



# Full wwPDB X-ray Structure Validation Report ⓘ

May 18, 2020 – 08:54 pm BST

PDB ID : 2CGV  
Title : Identification of chemically diverse Chk1 inhibitors by receptor- based virtual screening  
Authors : Foloppe, N.; Fisher, L.M.; Howes, R.; Potter, A.; Robertson, A.G.S.; Surgenor, A.E.  
Deposited on : 2006-03-09  
Resolution : 2.60 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.

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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 : 1.8.5 (274361), CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.11  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.11

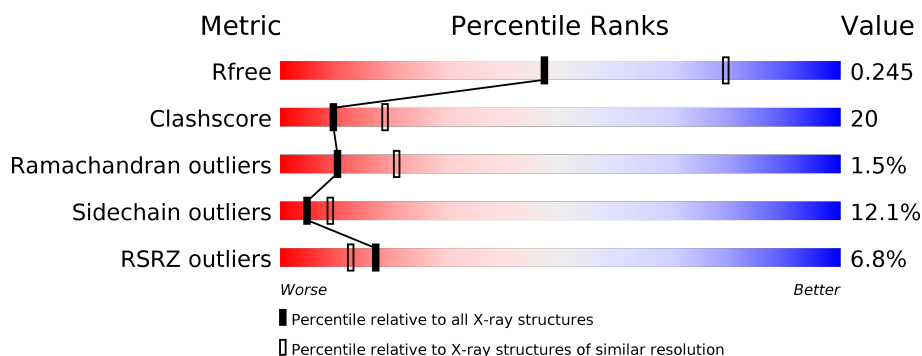
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.60 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	3163 (2.60-2.60)
Clashscore	141614	3518 (2.60-2.60)
Ramachandran outliers	138981	3455 (2.60-2.60)
Sidechain outliers	138945	3455 (2.60-2.60)
RSRZ outliers	127900	3104 (2.60-2.60)

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 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	297	<div> <div>6%</div> <div>51%</div> <div>28%</div> <div>10%</div> <div>11%</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	3B3	A	1273	-	X	X	-

## 2 Entry composition [i](#)

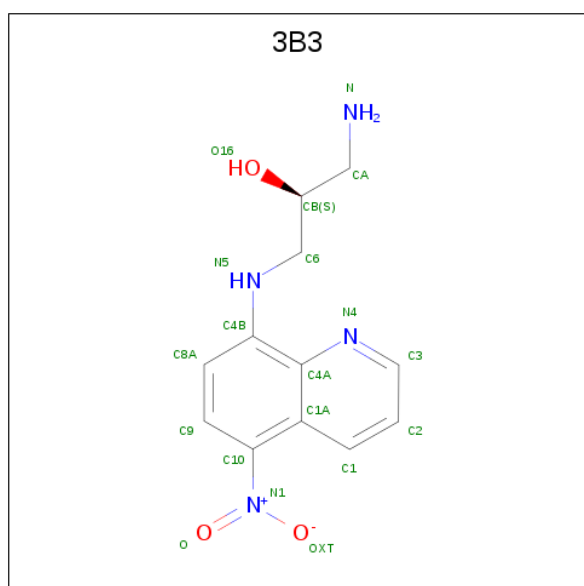
There are 3 unique types of molecules in this entry. The entry contains 2314 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 SERINE/THREONINE-PROTEIN KINASE CHK1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	264	Total	C	N	O	S	0	0	0
			2134	1366	366	390	12			

- Molecule 2 is (2S)-1-AMINO-3-[(5-NITROQUINOLIN-8-YL)AMINO]PROPAN-2-OL (three-letter code: 3B3) (formula: C<sub>12</sub>H<sub>14</sub>N<sub>4</sub>O<sub>3</sub>).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			19	12	4	3		

