
4:G:527:ARG:NH1	4:G:529:ILE:HD11	2.35	0.42
4:N:370:ARG:NH1	4:N:412:GLU:OE1	2.53	0.42
4:N:410:TYR:CZ	4:N:434:GLY:HA2	2.55	0.42
4:G:186:GLY:O	4:G:189:VAL:HG22	2.20	0.41
1:B:416:PHE:HE2	1:B:425:ILE:HD11	1.85	0.41
2:E:37:PRO:HG2	2:E:42:MET:HE2	2.02	0.41
3:F:127:ASP:O	3:F:128:SER:OG	2.21	0.41
4:M:179:LEU:HD21	4:M:255:VAL:CG2	2.49	0.41
2:P:38:THR:OG1	2:P:39:PRO:HD2	2.20	0.41
1:S:87:PRO:HG3	1:S:109:TRP:CH2	2.56	0.41
1:D:306:VAL:HG23	1:D:307:THR:N	2.36	0.41
4:H:333:VAL:HA	4:H:345:ILE:O	2.20	0.41
9:H:601:1VU:H18	9:H:601:1VU:C7	2.49	0.41
4:M:346:VAL:O	4:M:381:LEU:HA	2.20	0.41
4:N:298:PRO:CG	4:N:303:GLN:OE1	2.68	0.41
1:A:294:LEU:HD21	7:A:603:ATP:H3'	2.02	0.41
1:A:367:PRO:HD3	1:A:416:PHE:CD1	2.54	0.41
1:R:306:VAL:HG13	1:R:342:GLU:HB2	2.02	0.41
1:B:86:HIS:CD2	1:B:110:ILE:HG21	2.55	0.41
1:C:70:PHE:O	1:C:73:ILE:O	2.39	0.41
4:N:89:ASP:OD2	4:N:120:VAL:HB	2.19	0.41
1:Q:14:VAL:HG11	1:Q:21:ALA:HA	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:Q:481:VAL:HG13	1:R:492:LEU:HD23	2.03	0.41
1:S:421:LEU:HD12	1:S:422:ALA:O	2.21	0.41
3:F:174:SER:HB3	3:F:175:PRO:HD3	2.02	0.41
4:M:307:MET:HG2	4:M:347:ALA:HB1	2.03	0.41
1:B:70:PHE:N	1:B:70:PHE:CD1	2.89	0.41
1:B:444:PHE:CE2	1:B:446:VAL:HG22	2.55	0.41
1:Q:378:VAL:HG12	1:Q:379:GLU:N	2.35	0.41
1:R:474:VAL:N	1:R:475:PRO:CD	2.84	0.41
1:T:367:PRO:HD3	1:T:416:PHE:HD1	1.85	0.41
1:D:24:VAL:HG21	1:D:86:HIS:CD2	2.55	0.41
4:G:191:SER:HB3	4:G:192:PRO:HD3	2.02	0.41
2:P:89:ARG:O	2:P:93:ARG:HG3	2.21	0.41
1:R:344:ARG:HD3	1:R:391:MET:HE2	2.02	0.41
1:S:16:ASN:ND2	1:S:20:ILE:HG21	2.36	0.41
1:S:301:GLN:HG2	1:S:303:GLU:OE1	2.21	0.41
1:B:367:PRO:CD	1:B:416:PHE:HD1	2.34	0.41
3:F:469:THR:HB	3:F:470:PRO:HD2	2.03	0.41
4:G:463:VAL:HG13	4:G:464:TYR:CD2	2.56	0.41
4:M:101:ARG:NH2	4:M:259:LEU:O	2.54	0.41
1:Q:304:HIS:HB2	1:Q:315:LEU:HD12	2.03	0.41
1:S:474:VAL:N	1:S:475:PRO:HD2	2.36	0.41
1:T:402:ARG:NH2	1:T:437:PHE:O	2.54	0.41
1:R:302:VAL:HG11	1:R:391:MET:HE1	2.03	0.40
1:T:223:ASP:OD2	1:T:327:PRO:HA	2.20	0.40
1:B:389:ASP:OD1	1:B:390:SER:N	2.52	0.40
1:D:125:THR:O	1:D:129:ILE:HG12	2.21	0.40
3:F:120:CYS:O	3:F:157:VAL:HG11	2.21	0.40
3:F:192:ILE:HG13	3:F:193:THR:N	2.36	0.40
9:G:601:1VU:O9	9:G:601:1VU:H24	2.22	0.40
1:R:219:GLN:OE1	1:R:234:ARG:NH2	2.48	0.40
1:S:240:ARG:O	1:S:240:ARG:HD3	2.21	0.40
3:F:515:LEU:H	3:F:515:LEU:HD23	1.87	0.40
4:M:122:GLY:O	4:M:126:VAL:HG23	2.22	0.40
4:N:460:VAL:HG13	4:N:464:TYR:HD2	1.86	0.40
3:O:193:THR:O	3:O:211:LEU:HD21	2.21	0.40
1:Q:303:GLU:OE2	1:Q:344:ARG:NH2	2.46	0.40
1:R:474:VAL:HB	1:R:475:PRO:HD3	2.03	0.40
1:B:130:ALA:HA	1:B:269:ILE:HD13	2.04	0.40
1:B:306:VAL:HG13	1:B:342:GLU:HB2	2.03	0.40
3:F:330:LEU:HD13	3:F:366:MET:HE1	2.02	0.40
1:S:428:HIS:HA	1:S:431:VAL:HG12	2.02	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:T:294:LEU:HD11	7:T:601:ATP:C8	2.56	0.40
1:A:221:ILE:CD1	1:A:322:ILE:HD11	2.51	0.40
4:N:520:ASN:HD22	4:N:520:ASN:HA	1.63	0.40
1:R:70:PHE:N	1:R:70:PHE:CD1	2.88	0.40
1:S:13:LEU:HD12	1:S:36:VAL:HB	2.04	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	590/598 (99%)	577 (98%)	13 (2%)	0	100	100
1	B	478/598 (80%)	468 (98%)	10 (2%)	0	100	100
1	C	478/598 (80%)	466 (98%)	11 (2%)	1 (0%)	44	73
1	D	477/598 (80%)	466 (98%)	11 (2%)	0	100	100
1	I	67/598 (11%)	67 (100%)	0	0	100	100
1	J	67/598 (11%)	66 (98%)	1 (2%)	0	100	100
1	K	67/598 (11%)	64 (96%)	3 (4%)	0	100	100
1	L	67/598 (11%)	67 (100%)	0	0	100	100
1	Q	590/598 (99%)	581 (98%)	9 (2%)	0	100	100
1	R	478/598 (80%)	469 (98%)	9 (2%)	0	100	100
1	S	478/598 (80%)	470 (98%)	8 (2%)	0	100	100
1	T	474/598 (79%)	468 (99%)	6 (1%)	0	100	100
2	E	68/94 (72%)	65 (96%)	3 (4%)	0	100	100
2	P	68/94 (72%)	63 (93%)	5 (7%)	0	100	100
3	F	514/517 (99%)	502 (98%)	12 (2%)	0	100	100
3	O	513/517 (99%)	498 (97%)	15 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
4	G	529/542 (98%)	519 (98%)	9 (2%)	1 (0%)	44 73
4	H	537/542 (99%)	525 (98%)	12 (2%)	0	100 100
4	M	528/542 (97%)	516 (98%)	12 (2%)	0	100 100
4	N	537/542 (99%)	526 (98%)	11 (2%)	0	100 100
All	All	7605/10566 (72%)	7443 (98%)	160 (2%)	2 (0%)	100 100

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	439	GLY
4	G	462	PHE

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	370/453 (82%)	369 (100%)	1 (0%)	91 97
1	B	314/453 (69%)	314 (100%)	0	100 100
1	C	269/453 (59%)	269 (100%)	0	100 100
1	D	255/453 (56%)	255 (100%)	0	100 100
1	I	37/453 (8%)	37 (100%)	0	100 100
1	J	27/453 (6%)	27 (100%)	0	100 100
1	K	32/453 (7%)	32 (100%)	0	100 100
1	L	23/453 (5%)	23 (100%)	0	100 100
1	Q	380/453 (84%)	380 (100%)	0	100 100
1	R	295/453 (65%)	294 (100%)	1 (0%)	91 97
1	S	273/453 (60%)	273 (100%)	0	100 100
1	T	288/453 (64%)	288 (100%)	0	100 100
2	E	49/76 (64%)	49 (100%)	0	100 100
2	P	49/76 (64%)	49 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
3	F	386/412 (94%)	386 (100%)	0	100 100
3	O	374/412 (91%)	374 (100%)	0	100 100
4	G	405/436 (93%)	404 (100%)	1 (0%)	92 97
4	H	406/436 (93%)	406 (100%)	0	100 100
4	M	404/436 (93%)	404 (100%)	0	100 100
4	N	403/436 (92%)	402 (100%)	1 (0%)	92 97
All	All	5039/8156 (62%)	5035 (100%)	4 (0%)	92 98

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	221	ILE
4	G	462	PHE
4	N	520	ASN
1	R	444	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (20) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	100	GLN
1	B	243	GLN
1	B	297	ASN
1	D	61	GLN
1	D	100	GLN
1	D	243	GLN
4	H	167	ASN
4	H	188	HIS
4	H	394	GLN
4	M	520	ASN
4	N	143	ASN
4	N	352	GLN
4	N	520	ASN
3	O	150	HIS
3	O	224	HIS
3	O	420	ASN
2	P	82	GLN
1	R	225	HIS
1	R	319	GLN
1	S	456	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)

Of 34 ligands modelled in this entry, 8 are monoatomic - leaving 26 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	$\#\|Z\| > 2$
6	BCT	B	603	-	3,3,3	1.15	0	2,3,3	4.20	2 (100%)
6	BCT	C	603	-	3,3,3	1.12	0	2,3,3	4.16	2 (100%)
6	BCT	Q	602	-	3,3,3	1.15	0	2,3,3	4.24	2 (100%)
7	ATP	D	601	8	28,33,33	0.87	1 (3%)	34,52,52	1.03	3 (8%)
5	BTN	K	601	1	15,16,17	6.51	11 (73%)	20,21,23	2.75	8 (40%)
6	BCT	R	603	-	3,3,3	1.17	0	2,3,3	4.11	2 (100%)
5	BTN	J	601	1	15,16,17	6.52	11 (73%)	20,21,23	2.70	8 (40%)
6	BCT	D	603	-	3,3,3	1.12	0	2,3,3	4.25	2 (100%)
7	ATP	S	601	8	28,33,33	0.88	1 (3%)	34,52,52	0.92	1 (2%)
9	1VU	G	602	-	48,54,54	0.63	1 (2%)	60,80,80	1.02	3 (5%)
7	ATP	B	601	8	28,33,33	0.93	2 (7%)	34,52,52	0.94	2 (5%)
5	BTN	L	601	1	15,16,17	6.54	11 (73%)	20,21,23	2.75	8 (40%)
6	BCT	S	603	-	3,3,3	1.13	0	2,3,3	4.18	2 (100%)
7	ATP	Q	603	8	28,33,33	0.77	0	34,52,52	0.98	3 (8%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
5	BTN	A	601	1	15,16,17	6.64	11 (73%)	20,21,23	3.13	10 (50%)
9	1VU	H	602	-	48,54,54	0.64	0	60,80,80	0.96	2 (3%)
9	1VU	H	601	-	48,54,54	0.67	1 (2%)	60,80,80	1.05	4 (6%)
7	ATP	C	601	8	28,33,33	0.71	0	34,52,52	1.32	5 (14%)
6	BCT	A	602	-	3,3,3	1.22	0	2,3,3	4.22	1 (50%)
6	BCT	T	602	-	3,3,3	1.13	0	2,3,3	4.10	2 (100%)
7	ATP	R	601	8	28,33,33	1.13	2 (7%)	34,52,52	1.04	4 (11%)
7	ATP	T	601	8	28,33,33	0.74	0	34,52,52	0.90	3 (8%)
7	ATP	A	603	8	28,33,33	0.77	0	34,52,52	0.97	1 (2%)
5	BTN	Q	601	1	15,16,17	6.52	11 (73%)	20,21,23	2.76	8 (40%)
5	BTN	I	601	1	15,16,17	6.48	11 (73%)	20,21,23	2.71	8 (40%)
9	1VU	G	601	-	48,54,54	0.65	1 (2%)	60,80,80	1.05	4 (6%)

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
7	ATP	B	601	8	-	9/18/38/38	0/3/3/3
5	BTN	L	601	1	-	3/6/27/28	0/2/2/2
9	1VU	G	601	-	-	12/49/69/69	0/3/3/3
7	ATP	R	601	8	-	4/18/38/38	0/3/3/3
7	ATP	T	601	8	-	9/18/38/38	0/3/3/3
5	BTN	J	601	1	-	2/6/27/28	0/2/2/2
7	ATP	A	603	8	-	2/18/38/38	0/3/3/3
9	1VU	G	602	-	-	10/49/69/69	0/3/3/3
7	ATP	Q	603	8	-	3/18/38/38	0/3/3/3
5	BTN	Q	601	1	-	3/6/27/28	0/2/2/2
7	ATP	S	601	8	-	3/18/38/38	0/3/3/3
9	1VU	H	601	-	-	12/49/69/69	0/3/3/3
5	BTN	A	601	1	-	1/6/27/28	0/2/2/2
7	ATP	D	601	8	-	3/18/38/38	0/3/3/3
9	1VU	H	602	-	-	16/49/69/69	0/3/3/3
7	ATP	C	601	8	-	6/18/38/38	0/3/3/3
5	BTN	I	601	1	-	0/6/27/28	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	BTN	K	601	1	-	1/6/27/28	0/2/2/2

All (75) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	601	BTN	C6-S1	-13.65	1.43	1.81
5	I	601	BTN	C6-S1	-13.48	1.43	1.81
5	L	601	BTN	C6-S1	-13.48	1.43	1.81
5	J	601	BTN	C6-S1	-13.41	1.44	1.81
5	K	601	BTN	C6-S1	-13.41	1.44	1.81
5	Q	601	BTN	C6-S1	-13.33	1.44	1.81
5	L	601	BTN	C3-N1	12.74	1.58	1.35
5	A	601	BTN	C3-N1	12.71	1.58	1.35
5	K	601	BTN	C3-N1	12.57	1.58	1.35
5	J	601	BTN	C3-N1	12.56	1.58	1.35
5	Q	601	BTN	C3-N1	12.50	1.58	1.35
5	I	601	BTN	C3-N1	12.38	1.58	1.35
5	Q	601	BTN	C5-N1	-9.03	1.32	1.46
5	J	601	BTN	C5-N1	-8.86	1.33	1.46
5	I	601	BTN	C5-N1	-8.83	1.33	1.46
5	L	601	BTN	C5-N1	-8.80	1.33	1.46
5	A	601	BTN	C5-N1	-8.79	1.33	1.46
5	A	601	BTN	C3-N2	8.73	1.51	1.35
5	K	601	BTN	C5-N1	-8.61	1.33	1.46
5	K	601	BTN	C3-N2	8.36	1.50	1.35
5	Q	601	BTN	C3-N2	8.33	1.50	1.35
5	L	601	BTN	C3-N2	8.32	1.50	1.35
5	J	601	BTN	C3-N2	8.24	1.50	1.35
5	A	601	BTN	C2-S1	-8.10	1.69	1.82
5	I	601	BTN	C3-N2	8.09	1.50	1.35
5	J	601	BTN	C2-S1	-7.66	1.70	1.82
5	I	601	BTN	C2-S1	-7.57	1.70	1.82
5	Q	601	BTN	C2-S1	-7.51	1.70	1.82
5	L	601	BTN	C2-S1	-7.49	1.70	1.82
5	K	601	BTN	C2-S1	-7.41	1.70	1.82
5	J	601	BTN	C6-C5	5.59	1.64	1.53
5	K	601	BTN	C6-C5	5.44	1.64	1.53
5	Q	601	BTN	C6-C5	5.42	1.64	1.53
5	L	601	BTN	C6-C5	5.37	1.64	1.53
5	I	601	BTN	C6-C5	5.31	1.64	1.53
5	A	601	BTN	C6-C5	5.29	1.64	1.53
5	I	601	BTN	C4-N2	-4.32	1.37	1.45

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	K	601	BTN	C4-N2	-4.25	1.37	1.45
5	A	601	BTN	C7-C2	4.23	1.63	1.52
5	L	601	BTN	C7-C2	4.18	1.63	1.52
5	K	601	BTN	C7-C2	4.16	1.63	1.52
5	Q	601	BTN	C4-N2	-4.16	1.38	1.45
5	Q	601	BTN	C7-C2	4.12	1.63	1.52
5	A	601	BTN	C4-N2	-4.10	1.38	1.45
5	J	601	BTN	C4-N2	-4.10	1.38	1.45
5	K	601	BTN	C2-C4	-3.99	1.43	1.53
5	Q	601	BTN	C2-C4	-3.97	1.43	1.53
5	I	601	BTN	C7-C2	3.95	1.63	1.52
5	L	601	BTN	C4-N2	-3.92	1.38	1.45
5	L	601	BTN	C2-C4	-3.89	1.43	1.53
5	J	601	BTN	C2-C4	-3.85	1.43	1.53
5	I	601	BTN	C2-C4	-3.80	1.43	1.53
5	J	601	BTN	C7-C2	3.73	1.62	1.52
7	R	601	ATP	PA-O3A	-3.72	1.55	1.59
5	A	601	BTN	C2-C4	-3.65	1.43	1.53
5	K	601	BTN	C5-C4	3.54	1.65	1.55
5	A	601	BTN	C5-C4	3.50	1.65	1.55
5	J	601	BTN	C5-C4	3.42	1.65	1.55
5	L	601	BTN	C5-C4	3.41	1.65	1.55
5	I	601	BTN	C5-C4	3.35	1.65	1.55
5	Q	601	BTN	C5-C4	3.32	1.65	1.55
7	R	601	ATP	PB-O3B	-3.10	1.56	1.59
7	S	601	ATP	PA-O3A	-2.65	1.56	1.59
7	B	601	ATP	PB-O3B	-2.45	1.56	1.59
5	K	601	BTN	O3-C3	-2.40	1.18	1.23
5	J	601	BTN	O3-C3	-2.37	1.18	1.23
5	A	601	BTN	O3-C3	-2.33	1.18	1.23
5	I	601	BTN	O3-C3	-2.33	1.18	1.23
5	Q	601	BTN	O3-C3	-2.27	1.18	1.23
5	L	601	BTN	O3-C3	-2.24	1.18	1.23
7	B	601	ATP	PA-O3A	-2.20	1.57	1.59
7	D	601	ATP	PB-O3B	-2.16	1.57	1.59
9	G	601	1VU	C17-N3	-2.05	1.31	1.34
9	H	601	1VU	C17-N3	-2.04	1.31	1.34
9	G	602	1VU	C17-N3	-2.04	1.31	1.34

All (100) bond angle outliers are listed below:

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	A	601	BTN	C4-C5-N1	7.17	110.40	102.43
5	A	601	BTN	C6-S1-C2	7.17	104.90	89.98
5	L	601	BTN	C6-S1-C2	6.78	104.08	89.98
5	I	601	BTN	C6-S1-C2	6.76	104.05	89.98
5	K	601	BTN	C6-S1-C2	6.43	103.36	89.98
5	Q	601	BTN	C6-S1-C2	6.26	103.00	89.98
5	J	601	BTN	C6-S1-C2	6.19	102.85	89.98
6	A	602	BCT	O2-C-O1	5.65	134.13	119.68
5	L	601	BTN	C4-C5-N1	5.62	108.67	102.43
5	Q	601	BTN	C4-C5-N1	5.56	108.61	102.43
6	Q	602	BCT	O2-C-O1	5.50	133.74	119.68
6	D	603	BCT	O2-C-O1	5.48	133.70	119.68
6	C	603	BCT	O2-C-O1	5.45	133.61	119.68
6	S	603	BCT	O2-C-O1	5.44	133.59	119.68
6	B	603	BCT	O2-C-O1	5.41	133.51	119.68
6	R	603	BCT	O2-C-O1	5.38	133.44	119.68
7	C	601	ATP	C4'-O4'-C1'	-5.38	105.00	109.92
9	G	602	1VU	P2-O13-C23	-5.35	109.13	123.43
9	H	602	1VU	P2-O13-C23	-5.34	109.17	123.43
6	T	602	BCT	O2-C-O1	5.29	133.20	119.68
5	K	601	BTN	C4-C5-N1	5.25	108.26	102.43
5	J	601	BTN	C4-C5-N1	5.16	108.16	102.43
9	G	601	1VU	P2-O13-C23	-5.08	109.87	123.43
5	I	601	BTN	C4-C5-N1	5.03	108.02	102.43
5	J	601	BTN	C5-C4-N2	4.74	108.02	102.68
5	I	601	BTN	C5-C4-N2	4.69	107.97	102.68
5	K	601	BTN	C5-C4-N2	4.65	107.93	102.68
5	Q	601	BTN	C5-C4-N2	4.47	107.73	102.68
9	H	601	1VU	P2-O13-C23	-4.42	111.62	123.43
5	A	601	BTN	C5-N1-C3	-4.38	105.94	112.38
5	L	601	BTN	C5-C4-N2	4.27	107.50	102.68
5	J	601	BTN	C4-N2-C3	-3.78	107.87	112.56
5	K	601	BTN	C8-C7-C2	-3.73	105.46	114.04
5	Q	601	BTN	C4-N2-C3	-3.69	107.98	112.56
5	K	601	BTN	C4-N2-C3	-3.67	108.00	112.56
5	I	601	BTN	C4-N2-C3	-3.58	108.11	112.56
5	A	601	BTN	C4-N2-C3	-3.58	108.12	112.56
5	A	601	BTN	C6-C5-N1	-3.57	108.58	113.18
5	A	601	BTN	C5-C4-N2	3.55	106.68	102.68
5	L	601	BTN	C2-C4-C5	-3.48	104.64	108.89
5	L	601	BTN	C4-N2-C3	-3.44	108.29	112.56

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	Q	601	BTN	C6-C5-N1	-3.36	108.86	113.18
9	H	601	1VU	C7-C6-C5	-3.34	106.83	112.39
5	Q	601	BTN	C2-C4-C5	-3.32	104.83	108.89
5	Q	601	BTN	C5-N1-C3	-3.20	107.68	112.38
5	K	601	BTN	C5-N1-C3	-3.19	107.69	112.38
5	L	601	BTN	C5-N1-C3	-3.18	107.71	112.38
5	J	601	BTN	C5-N1-C3	-3.04	107.92	112.38
5	I	601	BTN	C5-N1-C3	-2.97	108.02	112.38
5	J	601	BTN	C2-C4-C5	-2.90	105.35	108.89
5	A	601	BTN	C7-C2-S1	-2.88	104.46	112.78
5	I	601	BTN	C8-C7-C2	-2.79	107.63	114.04
5	A	601	BTN	C2-C4-C5	-2.78	105.50	108.89
5	J	601	BTN	C8-C7-C2	-2.73	107.76	114.04
5	J	601	BTN	C6-C5-C4	-2.72	104.76	109.06
5	K	601	BTN	C6-C5-C4	-2.69	104.80	109.06
5	K	601	BTN	C2-C4-C5	-2.58	105.74	108.89
7	R	601	ATP	C5-C6-N6	2.49	124.11	120.31
5	I	601	BTN	C2-C4-C5	-2.49	105.84	108.89
5	I	601	BTN	C6-C5-C4	-2.46	105.17	109.06
6	D	603	BCT	O3-C-O1	-2.45	113.40	119.68
9	G	602	1VU	C7-C6-C5	-2.45	108.31	112.39
6	B	603	BCT	O3-C-O1	-2.45	113.42	119.68
6	Q	602	BCT	O3-C-O1	-2.41	113.52	119.68
6	T	602	BCT	O3-C-O1	-2.38	113.58	119.68
5	Q	601	BTN	C6-C5-C4	-2.37	105.31	109.06
9	H	602	1VU	C18-C19-N4	2.37	123.92	120.31
5	L	601	BTN	C2-C4-N2	2.36	115.83	113.34
7	A	603	ATP	C5-C6-N6	2.35	123.89	120.31
6	S	603	BCT	O3-C-O1	-2.33	113.71	119.68
7	Q	603	ATP	C5-C6-N6	2.32	123.84	120.31
7	D	601	ATP	C5-C6-N6	2.30	123.81	120.31
7	C	601	ATP	C5-C6-N6	2.29	123.80	120.31
7	S	601	ATP	C5-C6-N6	2.28	123.78	120.31
7	T	601	ATP	C5-C6-N6	2.28	123.78	120.31
7	B	601	ATP	C5-C6-N6	2.28	123.78	120.31
5	A	601	BTN	C6-C5-C4	-2.27	105.47	109.06
9	G	601	1VU	C7-C6-C5	-2.27	108.61	112.39
9	G	601	1VU	C18-C19-N4	2.26	123.75	120.31
9	H	601	1VU	C18-C19-N4	2.25	123.74	120.31
9	H	601	1VU	C22-C23-C15	-2.22	99.35	103.24
6	C	603	BCT	O3-C-O1	-2.22	114.00	119.68
7	D	601	ATP	O4'-C4'-C3'	-2.22	100.75	105.15

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	R	603	BCT	O3-C-O1	-2.20	114.04	119.68
7	R	601	ATP	O2'-C2'-C3'	-2.19	104.79	111.82
9	G	601	1VU	O4-C13-C10	-2.19	107.03	110.55
9	G	602	1VU	C18-C19-N4	2.15	123.58	120.31
7	Q	603	ATP	O2'-C2'-C3'	-2.14	104.97	111.82
7	R	601	ATP	O4'-C4'-C3'	-2.09	101.01	105.15
7	R	601	ATP	O3'-C3'-C2'	-2.08	105.16	111.82
7	C	601	ATP	O3'-C3'-C4'	-2.06	105.17	111.08
7	C	601	ATP	O2'-C2'-C3'	-2.05	105.26	111.82
5	L	601	BTN	C6-C5-N1	-2.04	110.55	113.18
5	A	601	BTN	C9-C8-C7	-2.04	105.95	113.62
7	T	601	ATP	O3'-C3'-C4'	-2.03	105.25	111.08
7	B	601	ATP	O2'-C2'-C3'	-2.02	105.33	111.82
7	T	601	ATP	O3'-C3'-C2'	-2.02	105.35	111.82
7	Q	603	ATP	O3'-C3'-C4'	-2.01	105.31	111.08
7	D	601	ATP	O2'-C2'-C3'	-2.01	105.38	111.82
7	C	601	ATP	O3'-C3'-C2'	-2.01	105.38	111.82

There are no chirality outliers.

All (99) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	L	601	BTN	S1-C2-C7-C8
5	L	601	BTN	C4-C2-C7-C8
5	Q	601	BTN	C9-C10-C11-O11
5	Q	601	BTN	S1-C2-C7-C8
5	Q	601	BTN	C4-C2-C7-C8
7	A	603	ATP	O4'-C4'-C5'-O5'
7	B	601	ATP	PB-O3B-PG-O2G
7	B	601	ATP	C5'-O5'-PA-O1A
7	B	601	ATP	C5'-O5'-PA-O3A
7	D	601	ATP	O4'-C4'-C5'-O5'
7	R	601	ATP	O4'-C4'-C5'-O5'
7	T	601	ATP	C5'-O5'-PA-O1A
7	T	601	ATP	C5'-O5'-PA-O2A
9	G	601	1VU	O2-C8-C9-C10
9	G	601	1VU	N1-C8-C9-C10
9	G	601	1VU	N1-C8-C9-O3
9	G	601	1VU	C9-C8-N1-C7
9	G	601	1VU	C-C1-C2-S
9	G	601	1VU	C-C1-C2-O
9	G	602	1VU	C9-C8-N1-C7

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Mol	Chain	Res	Type	Atoms
9	G	602	1VU	O2-C8-N1-C7
9	G	602	1VU	C4-C3-S-C2
9	G	602	1VU	O-C2-S-C3
9	G	602	1VU	C1-C2-S-C3
9	H	601	1VU	O2-C8-C9-C10
9	H	601	1VU	N1-C8-C9-O3
9	H	601	1VU	C9-C8-N1-C7
9	H	601	1VU	C6-C5-N-C4
9	H	601	1VU	O1-C5-N-C4
9	H	601	1VU	S-C3-C4-N
9	H	602	1VU	O2-C8-C9-C10
9	H	602	1VU	N1-C8-C9-C10
9	H	602	1VU	N1-C8-C9-O3
9	H	602	1VU	C9-C8-N1-C7
9	H	602	1VU	O2-C8-N1-C7
9	H	602	1VU	O-C2-S-C3
9	H	602	1VU	C1-C2-S-C3
9	H	601	1VU	O2-C8-N1-C7
9	H	602	1VU	C6-C5-N-C4
7	A	603	ATP	C3'-C4'-C5'-O5'
7	B	601	ATP	C3'-C4'-C5'-O5'
9	H	602	1VU	O1-C5-N-C4
7	B	601	ATP	O4'-C4'-C5'-O5'
7	D	601	ATP	C3'-C4'-C5'-O5'
9	G	602	1VU	C6-C5-N-C4
7	C	601	ATP	C4'-C5'-O5'-PA
7	Q	603	ATP	O4'-C4'-C5'-O5'
9	H	601	1VU	O10-C14-C15-O11
9	G	602	1VU	O1-C5-N-C4
5	L	601	BTN	C7-C8-C9-C10
7	R	601	ATP	C3'-C4'-C5'-O5'
9	G	601	1VU	O2-C8-C9-O3
9	G	602	1VU	O2-C8-C9-O3
9	H	601	1VU	O2-C8-C9-O3
9	H	602	1VU	O2-C8-C9-O3
7	S	601	ATP	PA-O3A-PB-O1B
7	T	601	ATP	C4'-C5'-O5'-PA
9	H	602	1VU	S-C3-C4-N
9	G	601	1VU	O2-C8-N1-C7
9	H	601	1VU	O-C2-S-C3
9	H	601	1VU	C1-C2-S-C3
7	S	601	ATP	C3'-C4'-C5'-O5'

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Mol	Chain	Res	Type	Atoms
7	T	601	ATP	PB-O3A-PA-O1A
5	A	601	BTN	C11-C10-C9-C8
5	J	601	BTN	C11-C10-C9-C8
9	H	602	1VU	C11-C10-C13-O4
9	H	602	1VU	C12-C10-C13-O4
9	H	602	1VU	C9-C10-C13-O4
7	B	601	ATP	C5'-O5'-PA-O2A
7	C	601	ATP	C5'-O5'-PA-O1A
7	T	601	ATP	C5'-O5'-PA-O3A
7	R	601	ATP	PB-O3A-PA-O1A
7	R	601	ATP	PB-O3A-PA-O2A
7	S	601	ATP	PA-O3A-PB-O2B
9	G	601	1VU	C23-O13-P2-O15
9	G	602	1VU	N1-C8-C9-C10
9	H	601	1VU	N1-C8-C9-C10
9	G	602	1VU	N1-C8-C9-O3
9	H	602	1VU	C3-C4-N-C5
9	G	601	1VU	C23-O13-P2-O14
7	C	601	ATP	PG-O3B-PB-O1B
7	Q	603	ATP	PB-O3A-PA-O1A
5	K	601	BTN	S1-C2-C7-C8
7	B	601	ATP	PB-O3B-PG-O1G
7	T	601	ATP	PA-O3A-PB-O3B
7	B	601	ATP	PG-O3B-PB-O1B
7	B	601	ATP	PG-O3B-PB-O2B
7	C	601	ATP	PA-O3A-PB-O1B
9	H	602	1VU	P1-O7-P-O6
5	J	601	BTN	C7-C8-C9-C10
9	G	601	1VU	C23-O13-P2-O16
9	G	601	1VU	C13-C10-C9-C8
7	C	601	ATP	PG-O3B-PB-O3A
7	C	601	ATP	PA-O3A-PB-O2B
7	D	601	ATP	PB-O3A-PA-O2A
7	Q	603	ATP	PB-O3A-PA-O2A
7	T	601	ATP	PA-O3A-PB-O1B
7	T	601	ATP	PA-O3A-PB-O2B
7	T	601	ATP	PB-O3A-PA-O2A

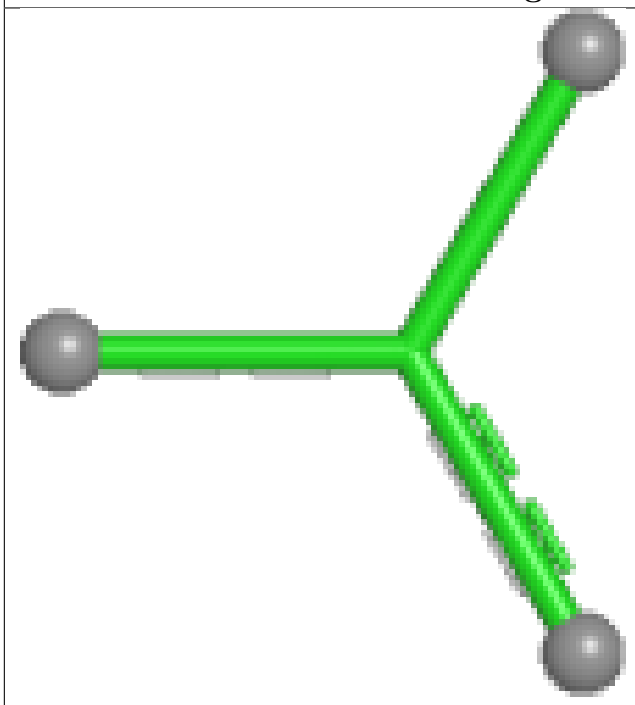
There are no ring outliers.

17 monomers are involved in 34 short contacts:

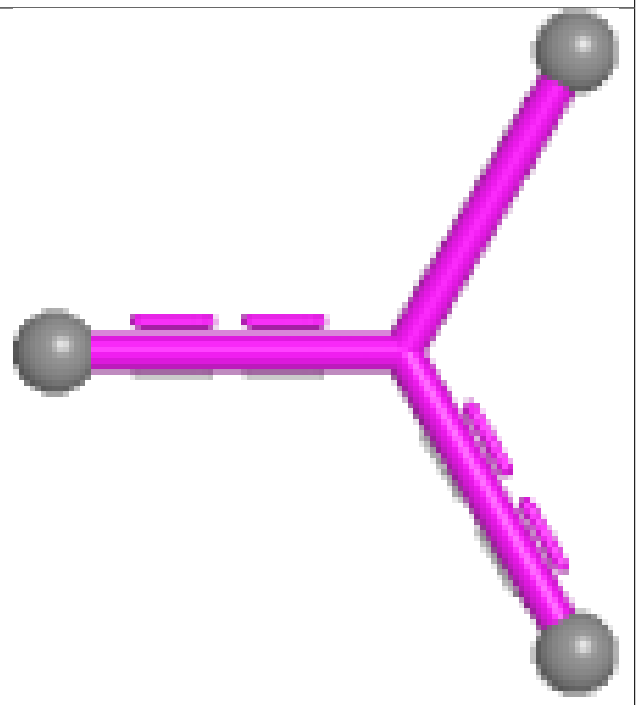
Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	B	603	BCT	2	0
6	Q	602	BCT	1	0
7	D	601	ATP	1	0
6	R	603	BCT	1	0
6	D	603	BCT	1	0
7	S	601	ATP	1	0
9	G	602	1VU	3	0
7	Q	603	ATP	1	0
9	H	602	1VU	6	0
9	H	601	1VU	6	0
7	C	601	ATP	2	0
6	A	602	BCT	1	0
6	T	602	BCT	1	0
7	R	601	ATP	1	0
7	T	601	ATP	1	0
7	A	603	ATP	1	0
9	G	601	1VU	4	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.

