Full wwPDB X-ray Structure Validation Report ⓘ

Nov 16, 2026 – 06:19 pm GMT

PDB ID	:	9QY2 / pdb_00009qy2
Title	:	Human N-myristoyltransferase (NMT1) with Myristoyl-CoA and photoactive arylazopyrazole inhibitor LD371
Authors	:	Perrett, S.; Van thor, J.J.
Deposited on	:	2025-04-16
Resolution	:	1.98 Å(reported)

This is a Full wwPDB X-ray Structure 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/XrayValidationReportHelp
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:

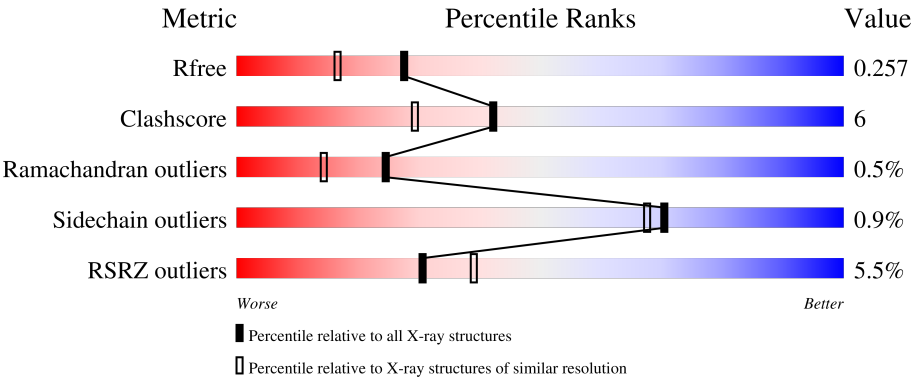
MolProbity	:	4-5-2 with Phenix2.2
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	2.2
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.015 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.51

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 1.98 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)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	1506 (1.98-1.98)
Clashscore	190562	1534 (1.98-1.98)
Ramachandran outliers	187476	1518 (1.98-1.98)
Sidechain outliers	187428	1518 (1.98-1.98)
RSRZ outliers	180081	1506 (1.98-1.98)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower 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 electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	410	4% 83% 10% 7%
1	B	410	6% 79% 13% · 7%

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 13586 atoms, of which 6546 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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 Glycylpeptide N-tetradecanoyltransferase 1.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	382	Total	C	H	N	O	S	0	3	0
			6294	2038	3146	534	560	16			
1	B	382	Total	C	H	N	O	S	0	11	0
			6413	2075	3206	548	567	17			

There are 44 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	87	MET	-	initiating methionine	UNP P30419
A	88	GLY	-	expression tag	UNP P30419
A	89	SER	-	expression tag	UNP P30419
A	90	SER	-	expression tag	UNP P30419
A	91	HIS	-	expression tag	UNP P30419
A	92	HIS	-	expression tag	UNP P30419
A	93	HIS	-	expression tag	UNP P30419
A	94	HIS	-	expression tag	UNP P30419
A	95	HIS	-	expression tag	UNP P30419
A	96	HIS	-	expression tag	UNP P30419
A	97	SER	-	expression tag	UNP P30419
A	98	SER	-	expression tag	UNP P30419
A	99	GLY	-	expression tag	UNP P30419
A	100	LEU	-	expression tag	UNP P30419
A	101	GLU	-	expression tag	UNP P30419
A	102	VAL	-	expression tag	UNP P30419
A	103	LEU	-	expression tag	UNP P30419
A	104	PHE	-	expression tag	UNP P30419
A	105	GLN	-	expression tag	UNP P30419
A	106	GLY	-	expression tag	UNP P30419
A	107	PRO	-	expression tag	UNP P30419
A	108	HIS	-	expression tag	UNP P30419
B	87	MET	-	initiating methionine	UNP P30419
B	88	GLY	-	expression tag	UNP P30419
B	89	SER	-	expression tag	UNP P30419

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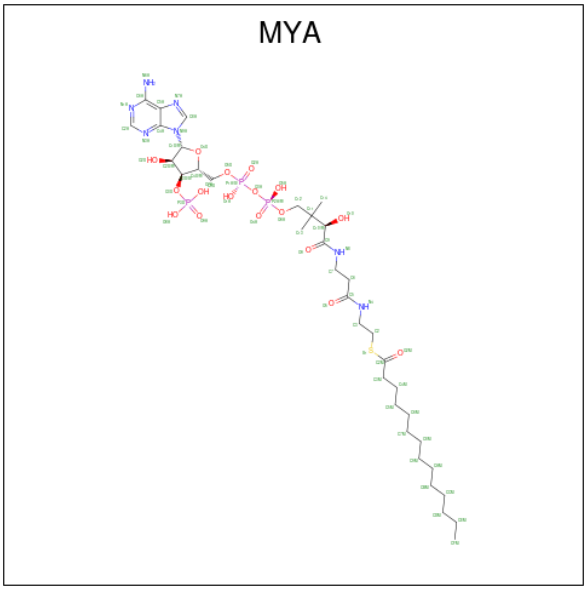
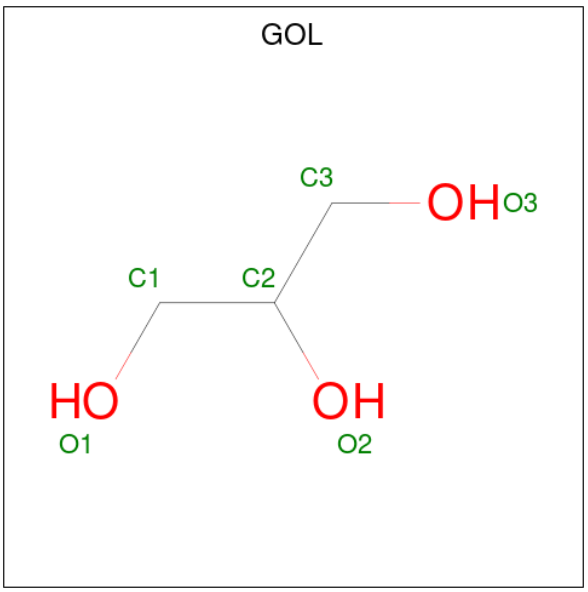
Chain	Residue	Modelled	Actual	Comment	Reference
B	90	SER	-	expression tag	UNP P30419
B	91	HIS	-	expression tag	UNP P30419
B	92	HIS	-	expression tag	UNP P30419
B	93	HIS	-	expression tag	UNP P30419
B	94	HIS	-	expression tag	UNP P30419
B	95	HIS	-	expression tag	UNP P30419
B	96	HIS	-	expression tag	UNP P30419
B	97	SER	-	expression tag	UNP P30419
B	98	SER	-	expression tag	UNP P30419
B	99	GLY	-	expression tag	UNP P30419
B	100	LEU	-	expression tag	UNP P30419
B	101	GLU	-	expression tag	UNP P30419
B	102	VAL	-	expression tag	UNP P30419
B	103	LEU	-	expression tag	UNP P30419
B	104	PHE	-	expression tag	UNP P30419
B	105	GLN	-	expression tag	UNP P30419
B	106	GLY	-	expression tag	UNP P30419
B	107	PRO	-	expression tag	UNP P30419
B	108	HIS	-	expression tag	UNP P30419

- Molecule 2 is TETRADECANOYL-COA (CCD ID: MYA) (formula: $C_{35}H_{62}N_7O_{17}P_3S$).



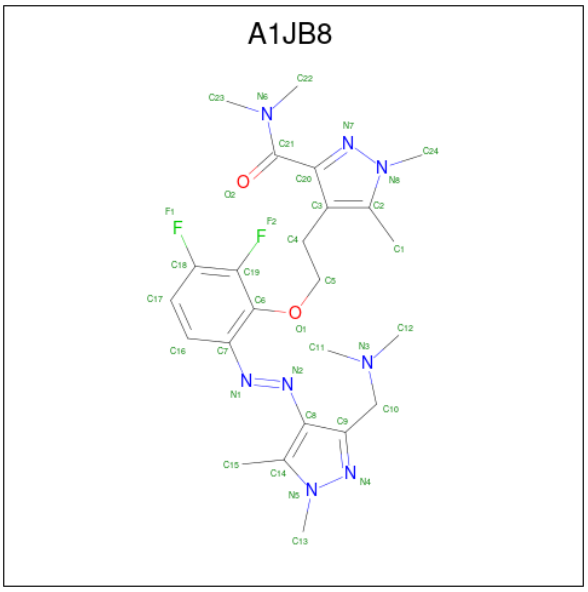
Mol	Chain	Residues	Atoms							ZeroOcc	AltConf
2	A	1	Total	C	H	N	O	P	S	0	0
			111	35	48	7	17	3	1		
2	B	1	Total	C	H	N	O	P	S	0	0
			111	35	48	7	17	3	1		

- Molecule 3 is GLYCEROL (CCD ID: GOL) (formula: $C_3H_8O_3$).



