Full wwPDB X-ray Structure Validation Report ⓘ

Nov 21, 2023 – 05:57 PM JST

PDB ID	:	6M63
Title	:	Crystal structure of a cAMP sensor G-Flamp1.
Authors	:	Zhou, Z.; Chen, S.; Wang, L.; Chu, J.
Deposited on	:	2020-03-12
Resolution	:	2.25 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

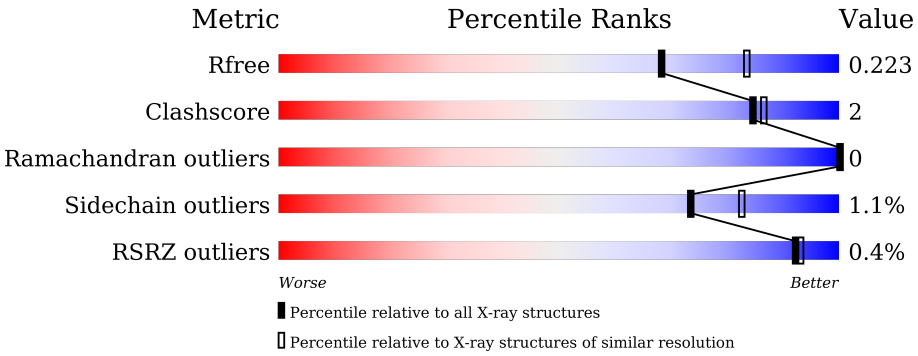
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.25 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1377 (2.26-2.26)
Clashscore	141614	1487 (2.26-2.26)
Ramachandran outliers	138981	1449 (2.26-2.26)
Sidechain outliers	138945	1450 (2.26-2.26)
RSRZ outliers	127900	1356 (2.26-2.26)

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	387	88% 5% 7%
1	B	387	.% 87% 5% 7%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 5855 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 Chimera of Cyclic nucleotide-gated potassium channel mll3241 and Yellow fluorescent protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	360	Total	C	N	O	S	0	0	0
			2724	1750	459	505	10			
1	B	359	Total	C	N	O	S	0	0	0
			2722	1749	461	502	10			

There are 56 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	initiating methionine	UNP Q98GN8
A	74	ASN	-	linker	UNP Q98GN8
A	75	TRP	-	linker	UNP Q98GN8
A	76	GLY	-	linker	UNP Q98GN8
A	101	GLY	ASP	engineered mutation	UNP A0A059PIR9
A	103	GLY	SER	engineered mutation	UNP A0A059PIR9
A	108	TYR	ASP	engineered mutation	UNP A0A059PIR9
A	131	VAL	TYR	engineered mutation	UNP A0A059PIR9
A	134	LYS	ALA	engineered mutation	UNP A0A059PIR9
A	159	LEU	HIS	engineered mutation	UNP A0A059PIR9
A	167	GLY	-	linker	UNP A0A059PIR9
A	168	GLY	-	linker	UNP A0A059PIR9
A	169	THR	-	linker	UNP A0A059PIR9
A	170	GLY	-	linker	UNP A0A059PIR9
A	171	GLY	-	linker	UNP A0A059PIR9
A	172	SER	-	linker	UNP A0A059PIR9
A	173	MET	-	linker	UNP A0A059PIR9
A	174	VAL	-	linker	UNP A0A059PIR9
A	175	SER	-	linker	UNP A0A059PIR9
A	203	ARG	SER	engineered mutation	UNP A0A059PIR9
A	239	CRO	THR	chromophore	UNP A0A059PIR9
A	239	CRO	TYR	chromophore	UNP A0A059PIR9
A	239	CRO	GLY	chromophore	UNP A0A059PIR9
A	266	ILE	VAL	engineered mutation	UNP A0A059PIR9

