



Full wwPDB X-ray Structure Validation Report ⓘ

Nov 13, 2023 – 11:33 AM JST

PDB ID : 5X1K
Title : Vanillate/3-O-methylgallate O-demethylase, LigM, 3-O-methylgallate complex form
Authors : Harada, A.; Senda, T.
Deposited on : 2017-01-26
Resolution : 2.15 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 types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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 : 2.36
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

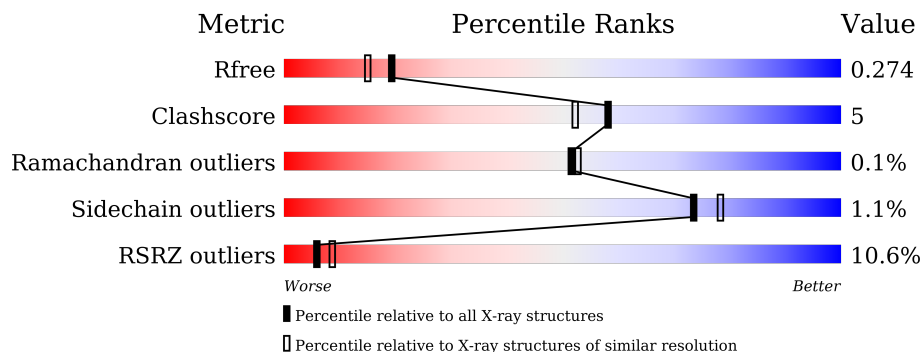
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.15 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	1479 (2.16-2.16)
Clashscore	141614	1585 (2.16-2.16)
Ramachandran outliers	138981	1560 (2.16-2.16)
Sidechain outliers	138945	1559 (2.16-2.16)
RSRZ outliers	127900	1456 (2.16-2.16)

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 $\leq 5\%$. 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	 90% 6%
1	B	474	 85% 9% 5% 3%
1	C	474	 75% 15% 9% 26%

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 10426 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.

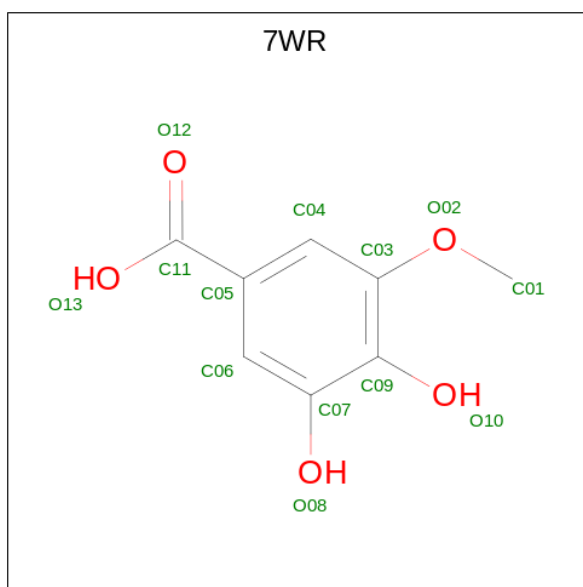
- Molecule 1 is a protein called Vanillate/3-O-methylgallate O-demethylase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	457	3580	2291	608	668	13	0	1	0
1	B	448	3478	2229	588	649	12	0	1	0
1	C	430	3041	1922	532	576	11	0	0	0

There are 9 discrepancies between the modelled and reference sequences:

