Full wwPDB X-ray Structure Validation Report ⓘ

May 17, 2020 – 04:47 am BST

PDB ID	:	6PQN
Title	:	Crystal structure of HzTransib transposase
Authors	:	Liu, C.; Yang, Y.; Schatz, D.G.
Deposited on	:	2019-07-09
Resolution	:	3.01 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:

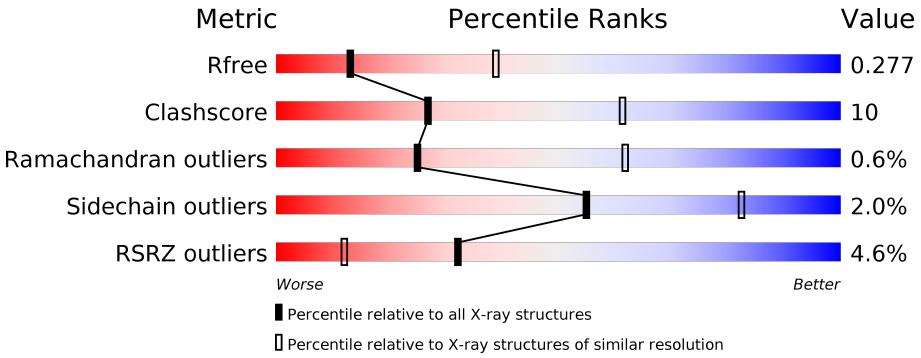
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.11
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, 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 3.01 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	2399 (3.04-3.00)
Clashscore	141614	2734 (3.04-3.00)
Ramachandran outliers	138981	2640 (3.04-3.00)
Sidechain outliers	138945	2643 (3.04-3.00)
RSRZ outliers	127900	2287 (3.04-3.00)

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	497	6% 70% 21% • 8%
1	B	497	2% 69% 21% • 9%

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	PO4	A	602	-	-	-	X
3	PO4	A	606	-	-	-	X
3	PO4	B	607	-	-	-	X

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 7380 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 DNA-mediated transposase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	457	Total	C	N	O	S	0	0	0
			3643	2318	624	684	17			
1	B	451	Total	C	N	O	S	0	2	0
			3626	2307	622	680	17			

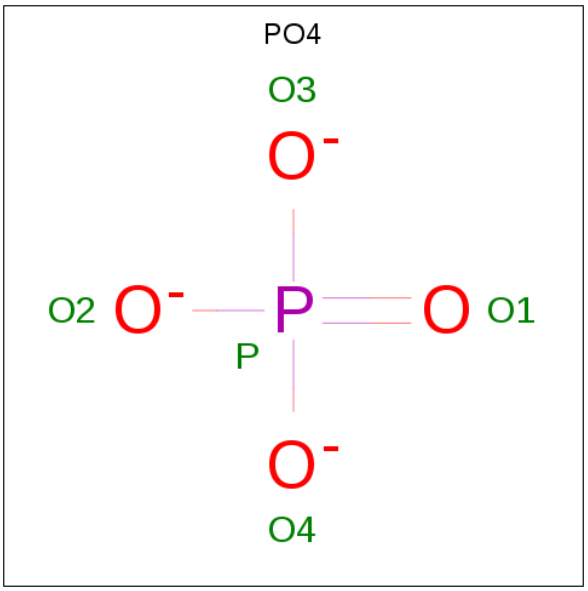
There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	508	HIS	-	expression tag	UNP B0F0C5
A	509	HIS	-	expression tag	UNP B0F0C5
A	510	HIS	-	expression tag	UNP B0F0C5
A	511	HIS	-	expression tag	UNP B0F0C5
A	512	HIS	-	expression tag	UNP B0F0C5
A	513	HIS	-	expression tag	UNP B0F0C5
B	508	HIS	-	expression tag	UNP B0F0C5
B	509	HIS	-	expression tag	UNP B0F0C5
B	510	HIS	-	expression tag	UNP B0F0C5
B	511	HIS	-	expression tag	UNP B0F0C5
B	512	HIS	-	expression tag	UNP B0F0C5
B	513	HIS	-	expression tag	UNP B0F0C5

