



# Full wwPDB X-ray Structure Validation Report ⓘ

Sep 24, 2023 – 12:21 PM EDT

PDB ID : 5U3T  
Title : Human PPARdelta ligand-binding domain in complexed with specific agonist 4  
Authors : Wu, C.-C.; Baiga, T.J.; Downes, M.; La Clair, J.J.; Atkins, A.R.; Richard, S.B.; Stockley-Noel, T.A.; Bowman, M.E.; Evans, R.M.; Noel, J.P.  
Deposited on : 2016-12-03  
Resolution : 1.70 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 : 2.35.1  
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)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.35.1

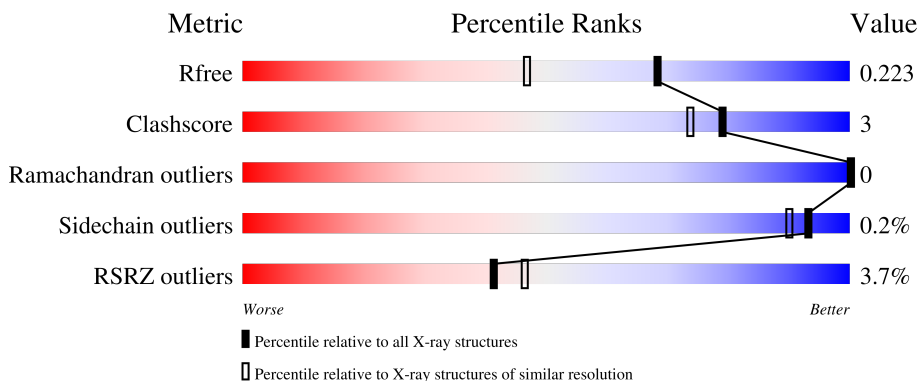
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.70 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	4298 (1.70-1.70)
Clashscore	141614	4695 (1.70-1.70)
Ramachandran outliers	138981	4610 (1.70-1.70)
Sidechain outliers	138945	4610 (1.70-1.70)
RSRZ outliers	127900	4222 (1.70-1.70)

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	272	 3% 96%
1	B	272	 4% 93% 5%

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
5	PEG	A	508	-	-	X	-
5	PEG	B	510	-	-	X	-

## 2 Entry composition [i](#)

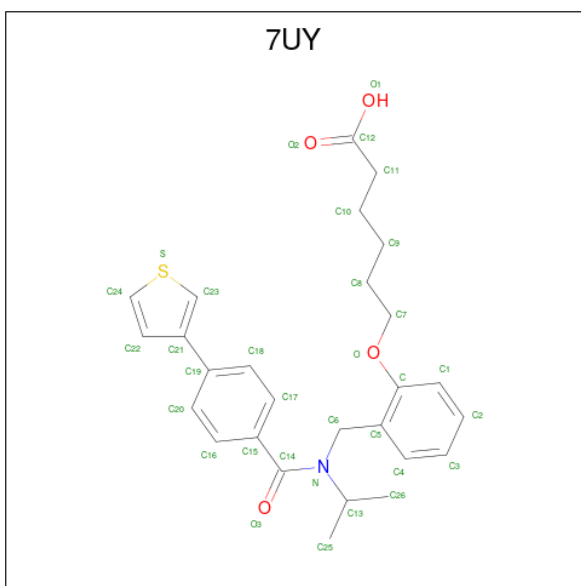
There are 7 unique types of molecules in this entry. The entry contains 10206 atoms, of which 5021 are hydrogens and 0 are deuteriums.

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 Peroxisome proliferator-activated receptor delta.

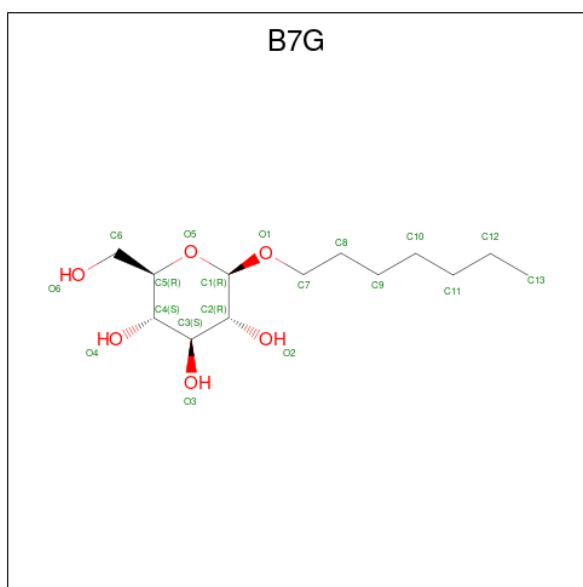
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace	
			Total	C	H	N	O				S
1	A	271	Total 4689	C 1492	H 2376	N 389	O 420	S 12	0	39	0
1	B	266	Total 4542	C 1447	H 2303	N 374	O 407	S 11	0	37	0

- Molecule 2 is 6-[2-((propan-2-yl)[4-(thiophen-3-yl)benzene-1-carbonyl]amino)methyl]phenoxy]hexanoic acid (three-letter code: 7UY) (formula: C<sub>27</sub>H<sub>31</sub>NO<sub>4</sub>S).



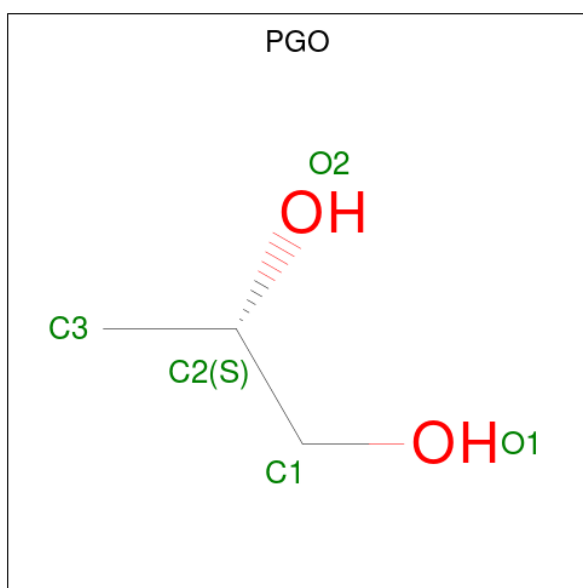
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	C	H	N	O			S
2	A	1	Total 126	C 54	H 60	N 2	O 8	S 2	0	1
2	B	1	Total 126	C 54	H 60	N 2	O 8	S 2	0	1

- Molecule 3 is heptyl beta-D-glucopyranoside (three-letter code: B7G) (formula: C<sub>13</sub>H<sub>26</sub>O<sub>6</sub>).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
3	A	1	45	13	26	6	0	0
3	B	1	45	13	26	6	0	0

- Molecule 4 is S-1,2-PROPANEDIOL (three-letter code: PGO) (formula:  $C_3H_8O_2$ ).



