



# Full wwPDB X-ray Structure Validation Report ⓘ

Aug 22, 2017 – 07:31 PM EDT

PDB ID : 5CLP  
Title : Crystal Structure of CK2alpha with 3,4-dichlorophenethylamine bound  
Authors : Brear, P.; De Fusco, C.; Georgiou, K.H.; Spring, D.; Hyvonen, M.  
Deposited on : unknown  
Resolution : 1.68 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

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

with specific help available everywhere you see the ⓘ symbol.

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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	:	1.7.2 (RC1), CSD as538be (2017)
Xtriage (Phenix)	:	1.9-1692
EDS	:	rb-20029824
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)	:	rb-20029824

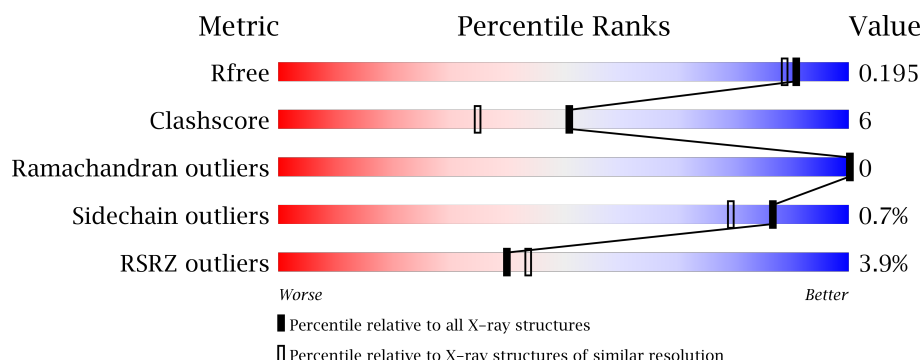
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 1.68 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	5252 (1.70-1.66)
Clashscore	112137	5803 (1.70-1.66)
Ramachandran outliers	110173	5704 (1.70-1.66)
Sidechain outliers	110143	5703 (1.70-1.66)
RSRZ outliers	101464	5298 (1.70-1.66)

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. 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	<div> <div>5%</div> <div>84%</div> <div>7%</div> <div>9%</div> </div>
1	B	352	<div> <div>3%</div> <div>88%</div> <div>5%</div> <div>7%</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 criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	42J	A	401[A]	-	-	X	X
2	42J	A	401[B]	-	-	X	X
2	42J	A	403	-	-	-	X
2	42J	A	404[A]	-	-	-	X
2	42J	A	404[B]	-	-	-	X
2	42J	A	405	-	-	-	X
2	42J	A	406	-	-	-	X
2	42J	B	401[A]	-	-	X	X
2	42J	B	401[B]	-	-	X	X
2	42J	B	402[A]	-	-	-	X
2	42J	B	404[A]	-	-	-	X
2	42J	B	404[B]	-	-	-	X
2	42J	B	405	-	-	-	X
3	ACT	A	408	-	-	-	X

## 2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 6220 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
1	A	322	Total	C	N	O	S	0	9	0
			2777	1778	486	501	12			
1	B	327	Total	C	N	O	S	0	7	0
			2807	1800	489	506	12			

There are 50 discrepancies between the modelled and reference sequences:

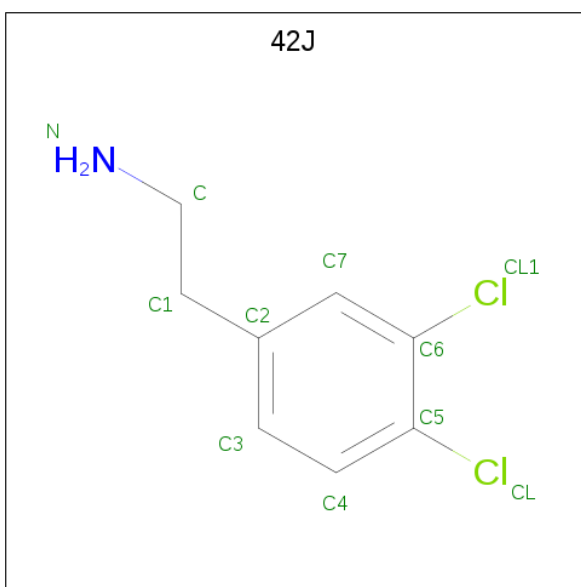
Chain	Residue	Modelled	Actual	Comment	Reference
A	-22	GLY	-	expression tag	UNP P68400
A	-21	SER	-	expression tag	UNP P68400
A	-20	MET	-	expression tag	UNP P68400
A	-19	ASP	-	expression tag	UNP P68400
A	-18	ILE	-	expression tag	UNP P68400
A	-17	GLU	-	expression tag	UNP P68400
A	-16	PHE	-	expression tag	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 2-(3,4-dichlorophenyl)ethanamine (three-letter code: 42J) (formula: C<sub>8</sub>H<sub>9</sub>Cl<sub>2</sub>N).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	Cl	N	0	1
			22	16	4	2		
2	A	1	Total	C	Cl	N	0	0
			11	8	2	1		
2	A	1	Total	C	Cl	N	0	0
			11	8	2	1		
2	A	1	Total	C	Cl	N	0	1
			22	16	4	2		
2	A	1	Total	C	Cl	N	0	0
			11	8	2	1		
2	A	1	Total	C	Cl	N	0	0
			11	8	2	1		
2	B	1	Total	C	Cl	N	0	1
			22	16	4	2		
2	B	1	Total	C	Cl	N	0	1
			22	16	4	2		
2	B	1	Total	C	Cl	N	0	0
			11	8	2	1		
2	B	1	Total	C	Cl	N	0	1
			22	16	4	2		
2	B	1	Total	C	Cl	N	0	0
			11	8	2	1		

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



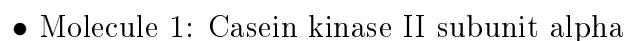
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			4	2	2		
3	A	1	Total	C	O	0	0
			4	2	2		
3	B	1	Total	C	O	0	0
			4	2	2		

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	178	Total	O	0	0
			178	178		
4	B	270	Total	O	0	0
			270	270		



- Molecule 1: Casein kinase II subunit alpha





## 4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	65.04Å 69.03Å 334.35Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	167.17 – 1.68 167.17 – 1.68	Depositor EDS
% Data completeness (in resolution range)	98.4 (167.17-1.68) 99.9 (167.17-1.68)	Depositor EDS
$R_{merge}$	0.08	Depositor
$R_{sym}$	0.08	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.15 (at 1.68Å)	Xtriage
Refinement program	BUSTER-TNT	Depositor
R, $R_{free}$	0.178 , 0.193 0.177 , 0.195	Depositor DCC
$R_{free}$ test set	4330 reflections (5.33%)	DCC
Wilson B-factor (Å <sup>2</sup> )	21.2	Xtriage
Anisotropy	0.446	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.37 , 52.8	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	6220	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	31.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.72% 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

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 42J, 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	0.50	0/2849	0.58	0/3853
1	B	0.56	0/2885	0.60	0/3902
All	All	0.53	0/5734	0.59	0/7755

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	2777	0	2719	35	0
1	B	2807	0	2749	27	0
2	A	88	0	72	32	0
2	B	88	0	72	27	0
3	A	8	0	6	0	0
3	B	4	0	3	0	0
4	A	178	0	0	2	0
4	B	270	0	0	5	1
All	All	6220	0	5621	74	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 6.

