



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 7, 2026 – 03:26 AM UTC

PDB ID : 9Q5X / pdb_00009q5x
Title : Human prolyl endopeptidase (PREP) - complex with KT-2-74
Authors : Fucci, I.J.; Thakur, K.; Pandian, J.; 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

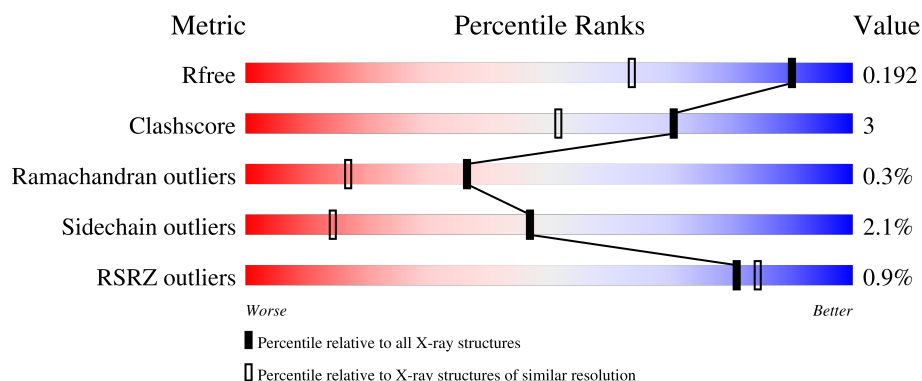
1 Overall quality at a glance

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% 7% ..
1	C	711	2% 90% 7% ..

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
3	PEG	A	802	-	-	X	-
3	PEG	A	811	-	-	X	-
3	PEG	C	801	-	-	X	-
4	SCN	A	803	-	-	X	-

2 Entry composition [i](#)

There are 7 unique types of molecules in this entry. The entry contains 36948 atoms, of which 17125 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.

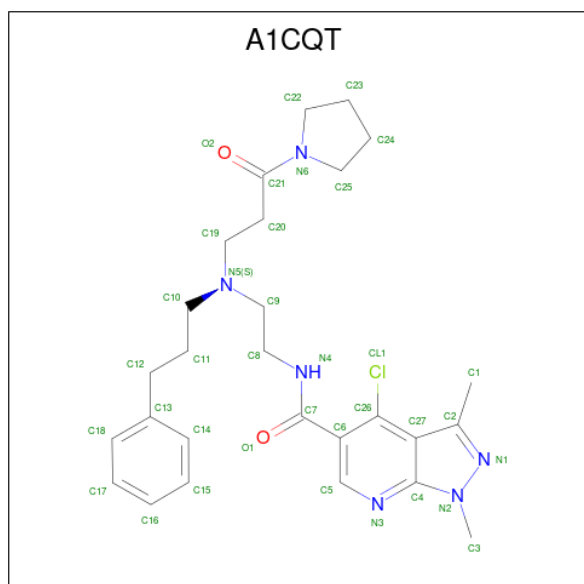
- Molecule 1 is a protein called Prolyl endopeptidase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	709	Total	C	H	N	O	S	182	14	0
			11402	3701	5642	951	1080	28			
1	B	707	Total	C	H	N	O	S	183	11	0
			11301	3672	5578	945	1078	28			
1	C	707	Total	C	H	N	O	S	180	6	0
			11259	3661	5556	942	1073	27			

There are 3 discrepancies between the modelled and reference sequences:

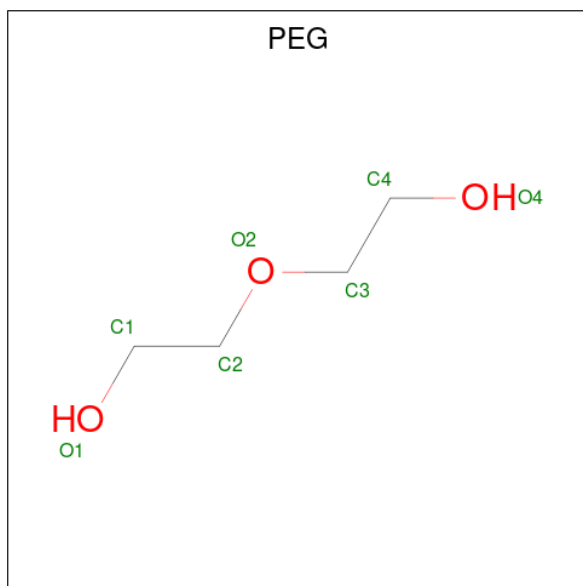
Chain	Residue	Modelled	Actual	Comment	Reference
A	0	GLY	-	expression tag	UNP P48147
B	0	GLY	-	expression tag	UNP P48147
C	0	GLY	-	expression tag	UNP P48147

- Molecule 2 is 4-chloro-1,3-dimethyl-N-(2-([3-oxo-3-(pyrrolidin-1-yl)propyl](3-phenylpropyl)amino)ethyl)-1H-pyrazolo[3,4-b]pyridine-5-carboxamide (CCD ID: A1CQT) (formula: C₂₇H₃₅ClN₆O₂) (labeled as "Ligand of Interest" by depositor).



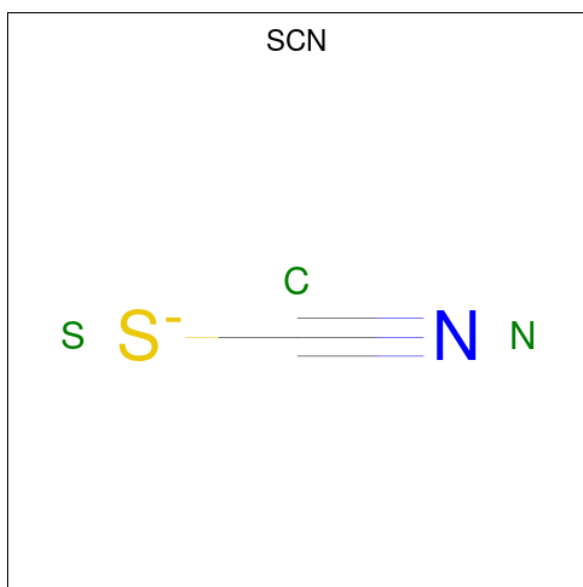
Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
2	A	1	Total	C	Cl	H	N	O	6	0
			71	27	1	35	6	2		
2	B	1	Total	C	Cl	H	N	O	6	0
			71	27	1	35	6	2		
2	C	1	Total	C	Cl	H	N	O	6	0
			71	27	1	35	6	2		

- Molecule 3 is DI(HYDROXYETHYL)ETHER (CCD ID: PEG) (formula: $C_4H_{10}O_3$).



