



# Full wwPDB X-ray Structure Validation Report ⓘ

May 28, 2020 – 12:33 am BST

PDB ID : 4GAA  
Title : Structure of Leukotriene A4 hydrolase from *Xenopus laevis* complexed with inhibitor bestatin  
Authors : Stsiapanava, A.; Kumar, R.B.; Haeggstrom, J.Z.; Rinaldo-Matthis, A.  
Deposited on : 2012-07-25  
Resolution : 2.26 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.

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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)  
Xtriage (Phenix) : 1.13  
EDS : 2.11  
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) : 2.11

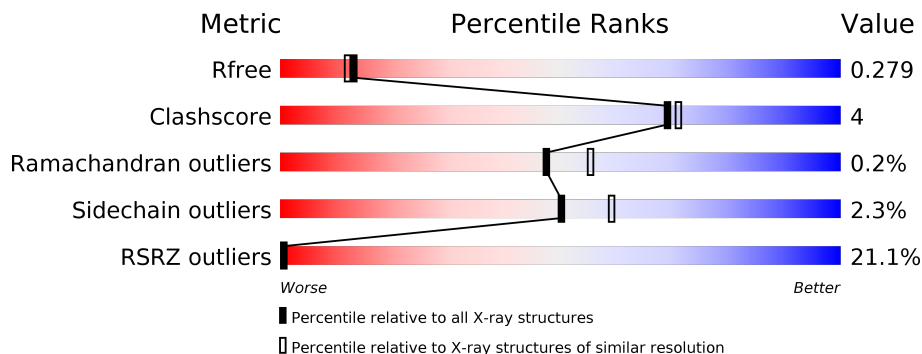
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.26 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	1377 (2.26-2.26)
Clashscore	141614	1487 (2.26-2.26)
Ramachandran outliers	138981	1449 (2.26-2.26)
Sidechain outliers	138945	1450 (2.26-2.26)
RSRZ outliers	127900	1356 (2.26-2.26)

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 on 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	609	 9% 89% 11%
1	B	609	 33% 86% 13%

## 2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 9859 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.

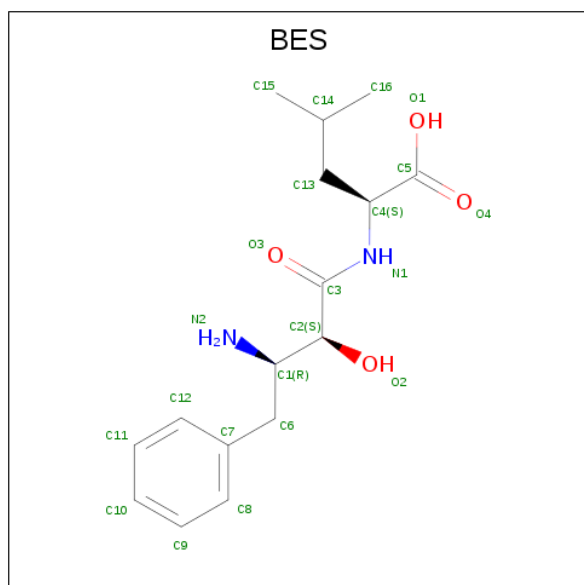
- Molecule 1 is a protein called MGC78867 protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	606	Total 4861	C 3136	N 807	O 898	S 20	0	2	0
1	B	605	Total 4857	C 3133	N 807	O 897	S 20	0	2	0

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	B	1	Total 1	Zn 1	0	0
2	A	1	Total 1	Zn 1	0	0

- Molecule 3 is 2-(3-AMINO-2-HYDROXY-4-PHENYL-BUTYRYLAMINO)-4-METHYL-PENTANOIC ACID (three-letter code: BES) (formula: C<sub>16</sub>H<sub>24</sub>N<sub>2</sub>O<sub>4</sub>).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	N	O	0	0
			22	16	2	4		
3	B	1	Total	C	N	O	0	0
			22	16	2	4		

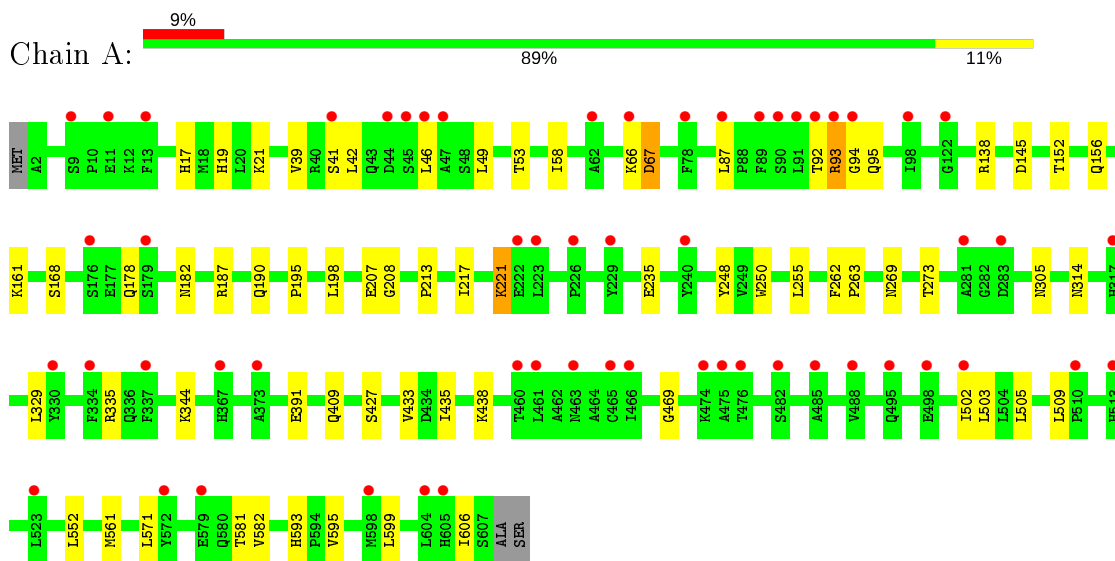
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	57	Total	O	0	1
			58	58		
4	B	36	Total	O	0	1
			37	37		

