



# Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 02:50 AM GMT

PDB ID : 2IZ0  
Title : PEX INHIBITOR-HOME DATA  
Authors : Sundaramoorthy, R.; Iulek, J.; Hunter, W.N.  
Deposited on : 2006-07-23  
Resolution : 2.60 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](mailto: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.

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

MolProbity : 4.02b-467  
Mogul : 1.7 (RC4), CSD as536be (2015)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20026688  
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)  
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) : trunk26865

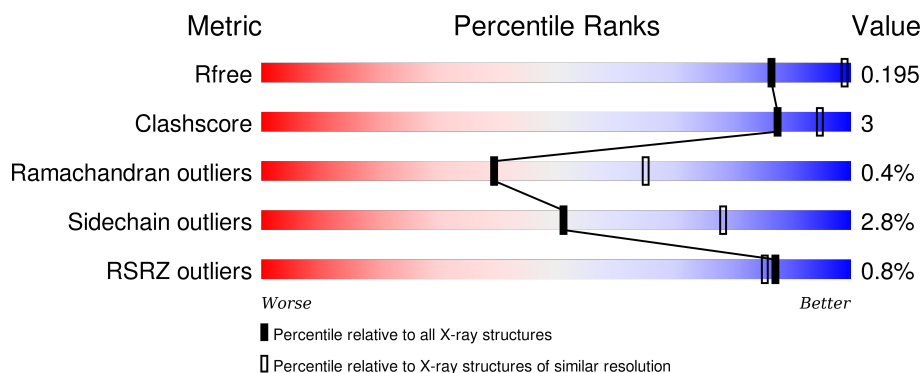
# 1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 2.60 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))
$R_{free}$	91344	2328 (2.60-2.60)
Clashscore	102246	2679 (2.60-2.60)
Ramachandran outliers	100387	2635 (2.60-2.60)
Sidechain outliers	100360	2635 (2.60-2.60)
RSRZ outliers	91569	2334 (2.60-2.60)

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  $\geq 3$ , 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	474	<div> <div></div> <div>87% 11% ..</div> </div>
1	B	474	<div> <div></div> <div>91% 8% ..</div> </div>
1	C	474	<div> <div></div> <div>92% 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
5	P33	C	1474	-	-	-	X
7	ATR	B	1470[A]	-	-	-	X
9	EDO	B	1473	-	-	-	X

## 2 Entry composition

There are 10 unique types of molecules in this entry. The entry contains 13264 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.

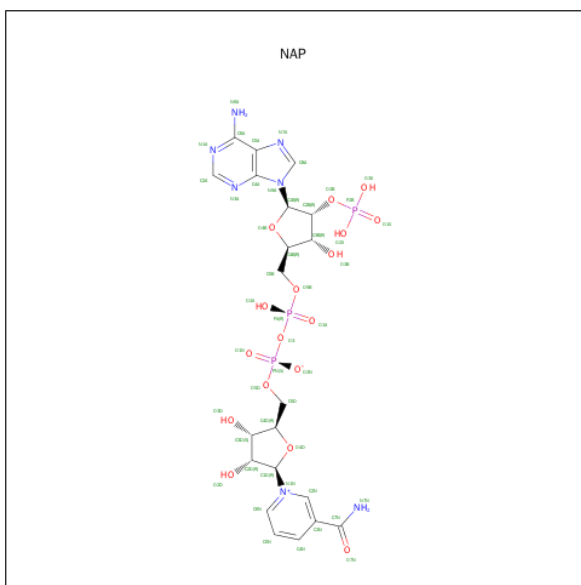
- Molecule 1 is a protein called 6-PHOSPHOGLUCONATE DEHYDROGENASE, DECARBOXYLATING.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	470	Total	C	N	O	S	0	24	1
			3802	2433	617	737	15			
1	B	470	Total	C	N	O	S	0	22	1
			3793	2423	618	737	15			
1	C	469	Total	C	N	O	S	0	26	1
			3803	2440	620	730	13			

There are 9 discrepancies between the modelled and reference sequences:

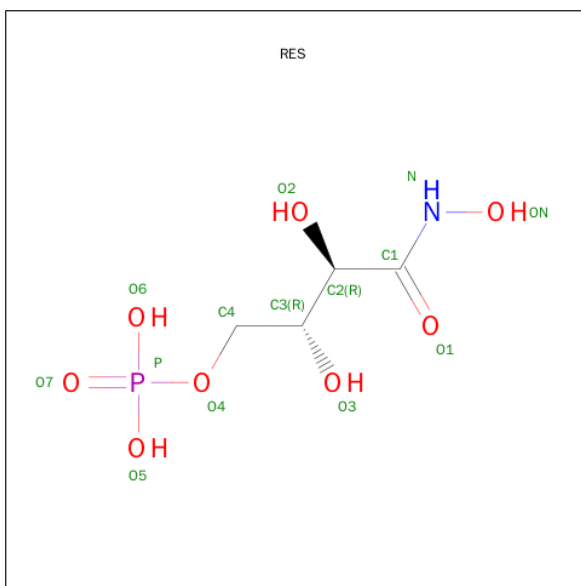
Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	HIS	-	EXPRESSION TAG	UNP P96789
A	0	HIS	-	EXPRESSION TAG	UNP P96789
A	43	PHE	TYR	CONFLICT	UNP P96789
B	-1	HIS	-	EXPRESSION TAG	UNP P96789
B	0	HIS	-	EXPRESSION TAG	UNP P96789
B	43	PHE	TYR	CONFLICT	UNP P96789
C	-1	HIS	-	EXPRESSION TAG	UNP P96789
C	0	HIS	-	EXPRESSION TAG	UNP P96789
C	43	PHE	TYR	CONFLICT	UNP P96789

- Molecule 2 is NADP NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (three-letter code: NAP) (formula: C<sub>21</sub>H<sub>28</sub>N<sub>7</sub>O<sub>17</sub>P<sub>3</sub>).



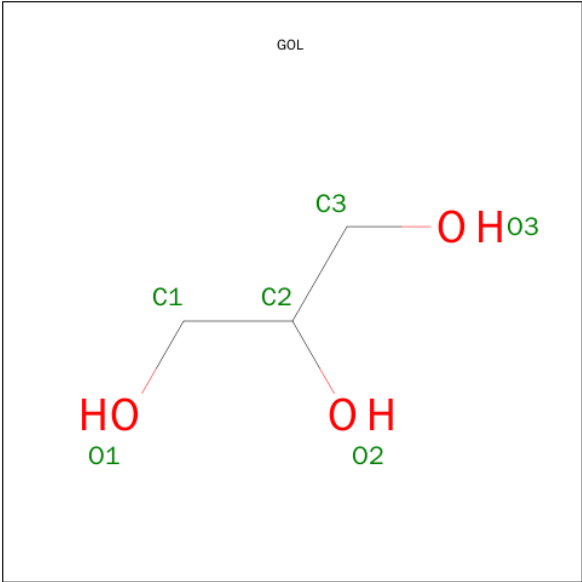
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	0	0
			48	21	7	17	3		

- Molecule 3 is 4-PHOSPHO-D-ERYTHRONOXYHYDROXAMIC ACID (three-letter code: RES) (formula:  $C_4H_{10}NO_8P$ ).



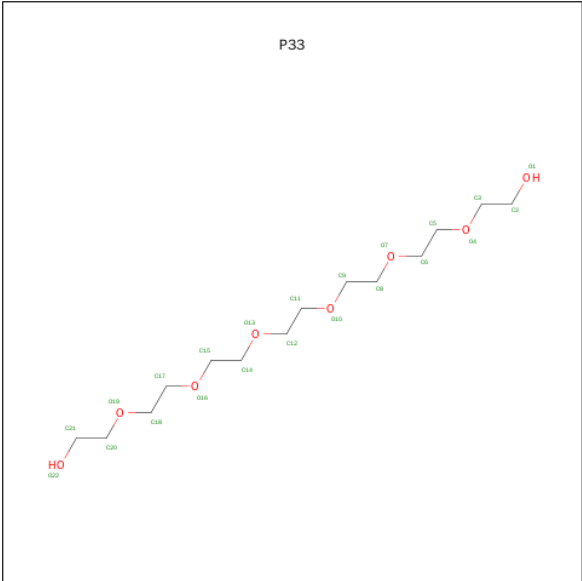
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			14	4	1	8	1		