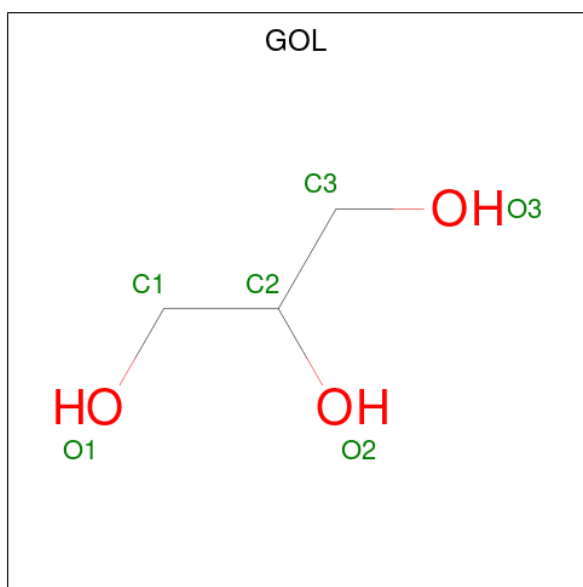
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	H	O	1	0
			9	2	5	2		
3	A	1	Total	C	H	O	4	1
			34	8	20	6		
3	A	1	Total	C	H	O	2	0
			17	4	10	3		
3	B	1	Total	C	H	O	2	0
			17	4	10	3		
3	B	1	Total	C	H	O	2	0
			17	4	10	3		
3	C	1	Total	C	H	O	1	0
			9	2	5	2		
3	C	1	Total	C	H	O	2	0
			17	4	10	3		
3	C	1	Total	C	H	O	2	0
			17	4	10	3		

- Molecule 4 is THIOCYANATE ION (CCD ID: SCN) (formula: CNS).



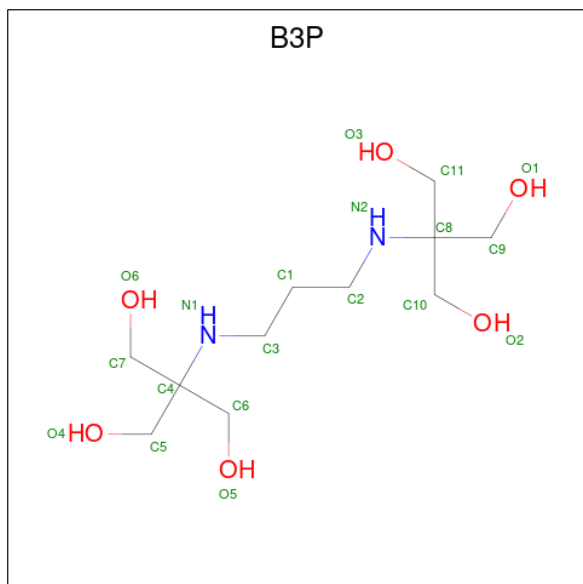
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total	C	N	S	0	0
			3	1	1	1		
4	B	1	Total	C	N	S	0	0
			3	1	1	1		
4	B	1	Total	C	N	S	0	0
			3	1	1	1		
4	B	1	Total	C	N	S	0	0
			3	1	1	1		
4	C	1	Total	C	N	S	0	0
			3	1	1	1		
4	C	1	Total	C	N	S	0	0
			3	1	1	1		
4	C	1	Total	C	N	S	0	0
			3	1	1	1		

- Molecule 5 is GLYCEROL (CCD ID: GOL) (formula: C₃H₈O₃).



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

- Molecule 6 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
6	B	1	Total	C	H	N	O	8	0
			45	11	26	2	6		
6	C	1	Total	C	H	N	O	8	0
			45	11	26	2	6		

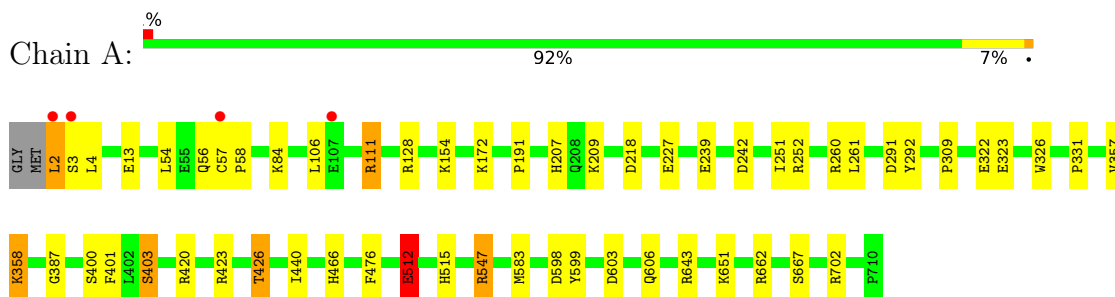
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	866	Total	O	0	0
			866	866		
7	B	775	Total	O	0	4
			779	779		
7	C	681	Total	O	0	0
			681	681		

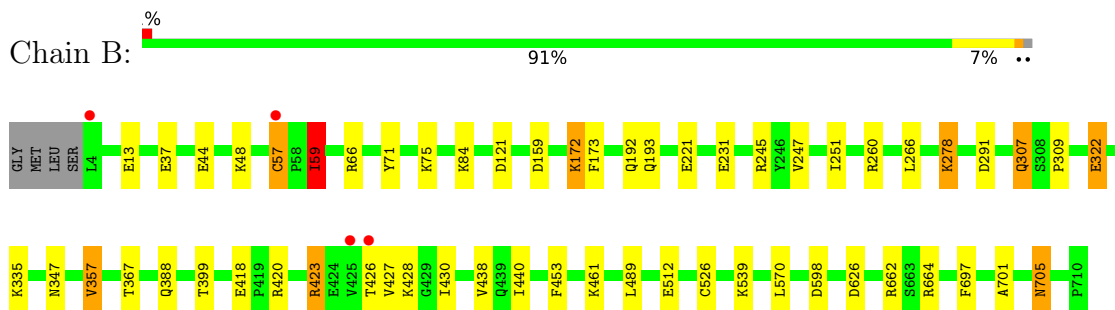
3 Residue-property plots [i](#)

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.

