



Full wwPDB X-ray Structure Validation Report ⓘ

Nov 7, 2023 – 06:56 PM JST

PDB ID : 8HX6
Title : Crystal structure of 4-amino-4-deoxychorismate synthase from *Streptomyces venezuelae*
Authors : Nakamichi, Y.; Watanabe, M.
Deposited on : 2023-01-04
Resolution : 2.14 Å (reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

The following versions of software and data (see [references ⓘ](#)) 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 : 2.36
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) : 2.36

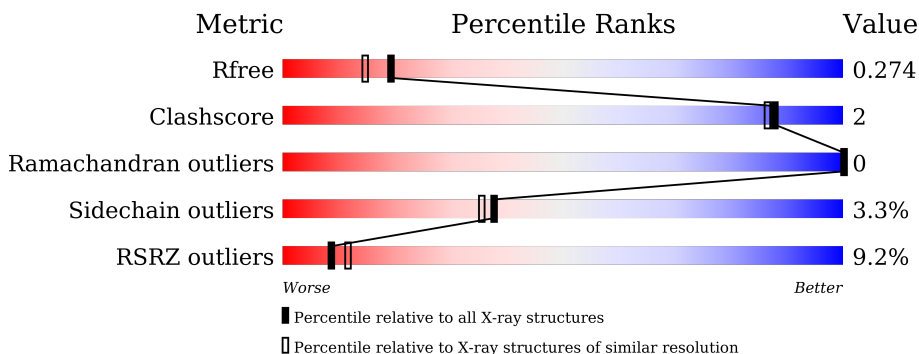
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

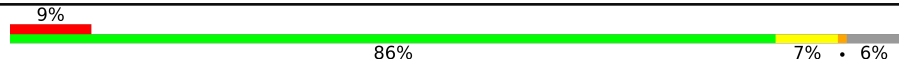

The reported resolution of this entry is 2.14 Å.

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	2523 (2.16-2.12)
Clashscore	141614	2653 (2.16-2.12)
Ramachandran outliers	138981	2618 (2.16-2.12)
Sidechain outliers	138945	2617 (2.16-2.12)
RSRZ outliers	127900	2485 (2.16-2.12)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	702	 9% 86% 7% • 6%
1	B	702	 8% 86% 6% • 7%

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 10224 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 4-amino-4-deoxychorismate synthase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	660	5096	3194	917	968	17	0	1	0
1	B	651	5029	3153	905	954	17	0	1	0

There are 32 discrepancies between the modelled and reference sequences:

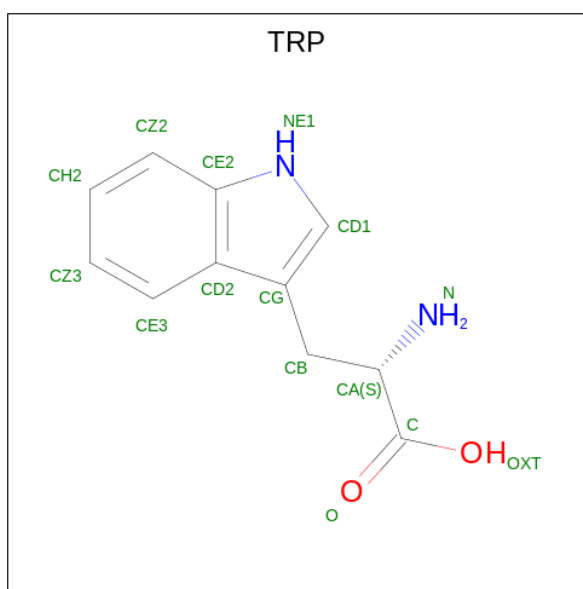
Chain	Residue	Modelled	Actual	Comment	Reference
A	-15	MET	-	initiating methionine	UNP Q6L8Q5
A	-14	ASN	-	expression tag	UNP Q6L8Q5
A	-13	HIS	-	expression tag	UNP Q6L8Q5
A	-12	LYS	-	expression tag	UNP Q6L8Q5
A	-11	VAL	-	expression tag	UNP Q6L8Q5
A	-10	HIS	-	expression tag	UNP Q6L8Q5
A	-9	HIS	-	expression tag	UNP Q6L8Q5
A	-8	HIS	-	expression tag	UNP Q6L8Q5
A	-7	HIS	-	expression tag	UNP Q6L8Q5
A	-6	HIS	-	expression tag	UNP Q6L8Q5
A	-5	HIS	-	expression tag	UNP Q6L8Q5
A	-4	ILE	-	expression tag	UNP Q6L8Q5
A	-3	GLU	-	expression tag	UNP Q6L8Q5
A	-2	GLY	-	expression tag	UNP Q6L8Q5
A	-1	ARG	-	expression tag	UNP Q6L8Q5
A	0	HIS	-	expression tag	UNP Q6L8Q5
B	-15	MET	-	initiating methionine	UNP Q6L8Q5
B	-14	ASN	-	expression tag	UNP Q6L8Q5
B	-13	HIS	-	expression tag	UNP Q6L8Q5
B	-12	LYS	-	expression tag	UNP Q6L8Q5
B	-11	VAL	-	expression tag	UNP Q6L8Q5
B	-10	HIS	-	expression tag	UNP Q6L8Q5
B	-9	HIS	-	expression tag	UNP Q6L8Q5
B	-8	HIS	-	expression tag	UNP Q6L8Q5
B	-7	HIS	-	expression tag	UNP Q6L8Q5