- 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	0	0
			6	3	3		
4	C	1	Total	C	O	0	0
			6	3	3		

- Molecule 5 is 3,6,9,12,15,18-HEXAOSAICOSANE-1,20-DIOL (three-letter code: P33) (formula: C<sub>14</sub>H<sub>30</sub>O<sub>8</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			22	14	8		

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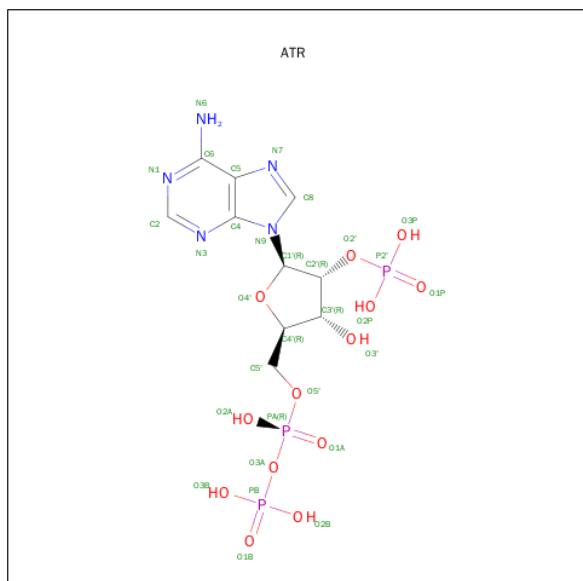
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	C	1	Total	C	O	0	0
			19	12	7		

- Molecule 6 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula:  $C_4H_{10}O_3$ ).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total	C	O	0	0
			7	4	3		

- Molecule 7 is 2'-MONOPHOSPHOADENOSINE-5'-DIPHOSPHATE (three-letter code: ATR) (formula:  $C_{10}H_{16}N_5O_{13}P_3$ ).

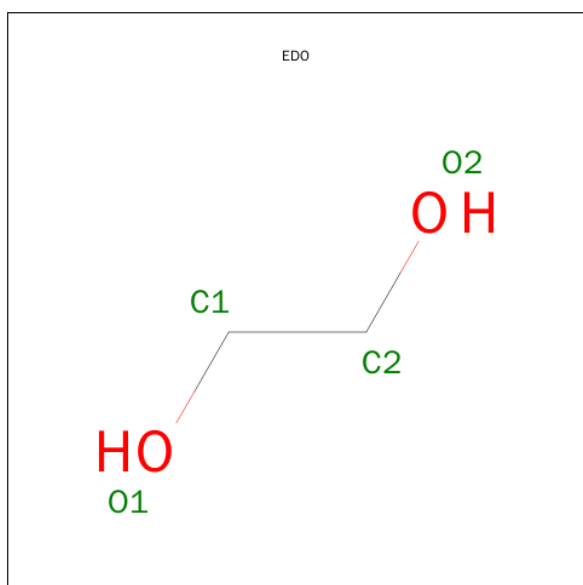


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
7	B	1	Total	C	N	O	P	0	1
			42	12	5	20	5		
7	C	1	Total	C	N	O	P	0	1
			42	12	5	20	5		

- Molecule 8 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	B	2	Total	Cl	0	0
			2	2		
8	C	2	Total	Cl	0	0
			2	2		

- Molecule 9 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C<sub>2</sub>H<sub>6</sub>O<sub>2</sub>).