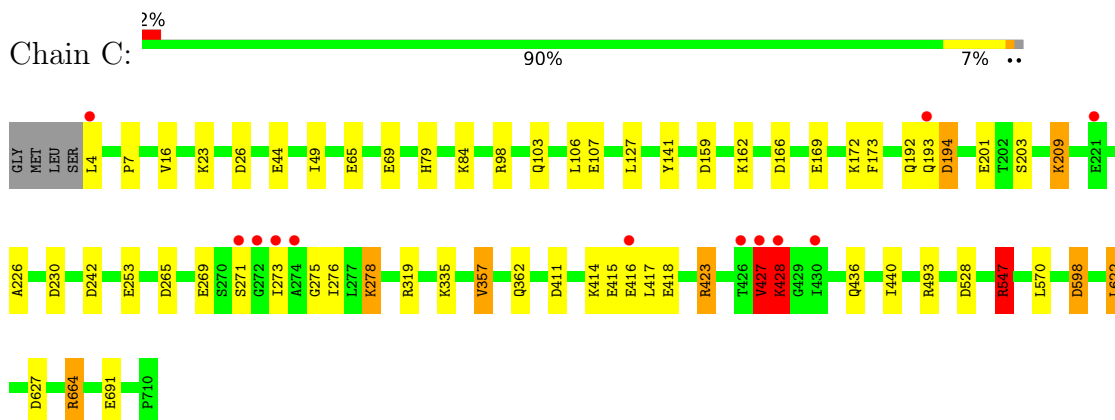
- Molecule 1: Prolyl endopeptidase



- 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	103.82Å 66.47Å 156.86Å 90.00° 102.07° 90.00°	Depositor
Resolution (Å)	34.60 – 1.41 34.60 – 1.41	Depositor EDS
% Data completeness (in resolution range)	80.1 (34.60-1.41) 80.1 (34.60-1.41)	Depositor EDS
R_{merge}	0.17	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.47 (at 1.41Å)	Xtriage
Refinement program	REFMAC 5.8.0430 (refmacat 0.4.100)	Depositor
R, R_{free}	0.155 , 0.192 0.155 , 0.192	Depositor DCC
R_{free} test set	20123 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å ²)	13.4	Xtriage
Anisotropy	0.019	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.41 , 38.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	36948	wwPDB-VP
Average B, all atoms (Å ²)	18.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.65% 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, GOL, A1CQT, B3P, SCN

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	2/5954 (0.0%)	1.25	15/8070 (0.2%)
1	B	0.91	3/5907 (0.1%)	1.27	18/8009 (0.2%)
1	C	0.88	0/5873	1.25	21/7961 (0.3%)
All	All	0.91	5/17734 (0.0%)	1.26	54/24040 (0.2%)

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	5
1	B	0	3
1	C	0	5
All	All	0	13

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	172	LYS	CD-CE	-6.32	1.33	1.52
1	A	515	HIS	CD2-NE2	5.80	1.44	1.37
1	B	59	ILE	CB-CG1	-5.54	1.42	1.53
1	B	57	CYS	C-N	5.15	1.40	1.33
1	A	651	LYS	CD-CE	-5.08	1.37	1.52

The worst 5 of 54 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	418	GLU	CB-CA-C	-8.91	99.91	110.15
1	A	172	LYS	CG-CD-CE	8.83	131.60	111.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	662	ARG	CD-NE-CZ	8.66	136.53	124.40
1	B	570	LEU	N-CA-CB	-8.04	97.83	110.46
1	B	662	ARG	CD-NE-CZ	8.01	135.61	124.40

There are no chirality outliers.

5 of 13 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	111	ARG	Sidechain
1	A	423	ARG	Sidechain
1	A	547	ARG	Sidechain
1	A	643	ARG	Sidechain
1	A	702	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	5760	5642	5617	47	0
1	B	5723	5578	5547	31	0
1	C	5703	5556	5531	31	0
2	A	36	35	0	0	0
2	B	36	35	0	0	0
2	C	36	35	0	0	0
3	A	25	35	35	17	0
3	B	14	20	20	0	0
3	C	18	25	25	4	0
4	A	3	0	0	2	0
4	B	9	0	0	0	0
4	C	12	0	0	1	0
5	A	42	56	56	3	0
5	B	36	48	48	4	0
5	C	6	8	8	0	0
6	B	19	26	26	1	0
6	C	19	26	26	0	0
7	A	866	0	0	14	0
7	B	779	0	0	17	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	C	681	0	0	11	0
All	All	19823	17125	16939	116	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 3.

The worst 5 of 116 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:57:CYS:HB3	7:B:1533:HOH:O	1.30	1.31
1:A:547:ARG:HD2	7:A:1580:HOH:O	1.30	1.29
1:A:322[A]:GLU:OE2	7:A:901:HOH:O	1.52	1.24
1:A:292:TYR:H	3:A:811:PEG:H41	1.20	1.05
1:A:606:GLN:HE22	3:C:801:PEG:H41	1.26	0.98

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	721/711 (101%)	702 (97%)	18 (2%)	1 (0%)	48	22
1	B	716/711 (101%)	700 (98%)	15 (2%)	1 (0%)	48	22
1	C	711/711 (100%)	691 (97%)	16 (2%)	4 (1%)	21	5
All	All	2148/2133 (101%)	2093 (97%)	49 (2%)	6 (0%)	36	17

5 of 6 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	427	VAL
1	C	428	LYS

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Mol	Chain	Res	Type
1	C	417	LEU
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	629/617 (102%)	618 (98%)	11 (2%)	53	20
1	B	623/617 (101%)	608 (98%)	15 (2%)	43	11
1	C	619/617 (100%)	604 (98%)	15 (2%)	43	11
All	All	1871/1851 (101%)	1830 (98%)	41 (2%)	47	13

5 of 41 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	107	GLU
1	C	427	VAL
1	C	162	LYS
1	C	335	LYS
1	C	547	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 26 such sidechains are listed below:

Mol	Chain	Res	Type
1	B	531	GLN
1	B	577	GLN
1	C	551	ASN
1	B	566	GLN
1	C	17	GLN

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](#)

