



# Full wwPDB X-ray Structure Validation Report ⓘ

Aug 28, 2023 – 07:22 AM EDT

PDB ID : 3JTK  
Title : Crystal Structure of human type-I N-myristoyltransferase with bound myristoyl-CoA and inhibitor DDD90055  
Authors : Qiu, W.; Hutchinson, A.; Wernimont, A.; Lin, Y.-H.; Kania, A.; Ravichandran, M.; Kozieradzki, I.; Cossar, D.; Schapira, M.; Arrowsmith, C.H.; Bountra, C.; Weigelt, J.; Edwards, A.M.; Wyatt, P.G.; Ferguson, M.A.J.; Frearson, J.A.; Brand, S.Y.; Robinson, D.A.; Bochkarev, A.; Hui, R.; Structural Genomics Consortium (SGC)  
Deposited on : 2009-09-12  
Resolution : 1.61 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](mailto: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>.

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

MolProbity : 4.02b-467  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
Xtrriage (Phenix) : 1.13  
EDS : 2.35  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)

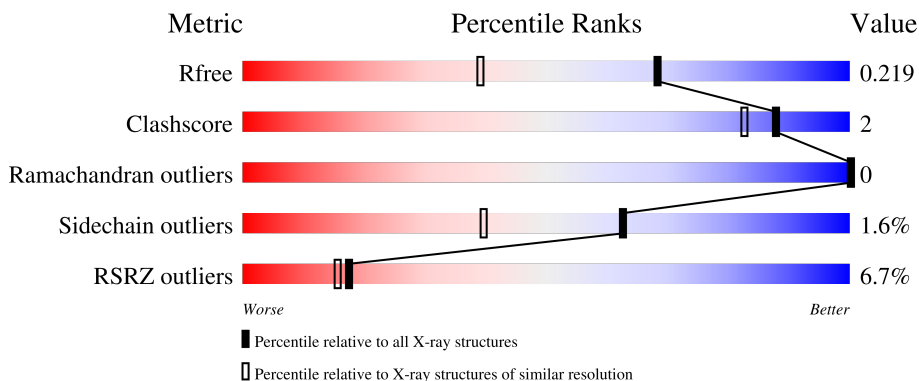
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

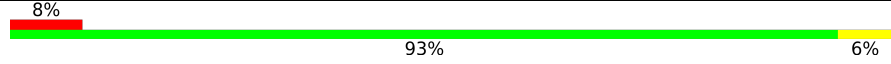
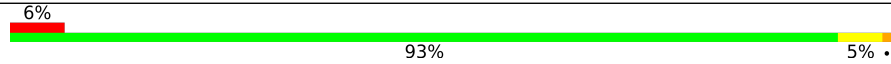
The reported resolution of this entry is 1.61 Å.

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))
$R_{free}$	130704	4693 (1.64-1.60)
Clashscore	141614	5002 (1.64-1.60)
Ramachandran outliers	138981	4888 (1.64-1.60)
Sidechain outliers	138945	4887 (1.64-1.60)
RSRZ outliers	127900	4609 (1.64-1.60)

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  $\geq 3$ , 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	383	
1	B	383	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard

Ideal geometry (proteins)	: Engh & Huber (2001)
Ideal geometry (DNA, RNA)	: Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	: 2.35

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
2	MYA	A	1001	X	-	-	-
2	MYA	B	2001	X	-	-	-

## 2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 7285 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.

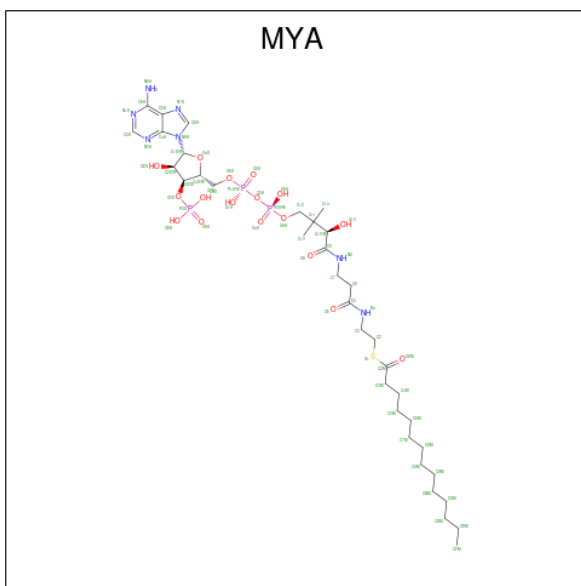
- Molecule 1 is a protein called Glycylpeptide N-tetradecanoyltransferase 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	382	3132	2034	525	557	16	0	4	0
1	B	378	3129	2033	528	552	16	0	6	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	114	GLY	-	expression tag	UNP P30419
B	114	GLY	-	expression tag	UNP P30419