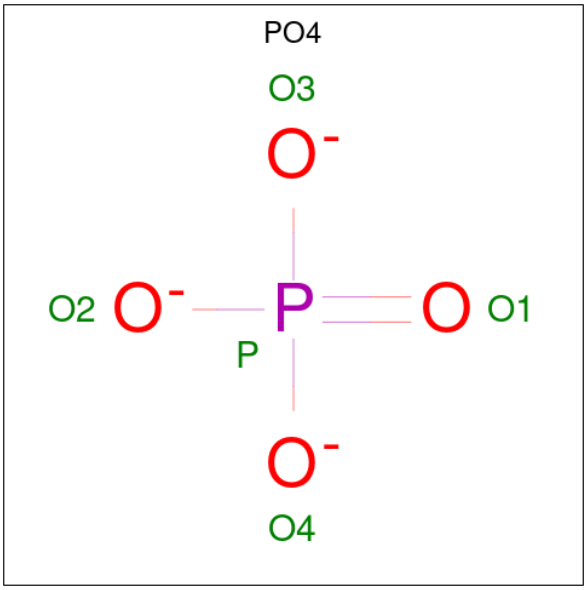
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C H O 14 3 8 3	0	0
3	A	1	Total C H O 14 3 8 3	0	0
3	B	1	Total C H O 14 3 8 3	0	0
3	B	1	Total C H O 14 3 8 3	0	0

- Molecule 4 is 4-[2-[6-[({E})-[3-[(dimethylamino)methyl]-1,5-dimethyl-pyrazol-4-yl]diazenyl] -2,3-bis(fluoranyl)phenoxy]ethyl]- {N}, {N},1,5-tetramethyl-pyrazole-3-carboxamide (CCD ID: A1JB8) (formula: $C_{24}H_{32}F_2N_8O_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
4	A	1	Total	C	F	H	N	O	0	0
			69	24	2	33	8	2		
4	B	1	Total	C	F	H	N	O	0	0
			69	24	2	33	8	2		

- Molecule 5 is PHOSPHATE ION (CCD ID: PO4) (formula: O_4P).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	O	P	0	0
			5	4	1		
5	A	1	Total	O	P	0	0
			5	4	1		

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total O P 5 4 1	0	0
5	B	1	Total O P 5 4 1	0	0
5	B	1	Total O P 5 4 1	0	0
5	B	1	Total O P 5 4 1	0	0
5	B	1	Total O P 5 4 1	0	0

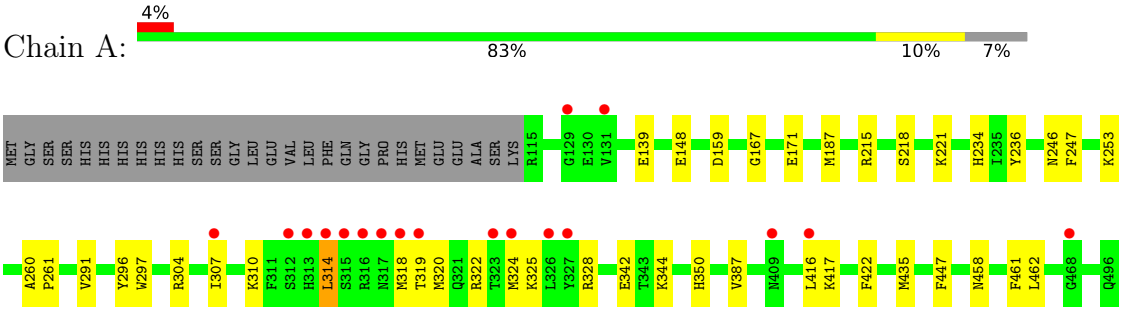
- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	205	Total O 205 205	0	0
6	B	223	Total O 223 223	0	0

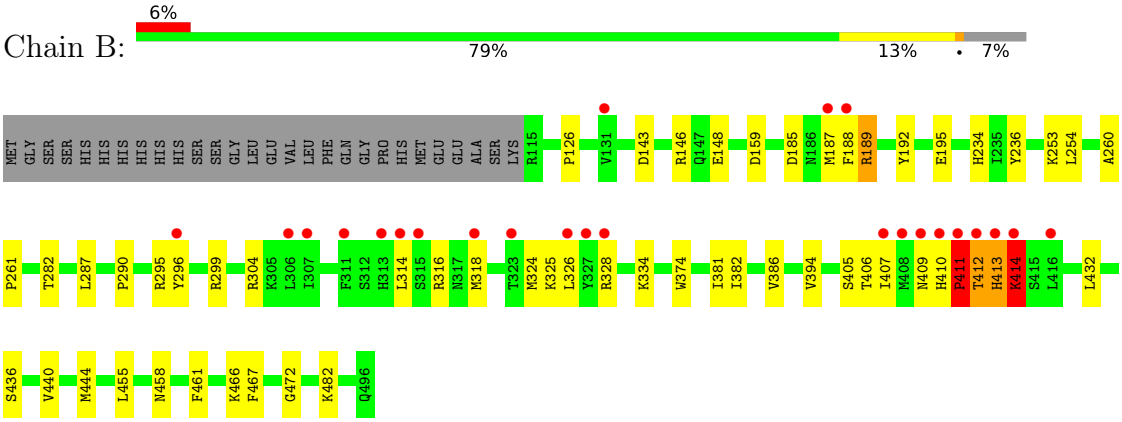
3 Residue-property plots (i)

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 electron 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 dot above a residue indicates a poor fit to the electron density (RSRZ > 2). 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: Glycylpeptide N-tetradecanoyltransferase 1



• Molecule 1: Glycylpeptide N-tetradecanoyltransferase 1



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α, β, γ	80.87Å 177.88Å 57.74Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	33.41 – 1.98 33.41 – 1.98	Depositor EDS
% Data completeness (in resolution range)	99.6 (33.41-1.98) 99.8 (33.41-1.98)	Depositor EDS
R_{merge}	0.49	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.15 (at 1.98Å)	Xtriage
Refinement program	PHENIX 2.1_6048	Depositor
R, R_{free}	0.194 , 0.257 0.194 , 0.257	Depositor DCC
R_{free} test set	2000 reflections (3.38%)	wwPDB-VP
Wilson B-factor (Å^2)	25.0	Xtriage
Anisotropy	0.591	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.44 , 48.6	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	13586	wwPDB-VP
Average B, all atoms (Å^2)	35.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 35.42 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 5.8516e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: A1JB8, GOL, PO4, MYA

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	0.51	1/3247 (0.0%)	0.61	0/4411
1	B	0.52	0/3320	0.67	2/4510 (0.0%)
All	All	0.52	1/6567 (0.0%)	0.64	2/8921 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	B	0	5

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	422	PHE	CA-C	5.51	1.55	1.52

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	414[A]	LYS	N-CA-C	6.81	125.31	110.80
1	B	414[B]	LYS	N-CA-C	6.81	125.31	110.80

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	189[A]	ARG	Sidechain
1	B	189[B]	ARG	Sidechain

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Mol	Chain	Res	Type	Group
1	B	411[A]	PRO	Peptide
1	B	413[A]	HIS	Peptide
1	B	413[B]	HIS	Peptide

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3148	3146	3135	32	0
1	B	3207	3206	3196	50	0
2	A	63	48	58	0	0
2	B	63	48	58	0	0
3	A	12	16	16	1	0
3	B	12	16	16	0	0
4	A	36	33	0	2	0
4	B	36	33	0	0	0
5	A	15	0	0	1	0
5	B	20	0	0	0	0
6	A	205	0	0	3	0
6	B	223	0	0	4	0
All	All	7040	6546	6479	82	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 6.

