Full wwPDB X-ray Structure Validation Report (i)

Jan 3, 2024 – 09:44 pm GMT

PDB ID	:	4US6
Title	:	New Crystal Form of Glucose Isomerase Grown in Short Peptide Supramolecular Hydrogels
Authors	:	Gavira, J.A.; Conejero-Muriel, M.; Diaz-Mochon, J.J.; Alvarez de Cienfuegos, L.
Deposited on	:	2014-07-03
Resolution	:	1.20 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 (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

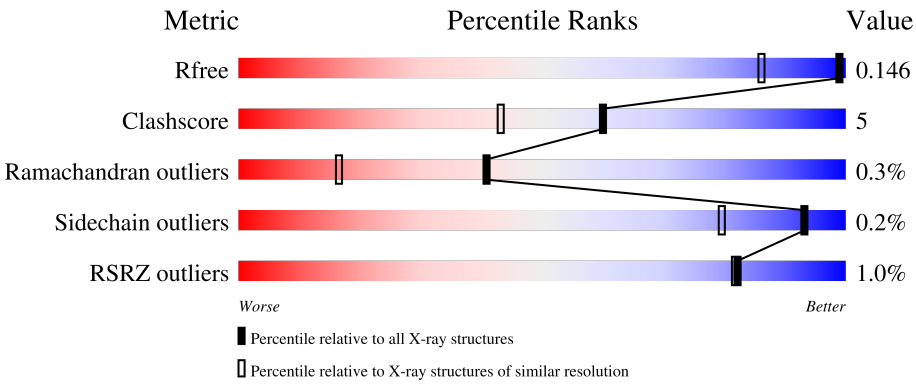
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

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

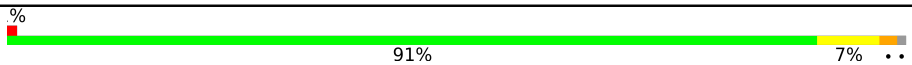
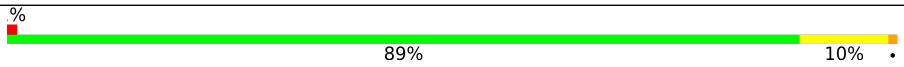
The reported resolution of this entry is 1.20 Å.

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	1223 (1.22-1.18)
Clashscore	141614	1286 (1.22-1.18)
Ramachandran outliers	138981	1240 (1.22-1.18)
Sidechain outliers	138945	1239 (1.22-1.18)
RSRZ outliers	127900	1200 (1.22-1.18)

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 of 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	388	
1	B	388	

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 14248 atoms, of which 6561 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 XYLOSE ISOMERASE.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
1	A	386	6513	2073	3206	603	622	9	34	34	0
1	B	387	6664	2116	3283	622	634	9	33	42	0

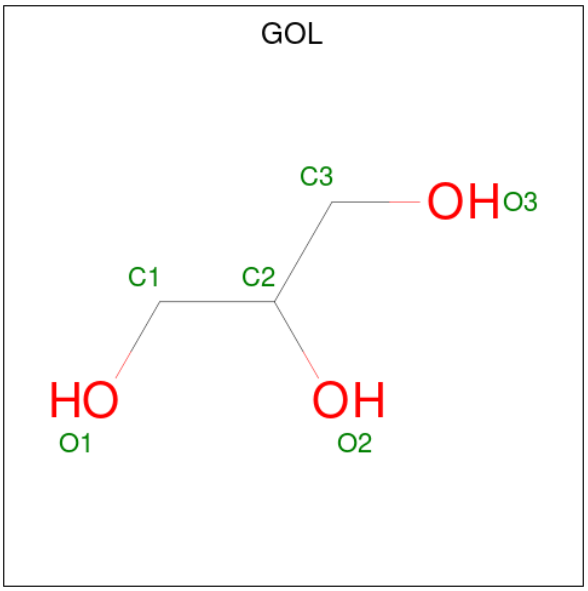
- Molecule 2 is CALCIUM ION (three-letter code: CA) (formula: Ca).

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

- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

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



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	H	O		
4	A	1	14	3	8	3	2	0
			Total	C	H	O		
4	A	1	28	6	16	6	0	1
			Total	C	H	O		
4	A	1	14	3	8	3	0	0
			Total	C	H	O		
4	B	1	14	3	8	3	2	0
			Total	C	H	O		
4	B	1	28	6	16	6	0	1
			Total	C	H	O		
4	B	1	28	6	16	6	0	1

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

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

- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
6	A	499	500	500	0	1

Continued on next page...

