Full wwPDB X-ray Structure Validation Report (i)

Jun 19, 2024 – 01:03 PM EDT

PDB ID	:	4GEV
Title	:	E. coli thymidylate synthase Y209W variant in complex with substrate and a cofactor analog
Authors	:	Newby, Z.; Lee, T.T.; Finer-Moore, J.; Stroud, R.M.
Deposited on	:	2012-08-02
Resolution	:	1.30 Å(reported)

The following versions of software and data (see references (i)) were used in the production of this report:

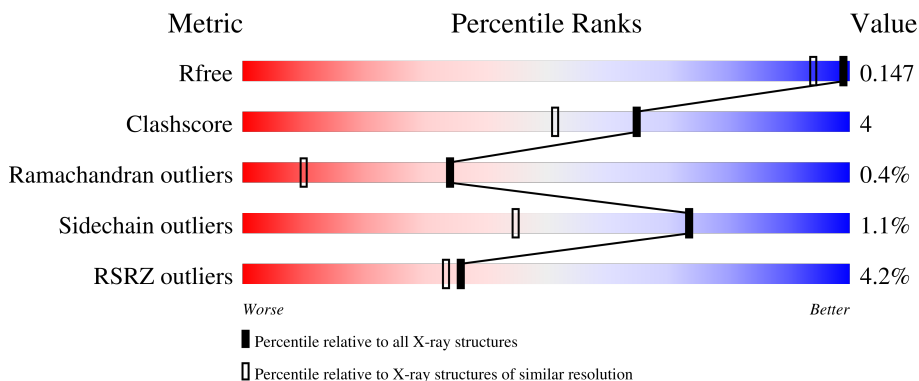|		
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	2.37.1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

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 1.30 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	Percentile Ranks	Value
Rfree		0.147
Clashscore		4
Ramachandran outliers		0.4%
Sidechain outliers		1.1%
RSRZ outliers		4.2%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1058 (1.30-1.30)
Clashscore	141614	1101 (1.30-1.30)
Ramachandran outliers	138981	1058 (1.30-1.30)
Sidechain outliers	138945	1058 (1.30-1.30)
RSRZ outliers	127900	1029 (1.30-1.30)

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 <=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	264	3% / 94% / 6%
1	B	264	6% / 96% / •

2 Entry composition ⓘ

There are 4 unique types of molecules in this entry. The entry contains 9394 atoms, of which 4280 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 Thymidylate synthase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	264	Total	C	H	N	O	S	0	3	0
			4285	1388	2114	376	395	12			
1	B	264	Total	C	H	N	O	S	0	1	0
			4260	1382	2100	372	394	12			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	209	TRP	TYR	ENGINEERED MUTATION	UNP P0A884
B	209	TRP	TYR	ENGINEERED MUTATION	UNP P0A884

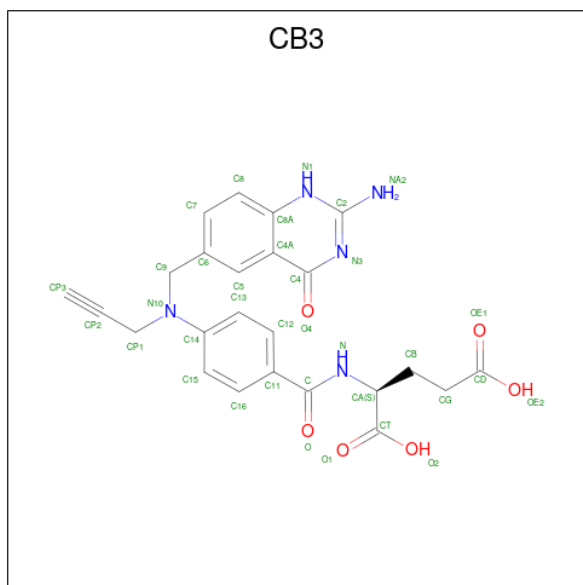- Molecule 2 is 2'-deoxy-5'-uridylic acid (three-letter code: UMC) (formula: $C_9H_{15}N_2O_8P$).
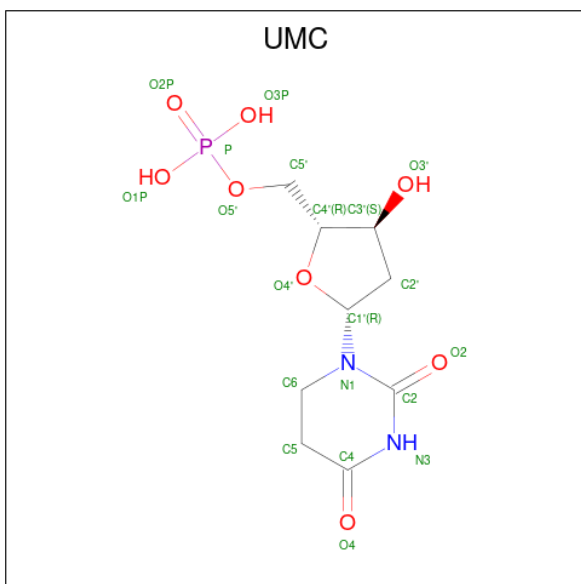
Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
2	A	1	Total	C	H	N	O	P	0	0
			32	9	12	2	8	1		

