



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2018 – 08:51 am GMT

PDB ID : 3H4X
Title : Structure of a Ca²⁺ dependent Phosphatidylinositol-specific phospholipase C (PI-PLC) Enzyme from Streptomyces antibioticus
Authors : Jackson, M.R.; Selby, T.L.
Deposited on : 2009-04-21
Resolution : 1.23 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
Mogul : 1.7.3 (157068), CSD as539be (2018)
Xtriage (Phenix) : 1.13
EDS : trunk30967
Percentile statistics : 20171227.v01 (using entries in the PDB archive December 27th 2017)
Refmac : 5.8.0158
CCP4 : 7.0 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk30967

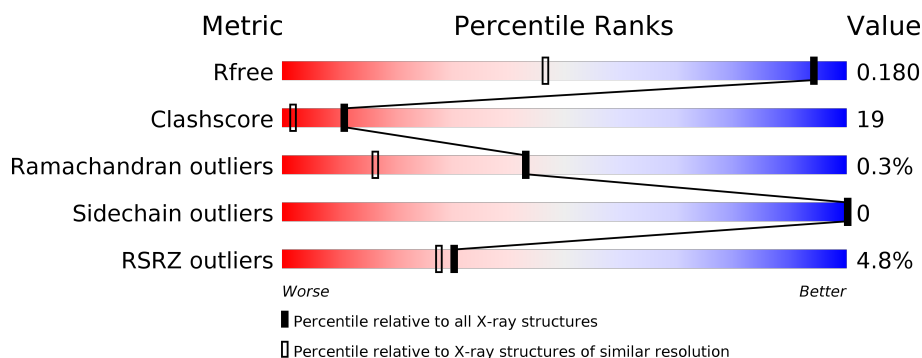
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.23 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}	111664	1699 (1.28-1.20)
Clashscore	122126	1783 (1.28-1.20)
Ramachandran outliers	120053	1724 (1.28-1.20)
Sidechain outliers	120020	1722 (1.28-1.20)
RSRZ outliers	108989	1669 (1.28-1.20)

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	339	<div> <div>4%</div> <div>79%</div> <div>13%</div> <div>7%</div> </div>

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	EOH	A	343	-	-	X	-
3	EOH	A	346	-	-	X	-

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	EOH	A	348	-	-	X	-
3	EOH	A	350	-	-	X	-
3	EOH	A	352	-	-	X	-
3	EOH	A	357	-	-	X	-
3	EOH	A	358	-	-	X	-
3	EOH	A	359	-	-	X	-
3	EOH	A	360	-	-	X	-
4	ACT	A	361	-	-	X	-
4	ACT	A	362	-	-	X	X
4	ACT	A	363	-	-	X	X
5	GOL	A	364	-	-	X	X
5	GOL	A	365	-	-	-	X
6	ACE	A	368	-	-	X	-
6	ACE	A	369	-	-	X	-
6	ACE	A	370	-	-	X	-
6	ACE	A	371	-	-	X	-

2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 2906 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 Phosphatidylinositol-specific phospholipase C1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	315	Total	C	N	O	S	0	1	0
			2414	1520	430	459	5			

