



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 11:25 PM UTC

PDB ID : 4A30 / pdb_00004a30
Title : CRYSTAL STRUCTURE OF LEISHMANIA MAJOR N-MYRISTOYLTRANSFERASE (NMT) WITH BOUND MYRISTOYL-COA AND A PYRAZOLE SULPHONAMIDE LIGAND
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Deposited on : 2011-09-29
Resolution : 1.50 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](#) ①) were used in the production of this report:

MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
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	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

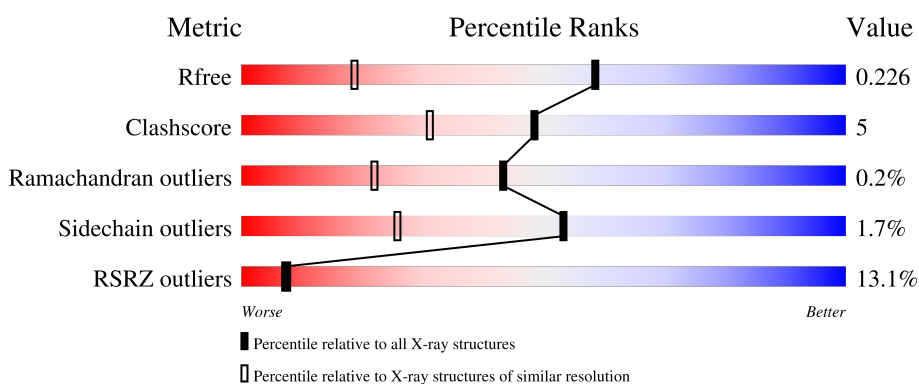
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.50 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	4037 (1.50-1.50)
Clashscore	190562	4235 (1.50-1.50)
Ramachandran outliers	187476	4153 (1.50-1.50)
Sidechain outliers	187428	4150 (1.50-1.50)
RSRZ outliers	180081	4039 (1.50-1.50)

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 $\leq 5\%$. 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	438	12% 79% 13% 6%

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 3708 atoms, of which 0 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.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	411	Total	C	N	O	S	0	0	0
			3342	2163	560	604	15			

There are 21 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-16	MET	-	expression tag	UNP Q4Q5S8
A	-15	GLY	-	expression tag	UNP Q4Q5S8
A	-14	SER	-	expression tag	UNP Q4Q5S8
A	-13	SER	-	expression tag	UNP Q4Q5S8
A	-12	HIS	-	expression tag	UNP Q4Q5S8
A	-11	HIS	-	expression tag	UNP Q4Q5S8
A	-10	HIS	-	expression tag	UNP Q4Q5S8
A	-9	HIS	-	expression tag	UNP Q4Q5S8
A	-8	HIS	-	expression tag	UNP Q4Q5S8
A	-7	HIS	-	expression tag	UNP Q4Q5S8
A	-6	SER	-	expression tag	UNP Q4Q5S8
A	-5	SER	-	expression tag	UNP Q4Q5S8
A	-4	GLY	-	expression tag	UNP Q4Q5S8
A	-3	ARG	-	expression tag	UNP Q4Q5S8
A	-2	GLU	-	expression tag	UNP Q4Q5S8
A	-1	ASN	-	expression tag	UNP Q4Q5S8
A	0	LEU	-	expression tag	UNP Q4Q5S8
A	1	TYR	-	expression tag	UNP Q4Q5S8
A	2	PHE	-	expression tag	UNP Q4Q5S8
A	3	GLN	-	expression tag	UNP Q4Q5S8
A	4	GLY	-	expression tag	UNP Q4Q5S8

