WORLDWIDE PDB
PROTEIN DATA BANK

wwPDB X-ray Structure Validation Summary Report (i)

Dec 2, 2024 – 01:40 PM JST

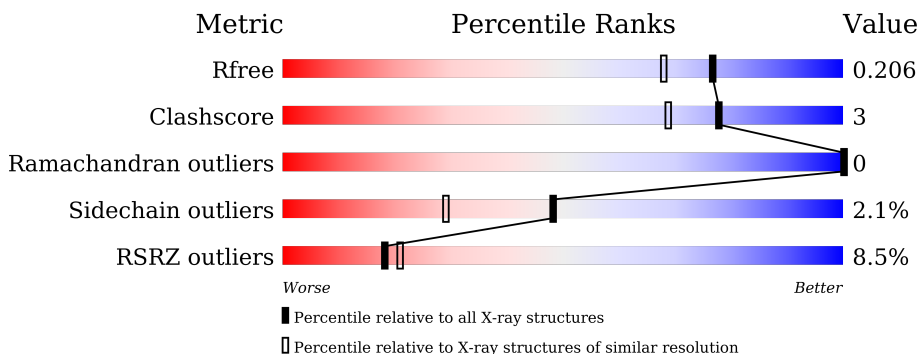|		
PDB ID	:	8Z69
Title	:	Crystal Structure of the second bromodomain of human BRD2 BD2 in complex with the inhibitor Y13195
Authors	:	Li, J.; Hu, Q.; Xu, H.; Zhao, X.; Zhang, C.; Zhu, R.; Wu, X.; Zhang, Y.; Xu, Y.
Deposited on	:	2024-04-18
Resolution	:	1.77 Å(reported)

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 1.77 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	Percentile Ranks	Value
Rfree		0.206
Clashscore		3
Ramachandran outliers		0
Sidechain outliers		2.1%
RSRZ outliers		8.5%

Worse   *Better*

▌Percentile relative to all X-ray structures

▯Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	1191 (1.78-1.78)
Clashscore	180529	1282 (1.78-1.78)
Ramachandran outliers	177936	1270 (1.78-1.78)
Sidechain outliers	177891	1270 (1.78-1.78)
RSRZ outliers	164620	1191 (1.78-1.78)

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	136	7% / 75% / 5% / 20%
1	B	136	9% / 73% / 7% · / 19%
1	C	136	7% / 74% / 6% / 20%
1	D	136	4% / 77% / · / 20%

2   Entry composition ⓘ

There are 8 unique types of molecules in this entry. The entry contains 4336 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 BRD2_HUMAN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	109	Total	C	N	O	S	0	3	0
			918	590	161	160	7			
1	B	110	Total	C	N	O	S	0	3	0
			929	596	163	163	7			
1	C	109	Total	C	N	O	S	0	3	0
			918	590	161	160	7			
1	D	109	Total	C	N	O	S	0	3	0
			918	590	161	160	7			

There are 96 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	320	GLU	-	expression tag	UNP P25440
A	321	GLY	-	expression tag	UNP P25440
A	322	ASP	-	expression tag	UNP P25440
A	323	ILE	-	expression tag	UNP P25440
A	324	HIS	-	expression tag	UNP P25440
A	325	MET	-	expression tag	UNP P25440
A	326	LYS	-	expression tag	UNP P25440
A	327	LYS	-	expression tag	UNP P25440
A	328	GLY	-	expression tag	UNP P25440
A	329	HIS	-	expression tag	UNP P25440
A	330	HIS	-	expression tag	UNP P25440
A	331	HIS	-	expression tag	UNP P25440
A	332	HIS	-	expression tag	UNP P25440
A	333	HIS	-	expression tag	UNP P25440
A	334	HIS	-	expression tag	UNP P25440
A	335	GLU	-	expression tag	UNP P25440
A	336	ASN	-	expression tag	UNP P25440
A	337	LEU	-	expression tag	UNP P25440
A	338	TYR	-	expression tag	UNP P25440
A	339	PHE	-	expression tag	UNP P25440
A	340	GLN	-	expression tag	UNP P25440

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Chain	Residue	Modelled	Actual	Comment	Reference
A	341	GLY	-	expression tag	UNP P25440
A	342	GLY	-	expression tag	UNP P25440
A	343	SER	-	expression tag	UNP P25440
B	320	GLU	-	expression tag	UNP P25440
B	321	GLY	-	expression tag	UNP P25440
B	322	ASP	-	expression tag	UNP P25440
B	323	ILE	-	expression tag	UNP P25440
B	324	HIS	-	expression tag	UNP P25440
B	325	MET	-	expression tag	UNP P25440
B	326	LYS	-	expression tag	UNP P25440
B	327	LYS	-	expression tag	UNP P25440
B	328	GLY	-	expression tag	UNP P25440
B	329	HIS	-	expression tag	UNP P25440
B	330	HIS	-	expression tag	UNP P25440
B	331	HIS	-	expression tag	UNP P25440
B	332	HIS	-	expression tag	UNP P25440
B	333	HIS	-	expression tag	UNP P25440
B	334	HIS	-	expression tag	UNP P25440
B	335	GLU	-	expression tag	UNP P25440
B	336	ASN	-	expression tag	UNP P25440
B	337	LEU	-	expression tag	UNP P25440
B	338	TYR	-	expression tag	UNP P25440
B	339	PHE	-	expression tag	UNP P25440
B	340	GLN	-	expression tag	UNP P25440
B	341	GLY	-	expression tag	UNP P25440
B	342	GLY	-	expression tag	UNP P25440
B	343	SER	-	expression tag	UNP P25440
C	320	GLU	-	expression tag	UNP P25440
C	321	GLY	-	expression tag	UNP P25440
C	322	ASP	-	expression tag	UNP P25440
C	323	ILE	-	expression tag	UNP P25440
C	324	HIS	-	expression tag	UNP P25440
C	325	MET	-	expression tag	UNP P25440
C	326	LYS	-	expression tag	UNP P25440
C	327	LYS	-	expression tag	UNP P25440
C	328	GLY	-	expression tag	UNP P25440
C	329	HIS	-	expression tag	UNP P25440
C	330	HIS	-	expression tag	UNP P25440
C	331	HIS	-	expression tag	UNP P25440
C	332	HIS	-	expression tag	UNP P25440
C	333	HIS	-	expression tag	UNP P25440
C	334	HIS	-	expression tag	UNP P25440