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

- Molecule 10 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	A	500	Total	O	0	0
			500	500		
10	B	568	Total	O	0	0
			568	568		

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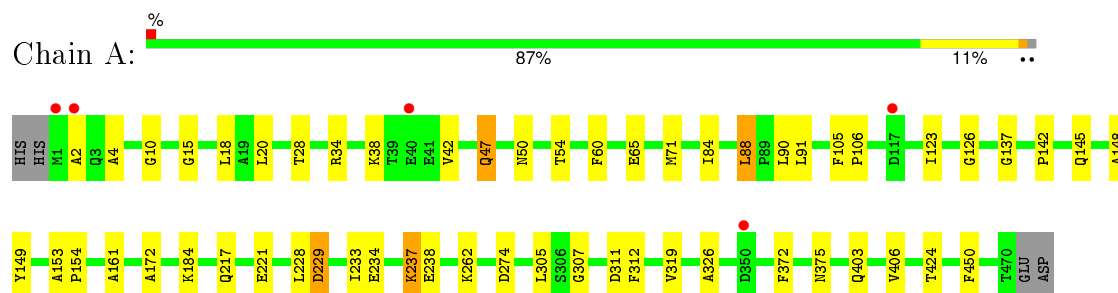
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	C	584	Total	O	0	0
			584	584		

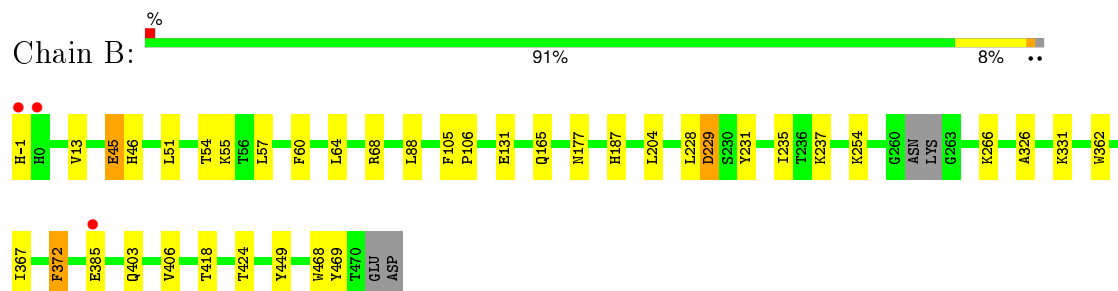
### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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.

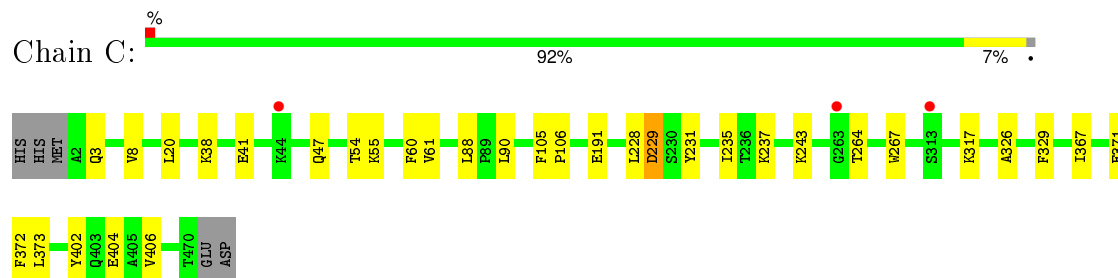
- Molecule 1: 6-PHOSPHOGLUCONATE DEHYDROGENASE, DECARBOXYLATING



- Molecule 1: 6-PHOSPHOGLUCONATE DEHYDROGENASE, DECARBOXYLATING



- Molecule 1: 6-PHOSPHOGLUCONATE DEHYDROGENASE, DECARBOXYLATING



## 4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	70.96 Å   104.46 Å   241.48 Å 90.00°   98.52°   90.00°	Depositor
Resolution (Å)	235.70 – 2.60 44.47 – 2.60	Depositor EDS
% Data completeness (in resolution range)	97.5 (235.70-2.60) 97.5 (44.47-2.60)	Depositor EDS
$R_{merge}$	0.07	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	4.61 (at 2.61 Å)	Xtriage
Refinement program	REFMAC 5.2.0005	Depositor
R, $R_{free}$	0.123 , 0.193 0.141 , 0.195	Depositor DCC
$R_{free}$ test set	2659 reflections (5.34%)	DCC
Wilson B-factor (Å <sup>2</sup> )	23.9	Xtriage
Anisotropy	0.104	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.34 , 41.7	EDS
Estimated twinning fraction	0.018 for h,-k,-h-l	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtriage
Outliers	0 of 52408 reflections	Xtriage
$F_o, F_c$ correlation	0.95	EDS
Total number of atoms	13264	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	16.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.49% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.375 respectively for untwinned datasets, and 0.333, 0.2 for perfectly twinned datasets.