Continued from previous page...

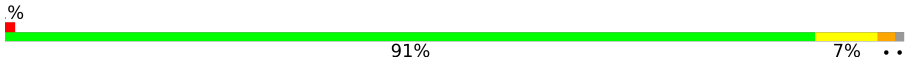
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
6	B	438	438	438	0	0

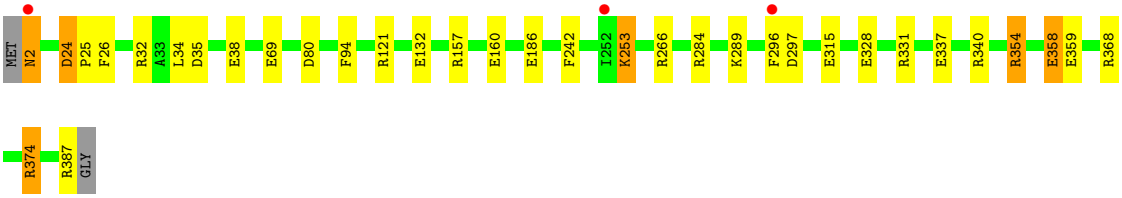
3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide 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: XYLOSE ISOMERASE

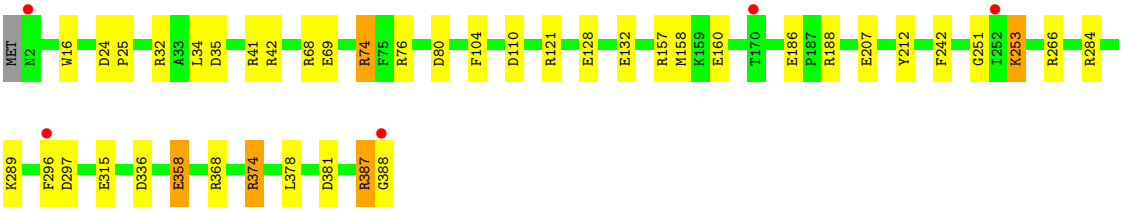
Chain A:





• Molecule 1: XYLOSE ISOMERASE

Chain B:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α, β, γ	86.00Å 93.68Å 99.22Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	99.21 – 1.20 46.84 – 1.20	Depositor EDS
% Data completeness (in resolution range)	99.3 (99.21-1.20) 99.3 (46.84-1.20)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.27 (at 1.20Å)	Xtriage
Refinement program	REFMAC 5.8.0073	Depositor
R, R_{free}	0.106 , 0.132 0.124 , 0.146	Depositor DCC
R_{free} test set	12309 reflections (4.97%)	wwPDB-VP
Wilson B-factor (Å^2)	8.7	Xtriage
Anisotropy	0.251	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.43 , 50.8	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.98	EDS
Total number of atoms	14248	wwPDB-VP
Average B, all atoms (Å^2)	12.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 79.47 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 5.5462e-07. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[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 (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: CA, GOL, MG, 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	1.05	11/3426 (0.3%)	1.15	18/4626 (0.4%)
1	B	1.01	7/3500 (0.2%)	1.15	30/4719 (0.6%)
All	All	1.03	18/6926 (0.3%)	1.15	48/9345 (0.5%)

All (18) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	368	ARG	CZ-NH1	11.94	1.48	1.33
1	A	337	GLU	CD-OE1	10.32	1.36	1.25
1	A	368	ARG	CZ-NH2	9.81	1.45	1.33
1	A	354	ARG	CZ-NH1	9.30	1.45	1.33
1	A	354	ARG	CZ-NH2	7.99	1.43	1.33
1	B	315	GLU	CD-OE2	-7.73	1.17	1.25
1	B	374[A]	ARG	CZ-NH2	7.08	1.42	1.33
1	B	374[B]	ARG	CZ-NH2	7.08	1.42	1.33
1	A	358	GLU	CD-OE2	7.07	1.33	1.25
1	A	24	ASP	C-N	6.33	1.46	1.34
1	A	340	ARG	CZ-NH2	-6.18	1.25	1.33
1	B	358[A]	GLU	CD-OE1	-6.17	1.18	1.25
1	B	358[B]	GLU	CD-OE1	-6.17	1.18	1.25
1	A	359	GLU	CG-CD	-5.80	1.43	1.51
1	B	121	ARG	CZ-NH1	5.73	1.40	1.33
1	A	315	GLU	CD-OE2	-5.21	1.20	1.25
1	B	315	GLU	CD-OE1	5.19	1.31	1.25
1	A	368	ARG	NE-CZ	5.10	1.39	1.33