36 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$
4	SCN	B	813	-	1,2,2	1.44	0	0,1,1	-	-
3	PEG	C	809	-	6,6,6	0.41	0	5,5,5	0.15	0
6	B3P	B	803	-	18,18,18	0.51	0	23,23,23	1.08	1 (4%)
5	GOL	B	804	-	5,5,5	0.17	0	5,5,5	0.43	0
3	PEG	B	801	-	6,6,6	0.53	0	5,5,5	0.39	0
5	GOL	B	807	-	5,5,5	0.34	0	5,5,5	0.72	0
4	SCN	C	807	-	1,2,2	2.75	1 (100%)	0,1,1	-	-
4	SCN	B	811	-	1,2,2	0.90	0	0,1,1	-	-
5	GOL	A	809	-	5,5,5	0.25	0	5,5,5	0.79	0
4	SCN	C	806	-	1,2,2	0.02	0	0,1,1	-	-
5	GOL	B	809	-	5,5,5	0.50	0	5,5,5	0.98	0
5	GOL	B	810	-	5,5,5	0.13	0	5,5,5	0.73	0
5	GOL	A	812	-	5,5,5	0.25	0	5,5,5	0.43	0
2	A1CQT	C	803	-	39,39,39	1.51	3 (7%)	46,53,53	2.03	7 (15%)
3	PEG	A	802	-	3,3,6	0.79	0	2,2,5	0.56	0
2	A1CQT	A	801	-	39,39,39	1.30	3 (7%)	46,53,53	1.58	7 (15%)
5	GOL	B	805	-	5,5,5	0.26	0	5,5,5	0.68	0
4	SCN	C	804	-	1,2,2	0.22	0	0,1,1	-	-
6	B3P	C	802	-	18,18,18	0.83	1 (5%)	23,23,23	1.03	1 (4%)
4	SCN	B	806	-	1,2,2	0.84	0	0,1,1	-	-
3	PEG	C	801	-	3,3,6	0.37	0	2,2,5	0.36	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	GOL	A	805	-	5,5,5	0.78	0	5,5,5	1.40	1 (20%)
5	GOL	A	808	-	5,5,5	0.25	0	5,5,5	0.57	0
5	GOL	A	806	-	5,5,5	0.32	0	5,5,5	1.20	0
2	A1CQT	B	802	-	39,39,39	1.48	1 (2%)	46,53,53	1.49	6 (13%)
5	GOL	B	812	-	5,5,5	0.16	0	5,5,5	0.57	0
3	PEG	A	811	-	6,6,6	0.47	0	5,5,5	1.27	1 (20%)
3	PEG	B	808	-	6,6,6	0.23	0	5,5,5	0.26	0
5	GOL	A	807	-	5,5,5	0.30	0	5,5,5	1.05	0
4	SCN	C	805	-	1,2,2	0.75	0	0,1,1	-	-
5	GOL	C	810	-	5,5,5	0.31	0	5,5,5	0.85	0
5	GOL	A	804	-	5,5,5	0.26	0	5,5,5	0.66	0
3	PEG	A	810[A]	-	6,6,6	0.28	0	5,5,5	0.19	0
4	SCN	A	803	-	1,2,2	0.06	0	0,1,1	-	-
3	PEG	A	810[B]	-	6,6,6	0.28	0	5,5,5	0.14	0
3	PEG	C	808	-	6,6,6	0.41	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. '2' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	PEG	C	809	-	-	2/4/4/4	-
6	B3P	B	803	-	-	12/28/28/28	-
5	GOL	B	804	-	-	0/4/4/4	-
3	PEG	B	801	-	-	2/4/4/4	-
5	GOL	B	807	-	-	2/4/4/4	-
5	GOL	A	809	-	-	2/4/4/4	-
5	GOL	B	809	-	-	2/4/4/4	-
5	GOL	B	810	-	-	4/4/4/4	-
5	GOL	A	812	-	-	0/4/4/4	-
2	A1CQT	C	803	-	-	4/25/32/32	0/4/4/4
3	PEG	A	802	-	-	1/1/1/4	-
2	A1CQT	A	801	-	-	4/25/32/32	0/4/4/4
5	GOL	B	805	-	-	2/4/4/4	-
6	B3P	C	802	-	-	0/28/28/28	-
3	PEG	C	801	-	-	1/1/1/4	-
5	GOL	A	805	-	-	2/4/4/4	-
5	GOL	A	808	-	-	2/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	GOL	A	806	-	-	0/4/4/4	-
2	A1CQT	B	802	-	-	3/25/32/32	0/4/4/4
5	GOL	B	812	-	-	2/4/4/4	-
3	PEG	A	811	-	-	2/4/4/4	-
3	PEG	B	808	-	-	2/4/4/4	-
5	GOL	A	807	-	-	2/4/4/4	-
5	GOL	C	810	-	-	0/4/4/4	-
5	GOL	A	804	-	-	4/4/4/4	-
3	PEG	A	810[A]	-	-	3/4/4/4	-
3	PEG	A	810[B]	-	-	1/4/4/4	-
3	PEG	C	808	-	-	2/4/4/4	-

The worst 5 of 9 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	802	A1CQT	C2-N1	7.77	1.40	1.32
2	A	801	A1CQT	C2-N1	6.24	1.38	1.32
2	C	803	A1CQT	C2-N1	6.15	1.38	1.32
2	C	803	A1CQT	O1-C7	4.05	1.32	1.23
2	C	803	A1CQT	C6-C26	3.27	1.42	1.39

The worst 5 of 24 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	803	A1CQT	C5-C6-C7	-8.56	97.14	118.23
2	C	803	A1CQT	C19-N5-C9	-5.66	97.97	111.44
2	B	802	A1CQT	C27-C2-N1	-5.60	108.22	110.58
2	A	801	A1CQT	C10-N5-C9	4.65	122.53	111.44
2	A	801	A1CQT	C11-C10-N5	4.65	127.00	113.93

There are no chirality outliers.

5 of 63 torsion outliers are listed below:

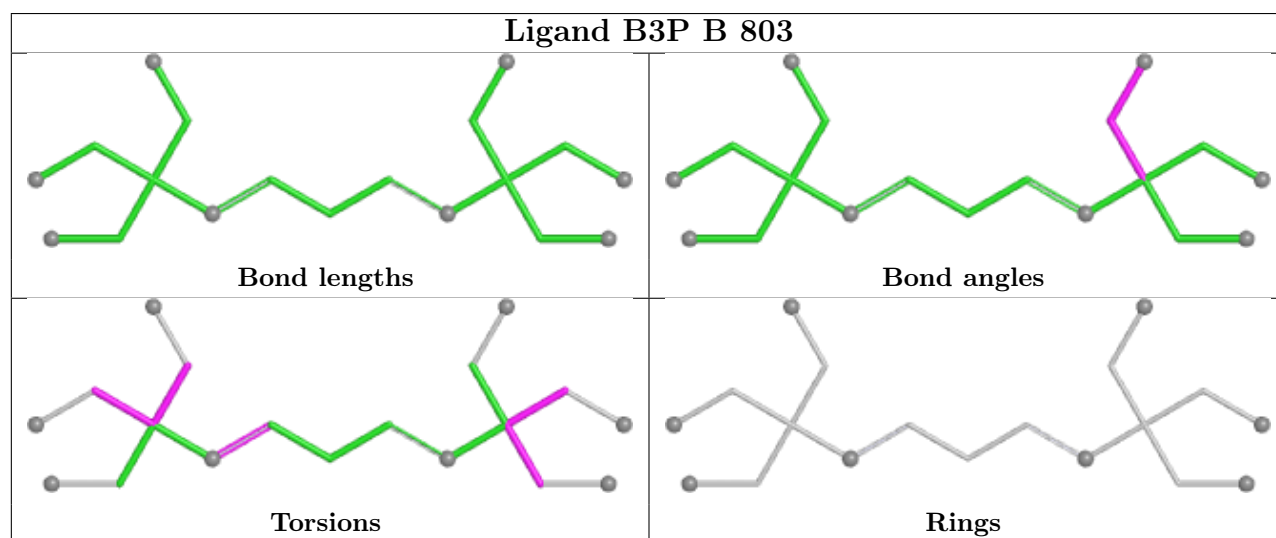
Mol	Chain	Res	Type	Atoms
2	A	801	A1CQT	C20-C21-N6-C22
5	A	804	GOL	O1-C1-C2-C3
5	A	804	GOL	C1-C2-C3-O3
5	A	805	GOL	C1-C2-C3-O3
5	A	808	GOL	C1-C2-C3-O3

There are no ring outliers.