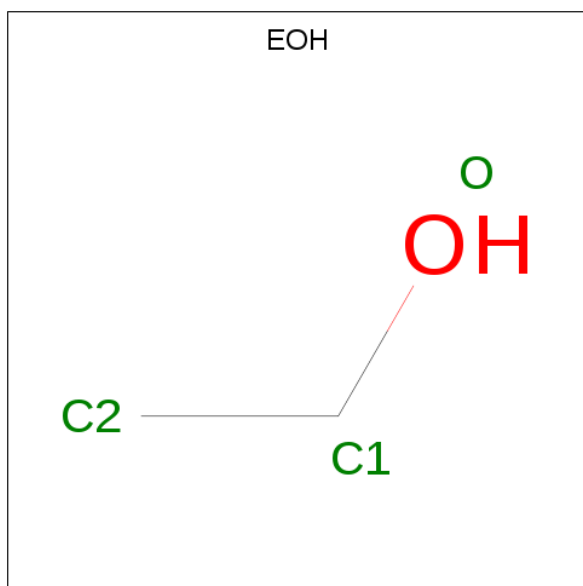
There are 22 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	EXPRESSION TAG	UNP B3A043
A	2	GLY	-	EXPRESSION TAG	UNP B3A043
A	3	SER	-	EXPRESSION TAG	UNP B3A043
A	4	SER	-	EXPRESSION TAG	UNP B3A043
A	5	HIS	-	EXPRESSION TAG	UNP B3A043
A	6	HIS	-	EXPRESSION TAG	UNP B3A043
A	7	HIS	-	EXPRESSION TAG	UNP B3A043
A	8	HIS	-	EXPRESSION TAG	UNP B3A043
A	9	HIS	-	EXPRESSION TAG	UNP B3A043
A	10	HIS	-	EXPRESSION TAG	UNP B3A043
A	11	SER	-	EXPRESSION TAG	UNP B3A043
A	12	SER	-	EXPRESSION TAG	UNP B3A043
A	13	GLY	-	EXPRESSION TAG	UNP B3A043
A	14	LEU	-	EXPRESSION TAG	UNP B3A043
A	15	VAL	-	EXPRESSION TAG	UNP B3A043
A	16	PRO	-	EXPRESSION TAG	UNP B3A043
A	17	ARG	-	EXPRESSION TAG	UNP B3A043
A	18	GLY	-	EXPRESSION TAG	UNP B3A043
A	19	SER	-	EXPRESSION TAG	UNP B3A043
A	20	HIS	-	EXPRESSION TAG	UNP B3A043
A	21	MET	-	EXPRESSION TAG	UNP B3A043
A	264	ALA	PRO	CONFLICT	UNP B3A043

- Molecule 2 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total Cl 1 1	0	0

