



# Full wwPDB X-ray Structure Validation Report

Feb 28, 2014 – 09:53 AM GMT

PDB ID : 1MC0  
Title : Regulatory Segment of Mouse 3',5'-Cyclic Nucleotide Phosphodiesterase 2A,  
Containing the GAF A and GAF B Domains  
Authors : Martinez, S.; Wu, A.; Glavas, N.; Tang, X.; Turley, S.; Hol, W.; Beavo, J.  
Deposited on : 2002-08-04  
Resolution : 2.86 Å(reported)

This is a full wwPDB validation report for a publicly released PDB entry.  
We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)  
A user guide is available at <http://wwpdb.org/ValidationPDFNotes.html>

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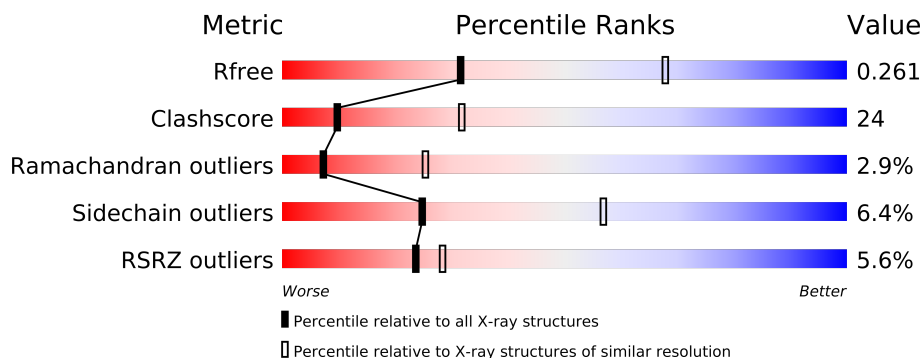
The following versions of software and data (see [references](#)) were used in the production of this report:

MolProbity : 4.02b-467  
Mogul : 1.15 2013  
Xtriage (Phenix) : dev-1323  
EDS : stable22639  
Percentile statistics : 21963  
Refmac : 5.8.0049  
CCP4 : 6.3.0 (Settle)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et. al. (1996)  
Validation Pipeline (wwPDB-VP) : stable22683

# 1 Overall quality at a glance

The reported resolution of this entry is 2.86 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))
$R_{free}$	66092	1524 (2.90-2.82)
Clashscore	79885	1879 (2.90-2.82)
Ramachandran outliers	78287	1824 (2.90-2.82)
Sidechain outliers	78261	1827 (2.90-2.82)
RSRZ outliers	66119	1526 (2.90-2.82)

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  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density.

Mol	Chain	Length	Quality of chain
1	A	368	

## 2 Entry composition i

There are 3 unique types of molecules in this entry. The entry contains 2727 atoms, of which 0 are hydrogen and 0 are deuterium.

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.

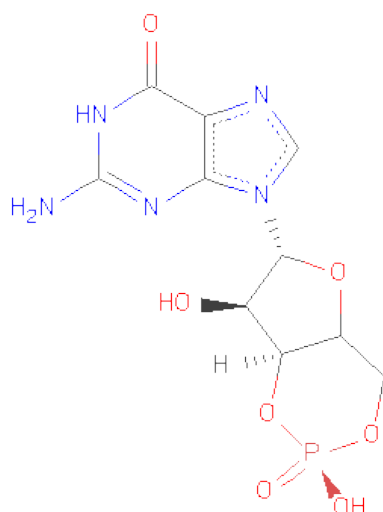
- Molecule 1 is a protein called 3',5'-cyclic nucleotide phosphodiesterase 2A.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	341	2666	1687	441	521	17	0	0	0

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	567	LEU	-	EXPRESSION TAG	UNP P60618
A	568	GLU	-	EXPRESSION TAG	UNP P60618
A	569	HIS	-	EXPRESSION TAG	UNP P60618
A	570	HIS	-	EXPRESSION TAG	UNP P60618
A	571	HIS	-	EXPRESSION TAG	UNP P60618
A	572	HIS	-	EXPRESSION TAG	UNP P60618
A	573	HIS	-	EXPRESSION TAG	UNP P60618
A	574	HIS	-	EXPRESSION TAG	UNP P60618

- Molecule 2 is CYCLIC GUANOSINE MONOPHOSPHATE (three-letter code: PCG) (formula: C<sub>10</sub>H<sub>12</sub>N<sub>5</sub>O<sub>7</sub>P).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	0	0
			23	10	5	7	1		

- Molecule 3 is water.