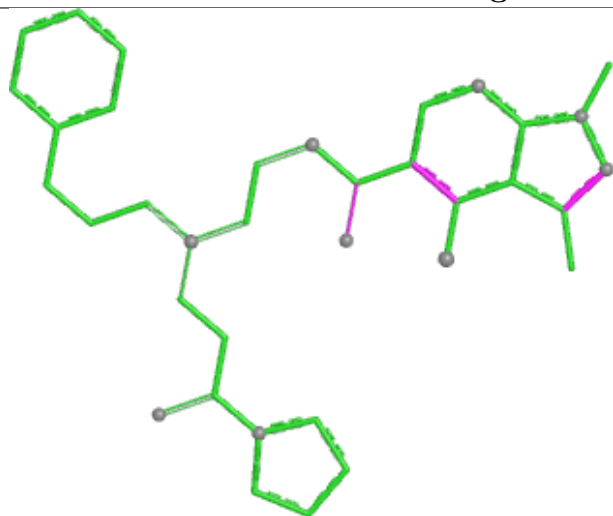
11 monomers are involved in 32 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	B	803	B3P	1	0
5	B	809	GOL	2	0
3	A	802	PEG	6	0
5	B	805	GOL	1	0
4	C	804	SCN	1	0
3	C	801	PEG	4	0
5	A	805	GOL	1	0
5	A	806	GOL	2	0
5	B	812	GOL	1	0
3	A	811	PEG	11	0
4	A	803	SCN	2	0

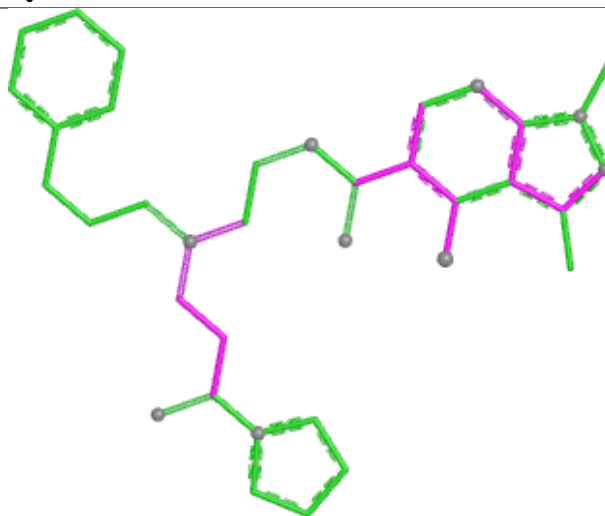
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. 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.



