



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 12, 2017 – 09:44 pm GMT

PDB ID : 4F3H
Title : The structural of FimXEAL-c-di-GMP from Xanthomonas campestris
Authors : Chin, K.-H.; Liao, Y.-T.; Chou, S.-H.
Deposited on : 2012-05-09
Resolution : 2.50 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

<http://wwpdb.org/validation/2016/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
Mogul : 1.7.2 (RC1), CSD as538be (2017)
Xtriage (Phenix) : 1.9-1692
EDS : trunk28620
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : recalc28949

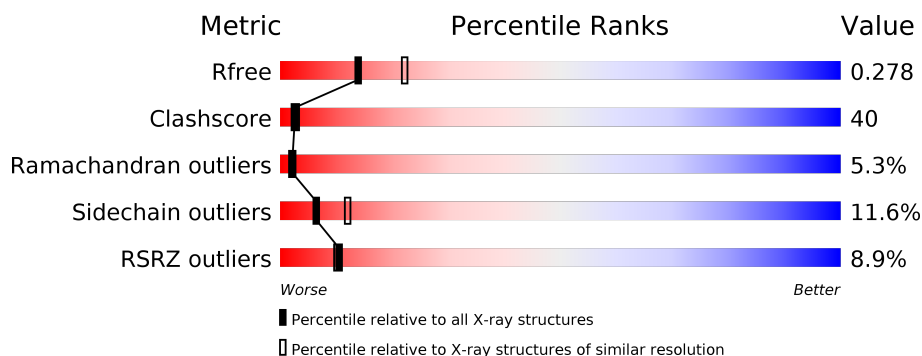
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.50 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	100719	3846 (2.50-2.50)
Clashscore	112137	4554 (2.50-2.50)
Ramachandran outliers	110173	4463 (2.50-2.50)
Sidechain outliers	110143	4465 (2.50-2.50)
RSRZ outliers	101464	3876 (2.50-2.50)

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. 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	250	<div> <div>9%</div> <div>38%</div> <div>47%</div> <div>12%</div> <div>..</div> </div>

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 2178 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.

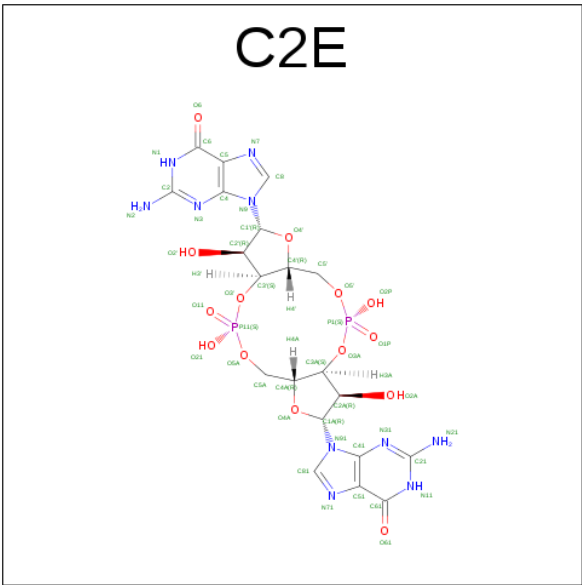
- Molecule 1 is a protein called Putative uncharacterized protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	247	1957	1238	344	367	8	0	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	SER	-	EXPRESSION TAG	UNP Q8P8F1
A	-1	ASN	-	EXPRESSION TAG	UNP Q8P8F1

- Molecule 2 is 9,9'-[(2R,3R,3AS,5S,7AR,9R,10R,10AS,12S,14AR)-3,5,10,12-TETRAHYDRO XY-5,12-DIOXIDOOCTAHYDRO-2H,7H-DIFURO[3,2-D:3',2'-J][1,3,7,9,2,8]TETRAOXA DIPHOSPHACYCLODODECINE-2,9-DIYL]BIS(2-AMINO-1,9-DIHYDRO-6H-PURIN-6-ONE) (three-letter code: C2E) (formula: C₂₀H₂₄N₁₀O₁₄P₂).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
2	A	1	46	20	10	14	2	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	175	Total 175	O 175	0	0

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: Putative uncharacterized protein



