Full wwPDB X-ray Structure Validation Report (i)

Nov 13, 2023 – 04:00 PM JST

PDB ID	:	5XKR
Title	:	Crystal structure of Msmeg3575 in complex with benzoguanamine
Authors	:	Gaded, V.M.; Anand, R.
Deposited on	:	2017-05-09
Resolution	:	1.38 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*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

The following versions of software and data (see references (1)) were used in the production of this report:

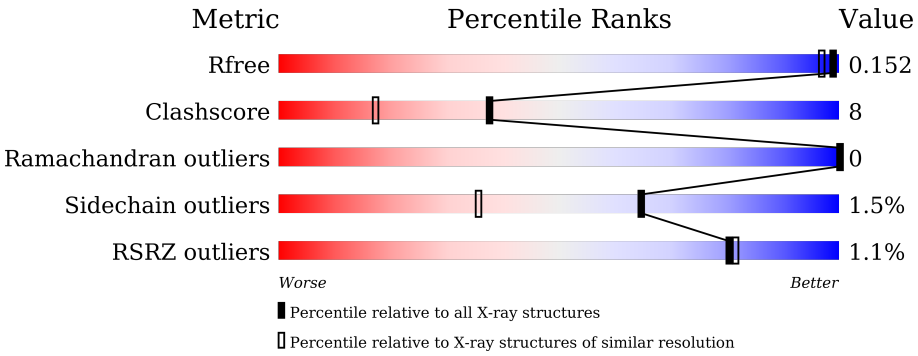
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 1.38 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	2907 (1.40-1.36)
Clashscore	141614	3037 (1.40-1.36)
Ramachandran outliers	138981	2970 (1.40-1.36)
Sidechain outliers	138945	2969 (1.40-1.36)
RSRZ outliers	127900	2846 (1.40-1.36)

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	159	86% 13%
1	B	159	84% 15%
1	C	159	85% 13%
1	D	159	87% 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 crite-

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
5	ACT	C	201	-	-	X	-

2 Entry composition (i)

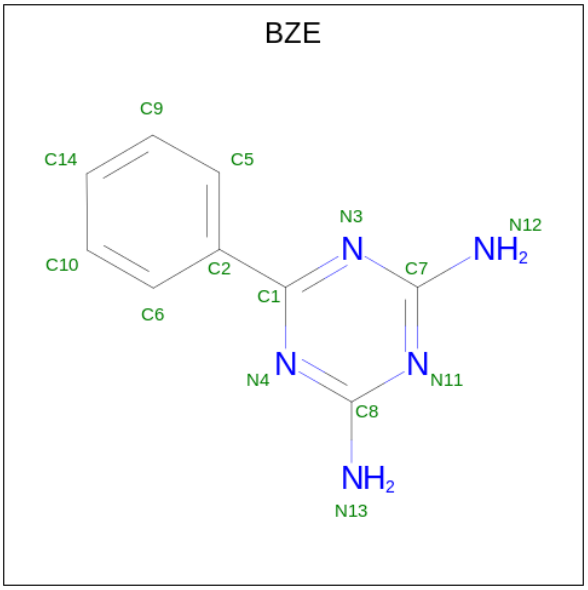
There are 6 unique types of molecules in this entry. The entry contains 6382 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 CMP/dCMP deaminase, zinc-binding protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	158	Total	C	N	O	S	0	8	0
			1235	780	223	227	5			
1	B	158	Total	C	N	O	S	0	10	0
			1252	795	223	229	5			
1	C	158	Total	C	N	O	S	0	13	0
			1271	810	224	232	5			
1	D	158	Total	C	N	O	S	0	6	0
			1235	775	227	228	5			

- Molecule 2 is 6-phenyl-1,3,5-triazine-2,4-diamine (three-letter code: BZE) (formula: $C_9H_9N_5$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N		0	0
			14	9	5			
2	B	1	Total	C	N		0	0
			14	9	5			

