WORLDWIDE PDB

PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report (i)

Jun 16, 2024 – 02:59 PM EDT

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PDB ID	:	5CQ7
Title	:	Crystal structure of the bromodomain of bromodomain adjacent to zinc finger domain protein 2B (BAZ2B) in complex with N,N-dimethylquinoxaline-6-car boxamide (SGC - Diamond I04-1 fragment screening)
Authors	:	Bradley, A.; Pearce, N.; Krojer, T.; Ng, J.; Talon, R.; Vollmar, M.; Jose, B.; von Delft, F.; Bountra, C.; Arrowsmith, C.H.; Edwards, A.; Knapp, S.; Structural Genomics Consortium (SGC)
Deposited on	:	2015-07-21
Resolution	:	1.86 Å(reported)

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 1.86 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.
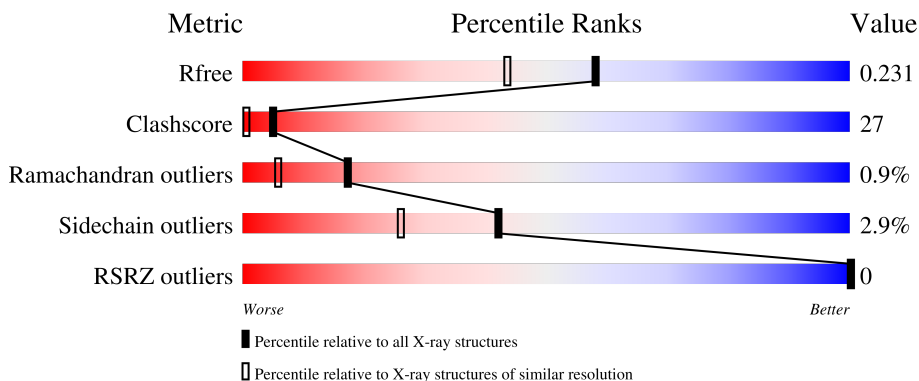
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2469 (1.86-1.86)
Clashscore	141614	2625 (1.86-1.86)
Ramachandran outliers	138981	2592 (1.86-1.86)
Sidechain outliers	138945	2592 (1.86-1.86)
RSRZ outliers	127900	2436 (1.86-1.86)

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 >=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 <=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	115	31% 54% 13% •

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
3	EDO	A	2002	-	X	-	-

2 Entry composition ⓘ

There are 4 unique types of molecules in this entry. The entry contains 1108 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 Bromodomain adjacent to zinc finger domain protein 2B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	115	932	595	153	177	7	0	1	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1856	SER	-	expression tag	UNP Q9UIF8
A	1857	MET	-	expression tag	UNP Q9UIF8

- Molecule 2 is N,N-dimethylquinoxaline-6-carboxamide (three-letter code: 53G) (formula: $C_{11}H_{11}N_3O$).
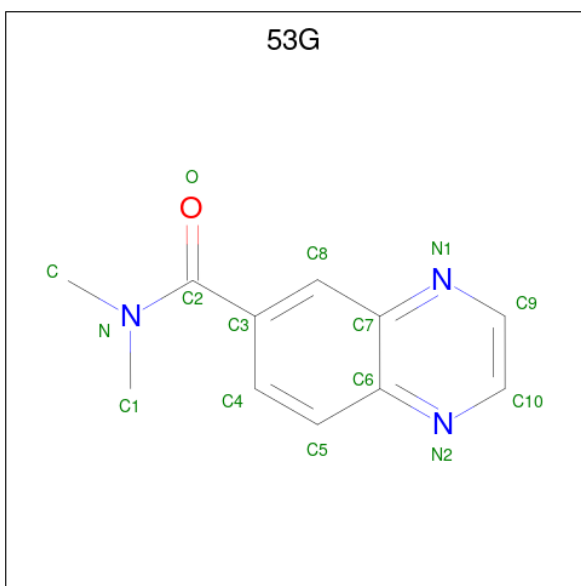
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
2	A	1	15	11	3	1	0	0

- Molecule 3 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).