All (82) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:253:LYS:HA	1:A:253:LYS:HE3	1.72	0.70
1:B:411[B]:PRO:O	1:B:412[B]:THR:HG23	1.92	0.70
1:A:304:ARG:NH1	1:A:324:MET:HE3	2.13	0.64
1:A:325:LYS:HA	1:A:325:LYS:HE2	1.80	0.62
1:B:458:ASN:HA	1:B:461:PHE:CE2	2.38	0.59
1:B:260:ALA:HB3	1:B:261:PRO:HD3	1.86	0.58
1:B:410[A]:HIS:CG	1:B:411[A]:PRO:HD2	2.39	0.57
1:A:187:MET:HE1	1:A:310:LYS:HB2	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:234:HIS:CE1	1:B:236:TYR:O	2.60	0.54
1:A:307:ILE:CD1	1:A:320:MET:HE1	2.40	0.51
1:B:188:PHE:CE1	1:B:407:ILE:HG23	2.45	0.51
1:A:350:HIS:CD2	1:B:143:ASP:O	2.64	0.50
1:A:167:GLY:O	1:A:171:GLU:HG3	2.11	0.50
1:A:458:ASN:HA	1:A:461:PHE:CE2	2.47	0.49
1:B:296:TYR:OH	1:B:472:GLY:HA3	2.12	0.49
1:A:291:VAL:HB	3:A:502:GOL:H32	1.94	0.49
1:A:435:MET:HG3	1:A:461:PHE:CE2	2.48	0.49
1:B:314:LEU:HD21	1:B:318:MET:O	2.13	0.49
1:A:159:ASP:C	6:A:626:HOH:O	2.56	0.48
1:B:189[B]:ARG:HH22	1:B:409[B]:ASN:HB3	1.77	0.48
1:B:406:THR:HG23	1:B:410[B]:HIS:H	1.79	0.47
1:B:185:ASP:HB3	1:B:187:MET:HE3	1.96	0.47
1:B:195:GLU:HB3	1:B:381:ILE:HD11	1.96	0.47
1:A:328:ARG:HD2	1:A:328:ARG:C	2.39	0.47
1:A:417:LYS:HG2	6:A:730:HOH:O	2.14	0.47
1:A:304:ARG:HH12	1:A:324:MET:HE3	1.80	0.47
1:A:139:GLU:OE2	5:A:505:PO4:O4	2.33	0.46
1:B:406:THR:CG2	1:B:410[B]:HIS:H	2.29	0.46
1:A:318:MET:CG	1:A:322:ARG:HG2	2.45	0.46
1:B:287:LEU:O	1:B:290:PRO:HD3	2.16	0.45
1:B:253:LYS:HE2	1:B:253:LYS:HA	1.98	0.44
1:A:417:LYS:HD3	1:A:447:PHE:CD1	2.52	0.44
1:B:407:ILE:HG22	1:B:410[A]:HIS:CB	2.47	0.44
4:A:504:A1JB8:C12	6:A:682:HOH:O	2.64	0.44
1:B:126:PRO:HG3	1:B:482:LYS:HG3	2.00	0.44
1:B:192:TYR:HD2	6:B:729:HOH:O	2.01	0.44
1:A:314:LEU:HD21	1:A:319:THR:C	2.43	0.44
1:B:334:LYS:HE3	6:B:656:HOH:O	2.17	0.44
1:B:432:LEU:O	1:B:432:LEU:HD23	2.17	0.43
1:B:159:ASP:C	6:B:635:HOH:O	2.60	0.43
1:A:307:ILE:HD12	1:A:320:MET:HE1	1.99	0.43
1:A:342:GLU:OE1	1:A:344:LYS:HE2	2.18	0.43
1:B:253:LYS:C	1:B:254:LEU:HD23	2.43	0.43
1:A:260:ALA:HB3	1:A:261:PRO:HD3	2.00	0.43
1:B:304:ARG:HH12	1:B:324:MET:HE1	1.84	0.43
1:A:416:LEU:HD23	1:A:417:LYS:N	2.34	0.42
1:A:234:HIS:CE1	1:A:236:TYR:O	2.72	0.42
1:B:295:ARG:HG3	6:B:789:HOH:O	2.18	0.42
1:B:374:TRP:O	1:B:382:ILE:HG12	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:440:VAL:O	1:B:444:MET:HG3	2.20	0.42
1:A:215:ARG:HA	1:A:221:LYS:O	2.20	0.42
1:A:314:LEU:HD11	1:A:320:MET:HA	2.02	0.42
1:B:146:ARG:HD3	1:B:148:GLU:O	2.20	0.42
1:A:435:MET:HG3	1:A:461:PHE:CZ	2.55	0.41
1:B:386:VAL:HB	1:B:394:VAL:HG13	2.02	0.41
1:A:296:TYR:HB2	4:A:504:A1JB8:F2	2.10	0.41
1:B:299:ARG:HB2	1:B:467:PHE:CE2	2.55	0.41
1:A:307:ILE:HD13	1:A:320:MET:HE1	2.02	0.41
1:A:246:ASN:HB3	1:A:247:PHE:CD2	2.55	0.41
1:A:304:ARG:NH1	1:A:324:MET:CE	2.83	0.41
1:B:325:LYS:HA	1:B:328:ARG:HB2	2.03	0.41
1:B:326:LEU:O	1:B:466:LYS:HE2	2.21	0.40
1:A:297:TRP:CD1	1:A:462:LEU:HD13	2.57	0.40
1:B:304:ARG:NH1	1:B:324:MET:HE1	2.36	0.40
1:B:436:SER:O	1:B:440:VAL:HG23	2.22	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 X-ray entries followed by that with respect to entries of similar resolution.

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	383/410 (93%)	369 (96%)	14 (4%)	0	100 100
1	B	391/410 (95%)	370 (95%)	14 (4%)	7 (2%)	6 1
All	All	774/820 (94%)	739 (96%)	28 (4%)	7 (1%)	24 6

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	414[A]	LYS
1	B	414[B]	LYS

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Mol	Chain	Res	Type
1	B	316	ARG
1	B	412[A]	THR
1	B	412[B]	THR
1	B	411[A]	PRO
1	B	411[B]	PRO

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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	351/372 (94%)	348 (99%)	3 (1%)	70	67
1	B	359/372 (96%)	355 (99%)	4 (1%)	65	61
All	All	710/744 (95%)	703 (99%)	7 (1%)	70	65

All (7) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	148	GLU
1	A	218	SER
1	A	314	LEU
1	B	405	SER
1	B	414[A]	LYS
1	B	414[B]	LYS
1	B	455	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	177	ASN
1	A	186	ASN
1	A	378	GLN
1	B	133	ASN
1	B	186	ASN
1	B	232	ASN

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Mol	Chain	Res	Type
1	B	272	HIS
1	B	302	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)

15 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
5	PO4	B	507	-	4,4,4	1.69	1 (25%)	6,6,6	0.78	0
5	PO4	A	506	-	4,4,4	1.23	0	6,6,6	0.64	0
5	PO4	A	505	-	4,4,4	0.92	0	6,6,6	0.75	0
4	A1JB8	A	504	-	38,38,38	2.31	9 (23%)	46,55,55	2.58	16 (34%)
5	PO4	B	508	-	4,4,4	1.65	1 (25%)	6,6,6	0.71	0
5	PO4	B	506	-	4,4,4	1.39	1 (25%)	6,6,6	0.52	0
3	GOL	B	502	-	5,5,5	0.45	0	5,5,5	0.39	0
4	A1JB8	B	504	-	38,38,38	2.38	10 (26%)	46,55,55	2.37	17 (36%)
5	PO4	B	505	-	4,4,4	1.67	1 (25%)	6,6,6	0.90	0
2	MYA	B	501	-	60,65,65	0.40	0	81,91,91	0.66	1 (1%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
3	GOL	B	503	-	5,5,5	0.19	0	5,5,5	0.77	0
3	GOL	A	502	-	5,5,5	0.37	0	5,5,5	0.58	0
5	PO4	A	507	-	4,4,4	1.92	1 (25%)	6,6,6	1.07	0
2	MYA	A	501	-	60,65,65	0.38	0	81,91,91	0.70	1 (1%)
3	GOL	A	503	-	5,5,5	0.57	0	5,5,5	1.10	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	A1JB8	A	504	-	-	4/23/23/23	0/3/3/3
3	GOL	B	502	-	-	1/4/4/4	-
4	A1JB8	B	504	-	-	3/23/23/23	0/3/3/3
2	MYA	B	501	-	-	0/64/80/80	0/3/3/3
3	GOL	B	503	-	-	4/4/4/4	-
3	GOL	A	502	-	-	2/4/4/4	-
2	MYA	A	501	-	-	1/64/80/80	0/3/3/3
3	GOL	A	503	-	-	4/4/4/4	-