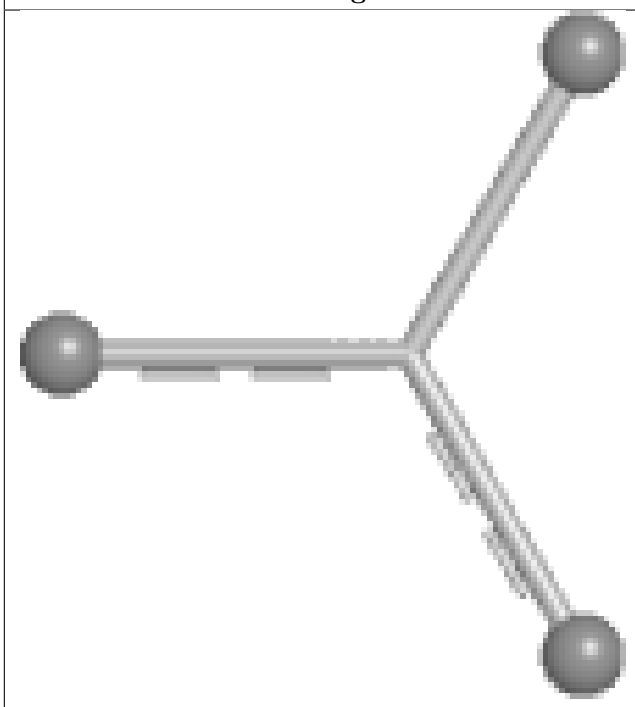
Ligand BCT B 603



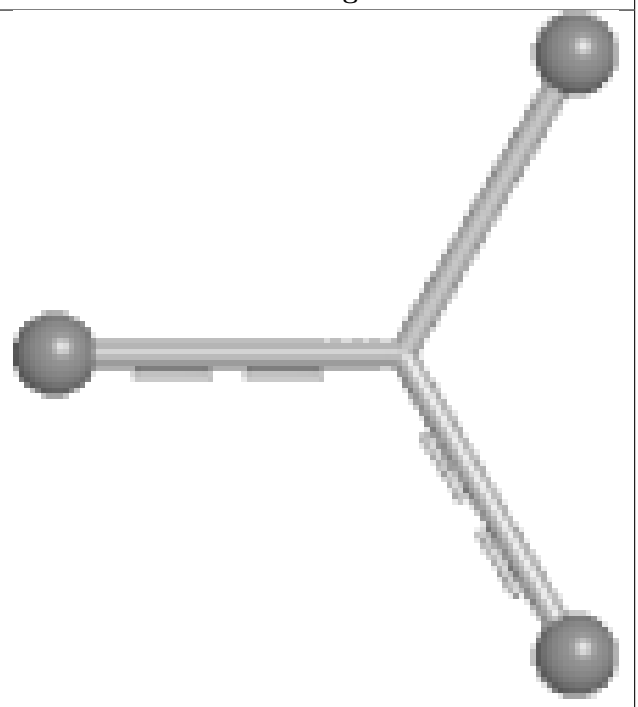
Bond lengths



Bond angles

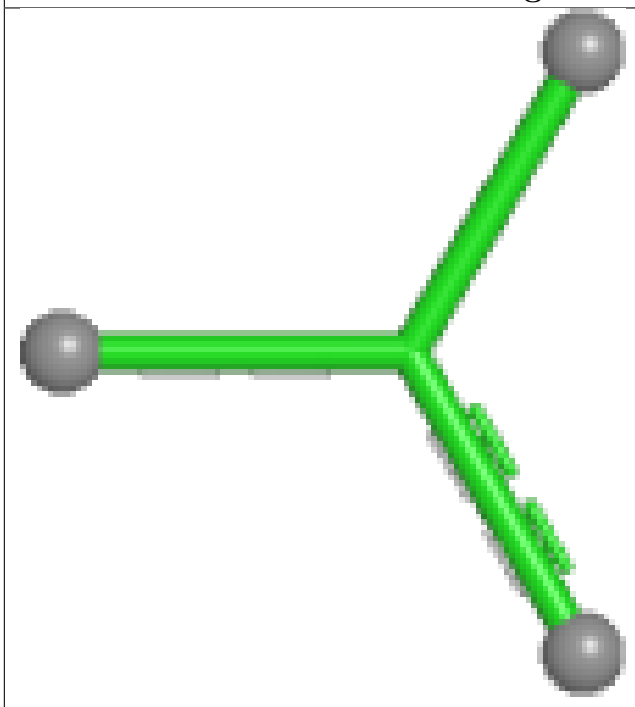


Torsions

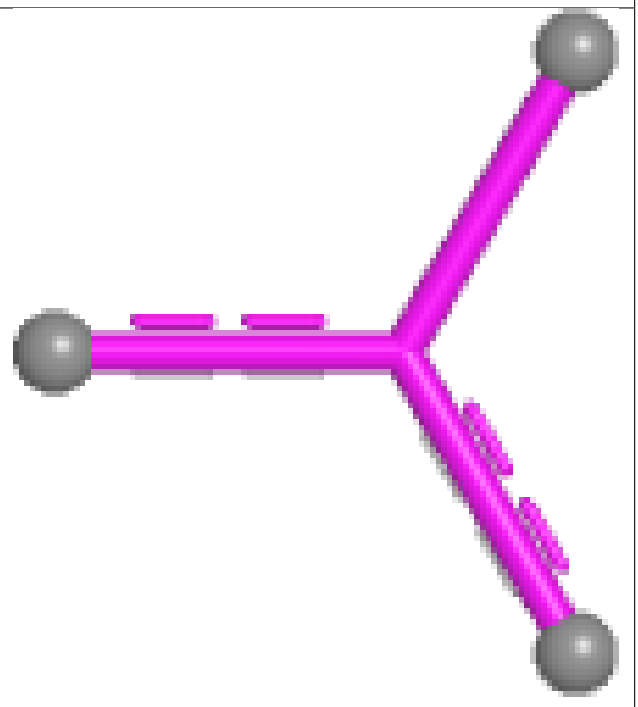


Rings

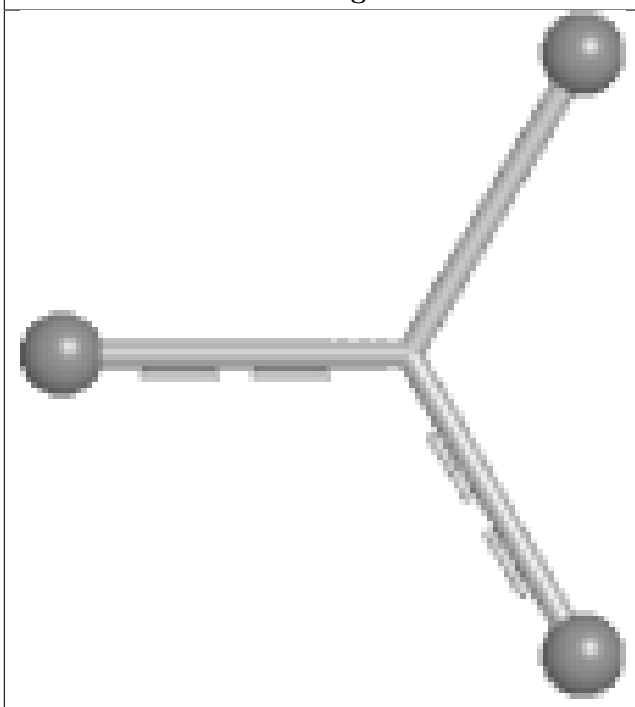
Ligand BCT C 603



Bond lengths



Bond angles



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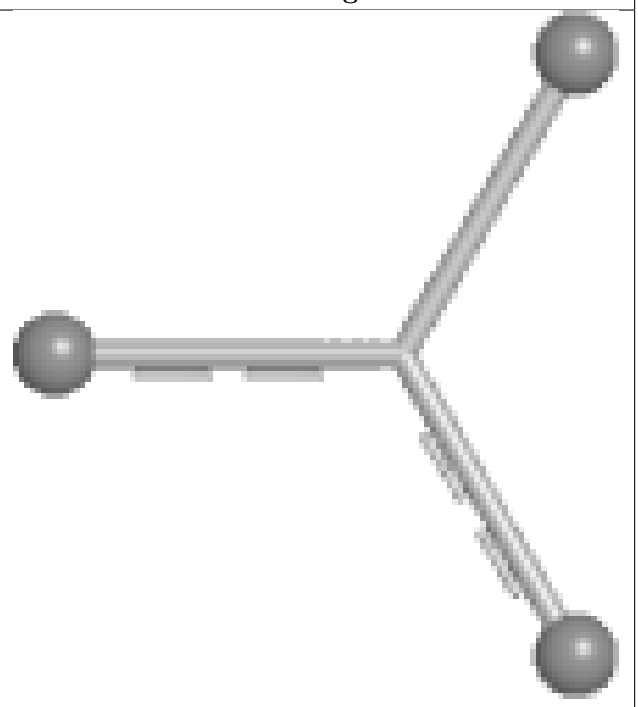
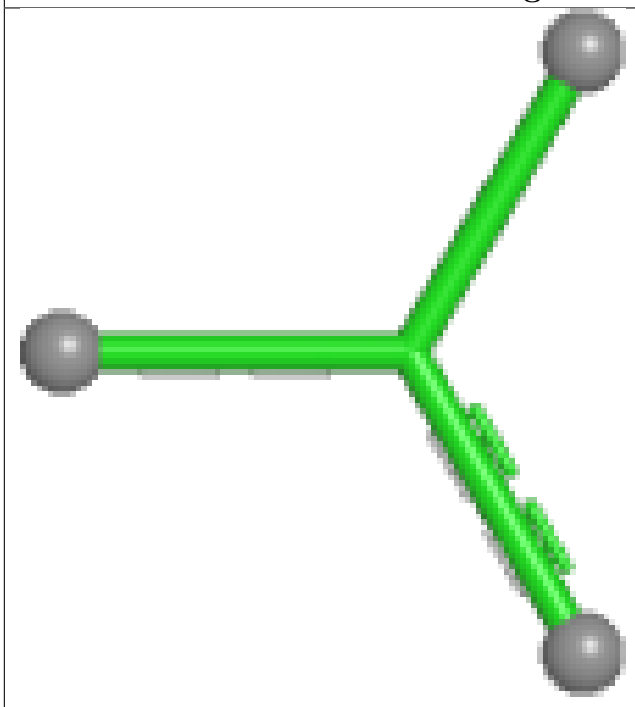


Rings

Ligand BCT Q 602



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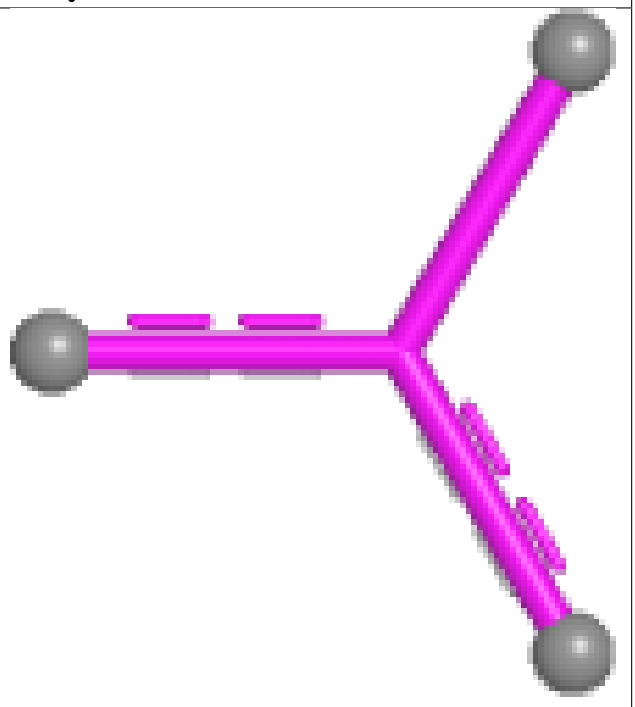
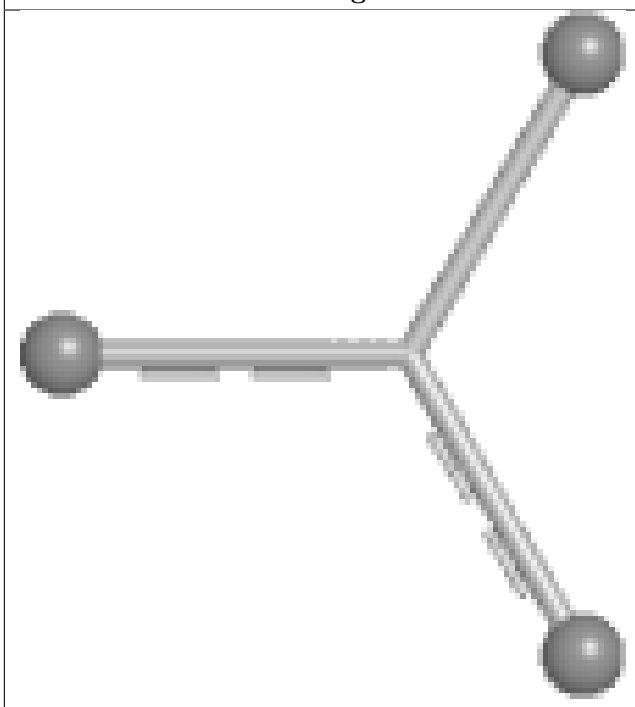


Bond angles



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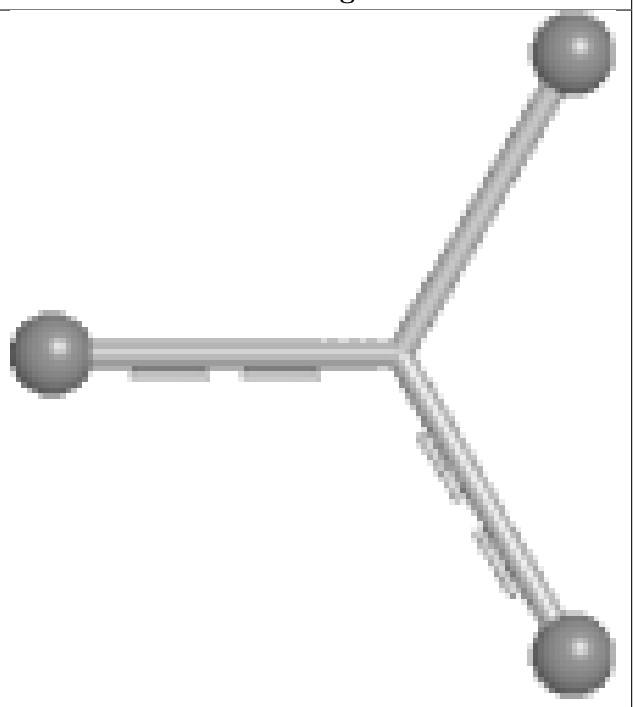
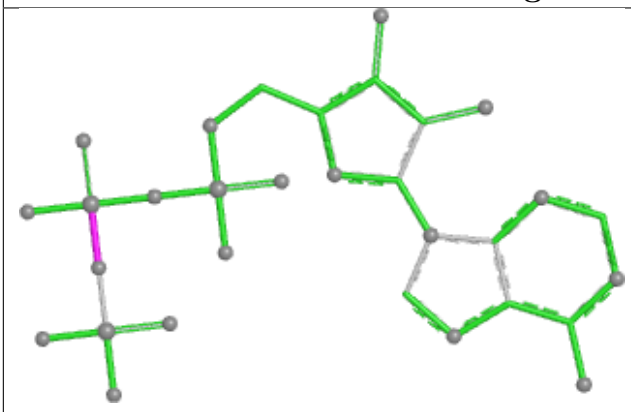


Rings

Ligand ATP D 601



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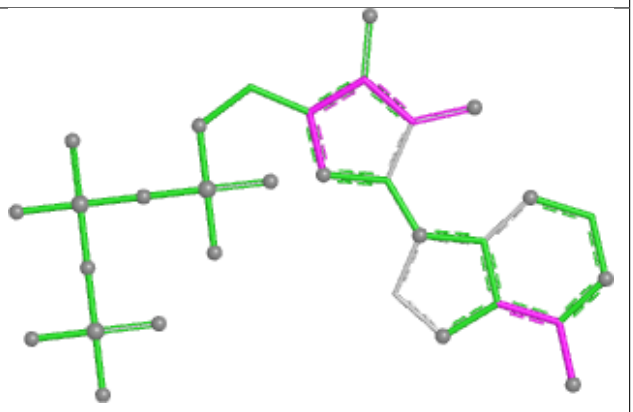

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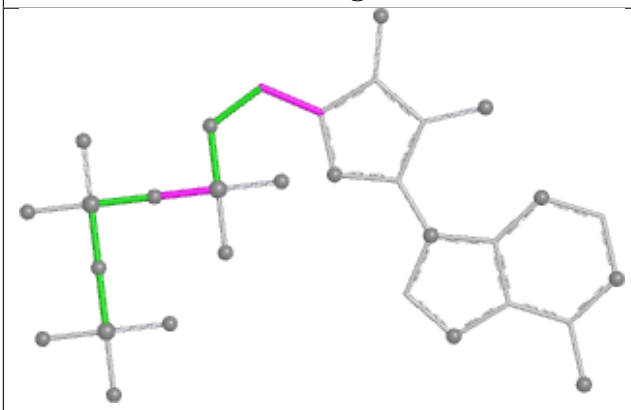
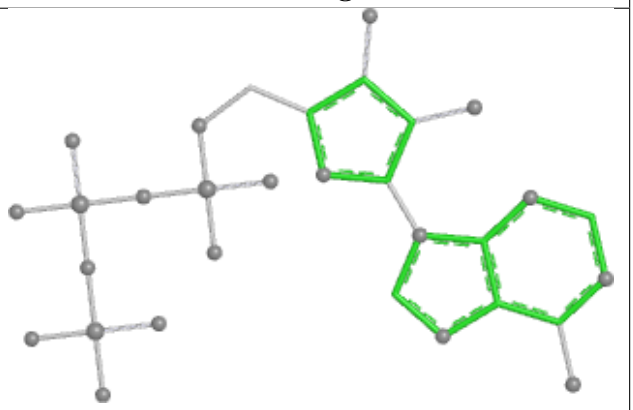
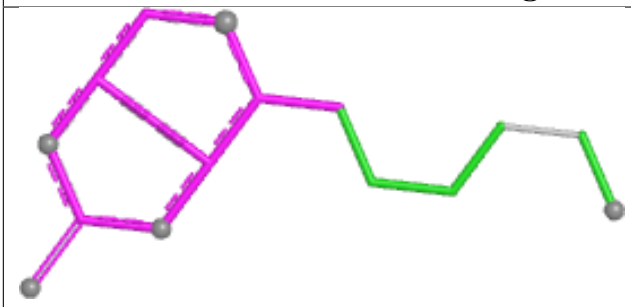


Torsions



Rings

Ligand BTN K 601



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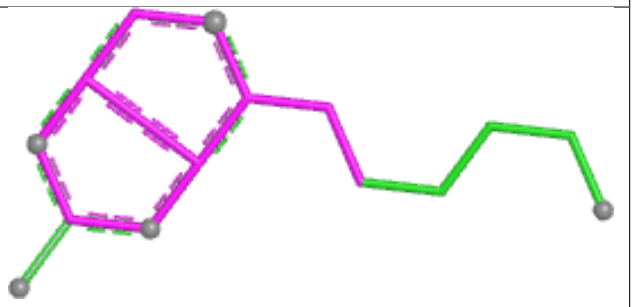

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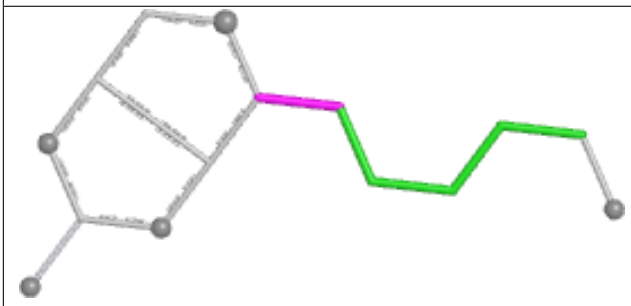

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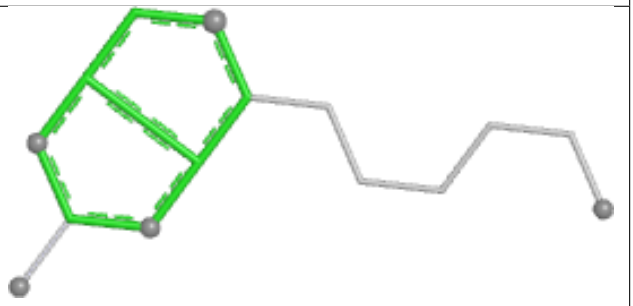
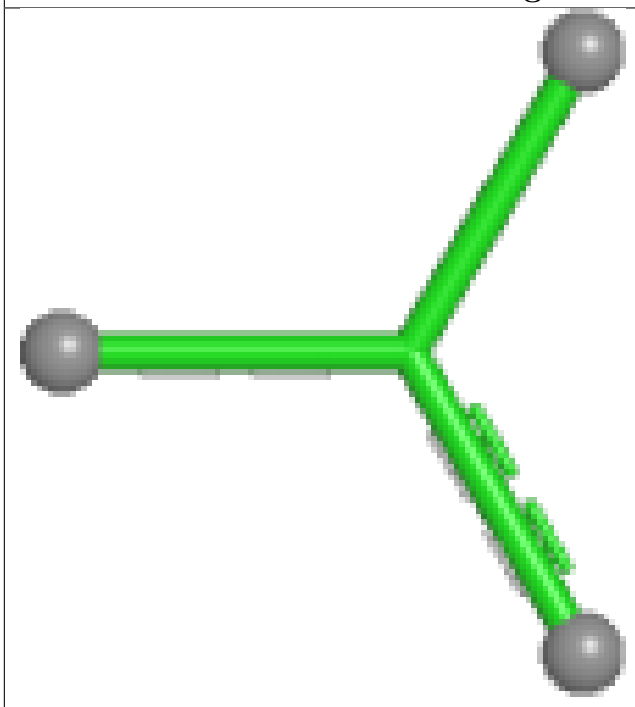


Rings

Ligand BCT R 603



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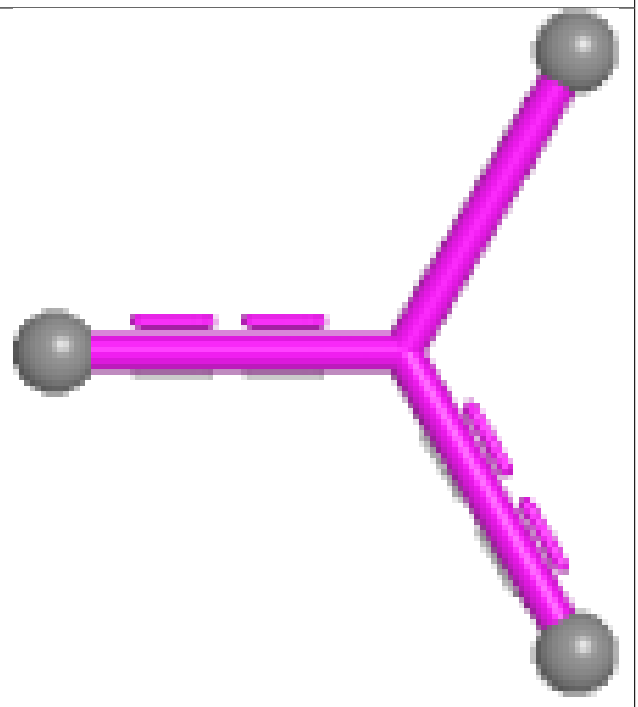

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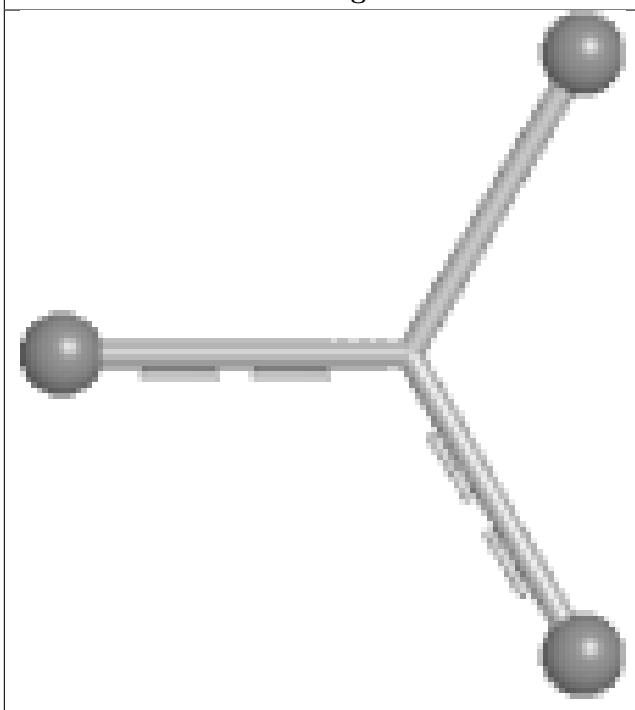