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Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
2	B	1	Total 32	C 9	H 12	N 2	O 8	P 1	0	0

- Molecule 3 is 10-PROPARGYL-5,8-DIDEAZAFOLIC ACID (three-letter code: CB3) (formula: $C_{24}H_{23}N_5O_6$).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total 56	C 24	H 21	N 5	O 6	0	0
3	B	1	Total 56	C 24	H 21	N 5	O 6	0	0

- Molecule 4 is water.

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	385	Total 385	O 385	0	0
4	B	288	Total 288	O 288	0	0

3 Residue-property plots ⓘ

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: Thymidylate synthase

Chain A:

• Molecule 1: Thymidylate synthase

Chain B:
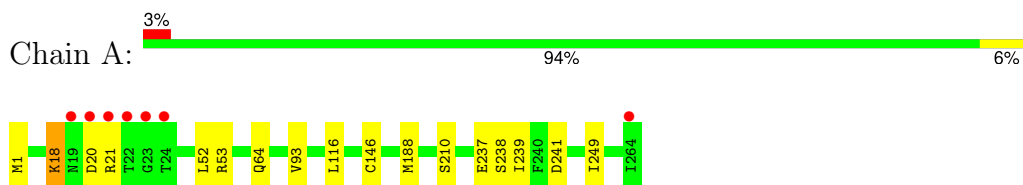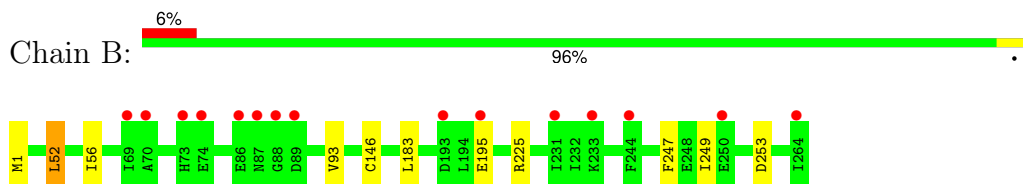
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 63	Depositor
Cell constants a, b, c, α, β, γ	125.78Å 125.78Å 66.94Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	45.83 – 1.30 45.83 – 1.30	Depositor EDS
% Data completeness (in resolution range)	99.8 (45.83-1.30) 99.8 (45.83-1.30)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.85 (at 1.30Å)	Xtriage
Refinement program	PHENIX 1.7.2_869, ELVES	Depositor
R, R_{free}	0.127 , 0.151 0.123 , 0.147	Depositor DCC
R_{free} test set	7362 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å^2)	13.4	Xtriage
Anisotropy	0.035	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.43 , 51.0	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.024 for h,-h-k,-l	Xtriage
F_o,F_c correlation	0.98	EDS
Total number of atoms	9394	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 3.79% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ 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: CXM, CB3, UMC

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	0.44	0/2232	0.65	0/3031
1	B	0.39	0/2213	0.62	0/3006
All	All	0.42	0/4445	0.63	0/6037

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2   Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2171	2114	2094	17	0
1	B	2160	2100	2092	9	0
2	A	20	12	13	2	0
2	B	20	12	13	2	0
3	A	35	21	21	4	0
3	B	35	21	21	4	0
4	A	385	0	0	4	3
4	B	288	0	0	2	1
All	All	5114	4280	4254	34	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 4.