All (24) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	504	A1JB8	C21-N6	8.24	1.44	1.34
4	A	504	A1JB8	C21-N6	7.22	1.43	1.34
4	B	504	A1JB8	C2-N8	6.34	1.41	1.34
4	A	504	A1JB8	C2-N8	6.03	1.41	1.34
4	A	504	A1JB8	C14-N5	5.31	1.40	1.34
4	B	504	A1JB8	C14-N5	5.20	1.40	1.34
4	B	504	A1JB8	C8-C14	3.91	1.42	1.37
4	A	504	A1JB8	N2-N1	-3.85	1.17	1.27
4	A	504	A1JB8	C8-C14	3.75	1.41	1.37
4	A	504	A1JB8	C10-N3	3.51	1.56	1.47
5	A	507	PO4	P-O1	3.07	1.58	1.50
4	A	504	A1JB8	C9-N4	3.07	1.39	1.32
4	B	504	A1JB8	C10-N3	3.05	1.54	1.47
5	B	505	PO4	P-O1	3.03	1.58	1.50
4	B	504	A1JB8	N2-N1	-2.97	1.19	1.27
4	B	504	A1JB8	C9-N4	2.81	1.38	1.32
5	B	507	PO4	P-O1	2.73	1.57	1.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	504	A1JB8	C12-N3	2.66	1.54	1.46
4	A	504	A1JB8	C20-N7	2.64	1.37	1.34
5	B	508	PO4	P-O1	2.62	1.57	1.50
4	B	504	A1JB8	C20-N7	2.47	1.37	1.34
4	A	504	A1JB8	O1-C6	-2.43	1.34	1.39
4	B	504	A1JB8	C11-N3	2.41	1.53	1.46
5	B	506	PO4	P-O1	2.20	1.56	1.50

All (35) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	504	A1JB8	C7-N1-N2	7.37	132.42	114.67
4	B	504	A1JB8	C7-N1-N2	7.11	131.78	114.67
4	A	504	A1JB8	C10-C9-N4	6.30	125.72	119.74
4	A	504	A1JB8	C20-C21-N6	5.77	128.11	120.10
4	B	504	A1JB8	C20-C21-N6	5.61	127.89	120.10
4	B	504	A1JB8	C10-C9-N4	5.43	124.89	119.74
4	A	504	A1JB8	O2-C21-N6	-4.51	114.67	122.64
4	A	504	A1JB8	C8-N2-N1	4.38	131.89	115.70
4	B	504	A1JB8	C7-C6-C19	-4.01	113.73	120.70
4	B	504	A1JB8	O2-C21-N6	-3.99	115.58	122.64
4	A	504	A1JB8	C13-N5-C14	-3.93	124.52	128.22
4	A	504	A1JB8	C7-C6-C19	-3.86	113.99	120.70
4	A	504	A1JB8	O1-C5-C4	3.77	116.62	107.42
4	B	504	A1JB8	O1-C5-C4	3.64	116.31	107.42
4	B	504	A1JB8	C8-N2-N1	3.56	128.86	115.70
2	A	501	MYA	C2-S1-C2M	3.50	112.77	101.87
4	A	504	A1JB8	C3-C20-N7	-3.34	108.71	111.61
2	B	501	MYA	C2-S1-C2M	3.34	112.26	101.87
4	B	504	A1JB8	C13-N5-C14	-3.32	125.08	128.22
4	A	504	A1JB8	C15-C14-N5	2.87	126.19	122.95
4	B	504	A1JB8	C3-C20-N7	-2.87	109.12	111.61
4	A	504	A1JB8	C8-C9-N4	-2.79	107.44	109.64
4	A	504	A1JB8	C14-C8-C9	2.78	109.52	106.31
4	A	504	A1JB8	C16-C17-C18	-2.78	115.69	119.05
4	B	504	A1JB8	C16-C17-C18	-2.59	115.91	119.05
4	A	504	A1JB8	C13-N5-N4	2.59	122.99	119.35
4	B	504	A1JB8	C15-C14-N5	2.57	125.84	122.95
4	A	504	A1JB8	C17-C16-C7	2.40	124.06	120.02
4	B	504	A1JB8	C8-C9-N4	-2.27	107.86	109.64
4	B	504	A1JB8	C17-C16-C7	2.22	123.76	120.02
4	B	504	A1JB8	C14-C8-C9	2.19	108.83	106.31

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	B	504	A1JB8	C6-C19-C18	2.13	124.23	121.24
4	B	504	A1JB8	C13-N5-N4	2.13	122.35	119.35
4	B	504	A1JB8	C1-C2-C3	2.07	131.74	128.16
4	A	504	A1JB8	C24-N8-C2	-2.04	126.30	128.22

There are no chirality outliers.

All (19) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	502	GOL	O1-C1-C2-C3
4	A	504	A1JB8	C3-C4-C5-O1
4	B	504	A1JB8	C3-C4-C5-O1
4	B	504	A1JB8	C9-C10-N3-C11
3	A	503	GOL	O1-C1-C2-C3
3	A	503	GOL	C1-C2-C3-O3
3	B	503	GOL	O1-C1-C2-C3
3	B	503	GOL	C1-C2-C3-O3
3	A	502	GOL	O1-C1-C2-O2
3	A	503	GOL	O1-C1-C2-O2
3	A	503	GOL	O2-C2-C3-O3
4	A	504	A1JB8	C14-C8-N2-N1
3	B	503	GOL	O2-C2-C3-O3
4	A	504	A1JB8	C9-C10-N3-C11
2	A	501	MYA	C6-C7-N8-C9
4	A	504	A1JB8	C3-C20-C21-O2
4	B	504	A1JB8	C14-C8-N2-N1
3	B	503	GOL	O1-C1-C2-O2
3	B	502	GOL	O1-C1-C2-C3

There are no ring outliers.

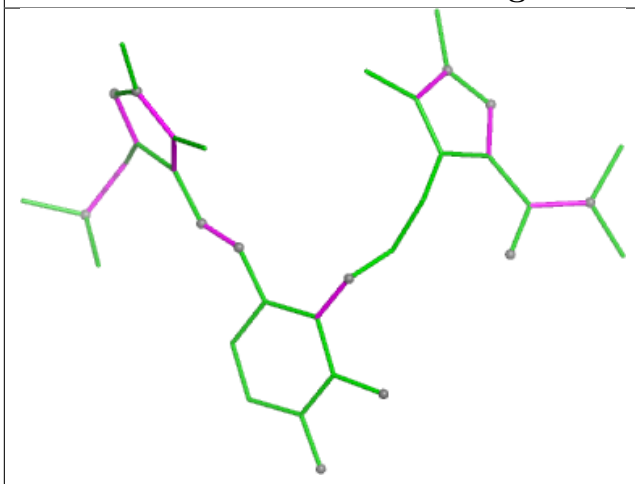
3 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	505	PO4	1	0
4	A	504	A1JB8	2	0
3	A	502	GOL	1	0