- Molecule 2 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

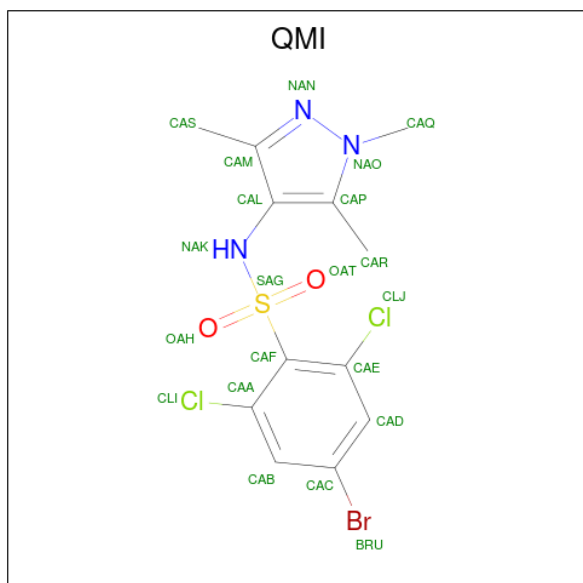
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	Cl	0	0
			1	1		

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



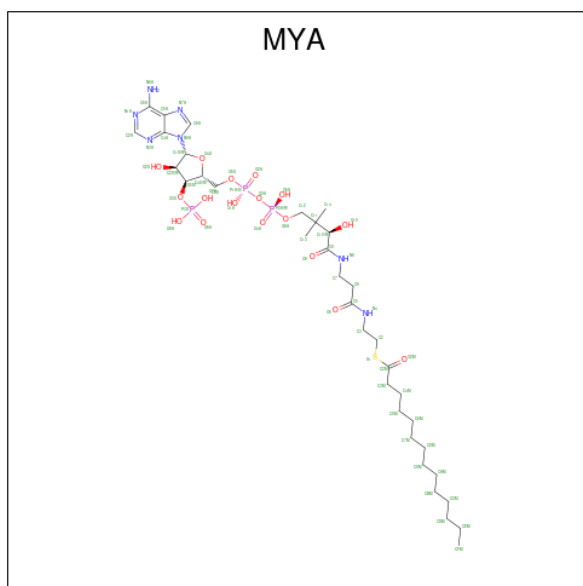
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			6	3	3		

- Molecule 4 is 4-BROMO-2,6-DICHLORO-N-(1,3,5-TRIMETHYL-1H-PYRAZOL-4-YL)BENZENESULFONAMIDE (CCD ID: QMI) (formula: $C_{12}H_{12}BrCl_2N_3O_2S$).



Mol	Chain	Residues	Atoms							ZeroOcc	AltConf
4	A	1	Total	Br	C	Cl	N	O	S	0	0
			21	1	12	2	3	2	1		

- Molecule 5 is TETRADECANOYL-COA (CCD ID: MYA) (formula: $C_{35}H_{62}N_7O_{17}P_3S$).