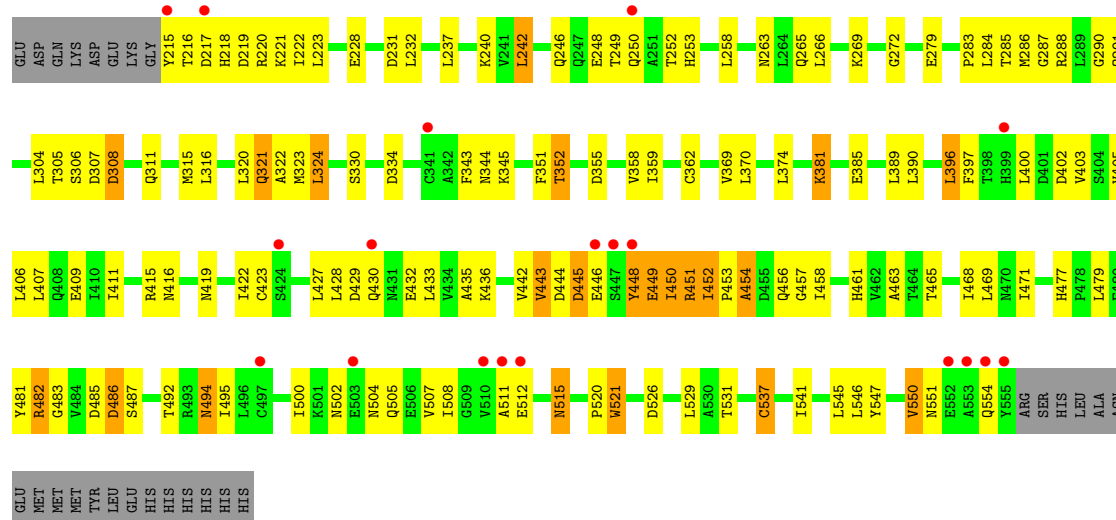
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	38	Total	O	0	0
			38	38		

### 3 Residue-property plots

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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: 3',5'-cyclic nucleotide phosphodiesterase 2A

Chain A: 



## 4 Data and refinement statistics

Property	Value	Source
Space group	F 2 2 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	134.20Å 136.20Å 149.10Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.97 – 2.86 19.97 – 2.86	Depositor EDS
% Data completeness (in resolution range)	96.2 (19.97-2.86) 96.3 (19.97-2.86)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.06	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.73 (at 2.88Å)	Xtriage
Refinement program	CNS 1.0	Depositor
R, $R_{free}$	0.221 , 0.266 0.220 , 0.261	Depositor DCC
$R_{free}$ test set	756 reflections (4.95%)	DCC
Wilson B-factor (Å <sup>2</sup> )	76.1	Xtriage
Anisotropy	0.753	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.31 , 55.2	EDS
Estimated twinning fraction	0.021 for -k,-h,-l	Xtriage
L-test for twinning	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtriage
Outliers	1 of 15282 reflections (0.007%)	Xtriage
$F_o, F_c$ correlation	0.95	EDS
Total number of atoms	2727	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	88.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.10% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: PCG

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	0/2708	0.63	0/3672

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 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 hydrogens added by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, and the number in parentheses is this value normalized per 1000 atoms of the molecule in the chain. The Symm-Clashes column gives symmetry related clashes, in the same way as for the Clashes column.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2666	0	2637	129	1
2	A	23	0	11	3	0
3	A	38	0	0	1	0
All	All	2727	0	2648	129	1

Clashscore is defined as the number of clashes calculated for the entry per 1000 atoms (including hydrogens) of the entry. The overall clashscore for this entry is 24.