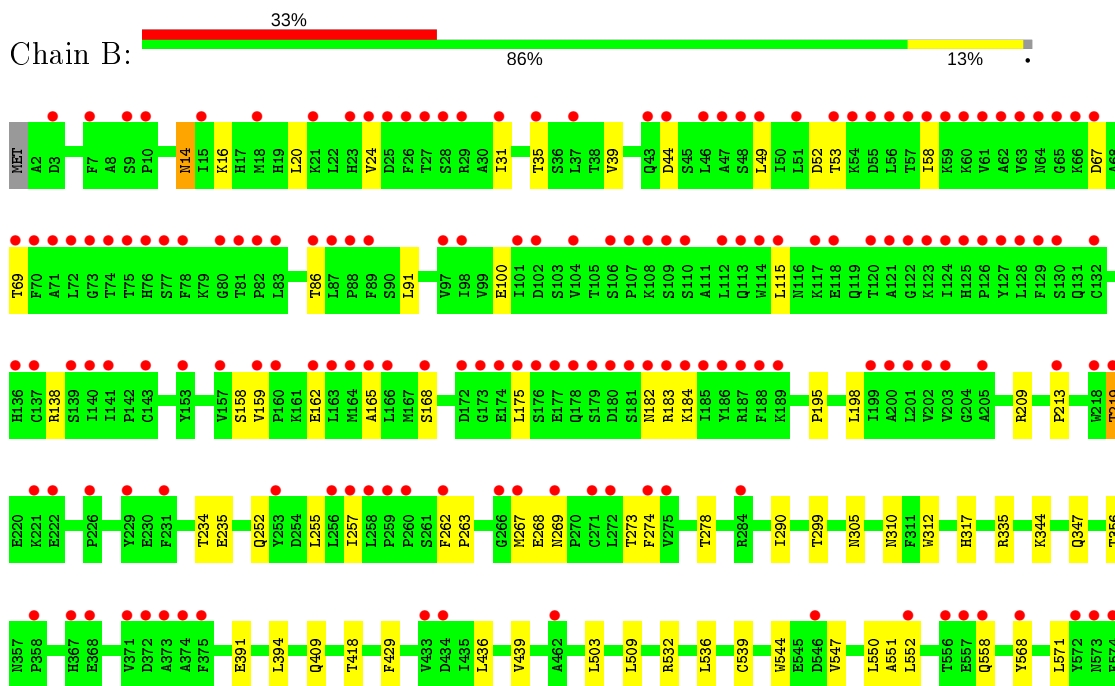
### 3 Residue-property plots [i](#)


These plots are drawn for all protein, RNA and DNA 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: MGC78867 protein



- Molecule 1: MGC78867 protein





E575	K576	R577	R578	E579	T581	W582	M583	T584	F585	L586	K587	M588	R589	S590	F591	M592	H593	F594	W595	T596	E597	M598	L599	W600	A601	D602	D603	L604	H605	I606	SER	ALA	SER
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-----	-----	-----

## 4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	222.12Å 52.17Å 109.90Å 90.00° 111.58° 90.00°	Depositor
Resolution (Å)	29.30 – 2.26 29.23 – 2.26	Depositor EDS
% Data completeness (in resolution range)	97.3 (29.30-2.26) 97.4 (29.23-2.26)	Depositor EDS
$R_{merge}$	0.07	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.64 (at 2.26Å)	Xtrriage
Refinement program	BUSTER 2.11.2	Depositor
R, $R_{free}$	0.222 , 0.250 0.242 , 0.279	Depositor DCC
$R_{free}$ test set	2726 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	39.6	Xtrriage
Anisotropy	0.187	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.32 , 79.9	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.46$ , $\langle L^2 \rangle = 0.29$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	9859	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	89.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.04% 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: BES, ZN

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	0.47	0/4991	0.64	0/6776
1	B	0.45	0/4987	0.63	0/6771
All	All	0.46	0/9978	0.63	0/13547

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	4861	0	4862	33	0
1	B	4857	0	4855	41	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
3	A	22	0	23	0	0
3	B	22	0	22	0	0
4	A	58	0	0	0	0
4	B	37	0	0	0	0
All	All	9859	0	9762	73	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 4.



