



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 06:26 PM UTC

PDB ID : 6S7A / pdb_00006s7a
Title : Crystal structure of CARM1 in complex with inhibitor AA175
Authors : Gunnell, E.A.; Al-Noori, A.; Dowden, J.; Dreveny, I.
Deposited on : 2019-07-04
Resolution : 1.86 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 : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

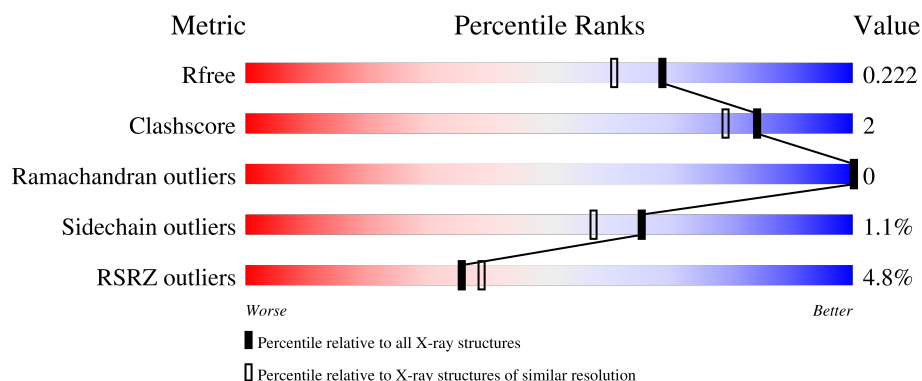
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.86 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}	180053	3428 (1.86-1.86)
Clashscore	190562	3579 (1.86-1.86)
Ramachandran outliers	187476	3553 (1.86-1.86)
Sidechain outliers	187428	3553 (1.86-1.86)
RSRZ outliers	180081	3429 (1.86-1.86)

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	351	8% 91% 6% .
1	B	351	2% 91% 7% .
1	C	351	5% 93% . . .
1	D	351	4% 93% . .

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 11870 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 Histone-arginine methyltransferase CARM1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	342	Total	C	N	O	S	0	0	0
			2744	1772	453	505	14			
1	B	342	Total	C	N	O	S	0	3	0
			2770	1790	456	509	15			
1	C	342	Total	C	N	O	S	0	1	0
			2750	1775	454	506	15			
1	D	342	Total	C	N	O	S	0	1	0
			2750	1775	454	506	15			

There are 24 discrepancies between the modelled and reference sequences:

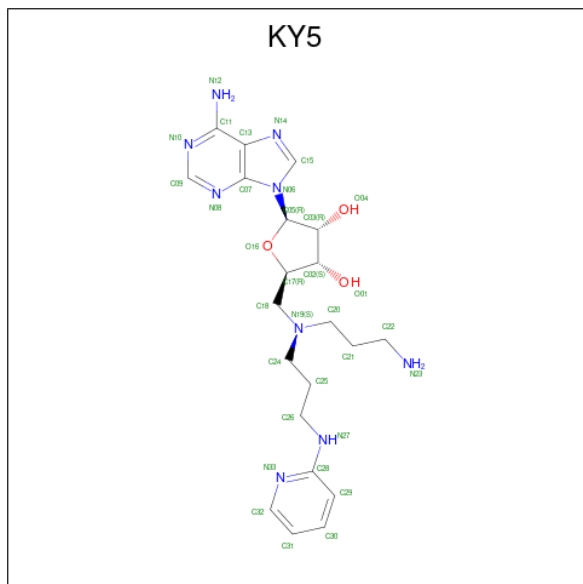
Chain	Residue	Modelled	Actual	Comment	Reference
A	480	HIS	-	expression tag	UNP Q86X55
A	481	HIS	-	expression tag	UNP Q86X55
A	482	HIS	-	expression tag	UNP Q86X55
A	483	HIS	-	expression tag	UNP Q86X55
A	484	HIS	-	expression tag	UNP Q86X55
A	485	HIS	-	expression tag	UNP Q86X55
B	480	HIS	-	expression tag	UNP Q86X55
B	481	HIS	-	expression tag	UNP Q86X55
B	482	HIS	-	expression tag	UNP Q86X55
B	483	HIS	-	expression tag	UNP Q86X55
B	484	HIS	-	expression tag	UNP Q86X55
B	485	HIS	-	expression tag	UNP Q86X55
C	480	HIS	-	expression tag	UNP Q86X55
C	481	HIS	-	expression tag	UNP Q86X55
C	482	HIS	-	expression tag	UNP Q86X55
C	483	HIS	-	expression tag	UNP Q86X55
C	484	HIS	-	expression tag	UNP Q86X55
C	485	HIS	-	expression tag	UNP Q86X55
D	480	HIS	-	expression tag	UNP Q86X55
D	481	HIS	-	expression tag	UNP Q86X55
D	482	HIS	-	expression tag	UNP Q86X55

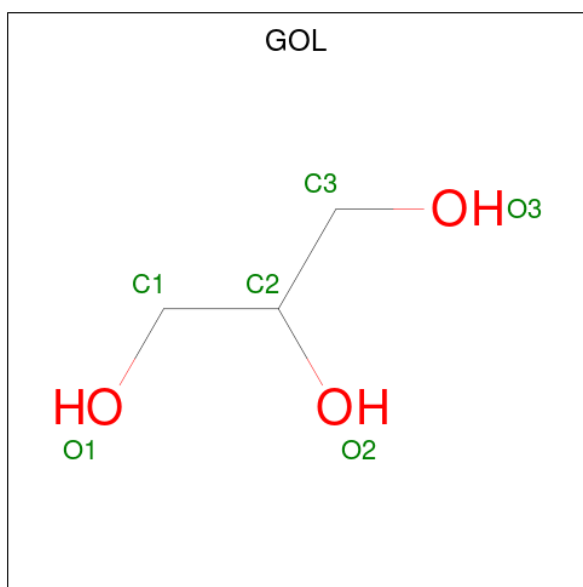
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Chain	Residue	Modelled	Actual	Comment	Reference
D	483	HIS	-	expression tag	UNP Q86X55
D	484	HIS	-	expression tag	UNP Q86X55
D	485	HIS	-	expression tag	UNP Q86X55

- Molecule 2 is (2 {R},3 {R},4 {S},5 {R})-2-(6-aminopurin-9-yl)-5-[[3-azanylpropyl-[3-(pyridin-2-ylamino)propyl]amino]methyl]oxolane-3,4-diol (CCD ID: KY5) (formula: C₂₁H₃₁N₉O₃) (labeled as "Ligand of Interest" by depositor).





Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			6	3	3		
3	B	1	Total	C	O	0	0
			6	3	3		
3	B	1	Total	C	O	0	0
			6	3	3		
3	C	1	Total	C	O	0	0
			6	3	3		
3	D	1	Total	C	O	0	0
			6	3	3		
3	D	1	Total	C	O	0	0
			6	3	3		

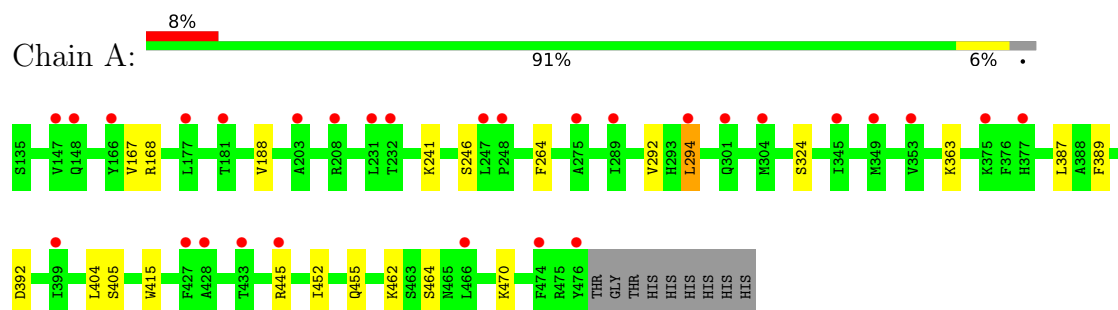
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	119	Total	O	0	0
			119	119		
4	B	261	Total	O	0	0
			261	261		
4	C	101	Total	O	0	0
			101	101		
4	D	207	Total	O	0	0
			207	207		

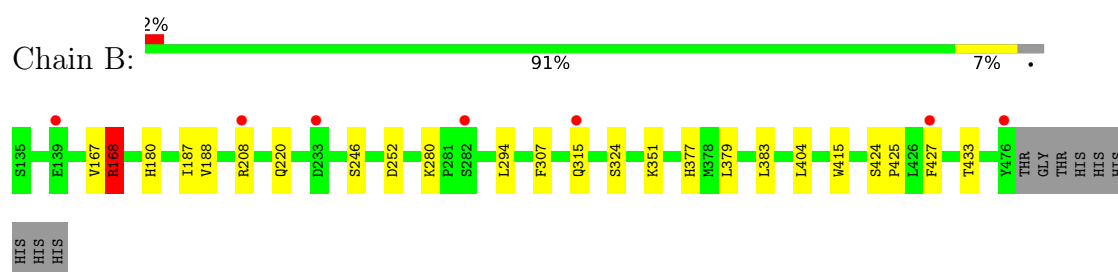
3 Residue-property plots [i](#)

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.

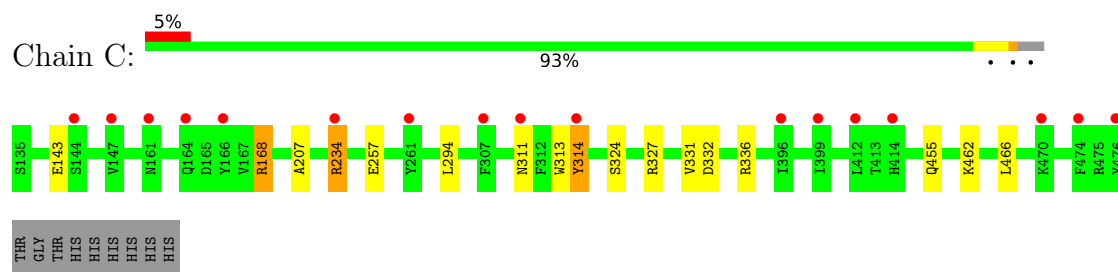
- Molecule 1: Histone-arginine methyltransferase CARM1



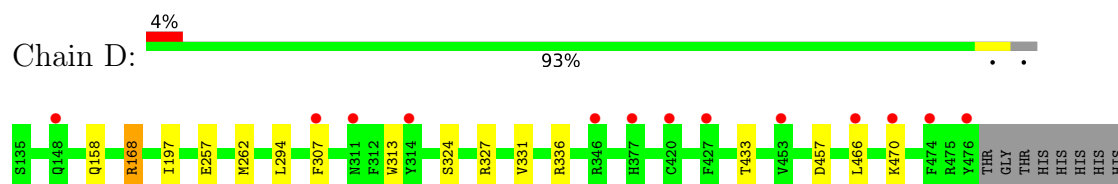
- Molecule 1: Histone-arginine methyltransferase CARM1



- Molecule 1: Histone-arginine methyltransferase CARM1



- Molecule 1: Histone-arginine methyltransferase CARM1



HIS

4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α , β , γ	74.78Å 98.62Å 207.14Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	71.42 – 1.86 71.42 – 1.86	Depositor EDS
% Data completeness (in resolution range)	99.9 (71.42-1.86) 99.9 (71.42-1.86)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.54 (at 1.86Å)	Xtriage
Refinement program	PHENIX	Depositor
R, R_{free}	0.199 , 0.220 0.201 , 0.222	Depositor DCC
R_{free} test set	6449 reflections (4.84%)	wwPDB-VP
Wilson B-factor (Å ²)	32.0	Xtriage
Anisotropy	0.051	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 35.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	11870	wwPDB-VP
Average B, all atoms (Å ²)	44.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 43.50 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.7471e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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 [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: KY5, GOL

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	0.89	0/2814	0.88	2/3813 (0.1%)
1	B	1.05	2/2841 (0.1%)	0.91	1/3849 (0.0%)
1	C	0.88	0/2820	0.88	3/3821 (0.1%)
1	D	1.00	1/2820 (0.0%)	0.94	4/3821 (0.1%)
All	All	0.96	3/11295 (0.0%)	0.91	10/15304 (0.1%)