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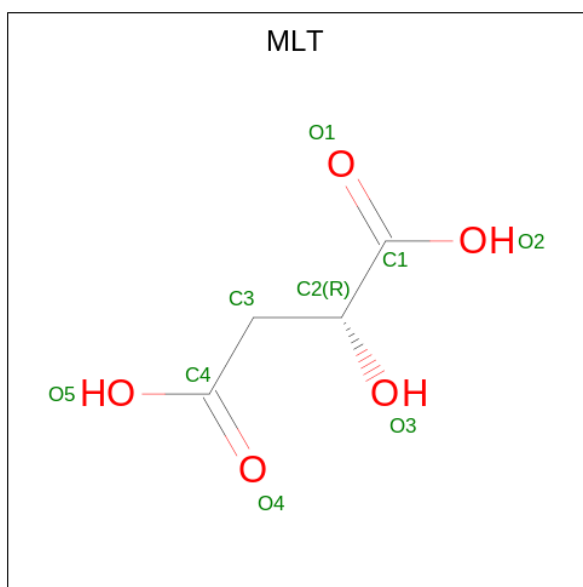
Chain	Residue	Modelled	Actual	Comment	Reference
B	-6	HIS	-	expression tag	UNP Q6L8Q5
B	-5	HIS	-	expression tag	UNP Q6L8Q5
B	-4	ILE	-	expression tag	UNP Q6L8Q5
B	-3	GLU	-	expression tag	UNP Q6L8Q5
B	-2	GLY	-	expression tag	UNP Q6L8Q5
B	-1	ARG	-	expression tag	UNP Q6L8Q5
B	0	HIS	-	expression tag	UNP Q6L8Q5

- Molecule 2 is TRYPTOPHAN (three-letter code: TRP) (formula: $C_{11}H_{12}N_2O_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
2	A	1	15	11	2	2	0	0
2	B	1	15	11	2	2	0	0

- Molecule 3 is D-MALATE (three-letter code: MLT) (formula: $C_4H_6O_5$).

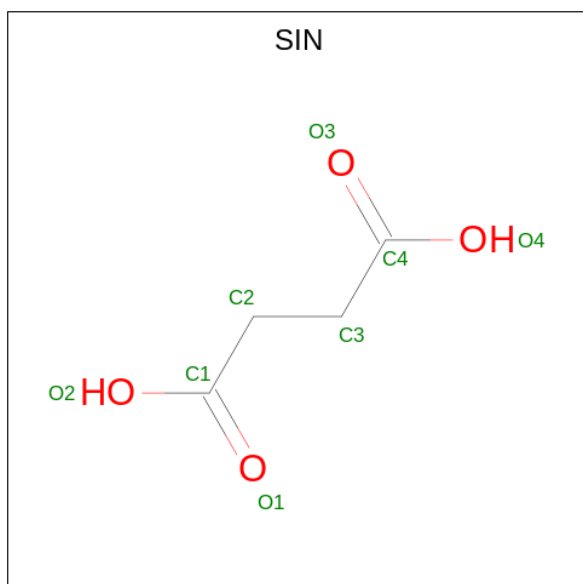


Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 9 4 5	0	0

- Molecule 4 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total Mg 1 1	0	0

- Molecule 5 is SUCCINIC ACID (three-letter code: SIN) (formula: C₄H₆O₄).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	B	1	Total	C	O	0	0
			8	4	4		