- Molecule 3 is ETHANOL (three-letter code: EOH) (formula: C_2H_6O).



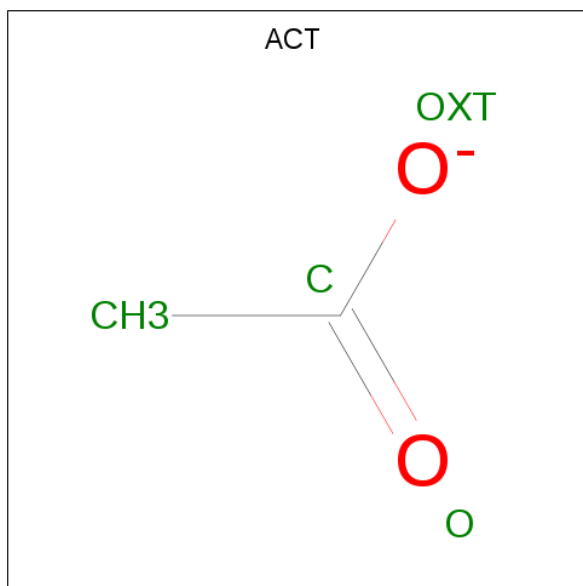
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 3 2 1	0	0
3	A	1	Total C O 3 2 1	0	0
3	A	1	Total C O 3 2 1	0	0
3	A	1	Total C O 3 2 1	0	0
3	A	1	Total C O 3 2 1	0	0
3	A	1	Total C O 3 2 1	0	0
3	A	1	Total C O 3 2 1	0	0
3	A	1	Total C O 3 2 1	0	0
3	A	1	Total C O 3 2 1	0	0
3	A	1	Total C O 3 2 1	0	0

Continued on next page...

Continued from previous page...

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

- Molecule 4 is ACETATE ION (three-letter code: ACT) (formula: $C_2H_3O_2$).



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

Continued on next page...

Continued from previous page...

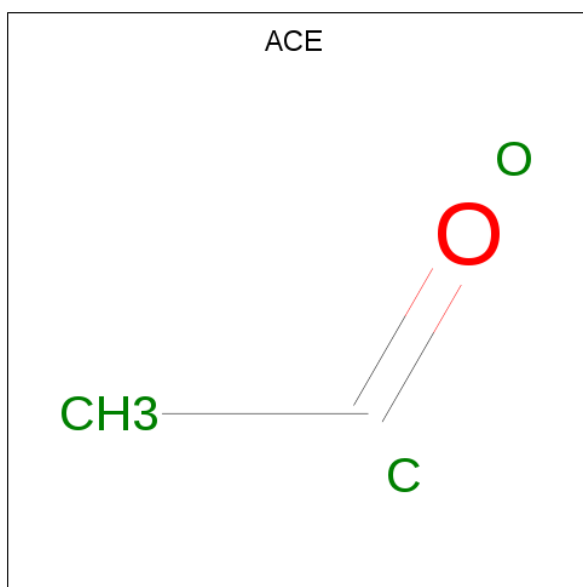
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			4	2	2		

- Molecule 5 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



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

- Molecule 6 is ACETYL GROUP (three-letter code: ACE) (formula: C_2H_4O).