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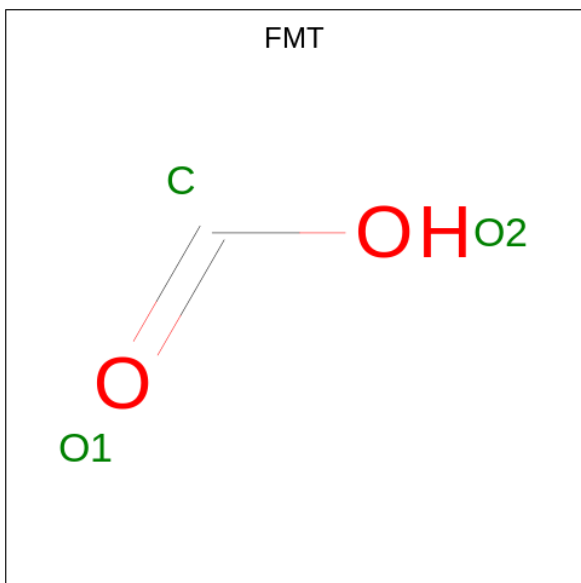
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Chain	Residue	Modelled	Actual	Comment	Reference
C	335	GLU	-	expression tag	UNP P25440
C	336	ASN	-	expression tag	UNP P25440
C	337	LEU	-	expression tag	UNP P25440
C	338	TYR	-	expression tag	UNP P25440
C	339	PHE	-	expression tag	UNP P25440
C	340	GLN	-	expression tag	UNP P25440
C	341	GLY	-	expression tag	UNP P25440
C	342	GLY	-	expression tag	UNP P25440
C	343	SER	-	expression tag	UNP P25440
D	320	GLU	-	expression tag	UNP P25440
D	321	GLY	-	expression tag	UNP P25440
D	322	ASP	-	expression tag	UNP P25440
D	323	ILE	-	expression tag	UNP P25440
D	324	HIS	-	expression tag	UNP P25440
D	325	MET	-	expression tag	UNP P25440
D	326	LYS	-	expression tag	UNP P25440
D	327	LYS	-	expression tag	UNP P25440
D	328	GLY	-	expression tag	UNP P25440
D	329	HIS	-	expression tag	UNP P25440
D	330	HIS	-	expression tag	UNP P25440
D	331	HIS	-	expression tag	UNP P25440
D	332	HIS	-	expression tag	UNP P25440
D	333	HIS	-	expression tag	UNP P25440
D	334	HIS	-	expression tag	UNP P25440
D	335	GLU	-	expression tag	UNP P25440
D	336	ASN	-	expression tag	UNP P25440
D	337	LEU	-	expression tag	UNP P25440
D	338	TYR	-	expression tag	UNP P25440
D	339	PHE	-	expression tag	UNP P25440
D	340	GLN	-	expression tag	UNP P25440
D	341	GLY	-	expression tag	UNP P25440
D	342	GLY	-	expression tag	UNP P25440
D	343	SER	-	expression tag	UNP P25440

- Molecule 2 is 7-(2-(4-fluoro-2,6-dimethylphenoxy)-5-(2-hydroxypropan-2-yl)phenyl)-5-methyl-2-(2-phenyl-1H-imidazol-5-yl)furo[3,2-c]pyridin-4(5H)-one (three-letter code: A1L0Y) (formula: $C_{34}H_{30}FN_3O_4$) (labeled as "Ligand of Interest" by depositor).

A1L0Y
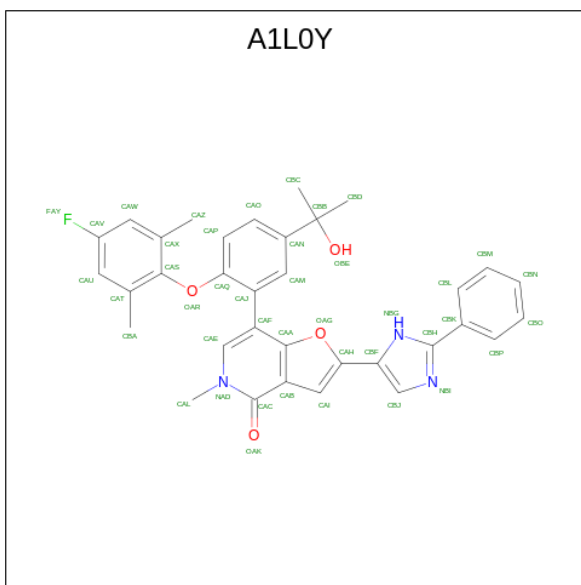
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	F	N	O	0	0
			42	34	1	3	4		
2	B	1	Total	C	F	N	O	0	0
			42	34	1	3	4		
2	C	1	Total	C	F	N	O	0	0
			42	34	1	3	4		
2	D	1	Total	C	F	N	O	0	0
			42	34	1	3	4		

- Molecule 3 is FORMIC ACID (three-letter code: FMT) (formula: CH_2O_2).

FMT

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total 3	C 1	O 2	0	0
3	A	1	Total 3	C 1	O 2	0	0
3	A	1	Total 3	C 1	O 2	0	0
3	C	1	Total 3	C 1	O 2	0	0
3	C	1	Total 3	C 1	O 2	0	0
3	D	1	Total 3	C 1	O 2	0	0
3	D	1	Total 3	C 1	O 2	0	0
3	D	1	Total 3	C 1	O 2	0	0
3	D	1	Total 3	C 1	O 2	0	0
3	D	1	Total 3	C 1	O 2	0	0

- Molecule 4 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).
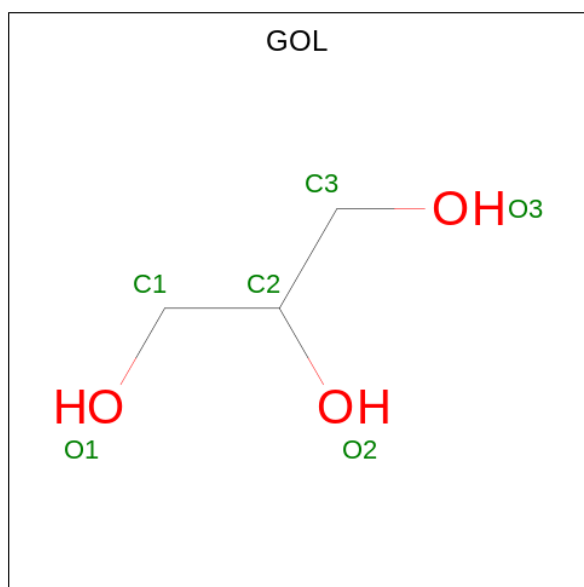
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total 6	C 3	O 3	0	0
4	C	1	Total 6	C 3	O 3	0	0

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

- Molecule 5 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).
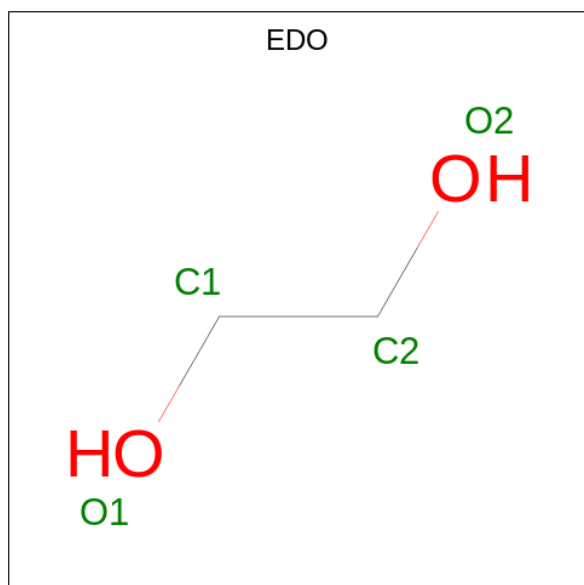
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	B	1	Total 4	C 2	O 2	0	0
5	B	1	Total 4	C 2	O 2	0	0
5	C	1	Total 4	C 2	O 2	0	0
5	C	1	Total 4	C 2	O 2	0	0
5	D	1	Total 4	C 2	O 2	0	0
5	D	1	Total 4	C 2	O 2	0	0
5	D	1	Total 4	C 2	O 2	0	0

- Molecule 6 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	C	1	Total Na 1 1	0	0
6	D	1	Total Na 1 1	0	0

- Molecule 7 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).