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	307	PHE	CA-C	-5.37	1.45	1.52
1	D	168	ARG	CZ-NH1	-5.21	1.25	1.32
1	B	168	ARG	C-O	-5.12	1.18	1.24

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	168	ARG	NE-CZ-NH1	-10.07	111.43	121.50
1	D	168	ARG	CB-CG-CD	-6.86	95.53	111.30
1	C	168	ARG	CB-CG-CD	-6.44	96.49	111.30
1	D	168	ARG	NE-CZ-NH2	6.42	124.98	119.20
1	C	314	TYR	N-CA-C	5.96	119.81	112.54
1	B	324	SER	N-CA-C	5.51	118.05	111.71
1	A	324	SER	N-CA-C	5.38	117.90	111.71
1	D	197	ILE	N-CA-C	5.33	115.96	110.36
1	A	294	LEU	CA-CB-CG	5.29	134.83	116.30
1	C	234	ARG	NE-CZ-NH2	-5.24	114.49	119.20

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	2744	0	2692	18	0
1	B	2770	0	2714	13	0
1	C	2750	0	2696	12	0
1	D	2750	0	2696	11	0
2	A	33	0	0	1	0
2	B	33	0	0	0	0
2	C	33	0	0	0	0
2	D	33	0	0	1	0
3	A	6	0	8	0	0
3	B	12	0	16	0	0
3	C	6	0	8	0	0
3	D	12	0	16	0	0
4	A	119	0	0	1	0
4	B	261	0	0	3	1
4	C	101	0	0	0	0
4	D	207	0	0	1	1
All	All	11870	0	10846	50	1

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 (50) 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:207:ALA:O	1:C:234:ARG:NH2	1.90	1.04
1:C:314:TYR:OH	1:D:327:ARG:NH1	2.08	0.85
1:C:327:ARG:CZ	1:C:331:VAL:HG21	2.11	0.80
1:A:445:ARG:HH12	1:A:470:LYS:HB3	1.47	0.79
1:B:315:GLN:NE2	4:B:601:HOH:O	2.20	0.75
1:B:383:LEU:HG	1:B:427[B]:PHE:CE1	2.29	0.68
1:A:294:LEU:HD23	1:A:387:LEU:HD13	1.77	0.65
1:B:220:GLN:HG3	4:B:726:HOH:O	2.03	0.58
1:B:383:LEU:HD22	1:B:425:PRO:HB2	1.84	0.58
1:A:294:LEU:HG	1:A:389:PHE:CE2	2.39	0.58
1:B:180:HIS:ND1	4:B:603:HOH:O	2.32	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:445:ARG:NH1	1:A:470:LYS:HB3	2.19	0.57
1:D:336:ARG:HG2	1:D:466:LEU:O	2.06	0.56
1:C:336:ARG:HG2	1:C:466:LEU:O	2.08	0.54
1:C:327:ARG:NH1	1:C:331:VAL:HG21	2.22	0.54
1:A:294:LEU:HD11	1:A:389:PHE:CE2	2.44	0.53
1:A:445:ARG:NH1	1:A:470:LYS:CB	2.75	0.50
1:A:167:VAL:HG12	1:A:404:LEU:CD1	2.43	0.49
1:D:433:THR:HG22	1:D:457:ASP:OD2	2.13	0.48
1:A:455:GLN:HB3	1:A:462:LYS:HG2	1.95	0.48
1:B:377:HIS:ND1	1:B:433[B]:THR:HG22	2.30	0.47
1:A:294:LEU:CD1	1:A:389:PHE:CE2	2.98	0.47
1:C:314:TYR:OH	1:D:327:ARG:CZ	2.64	0.46
1:A:167:VAL:HG12	1:A:404:LEU:HD11	1.98	0.45
1:C:313:TRP:O	1:C:324:SER:HA	2.17	0.45
1:C:455:GLN:HB3	1:C:462:LYS:HG2	1.98	0.45
1:D:168:ARG:NH1	2:D:501:KY5:N33	2.64	0.44
1:D:313:TRP:O	1:D:324:SER:HA	2.18	0.44
1:D:168:ARG:NE	1:D:257:GLU:OE1	2.46	0.44
1:A:452:ILE:O	1:A:464:SER:HA	2.17	0.44
1:B:252:ASP:OD1	1:B:280:LYS:HE3	2.18	0.43
1:C:168:ARG:NE	1:C:257:GLU:OE1	2.47	0.43
1:D:433:THR:CG2	1:D:457:ASP:OD2	2.67	0.43
1:A:168:ARG:HD2	1:A:415:TRP:CZ3	2.54	0.43
1:A:294:LEU:CG	1:A:389:PHE:CE2	3.02	0.42
1:A:363:LYS:HA	1:A:363:LYS:HD2	1.94	0.42
1:B:167:VAL:HG12	1:B:404:LEU:CD1	2.49	0.42
1:B:187:ILE:HD11	1:B:208:ARG:NH1	2.35	0.42
1:C:311:ASN:ND2	1:D:307:PHE:CE2	2.87	0.42
1:A:392:ASP:OD1	1:A:405:SER:OG	2.37	0.41
1:B:168:ARG:HD2	1:B:415:TRP:CZ3	2.55	0.41
1:C:332:ASP:HB3	1:C:336:ARG:NH1	2.36	0.41
1:C:311:ASN:HD21	1:D:307:PHE:HE2	1.67	0.41
1:B:351:LYS:HE2	1:B:379:LEU:HD11	2.03	0.41
1:D:158:GLN:OE1	4:D:601:HOH:O	2.22	0.41
1:B:167:VAL:HG12	1:B:404:LEU:HD11	2.03	0.41
1:B:252:ASP:OD1	1:B:280:LYS:CE	2.69	0.41
1:A:241:LYS:HA	2:A:501:KY5:N10	2.36	0.41
1:A:264:PHE:CE2	1:A:292:VAL:HG21	2.57	0.40
1:A:392:ASP:OD2	4:A:601:HOH:O	2.22	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:B:767:HOH:O	4:D:760:HOH:O[4_555]	2.17	0.03