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

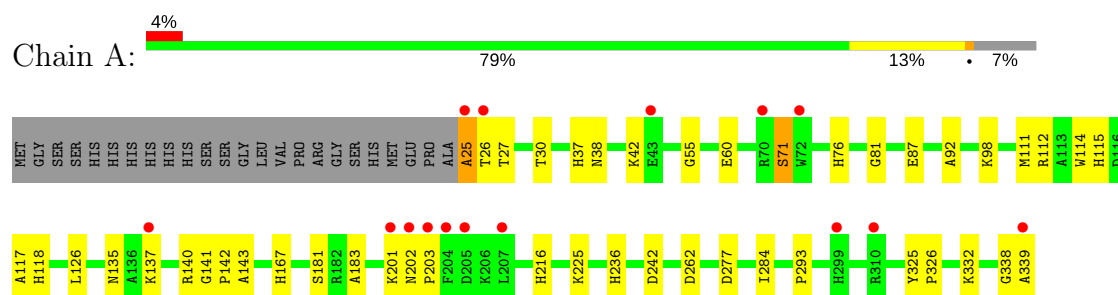
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	386	Total	O	0	0
			386	386		

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: Phosphatidylinositol-specific phospholipase C1



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α , β , γ	51.97Å 154.82Å 41.32Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	51.97 – 1.23 51.97 – 1.23	Depositor EDS
% Data completeness (in resolution range)	99.9 (51.97-1.23) 99.9 (51.97-1.23)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	4.61 (at 1.23Å)	Xtriage
Refinement program	REFMAC refmac_5.5.0068	Depositor
R, R_{free}	0.173 , 0.190 0.166 , 0.180	Depositor DCC
R_{free} test set	9796 reflections (10.02%)	wwPDB-VP
Wilson B-factor (Å ²)	10.4	Xtriage
Anisotropy	0.257	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.39 , 44.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	2906	wwPDB-VP
Average B, all atoms (Å ²)	13.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.73% 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: ACT, GOL, EOH, ACE, CL

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	0.26	0/2488	0.49	0/3391

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

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	25	ALA	Peptide

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	2414	0	2296	66	1
2	A	1	0	0	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	A	60	0	120	37	0
4	A	12	0	9	8	0
5	A	18	0	24	9	0
6	A	15	0	15	12	1
7	A	386	0	0	33	2
All	All	2906	0	2464	96	2

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 19.

All (96) 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:37:HIS:HD2	1:A:60[A]:GLU:OE1	1.26	1.18
1:A:37:HIS:CD2	1:A:60[A]:GLU:OE1	2.03	1.10
1:A:25:ALA:HB3	1:A:26:THR:HA	1.38	1.00
1:A:236:HIS:CE1	3:A:358:EOH:H21	2.10	0.86
1:A:25:ALA:CB	1:A:26:THR:HA	2.08	0.83
1:A:183:ALA:HA	3:A:359:EOH:H11	1.62	0.82
3:A:343:EOH:H11	7:A:597:HOH:O	1.80	0.81
1:A:25:ALA:HB3	1:A:26:THR:CA	2.10	0.81
1:A:236:HIS:HE1	3:A:358:EOH:H21	1.46	0.80
1:A:25:ALA:CB	1:A:26:THR:CA	2.60	0.79
1:A:262:ASP:OD1	3:A:348:EOH:H11	1.84	0.78
1:A:141:GLY:HA3	6:A:368:ACE:H1	1.70	0.74
3:A:352:EOH:C1	7:A:691:HOH:O	2.38	0.72
1:A:135:ASN:HD21	3:A:346:EOH:H21	1.55	0.72
1:A:167:HIS:NE2	3:A:357:EOH:H12	2.05	0.71
1:A:242:ASP:H	6:A:369:ACE:C	1.94	0.71
5:A:364:GOL:H2	7:A:592:HOH:O	1.91	0.70
1:A:143:ALA:CB	6:A:367:ACE:H3	2.21	0.70
3:A:358:EOH:H23	7:A:548:HOH:O	1.92	0.69
3:A:352:EOH:H11	7:A:691:HOH:O	1.92	0.68
1:A:37:HIS:HE1	7:A:690:HOH:O	1.77	0.67
1:A:236:HIS:HD2	7:A:596:HOH:O	1.77	0.67
3:A:346:EOH:H12	7:A:462:HOH:O	1.96	0.65
1:A:143:ALA:H	6:A:368:ACE:C	1.99	0.65
1:A:135:ASN:HD21	3:A:346:EOH:C2	2.10	0.65
1:A:37:HIS:CD2	1:A:60[A]:GLU:CD	2.71	0.64
5:A:364:GOL:H32	7:A:592:HOH:O	1.98	0.64
1:A:71:SER:H	5:A:366:GOL:HO2	1.46	0.62