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: GOL, CL, RES, EDO, NAP, ATR, P33, PEG

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	0.44	0/3946	0.56	0/5329
1	B	0.43	0/3933	0.55	3/5314 (0.1%)
1	C	0.43	0/3953	0.55	0/5337
All	All	0.44	0/11832	0.55	3/15980 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed( $^{\circ}$ )	Ideal( $^{\circ}$ )
1	B	-1[A]	HIS	CB-CA-C	5.42	121.24	110.40
1	B	-1[B]	HIS	CB-CA-C	5.42	121.24	110.40
1	B	469	TYR	O-C-N	-5.21	114.37	122.70

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	262	LYS	Peptide

## 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	3802	0	3818	28	0
1	B	3793	0	3776	18	0
1	C	3803	0	3846	17	0
2	A	48	0	25	0	0
3	A	14	0	10	0	0
4	A	6	0	8	0	0
4	C	6	0	8	0	0
5	A	22	0	30	1	0
5	C	19	0	25	0	0
6	A	7	0	10	0	0
7	B	42	0	10	0	0
7	C	42	0	10	0	0
8	B	2	0	0	0	0
8	C	2	0	0	0	0
9	B	4	0	6	1	0
10	A	500	0	0	0	0
10	B	568	0	0	1	1
10	C	584	0	0	3	0
All	All	13264	0	11582	59	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 3.