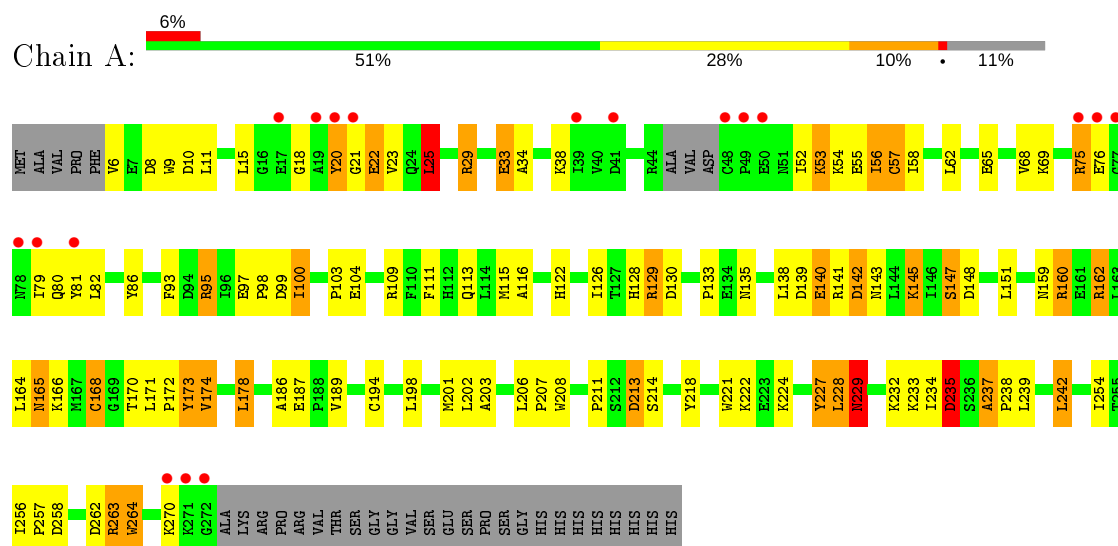
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	161	Total	O	0	0
			161	161		

### 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: SERINE/THREONINE-PROTEIN KINASE CHK1



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	44.95Å 65.68Å 54.87Å 90.00° 102.65° 90.00°	Depositor
Resolution (Å)	30.00 – 2.60 27.99 – 2.54	Depositor EDS
% Data completeness (in resolution range)	82.7 (30.00-2.60) 79.1 (27.99-2.54)	Depositor EDS
$R_{merge}$	0.10	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.93 (at 2.54Å)	Xtriage
Refinement program	REFMAC 5.1.09	Depositor
R, $R_{free}$	0.179 , 0.256 0.174 , 0.245	Depositor DCC
$R_{free}$ test set	385 reflections (4.70%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	32.1	Xtriage
Anisotropy	0.736	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.33 , 58.5	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	2314	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	47.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.73% 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: 3B3

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	1.40	16/2184 (0.7%)	1.40	23/2957 (0.8%)

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	A	0	3

All (16) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	264	TRP	CE3-CZ3	7.96	1.51	1.38
1	A	111	PHE	CE1-CZ	7.66	1.51	1.37
1	A	8	ASP	CB-CG	6.53	1.65	1.51
1	A	173	TYR	CE1-CZ	6.45	1.47	1.38
1	A	189	VAL	CB-CG2	-6.15	1.40	1.52
1	A	221	TRP	CZ3-CH2	-6.02	1.30	1.40
1	A	65	GLU	CD-OE1	5.51	1.31	1.25
1	A	227	TYR	CB-CG	5.45	1.59	1.51
1	A	227	TYR	CE2-CZ	5.41	1.45	1.38
1	A	65	GLU	CD-OE2	5.37	1.31	1.25
1	A	116	ALA	CA-CB	-5.21	1.41	1.52
1	A	104	GLU	CD-OE1	5.20	1.31	1.25
1	A	57	CYS	CB-SG	-5.19	1.73	1.81
1	A	213	ASP	CB-CG	5.12	1.62	1.51
1	A	168	CYS	CB-SG	-5.05	1.73	1.81
1	A	111	PHE	CG-CD1	5.03	1.46	1.38