All (129) close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:451:ARG:H	1:A:451:ARG:NE	1.65	0.93

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:547:TYR:HA	1:A:550:VAL:HG22	1.51	0.92
1:A:449:GLU:HG2	1:A:450:ILE:H	1.41	0.86
1:A:444:ASP:O	1:A:445:ASP:HB2	1.77	0.83
1:A:381:LYS:O	1:A:385:GLU:HG3	1.80	0.82
1:A:284:LEU:HD22	1:A:290:GLY:HA2	1.60	0.82
1:A:494:ASN:ND2	1:A:521:TRP:HA	1.95	0.80
1:A:411:ILE:HD12	1:A:511:ALA:HB1	1.63	0.79
1:A:216:THR:HA	1:A:219:ASP:HB2	1.64	0.78
1:A:305:THR:HB	1:A:308:ASP:OD1	1.84	0.78
1:A:492:THR:HG21	1:A:495:ILE:HD11	1.67	0.75
1:A:453:PRO:HG2	1:A:456:GLN:HB3	1.71	0.73
1:A:427:LEU:HD13	1:A:436:LYS:HB2	1.68	0.73
1:A:396:LEU:HD22	1:A:396:LEU:O	1.88	0.72
1:A:481:TYR:CZ	1:A:483:GLY:HA3	2.25	0.71
1:A:435:ALA:HB3	1:A:450:ILE:HB	1.73	0.70
1:A:305:THR:HG22	1:A:306:SER:N	2.07	0.70
1:A:397:PHE:HA	1:A:400:LEU:HD23	1.75	0.68
1:A:269:LYS:HE2	1:A:279:GLU:OE2	1.94	0.68
1:A:323:MET:HG2	1:A:324:LEU:N	2.09	0.67
1:A:428:LEU:HD11	1:A:454:ALA:CB	2.24	0.67
1:A:288:ARG:NH1	1:A:291:GLN:HB3	2.09	0.67
1:A:428:LEU:HD11	1:A:454:ALA:HB2	1.76	0.67
1:A:500:ILE:O	1:A:508:ILE:HG12	1.96	0.66
1:A:220:ARG:HG3	1:A:221:LYS:N	2.11	0.64
1:A:305:THR:HG22	1:A:307:ASP:H	1.63	0.64
1:A:411:ILE:CD1	1:A:511:ALA:HB1	2.27	0.64
1:A:458:ILE:HG23	1:A:469:LEU:HD23	1.80	0.63
1:A:452:ILE:HG12	1:A:453:PRO:HD2	1.82	0.62
1:A:222:ILE:HD11	1:A:362:CYS:HA	1.83	0.61
1:A:406:LEU:HD23	1:A:407:LEU:H	1.66	0.60
1:A:547:TYR:HA	1:A:550:VAL:CG2	2.29	0.59
1:A:397:PHE:O	1:A:400:LEU:HD23	2.02	0.59
1:A:397:PHE:HA	1:A:400:LEU:CD2	2.35	0.57
1:A:435:ALA:O	1:A:443:VAL:HG21	2.05	0.57
1:A:252:THR:HG22	1:A:253:HIS:CE1	2.40	0.57
1:A:215:TYR:O	1:A:218:HIS:N	2.38	0.57
1:A:285:THR:O	1:A:287:GLY:N	2.33	0.57
1:A:502:ASN:HB3	1:A:508:ILE:HG21	1.87	0.56
1:A:457:GLY:HA2	1:A:479:LEU:O	2.05	0.56
1:A:237:LEU:HB3	1:A:370:LEU:HD22	1.89	0.55
1:A:305:THR:CG2	1:A:306:SER:N	2.70	0.54
1:A:415:ARG:NH1	1:A:416:ASN:OD1	2.40	0.54