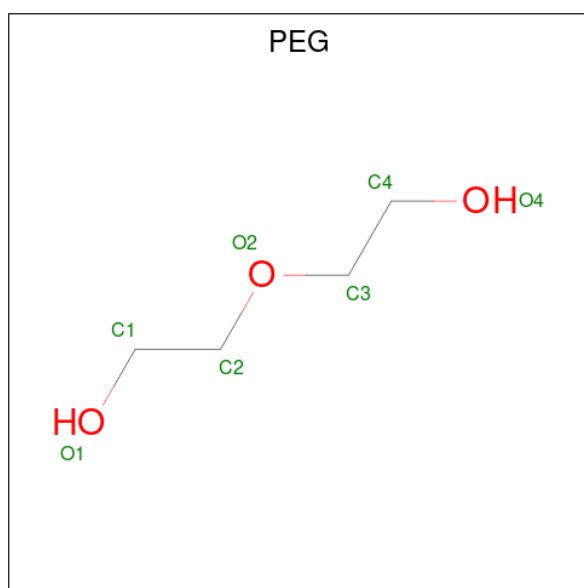
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
4	A	1	26	6	16	4	0	1
4	A	1	26	6	16	4	0	1

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total	C	H	O	0	0
			13	3	8	2		
4	A	1	Total	C	H	O	0	0
			13	3	8	2		
4	B	1	Total	C	H	O	0	1
			26	6	16	4		
4	B	1	Total	C	H	O	0	0
			13	3	8	2		
4	B	1	Total	C	H	O	0	0
			13	3	8	2		
4	B	1	Total	C	H	O	0	0
			13	3	8	2		
4	B	1	Total	C	H	O	0	0
			13	3	8	2		

- Molecule 5 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: C<sub>4</sub>H<sub>10</sub>O<sub>3</sub>).



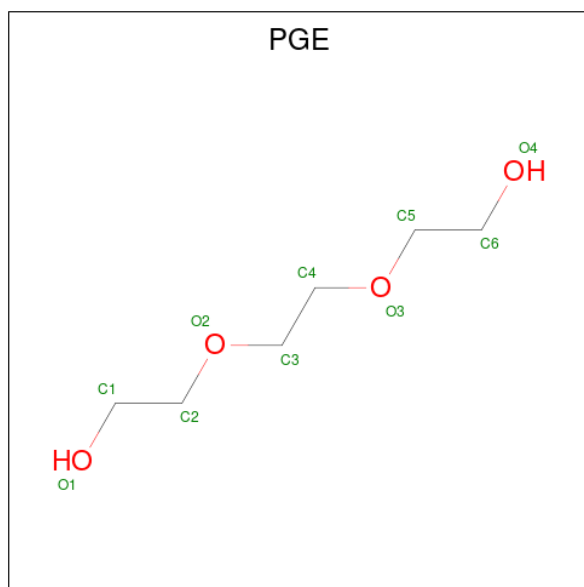
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	A	1	Total	C	H	O	0	0
			17	4	10	3		
5	A	1	Total	C	H	O	0	0
			17	4	10	3		
5	B	1	Total	C	H	O	0	0
			17	4	10	3		
5	B	1	Total	C	H	O	0	0
			17	4	10	3		

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	B	1	Total	C	H	O	0	0
			17	4	10	3		
5	B	1	Total	C	H	O	0	0
			17	4	10	3		

- Molecule 6 is TRIETHYLENE GLYCOL (three-letter code: PGE) (formula: C<sub>6</sub>H<sub>14</sub>O<sub>4</sub>).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	B	1	Total	C	H	O	0	0
			24	6	14	4		

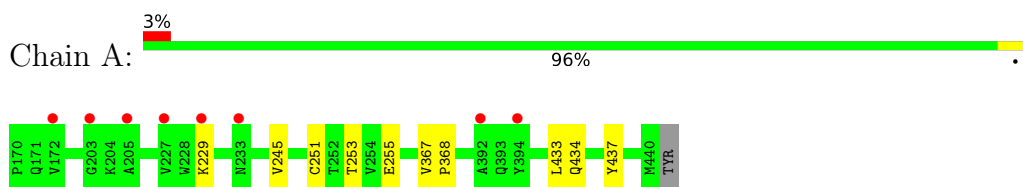
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	207	Total	O	0	0
			207	207		
7	B	144	Total	O	0	0
			144	144		

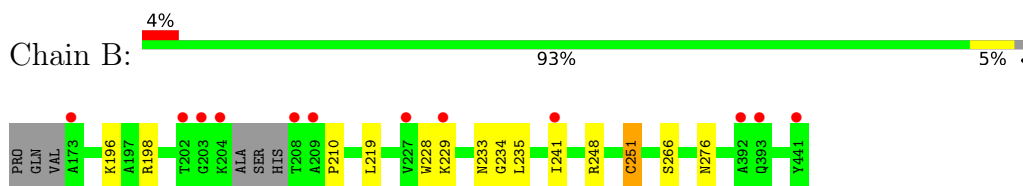
### 3 Residue-property plots [i](#)

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: Peroxisome proliferator-activated receptor delta



- Molecule 1: Peroxisome proliferator-activated receptor delta





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	39.64Å 94.69Å 96.43Å 90.00° 97.99° 90.00°	Depositor
Resolution (Å)	47.75 – 1.70 47.75 – 1.70	Depositor EDS
% Data completeness (in resolution range)	93.4 (47.75-1.70) 93.5 (47.75-1.70)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	5.14 (at 1.70Å)	Xtrriage
Refinement program	PHENIX 1.9pre_1665	Depositor
R, $R_{free}$	0.180 , 0.220 0.185 , 0.223	Depositor DCC
$R_{free}$ test set	1929 reflections (2.66%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	22.2	Xtrriage
Anisotropy	0.425	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.39 , 50.5	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.97	EDS
Total number of atoms	10206	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	37.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.70% 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: PGE, PEG, CME, B7G, 7UY, PGO

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	0.62	0/2538	0.65	0/3428
1	B	0.55	0/2496	0.64	0/3371
All	All	0.59	0/5034	0.65	0/6799

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	2313	2376	2155	11	0
1	B	2239	2303	2064	15	0
2	A	66	60	0	5	0
2	B	66	60	0	0	0
3	A	19	26	26	1	0
3	B	19	26	26	0	0
4	A	30	48	48	0	0
4	B	30	48	48	3	0
5	A	14	20	20	5	0
5	B	28	40	40	5	0
6	B	10	14	14	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	A	207	0	0	0	0
7	B	144	0	0	0	0
All	All	5185	5021	4441	27	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 (27) 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:196:LYS:HD3	4:B:509:PGO:H31	1.77	0.67
1:A:434:GLN:HG2	5:A:508:PEG:H21	1.78	0.65
1:A:434:GLN:CG	5:A:508:PEG:H21	2.33	0.58
1:B:210:PRO:HG2	4:B:508:PGO:H31	1.91	0.52
1:B:219:LEU:HD23	1:B:241:ILE:CD1	2.41	0.51
1:B:248:ARG:HH11	5:B:510:PEG:C3	2.24	0.50
1:A:437:TYR:OH	2:A:501[B]:7UY:O2	2.30	0.50
1:B:233:ASN:OD1	1:B:234:GLY:N	2.45	0.49
1:B:248:ARG:HH11	5:B:510:PEG:H31	1.76	0.48
1:A:253:THR:HG21	2:A:501[B]:7UY:O1	2.14	0.48
1:A:434:GLN:HG2	5:A:508:PEG:C2	2.43	0.47
1:B:219:LEU:CD2	1:B:241:ILE:CD1	2.93	0.47
1:A:245:VAL:HG13	2:A:501[B]:7UY:C23	2.46	0.46
1:B:229:LYS:HB2	5:B:510:PEG:H21	1.98	0.46
1:A:245:VAL:HG22	2:A:501[B]:7UY:S	2.57	0.45
1:B:196:LYS:CD	4:B:509:PGO:H31	2.46	0.43
1:B:235:LEU:HD21	1:B:251:CME:SG	2.59	0.43
1:A:367:VAL:N	1:A:368:PRO:CD	2.83	0.42
1:A:434:GLN:HA	5:A:508:PEG:H21	2.00	0.41
1:B:228:TRP:HE3	5:B:510:PEG:H11	1.85	0.41
1:B:219:LEU:HD22	1:B:241:ILE:HD11	2.03	0.41
1:A:433:LEU:HD13	2:A:501[B]:7UY:O1	2.21	0.41
3:A:502:B7G:H71	1:B:276:ASN:HB3	2.04	0.40
1:A:229:LYS:NZ	1:A:255[B]:GLU:OE1	2.51	0.40
1:B:266:SER:HB3	5:B:507:PEG:H32	2.03	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all 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	307/272 (113%)	303 (99%)	4 (1%)	0	100	100
1	B	298/272 (110%)	294 (99%)	4 (1%)	0	100	100
All	All	605/544 (111%)	597 (99%)	8 (1%)	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	272/239 (114%)	272 (100%)	0	100	100
1	B	268/239 (112%)	267 (100%)	1 (0%)	91	87
All	All	540/478 (113%)	539 (100%)	1 (0%)	93	90