All (23) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	262	ASP	CB-CG-OD2	13.76	130.69	118.30
1	A	178	LEU	CA-CB-CG	10.22	138.81	115.30
1	A	10	ASP	CB-CG-OD2	7.88	125.40	118.30
1	A	242	LEU	CB-CG-CD1	7.20	123.24	111.00
1	A	263	ARG	NE-CZ-NH1	6.98	123.79	120.30
1	A	57	CYS	CA-CB-SG	-6.91	101.57	114.00
1	A	129	ARG	NE-CZ-NH1	-6.76	116.92	120.30
1	A	148	ASP	CB-CG-OD2	6.62	124.25	118.30
1	A	95	ARG	NE-CZ-NH2	-6.59	117.00	120.30
1	A	25	LEU	CB-CG-CD2	6.59	122.21	111.00
1	A	109	ARG	CG-CD-NE	-6.39	98.38	111.80
1	A	8	ASP	CB-CG-OD1	6.33	124.00	118.30
1	A	213	ASP	CB-CG-OD2	6.14	123.82	118.30
1	A	229	ASN	N-CA-C	5.88	126.87	111.00
1	A	109	ARG	NE-CZ-NH2	-5.76	117.42	120.30
1	A	270	LYS	N-CA-C	5.64	126.22	111.00
1	A	263	ARG	NE-CZ-NH2	-5.63	117.48	120.30
1	A	202	LEU	CB-CG-CD1	-5.62	101.44	111.00
1	A	142	ASP	CB-CG-OD1	5.45	123.21	118.30
1	A	237	ALA	N-CA-CB	5.45	117.73	110.10
1	A	11	LEU	CA-CB-CG	5.16	127.16	115.30
1	A	139	ASP	CB-CG-OD2	5.08	122.87	118.30
1	A	8	ASP	OD1-CG-OD2	-5.03	113.75	123.30

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	228	LEU	Peptide
1	A	229	ASN	Peptide
1	A	235	ASP	Peptide

## 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	2134	0	2117	79	0
2	A	19	0	14	7	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	A	161	0	0	10	0
All	All	2314	0	2131	84	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 20.