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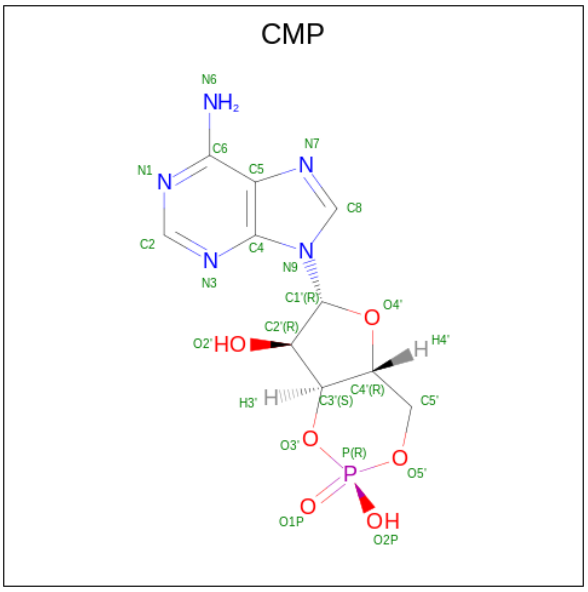
Chain	Residue	Modelled	Actual	Comment	Reference
A	272	VAL	SER	engineered mutation	UNP A0A059PIR9
A	318	ARG	-	linker	UNP A0A059PIR9
A	319	VAL	-	linker	UNP A0A059PIR9
A	342	VAL	SER	engineered mutation	UNP Q98GN8
B	1	MET	-	initiating methionine	UNP Q98GN8
B	74	ASN	-	linker	UNP Q98GN8
B	75	TRP	-	linker	UNP Q98GN8
B	76	GLY	-	linker	UNP Q98GN8
B	101	GLY	ASP	engineered mutation	UNP A0A059PIR9
B	103	GLY	SER	engineered mutation	UNP A0A059PIR9
B	108	TYR	ASP	engineered mutation	UNP A0A059PIR9
B	131	VAL	TYR	engineered mutation	UNP A0A059PIR9
B	134	LYS	ALA	engineered mutation	UNP A0A059PIR9
B	159	LEU	HIS	engineered mutation	UNP A0A059PIR9
B	167	GLY	-	linker	UNP A0A059PIR9
B	168	GLY	-	linker	UNP A0A059PIR9
B	169	THR	-	linker	UNP A0A059PIR9
B	170	GLY	-	linker	UNP A0A059PIR9
B	171	GLY	-	linker	UNP A0A059PIR9
B	172	SER	-	linker	UNP A0A059PIR9
B	173	MET	-	linker	UNP A0A059PIR9
B	174	VAL	-	linker	UNP A0A059PIR9
B	175	SER	-	linker	UNP A0A059PIR9
B	203	ARG	SER	engineered mutation	UNP A0A059PIR9
B	239	CRO	THR	chromophore	UNP A0A059PIR9
B	239	CRO	TYR	chromophore	UNP A0A059PIR9
B	239	CRO	GLY	chromophore	UNP A0A059PIR9
B	266	ILE	VAL	engineered mutation	UNP A0A059PIR9
B	272	VAL	SER	engineered mutation	UNP A0A059PIR9
B	318	ARG	-	linker	UNP A0A059PIR9
B	319	VAL	-	linker	UNP A0A059PIR9
B	342	VAL	SER	engineered mutation	UNP Q98GN8

- Molecule 2 is ADENOSINE-3',5'-CYCLIC-MONOPHOSPHATE (three-letter code: CMP) (formula: $C_{10}H_{12}N_5O_6P$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	0	0
			22	10	5	6	1		
2	B	1	Total	C	N	O	P	0	0
			22	10	5	6	1		

- Molecule 3 is water.