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

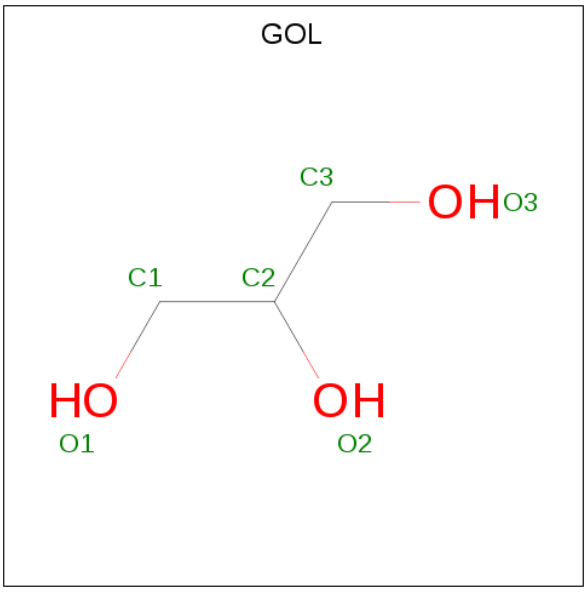
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	B	1	Total	Zn	0	0
			1	1		
2	A	1	Total	Zn	0	0
			1	1		

- Molecule 3 is PHOSPHATE ION (three-letter code: PO4) (formula: O_4P).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total O P 5 4 1	0	0
3	A	1	Total O P 5 4 1	0	0
3	A	1	Total O P 5 4 1	0	0
3	A	1	Total O P 5 4 1	0	0
3	A	1	Total O P 5 4 1	0	0
3	B	1	Total O P 5 4 1	0	0
3	B	1	Total O P 5 4 1	0	0
3	B	1	Total O P 5 4 1	0	0
3	B	1	Total O P 5 4 1	0	0
3	B	1	Total O P 5 4 1	0	0

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



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

- Molecule 5 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	B	1	Total Na 1 1	0	0

- Molecule 6 is water.

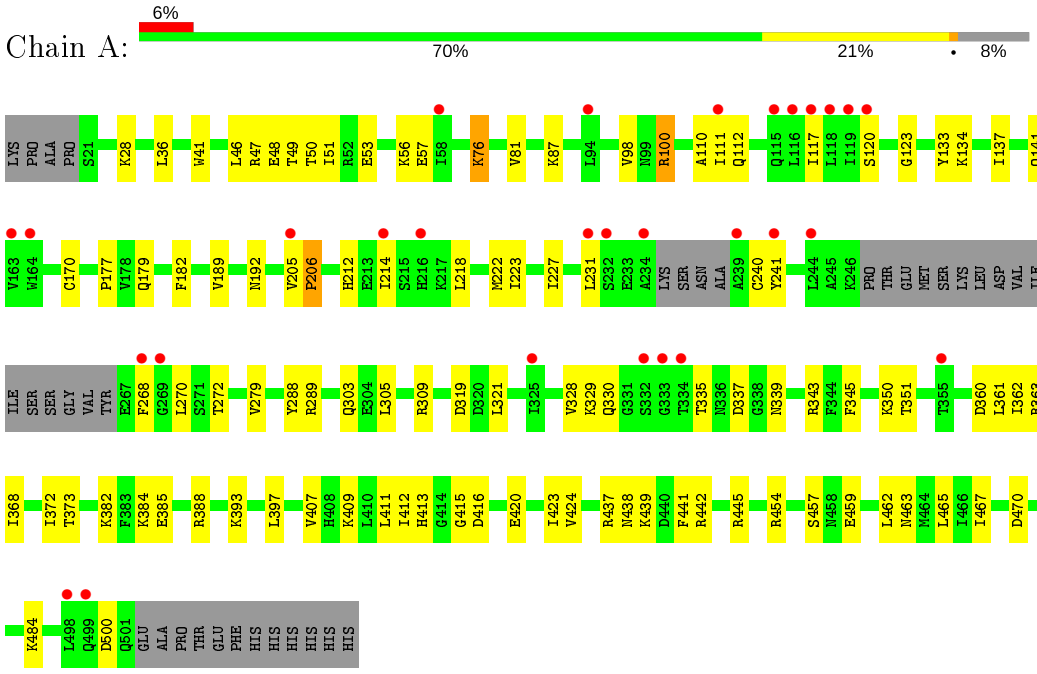
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	16	Total O 16 16	0	0
6	B	12	Total O 12 12	0	0

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.