All (84) 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:201:MET:CE	1:A:201:MET:SD	2.03	1.47
2:A:1273:3B3:O	2:A:1273:3B3:N1	1.57	1.37
2:A:1273:3B3:O	2:A:1273:3B3:H1	1.28	1.26
1:A:234:ILE:O	1:A:235:ASP:CB	2.00	1.01
1:A:97:GLU:HB3	1:A:100:ILE:HG23	1.43	1.00
2:A:1273:3B3:C1	2:A:1273:3B3:O	2.09	1.00
2:A:1273:3B3:H6C2	2:A:1273:3B3:N4	1.88	0.88
1:A:234:ILE:O	1:A:235:ASP:HB3	1.77	0.85
1:A:234:ILE:O	1:A:235:ASP:HB2	1.76	0.84
1:A:238:PRO:HD3	1:A:264:TRP:CD1	2.12	0.84
1:A:160:ARG:HH11	1:A:160:ARG:HG2	1.45	0.81
1:A:229:ASN:HB2	3:A:2134:HOH:O	1.80	0.81
1:A:135:ASN:OD1	2:A:1273:3B3:N	2.15	0.79
1:A:232:LYS:NZ	3:A:2135:HOH:O	2.11	0.79
1:A:164:LEU:HD11	1:A:186:ALA:HB2	1.67	0.75
1:A:160:ARG:NH1	1:A:160:ARG:HG2	2.02	0.74
1:A:213:ASP:OD2	1:A:222:LYS:NZ	2.26	0.69
1:A:97:GLU:HB3	1:A:100:ILE:CG2	2.22	0.67
2:A:1273:3B3:C6	2:A:1273:3B3:N4	2.60	0.65
1:A:229:ASN:OD1	1:A:229:ASN:O	2.15	0.65
1:A:115:MET:HE1	1:A:194:CYS:CB	2.28	0.64
1:A:113:GLN:HE22	1:A:143:ASN:HD22	1.48	0.61
1:A:166:LYS:NZ	1:A:168:CYS:SG	2.73	0.60
1:A:75:ARG:HG3	1:A:75:ARG:O	2.00	0.60
1:A:115:MET:HE1	1:A:194:CYS:HB3	1.84	0.59
1:A:166:LYS:HZ3	1:A:168:CYS:HB3	1.67	0.59
1:A:207:PRO:HB2	1:A:208:TRP:CE3	2.38	0.58
1:A:20:TYR:HD1	3:A:2009:HOH:O	1.87	0.58
1:A:263:ARG:NH2	3:A:2157:HOH:O	2.31	0.58
1:A:145:LYS:NZ	3:A:2084:HOH:O	2.37	0.57
1:A:122:HIS:ND1	1:A:187:GLU:HG2	2.18	0.57
1:A:25:LEU:HD23	1:A:86:TYR:CD1	2.39	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:140:GLU:CD	1:A:140:GLU:H	2.10	0.56
1:A:166:LYS:NZ	1:A:168:CYS:HB3	2.22	0.54
1:A:9:TRP:HZ3	1:A:33:GLU:O	1.92	0.53
1:A:79:ILE:HG22	1:A:81:TYR:CE2	2.44	0.52
1:A:170:THR:HG22	1:A:172:PRO:HD2	1.91	0.52
1:A:128:HIS:O	1:A:129:ARG:HB2	2.11	0.51
1:A:256:ILE:O	1:A:257:PRO:C	2.50	0.49
1:A:162:ARG:NH1	3:A:2095:HOH:O	2.46	0.49
1:A:166:LYS:NZ	1:A:168:CYS:CB	2.76	0.49
1:A:6:VAL:O	1:A:6:VAL:HG12	2.12	0.49
1:A:75:ARG:HD3	1:A:80:GLN:NE2	2.28	0.49
1:A:95:ARG:HH22	1:A:142:ASP:CG	2.15	0.48
1:A:164:LEU:HD11	1:A:186:ALA:CB	2.43	0.47
1:A:237:ALA:HB1	1:A:264:TRP:HB2	1.95	0.47
1:A:133:PRO:HD3	1:A:173:TYR:CE1	2.50	0.47
1:A:129:ARG:CD	3:A:2079:HOH:O	2.62	0.47
1:A:29:ARG:HA	1:A:29:ARG:HD3	1.30	0.47
1:A:227:TYR:CE1	1:A:228:LEU:HG	2.50	0.46
1:A:25:LEU:HD21	1:A:34:ALA:HB1	1.98	0.46
1:A:53:LYS:O	1:A:57:CYS:HB2	2.16	0.46
1:A:9:TRP:CH2	1:A:33:GLU:HG2	2.51	0.46
1:A:254:ILE:O	1:A:254:ILE:HG23	2.15	0.46
1:A:82:LEU:HD23	1:A:82:LEU:N	2.31	0.45
1:A:129:ARG:HD2	3:A:2079:HOH:O	2.17	0.45
1:A:229:ASN:CG	1:A:229:ASN:O	2.56	0.45
1:A:9:TRP:CD1	1:A:9:TRP:N	2.85	0.45
1:A:38:LYS:NZ	1:A:55:GLU:OE2	2.43	0.44
1:A:122:HIS:CE1	1:A:187:GLU:HG2	2.53	0.44
1:A:58:ILE:HG23	1:A:126:ILE:HD13	2.00	0.44
1:A:203:ALA:HB1	1:A:233:LYS:HE3	2.00	0.44
1:A:21:GLY:C	1:A:22:GLU:HG3	2.38	0.44
1:A:68:VAL:HG21	1:A:147:SER:HB2	2.00	0.44
1:A:130:ASP:HB2	1:A:151:LEU:HD12	2.00	0.43
1:A:62:LEU:HD23	1:A:62:LEU:HA	1.65	0.43
1:A:95:ARG:NH2	1:A:142:ASP:OD1	2.35	0.43
1:A:9:TRP:CZ3	1:A:33:GLU:O	2.70	0.43
1:A:23:VAL:HG11	2:A:1273:3B3:C2	2.49	0.42
1:A:52:ILE:O	1:A:56:ILE:HG23	2.19	0.42
1:A:115:MET:CE	1:A:194:CYS:SG	3.07	0.42
1:A:218:TYR:CE2	1:A:222:LYS:HE2	2.54	0.42
1:A:256:ILE:O	1:A:258:ASP:N	2.52	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:174:VAL:O	1:A:211:PRO:HG3	2.20	0.42
1:A:98:PRO:O	1:A:99:ASP:CB	2.67	0.42
1:A:113:GLN:NE2	1:A:143:ASN:HD22	2.14	0.42
1:A:165:ASN:HD22	1:A:166:LYS:H	1.66	0.42
1:A:141:ARG:O	1:A:142:ASP:HB2	2.20	0.42
1:A:93:PHE:CD1	1:A:93:PHE:C	2.93	0.41
1:A:115:MET:HE1	1:A:194:CYS:SG	2.61	0.41
1:A:160:ARG:CG	1:A:160:ARG:NH1	2.72	0.41
1:A:54:LYS:HE3	3:A:2027:HOH:O	2.21	0.41
1:A:100:ILE:HD13	1:A:100:ILE:HG21	1.86	0.41
1:A:38:LYS:NZ	3:A:2017:HOH:O	2.53	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	260/297 (88%)	232 (89%)	24 (9%)	4 (2%)	10 21

