Full wwPDB X-ray Structure Validation Report ⓘ

May 25, 2020 – 04:56 am BST

PDB ID	:	5DY0
Title	:	Crystal of AmtR from Corynebacterium glutamicum in complex with DNA
Authors	:	Palanca, C.; Rubio, V.
Deposited on	:	2015-09-24
Resolution	:	3.00 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 ⓘ symbol.

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

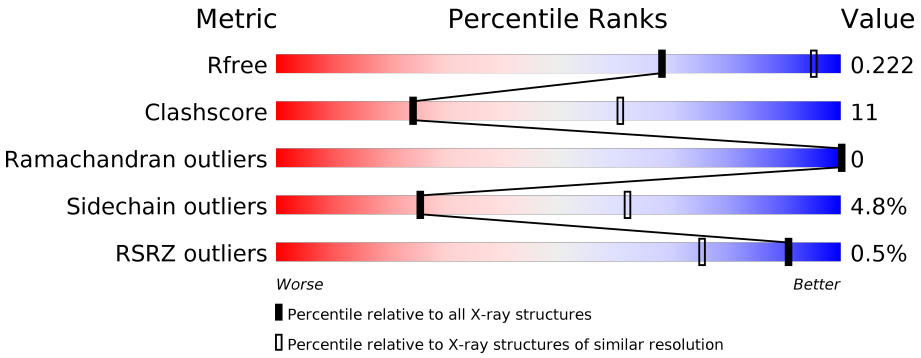
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.11
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.11

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.00 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	2092 (3.00-3.00)
Clashscore	141614	2416 (3.00-3.00)
Ramachandran outliers	138981	2333 (3.00-3.00)
Sidechain outliers	138945	2336 (3.00-3.00)
RSRZ outliers	127900	1990 (3.00-3.00)

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 >=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	230	% 83% 12%
1	B	230	74% 21% 5%
1	C	230	68% 23% 5%
1	D	230	% 73% 20% 5%
2	E	26	65% 31%
2	F	26	73% 23%

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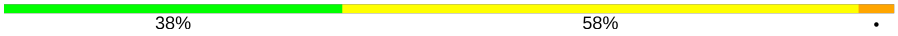
Mol	Chain	Length	Quality of chain
2	G	26	
2	H	26	

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 8709 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 TetR family transcriptional regulator.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	220	Total	C	N	O	S	0	0	0
			1664	1052	295	313	4			
1	B	218	Total	C	N	O	S	0	0	0
			1642	1038	286	314	4			
1	C	218	Total	C	N	O	S	0	0	0
			1637	1033	287	313	4			
1	D	219	Total	C	N	O	S	0	0	0
			1646	1040	291	311	4			

There are 36 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	141	ILE	VAL	conflict	UNP A0A072Z681
A	223	LEU	-	expression tag	UNP A0A072Z681
A	224	GLU	-	expression tag	UNP A0A072Z681
A	225	HIS	-	expression tag	UNP A0A072Z681
A	226	HIS	-	expression tag	UNP A0A072Z681
A	227	HIS	-	expression tag	UNP A0A072Z681
A	228	HIS	-	expression tag	UNP A0A072Z681
A	229	HIS	-	expression tag	UNP A0A072Z681
A	230	HIS	-	expression tag	UNP A0A072Z681
B	141	ILE	VAL	conflict	UNP A0A072Z681
B	223	LEU	-	expression tag	UNP A0A072Z681
B	224	GLU	-	expression tag	UNP A0A072Z681
B	225	HIS	-	expression tag	UNP A0A072Z681
B	226	HIS	-	expression tag	UNP A0A072Z681
B	227	HIS	-	expression tag	UNP A0A072Z681
B	228	HIS	-	expression tag	UNP A0A072Z681
B	229	HIS	-	expression tag	UNP A0A072Z681
B	230	HIS	-	expression tag	UNP A0A072Z681
C	141	ILE	VAL	conflict	UNP A0A072Z681
C	223	LEU	-	expression tag	UNP A0A072Z681
C	224	GLU	-	expression tag	UNP A0A072Z681