PEG
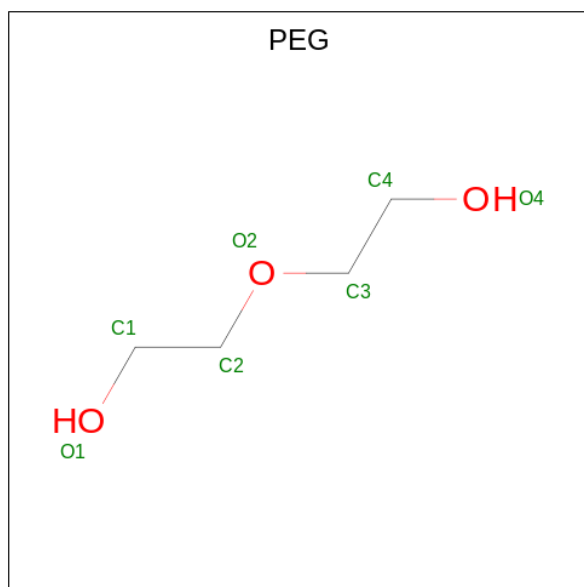
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	D	1	Total C O 7 4 3	0	0

- Molecule 8 is water.

| Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	95	Total O 95 95	0	0
8	B	87	Total O 87 87	0	0
8	C	101	Total O 101 101	0	0
8	D	111	Total O 111 111	0	0

3 Residue-property plots ⓘ

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.
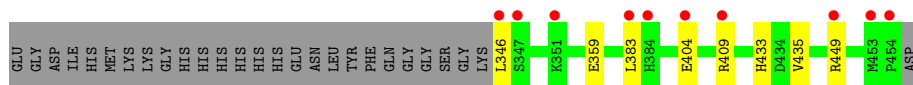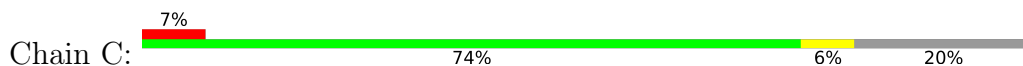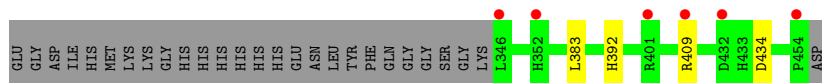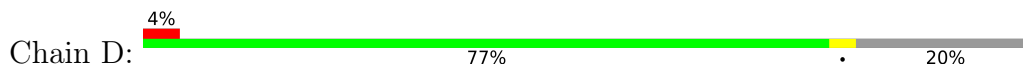
- Molecule 1: BRD2_HUMAN
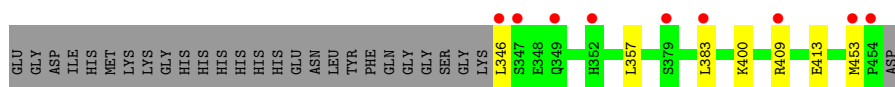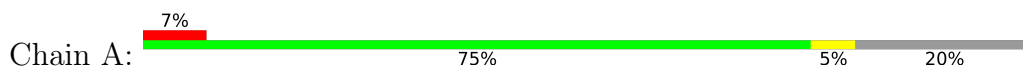
- Molecule 1: BRD2_HUMAN
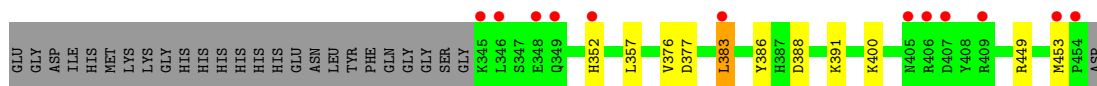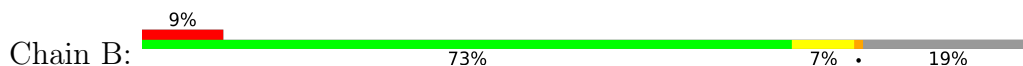
- Molecule 1: BRD2_HUMAN

- Molecule 1: BRD2_HUMAN

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	89.27Å 95.53Å 110.71Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	42.24 – 1.77 42.24 – 1.77	Depositor EDS
% Data completeness (in resolution range)	98.3 (42.24-1.77) 98.3 (42.24-1.77)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.80 (at 1.77Å)	Xtriage
Refinement program	REFMAC 5.8.0258	Depositor
R, R_{free}	0.181 , 0.199 0.190 , 0.206	Depositor DCC
R_{free} test set	4512 reflections (4.87%)	wwPDB-VP
Wilson B-factor (Å^2)	32.0	Xtriage
Anisotropy	0.413	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.37 , 38.2	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	4336	wwPDB-VP
Average B, all atoms (Å^2)	36.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 10.26% of the height of the origin peak. No significant pseudotranslation is detected.*

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[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: A1L0Y, NA, PEG, FMT, GOL, EDO

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	0.64	0/953	0.68	0/1283
1	B	0.64	0/961	0.69	0/1293
1	C	0.64	0/952	0.68	0/1280
1	D	0.64	0/953	0.71	0/1283
All	All	0.64	0/3819	0.69	0/5139

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 ⓘ

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	918	0	910	3	0
1	B	929	0	915	9	0
1	C	918	0	908	6	0
1	D	918	0	910	2	0
2	A	42	0	0	0	0
2	B	42	0	0	0	0
2	C	42	0	0	0	0
2	D	42	0	0	0	0
3	A	9	0	3	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	C	6	0	2	1	0
3	D	15	0	5	1	0
4	B	6	0	8	0	0
4	C	18	0	24	0	0
5	B	8	0	12	3	0
5	C	8	0	12	0	0
5	D	12	0	18	2	0
6	C	1	0	0	0	0
6	D	1	0	0	0	0
7	D	7	0	10	0	0
8	A	95	0	0	0	0
8	B	87	0	0	1	0
8	C	101	0	0	2	0
8	D	111	0	0	1	0
All	All	4336	0	3737	21	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.

The worst 5 of 21 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:C:433:HIS:HD2	1:C:435:VAL:H	1.36	0.73
1:B:449:ARG:NH2	8:B:602:HOH:O	2.31	0.63
1:C:359[A]:GLU:OE1	1:C:449[A]:ARG:NH1	2.38	0.54
3:D:505:FMT:C	8:D:601:HOH:O	2.57	0.53
1:B:376:VAL:O	5:B:503:EDO:H22	2.14	0.48

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	110/136 (81%)	110 (100%)	0	0	100	100
1	B	111/136 (82%)	111 (100%)	0	0	100	100
1	C	110/136 (81%)	110 (100%)	0	0	100	100
1	D	110/136 (81%)	109 (99%)	1 (1%)	0	100	100
All	All	441/544 (81%)	440 (100%)	1 (0%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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	99/118 (84%)	97 (98%)	2 (2%)	50	32
1	B	100/118 (85%)	99 (99%)	1 (1%)	73	61
1	C	97/118 (82%)	95 (98%)	2 (2%)	48	29
1	D	99/118 (84%)	96 (97%)	3 (3%)	36	15
All	All	395/472 (84%)	387 (98%)	8 (2%)	48	32

5 of 8 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	409	ARG
1	D	392	HIS
1	C	409	ARG
1	C	383	LEU
1	D	383	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 6 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	424	ASN
1	C	433	HIS
1	D	424	ASN