4 Data and refinement statistics

Property	Value	Source
Space group	P 32 2 1	Depositor
Cell constants a, b, c, α , β , γ	65.67Å 65.67Å 121.29Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	23.26 – 2.50 23.26 – 2.50	Depositor EDS
% Data completeness (in resolution range)	97.4 (23.26-2.50) 98.9 (23.26-2.50)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	5.71 (at 2.50Å)	Xtriage
Refinement program	CNS 1.2	Depositor
R, R_{free}	0.234 , 0.259 0.281 , 0.278	Depositor DCC
R_{free} test set	520 reflections (4.80%)	DCC
Wilson B-factor (Å ²)	55.1	Xtriage
Anisotropy	0.591	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 60.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.29$	Xtriage
Estimated twinning fraction	0.058 for -h,-k,l	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	2178	wwPDB-VP
Average B, all atoms (Å ²)	68.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.06% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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 [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: C2E

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	0.57	3/1997 (0.2%)	0.96	15/2700 (0.6%)

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	2

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	97	ARG	NE-CZ	11.66	1.48	1.33
1	A	97	ARG	CB-CG	-6.19	1.35	1.52
1	A	71	ASP	CA-CB	-5.50	1.41	1.53

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	97	ARG	NE-CZ-NH2	15.31	127.95	120.30
1	A	97	ARG	NE-CZ-NH1	-15.05	112.78	120.30
1	A	71	ASP	CB-CG-OD1	9.92	127.23	118.30
1	A	71	ASP	CB-CG-OD2	-9.68	109.59	118.30
1	A	24	HIS	CA-CB-CG	9.41	129.59	113.60
1	A	97	ARG	CA-CB-CG	8.20	131.44	113.40
1	A	55	ASN	CA-CB-CG	7.75	130.44	113.40
1	A	72	ARG	CA-CB-CG	7.34	129.55	113.40
1	A	34	GLU	C-N-CD	-7.04	105.10	120.60
1	A	236	GLN	CB-CA-C	-6.72	96.96	110.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	33	GLY	N-CA-C	-5.97	98.17	113.10
1	A	24	HIS	CB-CA-C	5.90	122.20	110.40
1	A	238	ASP	CA-CB-CG	5.83	126.23	113.40
1	A	97	ARG	CD-NE-CZ	5.31	131.03	123.60
1	A	20	GLY	N-CA-C	-5.07	100.43	113.10

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	44	ARG	Sidechain
1	A	97	ARG	Sidechain

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	1957	0	1932	158	0
2	A	46	0	22	7	0
3	A	175	0	0	8	1
All	All	2178	0	1954	160	1

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 40.

All (160) 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:97:ARG:NH1	2:A:501:C2E:O21	1.78	1.15
1:A:30:ASN:HD21	1:A:35:PRO:HA	1.01	1.10
1:A:30:ASN:ND2	1:A:35:PRO:HA	1.74	1.00
1:A:193:ARG:HG2	1:A:194:GLU:H	1.34	0.92
1:A:54:PRO:O	1:A:58:MET:HG2	1.72	0.89
1:A:165:LEU:HD12	1:A:165:LEU:H	1.38	0.88
1:A:206:ALA:HB1	1:A:211:ILE:O	1.76	0.86

