



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 5, 2026 – 03:02 AM UTC

PDB ID : 9Q5Z / pdb_00009q5z
Title : Human prolyl endopeptidase (PREP) - complex with KT-1-147
Authors : Fucci, I.J.; Thakur, K.; Yoo, E.; Monteiro, D.C.F.
Deposited on : 2025-08-21
Resolution : 1.41 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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

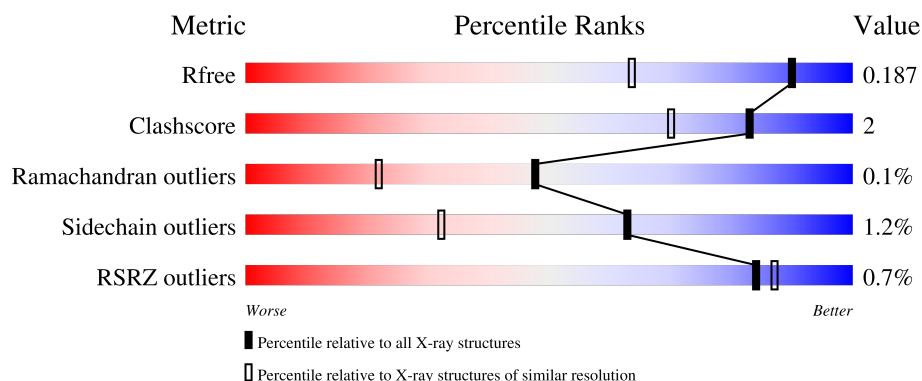
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.41 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	4041 (1.44-1.40)
Clashscore	190562	4154 (1.44-1.40)
Ramachandran outliers	187476	4083 (1.44-1.40)
Sidechain outliers	187428	4082 (1.44-1.40)
RSRZ outliers	180081	4039 (1.44-1.40)

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	711	% 92% 7%
1	B	711	% 91% 8% .
1	C	711	% 91% 8% ..

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	GOL	C	801	-	-	X	-
2	GOL	C	811	-	-	X	-
3	PEG	B	811	-	-	X	-
6	SCN	B	812	-	-	X	-
6	SCN	B	813	-	-	X	-

2 Entry composition [i](#)

There are 7 unique types of molecules in this entry. The entry contains 36766 atoms, of which 17062 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.

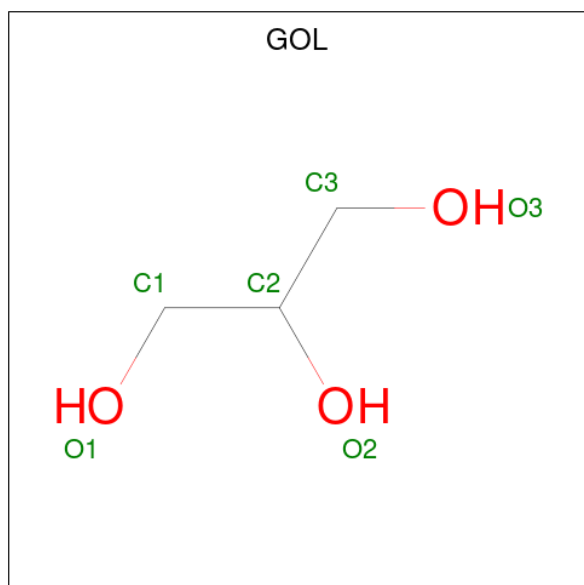
- Molecule 1 is a protein called Prolyl endopeptidase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	708	Total	C	H	N	O	S	182	9	0
			11312	3672	5592	948	1071	29			
1	B	708	Total	C	H	N	O	S	180	8	0
			11295	3668	5574	950	1075	28			
1	C	707	Total	C	H	N	O	S	178	3	0
			11219	3649	5531	941	1070	28			

There are 3 discrepancies between the modelled and reference sequences:

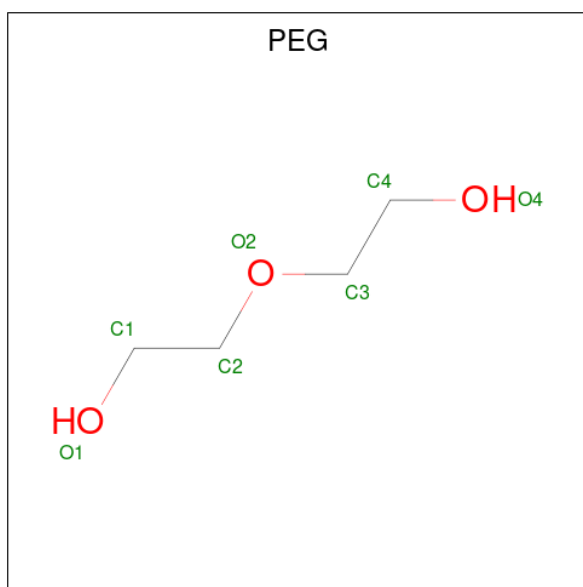
Chain	Residue	Modelled	Actual	Comment	Reference
A	0	GLY	-	expression tag	UNP P48147
B	0	GLY	-	expression tag	UNP P48147
C	0	GLY	-	expression tag	UNP P48147

- Molecule 2 is GLYCEROL (CCD ID: GOL) (formula: $C_3H_8O_3$).



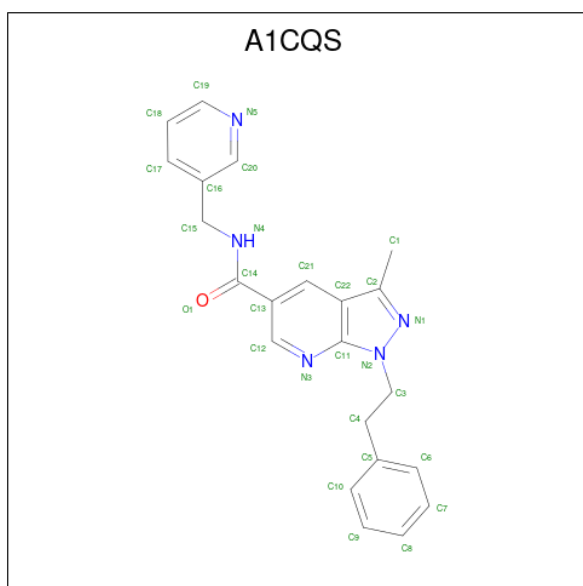
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	H	O	3	0
			14	3	8	3		
2	A	1	Total	C	H	O	3	0
			14	3	8	3		
2	A	1	Total	C	H	O	3	0
			14	3	8	3		
2	A	1	Total	C	H	O	3	0
			14	3	8	3		
2	A	1	Total	C	H	O	3	0
			14	3	8	3		
2	A	1	Total	C	H	O	3	0
			14	3	8	3		
2	A	1	Total	C	H	O	3	0
			14	3	8	3		
2	B	1	Total	C	H	O	3	0
			14	3	8	3		
2	B	1	Total	C	H	O	3	0
			14	3	8	3		
2	B	1	Total	C	H	O	3	0
			14	3	8	3		
2	B	1	Total	C	H	O	3	0
			14	3	8	3		
2	B	1	Total	C	H	O	3	0
			14	3	8	3		
2	B	1	Total	C	H	O	3	0
			14	3	8	3		
2	C	1	Total	C	H	O	3	0
			14	3	8	3		
2	C	1	Total	C	H	O	3	0
			14	3	8	3		
2	C	1	Total	C	H	O	3	0
			14	3	8	3		
2	C	1	Total	C	H	O	3	0
			14	3	8	3		

- Molecule 3 is DI(HYDROXYETHYL)ETHER (CCD ID: PEG) (formula: C₄H₁₀O₃).