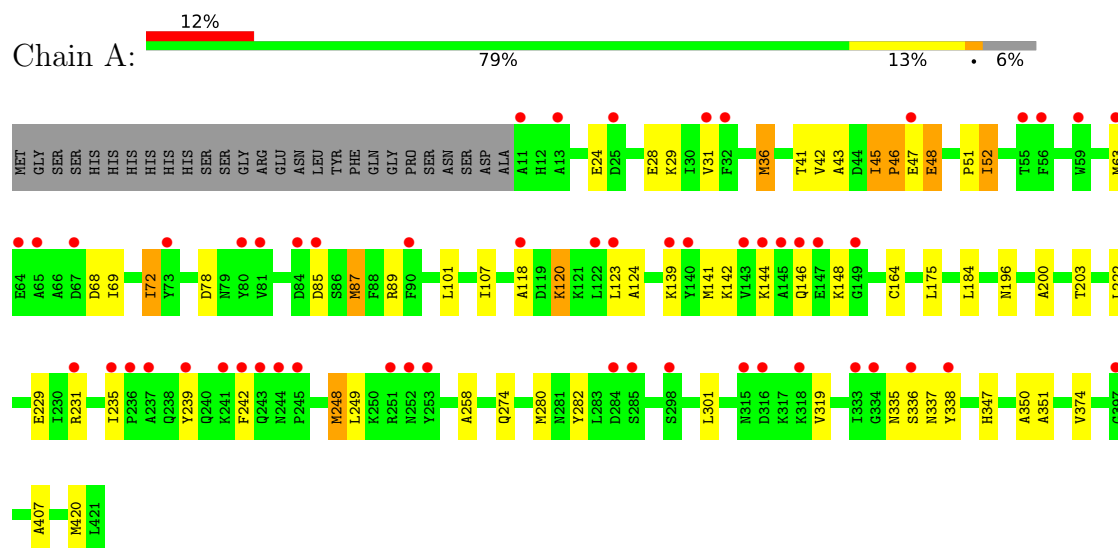


Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
5	A	1	Total	C	N	O	P	S	0	0
			63	35	7	17	3	1		

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	275	Total	O	0	0
			275	275		

• Molecule 1: GLYCYLPEPTIDE N-TETRADECANOYLTRANSFERASE



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	48.64Å 90.68Å 53.51Å 90.00° 114.02° 90.00°	Depositor
Resolution (Å)	19.95 – 1.50 19.95 – 2.30	Depositor EDS
% Data completeness (in resolution range)	97.2 (19.95-1.50) 94.8 (19.95-2.30)	Depositor EDS
R_{merge}	0.04	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.08 (at 2.30Å)	Xtriage
Refinement program	REFMAC 5.5.0109	Depositor
R, R_{free}	0.187 , 0.221 0.225 , 0.226	Depositor DCC
R_{free} test set	1312 reflections (7.32%)	wwPDB-VP
Wilson B-factor (Å ²)	25.4	Xtriage
Anisotropy	0.016	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.39 , 42.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.033 for h,-k,-h-l	Xtriage
F_o, F_c correlation	0.91	EDS
Total number of atoms	3708	wwPDB-VP
Average B, all atoms (Å ²)	20.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.47% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ 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: MYA, GOL, CL, QMI

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	1.63	23/3441 (0.7%)	1.38	15/4684 (0.3%)

All (23) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	85	ASP	CG-OD1	12.32	1.48	1.25
1	A	89	ARG	CZ-NH2	-8.24	1.22	1.33
1	A	85	ASP	CG-OD2	-7.55	1.11	1.25
1	A	85	ASP	CB-CG	7.43	1.70	1.52
1	A	107	ILE	N-CA	7.24	1.51	1.46
1	A	69	ILE	CA-CB	-6.52	1.46	1.54
1	A	87	MET	SD-CE	-6.42	1.63	1.79
1	A	42	VAL	CA-CB	6.33	1.61	1.54
1	A	46	PRO	N-CA	-6.13	1.40	1.47
1	A	42	VAL	N-CA	-5.80	1.40	1.46
1	A	374	VAL	CA-CB	5.75	1.61	1.55
1	A	350	ALA	N-CA	5.70	1.52	1.46
1	A	45	ILE	CA-C	-5.60	1.47	1.52
1	A	46	PRO	C-O	5.54	1.31	1.23
1	A	351	ALA	CA-CB	-5.44	1.43	1.53
1	A	407	ALA	CA-CB	5.43	1.61	1.53
1	A	336	SER	CA-CB	5.35	1.62	1.53
1	A	52	ILE	CG1-CD1	-5.35	1.30	1.51
1	A	196	ASN	CA-CB	5.23	1.61	1.53
1	A	139	LYS	C-O	5.18	1.30	1.24
1	A	282	TYR	C-O	5.14	1.30	1.24
1	A	69	ILE	N-CA	5.13	1.52	1.46
1	A	249	LEU	N-CA	5.09	1.52	1.46