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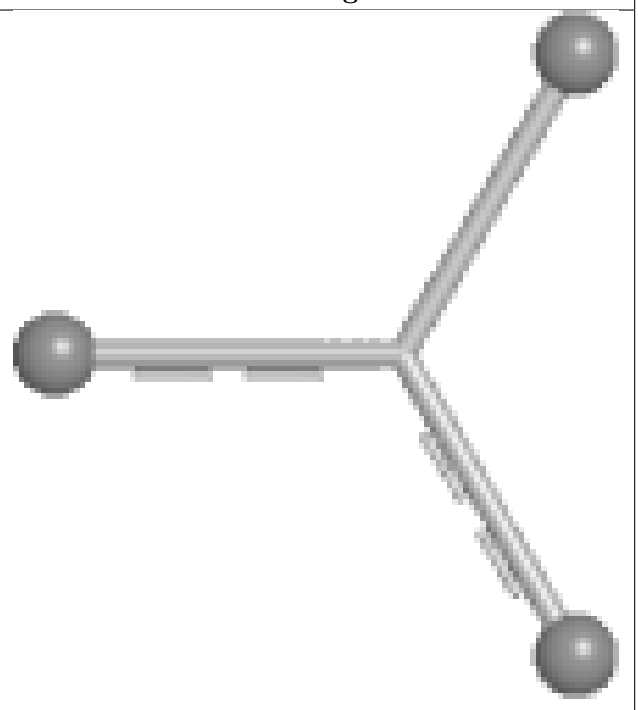
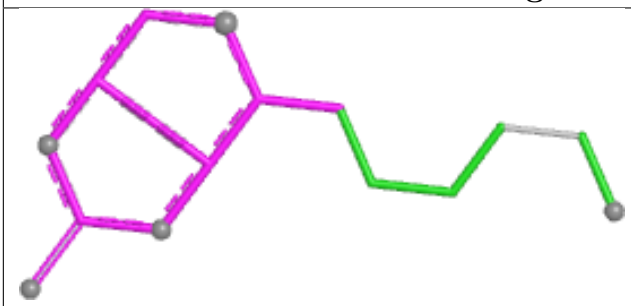


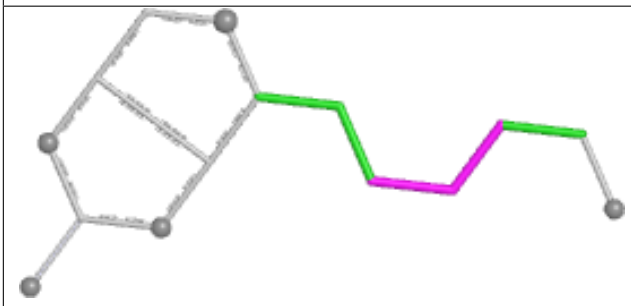
Rings

Ligand BTN J 601



Bond lengths

Bond angles



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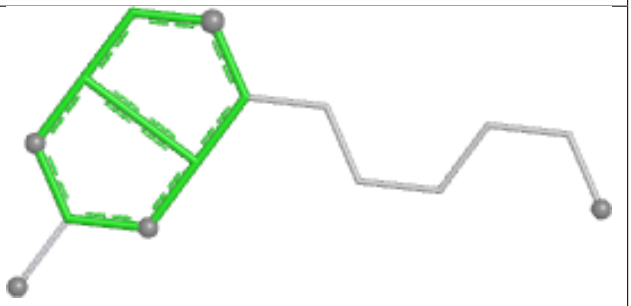
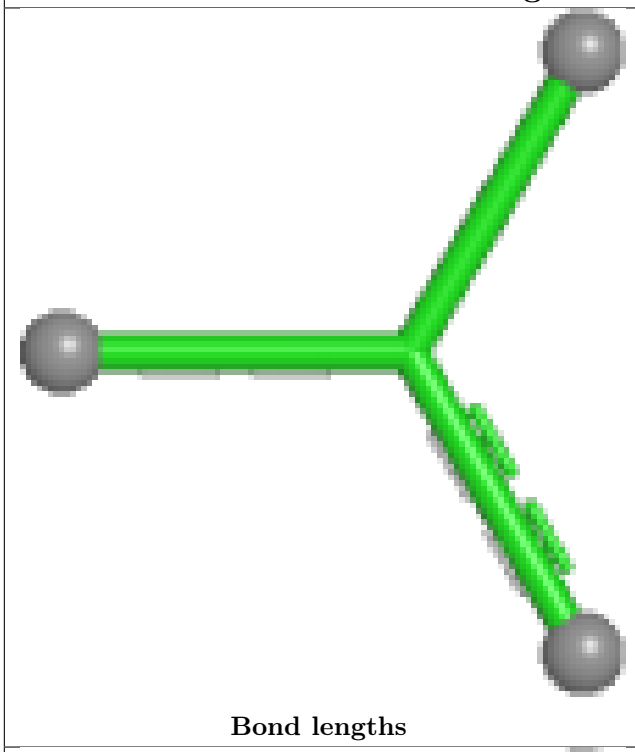


Rings

Ligand BCT D 603



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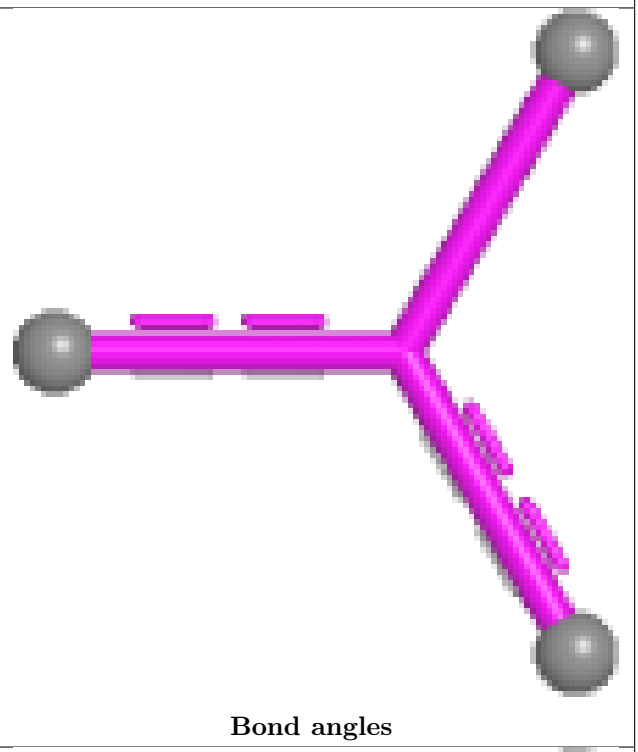

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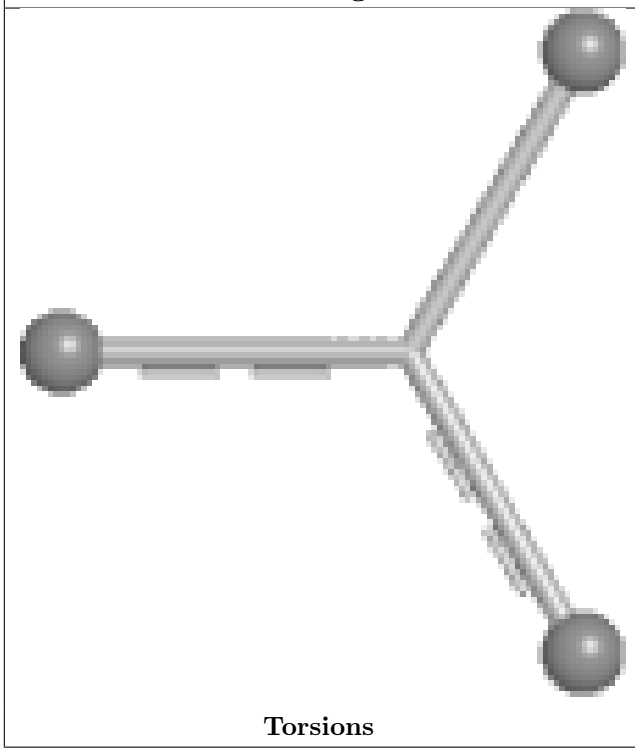

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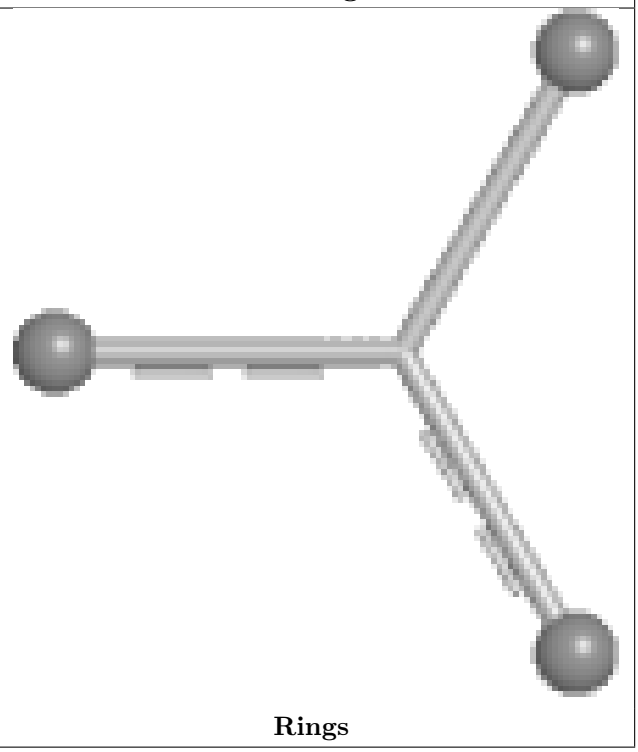
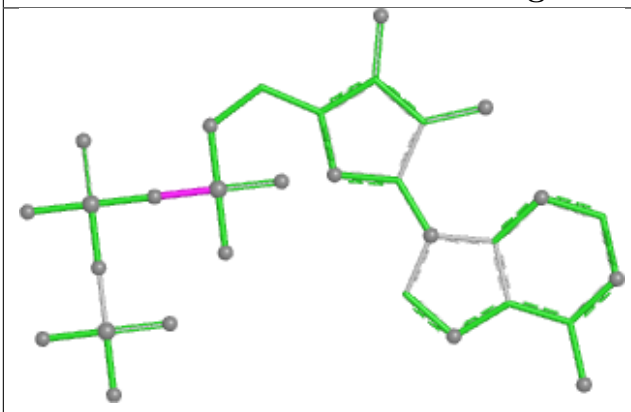


Rings

Ligand ATP S 601



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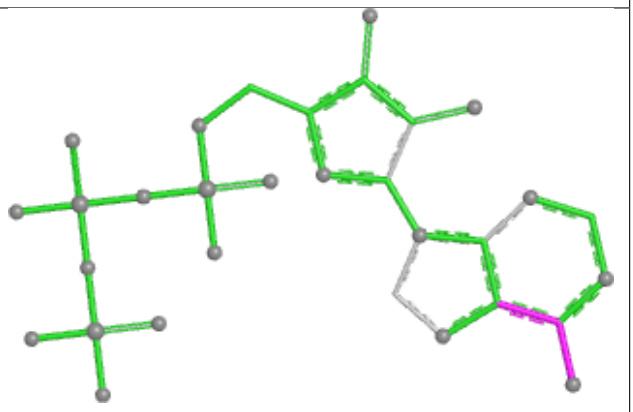

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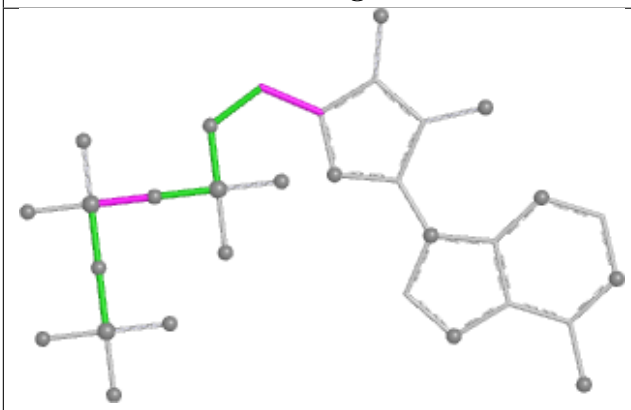

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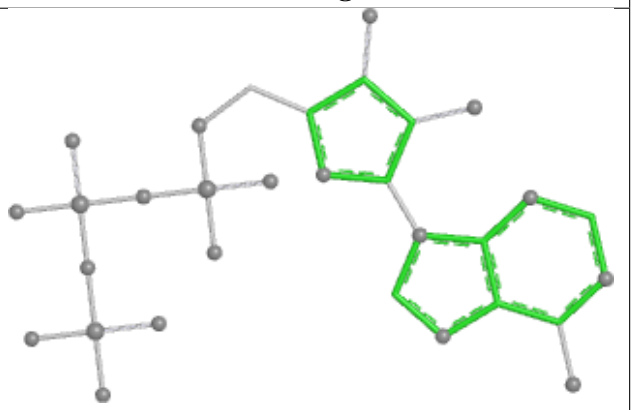
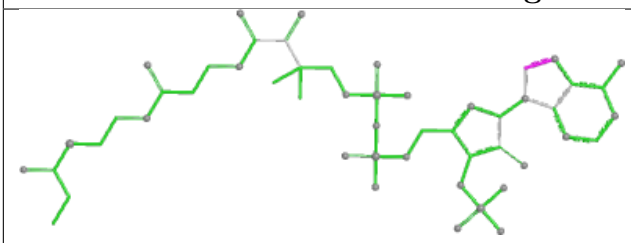
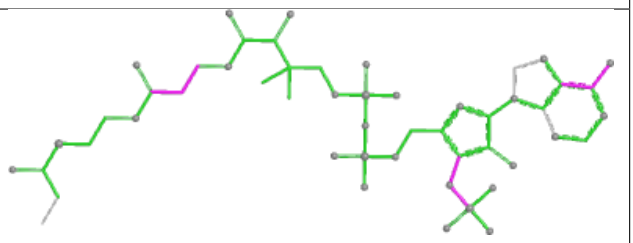


Rings

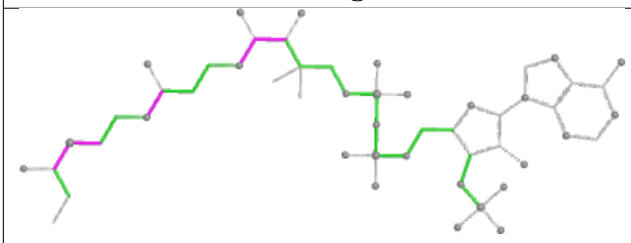
Ligand 1VU G 602



Bond lengths



Bond angles



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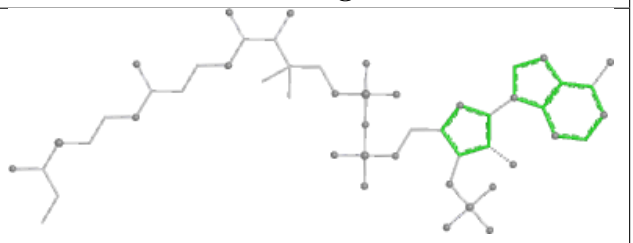
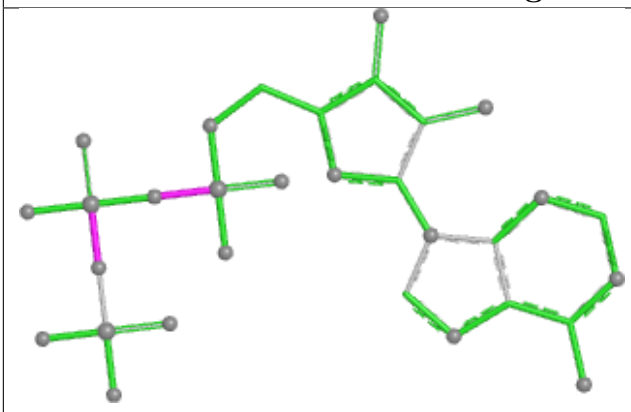


Rings

Ligand ATP B 601



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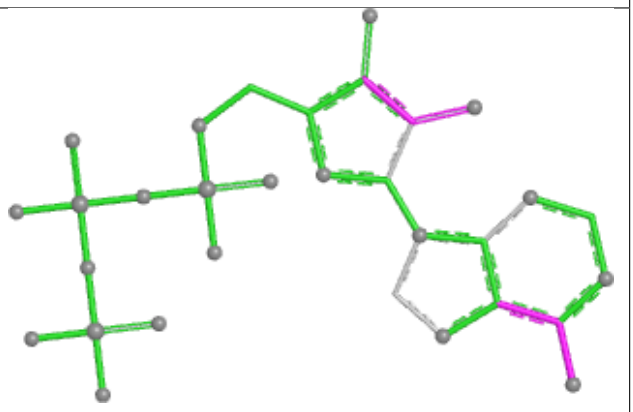

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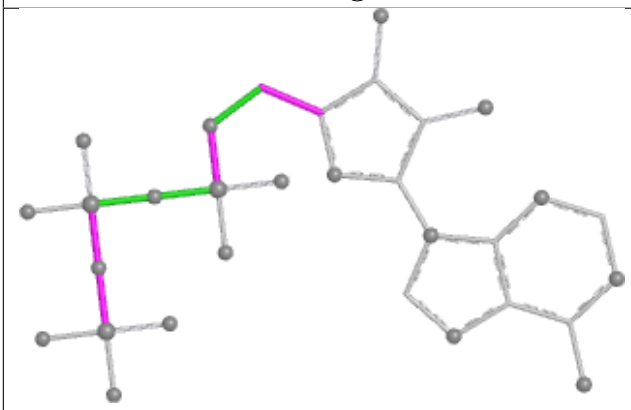
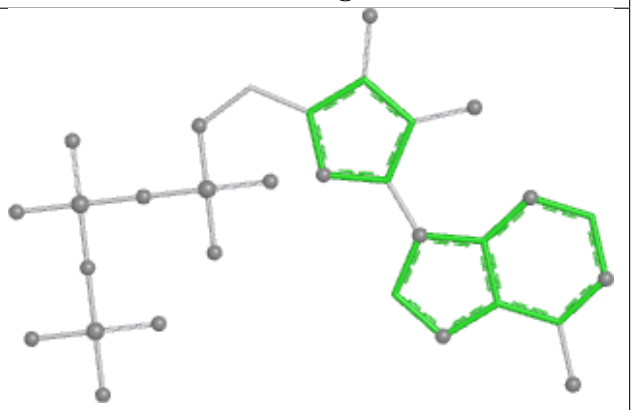
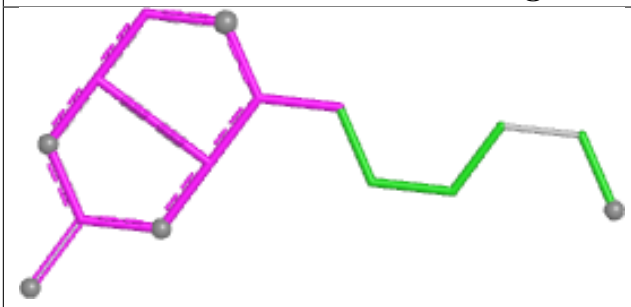


Torsions



Rings

Ligand BTN L 601



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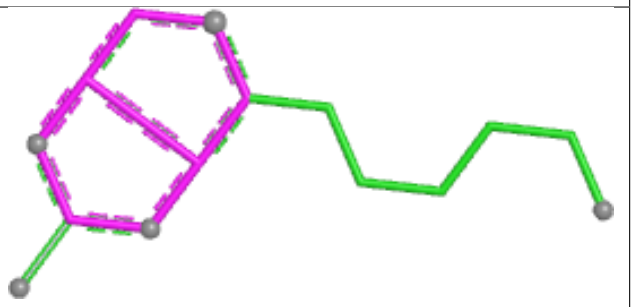