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



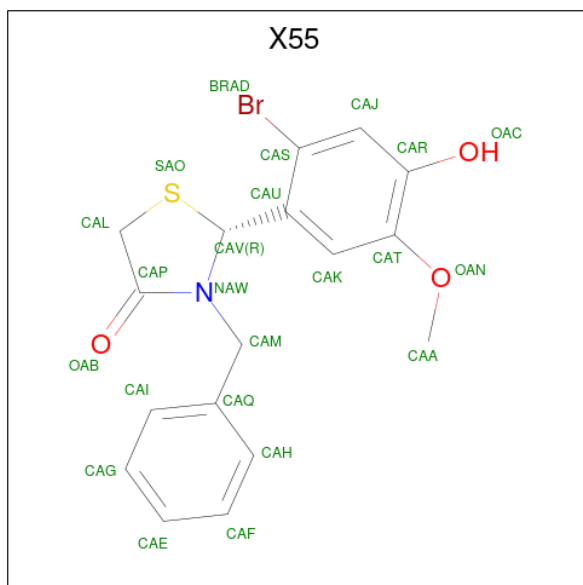
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	C	N	O	P			S
2	A	1	63	35	7	17	3	1	0	0

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

- Molecule 3 is (2R)-3-benzyl-2-(2-bromo-4-hydroxy-5-methoxyphenyl)-1,3-thiazolidin-4-one (three-letter code: X55) (formula: C<sub>17</sub>H<sub>16</sub>BrNO<sub>3</sub>S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	Br	C	N	O			S
3	A	1	23	1	17	1	3	1	0	0

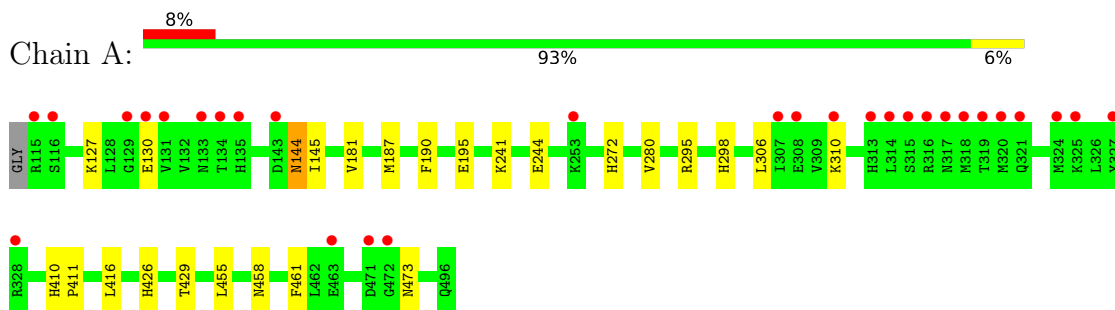
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	418	Total	O	0	0
			418	418		
4	B	457	Total	O	0	0
			457	457		

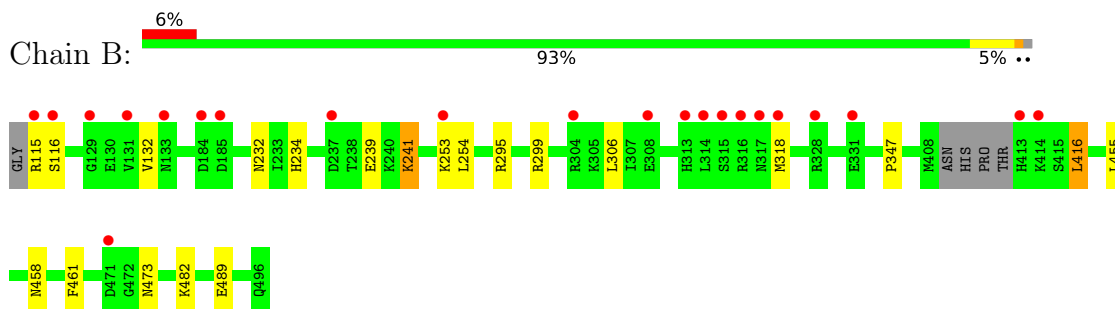
### 3 Residue-property plots [i](#)

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 2 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	58.25Å 79.02Å 178.38Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.76 – 1.61 19.76 – 1.61	Depositor EDS
% Data completeness (in resolution range)	100.0 (19.76-1.61) 98.4 (19.76-1.61)	Depositor EDS
$R_{merge}$	0.07	Depositor
$R_{sym}$	0.04	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.92 (at 1.60Å)	Xtrriage
Refinement program	REFMAC 5.5.0072	Depositor
R, $R_{free}$	0.198 , 0.221 0.195 , 0.219	Depositor DCC
$R_{free}$ test set	5324 reflections (4.99%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	17.9	Xtrriage
Anisotropy	0.063	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.36 , 43.3	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	7285	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	22.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 13.85% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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 [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: X55, 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	0.45	0/3236	0.53	0/4401
1	B	0.48	1/3237 (0.0%)	0.54	0/4396
All	All	0.47	1/6473 (0.0%)	0.53	0/8797

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	489	GLU	CB-CG	-5.04	1.42	1.52

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	3132	0	3107	16	0
1	B	3129	0	3129	11	0
2	A	63	0	56	0	0
2	B	63	0	57	0	0
3	A	23	0	15	3	0
4	A	418	0	0	2	0
4	B	457	0	0	2	0
All	All	7285	0	6364	26	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 2.