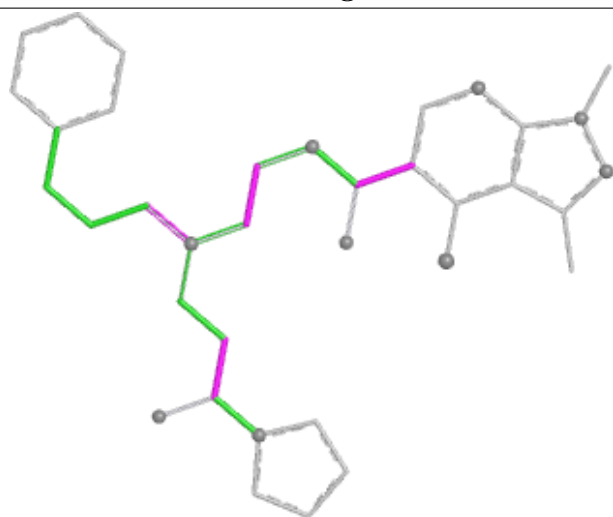
Ligand A1CQT C 803



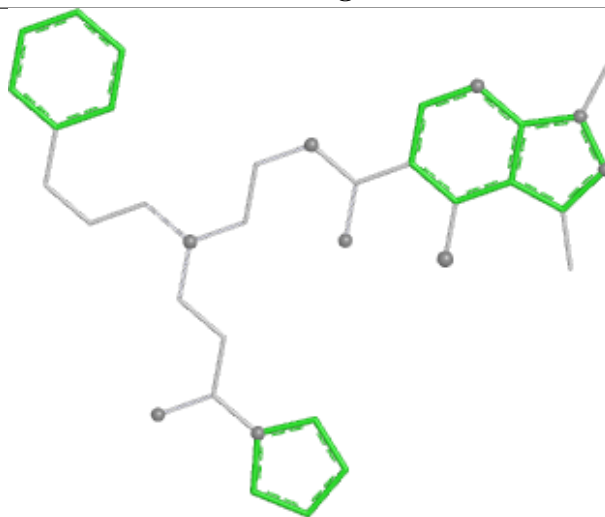
Bond lengths



Bond angles

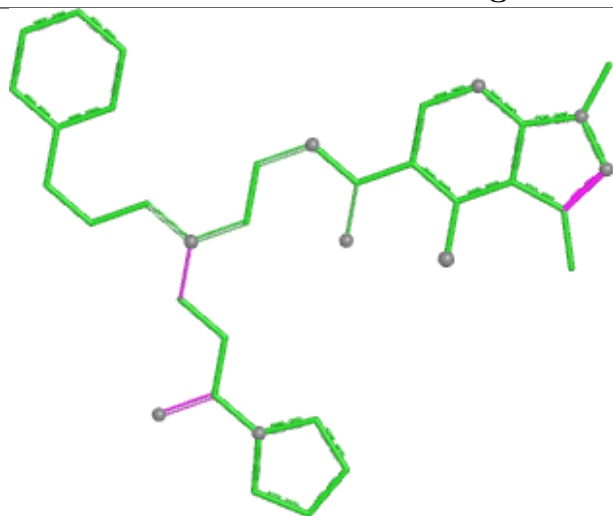


Torsions

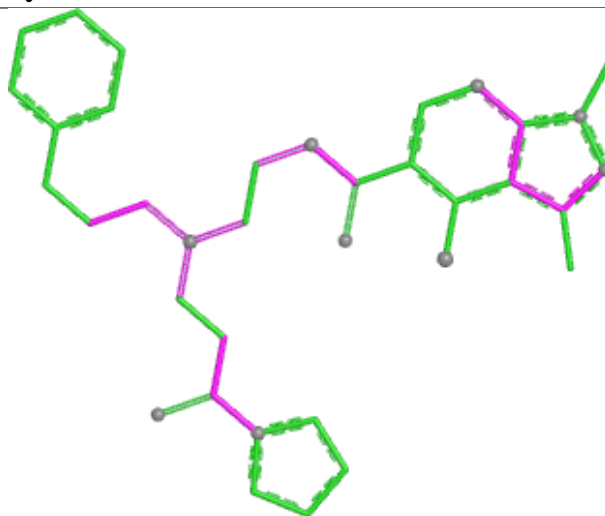


Rings

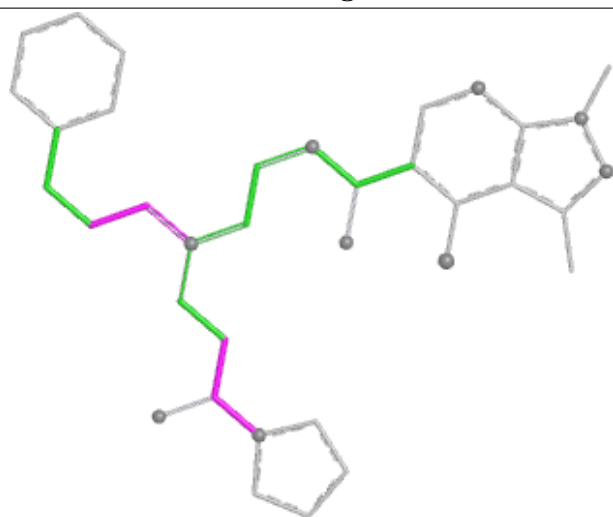
Ligand A1CQT A 801



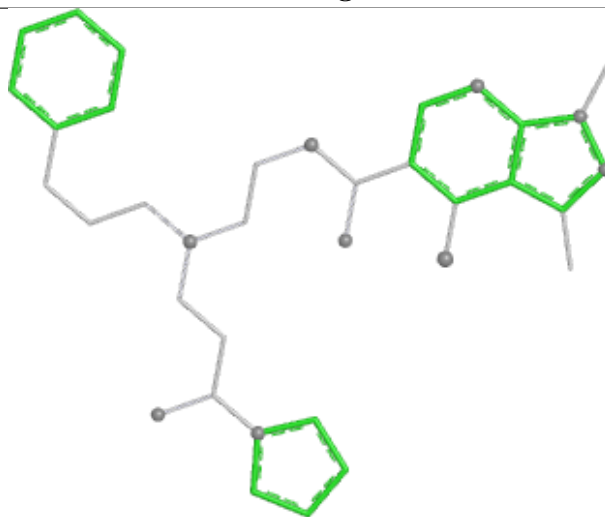
Bond lengths



Bond angles

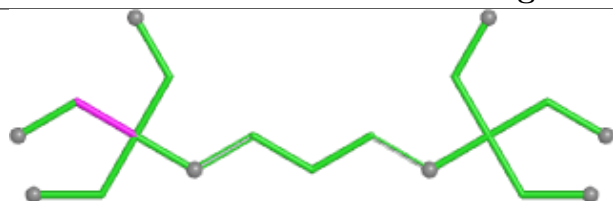


Torsions

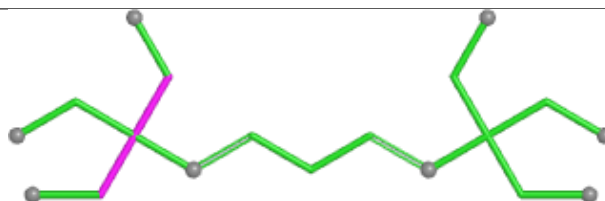


Rings

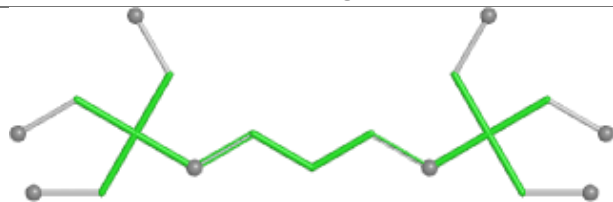
Ligand B3P C 802



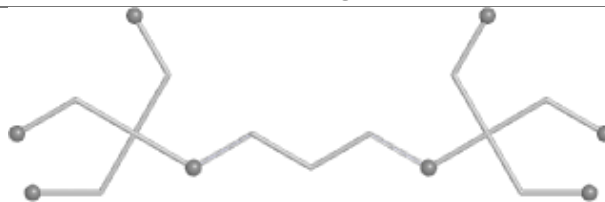
Bond lengths



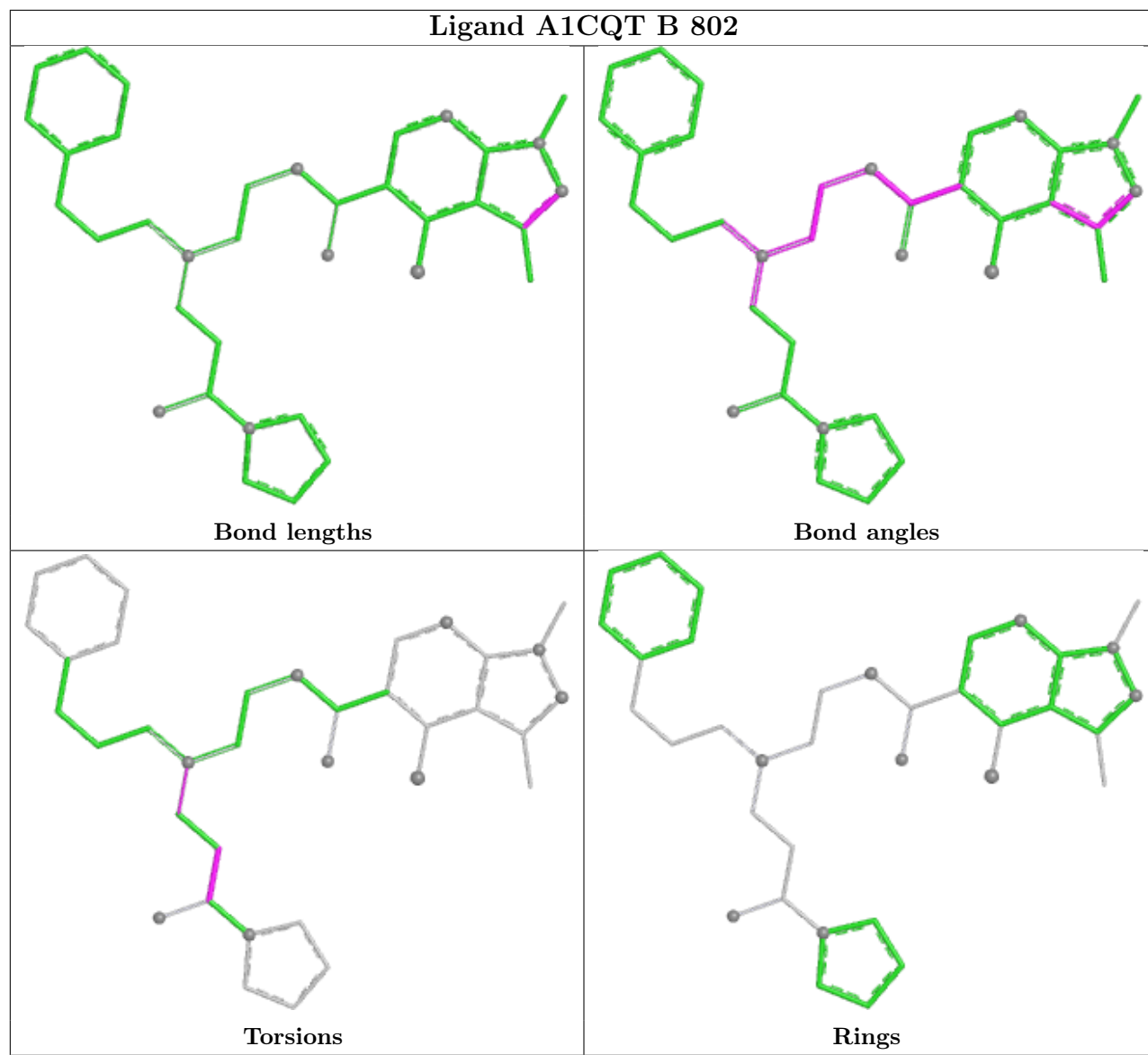
Bond angles



Torsions



Rings



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 [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	709/711 (99%)	-0.81	4 (0%) 85 88	5, 12, 28, 56	14 (1%)
1	B	707/711 (99%)	-0.74	4 (0%) 85 88	6, 14, 32, 57	10 (1%)
1	C	707/711 (99%)	-0.45	12 (1%) 69 73	8, 18, 37, 72	6 (0%)
All	All	2123/2133 (99%)	-0.67	20 (0%) 81 84	5, 15, 33, 72	30 (1%)

The worst 5 of 20 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	427	VAL	4.6
1	A	2	LEU	4.4
1	C	4	LEU	3.0
1	C	221[A]	GLU	2.8
1	B	426	THR	2.8

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](#)

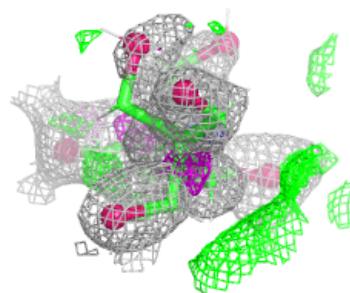
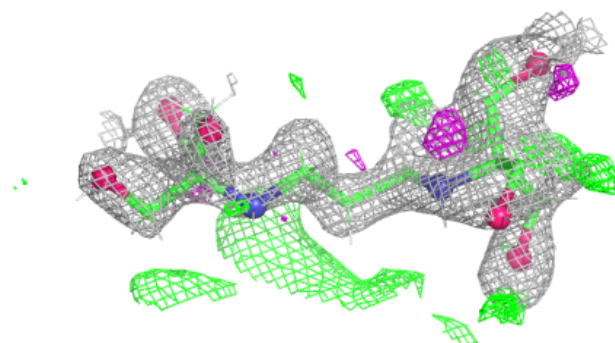
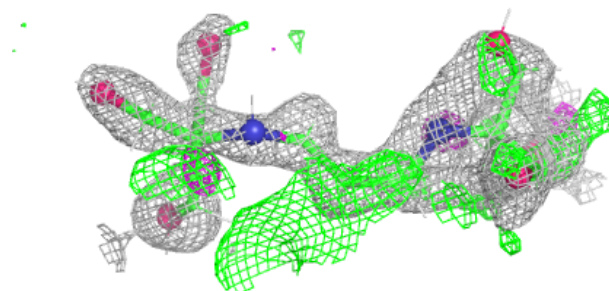
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled ‘Q < 0.9’ lists 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	810[A]	7/7	0.54	0.31	20,24,36,36	17
