



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 14, 2017 – 09:39 pm GMT

PDB ID : 5EDG
Title : human PDE10A in complex with 3-(2-Chloro-5-phenyl-3H-imidazol-4-yl)-1-(3-trifluoromethoxy-phenyl)-1H-pyridazin-4-one at 2.30Å
Authors : Joseph, C.; Rudolph, M.G.
Deposited on : 2015-10-21
Resolution : 2.30 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

<http://wwpdb.org/validation/2016/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.7.2 (RC1), CSD as538be (2017)
Xtriage (Phenix) : 1.9-1692
EDS : trunk28620
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : recalc28949

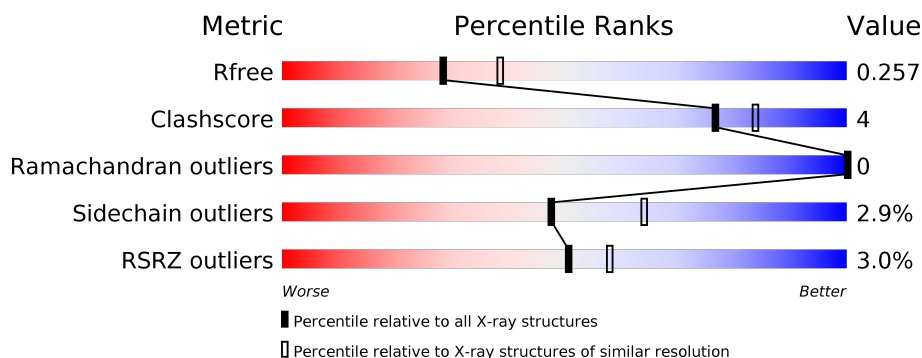
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 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	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	100719	4130 (2.30-2.30)
Clashscore	112137	4751 (2.30-2.30)
Ramachandran outliers	110173	4705 (2.30-2.30)
Sidechain outliers	110143	4704 (2.30-2.30)
RSRZ outliers	101464	4156 (2.30-2.30)

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 on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. 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	315	<div> <div>88%</div> <div>10% ..</div> </div>
1	C	315	<div> <div>92%</div> <div>7% .</div> </div>
1	D	315	<div> <div>87%</div> <div>12% .</div> </div>
2	B	316	<div> <div>87%</div> <div>12%</div> </div>

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 crite-

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
5	5MG	A	803	-	-	-	X
5	5MG	B	803	-	-	-	X
5	5MG	C	803	-	-	-	X
5	5MG	D	803	-	-	-	X

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 10625 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 cAMP and cAMP-inhibited cGMP 3',5'-cyclic phosphodiesterase 10A.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	313	Total	C	N	O	S	0	0	0
			2543	1624	434	461	24			
1	C	313	Total	C	N	O	S	0	0	0
			2543	1624	434	461	24			
1	D	313	Total	C	N	O	S	0	0	0
			2539	1622	435	458	24			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	456	ALA	-	expression tag	UNP Q9Y233
A	470	ARG	LYS	conflict	UNP Q9Y233
C	456	ALA	-	expression tag	UNP Q9Y233
C	470	ARG	LYS	conflict	UNP Q9Y233
D	456	ALA	-	expression tag	UNP Q9Y233
D	470	ARG	LYS	conflict	UNP Q9Y233

- Molecule 2 is a protein called cAMP and cAMP-inhibited cGMP 3',5'-cyclic phosphodiesterase 10A.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	315	Total	C	N	O	S	0	0	0
			2553	1630	436	463	24			

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	456	ALA	-	expression tag	UNP Q9Y233
B	470	ARG	LYS	conflict	UNP Q9Y233
B	771	ALA	-	expression tag	UNP Q9Y233