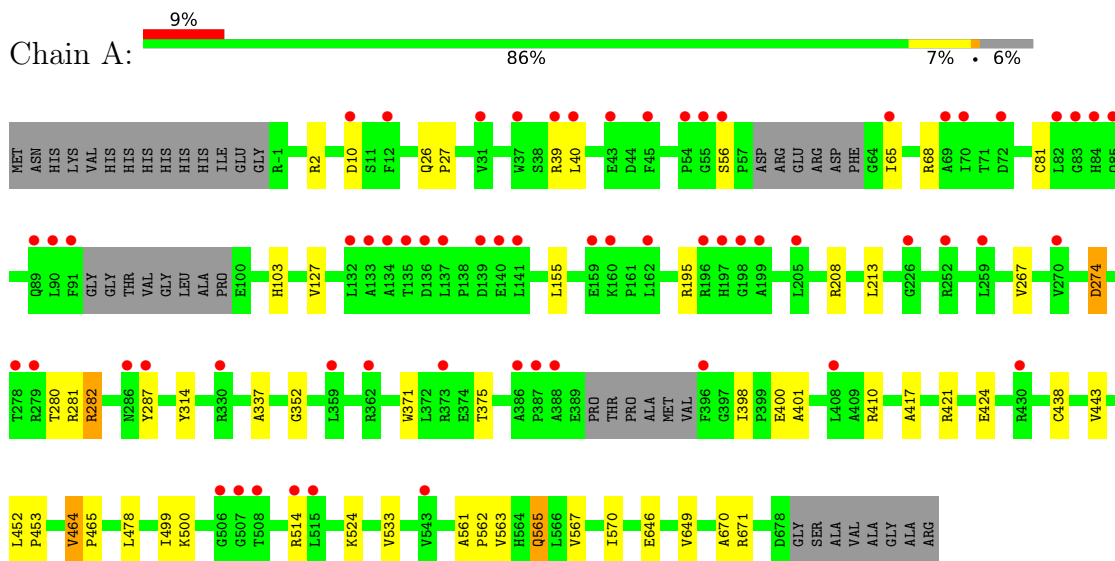
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	33	Total	O	0	0
			33	33		
6	B	18	Total	O	0	0
			18	18		

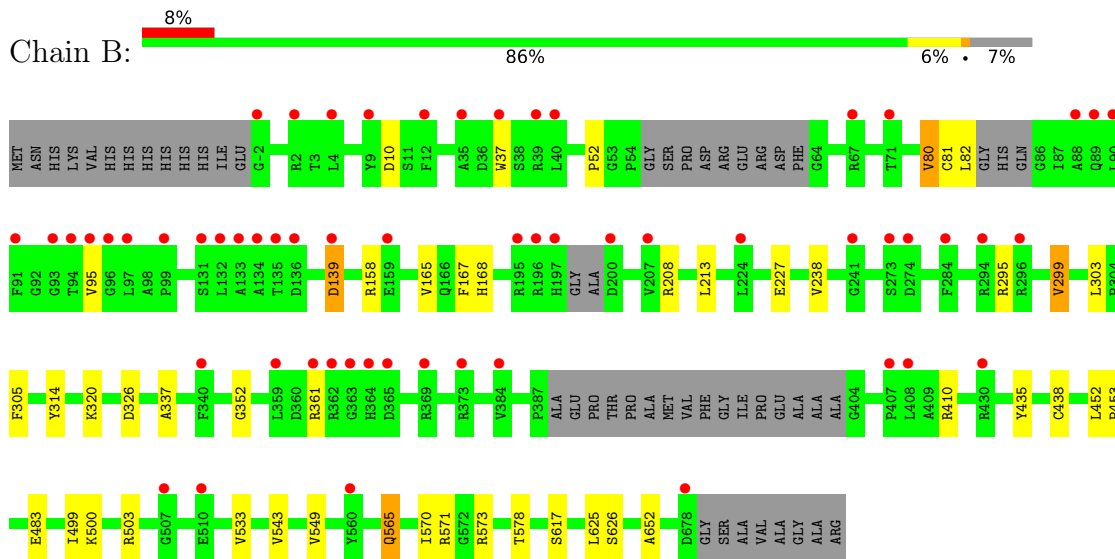
3 Residue-property plots [i](#)

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: 4-amino-4-deoxychorismate synthase



- Molecule 1: 4-amino-4-deoxychorismate synthase



4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	98.67Å 171.41Å 160.84Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	47.26 – 2.14 47.26 – 2.14	Depositor EDS
% Data completeness (in resolution range)	99.8 (47.26-2.14) 99.8 (47.26-2.14)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.37 (at 2.14Å)	Xtriage
Refinement program	REFMAC 5.8.0267	Depositor
R, R_{free}	0.224 , 0.272 0.230 , 0.274	Depositor DCC
R_{free} test set	3734 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	52.2	Xtriage
Anisotropy	0.263	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 44.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	0.002 for 1/2*h-1/2*k,-3/2*h-1/2*k,-l 0.020 for 1/2*h+1/2*k,3/2*h-1/2*k,-l	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	10224	wwPDB-VP
Average B, all atoms (Å ²)	69.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.40% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: OCS, MLT, MG, SIN

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	0/5200	0.72	0/7060
1	B	0.65	0/5129	0.72	0/6962
All	All	0.64	0/10329	0.72	0/14022