All (26) 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:195:GLU:HG2	4:A:934:HOH:O	1.76	0.85
1:B:234:HIS:HD2	1:B:239[A]:GLU:HG3	1.66	0.60
1:B:234:HIS:CD2	1:B:239[A]:GLU:HG3	2.36	0.60
1:B:232:ASN:OD1	1:B:241:LYS:HD2	2.07	0.54
1:A:187:MET:HE1	1:A:310:LYS:HB2	1.93	0.51
1:A:127:LYS:O	1:A:130:GLU:HG2	2.12	0.48
1:A:181:VAL:HB	1:A:190:PHE:CD1	2.50	0.47
1:A:458:ASN:HA	1:A:461:PHE:CE2	2.50	0.47
1:B:241:LYS:HZ3	1:B:241:LYS:HG3	1.55	0.45
1:B:306:LEU:HD23	1:B:416:LEU:HD21	1.98	0.44
1:A:298:HIS:HE1	3:A:1002:X55:HAJ	1.81	0.44
1:B:295:ARG:HD3	1:B:473:ASN:OD1	2.19	0.43
1:A:298:HIS:CE1	3:A:1002:X55:HAJ	2.53	0.43
1:A:426:HIS:HB2	1:A:429:THR:O	2.19	0.43
1:A:306:LEU:HD23	1:A:416:LEU:HD11	2.00	0.42
1:A:410:HIS:HA	1:A:411:PRO:HD3	1.89	0.42
1:B:132:VAL:HG11	1:B:482:LYS:HG2	2.02	0.42
1:B:241:LYS:HD3	4:B:736:HOH:O	2.19	0.42
1:A:145:ILE:HD12	1:A:272:HIS:HB3	2.02	0.42
1:A:298:HIS:NE2	3:A:1002:X55:OAC	2.53	0.41
1:A:144[A]:ASN:HB2	1:B:347:PRO:HB3	2.02	0.41
1:A:295:ARG:HD3	1:A:473:ASN:OD1	2.21	0.41
1:A:241:LYS:HE3	4:A:899:HOH:O	2.21	0.41
1:A:244:GLU:HG2	1:A:280:VAL:HG13	2.03	0.40
1:B:241:LYS:CD	4:B:736:HOH:O	2.69	0.40
1:B:458:ASN:HA	1:B:461:PHE:CE2	2.56	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	385/383 (100%)	377 (98%)	8 (2%)	0	100	100
1	B	381/383 (100%)	369 (97%)	12 (3%)	0	100	100
All	All	766/766 (100%)	746 (97%)	20 (3%)	0	100	100

There are no Ramachandran outliers to report.

### 5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	344/348 (99%)	341 (99%)	3 (1%)	78	64
1	B	346/348 (99%)	337 (97%)	9 (3%)	46	19
All	All	690/696 (99%)	678 (98%)	12 (2%)	62	36

All (12) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	144[A]	ASN
1	A	144[B]	ASN
1	A	455	LEU
1	B	115	ARG
1	B	116	SER
1	B	241	LYS
1	B	253	LYS
1	B	254	LEU
1	B	299	ARG
1	B	318	MET
1	B	416	LEU
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	232	ASN
1	A	351	GLN
1	A	475	GLN
1	A	496	GLN
1	B	144	ASN
1	B	211	HIS
1	B	234	HIS
1	B	458	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 monosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

3 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
2	MYA	B	2001	-	50,65,65	2.03	15 (30%)	65,91,91	1.82	14 (21%)
3	X55	A	1002	-	25,25,25	1.18	2 (8%)	33,35,35	2.02	9 (27%)
2	MYA	A	1001	-	50,65,65	2.11	14 (28%)	65,91,91	2.02	17 (26%)

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
2	MYA	B	2001	-	1/1/12/14	7/44/80/80	0/3/3/3
3	X55	A	1002	-	-	6/10/23/23	0/3/3/3
2	MYA	A	1001	-	1/1/12/14	8/44/80/80	0/3/3/3

All (31) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1001	MYA	P2A-O5A	-7.14	1.35	1.56
2	B	2001	MYA	P2A-O5A	-7.02	1.35	1.56
2	A	1001	MYA	C6A-N1A	-5.22	1.31	1.37
2	B	2001	MYA	C6A-N1A	-5.14	1.31	1.37
2	A	1001	MYA	O6A-C12	-4.57	1.29	1.43
2	A	1001	MYA	C5A-N7A	-4.38	1.30	1.39
2	B	2001	MYA	C5A-N7A	-4.13	1.31	1.39
2	B	2001	MYA	P2A-O4A	-3.72	1.41	1.52
3	A	1002	X55	CAV-NAW	3.64	1.48	1.45
2	B	2001	MYA	O6A-C12	-3.46	1.32	1.43
2	A	1001	MYA	O10-C10	-3.35	1.36	1.42
2	B	2001	MYA	C8A-N9A	-3.18	1.30	1.37
3	A	1002	X55	CAU-CAV	3.15	1.54	1.51
2	A	1001	MYA	C5A-C6A	-3.12	1.37	1.43
2	B	2001	MYA	C4A-N9A	-2.87	1.30	1.38
2	A	1001	MYA	C4A-N9A	-2.86	1.30	1.38
2	A	1001	MYA	P1A-O5X	-2.70	1.43	1.59
2	B	2001	MYA	O10-C10	-2.68	1.37	1.42
2	A	1001	MYA	O5-C5	-2.40	1.18	1.23
2	A	1001	MYA	P2A-O4A	-2.39	1.45	1.52
2	B	2001	MYA	C2A-N3A	-2.26	1.28	1.34
2	B	2001	MYA	P1A-O5X	-2.26	1.46	1.59
2	B	2001	MYA	C5A-C6A	-2.23	1.38	1.43
2	B	2001	MYA	C4A-N3A	-2.23	1.28	1.34
2	A	1001	MYA	O3X-C3X	-2.23	1.37	1.46
2	A	1001	MYA	C8A-N9A	-2.20	1.32	1.37
2	B	2001	MYA	O5X-C5X	-2.20	1.36	1.44
2	B	2001	MYA	C7-N8	-2.18	1.41	1.46
2	A	1001	MYA	C2A-N3A	-2.14	1.29	1.34
2	B	2001	MYA	C6A-N6A	-2.12	1.28	1.34
2	A	1001	MYA	O2X-C2X	-2.05	1.38	1.43