All (34) 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:146:CYS:SG	2:B:801:UMC:H6	1.15	1.69
1:A:146:CYS:SG	2:A:701:UMC:H6	1.09	1.67
1:A:18:LYS:HB2	4:A:986:HOH:O	1.87	0.74
1:A:116:LEU:HG	1:A:188:MET:HE1	1.73	0.71
1:A:64:GLN:NE2	4:A:1135:HOH:O	2.28	0.66
1:A:52:LEU:CD2	1:A:249:ILE:HG13	2.30	0.61
1:A:210:SER:O	4:A:1126:HOH:O	2.16	0.60
1:A:52:LEU:HD22	1:A:249:ILE:HG13	1.83	0.59
1:A:116:LEU:CD2	1:A:188:MET:CE	2.84	0.55
1:A:146:CYS:SG	2:A:701:UMC:C5	2.92	0.54
1:A:116:LEU:HD11	1:A:239:ILE:HB	1.91	0.52
1:A:116:LEU:CD2	1:A:188:MET:HE3	2.39	0.52
1:A:116:LEU:CG	1:A:188:MET:HE1	2.40	0.52
1:B:52:LEU:HD11	1:B:249:ILE:HG13	1.93	0.50
1:A:237:GLU:HG2	1:A:241:ASP:OD2	2.12	0.49
1:B:52:LEU:HD13	1:B:56:ILE:HD11	1.94	0.49
1:A:53:ARG:HD2	4:A:974:HOH:O	2.12	0.49
3:B:802:CB3:H13	3:B:802:CB3:C6	2.44	0.48
1:B:146:CYS:SG	4:B:1188:HOH:O	2.43	0.47
3:A:702:CB3:C6	3:A:702:CB3:H15	2.45	0.46
1:B:195:GLU:HG2	4:B:1127:HOH:O	2.15	0.46
1:A:116:LEU:HD23	1:A:188:MET:CE	2.46	0.46
1:B:146:CYS:SG	2:B:801:UMC:C5	2.97	0.46
1:A:116:LEU:CD2	1:A:188:MET:HE1	2.46	0.46
1:B:52:LEU:CD1	1:B:249:ILE:HG13	2.46	0.45
3:B:802:CB3:C14	3:B:802:CB3:C5	2.94	0.44
1:B:183:LEU:HD11	1:B:247:PHE:CE2	2.52	0.44
1:B:225:ARG:HD2	1:B:253:ASP:O	2.17	0.44
3:B:802:CB3:C5	3:B:802:CB3:C13	2.97	0.43
3:A:702:CB3:C5	3:A:702:CB3:C15	2.97	0.43
3:A:702:CB3:C5	3:A:702:CB3:C14	2.96	0.42
3:A:702:CB3:C6	3:A:702:CB3:C15	2.98	0.42
1:A:116:LEU:HD23	1:A:188:MET:HE3	2.02	0.41
3:B:802:CB3:C6	3:B:802:CB3:C13	2.96	0.40

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)
4:A:1089:HOH:O	4:A:1141:HOH:O[6_544]	2.14	0.06
4:A:950:HOH:O	4:A:1141:HOH:O[6_544]	2.18	0.02
4:A:1089:HOH:O	4:B:1096:HOH:O[6_544]	2.19	0.01

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	265/264 (100%)	261 (98%)	3 (1%)	1 (0%)	34	10
1	B	263/264 (100%)	257 (98%)	5 (2%)	1 (0%)	34	10
All	All	528/528 (100%)	518 (98%)	8 (2%)	2 (0%)	34	10

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	93	VAL
1	B	93	VAL

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	235/232 (101%)	231 (98%)	4 (2%)	60	26
1	B	233/232 (100%)	232 (100%)	1 (0%)	91	76
All	All	468/464 (101%)	463 (99%)	5 (1%)	73	45

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	18	LYS
1	A	20	ASP
1	A	21	ARG
1	A	238	SER
1	B	52	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	217	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

2 non-standard protein/DNA/RNA residues are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$|Z| > 2$	Counts	RMSZ	#$|Z| > 2$
1	CXM	B	1	1	9,10,11	0.90	0	9,11,13	1.52	1 (11%)
1	CXM	A	1	1	9,10,11	1.03	1 (11%)	9,11,13	1.64	1 (11%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	CXM	B	1	1	-	2/9/10/12	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	CXM	A	1	1	-	2/9/10/12	-

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1	CXM	ON1-CN	2.36	1.26	1.21

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1	CXM	ON1-CN-N	-4.26	117.87	124.86
1	B	1	CXM	ON1-CN-N	-3.77	118.67	124.86

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	1	CXM	O-C-CA-CB
1	B	1	CXM	O-C-CA-CB
1	A	1	CXM	ON1-CN-N-CA
1	B	1	CXM	ON1-CN-N-CA

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

4 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	CB3	B	802	-	36,37,37	1.15	3 (8%)	48,51,51	1.91	10 (20%)
3	CB3	A	702	-	36,37,37	1.18	3 (8%)	48,51,51	1.82	8 (16%)
2	UMC	B	801	1	20,21,21	1.01	3 (15%)	25,31,31	1.24	4 (16%)
2	UMC	A	701	1	20,21,21	0.79	0	25,31,31	1.12	2 (8%)

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	CB3	B	802	-	-	3/27/28/28	0/3/3/3
3	CB3	A	702	-	-	3/27/28/28	0/3/3/3
2	UMC	B	801	1	-	1/10/35/35	0/2/2/2
2	UMC	A	701	1	-	0/10/35/35	0/2/2/2