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	89	ARG	NE-CZ-NH2	-9.66	110.50	119.20
1	A	85	ASP	CB-CG-OD2	-8.53	98.78	118.40
1	A	258	ALA	CA-C-N	8.18	128.23	119.89
1	A	258	ALA	C-N-CA	8.18	128.23	119.89
1	A	89	ARG	NE-CZ-NH1	7.77	129.27	121.50
1	A	85	ASP	CB-CG-OD1	7.25	135.09	118.40
1	A	222	LEU	N-CA-C	-6.07	105.90	113.55
1	A	72	ILE	N-CA-C	-5.90	104.98	110.53
1	A	47	GLU	N-CA-C	5.83	118.59	111.82
1	A	68	ASP	N-CA-C	-5.78	105.06	111.36
1	A	78	ASP	N-CA-C	5.46	119.95	113.28
1	A	248	MET	N-CA-C	-5.29	105.52	111.28
1	A	85	ASP	CA-CB-CG	-5.17	107.43	112.60
1	A	301	LEU	CA-C-N	-5.15	113.17	120.49
1	A	301	LEU	C-N-CA	-5.15	113.17	120.49

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3342	0	3255	37	0
2	A	1	0	0	0	0
3	A	6	0	7	0	0
4	A	21	0	12	0	0
5	A	63	0	58	0	0
6	A	275	0	0	6	0
All	All	3708	0	3332	37	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 5.

All (37) 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:63:MET:SD	1:A:72:ILE:HD12	1.61	1.39
1:A:63:MET:SD	1:A:72:ILE:CD1	2.27	1.21
1:A:63:MET:HE2	1:A:101:LEU:CD1	1.94	0.96
1:A:63:MET:HE2	1:A:101:LEU:HD12	1.48	0.93
1:A:31:VAL:HA	1:A:141:MET:HE2	1.51	0.93
1:A:124:ALA:HB1	1:A:184:LEU:HD11	1.73	0.69
1:A:31:VAL:CA	1:A:141:MET:HE2	2.22	0.68
1:A:274:GLN:NE2	1:A:319:VAL:H	1.91	0.67
1:A:41:THR:HG22	1:A:43:ALA:H	1.60	0.67
1:A:229:GLU:HG2	1:A:338:TYR:HE2	1.61	0.65
1:A:63:MET:SD	1:A:72:ILE:HD11	2.34	0.65
1:A:274:GLN:HE22	1:A:319:VAL:H	1.45	0.63
1:A:347:HIS:HE1	6:A:2234:HOH:O	1.84	0.60
1:A:141:MET:SD	1:A:144:LYS:HD2	2.41	0.60
1:A:142:LYS:NZ	6:A:2120:HOH:O	2.36	0.57
1:A:146:GLN:HG2	6:A:2124:HOH:O	2.04	0.57
1:A:24:GLU:O	1:A:28:GLU:HG3	2.07	0.55
1:A:123:LEU:HD13	1:A:175:LEU:HD21	1.88	0.55
1:A:63:MET:CE	1:A:72:ILE:HD12	2.36	0.51
1:A:203:THR:CG2	1:A:420:MET:HG3	2.41	0.50
1:A:48:GLU:HG2	6:A:2035:HOH:O	2.11	0.50
1:A:335:ASN:HD21	1:A:337:ASN:HB2	1.77	0.49
1:A:63:MET:HE2	1:A:101:LEU:HD13	1.89	0.49
1:A:203:THR:HG21	1:A:420:MET:HG3	1.94	0.49
1:A:235:ILE:HG22	1:A:239:TYR:HB2	1.96	0.48
1:A:87:MET:HE1	1:A:231:ARG:HB2	1.97	0.46
1:A:120:LYS:HD3	6:A:2049:HOH:O	2.16	0.44
1:A:235:ILE:CG2	1:A:239:TYR:HB2	2.48	0.44
1:A:45:ILE:O	1:A:46:PRO:C	2.60	0.43
1:A:148:LYS:NZ	6:A:2129:HOH:O	2.52	0.42
1:A:123:LEU:HB3	1:A:175:LEU:HD22	2.00	0.42
1:A:36:MET:HE3	1:A:36:MET:HB3	1.96	0.42
1:A:280:MET:HE2	1:A:280:MET:HA	2.03	0.41
1:A:335:ASN:ND2	1:A:337:ASN:H	2.19	0.41
1:A:164:CYS:O	1:A:200:ALA:HA	2.20	0.41
1:A:242:PHE:CD2	1:A:248:MET:HG3	2.56	0.40
1:A:31:VAL:HB	1:A:141:MET:CE	2.51	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	409/438 (93%)	397 (97%)	11 (3%)	1 (0%)	43	22