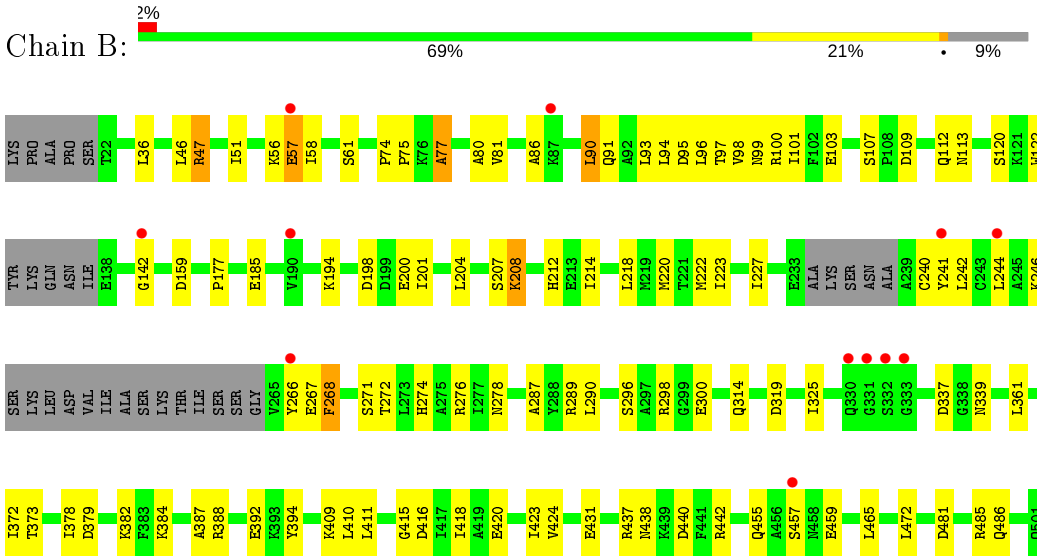
- Molecule 1: Putative DNA-mediated transposase

Chain A:



- Molecule 1: Putative DNA-mediated transposase

Chain B:



GLU
PHE
HIS
HIS
HIS
HIS
HIS
HIS

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 61 2 2	Depositor
Cell constants a, b, c, α, β, γ	160.29Å 160.29Å 235.86Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	80.15 – 3.01 80.15 – 3.01	Depositor EDS
% Data completeness (in resolution range)	99.2 (80.15-3.01) 99.2 (80.15-3.01)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.05 (at 3.01Å)	Xtriage
Refinement program	PHENIX 1.15.2_3472, PHENIX 1.15.2_3472	Depositor
R, R_{free}	0.219 , 0.277 0.220 , 0.277	Depositor DCC
R_{free} test set	1792 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	120.0	Xtriage
Anisotropy	0.332	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 123.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.51$, $< L^2 > = 0.35$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	7380	wwPDB-VP
Average B, all atoms (Å^2)	147.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.91% 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

Bond lengths and bond angles in the following residue types are not validated in this section: GOL, ZN, PO4, NA

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	0.28	0/3712	0.49	0/5008
1	B	0.29	0/3694	0.50	0/4981
All	All	0.28	0/7406	0.50	0/9989

There are no bond length outliers.

There are no bond angle outliers.

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	3643	0	3662	71	0
1	B	3626	0	3650	84	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
3	A	25	0	0	1	0
3	B	25	0	0	1	0
4	A	24	0	32	1	0
4	B	6	0	8	0	0
5	B	1	0	0	0	0
6	A	16	0	0	2	0
6	B	12	0	0	2	0
All	All	7380	0	7352	150	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 10.