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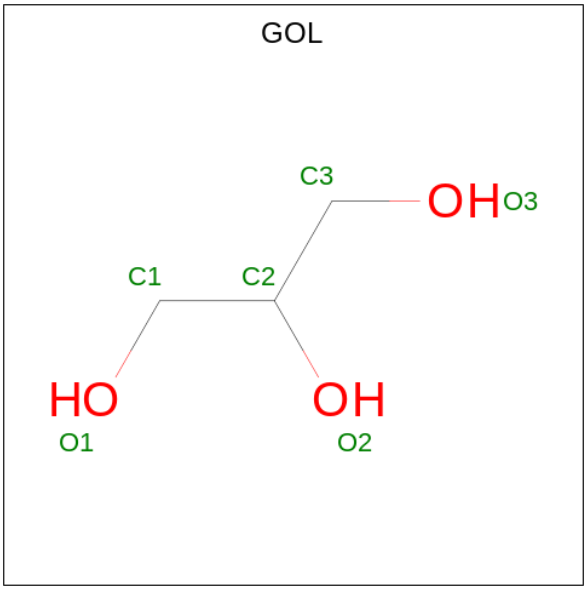
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	C	1	Total C N 14 9 5	0	0
2	D	1	Total C N 14 9 5	0	0

- Molecule 3 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total Zn 1 1	0	0
3	B	1	Total Zn 1 1	0	0
3	C	1	Total Zn 1 1	0	0
3	D	1	Total Zn 1 1	0	0

- Molecule 4 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 6 3 3	0	0
4	B	1	Total C O 6 3 3	0	0
4	B	1	Total C O 6 3 3	0	0

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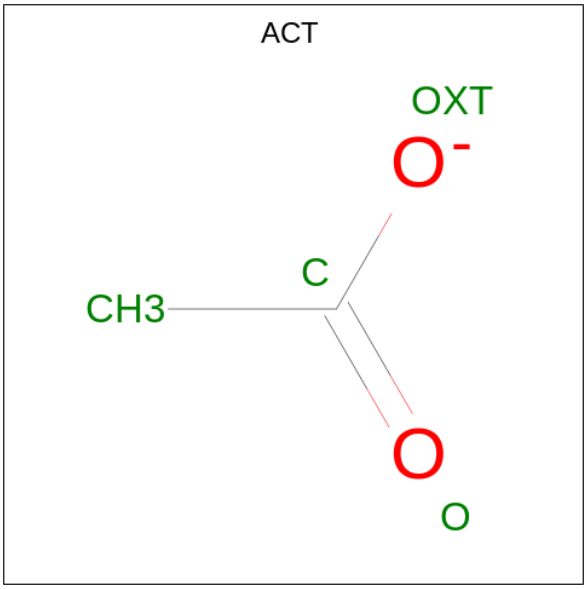
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total C O 6 3 3	0	0
4	C	1	Total C O 6 3 3	0	0
4	C	1	Total C O 6 3 3	0	0
4	C	1	Total C O 6 3 3	0	0
4	D	1	Total C O 6 3 3	0	0

- Molecule 5 is ACETATE ION (three-letter code: ACT) (formula: $C_2H_3O_2$).



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

- Molecule 6 is water.

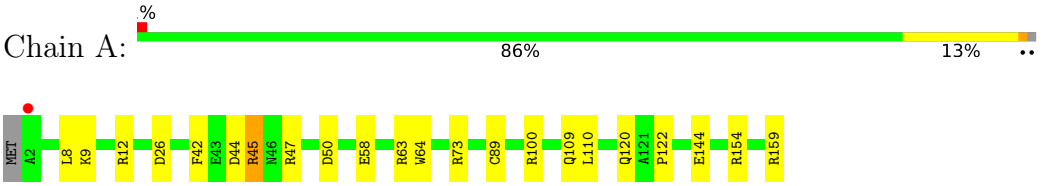
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	340	Total O 340 340	0	0
6	B	307	Total O 307 307	0	0
6	C	306	Total O 306 306	0	0
6	D	312	Total O 312 312	0	0

3 Residue-property plots (i)

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.