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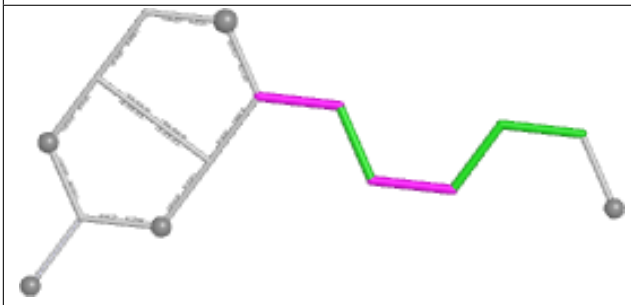

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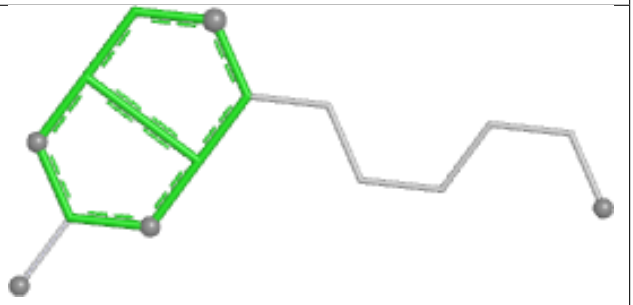
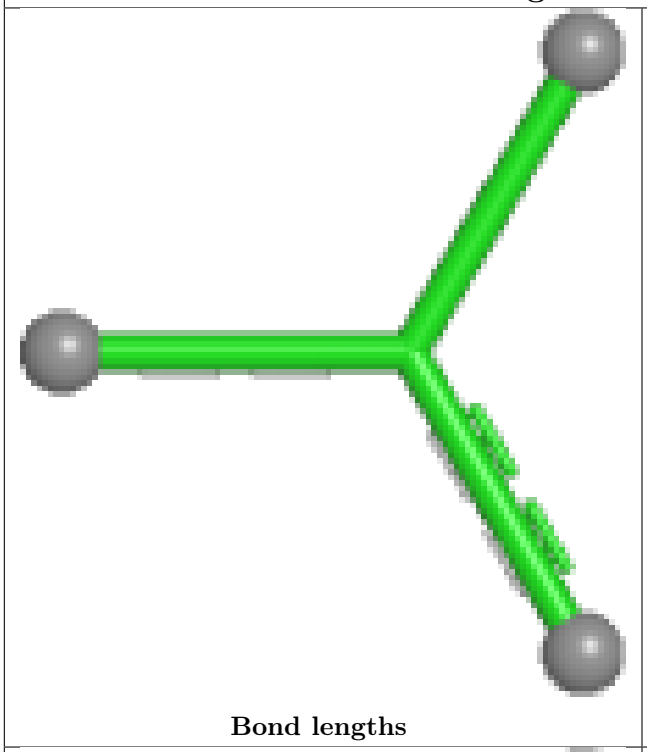


Rings

Ligand BCT S 603



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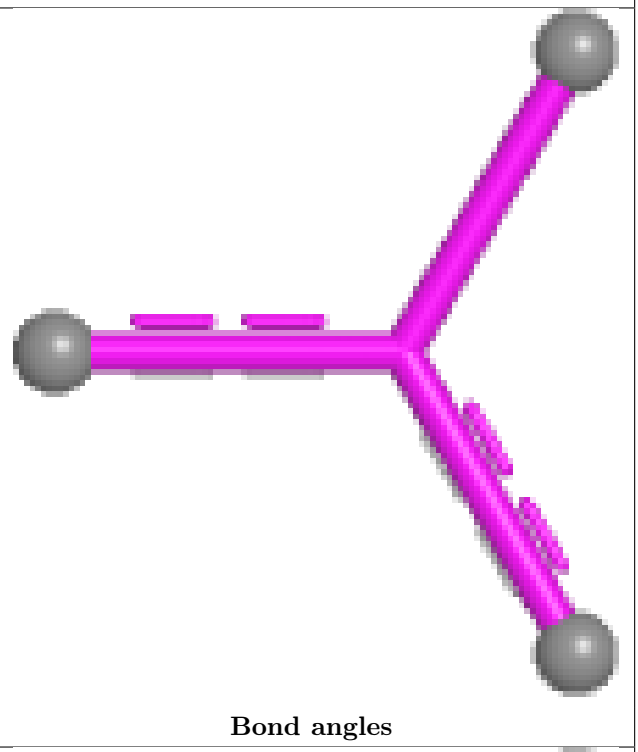

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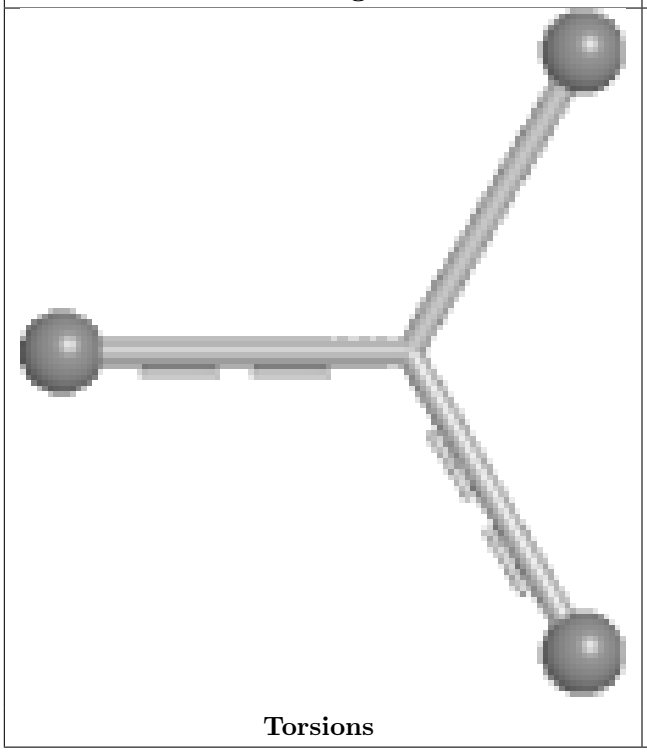

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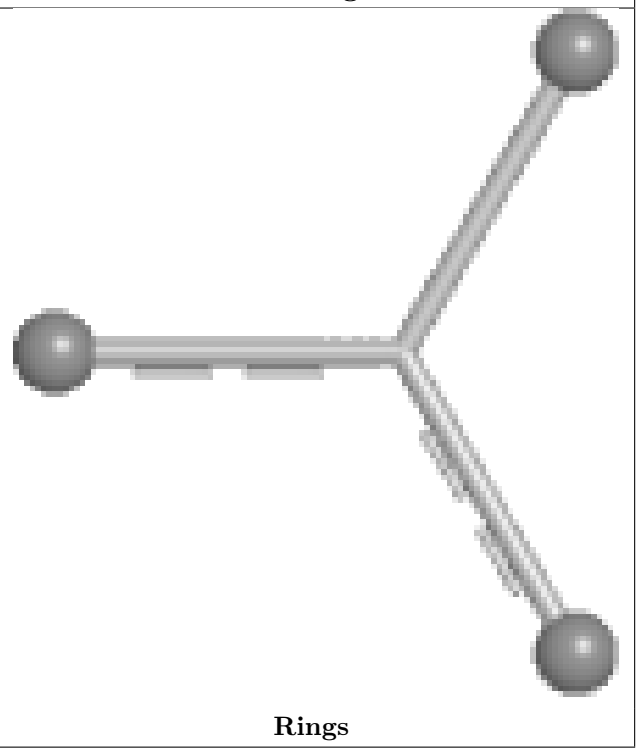
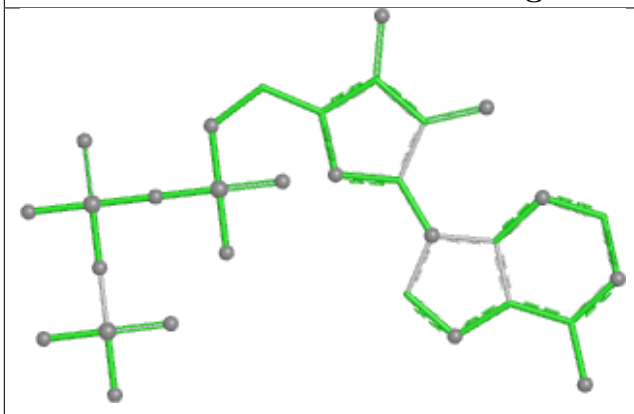


Rings

Ligand ATP Q 603



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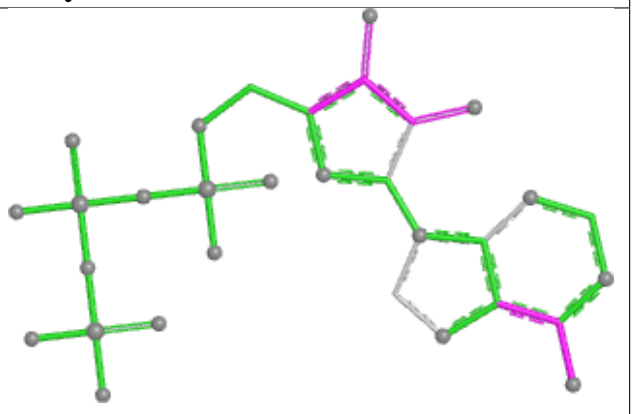

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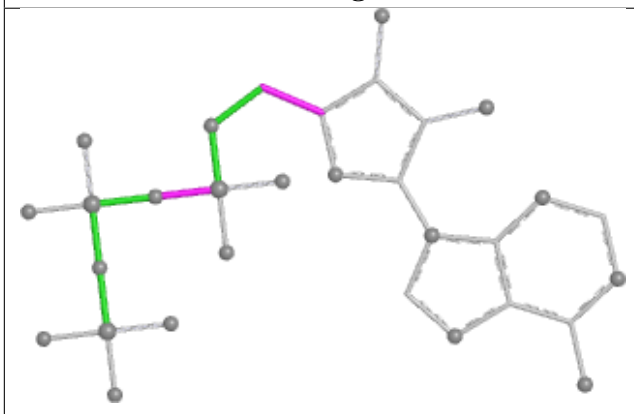

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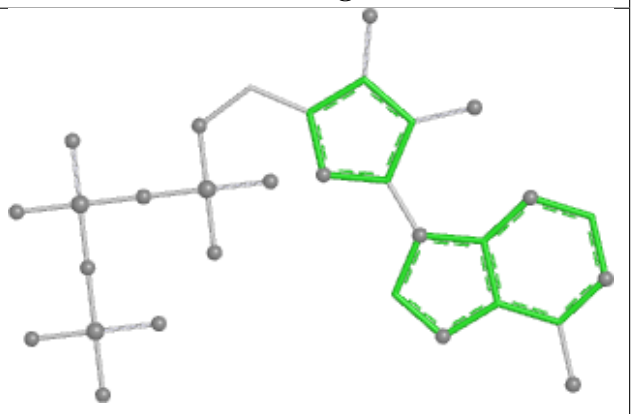
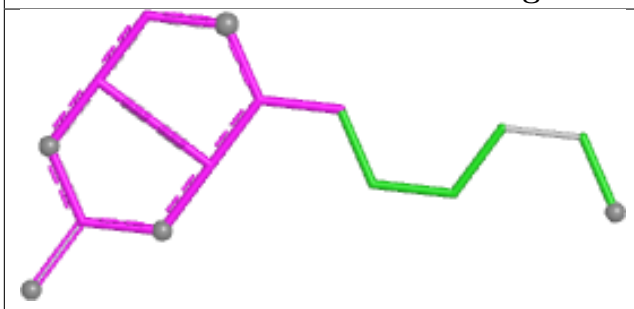


Rings

Ligand BTN A 601



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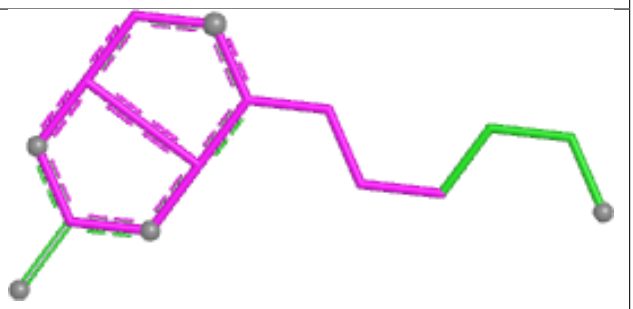

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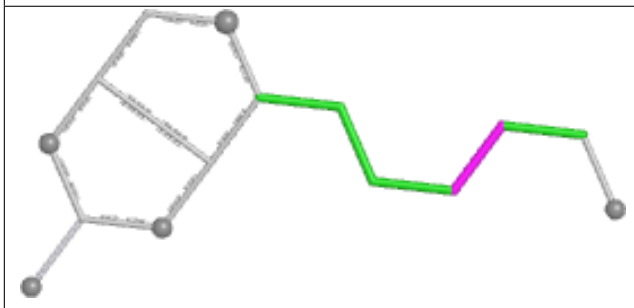

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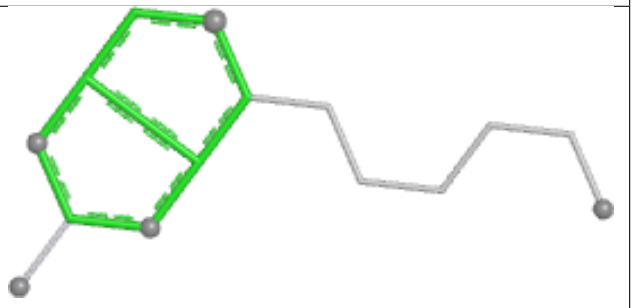
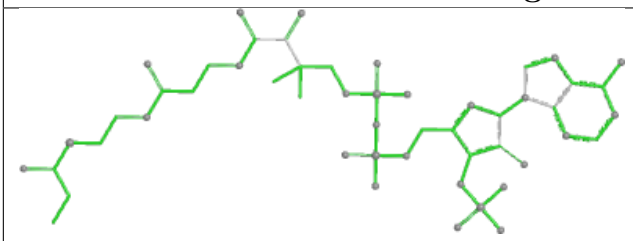


Rings

Ligand 1VU H 602



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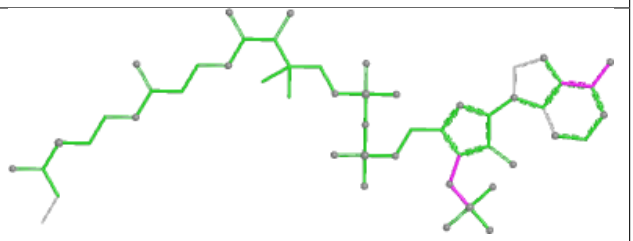

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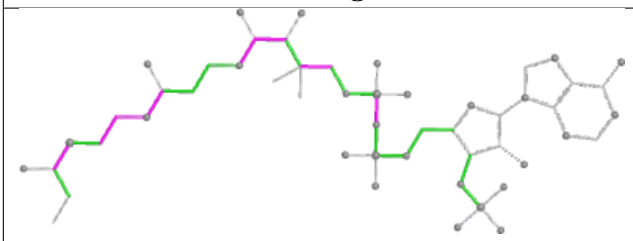

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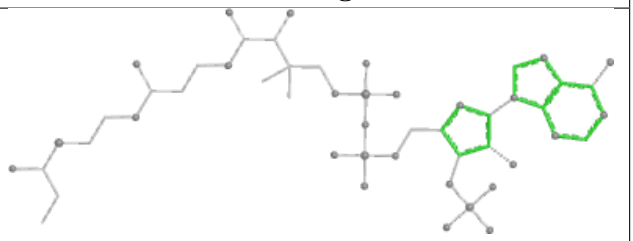
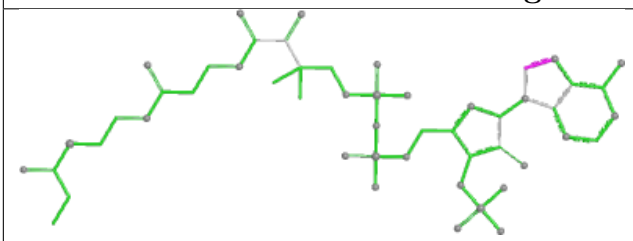


Rings

Ligand 1VU H 601



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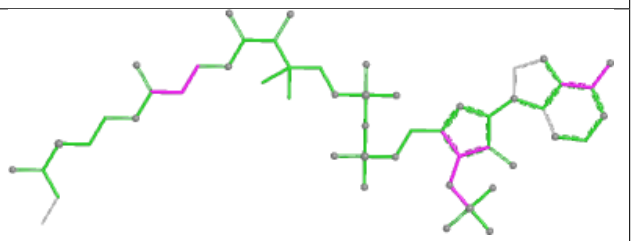

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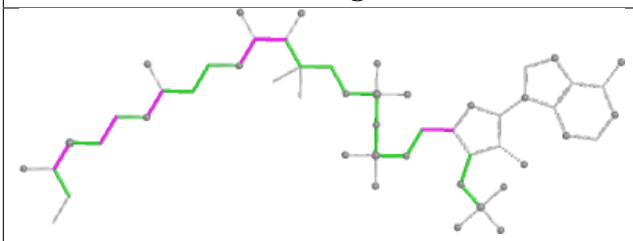

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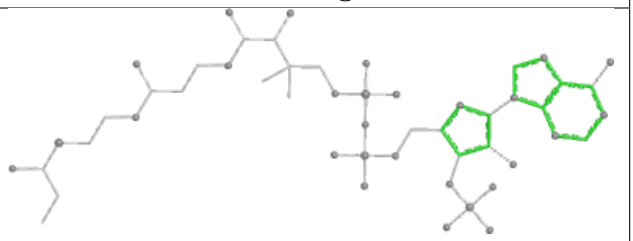
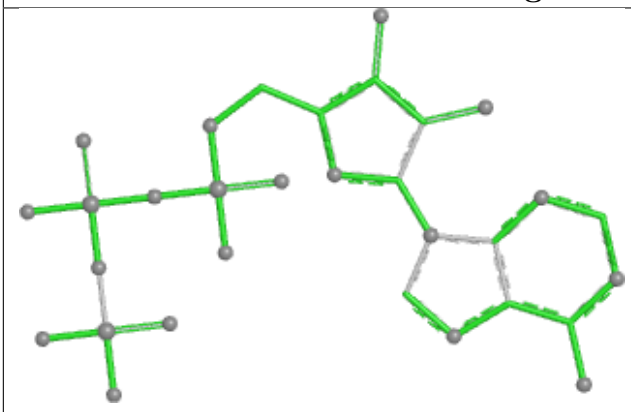


Rings

Ligand ATP C 601



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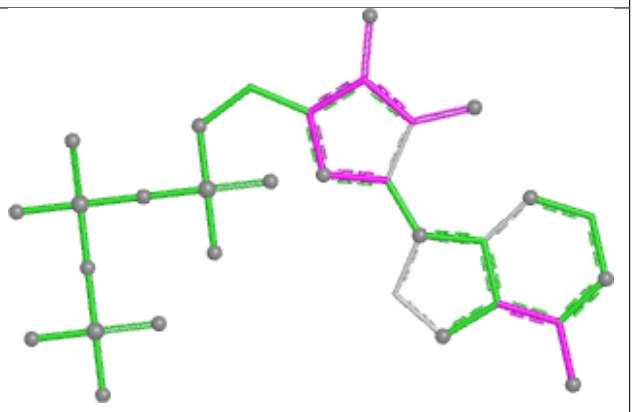