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	198	ARG

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

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

2 non-standard protein/DNA/RNA residues 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
1	CME	B	251	1	8,9,10	1.00	0	5,9,11	2.62	2 (40%)
1	CME	A	251	1	8,9,10	1.13	1 (12%)	5,9,11	1.20	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
1	CME	B	251	1	-	3/5/8/10	-
1	CME	A	251	1	-	1/5/8/10	-

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	251	CME	CB-SG	-2.25	1.74	1.81

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	251	CME	CB-SG-SD	4.24	114.80	103.82
1	B	251	CME	CE-SD-SG	3.28	118.56	103.45
1	A	251	CME	CB-SG-SD	2.04	109.11	103.82

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	251	CME	SD-CE-CZ-OH

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Mol	Chain	Res	Type	Atoms
1	B	251	CME	SD-CE-CZ-OH
1	B	251	CME	CE-SD-SG-CB
1	B	251	CME	CA-CB-SG-SD

There are no ring outliers.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	B	251	CME	2	0

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

25 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	7UY	B	501[B]	-	35,35,35	1.02	1 (2%)	42,46,46	1.75	8 (19%)
6	PGE	B	503	-	9,9,9	0.66	0	8,8,8	0.31	0
2	7UY	A	501[A]	-	35,35,35	1.03	2 (5%)	42,46,46	1.60	8 (19%)
3	B7G	A	502	-	19,19,19	0.85	1 (5%)	24,24,24	1.12	2 (8%)
5	PEG	B	505	-	6,6,6	0.60	0	5,5,5	0.75	0
4	PGO	A	507	-	3,4,4	0.23	0	1,4,4	0.27	0
5	PEG	A	508	-	6,6,6	0.51	0	5,5,5	0.49	0
4	PGO	B	509	-	3,4,4	0.26	0	1,4,4	0.60	0
2	7UY	A	501[B]	-	35,35,35	0.78	1 (2%)	42,46,46	1.48	7 (16%)
4	PGO	A	503[A]	-	3,4,4	0.46	0	1,4,4	0.21	0
4	PGO	B	504[A]	-	3,4,4	0.19	0	1,4,4	0.04	0
4	PGO	A	505	-	3,4,4	0.23	0	1,4,4	0.38	0
4	PGO	A	504[A]	-	3,4,4	0.22	0	1,4,4	0.04	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
4	PGO	B	512	-	3,4,4	0.29	0	1,4,4	0.37	0
4	PGO	B	511	-	3,4,4	0.18	0	1,4,4	0.41	0
4	PGO	A	503[B]	-	3,4,4	0.17	0	1,4,4	0.28	0
5	PEG	B	507	-	6,6,6	0.58	0	5,5,5	0.31	0
2	7UY	B	501[A]	-	35,35,35	1.06	1 (2%)	42,46,46	1.46	8 (19%)
4	PGO	B	508	-	3,4,4	0.28	0	1,4,4	0.23	0
4	PGO	B	504[B]	-	3,4,4	0.33	0	1,4,4	0.01	0
5	PEG	B	506	-	6,6,6	0.58	0	5,5,5	0.32	0
5	PEG	B	510	-	6,6,6	0.55	0	5,5,5	0.68	0
4	PGO	A	504[B]	-	3,4,4	0.32	0	1,4,4	0.20	0
5	PEG	A	506	-	6,6,6	0.57	0	5,5,5	0.29	0
3	B7G	B	502	-	19,19,19	0.83	0	24,24,24	1.17	3 (12%)

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. '2' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	7UY	B	501[B]	-	-	3/29/29/29	0/3/3/3
6	PGE	B	503	-	-	5/7/7/7	-
2	7UY	A	501[A]	-	-	6/29/29/29	0/3/3/3
3	B7G	A	502	-	-	5/10/30/30	0/1/1/1
5	PEG	B	505	-	-	1/4/4/4	-
4	PGO	A	507	-	-	2/2/2/2	-
5	PEG	A	508	-	-	2/4/4/4	-
4	PGO	B	509	-	-	0/2/2/2	-
2	7UY	A	501[B]	-	-	3/29/29/29	0/3/3/3
4	PGO	A	503[A]	-	-	2/2/2/2	-
4	PGO	B	504[A]	-	-	0/2/2/2	-
4	PGO	A	505	-	-	1/2/2/2	-
4	PGO	A	504[A]	-	-	2/2/2/2	-
4	PGO	B	512	-	-	0/2/2/2	-
4	PGO	B	511	-	-	0/2/2/2	-
4	PGO	A	503[B]	-	-	2/2/2/2	-
5	PEG	B	507	-	-	4/4/4/4	-
2	7UY	B	501[A]	-	-	3/29/29/29	0/3/3/3
4	PGO	B	508	-	-	0/2/2/2	-
4	PGO	B	504[B]	-	-	0/2/2/2	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	PEG	B	506	-	-	3/4/4/4	-
5	PEG	B	510	-	-	2/4/4/4	-
4	PGO	A	504[B]	-	-	0/2/2/2	-
5	PEG	A	506	-	-	0/4/4/4	-
3	B7G	B	502	-	-	0/10/30/30	0/1/1/1

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	501[A]	7UY	C23-C21	5.08	1.40	1.37
2	B	501[B]	7UY	C23-C21	4.90	1.40	1.37
2	A	501[A]	7UY	C23-C21	4.23	1.39	1.37
2	A	501[B]	7UY	C23-C21	3.36	1.39	1.37
3	A	502	B7G	O5-C1	2.12	1.47	1.41
2	A	501[A]	7UY	C23-S	2.05	1.73	1.70