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Mol	Chain	Res	Type
1	A	443	GLN
1	A	424	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 28 ligands modelled in this entry, 2 are monoatomic - leaving 26 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
5	EDO	B	503	-	3,3,3	0.76	0	2,2,2	0.70	0
2	A1L0Y	D	501	-	41,47,47	2.83	12 (29%)	53,71,71	1.23	7 (13%)
3	FMT	D	502	-	2,2,2	0.37	0	1,1,1	0.14	0
3	FMT	A	504	-	2,2,2	0.28	0	1,1,1	0.17	0
3	FMT	D	505	-	2,2,2	0.34	0	1,1,1	0.04	0
4	GOL	C	506	-	5,5,5	0.08	0	5,5,5	0.24	0
3	FMT	C	508	-	2,2,2	0.44	0	1,1,1	0.14	0
5	EDO	D	508	-	3,3,3	0.26	0	2,2,2	0.36	0
4	GOL	C	504	-	5,5,5	0.08	0	5,5,5	0.25	0
5	EDO	D	509	-	3,3,3	0.06	0	2,2,2	0.14	0
7	PEG	D	506	-	6,6,6	0.21	0	5,5,5	0.12	0
5	EDO	C	502	-	3,3,3	0.20	0	2,2,2	0.33	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
4	GOL	C	505	-	5,5,5	0.08	0	5,5,5	0.32	0
4	GOL	B	502	-	5,5,5	0.09	0	5,5,5	0.25	0
3	FMT	C	501	-	2,2,2	0.43	0	1,1,1	0.11	0
5	EDO	D	507	-	3,3,3	0.18	0	2,2,2	0.28	0
3	FMT	D	510	-	2,2,2	0.28	0	1,1,1	0.18	0
2	A1L0Y	A	501	-	41,47,47	3.20	11 (26%)	53,71,71	1.36	7 (13%)
3	FMT	A	503	-	2,2,2	0.48	0	1,1,1	0.12	0
3	FMT	A	502	-	2,2,2	0.43	0	1,1,1	0.13	0
5	EDO	B	504	-	3,3,3	0.09	0	2,2,2	0.24	0
2	A1L0Y	B	501	-	41,47,47	3.07	10 (24%)	53,71,71	1.11	4 (7%)
2	A1L0Y	C	503	-	41,47,47	2.68	10 (24%)	53,71,71	1.27	9 (16%)
3	FMT	D	504	-	2,2,2	0.45	0	1,1,1	0.07	0
3	FMT	D	503	-	2,2,2	0.50	0	1,1,1	0.04	0
5	EDO	C	507	-	3,3,3	0.06	0	2,2,2	0.14	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
5	EDO	D	507	-	-	1/1/1/1	-
5	EDO	D	508	-	-	0/1/1/1	-
5	EDO	D	509	-	-	0/1/1/1	-
5	EDO	B	503	-	-	0/1/1/1	-
2	A1L0Y	A	501	-	-	0/18/22/22	0/6/6/6
5	EDO	C	502	-	-	1/1/1/1	-
7	PEG	D	506	-	-	2/4/4/4	-
4	GOL	C	505	-	-	2/4/4/4	-
5	EDO	B	504	-	-	1/1/1/1	-
2	A1L0Y	B	501	-	-	4/18/22/22	0/6/6/6
2	A1L0Y	D	501	-	-	0/18/22/22	0/6/6/6
4	GOL	B	502	-	-	0/4/4/4	-
2	A1L0Y	C	503	-	-	4/18/22/22	0/6/6/6
4	GOL	C	504	-	-	0/4/4/4	-
4	GOL	C	506	-	-	2/4/4/4	-
5	EDO	C	507	-	-	0/1/1/1	-

The worst 5 of 43 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	501	A1L0Y	CBB-CAN	-14.57	1.43	1.53
2	B	501	A1L0Y	CBB-CAN	-14.28	1.43	1.53
2	D	501	A1L0Y	CBB-CAN	-11.43	1.45	1.53
2	C	503	A1L0Y	CBB-CAN	-9.97	1.46	1.53
2	A	501	A1L0Y	CBF-CAH	-5.98	1.35	1.49

The worst 5 of 27 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	501	A1L0Y	CAM-CAN-CBB	3.62	124.95	120.43
2	C	503	A1L0Y	CAF-CAE-NAD	-3.45	118.54	122.96
2	D	501	A1L0Y	CAF-CAE-NAD	-3.41	118.59	122.96
2	C	503	A1L0Y	OBE-CBB-CAN	3.37	114.64	109.13
2	A	501	A1L0Y	CAQ-OAR-CAS	3.27	125.04	117.79

There are no chirality outliers.

5 of 17 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	D	506	PEG	O1-C1-C2-O2
4	C	505	GOL	O1-C1-C2-C3
4	C	506	GOL	C1-C2-C3-O3
4	C	506	GOL	O2-C2-C3-O3
5	B	504	EDO	O1-C1-C2-O2

There are no ring outliers.

5 monomers are involved in 7 short contacts:

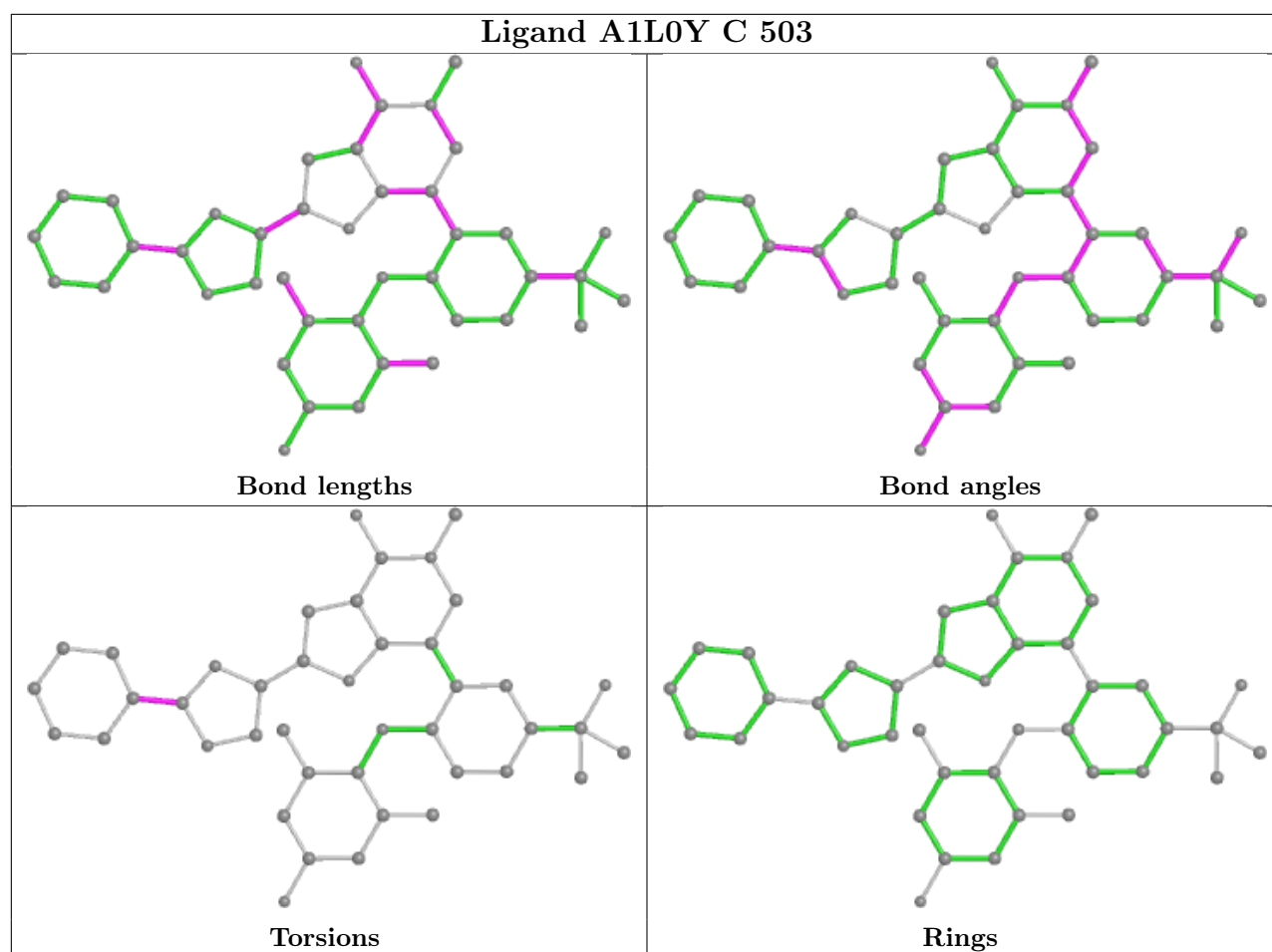| Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	503	EDO	2	0
3	D	505	FMT	1	0
5	D	508	EDO	2	0
3	C	501	FMT	1	0
5	B	504	EDO	1	0