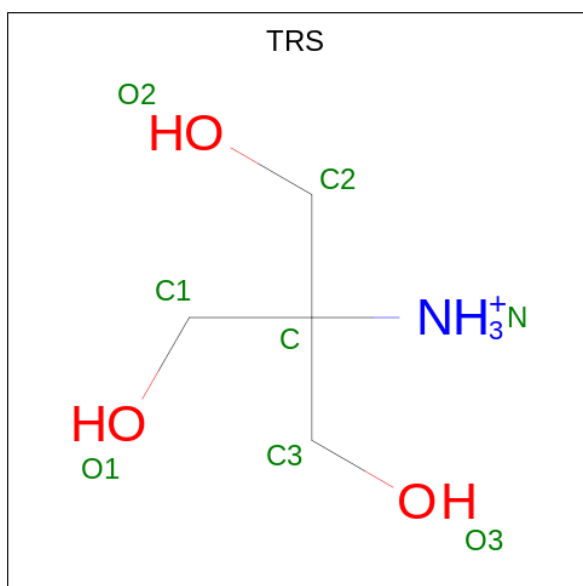
Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	GLY	-	expression tag	UNP G2IQS7
A	-1	SER	-	expression tag	UNP G2IQS7
A	0	SER	-	expression tag	UNP G2IQS7
B	-2	GLY	-	expression tag	UNP G2IQS7
B	-1	SER	-	expression tag	UNP G2IQS7
B	0	SER	-	expression tag	UNP G2IQS7
C	-2	GLY	-	expression tag	UNP G2IQS7
C	-1	SER	-	expression tag	UNP G2IQS7
C	0	SER	-	expression tag	UNP G2IQS7

- Molecule 2 is 3-methoxy-4,5-bis(oxidanyl)benzoic acid (three-letter code: 7WR) (formula: C₈H₈O₅).



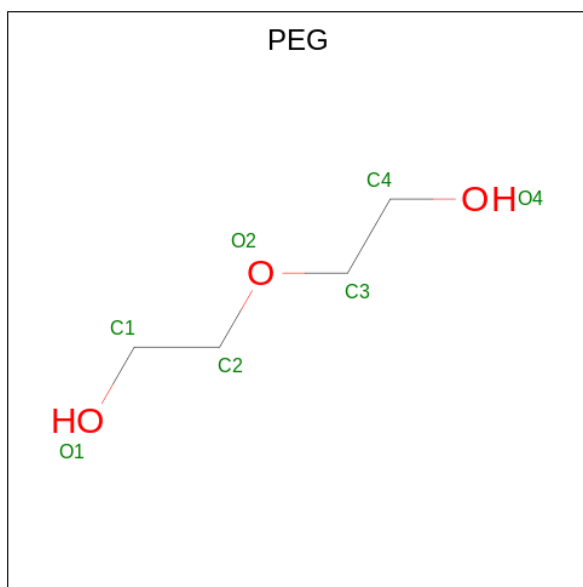
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			13	8	5		
2	B	1	Total	C	O	0	0
			13	8	5		
2	C	1	Total	C	O	0	0
			13	8	5		

- Molecule 3 is 2-AMINO-2-HYDROXYMETHYL-PROPANE-1,3-DIOL (three-letter code: TRS) (formula: $C_4H_{12}NO_3$).



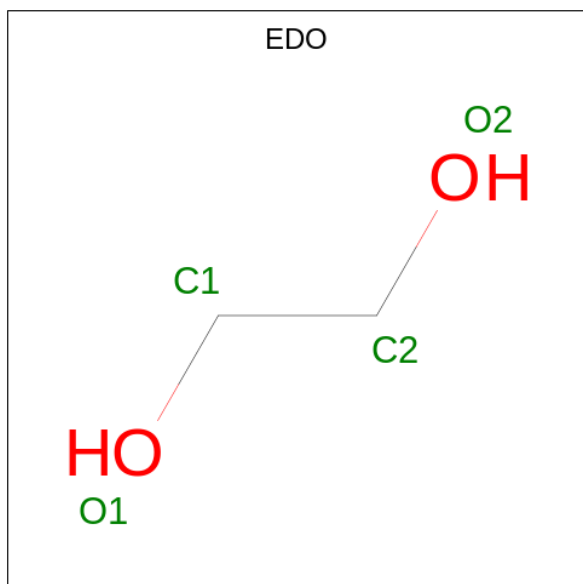
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	N	O	0	0
			8	4	1	3		
3	B	1	Total	C	N	O	0	0
			8	4	1	3		

- Molecule 4 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).