All (150) 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:47:ARG:HH12	1:B:61:SER:HA	1.03	1.17
1:B:47:ARG:NH1	1:B:61:SER:HA	1.85	0.90
1:A:328:VAL:HG22	1:A:330:GLN:H	1.49	0.76
1:B:372:ILE:HG23	1:B:423:ILE:HD13	1.69	0.74
1:A:372:ILE:HG23	1:A:423:ILE:HD13	1.71	0.73
1:A:76:LYS:HD3	1:A:76:LYS:H	1.56	0.71
1:A:272:THR:HB	1:A:373:THR:HG22	1.72	0.70
1:B:95:ASP:O	1:B:99:ASN:ND2	2.23	0.70
1:B:120:SER:HB2	1:B:218:LEU:HD22	1.73	0.69
1:B:437:ARG:HG3	1:B:457:SER:HB3	1.74	0.69
1:B:272:THR:HG22	1:B:372:ILE:HG22	1.76	0.68
1:B:272:THR:HB	1:B:373:THR:HG22	1.75	0.68
1:A:240:CYS:O	1:A:241:TYR:HB2	1.93	0.67
1:B:57:GLU:N	1:B:57:GLU:OE1	2.29	0.64
1:A:270:LEU:HD13	1:A:409:LYS:HE3	1.79	0.64
1:B:81:VAL:HG21	1:B:459:GLU:HG3	1.79	0.64
1:A:321:LEU:O	1:A:343:ARG:NH2	2.31	0.64
1:B:112:GLN:HG3	1:B:159:ASP:HB2	1.80	0.63
1:A:437:ARG:HG3	1:A:457:SER:HB3	1.79	0.62
1:B:384:LYS:HG2	1:B:415:GLY:HA3	1.80	0.62
1:B:368:ILE:HG21	1:B:410:LEU:HD21	1.81	0.62
1:A:272:THR:HG22	1:A:372:ILE:HG22	1.80	0.62
1:B:177:PRO:HG3	1:B:465:LEU:HB3	1.81	0.62
1:B:244:LEU:HD11	1:B:246:LYS:NZ	2.15	0.62
1:B:90:LEU:HA	1:B:93:LEU:HB3	1.82	0.62
1:A:56:LYS:HG2	1:A:56:LYS:O	2.00	0.62
1:B:278:ASN:ND2	6:B:701:HOH:O	2.32	0.62
1:B:56:LYS:O	1:B:58:ILE:N	2.33	0.61
1:A:438:ASN:HB3	1:A:442:ARG:HH12	1.63	0.61
1:A:47:ARG:O	1:A:51:ILE:HG12	2.01	0.61
1:A:81:VAL:HG21	1:A:459:GLU:HG2	1.84	0.59
1:B:267:GLU:HB3	1:B:409:LYS:HE2	1.85	0.59
1:B:100:ARG:HH21	1:B:472:LEU:HD23	1.68	0.59
1:B:113:ASN:HB2	1:B:212:HIS:HA	1.85	0.58
1:B:75:PRO:HG2	1:B:77:ALA:HB3	1.85	0.58
1:A:48:GLU:HG3	1:B:485:ARG:HH22	1.68	0.57
1:B:81:VAL:O	1:B:455:GLN:NE2	2.37	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:289:ARG:NH2	3:A:605:PO4:O3	2.36	0.56
1:B:51:ILE:HD12	1:B:56:LYS:HA	1.86	0.56
1:A:36:LEU:HD21	1:B:46:LEU:HB2	1.87	0.56
1:B:378:ILE:HD13	1:B:418:ILE:HD12	1.88	0.56
1:B:379:ASP:OD2	1:B:382:LYS:HE2	2.06	0.56
1:B:223:ILE:HD12	1:B:227:ILE:HG21	1.88	0.55
1:B:276[A]:ARG:NH1	3:B:605:PO4:O2	2.38	0.55
1:B:80:ALA:O	1:B:86:ALA:HA	2.07	0.55
1:B:223:ILE:HG23	1:B:227:ILE:HB	1.87	0.54
1:A:303:GLN:NE2	6:A:701:HOH:O	2.28	0.54
1:A:363:ARG:NH1	6:A:703:HOH:O	2.40	0.54
1:A:177:PRO:HG3	1:A:465:LEU:HB3	1.90	0.53
1:B:91:GLN:HG2	1:B:204:LEU:HD23	1.89	0.53
1:A:47:ARG:O	1:A:50:THR:HG22	2.07	0.53