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:42:LYS:NZ	6:A:371:ACE:C	2.53	0.62
1:A:42:LYS:HZ1	6:A:371:ACE:C	2.03	0.62
4:A:361:ACT:CH3	7:A:626:HOH:O	2.47	0.61
1:A:55:GLY:HA3	1:A:332:LYS:HG2	1.81	0.61
1:A:225:LYS:NZ	3:A:350:EOH:H21	2.16	0.61
1:A:140:ARG:HG3	5:A:366:GOL:H31	1.82	0.61
4:A:361:ACT:H1	7:A:626:HOH:O	1.99	0.61
3:A:357:EOH:H11	7:A:687:HOH:O	2.00	0.60
1:A:60[A]:GLU:OE1	7:A:661:HOH:O	2.16	0.60
1:A:71:SER:N	5:A:366:GOL:O2	2.28	0.60
3:A:358:EOH:H22	7:A:438:HOH:O	2.02	0.58
1:A:338:GLY:O	1:A:339:ALA:HB3	2.04	0.57
1:A:167:HIS:CD2	3:A:357:EOH:H12	2.39	0.57
6:A:371:ACE:H2	7:A:452:HOH:O	2.06	0.56
1:A:183:ALA:CA	3:A:359:EOH:H11	2.35	0.55
3:A:352:EOH:H21	7:A:486:HOH:O	2.06	0.55
1:A:111:MET:CE	1:A:126:LEU:HD21	2.37	0.54
3:A:349:EOH:H11	7:A:582:HOH:O	2.05	0.54
1:A:81:GLY:HA3	3:A:360:EOH:H23	1.88	0.54
1:A:92:ALA:HB2	1:A:117:ALA:HB2	1.90	0.54
1:A:87:GLU:HB3	1:A:98:LYS:HB2	1.90	0.54
1:A:236:HIS:HE1	3:A:358:EOH:C2	2.20	0.53
1:A:115:HIS:NE2	4:A:361:ACT:C	2.72	0.52
3:A:347:EOH:H22	7:A:754:HOH:O	2.08	0.52
5:A:364:GOL:H12	7:A:737:HOH:O	2.09	0.52
3:A:357:EOH:C1	7:A:687:HOH:O	2.57	0.51
1:A:135:ASN:ND2	3:A:346:EOH:H11	2.26	0.51
1:A:111:MET:HE3	1:A:126:LEU:HD21	1.92	0.51
1:A:26:THR:HB	1:A:30:THR:OG1	2.10	0.51
1:A:262:ASP:OD1	3:A:348:EOH:C1	2.57	0.51
1:A:114:TRP:O	1:A:118:HIS:HD2	1.94	0.51
1:A:135:ASN:HD21	3:A:346:EOH:C1	2.24	0.50
3:A:348:EOH:H11	7:A:708:HOH:O	2.11	0.50
1:A:293:PRO:HG2	4:A:363:ACT:O	2.11	0.50
1:A:27:THR:HA	1:A:181:SER:HA	1.93	0.50
1:A:25:ALA:HB1	1:A:26:THR:O	2.12	0.49
1:A:111:MET:HE1	1:A:126:LEU:CD2	2.42	0.49
3:A:342:EOH:H23	7:A:755:HOH:O	2.11	0.49
1:A:92:ALA:CB	1:A:117:ALA:HB2	2.42	0.49
6:A:370:ACE:C	7:A:396:HOH:O	2.52	0.48
1:A:325:TYR:N	1:A:326:PRO:CD	2.77	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:236:HIS:CE1	3:A:358:EOH:C2	2.91	0.47
1:A:142:PRO:HD2	6:A:370:ACE:H3	1.95	0.47
1:A:262:ASP:HB2	4:A:362:ACT:O	2.15	0.47
1:A:225:LYS:HZ2	3:A:350:EOH:H21	1.79	0.47
1:A:25:ALA:CB	1:A:26:THR:C	2.83	0.46
5:A:364:GOL:C3	7:A:592:HOH:O	2.61	0.45
1:A:277:ASP:OD1	3:A:352:EOH:H12	2.16	0.45
4:A:362:ACT:O	7:A:557:HOH:O	2.21	0.45
3:A:343:EOH:C2	7:A:597:HOH:O	2.64	0.45
1:A:42:LYS:NZ	6:A:371:ACE:O	2.50	0.45
6:A:371:ACE:CH3	7:A:452:HOH:O	2.64	0.44
1:A:38:ASN:ND2	1:A:76:HIS:ND1	2.66	0.44
1:A:112:ARG:HH12	3:A:344:EOH:C1	2.30	0.43
1:A:225:LYS:HZ3	3:A:350:EOH:H21	1.84	0.43
1:A:284:ILE:N	1:A:284:ILE:HD12	2.33	0.43
1:A:325:TYR:CG	1:A:326:PRO:HD3	2.54	0.43
1:A:225:LYS:HG3	5:A:365:GOL:H32	2.00	0.43
1:A:216:HIS:ND1	3:A:353:EOH:C2	2.81	0.42
1:A:137:LYS:HG2	7:A:604:HOH:O	2.19	0.42
1:A:202:ASN:OD1	1:A:203:PRO:HD2	2.18	0.42
5:A:364:GOL:C2	7:A:592:HOH:O	2.59	0.42
4:A:363:ACT:O	7:A:477:HOH:O	2.22	0.42
6:A:368:ACE:O	6:A:370:ACE:H3	2.19	0.42
1:A:25:ALA:HB1	1:A:26:THR:C	2.41	0.41
3:A:360:EOH:H23	7:A:395:HOH:O	2.20	0.41
4:A:361:ACT:H3	7:A:626:HOH:O	2.15	0.41
3:A:359:EOH:C2	7:A:534:HOH:O	2.69	0.40

