



# Full wwPDB X-ray Structure Validation Report ⓘ

Mar 18, 2026 – 07:28 AM UTC

PDB ID : 5MO8 / pdb\_00005mo8  
Title : Crystal Structure of CK2alpha with N-(3-(((2-chloro-[1,1'-biphenyl]-4-yl)methyl)amino)propyl)methanesulfonamide bound  
Authors : Brear, P.; De Fusco, C.; Georgiou, K.; Iegre, J.; Sore, H.; Hyvonen, M.; Spring, D.  
Deposited on : 2016-12-13  
Resolution : 1.82 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](mailto: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>.

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

MolProbity : 4-5-2 with Phenix2.0  
Mogul : 2022.3.0, CSD as543be (2022)  
Xtriage (Phenix) : 2.0  
EDS : 3.0  
Buster-report : wwPDB partial adaption of 1.1.7 (2018)  
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)  
CCP4 : 9.0.010 (Gargrove)  
Density-Fitness : 1.0.12  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.49

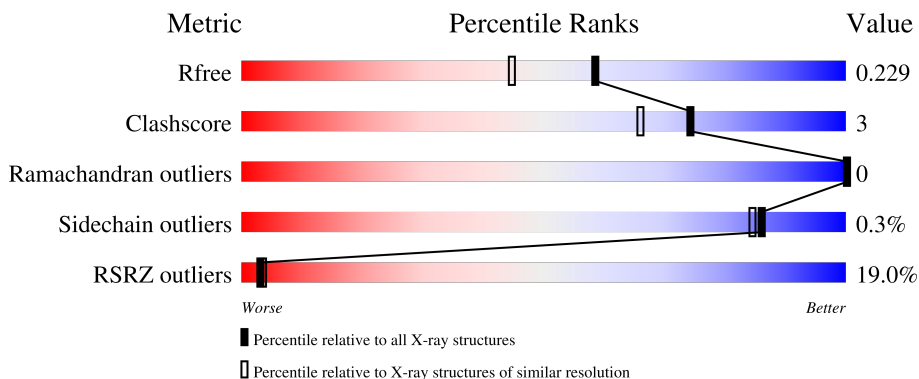
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.82 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	180053	1112 (1.82-1.82)
Clashscore	190562	1148 (1.82-1.82)
Ramachandran outliers	187476	1140 (1.82-1.82)
Sidechain outliers	187428	1140 (1.82-1.82)
RSRZ outliers	180081	1112 (1.82-1.82)

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 of the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	352	
1	B	352	

## 2 Entry composition i

There are 5 unique types of molecules in this entry. The entry contains 5828 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 Casein kinase II subunit alpha.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	325	2764	1772	485	496	11	0	2	0
1	B	324	2763	1770	485	497	11	0	3	0

There are 50 discrepancies between the modelled and reference sequences:

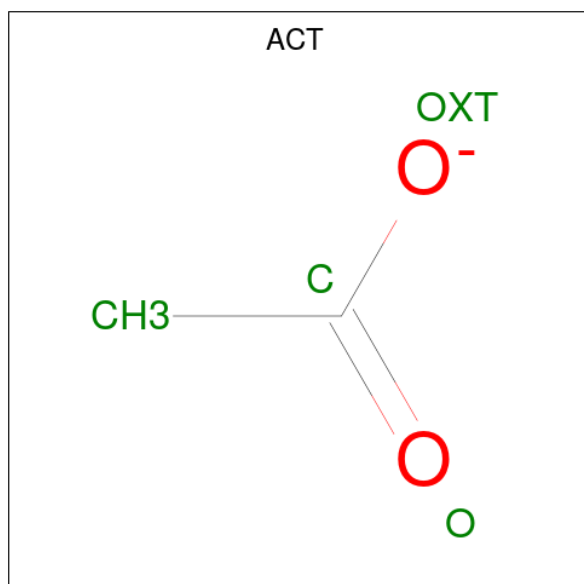
Chain	Residue	Modelled	Actual	Comment	Reference
A	-22	GLY	-	expression tag	UNP P68400
A	-21	SER	-	expression tag	UNP P68400
A	-20	MET	-	expression tag	UNP P68400
A	-19	ASP	-	expression tag	UNP P68400
A	-18	ILE	-	expression tag	UNP P68400
A	-17	GLU	-	expression tag	UNP P68400
A	-16	PHE	-	expression tag	UNP P68400
A	-15	ASP	-	expression tag	UNP P68400
A	-14	ASP	-	expression tag	UNP P68400
A	-13	ASP	-	expression tag	UNP P68400
A	-12	ALA	-	expression tag	UNP P68400
A	-11	ASP	-	expression tag	UNP P68400
A	-10	ASP	-	expression tag	UNP P68400
A	-9	ASP	-	expression tag	UNP P68400
A	-8	GLY	-	expression tag	UNP P68400
A	-7	SER	-	expression tag	UNP P68400
A	-6	GLY	-	expression tag	UNP P68400
A	-5	SER	-	expression tag	UNP P68400
A	-4	GLY	-	expression tag	UNP P68400
A	-3	SER	-	expression tag	UNP P68400
A	-2	GLY	-	expression tag	UNP P68400
A	-1	SER	-	expression tag	UNP P68400
A	0	GLY	-	expression tag	UNP P68400
A	1	SER	-	expression tag	UNP P68400
A	21	SER	ARG	engineered mutation	UNP P68400