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	235	ASP
1	A	76	GLU
1	A	214	SER
1	A	18	GLY

### 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	231/261 (88%)	203 (88%)	28 (12%)	5 9

All (28) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	15	LEU
1	A	20	TYR
1	A	22	GLU
1	A	25	LEU
1	A	29	ARG
1	A	33	GLU
1	A	53	LYS
1	A	56	ILE
1	A	69	LYS
1	A	75	ARG
1	A	100	ILE
1	A	103	PRO
1	A	138	LEU
1	A	140	GLU
1	A	145	LYS
1	A	147	SER
1	A	159	ASN
1	A	160	ARG
1	A	162	ARG
1	A	165	ASN
1	A	171	LEU
1	A	174	VAL
1	A	178	LEU
1	A	198	LEU
1	A	206	LEU
1	A	224	LYS
1	A	239	LEU
1	A	242	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	73	HIS

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Mol	Chain	Res	Type
1	A	80	GLN
1	A	108	GLN
1	A	143	ASN
1	A	158	ASN
1	A	165	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](#)

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	3B3	A	1273	-	18,20,20	5.49	8 (44%)	21,27,27	2.99	12 (57%)

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	3B3	A	1273	-	-	6/9/11/11	0/2/2/2

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1273	3B3	O-N1	20.31	1.57	1.22
2	A	1273	3B3	C10-N1	-7.42	1.32	1.45
2	A	1273	3B3	C6-CB	4.56	1.63	1.52
2	A	1273	3B3	C6-N5	3.73	1.53	1.45
2	A	1273	3B3	C3-N4	3.15	1.38	1.32
2	A	1273	3B3	C2-C3	2.73	1.45	1.37
2	A	1273	3B3	C10-C1A	-2.62	1.33	1.42
2	A	1273	3B3	C9-C10	2.25	1.42	1.37

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1273	3B3	C4B-C4A-N4	6.03	122.61	117.48
2	A	1273	3B3	C9-C10-N1	4.85	121.65	116.47
2	A	1273	3B3	C2-C1-C1A	-4.50	114.65	120.89
2	A	1273	3B3	C8A-C4B-N5	-4.29	117.47	122.30
2	A	1273	3B3	O16-CB-CA	-3.94	95.90	109.33
2	A	1273	3B3	C1-C1A-C4A	3.78	126.82	118.98
2	A	1273	3B3	C8A-C9-C10	-3.20	118.83	121.86
2	A	1273	3B3	C1A-C4A-N4	-3.03	116.81	122.54
2	A	1273	3B3	O-N1-C10	3.01	124.19	119.03
2	A	1273	3B3	C1-C1A-C10	-2.99	116.97	122.81
2	A	1273	3B3	C9-C10-C1A	2.87	125.27	120.38
2	A	1273	3B3	C9-C8A-C4B	-2.70	116.72	120.36

There are no chirality outliers.