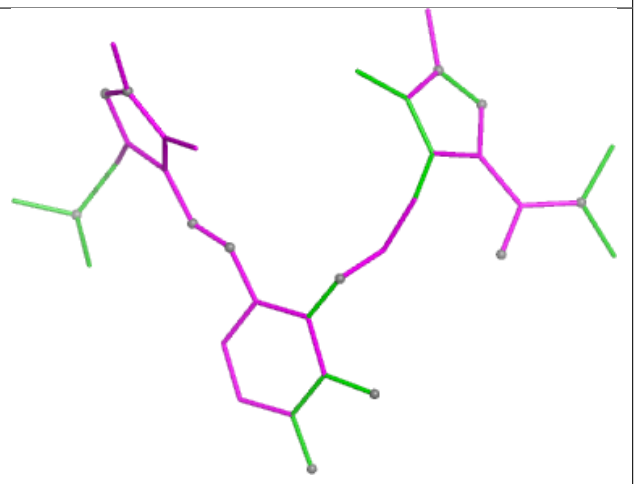
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

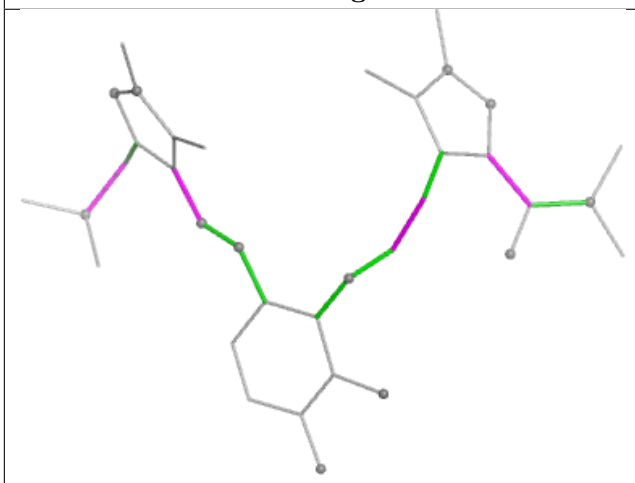
Ligand A1JB8 A 504



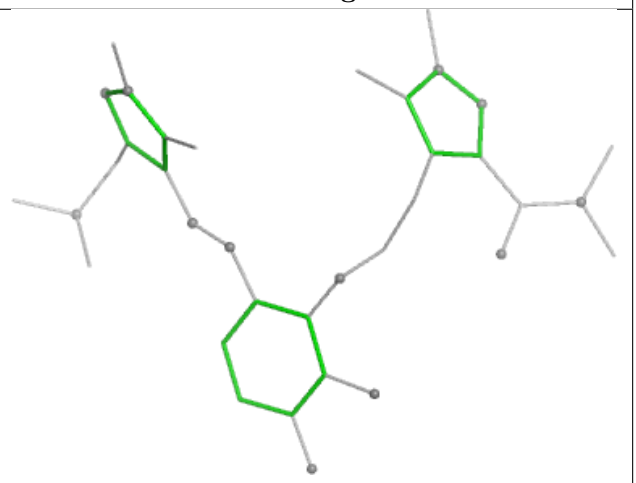
Bond lengths



Bond angles

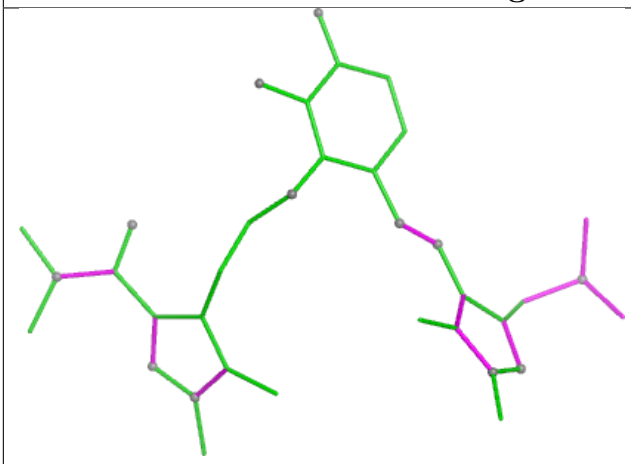


Torsions

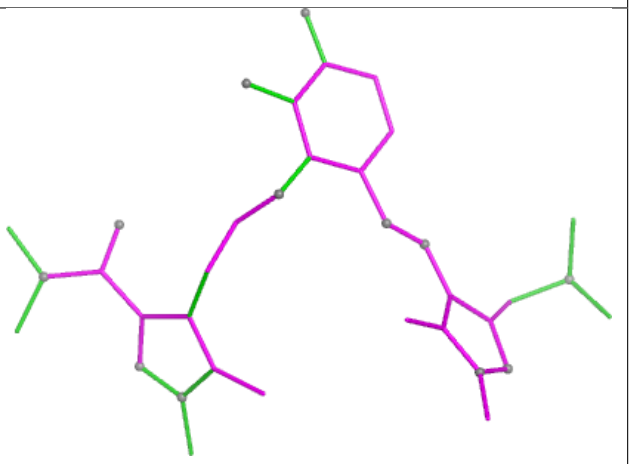


Rings

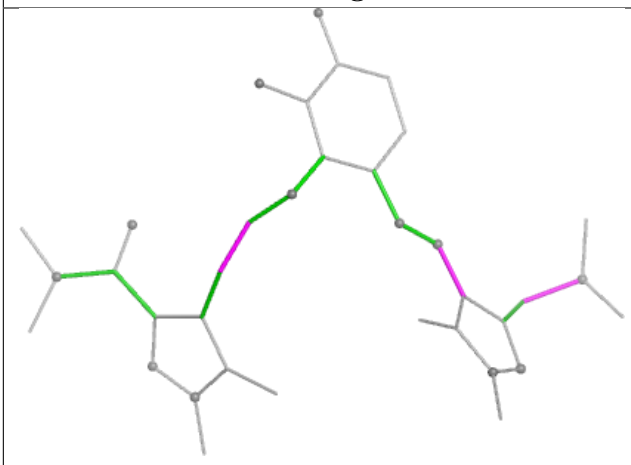
Ligand A1JB8 B 504



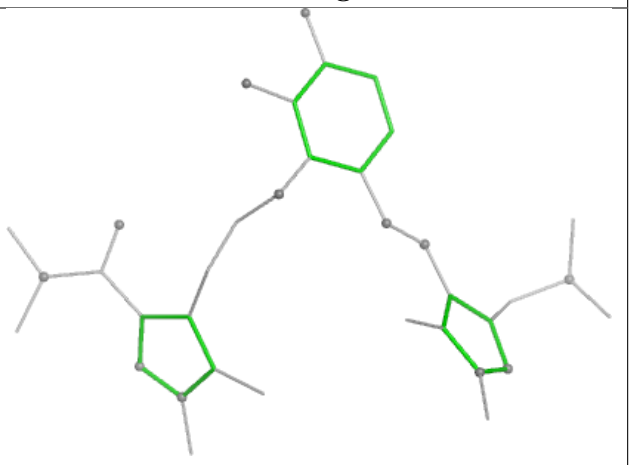
Bond lengths



Bond angles

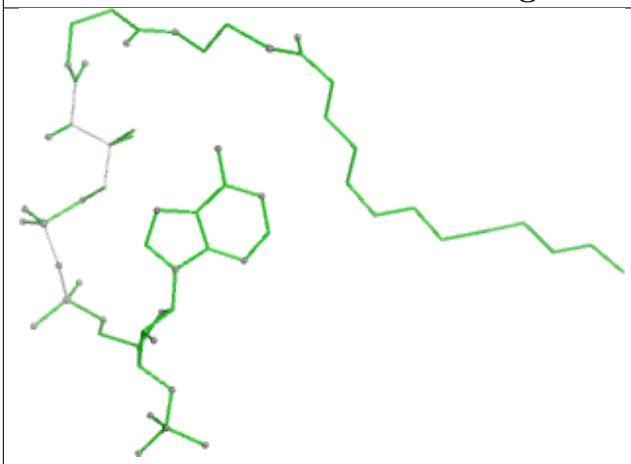


Torsions

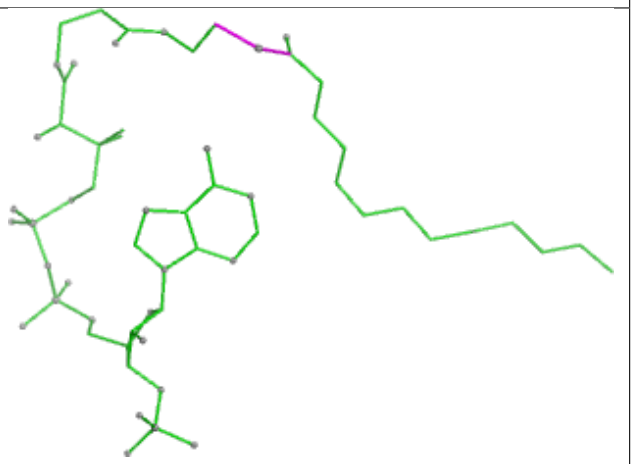


Rings

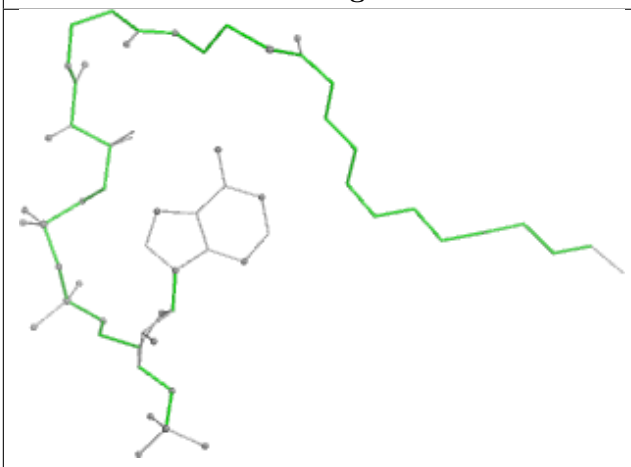
Ligand MYA B 501



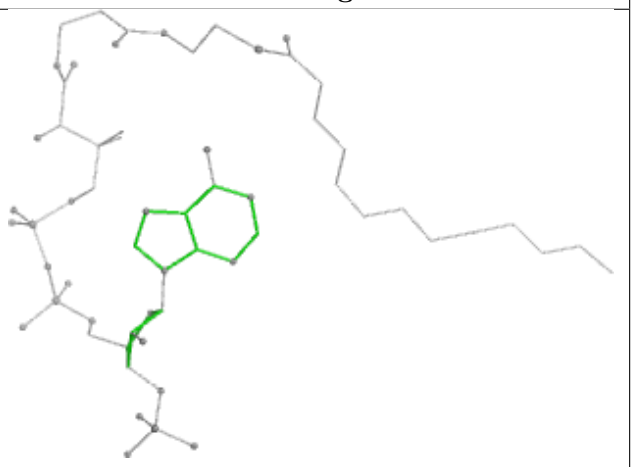
Bond lengths



Bond angles

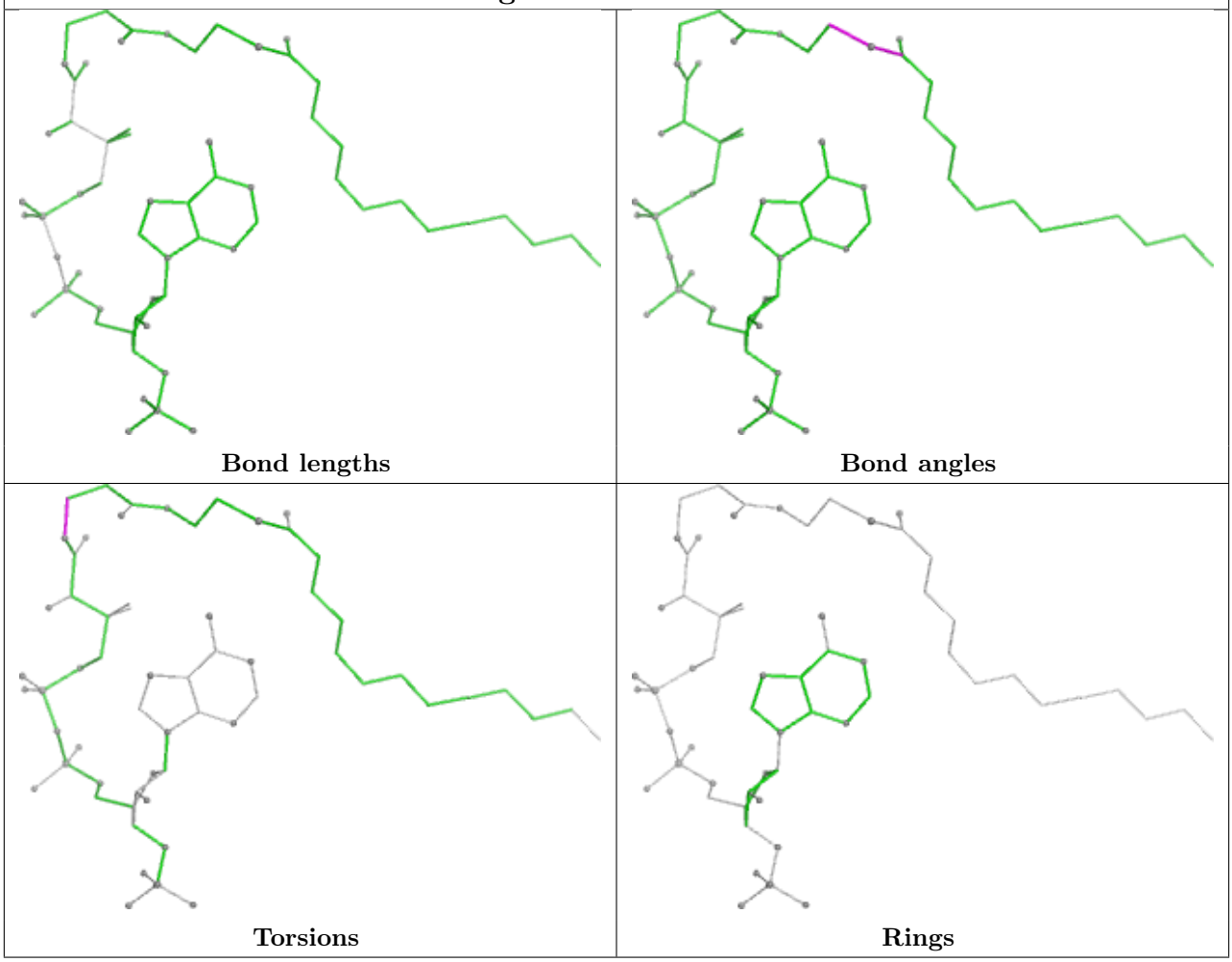


Torsions



Rings

Ligand MYA A 501



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	382/410 (93%)	0.28	18 (4%)	36	46	15, 32, 67, 109	2 (0%)
1	B	382/410 (93%)	0.32	24 (6%)	26	34	14, 28, 71, 107	10 (2%)