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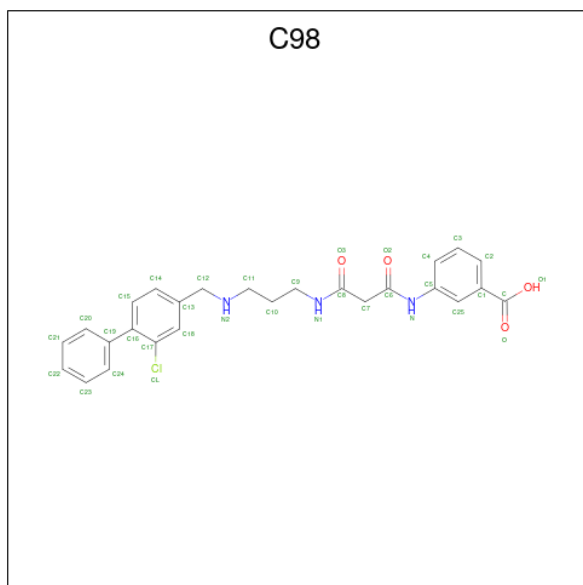
Chain	Residue	Modelled	Actual	Comment	Reference
B	-22	GLY	-	expression tag	UNP P68400
B	-21	SER	-	expression tag	UNP P68400
B	-20	MET	-	expression tag	UNP P68400
B	-19	ASP	-	expression tag	UNP P68400
B	-18	ILE	-	expression tag	UNP P68400
B	-17	GLU	-	expression tag	UNP P68400
B	-16	PHE	-	expression tag	UNP P68400
B	-15	ASP	-	expression tag	UNP P68400
B	-14	ASP	-	expression tag	UNP P68400
B	-13	ASP	-	expression tag	UNP P68400
B	-12	ALA	-	expression tag	UNP P68400
B	-11	ASP	-	expression tag	UNP P68400
B	-10	ASP	-	expression tag	UNP P68400
B	-9	ASP	-	expression tag	UNP P68400
B	-8	GLY	-	expression tag	UNP P68400
B	-7	SER	-	expression tag	UNP P68400
B	-6	GLY	-	expression tag	UNP P68400
B	-5	SER	-	expression tag	UNP P68400
B	-4	GLY	-	expression tag	UNP P68400
B	-3	SER	-	expression tag	UNP P68400
B	-2	GLY	-	expression tag	UNP P68400
B	-1	SER	-	expression tag	UNP P68400
B	0	GLY	-	expression tag	UNP P68400
B	1	SER	-	expression tag	UNP P68400
B	21	SER	ARG	engineered mutation	UNP P68400

- Molecule 2 is ACETATE ION (CCD ID: ACT) (formula: C<sub>2</sub>H<sub>3</sub>O<sub>2</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			4	2	2		
2	A	1	Total	C	O	0	0
			4	2	2		
2	A	1	Total	C	O	0	0
			4	2	2		

- Molecule 3 is 3-[[3-[3-[(3-chloranyl-4-phenyl-phenyl)methylamino]propylamino]-3-oxidanylidene-propanoyl]amino]benzoic acid (CCD ID: C98) (formula: C<sub>26</sub>H<sub>26</sub>ClN<sub>3</sub>O<sub>4</sub>).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
3	A	1	Total	C	Cl	N	O	0	0
			34	26	1	3	4		
3	B	1	Total	C	Cl	N	O	0	0
			34	26	1	3	4		

- Molecule 4 is PHOSPHATE ION (CCD ID: PO4) (formula: O<sub>4</sub>P).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total O P 5 4 1	0	0
4	B	1	Total O P 5 4 1	0	0

- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	165	Total O 165 165	0	0
5	B	46	Total O 46 46	0	0