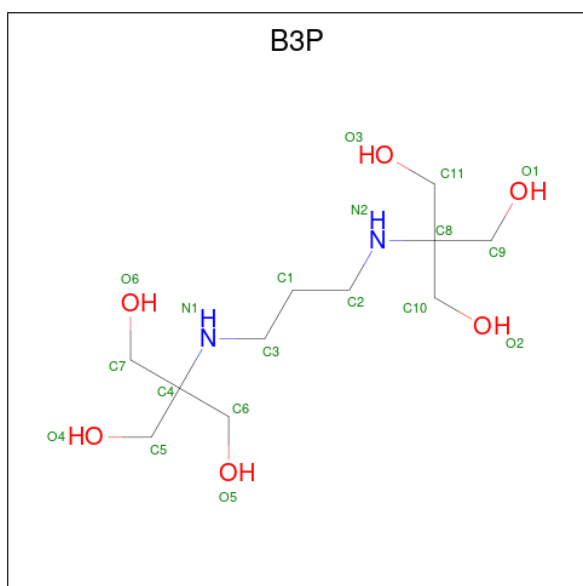
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	H	O	1	0
			9	2	5	2		
3	A	1	Total	C	H	O	2	0
			17	4	10	3		
3	B	1	Total	C	H	O	1	0
			9	2	5	2		

- Molecule 4 is 3-methyl-1-(2-phenylethyl)-N-[(pyridin-3-yl)methyl]-1H-pyrazolo[3,4-b]pyridine-5-carboxamide (CCD ID: A1CQS) (formula: C₂₂H₂₁N₅O).



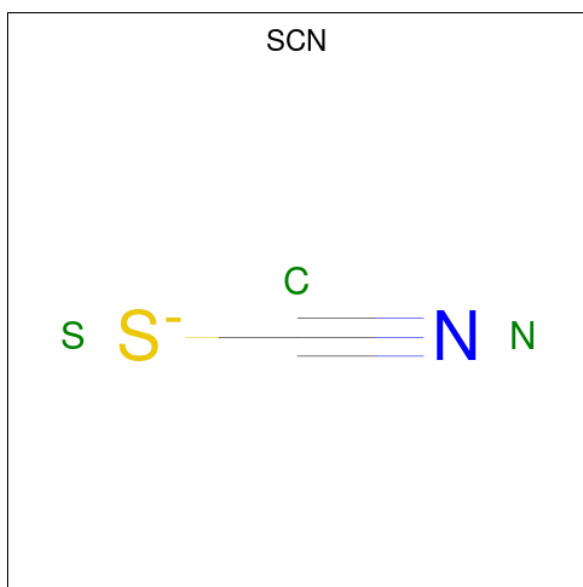
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total	C	H	N	O	3	0
			49	22	21	5	1		
4	B	1	Total	C	H	N	O	3	0
			49	22	21	5	1		
4	C	1	Total	C	H	N	O	3	0
			49	22	21	5	1		

- Molecule 5 is 2-[3-(2-HYDROXY-1,1-DIHYDROXYMETHYL-ETHYLAMINO)-PROPYLAMINO]-2-HYDROXYMETHYL-PROPANE-1,3-DIOL (CCD ID: B3P) (formula: $C_{11}H_{26}N_2O_6$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	A	1	Total	C	H	N	O	8	0
			45	11	26	2	6		
5	A	1	Total	C	H	N	O	8	0
			45	11	26	2	6		
5	B	1	Total	C	H	N	O	8	0
			45	11	26	2	6		
5	C	1	Total	C	H	N	O	8	0
			45	11	26	2	6		
5	C	1	Total	C	H	N	O	8	0
			45	11	26	2	6		

- Molecule 6 is THIOCYANATE ION (CCD ID: SCN) (formula: CNS).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	A	1	Total	C	N	S	0	0
			3	1	1	1		
6	A	1	Total	C	N	S	0	0
			3	1	1	1		
6	A	1	Total	C	N	S	0	0
			3	1	1	1		
6	A	1	Total	C	N	S	0	0
			3	1	1	1		
6	B	1	Total	C	N	S	0	0
			3	1	1	1		
6	B	1	Total	C	N	S	0	0
			3	1	1	1		
6	B	1	Total	C	N	S	0	0
			3	1	1	1		
6	B	1	Total	C	N	S	0	0
			3	1	1	1		
6	C	1	Total	C	N	S	0	0
			3	1	1	1		
6	C	1	Total	C	N	S	0	0
			3	1	1	1		
6	C	1	Total	C	N	S	0	0
			3	1	1	1		

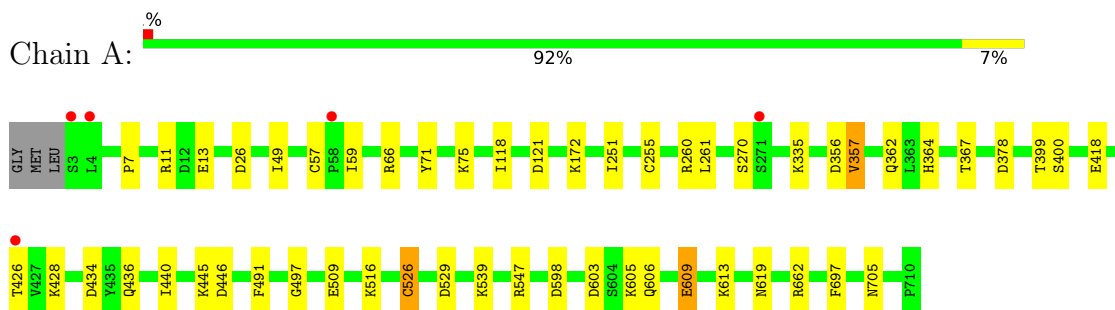
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	807	Total 811	O 811	0	4
7	B	783	Total 783	O 783	0	0
7	C	636	Total 637	O 637	0	1

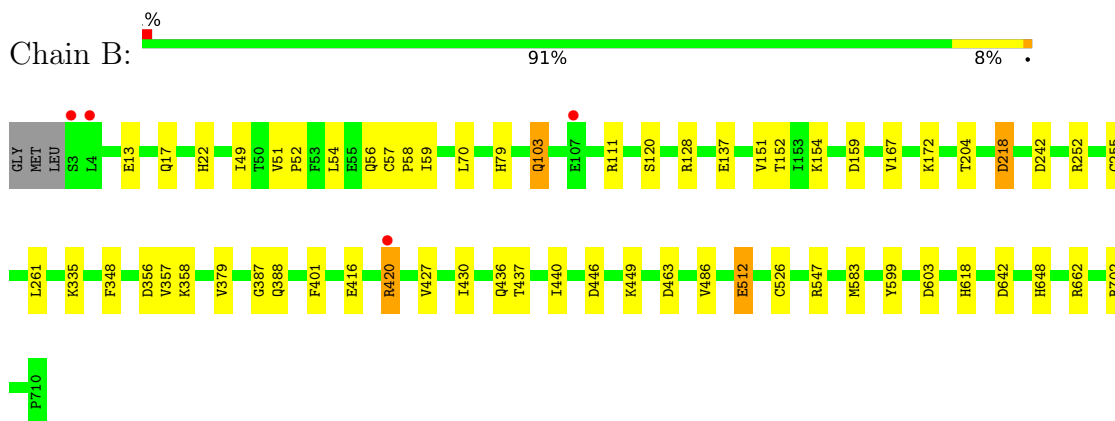
3 Residue-property plots [i](#)

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.