All (48) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	368	ARG	NE-CZ-NH2	-24.60	108.00	120.30

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	374[A]	ARG	NE-CZ-NH1	-16.37	112.11	120.30
1	B	374[B]	ARG	NE-CZ-NH1	-16.37	112.11	120.30
1	A	374[A]	ARG	NE-CZ-NH2	-14.29	113.15	120.30
1	A	374[B]	ARG	NE-CZ-NH2	-14.29	113.15	120.30
1	A	354	ARG	NE-CZ-NH2	-11.33	114.64	120.30
1	B	368[A]	ARG	NE-CZ-NH1	11.16	125.88	120.30
1	B	368[B]	ARG	NE-CZ-NH1	11.16	125.88	120.30
1	A	368	ARG	NE-CZ-NH1	11.07	125.83	120.30
1	A	253[A]	LYS	CD-CE-NZ	9.59	133.77	111.70
1	A	253[B]	LYS	CD-CE-NZ	9.59	133.77	111.70
1	A	374[A]	ARG	NE-CZ-NH1	9.54	125.07	120.30
1	A	374[B]	ARG	NE-CZ-NH1	9.54	125.07	120.30
1	B	374[A]	ARG	NE-CZ-NH2	8.76	124.68	120.30
1	B	374[B]	ARG	NE-CZ-NH2	8.76	124.68	120.30
1	B	74[A]	ARG	NE-CZ-NH2	-8.68	115.96	120.30
1	B	74[B]	ARG	NE-CZ-NH2	-8.68	115.96	120.30
1	B	387[A]	ARG	NE-CZ-NH2	-8.60	116.00	120.30
1	B	387[B]	ARG	NE-CZ-NH2	-8.60	116.00	120.30
1	B	368[A]	ARG	NE-CZ-NH2	-8.31	116.15	120.30
1	B	368[B]	ARG	NE-CZ-NH2	-8.31	116.15	120.30
1	B	253[A]	LYS	CD-CE-NZ	8.08	130.29	111.70
1	B	253[B]	LYS	CD-CE-NZ	8.08	130.29	111.70
1	A	331	ARG	NE-CZ-NH2	-7.41	116.60	120.30
1	B	387[A]	ARG	NE-CZ-NH1	7.09	123.84	120.30
1	B	387[B]	ARG	NE-CZ-NH1	7.09	123.84	120.30
1	A	387	ARG	NE-CZ-NH2	-7.04	116.78	120.30
1	B	80[A]	ASP	CB-CG-OD1	6.52	124.17	118.30
1	B	80[B]	ASP	CB-CG-OD1	6.52	124.17	118.30
1	A	121	ARG	NE-CZ-NH2	-6.46	117.07	120.30
1	A	368	ARG	NH1-CZ-NH2	6.08	126.09	119.40
1	B	212	TYR	CB-CG-CD1	-6.01	117.40	121.00
1	B	188	ARG	NE-CZ-NH1	5.95	123.28	120.30
1	A	284[A]	ARG	NE-CZ-NH2	-5.81	117.39	120.30
1	A	284[B]	ARG	NE-CZ-NH2	-5.81	117.39	120.30
1	A	266	ARG	CD-NE-CZ	5.78	131.69	123.60
1	B	284[A]	ARG	NE-CZ-NH2	-5.66	117.47	120.30
1	B	284[B]	ARG	NE-CZ-NH2	-5.66	117.47	120.30
1	B	110	ASP	CB-CG-OD1	5.60	123.34	118.30
1	A	340	ARG	CD-NE-CZ	5.57	131.39	123.60
1	B	266	ARG	CD-NE-CZ	5.54	131.36	123.60
1	A	242	PHE	CB-CG-CD2	-5.45	116.98	120.80
1	B	212	TYR	CB-CG-CD2	5.38	124.23	121.00

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	358[A]	GLU	OE1-CD-OE2	-5.33	116.91	123.30
1	B	358[B]	GLU	OE1-CD-OE2	-5.33	116.91	123.30
1	B	336	ASP	CB-CG-OD1	5.20	122.98	118.30
1	B	68	ARG	NE-CZ-NH1	-5.18	117.71	120.30
1	B	242	PHE	CB-CG-CD2	-5.03	117.28	120.80

There are no chirality outliers.

