



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 31, 2016 – 07:55 PM EDT

PDB ID : 5KX6
Title : The structure of Arabidopsis thaliana FUT1 Mutant R284K in complex with GDP
Authors : Alahuhta, P.M.; Lunin, V.V.
Deposited on : 2016-07-20
Resolution : 2.20 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

<http://wwpdb.org/validation/2016/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.7.1 (RC1), CSD as537be (2016)
Xtriage (Phenix) : 1.9-1692
EDS : rb-20028320
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) : rb-20028320

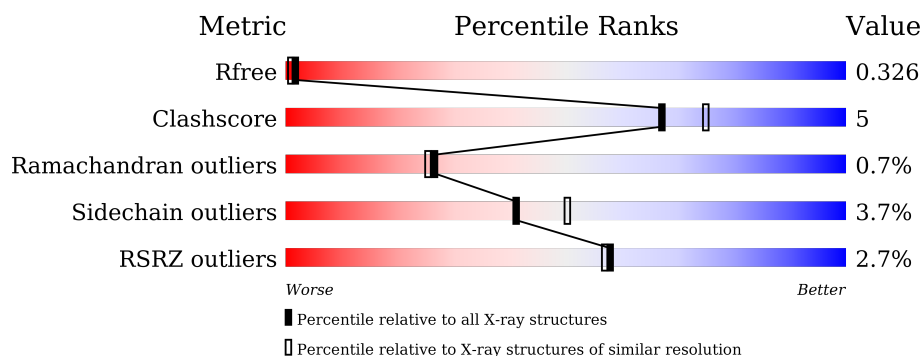
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.20 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}	91344	3774 (2.20-2.20)
Clashscore	102246	4477 (2.20-2.20)
Ramachandran outliers	100387	4404 (2.20-2.20)
Sidechain outliers	100360	4405 (2.20-2.20)
RSRZ outliers	91569	3781 (2.20-2.20)

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	476	<div> <div>3%</div> <div>78%</div> <div>14%</div> <div>• 8%</div> </div>
1	B	476	<div> <div>2%</div> <div>79%</div> <div>15%</div> <div>• 5%</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
2	GDP	A	601	-	-	-	X
3	GOL	B	602	-	-	-	X
4	EDO	B	603	-	-	-	X
5	MES	B	604	-	-	-	X

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 7978 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.

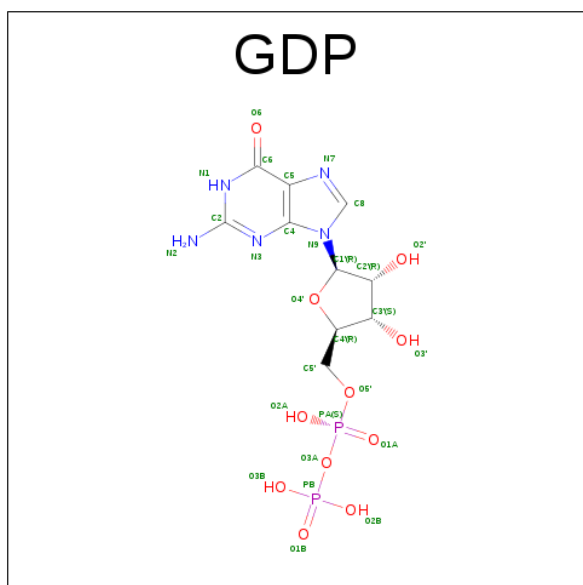
- Molecule 1 is a protein called Galactoside 2-alpha-L-fucosyltransferase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	440	Total	C	N	O	S	0	9	0
			3606	2322	599	663	22			
1	B	450	Total	C	N	O	S	0	9	0
			3676	2366	605	682	23			

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	83	GLY	-	expression tag	UNP Q9SWH5
A	366	LYS	ARG	engineered mutation	UNP Q9SWH5
B	83	GLY	-	expression tag	UNP Q9SWH5
B	366	LYS	ARG	engineered mutation	UNP Q9SWH5

- Molecule 2 is GUANOSINE-5'-DIPHOSPHATE (three-letter code: GDP) (formula: $C_{10}H_{15}N_5O_{11}P_2$).