All (73) 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:571:LEU:HB3	1:B:581:THR:HG21	1.65	0.77
1:A:571:LEU:HB3	1:A:581:THR:HG21	1.64	0.77
1:B:312:TRP:HE1	1:B:418:THR:CG2	2.04	0.71
1:B:52:ASP:HB3	1:B:138:ARG:HG2	1.75	0.67
1:A:161:LYS:HE3	1:A:182:ASN:HA	1.77	0.65
1:B:312:TRP:HE1	1:B:418:THR:HG21	1.62	0.64
1:B:158:SER:HB3	1:B:183:ARG:HD2	1.84	0.59
1:B:195:PRO:HD2	1:B:198:LEU:HD12	1.85	0.59
1:B:159:VAL:HG11	1:B:165:ALA:HB2	1.86	0.57
1:A:195:PRO:HD2	1:A:198:LEU:HD12	1.87	0.56
1:B:310:ASN:OD1	1:B:418:THR:HG23	2.07	0.55
1:A:469:GLY:HA3	1:A:502:ILE:HD11	1.89	0.55
1:A:41:SER:O	1:A:94:GLY:HA2	2.07	0.55
1:B:335:ARG:NH2	1:B:391:GLU:OE1	2.39	0.55
1:A:335:ARG:NH2	1:A:391:GLU:OE1	2.41	0.54
1:A:138:ARG:HH21	1:A:145:ASP:HB3	1.72	0.54
1:B:532:ARG:HH22	1:B:550:LEU:HD22	1.72	0.54
1:B:267:MET:HB3	1:B:274:PHE:HB2	1.90	0.54
1:A:344:LYS:HD2	1:A:502:ILE:HG22	1.88	0.53
1:B:503:LEU:HD22	1:B:509:LEU:HD11	1.91	0.53
1:A:582:VAL:HG13	1:A:606:ILE:HD11	1.91	0.52
1:A:503:LEU:HD22	1:A:509:LEU:HD11	1.90	0.52
1:A:49:LEU:HD13	1:A:87:LEU:HD11	1.91	0.51
1:B:312:TRP:HE1	1:B:418:THR:HG22	1.76	0.50
1:B:213:PRO:HD2	1:B:235:GLU:HG3	1.95	0.49
1:A:213:PRO:HD2	1:A:235:GLU:HG3	1.94	0.48
1:B:234:THR:HG21	1:B:255:LEU:HD11	1.94	0.48
1:B:39:VAL:HG11	1:B:49:LEU:HD11	1.96	0.47
1:B:24:VAL:HG12	1:B:31:ILE:HG12	1.97	0.47
1:B:593:HIS:ND1	1:B:594:PRO:HD2	2.30	0.47
1:A:39:VAL:HG11	1:A:49:LEU:HD11	1.96	0.47
1:B:601:ALA:HA	1:B:606:ILE:HD13	1.97	0.46
1:A:92:THR:O	1:A:95:GLN:HB2	2.16	0.46
1:B:234:THR:HG22	1:B:290:ILE:HG21	1.98	0.46
1:A:156:GLN:HG2	1:A:187:ARG:HG2	1.97	0.46
1:B:219:THR:HG23	1:B:257:ILE:HB	1.97	0.45
1:B:20:LEU:HD23	1:B:35:THR:HG23	1.99	0.44
1:B:344:LYS:HA	1:B:347:GLN:HG2	1.99	0.44
1:A:207:GLU:HG3	1:A:221:LYS:HG3	1.99	0.44
1:A:409[B]:GLN:CD	1:B:409:GLN:HG2	2.37	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:53:THR:HG21	1:A:58:ILE:HD11	1.99	0.44
1:A:262:PHE:CD1	1:A:263:PRO:HD2	2.53	0.44
1:A:255:LEU:HD23	1:A:273:THR:HB	2.00	0.43
1:A:66:LYS:O	1:A:67:ASP:HB2	2.17	0.43
1:A:152:THR:HG23	1:A:190:GLN:O	2.19	0.43
1:B:69:THR:HG23	1:B:86:THR:HG23	1.99	0.43
1:B:262:PHE:CD1	1:B:263:PRO:HD2	2.54	0.43
1:A:248:TYR:CZ	1:A:250:TRP:HB2	2.53	0.43
1:B:168:SER:HB3	1:B:269:ASN:HB3	2.01	0.43
1:A:593:HIS:CE1	1:A:595:VAL:HG23	2.54	0.43
1:A:208:GLY:HA2	1:A:217:ILE:O	2.19	0.43
1:A:593:HIS:HE1	1:A:595:VAL:HG23	1.84	0.43
1:A:17:HIS:ND1	1:A:152:THR:HG22	2.34	0.42
1:B:552:LEU:HD21	1:B:581:THR:HG22	2.01	0.42
1:B:255:LEU:HD23	1:B:273:THR:HB	2.01	0.42
1:B:394:LEU:HD13	1:B:429:PHE:CE1	2.54	0.42
1:B:536:LEU:HD13	1:B:551:ALA:HA	2.02	0.42
1:A:19:HIS:ND1	1:A:21:LYS:HE2	2.35	0.41
1:B:436:LEU:O	1:B:439:VAL:HG13	2.21	0.41
1:B:568:TYR:CZ	1:B:585:PHE:HD1	2.38	0.41
1:B:544:TRP:O	1:B:547:VAL:HG12	2.21	0.41
1:B:53:THR:HG21	1:B:58:ILE:HD11	2.01	0.41
1:A:561:MET:SD	1:A:599:LEU:HD12	2.60	0.41
1:A:168:SER:HB3	1:A:269:ASN:HB3	2.03	0.41
1:B:159:VAL:O	1:B:184:LYS:N	2.54	0.41
1:B:299:THR:HG21	1:B:317:HIS:HB3	2.03	0.41
1:B:14:ASN:HB3	1:B:16:LYS:HE2	2.02	0.41
1:B:278:THR:HG22	1:B:558:GLN:HG2	2.03	0.41
1:B:539:CYS:HG	1:B:544:TRP:HE3	1.69	0.41
1:A:435:ILE:HA	1:A:438:LYS:HD2	2.03	0.41
1:A:552:LEU:HD21	1:A:581:THR:HG22	2.02	0.40
1:A:42:LEU:C	1:A:93:ARG:HG3	2.41	0.40
1:B:278:THR:HG22	1:B:558:GLN:HE21	1.87	0.40