There are no planarity outliers.

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	3307	3206	3190	24	0
1	B	3381	3283	3262	36	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
3	A	2	0	0	0	0
3	B	1	0	0	0	0
4	A	24	32	30	2	0
4	B	30	40	36	2	0
5	A	1	0	0	0	0
5	B	1	0	0	0	0
6	A	500	0	0	12	4
6	B	438	0	0	16	6
All	All	7687	6561	6518	61	8

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 5.

All (61) 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:328[B]:GLU:OE2	6:A:2431:HOH:O	1.59	1.18
1:A:289[B]:LYS:NZ	6:A:2031[B]:HOH:O	2.01	0.92
1:B:289[B]:LYS:NZ	6:B:2036:HOH:O	2.02	0.89

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:387[B]:ARG:NH2	6:B:2429:HOH:O	2.06	0.88
1:B:41[A]:ARG:NH1	6:B:2078:HOH:O	2.04	0.88
1:A:32[B]:ARG:CG	1:A:32[B]:ARG:HH11	1.90	0.84
1:B:104:PHE:HB2	1:B:158[B]:MET:HE3	1.61	0.83
1:A:297[B]:ASP:OD2	6:A:2406:HOH:O	1.96	0.81
1:B:76[A]:ARG:NH2	1:B:128[A]:GLU:OE2	2.13	0.80
1:A:80[B]:ASP:OD1	6:A:2145:HOH:O	1.99	0.79
1:B:297[B]:ASP:OD2	6:B:2342:HOH:O	2.01	0.78
1:B:381:ASP:OD2	1:B:387[B]:ARG:CZ	2.40	0.70
1:B:374[A]:ARG:CZ	6:B:2363:HOH:O	2.40	0.69
1:B:381:ASP:OD2	1:B:387[B]:ARG:NH2	2.25	0.69
1:B:253[B]:LYS:NZ	6:B:2307:HOH:O	2.25	0.68
1:A:253[B]:LYS:NZ	6:A:2368:HOH:O	2.26	0.67
1:A:32[B]:ARG:HH11	1:A:32[B]:ARG:HG2	1.58	0.66
1:B:388[B]:GLY:OXT	6:B:2435:HOH:O	2.15	0.64
1:A:32[B]:ARG:HH11	1:A:32[B]:ARG:HG3	1.63	0.63
1:B:207[B]:GLU:OE1	6:B:2243:HOH:O	2.16	0.61
1:B:378:LEU:HD23	1:B:387[B]:ARG:HE	1.64	0.61
1:A:32[B]:ARG:CG	1:A:32[B]:ARG:NH1	2.59	0.60
6:A:2218:HOH:O	1:B:358[A]:GLU:OE2	2.16	0.60
1:A:132[A]:GLU:CG	6:A:2163:HOH:O	2.49	0.60
1:B:132:GLU:CG	6:B:2162:HOH:O	2.50	0.59
1:B:24:ASP:HB2	1:B:25[B]:PRO:CD	2.35	0.57
1:B:132:GLU:HG3	6:B:2162:HOH:O	2.04	0.57
1:A:35:ASP:O	1:A:38[B]:GLU:HG2	2.06	0.55
1:B:157:ARG:HH21	1:B:160[B]:GLU:CD	2.10	0.54
6:A:2218:HOH:O	1:B:358[A]:GLU:CD	2.46	0.53
1:A:132[A]:GLU:HG3	6:A:2163:HOH:O	2.09	0.53
4:B:1392[B]:GOL:O3	6:B:2332:HOH:O	2.19	0.51
1:B:42[A]:ARG:NH2	6:B:2082:HOH:O	2.30	0.49
1:A:32[A]:ARG:HG2	1:A:296[A]:PHE:CE2	2.49	0.48
1:B:34:LEU:HD21	1:B:296[A]:PHE:CE1	2.48	0.47
1:A:32[B]:ARG:HG3	1:A:32[B]:ARG:NH1	2.25	0.47
1:B:32[A]:ARG:HG2	1:B:296[A]:PHE:CE2	2.50	0.47
1:A:157:ARG:HH21	1:A:160[B]:GLU:CD	2.18	0.47
1:A:34:LEU:HD21	1:A:296[A]:PHE:CE1	2.50	0.47
6:A:2218:HOH:O	1:B:358[A]:GLU:OE1	2.18	0.47
1:A:94:PHE:HZ	4:A:1392:GOL:O3	1.99	0.46
1:A:374[A]:ARG:NH2	6:A:2429:HOH:O	2.45	0.46
1:B:32[A]:ARG:HG2	1:B:296[A]:PHE:HE2	1.81	0.45
1:B:35:ASP:OD2	1:B:74[B]:ARG:NH2	2.37	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:25[A]:PRO:HB2	1:A:26:PHE:CE2	2.51	0.45
1:B:374[A]:ARG:NE	6:B:2363:HOH:O	2.49	0.45
1:B:374[A]:ARG:NH2	6:B:2363:HOH:O	2.48	0.45
1:A:24:ASP:HB2	1:A:25[A]:PRO:CD	2.47	0.44
1:A:69[A]:GLU:HG3	6:A:2125:HOH:O	2.18	0.44
1:B:381:ASP:HB3	1:B:387[B]:ARG:HG3	1.99	0.44
1:A:94:PHE:CZ	4:A:1392:GOL:O3	2.70	0.44
1:B:374[A]:ARG:NH1	1:B:374[A]:ARG:HG2	2.33	0.43
1:B:16:TRP:CD1	4:B:1392[B]:GOL:H32	2.55	0.42
1:B:42[B]:ARG:NH2	1:B:296[B]:PHE:HE2	2.18	0.42
1:B:24:ASP:CB	1:B:25[B]:PRO:CD	2.97	0.41
1:B:76[A]:ARG:CZ	1:B:128[A]:GLU:OE2	2.67	0.41
1:A:354:ARG:NH2	1:A:358:GLU:HB3	2.36	0.41
1:B:69[A]:GLU:HG2	6:B:2126:HOH:O	2.21	0.41
1:B:251:GLY:HA2	6:B:2284:HOH:O	2.21	0.41
1:B:24:ASP:HB2	1:B:25[B]:PRO:HD2	2.02	0.40