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 A1L0Y D 501

Bond lengths   Bond angles

Torsions   Rings

Ligand A1L0Y A 501

Bond lengths

Bond angles

Torsions

Rings

Ligand A1L0Y B 501

Bond lengths

Bond angles

Torsions

Rings

Ligand A1L0Y C 503
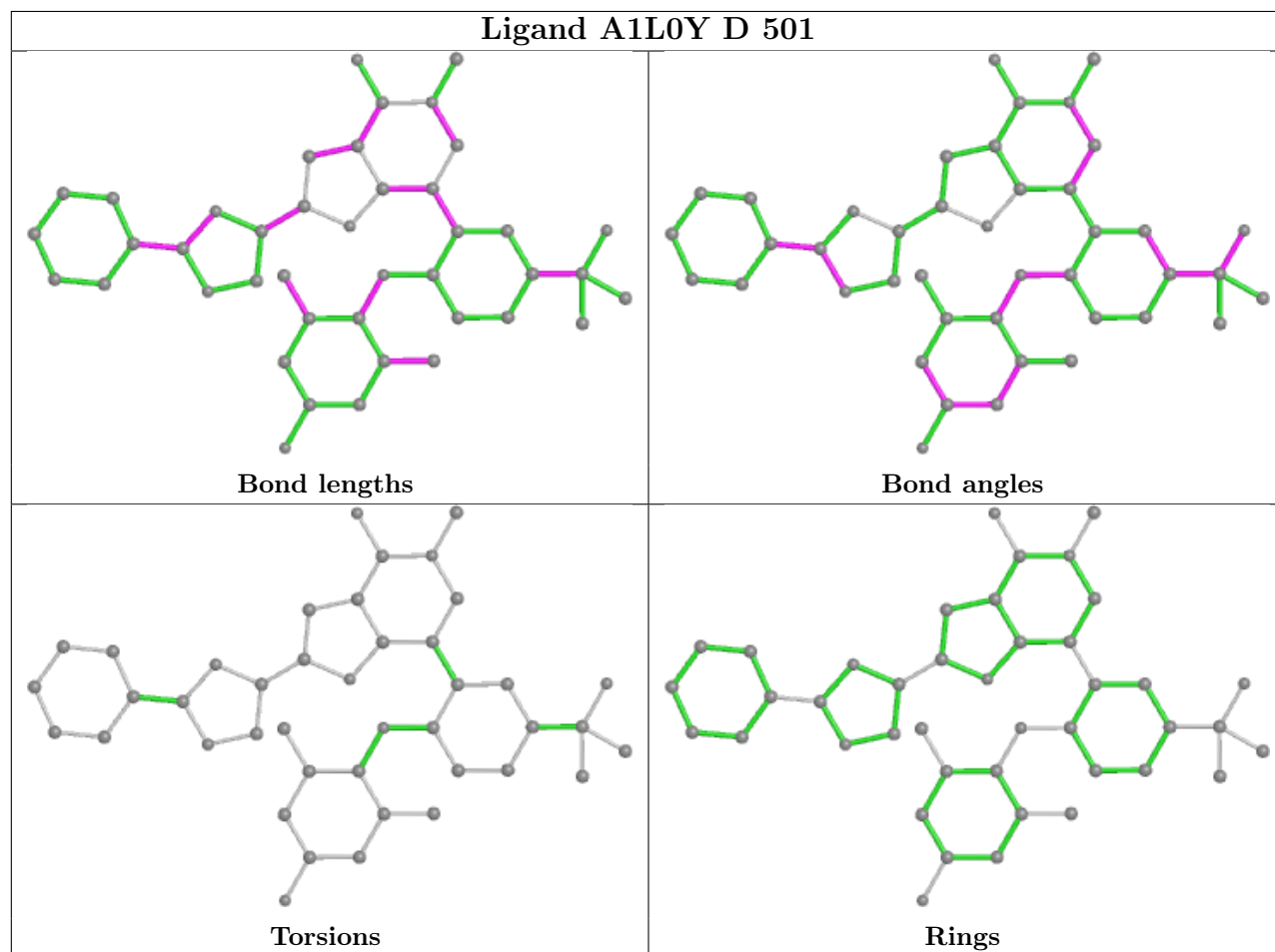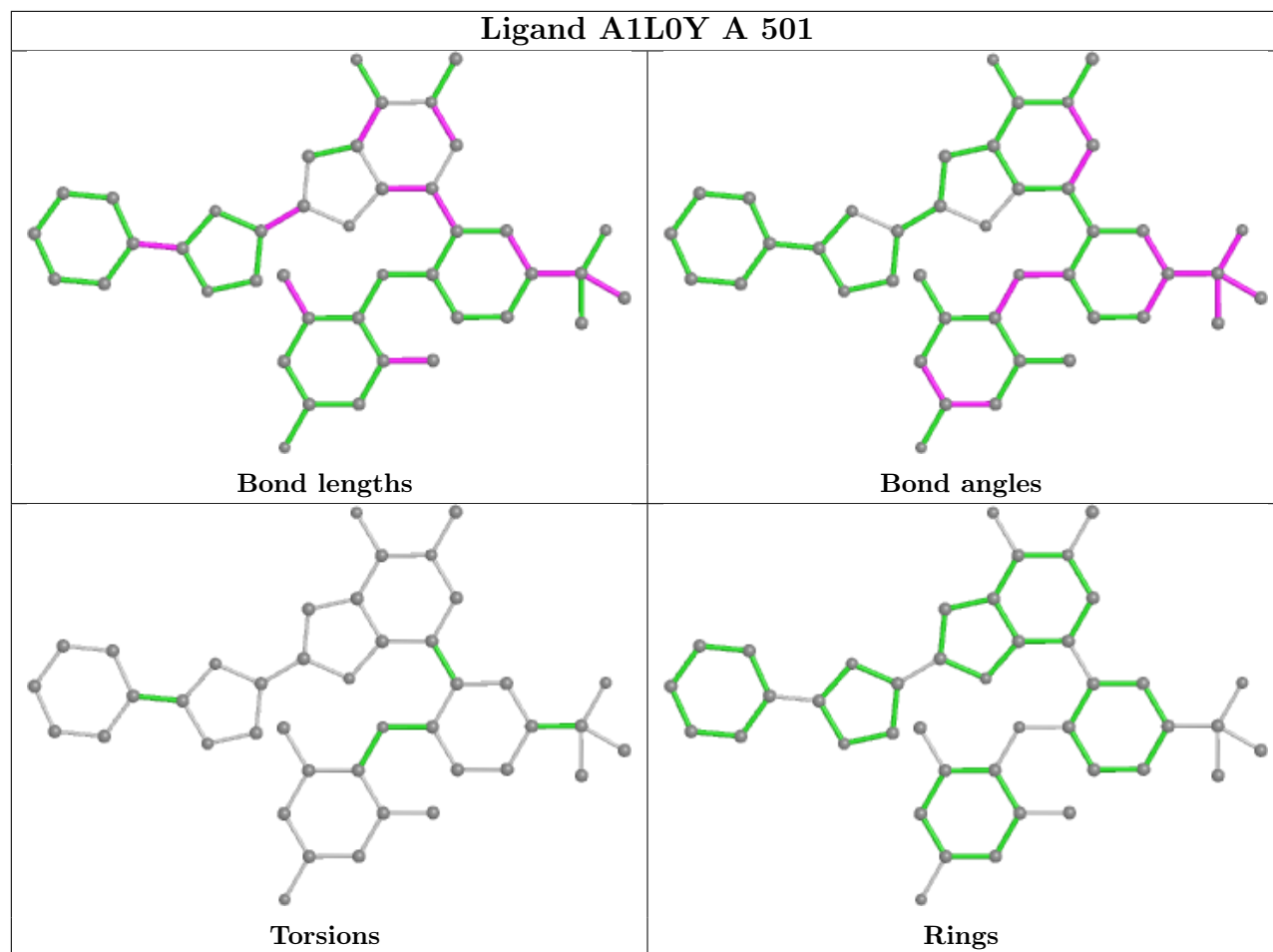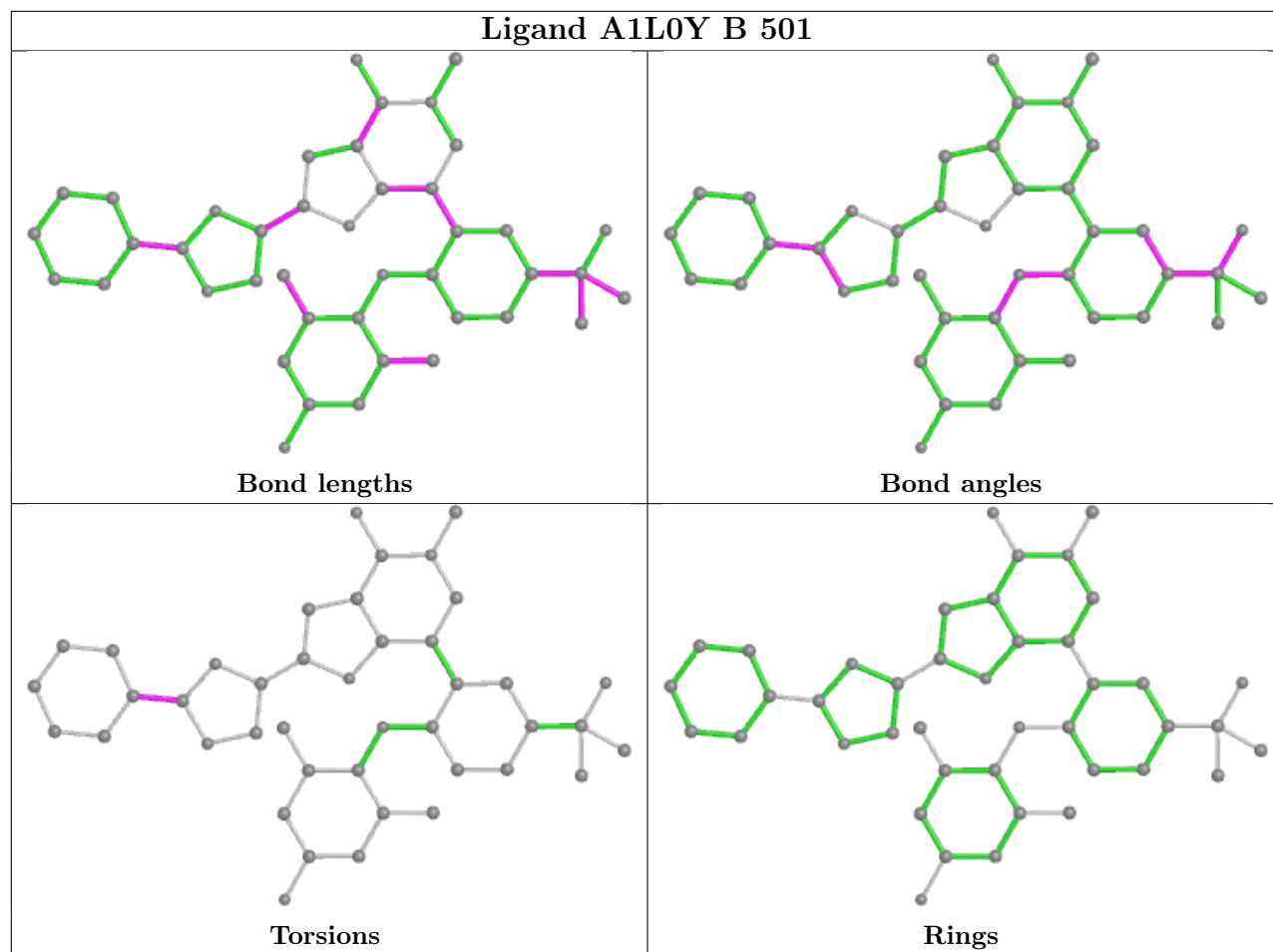
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 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, 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(Å²)	Q<0.9
1	A	109/136 (80%)	0.73	9 (8%)	19	22	19, 34, 57, 85	3 (2%)
1	B	110/136 (80%)	0.53	12 (10%)	12	14	13, 32, 59, 92	3 (2%)
1	C	109/136 (80%)	0.44	10 (9%)	16	19	17, 31, 53, 81	3 (2%)
1	D	109/136 (80%)	0.29	6 (5%)	32	38	17, 31, 50, 67	3 (2%)
All	All	437/544 (80%)	0.50	37 (8%)	18	21	13, 32, 57, 92	12 (2%)