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	5096	0	4976	22	0
1	B	5029	0	4924	20	0
2	A	15	0	9	0	0
2	B	15	0	9	0	0
3	A	9	0	4	0	0
4	A	1	0	0	0	0
5	B	8	0	4	0	0
6	A	33	0	0	0	0
6	B	18	0	0	0	0
All	All	10224	0	9926	41	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 (41) 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:438:CYS:SG	1:A:500:LYS:NZ	2.57	0.76
1:B:438:CYS:SG	1:B:500:LYS:NZ	2.73	0.59
1:A:314:TYR:CE2	1:A:337:ALA:HB3	2.38	0.58
1:A:499:ILE:HG12	1:A:567:VAL:HG22	1.89	0.55
1:B:52:PRO:HG2	1:B:168:HIS:CE1	2.42	0.54
1:B:213:LEU:HD22	1:B:352:GLY:HA2	1.91	0.53
1:A:565:GLN:HE21	1:A:565:GLN:HA	1.73	0.52
1:B:452:LEU:HB3	1:B:453:PRO:HD3	1.92	0.51
1:A:282:ARG:HD2	1:A:287:TYR:HB2	1.93	0.51
1:B:299:VAL:HG13	1:B:626:SER:HB2	1.93	0.51
1:A:155:LEU:HD12	1:A:155:LEU:C	2.31	0.51
1:B:95:VAL:O	1:B:95:VAL:HG13	2.10	0.50
1:A:417:ALA:O	1:A:421:ARG:HG2	2.12	0.50
1:A:464:VAL:HG22	1:A:465:PRO:HD2	1.93	0.50
1:A:452:LEU:HB3	1:A:453:PRO:HD3	1.94	0.49
1:A:649:VAL:HG11	1:A:670:ALA:HB2	1.96	0.47
1:A:401:ALA:HA	1:A:671:ARG:HD3	1.98	0.45
1:A:443:VAL:O	1:A:646:GLU:HA	2.17	0.45
1:B:139:ASP:O	1:B:158:ARG:NH1	2.49	0.45
1:A:213:LEU:HD22	1:A:352:GLY:HA2	1.99	0.45
1:B:314:TYR:CE2	1:B:337:ALA:HB3	2.52	0.45
1:B:483:GLU:HB2	1:B:499:ILE:HD12	1.99	0.45
1:A:267:VAL:HA	1:A:280:THR:O	2.17	0.44
1:B:549:VAL:HA	1:B:571:ARG:O	2.17	0.44
1:A:533:VAL:HA	1:A:570:ILE:HD11	1.99	0.44
1:B:52:PRO:HG3	1:B:80:VAL:HG22	2.00	0.44
1:B:303:LEU:HD22	1:B:305:PHE:CZ	2.53	0.43
1:B:565:GLN:HE21	1:B:565:GLN:HA	1.83	0.43
1:A:478:LEU:HD12	1:A:478:LEU:N	2.34	0.43
1:B:320:LYS:NZ	1:B:326:ASP:O	2.51	0.43
1:B:500:LYS:HE3	1:B:652:ALA:HB2	2.01	0.42
1:A:40:LEU:HD12	1:A:65:ILE:HD11	2.02	0.42
1:A:371:TRP:CE2	1:A:375:THR:HG21	2.55	0.42
1:B:165:VAL:HG13	1:B:167:PHE:CE1	2.55	0.42
1:A:561:ALA:HB3	1:A:562:PRO:HD3	2.02	0.41
1:A:103:HIS:HB3	1:B:435:TYR:HB3	2.03	0.41
1:B:295:ARG:O	1:B:625:LEU:HG	2.20	0.41
1:B:533:VAL:HA	1:B:570:ILE:HD11	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:26:GLN:HG3	1:A:27:PRO:HD2	2.01	0.41
1:A:274:ASP:N	1:A:274:ASP:OD1	2.53	0.41
1:B:543:VAL:HB	1:B:578:THR:HG21	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	652/702 (93%)	626 (96%)	26 (4%)	0	100	100
1	B	641/702 (91%)	623 (97%)	18 (3%)	0	100	100
All	All	1293/1404 (92%)	1249 (97%)	44 (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	530/560 (95%)	510 (96%)	20 (4%)	33	30
1	B	525/560 (94%)	510 (97%)	15 (3%)	42	40
All	All	1055/1120 (94%)	1020 (97%)	35 (3%)	38	35

All (35) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2	ARG
1	A	10	ASP
1	A	39	ARG
1	A	56	SER
1	A	68	ARG
1	A	127	VAL
1	A	195	ARG
1	A	208	ARG
1	A	274	ASP
1	A	281	ARG
1	A	282	ARG
1	A	398	ILE
1	A	400	GLU
1	A	410	ARG
1	A	424	GLU
1	A	464	VAL
1	A	514	ARG
1	A	524	LYS
1	A	563	VAL
1	A	565	GLN
1	B	10	ASP
1	B	37	TRP
1	B	80	VAL
1	B	82	LEU
1	B	139	ASP
1	B	208	ARG
1	B	227	GLU
1	B	238	VAL
1	B	299	VAL
1	B	361	ARG
1	B	410	ARG
1	B	503	ARG
1	B	565	GLN
1	B	573	ARG
1	B	617	SER

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

5.3.3 RNA

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	OCS	A	81	1	7,8,9	1.49	1 (14%)	6,11,13	2.42	2 (33%)
1	OCS	B	81	1	7,8,9	0.99	1 (14%)	6,11,13	1.10	1 (16%)