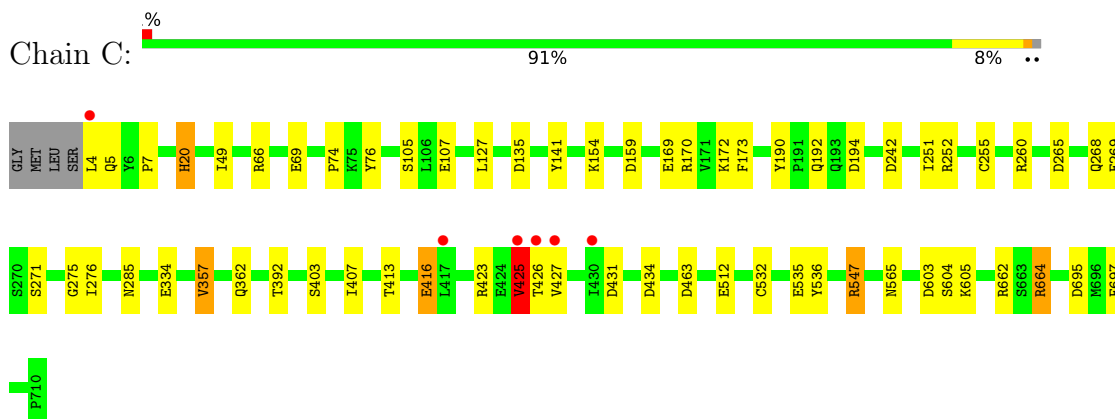
- Molecule 1: Prolyl endopeptidase



- Molecule 1: Prolyl endopeptidase



- Molecule 1: Prolyl endopeptidase



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	103.53Å 66.37Å 156.05Å 90.00° 101.98° 90.00°	Depositor
Resolution (Å)	34.10 – 1.41 34.10 – 1.41	Depositor EDS
% Data completeness (in resolution range)	76.2 (34.10-1.41) 77.0 (34.10-1.41)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.71 (at 1.40Å)	Xtriage
Refinement program	REFMAC 5.8.0430 (refmacat 0.4.100)	Depositor
R, R_{free}	0.152 , 0.187 0.152 , 0.187	Depositor DCC
R_{free} test set	20054 reflections (4.99%)	wwPDB-VP
Wilson B-factor (Å ²)	15.5	Xtriage
Anisotropy	0.025	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.40 , 33.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	36766	wwPDB-VP
Average B, all atoms (Å ²)	19.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.76% 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: PEG, SCN, B3P, A1CQS, 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	0.95	4/5901 (0.1%)	1.27	24/8000 (0.3%)
1	B	0.95	5/5897 (0.1%)	1.26	21/7993 (0.3%)
1	C	0.87	2/5849 (0.0%)	1.28	27/7929 (0.3%)
All	All	0.92	11/17647 (0.1%)	1.27	72/23922 (0.3%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	B	0	5
1	C	0	3
All	All	0	9

The worst 5 of 11 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	512	GLU	CD-OE1	7.28	1.39	1.25
1	A	57[A]	CYS	C-N	6.83	1.41	1.34
1	A	57[B]	CYS	C-N	6.83	1.41	1.34
1	A	400	SER	CA-CB	-6.00	1.45	1.53
1	B	22	HIS	CE1-NE2	5.76	1.38	1.32

The worst 5 of 72 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	69	GLU	CB-CG-CD	11.06	131.40	112.60
1	C	547	ARG	CG-CD-NE	-8.49	93.32	112.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	13	GLU	CB-CG-CD	8.32	126.75	112.60
1	B	662	ARG	CD-NE-CZ	8.09	135.72	124.40
1	C	66	ARG	CG-CD-NE	-7.99	94.43	112.00

There are no chirality outliers.

5 of 9 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	547	ARG	Sidechain
1	B	111	ARG	Sidechain
1	B	252	ARG	Sidechain
1	B	420	ARG	Sidechain
1	B	547[A]	ARG	Sidechain

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	5720	5592	5564	21	0
1	B	5721	5574	5545	27	0
1	C	5688	5531	5508	28	0
2	A	48	64	64	1	0
2	B	42	56	56	1	0
2	C	24	32	32	11	0
3	A	11	15	15	1	0
3	B	4	5	5	6	0
4	A	28	21	0	1	0
4	B	28	21	0	2	0
4	C	28	21	0	1	0
5	A	38	52	52	0	0
5	B	19	26	26	0	0
5	C	38	52	52	0	0
6	A	12	0	0	1	0
6	B	12	0	0	5	0
6	C	12	0	0	2	0
7	A	811	0	0	9	1
7	B	783	0	0	8	2

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	C	637	0	0	7	3
All	All	19704	17062	16919	83	3

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.

The worst 5 of 83 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:255:CYS:SG	4:B:803:A1CQS:C21	2.22	1.26
1:C:255:CYS:SG	4:C:803:A1CQS:C21	2.29	1.21
1:A:255:CYS:SG	4:A:803:A1CQS:C21	2.39	1.11
1:C:285:ASN:HD21	2:C:811:GOL:C1	1.79	0.96
1:C:334:GLU:OE1	7:C:901:HOH:O	1.88	0.91

All (3) 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)
7:B:1166:HOH:O	7:C:1419:HOH:O[2_455]	1.86	0.34
7:A:1142:HOH:O	7:C:1208:HOH:O[2_545]	2.07	0.13
7:B:1345:HOH:O	7:C:1301:HOH:O[2_555]	2.19	0.01

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	715/711 (101%)	695 (97%)	19 (3%)	1 (0%)	48 22
1	B	714/711 (100%)	693 (97%)	20 (3%)	1 (0%)	48 22
1	C	708/711 (100%)	692 (98%)	15 (2%)	1 (0%)	48 22

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
All	All	2137/2133 (100%)	2080 (97%)	54 (2%)	3 (0%)	48	22

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	357	VAL
1	A	357	VAL
1	C	357	VAL

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	624/617 (101%)	619 (99%)	5 (1%)	73	47
1	B	623/617 (101%)	615 (99%)	8 (1%)	61	29
1	C	617/617 (100%)	607 (98%)	10 (2%)	55	22
All	All	1864/1851 (101%)	1841 (99%)	23 (1%)	63	32

5 of 23 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	105	SER
1	C	403	SER
1	C	357	VAL
1	C	416	GLU
1	B	154	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 14 such sidechains are listed below:

Mol	Chain	Res	Type
1	B	531	GLN
1	B	566	GLN
1	C	566	GLN

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Mol	Chain	Res	Type
1	C	524	GLN
1	C	531	GLN