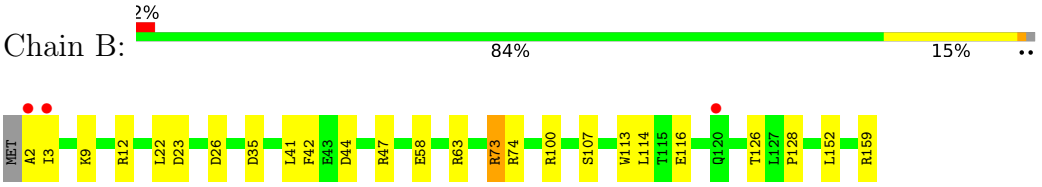
• Molecule 1: CMP/dCMP deaminase, zinc-binding protein

Chain A:



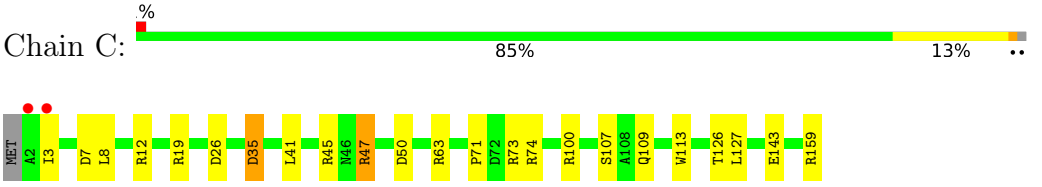
• Molecule 1: CMP/dCMP deaminase, zinc-binding protein

Chain B:



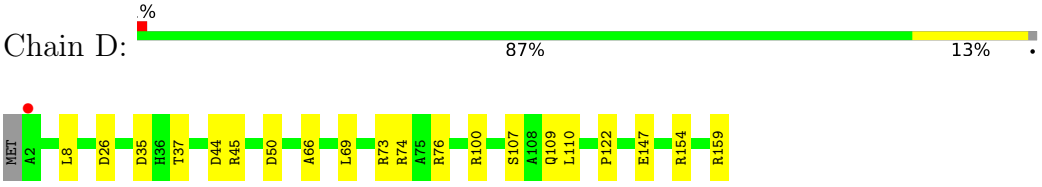
• Molecule 1: CMP/dCMP deaminase, zinc-binding protein

Chain C:



• Molecule 1: CMP/dCMP deaminase, zinc-binding protein

Chain D:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	53.08Å 63.45Å 108.57Å 90.00° 89.99° 90.00°	Depositor
Resolution (Å)	108.57 – 1.38 9.53 – 1.38	Depositor EDS
% Data completeness (in resolution range)	97.4 (108.57-1.38) 97.7 (9.53-1.38)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.04	Depositor
$< I/\sigma(I) >$ [1]	4.77 (at 1.38Å)	Xtriage
Refinement program	REFMAC 5.8.0135	Depositor
R, R_{free}	0.128 , 0.153 0.128 , 0.152	Depositor DCC
R_{free} test set	7144 reflections (4.96%)	wwPDB-VP
Wilson B-factor (Å^2)	13.1	Xtriage
Anisotropy	0.037	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.43 , 50.6	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.487 for h,-k,-l	Xtriage
F_o,F_c correlation	0.98	EDS
Total number of atoms	6382	wwPDB-VP
Average B, all atoms (Å^2)	20.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.25% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ 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: BZE, ACT, ZN, GOL

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	0.87	0/1290	0.99	7/1761 (0.4%)
1	B	0.89	0/1312	1.09	11/1795 (0.6%)
1	C	0.91	0/1342	1.11	10/1832 (0.5%)
1	D	0.91	1/1283 (0.1%)	1.05	8/1750 (0.5%)
All	All	0.89	1/5227 (0.0%)	1.06	36/7138 (0.5%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	107	SER	CB-OG	-8.99	1.30	1.42