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	340/351 (97%)	332 (98%)	8 (2%)	0	100	100
1	B	343/351 (98%)	334 (97%)	9 (3%)	0	100	100
1	C	341/351 (97%)	332 (97%)	9 (3%)	0	100	100
1	D	341/351 (97%)	331 (97%)	10 (3%)	0	100	100
All	All	1365/1404 (97%)	1329 (97%)	36 (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	298/306 (97%)	296 (99%)	2 (1%)	76	70
1	B	301/306 (98%)	296 (98%)	5 (2%)	53	42
1	C	299/306 (98%)	297 (99%)	2 (1%)	76	70
1	D	299/306 (98%)	295 (99%)	4 (1%)	61	51
All	All	1197/1224 (98%)	1184 (99%)	13 (1%)	65	57

All (13) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	188	VAL
1	A	246	SER
1	B	168	ARG
1	B	188	VAL
1	B	246	SER
1	B	294	LEU
1	B	424	SER
1	C	143	GLU
1	C	294	LEU
1	D	262	MET
1	D	294	LEU
1	D	331	VAL
1	D	470	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	315	GLN
1	C	455	GLN
1	D	159	GLN
1	D	220	GLN
1	D	315	GLN
1	D	368	HIS

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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

10 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
3	GOL	B	502	-	5,5,5	0.25	0	5,5,5	0.30	0
2	KY5	D	501	-	36,36,36	3.67	17 (47%)	48,49,49	2.16	14 (29%)
3	GOL	A	502	-	5,5,5	0.10	0	5,5,5	0.61	0
3	GOL	D	503	-	5,5,5	0.16	0	5,5,5	0.57	0
2	KY5	B	501	-	36,36,36	3.82	17 (47%)	48,49,49	1.76	10 (20%)
3	GOL	C	502	-	5,5,5	0.23	0	5,5,5	0.45	0
2	KY5	A	501	-	36,36,36	4.18	21 (58%)	48,49,49	1.88	15 (31%)
2	KY5	C	501	-	36,36,36	4.00	19 (52%)	48,49,49	1.86	12 (25%)
3	GOL	D	502	-	5,5,5	0.31	0	5,5,5	0.33	0
3	GOL	B	503	-	5,5,5	0.34	0	5,5,5	0.40	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
3	GOL	B	502	-	-	1/4/4/4	-
2	KY5	D	501	-	-	2/19/35/35	0/4/4/4
3	GOL	A	502	-	-	0/4/4/4	-
3	GOL	D	503	-	-	0/4/4/4	-
2	KY5	B	501	-	-	0/19/35/35	0/4/4/4
3	GOL	C	502	-	-	0/4/4/4	-
2	KY5	A	501	-	-	8/19/35/35	0/4/4/4
2	KY5	C	501	-	-	6/19/35/35	0/4/4/4
3	GOL	D	502	-	-	4/4/4/4	-
3	GOL	B	503	-	-	4/4/4/4	-

All (74) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	501	KY5	C02-C17	-11.20	1.24	1.53
2	C	501	KY5	C02-C17	-10.70	1.25	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	501	KY5	C28-N33	9.83	1.52	1.34
2	B	501	KY5	C02-C17	-9.75	1.28	1.53
2	D	501	KY5	C02-C17	-9.58	1.28	1.53
2	D	501	KY5	C28-N33	9.46	1.51	1.34
2	B	501	KY5	C28-N33	8.87	1.50	1.34
2	C	501	KY5	C28-N33	8.56	1.49	1.34
2	A	501	KY5	O16-C05	-7.74	1.24	1.42
2	C	501	KY5	O16-C05	-6.99	1.25	1.42
2	D	501	KY5	C32-N33	6.94	1.49	1.34
2	A	501	KY5	C30-C29	6.60	1.50	1.38
2	C	501	KY5	C28-N27	-6.56	1.27	1.36
2	B	501	KY5	O16-C05	-6.52	1.26	1.42
2	B	501	KY5	C29-C28	6.51	1.54	1.39
2	C	501	KY5	C32-N33	6.47	1.48	1.34
2	B	501	KY5	C30-C29	6.41	1.49	1.38
2	C	501	KY5	C30-C29	6.38	1.49	1.38
2	B	501	KY5	C32-N33	6.28	1.47	1.34
2	A	501	KY5	C32-N33	6.20	1.47	1.34
2	C	501	KY5	C29-C28	6.12	1.53	1.39
2	D	501	KY5	O16-C05	-6.00	1.28	1.42
2	B	501	KY5	C31-C30	5.62	1.50	1.38
2	A	501	KY5	C29-C28	5.55	1.52	1.39
2	A	501	KY5	C28-N27	-5.50	1.28	1.36
2	B	501	KY5	C28-N27	-5.44	1.28	1.36
2	C	501	KY5	C31-C30	5.42	1.50	1.38
2	A	501	KY5	C31-C30	5.40	1.50	1.38
2	A	501	KY5	C31-C32	5.25	1.52	1.37
2	A	501	KY5	C11-N12	5.16	1.47	1.34
2	B	501	KY5	C31-C32	5.16	1.52	1.37
2	D	501	KY5	C30-C29	5.15	1.47	1.38
2	C	501	KY5	C31-C32	4.95	1.51	1.37
2	D	501	KY5	C31-C30	4.73	1.48	1.38
2	A	501	KY5	O04-C03	-4.71	1.31	1.43
2	D	501	KY5	C11-N12	4.69	1.46	1.34
2	D	501	KY5	C31-C32	4.61	1.50	1.37
2	C	501	KY5	C11-N12	4.59	1.45	1.34
2	C	501	KY5	O04-C03	-4.55	1.31	1.43
2	B	501	KY5	C11-N12	4.42	1.45	1.34
2	D	501	KY5	C18-N19	4.42	1.56	1.47
2	D	501	KY5	O16-C17	4.19	1.54	1.45
2	D	501	KY5	C28-N27	-4.18	1.30	1.36
2	A	501	KY5	C03-C02	-3.96	1.42	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	501	KY5	C29-C28	3.90	1.48	1.39
2	B	501	KY5	O04-C03	-3.74	1.33	1.43
2	D	501	KY5	O04-C03	-3.70	1.33	1.43
2	C	501	KY5	C18-N19	3.65	1.54	1.47
2	C	501	KY5	C03-C02	-3.50	1.43	1.53
2	A	501	KY5	O01-C02	3.45	1.51	1.43
2	A	501	KY5	O16-C17	3.12	1.51	1.45
2	C	501	KY5	O16-C17	2.98	1.51	1.45
2	B	501	KY5	C18-N19	2.97	1.53	1.47
2	B	501	KY5	C03-C02	-2.97	1.45	1.53
2	B	501	KY5	C24-N19	2.73	1.53	1.47
2	A	501	KY5	C20-N19	2.73	1.53	1.47
2	A	501	KY5	C18-N19	2.71	1.52	1.47
2	A	501	KY5	C07-N08	2.66	1.39	1.34
2	C	501	KY5	O01-C02	2.64	1.49	1.43
2	D	501	KY5	C03-C02	-2.60	1.46	1.53
2	A	501	KY5	C18-C17	-2.60	1.43	1.51
2	C	501	KY5	C15-N14	2.52	1.36	1.31
2	A	501	KY5	C15-N14	2.52	1.36	1.31
2	B	501	KY5	C15-N14	2.39	1.36	1.31
2	A	501	KY5	C24-N19	2.36	1.52	1.47
2	C	501	KY5	C07-N08	2.32	1.38	1.34
2	C	501	KY5	C18-C17	-2.22	1.44	1.51
2	A	501	KY5	C26-N27	2.21	1.50	1.45
2	B	501	KY5	O01-C02	2.17	1.48	1.43
2	D	501	KY5	C20-N19	2.15	1.52	1.47
2	D	501	KY5	C15-N14	2.14	1.35	1.31
2	C	501	KY5	C24-N19	2.11	1.52	1.47
2	B	501	KY5	C18-C17	-2.09	1.45	1.51
2	D	501	KY5	C24-N19	2.01	1.52	1.47