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

- Molecule 5 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).



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

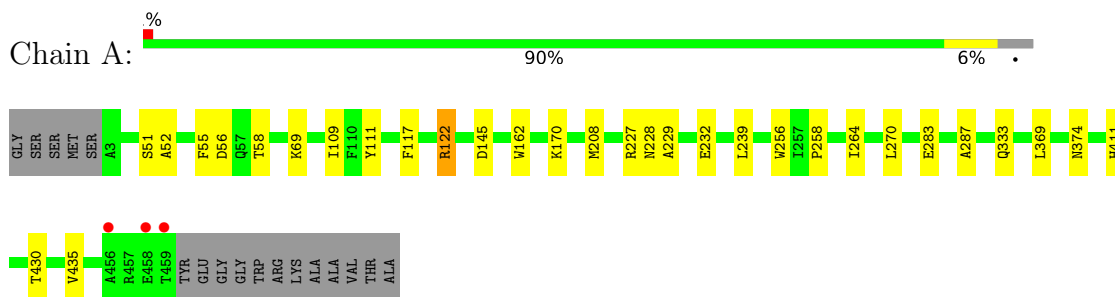
- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	160	Total O 160 160	0	0
6	B	80	Total O 80 80	0	0
6	C	9	Total O 9 9	0	0

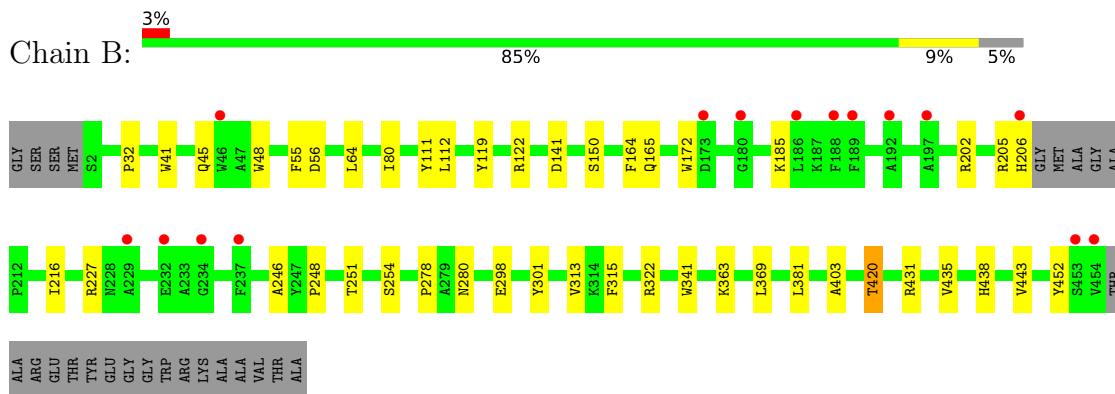
3 Residue-property plots

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.

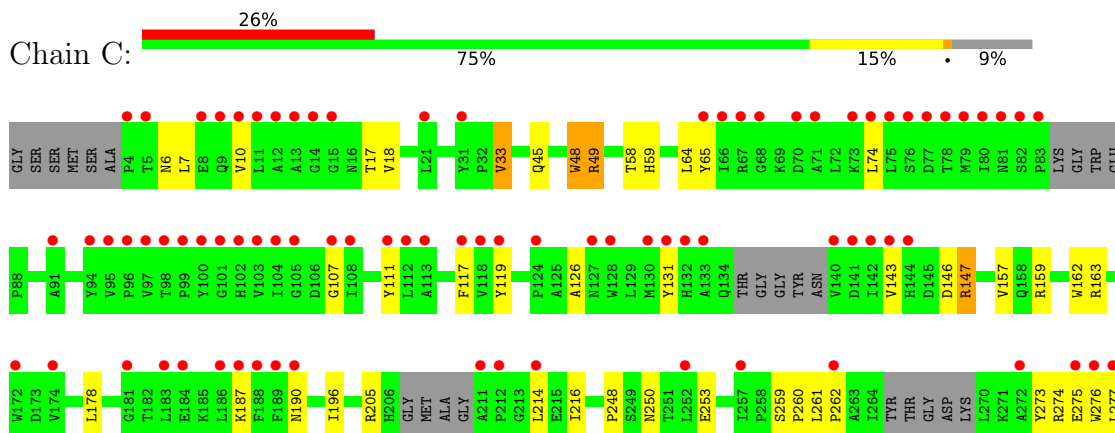
- Molecule 1: Vanillate/3-O-methylgallate O-demethylase