All (2) 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)
1:A:201:LYS:NZ	7:A:692:HOH:O[1_554]	1.83	0.37
6:A:369:ACE:CH3	7:A:580:HOH:O[2_755]	2.13	0.07

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	314/339 (93%)	304 (97%)	9 (3%)	1 (0%)	43	16

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	71	SER

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	241/260 (93%)	241 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	37	HIS
1	A	38	ASN
1	A	118	HIS
1	A	135	ASN
1	A	228	GLN
1	A	236	HIS
1	A	290	ASN

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 carbohydrates in this entry.

5.6 Ligand geometry ⓘ

Of 32 ligands modelled in this entry, 1 is monoatomic - leaving 31 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	$\# Z > 2$
3	EOH	A	341	-	2,2,2	0.45	0	1,1,1	0.17	0
3	EOH	A	342	-	2,2,2	0.44	0	1,1,1	0.19	0
3	EOH	A	343	-	2,2,2	0.45	0	1,1,1	0.16	0
3	EOH	A	344	-	2,2,2	0.46	0	1,1,1	0.17	0
3	EOH	A	345	-	2,2,2	0.45	0	1,1,1	0.19	0
3	EOH	A	346	-	2,2,2	0.45	0	1,1,1	0.20	0
3	EOH	A	347	-	2,2,2	0.45	0	1,1,1	0.17	0
3	EOH	A	348	-	2,2,2	0.45	0	1,1,1	0.15	0
3	EOH	A	349	-	2,2,2	0.45	0	1,1,1	0.17	0
3	EOH	A	350	-	2,2,2	0.45	0	1,1,1	0.16	0
3	EOH	A	351	-	2,2,2	0.45	0	1,1,1	0.18	0
3	EOH	A	352	-	2,2,2	0.45	0	1,1,1	0.17	0
3	EOH	A	353	-	2,2,2	0.46	0	1,1,1	0.15	0
3	EOH	A	354	-	2,2,2	0.45	0	1,1,1	0.18	0
3	EOH	A	355	-	2,2,2	0.45	0	1,1,1	0.17	0
3	EOH	A	356	-	2,2,2	0.45	0	1,1,1	0.18	0
3	EOH	A	357	-	2,2,2	0.45	0	1,1,1	0.16	0
3	EOH	A	358	-	2,2,2	0.47	0	1,1,1	0.10	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	EOH	A	359	-	2,2,2	0.45	0	1,1,1	0.16	0
3	EOH	A	360	-	2,2,2	0.45	0	1,1,1	0.19	0
4	ACT	A	361	-	1,3,3	1.37	0	0,3,3	0.00	-
4	ACT	A	362	-	1,3,3	1.31	0	0,3,3	0.00	-
4	ACT	A	363	-	1,3,3	1.32	0	0,3,3	0.00	-
5	GOL	A	364	-	5,5,5	0.38	0	5,5,5	0.27	0
5	GOL	A	365	-	5,5,5	0.36	0	5,5,5	0.26	0
5	GOL	A	366	-	5,5,5	0.40	0	5,5,5	0.23	0
6	ACE	A	367	-	1,2,2	0.58	0	1,1,1	0.50	0
6	ACE	A	368	-	1,2,2	0.60	0	1,1,1	0.47	0
6	ACE	A	369	-	1,2,2	0.57	0	1,1,1	0.45	0
6	ACE	A	370	-	1,2,2	0.57	0	1,1,1	0.50	0
6	ACE	A	371	-	1,2,2	0.58	0	1,1,1	0.52	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
3	EOH	A	341	-	-	0/0/0/0	0/0/0/0
3	EOH	A	342	-	-	0/0/0/0	0/0/0/0
3	EOH	A	343	-	-	0/0/0/0	0/0/0/0
3	EOH	A	344	-	-	0/0/0/0	0/0/0/0
3	EOH	A	345	-	-	0/0/0/0	0/0/0/0
3	EOH	A	346	-	-	0/0/0/0	0/0/0/0
3	EOH	A	347	-	-	0/0/0/0	0/0/0/0
3	EOH	A	348	-	-	0/0/0/0	0/0/0/0
3	EOH	A	349	-	-	0/0/0/0	0/0/0/0
3	EOH	A	350	-	-	0/0/0/0	0/0/0/0
3	EOH	A	351	-	-	0/0/0/0	0/0/0/0
3	EOH	A	352	-	-	0/0/0/0	0/0/0/0
3	EOH	A	353	-	-	0/0/0/0	0/0/0/0
3	EOH	A	354	-	-	0/0/0/0	0/0/0/0
3	EOH	A	355	-	-	0/0/0/0	0/0/0/0
3	EOH	A	356	-	-	0/0/0/0	0/0/0/0
3	EOH	A	357	-	-	0/0/0/0	0/0/0/0
3	EOH	A	358	-	-	0/0/0/0	0/0/0/0
3	EOH	A	359	-	-	0/0/0/0	0/0/0/0
3	EOH	A	360	-	-	0/0/0/0	0/0/0/0
4	ACT	A	361	-	-	0/0/0/0	0/0/0/0
4	ACT	A	362	-	-	0/0/0/0	0/0/0/0
4	ACT	A	363	-	-	0/0/0/0	0/0/0/0

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	GOL	A	364	-	-	0/4/4/4	0/0/0/0
5	GOL	A	365	-	-	0/4/4/4	0/0/0/0
5	GOL	A	366	-	-	0/4/4/4	0/0/0/0
6	ACE	A	367	-	-	0/0/0/0	0/0/0/0
6	ACE	A	368	-	-	0/0/0/0	0/0/0/0
6	ACE	A	369	-	-	0/0/0/0	0/0/0/0
6	ACE	A	370	-	-	0/0/0/0	0/0/0/0
6	ACE	A	371	-	-	0/0/0/0	0/0/0/0