All (8) 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)
6:A:2003:HOH:O	6:A:2191:HOH:O[4_455]	1.95	0.25
6:B:2006:HOH:O	6:B:2400:HOH:O[4_554]	2.04	0.16
6:B:2072:HOH:O	6:B:2368:HOH:O[4_554]	2.04	0.16
6:A:2026:HOH:O	6:A:2443:HOH:O[4_455]	2.10	0.10
6:A:2145:HOH:O	6:B:2230:HOH:O[4_455]	2.10	0.10
6:B:2072:HOH:O	6:B:2365:HOH:O[4_554]	2.10	0.10
6:B:2006:HOH:O	6:B:2401:HOH:O[4_554]	2.13	0.07
6:A:2145:HOH:O	6:B:2224:HOH:O[4_455]	2.14	0.06

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	417/388 (108%)	404 (97%)	12 (3%)	1 (0%)	47	19
1	B	425/388 (110%)	412 (97%)	12 (3%)	1 (0%)	47	19
All	All	842/776 (108%)	816 (97%)	24 (3%)	2 (0%)	41	19

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	186	GLU
1	B	186	GLU

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	337/304 (111%)	335 (99%)	2 (1%)	86	63
1	B	343/304 (113%)	343 (100%)	0	100	100
All	All	680/608 (112%)	678 (100%)	2 (0%)	93	79

All (2) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2[A]	ASN
1	A	2[B]	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA (i)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains (i)