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Chain	Residue	Modelled	Actual	Comment	Reference
C	225	HIS	-	expression tag	UNP A0A072Z681
C	226	HIS	-	expression tag	UNP A0A072Z681
C	227	HIS	-	expression tag	UNP A0A072Z681
C	228	HIS	-	expression tag	UNP A0A072Z681
C	229	HIS	-	expression tag	UNP A0A072Z681
C	230	HIS	-	expression tag	UNP A0A072Z681
D	141	ILE	VAL	conflict	UNP A0A072Z681
D	223	LEU	-	expression tag	UNP A0A072Z681
D	224	GLU	-	expression tag	UNP A0A072Z681
D	225	HIS	-	expression tag	UNP A0A072Z681
D	226	HIS	-	expression tag	UNP A0A072Z681
D	227	HIS	-	expression tag	UNP A0A072Z681
D	228	HIS	-	expression tag	UNP A0A072Z681
D	229	HIS	-	expression tag	UNP A0A072Z681
D	230	HIS	-	expression tag	UNP A0A072Z681

- Molecule 2 is a DNA chain called DNA.

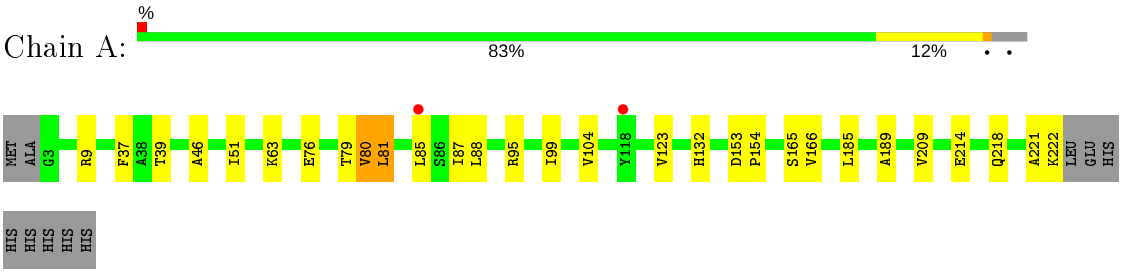
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	E	26	Total	C	N	O	P	0	0	0
			530	257	94	154	25			
2	F	26	Total	C	N	O	P	0	0	0
			530	257	94	154	25			
2	G	26	Total	C	N	O	P	0	0	0
			530	257	94	154	25			
2	H	26	Total	C	N	O	P	0	0	0
			530	257	94	154	25			

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.

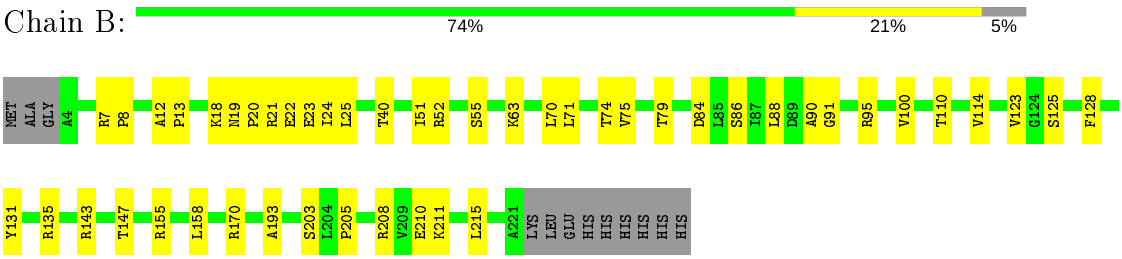
- Molecule 1: TetR family transcriptional regulator

Chain A:



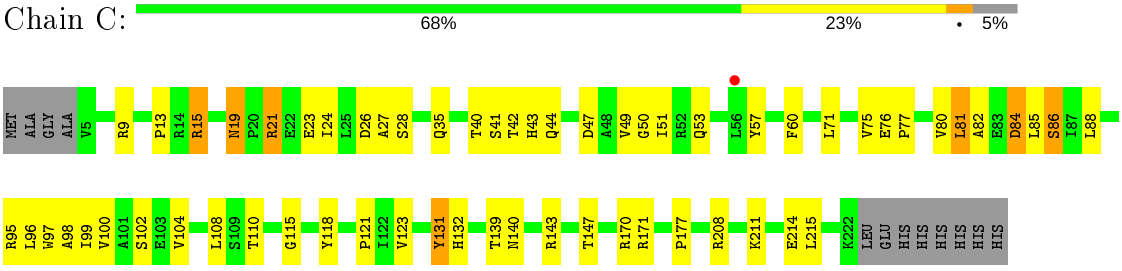
- Molecule 1: TetR family transcriptional regulator

Chain B:



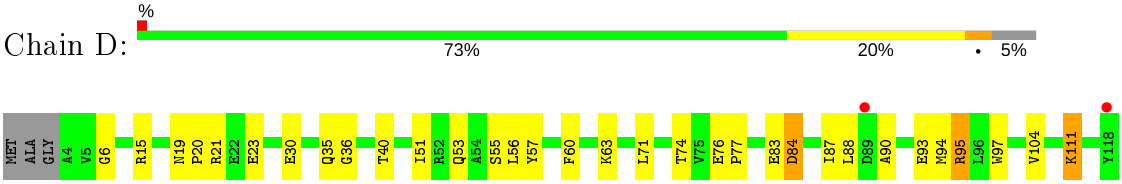
- Molecule 1: TetR family transcriptional regulator

Chain C:



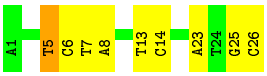
- Molecule 1: TetR family transcriptional regulator

Chain D:



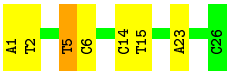
- Molecule 2: DNA

Chain E:



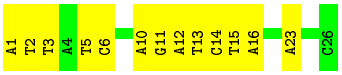
- Molecule 2: DNA

Chain F:



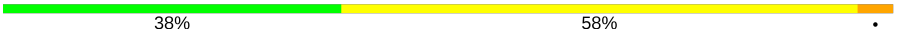
- Molecule 2: DNA

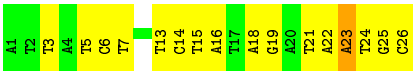
Chain G:



- Molecule 2: DNA

Chain H:





4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	101.73Å 137.42Å 239.87Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	137.42 – 3.00 119.94 – 3.00	Depositor EDS
% Data completeness (in resolution range)	97.3 (137.42-3.00) 97.3 (119.94-3.00)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.59 (at 3.01Å)	Xtriage
Refinement program	REFMAC 5.8.0124	Depositor
R, R_{free}	0.206 , 0.224 0.210 , 0.222	Depositor DCC
R_{free} test set	3348 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å^2)	89.0	Xtriage
Anisotropy	0.404	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 74.9	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	8709	wwPDB-VP
Average B, all atoms (Å^2)	94.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.05% 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

5.1 Standard geometry

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	0.58	0/1696	0.77	0/2310
1	B	0.51	0/1674	0.69	0/2284
1	C	0.49	0/1669	0.71	0/2279
1	D	0.58	0/1677	0.77	0/2286
2	E	0.57	0/594	0.91	2/915 (0.2%)
2	F	0.51	0/594	0.97	3/915 (0.3%)
2	G	0.53	0/594	0.93	1/915 (0.1%)
2	H	0.55	0/594	1.00	1/915 (0.1%)
All	All	0.54	0/9092	0.80	7/12819 (0.1%)

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	F	23	DA	O4'-C4'-C3'	-8.76	100.74	106.00
2	G	23	DA	O4'-C4'-C3'	-8.73	100.76	106.00
2	E	23	DA	O4'-C4'-C3'	-6.53	101.89	104.50
2	H	23	DA	O4'-C4'-C3'	-6.52	101.89	104.50
2	E	5	DT	C1'-O4'-C4'	-6.16	103.94	110.10
2	F	23	DA	C1'-O4'-C4'	-5.68	104.42	110.10
2	F	5	DT	C1'-O4'-C4'	-5.06	105.04	110.10

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	1664	0	1654	21	0
1	B	1642	0	1619	31	0
1	C	1637	0	1595	55	0
1	D	1646	0	1631	34	0
2	E	530	0	298	8	0
2	F	530	0	298	6	0
2	G	530	0	298	12	0
2	H	530	0	298	17	0
All	All	8709	0	7691	179	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 11.