All (51) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	501	KY5	N27-C28-N33	6.25	126.41	116.98
2	D	501	KY5	N10-C09-N08	-5.41	120.40	128.58
2	A	501	KY5	N10-C09-N08	-4.89	121.18	128.58
2	D	501	KY5	C29-C28-N33	-4.69	115.47	122.61
2	B	501	KY5	N10-C09-N08	-4.61	121.61	128.58
2	B	501	KY5	O16-C17-C18	-4.35	101.75	108.88
2	A	501	KY5	C25-C26-N27	-4.32	99.77	111.46
2	C	501	KY5	N10-C09-N08	-4.27	122.12	128.58

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	501	KY5	C13-C07-N08	-4.14	121.01	126.72
2	B	501	KY5	C03-C02-C17	4.11	110.56	102.61
2	D	501	KY5	C30-C29-C28	3.88	124.04	117.72
2	C	501	KY5	C25-C26-N27	-3.85	101.06	111.46
2	A	501	KY5	C13-C07-N08	-3.65	121.69	126.72
2	C	501	KY5	N06-C15-N14	-3.56	108.89	113.94
2	C	501	KY5	O16-C17-C18	-3.51	103.13	108.88
2	D	501	KY5	C13-C07-N08	-3.46	121.95	126.72
2	B	501	KY5	C13-C07-N08	-3.32	122.14	126.72
2	D	501	KY5	C32-N33-C28	3.22	121.81	117.21
2	D	501	KY5	C03-C02-C17	3.06	108.52	102.61
2	D	501	KY5	N06-C15-N14	-3.02	109.66	113.94
2	A	501	KY5	N06-C15-N14	-2.99	109.69	113.94
2	B	501	KY5	C25-C26-N27	-2.98	103.42	111.46
2	D	501	KY5	N08-C07-N06	2.96	132.20	127.17
2	D	501	KY5	O16-C17-C18	-2.96	104.04	108.88
2	D	501	KY5	C09-N08-C07	2.91	118.94	111.83
2	C	501	KY5	C03-C02-C17	2.90	108.21	102.61
2	C	501	KY5	C09-N08-C07	2.82	118.73	111.83
2	B	501	KY5	C09-N08-C07	2.77	118.60	111.83
2	A	501	KY5	C09-N08-C07	2.76	118.58	111.83
2	A	501	KY5	N27-C28-N33	2.76	121.14	116.98
2	D	501	KY5	C07-N06-C15	2.75	108.62	105.74
2	C	501	KY5	C13-N14-C15	2.73	107.73	103.45
2	A	501	KY5	N08-C07-N06	2.72	131.80	127.17
2	B	501	KY5	N06-C15-N14	-2.68	110.14	113.94
2	A	501	KY5	C09-N10-C11	2.58	122.97	118.73
2	A	501	KY5	O16-C17-C18	-2.48	104.83	108.88
2	C	501	KY5	C07-C13-N14	-2.47	107.76	110.58
2	C	501	KY5	N08-C07-N06	2.38	131.22	127.17
2	A	501	KY5	C21-C20-N19	2.36	120.57	113.93
2	A	501	KY5	C31-C32-N33	-2.35	119.69	123.42
2	A	501	KY5	C13-N14-C15	2.23	106.96	103.45
2	B	501	KY5	C13-N14-C15	2.23	106.96	103.45
2	C	501	KY5	C25-C24-N19	-2.21	107.72	113.93
2	A	501	KY5	C07-N06-C15	2.18	108.03	105.74
2	D	501	KY5	C09-N10-C11	2.16	122.28	118.73
2	C	501	KY5	C29-C28-N27	2.07	125.59	121.17
2	B	501	KY5	C07-C13-N14	-2.06	108.22	110.58
2	D	501	KY5	C13-N14-C15	2.06	106.69	103.45
2	A	501	KY5	C17-O16-C05	-2.05	104.94	109.47
2	A	501	KY5	C32-N33-C28	2.04	120.13	117.21

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	501	KY5	C24-N19-C18	2.02	116.62	111.89

There are no chirality outliers.