All (74) 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:174:ILE:HB	2:A:401[B]:42J:H8	1.14	1.06
1:B:68:LYS:HD3	2:B:401[A]:42J:N	1.73	1.04
1:B:174:ILE:HB	2:B:401[B]:42J:H8	1.20	1.02
2:A:401[A]:42J:N	2:A:401[A]:42J:H2	1.91	0.84
2:A:401[B]:42J:H6	4:A:543:HOH:O	1.80	0.81
1:B:174:ILE:HB	2:B:401[B]:42J:N	1.96	0.80
1:A:174:ILE:HB	2:A:401[B]:42J:N	1.97	0.78
1:B:68:LYS:HD3	2:B:401[A]:42J:H8	1.48	0.78
2:A:401[A]:42J:H8	2:A:401[A]:42J:H2	1.50	0.76
1:B:68:LYS:CD	2:B:401[A]:42J:N	2.52	0.73
2:B:401[A]:42J:N	4:B:501:HOH:O	2.21	0.71
2:B:401[B]:42J:H6	4:B:557:HOH:O	1.89	0.71
1:B:68:LYS:HZ3	2:B:401[A]:42J:H6	1.55	0.71
1:B:31:VAL:HG13	1:B:100[B]:ILE:HD12	1.73	0.70
1:A:68:LYS:HD3	2:A:401[A]:42J:H6	1.76	0.67
1:A:175:ASP:H	2:A:401[A]:42J:H5	1.59	0.67
1:A:283:ARG:C	2:A:406:42J:H9	1.97	0.66
1:B:68:LYS:NZ	2:B:401[A]:42J:H6	2.12	0.65
1:A:113:PHE:CZ	2:A:401[B]:42J:H7	2.32	0.64
2:B:401[A]:42J:N	2:B:401[A]:42J:H2	2.12	0.64
1:B:11[B]:VAL:HG11	4:B:729:HOH:O	1.99	0.62
1:B:102:LYS:HE2	1:B:107:ARG:HB3	1.81	0.62
1:B:175:ASP:H	2:B:401[A]:42J:H5	1.64	0.62
1:B:95:ILE:HG21	2:B:401[B]:42J:H9	1.65	0.61
1:A:140:ILE:HD11	2:A:404[B]:42J:CL1	2.37	0.60
1:A:174:ILE:CB	2:A:401[B]:42J:H8	2.03	0.59
1:A:95:ILE:HG21	2:A:401[B]:42J:H9	1.69	0.57
1:A:236:HIS:HE1	4:A:581:HOH:O	1.87	0.57
1:A:107:ARG:HH11	1:A:107:ARG:HG3	1.70	0.57
1:A:8:ARG:HH11	1:A:184:PRO:HB2	1.70	0.56
1:A:251:THR:HB	1:A:255:TYR:CE2	2.41	0.55
1:B:113:PHE:CZ	2:B:401[B]:42J:H7	2.42	0.54
1:B:174:ILE:CB	2:B:401[B]:42J:H8	2.07	0.54
1:B:221:MET:HE1	2:B:403:42J:H2	1.90	0.54
1:A:285:VAL:HG21	2:A:405:42J:CL1	2.45	0.54
1:B:18:HIS:HE1	4:B:696:HOH:O	1.92	0.53
2:B:401[B]:42J:N	2:B:401[B]:42J:H3	2.22	0.53
2:A:401[A]:42J:C3	2:A:401[A]:42J:N	2.69	0.53
1:B:175:ASP:H	2:B:401[B]:42J:C	2.21	0.53
2:B:401[A]:42J:N	2:B:401[A]:42J:C3	2.73	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:68:LYS:NZ	2:A:401[A]:42J:C	2.73	0.51
1:A:221:MET:HE1	2:A:404[A]:42J:H2	1.92	0.51
1:B:39:TYR:O	2:B:404[A]:42J:H5	2.11	0.50
2:B:401[B]:42J:N	2:B:401[B]:42J:C7	2.73	0.50
1:A:31:VAL:HG13	1:A:100[B]:ILE:HD12	1.93	0.50
1:A:175:ASP:H	2:A:401[B]:42J:C	2.25	0.49
1:A:68:LYS:NZ	2:A:401[A]:42J:H6	2.27	0.49
1:A:175:ASP:HA	2:A:401[A]:42J:H7	1.95	0.49
2:B:402[A]:42J:H6	4:B:501:HOH:O	2.12	0.48
1:A:68:LYS:CD	2:A:401[A]:42J:H6	2.42	0.47
1:A:221:MET:CE	2:A:404[A]:42J:H2	2.45	0.46
1:B:102:LYS:HD3	1:B:107:ARG:HE	1.81	0.46
1:A:67:VAL:HG12	1:A:69[B]:ILE:HD13	1.96	0.46
1:B:163[B]:MET:SD	2:B:402[B]:42J:H1	2.56	0.46
1:B:175:ASP:HA	2:B:401[A]:42J:C	2.45	0.46
1:A:163[B]:MET:SD	2:A:402:42J:H1	2.56	0.46
1:A:269:PHE:HB3	1:A:273:LEU:HD22	1.98	0.45
2:A:401[B]:42J:H3	2:A:401[B]:42J:N	2.31	0.45
1:A:290:GLN:HB2	2:A:405:42J:H4	1.98	0.45
1:B:175:ASP:HB2	2:B:401[A]:42J:H7	1.99	0.44
1:A:140:ILE:CD1	2:A:404[B]:42J:CL1	3.03	0.44
1:B:175:ASP:CB	2:B:401[A]:42J:H7	2.47	0.44
1:A:68:LYS:NZ	2:A:401[A]:42J:H7	2.33	0.44
1:A:283:ARG:HA	2:A:406:42J:N	2.33	0.43
1:B:221:MET:CE	2:B:403:42J:H2	2.48	0.43
1:A:283:ARG:C	2:A:406:42J:N	2.70	0.42
1:A:68:LYS:HE3	1:A:70:LEU:HD21	2.00	0.42
2:A:401[A]:42J:H8	2:A:401[A]:42J:C3	2.27	0.41
1:B:68:LYS:HE3	1:B:70:LEU:HD21	2.02	0.41
1:A:68:LYS:CE	2:A:401[A]:42J:H6	2.50	0.41
1:A:105:VAL:HG11	1:B:20:PRO:HG2	2.02	0.41
1:A:175:ASP:N	2:A:401[A]:42J:H5	2.32	0.41
1:B:175:ASP:HA	2:B:401[A]:42J:H6	2.02	0.41
1:A:68:LYS:HZ2	2:A:401[A]:42J:C	2.33	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	Interatomic distance (Å)	Clash overlap (Å)
4:B:502:HOH:O	4:B:502:HOH:O[4_597]	0.97	1.23