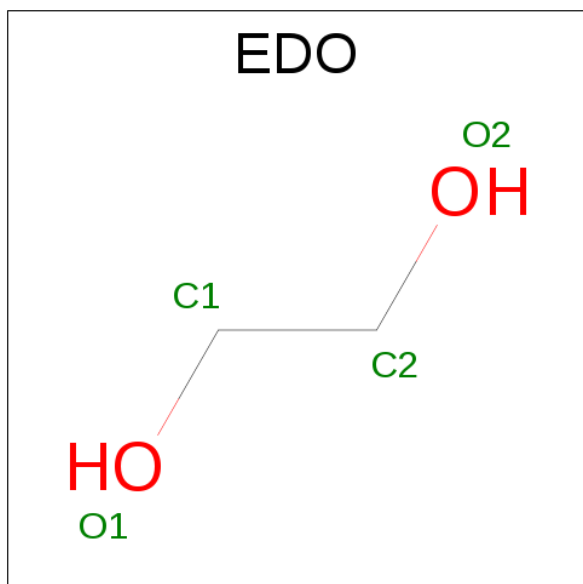
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	0	0
			28	10	5	11	2		
2	B	1	Total	C	N	O	P	0	0
			28	10	5	11	2		

- Molecule 3 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



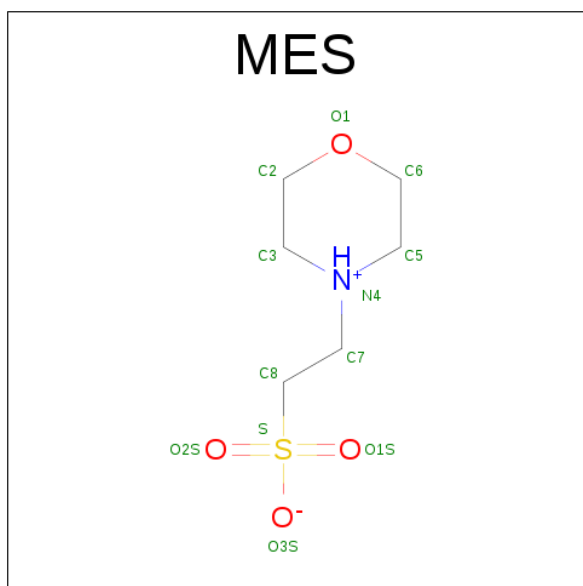
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	B	1	Total	C	O	0	0
			6	3	3		

- Molecule 4 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).



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

- Molecule 5 is 2-(N-MORPHOLINO)-ETHANESULFONIC ACID (three-letter code: MES) (formula: C₆H₁₃NO₄S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	B	1	Total	C	N	O	S	0	0
			12	6	1	4	1		

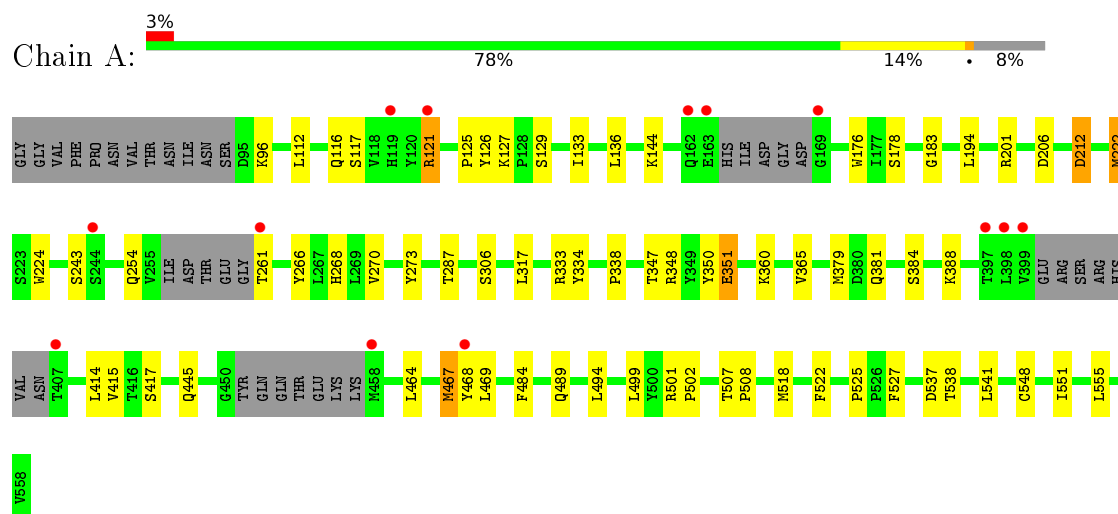
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	309	Total	O	0	4
			313	313		
6	B	301	Total	O	0	4
			305	305		