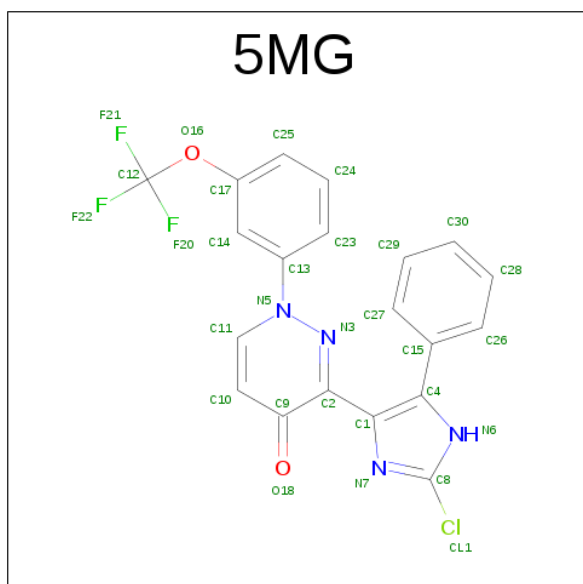
- Molecule 3 is ZINC ION (three-letter code: ZN) (formula: Zn).

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

- Molecule 4 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	B	1	Total	Mg	0	0
			1	1		
4	A	1	Total	Mg	0	0
			1	1		
4	D	1	Total	Mg	0	0
			1	1		
4	C	1	Total	Mg	0	0
			1	1		

- Molecule 5 is 3-(2-chloranyl-5-phenyl-1 {H}-imidazol-4-yl)-1-[3-(trifluoromethoxy)phenyl]pyridazin-4-one (three-letter code: 5MG) (formula: C₂₀H₁₂ClF₃N₄O₂).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
5	A	1	Total	C	Cl	F	N	O	0	0
			30	20	1	3	4	2		
5	B	1	Total	C	Cl	F	N	O	0	0
			30	20	1	3	4	2		
5	C	1	Total	C	Cl	F	N	O	0	0
			30	20	1	3	4	2		
5	D	1	Total	C	Cl	F	N	O	0	0
			30	20	1	3	4	2		

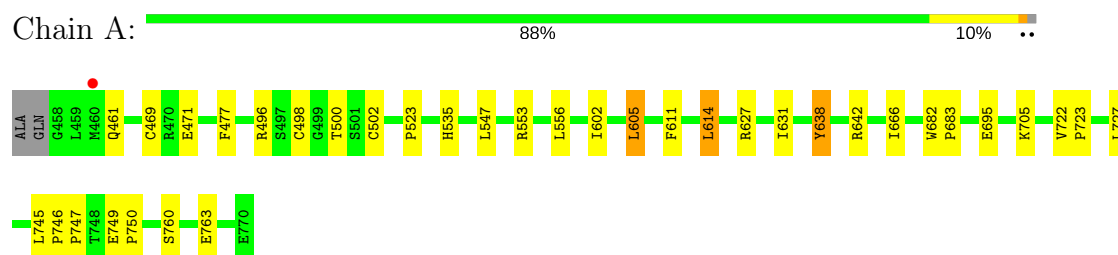
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	101	Total	O	0	0
			101	101		
6	B	97	Total	O	0	0
			97	97		
6	C	81	Total	O	0	0
			81	81		
6	D	40	Total	O	0	0
			40	40		

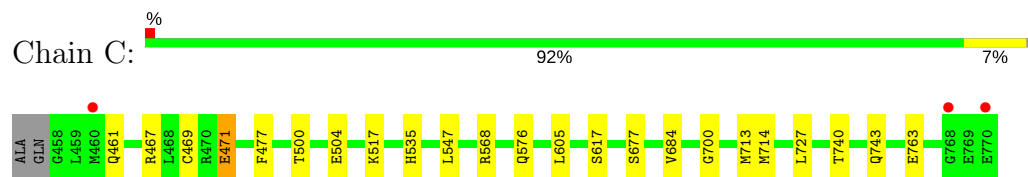
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA 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.