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	606/609 (100%)	581 (96%)	23 (4%)	2 (0%)	41	46
1	B	605/609 (99%)	584 (96%)	20 (3%)	1 (0%)	47	55
All	All	1211/1218 (99%)	1165 (96%)	43 (4%)	3 (0%)	47	55

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	67	ASP
1	A	221	LYS
1	B	268	GLU

### 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	538/538 (100%)	529 (98%)	9 (2%)	60	71
1	B	537/538 (100%)	521 (97%)	16 (3%)	41	50
All	All	1075/1076 (100%)	1050 (98%)	25 (2%)	50	59

All (25) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	46	LEU
1	A	93	ARG
1	A	178	GLN

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Mol	Chain	Res	Type
1	A	305	ASN
1	A	314	ASN
1	A	329	LEU
1	A	427	SER
1	A	433	VAL
1	A	505	LEU
1	B	14	ASN
1	B	44	ASP
1	B	67	ASP
1	B	91	LEU
1	B	100	GLU
1	B	115	LEU
1	B	162	GLU
1	B	175	LEU
1	B	182	ASN
1	B	209	ARG
1	B	219	THR
1	B	252	GLN
1	B	305	ASN
1	B	356	THR
1	B	592	MET
1	B	597	GLU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	269	ASN
1	A	314	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 carbohydrates in this entry.

## 5.6 Ligand geometry

Of 4 ligands modelled in this entry, 2 are monoatomic - leaving 2 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
3	BES	A	702	2	19,22,22	0.83	0	23,29,29	1.36	4 (17%)
3	BES	B	702	2	19,22,22	0.68	0	23,29,29	0.81	1 (4%)

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
3	BES	A	702	2	-	4/20/24/24	0/1/1/1
3	BES	B	702	2	-	5/20/24/24	0/1/1/1

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	702	BES	C13-C4-N1	-3.74	103.14	109.80
3	A	702	BES	C2-C3-N1	-2.65	112.60	116.25
3	B	702	BES	C13-C4-N1	-2.65	105.09	109.80
3	A	702	BES	C4-N1-C3	2.55	127.02	123.19
3	A	702	BES	O2-C2-C1	2.36	114.60	109.64

There are no chirality outliers.

All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	702	BES	O2-C2-C3-N1
3	B	702	BES	C14-C13-C4-C5
3	B	702	BES	C14-C13-C4-N1