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	802	CB3	O-C	3.51	1.31	1.23
3	A	702	CB3	O-C	2.98	1.30	1.23
3	B	802	CB3	C4-N3	2.89	1.38	1.33
3	A	702	CB3	C4-N3	2.65	1.37	1.33
2	B	801	UMC	C2-N1	-2.39	1.32	1.35
2	B	801	UMC	C4-N3	-2.37	1.33	1.37
3	A	702	CB3	CP1-CP2	2.35	1.50	1.46
3	B	802	CB3	CP1-CP2	2.23	1.50	1.46
2	B	801	UMC	C2-N3	-2.10	1.34	1.38

All (24) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	702	CB3	N1-C2-N3	-5.74	119.92	127.21
3	A	702	CB3	C4A-C8A-N1	-5.72	120.23	123.56
3	B	802	CB3	C4A-C8A-N1	-5.57	120.32	123.56
3	B	802	CB3	N1-C2-N3	-5.52	120.19	127.21
3	B	802	CB3	C4A-C4-N3	-5.36	119.20	124.68
3	A	702	CB3	C4A-C4-N3	-4.47	120.10	124.68
3	B	802	CB3	C6-C9-N10	-3.94	107.75	114.13
3	A	702	CB3	C6-C9-N10	-3.75	108.06	114.13
3	B	802	CB3	C2-N3-C4	3.60	120.97	115.96

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	702	CB3	C2-N3-C4	3.42	120.72	115.96
3	B	802	CB3	C9-N10-C14	3.33	126.50	120.72
3	A	702	CB3	C9-N10-C14	3.21	126.28	120.72
2	A	701	UMC	C5-C4-N3	3.12	120.00	116.69
2	B	801	UMC	N3-C2-N1	2.51	119.17	116.65
3	B	802	CB3	CP1-N10-C9	-2.44	114.73	117.19
2	B	801	UMC	C5-C4-N3	2.44	119.28	116.69
2	B	801	UMC	O2-C2-N1	-2.42	120.19	123.10
3	A	702	CB3	NA2-C2-N1	2.41	121.55	117.79
3	B	802	CB3	OE2-CD-CG	2.32	121.33	114.00
3	A	702	CB3	OE2-CD-CG	2.28	121.22	114.00
2	A	701	UMC	O4'-C1'-N1	2.25	111.18	108.39
3	B	802	CB3	C15-C14-N10	-2.25	118.27	121.39
2	B	801	UMC	O4'-C1'-N1	2.01	110.89	108.39
3	B	802	CB3	O2-CT-CA	2.00	120.29	113.51

There are no chirality outliers.

All (7) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	802	CB3	C6-C9-N10-C14
3	A	702	CB3	C6-C9-N10-C14
3	A	702	CB3	OE1-CD-CG-CB
3	B	802	CB3	OE1-CD-CG-CB
3	A	702	CB3	OE2-CD-CG-CB
3	B	802	CB3	OE2-CD-CG-CB
2	B	801	UMC	O4'-C4'-C5'-O5'

There are no ring outliers.

4 monomers are involved in 12 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	802	CB3	4	0
3	A	702	CB3	4	0
2	B	801	UMC	2	0
2	A	701	UMC	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 then 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 CB3 B 802