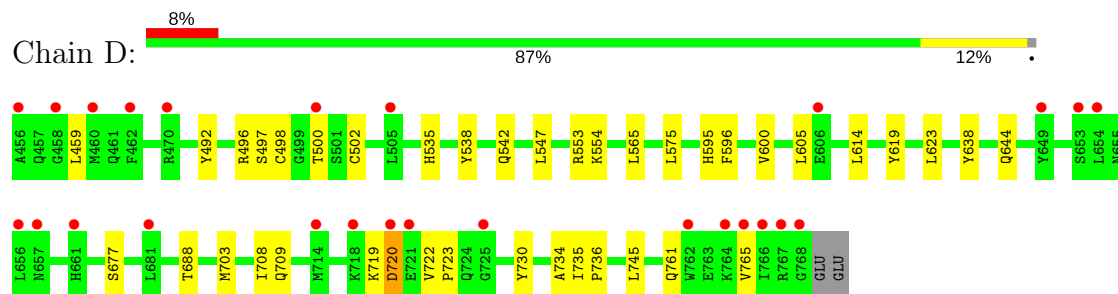
- Molecule 1: cAMP and cAMP-inhibited cGMP 3',5'-cyclic phosphodiesterase 10A



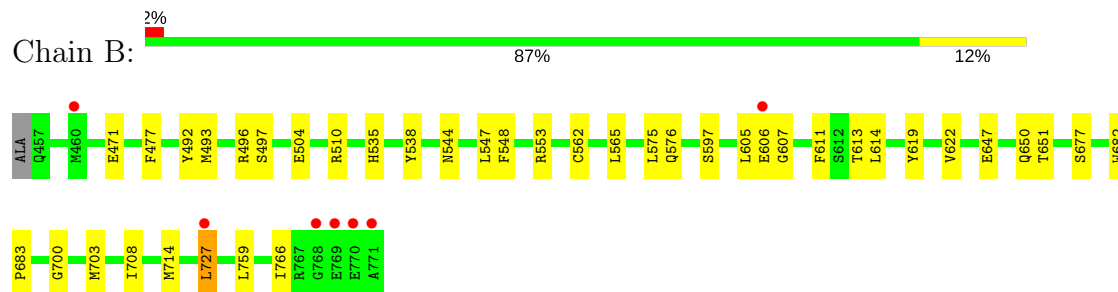
- Molecule 1: cAMP and cAMP-inhibited cGMP 3',5'-cyclic phosphodiesterase 10A



- Molecule 1: cAMP and cAMP-inhibited cGMP 3',5'-cyclic phosphodiesterase 10A



- Molecule 2: cAMP and cAMP-inhibited cGMP 3',5'-cyclic phosphodiesterase 10A



4 Data and refinement statistics

Property	Value	Source
Space group	H 3	Depositor
Cell constants a, b, c, α , β , γ	135.15Å 135.15Å 235.06Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	41.47 – 2.30 41.47 – 2.30	Depositor EDS
% Data completeness (in resolution range)	96.0 (41.47-2.30) 96.1 (41.47-2.30)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.38 (at 2.29Å)	Xtriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.212 , 0.261 0.211 , 0.257	Depositor DCC
R_{free} test set	3394 reflections (5.23%)	DCC
Wilson B-factor (Å ²)	40.5	Xtriage
Anisotropy	0.080	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 41.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.026 for h,-h-k,-l	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	10625	wwPDB-VP
Average B, all atoms (Å ²)	48.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.83% 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 [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: 5MG, MG, ZN, CME

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	0.59	0/2594	0.62	0/3510
1	C	0.56	0/2594	0.65	0/3510
1	D	0.48	0/2590	0.53	0/3505
2	B	0.54	0/2604	0.62	0/3524
All	All	0.54	0/10382	0.61	0/14049

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 [i](#)

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	2543	0	2513	17	0
1	C	2543	0	2511	11	0
1	D	2539	0	2514	20	0
2	B	2553	0	2518	18	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
4	A	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	B	1	0	0	0	0
4	C	1	0	0	0	0
4	D	1	0	0	0	0
5	A	30	0	0	0	0
5	B	30	0	0	3	0
5	C	30	0	0	2	0
5	D	30	0	0	5	0
6	A	101	0	0	1	0
6	B	97	0	0	0	0
6	C	81	0	0	2	0
6	D	40	0	0	0	0
All	All	10625	0	10056	71	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 4.