All (6) torsion outliers are listed below:

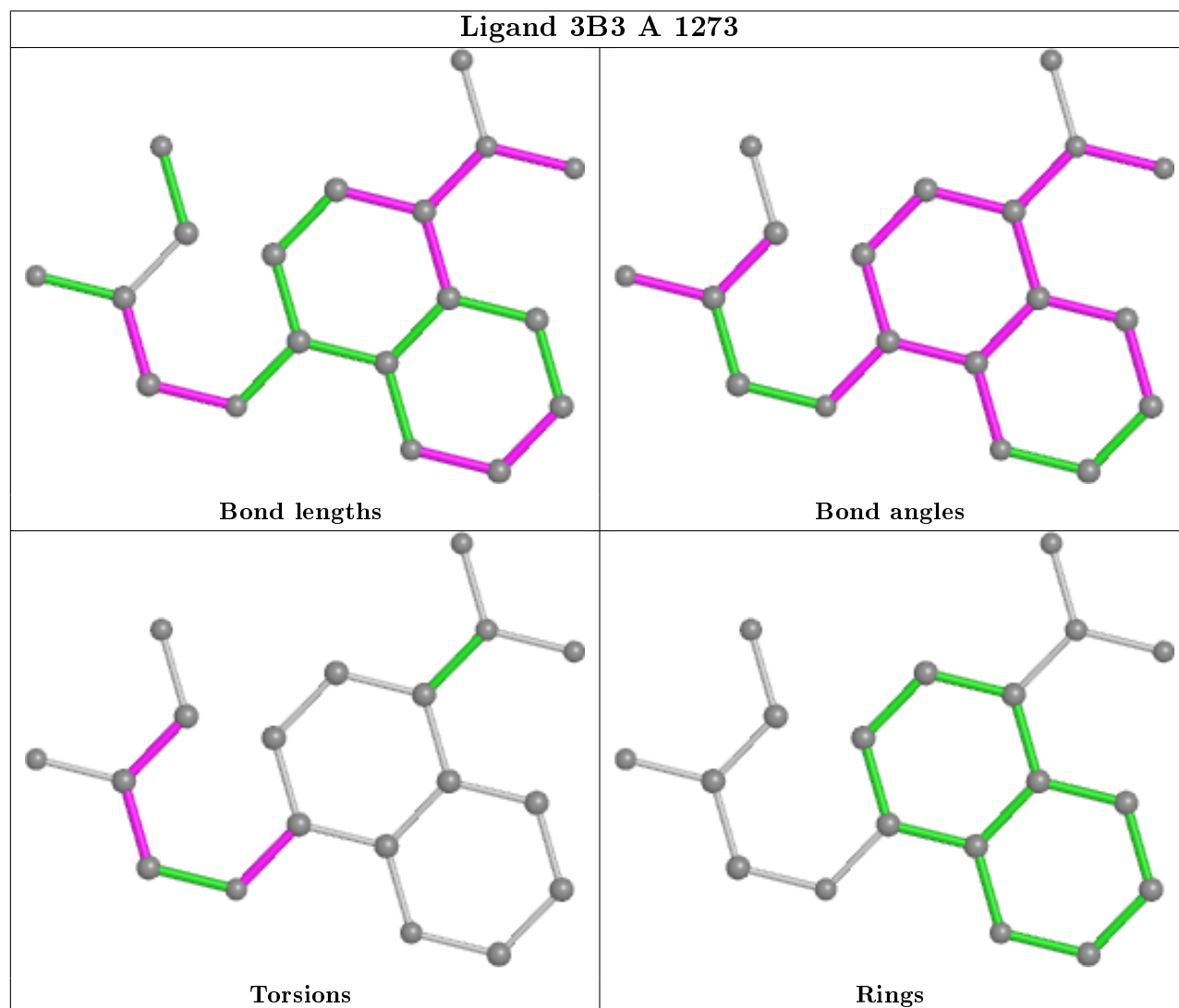
Mol	Chain	Res	Type	Atoms
2	A	1273	3B3	C4A-C4B-N5-C6
2	A	1273	3B3	C8A-C4B-N5-C6
2	A	1273	3B3	N-CA-CB-C6
2	A	1273	3B3	N-CA-CB-O16
2	A	1273	3B3	N5-C6-CB-CA
2	A	1273	3B3	N5-C6-CB-O16

There are no ring outliers.