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:30:ASN:HD22	1:A:33:GLY:C	1.79	0.85
1:A:14:GLU:O	1:A:17:ILE:HG13	1.80	0.81
1:A:58:MET:HG3	3:A:773:HOH:O	1.81	0.81
1:A:193:ARG:HG2	1:A:194:GLU:N	1.96	0.80
1:A:242:PRO:HD2	3:A:662:HOH:O	1.81	0.80
1:A:30:ASN:HD21	1:A:35:PRO:CA	1.91	0.80
1:A:15:ALA:HA	1:A:19:ASP:HA	1.63	0.79
1:A:131:PRO:O	1:A:135:VAL:HG23	1.83	0.77
1:A:97:ARG:NH2	1:A:159:GLU:OE1	2.17	0.77
1:A:30:ASN:HB3	1:A:234:TYR:CD2	2.21	0.75
1:A:32:GLN:HB2	1:A:233:ASP:HA	1.69	0.75
1:A:170:LEU:HD22	1:A:174:PHE:HB2	1.68	0.74
1:A:68:THR:O	1:A:72:ARG:HG3	1.89	0.73
1:A:196:GLN:HB3	3:A:765:HOH:O	1.88	0.72
1:A:124:GLU:OE1	1:A:153:GLY:HA3	1.87	0.72
1:A:200:ARG:NE	1:A:230:ALA:HA	2.03	0.72
1:A:203:THR:HG21	1:A:230:ALA:O	1.89	0.72
1:A:189:ILE:HD11	1:A:223:SER:HB2	1.73	0.70
1:A:149:VAL:HG22	1:A:154:CYS:HB2	1.75	0.69
1:A:174:PHE:O	1:A:175:GLN:HB2	1.92	0.68
1:A:209:THR:HB	1:A:211:ILE:HG13	1.77	0.67
1:A:112:ILE:O	1:A:116:LEU:HB2	1.95	0.67
1:A:54:PRO:HB3	1:A:58:MET:CG	2.25	0.66
1:A:55:ASN:ND2	2:A:501:C2E:H5'1	2.11	0.66
1:A:181:LEU:HD21	1:A:202:ILE:HG21	1.78	0.65
1:A:77:ARG:HA	3:A:729:HOH:O	1.96	0.64
1:A:15:ALA:CA	1:A:19:ASP:HA	2.28	0.64
1:A:122:PRO:O	1:A:124:GLU:N	2.31	0.63
1:A:93:HIS:ND1	1:A:125:ARG:HA	2.13	0.63
1:A:17:ILE:C	1:A:19:ASP:H	2.02	0.62
2:A:501:C2E:H1'	3:A:773:HOH:O	1.99	0.62
1:A:17:ILE:HG12	3:A:651:HOH:O	1.99	0.62
1:A:78:ALA:O	1:A:82:LEU:HD13	1.99	0.62
1:A:7:ARG:HD3	1:A:47:ARG:NH2	2.14	0.61
1:A:9:VAL:O	1:A:13:ARG:HG3	2.00	0.61
1:A:28:VAL:HG13	1:A:236:GLN:HG3	1.83	0.60
1:A:7:ARG:HB3	1:A:7:ARG:NH1	2.17	0.59
1:A:159:GLU:HA	1:A:180:LYS:HB3	1.83	0.59
1:A:45:LEU:HB3	1:A:52:MET:HB2	1.84	0.59
1:A:95:LEU:HD22	1:A:129:GLN:OE1	2.03	0.59
1:A:98:ILE:HD12	1:A:128:LEU:HD13	1.86	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:93:HIS:ND1	1:A:125:ARG:HG3	2.18	0.58
1:A:174:PHE:O	1:A:175:GLN:CB	2.52	0.58
1:A:170:LEU:CD2	1:A:174:PHE:HB2	2.34	0.58
1:A:97:ARG:HH21	1:A:129:GLN:HE21	1.52	0.57
1:A:238:ASP:OD2	2:A:501:C2E:H81	2.05	0.56
1:A:213:THR:HG23	1:A:233:ASP:H	1.71	0.56
1:A:93:HIS:CE1	1:A:125:ARG:HG3	2.40	0.56
1:A:54:PRO:HB3	1:A:58:MET:SD	2.45	0.56
1:A:200:ARG:HE	1:A:230:ALA:HA	1.71	0.56
1:A:15:ALA:O	1:A:19:ASP:HA	2.06	0.56