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	118	ALA

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	357/385 (93%)	351 (98%)	6 (2%)	53	26

All (6) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	29	LYS
1	A	36	MET
1	A	48	GLU
1	A	51	PRO
1	A	52	ILE
1	A	120	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (10) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	18	GLN
1	A	91	ASN
1	A	162	HIS
1	A	193	ASN
1	A	216	GLN
1	A	243	GLN
1	A	252	ASN
1	A	274	GLN
1	A	335	ASN
1	A	347	HIS

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 4 ligands modelled in this entry, 1 is monoatomic - leaving 3 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	$\# Z > 2$
5	MYA	A	1425	-	63,65,65	1.48	10 (15%)	85,91,91	1.48	17 (20%)
4	QMI	A	1424	-	21,22,22	2.26	3 (14%)	31,34,34	2.96	15 (48%)
3	GOL	A	1423	-	5,5,5	0.88	0	5,5,5	1.44	1 (20%)

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
5	MYA	A	1425	-	-	1/64/80/80	0/3/3/3
4	QMI	A	1424	-	-	0/11/11/11	0/2/2/2
3	GOL	A	1423	-	-	0/4/4/4	-

All (13) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1424	QMI	CAF-SAG	-6.55	1.68	1.78
4	A	1424	QMI	CAL-CAP	5.98	1.44	1.36
5	A	1425	MYA	P1A-O3A	5.81	1.65	1.59
5	A	1425	MYA	C3M-C2M	3.21	1.54	1.50
5	A	1425	MYA	P2A-O5A	-3.16	1.40	1.55
4	A	1424	QMI	CAL-NAK	-3.04	1.39	1.42
5	A	1425	MYA	C3X-C4X	-2.81	1.45	1.52
5	A	1425	MYA	P3X-O3X	2.78	1.64	1.59
5	A	1425	MYA	C8A-N9A	-2.36	1.33	1.37
5	A	1425	MYA	O4X-C1X	-2.26	1.36	1.42
5	A	1425	MYA	P2A-O3A	-2.21	1.57	1.59
5	A	1425	MYA	C2A-N3A	2.04	1.37	1.33
5	A	1425	MYA	O2M-C2M	2.01	1.24	1.21

All (33) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	1424	QMI	CAL-CAP-NAO	-7.00	102.08	104.79
4	A	1424	QMI	CAD-CAE-CAF	6.10	127.29	121.35
4	A	1424	QMI	CAA-CAF-CAE	-5.84	111.62	117.62
4	A	1424	QMI	OAT-SAG-OAH	-5.53	112.80	119.52
5	A	1425	MYA	N3A-C2A-N1A	-5.07	120.90	128.58
4	A	1424	QMI	CAD-CAE-CLJ	-4.38	111.28	118.45
4	A	1424	QMI	CAS-CAM-CAL	4.18	134.24	128.75
5	A	1425	MYA	C5A-C4A-N3A	-3.83	121.44	126.72
4	A	1424	QMI	CAA-CAF-SAG	3.71	125.79	123.20
4	A	1424	QMI	CAB-CAA-CLI	-3.34	112.99	118.45
4	A	1424	QMI	CAP-CAL-NAK	-3.01	122.64	127.94
4	A	1424	QMI	CAR-CAP-CAL	2.97	132.97	129.47
5	A	1425	MYA	C4A-C5A-N7A	-2.78	107.41	110.58
4	A	1424	QMI	BRU-CAC-CAD	-2.70	115.42	119.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	1425	MYA	O5A-P2A-O3A	2.67	114.49	107.27
5	A	1425	MYA	C2A-N3A-C4A	2.57	118.11	111.83
5	A	1425	MYA	O3A-P2A-O4A	-2.54	103.07	110.70
5	A	1425	MYA	C3X-C2X-C1X	-2.47	94.46	99.89
4	A	1424	QMI	CAB-CAA-CAF	2.44	123.72	121.35
3	A	1423	GOL	O2-C2-C3	-2.41	99.18	109.18
5	A	1425	MYA	C2X-C3X-C4X	2.35	107.36	103.24
5	A	1425	MYA	P3X-O3X-C3X	-2.35	117.17	123.43
5	A	1425	MYA	C2A-N1A-C6A	2.34	122.57	118.73
5	A	1425	MYA	O6A-C12-C11	-2.32	106.82	110.55
5	A	1425	MYA	N9A-C8A-N7A	-2.30	110.67	113.94
5	A	1425	MYA	O2M-C2M-C3M	-2.24	121.39	123.98
5	A	1425	MYA	C5A-N7A-C8A	2.15	106.82	103.45
5	A	1425	MYA	O5A-P2A-O4A	2.09	122.17	112.44
4	A	1424	QMI	CAB-CAC-CAD	2.08	124.48	121.53
5	A	1425	MYA	O5-C5-N4	-2.06	118.99	123.03
5	A	1425	MYA	C4M-C3M-C2M	-2.04	107.78	112.27
4	A	1424	QMI	CAM-NAN-NAO	2.02	107.80	105.55
4	A	1424	QMI	CAE-CAD-CAC	-2.01	115.48	118.25