All (59) 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:C:317[B]:LYS:HE2	10:C:2412:HOH:O	1.64	0.94
1:C:231:TYR:CZ	1:C:235[B]:ILE:HD11	2.11	0.85
1:A:217:GLN:HE22	1:A:221:GLU:CD	1.97	0.68
1:C:38[B]:LYS:HE3	1:C:41[B]:GLU:OE1	2.00	0.61
1:A:234:GLU:O	1:A:237[A]:LYS:HG3	1.99	0.61
1:A:142:PRO:HD2	1:A:172:ALA:O	2.02	0.59
1:B:449:TYR:HA	1:B:468:TRP:CD1	2.39	0.58
1:C:38[B]:LYS:CE	1:C:41[B]:GLU:OE1	2.54	0.56
1:A:274[A]:ASP:OD1	1:B:266:LYS:NZ	2.36	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:231:TYR:CE2	1:C:235[A]:ILE:HD11	2.46	0.51
1:B:64:LEU:HB2	1:B:68[B]:ARG:HG2	1.91	0.51
1:A:326:ALA:HA	1:A:406:VAL:HG22	1.91	0.51
1:A:237[B]:LYS:NZ	1:A:238:GLU:OE2	2.42	0.51
1:A:28[A]:THR:HG22	1:A:50:ASN:HB3	1.93	0.51
1:A:450:PHE:CE2	1:B:367[B]:ILE:HD12	2.45	0.51
1:B:326:ALA:HA	1:B:406:VAL:HG22	1.93	0.51
1:A:54:THR:HG21	1:A:60:PHE:HA	1.93	0.50
1:A:47[A]:GLN:HA	1:A:47[A]:GLN:HE21	1.76	0.50
1:B:204:LEU:HD23	1:B:418:THR:HG21	1.93	0.50
1:C:329:PHE:CG	1:C:406:VAL:HG21	2.46	0.50
1:B:231:TYR:CE2	1:B:235:ILE:HD11	2.47	0.49
1:A:10:GLY:O	1:A:15:GLY:HA3	2.13	0.49
1:A:18[A]:LEU:HD21	1:A:71:MET:SD	2.53	0.48
9:B:1473:EDO:H12	10:B:2567:HOH:O	2.13	0.47
1:A:84:ILE:HG22	1:A:88:LEU:HD22	1.96	0.47
1:B:187:HIS:HB2	1:B:362:TRP:CZ2	2.50	0.47
1:B:105:PHE:CD1	1:B:106:PRO:HD3	2.50	0.46
1:C:231:TYR:CE2	1:C:235[B]:ILE:HD11	2.47	0.46
1:A:228:LEU:HB3	1:A:233:ILE:HD13	1.98	0.45
1:C:326:ALA:HA	1:C:406:VAL:HG22	1.98	0.45
1:C:54:THR:HG21	1:C:60:PHE:HA	1.99	0.45
1:A:450:PHE:CD2	1:B:367[B]:ILE:HD12	2.51	0.45
1:B:331:LYS:HE2	1:B:372:PHE:CE1	2.53	0.44
1:B:45:GLU:HG3	1:B:46:HIS:CD2	2.53	0.44
1:A:312:PHE:CZ	1:A:319:VAL:HG21	2.52	0.44
1:B:54:THR:HG21	1:B:60:PHE:HA	2.00	0.43
1:C:228:LEU:O	1:C:229:ASP:C	2.56	0.43
1:B:64:LEU:CB	1:B:68[B]:ARG:HG2	2.48	0.43
1:A:105:PHE:CD1	1:A:106:PRO:HD3	2.53	0.43
1:A:126:GLY:HA3	1:A:184:LYS:HB2	2.00	0.43
1:A:153:ALA:N	1:A:154:PRO:CD	2.81	0.43
1:B:228:LEU:O	1:B:229:ASP:C	2.58	0.42
1:A:137:GLY:O	1:A:161:ALA:HB2	2.19	0.42
5:A:1473:P33:H32	1:C:47:GLN:HB2	2.02	0.42
1:C:402:TYR:O	1:C:406:VAL:HG23	2.20	0.42
1:A:372:PHE:HA	1:A:375:ASN:HD22	1.84	0.42
1:B:13[B]:VAL:HG11	1:B:131:GLU:OE2	2.20	0.41
1:A:4:ALA:O	1:A:65[A]:GLU:HG2	2.20	0.41
1:C:404[B]:GLU:HG2	10:C:2218:HOH:O	2.20	0.41
1:C:191:GLU:CG	1:C:367[A]:ILE:HD11	2.51	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:105:PHE:N	1:C:106:PRO:CD	2.84	0.41
1:A:307:GLY:HA2	1:B:403:GLN:OE1	2.21	0.41
1:A:228:LEU:O	1:A:229:ASP:C	2.59	0.40
1:A:123[B]:ILE:HD11	1:A:149:TYR:HA	2.03	0.40
1:C:61[A]:VAL:HG21	1:C:90:LEU:HB3	2.03	0.40
1:A:28[A]:THR:HG23	10:C:2247:HOH:O	2.20	0.40
1:C:264:THR:HG22	1:C:267:TRP:CZ2	2.56	0.40
1:A:123[A]:ILE:HD11	1:A:148:ALA:HB1	2.04	0.40
1:A:424:THR:HB	1:B:424:THR:HB	2.03	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)
10:B:2017:HOH:O	10:B:2017:HOH:O[2_656]	0.58	1.62

## 5.3 Torsion angles ⓘ

### 5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	491/474 (104%)	478 (97%)	11 (2%)	2 (0%)	39	65
1	B	487/474 (103%)	470 (96%)	15 (3%)	2 (0%)	39	65
1	C	493/474 (104%)	476 (97%)	15 (3%)	2 (0%)	39	65
All	All	1471/1422 (103%)	1424 (97%)	41 (3%)	6 (0%)	39	65

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	2	ALA
1	C	3	GLN
1	A	229	ASP

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Mol	Chain	Res	Type
1	B	177	ASN
1	C	229	ASP
1	B	229	ASP