## 4 Data and refinement statistics i

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	64.60Å 67.50Å 334.92Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	167.46 – 1.82 167.46 – 1.82	Depositor EDS
% Data completeness (in resolution range)	99.8 (167.46-1.82) 99.9 (167.46-1.82)	Depositor EDS
$R_{merge}$	0.06	Depositor
$R_{sym}$	0.06	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.36 (at 1.82Å)	Xtrriage
Refinement program	BUSTER	Depositor
R, $R_{free}$	0.205 , 0.219 0.214 , 0.229	Depositor DCC
$R_{free}$ test set	3370 reflections (4.96%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	30.9	Xtrriage
Anisotropy	0.579	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.33 , 41.0	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	0.095 for -k,-h,-l	Xtrriage
$F_o, F_c$ correlation	0.95	EDS
Total number of atoms	5828	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	53.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.13% of the height of the origin peak. No significant pseudotranslation is detected.*

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

<sup>2</sup>Theoretical 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: PO4, C98, ACT

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	0.88	0/2839	1.10	6/3841 (0.2%)
1	B	0.78	0/2838	1.16	5/3839 (0.1%)
All	All	0.84	0/5677	1.13	11/7680 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	B	0	2

There are no bond length outliers.

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	314	THR	N-CA-C	-6.47	102.19	110.53
1	A	314	THR	N-CA-C	-6.28	102.43	110.53
1	A	124	LEU	CA-C-N	5.82	128.35	120.38
1	A	124	LEU	C-N-CA	5.82	128.35	120.38
1	B	55	GLU	N-CA-C	-5.60	101.36	110.20
1	A	55	GLU	N-CA-C	-5.45	101.59	110.20
1	A	218	LEU	CA-C-N	5.28	125.84	119.98
1	A	218	LEU	C-N-CA	5.28	125.84	119.98
1	B	120	ASP	CA-C-N	5.22	127.22	120.44
1	B	120	ASP	C-N-CA	5.22	127.22	120.44
1	B	130	ASP	CA-CB-CG	5.09	117.69	112.60

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	19[A]	ARG	Mainchain
1	B	19[B]	ARG	Mainchain

## 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	2764	0	2707	21	1
1	B	2763	0	2702	15	0
2	A	12	0	9	0	0
3	A	34	0	0	3	0
3	B	34	0	0	2	0
4	A	5	0	0	0	0
4	B	5	0	0	0	0
5	A	165	0	0	0	0
5	B	46	0	0	0	0
All	All	5828	0	5418	34	1

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

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:A:128:LEU:HD13	1:A:225:MET:HE1	1.73	0.69
1:A:128:LEU:HD13	1:A:225:MET:CE	2.27	0.64
1:B:162:VAL:O	3:B:401:C98:N2	2.35	0.58
1:B:116:VAL:HB	1:B:163:MET:HE3	1.86	0.58
1:A:20:PRO:HD2	1:B:105:VAL:HG11	1.87	0.56
1:A:128:LEU:CD1	1:A:225:MET:HE1	2.35	0.55
1:A:74:LYS:HE2	1:A:77:LYS:HB2	1.88	0.54
1:B:125:TYR:HA	1:B:128:LEU:HD12	1.92	0.52
1:A:125:TYR:HA	1:A:128:LEU:HD12	1.92	0.51
1:B:116:VAL:HB	1:B:163:MET:CE	2.40	0.51
1:A:23:TYR:HB2	1:B:105:VAL:HG12	1.94	0.49
1:B:165:ASP:HB3	1:B:170:LYS:HB3	1.94	0.49
1:B:5:VAL:HB	1:B:261:TYR:HA	1.95	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:5:VAL:HB	1:A:261:TYR:HA	1.98	0.46
1:A:47:ARG:HG3	1:A:52:GLU:HG3	1.97	0.46
1:A:36:GLN:HG3	1:A:101:VAL:HG21	1.98	0.46
3:A:404:C98:CL	3:A:404:C98:C20	3.02	0.45
1:A:22:GLU:H	1:A:22:GLU:CD	2.24	0.45
1:B:163:MET:HG3	1:B:174:ILE:HD13	1.98	0.45
1:A:10:ARG:NH2	1:A:317:GLU:OE2	2.51	0.44
1:A:163:MET:HG3	1:A:174:ILE:HD13	2.01	0.43
1:B:313:LEU:HD22	1:B:317:GLU:HB3	1.99	0.43
1:A:137:MET:HE1	1:A:218:LEU:HG	2.00	0.43
1:B:190:VAL:HG11	1:B:205:ASP:HA	2.00	0.43
1:A:102:LYS:HG3	1:A:107:ARG:HA	2.00	0.43
1:A:33:TRP:CE3	1:A:100:ILE:HG22	2.53	0.43
1:A:225:MET:HG3	3:A:404:C98:C21	2.50	0.42
1:B:22:GLU:H	1:B:22:GLU:CD	2.27	0.42
1:B:303:LYS:HB3	1:B:313:LEU:HG	2.01	0.42
1:A:159:PRO:HB3	3:A:404:C98:C18	2.51	0.41
1:A:91:GLY:HA3	1:A:146:TYR:CE2	2.55	0.41
1:B:163:MET:SD	3:B:401:C98:O2	2.78	0.41
1:A:116:VAL:HG21	1:A:172:ARG:HG3	2.03	0.41
1:A:90:GLY:HA3	1:B:33:TRP:HD1	1.85	0.41