All (25) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	501	KY5	C02-C17-C18-N19
2	A	501	KY5	O16-C17-C18-N19
3	B	503	GOL	O1-C1-C2-C3
3	B	503	GOL	C1-C2-C3-O3
3	D	502	GOL	O1-C1-C2-C3
3	D	502	GOL	C1-C2-C3-O3
2	A	501	KY5	C21-C20-N19-C18
2	A	501	KY5	N19-C20-C21-C22
2	A	501	KY5	N19-C24-C25-C26
2	A	501	KY5	C17-C18-N19-C24
2	C	501	KY5	C24-C25-C26-N27
3	D	502	GOL	O1-C1-C2-O2
2	C	501	KY5	C25-C24-N19-C18
3	B	503	GOL	O2-C2-C3-O3
3	D	502	GOL	O2-C2-C3-O3
2	A	501	KY5	C24-C25-C26-N27
3	B	503	GOL	O1-C1-C2-O2
2	D	501	KY5	C25-C26-N27-C28
2	C	501	KY5	C25-C24-N19-C20
2	C	501	KY5	O16-C17-C18-N19
2	D	501	KY5	C17-C18-N19-C20
2	A	501	KY5	C20-C21-C22-N23
3	B	502	GOL	O2-C2-C3-O3
2	C	501	KY5	C25-C26-N27-C28
2	C	501	KY5	C02-C17-C18-N19

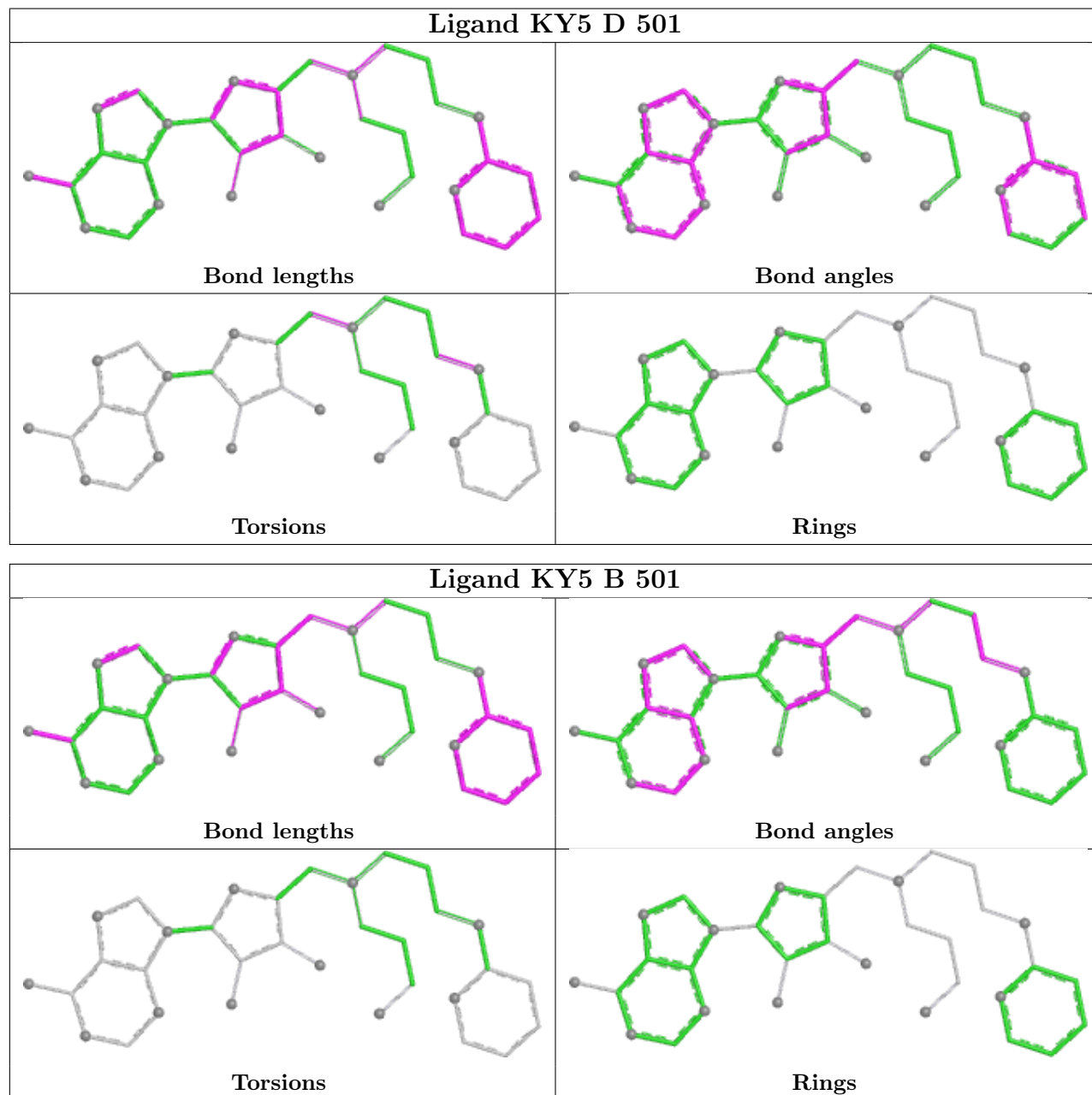
There are no ring outliers.