All (40) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1001	MYA	C10-C9-N8	-6.62	103.39	116.58
3	A	1002	X55	CAL-CAP-NAW	6.53	117.46	112.38
2	B	2001	MYA	C10-C9-N8	-5.48	105.66	116.58
3	A	1002	X55	CAP-CAL-SAO	-5.43	102.96	107.60
2	A	1001	MYA	C13-C11-C10	-5.07	100.03	108.82
2	B	2001	MYA	O10-C10-C11	5.03	122.09	110.25
2	A	1001	MYA	N6A-C6A-N1A	4.71	123.59	117.01
2	A	1001	MYA	O10-C10-C11	4.65	121.19	110.25
2	B	2001	MYA	C14-C11-C12	4.28	115.22	108.23
2	B	2001	MYA	C5A-C4A-N3A	-4.20	119.53	127.41
2	B	2001	MYA	C13-C11-C10	-4.09	101.72	108.82
2	A	1001	MYA	C5A-C4A-N3A	-4.05	119.82	127.41
2	A	1001	MYA	C14-C11-C10	3.94	115.65	108.82
3	A	1002	X55	CAV-NAW-CAP	-3.79	116.11	119.13
2	B	2001	MYA	P1A-O5X-C5X	3.77	125.48	118.86
2	A	1001	MYA	N3A-C2A-N1A	-3.65	121.91	128.82
2	B	2001	MYA	C14-C11-C10	3.43	114.77	108.82
2	B	2001	MYA	O5X-P1A-O1A	3.39	114.25	106.15
2	A	1001	MYA	C14-C11-C12	3.29	113.59	108.23
2	A	1001	MYA	O5X-P1A-O1A	3.17	113.71	106.15
3	A	1002	X55	OAN-CAT-CAR	2.92	118.80	114.57
3	A	1002	X55	CAK-CAU-CAS	2.69	120.23	117.25
2	A	1001	MYA	C2A-N1A-C6A	2.62	122.27	113.17
2	A	1001	MYA	C7-C6-C5	2.57	116.64	112.36
2	A	1001	MYA	O9-C9-C10	2.51	128.73	121.06
3	A	1002	X55	CAL-SAO-CAV	2.42	96.81	93.14
2	A	1001	MYA	N9A-C4A-N3A	2.38	132.04	127.09
2	B	2001	MYA	N3A-C2A-N1A	-2.38	124.33	128.82
2	B	2001	MYA	C6-C7-N8	-2.28	107.28	111.90
2	A	1001	MYA	O6A-P2A-O3A	2.22	109.30	101.37
2	A	1001	MYA	C6-C5-N4	-2.21	112.71	116.42
2	A	1001	MYA	P1A-O5X-C5X	2.20	122.73	118.86
3	A	1002	X55	CAA-OAN-CAT	-2.15	114.29	117.53
2	A	1001	MYA	O4X-C1X-C2X	-2.14	101.98	106.64
2	B	2001	MYA	N6A-C6A-N1A	2.07	119.91	117.01
2	B	2001	MYA	N9A-C4A-N3A	2.07	131.40	127.09
2	B	2001	MYA	O6A-P2A-O3A	2.05	108.70	101.37
2	B	2001	MYA	O9-C9-N8	2.02	127.33	122.99
3	A	1002	X55	OAB-CAP-NAW	-2.02	122.49	124.87
3	A	1002	X55	CAJ-CAS-CAU	-2.00	119.34	122.34

All (2) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	A	1001	MYA	C10
2	B	2001	MYA	C10

All (21) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1001	MYA	O10-C10-C9-N8
2	A	1001	MYA	O10-C10-C9-O9
2	A	1001	MYA	C9-C10-C11-C14
2	A	1001	MYA	O10-C10-C11-C12
2	A	1001	MYA	O10-C10-C11-C13
2	A	1001	MYA	O10-C10-C11-C14
2	B	2001	MYA	O10-C10-C9-N8
2	B	2001	MYA	O10-C10-C9-O9
2	B	2001	MYA	O10-C10-C11-C12
2	B	2001	MYA	O10-C10-C11-C13
2	B	2001	MYA	O10-C10-C11-C14
3	A	1002	X55	CAR-CAT-OAN-CAA
3	A	1002	X55	CAK-CAT-OAN-CAA
2	B	2001	MYA	C9-C10-C11-C14
3	A	1002	X55	CAS-CAU-CAV-NAW
2	A	1001	MYA	C11-C10-C9-O9
3	A	1002	X55	CAK-CAU-CAV-NAW
2	A	1001	MYA	C9-C10-C11-C13
3	A	1002	X55	CAK-CAU-CAV-SAO
3	A	1002	X55	CAS-CAU-CAV-SAO
2	B	2001	MYA	C11-C10-C9-O9