## 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	327/352 (93%)	320 (98%)	7 (2%)	0	100	100
1	B	332/352 (94%)	325 (98%)	7 (2%)	0	100	100
All	All	659/704 (94%)	645 (98%)	14 (2%)	0	100	100

There are no Ramachandran outliers to report.

### 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	305/319 (96%)	304 (100%)	1 (0%)	94	91
1	B	308/319 (97%)	305 (99%)	3 (1%)	80	69
All	All	613/638 (96%)	609 (99%)	4 (1%)	87	79

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	160	HIS
1	B	118	ASN
1	B	160	HIS
1	B	283	ARG

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (10) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	36	GLN
1	A	118	ASN
1	A	168	HIS
1	A	236	HIS
1	A	262	ASN
1	B	18	HIS
1	B	118	ASN
1	B	168	HIS
1	B	186	GLN
1	B	262	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 carbohydrates in this entry.

## 5.6 Ligand geometry [i](#)

19 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	42J	A	401[A]	-	11,11,11	0.16	0	14,14,14	0.30	0
2	42J	A	401[B]	-	11,11,11	0.27	0	14,14,14	0.17	0
2	42J	A	402	-	11,11,11	0.26	0	14,14,14	0.16	0
2	42J	A	403	-	11,11,11	0.28	0	14,14,14	0.15	0
2	42J	A	404[A]	-	11,11,11	0.27	0	14,14,14	0.16	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	42J	A	404[B]	-	11,11,11	0.27	0	14,14,14	0.19	0
2	42J	A	405	-	11,11,11	0.27	0	14,14,14	0.15	0
2	42J	A	406	-	11,11,11	0.27	0	14,14,14	0.15	0
3	ACT	A	407	-	1,3,3	5.05	1 (100%)	0,3,3	0.00	-
3	ACT	A	408	-	1,3,3	4.58	1 (100%)	0,3,3	0.00	-
2	42J	B	401[A]	-	11,11,11	0.25	0	14,14,14	0.18	0
2	42J	B	401[B]	-	11,11,11	0.24	0	14,14,14	0.16	0
2	42J	B	402[A]	-	11,11,11	0.26	0	14,14,14	0.17	0
2	42J	B	402[B]	-	11,11,11	0.27	0	14,14,14	0.17	0
2	42J	B	403	-	11,11,11	0.26	0	14,14,14	0.17	0
2	42J	B	404[A]	-	11,11,11	0.27	0	14,14,14	0.15	0
2	42J	B	404[B]	-	11,11,11	0.30	0	14,14,14	0.16	0
2	42J	B	405	-	11,11,11	0.25	0	14,14,14	0.17	0
3	ACT	B	406	-	1,3,3	4.22	1 (100%)	0,3,3	0.00	-

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	42J	A	401[A]	-	-	0/3/3/3	0/1/1/1
2	42J	A	401[B]	-	-	0/3/3/3	0/1/1/1
2	42J	A	402	-	-	0/3/3/3	0/1/1/1
2	42J	A	403	-	-	0/3/3/3	0/1/1/1
2	42J	A	404[A]	-	-	0/3/3/3	0/1/1/1
2	42J	A	404[B]	-	-	0/3/3/3	0/1/1/1
2	42J	A	405	-	-	0/3/3/3	0/1/1/1
2	42J	A	406	-	-	0/3/3/3	0/1/1/1
3	ACT	A	407	-	-	0/0/0/0	0/0/0/0
3	ACT	A	408	-	-	0/0/0/0	0/0/0/0
2	42J	B	401[A]	-	-	0/3/3/3	0/1/1/1
2	42J	B	401[B]	-	-	0/3/3/3	0/1/1/1
2	42J	B	402[A]	-	-	0/3/3/3	0/1/1/1
2	42J	B	402[B]	-	-	0/3/3/3	0/1/1/1
2	42J	B	403	-	-	0/3/3/3	0/1/1/1
2	42J	B	404[A]	-	-	0/3/3/3	0/1/1/1
2	42J	B	404[B]	-	-	0/3/3/3	0/1/1/1
2	42J	B	405	-	-	0/3/3/3	0/1/1/1
3	ACT	B	406	-	-	0/0/0/0	0/0/0/0