All (179) 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:125:SER:OG	1:B:128:PHE:CD2	1.78	1.34
1:D:84:ASP:O	1:D:87:ILE:HG12	1.51	1.09
1:B:125:SER:OG	1:B:128:PHE:HD2	1.19	1.00
1:D:93:GLU:N	1:D:93:GLU:OE1	1.95	1.00
1:D:90:ALA:O	1:D:95:ARG:NH1	1.96	0.99
1:C:24:ILE:HD11	1:C:60:PHE:CE2	2.03	0.92
1:C:143:ARG:O	1:C:147:THR:HG23	1.72	0.88
1:C:24:ILE:HD11	1:C:60:PHE:CD2	2.10	0.87
1:C:123:VAL:HG12	1:C:132:HIS:CE1	2.11	0.85
1:C:110:THR:O	1:C:170:ARG:NH2	2.13	0.82
1:C:15:ARG:HB2	1:C:23:GLU:HG2	1.62	0.80
1:C:15:ARG:NH1	1:C:26:ASP:OD1	2.13	0.80
1:D:104:VAL:HG13	1:D:166:VAL:HG11	1.66	0.78
2:H:13:DT:H2'	2:H:14:DC:C6	2.20	0.76
1:C:15:ARG:HD2	1:C:27:ALA:HB2	1.66	0.76
2:G:15:DT:H2"	2:G:16:DA:H5'	1.67	0.75
2:H:21:DT:H2"	2:H:22:DA:C8	2.21	0.75
1:C:40:THR:HA	1:C:44:GLN:OE1	1.86	0.74
1:D:94:MET:CE	1:D:205:PRO:HB2	2.16	0.74
1:B:125:SER:CB	1:B:128:PHE:HD2	2.00	0.74
1:D:162:ILE:O	1:D:165:SER:OG	2.07	0.71
1:D:84:ASP:O	1:D:87:ILE:CG1	2.36	0.71
1:C:80:VAL:O	1:C:84:ASP:OD1	2.09	0.70
1:D:36:GLY:O	1:D:40:THR:HG23	1.92	0.69
1:D:137:ALA:O	1:D:141:ILE:HG13	1.95	0.67
2:H:25:DG:H1'	2:H:26:DC:H5'	1.77	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:76:GLU:O	1:A:80:VAL:HG13	1.94	0.67
1:C:170:ARG:NH1	1:C:171:ARG:O	2.27	0.66
1:D:35:GLN:OE1	1:D:40:THR:HG22	1.96	0.66
1:B:211:LYS:O	1:B:215:LEU:HD12	1.96	0.66
1:D:15:ARG:NH2	1:D:30:GLU:OE2	2.23	0.65
1:B:143:ARG:O	1:B:147:THR:HG23	1.96	0.65
1:D:185:LEU:HD12	1:D:209:VAL:HG13	1.78	0.65
1:C:15:ARG:HB2	1:C:23:GLU:CG	2.26	0.64
1:D:119:GLN:O	1:D:119:GLN:HG3	1.96	0.64
1:C:77:PRO:O	1:C:80:VAL:HG12	1.97	0.64
1:C:131:TYR:CD1	1:C:131:TYR:C	2.70	0.64
2:H:25:DG:H2"	2:H:26:DC:OP2	1.97	0.64
1:B:110:THR:O	1:B:170:ARG:NH2	2.30	0.63
1:C:96:LEU:HD12	1:C:96:LEU:O	1.99	0.63
1:A:87:ILE:O	1:A:87:ILE:HD12	2.00	0.61
2:F:5:DT:H2'	2:F:6:DC:C6	2.35	0.61
1:D:94:MET:HE1	1:D:205:PRO:HB2	1.82	0.61
1:D:94:MET:HE2	1:D:205:PRO:HB2	1.83	0.60
1:B:125:SER:OG	1:B:128:PHE:CE2	2.51	0.59
1:B:125:SER:CB	1:B:128:PHE:CD2	2.78	0.59
2:E:5:DT:H2'	2:E:6:DC:C6	2.37	0.59
2:E:7:DT:H1'	2:E:8:DA:H5'	1.84	0.59
1:C:123:VAL:HG12	1:C:132:HIS:NE2	2.17	0.59
2:H:24:DT:H2"	2:H:25:DG:C5'	2.33	0.59
1:C:88:LEU:HD13	1:C:215:LEU:HD22	1.85	0.58
1:C:41:SER:OG	1:C:44:GLN:HG3	2.03	0.58
1:C:123:VAL:O	1:C:132:HIS:NE2	2.35	0.57
1:C:24:ILE:HD11	1:C:60:PHE:HE2	1.65	0.57
1:A:104:VAL:HG13	1:A:166:VAL:HG11	1.86	0.56
1:D:194:ASP:OD1	1:D:208:ARG:NH1	2.39	0.56
1:D:51:ILE:HD12	1:D:55:SER:HB2	1.87	0.56
1:B:19:ASN:HB2	1:B:20:PRO:HD2	1.86	0.56
1:C:81:LEU:HD12	1:C:82:ALA:N	2.20	0.56
1:D:119:GLN:O	1:D:119:GLN:CG	2.52	0.56
1:D:20:PRO:HA	1:D:23:GLU:HG2	1.86	0.56
1:A:85:LEU:O	1:A:88:LEU:HD23	2.05	0.56
1:D:104:VAL:HG11	1:D:189:ALA:HA	1.87	0.56