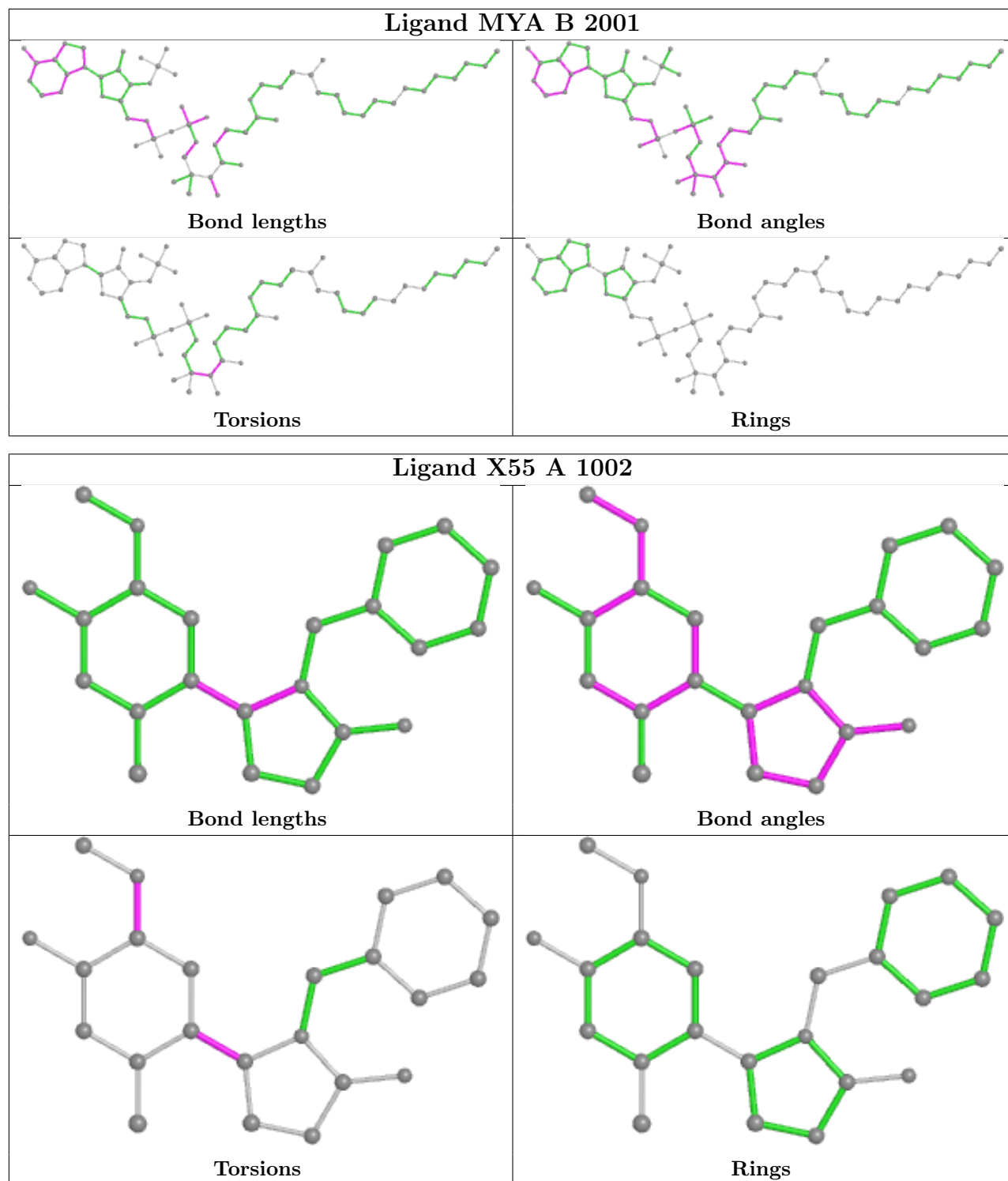
There are no ring outliers.