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 ⓘ

42 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	GOL	A	805	-	5,5,5	0.49	0	5,5,5	1.07	0
2	GOL	B	801	-	5,5,5	0.22	0	5,5,5	0.57	0
5	B3P	B	804	-	18,18,18	1.21	2 (11%)	23,23,23	2.04	7 (30%)
2	GOL	B	805	-	5,5,5	0.23	0	5,5,5	0.47	0
2	GOL	B	802	-	5,5,5	0.52	0	5,5,5	0.79	0
2	GOL	B	814	-	5,5,5	0.19	0	5,5,5	0.51	0
2	GOL	C	801	-	5,5,5	0.30	0	5,5,5	0.51	0
6	SCN	B	808	-	1,2,2	0.39	0	0,1,1	-	-
6	SCN	A	814	-	1,2,2	1.13	0	0,1,1	-	-
6	SCN	C	808	-	1,2,2	0.25	0	0,1,1	-	-
6	SCN	A	810	-	1,2,2	0.78	0	0,1,1	-	-
3	PEG	A	802	-	3,3,6	0.62	0	2,2,5	0.14	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	GOL	B	809	-	5,5,5	0.10	0	5,5,5	0.42	0
2	GOL	C	811	-	5,5,5	0.34	0	5,5,5	0.55	0
2	GOL	A	816	-	5,5,5	0.18	0	5,5,5	0.59	0
2	GOL	A	815	-	5,5,5	0.21	0	5,5,5	0.32	0
6	SCN	B	813	-	1,2,2	0.72	0	0,1,1	-	-
3	PEG	A	809	-	6,6,6	0.28	0	5,5,5	0.29	0
3	PEG	B	811	-	3,3,6	0.68	0	2,2,5	0.55	0
5	B3P	A	807	-	18,18,18	0.49	0	23,23,23	1.41	4 (17%)
6	SCN	C	809	-	1,2,2	0.13	0	0,1,1	-	-
6	SCN	A	811	-	1,2,2	0.64	0	0,1,1	-	-
2	GOL	B	806	-	5,5,5	0.12	0	5,5,5	0.60	0
5	B3P	C	802	-	18,18,18	1.13	1 (5%)	23,23,23	0.88	0
6	SCN	A	813	-	1,2,2	2.14	1 (100%)	0,1,1	-	-
5	B3P	C	807	-	18,18,18	0.75	0	23,23,23	1.22	3 (13%)
5	B3P	A	804	-	18,18,18	1.03	0	23,23,23	2.37	7 (30%)
6	SCN	B	812	-	1,2,2	0.85	0	0,1,1	-	-
2	GOL	C	810	-	5,5,5	0.06	0	5,5,5	0.49	0
2	GOL	B	810	-	5,5,5	0.22	0	5,5,5	0.82	0
4	A1CQS	B	803	-	31,31,31	1.74	4 (12%)	42,42,42	1.59	7 (16%)
2	GOL	C	805	-	5,5,5	0.27	0	5,5,5	0.27	0
2	GOL	A	817	-	5,5,5	0.21	0	5,5,5	0.26	0
2	GOL	A	806	-	5,5,5	0.33	0	5,5,5	1.33	0
6	SCN	C	804	-	1,2,2	0.12	0	0,1,1	-	-
6	SCN	C	806	-	1,2,2	0.69	0	0,1,1	-	-
6	SCN	B	807	-	1,2,2	0.08	0	0,1,1	-	-
4	A1CQS	A	803	-	31,31,31	1.21	2 (6%)	42,42,42	1.71	7 (16%)
4	A1CQS	C	803	-	31,31,31	1.59	6 (19%)	42,42,42	1.53	3 (7%)
2	GOL	A	808	-	5,5,5	0.08	0	5,5,5	0.33	0
2	GOL	A	801	-	5,5,5	0.18	0	5,5,5	0.44	0
2	GOL	A	812	-	5,5,5	0.33	0	5,5,5	0.98	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
2	GOL	A	805	-	-	2/4/4/4	-
2	GOL	B	801	-	-	3/4/4/4	-
5	B3P	B	804	-	-	9/28/28/28	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GOL	B	805	-	-	1/4/4/4	-
2	GOL	B	802	-	-	0/4/4/4	-
2	GOL	B	814	-	-	2/4/4/4	-
2	GOL	C	801	-	-	2/4/4/4	-
3	PEG	A	802	-	-	1/1/1/4	-
2	GOL	B	809	-	-	4/4/4/4	-
2	GOL	C	811	-	-	2/4/4/4	-
2	GOL	A	816	-	-	0/4/4/4	-
2	GOL	A	815	-	-	2/4/4/4	-
3	PEG	A	809	-	-	4/4/4/4	-
3	PEG	B	811	-	-	1/1/1/4	-
5	B3P	A	807	-	-	0/28/28/28	-
2	GOL	B	806	-	-	2/4/4/4	-
5	B3P	C	802	-	-	0/28/28/28	-
5	B3P	C	807	-	-	2/28/28/28	-
5	B3P	A	804	-	-	7/28/28/28	-
2	GOL	C	810	-	-	3/4/4/4	-
2	GOL	B	810	-	-	0/4/4/4	-
4	A1CQS	B	803	-	-	4/14/14/14	0/4/4/4
2	GOL	C	805	-	-	4/4/4/4	-
2	GOL	A	817	-	-	0/4/4/4	-
2	GOL	A	806	-	-	3/4/4/4	-
4	A1CQS	A	803	-	-	5/14/14/14	0/4/4/4
4	A1CQS	C	803	-	-	3/14/14/14	0/4/4/4
2	GOL	A	808	-	-	2/4/4/4	-
2	GOL	A	801	-	-	3/4/4/4	-
2	GOL	A	812	-	-	2/4/4/4	-

The worst 5 of 16 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	803	A1CQS	C2-N1	6.54	1.38	1.32
4	C	803	A1CQS	C2-N1	5.65	1.37	1.32
4	B	803	A1CQS	C19-N5	3.89	1.44	1.33
5	C	802	B3P	C2-N2	3.45	1.51	1.46
4	C	803	A1CQS	C19-N5	3.37	1.43	1.33

The worst 5 of 38 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	803	A1CQS	C22-C2-N1	-6.97	108.03	110.76
5	A	804	B3P	C3-N1-C4	6.96	126.34	116.17
5	B	804	B3P	C3-N1-C4	6.51	125.69	116.17
4	B	803	A1CQS	C22-C2-N1	-4.75	108.90	110.76
4	C	803	A1CQS	C4-C3-N2	-4.75	106.93	111.93

There are no chirality outliers.

5 of 73 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	801	GOL	O1-C1-C2-C3
2	A	805	GOL	O1-C1-C2-C3
2	A	806	GOL	C1-C2-C3-O3
2	A	812	GOL	C1-C2-C3-O3
2	B	801	GOL	C1-C2-C3-O3

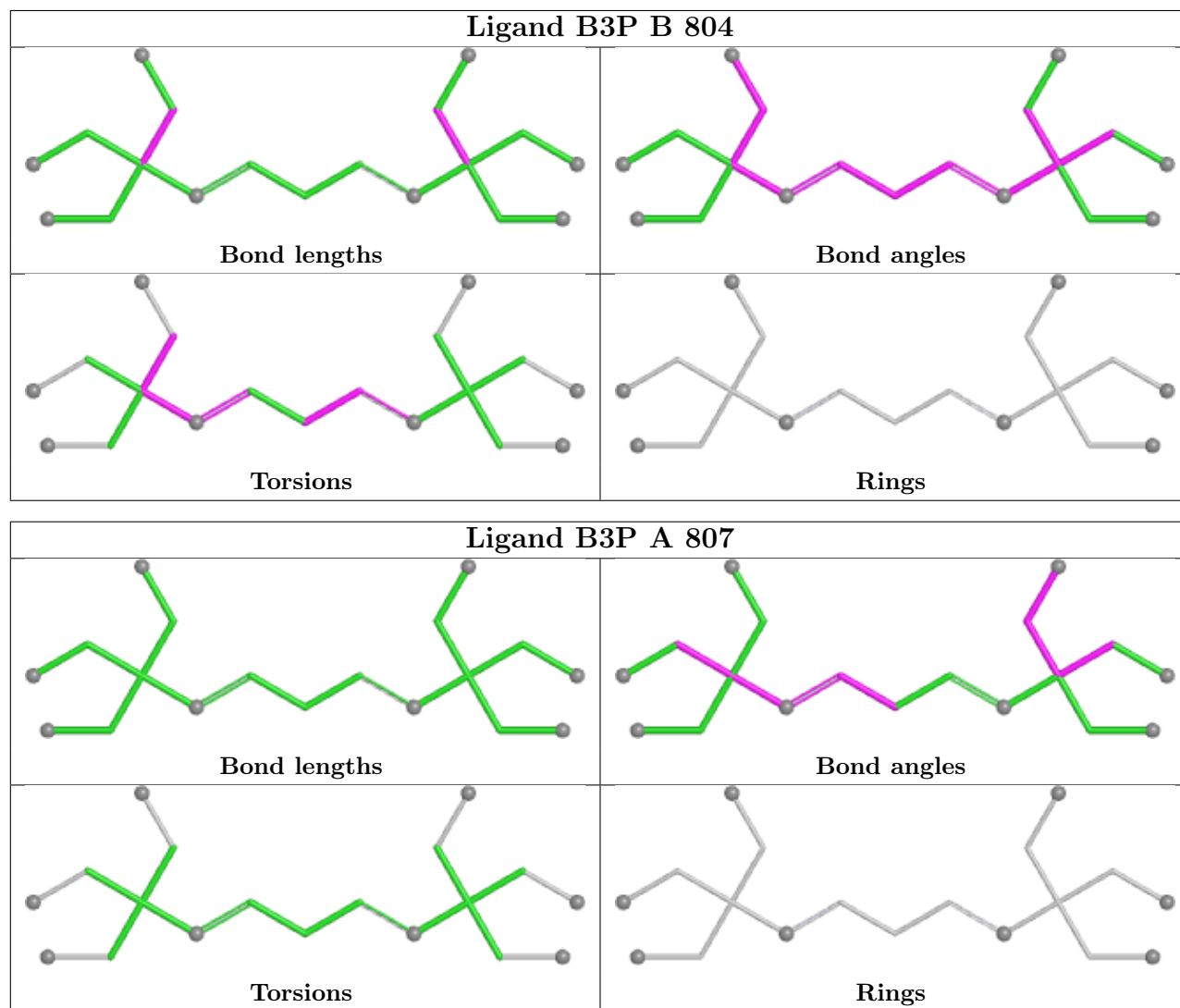
There are no ring outliers.