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	OCS	A	81	1	-	1/4/7/9	-
1	OCS	B	81	1	-	1/4/7/9	-

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	81	OCS	OD3-SG	3.56	1.55	1.45
1	B	81	OCS	OD2-SG	2.26	1.55	1.47

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	81	OCS	OD3-SG-CB	-4.82	101.22	106.94
1	A	81	OCS	OD2-SG-OD1	3.24	119.20	111.27
1	B	81	OCS	OD2-SG-CB	-2.03	102.50	105.74

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	81	OCS	N-CA-CB-SG

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Mol	Chain	Res	Type	Atoms
1	B	81	OCS	N-CA-CB-SG

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 5 ligands modelled in this entry, 1 is monoatomic - leaving 4 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
2	TRP	B	701	-	14,16,16	0.81	1 (7%)	16,22,22	1.03	1 (6%)
3	MLT	A	702	-	8,8,8	1.07	0	10,10,10	1.45	1 (10%)
5	SIN	B	702	-	7,7,7	1.10	0	8,8,8	1.03	0
2	TRP	A	701	-	14,16,16	0.78	1 (7%)	16,22,22	1.17	2 (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. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	TRP	B	701	-	-	0/7/8/8	0/2/2/2
3	MLT	A	702	-	-	3/8/8/8	-
5	SIN	B	702	-	-	5/5/5/5	-
2	TRP	A	701	-	-	0/7/8/8	0/2/2/2

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	701	TRP	OXT-C	-2.20	1.23	1.30
2	A	701	TRP	OXT-C	-2.04	1.23	1.30

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	702	MLT	O1-C1-C2	-2.52	117.62	122.54
2	A	701	TRP	OXT-C-O	-2.52	118.38	124.09
2	A	701	TRP	OXT-C-CA	2.34	121.34	113.38
2	B	701	TRP	OXT-C-O	-2.12	119.28	124.09

There are no chirality outliers.

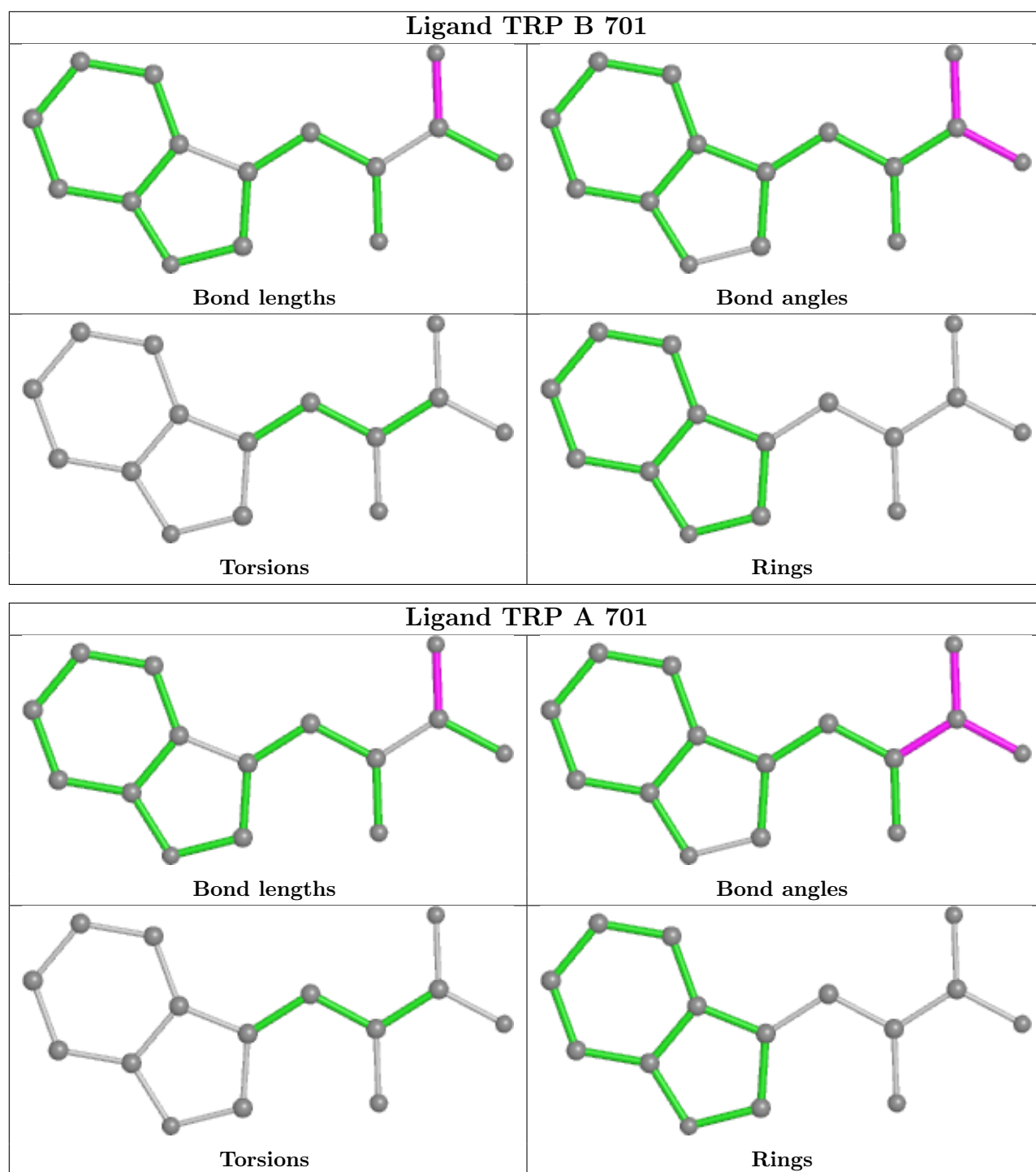
All (8) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	B	702	SIN	C1-C2-C3-C4
3	A	702	MLT	O3-C2-C3-C4
3	A	702	MLT	O2-C1-C2-C3
3	A	702	MLT	O1-C1-C2-C3
5	B	702	SIN	C2-C3-C4-O3
5	B	702	SIN	C2-C3-C4-O4
5	B	702	SIN	O2-C1-C2-C3
5	B	702	SIN	O1-C1-C2-C3