All	All	764/820 (93%)	0.30	42 (5%)	30	39	14, 30, 71, 109	12 (1%)

All (42) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	411[A]	PRO	10.6
1	B	413[A]	HIS	7.7
1	B	412[A]	THR	7.4
1	B	410[A]	HIS	7.3
1	A	319	THR	4.2
1	B	409[A]	ASN	3.8
1	A	314	LEU	3.8
1	B	407	ILE	3.6
1	B	327	TYR	3.5
1	B	408[A]	MET	3.3
1	B	307	ILE	3.3
1	B	311	PHE	3.2
1	A	317	ASN	3.0
1	B	314	LEU	3.0
1	B	296	TYR	2.9
1	B	318	MET	2.9
1	B	416	LEU	2.9
1	B	313	HIS	2.9
1	A	131	VAL	2.9
1	A	468	GLY	2.9
1	A	313	HIS	2.8
1	A	323	THR	2.6
1	A	326	LEU	2.5
1	A	307	ILE	2.5

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Mol	Chain	Res	Type	RSRZ
1	B	323	THR	2.5
1	B	306	LEU	2.5
1	A	324	MET	2.4
1	A	318	MET	2.3
1	B	414[A]	LYS	2.3
1	B	187	MET	2.3
1	A	129	GLY	2.3
1	A	316	ARG	2.3
1	A	315	SER	2.3
1	A	327	TYR	2.2
1	A	409	ASN	2.2
1	B	326	LEU	2.2
1	B	131	VAL	2.2
1	A	416	LEU	2.1
1	B	188	PHE	2.1
1	B	315	SER	2.1
1	B	328	ARG	2.1
1	A	312	SER	2.0