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:311:GLN:HG3	1:A:315:MET:CE	2.37	0.54
1:A:316:LEU:HD11	1:A:343:PHE:CD2	2.43	0.54
1:A:512:GLU:OE2	2:A:160:PCG:H3'	2.06	0.54
1:A:451:ARG:CD	1:A:451:ARG:H	2.21	0.54
1:A:304:LEU:HB3	1:A:308:ASP:HB2	1.90	0.54
1:A:451:ARG:N	1:A:451:ARG:NE	2.48	0.54
1:A:266:LEU:HG	1:A:284:LEU:HD21	1.91	0.53
1:A:402:ASP:HB3	1:A:405:VAL:HG23	1.91	0.53
1:A:546:LEU:HD23	1:A:546:LEU:C	2.29	0.53
1:A:237:LEU:HB3	1:A:370:LEU:CD2	2.39	0.53
1:A:505:GLN:O	1:A:505:GLN:HG2	2.09	0.52
1:A:288:ARG:HH11	1:A:291:GLN:HB3	1.74	0.52
1:A:249:THR:O	1:A:250:GLN:HB3	2.09	0.52
1:A:502:ASN:OD1	1:A:504:ASN:HB2	2.10	0.52
1:A:403:VAL:O	1:A:407:LEU:HB2	2.10	0.51
1:A:541:ILE:O	1:A:545:LEU:HG	2.11	0.51
1:A:456:GLN:CG	1:A:457:GLY:N	2.74	0.51
1:A:321:GLN:HE21	1:A:322:ALA:HB2	1.76	0.51
1:A:494:ASN:HD22	1:A:521:TRP:HA	1.75	0.51
1:A:477:HIS:CD2	1:A:479:LEU:H	2.29	0.51
1:A:481:TYR:CE2	1:A:483:GLY:HA3	2.47	0.50
1:A:266:LEU:HG	1:A:284:LEU:CD2	2.42	0.50
1:A:403:VAL:O	1:A:406:LEU:HD23	2.11	0.50
1:A:330:SER:O	1:A:334:ASP:HA	2.13	0.49
1:A:512:GLU:OE2	2:A:160:PCG:H8	2.12	0.49
1:A:449:GLU:HG2	1:A:450:ILE:N	2.18	0.49
1:A:463:ALA:HA	1:A:507:VAL:HG11	1.94	0.48
1:A:456:GLN:HG2	1:A:457:GLY:N	2.28	0.48
1:A:427:LEU:HD13	1:A:436:LYS:CB	2.41	0.48
1:A:547:TYR:O	1:A:551:ASN:HB2	2.13	0.48
1:A:449:GLU:O	1:A:450:ILE:HG12	2.14	0.47
1:A:452:ILE:HD11	1:A:481:TYR:CE2	2.50	0.47
1:A:432:GLU:HA	1:A:452:ILE:O	2.14	0.47
1:A:494:ASN:ND2	1:A:520:PRO:O	2.48	0.47
1:A:320:LEU:HD11	1:A:343:PHE:CD1	2.49	0.47
1:A:400:LEU:N	1:A:400:LEU:HD22	2.30	0.47
1:A:411:ILE:HG12	1:A:423:CYS:HB2	1.97	0.46
1:A:458:ILE:HD13	1:A:471:ILE:HD12	1.98	0.46
1:A:345:LYS:NZ	1:A:352:THR:HG23	2.30	0.46
1:A:445:ASP:HB3	1:A:448:TYR:CE1	2.49	0.46
1:A:406:LEU:HA	1:A:409:GLU:HG2	1.97	0.46
1:A:321:GLN:NE2	1:A:322:ALA:HB2	2.30	0.46