1:A:55:ASN:HD21	2:A:501:C2E:H5'1	1.70	0.55
1:A:159:GLU:HG2	1:A:160:GLN:HG3	1.87	0.55
1:A:187:GLY:O	1:A:188:ASP:HB3	2.07	0.55
1:A:22:LEU:HD23	1:A:22:LEU:N	2.22	0.55
1:A:166:ASP:O	1:A:169:GLN:HB3	2.07	0.54
1:A:180:LYS:HG2	1:A:216:GLU:OE2	2.07	0.54
1:A:7:ARG:HG2	1:A:8:TRP:N	2.22	0.54
1:A:116:LEU:HD21	1:A:123:GLY:HA2	1.90	0.53
1:A:21:PHE:CD1	1:A:43:LEU:HD11	2.44	0.53
1:A:103:PHE:CD2	1:A:142:ALA:HB2	2.44	0.53
1:A:70:ILE:O	1:A:74:VAL:HG23	2.08	0.53
1:A:189:ILE:HD12	1:A:190:ALA:H	1.75	0.52
1:A:82:LEU:HD11	1:A:94:LEU:HD23	1.92	0.52
1:A:23:LEU:HD11	1:A:73:TRP:HZ3	1.74	0.52
1:A:140:ARG:HH21	1:A:140:ARG:HG3	1.74	0.52
1:A:132:GLU:HA	1:A:158:LEU:HD22	1.91	0.52
1:A:97:ARG:NH2	1:A:129:GLN:NE2	2.58	0.52
1:A:205:ARG:O	1:A:208:PRO:HD2	2.11	0.51
1:A:166:ASP:HA	1:A:169:GLN:HB3	1.92	0.50
1:A:97:ARG:HH21	1:A:129:GLN:NE2	2.09	0.50
1:A:82:LEU:O	1:A:86:GLN:HB2	2.11	0.50
1:A:30:ASN:HB3	1:A:234:TYR:CE2	2.47	0.50
1:A:32:GLN:HG3	1:A:231:GLY:C	2.32	0.50
1:A:39:TYR:O	1:A:94:LEU:HD13	2.12	0.50
1:A:213:THR:HG22	1:A:233:ASP:OD2	2.12	0.50
1:A:129:GLN:HA	1:A:157:GLY:O	2.12	0.49
1:A:198:LYS:C	1:A:200:ARG:H	2.15	0.49
1:A:14:GLU:HA	1:A:17:ILE:HD11	1.93	0.49
1:A:193:ARG:NH1	3:A:772:HOH:O	2.44	0.49
1:A:207:GLN:HB2	1:A:208:PRO:HD3	1.94	0.49
1:A:165:LEU:CD1	1:A:165:LEU:H	2.16	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:221:ALA:HA	1:A:224:MET:HB2	1.95	0.49
1:A:17:ILE:O	1:A:19:ASP:N	2.43	0.49
1:A:15:ALA:C	1:A:19:ASP:HA	2.33	0.49
1:A:9:VAL:HA	1:A:12:LEU:HD12	1.93	0.49
1:A:85:ARG:NE	1:A:247:MET:HG2	2.27	0.49
1:A:91:LYS:HD3	3:A:761:HOH:O	2.12	0.49
1:A:13:ARG:HA	1:A:16:LEU:HD12	1.95	0.49
1:A:131:PRO:HA	1:A:159:GLU:O	2.13	0.49
1:A:22:LEU:HD11	1:A:51:MET:CE	2.43	0.49
1:A:30:ASN:ND2	1:A:33:GLY:O	2.42	0.49
1:A:69:GLU:CD	1:A:72:ARG:NH2	2.66	0.49
1:A:69:GLU:CD	1:A:72:ARG:HH22	2.16	0.48
1:A:53:SER:O	1:A:55:ASN:N	2.46	0.48
1:A:118:VAL:O	1:A:118:VAL:HG12	2.14	0.48
1:A:22:LEU:HD11	1:A:51:MET:HE1	1.96	0.47
1:A:140:ARG:O	1:A:143:GLN:HB3	2.15	0.47
1:A:140:ARG:O	1:A:144:GLN:HG3	2.15	0.47
1:A:17:ILE:HB	1:A:18:GLY:H	1.37	0.47
1:A:44:ARG:HD2	1:A:51:MET:HG2	1.97	0.46
1:A:221:ALA:HB2	1:A:239:PHE:CZ	2.50	0.46
1:A:189:ILE:HD12	1:A:190:ALA:N	2.30	0.46