1:A:37:PHE:CZ	1:A:63:LYS:HE2	2.41	0.56
1:B:123:VAL:HG11	1:B:131:TYR:CE1	2.41	0.56
2:E:6:DC:H2'	2:E:7:DT:C6	2.41	0.56
1:C:9:ARG:CD	1:C:51:ILE:HD11	2.37	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:210:GLU:CD	1:D:206:ALA:HB2	2.28	0.54
1:B:21:ARG:O	1:B:25:LEU:HD12	2.08	0.54
1:C:131:TYR:CD1	1:C:132:HIS:N	2.75	0.54
1:A:95:ARG:O	1:A:99:ILE:HG12	2.08	0.53
1:B:21:ARG:O	1:B:24:ILE:HB	2.08	0.53
2:G:12:DA:H2'	2:G:13:DT:O4'	2.09	0.53
1:A:37:PHE:CE1	1:A:63:LYS:HE2	2.43	0.53
1:C:15:ARG:HD2	1:C:27:ALA:CB	2.36	0.53
2:H:23:DA:H2'	2:H:24:DT:C6	2.44	0.53
1:C:15:ARG:NH1	1:C:27:ALA:HA	2.25	0.52
1:D:97:TRP:CZ2	1:D:208:ARG:HD2	2.45	0.52
2:H:5:DT:H2'	2:H:6:DC:C6	2.45	0.52
2:E:13:DT:H2"	2:E:14:DC:H5'	1.90	0.52
2:H:24:DT:H2"	2:H:25:DG:H5'	1.90	0.52
1:D:88:LEU:O	1:D:95:ARG:HD2	2.10	0.51
1:D:145:LEU:O	1:D:149:ILE:HD12	2.10	0.51
2:F:5:DT:H2'	2:F:6:DC:H6	1.74	0.51
2:E:5:DT:H2'	2:E:6:DC:H6	1.73	0.51
1:C:35:GLN:NE2	1:C:40:THR:OG1	2.44	0.51
1:A:87:ILE:C	1:A:88:LEU:HD22	2.32	0.50
1:B:84:ASP:O	1:B:88:LEU:HD13	2.11	0.50
1:A:123:VAL:O	1:A:132:HIS:NE2	2.44	0.50
1:A:153:ASP:OD1	1:A:154:PRO:HD2	2.12	0.50
2:H:24:DT:O4'	2:H:24:DT:OP2	2.30	0.50
1:B:24:ILE:HG22	1:B:25:LEU:N	2.26	0.49
2:G:15:DT:H2"	2:G:16:DA:C5'	2.39	0.49
1:B:70:LEU:O	1:B:74:THR:HG23	2.13	0.49
1:C:15:ARG:HD3	1:C:26:ASP:OD1	2.12	0.49
2:H:18:DA:H2'	2:H:19:DG:C8	2.48	0.49
1:B:205:PRO:HB2	1:B:208:ARG:HB3	1.95	0.49
2:H:6:DC:H2'	2:H:7:DT:C6	2.48	0.49
1:C:9:ARG:HD3	1:C:51:ILE:HD11	1.95	0.48
2:G:2:DT:H2"	2:G:3:DT:H5'	1.96	0.48
2:G:5:DT:H2'	2:G:6:DC:C6	2.48	0.48
1:C:15:ARG:CZ	1:C:26:ASP:OD1	2.61	0.48
1:C:97:TRP:NE1	1:C:208:ARG:HD2	2.29	0.48
1:C:53:GLN:NE2	2:H:16:DA:N7	2.53	0.47
2:H:25:DG:H1'	2:H:26:DC:C5'	2.44	0.47
1:C:115:GLY:HA2	1:C:118:TYR:CD2	2.49	0.47
1:C:77:PRO:HA	1:C:80:VAL:HG12	1.97	0.47
1:B:12:ALA:HB1	1:B:13:PRO:HD2	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:131:TYR:HD1	1:C:132:HIS:N	2.12	0.47
1:B:7:ARG:HG3	1:B:8:PRO:HD2	1.97	0.47
1:C:71:LEU:HD23	1:C:131:TYR:CD2	2.50	0.47
1:B:100:VAL:HG11	1:B:193:ALA:HA	1.95	0.47
1:C:19:ASN:OD1	1:C:21:ARG:N	2.48	0.47
2:F:1:DA:H4'	2:F:2:DT:OP1	2.15	0.46
2:H:14:DC:H2'	2:H:15:DT:H72	1.97	0.46
1:D:142:PHE:CE2	1:D:163:THR:HG21	2.51	0.46
1:A:104:VAL:HG11	1:A:189:ALA:HA	1.98	0.46
1:B:88:LEU:HD23	1:B:215:LEU:HD23	1.98	0.46
1:D:76:GLU:N	1:D:77:PRO:HD2	2.31	0.46
1:A:87:ILE:O	1:A:88:LEU:HD22	2.16	0.45
1:C:75:VAL:HG23	1:C:118:TYR:HE1	1.81	0.45
1:D:170:ARG:HD3	1:D:171:ARG:O	2.17	0.45
1:D:83:GLU:O	1:D:87:ILE:HG23	2.17	0.45
1:B:95:ARG:HH11	1:B:95:ARG:HG3	1.82	0.45
1:C:95:ARG:O	1:C:99:ILE:HG13	2.17	0.45
2:H:24:DT:C2'	2:H:25:DG:H5'	2.47	0.45
2:G:10:DA:H4'	2:G:11:DG:OP1	2.16	0.45