1:A:111:ILE:HD12	1:A:112:GLN:N	2.24	0.53
1:A:87:LYS:HG2	1:A:179:GLN:HG3	1.91	0.53
1:A:481:ASP:HB2	1:A:484:LYS:H	1.73	0.52
1:B:289:ARG:HG3	1:B:289:ARG:HH11	1.72	0.52
1:A:134:LYS:HB3	1:A:137:ILE:O	2.10	0.52
1:B:314:GLN:HG3	1:B:325:ILE:HG22	1.91	0.52
1:B:387:ALA:HB1	1:B:411:LEU:HA	1.91	0.51
1:B:194:LYS:HE2	1:B:198:ASP:OD2	2.10	0.51
1:B:372:ILE:CD1	1:B:418:ILE:HD11	2.40	0.50
1:B:98:VAL:HG11	1:B:214:ILE:HD13	1.94	0.50
1:A:28:LYS:HE2	1:A:476:THR:HG21	1.94	0.50
1:A:120:SER:HB2	1:A:218:LEU:HD22	1.93	0.50
1:B:96:LEU:O	1:B:100:ARG:HG2	2.12	0.49
1:A:98:VAL:HG11	1:A:214:ILE:HD13	1.94	0.49
1:B:240:CYS:C	1:B:242:LEU:H	2.15	0.49
1:A:57:GLU:N	1:A:57:GLU:OE1	2.38	0.49
1:A:223:ILE:HD12	1:A:227:ILE:HG21	1.94	0.48
1:B:244:LEU:HD11	1:B:246:LYS:HZ3	1.78	0.48
1:A:360:ASP:HB3	1:A:393:LYS:HE2	1.96	0.48
1:B:368:ILE:CG2	1:B:410:LEU:HD21	2.43	0.48
1:A:46:LEU:HB2	1:B:36:LEU:HD21	1.96	0.48
1:A:437:ARG:HH21	1:A:454:ARG:HG3	1.79	0.47
1:B:481:ASP:O	1:B:485:ARG:HG2	2.13	0.47
1:B:81:VAL:HG23	1:B:455:GLN:HE21	1.79	0.47
1:A:337:ASP:OD2	1:A:339:ASN:HB3	2.14	0.47
1:A:480:LEU:HD22	1:A:500:ASP:HB3	1.96	0.47
1:B:222:MET:HB3	1:B:424:VAL:HG13	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:288:TYR:HA	1:A:309:ARG:HG2	1.97	0.47
1:A:337:ASP:N	1:A:337:ASP:OD1	2.40	0.47
1:A:279:VAL:HG22	1:A:407:VAL:HG22	1.97	0.47
1:B:113:ASN:HB3	1:B:212:HIS:CD2	2.50	0.47
1:B:416:ASP:O	1:B:420:GLU:HG2	2.14	0.46
1:B:51:ILE:CD1	1:B:56:LYS:HA	2.45	0.46
1:A:382:LYS:HE3	1:A:382:LYS:HB2	1.66	0.46
1:B:74:PRO:HB3	1:B:96:LEU:HD12	1.96	0.46
1:A:100:ARG:HD3	1:A:470:ASP:OD2	2.15	0.46
1:B:208:LYS:H	1:B:208:LYS:HD3	1.81	0.46
1:A:117:ILE:HB	1:A:157:THR:HB	1.98	0.46
1:B:267:GLU:O	1:B:268:PHE:HB2	2.15	0.46
1:A:385:GLU:HG2	1:A:388:ARG:HH21	1.80	0.46
1:B:90:LEU:HD21	1:B:200:GLU:HB2	1.97	0.46
1:A:384:LYS:HG2	1:A:415:GLY:HA3	1.98	0.46
1:A:445:ARG:NH2	1:B:319:ASP:O	2.49	0.45
1:A:123:GLY:HA3	1:A:222:MET:HB2	1.96	0.45
1:A:170:CYS:HB2	4:A:609:GOL:O1	2.16	0.45
1:B:142:GLY:HA3	1:B:437:ARG:HH21	1.81	0.45
1:B:438:ASN:HB3	1:B:442:ARG:NH2	2.31	0.45
1:A:361:LEU:HA	1:A:361:LEU:HD23	1.78	0.45
1:A:76:LYS:CD	1:A:76:LYS:H	2.27	0.45
1:A:205:VAL:N	1:A:206:PRO:HD3	2.32	0.45
1:B:122:TRP:CE2	1:B:220:MET:HB2	2.51	0.45
1:B:107:SER:HB3	1:B:109:ASP:OD2	2.17	0.45