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:458:ILE:HG12	1:A:471:ILE:CD1	2.46	0.46
1:A:250:GLN:HG2	1:A:250:GLN:O	2.16	0.46
1:A:468:ILE:HD11	1:A:531:THR:HA	1.98	0.46
1:A:500:ILE:HG23	1:A:537:CYS:HB3	1.97	0.46
1:A:358:VAL:CG1	1:A:359:ILE:N	2.79	0.46
1:A:427:LEU:CD1	1:A:436:LYS:HB2	2.41	0.45
1:A:485:ASP:C	1:A:487:SER:H	2.19	0.45
1:A:355:ASP:O	1:A:358:VAL:HG12	2.16	0.45
1:A:258:LEU:HD13	1:A:374:LEU:HD21	1.98	0.45
1:A:304:LEU:HD11	1:A:323:MET:SD	2.57	0.45
1:A:442:VAL:O	1:A:443:VAL:C	2.55	0.45
1:A:427:LEU:N	1:A:427:LEU:HD12	2.32	0.44
1:A:550:VAL:O	1:A:550:VAL:HG23	2.17	0.44
1:A:324:LEU:HD12	1:A:351:PHE:HB3	1.98	0.44
1:A:246:GLN:OE1	1:A:272:GLY:HA2	2.17	0.44
1:A:482:ARG:O	1:A:486:ASP:OD1	2.36	0.44
1:A:242:LEU:HD12	1:A:242:LEU:HA	1.80	0.44
1:A:323:MET:HG3	1:A:343:PHE:CE1	2.53	0.44
1:A:428:LEU:HD11	1:A:454:ALA:HB1	1.98	0.44
1:A:215:TYR:C	1:A:217:ASP:N	2.69	0.44
1:A:546:LEU:O	1:A:550:VAL:HG13	2.18	0.44
1:A:397:PHE:CA	1:A:400:LEU:HD23	2.43	0.44
1:A:451:ARG:CD	1:A:451:ARG:N	2.81	0.43
1:A:228:GLU:O	1:A:240:LYS:NZ	2.39	0.43
1:A:305:THR:HG22	1:A:306:SER:H	1.79	0.43
1:A:358:VAL:HG13	1:A:359:ILE:N	2.33	0.43
1:A:397:PHE:C	1:A:400:LEU:HD23	2.38	0.43
1:A:433:LEU:N	1:A:452:ILE:O	2.52	0.43
1:A:461:HIS:O	1:A:465:THR:HG23	2.17	0.43
1:A:263:ASN:O	1:A:284:LEU:HD12	2.19	0.42
1:A:305:THR:CG2	1:A:306:SER:H	2.32	0.42
1:A:248:GLU:HB3	1:A:358:VAL:HG21	2.00	0.42
1:A:422:ILE:HD12	2:A:160:PCG:N1	2.35	0.42
1:A:429:ASP:O	1:A:430:GLN:HB3	2.19	0.42
1:A:232:LEU:HA	3:A:5:HOH:O	2.18	0.42
1:A:526:ASP:HA	1:A:529:LEU:HD12	2.03	0.41
1:A:494:ASN:OD1	1:A:515:ASN:HA	2.21	0.41
1:A:222:ILE:HG22	1:A:223:LEU:N	2.35	0.41
1:A:492:THR:HG21	1:A:495:ILE:CD1	2.45	0.41
1:A:215:TYR:C	1:A:217:ASP:H	2.24	0.41
1:A:265:GLN:HG2	1:A:283:PRO:HA	2.03	0.41
1:A:446:GLU:O	1:A:449:GLU:HB2	2.21	0.41

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:448:TYR:HD1	1:A:448:TYR:H	1.67	0.41
1:A:433:LEU:O	1:A:451:ARG:HA	2.21	0.40

All (1) 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	Distance(Å)	Clash(Å)
1:A:390:LEU:CD1	1:A:390:LEU:CD1[14_655]	2.17	0.03

## 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	339/368 (92%)	303 (89%)	26 (8%)	10 (3%)	7	25

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	286	MET
1	A	445	ASP
1	A	352	THR
1	A	449	GLU
1	A	344	ASN
1	A	550	VAL
1	A	454	ALA
1	A	515	ASN
1	A	443	VAL
1	A	450	ILE

### 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	299/324 (92%)	280 (94%)	19 (6%)	25 57

All (19) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	231	ASP
1	A	242	LEU
1	A	308	ASP
1	A	321	GLN
1	A	324	LEU
1	A	369	VAL
1	A	381	LYS
1	A	389	LEU
1	A	396	LEU
1	A	419	ASN
1	A	448	TYR
1	A	451	ARG
1	A	452	ILE
1	A	482	ARG
1	A	486	ASP
1	A	494	ASN
1	A	521	TRP
1	A	537	CYS
1	A	554	GLN

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	247	GLN
1	A	321	GLN
1	A	360	GLN
1	A	364	HIS
1	A	419	ASN
1	A	456	GLN
1	A	467	GLN
1	A	477	HIS
1	A	505	GLN

### 5.3.3 RNA ⓘ

There are no RNA chains in this entry.