1 monomer is involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1273	3B3	7	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	264/297 (88%)	-0.06	18 (6%) 17 12	16, 39, 95, 112	2 (0%)

All (18) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	20	TYR	6.4
1	A	17	GLU	6.3
1	A	48	CYS	5.5
1	A	272	GLY	5.2
1	A	19	ALA	4.3
1	A	49	PRO	4.1
1	A	81	TYR	3.7
1	A	78	ASN	3.6
1	A	21	GLY	3.5
1	A	79	ILE	3.5
1	A	77	GLY	3.0
1	A	41	ASP	3.0
1	A	271	LYS	2.7
1	A	50	GLU	2.5
1	A	76	GLU	2.4
1	A	75	ARG	2.2
1	A	270	LYS	2.2
1	A	39	ILE	2.2

### 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](#)

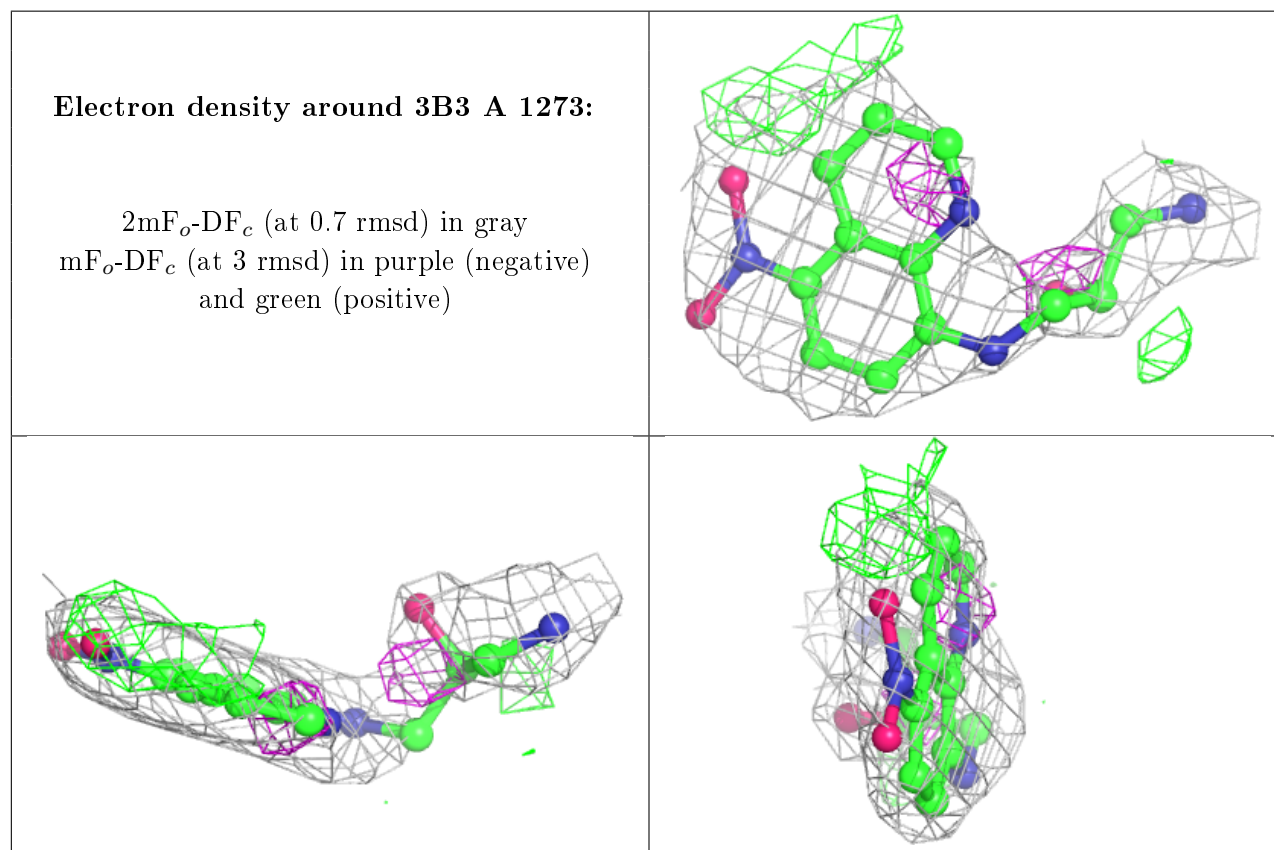
There are no carbohydrates in this entry.

### 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. 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( $\text{\AA}^2$ )	Q<0.9
2	3B3	A	1273	19/19	0.82	0.26	23,31,37,47	19

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.