1:B:123:GLY:HA3	1:B:222:MET:HB2	1.97	0.44
1:A:182:PHE:CZ	1:A:437:ARG:HD3	2.52	0.44
1:A:223:ILE:HG23	1:A:227:ILE:HB	1.98	0.44
1:B:244:LEU:HD11	1:B:246:LYS:HZ2	1.83	0.44
1:B:99:ASN:O	1:B:103:GLU:HG2	2.17	0.44
1:B:287:ALA:HA	1:B:290:LEU:HG	1.99	0.44
1:A:463:ASN:O	1:A:467:ILE:HD12	2.18	0.43
1:B:300:GLU:OE2	1:B:300:GLU:N	2.25	0.43
1:B:81:VAL:HG11	1:B:459:GLU:HA	2.00	0.43
1:A:141:GLN:HG2	1:A:441:PHE:CZ	2.54	0.43
1:A:321:LEU:HD11	1:A:350:LYS:HD2	2.00	0.43
1:B:300:GLU:O	1:B:300:GLU:HG2	2.17	0.43
1:A:222:MET:HB3	1:A:424:VAL:HG13	2.01	0.43
1:B:47:ARG:HH22	1:B:61:SER:HB3	1.84	0.43
1:A:368:ILE:O	1:A:372:ILE:HG12	2.19	0.43
1:A:110:ALA:HB3	1:A:212:HIS:NE2	2.34	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:412:ILE:HG22	1:A:413:HIS:CE1	2.53	0.43
1:B:56:LYS:C	1:B:58:ILE:H	2.22	0.42
1:A:393:LYS:HE3	1:A:397:LEU:HD11	2.01	0.42
1:B:201:ILE:HD12	1:B:218:LEU:HD12	2.00	0.42
1:A:416:ASP:O	1:A:420:GLU:HG2	2.20	0.42
1:B:271:SER:HB3	1:B:274:HIS:HB2	2.00	0.42
1:A:345:PHE:HB3	1:A:366:SER:OG	2.19	0.42
1:B:382:LYS:HG3	6:B:711:HOH:O	2.19	0.42
1:B:207:SER:N	1:B:214:ILE:O	2.53	0.42
1:B:296:SER:HB3	1:B:298:ARG:HG2	2.02	0.41
1:B:47:ARG:HH22	1:B:61:SER:CA	2.33	0.41
1:A:189:VAL:HA	1:A:192:ASN:HB2	2.01	0.41
1:B:361:LEU:HD22	1:B:365:PHE:CE2	2.55	0.41
1:A:227:ILE:O	1:A:231:LEU:HD13	2.20	0.41
1:A:365:PHE:CZ	1:A:411:LEU:HD11	2.55	0.41
1:B:267:GLU:HB3	1:B:409:LYS:CE	2.50	0.41
1:A:111:ILE:H	1:A:111:ILE:HG13	1.63	0.41
1:A:329:LYS:HB3	1:A:335:THR:HG21	2.01	0.41
1:A:385:GLU:HG2	1:A:388:ARG:NH2	2.36	0.41
1:B:361:LEU:HD11	1:B:394:TYR:HA	2.02	0.41
1:A:41:TRP:CG	1:B:486:GLN:HB2	2.56	0.41
1:B:388[A]:ARG:O	1:B:392:GLU:HG3	2.20	0.41
1:B:90:LEU:HD12	1:B:94:LEU:HD11	2.02	0.41
1:A:205:VAL:H	1:A:206:PRO:HD3	1.85	0.41
1:A:49:THR:O	1:A:53:GLU:HG2	2.21	0.40
1:B:97:THR:O	1:B:101:ILE:HG13	2.21	0.40
1:A:351:THR:HG22	1:A:362:ILE:HD13	2.03	0.40
1:B:289:ARG:HG3	1:B:289:ARG:NH1	2.36	0.40
1:B:372:ILE:HD13	1:B:418:ILE:HD11	2.03	0.40
1:A:329:LYS:H	1:A:335:THR:CG2	2.35	0.40
1:B:339:ASN:N	1:B:431:GLU:OE2	2.54	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	451/497 (91%)	419 (93%)	31 (7%)	1 (0%)	47 81
1	B	445/497 (90%)	416 (94%)	25 (6%)	4 (1%)	17 53
All	All	896/994 (90%)	835 (93%)	56 (6%)	5 (1%)	25 62