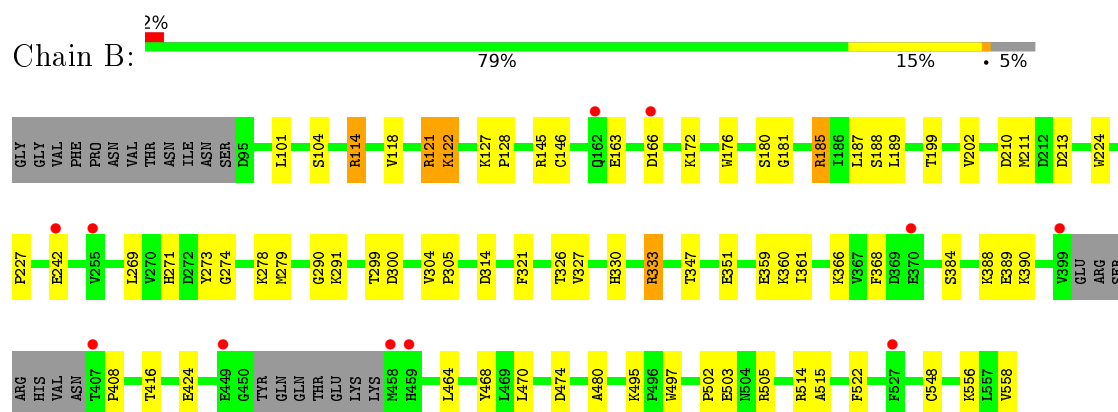
3 Residue-property plots [i](#)

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: Galactoside 2-alpha-L-fucosyltransferase



- Molecule 1: Galactoside 2-alpha-L-fucosyltransferase



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	54.22Å 112.96Å 87.82Å 90.00° 104.48° 90.00°	Depositor
Resolution (Å)	85.03 – 2.20 50.70 – 2.20	Depositor EDS
% Data completeness (in resolution range)	91.0 (85.03-2.20) 91.0 (50.70-2.20)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.08 (at 2.20Å)	Xtriage
Refinement program	REFMAC 5.8.0155	Depositor
R, R_{free}	0.253 , 0.327 0.255 , 0.326	Depositor DCC
R_{free} test set	2282 reflections (5.06%)	DCC
Wilson B-factor (Å ²)	17.6	Xtriage
Anisotropy	0.285	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.29 , 38.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.54$, $\langle L^2 \rangle = 0.38$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.90	EDS
Total number of atoms	7978	wwPDB-VP
Average B, all atoms (Å ²)	27.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.14% 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: GDP, GOL, EDO, MES

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	1.06	1/3707 (0.0%)	1.06	13/5022 (0.3%)
1	B	1.06	1/3781 (0.0%)	1.05	9/5127 (0.2%)
All	All	1.06	2/7488 (0.0%)	1.06	22/10149 (0.2%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	424	GLU	CD-OE2	6.12	1.32	1.25
1	A	183	GLY	N-CA	6.11	1.55	1.46

All (22) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	333	ARG	NE-CZ-NH1	9.72	125.16	120.30
1	B	185	ARG	NE-CZ-NH2	-8.52	116.04	120.30
1	A	201	ARG	NE-CZ-NH1	6.79	123.69	120.30
1	B	121	ARG	NE-CZ-NH1	6.70	123.65	120.30
1	B	121	ARG	NE-CZ-NH2	-6.49	117.05	120.30
1	B	187	LEU	CB-CG-CD2	6.36	121.82	111.00
1	B	185	ARG	NE-CZ-NH1	5.88	123.24	120.30
1	A	201	ARG	NE-CZ-NH2	-5.85	117.37	120.30
1	A	212[A]	ASP	N-CA-CB	-5.83	100.10	110.60
1	A	212[B]	ASP	N-CA-CB	-5.83	100.10	110.60
1	B	505	ARG	NE-CZ-NH2	-5.70	117.45	120.30
1	A	467	MET	CG-SD-CE	-5.68	91.11	100.20
1	A	537	ASP	CB-CG-OD1	5.65	123.38	118.30
1	A	348	ARG	NE-CZ-NH1	5.62	123.11	120.30
1	A	212[A]	ASP	CB-CG-OD1	5.58	123.32	118.30
1	A	212[B]	ASP	CB-CG-OD1	5.58	123.32	118.30
1	B	114	ARG	NE-CZ-NH1	5.32	122.96	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	333	ARG	NE-CZ-NH1	5.31	122.96	120.30
1	A	212[A]	ASP	CB-CG-OD2	-5.09	113.72	118.30
1	A	212[B]	ASP	CB-CG-OD2	-5.09	113.72	118.30
1	B	514	ARG	NE-CZ-NH2	-5.06	117.77	120.30
1	A	348	ARG	NE-CZ-NH2	-5.02	117.79	120.30