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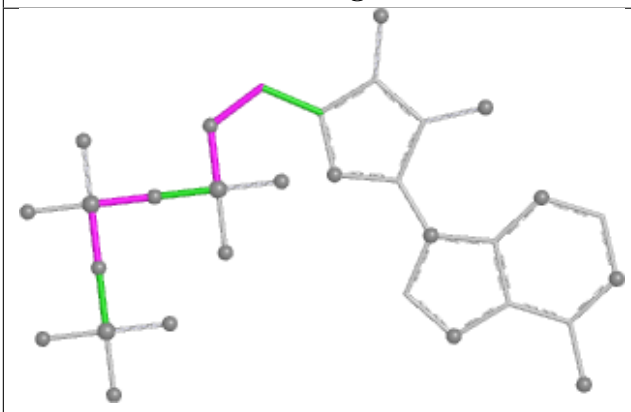

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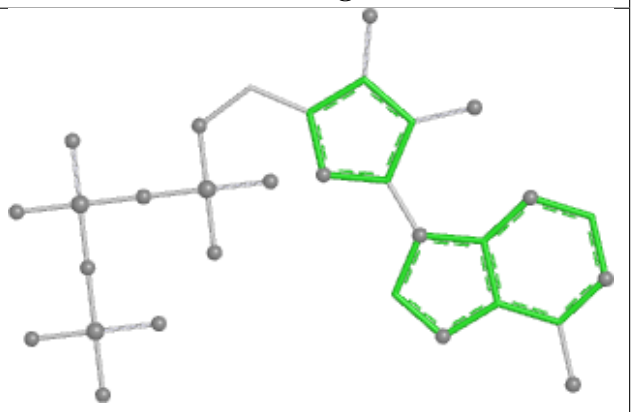
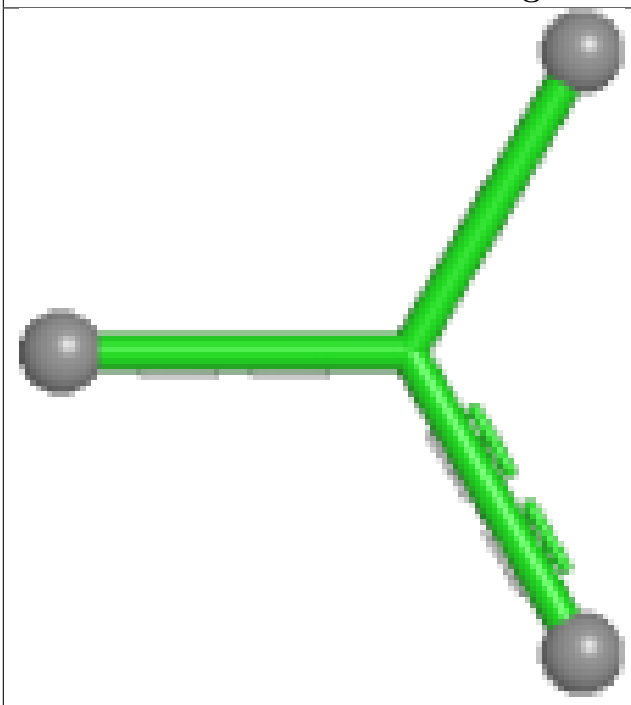


Rings

Ligand BCT A 602



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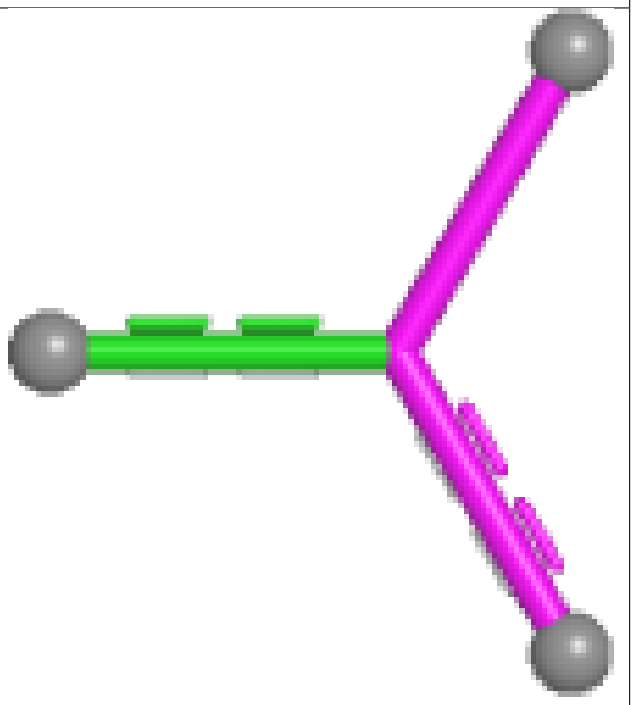

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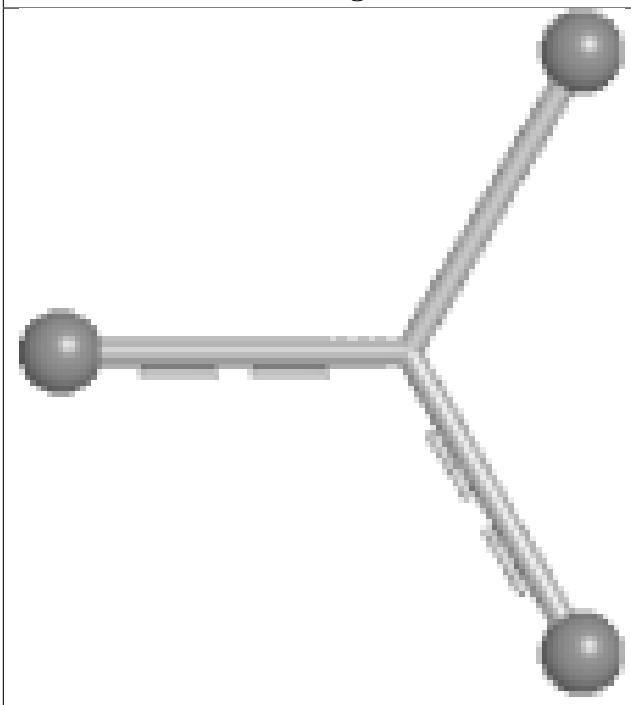

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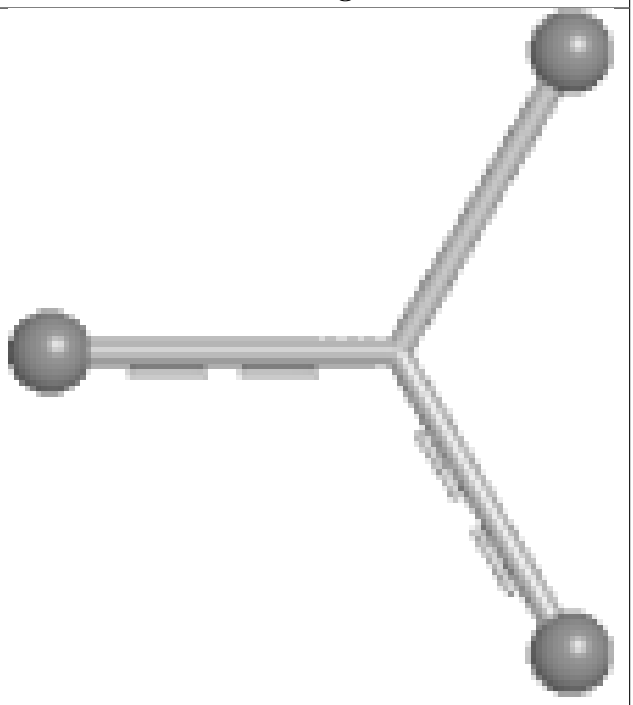
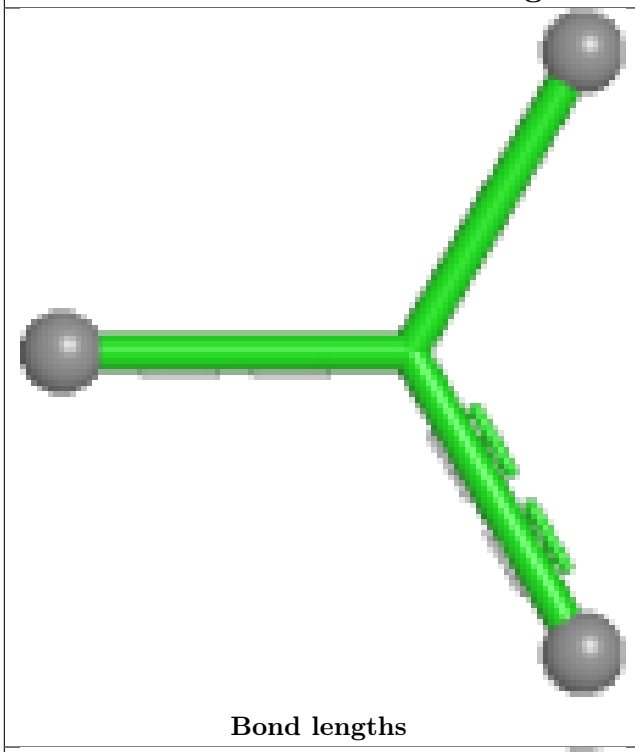


Rings

Ligand BCT T 602



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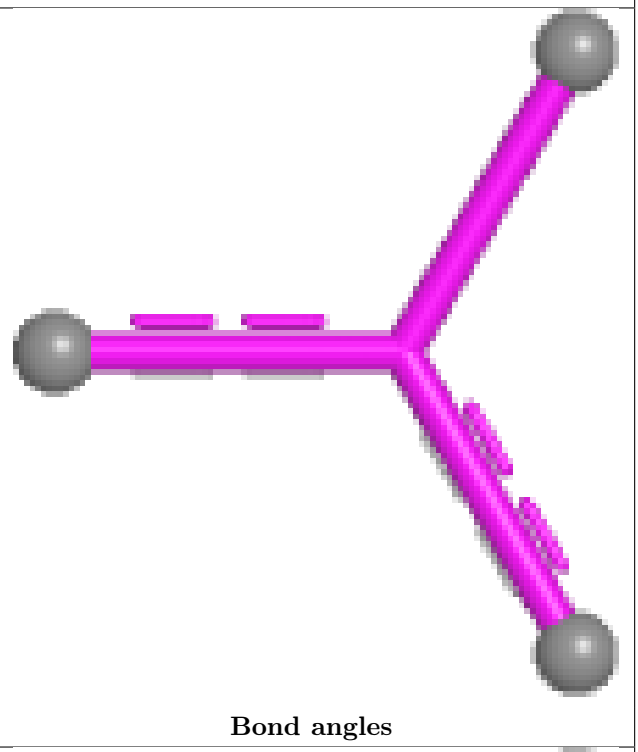

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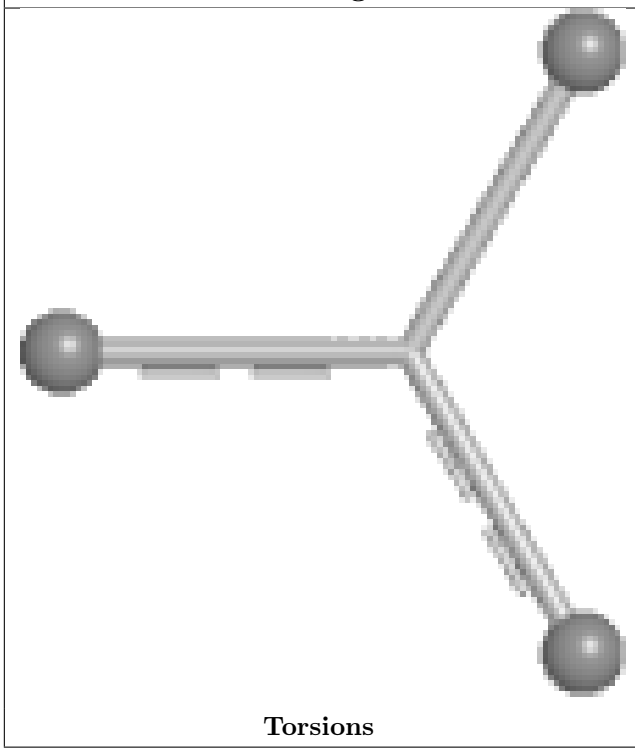

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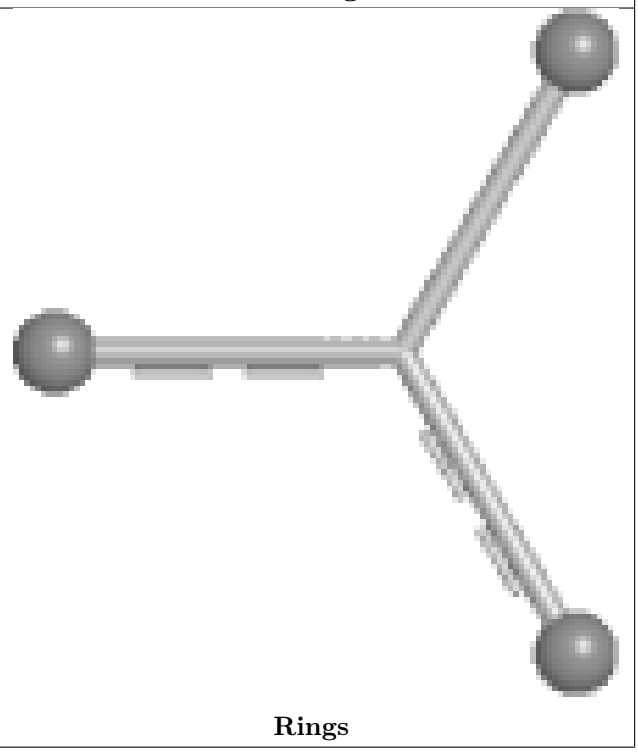
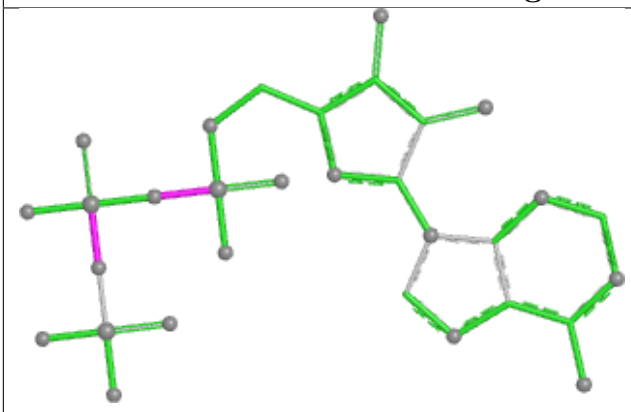


Rings

Ligand ATP R 601



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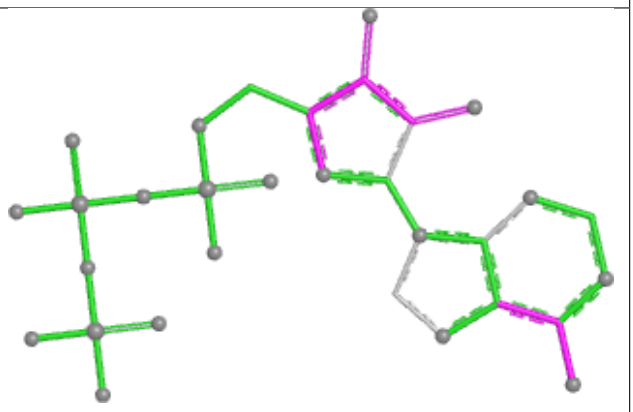

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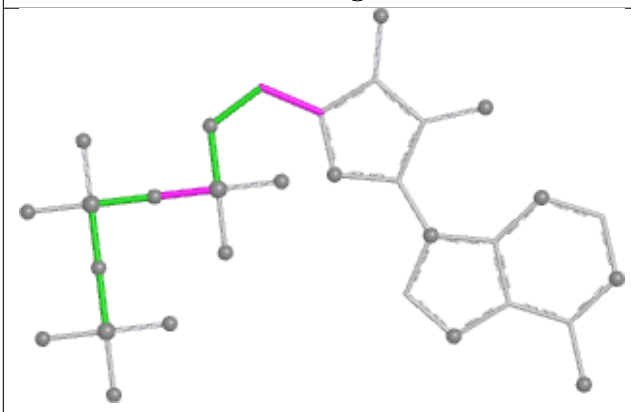

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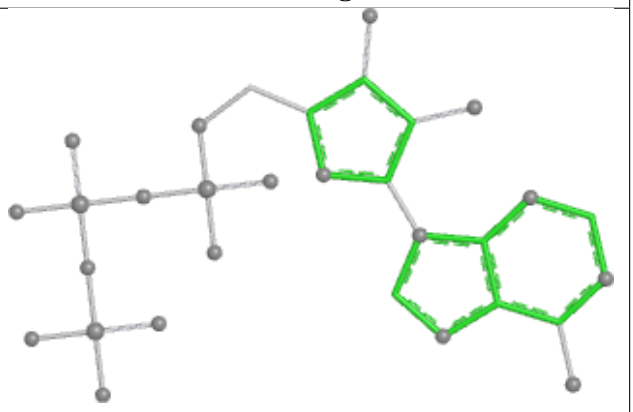
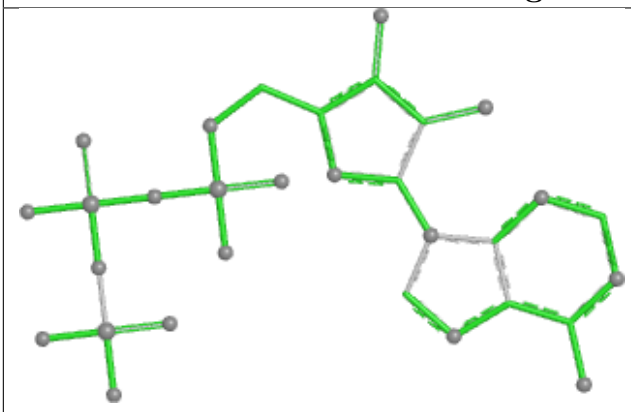


Rings

Ligand ATP T 601



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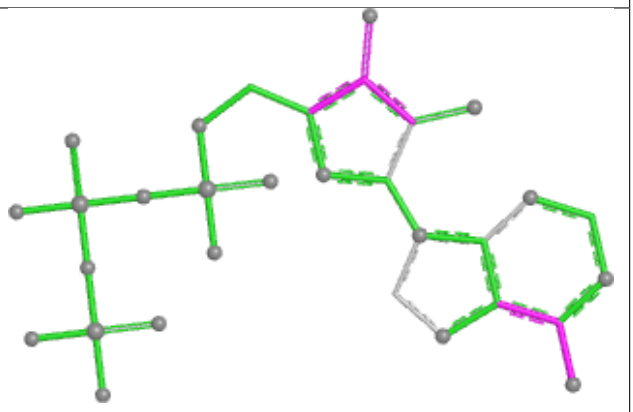

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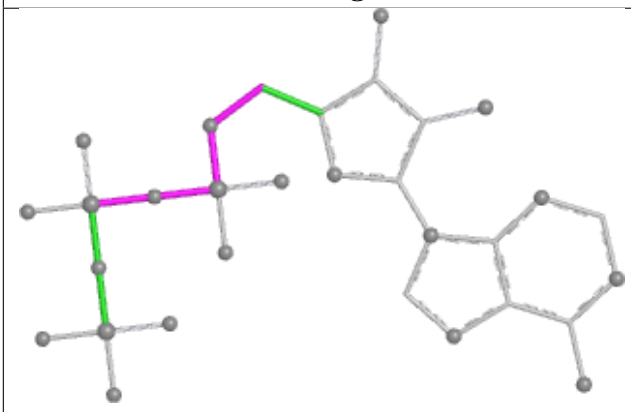