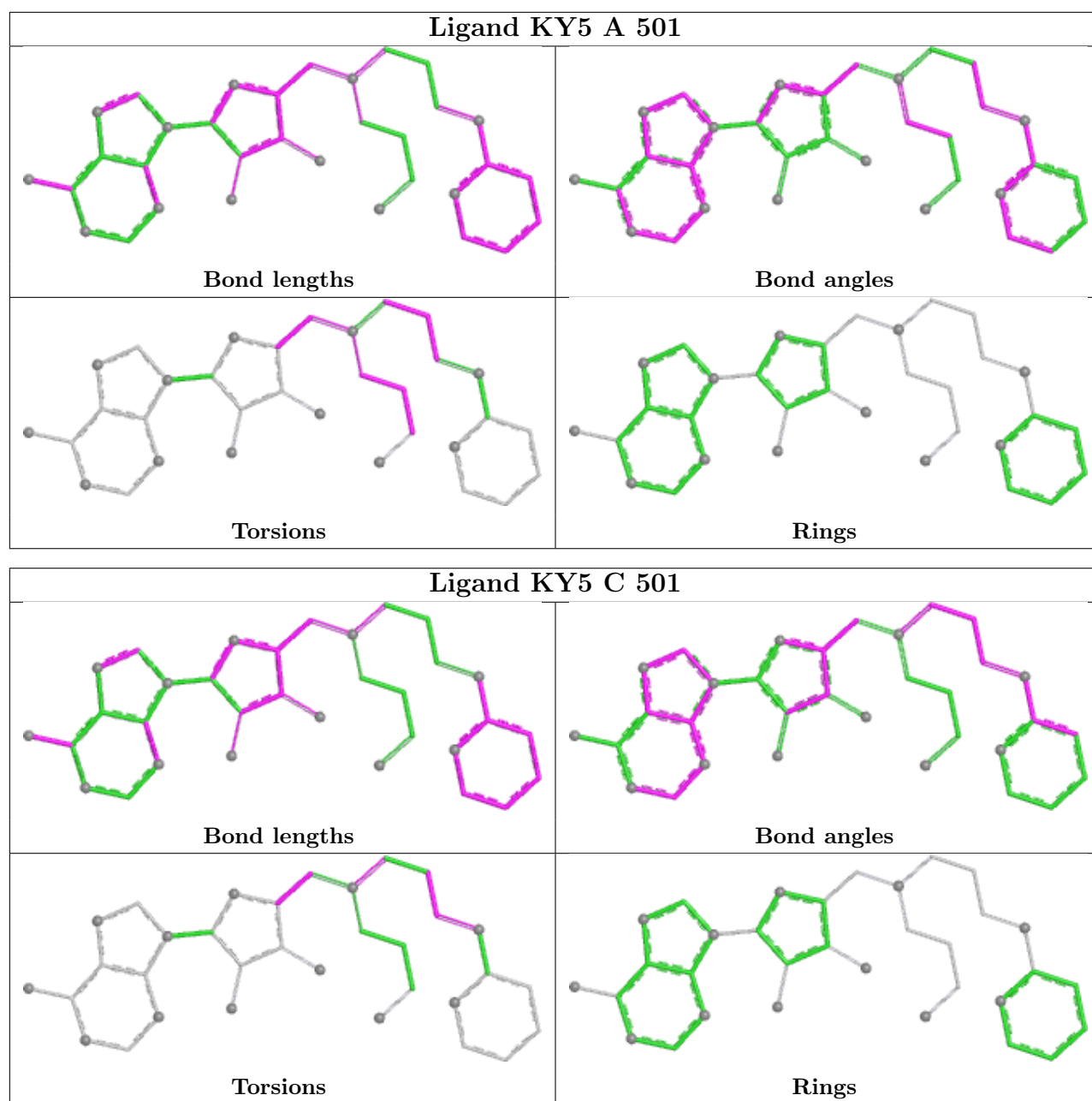
2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	D	501	KY5	1	0
2	A	501	KY5	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 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	342/351 (97%)	0.95	29 (8%) 16 17	34, 52, 73, 94	0
1	B	342/351 (97%)	0.10	7 (2%) 65 68	15, 32, 47, 57	3 (0%)
1	C	342/351 (97%)	0.81	17 (4%) 34 37	26, 51, 65, 85	1 (0%)
1	D	342/351 (97%)	0.27	13 (3%) 44 48	18, 36, 54, 69	1 (0%)
All	All	1368/1404 (97%)	0.53	66 (4%) 35 39	15, 45, 64, 94	5 (0%)

All (66) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	314	TYR	5.4
1	A	476	TYR	4.3
1	A	248	PRO	4.3
1	B	476	TYR	4.2
1	C	476	TYR	4.1
1	D	476	TYR	3.9
1	D	311	ASN	3.7
1	D	307	PHE	3.3
1	B	282	SER	3.3
1	A	247	LEU	3.1
1	A	294	LEU	3.1
1	C	474	PHE	3.1
1	C	307	PHE	3.0
1	C	311	ASN	2.9
1	C	314	TYR	2.9
1	B	315	GLN	2.9
1	C	261	TYR	2.8
1	A	474	PHE	2.8
1	A	349	MET	2.8
1	A	181	THR	2.7
1	D	377	HIS	2.7

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Mol	Chain	Res	Type	RSRZ
1	A	466	LEU	2.7
1	D	466	LEU	2.7
1	C	166	TYR	2.6
1	A	232	THR	2.6
1	B	233	ASP	2.6
1	D	470	LYS	2.5
1	A	289	ILE	2.5
1	A	427	PHE	2.5
1	A	275	ALA	2.4
1	A	353	VAL	2.4
1	C	161	ASN	2.4
1	A	375	LYS	2.4
1	C	147	VAL	2.4
1	B	208	ARG	2.3
1	D	427	PHE	2.3
1	D	474	PHE	2.3
1	A	433	THR	2.3
1	A	203	ALA	2.3
1	A	377	HIS	2.3
1	A	177	LEU	2.3
1	C	396	ILE	2.2
1	A	304	MET	2.2
1	C	470	LYS	2.2
1	B	139	GLU	2.2
1	C	144	SER	2.2
1	B	427[A]	PHE	2.2
1	A	445	ARG	2.2
1	A	231	LEU	2.2
1	A	345	ILE	2.2
1	A	148	GLN	2.2
1	D	420	CYS	2.2
1	C	414	HIS	2.1
1	C	412	LEU	2.1
1	A	399	ILE	2.1
1	A	147	VAL	2.1
1	D	346	ARG	2.1
1	D	453	VAL	2.1
1	A	166	TYR	2.1
1	C	234	ARG	2.1
1	D	148	GLN	2.1
1	A	428	ALA	2.1
1	A	208	ARG	2.1

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Mol	Chain	Res	Type	RSRZ
1	C	399	ILE	2.0
1	C	164	GLN	2.0
1	A	301	GLN	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 oligosaccharides in this entry.