EDO

O2

OH

C1

C2

HO

O1

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

• Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	157	Total 157	O 157	0	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide 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: Bromodomain adjacent to zinc finger domain protein 2B

Chain A:
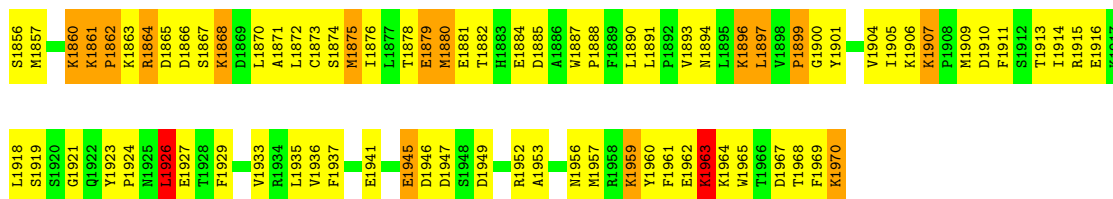
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	82.85Å 96.56Å 57.88Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	42.51 – 1.86 42.58 – 1.86	Depositor EDS
% Data completeness (in resolution range)	99.1 (42.51-1.86) 99.1 (42.58-1.86)	Depositor EDS
R_{merge}	0.04	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.32 (at 1.86Å)	Xtriage
Refinement program	PHENIX	Depositor
R, R_{free}	0.174 , 0.230 0.176 , 0.231	Depositor DCC
R_{free} test set	972 reflections (4.90%)	wwPDB-VP
Wilson B-factor (Å^2)	31.6	Xtriage
Anisotropy	0.038	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 38.5	EDS
L-test for twinning[2]	$< \mid L \mid > = 0.48, < L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	1108	wwPDB-VP
Average B, all atoms (Å^2)	34.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.72% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< \mid L \mid >$, $< L^2 >$ 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: EDO, 53G

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	3.23	92/957 (9.6%)	2.34	51/1290 (4.0%)