All (71) 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:A:469:CYS:SG	6:A:992:HOH:O	2.20	0.98
5:D:803:5MG:C23	5:D:803:5MG:C28	2.53	0.86
1:D:677:SER:HB2	5:D:803:5MG:CL1	2.19	0.80
1:C:469:CYS:SG	6:C:977:HOH:O	2.49	0.70
5:D:803:5MG:C23	5:D:803:5MG:C26	2.76	0.64
5:B:803:5MG:C23	5:B:803:5MG:C28	2.78	0.61
1:C:727:LEU:HD21	1:C:763:GLU:HG3	1.83	0.60
2:B:611:PHE:HB3	2:B:614:LEU:HD22	1.84	0.59
2:B:727:LEU:HD12	2:B:766:ILE:CD1	2.33	0.58
1:D:730:TYR:HA	1:D:734:ALA:HB3	1.86	0.58
1:A:602:ILE:HA	1:A:605:LEU:HD22	1.86	0.58
5:D:803:5MG:C24	5:D:803:5MG:C28	2.83	0.56
2:B:544:ASN:HB3	2:B:547:LEU:HD22	1.88	0.56
1:A:498:CYS:HG	1:A:502:CYS:CB	2.20	0.54
1:D:554:LYS:NZ	1:D:614:LEU:HD11	2.22	0.53
1:D:498:CYS:SG	1:D:502:CYS:SG	3.04	0.53
2:B:548:PHE:O	2:B:553:ARG:NH2	2.42	0.52
2:B:535:HIS:O	2:B:538:TYR:HB3	2.11	0.51
1:D:719:LYS:O	1:D:722:VAL:HG23	2.11	0.50
1:A:705:LYS:HG2	1:C:684:VAL:HG22	1.94	0.50
5:B:803:5MG:C23	5:B:803:5MG:C26	2.89	0.50
2:B:647:GLU:O	2:B:651:THR:HG23	2.12	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:562:CYS:HB3	2:B:565:LEU:HD12	1.94	0.49
1:C:461:GLN:NE2	1:C:500:THR:HG21	2.28	0.49
2:B:677:SER:HB2	5:B:803:5MG:CL1	2.50	0.48
1:D:554:LYS:HZ2	1:D:614:LEU:HD11	1.79	0.48
5:D:803:5MG:C26	5:D:803:5MG:N3	2.76	0.48
1:D:497:SER:HA	1:D:542:GLN:NE2	2.28	0.48
1:D:720:ASP:OD1	1:D:720:ASP:N	2.46	0.48
2:B:477:PHE:HB3	2:B:535:HIS:CE1	2.49	0.47
1:C:568:ARG:NH1	6:C:906:HOH:O	2.45	0.47
2:B:700:GLY:HA3	2:B:714:MET:O	2.15	0.47
1:D:547:LEU:HD22	1:D:745:LEU:CD2	2.45	0.47
2:B:619:TYR:O	2:B:622:VAL:HG12	2.15	0.46
2:B:727:LEU:HD23	2:B:759:LEU:HD11	1.97	0.46
1:A:461:GLN:NE2	1:A:461:GLN:HA	2.31	0.45
1:C:477:PHE:HB3	1:C:535:HIS:CE1	2.51	0.45
1:C:467:ARG:O	1:C:471:GLU:HB2	2.16	0.45
2:B:510:ARG:NH2	2:B:607:GLY:O	2.50	0.45
1:D:596:PHE:O	1:D:600:VAL:HG23	2.17	0.45
1:D:761:GLN:O	1:D:765:VAL:HG23	2.17	0.45
2:B:703:MET:HE1	2:B:708:ILE:HG21	1.98	0.44
1:A:523:PRO:HD2	1:A:695:GLU:HG2	1.99	0.44
1:D:492:TYR:CZ	1:D:496:ARG:HD2	2.52	0.44
1:D:677:SER:OG	1:D:688:THR:HG21	2.17	0.44
1:A:611:PHE:HB3	1:A:614:LEU:HD22	1.99	0.44
1:C:700:GLY:HA3	1:C:714:MET:O	2.18	0.44
2:B:682:TRP:HB3	2:B:683:PRO:HD3	1.98	0.43
1:C:713:MET:SD	5:C:803:5MG:C11	3.06	0.43
2:B:492:TYR:CZ	2:B:496:ARG:HD2	2.53	0.43
1:A:682:TRP:N	1:A:683:PRO:CD	2.81	0.43
1:D:498:CYS:HB3	1:D:553:ARG:HB3	2.00	0.43
1:A:727:LEU:HD21	1:A:763:GLU:HG3	1.99	0.43
2:B:727:LEU:CD2	2:B:759:LEU:HD11	2.49	0.43
1:A:722:VAL:HB	1:A:723:PRO:HD3	2.01	0.43
1:A:547:LEU:HD22	1:A:745:LEU:CD2	2.49	0.42
2:B:493:MET:O	2:B:497:SER:HB2	2.19	0.42
1:A:749:GLU:N	1:A:750:PRO:CD	2.83	0.42
1:A:627:ARG:O	1:A:631:ILE:HG12	2.20	0.42
1:C:740:THR:HA	1:C:743:GLN:NE2	2.35	0.42
1:A:556:LEU:HD21	1:A:666:ILE:CG2	2.50	0.41
1:A:746:PRO:N	1:A:747:PRO:CD	2.83	0.41
1:D:722:VAL:HB	1:D:723:PRO:HD3	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:735:ILE:HB	1:D:736:PRO:HD3	2.02	0.41
1:C:677:SER:HB2	5:C:803:5MG:CL1	2.58	0.41
1:D:619:TYR:O	1:D:623:LEU:HD23	2.20	0.41
1:A:477:PHE:HB3	1:A:535:HIS:CE1	2.56	0.41
1:D:703:MET:HE1	1:D:708:ILE:HG21	2.02	0.41
1:D:565:LEU:O	1:D:595:HIS:ND1	2.45	0.40
1:D:535:HIS:O	1:D:538:TYR:HB3	2.22	0.40
1:A:638:TYR:OH	1:A:642:ARG:HD3	2.22	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	310/315 (98%)	299 (96%)	11 (4%)	0	100	100
1	C	310/315 (98%)	302 (97%)	8 (3%)	0	100	100
1	D	310/315 (98%)	296 (96%)	14 (4%)	0	100	100
2	B	312/316 (99%)	306 (98%)	6 (2%)	0	100	100
All	All	1242/1261 (98%)	1203 (97%)	39 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	281/282 (100%)	273 (97%)	8 (3%)	49	65
1	C	281/282 (100%)	274 (98%)	7 (2%)	53	70
1	D	280/282 (99%)	272 (97%)	8 (3%)	48	64
2	B	281/282 (100%)	271 (96%)	10 (4%)	40	55
All	All	1123/1128 (100%)	1090 (97%)	33 (3%)	48	64