The worst 5 of 37 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	346	LEU	11.2
1	A	346	LEU	11.2
1	A	454	PRO	5.4
1	C	454	PRO	5.0
1	B	345	LYS	4.3

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.
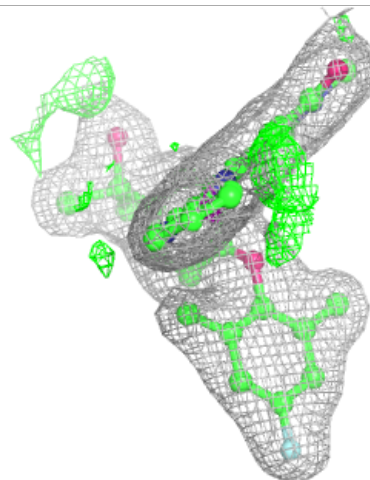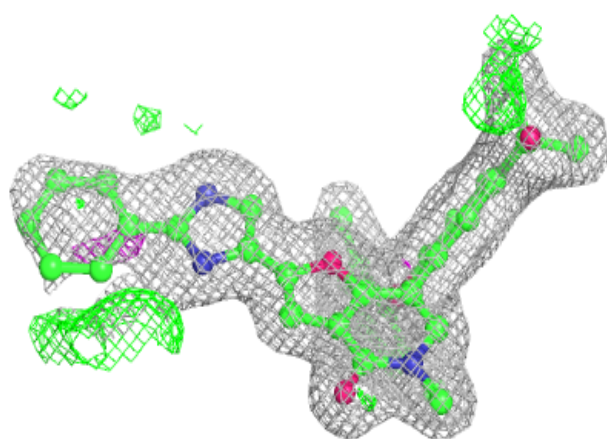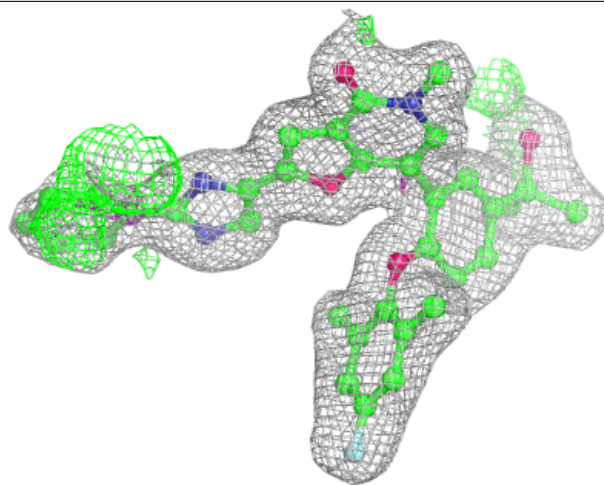
6.4 Ligands (i)