All (36) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	74	ARG	NE-CZ-NH2	12.54	126.57	120.30
1	C	74	ARG	NE-CZ-NH1	-12.24	114.18	120.30
1	B	74	ARG	NE-CZ-NH2	11.21	125.91	120.30
1	B	74	ARG	NE-CZ-NH1	-10.54	115.03	120.30
1	A	45	ARG	NE-CZ-NH1	9.17	124.89	120.30
1	D	45	ARG	NE-CZ-NH1	8.45	124.52	120.30
1	C	12	ARG	NE-CZ-NH2	-8.03	116.28	120.30
1	D	154	ARG	NE-CZ-NH1	7.81	124.20	120.30
1	A	100	ARG	NE-CZ-NH2	-7.32	116.64	120.30
1	B	63	ARG	NE-CZ-NH2	-7.26	116.67	120.30
1	B	12	ARG	NE-CZ-NH2	-7.17	116.72	120.30
1	C	63	ARG	NE-CZ-NH2	-6.71	116.95	120.30
1	A	44	ASP	CB-CG-OD1	6.41	124.07	118.30
1	D	100	ARG	NE-CZ-NH2	-6.36	117.12	120.30
1	A	159	ARG	NE-CZ-NH1	6.32	123.46	120.30
1	C	47	ARG	NE-CZ-NH1	6.16	123.38	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	12	ARG	NE-CZ-NH1	6.06	123.33	120.30
1	B	44	ASP	CB-CG-OD2	-6.05	112.85	118.30
1	C	12	ARG	NE-CZ-NH1	5.99	123.29	120.30
1	A	154	ARG	NE-CZ-NH1	5.97	123.28	120.30
1	D	159	ARG	NE-CZ-NH1	5.79	123.19	120.30
1	C	35	ASP	CB-CG-OD2	-5.72	113.15	118.30
1	A	100	ARG	NE-CZ-NH1	5.71	123.16	120.30
1	B	47	ARG	NE-CZ-NH1	5.67	123.13	120.30
1	D	76	ARG	NE-CZ-NH1	-5.56	117.52	120.30
1	B	73	ARG	NE-CZ-NH2	-5.53	117.54	120.30
1	B	73	ARG	NE-CZ-NH1	5.51	123.06	120.30
1	D	44	ASP	CB-CG-OD1	5.46	123.22	118.30
1	B	44	ASP	CB-CG-OD1	5.42	123.18	118.30
1	C	45	ARG	NE-CZ-NH1	5.40	123.00	120.30
1	D	45	ARG	NE-CZ-NH2	-5.38	117.61	120.30
1	B	58	GLU	OE1-CD-OE2	-5.29	116.95	123.30
1	C	7	ASP	CB-CG-OD2	-5.22	113.60	118.30
1	A	47	ARG	NE-CZ-NH2	-5.17	117.71	120.30
1	D	154	ARG	NE-CZ-NH2	-5.09	117.75	120.30
1	C	7	ASP	CB-CG-OD1	5.09	122.88	118.30

There are no chirality outliers.

There are no planarity outliers.

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	1235	0	1204	16	0
1	B	1252	0	1222	19	0
1	C	1271	0	1264	22	0
1	D	1235	0	1210	14	0
2	A	14	0	9	0	0
2	B	14	0	9	2	0
2	C	14	0	9	2	0
2	D	14	0	9	0	0
3	A	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
4	A	6	0	8	0	0
4	B	18	0	23	7	0
4	C	18	0	24	4	0
4	D	6	0	8	0	0
5	B	8	0	6	0	0
5	C	8	0	6	6	0
6	A	340	0	0	12	13
6	B	307	0	0	14	12
6	C	306	0	0	15	9
6	D	312	0	0	12	8
All	All	6382	0	5011	78	21

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 8.