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	Interatomic distance (Å)	Clash overlap (Å)
1:A:264:GLU:OE2	1:A:280:ARG:NH1[8_597]	1.75	0.45

## 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	325/352 (92%)	318 (98%)	7 (2%)	0	100	100
1	B	325/352 (92%)	318 (98%)	7 (2%)	0	100	100
All	All	650/704 (92%)	636 (98%)	14 (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	302/319 (95%)	302 (100%)	0	100	100
1	B	302/319 (95%)	300 (99%)	2 (1%)	76	70
All	All	604/638 (95%)	602 (100%)	2 (0%)	86	84

All (2) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	230	GLU
1	B	258	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (18) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	29	HIS
1	A	36	GLN
1	A	118	ASN
1	A	126	GLN
1	A	168	HIS
1	A	186	GLN
1	A	234	HIS
1	A	262	ASN
1	A	270	ASN
1	B	16	ASN
1	B	115	HIS

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Mol	Chain	Res	Type
1	B	118	ASN
1	B	126	GLN
1	B	168	HIS
1	B	186	GLN
1	B	234	HIS
1	B	262	ASN
1	B	270	ASN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

7 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	ACT	A	402	-	3,3,3	0.93	0	3,3,3	1.07	0
3	C98	B	401	-	36,36,36	0.63	2 (5%)	47,47,47	0.61	2 (4%)
4	PO4	B	402	-	4,4,4	2.58	3 (75%)	6,6,6	0.80	0
2	ACT	A	401	-	3,3,3	1.21	0	3,3,3	1.11	0
3	C98	A	404	-	36,36,36	0.63	2 (5%)	47,47,47	0.58	2 (4%)
4	PO4	A	405	-	4,4,4	2.62	2 (50%)	6,6,6	0.89	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	ACT	A	403	-	3,3,3	1.11	0	3,3,3	1.00	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	C98	A	404	-	-	3/25/25/25	0/3/3/3
3	C98	B	401	-	-	3/25/25/25	0/3/3/3

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	405	PO4	P-O1	4.37	1.60	1.50
4	B	402	PO4	P-O1	4.29	1.60	1.50
3	A	404	C98	O1-C	-2.93	1.21	1.30
3	B	401	C98	O1-C	-2.80	1.22	1.30
3	B	401	C98	O-C	2.47	1.29	1.22
3	A	404	C98	O-C	2.26	1.29	1.22
4	A	405	PO4	P-O2	2.11	1.60	1.54
4	B	402	PO4	P-O4	2.02	1.60	1.54
4	B	402	PO4	P-O3	2.00	1.60	1.54

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	401	C98	O1-C-C1	2.75	121.91	114.84
3	A	404	C98	O1-C-C1	2.70	121.77	114.84
3	B	401	C98	O-C-C1	-2.68	114.44	121.46
3	A	404	C98	O-C-C1	-2.60	114.65	121.46

There are no chirality outliers.

All (6) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	404	C98	C13-C12-N2-C11
3	A	404	C98	O2-C6-C7-C8
3	B	401	C98	C10-C11-N2-C12
3	A	404	C98	C10-C11-N2-C12
3	B	401	C98	C7-C8-N1-C9