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	1

All (92) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1963	LYS	CE-NZ	16.94	1.91	1.49
1	A	1963	LYS	CD-CE	15.58	1.90	1.51
1	A	1884	GLU	CG-CD	14.26	1.73	1.51
1	A	1945[A]	GLU	CD-OE2	13.07	1.40	1.25
1	A	1945[B]	GLU	CD-OE2	13.07	1.40	1.25
1	A	1926	LEU	CA-CB	12.92	1.83	1.53
1	A	1960	TYR	CG-CD1	12.48	1.55	1.39
1	A	1907	LYS	CE-NZ	11.55	1.77	1.49
1	A	1907	LYS	CD-CE	10.39	1.77	1.51
1	A	1860	LYS	CD-CE	10.37	1.77	1.51
1	A	1936	VAL	CB-CG1	10.26	1.74	1.52
1	A	1871	ALA	CA-CB	10.23	1.74	1.52
1	A	1945[A]	GLU	CB-CG	9.97	1.71	1.52
1	A	1945[B]	GLU	CB-CG	9.97	1.71	1.52
1	A	1901	TYR	CD2-CE2	9.85	1.54	1.39
1	A	1960	TYR	CE2-CZ	9.60	1.51	1.38
1	A	1941	GLU	CB-CG	-9.56	1.33	1.52
1	A	1959	LYS	CD-CE	9.51	1.75	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1923	TYR	CB-CG	9.47	1.65	1.51
1	A	1961	PHE	CD1-CE1	9.32	1.57	1.39
1	A	1885	ASP	CB-CG	9.30	1.71	1.51
1	A	1960	TYR	CB-CG	-9.11	1.38	1.51
1	A	1861	LYS	CD-CE	8.81	1.73	1.51
1	A	1921	GLY	CA-C	-8.81	1.37	1.51
1	A	1875	MET	CG-SD	8.76	2.04	1.81
1	A	1923	TYR	CG-CD2	-8.71	1.27	1.39
1	A	1906	LYS	CD-CE	8.21	1.71	1.51
1	A	1961	PHE	CG-CD1	8.20	1.51	1.38
1	A	1861	LYS	CE-NZ	8.15	1.69	1.49
1	A	1970	LYS	N-CA	7.99	1.62	1.46
1	A	1916	GLU	CD-OE2	7.92	1.34	1.25
1	A	1904	VAL	CB-CG2	7.78	1.69	1.52
1	A	1963	LYS	CB-CG	7.75	1.73	1.52
1	A	1927	GLU	CB-CG	-7.72	1.37	1.52
1	A	1945[A]	GLU	CG-CD	7.66	1.63	1.51
1	A	1945[B]	GLU	CG-CD	7.66	1.63	1.51
1	A	1941	GLU	CD-OE2	7.47	1.33	1.25
1	A	1964	LYS	CE-NZ	7.34	1.67	1.49
1	A	1969	PHE	CE1-CZ	6.99	1.50	1.37
1	A	1916	GLU	CG-CD	6.98	1.62	1.51
1	A	1965	TRP	CG-CD1	-6.93	1.27	1.36
1	A	1964	LYS	CD-CE	6.82	1.68	1.51
1	A	1965	TRP	CZ3-CH2	6.79	1.50	1.40
1	A	1899	PRO	CA-CB	6.78	1.67	1.53
1	A	1901	TYR	CZ-OH	6.72	1.49	1.37
1	A	1861	LYS	CG-CD	6.69	1.75	1.52
1	A	1961	PHE	CD2-CE2	6.64	1.52	1.39
1	A	1879	GLU	CB-CG	6.62	1.64	1.52
1	A	1949	ASP	CB-CG	6.46	1.65	1.51
1	A	1937	PHE	CE1-CZ	6.43	1.49	1.37
1	A	1936	VAL	CB-CG2	6.42	1.66	1.52
1	A	1879	GLU	CD-OE2	6.27	1.32	1.25
1	A	1867	SER	CB-OG	6.21	1.50	1.42
1	A	1905	ILE	CB-CG2	6.20	1.72	1.52
1	A	1901	TYR	CE2-CZ	-6.18	1.30	1.38
1	A	1968	THR	C-O	-6.18	1.11	1.23
1	A	1866	ASP	C-O	6.02	1.34	1.23
1	A	1929	PHE	CE2-CZ	5.99	1.48	1.37
1	A	1870	LEU	CG-CD2	5.97	1.74	1.51
1	A	1962	GLU	CG-CD	5.92	1.60	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1878	THR	CA-CB	5.83	1.68	1.53
1	A	1911	PHE	CB-CG	5.80	1.61	1.51
1	A	1868	LYS	CB-CG	5.78	1.68	1.52
1	A	1935	LEU	CG-CD1	5.78	1.73	1.51
1	A	1953	ALA	C-O	5.74	1.34	1.23
1	A	1933	VAL	CB-CG2	5.65	1.64	1.52
1	A	1907	LYS	CB-CG	5.61	1.67	1.52
1	A	1893	VAL	CB-CG1	5.55	1.64	1.52
1	A	1960	TYR	CE1-CZ	-5.54	1.31	1.38
1	A	1947	ASP	C-O	5.52	1.33	1.23
1	A	1962	GLU	CA-CB	-5.52	1.41	1.53
1	A	1862	PRO	CA-C	5.51	1.63	1.52
1	A	1863	LYS	CA-C	5.48	1.67	1.52
1	A	1969	PHE	CB-CG	5.41	1.60	1.51
1	A	1941	GLU	CG-CD	5.41	1.60	1.51
1	A	1887	TRP	CA-CB	5.35	1.65	1.53
1	A	1913	THR	C-O	5.35	1.33	1.23
1	A	1873	CYS	CB-SG	5.33	1.91	1.82
1	A	1856	SER	CA-CB	5.27	1.60	1.52
1	A	1923	TYR	CE2-CZ	5.26	1.45	1.38
1	A	1900	GLY	CA-C	5.22	1.60	1.51
1	A	1874	SER	CB-OG	5.22	1.49	1.42
1	A	1856	SER	C-O	5.18	1.33	1.23
1	A	1874	SER	C-O	5.16	1.33	1.23
1	A	1963	LYS	CG-CD	5.16	1.70	1.52
1	A	1860	LYS	CB-CG	-5.14	1.38	1.52
1	A	1891	LEU	CG-CD1	5.13	1.70	1.51
1	A	1899	PRO	N-CD	5.10	1.54	1.47
1	A	1919	SER	CA-CB	5.08	1.60	1.52
1	A	1924	PRO	CG-CD	5.08	1.67	1.50
1	A	1909	MET	C-O	5.06	1.32	1.23
1	A	1957	MET	CG-SD	-5.04	1.68	1.81