All (36) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	501[B]	7UY	C21-C23-S	-4.90	109.13	112.29
2	B	501[B]	7UY	C26-C13-N	4.88	117.62	111.01
2	B	501[B]	7UY	C22-C21-C19	-3.81	122.80	126.32
2	B	501[A]	7UY	C21-C23-S	-3.60	109.97	112.29
2	A	501[A]	7UY	C26-C13-N	3.60	115.88	111.01
2	A	501[B]	7UY	C23-C21-C19	-3.56	122.72	127.58
3	A	502	B7G	C7-O1-C1	3.42	119.51	113.84
2	A	501[A]	7UY	C6-N-C14	3.35	126.28	116.97
3	B	502	B7G	O1-C1-C2	3.35	113.53	108.30
2	B	501[A]	7UY	C22-C21-C19	-3.29	123.28	126.32
2	B	501[B]	7UY	C6-N-C14	3.26	126.02	116.97
2	A	501[B]	7UY	C6-N-C14	3.18	125.82	116.97
2	B	501[A]	7UY	C6-N-C14	3.18	125.81	116.97
2	A	501[B]	7UY	C26-C13-N	3.11	115.23	111.01
2	A	501[A]	7UY	C15-C14-N	3.07	124.87	118.77
2	A	501[B]	7UY	C21-C23-S	-2.97	110.38	112.29
2	A	501[A]	7UY	C21-C23-S	-2.92	110.41	112.29
2	A	501[A]	7UY	C22-C21-C19	-2.90	123.65	126.32
2	A	501[A]	7UY	C23-C21-C19	-2.89	123.64	127.58
2	B	501[A]	7UY	C26-C13-N	2.87	114.90	111.01
2	A	501[B]	7UY	C22-C21-C19	-2.68	123.84	126.32
2	A	501[A]	7UY	O3-C14-C15	-2.64	115.10	120.23
2	B	501[B]	7UY	O3-C14-C15	-2.61	115.15	120.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	501[B]	7UY	C6-N-C13	-2.60	115.21	118.29
2	B	501[A]	7UY	C6-N-C13	-2.60	115.22	118.29
2	A	501[B]	7UY	O-C-C5	2.57	119.14	115.78
2	B	501[A]	7UY	C23-C21-C19	-2.53	124.12	127.58
2	B	501[B]	7UY	C15-C14-N	2.52	123.77	118.77
2	B	501[B]	7UY	C25-C13-N	-2.51	107.61	111.01
2	B	501[B]	7UY	C23-C21-C19	-2.45	124.24	127.58
2	A	501[A]	7UY	O-C-C5	2.38	118.89	115.78
2	B	501[A]	7UY	O3-C14-C15	-2.24	115.86	120.23
3	B	502	B7G	O3-C3-C4	-2.19	105.30	110.35
2	B	501[A]	7UY	C15-C14-N	2.10	122.94	118.77
3	A	502	B7G	O2-C2-C1	-2.04	105.09	110.05
3	B	502	B7G	C7-O1-C1	2.01	117.18	113.84

There are no chirality outliers.

All (46) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	503[A]	PGO	O1-C1-C2-C3
4	A	503[A]	PGO	O1-C1-C2-O2
4	A	503[B]	PGO	O1-C1-C2-C3
4	A	504[A]	PGO	O1-C1-C2-O2
4	A	507	PGO	O1-C1-C2-O2
6	B	503	PGE	O2-C3-C4-O3
5	B	506	PEG	O1-C1-C2-O2
5	B	506	PEG	O2-C3-C4-O4
5	B	507	PEG	O2-C3-C4-O4
5	B	510	PEG	O1-C1-C2-O2
6	B	503	PGE	O3-C5-C6-O4
5	A	508	PEG	O2-C3-C4-O4
6	B	503	PGE	O1-C1-C2-O2
5	B	507	PEG	C1-C2-O2-C3
5	A	508	PEG	O1-C1-C2-O2
5	B	507	PEG	O1-C1-C2-O2
2	B	501[A]	7UY	C9-C10-C11-C12
2	A	501[A]	7UY	C26-C13-N-C14
2	B	501[B]	7UY	C26-C13-N-C14
3	A	502	B7G	C8-C7-O1-C1
3	A	502	B7G	C10-C11-C12-C13
5	B	510	PEG	C4-C3-O2-C2
4	A	504[A]	PGO	O1-C1-C2-C3
4	A	507	PGO	O1-C1-C2-C3

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Mol	Chain	Res	Type	Atoms
6	B	503	PGE	C3-C4-O3-C5
5	B	505	PEG	O2-C3-C4-O4
2	A	501[A]	7UY	C26-C13-N-C6
3	A	502	B7G	O1-C7-C8-C9
6	B	503	PGE	C4-C3-O2-C2
5	B	507	PEG	C4-C3-O2-C2
3	A	502	B7G	C11-C10-C9-C8
2	A	501[A]	7UY	C25-C13-N-C6
2	B	501[B]	7UY	C26-C13-N-C6
4	A	503[B]	PGO	O1-C1-C2-O2
2	B	501[A]	7UY	C10-C11-C12-O1
2	B	501[A]	7UY	C10-C11-C12-O2
2	A	501[A]	7UY	C10-C11-C12-O1
2	A	501[A]	7UY	C10-C11-C12-O2
4	A	505	PGO	O1-C1-C2-C3
5	B	506	PEG	C1-C2-O2-C3
2	A	501[B]	7UY	C9-C10-C11-C12
3	A	502	B7G	C7-C8-C9-C10
2	A	501[A]	7UY	C25-C13-N-C14
2	A	501[B]	7UY	C26-C13-N-C14
2	A	501[B]	7UY	C25-C13-N-C14
2	B	501[B]	7UY	C25-C13-N-C14

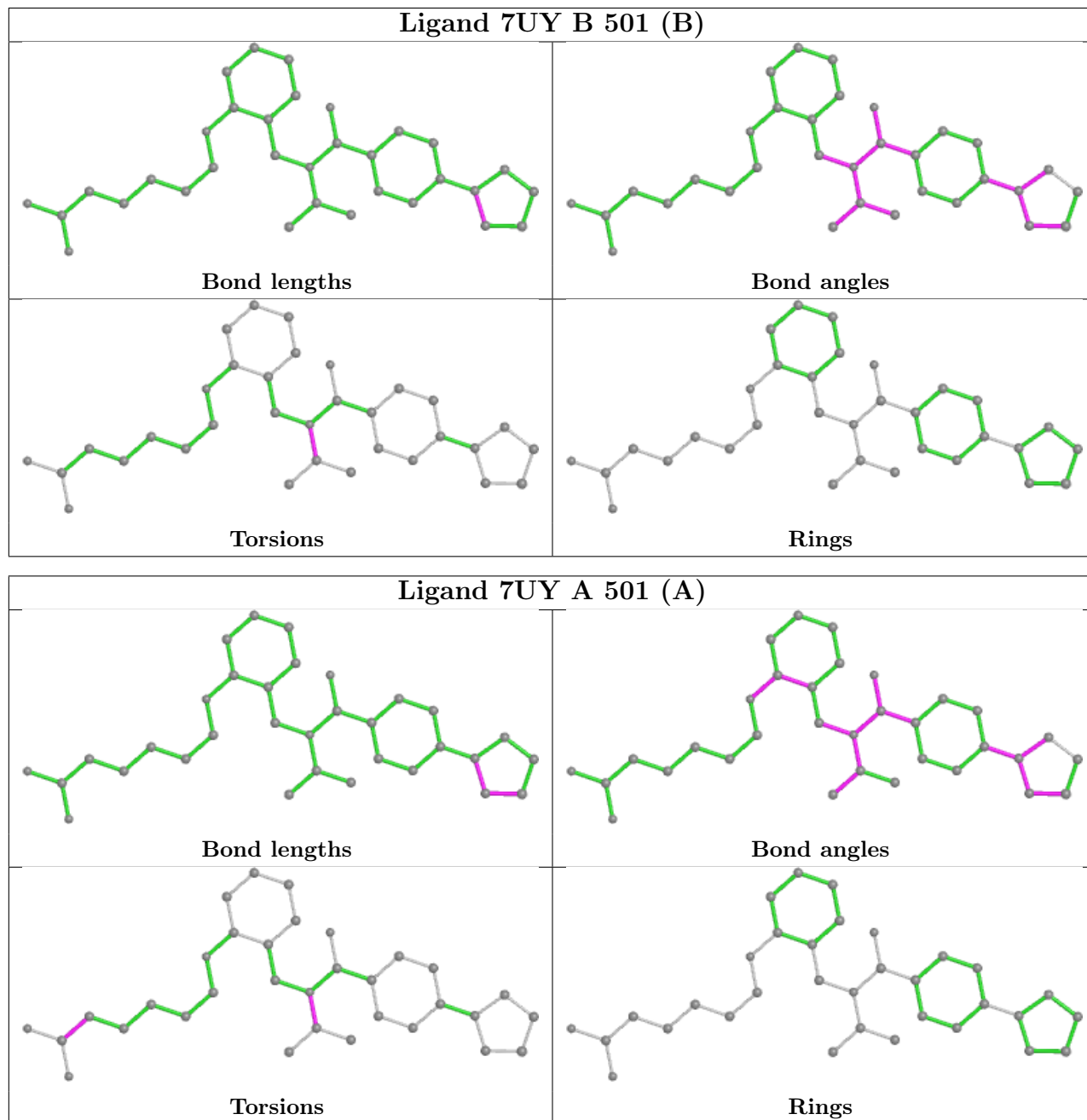
There are no ring outliers.