3	PEG	A	810[B]	7/7	0.54	0.31	34,41,47,48	17
3	PEG	C	808	7/7	0.75	0.15	36,43,51,52	2
3	PEG	C	809	7/7	0.79	0.14	36,46,55,56	2
5	GOL	A	806	6/6	0.79	0.16	27,36,43,56	3
5	GOL	A	808	6/6	0.79	0.13	36,40,48,48	3
6	B3P	B	803	19/19	0.79	0.13	31,36,47,51	8
3	PEG	B	801	7/7	0.81	0.14	36,44,49,50	2
5	GOL	A	809	6/6	0.83	0.12	24,39,49,55	3
5	GOL	C	810	6/6	0.84	0.12	33,36,37,41	3
5	GOL	B	809	6/6	0.85	0.13	27,36,41,41	3
3	PEG	B	808	7/7	0.85	0.13	36,48,53,54	2
3	PEG	A	811	7/7	0.85	0.13	27,36,41,47	2
5	GOL	B	812	6/6	0.87	0.18	11,21,36,36	14
4	SCN	B	811	3/3	0.87	0.15	19,19,20,33	3
4	SCN	C	807	3/3	0.87	0.14	21,21,28,71	0
5	GOL	B	805	6/6	0.88	0.12	24,36,41,52	3
5	GOL	A	804	6/6	0.88	0.14	29,38,44,62	3
5	GOL	B	810	6/6	0.88	0.13	25,36,43,50	3
5	GOL	A	807	6/6	0.89	0.10	26,30,36,43	3
5	GOL	A	805	6/6	0.89	0.12	18,27,36,36	3
4	SCN	C	804	3/3	0.89	0.14	38,38,48,58	0
4	SCN	A	803	3/3	0.90	0.10	26,26,30,47	0
3	PEG	C	801	4/7	0.90	0.09	29,30,36,37	1
5	GOL	B	807	6/6	0.91	0.10	25,32,36,38	3
4	SCN	B	806	3/3	0.91	0.12	33,33,34,38	0
4	SCN	C	805	3/3	0.93	0.09	26,26,32,42	0
2	A1CQT	C	803	36/36	0.93	0.09	10,26,38,41	6
3	PEG	A	802	4/7	0.93	0.09	20,26,28,36	1
4	SCN	B	813	3/3	0.94	0.11	30,30,31,36	0
4	SCN	C	806	3/3	0.95	0.08	31,31,34,41	0
2	A1CQT	A	801	36/36	0.95	0.08	11,23,36,40	6
2	A1CQT	B	802	36/36	0.95	0.07	11,23,36,38	6
5	GOL	B	804	6/6	0.96	0.06	21,24,36,36	3
5	GOL	A	812	6/6	0.96	0.06	14,19,36,36	3
6	B3P	C	802	19/19	0.98	0.04	9,14,36,36	8