All (33) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	471	GLU
1	A	496	ARG
1	A	500	THR
1	A	553	ARG
1	A	605	LEU
1	A	614	LEU
1	A	638	TYR
1	A	760	SER
2	B	471	GLU
2	B	504	GLU
2	B	575	LEU
2	B	576	GLN
2	B	597	SER
2	B	605	LEU
2	B	606	GLU
2	B	613	THR
2	B	650	GLN
2	B	727	LEU
1	C	471	GLU
1	C	504	GLU
1	C	517	LYS
1	C	547	LEU
1	C	576	GLN
1	C	605	LEU
1	C	617	SER
1	D	459	LEU
1	D	500	THR
1	D	575	LEU
1	D	605	LEU
1	D	638	TYR
1	D	644	GLN
1	D	709	GLN
1	D	720	ASP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (23) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	484	ASN
1	A	604	GLN
1	A	644	GLN
1	A	724	GLN
1	A	743	GLN
2	B	495	HIS
2	B	576	GLN
2	B	604	GLN
2	B	709	GLN
2	B	731	ASN
2	B	743	GLN
2	B	761	GLN
1	C	542	GLN
1	C	576	GLN
1	C	604	GLN
1	C	743	GLN
1	D	542	GLN
1	D	604	GLN
1	D	644	GLN
1	D	709	GLN
1	D	731	ASN
1	D	743	GLN
1	D	761	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

4 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	CME	A	509	1	9,9,10	0.58	0	6,9,11	2.30	2 (33%)
2	CME	B	509	2	9,9,10	0.61	0	6,9,11	1.67	2 (33%)
1	CME	C	509	1	9,9,10	0.71	0	6,9,11	2.16	2 (33%)
1	CME	D	509	1	9,9,10	0.58	0	6,9,11	1.41	1 (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
1	CME	A	509	1	-	0/5/8/10	0/0/0/0
2	CME	B	509	2	-	0/5/8/10	0/0/0/0
1	CME	C	509	1	-	0/5/8/10	0/0/0/0
1	CME	D	509	1	-	0/5/8/10	0/0/0/0