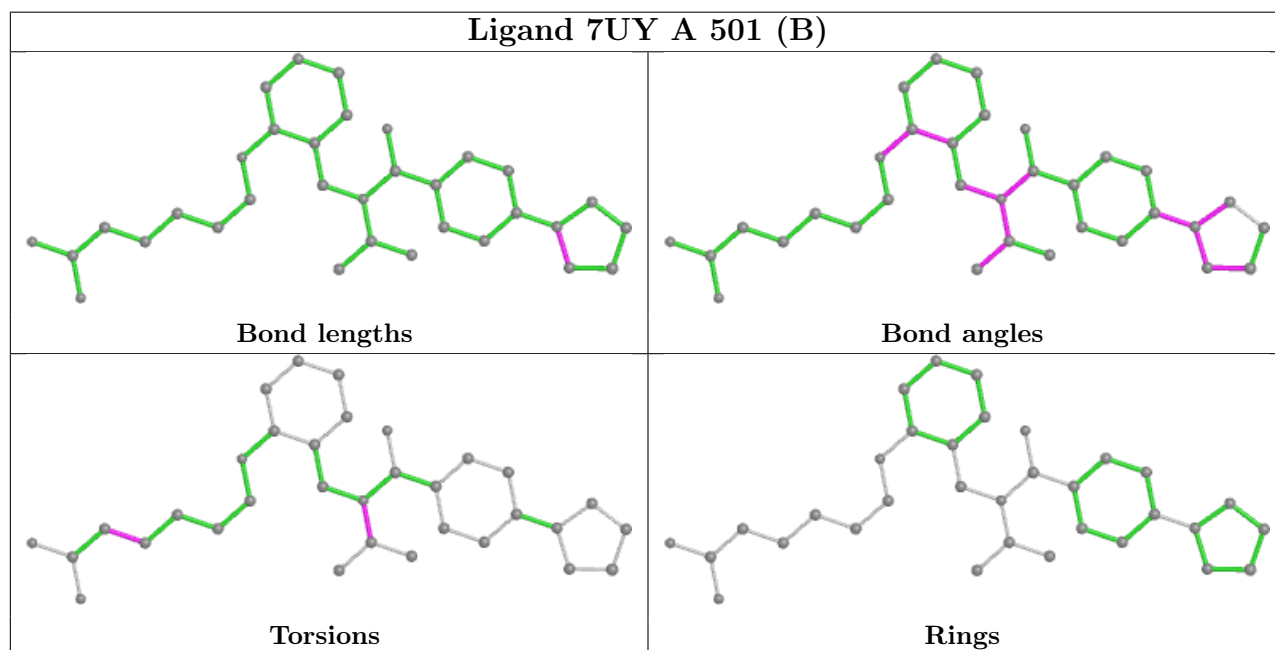
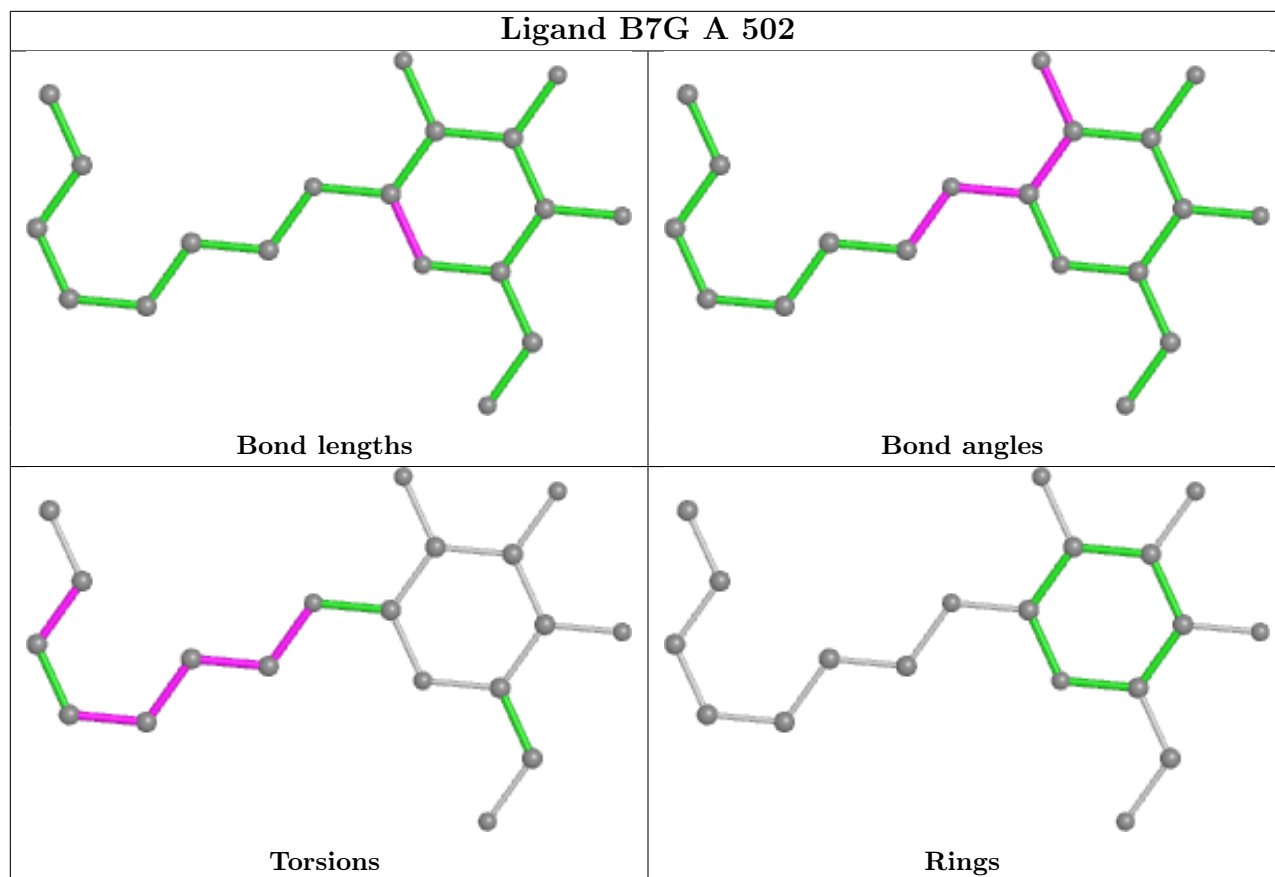
7 monomers are involved in 19 short contacts:

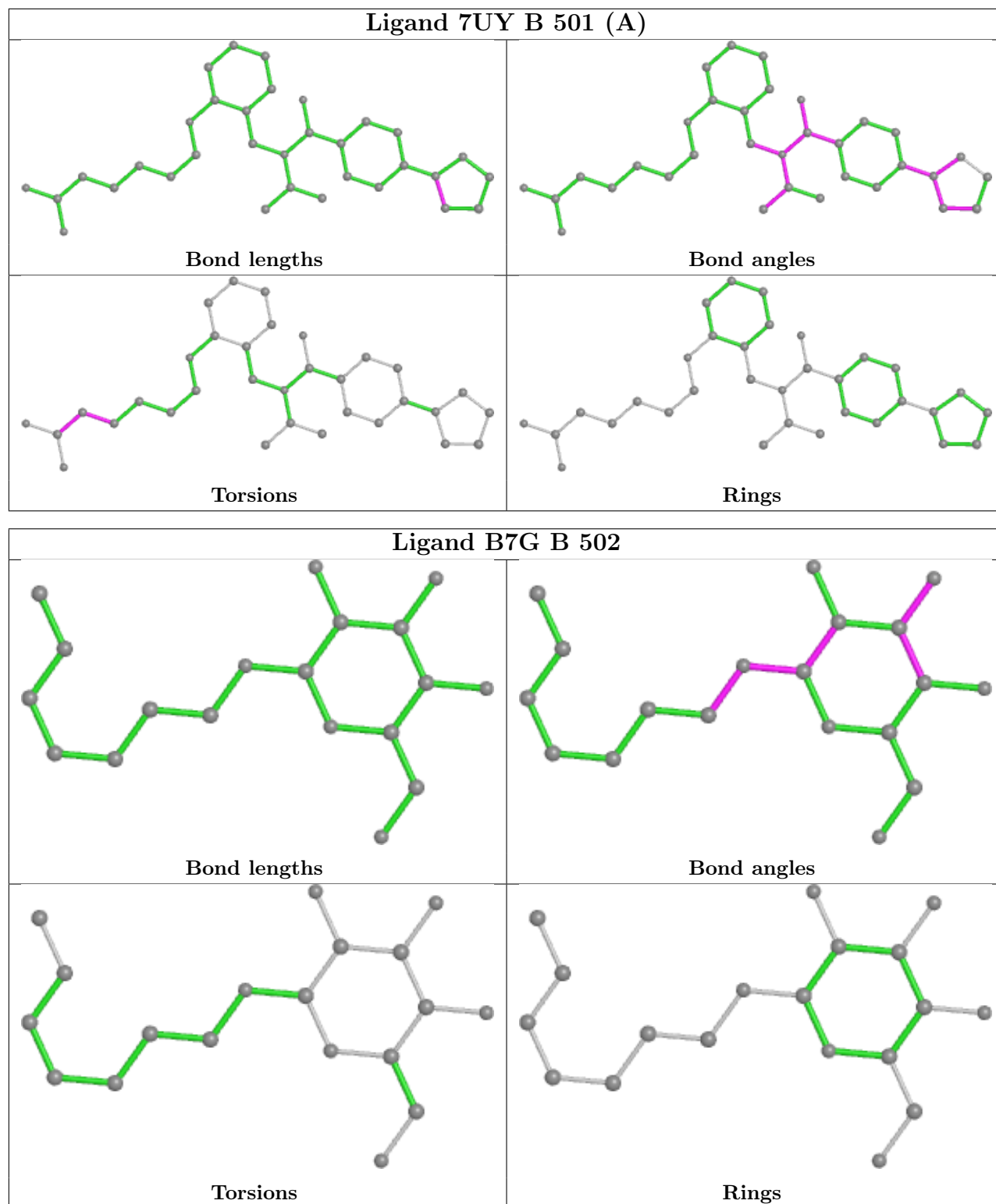
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	502	B7G	1	0
5	A	508	PEG	5	0
4	B	509	PGO	2	0
2	A	501[B]	7UY	5	0
5	B	507	PEG	1	0
4	B	508	PGO	1	0
5	B	510	PEG	4	0

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 than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring

in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.







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

There are no such residues in this entry.

## 5.8 Polymer linkage issues

There are no chain breaks in this entry.

## 6 Fit of model and data [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

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	270/272 (99%)	-0.01	8 (2%) 50 54	15, 26, 54, 131	0
1	B	265/272 (97%)	0.12	12 (4%) 33 37	16, 32, 64, 108	0
All	All	535/544 (98%)	0.05	20 (3%) 41 46	15, 28, 64, 131	0

All (20) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	208	THR	7.0
1	A	205	ALA	6.1
1	B	204	LYS	4.5
1	B	227	VAL	4.1
1	A	227	VAL	3.6
1	B	229	LYS	3.6
1	B	393	GLN	3.5
1	B	441	TYR	3.4
1	A	394[A]	TYR	2.8
1	B	203	GLY	2.8
1	A	203	GLY	2.7
1	A	392	ALA	2.6
1	B	392	ALA	2.6
1	A	172	VAL	2.5
1	B	173	ALA	2.5
1	B	209	ALA	2.5
1	B	241	ILE	2.2
1	A	233	ASN	2.2
1	B	202	THR	2.0
1	A	229	LYS	2.0

## 6.2 Non-standard residues in protein, DNA, RNA chains [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(Å <sup>2</sup> )	Q<0.9
1	CME	B	251	10/11	0.91	0.11	21,58,100,100	0
1	CME	A	251	10/11	0.93	0.13	17,53,95,194	0

## 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(Å <sup>2</sup> )	Q<0.9
5	PEG	B	507	7/7	0.54	0.31	74,92,110,110	0
4	PGO	A	507	5/5	0.59	0.25	66,79,108,115	0
4	PGO	A	505	5/5	0.64	0.13	63,75,84,90	0
4	PGO	B	508	5/5	0.68	0.23	38,61,74,84	0
4	PGO	B	511	5/5	0.73	0.20	48,66,83,88	0
5	PEG	B	506	7/7	0.76	0.38	59,97,125,125	0
5	PEG	B	510	7/7	0.79	0.21	37,52,72,72	0
4	PGO	B	509	5/5	0.82	0.32	66,88,105,105	0
4	PGO	B	504[A]	5/5	0.83	0.19	35,44,47,53	13
4	PGO	B	504[B]	5/5	0.83	0.19	19,35,55,55	13
4	PGO	B	512	5/5	0.86	0.23	62,74,83,86	0
5	PEG	A	508	7/7	0.86	0.12	43,57,68,68	0
5	PEG	B	505	7/7	0.86	0.12	41,70,86,86	0
6	PGE	B	503	10/10	0.87	0.12	32,73,120,126	0
3	B7G	A	502	19/19	0.91	0.12	24,40,51,54	0
4	PGO	A	503[A]	5/5	0.92	0.14	14,29,44,44	13
4	PGO	A	503[B]	5/5	0.92	0.14	21,35,44,44	13
5	PEG	A	506	7/7	0.93	0.11	45,58,124,134	0
4	PGO	A	504[B]	5/5	0.94	0.18	24,37,49,49	13
4	PGO	A	504[A]	5/5	0.94	0.18	25,39,47,47	13