1:A:165:LEU:O	1:A:167:SER:N	2.49	0.46
1:A:54:PRO:HB3	1:A:58:MET:HG2	1.97	0.46
1:A:161:PHE:CG	1:A:179:LEU:HD22	2.51	0.46
1:A:197:GLU:O	1:A:200:ARG:HB2	2.17	0.45
1:A:22:LEU:C	1:A:23:LEU:HD12	2.36	0.45
2:A:501:C2E:H512	2:A:501:C2E:H5'2	1.99	0.45
1:A:7:ARG:HD3	1:A:47:ARG:HH22	1.80	0.45
1:A:54:PRO:HG2	2:A:501:C2E:C8	2.46	0.45
1:A:160:GLN:HA	1:A:182:ASP:HA	1.99	0.44
1:A:98:ILE:O	1:A:130:THR:HB	2.17	0.44
1:A:140:ARG:NH2	1:A:140:ARG:HG3	2.33	0.44
1:A:123:GLY:O	1:A:154:CYS:HA	2.18	0.44
1:A:4:ARG:O	1:A:7:ARG:HG2	2.18	0.44
1:A:104:SER:O	1:A:106:PRO:HD3	2.17	0.44
1:A:135:VAL:HG21	1:A:158:LEU:CD2	2.47	0.44
1:A:139:LEU:C	1:A:139:LEU:HD13	2.38	0.44
1:A:205:ARG:C	1:A:208:PRO:HD2	2.38	0.44
1:A:17:ILE:C	1:A:19:ASP:N	2.70	0.43
1:A:193:ARG:HA	1:A:196:GLN:OE1	2.18	0.43
1:A:213:THR:HG23	1:A:233:ASP:N	2.33	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:25:TYR:HB3	1:A:39:TYR:HB3	1.99	0.43
1:A:100:PRO:HA	1:A:103:PHE:CE2	2.54	0.43
1:A:30:ASN:N	1:A:30:ASN:OD1	2.50	0.43
1:A:45:LEU:HD12	1:A:46:GLU:H	1.83	0.43
1:A:145:PHE:O	1:A:146:LEU:C	2.57	0.43
1:A:207:GLN:N	1:A:208:PRO:CD	2.81	0.43
1:A:214:VAL:HG22	1:A:234:TYR:HB2	2.01	0.42
1:A:105:ASP:O	1:A:108:MET:HB3	2.20	0.42
1:A:32:GLN:HG3	1:A:231:GLY:O	2.19	0.42
1:A:54:PRO:C	1:A:58:MET:HG2	2.38	0.42
1:A:30:ASN:HB2	1:A:33:GLY:CA	2.49	0.42
1:A:23:LEU:CD1	1:A:73:TRP:HZ3	2.33	0.42
1:A:219:ALA:HA	1:A:239:PHE:HB2	2.02	0.42
1:A:187:GLY:O	1:A:188:ASP:CB	2.67	0.42
1:A:86:GLN:HG3	1:A:125:ARG:HH21	1.85	0.41
1:A:30:ASN:HB2	1:A:33:GLY:HA3	2.03	0.41
1:A:21:PHE:HB2	1:A:73:TRP:CZ2	2.56	0.41
1:A:5:ILE:HG13	1:A:6:GLU:N	2.35	0.41
1:A:18:GLY:O	1:A:19:ASP:O	2.37	0.41
1:A:216:GLU:O	1:A:217:PHE:HB2	2.21	0.41
1:A:47:ARG:O	1:A:48:ASN:C	2.59	0.41
1:A:75:VAL:O	1:A:79:ILE:HG13	2.20	0.41
1:A:86:GLN:HB3	1:A:86:GLN:HE21	1.53	0.41
1:A:24:HIS:CD2	1:A:245:PRO:HB3	2.56	0.41
1:A:108:MET:O	1:A:112:ILE:HG13	2.21	0.40
1:A:149:VAL:HG22	1:A:154:CYS:CB	2.48	0.40
1:A:218:VAL:HG11	1:A:224:MET:HG2	2.03	0.40
1:A:75:VAL:HG11	1:A:108:MET:HE1	2.02	0.40
1:A:17:ILE:HG13	1:A:17:ILE:H	1.74	0.40
1:A:60:ILE:C	1:A:62:GLU:N	2.74	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:604:HOH:O	3:A:604:HOH:O[6_554]	1.90	0.30