All (78) 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:B:9:LYS:CB	6:B:518:HOH:O	1.87	1.20
1:C:19:ARG:HH21	5:C:201:ACT:H1	1.09	1.11
1:A:120:GLN:CB	6:A:521:HOH:O	2.05	1.05
1:C:3:ILE:HA	4:C:207:GOL:O2	1.60	0.99
1:B:3:ILE:HA	4:B:205:GOL:O2	1.62	0.97
1:C:113:TRP:NE1	6:C:301:HOH:O	1.97	0.96
1:B:159:ARG:CB	6:B:468:HOH:O	2.16	0.94
1:C:113:TRP:CE2	6:C:301:HOH:O	2.25	0.89
1:C:159:ARG:NH2	6:C:302:HOH:O	2.02	0.89
1:A:12:ARG:NH1	6:A:302:HOH:O	2.04	0.89
1:D:50:ASP:OD1	6:D:302:HOH:O	1.91	0.87
1:A:50:ASP:OD1	6:A:301:HOH:O	1.96	0.83
1:C:19:ARG:NH2	5:C:201:ACT:H1	1.93	0.82
1:A:63:ARG:NH1	6:A:303:HOH:O	2.11	0.81
2:C:202:BZE:H4	4:C:206:GOL:H11	1.50	0.76
1:D:69:LEU:O	6:D:303:HOH:O	2.07	0.72
1:C:109:GLN:NE2	6:C:305:HOH:O	2.24	0.70
1:D:8[A]:LEU:HD12	6:D:312:HOH:O	1.93	0.69
1:B:23:ASP:CG	6:B:303:HOH:O	2.32	0.68
1:B:3:ILE:HA	4:B:205:GOL:HO2	1.59	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:35:ASP:OD1	1:D:73[B]:ARG:NH1	2.28	0.66
2:B:201:BZE:H2	4:B:206:GOL:H32	1.63	0.64
1:A:9:LYS:CB	6:A:547:HOH:O	2.44	0.63
1:C:19:ARG:HH21	5:C:201:ACT:CH3	2.00	0.62
1:C:143:GLU:CB	6:C:485:HOH:O	2.48	0.61
2:C:202:BZE:H4	4:C:206:GOL:C1	2.13	0.60
1:B:3:ILE:HB	6:B:307:HOH:O	2.01	0.60
1:B:113[B]:TRP:CD1	6:B:321:HOH:O	2.52	0.60
1:D:147:GLU:OE2	6:D:304:HOH:O	2.16	0.60
1:B:2:ALA:HB3	6:B:334:HOH:O	2.02	0.59
1:C:159:ARG:HD3	6:C:533:HOH:O	2.02	0.59
1:A:109:GLN:HG2	6:A:503:HOH:O	2.02	0.59
1:D:73[B]:ARG:HG3	6:D:305:HOH:O	2.03	0.58
1:A:73[A]:ARG:NH2	6:A:307:HOH:O	2.36	0.58
1:D:37:THR:HG21	6:D:513:HOH:O	2.02	0.58
1:D:74[A]:ARG:NH1	6:D:303:HOH:O	2.37	0.57
1:C:50:ASP:N	6:C:304:HOH:O	2.20	0.56
1:A:73[B]:ARG:HD2	6:A:544:HOH:O	2.05	0.56
1:C:3:ILE:HB	6:C:309:HOH:O	2.06	0.56
1:C:100[A]:ARG:NH2	6:C:303:HOH:O	2.12	0.55
1:B:100[B]:ARG:NH2	6:B:301:HOH:O	2.13	0.55
1:B:114:LEU:HD11	4:B:206:GOL:H11	1.89	0.55
1:C:47:ARG:N	6:C:306:HOH:O	2.41	0.54
1:B:23:ASP:OD2	6:B:303:HOH:O	2.19	0.53
1:C:8[B]:LEU:HD12	6:C:323:HOH:O	2.08	0.53
5:C:201:ACT:H3	6:C:450:HOH:O	2.09	0.53
1:A:73[B]:ARG:HD3	6:A:334:HOH:O	2.09	0.52
1:A:122:PRO:HD2	6:A:564:HOH:O	2.09	0.52
1:B:116:GLU:O	6:B:302:HOH:O	2.19	0.52
2:B:201:BZE:H2	4:B:206:GOL:C3	2.23	0.51
1:B:159:ARG:CA	6:B:468:HOH:O	2.53	0.51
1:D:66:ALA:O	6:D:303:HOH:O	2.19	0.50
1:D:122:PRO:HD2	6:D:553:HOH:O	2.11	0.50
4:B:207:GOL:C1	6:B:318:HOH:O	2.60	0.50
1:C:19:ARG:HH12	5:C:204:ACT:H3	1.77	0.49
1:B:107[A]:SER:HB3	1:B:126:THR:HB	1.95	0.48
1:D:109:GLN:HG2	6:D:501:HOH:O	2.13	0.48
1:C:107[A]:SER:HB3	1:C:126:THR:HB	1.96	0.47
1:A:8[B]:LEU:HD21	1:A:144:GLU:OE1	2.15	0.47
1:C:35:ASP:HB3	1:C:41:LEU:HD11	1.97	0.47
6:B:302:HOH:O	1:C:127:LEU:HD21	2.16	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:128:PRO:HG3	6:B:501:HOH:O	2.16	0.46
1:C:71:PRO:HA	6:C:352:HOH:O	2.16	0.46
1:C:159:ARG:CD	6:C:533:HOH:O	2.62	0.45
1:B:35:ASP:HB3	1:B:41:LEU:HD11	1.98	0.45
5:C:201:ACT:CH3	6:C:450:HOH:O	2.64	0.45
1:A:122:PRO:CD	6:A:564:HOH:O	2.65	0.44
1:B:3:ILE:HD13	4:B:205:GOL:O2	2.17	0.44
1:A:110:LEU:HD23	6:A:472:HOH:O	2.17	0.44
1:D:110:LEU:HD23	6:D:460:HOH:O	2.17	0.43
1:C:3:ILE:HD13	4:C:207:GOL:O2	2.19	0.42
1:A:42[B]:PHE:CE2	1:A:64:TRP:CD1	3.07	0.42
1:B:22[B]:LEU:HD13	1:B:152[B]:LEU:HD12	2.01	0.42
1:D:122:PRO:CD	6:D:553:HOH:O	2.68	0.41
1:B:42:PHE:CZ	6:B:329:HOH:O	2.57	0.41
1:A:58:GLU:HB2	1:A:89:CYS:HB3	2.03	0.40
1:A:42[B]:PHE:CD2	1:A:64:TRP:CD1	3.08	0.40