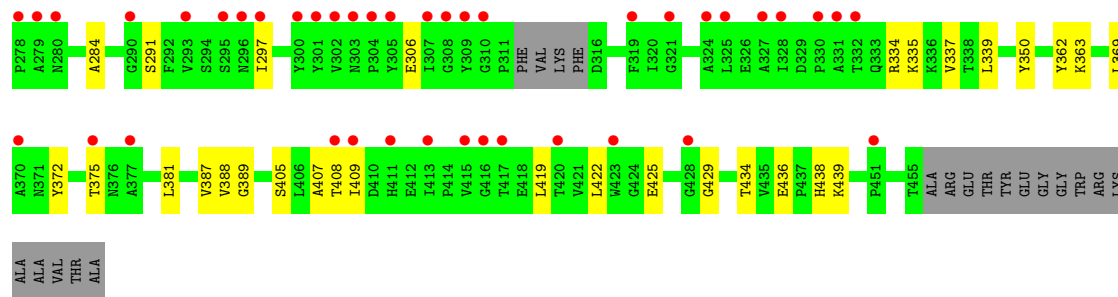


- Molecule 1: Vanillate/3-O-methylgallate O-demethylase



- Molecule 1: Vanillate/3-O-methylgallate O-demethylase





4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α , β , γ	104.06Å 118.07Å 132.82Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	44.82 – 2.15 47.89 – 2.15	Depositor EDS
% Data completeness (in resolution range)	99.6 (44.82-2.15) 90.2 (47.89-2.15)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.22 (at 2.16Å)	Xtrriage
Refinement program	PHENIX (1.11.1_2575: ???)	Depositor
R, R_{free}	0.233 , 0.274 0.233 , 0.274	Depositor DCC
R_{free} test set	4517 reflections (5.07%)	wwPDB-VP
Wilson B-factor (Å ²)	19.9	Xtrriage
Anisotropy	0.725	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 43.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.91	EDS
Total number of atoms	10426	wwPDB-VP
Average B, all atoms (Å ²)	33.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.15% 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: 7WR, EDO, PEG, TRS

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	0.45	0/3685	0.61	1/5023 (0.0%)
1	B	0.40	0/3582	0.57	0/4890
1	C	0.34	0/3118	0.53	0/4265
All	All	0.40	0/10385	0.57	1/14178 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	122	ARG	NE-CZ-NH1	-5.13	117.74	120.30