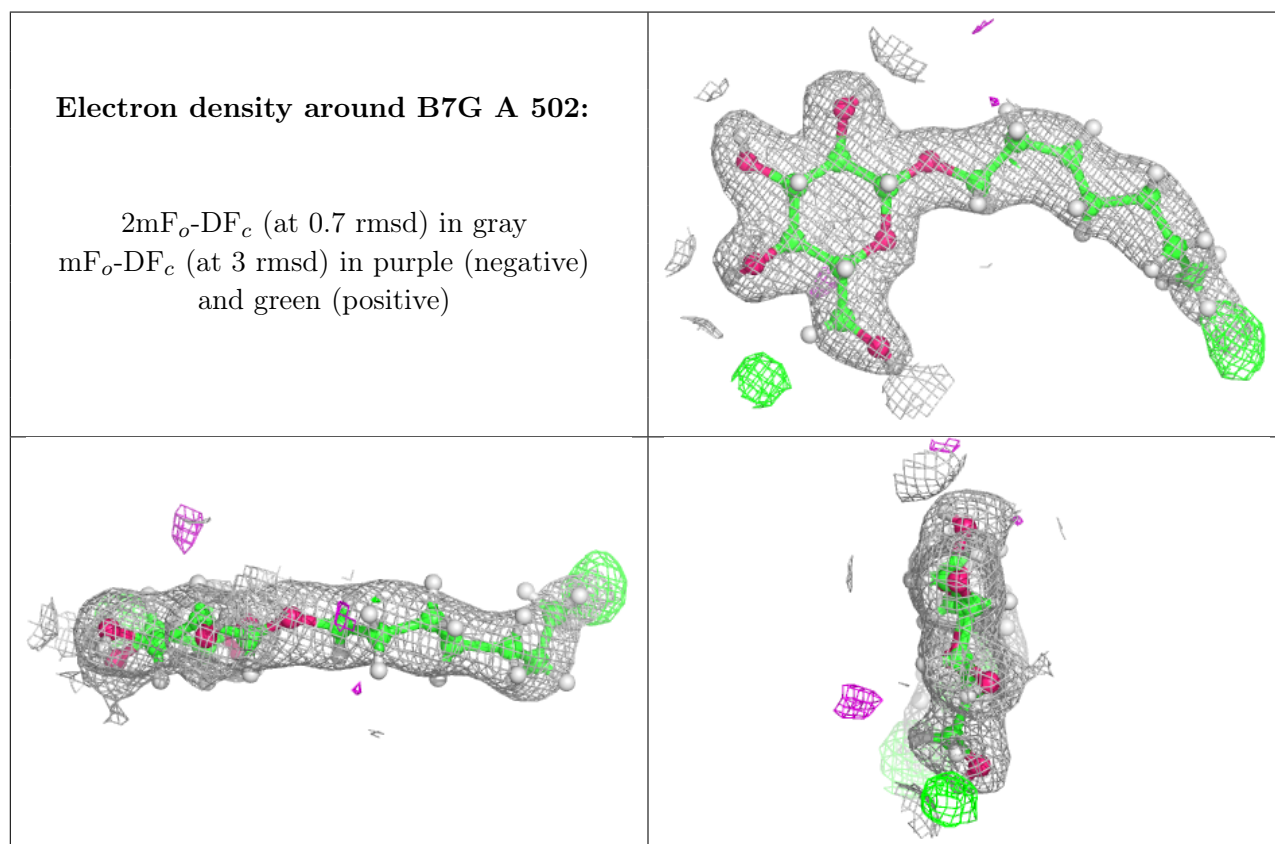
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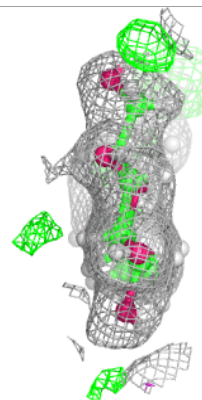
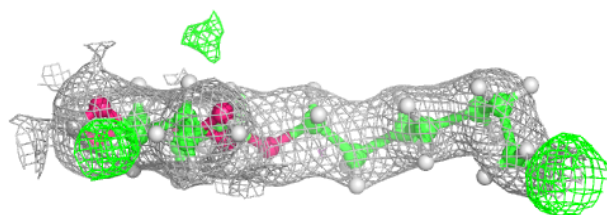
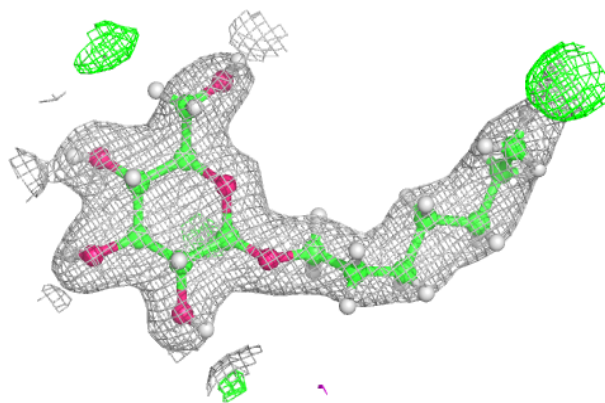
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
3	B7G	B	502	19/19	0.95	0.10	24,35,44,52	0
2	7UY	B	501[B]	33/33	0.97	0.08	18,24,33,39	63
2	7UY	B	501[A]	33/33	0.97	0.08	15,24,34,39	63
2	7UY	A	501[B]	33/33	0.98	0.10	11,18,26,27	63
2	7UY	A	501[A]	33/33	0.98	0.10	10,19,27,29	63

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.

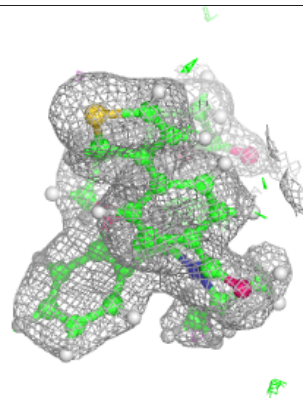
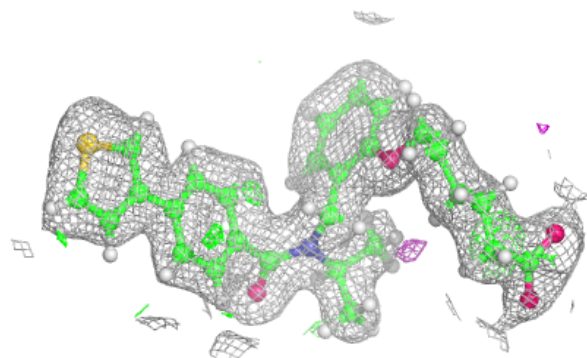
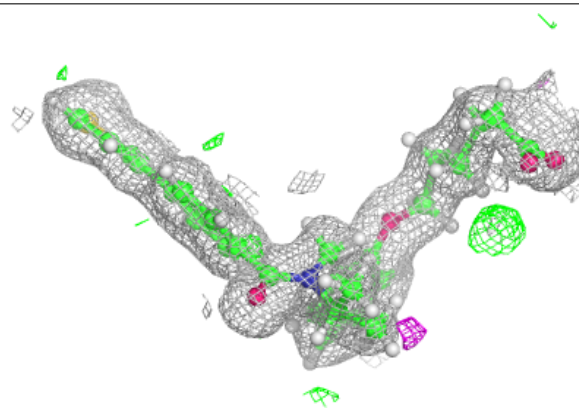