There are no chirality outliers.

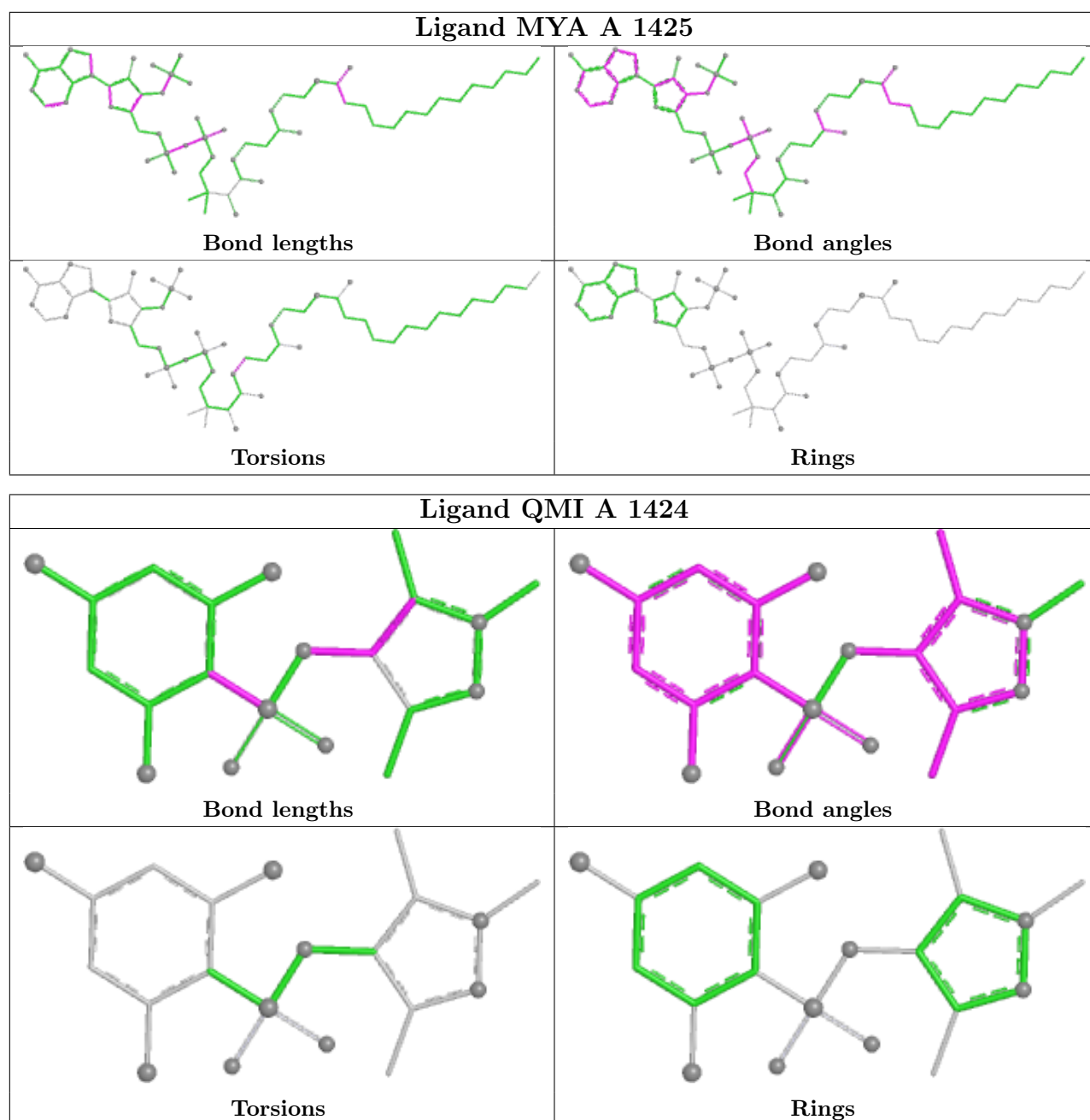
All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	1425	MYA	C6-C7-N8-C9