All (21) 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)
6:A:389:HOH:O	6:C:497:HOH:O[2_545]	1.44	0.76
6:A:473:HOH:O	6:B:495:HOH:O[1_655]	1.46	0.74
6:A:485:HOH:O	6:B:314:HOH:O[1_655]	1.47	0.73
6:C:487:HOH:O	6:D:435:HOH:O[1_455]	1.52	0.68
6:A:478:HOH:O	6:C:491:HOH:O[2_545]	1.53	0.67
6:A:539:HOH:O	6:C:450:HOH:O[2_545]	1.67	0.53
6:B:510:HOH:O	6:D:307:HOH:O[2_546]	1.83	0.37
6:A:503:HOH:O	6:B:447:HOH:O[2_555]	1.90	0.30
6:B:303:HOH:O	6:D:311:HOH:O[2_546]	1.91	0.29
6:B:513:HOH:O	6:D:506:HOH:O[2_546]	1.97	0.23
6:C:596:HOH:O	6:D:564:HOH:O[2_546]	1.98	0.22
6:A:308:HOH:O	6:B:346:HOH:O[2_555]	2.02	0.18
6:A:399:HOH:O	6:C:497:HOH:O[2_545]	2.07	0.13
6:C:471:HOH:O	6:D:513:HOH:O[1_455]	2.07	0.13
6:B:442:HOH:O	6:D:319:HOH:O[2_546]	2.10	0.10
6:A:386:HOH:O	6:B:346:HOH:O[2_555]	2.11	0.09
6:A:524:HOH:O	6:B:566:HOH:O[2_555]	2.11	0.09
6:C:487:HOH:O	6:D:502:HOH:O[1_455]	2.13	0.07
6:A:363:HOH:O	6:C:464:HOH:O[2_545]	2.18	0.02