All (51) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1880	MET	CG-SD-CE	-14.70	76.67	100.20
1	A	1861	LYS	CD-CE-NZ	-12.96	81.88	111.70
1	A	1926	LEU	CA-CB-CG	-11.92	87.89	115.30
1	A	1865	ASP	CB-CG-OD1	11.56	128.71	118.30
1	A	1964	LYS	CD-CE-NZ	-10.76	86.96	111.70
1	A	1881	GLU	OE1-CD-OE2	-10.50	110.70	123.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	1860	LYS	CD-CE-NZ	-10.20	88.24	111.70
1	A	1952	ARG	NE-CZ-NH2	-9.96	115.32	120.30
1	A	1929	PHE	CB-CG-CD2	-9.93	113.85	120.80
1	A	1926	LEU	CB-CG-CD1	-9.41	95.00	111.00
1	A	1947	ASP	CB-CG-OD1	9.19	126.57	118.30
1	A	1947	ASP	CB-CG-OD2	-9.12	110.09	118.30
1	A	1949	ASP	CB-CG-OD1	-8.99	110.21	118.30
1	A	1967	ASP	CB-CG-OD1	8.52	125.97	118.30
1	A	1967	ASP	CB-CG-OD2	-8.28	110.84	118.30
1	A	1918	LEU	CB-CG-CD2	7.94	124.50	111.00
1	A	1963	LYS	CD-CE-NZ	-7.79	93.79	111.70
1	A	1884	GLU	OE1-CD-OE2	-7.70	114.06	123.30
1	A	1901	TYR	CB-CG-CD2	-7.02	116.79	121.00
1	A	1910	ASP	CB-CG-OD2	-6.81	112.17	118.30
1	A	1927	GLU	CA-CB-CG	-6.81	98.41	113.40
1	A	1897	LEU	CA-CB-CG	-6.79	99.67	115.30
1	A	1946	ASP	CB-CG-OD1	6.74	124.36	118.30
1	A	1941	GLU	OE1-CD-OE2	6.46	131.05	123.30
1	A	1891	LEU	CB-CG-CD2	-6.44	100.06	111.00
1	A	1964	LYS	CA-CB-CG	6.43	127.54	113.40
1	A	1864	ARG	NE-CZ-NH1	6.36	123.48	120.30
1	A	1860	LYS	CB-CG-CD	-6.34	95.11	111.60
1	A	1963	LYS	CB-CG-CD	-6.33	95.13	111.60
1	A	1936	VAL	CG1-CB-CG2	-6.33	100.78	110.90
1	A	1915	ARG	NE-CZ-NH1	6.29	123.45	120.30
1	A	1872	LEU	CB-CG-CD2	-6.25	100.38	111.00
1	A	1941	GLU	CA-CB-CG	-6.12	99.93	113.40
1	A	1960	TYR	CB-CG-CD1	5.89	124.53	121.00
1	A	1890	LEU	CB-CG-CD1	-5.88	101.01	111.00
1	A	1915	ARG	NE-CZ-NH2	5.85	123.23	120.30
1	A	1907	LYS	CG-CD-CE	5.85	129.44	111.90
1	A	1885	ASP	CB-CG-OD1	-5.72	113.15	118.30
1	A	1915	ARG	NH1-CZ-NH2	-5.71	113.11	119.40
1	A	1897	LEU	CB-CG-CD2	5.67	120.64	111.00
1	A	1857	MET	CG-SD-CE	5.49	108.98	100.20
1	A	1960	TYR	CB-CG-CD2	-5.40	117.76	121.00
1	A	1897	LEU	CB-CA-C	-5.40	99.94	110.20
1	A	1962	GLU	OE1-CD-OE2	-5.38	116.84	123.30
1	A	1918	LEU	CA-CB-CG	5.38	127.68	115.30
1	A	1896	LYS	CB-CG-CD	5.37	125.56	111.60
1	A	1882	THR	CA-CB-CG2	-5.21	105.11	112.40
1	A	1861	LYS	CA-CB-CG	5.20	124.83	113.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	1882	THR	O-C-N	-5.08	114.57	122.70
1	A	1923	TYR	CD1-CE1-CZ	-5.02	115.28	119.80
1	A	1956	ASN	CB-CA-C	-5.02	100.37	110.40