Bond lengths

Bond angles

Torsions

Rings

Ligand CB3 A 702

Bond lengths

Bond angles

Torsions

Rings

Ligand UMC B 801

Bond lengths

Bond angles

Torsions

Rings

Ligand UMC A 701

Bond lengths

Bond angles

Torsions

Rings
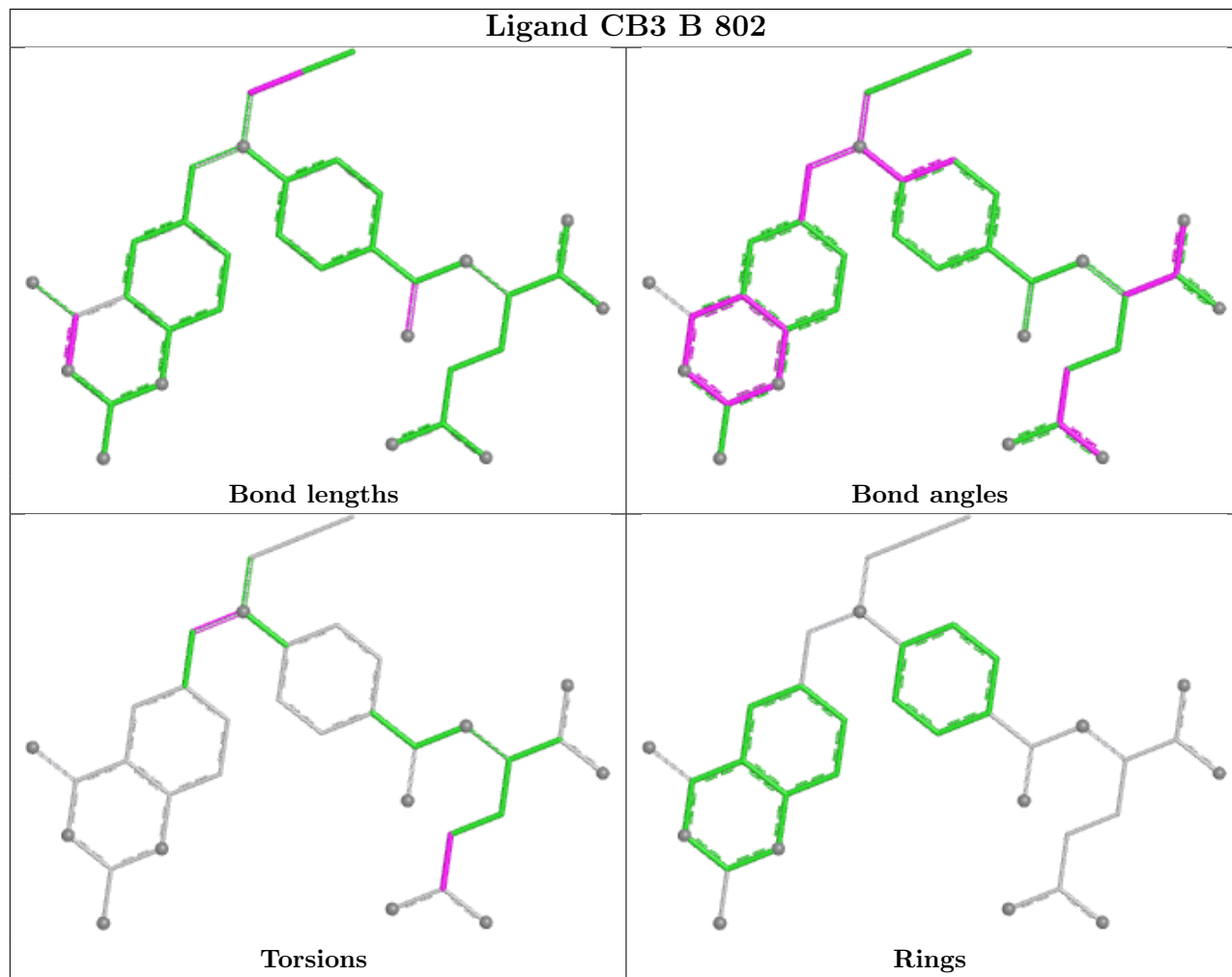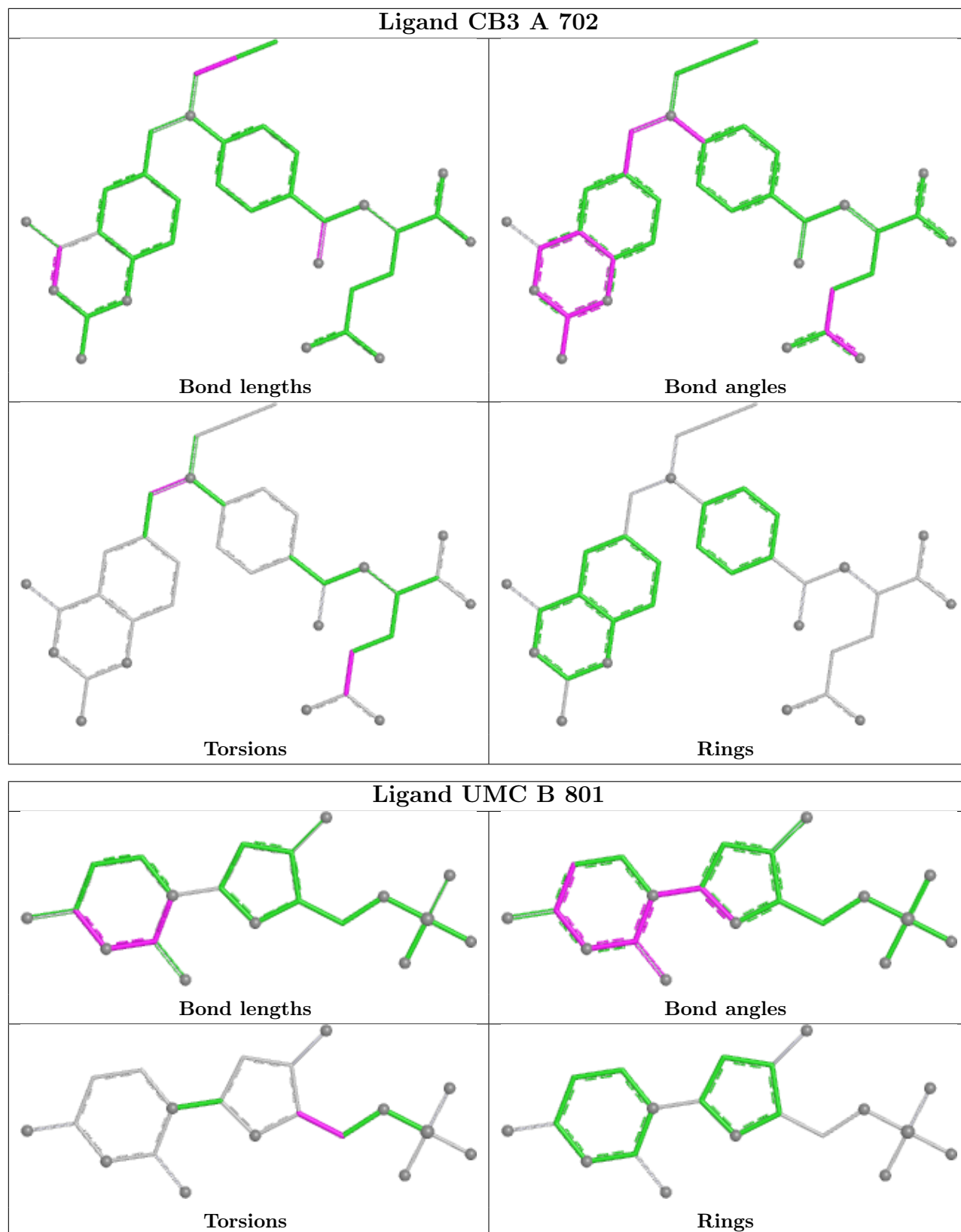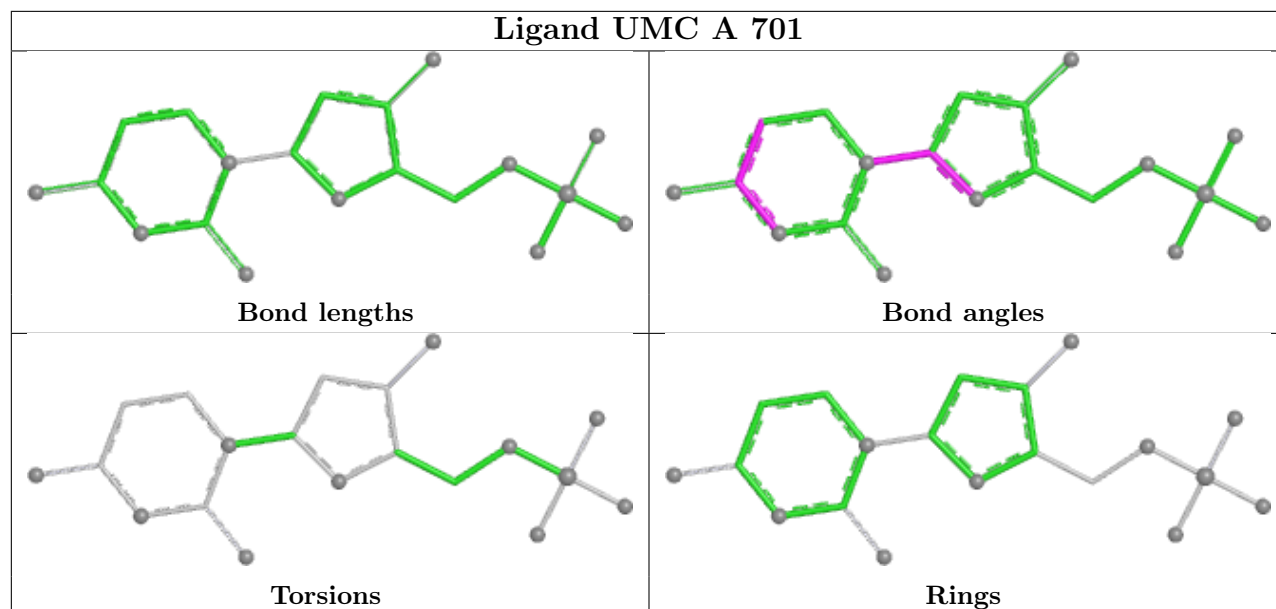
5.7 Other polymers ⓘ