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

25 monomers are involved in 67 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	342	EOH	1	0
3	A	343	EOH	2	0
3	A	344	EOH	1	0
3	A	346	EOH	5	0
3	A	347	EOH	1	0
3	A	348	EOH	3	0
3	A	349	EOH	1	0
3	A	350	EOH	3	0
3	A	352	EOH	4	0
3	A	353	EOH	1	0
3	A	357	EOH	4	0
3	A	358	EOH	6	0
3	A	359	EOH	3	0
3	A	360	EOH	2	0
4	A	361	ACT	4	0
4	A	362	ACT	2	0
4	A	363	ACT	2	0
5	A	364	GOL	5	0
5	A	365	GOL	1	0
5	A	366	GOL	3	0
6	A	367	ACE	1	0
6	A	368	ACE	3	0
6	A	369	ACE	1	1

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	370	ACE	3	0
6	A	371	ACE	5	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	315/339 (92%)	0.34	15 (4%) 30 28	6, 10, 17, 30	0

All (15) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	204	PHE	14.8
1	A	25	ALA	13.3
1	A	339	ALA	10.1
1	A	203	PRO	7.1
1	A	205	ASP	6.5
1	A	202	ASN	5.1
1	A	26	THR	3.5
1	A	201	LYS	2.6
1	A	72	TRP	2.5
1	A	43	GLU	2.5
1	A	299	HIS	2.5
1	A	310	ARG	2.4
1	A	137	LYS	2.3
1	A	207	LEU	2.0
1	A	70	ARG	2.0

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 ⓘ

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(Å ²)	Q<0.9
3	EOH	A	353	3/3	0.17	0.37	29,29,29,29	0
3	EOH	A	344	3/3	0.47	0.26	28,28,28,28	0
3	EOH	A	354	3/3	0.58	0.28	31,31,31,31	0
5	GOL	A	365	6/6	0.65	0.42	28,29,29,29	0
4	ACT	A	362	4/4	0.65	0.55	25,25,25,25	0
5	GOL	A	366	6/6	0.66	0.34	27,27,27,27	0
5	GOL	A	364	6/6	0.66	0.43	25,25,26,26	0
6	ACE	A	371	3/3	0.67	0.30	21,21,21,21	0
3	EOH	A	356	3/3	0.67	0.25	26,26,26,26	0
3	EOH	A	352	3/3	0.69	0.26	27,27,27,27	0
3	EOH	A	351	3/3	0.70	0.25	30,30,30,30	0
3	EOH	A	360	3/3	0.71	0.34	25,25,25,25	0
3	EOH	A	355	3/3	0.72	0.32	29,29,29,29	0
3	EOH	A	347	3/3	0.73	0.29	30,30,30,30	0
4	ACT	A	363	4/4	0.76	0.60	25,25,25,25	0
3	EOH	A	350	3/3	0.77	0.33	27,27,27,27	0
3	EOH	A	348	3/3	0.77	0.30	26,26,26,26	0
3	EOH	A	346	3/3	0.77	0.26	30,30,30,30	0
3	EOH	A	358	3/3	0.77	0.23	16,16,16,17	0
6	ACE	A	367	3/3	0.78	0.33	24,24,24,24	0
3	EOH	A	359	3/3	0.82	0.30	24,24,24,24	0
3	EOH	A	345	3/3	0.83	0.24	27,27,27,27	0
3	EOH	A	342	3/3	0.83	0.42	30,30,30,30	0
6	ACE	A	369	3/3	0.84	0.28	20,20,21,21	0
3	EOH	A	357	3/3	0.84	0.25	26,26,26,26	0
3	EOH	A	349	3/3	0.85	0.15	29,29,29,29	0
4	ACT	A	361	4/4	0.85	0.55	24,24,24,24	0
6	ACE	A	370	3/3	0.86	0.21	21,21,21,21	0
6	ACE	A	368	3/3	0.90	0.26	18,18,19,19	0
3	EOH	A	341	3/3	0.90	0.42	28,28,28,28	0
3	EOH	A	343	3/3	0.91	0.31	27,27,27,27	0
2	CL	A	340	1/1	1.00	0.07	10,10,10,10	0

6.5 Other polymers ⓘ

There are no such residues in this entry.