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	509	CME	CB-SG-SD	-4.77	94.55	103.83
1	C	509	CME	CB-SG-SD	-4.12	95.81	103.83
2	B	509	CME	CB-SG-SD	-2.26	99.43	103.83
1	A	509	CME	CE-SD-SG	2.30	114.95	103.40
1	C	509	CME	CE-SD-SG	2.50	115.99	103.40
2	B	509	CME	CE-SD-SG	2.78	117.37	103.40
1	D	509	CME	CE-SD-SG	2.83	117.60	103.40

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry

Of 12 ligands modelled in this entry, 8 are monoatomic - leaving 4 for Mogul analysis.

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$
5	5MG	A	803	-	30,33,33	1.24	3 (10%)	33,48,48	1.35	7 (21%)
5	5MG	B	803	-	30,33,33	1.36	4 (13%)	33,48,48	1.31	6 (18%)
5	5MG	C	803	-	30,33,33	1.31	4 (13%)	33,48,48	1.36	5 (15%)
5	5MG	D	803	-	30,33,33	1.31	3 (10%)	33,48,48	1.38	7 (21%)

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
5	5MG	A	803	-	-	0/13/17/17	0/4/4/4
5	5MG	B	803	-	-	0/13/17/17	0/4/4/4
5	5MG	C	803	-	-	0/13/17/17	0/4/4/4
5	5MG	D	803	-	-	0/13/17/17	0/4/4/4

All (14) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	B	803	5MG	C2-N3	-2.83	1.30	1.33
5	C	803	5MG	C2-C1	-2.63	1.45	1.49
5	B	803	5MG	C8-N6	-2.61	1.31	1.34
5	C	803	5MG	C2-N3	-2.53	1.31	1.33
5	B	803	5MG	C2-C1	-2.42	1.46	1.49
5	A	803	5MG	C2-C1	-2.25	1.46	1.49
5	D	803	5MG	C2-N3	-2.22	1.31	1.33
5	C	803	5MG	C8-N6	-2.16	1.31	1.34
5	A	803	5MG	C2-N3	-2.01	1.31	1.33
5	A	803	5MG	O16-C12	2.11	1.45	1.31
5	D	803	5MG	O16-C12	2.14	1.45	1.31

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	C	803	5MG	C10-C9	2.25	1.42	1.37
5	B	803	5MG	C10-C9	2.77	1.43	1.37
5	D	803	5MG	C10-C9	3.00	1.43	1.37

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	C	803	5MG	C10-C9-C2	-3.05	116.08	120.15
5	A	803	5MG	C23-C13-C14	-3.05	118.53	121.55
5	D	803	5MG	C10-C9-C2	-2.99	116.16	120.15
5	A	803	5MG	C10-C9-C2	-2.91	116.27	120.15
5	D	803	5MG	C9-C2-N3	-2.77	119.39	122.59
5	B	803	5MG	C10-C9-C2	-2.74	116.49	120.15
5	B	803	5MG	C9-C2-N3	-2.69	119.49	122.59
5	B	803	5MG	C1-C4-N6	-2.49	107.03	113.76
5	A	803	5MG	C1-C4-N6	-2.48	107.06	113.76
5	D	803	5MG	C1-C4-N6	-2.47	107.08	113.76
5	B	803	5MG	C4-C1-N7	-2.36	107.38	113.76
5	D	803	5MG	C4-C1-N7	-2.36	107.39	113.76
5	C	803	5MG	C1-C4-N6	-2.34	107.45	113.76
5	C	803	5MG	C4-C1-N7	-2.17	107.89	113.76
5	A	803	5MG	C4-C1-N7	-2.17	107.90	113.76
5	C	803	5MG	C27-C15-C4	-2.08	117.32	120.59
5	D	803	5MG	C14-C13-N5	2.01	121.58	119.13
5	A	803	5MG	C13-C14-C17	2.21	121.87	119.64
5	D	803	5MG	C11-N5-C13	2.43	123.08	119.88
5	A	803	5MG	C1-C2-N3	2.55	117.19	113.36
5	A	803	5MG	C11-N5-C13	2.59	123.29	119.88
5	B	803	5MG	C1-C2-N3	2.71	117.43	113.36
5	B	803	5MG	C11-N5-C13	3.03	123.87	119.88
5	D	803	5MG	C1-C2-N3	3.55	118.69	113.36
5	C	803	5MG	C1-C2-N3	3.88	119.18	113.36