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	406	ACT	CH3-C	4.22	1.54	1.48
3	A	408	ACT	CH3-C	4.58	1.54	1.48
3	A	407	ACT	CH3-C	5.05	1.55	1.48

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

13 monomers are involved in 59 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	401[A]	42J	14	0
2	A	401[B]	42J	8	0
2	A	402	42J	1	0
2	A	404[A]	42J	2	0
2	A	404[B]	42J	2	0
2	A	405	42J	2	0
2	A	406	42J	3	0
2	B	401[A]	42J	13	0
2	B	401[B]	42J	9	0
2	B	402[A]	42J	1	0
2	B	402[B]	42J	1	0
2	B	403	42J	2	0
2	B	404[A]	42J	1	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, 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	322/352 (91%)	0.13	16 (4%) 30 32	15, 32, 61, 87	0
1	B	327/352 (92%)	0.01	9 (2%) 53 57	11, 21, 52, 80	0
All	All	649/704 (92%)	0.07	25 (3%) 40 44	11, 26, 59, 87	0

All (25) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	125	TYR	7.3
1	B	124	LEU	6.8
1	A	50	TYR	5.1
1	B	49	LYS	4.9
1	B	121	PHE	4.9
1	A	49	LYS	4.1
1	A	278	ARG	4.1
1	A	126	GLN	4.0
1	B	50	TYR	3.8
1	B	107	ARG	3.0
1	A	127	THR	2.9
1	B	120	ASP	2.9
1	B	271	ASP	2.7
1	A	288	GLU	2.5
1	A	73	VAL	2.5
1	A	107	ARG	2.4
1	A	267	PRO	2.3
1	A	271	ASP	2.3
1	B	127	THR	2.3
1	A	252	GLU	2.3
1	A	105	VAL	2.2
1	A	255	TYR	2.2
1	A	128	LEU	2.2
1	A	120	ASP	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	33	TRP	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 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, 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	LLDF	B-factors(Å <sup>2</sup> )	Q<0.9
2	42J	B	405	11/11	0.68	0.21	25.52	40,44,50,56	0
2	42J	B	404[B]	11/11	0.83	0.27	17.85	30,46,53,55	11
2	42J	B	404[A]	11/11	0.83	0.27	17.04	38,40,45,46	11
2	42J	A	403	11/11	0.91	0.20	4.63	37,47,58,59	0
2	42J	B	401[B]	11/11	0.92	0.17	4.49	8,26,32,41	11
2	42J	B	401[A]	11/11	0.92	0.17	4.40	7,13,21,21	11
2	42J	A	401[B]	11/11	0.87	0.17	4.23	12,35,42,49	11
2	42J	A	401[A]	11/11	0.87	0.17	4.02	11,19,28,29	11
3	ACT	A	408	4/4	0.67	0.19	3.85	72,73,74,74	0
2	42J	A	406	11/11	0.91	0.27	3.40	52,54,55,55	0
2	42J	A	404[A]	11/11	0.78	0.22	3.29	32,44,49,58	11
2	42J	A	404[B]	11/11	0.78	0.22	3.19	54,59,62,65	11
2	42J	A	405	11/11	0.67	0.19	2.13	90,94,95,96	0
2	42J	B	402[A]	11/11	0.83	0.15	2.10	31,41,56,57	11
2	42J	B	403	11/11	0.64	0.23	1.45	26,40,53,61	0
2	42J	A	402	11/11	0.72	0.16	1.34	37,47,56,62	0
2	42J	B	402[B]	11/11	0.83	0.15	0.99	31,42,56,58	11
3	ACT	A	407	4/4	0.93	0.09	-0.21	34,37,37,37	0
3	ACT	B	406	4/4	0.97	0.07	-0.83	29,30,31,33	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.