### 5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	409/390 (105%)	394 (96%)	15 (4%)	41	69
1	B	407/390 (104%)	396 (97%)	11 (3%)	52	79
1	C	410/390 (105%)	400 (98%)	10 (2%)	57	82
All	All	1226/1170 (105%)	1190 (97%)	36 (3%)	51	77

All (36) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	20	LEU
1	A	34	ARG
1	A	38	LYS
1	A	42	VAL
1	A	47[A]	GLN
1	A	47[B]	GLN
1	A	88	LEU
1	A	90	LEU
1	A	91	LEU
1	A	145	GLN
1	A	237[A]	LYS
1	A	237[B]	LYS
1	A	305	LEU
1	A	311	ASP
1	A	403	GLN
1	B	45	GLU
1	B	51	LEU
1	B	55	LYS
1	B	57	LEU

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Mol	Chain	Res	Type
1	B	88	LEU
1	B	165	GLN
1	B	237	LYS
1	B	254	LYS
1	B	372	PHE
1	B	385[A]	GLU
1	B	385[B]	GLU
1	C	8	VAL
1	C	20	LEU
1	C	55	LYS
1	C	88	LEU
1	C	237	LYS
1	C	243	LYS
1	C	371[A]	GLU
1	C	371[B]	GLU
1	C	372	PHE
1	C	373	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	217	GLN
1	A	375	ASN
1	C	47	GLN

### 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 16 ligands modelled in this entry, 4 are monoatomic - leaving 12 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
2	NAP	A	1470	-	42,52,52	1.58	3 (7%)	54,80,80	1.86	4 (7%)
3	RES	A	1471	-	12,13,13	0.64	0	13,18,18	2.33	1 (7%)
4	GOL	A	1472	-	5,5,5	0.34	0	5,5,5	0.28	0
5	P33	A	1473	-	21,21,21	0.58	0	20,20,20	0.62	0
6	PEG	A	1474	-	6,6,6	0.39	0	5,5,5	0.33	0
7	ATR	B	1470[A]	-	26,33,33	0.90	1 (3%)	34,52,52	2.06	3 (8%)
7	ATR	B	1470[B]	-	26,33,33	0.89	1 (3%)	34,52,52	2.02	2 (5%)
9	EDO	B	1473	-	3,3,3	0.42	0	2,2,2	0.41	0
7	ATR	C	1470[A]	-	26,33,33	0.88	1 (3%)	34,52,52	1.90	2 (5%)
7	ATR	C	1470[B]	-	26,33,33	0.89	1 (3%)	34,52,52	1.89	3 (8%)
4	GOL	C	1473	-	5,5,5	0.36	0	5,5,5	0.34	0
5	P33	C	1474	-	18,18,21	0.56	0	17,17,20	0.48	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the chemical component dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAP	A	1470	-	-	0/27/67/67	0/5/5/5
3	RES	A	1471	-	-	0/15/16/16	0/0/0/0
4	GOL	A	1472	-	-	0/4/4/4	0/0/0/0
5	P33	A	1473	-	-	0/19/19/19	0/0/0/0
6	PEG	A	1474	-	-	0/4/4/4	0/0/0/0
7	ATR	B	1470[A]	-	-	0/17/37/37	0/3/3/3
7	ATR	B	1470[B]	-	-	0/17/37/37	0/3/3/3
9	EDO	B	1473	-	-	0/1/1/1	0/0/0/0
7	ATR	C	1470[A]	-	-	0/17/37/37	0/3/3/3
7	ATR	C	1470[B]	-	-	0/17/37/37	0/3/3/3
4	GOL	C	1473	-	-	0/4/4/4	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	P33	C	1474	-	-	0/16/16/19	0/0/0/0

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	C	1470[B]	ATR	O4'-C1'	2.18	1.44	1.41
7	C	1470[A]	ATR	O4'-C1'	2.18	1.44	1.41
2	A	1470	NAP	C2A-N1A	2.50	1.38	1.33
7	B	1470[A]	ATR	O4'-C1'	2.63	1.44	1.41
7	B	1470[B]	ATR	O4'-C1'	2.63	1.44	1.41
2	A	1470	NAP	C2A-N3A	3.49	1.38	1.32
2	A	1470	NAP	O7N-C7N	7.99	1.41	1.24