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	57	GLU
1	B	241	TYR
1	B	77	ALA
1	A	206	PRO
1	B	185	GLU

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	401/442 (91%)	392 (98%)	9 (2%)	52 80
1	B	401/442 (91%)	394 (98%)	7 (2%)	60 85
All	All	802/884 (91%)	786 (98%)	16 (2%)	55 82

All (16) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	76	LYS
1	A	100	ARG
1	A	133	TYR
1	A	268	PHE
1	A	305	LEU
1	A	319	ASP
1	A	439	LYS
1	A	462	LEU

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Mol	Chain	Res	Type
1	A	480	LEU
1	B	47	ARG
1	B	90	LEU
1	B	208	LYS
1	B	266	TYR
1	B	268	PHE
1	B	337	ASP
1	B	440	ASP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	447	HIS
1	B	455	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 18 ligands modelled in this entry, 3 are monoatomic - leaving 15 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	PO4	A	604	-	4,4,4	0.81	0	6,6,6	0.60	0
4	GOL	A	607	-	5,5,5	0.95	0	5,5,5	0.91	0
3	PO4	B	605	-	4,4,4	0.86	0	6,6,6	0.64	0
3	PO4	A	605	-	4,4,4	0.91	0	6,6,6	0.49	0
3	PO4	A	606	-	4,4,4	0.95	0	6,6,6	0.42	0
3	PO4	B	603	-	4,4,4	0.90	0	6,6,6	0.39	0
3	PO4	B	604	-	4,4,4	0.87	0	6,6,6	0.56	0
3	PO4	A	602	-	4,4,4	0.92	0	6,6,6	0.43	0
4	GOL	A	609	-	5,5,5	0.89	0	5,5,5	1.06	0
4	GOL	B	608	-	5,5,5	0.93	0	5,5,5	0.98	0
4	GOL	A	608	-	5,5,5	0.99	0	5,5,5	0.90	0
3	PO4	B	607	-	4,4,4	0.93	0	6,6,6	0.45	0
3	PO4	A	603	-	4,4,4	0.87	0	6,6,6	0.57	0
4	GOL	A	610	-	5,5,5	0.97	0	5,5,5	0.90	0
3	PO4	B	606	-	4,4,4	0.89	0	6,6,6	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
4	GOL	B	608	-	-	0/4/4/4	-
4	GOL	A	609	-	-	2/4/4/4	-
4	GOL	A	607	-	-	2/4/4/4	-
4	GOL	A	610	-	-	2/4/4/4	-
4	GOL	A	608	-	-	2/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (8) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	607	GOL	O1-C1-C2-C3
4	A	609	GOL	C1-C2-C3-O3
4	A	608	GOL	O1-C1-C2-C3
4	A	610	GOL	O1-C1-C2-C3
4	A	610	GOL	O1-C1-C2-O2
4	A	607	GOL	O1-C1-C2-O2

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Mol	Chain	Res	Type	Atoms
4	A	609	GOL	O2-C2-C3-O3
4	A	608	GOL	O1-C1-C2-O2

There are no ring outliers.