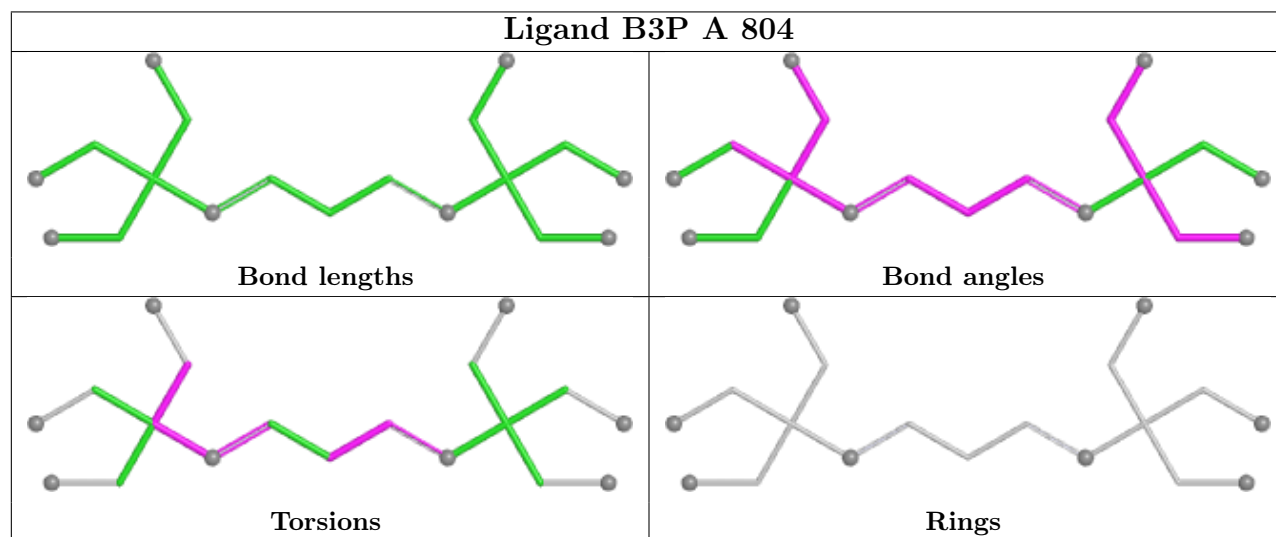
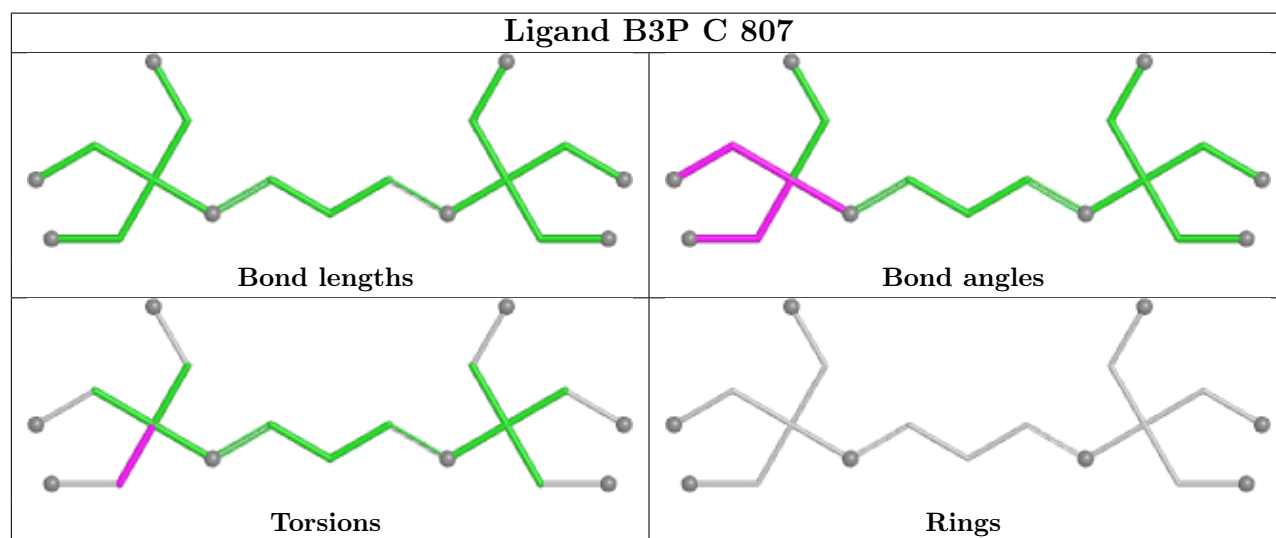
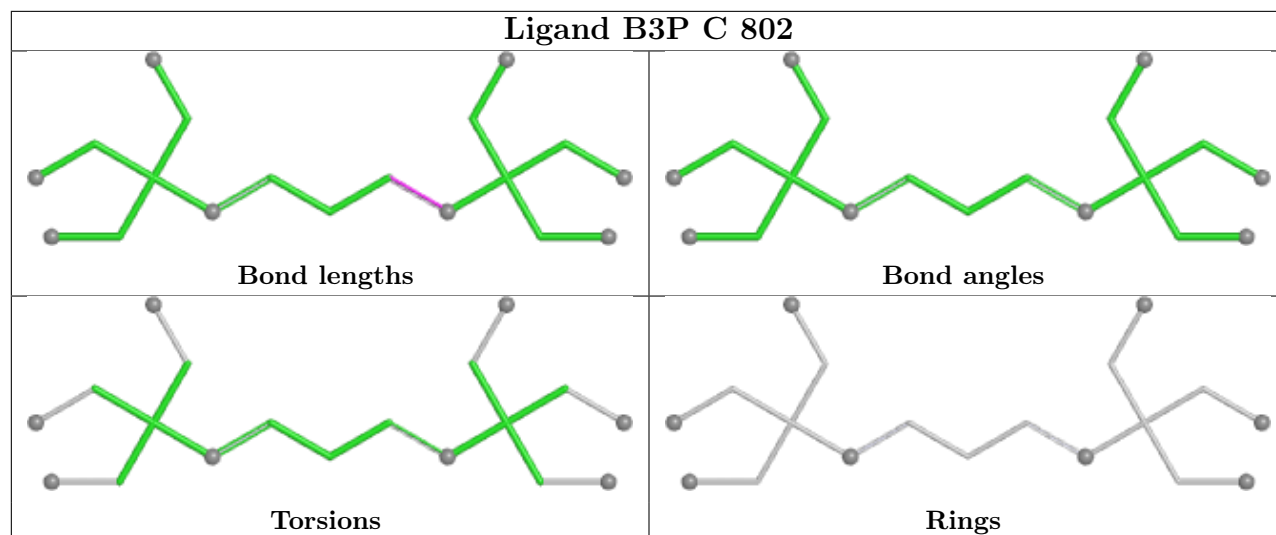
15 monomers are involved in 31 short contacts:

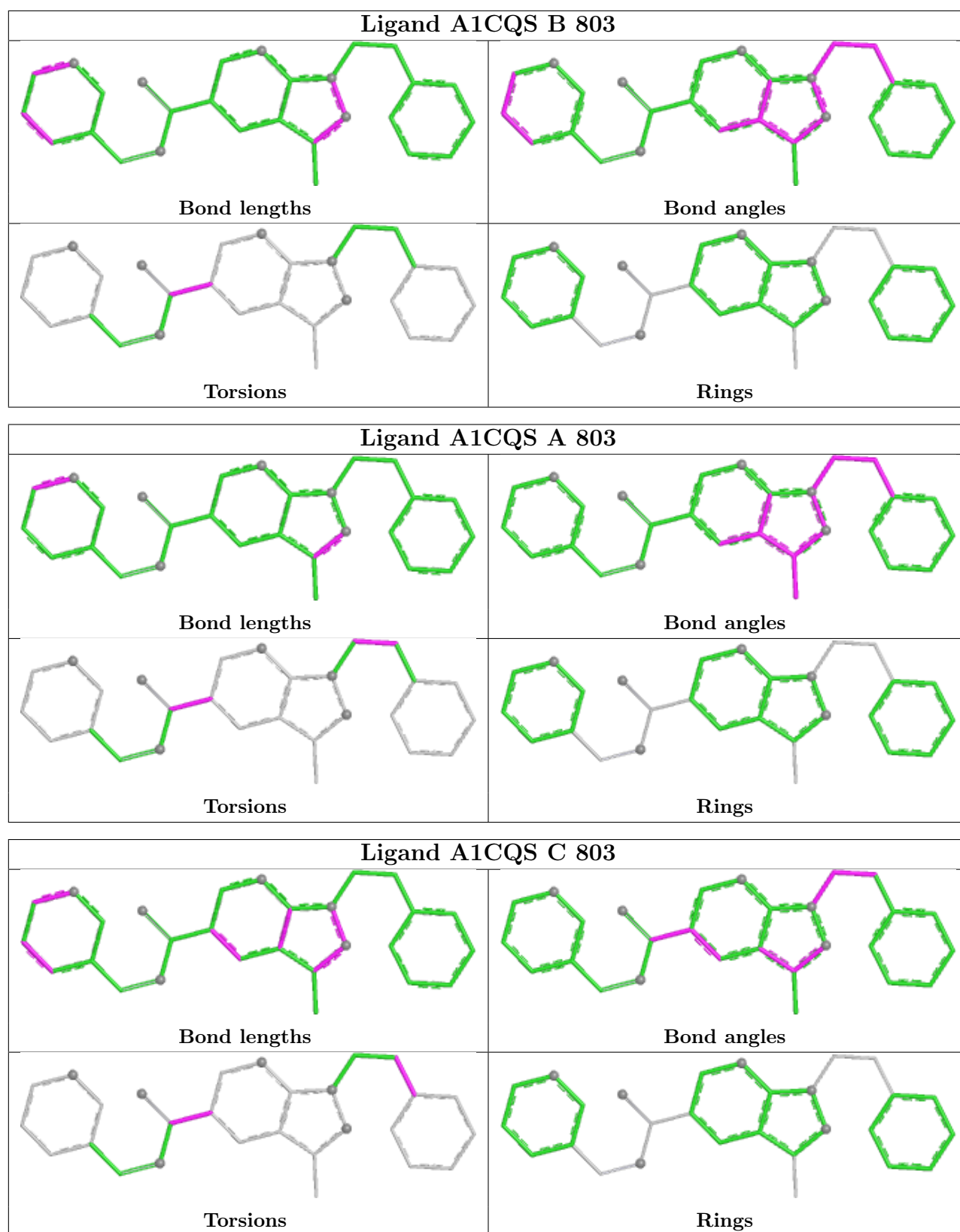
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	801	GOL	4	0
6	A	814	SCN	1	0
6	C	808	SCN	1	0
3	A	802	PEG	1	0
2	B	809	GOL	1	0
2	C	811	GOL	4	0
6	B	813	SCN	3	0
3	B	811	PEG	6	0
6	C	809	SCN	1	0
6	B	812	SCN	2	0
4	B	803	A1CQS	2	0
2	C	805	GOL	3	0
2	A	806	GOL	1	0
4	A	803	A1CQS	1	0
4	C	803	A1CQS	1	0

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 ⓘ

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(Å ²)	Q<0.9
1	A	708/711 (99%)	-0.66	5 (0%) 84 87	6, 15, 30, 53	8 (1%)
1	B	708/711 (99%)	-0.61	4 (0%) 85 88	7, 15, 30, 62	7 (0%)
1	C	707/711 (99%)	-0.37	6 (0%) 82 86	7, 19, 36, 69	3 (0%)
All	All	2123/2133 (99%)	-0.55	15 (0%) 84 87	6, 16, 33, 69	18 (0%)

The worst 5 of 15 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	3	SER	5.6
1	C	427	VAL	5.0
1	B	4	LEU	4.1
1	C	4	LEU	4.0
1	C	425	VAL	3.0

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.