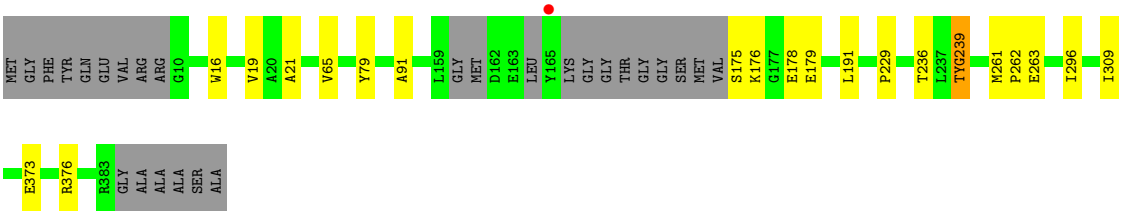
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	184	Total	O	0	0
			184	184		
3	B	181	Total	O	0	0
			181	181		

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.

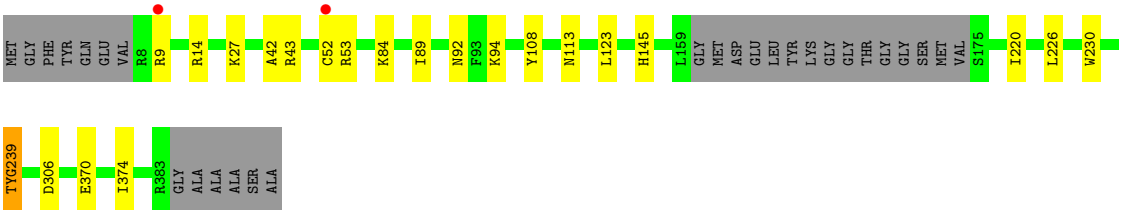
• Molecule 1: Chimera of Cyclic nucleotide-gated potassium channel mll3241 and Yellow fluorescent protein

Chain A:



• Molecule 1: Chimera of Cyclic nucleotide-gated potassium channel mll3241 and Yellow fluorescent protein

Chain B:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	87.84Å 94.69Å 109.98Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	47.55 – 2.25 47.55 – 2.25	Depositor EDS
% Data completeness (in resolution range)	99.4 (47.55-2.25) 99.4 (47.55-2.25)	Depositor EDS
R_{merge}	0.15	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	4.32 (at 2.24Å)	Xtriage
Refinement program	PHENIX 1.17.1_3660	Depositor
R, R_{free}	0.178 , 0.223 0.179 , 0.223	Depositor DCC
R_{free} test set	2005 reflections (4.56%)	wwPDB-VP
Wilson B-factor (Å^2)	34.0	Xtriage
Anisotropy	0.139	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.37 , 54.6	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	5855	wwPDB-VP
Average B, all atoms (Å^2)	37.0	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 34.86 % 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 6.3822e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[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: CMP, CRO

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	0.40	0/2757	0.56	0/3734
1	B	0.40	0/2757	0.56	0/3741
All	All	0.40	0/5514	0.56	0/7475

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	2724	0	2654	11	0
1	B	2722	0	2661	12	0
2	A	22	0	11	1	0
2	B	22	0	11	1	0
3	A	184	0	0	1	0
3	B	181	0	0	2	0
All	All	5855	0	5337	25	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 2.