There are no ring outliers.

No monomer is involved in short contacts.

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



5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	659/702 (93%)	0.61	63 (9%) 8 10	42, 64, 111, 132	0
1	B	650/702 (92%)	0.54	58 (8%) 9 13	44, 67, 100, 118	0
All	All	1309/1404 (93%)	0.58	121 (9%) 9 12	42, 66, 106, 132	0

All (121) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	134	ALA	8.2
1	B	363	GLY	8.0
1	A	84	HIS	7.8
1	B	200	ASP	5.4
1	A	388	ALA	5.3
1	B	9	TYR	4.9
1	A	198	GLY	4.8
1	A	140	GLU	4.8
1	B	37	TRP	4.7
1	B	99	PRO	4.7
1	A	91	PHE	4.6
1	A	135	THR	4.6
1	A	43	GLU	4.4
1	B	369	ARG	4.3
1	B	95	VAL	4.3
1	A	56	SER	4.1
1	B	97	LEU	4.0
1	A	70	ILE	3.8
1	B	67	ARG	3.8
1	A	134	ALA	3.8
1	A	83	GLY	3.7
1	A	37	TRP	3.7
1	A	54	PRO	3.6
1	B	35	ALA	3.6

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Mol	Chain	Res	Type	RSRZ
1	A	65	ILE	3.5
1	A	386	ALA	3.4
1	B	132	LEU	3.4
1	A	430	ARG	3.4
1	B	408	LEU	3.4
1	A	136	ASP	3.4
1	A	387	PRO	3.4
1	A	259	LEU	3.3
1	B	93	GLY	3.3
1	B	197	HIS	3.3
1	A	197	HIS	3.2
1	A	141	LEU	3.2
1	A	287	TYR	3.2
1	B	136	ASP	3.2
1	A	85	GLN	3.1
1	A	160	LYS	3.1
1	B	430	ARG	3.1
1	A	90	LEU	3.1
1	B	12	PHE	3.0
1	B	90	LEU	3.0
1	A	139	ASP	3.0
1	B	361	ARG	2.9
1	B	159	GLU	2.9
1	B	91	PHE	2.9
1	B	224	LEU	2.9
1	A	196	ARG	2.9
1	A	506	GLY	2.8
1	B	96	GLY	2.8
1	B	365	ASP	2.8
1	B	2	ARG	2.8
1	A	55	GLY	2.8
1	B	139	ASP	2.7
1	A	82	LEU	2.7
1	A	226	GLY	2.7
1	A	12	PHE	2.6
1	A	40	LEU	2.6
1	A	408	LEU	2.6
1	B	88	ALA	2.6
1	A	72	ASP	2.6
1	B	678	ASP	2.6
1	B	340	PHE	2.6
1	A	132	LEU	2.6