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:A:584:HOH:O	6:B:588:HOH:O[2_545]	2.18	0.02
6:A:315:HOH:O	6:B:482:HOH:O[1_655]	2.19	0.01

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	164/159 (103%)	163 (99%)	1 (1%)	0	100	100
1	B	166/159 (104%)	165 (99%)	1 (1%)	0	100	100
1	C	169/159 (106%)	168 (99%)	1 (1%)	0	100	100
1	D	162/159 (102%)	161 (99%)	1 (1%)	0	100	100
All	All	661/636 (104%)	657 (99%)	4 (1%)	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	124/121 (102%)	122 (98%)	2 (2%)	62	33
1	B	127/121 (105%)	125 (98%)	2 (2%)	62	33
1	C	132/121 (109%)	130 (98%)	2 (2%)	65	36
1	D	125/121 (103%)	124 (99%)	1 (1%)	81	61
All	All	508/484 (105%)	501 (99%)	7 (1%)	65	39

All (7) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	26	ASP
1	A	45	ARG
1	B	26	ASP
1	B	73	ARG
1	C	26	ASP
1	C	73	ARG
1	D	26	ASP

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

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 monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 20 ligands modelled in this entry, 4 are monoatomic - leaving 16 for Mogul analysis.

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	$\#\|Z\| > 2$
4	GOL	D	203	-	5,5,5	0.43	0	5,5,5	0.70	0
2	BZE	C	202	-	15,15,15	0.47	0	20,20,20	0.59	0
4	GOL	C	205	-	5,5,5	0.57	0	5,5,5	0.89	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
5	ACT	B	203	-	3,3,3	0.74	0	3,3,3	1.03	0
4	GOL	C	206	-	5,5,5	0.54	0	5,5,5	1.12	0
4	GOL	B	205	-	5,5,5	0.51	0	5,5,5	0.64	0
2	BZE	D	202	-	15,15,15	0.46	0	20,20,20	0.82	0
2	BZE	A	201	-	15,15,15	0.48	0	20,20,20	0.77	0
4	GOL	B	207	-	5,5,5	0.39	0	5,5,5	1.32	1 (20%)
5	ACT	C	201	-	3,3,3	2.35	2 (66%)	3,3,3	1.00	0
4	GOL	B	206	-	5,5,5	1.38	1 (20%)	5,5,5	3.15	2 (40%)
2	BZE	B	201	-	15,15,15	0.48	0	20,20,20	0.61	0
5	ACT	B	204	-	3,3,3	0.97	0	3,3,3	0.22	0
4	GOL	A	203	-	5,5,5	0.38	0	5,5,5	0.73	0
4	GOL	C	207	-	5,5,5	0.59	0	5,5,5	1.11	0
5	ACT	C	204	-	3,3,3	0.63	0	3,3,3	1.42	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
4	GOL	D	203	-	-	0/4/4/4	-
2	BZE	C	202	-	-	0/4/4/4	0/2/2/2
4	GOL	C	205	-	-	0/4/4/4	-
4	GOL	C	206	-	-	4/4/4/4	-
4	GOL	B	205	-	-	3/4/4/4	-
2	BZE	D	202	-	-	0/4/4/4	0/2/2/2
2	BZE	A	201	-	-	0/4/4/4	0/2/2/2
4	GOL	B	207	-	-	2/4/4/4	-
4	GOL	B	206	-	-	2/4/4/4	-
2	BZE	B	201	-	-	0/4/4/4	0/2/2/2
4	GOL	A	203	-	-	0/4/4/4	-
4	GOL	C	207	-	-	0/4/4/4	-

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	C	201	ACT	CH3-C	-3.06	1.36	1.49
5	C	201	ACT	O-C	2.43	1.33	1.22
4	B	206	GOL	O3-C3	-2.41	1.32	1.42

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	B	206	GOL	O2-C2-C3	-6.18	81.90	109.12
4	B	206	GOL	O2-C2-C1	3.22	123.31	109.12
4	B	207	GOL	O2-C2-C3	2.28	119.19	109.12

There are no chirality outliers.