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1864	ARG	Mainchain

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	932	0	908	51	0
2	A	15	0	11	1	0
3	A	4	0	6	0	0
4	A	157	0	0	10	0
All	All	1108	0	925	51	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 27.

All (51) 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:1959:LYS:CE	1:A:1959:LYS:CD	1.75	1.64
1:A:1914:ILE:CD1	1:A:1914:ILE:CG1	1.78	1.61
1:A:1907:LYS:CD	1:A:1907:LYS:CE	1.77	1.60
1:A:1860:LYS:CD	1:A:1860:LYS:CE	1.77	1.58
1:A:1861:LYS:CD	1:A:1861:LYS:CG	1.75	1.58
1:A:1926:LEU:HD12	1:A:1926:LEU:CA	1.33	1.53
1:A:1926:LEU:CA	1:A:1926:LEU:CB	1.83	1.51
1:A:1861:LYS:CE	1:A:1861:LYS:NZ	1.69	1.51
1:A:1963:LYS:CD	1:A:1963:LYS:CE	1.90	1.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1875:MET:SD	1:A:1875:MET:CG	2.03	1.46
1:A:1907:LYS:CE	1:A:1907:LYS:NZ	1.77	1.43
1:A:1926:LEU:CA	1:A:1926:LEU:CD1	2.01	1.39
1:A:1963:LYS:CE	1:A:1963:LYS:NZ	1.91	1.34
1:A:1926:LEU:CD1	1:A:1926:LEU:HA	1.54	1.31
1:A:1926:LEU:CA	1:A:1926:LEU:CG	2.31	1.09
1:A:1861:LYS:CD	1:A:1861:LYS:NZ	2.24	1.01
1:A:1860:LYS:CD	1:A:1860:LYS:NZ	2.29	0.94
1:A:1861:LYS:CG	1:A:1861:LYS:NZ	2.40	0.84
1:A:1861:LYS:CD	1:A:1861:LYS:CB	2.61	0.77
1:A:1945[B]:GLU:OE1	4:A:2101:HOH:O	2.01	0.77
1:A:1899:PRO:O	4:A:2102:HOH:O	2.05	0.74
1:A:1875:MET:SD	1:A:1875:MET:CB	2.75	0.74
1:A:1875:MET:HE2	1:A:1875:MET:HB3	1.74	0.69
1:A:1926:LEU:CB	1:A:1926:LEU:N	2.58	0.65
1:A:1914:ILE:CD1	1:A:1914:ILE:CB	2.75	0.63
1:A:1861:LYS:CG	1:A:1861:LYS:HZ3	2.10	0.63
1:A:1907:LYS:NZ	4:A:2103:HOH:O	2.17	0.63
1:A:1861:LYS:CG	1:A:1861:LYS:HZ2	2.12	0.62
1:A:1861:LYS:HZ3	1:A:1861:LYS:HG3	1.63	0.61
1:A:1888:PRO:O	2:A:2001:53G:H5	2.01	0.60
1:A:1861:LYS:NZ	1:A:1861:LYS:HG3	2.17	0.57
1:A:1963:LYS:NZ	1:A:1963:LYS:CG	2.69	0.56
1:A:1861:LYS:CD	1:A:1861:LYS:HZ3	2.17	0.56
1:A:1970:LYS:O	4:A:2104:HOH:O	2.19	0.52
1:A:1926:LEU:HD12	1:A:1926:LEU:HA	0.59	0.52
1:A:1959:LYS:HE3	4:A:2130:HOH:O	2.12	0.49
1:A:1926:LEU:CB	1:A:1926:LEU:C	2.74	0.48
1:A:1959:LYS:HG3	4:A:2130:HOH:O	2.13	0.47
1:A:1860:LYS:CE	1:A:1860:LYS:CG	2.84	0.47
1:A:1876:ILE:O	1:A:1880:MET:HG2	2.14	0.47
1:A:1963:LYS:CD	1:A:1963:LYS:NZ	2.78	0.46
1:A:1860:LYS:NZ	1:A:1860:LYS:HD3	2.22	0.45
1:A:1959:LYS:CE	1:A:1959:LYS:CG	2.84	0.45
1:A:1875:MET:CB	1:A:1875:MET:HE2	2.45	0.44
1:A:1894:ASN:ND2	1:A:1897:LEU:HD12	2.34	0.43
1:A:1945[B]:GLU:CD	4:A:2101:HOH:O	2.53	0.42
1:A:1875:MET:O	1:A:1879:GLU:HG3	2.20	0.42
1:A:1899:PRO:HB2	4:A:2102:HOH:O	2.18	0.42
1:A:1868:LYS:HB2	4:A:2179:HOH:O	2.21	0.41
1:A:1861:LYS:CD	1:A:1861:LYS:HB3	2.45	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1899:PRO:CB	4:A:2102:HOH:O	2.69	0.40