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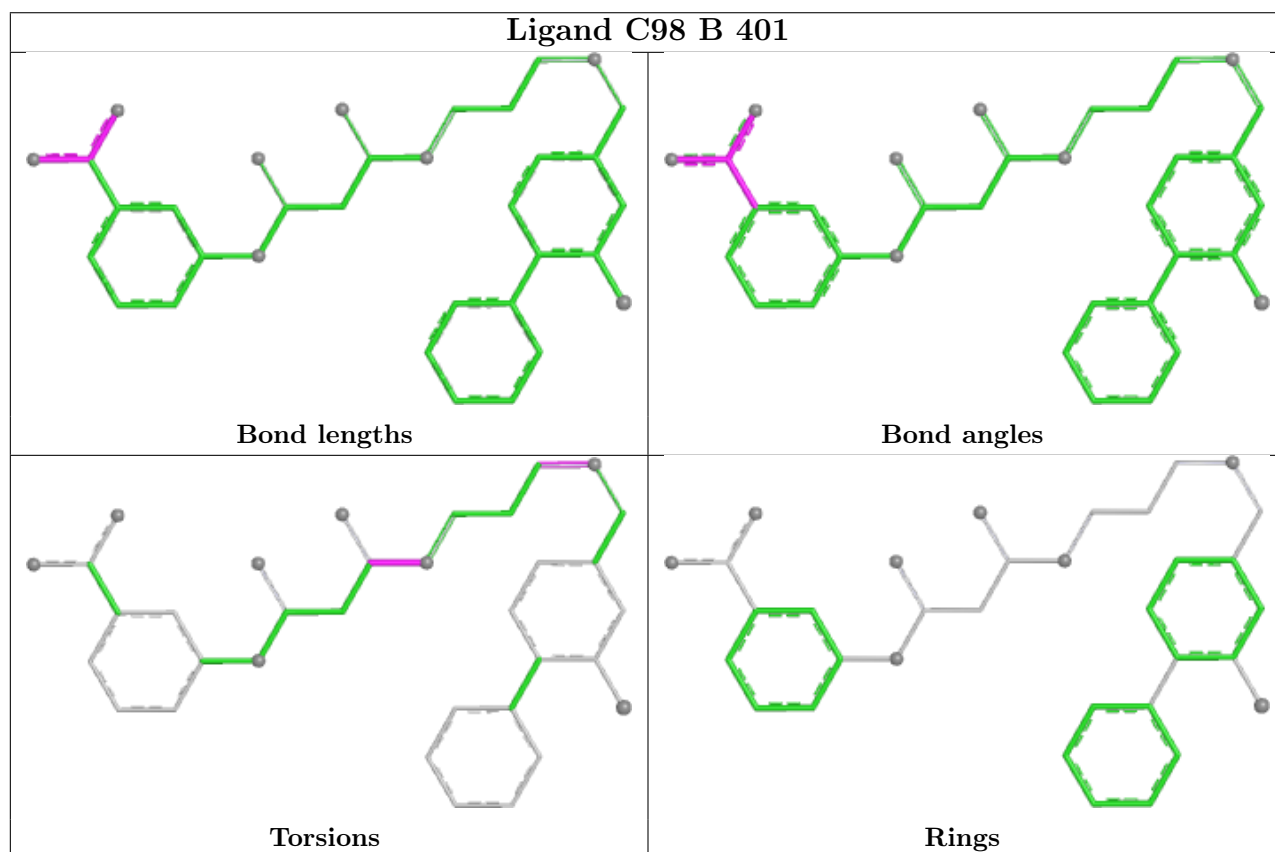
Mol	Chain	Res	Type	Atoms
3	B	401	C98	O3-C8-N1-C9

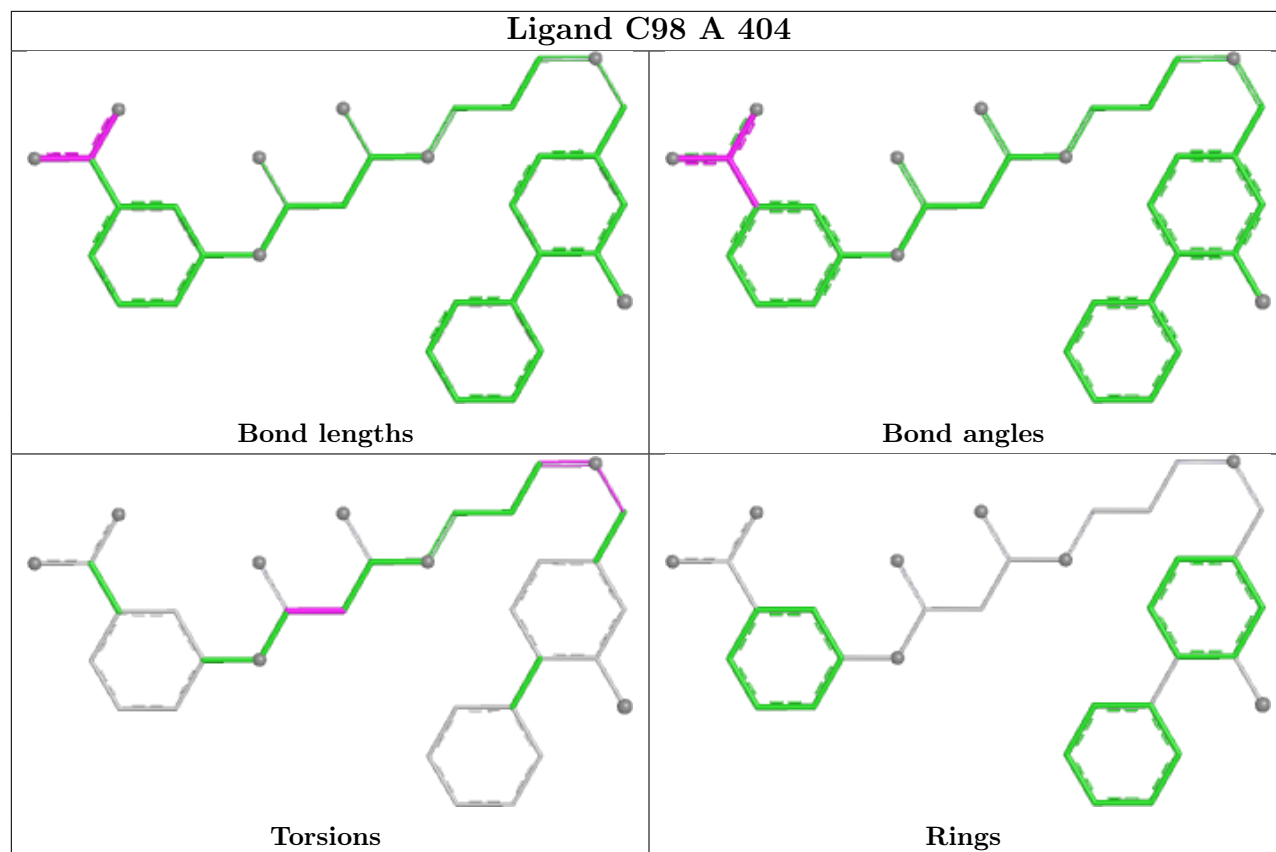
There are no ring outliers.