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	3580	0	3447	22	0
1	B	3478	0	3294	24	0
1	C	3041	0	2571	48	0
2	A	13	0	0	1	0
2	B	13	0	0	1	0
2	C	13	0	0	0	0
3	A	8	0	12	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	8	0	12	1	0
4	A	7	0	10	3	0
5	A	12	0	18	1	0
5	B	4	0	6	0	0
6	A	160	0	0	1	0
6	B	80	0	0	1	0
6	C	9	0	0	2	0
All	All	10426	0	9370	94	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 (94) 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:143:VAL:O	6:C:601:HOH:O	1.84	0.95
1:A:56:ASP:OD2	1:A:227[B]:ARG:NH2	2.16	0.79
1:B:435:VAL:O	3:B:502:TRS:O2	2.01	0.77
1:C:389:GLY:HA3	1:C:409:ILE:HG22	1.68	0.75
1:A:55:PHE:HE2	1:A:208:MET:HE1	1.55	0.72
1:C:18:VAL:HG23	1:C:297:ILE:HG12	1.74	0.69
1:A:69:LYS:O	6:A:601:HOH:O	2.12	0.67
1:C:65:TYR:N	6:C:601:HOH:O	2.10	0.65
1:A:435:VAL:O	3:A:502:TRS:H31	1.98	0.63
1:C:119:TYR:HE2	1:C:126:ALA:HB2	1.64	0.63
1:C:17:THR:CB	1:C:297:ILE:HD11	2.31	0.60
1:C:162:TRP:HZ3	1:C:216:ILE:HG13	1.67	0.59
1:B:64:LEU:HB2	1:B:119:TYR:HB3	1.84	0.59
1:C:363:LYS:HB2	1:C:438:HIS:CD2	2.38	0.58
1:C:372:TYR:O	1:C:434:THR:HG21	2.04	0.58
1:B:452:TYR:O	6:B:601:HOH:O	2.17	0.58
1:C:363:LYS:NZ	1:C:436:GLU:OE1	2.34	0.56
1:A:232:GLU:OE1	4:A:503:PEG:O4	2.22	0.56
1:B:381:LEU:HB2	1:B:420:THR:HG23	1.88	0.56
1:A:430:THR:O	3:A:502:TRS:H32	2.05	0.55
1:A:287:ALA:H	1:A:374:ASN:HD21	1.55	0.55
1:C:111:TYR:HA	1:C:117:PHE:CD1	2.42	0.55
1:B:122:ARG:HD2	2:B:501:7WR:O13	2.06	0.54
1:C:33:VAL:HG11	1:C:59:HIS:CE1	2.44	0.53
1:C:107:GLY:HA3	1:C:119:TYR:HE1	1.75	0.52
1:B:45:GLN:HG2	1:B:48:TRP:CH2	2.45	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:261:LEU:HD12	1:C:262:PRO:HD2	1.92	0.51
1:A:122:ARG:HD2	2:A:501:7WR:O13	2.11	0.51
1:B:205:ARG:NH1	1:B:206:HIS:O	2.44	0.51
1:C:58:THR:O	1:C:159:ARG:NH2	2.44	0.50
1:A:55:PHE:CE2	1:A:208:MET:HE1	2.41	0.50
1:C:7:LEU:O	1:C:10:VAL:HG12	2.12	0.50
1:C:291:SER:HB2	1:C:422:LEU:HD23	1.92	0.50
1:C:45:GLN:HG2	1:C:48:TRP:CH2	2.47	0.50
1:C:306:GLU:HA	1:C:334:ARG:O	2.12	0.49
1:C:64:LEU:O	1:C:119:TYR:N	2.31	0.49
1:A:264:ILE:HA	1:A:270:LEU:HD13	1.94	0.48
1:B:341:TRP:HB2	1:B:403:ALA:HB3	1.95	0.48
1:A:52:ALA:O	1:A:239:LEU:HA	2.14	0.47
1:C:58:THR:HG23	1:C:162:TRP:HA	1.96	0.47
1:C:107:GLY:HA3	1:C:119:TYR:CE1	2.49	0.47
1:A:229:ALA:HA	4:A:503:PEG:H21	1.97	0.47
1:B:298:GLU:HG2	1:B:301:TYR:CE2	2.49	0.47
1:C:7:LEU:HD13	1:C:284:ALA:HB2	1.96	0.47
1:C:362:TYR:CE1	1:C:439:LYS:HE3	2.50	0.47