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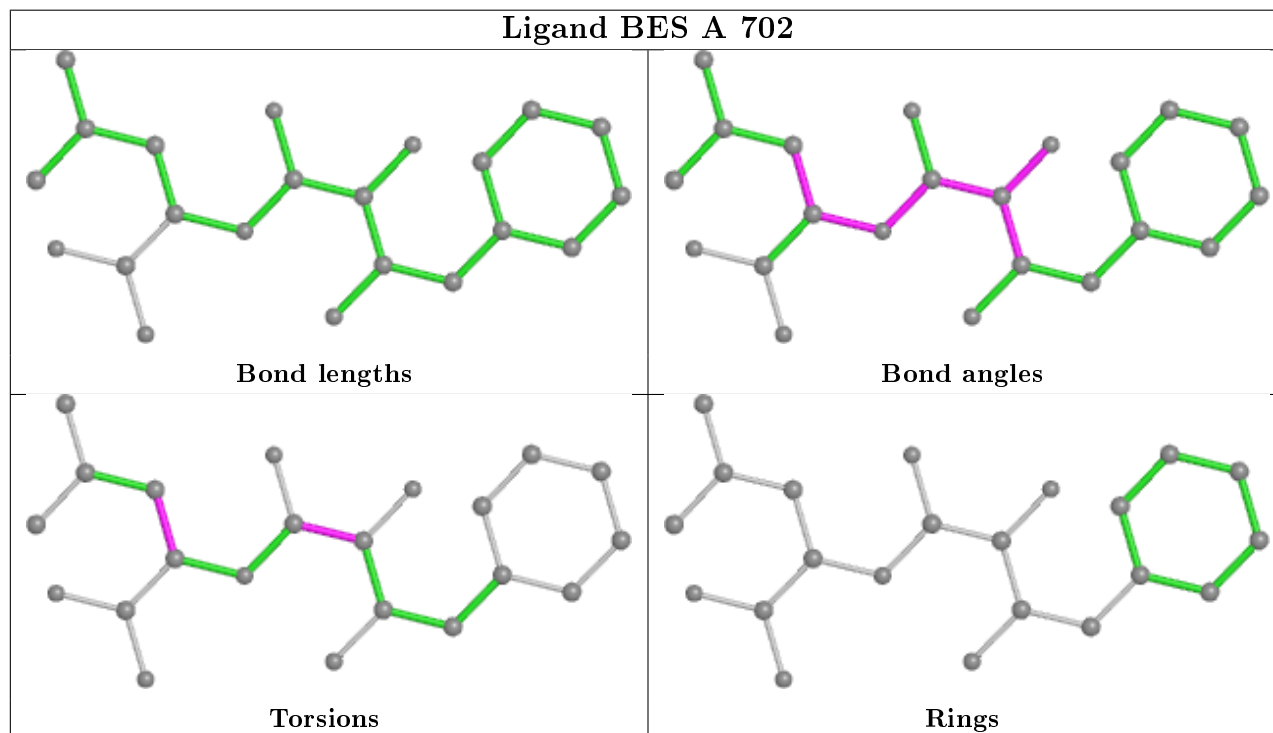
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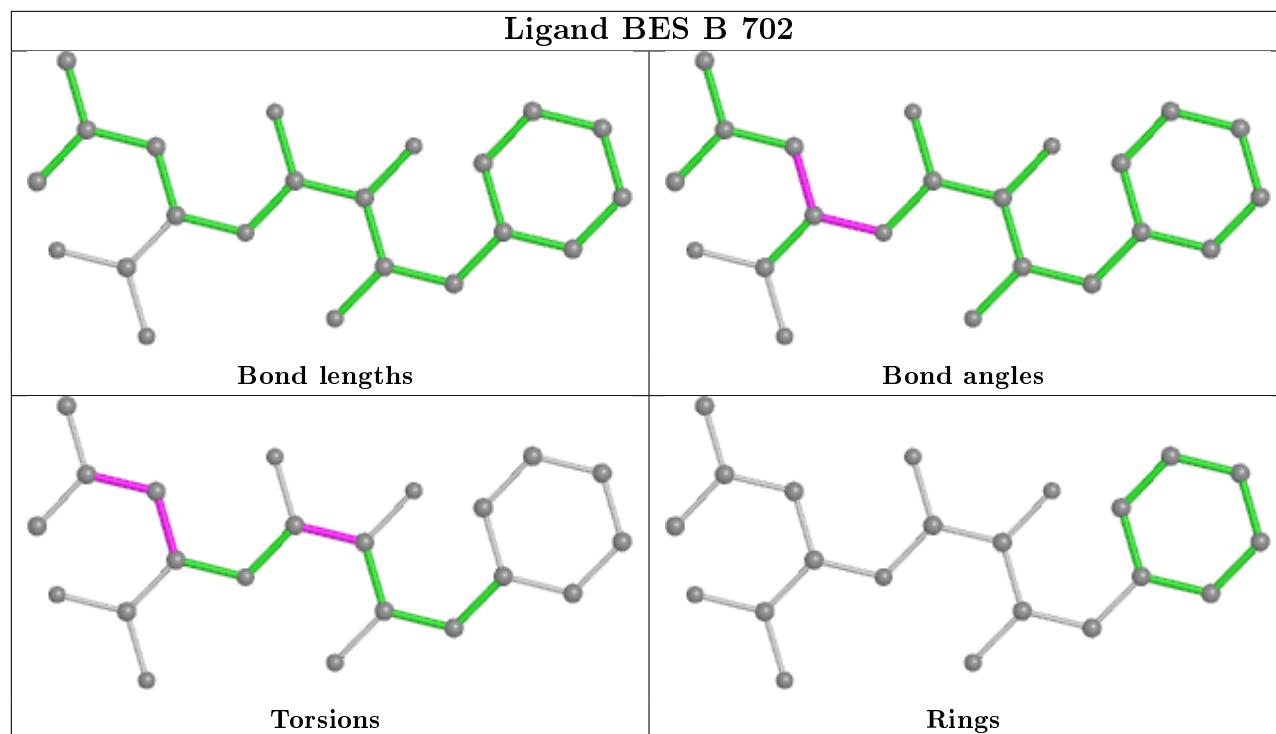
Mol	Chain	Res	Type	Atoms
3	A	702	BES	O2-C2-C3-O3
3	A	702	BES	C14-C13-C4-N1
3	B	702	BES	O2-C2-C3-N1
3	B	702	BES	C4-C13-C14-C15
3	B	702	BES	O2-C2-C3-O3
3	A	702	BES	C14-C13-C4-C5

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, 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	606/609 (99%)	0.54	57 (9%) <b>8</b>   <b>9</b>	32, 74, 127, 141	0
1	B	605/609 (99%)	1.61	198 (32%) <b>0</b>   <b>0</b>	36, 105, 164, 185	0
All	All	1211/1218 (99%)	1.08	255 (21%) <b>1</b>   <b>1</b>	32, 83, 156, 185	0

All (255) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	71	ALA	16.9
1	B	179	SER	13.3
1	B	176	SER	13.0
1	B	175	LEU	12.5
1	B	122	GLY	11.1
1	B	26	PHE	10.7
1	B	73	GLY	9.3
1	B	83	LEU	8.9
1	B	123	LYS	8.7
1	B	61	VAL	8.4
1	B	585	PHE	8.4
1	B	59	LYS	8.3
1	B	27	THR	8.0
1	B	118	GLU	8.0
1	B	62	ALA	8.0
1	B	601	ALA	7.6
1	B	88	PRO	7.6
1	B	202	VAL	7.6
1	B	115	LEU	7.2
1	B	67	ASP	6.9
1	B	185	ILE	6.9
1	B	174	GLU	6.9
1	B	178	GLN	6.7
1	B	126	PRO	6.6