2 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	401	C98	2	0
3	A	404	C98	3	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.





## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 6 Fit of model and data [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	325/352 (92%)	0.19	23 (7%) 22 25	11, 31, 67, 93	2 (0%)
1	B	324/352 (92%)	1.60	100 (30%) 1 1	21, 70, 104, 124	3 (0%)
All	All	649/704 (92%)	0.90	123 (18%) 3 3	11, 50, 97, 124	5 (0%)

All (123) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	33	TRP	6.2
1	B	327	VAL	5.8
1	B	121	PHE	5.1
1	A	104	PRO	5.1
1	A	124	LEU	5.0
1	A	50	TYR	4.9
1	A	121	PHE	4.8
1	B	265	LEU	4.6
1	B	116	VAL	4.6
1	B	50	TYR	4.5
1	A	33	TRP	4.4
1	B	73	VAL	4.4
1	A	105	VAL	4.4
1	B	45	LEU	4.3
1	A	328	VAL	4.1
1	A	125	TYR	4.1
1	B	128	LEU	3.9
1	B	125	TYR	3.9
1	B	225	MET	3.9
1	B	281	TRP	3.8
1	B	124	LEU	3.7
1	B	42	VAL	3.7
1	B	31	VAL	3.6
1	B	72	PRO	3.6

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	B	59	ILE	3.5
1	B	206	TYR	3.4
1	B	4	PRO	3.4
1	B	307	TYR	3.4
1	B	204	VAL	3.3
1	B	258	ILE	3.3
1	B	166	HIS	3.2
1	A	122	LYS	3.1
1	A	49	LYS	3.1
1	B	30	VAL	3.0
1	B	104	PRO	3.0
1	B	65	VAL	3.0
1	A	34	GLY	3.0
1	B	105	VAL	2.9
1	B	74	LYS	2.9
1	B	325	TYR	2.9
1	B	272	ILE	2.9
1	B	11	VAL	2.9
1	B	268	ARG	2.9
1	B	57	ILE	2.9
1	B	249	LEU	2.9
1	B	131	TYR	2.8
1	A	128	LEU	2.8
1	B	298	LEU	2.8
1	B	254	LEU	2.8
1	B	15	VAL	2.8
1	B	123	GLN	2.7
1	B	305	LEU	2.7
1	B	71	LYS	2.7
1	B	269	PHE	2.7
1	B	263	ILE	2.7
1	B	248	VAL	2.7
1	B	107	ARG	2.6
1	B	247	LYS	2.6
1	B	66	VAL	2.6
1	B	211	TYR	2.6
1	B	300	PHE	2.6
1	A	73	VAL	2.6
1	A	71	LYS	2.6
1	B	115	HIS	2.5
1	B	119	THR	2.5
1	B	257	TYR	2.5