**Electron density around B7G B 502:**

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

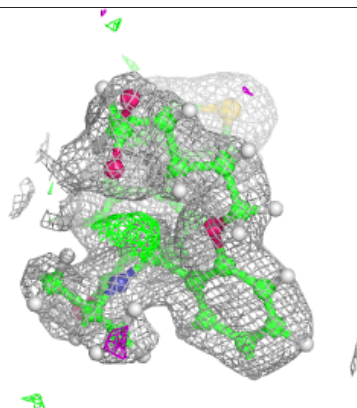
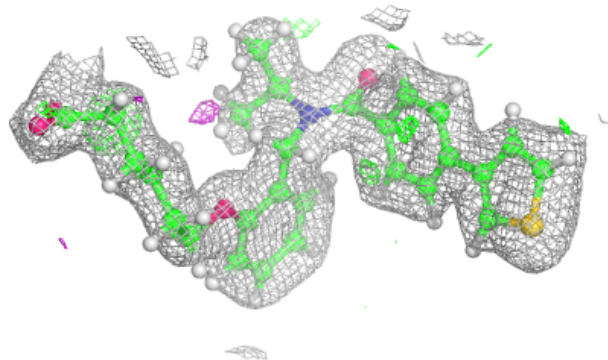
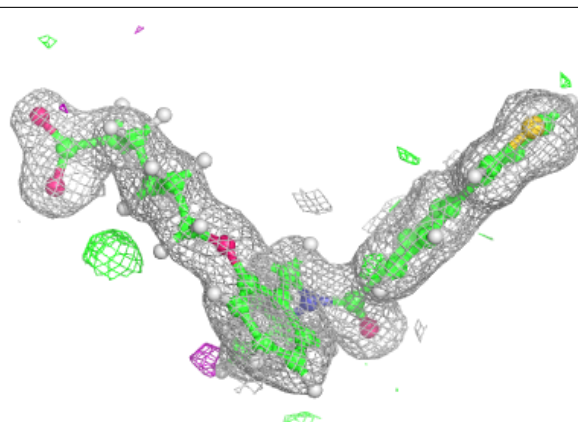
**Electron density around 7UY B 501 (B):**

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

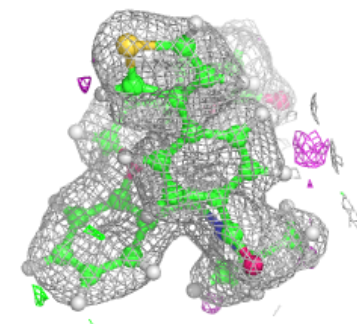
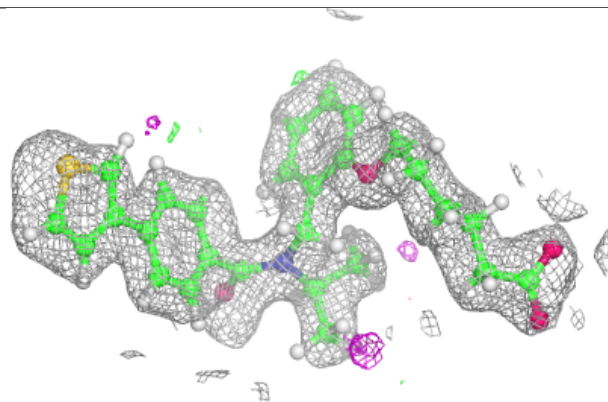
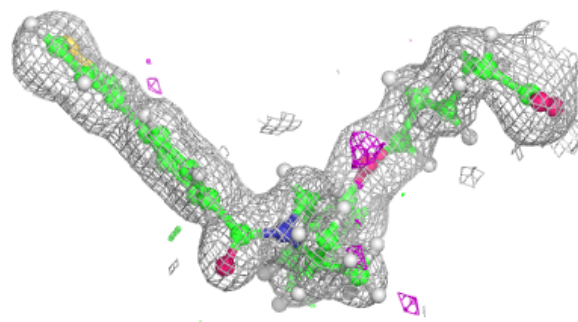


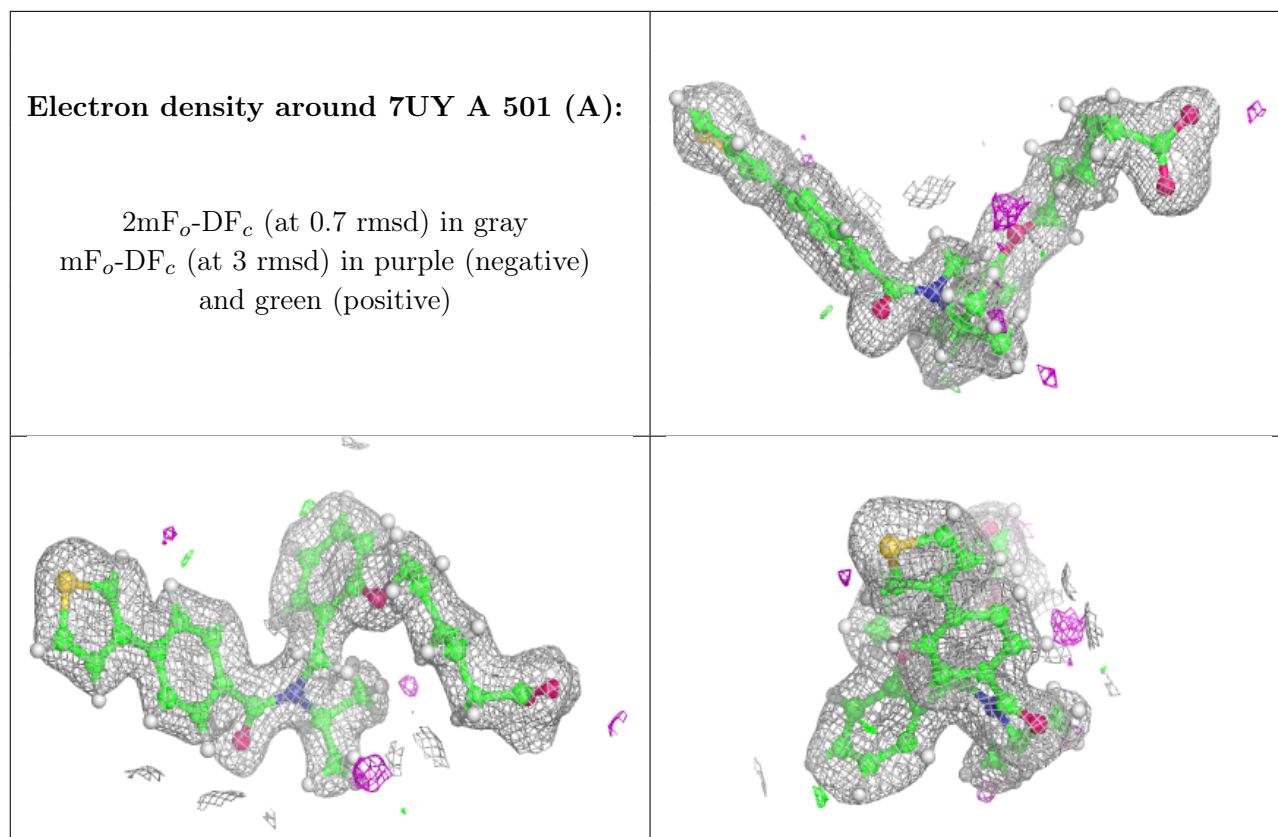
**Electron density around 7UY B 501 (A):**

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

**Electron density around 7UY A 501 (B):**

$2mF_o-DF_c$  (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.