1:C:50:GLY:O	1:C:51:ILE:HD12	2.17	0.44
1:D:57:TYR:HA	1:D:60:PHE:O	2.17	0.44
1:A:46:ALA:HB1	1:A:51:ILE:O	2.17	0.44
1:B:155:ARG:HA	1:B:158:LEU:HD23	2.00	0.44
1:D:6:GLY:HA2	2:H:3:DT:O2	2.17	0.44
2:G:2:DT:H2'	2:G:3:DT:H71	1.98	0.44
1:A:9:ARG:HG2	2:F:5:DT:H5"	1.98	0.44
2:G:1:DA:H2"	2:G:2:DT:H5"	1.99	0.43
1:A:185:LEU:HD12	1:A:209:VAL:HG13	1.99	0.43
2:G:14:DC:H2'	2:G:15:DT:H72	1.99	0.43
2:G:1:DA:H4'	2:G:2:DT:OP1	2.18	0.43
1:B:91:GLY:O	1:B:95:ARG:HG3	2.17	0.43
1:A:37:PHE:CD1	1:A:37:PHE:C	2.92	0.43
2:F:14:DC:H2'	2:F:15:DT:H72	2.00	0.43
2:E:25:DG:H2"	2:E:26:DC:H5"	2.01	0.43
1:C:49:VAL:HG12	1:C:51:ILE:HD13	2.00	0.42
1:D:53:GLN:O	1:D:56:LEU:HD12	2.19	0.42
2:G:5:DT:H2'	2:G:6:DC:H6	1.84	0.42
1:B:90:ALA:O	1:B:95:ARG:NH1	2.51	0.42
2:E:13:DT:C2'	2:E:14:DC:H5'	2.49	0.42
2:E:7:DT:H2"	2:E:8:DA:H5'	2.01	0.42
1:A:153:ASP:OD1	1:A:154:PRO:CD	2.67	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:74:THR:HG21	1:B:114:VAL:HB	2.01	0.42
1:C:15:ARG:HH11	1:C:27:ALA:HA	1.84	0.42
2:G:1:DA:H2"	2:G:2:DT:C5'	2.49	0.42
2:H:21:DT:C2'	2:H:22:DA:C8	2.99	0.42
1:B:19:ASN:O	1:B:23:GLU:HG3	2.18	0.42
1:C:100:VAL:O	1:C:104:VAL:HG23	2.20	0.42
1:C:76:GLU:N	1:C:77:PRO:HD2	2.34	0.42
1:D:40:THR:O	1:D:63:LYS:NZ	2.30	0.42
1:C:98:ALA:O	1:C:102:SER:OG	2.23	0.42
1:B:123:VAL:HG11	1:B:131:TYR:CD1	2.55	0.42
1:C:43:HIS:O	1:C:47:ASP:HB2	2.20	0.42
1:D:19:ASN:HB2	1:D:20:PRO:CD	2.50	0.42
1:C:123:VAL:CG1	1:C:132:HIS:CE1	2.94	0.41
1:A:9:ARG:HG2	2:F:5:DT:C5'	2.50	0.41
1:C:21:ARG:O	1:C:24:ILE:HG12	2.20	0.41
1:D:111:LYS:HB2	1:D:111:LYS:HE2	1.84	0.41
1:A:221:ALA:O	1:A:222:LYS:C	2.58	0.41
1:B:40:THR:O	1:B:63:LYS:NZ	2.39	0.41
1:C:15:ARG:HH11	1:C:26:ASP:C	2.24	0.41
1:A:81:LEU:O	1:A:85:LEU:HD13	2.21	0.41
1:C:81:LEU:O	1:C:85:LEU:HD12	2.21	0.41
1:B:18:LYS:N	1:B:22:GLU:OE1	2.54	0.41
1:C:211:LYS:O	1:C:214:GLU:HB3	2.20	0.41
1:C:42:THR:HG21	1:C:57:TYR:OH	2.20	0.41
1:A:214:GLU:O	1:A:218:GLN:HG3	2.21	0.40
1:C:121:PRO:O	1:C:123:VAL:N	2.54	0.40
1:C:108:LEU:O	1:C:177:PRO:HG2	2.21	0.40
1:B:71:LEU:O	1:B:75:VAL:HG23	2.21	0.40
1:C:82:ALA:O	1:C:86:SER:HB3	2.21	0.40
1:C:9:ARG:NH1	1:C:13:PRO:HB3	2.36	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	218/230 (95%)	210 (96%)	8 (4%)	0	100	100
1	B	216/230 (94%)	203 (94%)	13 (6%)	0	100	100
1	C	216/230 (94%)	205 (95%)	11 (5%)	0	100	100
1	D	217/230 (94%)	205 (94%)	12 (6%)	0	100	100
All	All	867/920 (94%)	823 (95%)	44 (5%)	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	172/192 (90%)	167 (97%)	5 (3%)	42	76
1	B	171/192 (89%)	164 (96%)	7 (4%)	30	67
1	C	168/192 (88%)	158 (94%)	10 (6%)	19	53
1	D	170/192 (88%)	159 (94%)	11 (6%)	17	50
All	All	681/768 (89%)	648 (95%)	33 (5%)	25	62