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Mol	Chain	Res	Type	RSRZ
1	B	64	LYS	2.5
1	B	181	PHE	2.5
1	B	41	LEU	2.5
1	B	46	GLY	2.5
1	B	270	ASN	2.5
1	B	127	THR	2.5
1	B	6	PRO	2.5
1	B	48	GLY	2.5
1	B	285	VAL	2.5
1	B	292	LEU	2.4
1	B	278	ARG	2.4
1	A	107	ARG	2.4
1	B	216	TRP	2.4
1	B	44	LYS	2.4
1	B	49	LYS	2.4
1	B	70	LEU	2.4
1	B	185	GLY	2.4
1	B	122	LYS	2.4
1	B	232	PHE	2.3
1	A	31	VAL	2.3
1	B	5	VAL	2.3
1	B	53	VAL	2.3
1	B	120	ASP	2.3
1	B	273	LEU	2.3
1	B	251	THR	2.3
1	B	323	TYR	2.3
1	B	227	PHE	2.3
1	A	268	ARG	2.2
1	B	226	ILE	2.2
1	A	126	GLN	2.2
1	B	60	THR	2.2
1	B	96	THR	2.2
1	B	280	ARG	2.2
1	B	311[A]	SER	2.2
1	B	239	TYR	2.2
1	B	117	ASN	2.2
1	B	100	ILE	2.2
1	B	55	GLU	2.2
1	A	327	VAL	2.2
1	A	103	ASP	2.1
1	B	293	VAL	2.1
1	A	32	GLU	2.1

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Mol	Chain	Res	Type	RSRZ
1	B	14	ASP	2.1
1	B	245	ILE	2.1
1	B	261	TYR	2.1
1	B	32	GLU	2.1
1	B	321	HIS	2.1
1	B	184	PRO	2.1
1	B	26	TYR	2.0
1	B	188	TYR	2.0
1	B	202	LEU	2.0
1	B	56	ALA	2.0
1	A	21	SER	2.0
1	B	51	SER	2.0
1	B	135	PHE	2.0
1	A	36	GLN	2.0
1	B	316	ARG	2.0

## 6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

## 6.3 Carbohydrates [i](#)

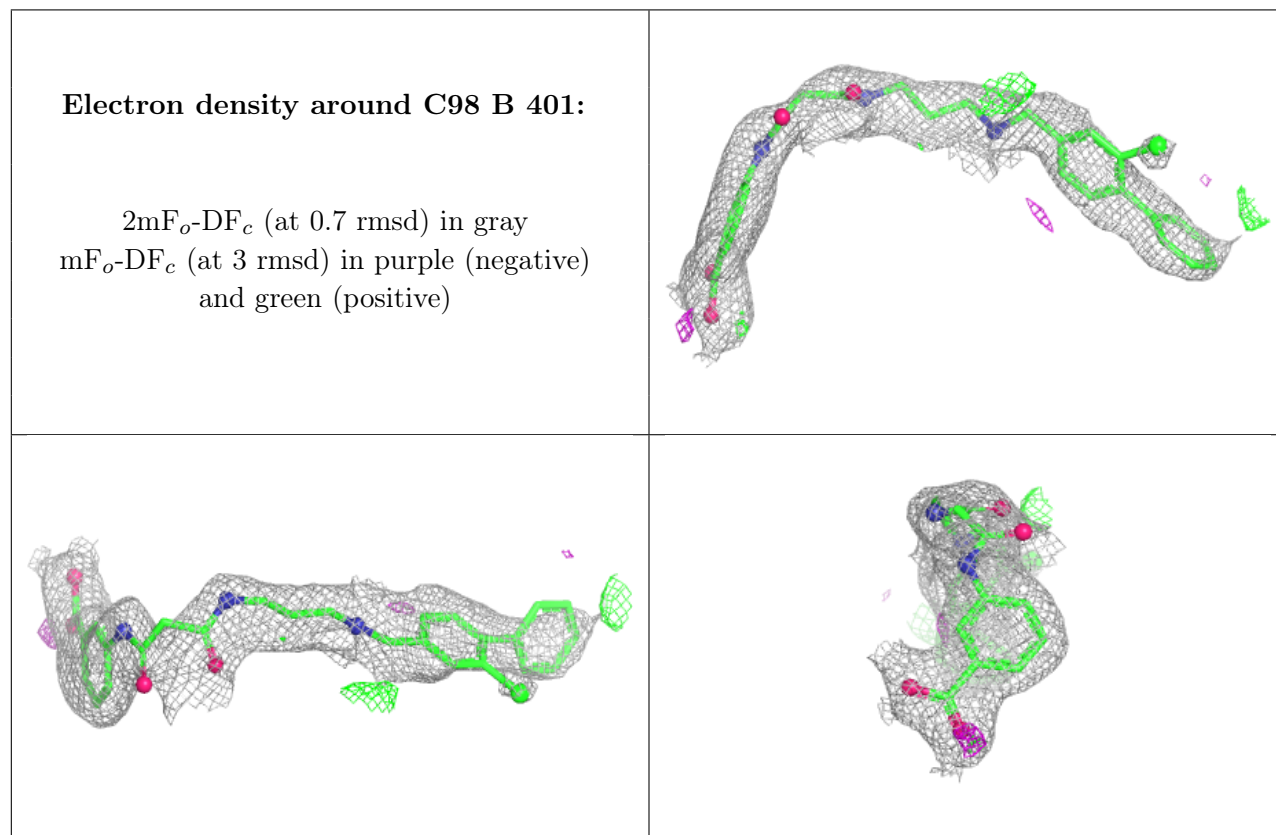
There are no oligosaccharides in this entry.