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [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	411/438 (93%)	1.07	54 (13%) 7 7	9, 18, 38, 50	2 (0%)

All (54) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	63	MET	5.5
1	A	242	PHE	4.7
1	A	245	PRO	4.1
1	A	65	ALA	3.8
1	A	55	THR	3.6
1	A	140	TYR	3.5
1	A	85	ASP	3.5
1	A	334	GLY	3.5
1	A	236	PRO	3.5
1	A	147	GLU	3.4
1	A	64	GLU	3.4
1	A	31	VAL	3.3
1	A	81	VAL	3.2
1	A	397	GLY	3.1
1	A	336	SER	3.1
1	A	90	PHE	3.1
1	A	243	GLN	3.1
1	A	244	ASN	3.0
1	A	241	LYS	3.0
1	A	143	VAL	2.9
1	A	235	ILE	2.9
1	A	239	TYR	2.8
1	A	146	GLN	2.7
1	A	11	ALA	2.6
1	A	118	ALA	2.6
1	A	315	ASN	2.6
1	A	122	LEU	2.6

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Mol	Chain	Res	Type	RSRZ
1	A	251	ARG	2.6
1	A	237	ALA	2.5
1	A	252	ASN	2.5
1	A	298	SER	2.4
1	A	144	LYS	2.4
1	A	284	ASP	2.4
1	A	32	PHE	2.4
1	A	47	GLU	2.4
1	A	56	PHE	2.4
1	A	231	ARG	2.3
1	A	338	TYR	2.3
1	A	13	ALA	2.3
1	A	316	ASP	2.3
1	A	145	ALA	2.2
1	A	149	GLY	2.2
1	A	333	ILE	2.2
1	A	318	LYS	2.2
1	A	25	ASP	2.2
1	A	253	TYR	2.1
1	A	67	ASP	2.1
1	A	285	SER	2.1
1	A	123	LEU	2.1
1	A	59	TRP	2.1
1	A	73	TYR	2.1
1	A	80	TYR	2.1
1	A	84	ASP	2.1
1	A	139	LYS	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,