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	B	590	SER	6.4
1	B	181	SER	6.4
1	B	74	THR	6.4
1	B	129	PHE	6.3
1	B	186	TYR	6.1
1	B	107	PRO	6.0
1	B	591	PHE	5.6
1	B	29	ARG	5.5
1	B	114	TRP	5.4
1	B	106	SER	5.4
1	B	54	LYS	5.4
1	B	203	VAL	5.3
1	B	177	GLU	5.3
1	B	159	VAL	5.3
1	B	219	THR	5.3
1	B	86	THR	5.3
1	A	229	TYR	5.3
1	B	113	GLN	5.3
1	B	120	THR	5.3
1	B	7	PHE	5.3
1	A	488	VAL	5.2
1	B	182	ASN	5.2
1	B	163	LEU	5.2
1	B	124	ILE	5.1
1	B	128	LEU	5.1
1	B	201	LEU	5.1
1	B	78	PHE	5.1
1	B	588	ASN	5.1
1	B	75	THR	5.0
1	B	602	LYS	5.0
1	B	586	LEU	5.0
1	B	72	LEU	4.9
1	B	606	ILE	4.9
1	B	222	GLU	4.8
1	B	200	ALA	4.7
1	B	260	PRO	4.7
1	B	76	HIS	4.7
1	A	330	TYR	4.7
1	B	259	PRO	4.6
1	B	274	PHE	4.6
1	A	92	THR	4.5
1	B	183	ARG	4.5

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	B	165	ALA	4.5
1	B	184	LYS	4.4
1	B	64	ASN	4.4
1	B	180	ASP	4.3
1	B	574	PHE	4.3
1	B	162	GLU	4.2
1	B	130	SER	4.2
1	B	80	GLY	4.2
1	A	510	PRO	4.2
1	B	63	VAL	4.2
1	B	596	THR	4.2
1	A	91	LEU	4.1
1	B	56	LEU	4.1
1	B	173	GLY	4.1
1	B	25	ASP	4.1
1	B	605	HIS	4.1
1	B	82	PRO	4.0
1	B	58	ILE	4.0
1	B	77	SER	4.0
1	B	87	LEU	4.0
1	A	62	ALA	4.0
1	A	11	GLU	4.0
1	A	334	PHE	4.0
1	B	595	VAL	3.9
1	B	172	ASP	3.9
1	B	81	THR	3.8
1	B	127	TYR	3.8
1	B	28	SER	3.8
1	B	572	TYR	3.8
1	B	597	GLU	3.8
1	B	374	ALA	3.8
1	B	584	THR	3.8
1	B	157	VAL	3.7
1	B	168	SER	3.7
1	B	604	LEU	3.6
1	B	143	CYS	3.6
1	B	373	ALA	3.6
1	B	592	MET	3.6
1	B	368	GLU	3.6
1	A	90	SER	3.6
1	B	66	LYS	3.6
1	B	132	CYS	3.5

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	B	160	PRO	3.5
1	B	581	THR	3.5
1	B	568	TYR	3.5
1	A	66	LYS	3.4
1	A	474	LYS	3.4
1	B	109	SER	3.4
1	A	281	ALA	3.4
1	A	283	ASP	3.3
1	A	605	HIS	3.3
1	A	498	GLU	3.3
1	B	108	LYS	3.3
1	B	43	GLN	3.3
1	B	137	CYS	3.2
1	B	257	ILE	3.2
1	B	60	LYS	3.2
1	B	117	LYS	3.2
1	B	256	LEU	3.2
1	B	125	HIS	3.1
1	B	188	PHE	3.1
1	B	44	ASP	3.1
1	B	46	LEU	3.1
1	B	112	LEU	3.1
1	B	110	SER	3.1
1	B	275	VAL	3.1
1	A	78	PHE	3.1
1	A	45	SER	3.1
1	A	460	THR	3.1
1	A	44	ASP	3.1
1	B	102	ASP	3.0
1	B	229	TYR	3.0
1	A	604	LEU	3.0
1	B	272	LEU	3.0
1	A	223	LEU	3.0
1	B	594	PRO	3.0
1	A	87	LEU	3.0
1	B	367	HIS	3.0
1	B	101	ILE	3.0
1	B	24	VAL	3.0
1	A	176	SER	3.0
1	B	65	GLY	3.0
1	B	358	PRO	3.0
1	B	556	THR	3.0