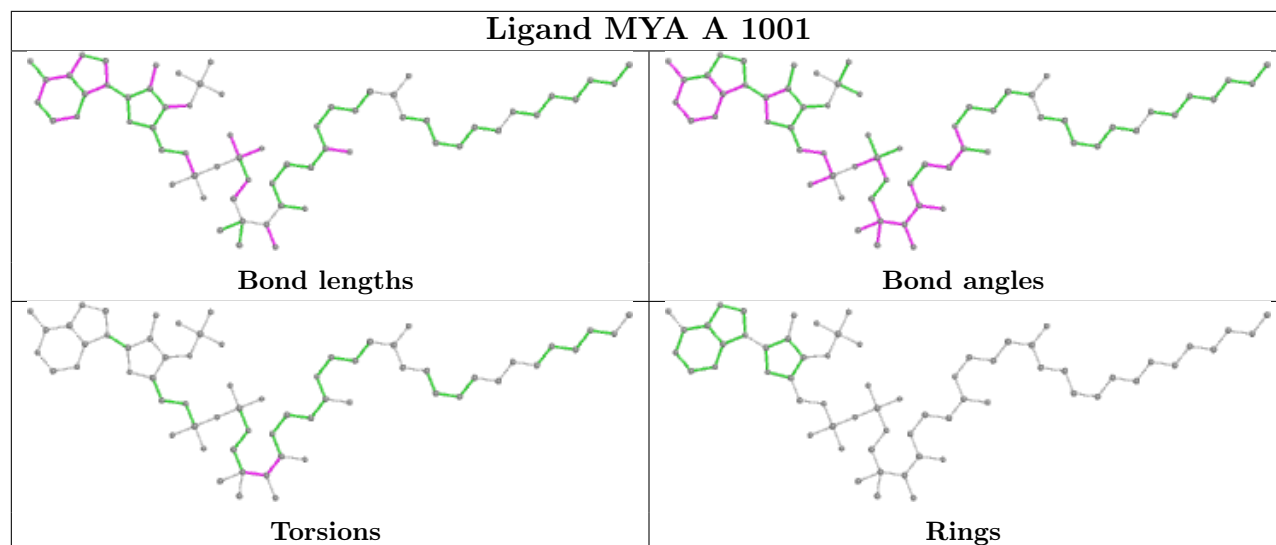
1 monomer is involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	1002	X55	3	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and

any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.





## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	382/383 (99%)	0.33	29 (7%) 13 11	10, 19, 38, 52	0
1	B	378/383 (98%)	0.20	22 (5%) 23 20	9, 18, 35, 48	0
All	All	760/766 (99%)	0.27	51 (6%) 17 16	9, 18, 37, 52	0

All (51) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	316	ARG	7.0
1	B	316	ARG	6.9
1	B	315	SER	6.3
1	A	315	SER	6.2
1	A	131	VAL	6.1
1	A	129	GLY	6.0
1	B	115	ARG	5.5
1	A	317	ASN	5.3
1	B	317	ASN	5.3
1	A	115	ARG	5.2
1	B	313	HIS	5.1
1	B	414	LYS	4.3
1	B	116	SER	4.1
1	A	318	MET	4.1
1	B	413	HIS	4.1
1	A	133	ASN	3.9
1	A	314	LEU	3.9
1	A	472	GLY	3.7
1	A	328	ARG	3.7
1	A	313	HIS	3.6
1	B	129	GLY	3.4
1	A	321	GLN	3.4
1	B	318	MET	3.4
1	A	130	GLU	3.1

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Mol	Chain	Res	Type	RSRZ
1	A	116	SER	3.1
1	B	253	LYS	3.0
1	B	314	LEU	2.9
1	A	134	THR	2.9
1	A	143	ASP	2.8
1	A	471	ASP	2.8
1	B	131	VAL	2.8
1	B	304	ARG	2.8
1	A	135	HIS	2.7
1	B	308	GLU	2.7
1	B	184	ASP	2.7
1	A	324	MET	2.6
1	A	320	MET	2.5
1	A	310	LYS	2.5
1	B	471	ASP	2.4
1	A	253	LYS	2.4
1	B	328	ARG	2.4
1	A	319	THR	2.4
1	A	307	ILE	2.2
1	B	237	ASP	2.2
1	B	133	ASN	2.2
1	A	308	GLU	2.2
1	A	463	GLU	2.2
1	A	325	LYS	2.2
1	B	331	GLU	2.1
1	A	327	TYR	2.1
1	B	185	ASP	2.1