All (33) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	39	THR
1	A	79	THR
1	A	80	VAL
1	A	81	LEU
1	A	165	SER
1	B	51	ILE
1	B	52	ARG
1	B	55	SER
1	B	79	THR
1	B	86	SER

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Mol	Chain	Res	Type
1	B	135	ARG
1	B	203	SER
1	C	15	ARG
1	C	19	ASN
1	C	21	ARG
1	C	28	SER
1	C	81	LEU
1	C	84	ASP
1	C	86	SER
1	C	131	TYR
1	C	139	THR
1	C	140	ASN
1	D	21	ARG
1	D	71	LEU
1	D	74	THR
1	D	84	ASP
1	D	95	ARG
1	D	111	LYS
1	D	163	THR
1	D	165	SER
1	D	170	ARG
1	D	184	SER
1	D	208	ARG

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	35	GLN
1	B	134	GLN
1	C	35	GLN
1	D	43	HIS

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

There are no carbohydrates in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

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	220/230 (95%)	0.41	2 (0%) 84 63	59, 79, 132, 169	0
1	B	218/230 (94%)	0.34	0 100 100	63, 96, 133, 168	0
1	C	218/230 (94%)	0.30	1 (0%) 91 75	65, 102, 141, 162	0
1	D	219/230 (95%)	0.35	2 (0%) 84 63	58, 86, 127, 140	0
2	E	26/26 (100%)	0.04	0 100 100	69, 89, 109, 113	0
2	F	26/26 (100%)	0.07	0 100 100	62, 94, 107, 118	0
2	G	26/26 (100%)	-0.02	0 100 100	77, 100, 116, 119	0
2	H	26/26 (100%)	0.01	0 100 100	71, 102, 112, 118	0
All	All	979/1024 (95%)	0.32	5 (0%) 91 75	58, 91, 133, 169	0

All (5) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	56	LEU	2.4
1	A	85	LEU	2.2
1	D	89	ASP	2.1
1	D	118	TYR	2.1
1	A	118	TYR	2.0

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 carbohydrates in this entry.

6.4 Ligands

There are no ligands in this entry.

6.5 Other polymers

There are no such residues in this entry.