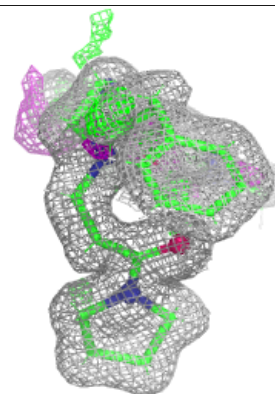
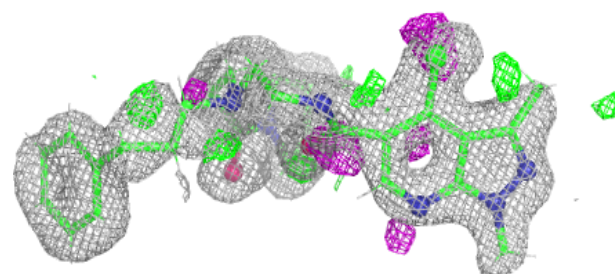
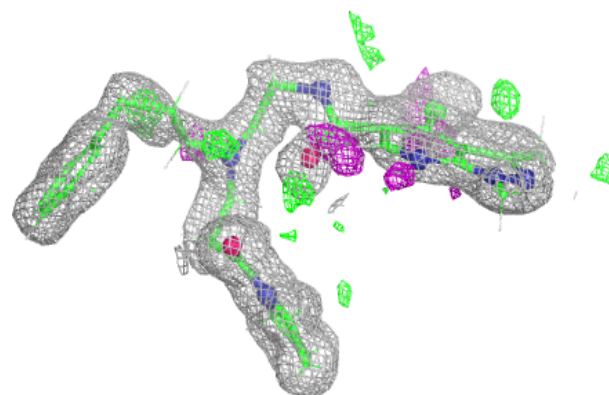
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around B3P 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)

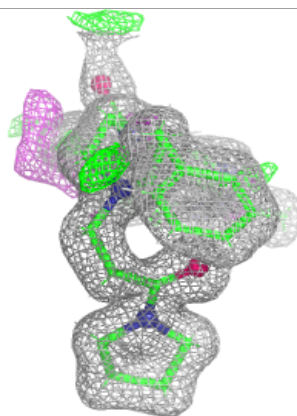
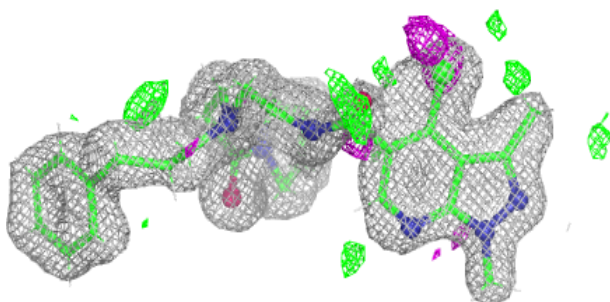
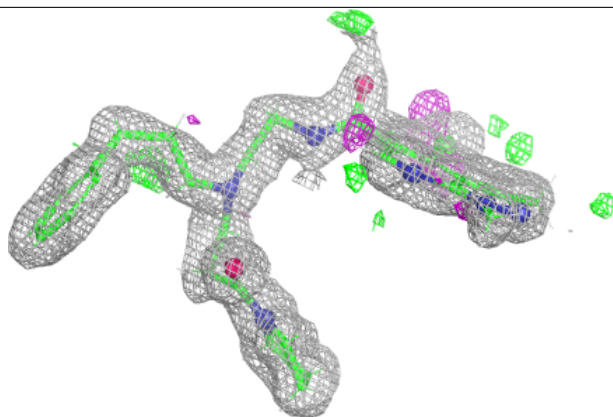
**Electron density around A1CQT C 803:**

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

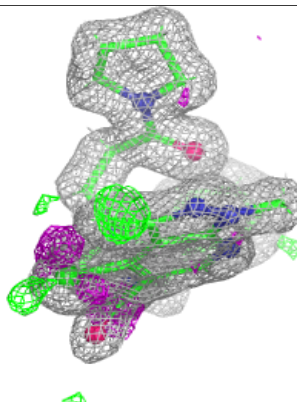
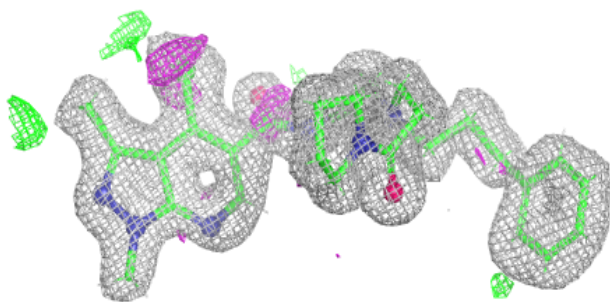
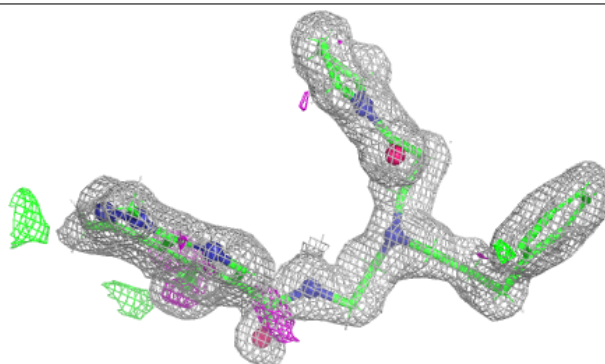


Electron density around A1CQT A 801:

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

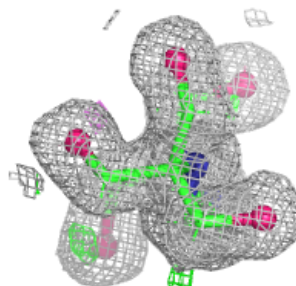
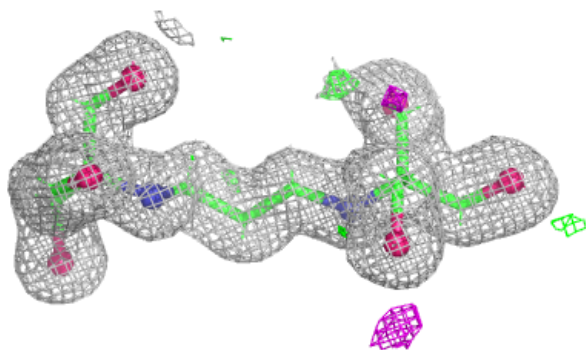
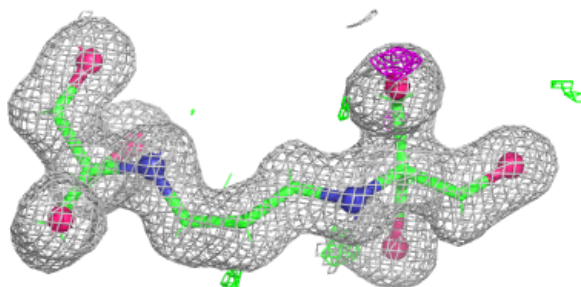
**Electron density around A1CQT B 802:**

$2mF_o-DF_c$ (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.