All (25) 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)
2:A:400:CMP:C2	2:A:400:CMP:H2	0.97	1.50
2:B:400:CMP:H2	2:B:400:CMP:C2	0.97	1.49
1:A:175:SER:N	3:A:540:HOH:O	2.32	0.62
1:B:53:ARG:NH1	3:B:545:HOH:O	2.30	0.57
1:A:239:CRO:HD2	1:A:239:CRO:N2	2.25	0.52
1:A:21:ALA:HB3	1:A:65:VAL:HG13	1.92	0.51
1:A:373:GLU:OE2	1:A:376:ARG:NH1	2.45	0.50
1:B:94:LYS:HD2	1:B:108:TYR:CE2	2.48	0.49
1:A:176:LYS:O	1:A:179:GLU:HG2	2.13	0.48
1:B:27:LYS:HE3	1:B:370:GLU:OE2	2.15	0.46
1:A:79:TYR:O	1:A:91:ALA:HA	2.16	0.45
1:B:370:GLU:O	1:B:374:ILE:HG13	2.17	0.45
1:B:226:LEU:HD22	1:B:230:TRP:CD2	2.52	0.44
1:B:84:LYS:HG2	1:B:123:LEU:HD13	1.99	0.43
1:B:43:ARG:NH1	3:B:538:HOH:O	2.22	0.43
1:A:229:PRO:HD3	1:A:309:ILE:O	2.19	0.42
1:B:145:HIS:HB3	1:B:220:ILE:HD13	2.01	0.42
1:A:191:LEU:C	1:A:191:LEU:HD23	2.41	0.41
1:A:16:TRP:O	1:A:19:VAL:HG12	2.21	0.41
1:B:239:CRO:HD1	1:B:239:CRO:N2	2.35	0.41
1:B:89:ILE:HG13	1:B:113:ASN:HB2	2.02	0.41
1:A:261:MET:HB3	1:A:262:PRO:HA	2.03	0.41
1:B:27:LYS:HZ2	1:B:27:LYS:HG2	1.80	0.41
1:A:236:THR:CG2	1:A:296:ILE:HG21	2.51	0.40
1:B:14:ARG:HH22	1:B:42:ALA:HB3	1.86	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	350/387 (90%)	343 (98%)	7 (2%)	0	100	100
1	B	352/387 (91%)	346 (98%)	6 (2%)	0	100	100
All	All	702/774 (91%)	689 (98%)	13 (2%)	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	277/317 (87%)	275 (99%)	2 (1%)	84	90
1	B	277/317 (87%)	273 (99%)	4 (1%)	67	76
All	All	554/634 (87%)	548 (99%)	6 (1%)	73	82

All (6) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	178	GLU
1	A	263	GLU
1	B	9	ARG
1	B	52	CYS
1	B	92	ASN
1	B	306	ASP

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

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
1	CRO	A	239	1	23,23,24	2.57	7 (30%)	30,32,34	2.68	11 (36%)
1	CRO	B	239	1	23,23,24	2.43	7 (30%)	30,32,34	2.71	8 (26%)

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	CRO	A	239	1	-	1/12/31/32	0/2/2/2
1	CRO	B	239	1	-	1/12/31/32	0/2/2/2

All (14) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	239	CRO	CA2-C2	5.73	1.54	1.48
1	A	239	CRO	C1-N2	5.62	1.40	1.32
1	B	239	CRO	C1-N2	5.43	1.40	1.32
1	A	239	CRO	C1-N3	5.34	1.46	1.37
1	B	239	CRO	C1-N3	5.15	1.45	1.37
1	B	239	CRO	CA2-C2	4.84	1.53	1.48
1	A	239	CRO	CG2-CB2	4.44	1.55	1.46
1	B	239	CRO	CG2-CB2	3.98	1.54	1.46
1	B	239	CRO	OH-CZ	3.81	1.45	1.37
1	A	239	CRO	OH-CZ	3.61	1.45	1.37
1	A	239	CRO	C2-N3	2.97	1.46	1.39
1	B	239	CRO	C2-N3	2.91	1.46	1.39
1	A	239	CRO	CA2-N2	2.35	1.43	1.38
1	B	239	CRO	CA2-N2	2.06	1.43	1.38

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	239	CRO	O2-C2-CA2	-9.59	125.57	130.96