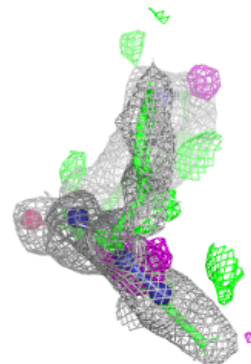
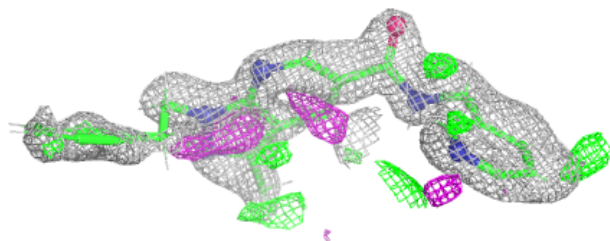
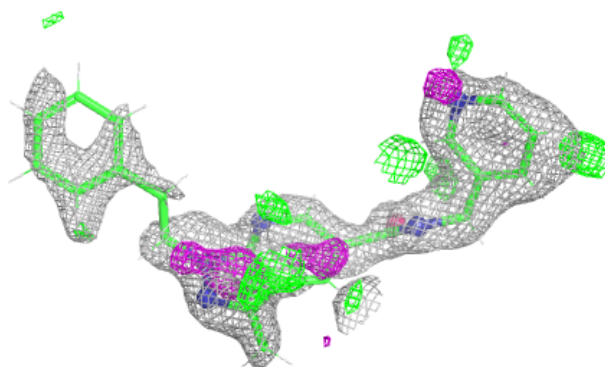
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
3	PEG	A	809	7/7	0.74	0.16	36,52,59,60	2
6	SCN	C	806	3/3	0.74	0.39	28,28,28,39	3
2	GOL	C	801	6/6	0.78	0.22	20,23,30,34	14
2	GOL	B	805	6/6	0.79	0.15	36,45,53,54	3
2	GOL	B	801	6/6	0.79	0.21	23,25,30,30	14
2	GOL	B	814	6/6	0.82	0.14	35,44,48,49	3
2	GOL	B	810	6/6	0.82	0.14	27,38,46,51	3
2	GOL	A	801	6/6	0.83	0.20	26,31,36,36	14
6	SCN	C	804	3/3	0.83	0.20	27,27,30,40	3
2	GOL	C	805	6/6	0.83	0.20	33,36,44,51	14
2	GOL	A	805	6/6	0.84	0.14	31,39,43,44	3
4	A1CQS	C	803	28/28	0.84	0.14	23,37,60,66	3
2	GOL	A	808	6/6	0.84	0.13	33,40,51,52	3
2	GOL	C	811	6/6	0.84	0.14	36,40,47,53	3
4	A1CQS	A	803	28/28	0.85	0.12	20,33,42,45	3
6	SCN	A	814	3/3	0.86	0.12	39,39,40,52	0
2	GOL	A	812	6/6	0.86	0.14	21,36,45,50	3
5	B3P	C	807	19/19	0.86	0.11	23,32,43,45	8
2	GOL	A	816	6/6	0.87	0.12	26,36,37,39	3
3	PEG	A	802	4/7	0.87	0.11	33,35,39,42	1
2	GOL	A	817	6/6	0.87	0.11	24,36,39,43	3
5	B3P	B	804	19/19	0.88	0.12	17,36,46,52	8
6	SCN	B	812	3/3	0.88	0.15	15,15,26,26	3
6	SCN	B	807	3/3	0.89	0.09	23,23,41,55	0
2	GOL	C	810	6/6	0.89	0.11	35,40,46,52	3
6	SCN	C	808	3/3	0.89	0.12	40,40,43,52	0
2	GOL	B	806	6/6	0.90	0.09	29,31,36,46	3
5	B3P	A	807	19/19	0.90	0.09	23,31,38,40	8
6	SCN	A	810	3/3	0.90	0.13	23,23,23,30	3
2	GOL	B	809	6/6	0.91	0.15	19,40,46,65	3
5	B3P	A	804	19/19	0.91	0.10	17,32,46,53	8
4	A1CQS	B	803	28/28	0.91	0.11	20,30,47,51	3
6	SCN	B	813	3/3	0.92	0.13	16,16,21,29	3
2	GOL	A	815	6/6	0.93	0.07	21,27,36,36	3
6	SCN	A	811	3/3	0.93	0.17	21,21,25,32	3
3	PEG	B	811	4/7	0.93	0.10	21,26,34,36	1
2	GOL	B	802	6/6	0.93	0.08	17,24,36,36	3
6	SCN	B	808	3/3	0.93	0.09	32,32,35,41	0
2	GOL	A	806	6/6	0.94	0.07	27,30,36,36	3
6	SCN	C	809	3/3	0.95	0.08	39,39,39,45	0
6	SCN	A	813	3/3	0.98	0.09	20,20,23,24	0
5	B3P	C	802	19/19	0.98	0.04	12,16,36,36	8

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.

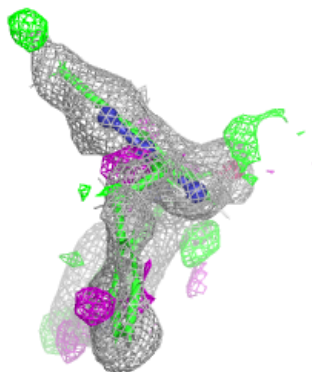
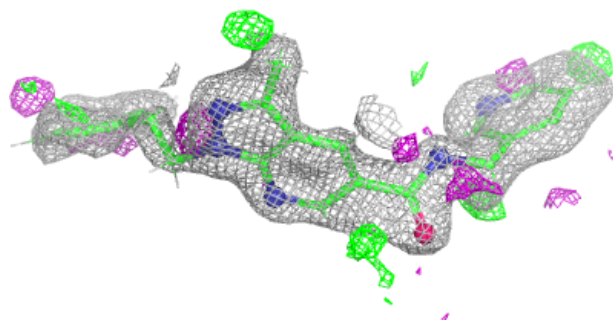
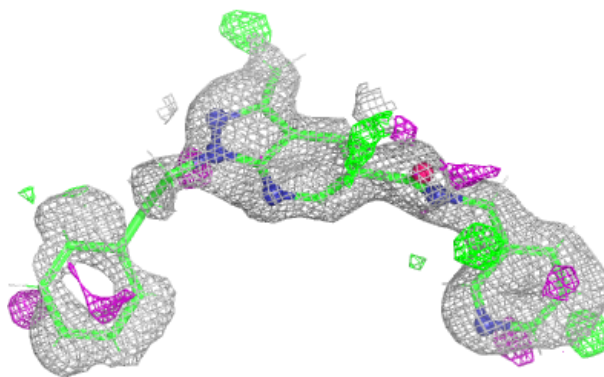
Electron density around A1CQS C 803:

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

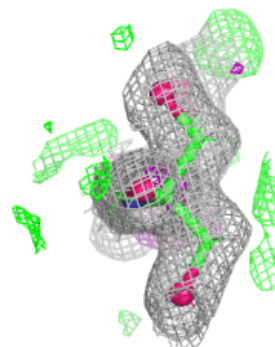
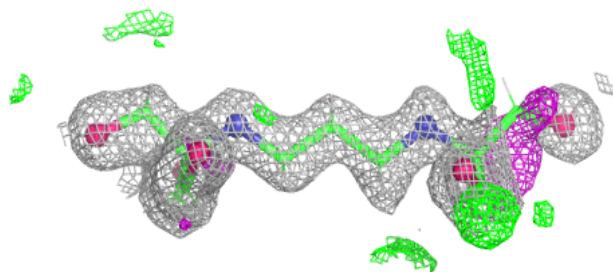
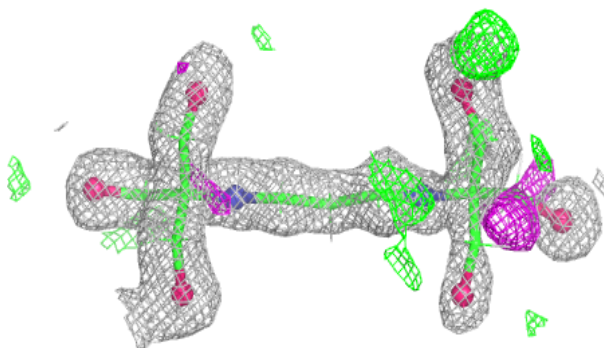


Electron density around A1CQS A 803:

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

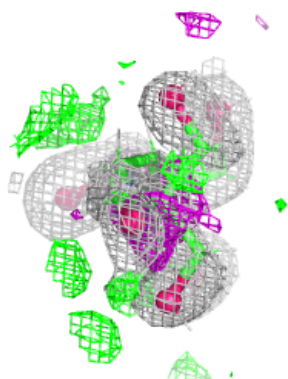
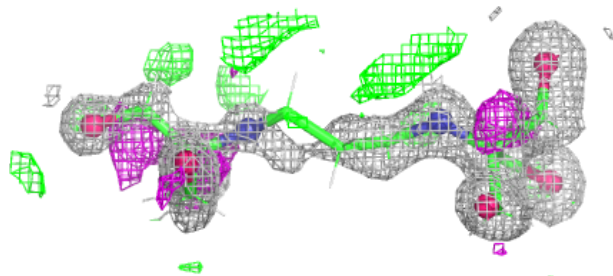
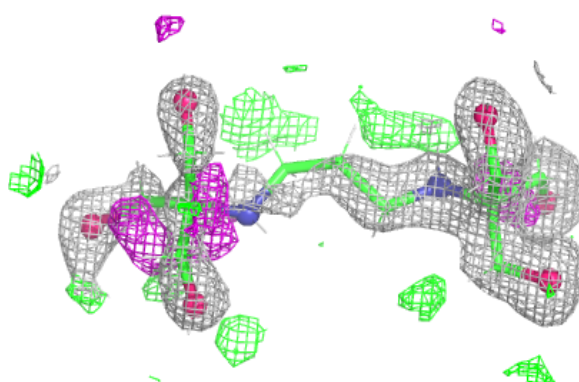
**Electron density around B3P C 807:**

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

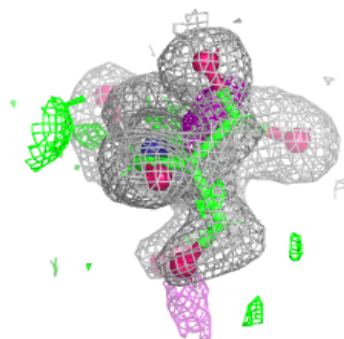
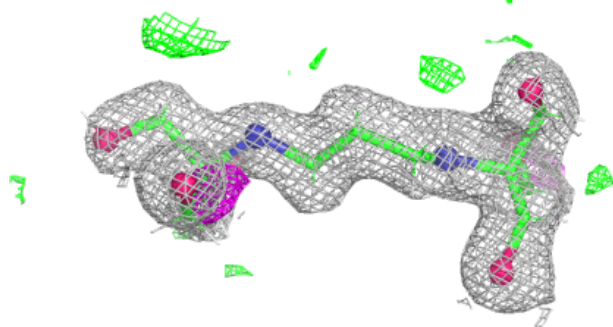
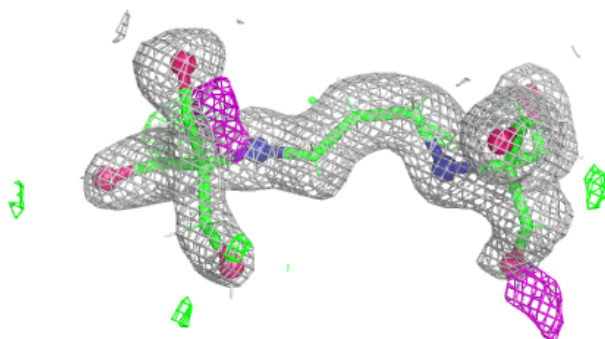


Electron density around B3P B 804:

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

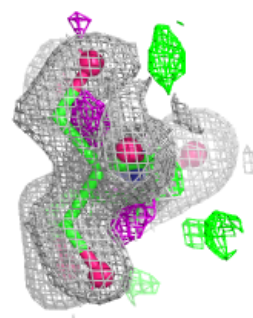
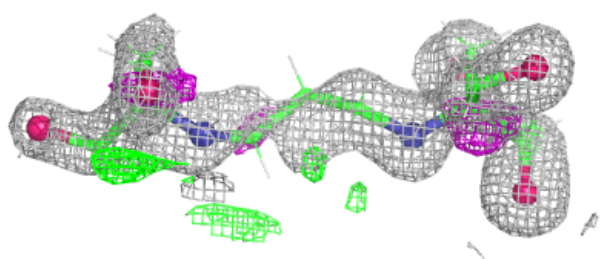
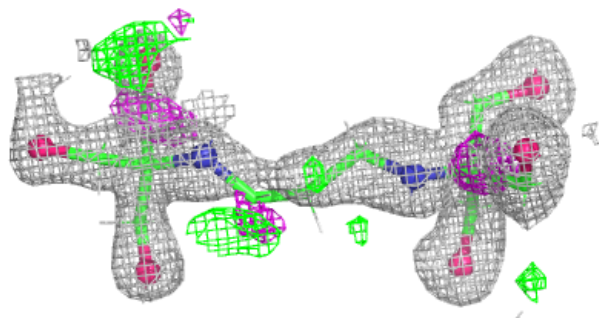
**Electron density around B3P A 807:**

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

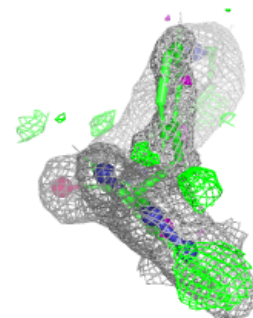
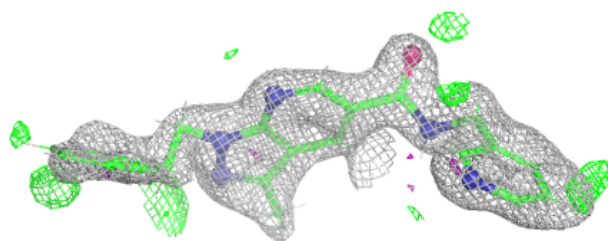
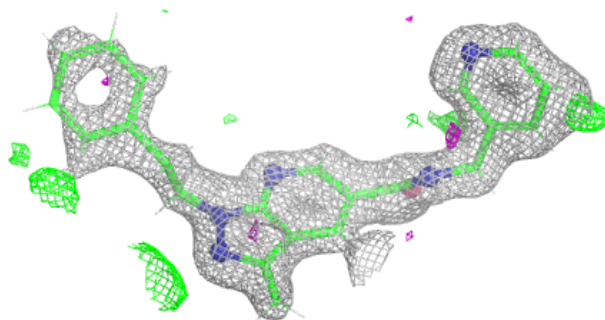


Electron density around B3P A 804:

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and green (positive)

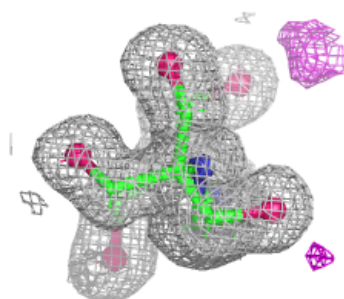
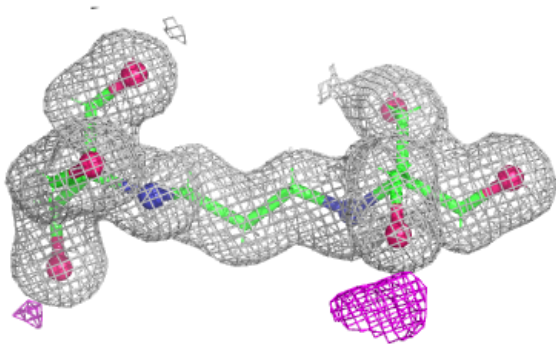
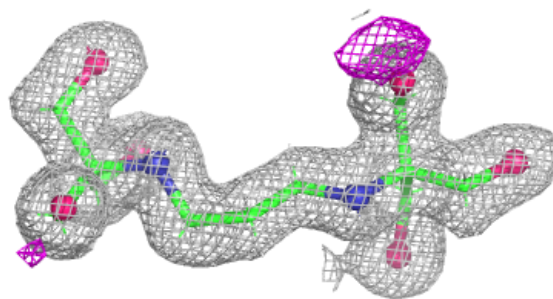
**Electron density around A1CQS B 803:**

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



Electron density around B3P C 802:

$2mF_o-DF_c$ (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.