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

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

6.3 Carbohydrates (i)

There are no oligosaccharides in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	A1JB8	B	504	36/36	0.72	0.17	38,51,71,78	0
5	PO4	B	507	5/5	0.72	0.16	43,59,99,102	0
4	A1JB8	A	504	36/36	0.74	0.18	36,54,68,78	0
5	PO4	A	507	5/5	0.75	0.15	41,42,67,95	0
5	PO4	B	508	5/5	0.86	0.10	37,46,70,72	0

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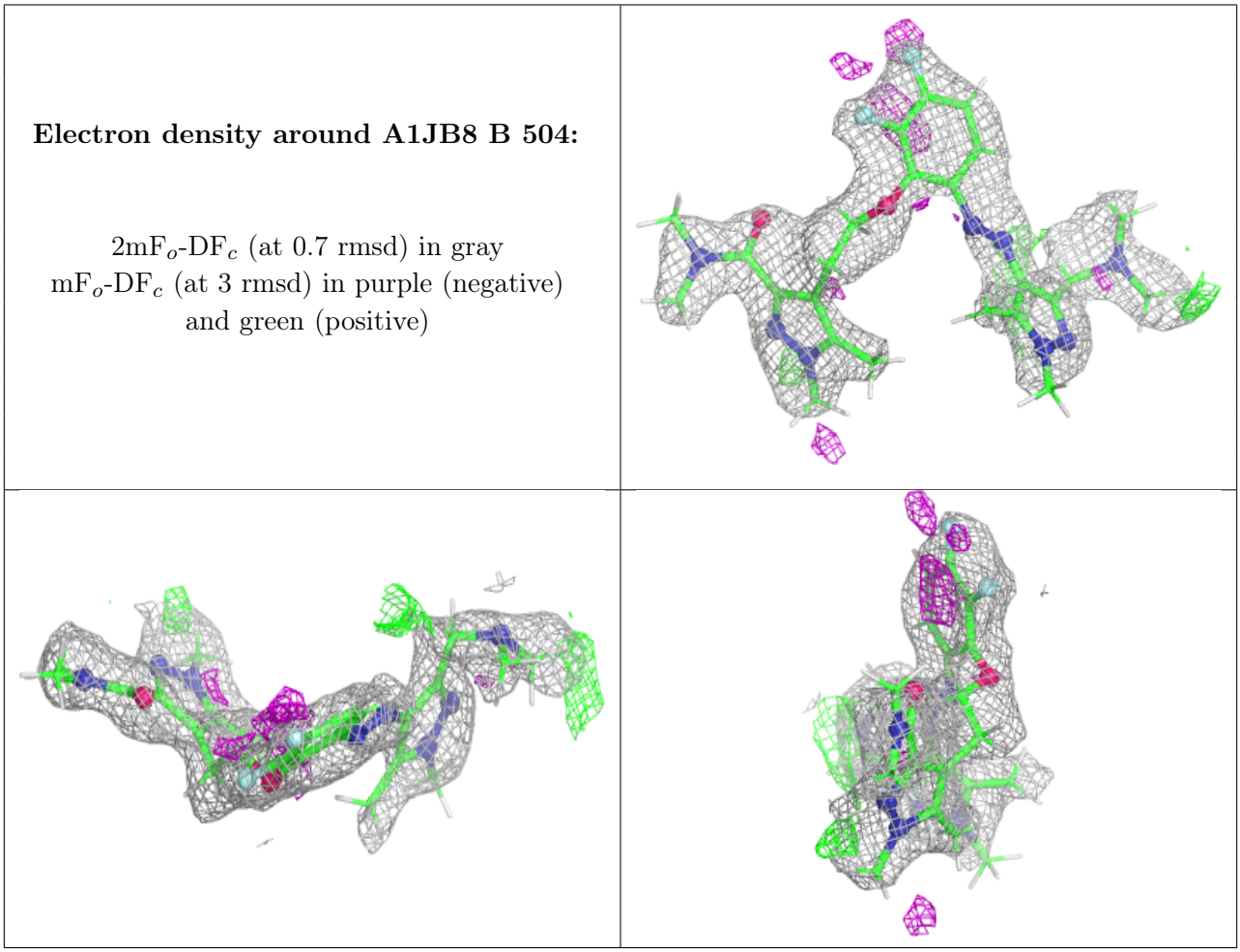
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	GOL	B	503	6/6	0.87	0.13	26,40,52,55	0
3	GOL	A	503	6/6	0.87	0.11	26,39,44,49	0
3	GOL	A	502	6/6	0.91	0.09	24,34,46,46	0
5	PO4	A	505	5/5	0.93	0.09	30,36,39,44	0
2	MYA	A	501	63/63	0.93	0.08	16,27,36,41	0
5	PO4	B	505	5/5	0.94	0.07	22,32,39,40	0
3	GOL	B	502	6/6	0.94	0.07	17,27,32,36	0
2	MYA	B	501	63/63	0.94	0.07	11,23,33,41	0
5	PO4	B	506	5/5	0.95	0.07	24,28,33,36	0
5	PO4	A	506	5/5	0.96	0.06	26,27,33,34	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

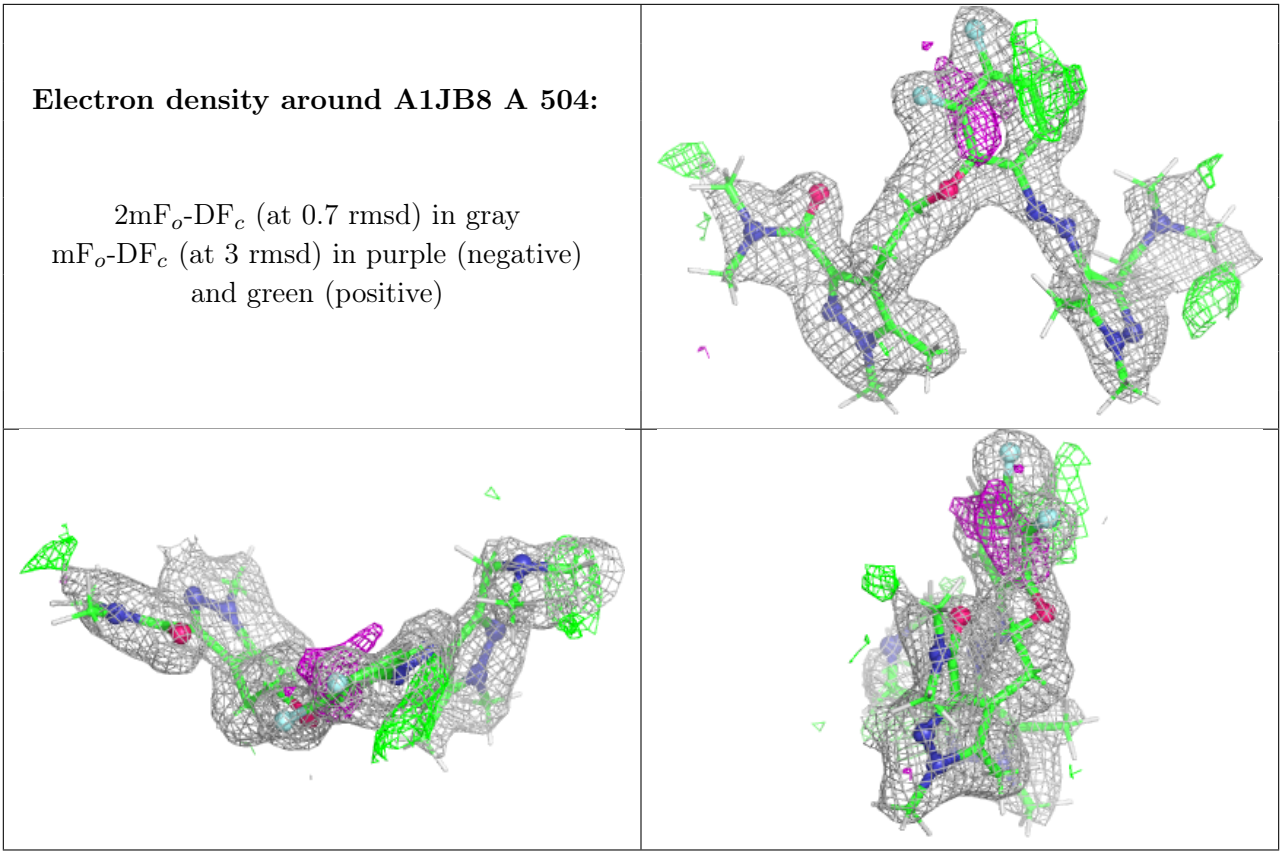
Electron density around A1JB8 B 504:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