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 16 ligands modelled in this entry, 7 are monoatomic - leaving 9 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	$\#\|Z\| > 2$
4	GOL	A	1391[B]	-	5,5,5	0.75	0	5,5,5	0.37	0
4	GOL	A	1392	-	5,5,5	0.70	0	5,5,5	2.39	2 (40%)
4	GOL	B	1392[A]	-	5,5,5	0.79	0	5,5,5	1.64	2 (40%)
4	GOL	B	1391	3	5,5,5	0.47	0	5,5,5	0.30	0
4	GOL	A	1390	3	5,5,5	0.46	0	5,5,5	0.36	0
4	GOL	A	1391[A]	-	5,5,5	0.90	0	5,5,5	0.89	0
4	GOL	B	1392[B]	-	5,5,5	0.33	0	5,5,5	0.79	0
4	GOL	B	1393[A]	5	5,5,5	0.26	0	5,5,5	0.25	0
4	GOL	B	1393[B]	5	5,5,5	0.26	0	5,5,5	0.24	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	A	1391[B]	-	-	0/4/4/4	-
4	GOL	A	1392	-	-	2/4/4/4	-
4	GOL	B	1392[A]	-	-	2/4/4/4	-
4	GOL	B	1391	3	-	0/4/4/4	-
4	GOL	A	1390	3	-	0/4/4/4	-
4	GOL	A	1391[A]	-	-	2/4/4/4	-
4	GOL	B	1392[B]	-	-	2/4/4/4	-
4	GOL	B	1393[A]	5	-	0/4/4/4	-
4	GOL	B	1393[B]	5	-	2/4/4/4	-

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	1392	GOL	C3-C2-C1	4.23	128.16	111.70
4	A	1392	GOL	O1-C1-C2	3.20	125.56	110.20
4	B	1392[A]	GOL	O3-C3-C2	2.39	121.66	110.20
4	B	1392[A]	GOL	O1-C1-C2	2.26	121.03	110.20

There are no chirality outliers.

All (10) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	1391[A]	GOL	O2-C2-C3-O3
4	A	1392	GOL	O1-C1-C2-C3
4	B	1392[A]	GOL	O1-C1-C2-C3
4	A	1391[A]	GOL	C1-C2-C3-O3
4	B	1392[B]	GOL	O1-C1-C2-C3
4	B	1393[B]	GOL	O1-C1-C2-C3
4	A	1392	GOL	O1-C1-C2-O2
4	B	1392[A]	GOL	O1-C1-C2-O2
4	B	1392[B]	GOL	O1-C1-C2-O2
4	B	1393[B]	GOL	O1-C1-C2-O2

There are no ring outliers.

2 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	1392	GOL	2	0
4	B	1392[B]	GOL	2	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	386/388 (99%)	-0.31	3 (0%)	86	86	6, 10, 21, 38	0
1	B	387/388 (99%)	-0.31	5 (1%)	77	77	6, 9, 18, 51	0
All	All	773/776 (99%)	-0.31	8 (1%)	82	82	6, 9, 19, 51	0

All (8) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	388[A]	GLY	7.4
1	B	2[A]	ASN	3.2
1	B	296[A]	PHE	2.5
1	A	252	ILE	2.5
1	B	252	ILE	2.5
1	A	2[A]	ASN	2.2
1	B	170[A]	THR	2.0
1	A	296[A]	PHE	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 monosaccharides 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, 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
5	NA	B	1394	1/1	0.68	0.22	21,21,21,21	0
4	GOL	A	1392	6/6	0.86	0.19	19,24,29,48	0
4	GOL	B	1392[B]	6/6	0.93	0.14	18,27,41,46	14
4	GOL	B	1393[A]	6/6	0.93	0.16	10,11,18,21	14
4	GOL	B	1393[B]	6/6	0.93	0.16	9,13,21,25	14
4	GOL	B	1392[A]	6/6	0.93	0.14	17,21,24,25	14
5	NA	A	1393	1/1	0.95	0.11	30,30,30,30	0
4	GOL	A	1391[B]	6/6	0.98	0.10	11,12,18,18	14
4	GOL	A	1391[A]	6/6	0.98	0.10	6,10,30,37	14
4	GOL	A	1390	6/6	0.99	0.06	7,8,9,10	2
4	GOL	B	1391	6/6	0.99	0.06	6,8,9,9	2
2	CA	B	1389	1/1	1.00	0.08	7,7,7,7	0
3	MG	A	1389	1/1	1.00	0.08	6,6,6,6	0
3	MG	A	1394	1/1	1.00	0.05	12,12,12,12	0
3	MG	B	1390	1/1	1.00	0.07	6,6,6,6	0
2	CA	A	1388	1/1	1.00	0.08	7,7,7,7	0

6.5 Other polymers (i)

There are no such residues in this entry.