3 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	605	PO4	1	0
3	A	605	PO4	1	0
4	A	609	GOL	1	0

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
1	A	457/497 (91%)	0.44	30 (6%) 18 5	86, 138, 223, 326	1 (0%)
1	B	451/497 (90%)	0.38	12 (2%) 54 26	80, 142, 228, 374	0
All	All	908/994 (91%)	0.41	42 (4%) 32 12	80, 140, 227, 374	1 (0%)

All (42) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	234	ALA	13.5
1	B	332	SER	13.2
1	B	333	GLY	9.2
1	B	331	GLY	9.2
1	A	332	SER	8.2
1	A	333	GLY	6.3
1	B	266	TYR	5.9
1	A	232	SER	5.8
1	A	269	GLY	4.6
1	A	118	LEU	4.4
1	A	231	LEU	4.1
1	A	244	LEU	3.7
1	A	334	THR	3.6
1	B	241	TYR	3.6
1	A	241	TYR	3.6
1	A	268	PHE	3.2
1	B	57	GLU	3.1
1	A	119	ILE	3.1
1	A	116	LEU	3.1
1	B	457	SER	2.9
1	A	216	HIS	2.9
1	A	205	VAL	2.8
1	A	94	LEU	2.8
1	B	190	VAL	2.7

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Mol	Chain	Res	Type	RSRZ
1	A	58	ILE	2.7
1	A	499	GLN	2.7
1	A	164	TRP	2.6
1	A	214	ILE	2.6
1	B	142	GLY	2.6
1	A	117	ILE	2.6
1	A	239	ALA	2.4
1	A	158	ALA	2.4
1	A	111	ILE	2.3
1	B	330	GLN	2.3
1	A	498	LEU	2.3
1	B	244	LEU	2.3
1	A	325	ILE	2.3
1	B	87	LYS	2.3
1	A	355	THR	2.1
1	A	163	VAL	2.1
1	A	120	SER	2.0
1	A	115	GLN	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 (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	PO4	A	606	5/5	0.18	0.98	451,451,453,467	0
3	PO4	A	602	5/5	0.45	0.71	220,221,229,232	0
4	GOL	A	610	6/6	0.56	0.35	129,149,154,156	0
4	GOL	B	608	6/6	0.60	0.19	155,163,170,176	0
5	NA	B	601	1/1	0.64	0.39	108,108,108,108	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	GOL	A	608	6/6	0.70	0.22	138,146,152,160	0
3	PO4	A	605	5/5	0.70	0.34	168,169,177,183	0
4	GOL	A	607	6/6	0.72	0.25	106,112,120,121	0
3	PO4	B	607	5/5	0.76	0.82	233,238,246,249	0
3	PO4	B	603	5/5	0.79	0.15	198,201,205,206	0
4	GOL	A	609	6/6	0.84	0.33	121,144,151,156	0
3	PO4	B	605	5/5	0.84	0.21	111,150,164,168	0
3	PO4	B	606	5/5	0.84	0.24	158,176,196,222	0
3	PO4	B	604	5/5	0.85	0.28	149,157,171,174	0
3	PO4	A	603	5/5	0.88	0.22	130,138,152,189	0
2	ZN	B	602	1/1	0.92	0.24	300,300,300,300	0
2	ZN	A	601	1/1	0.93	0.22	286,286,286,286	0
3	PO4	A	604	5/5	0.97	0.25	69,89,112,143	0

6.5 Other polymers (i)

There are no such residues in this entry.