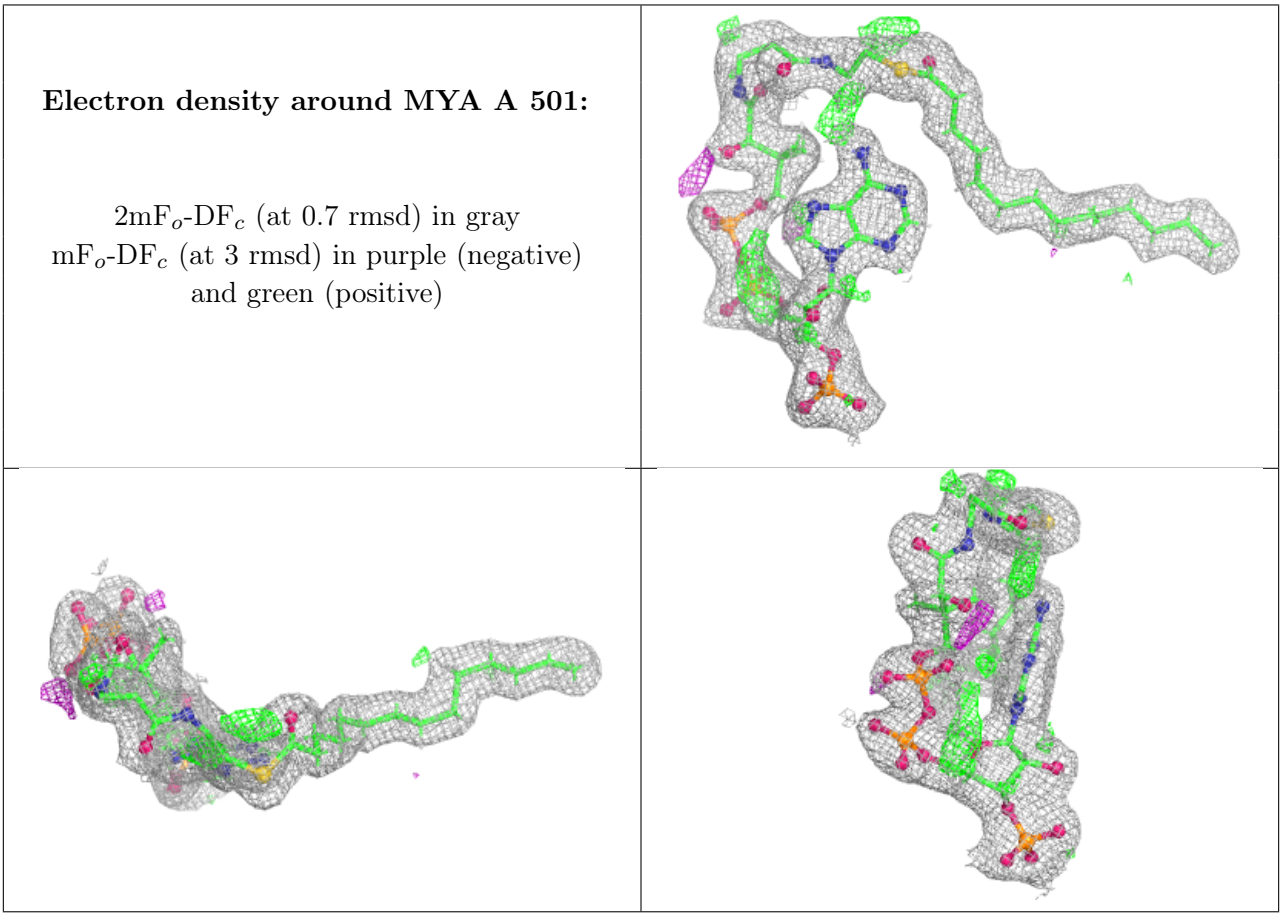
Electron density around A1JB8 A 504:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



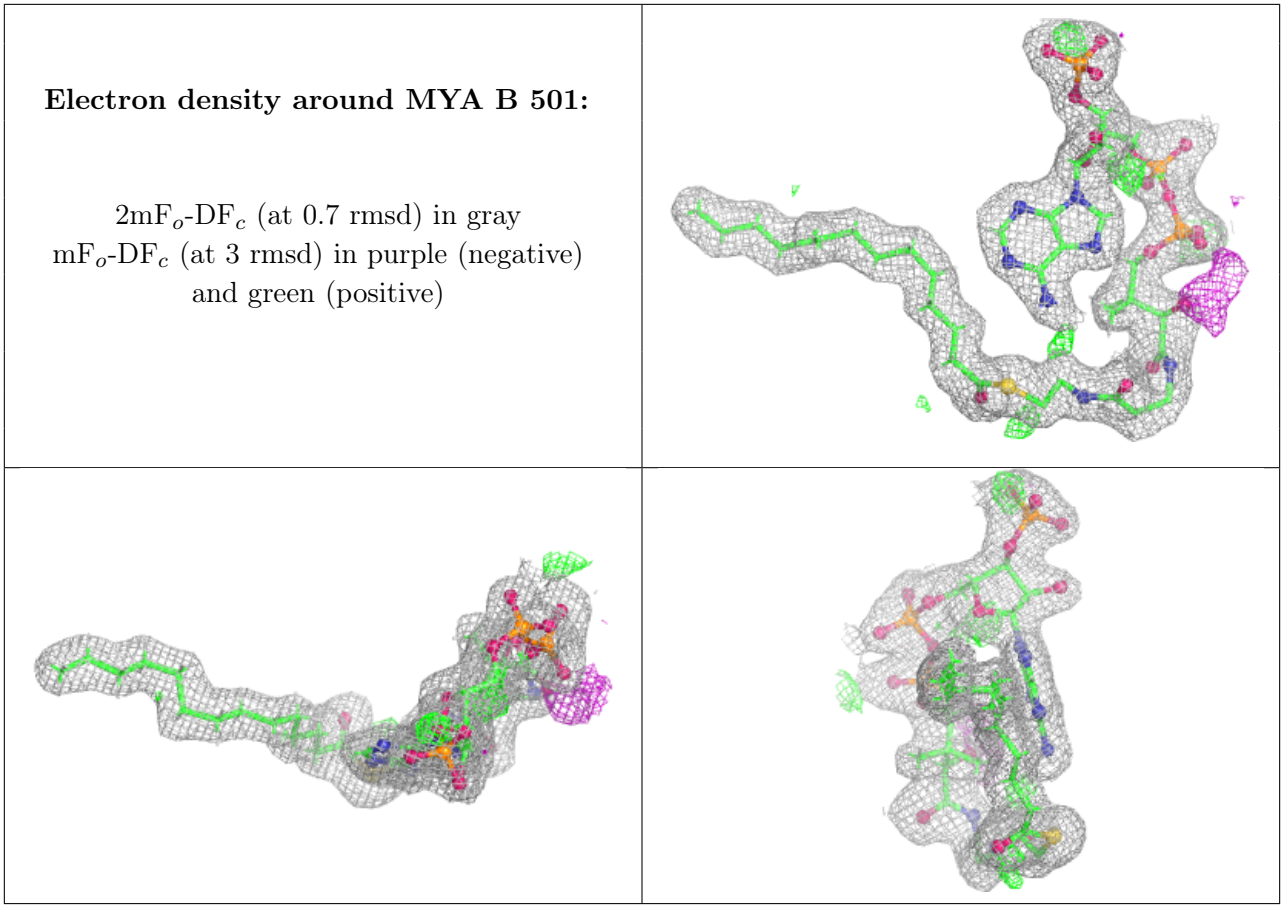
Electron density around MYA A 501:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



Electron density around MYA B 501:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



6.5 Other polymers

There are no such residues in this entry.