1:C:131:TYR:HA	1:C:276:TRP:CZ3	2.51	0.46
1:A:51:SER:HA	1:A:170:LYS:HD2	1.98	0.46
1:B:248:PRO:HB2	1:B:369:LEU:HD22	1.96	0.46
1:C:33:VAL:HG21	1:C:157:VAL:HG11	1.97	0.46
1:B:341:TRP:CE3	1:B:443:VAL:HG11	2.51	0.46
1:C:273:TYR:O	1:C:277:LEU:HD13	2.15	0.46
1:C:248:PRO:HB2	1:C:369:LEU:HD22	1.97	0.46
1:C:388:VAL:HG11	1:C:419:LEU:HD11	1.97	0.46
1:B:164:PHE:HB2	1:B:216:ILE:HG13	1.98	0.46
1:C:178:LEU:HD13	1:C:196:ILE:HD12	1.98	0.45
1:B:56:ASP:OD2	1:B:227:ARG:NH2	2.49	0.45
1:C:187:LYS:O	1:C:190:ASN:HB2	2.16	0.45
1:C:335:LYS:O	1:C:408:THR:HA	2.16	0.45
1:B:32:PRO:HB3	1:B:150:SER:HA	1.98	0.45
1:B:55:PHE:HB2	1:B:165:GLN:HB2	1.98	0.45
1:C:259:SER:N	1:C:260:PRO:HD3	2.32	0.45
1:B:278:PRO:HB2	1:B:280:ASN:OD1	2.17	0.44
1:C:74:LEU:HD12	1:C:74:LEU:O	2.17	0.44
1:C:131:TYR:HD1	1:C:276:TRP:CE3	2.36	0.44
1:B:363:LYS:HD3	1:B:438:HIS:CE1	2.53	0.43
1:C:6:ASN:HD22	1:C:275:GLU:HA	1.83	0.43
1:C:205:ARG:HA	1:C:214:LEU:HD23	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:339:LEU:HB2	1:C:405:SER:OG	2.19	0.43
1:C:372:TYR:HB2	1:C:434:THR:OG1	2.19	0.42
1:C:261:LEU:HB2	1:C:375:THR:HG21	2.01	0.42
1:A:145:ASP:OD1	5:A:505:EDO:H11	2.19	0.42
1:C:111:TYR:HA	1:C:117:PHE:CE1	2.54	0.42
1:C:381:LEU:HD23	1:C:387:VAL:HA	2.02	0.42
1:B:45:GLN:HG2	1:B:48:TRP:CZ2	2.55	0.42
1:B:112:LEU:HD22	1:B:202:ARG:NH1	2.34	0.42
1:B:41:TRP:HB2	1:B:246:ALA:HB2	2.03	0.41
1:B:251:THR:HA	1:B:254:SER:OG	2.19	0.41
1:A:369:LEU:HD12	1:A:369:LEU:HA	1.95	0.41
1:C:146:ASP:OD1	1:C:147:ARG:N	2.54	0.41
1:A:58:THR:HG23	1:A:162:TRP:HA	2.01	0.41
1:B:315:PHE:HB3	1:B:322:ARG:HH21	1.86	0.41
1:C:49:ARG:NH2	1:C:253:GLU:OE2	2.53	0.41
1:C:425:GLU:HB2	1:C:429:GLY:HA2	2.02	0.41
1:C:7:LEU:HB3	1:C:274:ARG:O	2.21	0.41
1:C:337:VAL:N	1:C:407:ALA:O	2.48	0.41
1:A:256:TRP:CH2	1:A:258:PRO:HB3	2.56	0.41
1:A:228:ASN:HB3	4:A:503:PEG:O2	2.21	0.41
1:A:333:GLN:O	1:A:411:HIS:HB3	2.20	0.40
1:A:283:GLU:OE1	1:A:283:GLU:N	2.44	0.40
1:B:172:TRP:CZ2	1:B:185:LYS:HG3	2.57	0.40
1:C:362:TYR:CZ	1:C:439:LYS:HE3	2.57	0.40
1:A:109:ILE:HD11	1:A:117:PHE:HB3	2.02	0.40
1:A:287:ALA:N	1:A:374:ASN:HD21	2.19	0.40
1:B:80:ILE:HD12	1:B:313:VAL:HG22	2.03	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	456/474 (96%)	444 (97%)	12 (3%)	0	100	100
1	B	445/474 (94%)	433 (97%)	12 (3%)	0	100	100
1	C	418/474 (88%)	398 (95%)	19 (4%)	1 (0%)	47	46
All	All	1319/1422 (93%)	1275 (97%)	43 (3%)	1 (0%)	51	53