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Mol	Chain	Res	Type	RSRZ
1	A	45	PHE	2.6
1	B	135	THR	2.5
1	B	274	ASP	2.5
1	A	89	GLN	2.5
1	B	273	SER	2.5
1	B	89	GLN	2.5
1	B	241	GLY	2.5
1	B	131	SER	2.5
1	A	396	PHE	2.5
1	B	407	PRO	2.4
1	B	296	ARG	2.4
1	B	133	ALA	2.4
1	B	94	THR	2.4
1	A	543	VAL	2.4
1	B	-2	GLY	2.4
1	A	362	ARG	2.4
1	B	507	GLY	2.4
1	A	515	LEU	2.4
1	A	270	VAL	2.4
1	B	284	PHE	2.3
1	B	39	ARG	2.3
1	B	71	THR	2.3
1	A	137	LEU	2.3
1	A	279	ARG	2.3
1	A	205	LEU	2.2
1	B	359	LEU	2.2
1	A	278	THR	2.2
1	B	294	ARG	2.2
1	A	507	GLY	2.2
1	A	69	ALA	2.2
1	A	373	ARG	2.2
1	B	196	ARG	2.2
1	A	508	THR	2.2
1	B	362	ARG	2.2
1	A	286	ASN	2.2
1	B	207	VAL	2.2
1	A	330	ARG	2.2
1	A	133	ALA	2.2
1	A	159	GLU	2.1
1	B	560	TYR	2.1
1	A	39	ARG	2.1
1	B	40	LEU	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	31	VAL	2.1
1	A	10	ASP	2.1
1	B	384	VAL	2.1
1	B	373	ARG	2.1
1	A	162	LEU	2.1
1	B	4	LEU	2.1
1	A	252	ARG	2.1
1	A	514	ARG	2.0
1	A	359	LEU	2.0
1	A	199	ALA	2.0
1	B	195	ARG	2.0
1	B	364	HIS	2.0
1	B	510	GLU	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, 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
1	OCS	B	81	9/10	0.85	0.16	65,71,74,75	0
1	OCS	A	81	9/10	0.88	0.12	75,83,86,88	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, 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.

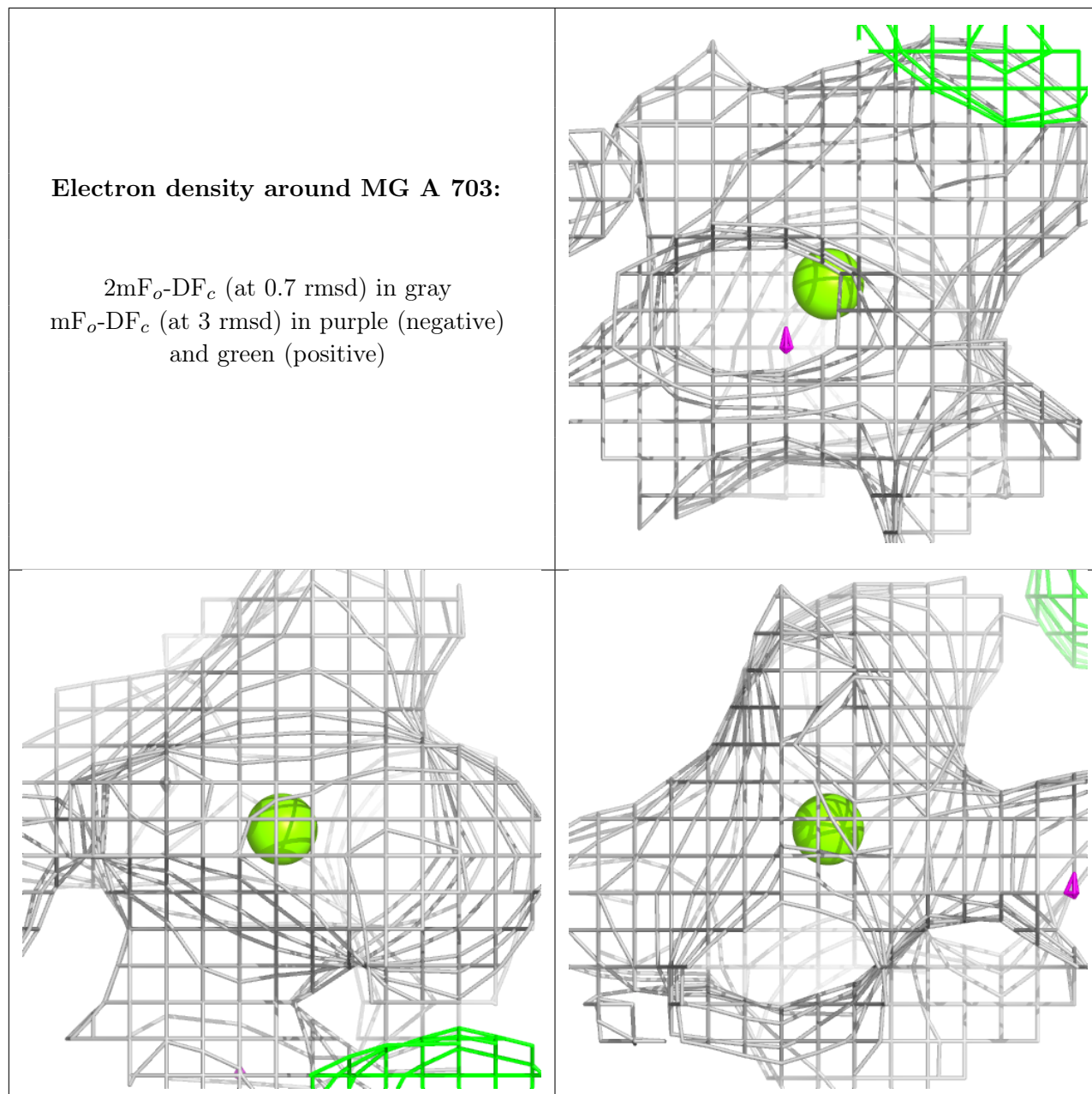
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	MLT	A	702	9/9	0.77	0.23	63,65,67,70	0
5	SIN	B	702	8/8	0.88	0.13	75,77,77,77	0
4	MG	A	703	1/1	0.92	0.07	63,63,63,63	0