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	239	CRO	O2-C2-CA2	-7.25	126.89	130.96
1	A	239	CRO	CA2-C2-N3	6.86	106.61	103.37
1	B	239	CRO	CA2-C2-N3	6.28	106.34	103.37
1	B	239	CRO	C2-N3-C1	-4.85	105.51	107.97
1	A	239	CRO	C2-N3-C1	-4.75	105.56	107.97
1	A	239	CRO	CG2-CB2-CA2	-4.19	124.81	129.94
1	B	239	CRO	CG2-CB2-CA2	-3.69	125.42	129.94
1	A	239	CRO	CA2-N2-C1	3.49	108.34	105.77
1	A	239	CRO	C1-CA1-N1	-3.37	104.50	109.96
1	A	239	CRO	O3-C3-CA3	-3.25	116.56	126.39
1	B	239	CRO	O3-C3-CA3	-3.05	117.18	126.39
1	B	239	CRO	CA2-N2-C1	2.93	107.93	105.77
1	A	239	CRO	C2-CA2-N2	-2.75	107.01	108.93
1	A	239	CRO	CA1-C1-N3	-2.36	121.92	124.75
1	B	239	CRO	CA1-C1-N3	-2.19	122.12	124.75
1	A	239	CRO	CD1-CE1-CZ	-2.15	117.52	119.88
1	A	239	CRO	CD2-CG2-CD1	2.08	120.72	117.64
1	B	239	CRO	CD2-CG2-CD1	2.07	120.70	117.64

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	B	239	CRO	C3-CA3-N3-C2
1	A	239	CRO	C3-CA3-N3-C2

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	239	CRO	1	0
1	B	239	CRO	1	0

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

2 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	CMP	A	400	-	22,25,25	1.40	4 (18%)	24,39,39	1.69	6 (25%)
2	CMP	B	400	-	22,25,25	1.38	5 (22%)	24,39,39	1.52	4 (16%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	CMP	A	400	-	-	0/0/31/31	0/4/4/4
2	CMP	B	400	-	-	0/0/31/31	0/4/4/4

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	400	CMP	P-O3'	3.18	1.63	1.57
2	B	400	CMP	P-O5'	2.82	1.60	1.57
2	A	400	CMP	P-O5'	2.78	1.60	1.57
2	B	400	CMP	P-O3'	2.57	1.62	1.57
2	B	400	CMP	C5-C4	2.41	1.47	1.40
2	B	400	CMP	O5'-C5'	-2.36	1.42	1.46
2	A	400	CMP	C5-C4	2.30	1.47	1.40
2	A	400	CMP	O5'-C5'	-2.23	1.43	1.46
2	B	400	CMP	O3'-C3'	-2.18	1.41	1.44

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	400	CMP	O2P-P-O1P	3.51	119.73	108.73
2	B	400	CMP	N3-C2-N1	-3.41	123.35	128.68
2	B	400	CMP	O2P-P-O1P	3.26	118.94	108.73
2	A	400	CMP	N3-C2-N1	-3.19	123.69	128.68
2	B	400	CMP	C4-C5-N7	-2.72	106.56	109.40
2	A	400	CMP	O5'-P-O1P	-2.64	104.36	110.44

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	400	CMP	C4-C5-N7	-2.63	106.66	109.40
2	A	400	CMP	O3'-C3'-C2'	2.62	118.17	115.61
2	A	400	CMP	C2-N1-C6	2.39	122.84	118.75
2	B	400	CMP	C2-N1-C6	2.07	122.29	118.75

There are no chirality outliers.