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, 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.

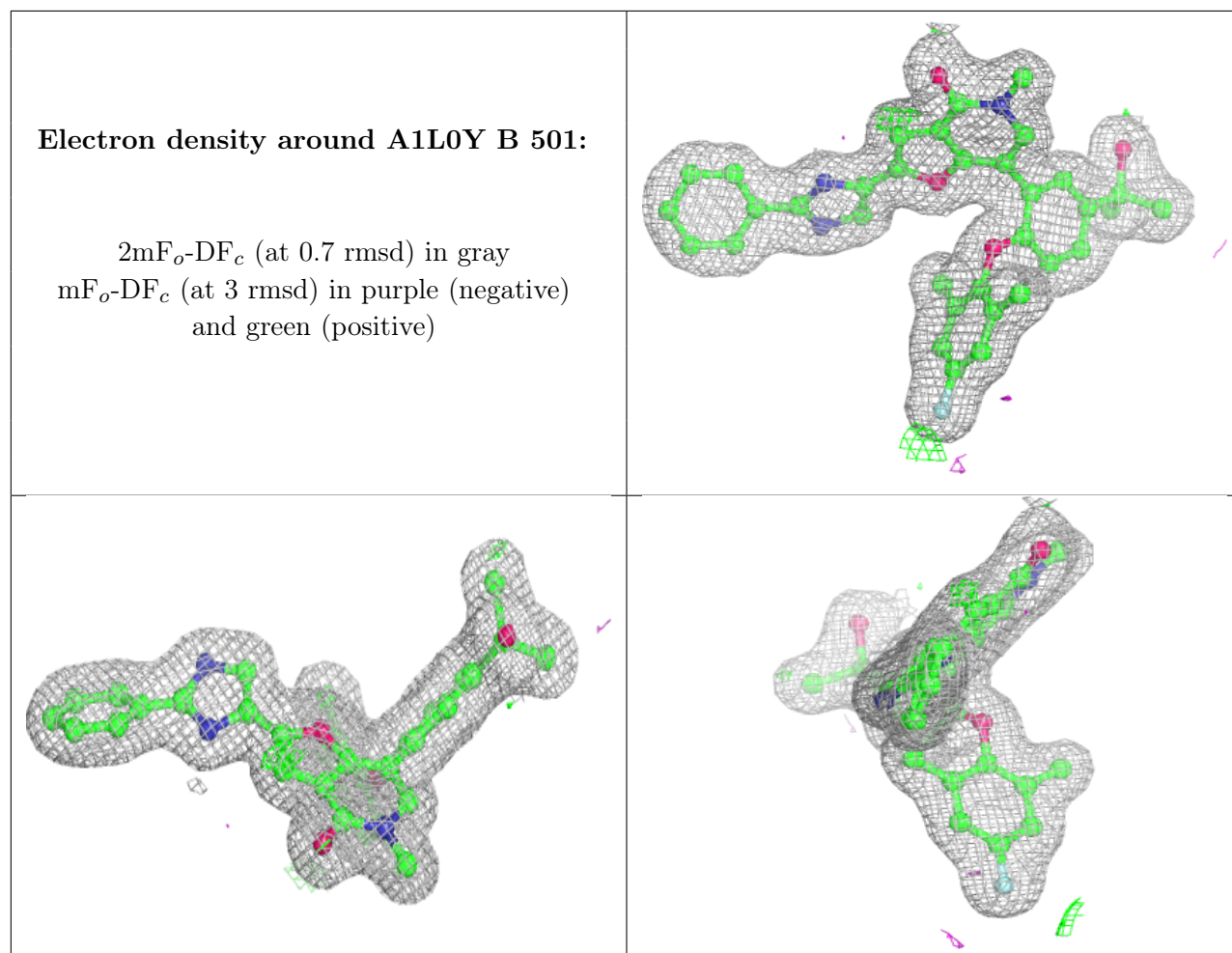| Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
5	EDO	B	504	4/4	0.59	0.31	78,80,81,82	0
3	FMT	D	510	3/3	0.61	0.19	82,82,82,83	0
7	PEG	D	506	7/7	0.66	0.28	66,73,84,86	0
5	EDO	D	507	4/4	0.70	0.24	57,59,59,60	0
3	FMT	A	504	3/3	0.72	0.18	82,82,83,84	0
5	EDO	D	509	4/4	0.73	0.22	89,89,91,92	0
3	FMT	C	508	3/3	0.77	0.19	53,53,59,61	0
3	FMT	C	501	3/3	0.77	0.26	63,63,65,68	0
3	FMT	D	502	3/3	0.80	0.23	65,65,66,70	0
5	EDO	D	508	4/4	0.80	0.22	41,49,54,57	0
3	FMT	D	504	3/3	0.81	0.31	54,54,54,59	0
5	EDO	C	502	4/4	0.81	0.27	62,65,65,68	0
3	FMT	D	503	3/3	0.84	0.23	52,52,55,61	0
4	GOL	C	506	6/6	0.85	0.20	47,59,63,63	0
6	NA	C	509	1/1	0.86	0.25	56,56,56,56	0
4	GOL	C	504	6/6	0.87	0.19	51,60,64,65	0
4	GOL	B	502	6/6	0.88	0.17	40,61,67,70	0