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

There are no non-standard protein/DNA/RNA residues in this entry.

## 5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

## 5.6 Ligand geometry ⓘ

1 ligand is 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	PCG	A	160	-	26,26,26	2.33	12 (46%)	38,41,41	4.02	17 (44%)

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	PCG	A	160	-	-	0/4/31/31	0/0/4/4

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	160	PCG	O3'-C3'	4.50	1.51	1.44
2	A	160	PCG	C4-N3	4.33	1.43	1.35
2	A	160	PCG	PA-O5'	-3.86	1.50	1.58
2	A	160	PCG	PA-O3'	-3.49	1.51	1.58
2	A	160	PCG	C6-N1	3.42	1.42	1.37
2	A	160	PCG	C5-N7	-3.08	1.28	1.40
2	A	160	PCG	C4-N9	3.04	1.42	1.37
2	A	160	PCG	C2-N3	2.74	1.37	1.33

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	160	PCG	C6-C5	2.70	1.45	1.41
2	A	160	PCG	C2-N1	2.55	1.40	1.36
2	A	160	PCG	C8-N9	2.48	1.40	1.36
2	A	160	PCG	C2-N2	2.14	1.35	1.32

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	160	PCG	C6-C5-N7	11.12	135.64	134.14
2	A	160	PCG	O5'-PA-O3'	-9.21	93.17	105.81
2	A	160	PCG	O3'-C3'-C2'	8.70	125.63	115.62
2	A	160	PCG	O1A-PA-O3'	7.99	123.78	107.39
2	A	160	PCG	C1'-N9-C4	-7.43	113.80	126.64
2	A	160	PCG	C8-N9-C1'	5.85	137.90	126.38
2	A	160	PCG	C2'-C3'-C4'	-5.80	91.88	103.16
2	A	160	PCG	C4'-O4'-C1'	-4.67	104.68	109.75
2	A	160	PCG	C6-N1-C2	4.05	126.59	119.51
2	A	160	PCG	C8-N7-C5	4.03	116.07	103.58
2	A	160	PCG	C4-C5-N7	-3.38	106.63	109.52
2	A	160	PCG	N7-C8-N9	-3.33	104.95	114.36
2	A	160	PCG	O3'-C3'-C4'	3.30	113.38	110.73
2	A	160	PCG	O2'-C2'-C3'	3.28	120.84	111.20
2	A	160	PCG	O3'-PA-O2A	2.76	115.90	109.99
2	A	160	PCG	O4'-C4'-C5'	2.29	119.19	111.97
2	A	160	PCG	C5-C4-N9	-2.16	104.05	107.16

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

## 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 ⓘ

### 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<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	341/368 (92%)	0.03	19 (5%) 24 28	57, 83, 137, 167	0

All (19) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	555	TYR	4.9
1	A	215	TYR	4.3
1	A	446	GLU	4.2
1	A	511	ALA	4.1
1	A	447	SER	4.0
1	A	554	GLN	3.8
1	A	424	SER	3.7
1	A	512	GLU	3.4
1	A	217	ASP	3.2
1	A	430	GLN	3.1
1	A	553	ALA	2.9
1	A	552	GLU	2.8
1	A	341	CYS	2.8
1	A	510	VAL	2.7
1	A	503	GLU	2.7
1	A	497	CYS	2.4
1	A	448	TYR	2.3
1	A	250	GLN	2.2
1	A	399	HIS	2.0

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

There are no non-standard protein/DNA/RNA residues in this entry.

### 6.3 Carbohydrates

There are no carbohydrates 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. 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, 95<sup>th</sup> 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	RSR	LLDF	B-factors( $\text{\AA}^2$ )	Q<0.9
2	PCG	A	160	23/23	0.23	0.34	74,77,86,89	0

### 6.5 Other polymers

There are no such residues in this entry.