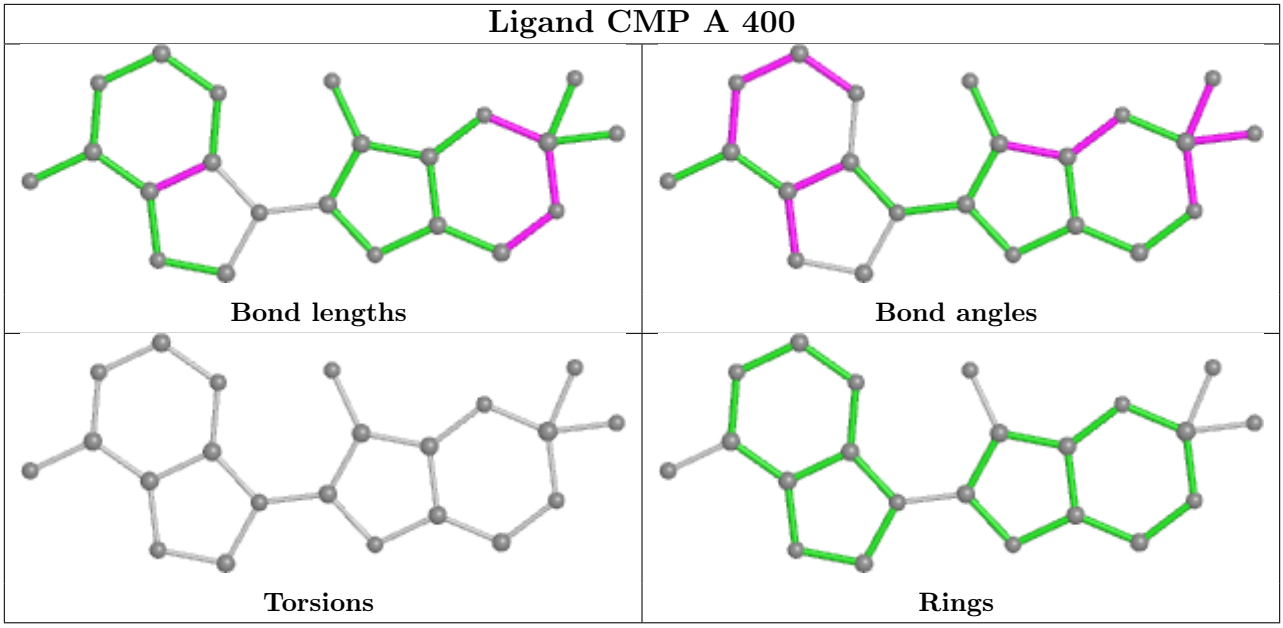
There are no torsion outliers.

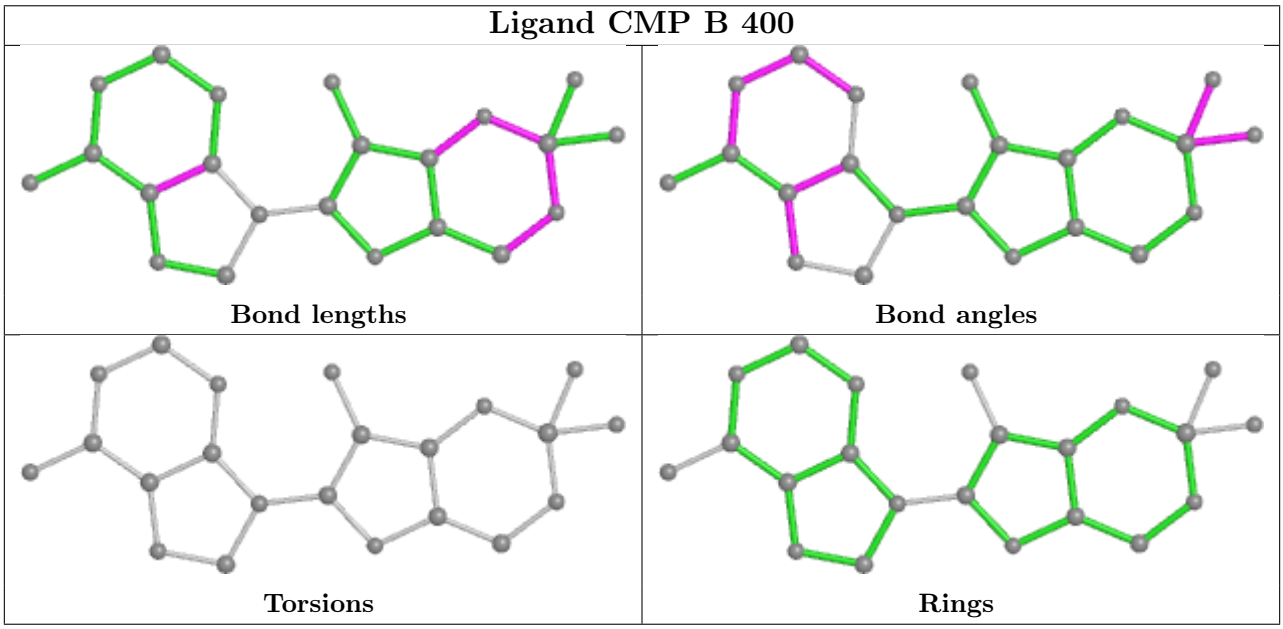
There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	400	CMP	1	0
2	B	400	CMP	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 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.