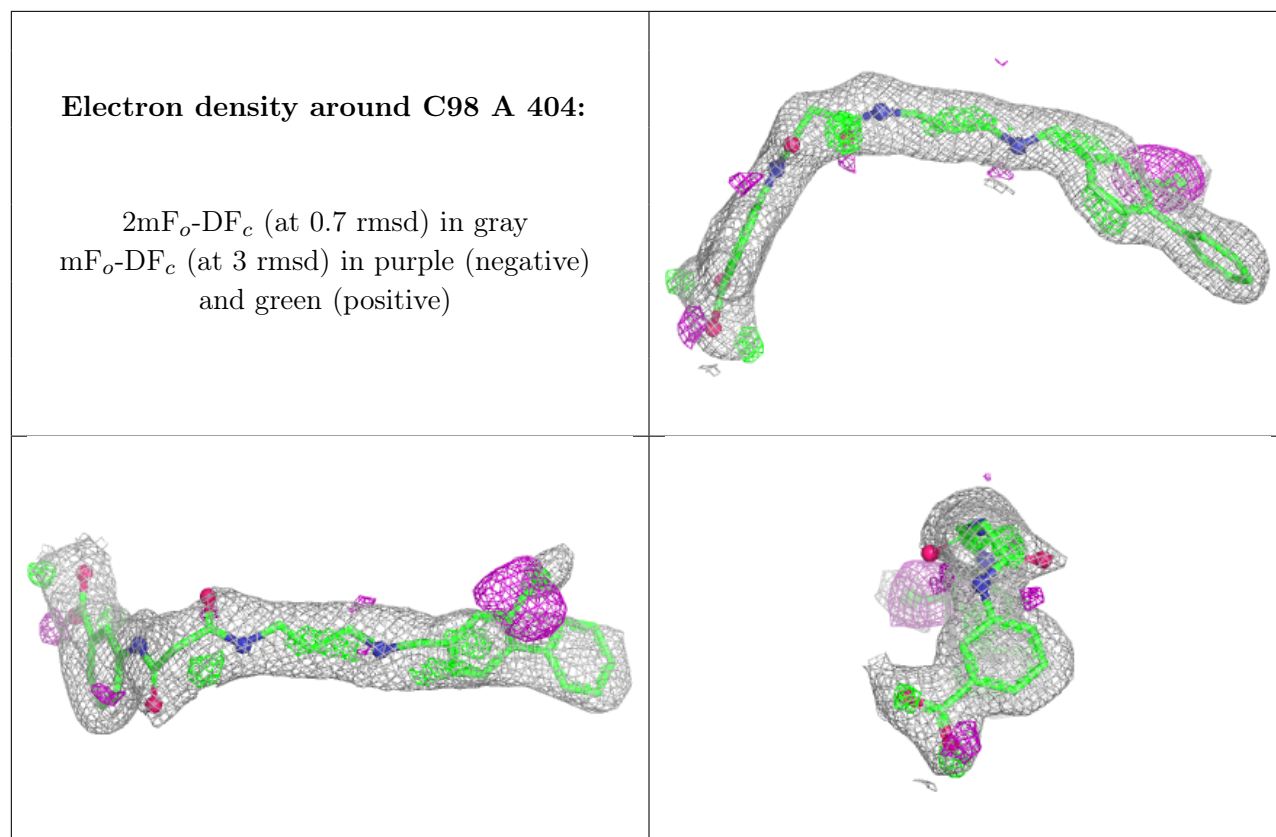
## 6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 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	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q < 0.9
2	ACT	A	403	4/4	0.77	0.21	54,57,58,61	0
4	PO4	B	402	5/5	0.79	0.14	73,73,73,75	0
3	C98	B	401	34/34	0.81	0.19	37,81,95,95	0
3	C98	A	404	34/34	0.86	0.16	27,50,62,72	0
2	ACT	A	402	4/4	0.90	0.22	40,41,44,44	0
4	PO4	A	405	5/5	0.91	0.09	42,43,47,48	0
2	ACT	A	401	4/4	0.94	0.08	35,43,44,44	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.





## 6.5 Other polymers [i](#)

There are no such residues in this entry.