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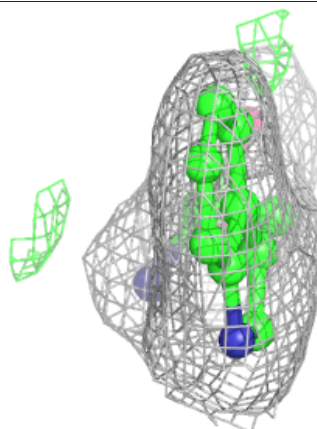
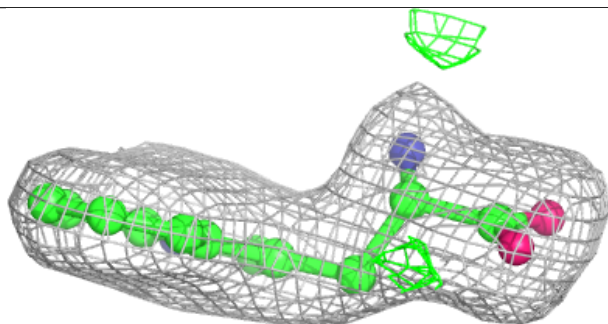
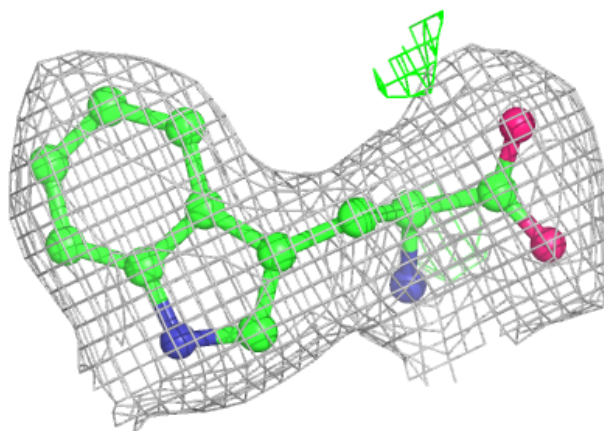
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	TRP	B	701	15/15	0.95	0.10	52,53,54,55	0
2	TRP	A	701	15/15	0.96	0.12	44,45,45,45	0

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.

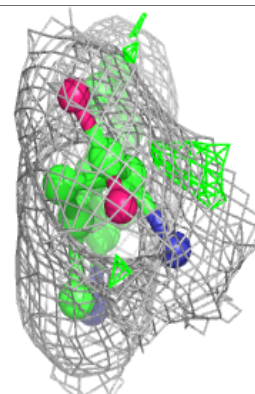
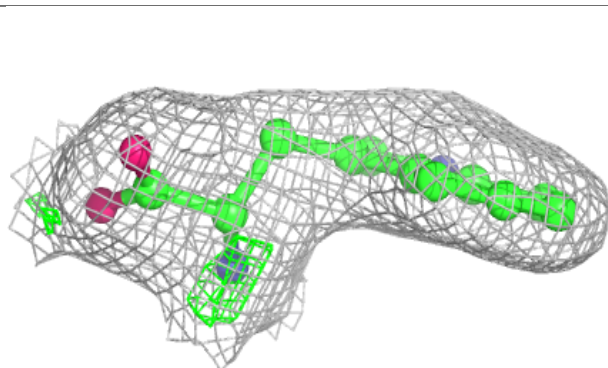
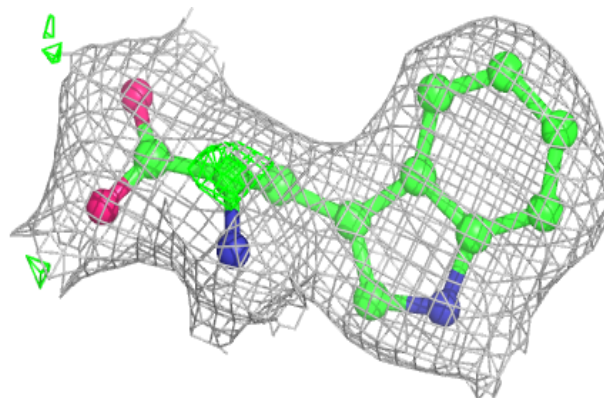


Electron density around TRP B 701:

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

**Electron density around TRP A 701:**

$2mF_o-DF_c$ (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.