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, 95^{th} 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	359/387 (92%)	-0.28	1 (0%)	94	94	23, 34, 61, 81	0
1	B	358/387 (92%)	-0.24	2 (0%)	89	89	23, 35, 58, 92	0
All	All	717/774 (92%)	-0.26	3 (0%)	92	93	23, 34, 59, 92	0

All (3) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	9	ARG	3.6
1	A	165	TYR	2.1
1	B	52	CYS	2.1

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, 95^{th} 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	CRO	B	239	22/23	0.96	0.13	22,28,31,34	0
1	CRO	A	239	22/23	0.97	0.13	22,29,31,36	0

6.3 Carbohydrates

There are no monosaccharides in this entry.

6.4 Ligands (i)

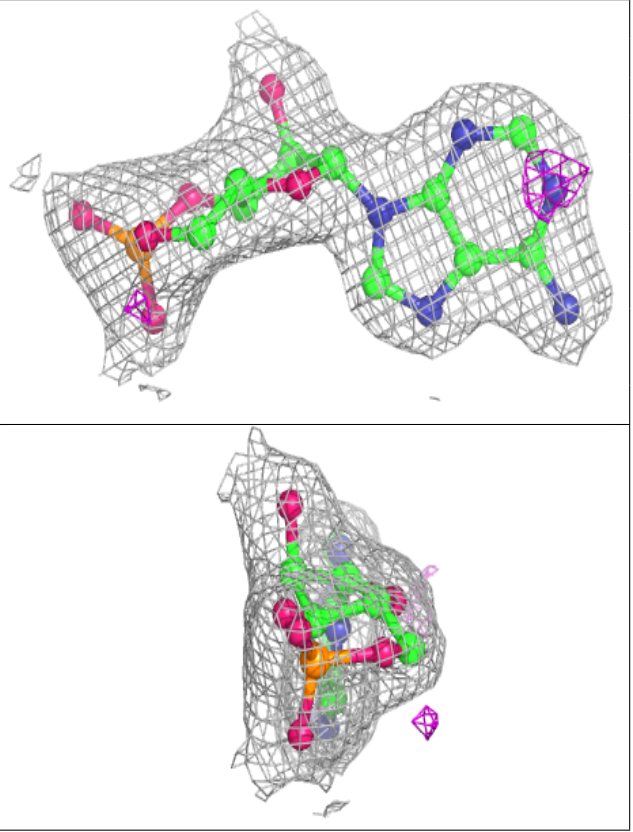
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9'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

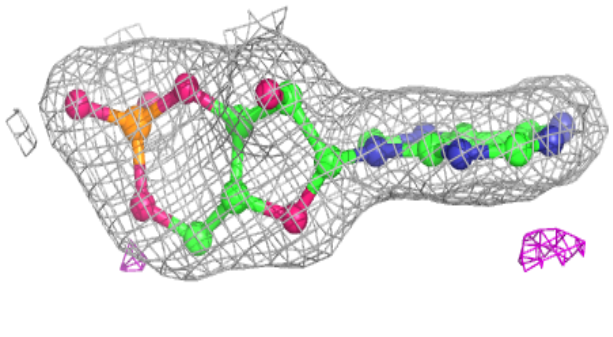
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	CMP	B	400	22/22	0.98	0.13	22,29,34,37	0
2	CMP	A	400	22/22	0.99	0.12	23,28,33,33	0