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	B	35	THR	2.9
1	B	582	VAL	2.9
1	B	53	THR	2.9
1	B	57	THR	2.9
1	B	575	GLU	2.9
1	B	600	VAL	2.9
1	A	98	ILE	2.8
1	B	189	LYS	2.8
1	B	573	ASN	2.8
1	B	462	ALA	2.8
1	B	603	ASP	2.8
1	B	70	PHE	2.8
1	B	262	PHE	2.8
1	B	258	LEU	2.8
1	B	434	ASP	2.8
1	A	41	SER	2.7
1	B	21	LYS	2.7
1	B	139	SER	2.7
1	A	222	GLU	2.7
1	B	48	SER	2.7
1	B	375	PHE	2.7
1	A	461	LEU	2.7
1	B	15	ILE	2.7
1	B	37	LEU	2.7
1	A	89	PHE	2.6
1	B	136	HIS	2.6
1	B	121	ALA	2.6
1	B	3	ASP	2.6
1	A	226	PRO	2.6
1	B	89	PHE	2.6
1	B	141	ILE	2.6
1	B	271	CYS	2.6
1	A	373	ALA	2.6
1	B	218	TRP	2.5
1	A	502	ILE	2.5
1	B	578	ARG	2.5
1	B	31	ILE	2.5
1	B	284	ARG	2.5
1	B	49	LEU	2.5
1	A	579	GLU	2.5
1	B	97	VAL	2.5
1	B	253	TYR	2.5

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	B	226	PRO	2.5
1	A	13	PHE	2.4
1	A	513	HIS	2.4
1	B	213	PRO	2.4
1	B	51	LEU	2.4
1	A	47	ALA	2.4
1	A	367	HIS	2.4
1	B	55	ASP	2.4
1	B	579	GLU	2.4
1	B	583	ASN	2.4
1	A	485	ALA	2.3
1	B	140	ILE	2.3
1	A	475	ALA	2.3
1	B	104	VAL	2.3
1	B	221	LYS	2.3
1	A	465	CYS	2.3
1	B	10	PRO	2.3
1	B	269	ASN	2.3
1	B	576	LYS	2.3
1	B	205	ALA	2.3
1	B	9	SER	2.3
1	B	18	MET	2.3
1	B	267	MET	2.3
1	B	433	VAL	2.3
1	A	9	SER	2.3
1	B	577	ALA	2.3
1	B	231	PHE	2.3
1	A	179	SER	2.3
1	A	572	TYR	2.2
1	B	164	MET	2.2
1	A	240	TYR	2.2
1	B	371	VAL	2.2
1	A	94	GLY	2.2
1	A	463	ASN	2.2
1	B	153	TYR	2.2
1	A	466	ILE	2.2
1	B	546	ASP	2.2
1	A	337	PHE	2.2
1	B	587	LYS	2.1
1	B	372	ASP	2.1
1	B	98	ILE	2.1
1	B	266	GLY	2.1

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Mol	Chain	Res	Type	RSRZ
1	B	47	ALA	2.1
1	B	187	ARG	2.1
1	B	589	ARG	2.1
1	B	593	HIS	2.1
1	A	93	ARG	2.1
1	B	166	LEU	2.1
1	B	599	LEU	2.1
1	A	476	THR	2.1
1	A	598	MET	2.1
1	A	46	LEU	2.0
1	B	558	GLN	2.0
1	B	23	HIS	2.0
1	A	523	LEU	2.0
1	B	199	ILE	2.0
1	B	557	GLU	2.0
1	A	122	GLY	2.0
1	B	69	THR	2.0
1	A	482	SER	2.0
1	A	495	GLN	2.0
1	A	317	HIS	2.0
1	B	552	LEU	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 carbohydrates 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.

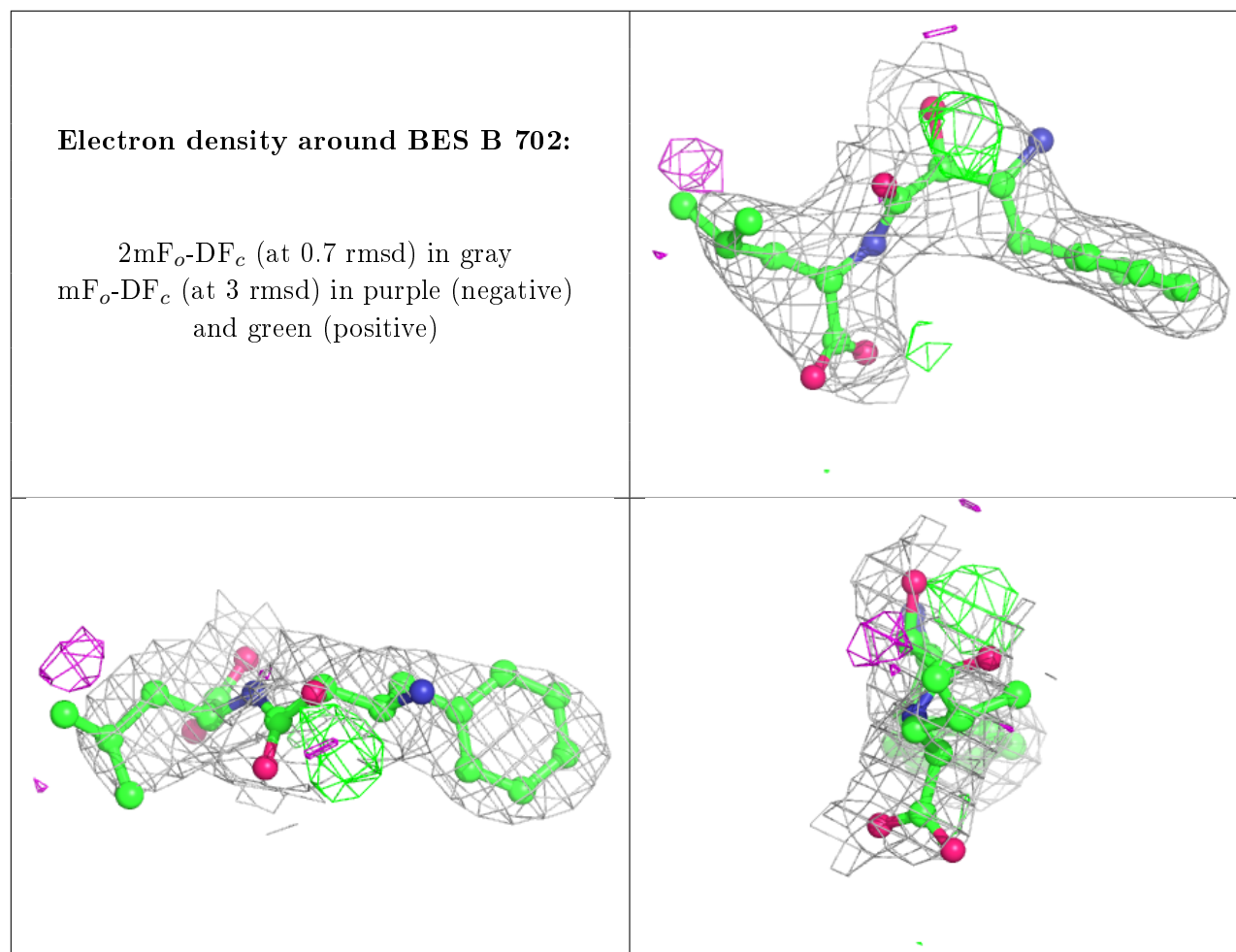
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
3	BES	B	702	22/22	0.85	0.27	48,66,76,78	0
3	BES	A	702	22/22	0.89	0.22	33,48,63,65	0