6.4 Ligands [i](#)

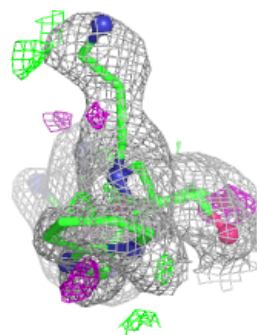
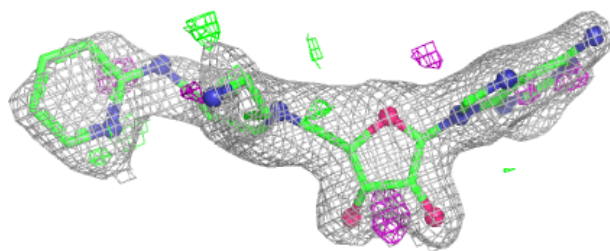
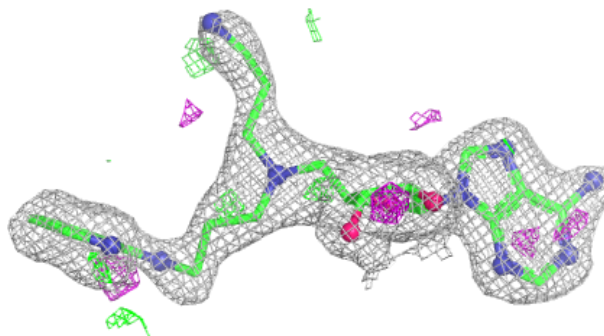
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists 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	GOL	A	502	6/6	0.78	0.18	71,74,77,78	0
3	GOL	C	502	6/6	0.80	0.18	77,78,80,85	0
3	GOL	B	503	6/6	0.82	0.15	64,68,71,76	0
3	GOL	D	502	6/6	0.82	0.17	61,63,66,68	0
3	GOL	B	502	6/6	0.86	0.13	64,64,66,71	0
3	GOL	D	503	6/6	0.87	0.15	63,65,70,70	0
2	KY5	A	501	33/33	0.88	0.14	42,48,66,68	0
2	KY5	C	501	33/33	0.90	0.13	39,44,72,72	5
2	KY5	B	501	33/33	0.94	0.09	27,31,49,51	0
2	KY5	D	501	33/33	0.94	0.10	26,31,52,54	0

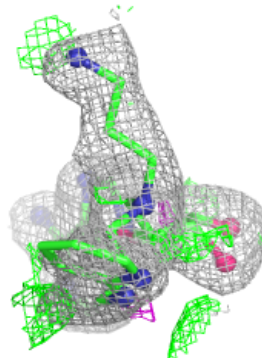
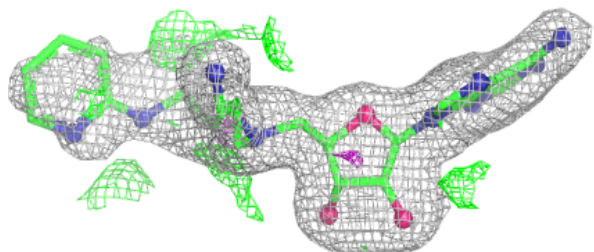
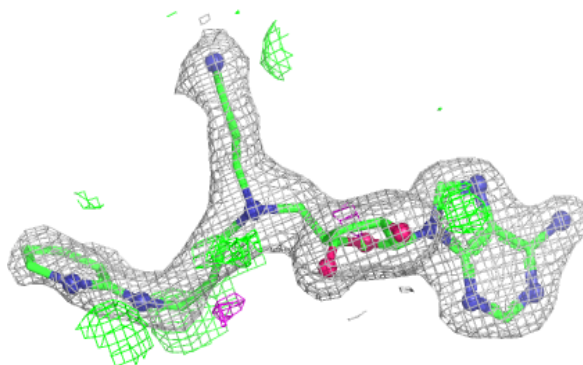
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around KY5 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)

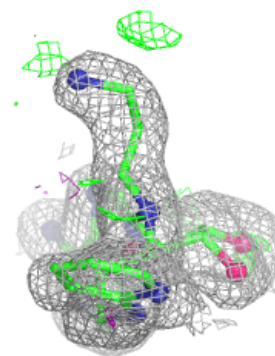
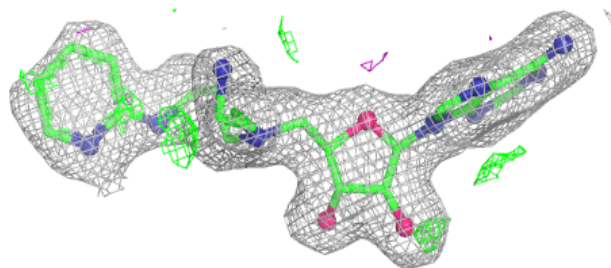
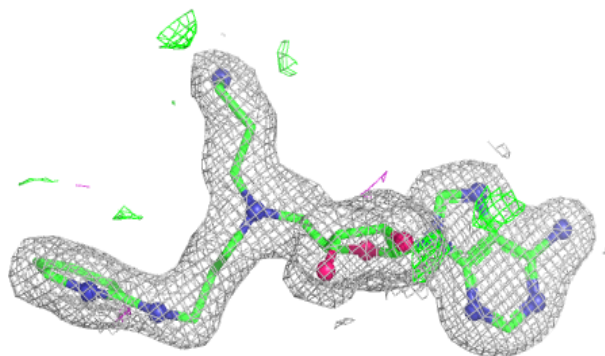
**Electron density around KY5 C 501:**

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

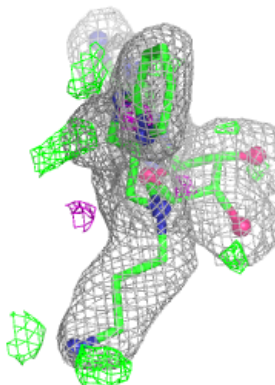
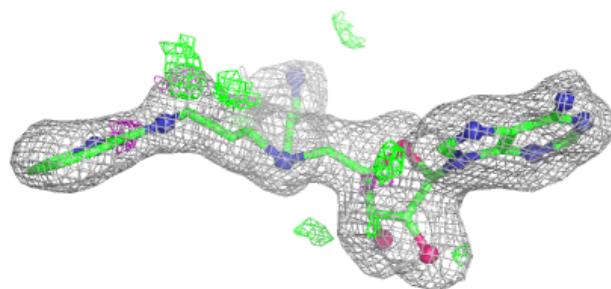
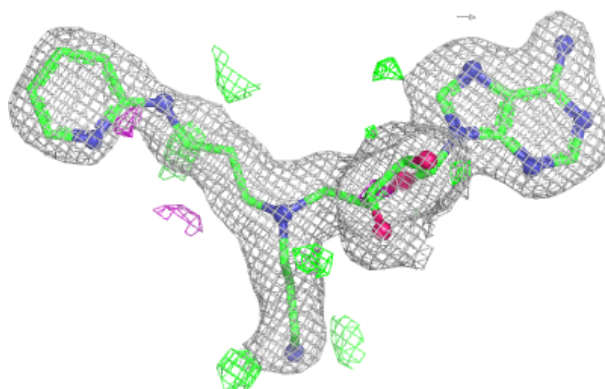


Electron density around KY5 B 501:

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

**Electron density around KY5 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 [i](#)

There are no such residues in this entry.