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 CMP B 400:

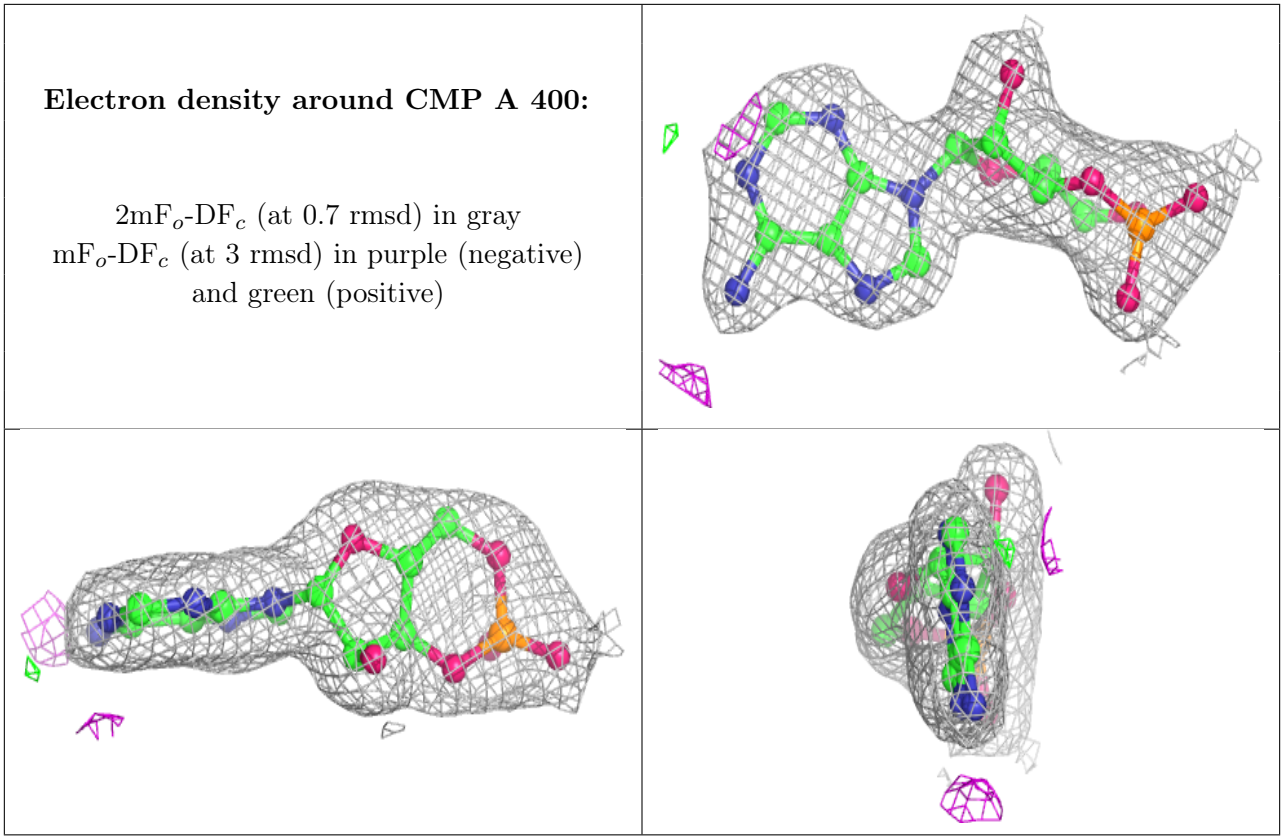
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)





Electron density around CMP A 400:

$2mF_o$-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.