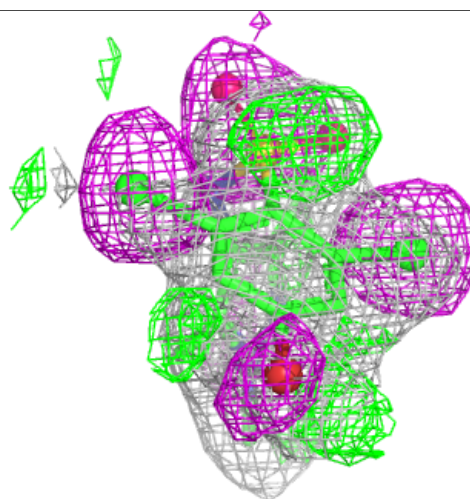
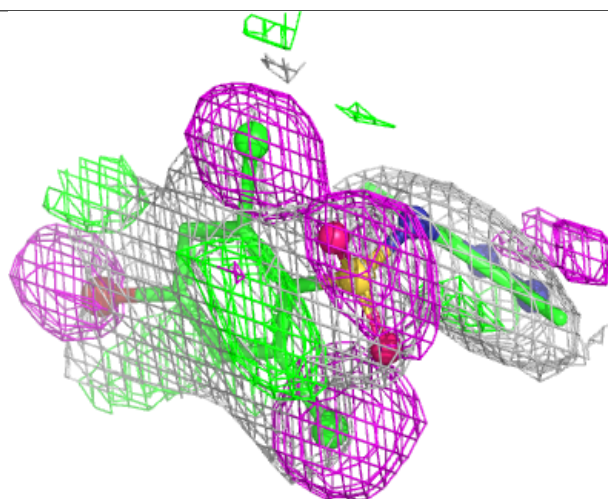
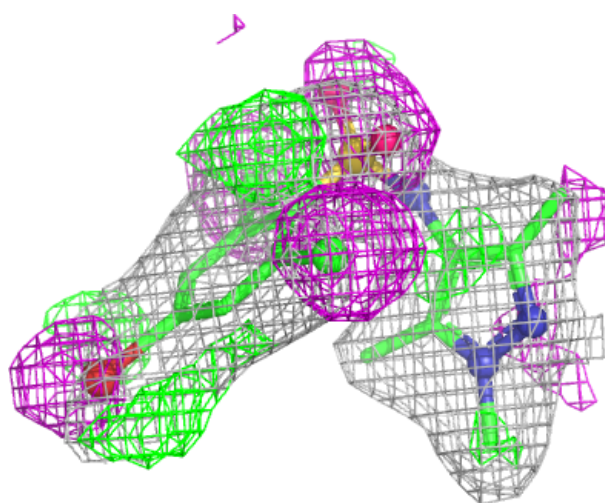
median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
4	QMI	A	1424	21/21	0.54	0.21	14,17,23,34	1
3	GOL	A	1423	6/6	0.78	0.12	20,27,29,31	0
2	CL	A	1422	1/1	0.80	0.12	53,53,53,53	0
5	MYA	A	1425	63/63	0.93	0.08	9,15,20,23	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.

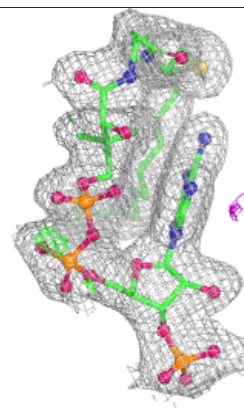
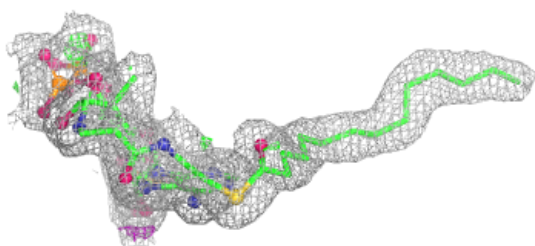
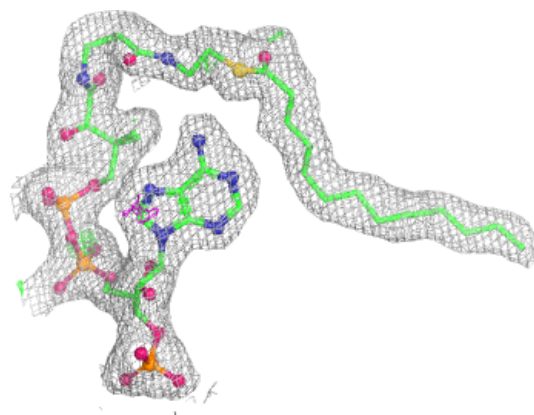
Electron density around QMI A 1424:

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 1425:

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



6.5 Other polymers [i](#)

There are no such residues in this entry.