## 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 monosaccharides in this entry.

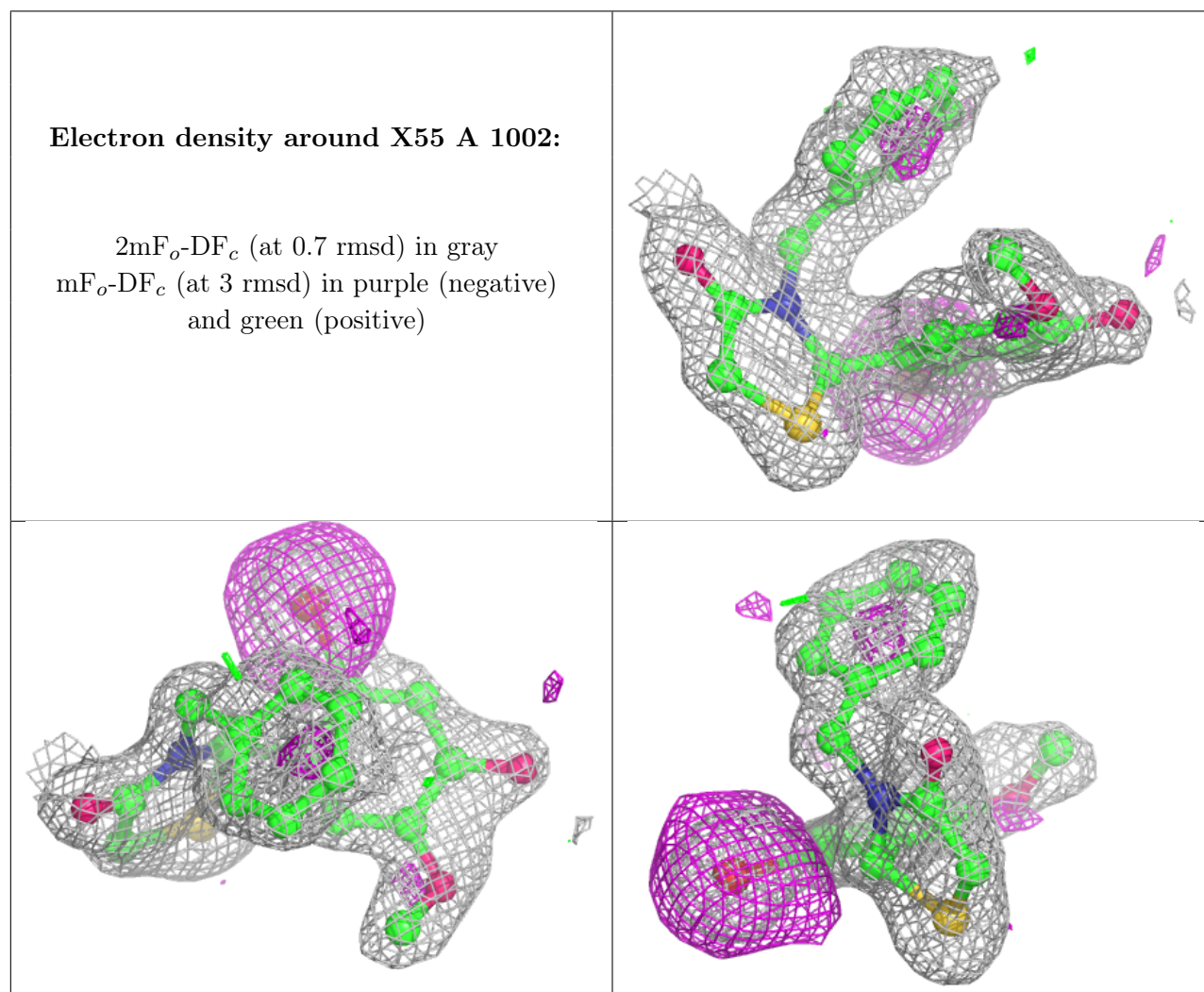
## 6.4 Ligands [i](#)

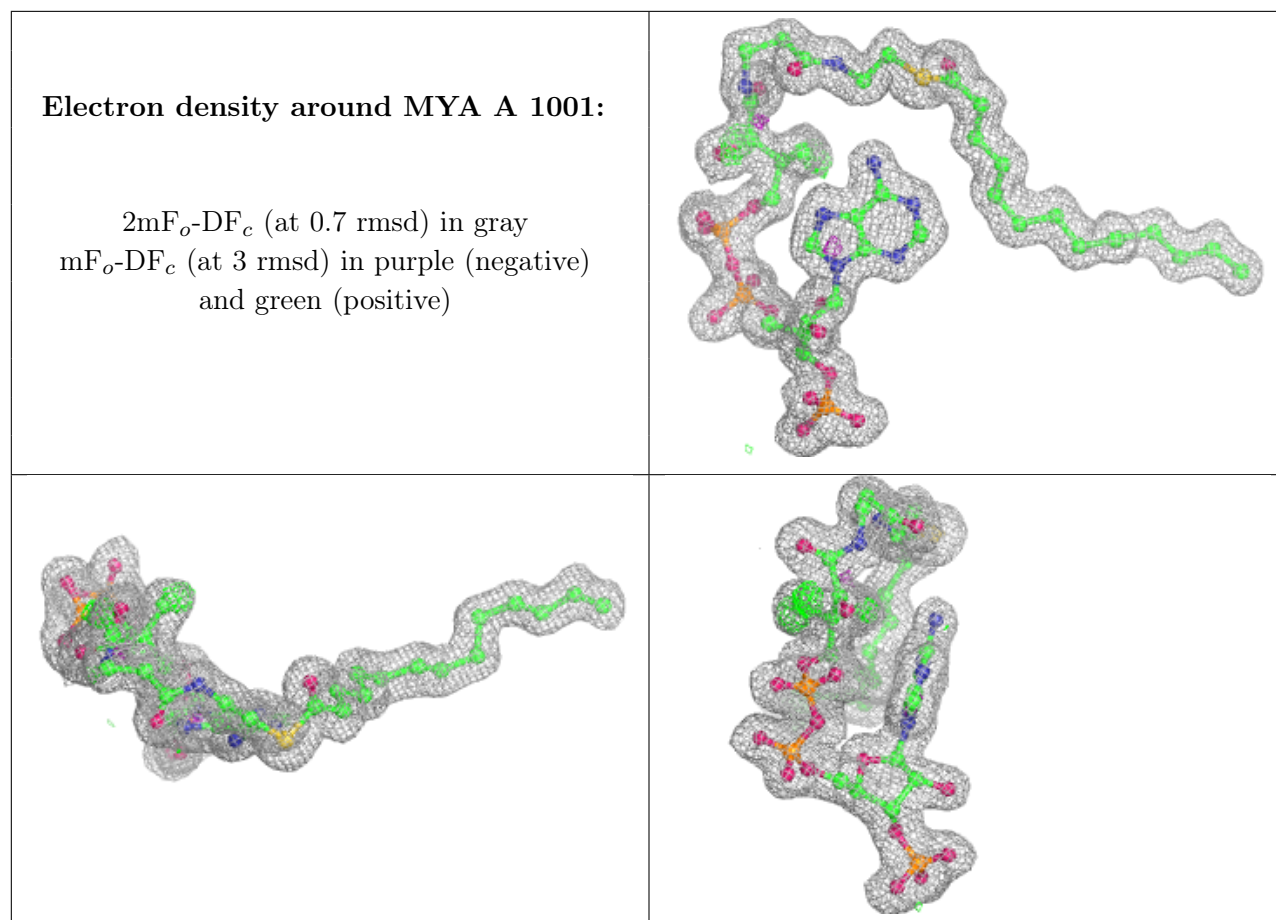
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum,