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	263/264 (99%)	-0.02	7 (2%) 54	52	8, 12, 25, 35	0
1	B	263/264 (99%)	0.09	15 (5%) 23	20	8, 18, 31, 38	0
All	All	526/528 (99%)	0.04	22 (4%) 36	33	8, 15, 29, 38	0

All (22) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	22	THR	6.5
1	A	264	ILE	5.4
1	B	86	GLU	5.0
1	A	23	GLY	4.8
1	B	264	ILE	4.7
1	A	21	ARG	4.0
1	A	24	THR	3.6
1	A	19	ASN	3.4
1	B	69	ILE	3.0
1	B	244	PHE	3.0
1	A	20	ASP	3.0
1	B	70	ALA	2.9
1	B	88	GLY	2.9
1	B	87	ASN	2.8
1	B	231	ILE	2.7
1	B	195	GLU	2.5
1	B	233	LYS	2.5
1	B	73	HIS	2.2
1	B	74	GLU	2.1
1	B	250	GLU	2.1
1	B	193	ASP	2.1
1	B	89	ASP	2.0

## 6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
1	CXM	A	1	11/12	0.99	0.06	10,12,18,18	0
1	CXM	B	1	11/12	0.99	0.06	16,18,23,23	0

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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	CB3	A	702	35/35	0.94	0.10	13,16,25,27	0
3	CB3	B	802	35/35	0.95	0.08	15,21,33,36	0
2	UMC	A	701	20/20	0.97	0.08	10,12,15,15	0