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	245/250 (98%)	207 (84%)	25 (10%)	13 (5%)	2 2

All (13) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	19	ASP
1	A	35	PRO
1	A	123	GLY
1	A	175	GLN
1	A	188	ASP
1	A	17	ILE
1	A	166	ASP
1	A	54	PRO
1	A	163	SER
1	A	20	GLY
1	A	61	ALA
1	A	165	LEU
1	A	199	ILE

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	207/209 (99%)	183 (88%)	24 (12%)	6 12

All (24) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2	GLU
1	A	5	ILE
1	A	6	GLU
1	A	7	ARG
1	A	10	GLU
1	A	17	ILE
1	A	22	LEU
1	A	31	LEU
1	A	50	GLU
1	A	62	GLU
1	A	63	GLU
1	A	72	ARG
1	A	77	ARG
1	A	86	GLN
1	A	97	ARG
1	A	98	ILE
1	A	124	GLU
1	A	125	ARG
1	A	130	THR
1	A	143	GLN
1	A	166	ASP
1	A	170	LEU
1	A	193	ARG
1	A	224	MET

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	11	GLN
1	A	24	HIS
1	A	26	GLN
1	A	30	ASN
1	A	86	GLN
1	A	101	ASN
1	A	143	GLN
1	A	169	GLN

5.3.3 RNA ⓘ

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	C2E	A	501	-	44,52,52	1.49	5 (11%)	50,82,82	2.45	17 (34%)

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	C2E	A	501	-	-	0/22/62/62	0/6/7/7

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	501	C2E	O4'-C4'	-2.38	1.39	1.45
2	A	501	C2E	C5-C4	2.84	1.46	1.40
2	A	501	C2E	C51-C41	3.97	1.49	1.40
2	A	501	C2E	C61-C51	4.46	1.49	1.41
2	A	501	C2E	C6-C5	4.83	1.50	1.41

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	501	C2E	C61-C51-C41	-4.49	116.38	120.84
2	A	501	C2E	C6-C5-C4	-3.94	116.93	120.84
2	A	501	C2E	N3-C2-N1	-3.81	121.90	127.46
2	A	501	C2E	C5-C6-N1	-3.62	118.33	123.48
2	A	501	C2E	C51-C61-N11	-3.47	118.54	123.48
2	A	501	C2E	N31-C21-N11	-3.44	122.43	127.46
2	A	501	C2E	C4-C5-N7	-2.90	106.61	109.41
2	A	501	C2E	C41-C51-N71	-2.84	106.67	109.41
2	A	501	C2E	N2-C2-N1	2.05	120.53	117.24
2	A	501	C2E	C3'-C2'-C1'	3.31	107.39	99.95
2	A	501	C2E	O4A-C4A-C5A	3.49	121.19	109.40
2	A	501	C2E	C3A-C2A-C1A	3.51	107.83	99.95
2	A	501	C2E	C6-N1-C2	4.11	121.97	116.06
2	A	501	C2E	C61-N11-C21	4.57	122.63	116.06
2	A	501	C2E	C21-N31-C41	4.98	120.98	115.16
2	A	501	C2E	C2-N3-C4	5.74	121.86	115.16
2	A	501	C2E	C4'-O4'-C1'	6.24	116.41	109.77

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	501	C2E	7	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 [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, 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(Å ²)	Q<0.9
1	A	247/250 (98%)	0.57	22 (8%) 10 10	45, 68, 92, 104	0

All (22) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	246	LEU	4.1
1	A	96	VAL	3.6
1	A	33	GLY	3.4
1	A	244	GLY	3.2
1	A	245	PRO	3.1
1	A	87	ARG	3.1
1	A	136	PHE	3.0
1	A	192	ALA	3.0
1	A	193	ARG	2.9
1	A	89	GLY	2.8
1	A	97	ARG	2.8
1	A	191	SER	2.8
1	A	88	ALA	2.5
1	A	107	GLN	2.4
1	A	247	MET	2.4
1	A	127	TRP	2.3
1	A	199	ILE	2.2
1	A	95	LEU	2.2
1	A	94	LEU	2.1
1	A	128	LEU	2.1
1	A	19	ASP	2.1
1	A	41	ALA	2.1

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 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	LLDF	B-factors(\AA^2)	Q<0.9
2	C2E	A	501	46/46	0.91	0.19	-0.36	51,57,61,65	0

6.5 Other polymers [i](#)

There are no such residues in this entry.