There are no symmetry-related clashes.

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	114/115 (99%)	111 (97%)	2 (2%)	1 (1%)	17	6

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1926	LEU

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	104/107 (97%)	101 (97%)	3 (3%)	42	26

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1862	PRO
1	A	1896	LYS

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Mol	Chain	Res	Type
1	A	1963	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3   RNA ⓘ

There are no RNA molecules 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 monosaccharides in this entry.

5.6   Ligand geometry ⓘ

2 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	53G	A	2001	-	16,16,16	1.61	4 (25%)	22,22,22	1.57	5 (22%)
3	EDO	A	2002	-	3,3,3	2.45	2 (66%)	2,2,2	0.73	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
2	53G	A	2001	-	-	0/8/8/8	0/2/2/2
3	EDO	A	2002	-	-	1/1/1/1	-

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	2001	53G	O-C2	-3.37	1.15	1.22
3	A	2002	EDO	O1-C1	3.15	1.58	1.42
2	A	2001	53G	C3-C2	3.13	1.55	1.50
2	A	2001	53G	C4-C3	2.40	1.43	1.39
3	A	2002	EDO	O2-C2	2.06	1.52	1.42
2	A	2001	53G	C9-C10	2.03	1.43	1.38

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	2001	53G	C1-N-C2	3.78	134.72	121.74
2	A	2001	53G	C-N-C2	-3.50	109.73	121.74
2	A	2001	53G	C4-C3-C2	-2.46	114.06	120.29
2	A	2001	53G	O-C2-N	-2.25	117.76	122.36
2	A	2001	53G	C8-C7-N1	2.08	120.34	117.97

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	2002	EDO	O1-C1-C2-O2

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	2001	53G	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, 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(Å²)	Q<0.9
1	A	115/115 (100%)	-0.14	0	100	100	22, 32, 45, 59	0

There are no RSRZ outliers to report.

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 monosaccharides 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. 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	B-factors(Å²)	Q<0.9
2	53G	A	2001	15/15	0.81	0.21	26,34,44,46	15
3	EDO	A	2002	4/4	0.86	0.23	46,47,51,55	0

6.5 Other polymers ⓘ

There are no such residues in this entry.

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