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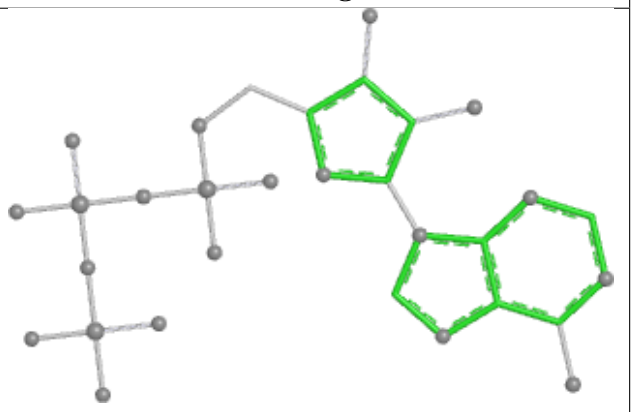
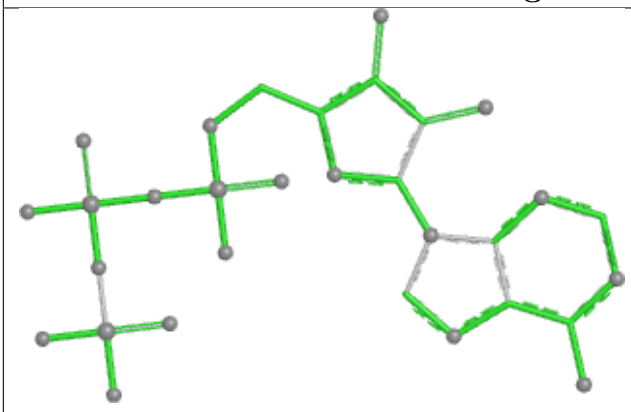


Rings

Ligand ATP A 603



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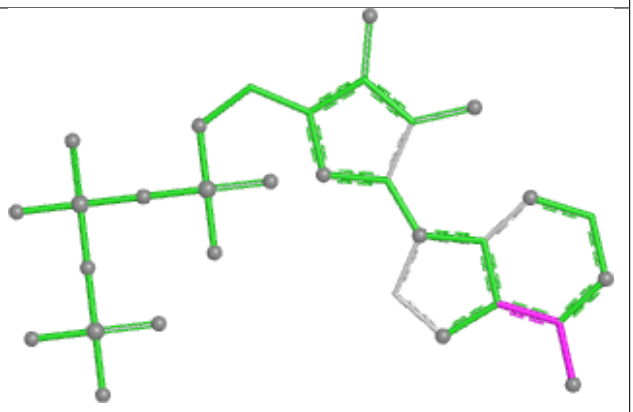

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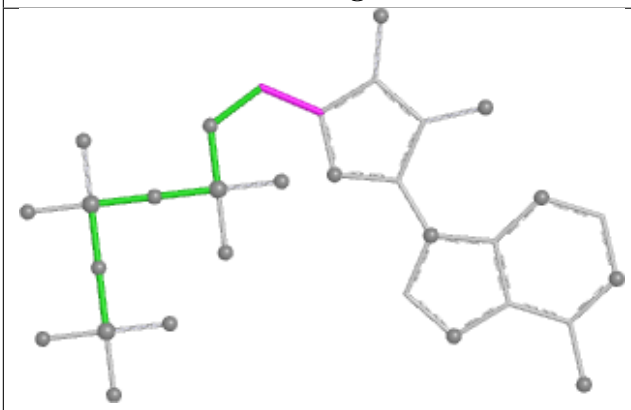

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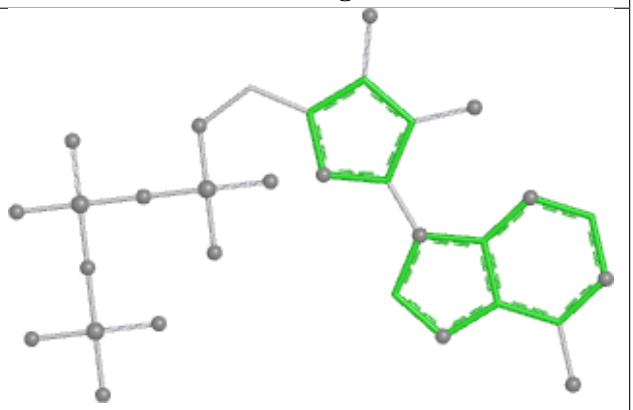
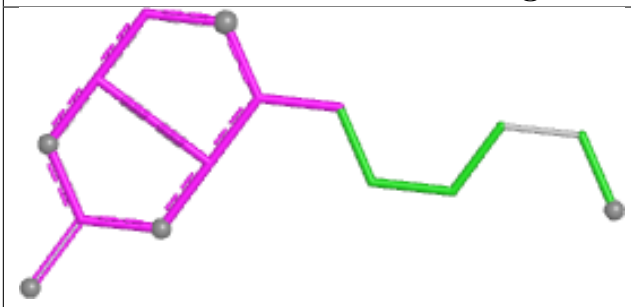


Rings

Ligand BTN Q 601



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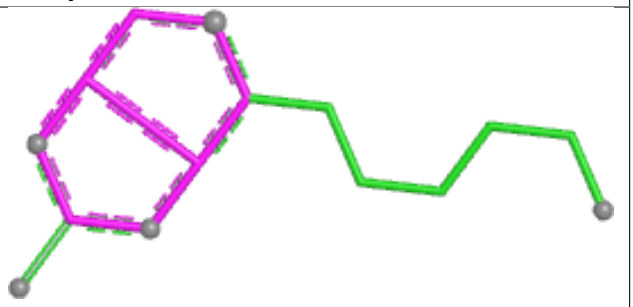
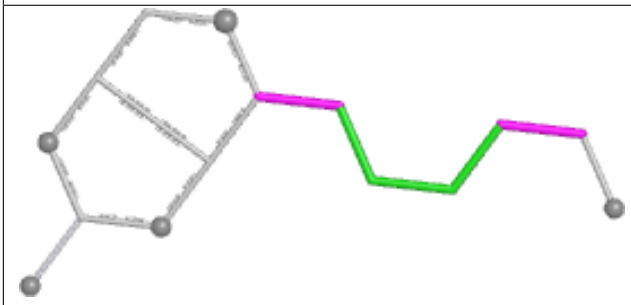


Bond angles



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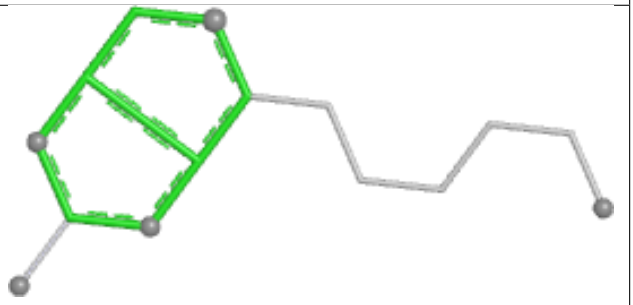
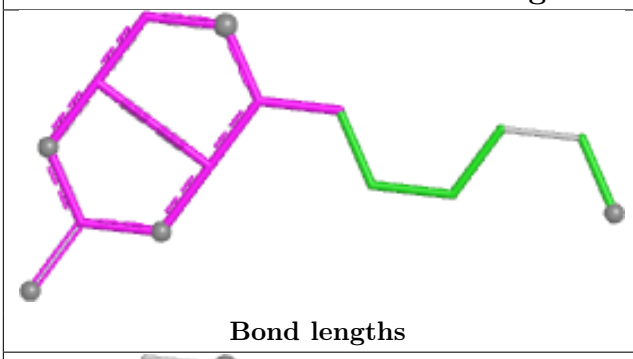


Rings

Ligand BTN I 601



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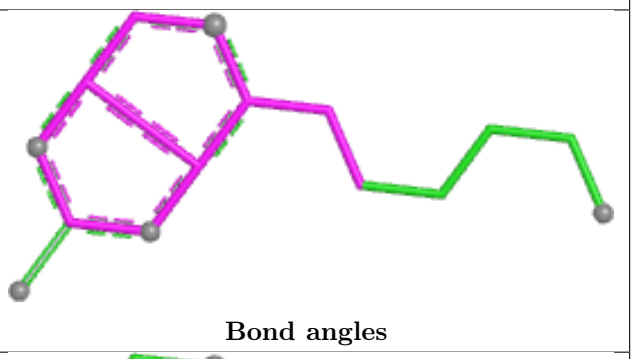
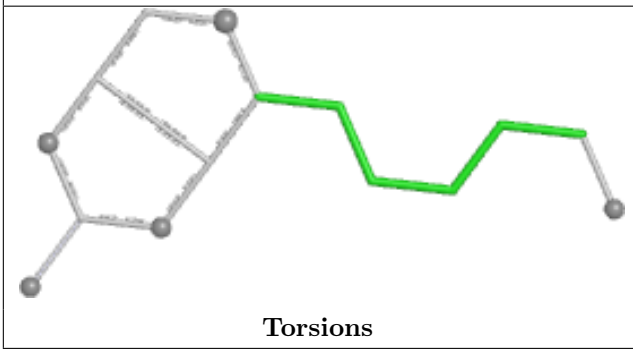
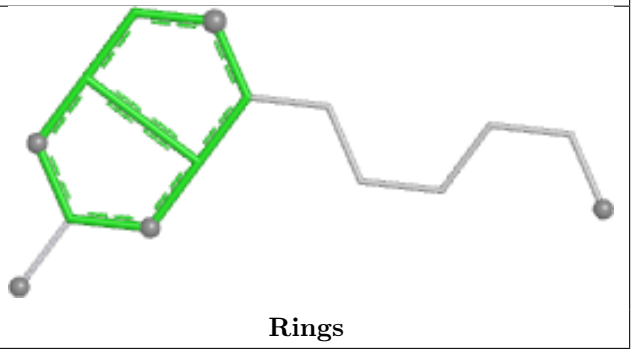


Bond angles

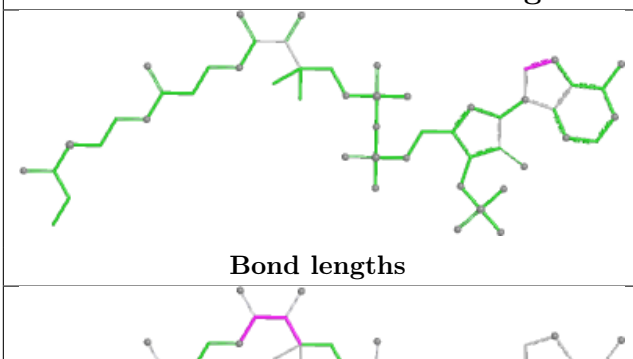


Torsions

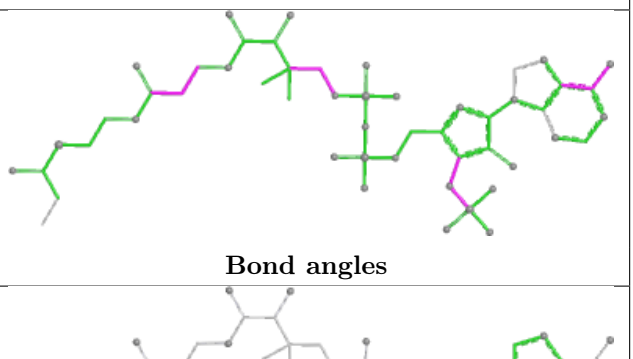


Rings

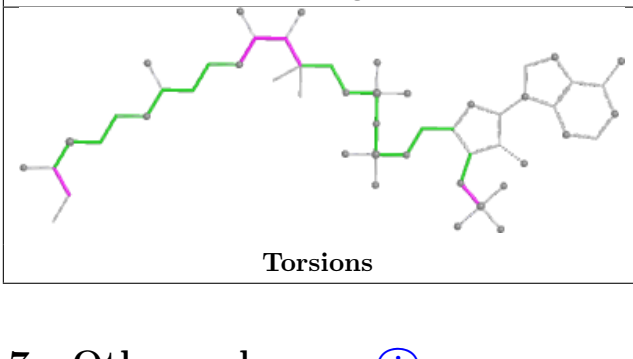
Ligand 1VU G 601



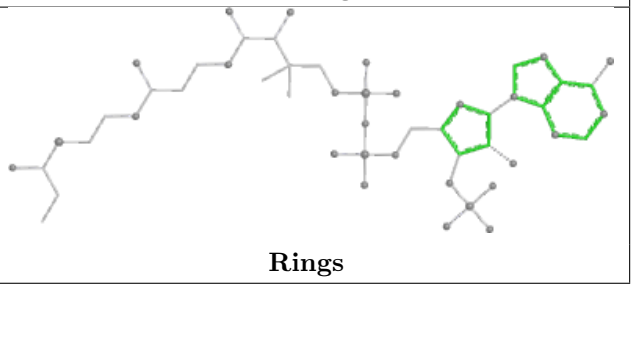
Bond lengths



Bond angles



Torsions



Rings

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.

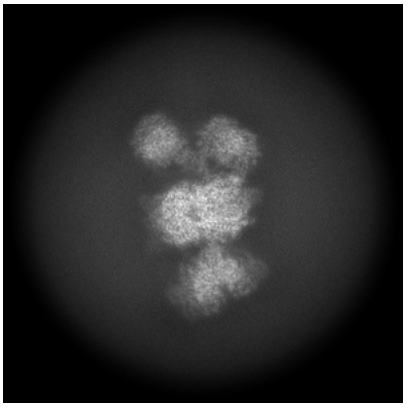
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-73585. These allow visual inspection of the internal detail of the map and identification of artifacts.

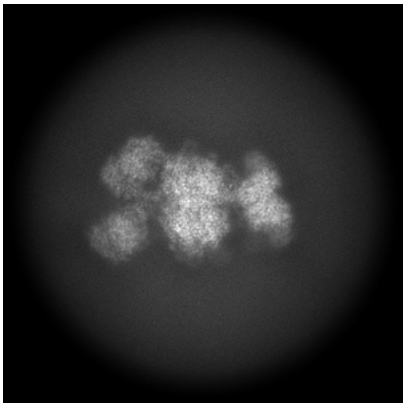
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

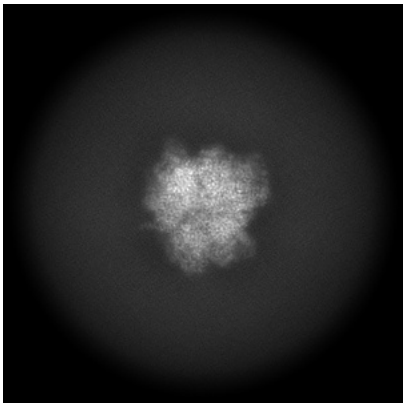
6.1.1 Primary map



X



Y

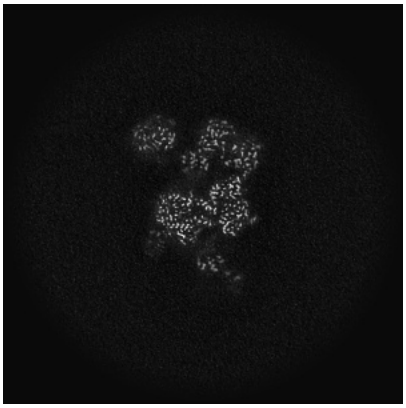


Z

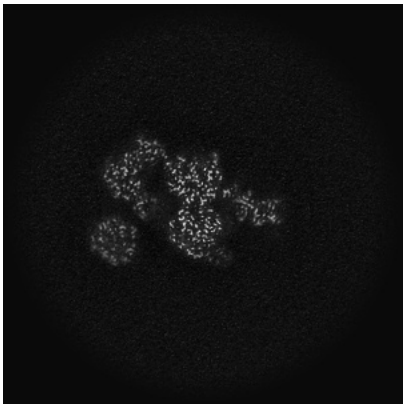
The images above show the map projected in three orthogonal directions.

6.2 Central slices

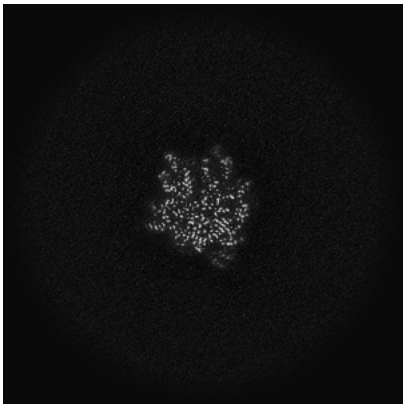
6.2.1 Primary map



X Index: 240



Y Index: 240

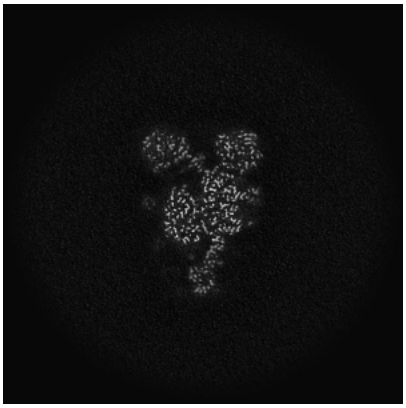


Z Index: 240

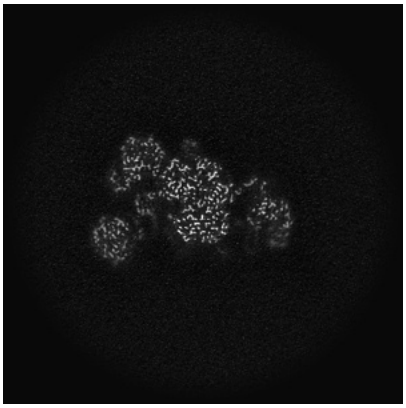
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

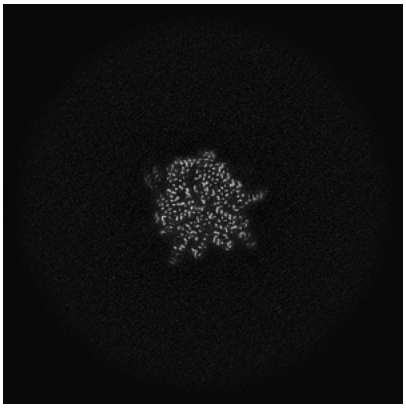
6.3.1 Primary map



X Index: 253



Y Index: 255

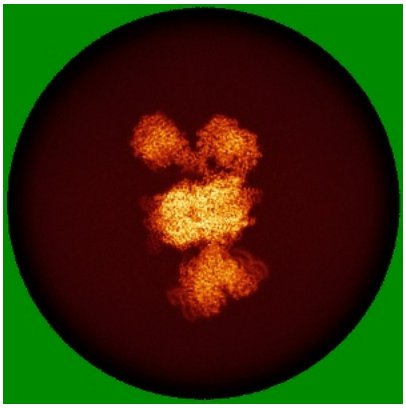


Z Index: 217

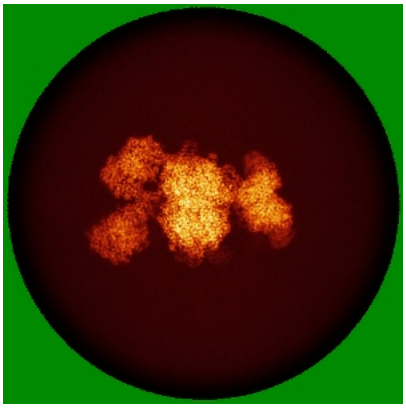
The images above show the largest variance slices of the map in three orthogonal directions.

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

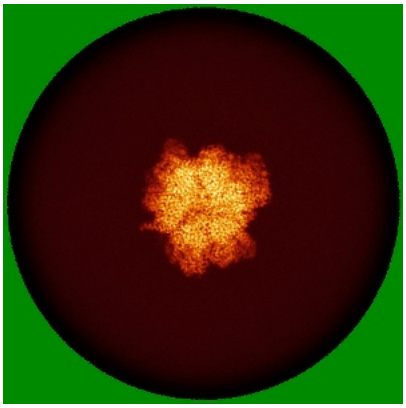
6.4.1 Primary map



X



Y



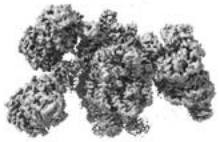
Z

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.