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	3606	0	3496	35	0
1	B	3676	0	3545	33	0
2	A	28	0	12	0	0
2	B	28	0	12	0	0
3	B	6	0	8	2	0
4	B	4	0	6	0	0
5	B	12	0	13	1	0
6	A	313	0	0	4	0
6	B	305	0	0	5	0
All	All	7978	0	7092	69	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 5.

All (69) 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:212[A]:ASP:OD1	6:A:703:HOH:O	1.87	0.91
1:B:145[B]:ARG:NH1	6:B:702:HOH:O	2.03	0.90
5:B:604:MES:O1S	6:B:701:HOH:O	1.97	0.83
1:B:314[B]:ASP:OD1	6:B:703:HOH:O	2.08	0.72
1:B:188:SER:HB2	1:B:299:THR:HG23	1.75	0.68
1:A:384[B]:SER:O	1:A:388[B]:LYS:HB3	1.97	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:112:LEU:O	1:A:116:GLN:HG2	2.01	0.61
1:A:527:PHE:HD1	1:A:538:THR:HG1	1.48	0.61
1:A:551:ILE:HG23	1:A:551:ILE:O	2.04	0.58
1:A:538:THR:HA	1:A:541:LEU:HD13	1.86	0.56
1:A:347:THR:O	1:A:351[B]:GLU:HB2	2.06	0.56
1:B:502:PRO:HD3	3:B:602:GOL:H31	1.87	0.55
1:A:464:LEU:HD11	1:A:468[A]:TYR:HE2	1.72	0.54
1:A:467:MET:HE3	1:A:484:PHE:HA	1.89	0.54
1:A:347:THR:O	1:A:351[A]:GLU:HB2	2.09	0.53
1:A:125:PRO:HG2	1:A:126:TYR:CE2	2.45	0.52
1:B:127:LYS:HD3	1:B:128:PRO:HD2	1.92	0.52
1:B:180:SER:O	1:B:185:ARG:HD2	2.11	0.51
1:B:321:PHE:CE1	1:B:327:VAL:HA	2.46	0.51
1:A:467:MET:CE	1:A:484:PHE:HA	2.41	0.51
1:B:122:LYS:NZ	1:B:474:ASP:OD1	2.43	0.49
1:B:176:TRP:CG	1:B:189:LEU:HD13	2.48	0.48
1:B:185:ARG:NH2	1:B:211:MET:SD	2.87	0.48
1:B:495:LYS:HD3	1:B:515:ALA:O	2.14	0.48
1:A:379:MET:HG2	6:A:817:HOH:O	2.13	0.47
1:B:210:ASP:HA	1:B:213:ASP:OD2	2.15	0.47
1:B:359:GLU:OE1	1:B:361:ILE:HD11	2.15	0.47
1:A:129:SER:O	1:A:133:ILE:HG13	2.15	0.46
1:A:365:VAL:HB	1:A:417:SER:HB2	1.97	0.46
1:B:366:LYS:HE3	1:B:368:PHE:CE2	2.50	0.46
1:B:176:TRP:CD2	1:B:189:LEU:HD13	2.51	0.46
1:B:347:THR:O	1:B:351:GLU:HG2	2.15	0.46
1:A:268:HIS:CE1	1:A:270:VAL:HB	2.51	0.45
1:B:304:VAL:HB	1:B:305:PRO:HD3	1.98	0.45
1:B:480:ALA:H	3:B:602:GOL:HO3	1.64	0.45
1:B:146:CYS:HB2	1:B:202:VAL:HG21	1.97	0.45
1:B:351:GLU:HG3	6:B:975:HOH:O	2.16	0.45
1:B:180:SER:OG	1:B:181:GLY:N	2.47	0.45
1:A:126:TYR:CE2	1:A:518:MET:HE1	2.52	0.45
1:A:414:LEU:HD21	1:A:469:LEU:HB3	1.98	0.45
1:A:121[A]:ARG:NH2	6:A:721:HOH:O	2.50	0.44
1:A:415:VAL:O	1:A:445:GLN:HG3	2.18	0.44
1:A:548:CYS:HB2	1:A:551:ILE:O	2.18	0.44
1:B:389:GLU:HG3	1:B:497:TRP:CD1	2.53	0.44
1:A:507:THR:HG22	1:A:508:PRO:O	2.18	0.43
1:B:330:HIS:HD2	1:B:333:ARG:HH21	1.66	0.43
1:B:416:THR:OG1	1:B:470:LEU:HD11	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:136:LEU:HD13	1:A:334:TYR:CD1	2.54	0.43
1:A:350:TYR:CE2	1:A:360:LYS:HE2	2.53	0.43
1:A:176:TRP:CH2	1:A:178:SER:HA	2.54	0.42
1:A:144:LYS:HA	1:A:222:MET:HG3	2.01	0.42
1:A:338:PRO:HD3	1:A:468[A]:TYR:CZ	2.54	0.42
1:A:306:SER:HG	1:A:522:PHE:HE2	1.65	0.42
1:B:464:LEU:HD11	1:B:468[A]:TYR:HE1	1.84	0.42
1:B:326:THR:O	1:B:327:VAL:C	2.56	0.42
1:A:501:ARG:HA	1:A:502:PRO:HD3	1.95	0.42
1:B:101:LEU:HB2	1:B:128:PRO:HG3	2.02	0.42
1:B:274:GLY:O	1:B:278:LYS:HG3	2.20	0.41
1:B:269:LEU:HB2	1:B:299:THR:HB	2.02	0.41
1:B:279:MET:CE	6:B:943:HOH:O	2.68	0.41
1:A:266:TYR:OH	1:A:268:HIS:HD2	2.04	0.41
1:A:525:PRO:CB	1:A:555:LEU:HD12	2.50	0.41
1:B:271:HIS:ND1	1:B:300:ASP:OD2	2.45	0.41
1:A:381:GLN:HG2	1:A:499:LEU:HD22	2.03	0.40
1:B:172:LYS:HE3	1:B:199:THR:O	2.21	0.40
1:A:194:LEU:HD21	1:A:317:LEU:HD21	2.03	0.40
1:B:314[B]:ASP:C	1:B:314[B]:ASP:OD1	2.59	0.40
1:A:287:THR:HA	6:A:823:HOH:O	2.21	0.40
1:A:489:GLN:HB2	1:A:494:LEU:O	2.21	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	439/476 (92%)	412 (94%)	25 (6%)	2 (0%)	34	35
1	B	453/476 (95%)	428 (94%)	21 (5%)	4 (1%)	21	19
All	All	892/952 (94%)	840 (94%)	46 (5%)	6 (1%)	26	25