All (11) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	B	205	GOL	O1-C1-C2-C3
4	B	206	GOL	O1-C1-C2-C3
4	B	207	GOL	C1-C2-C3-O3
4	C	206	GOL	C1-C2-C3-O3
4	C	206	GOL	O2-C2-C3-O3
4	B	205	GOL	O1-C1-C2-O2
4	B	207	GOL	O2-C2-C3-O3
4	C	206	GOL	O1-C1-C2-C3
4	B	206	GOL	O1-C1-C2-O2
4	C	206	GOL	O1-C1-C2-O2
4	B	205	GOL	O2-C2-C3-O3

There are no ring outliers.

9 monomers are involved in 17 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	202	BZE	2	0
4	C	206	GOL	2	0
4	B	205	GOL	3	0
4	B	207	GOL	1	0
5	C	201	ACT	5	0
4	B	206	GOL	3	0
2	B	201	BZE	2	0
4	C	207	GOL	2	0
5	C	204	ACT	1	0

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} 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^2)	Q<0.9
1	A	158/159 (99%)	-0.20	1 (0%)	89	90	9, 15, 28, 42	0
1	B	158/159 (99%)	-0.19	3 (1%)	66	69	9, 13, 26, 52	1 (0%)
1	C	158/159 (99%)	-0.20	2 (1%)	77	78	9, 13, 26, 46	0
1	D	158/159 (99%)	-0.15	1 (0%)	89	90	9, 15, 30, 43	1 (0%)
All	All	632/636 (99%)	-0.19	7 (1%)	80	81	9, 14, 28, 52	2 (0%)

All (7) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	2	ALA	5.3
1	B	3	ILE	4.1
1	B	2	ALA	3.9
1	C	3	ILE	3.5
1	A	2	ALA	3.4
1	D	2	ALA	2.4
1	B	120[A]	GLN	2.2

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 (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^{th} 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^2)	Q<0.9
4	GOL	B	205	6/6	0.70	0.20	35,39,41,43	0
4	GOL	C	207	6/6	0.75	0.22	33,38,43,46	0
5	ACT	B	204	4/4	0.79	0.16	47,49,50,51	0
5	ACT	C	204	4/4	0.85	0.17	44,45,47,50	0
4	GOL	C	206	6/6	0.86	0.18	22,28,38,42	0
4	GOL	B	206	6/6	0.87	0.14	25,26,34,41	0
4	GOL	B	207	6/6	0.90	0.11	32,39,40,40	0
4	GOL	C	205	6/6	0.90	0.11	19,29,31,32	0
4	GOL	D	203	6/6	0.91	0.10	19,25,29,36	0
4	GOL	A	203	6/6	0.92	0.17	19,26,30,37	0
5	ACT	C	201	4/4	0.95	0.07	10,13,13,18	0
2	BZE	B	201	14/14	0.96	0.06	9,10,11,11	0
2	BZE	A	201	14/14	0.96	0.08	11,11,13,13	0
2	BZE	D	202	14/14	0.97	0.06	10,11,12,13	0
2	BZE	C	202	14/14	0.97	0.07	9,10,10,11	0
5	ACT	B	203	4/4	0.98	0.06	13,13,13,15	0
3	ZN	A	202	1/1	1.00	0.04	10,10,10,10	0
3	ZN	B	202	1/1	1.00	0.03	9,9,9,9	0
3	ZN	C	203	1/1	1.00	0.05	9,9,9,9	0
3	ZN	D	201	1/1	1.00	0.04	10,10,10,10	0

6.5 Other polymers (i)

There are no such residues in this entry.