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

3 monomers are involved in 10 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	803	5MG	3	0
5	C	803	5MG	2	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	D	803	5MG	5	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	312/315 (99%)	-0.05	1 (0%) 93 96	26, 40, 62, 79	0
1	C	312/315 (99%)	-0.13	3 (0%) 82 86	27, 41, 63, 77	0
1	D	312/315 (99%)	0.31	26 (8%) 12 16	44, 60, 79, 80	0
2	B	314/316 (99%)	0.06	7 (2%) 62 69	28, 42, 66, 80	0
All	All	1250/1261 (99%)	0.05	37 (2%) 51 58	26, 46, 73, 80	0

All (37) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	765	VAL	4.9
2	B	771	ALA	4.7
1	D	720	ASP	4.2
1	D	654	LEU	4.1
1	D	681	LEU	3.9
1	D	649	TYR	3.6
1	D	657	ASN	3.5
2	B	769	GLU	3.5
1	D	470	ARG	3.2
1	D	505	LEU	3.2
1	D	460	MET	3.1
1	A	460	MET	3.0
1	C	460	MET	3.0
1	D	767	ARG	2.9
1	C	770	GLU	2.9
1	D	606	GLU	2.9
2	B	770	GLU	2.7
1	D	718	LYS	2.7
2	B	606	GLU	2.6
1	D	768	GLY	2.6
2	B	768	GLY	2.6

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Mol	Chain	Res	Type	RSRZ
1	D	766	ILE	2.5
1	C	768	GLY	2.5
1	D	721	GLU	2.5
1	D	656	LEU	2.4
1	D	714	MET	2.3
1	D	764	LYS	2.3
1	D	456	ALA	2.3
1	D	458	GLY	2.2
1	D	462	PHE	2.1
1	D	661	HIS	2.1
1	D	500	THR	2.1
1	D	762	TRP	2.1
2	B	460	MET	2.0
1	D	725	GLY	2.0
2	B	727	LEU	2.0
1	D	653	SER	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	LLDF	B-factors(Å ²)	Q<0.9
1	CME	A	509	10/11	0.87	0.14	-	51,53,66,66	0
1	CME	C	509	10/11	0.90	0.15	-	46,48,66,67	0
2	CME	B	509	10/11	0.82	0.23	-	49,52,71,71	0
1	CME	D	509	10/11	0.72	0.31	-	69,71,80,80	0

6.3 Carbohydrates [i](#)

There are no carbohydrates 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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains.

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	LLDF	B-factors(Å ²)	Q<0.9
5	5MG	A	803	30/30	0.74	0.28	5.47	49,55,59,61	0
5	5MG	D	803	30/30	0.76	0.31	4.73	58,62,66,67	0
5	5MG	B	803	30/30	0.78	0.26	3.60	47,53,59,61	0
5	5MG	C	803	30/30	0.89	0.22	3.39	45,48,57,58	0
4	MG	B	802	1/1	0.98	0.12	0.02	27,27,27,27	0
3	ZN	B	801	1/1	1.00	0.11	-1.23	33,33,33,33	0
3	ZN	A	801	1/1	1.00	0.13	-1.34	33,33,33,33	0
4	MG	A	802	1/1	0.99	0.09	-1.67	25,25,25,25	0
3	ZN	C	801	1/1	1.00	0.11	-2.33	32,32,32,32	0
3	ZN	D	801	1/1	0.99	0.06	-2.76	50,50,50,50	0
4	MG	C	802	1/1	0.96	0.10	-2.81	26,26,26,26	0
4	MG	D	802	1/1	0.95	0.05	-4.53	43,43,43,43	0

6.5 Other polymers [i](#)

There are no such residues in this entry.