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	254	GLN
1	B	408	PRO
1	B	114	ARG
1	B	290	GLY
1	A	206	ASP
1	B	548	CYS

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	398/423 (94%)	386 (97%)	12 (3%)	48	60
1	B	405/423 (96%)	385 (95%)	20 (5%)	31	36
All	All	803/846 (95%)	771 (96%)	32 (4%)	41	47

All (32) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	96	LYS
1	A	117	SER
1	A	121[A]	ARG
1	A	121[B]	ARG
1	A	127	LYS
1	A	222	MET
1	A	224	TRP
1	A	243	SER
1	A	261	THR
1	A	273	TYR
1	A	351[A]	GLU
1	A	351[B]	GLU
1	B	104	SER
1	B	118	VAL
1	B	121	ARG
1	B	122	LYS
1	B	163	GLU

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Mol	Chain	Res	Type
1	B	166	ASP
1	B	224	TRP
1	B	227	PRO
1	B	242	GLU
1	B	273	TYR
1	B	291	LYS
1	B	360	LYS
1	B	384[A]	SER
1	B	384[B]	SER
1	B	388	LYS
1	B	390	LYS
1	B	503	GLU
1	B	522	PHE
1	B	556	LYS
1	B	558	VAL

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	268	HIS
1	A	459	HIS
1	B	264	HIS
1	B	330	HIS
1	B	504	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