5	EDO	C	507	4/4	0.89	0.20	41,55,57,66	0
6	NA	D	511	1/1	0.89	0.20	47,47,47,47	0
3	FMT	A	503	3/3	0.89	0.30	51,51,51,55	0
4	GOL	C	505	6/6	0.90	0.17	62,66,70,70	0
3	FMT	D	505	3/3	0.90	0.23	44,44,52,55	0
5	EDO	B	503	4/4	0.90	0.16	30,34,36,48	0
3	FMT	A	502	3/3	0.90	0.17	47,47,57,58	0
2	A1L0Y	A	501	42/42	0.95	0.10	27,34,69,73	0
2	A1L0Y	B	501	42/42	0.97	0.06	22,25,39,41	0
2	A1L0Y	C	503	42/42	0.97	0.06	24,26,41,44	0
2	A1L0Y	D	501	42/42	0.97	0.07	24,29,43,45	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.
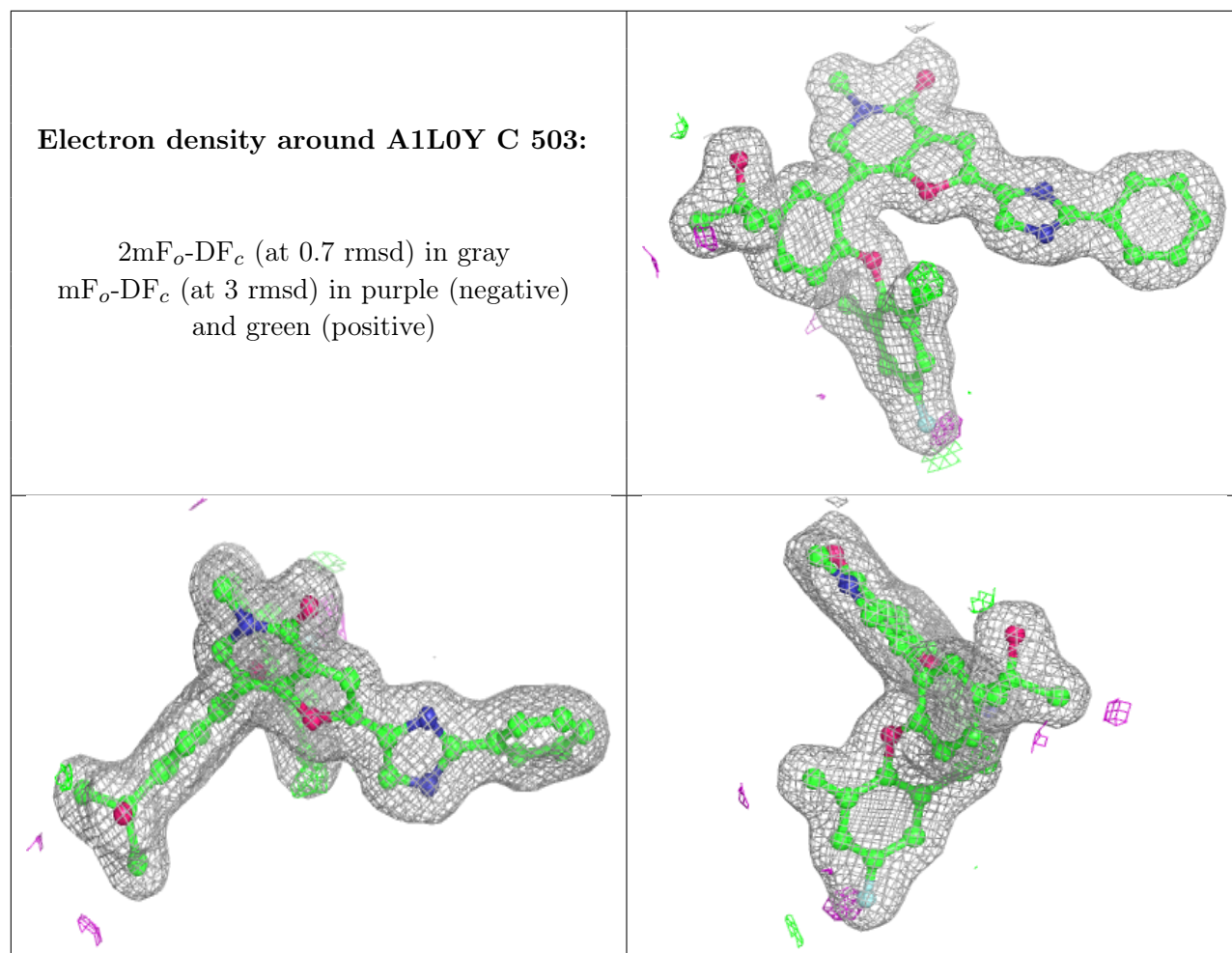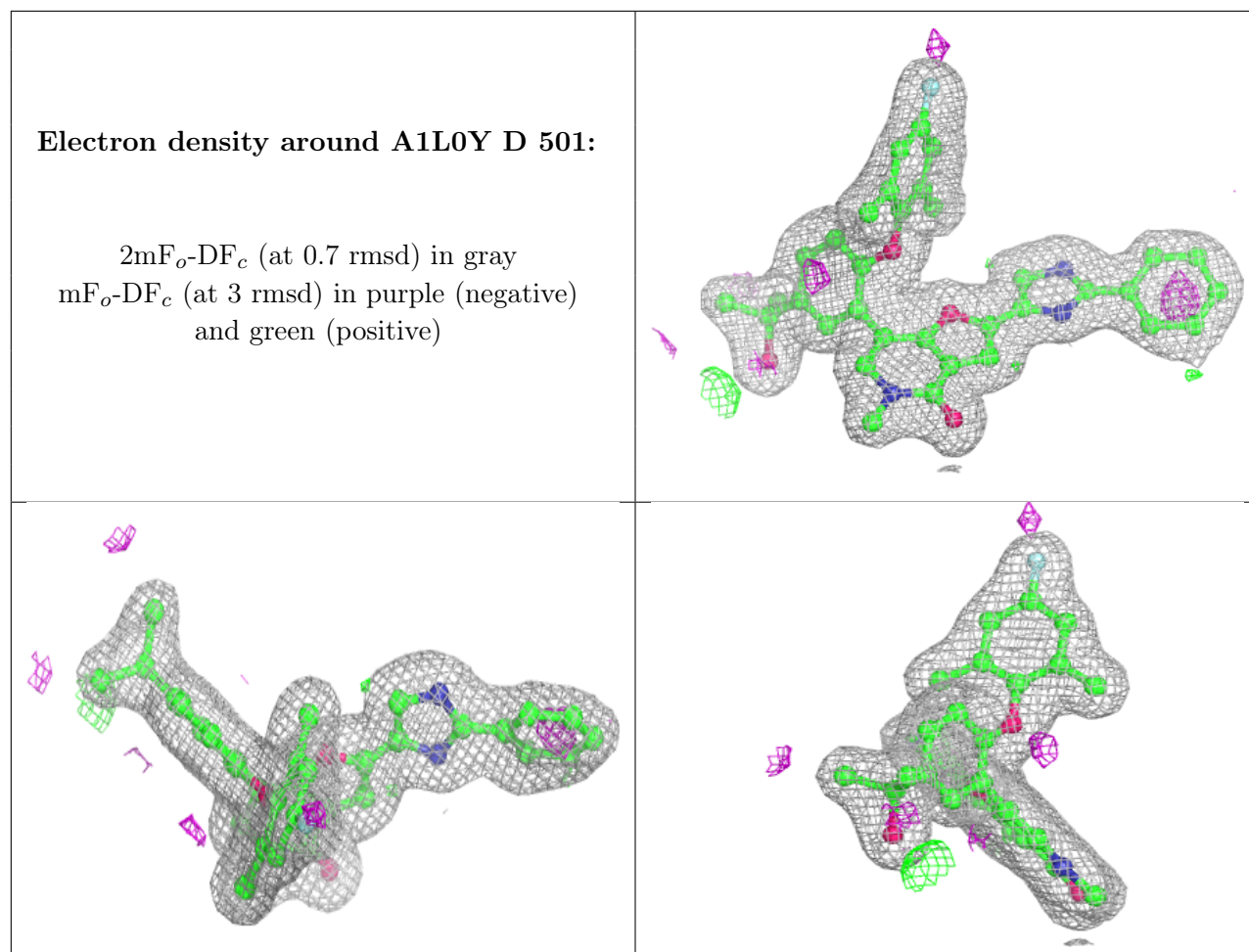
Electron density around A1L0Y A 501:

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 A1L0Y 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)

Electron density around A1L0Y C 503:

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 A1L0Y D 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.