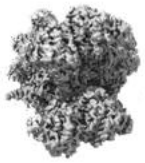
6.5 Orthogonal surface views (i)

6.5.1 Primary map

X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.16. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

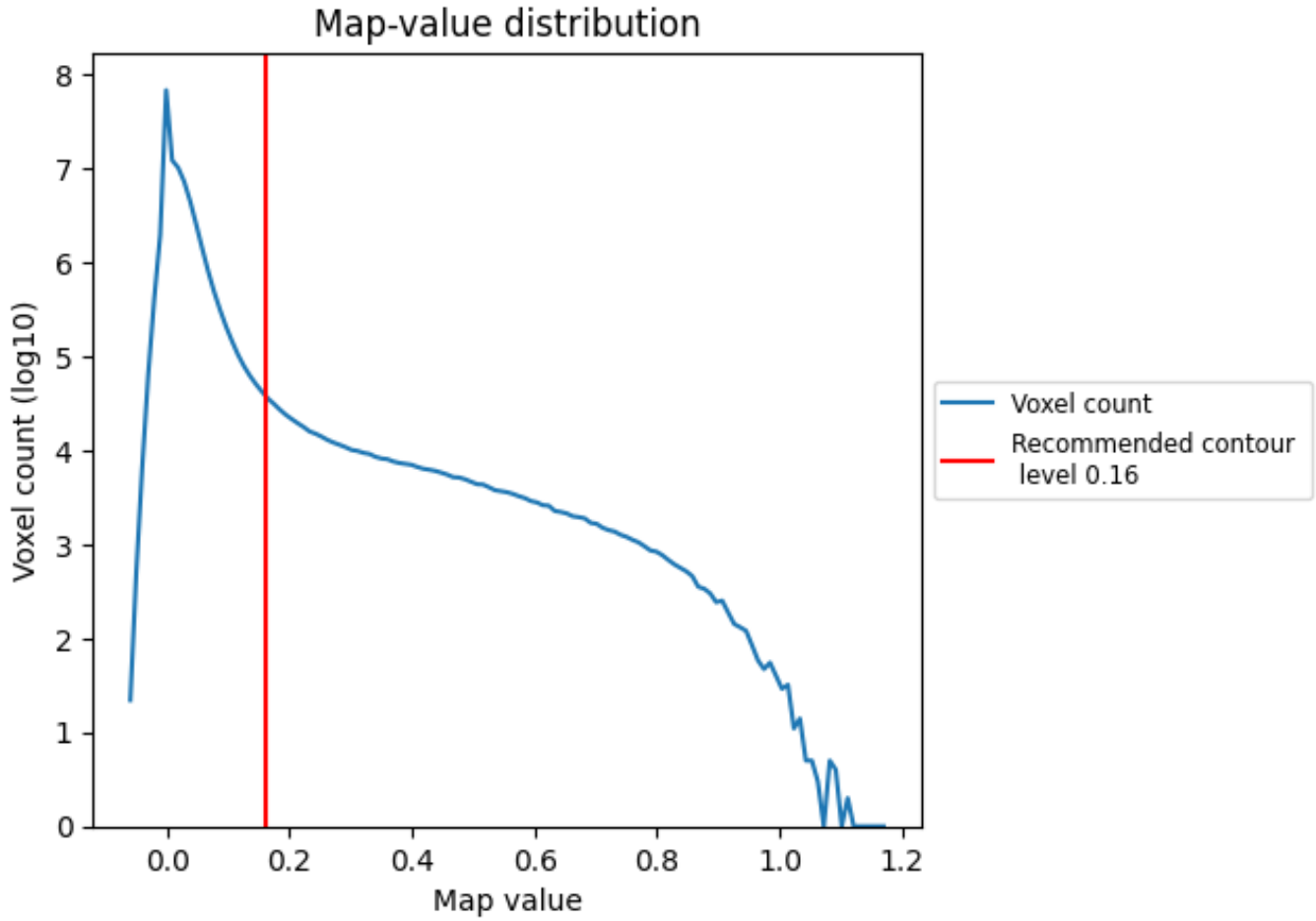
6.6 Mask visualisation (i)

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

7 Map analysis

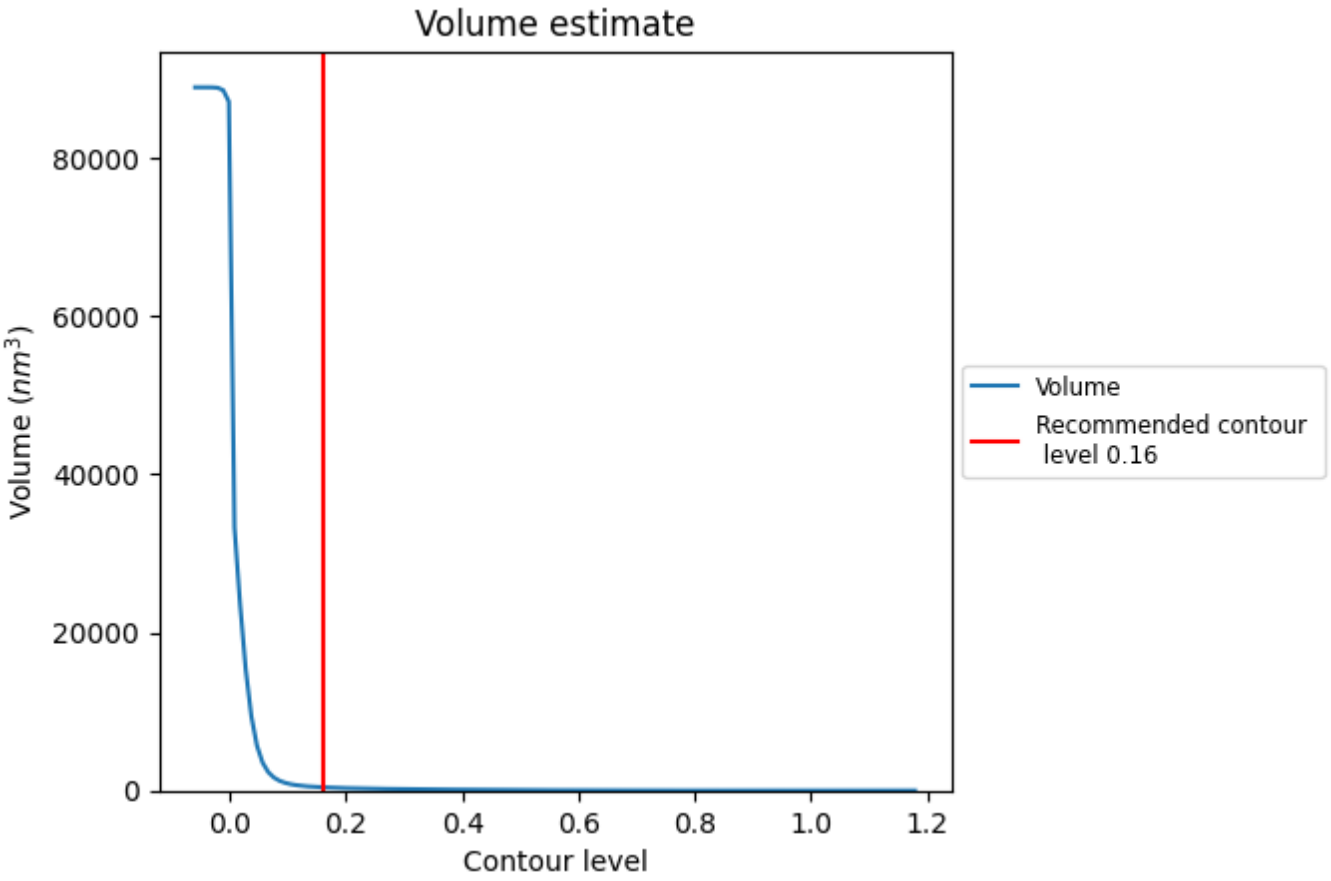
This section contains the results of statistical analysis of the map.

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.

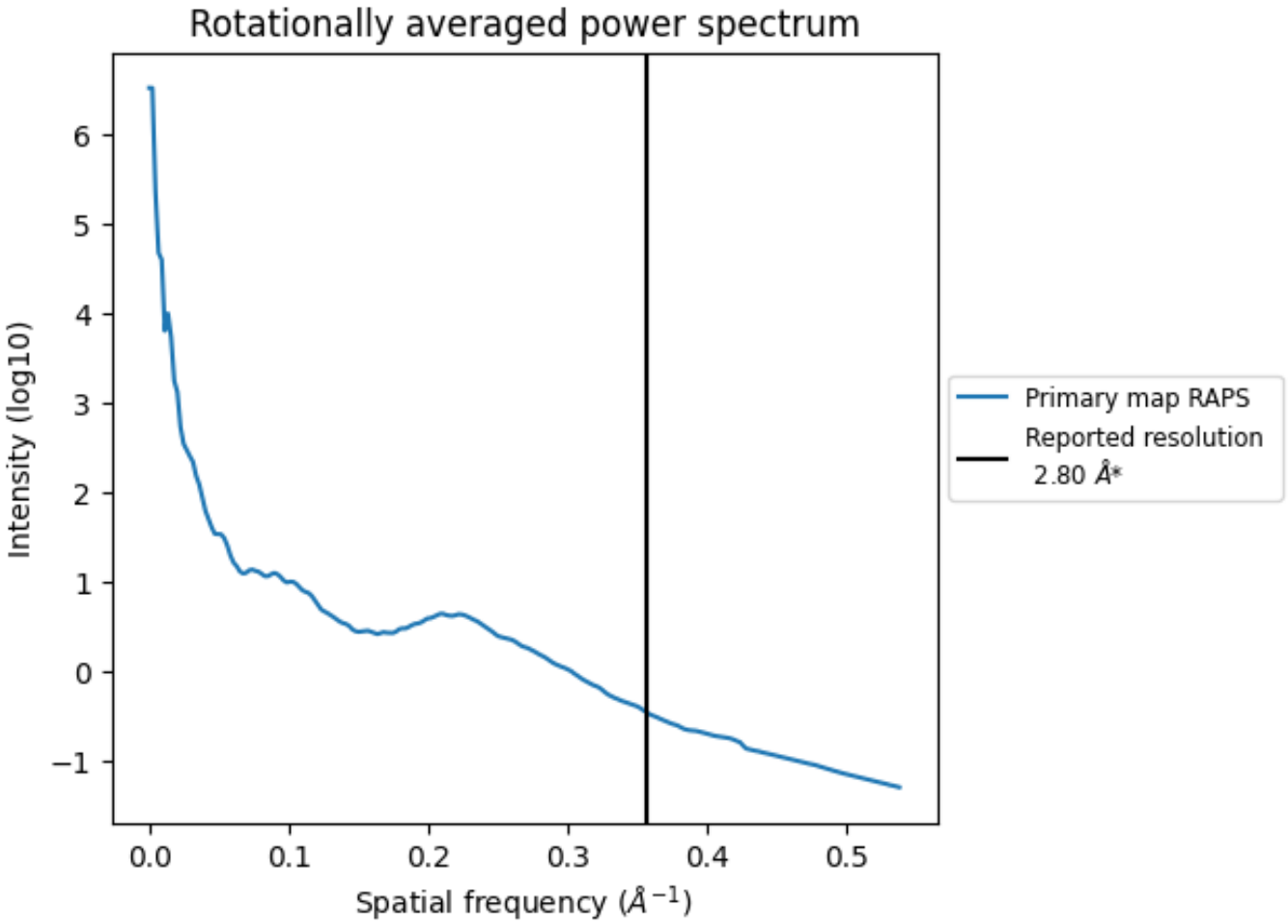
7.2 Volume estimate



The volume at the recommended contour level is 413 nm^3; this corresponds to an approximate mass of 374 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 0.357 Å^{-1}

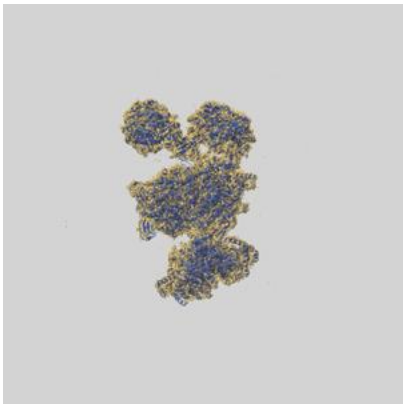
8 Fourier-Shell correlation

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

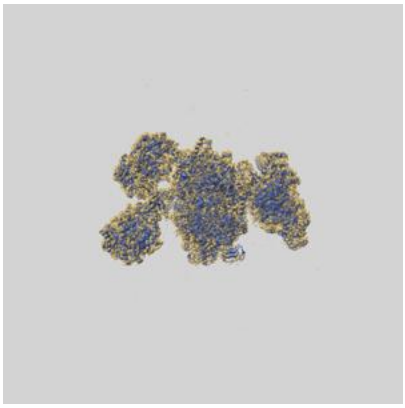
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-73585 and PDB model 9YX2. Per-residue inclusion information can be found in section 3 on page 9.

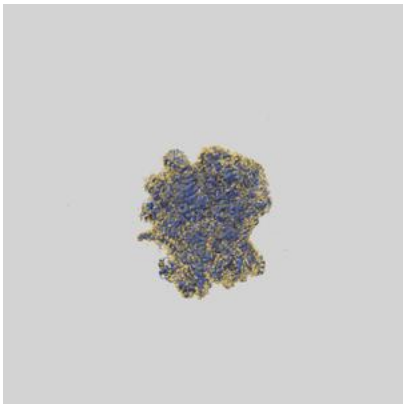
9.1 Map-model overlay



X



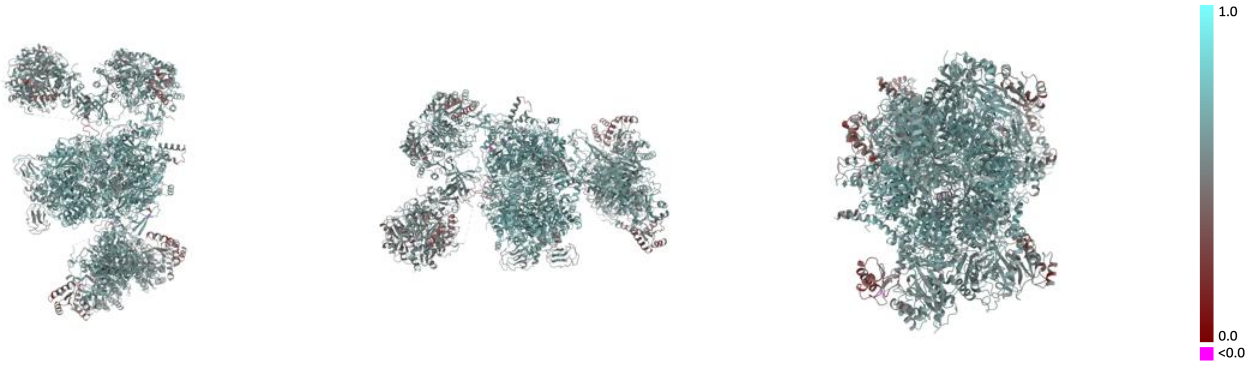
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.16 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

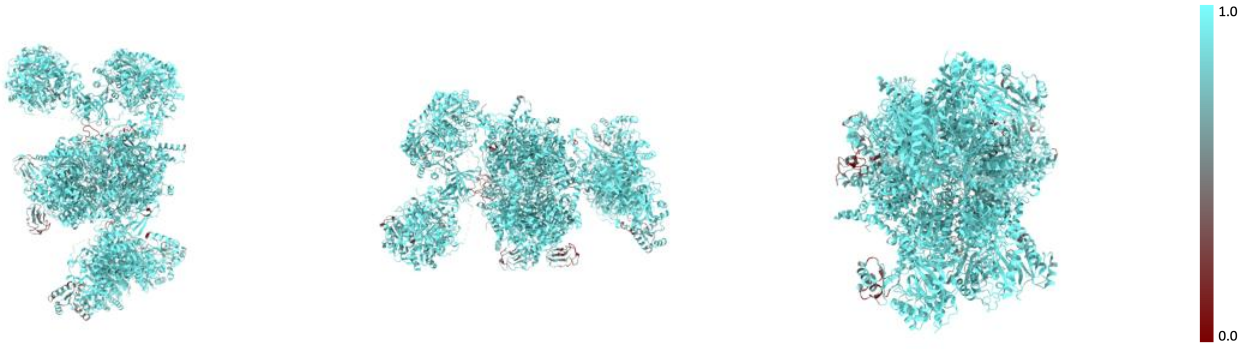
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

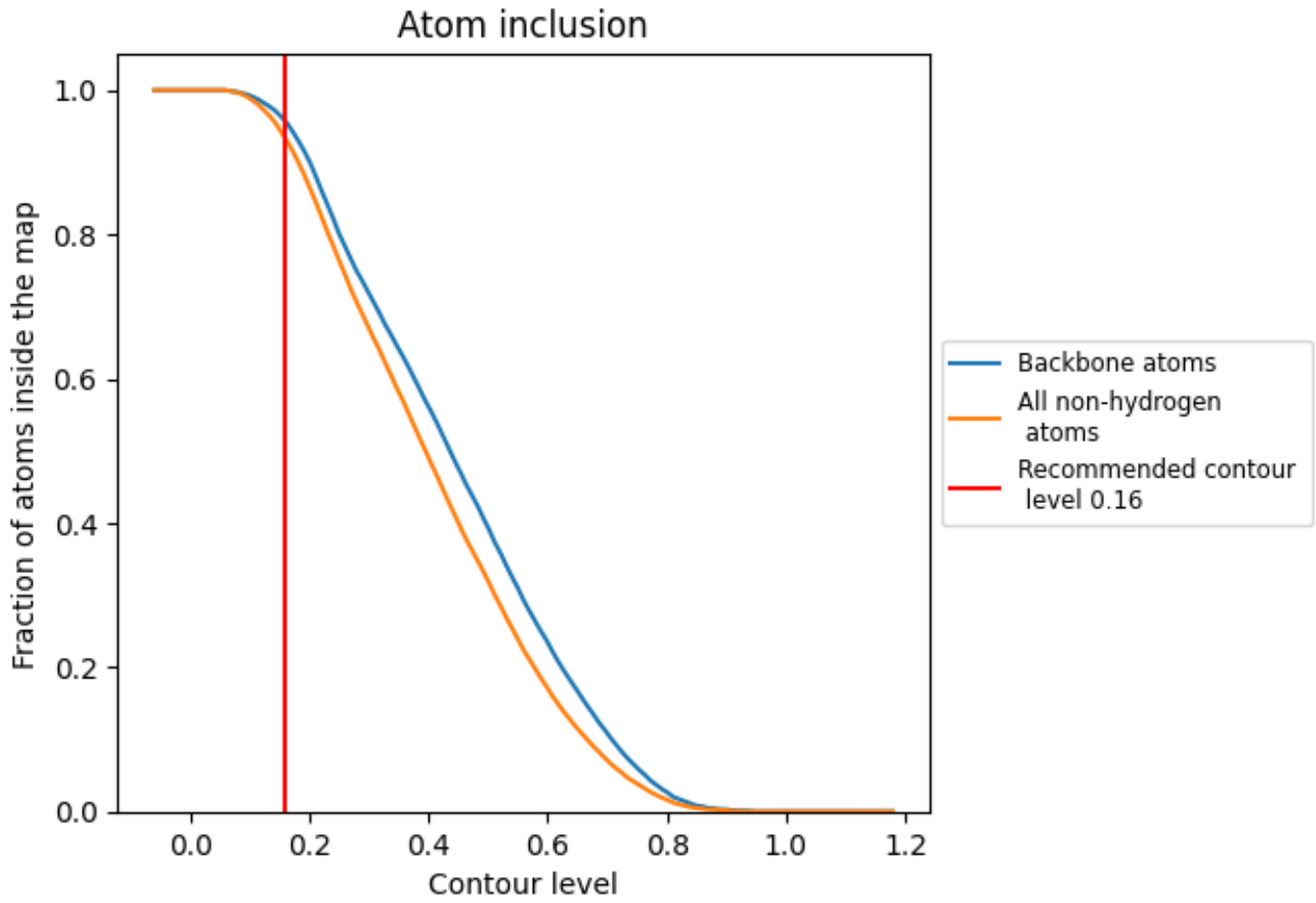
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.16).

9.4 Atom inclusion (i)



At the recommended contour level, 96% of all backbone atoms, 93% 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 (0.16) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9330	0.5940
A	0.9260	0.5650
B	0.9120	0.5490
C	0.8510	0.5060
D	0.9140	0.5210
E	0.8780	0.5860
F	0.9720	0.6530
G	0.9780	0.6580
H	0.9740	0.6540
I	0.6640	0.5440
J	0.5530	0.5190
K	0.7240	0.5550
L	0.5380	0.5230
M	0.9790	0.6590
N	0.9790	0.6570
O	0.9760	0.6520
P	0.8920	0.5950
Q	0.9400	0.5740
R	0.9430	0.5600
S	0.9120	0.5370
T	0.9390	0.5460