2	UMC	B	801	20/20	0.98	0.06	13,14,18,18	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 CB3 A 702:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
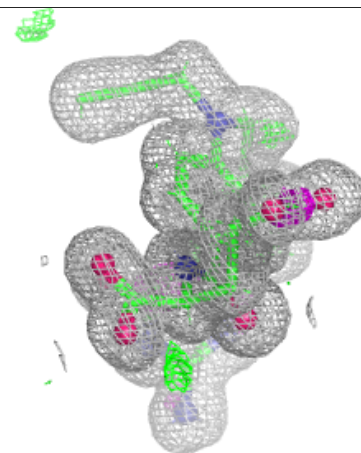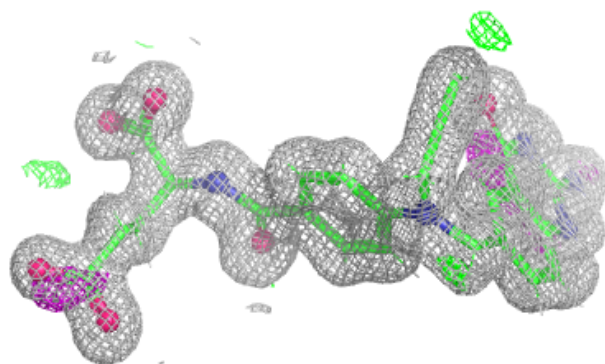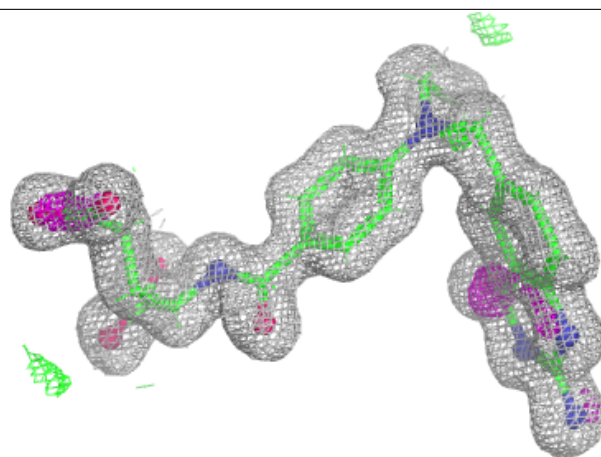
Electron density around CB3 B 802:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
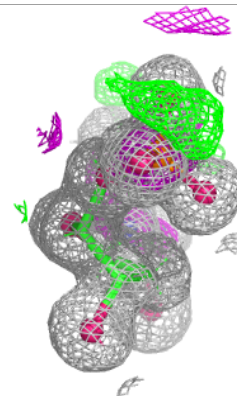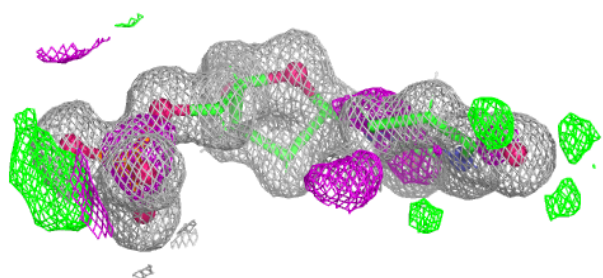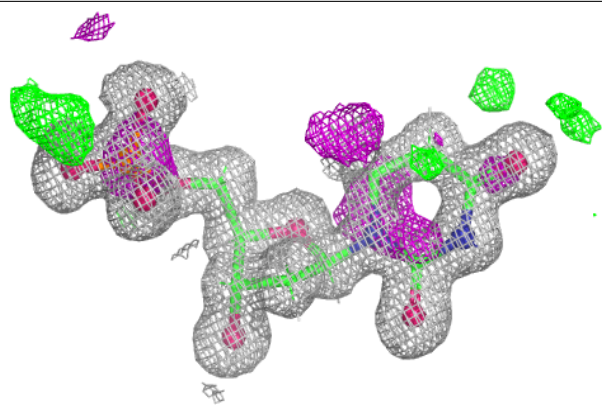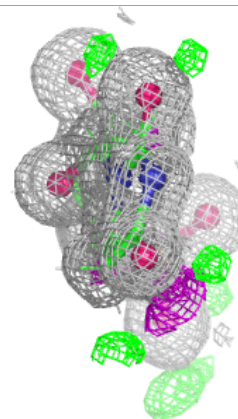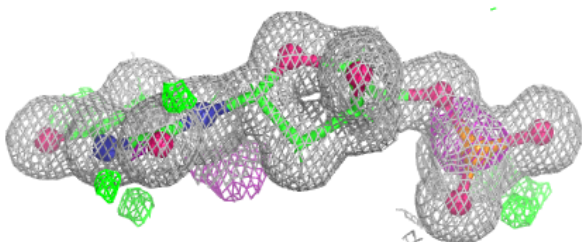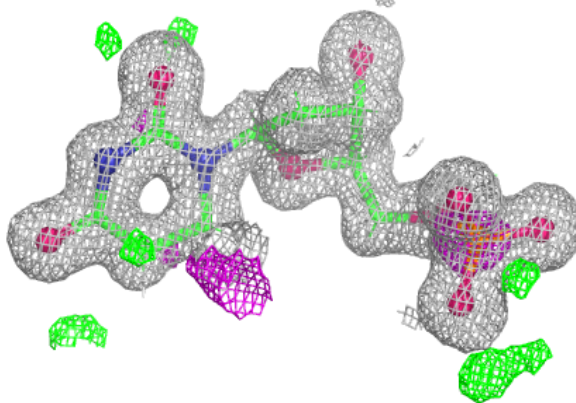$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
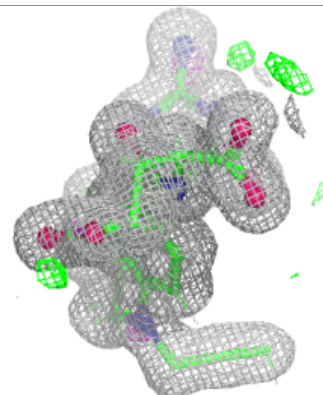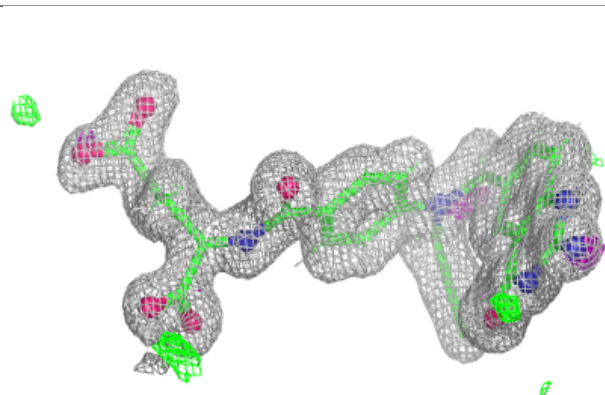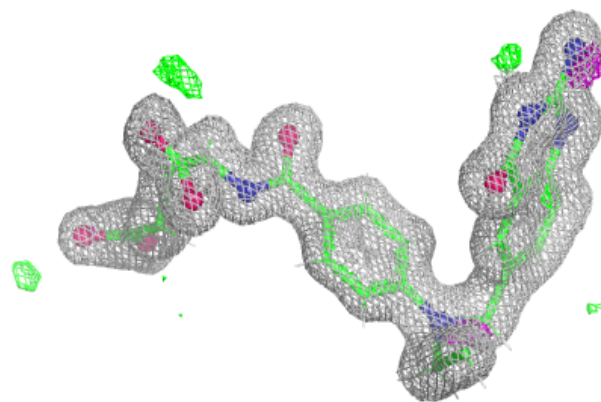
Electron density around UMC A 701:

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

Electron density around UMC B 801:

$2mF_o$-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 ⓘ

There are no such residues in this entry.