5 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the chemical component dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	GDP	A	601	-	24,30,30	1.23	2 (8%)	26,47,47	2.07	7 (26%)
2	GDP	B	601	-	24,30,30	1.01	2 (8%)	26,47,47	1.93	5 (19%)
3	GOL	B	602	-	5,5,5	0.77	0	5,5,5	1.33	0
4	EDO	B	603	-	3,3,3	0.60	0	2,2,2	0.25	0
5	MES	B	604	-	12,12,12	2.58	1 (8%)	15,16,16	3.43	7 (46%)

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	GDP	A	601	-	-	0/12/32/32	0/3/3/3
2	GDP	B	601	-	-	0/12/32/32	0/3/3/3
3	GOL	B	602	-	-	0/4/4/4	0/0/0/0
4	EDO	B	603	-	-	0/1/1/1	0/0/0/0
5	MES	B	604	-	-	0/6/14/14	0/1/1/1

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	B	604	MES	C8-S	-8.81	1.64	1.77
2	B	601	GDP	C5-C4	2.90	1.47	1.40
2	B	601	GDP	C6-C5	2.92	1.47	1.41
2	A	601	GDP	C5-C4	3.14	1.47	1.40
2	A	601	GDP	C6-C5	3.73	1.48	1.41

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	B	604	MES	O2S-S-C8	-7.15	101.82	106.87
2	B	601	GDP	C5-C6-N1	-4.42	117.74	123.52
2	A	601	GDP	C6-C5-C4	-4.16	116.10	120.86
2	A	601	GDP	N3-C2-N1	-3.97	122.16	127.56
2	A	601	GDP	C1'-N9-C4	-3.88	122.47	126.81
2	B	601	GDP	N3-C2-N1	-3.59	122.68	127.56
2	A	601	GDP	C5-C6-N1	-3.42	119.05	123.52
2	B	601	GDP	C6-C5-C4	-3.36	117.02	120.86
5	B	604	MES	C7-C8-S	-3.34	101.66	112.61
5	B	604	MES	C6-C5-N4	-2.58	106.16	110.11
5	B	604	MES	C2-C3-N4	-2.53	106.24	110.11
2	B	601	GDP	C1'-N9-C4	-2.45	124.07	126.81
5	B	604	MES	O2S-S-O1S	-2.01	108.27	113.96
2	A	601	GDP	O4'-C1'-N9	2.08	112.04	108.11
2	A	601	GDP	N2-C2-N1	2.15	120.75	117.20
5	B	604	MES	O3S-S-C8	4.70	114.75	104.99
2	A	601	GDP	C6-N1-C2	5.00	121.75	115.88
2	B	601	GDP	C6-N1-C2	5.71	122.57	115.88
5	B	604	MES	O1S-S-C8	8.08	112.58	106.87

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	602	GOL	2	0
5	B	604	MES	1	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 ⓘ

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, 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	440/476 (92%)	0.12	13 (2%) 54 53	15, 25, 54, 93	0
1	B	450/476 (94%)	0.06	11 (2%) 62 61	14, 22, 52, 77	0
All	All	890/952 (93%)	0.09	24 (2%) 58 57	14, 23, 53, 93	0

All (24) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	370	GLU	6.0
1	A	169	GLY	5.0
1	A	398	LEU	4.3
1	A	261	THR	4.0
1	B	458	MET	3.6
1	A	458	MET	3.2
1	A	399	VAL	3.1
1	A	397	THR	3.0
1	B	459	HIS	3.0
1	A	121[A]	ARG	3.0
1	B	527[A]	PHE	3.0
1	A	162	GLN	2.9
1	B	407	THR	2.7
1	A	163	GLU	2.6
1	B	255	VAL	2.5
1	B	162	GLN	2.4
1	B	399	VAL	2.4
1	A	468[A]	TYR	2.4
1	A	244	SER	2.3
1	B	166	ASP	2.3
1	A	119	HIS	2.2
1	A	407	THR	2.2
1	B	449	GLU	2.1
1	B	242	GLU	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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(\AA^2)	Q<0.9
4	EDO	B	603	4/4	0.64	0.39	5.85	42,43,45,46	0
3	GOL	B	602	6/6	0.62	0.31	5.16	39,40,41,41	0
5	MES	B	604	12/12	0.88	0.41	4.41	17,18,18,19	12
2	GDP	A	601	28/28	0.71	0.27	3.17	32,46,54,56	28
2	GDP	B	601	28/28	0.85	0.20	0.53	34,50,103,108	0

6.5 Other polymers [i](#)

There are no such residues in this entry.