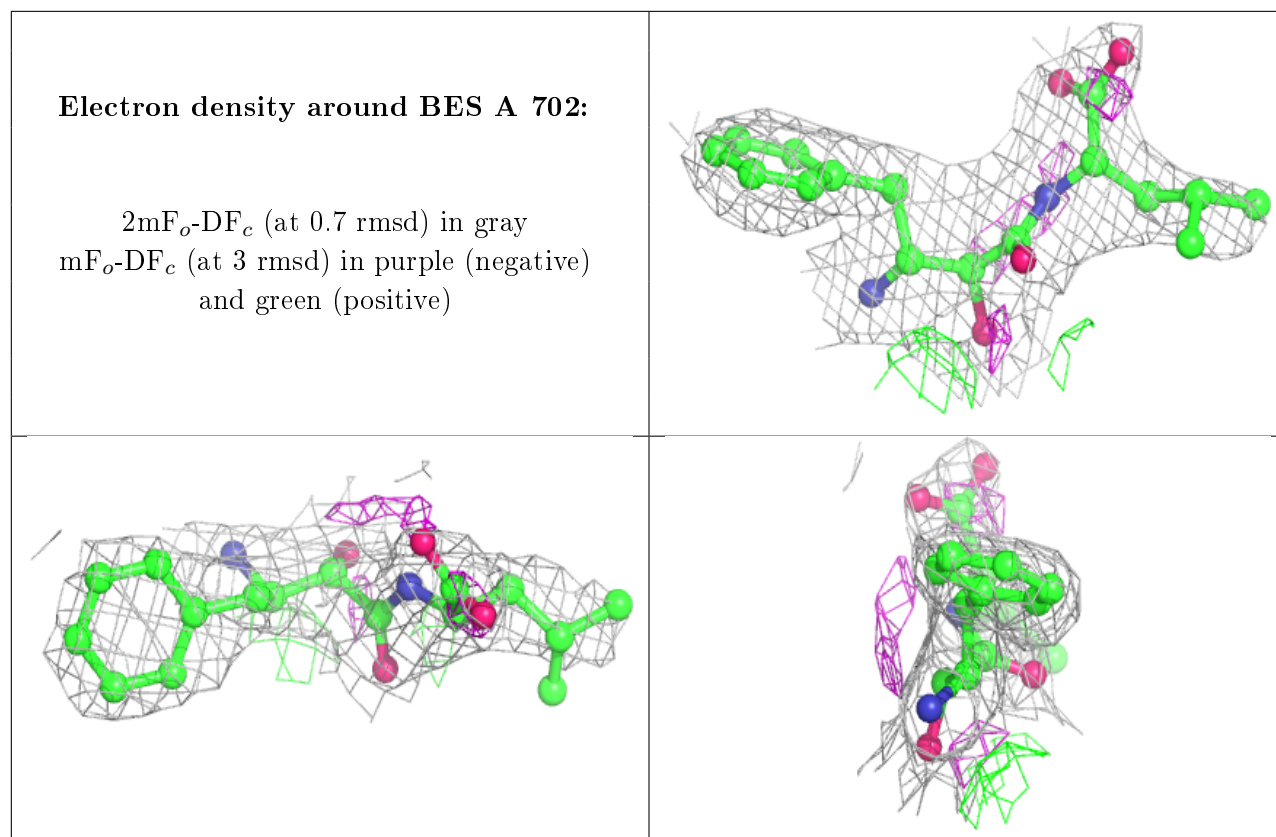
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
2	ZN	A	701	1/1	0.92	0.10	44,44,44,44	0
2	ZN	B	701	1/1	0.97	0.09	55,55,55,55	0

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.