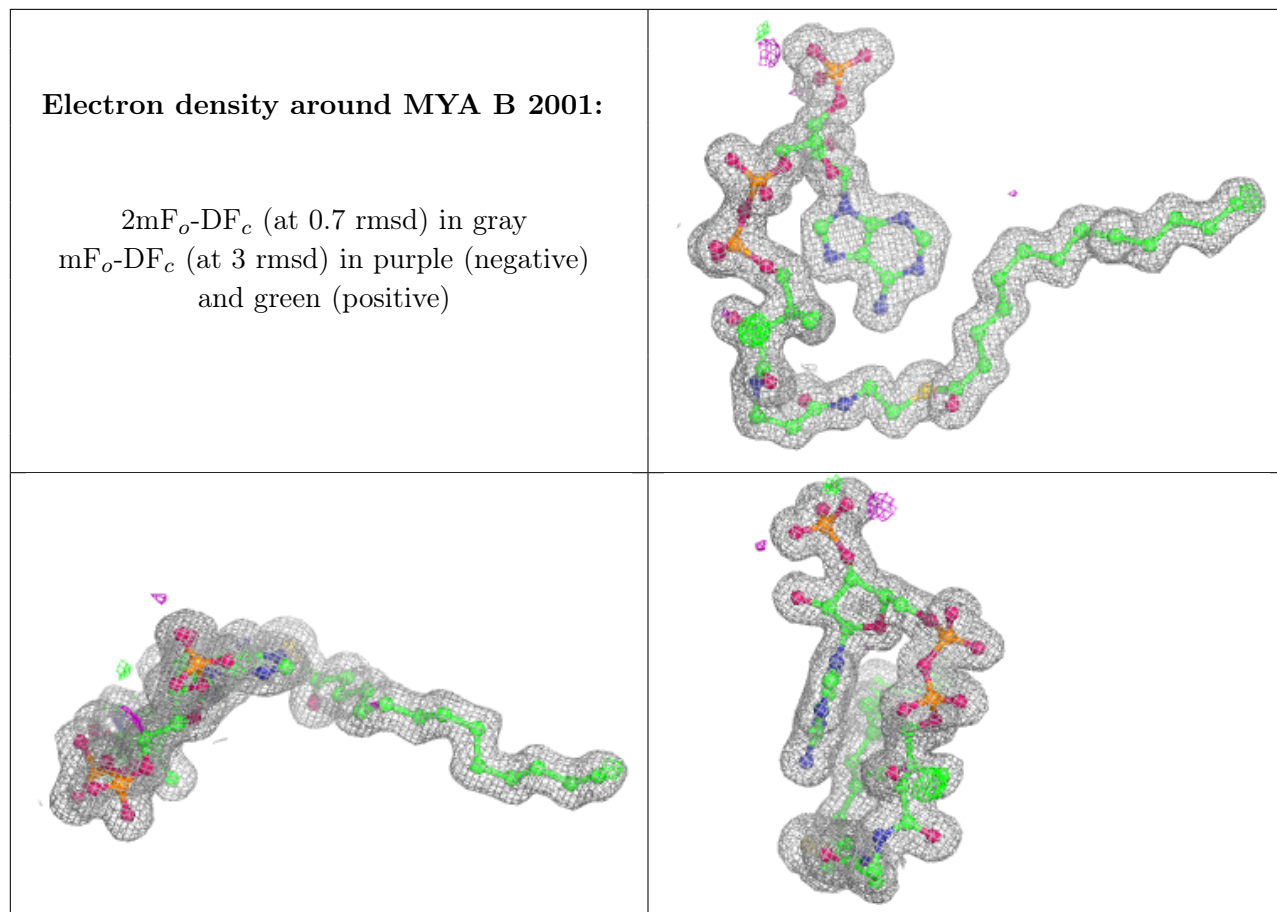
median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
3	X55	A	1002	23/23	0.85	0.17	27,29,39,45	0
2	MYA	A	1001	63/63	0.95	0.08	10,19,22,23	0
2	MYA	B	2001	63/63	0.96	0.07	9,17,20,20	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.







## 6.5 Other polymers [i](#)

There are no such residues in this entry.