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1470	NAP	N3A-C2A-N1A	-11.76	119.89	128.89
7	B	1470[A]	ATR	N3-C2-N1	-10.24	121.05	128.89
7	B	1470[B]	ATR	N3-C2-N1	-10.24	121.05	128.89
7	C	1470[B]	ATR	N3-C2-N1	-9.27	121.80	128.89
7	C	1470[A]	ATR	N3-C2-N1	-9.27	121.80	128.89
3	A	1471	RES	ON-N-C1	-7.79	108.84	119.86
7	B	1470[A]	ATR	C4-C5-N7	-2.46	107.22	109.48
7	B	1470[B]	ATR	C4-C5-N7	-2.46	107.22	109.48
2	A	1470	NAP	O7N-C7N-C3N	-2.07	117.33	119.59
7	C	1470[B]	ATR	C4-C5-N7	-2.01	107.63	109.48
7	C	1470[A]	ATR	C4-C5-N7	-2.01	107.63	109.48
2	A	1470	NAP	O4B-C1B-N9A	2.05	112.39	108.10
7	B	1470[A]	ATR	O3B-PB-O2B	2.05	115.20	107.38
2	A	1470	NAP	C3N-C7N-N7N	2.06	120.08	117.82
7	C	1470[B]	ATR	O3B-PB-O2B	2.20	115.77	107.38

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	1473	P33	1	0
9	B	1473	EDO	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 [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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	470/474 (99%)	-0.33	5 (1%) 82 79	4, 15, 31, 42	2 (0%)
1	B	470/474 (99%)	-0.55	3 (0%) 90 88	3, 11, 27, 49	0
1	C	469/474 (98%)	-0.52	3 (0%) 90 88	4, 13, 27, 41	0
All	All	1409/1422 (99%)	-0.47	11 (0%) 87 85	3, 13, 29, 49	2 (0%)

All (11) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	1[A]	MET	6.0
1	B	-1[A]	HIS	5.4
1	B	0	HIS	2.7
1	B	385[A]	GLU	2.7
1	A	117	ASP	2.3
1	A	350[A]	ASP	2.3
1	A	40	GLU	2.2
1	A	2	ALA	2.2
1	C	263	GLY	2.1
1	C	44[A]	LYS	2.1
1	C	313	SER	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 ⓘ

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, 95<sup>th</sup> 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(Å <sup>2</sup> )	Q<0.9
5	P33	C	1474	19/22	0.79	0.29	2.36	48,55,59,60	0
9	EDO	B	1473	4/4	0.92	0.18	2.05	19,23,23,24	0
5	P33	A	1473	22/22	0.81	0.28	1.77	41,57,64,64	0
7	ATR	B	1470[A]	31/31	0.94	0.20	1.18	15,19,24,25	11
7	ATR	B	1470[B]	31/31	0.94	0.20	1.18	15,19,27,28	11
4	GOL	C	1473	6/6	0.93	0.21	1.17	35,36,38,39	0
4	GOL	A	1472	6/6	0.94	0.19	0.71	31,34,35,35	0
7	ATR	C	1470[B]	31/31	0.94	0.16	0.57	13,16,19,21	11
7	ATR	C	1470[A]	31/31	0.94	0.16	0.57	13,17,32,34	11
8	CL	C	1471	1/1	0.90	0.13	0.39	55,55,55,55	0
2	NAP	A	1470	48/48	0.96	0.13	-0.24	15,20,24,25	0
8	CL	B	1471	1/1	0.97	0.10	-0.86	43,43,43,43	0
3	RES	A	1471	14/14	0.98	0.09	-1.32	6,10,11,12	1
6	PEG	A	1474	7/7	0.82	0.35	-	57,58,59,59	0
8	CL	C	1472	1/1	0.99	0.28	-	28,28,28,28	0
8	CL	B	1472	1/1	0.99	0.27	-	33,33,33,33	0

## 6.5 Other polymers ⓘ

There are no such residues in this entry.