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	33	VAL

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	367/382 (96%)	366 (100%)	1 (0%)	92	95
1	B	351/382 (92%)	347 (99%)	4 (1%)	73	78
1	C	250/382 (65%)	244 (98%)	6 (2%)	49	51
All	All	968/1146 (84%)	957 (99%)	11 (1%)	73	78

All (11) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	111	TYR
1	B	111	TYR
1	B	141	ASP
1	B	420	THR
1	B	431	ARG
1	C	48	TRP
1	C	49	ARG
1	C	147	ARG
1	C	163	ARG
1	C	250	ASN
1	C	350	TYR

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](#)

10 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
5	EDO	B	503	-	3,3,3	0.57	0	2,2,2	0.06	0
2	7WR	C	501	-	13,13,13	1.34	3 (23%)	18,18,18	1.71	2 (11%)
2	7WR	A	501	-	13,13,13	1.41	2 (15%)	18,18,18	2.23	6 (33%)
3	TRS	B	502	-	7,7,7	0.36	0	9,9,9	1.15	0
5	EDO	A	505	-	3,3,3	0.55	0	2,2,2	0.42	0
5	EDO	A	506	-	3,3,3	0.53	0	2,2,2	0.38	0
3	TRS	A	502	-	7,7,7	0.22	0	9,9,9	0.91	1 (11%)
2	7WR	B	501	-	13,13,13	1.33	3 (23%)	18,18,18	1.58	3 (16%)
5	EDO	A	504	-	3,3,3	0.56	0	2,2,2	0.29	0
4	PEG	A	503	-	6,6,6	0.48	0	5,5,5	0.72	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
5	EDO	B	503	-	-	0/1/1/1	-
2	7WR	C	501	-	-	2/6/6/6	0/1/1/1
2	7WR	A	501	-	-	2/6/6/6	0/1/1/1
3	TRS	B	502	-	-	9/9/9/9	-
5	EDO	A	505	-	-	0/1/1/1	-
5	EDO	A	506	-	-	0/1/1/1	-
3	TRS	A	502	-	-	2/9/9/9	-
2	7WR	B	501	-	-	2/6/6/6	0/1/1/1
5	EDO	A	504	-	-	0/1/1/1	-
4	PEG	A	503	-	-	1/4/4/4	-

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	501	7WR	O02-C03	2.60	1.41	1.37
2	B	501	7WR	O02-C03	2.56	1.41	1.37
2	C	501	7WR	O02-C03	2.35	1.40	1.37
2	C	501	7WR	C05-C11	2.20	1.54	1.49
2	B	501	7WR	C05-C11	2.09	1.53	1.49
2	C	501	7WR	O08-C07	2.05	1.40	1.36
2	B	501	7WR	O10-C09	2.02	1.41	1.37
2	A	501	7WR	O08-C07	2.01	1.40	1.36

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	501	7WR	O02-C03-C09	6.89	121.49	114.54
2	C	501	7WR	O02-C03-C09	5.74	120.33	114.54
2	B	501	7WR	O02-C03-C09	5.31	119.90	114.54
2	A	501	7WR	C05-C06-C07	-2.99	117.55	120.09
2	C	501	7WR	O02-C03-C04	-2.33	120.10	124.12
2	A	501	7WR	O02-C03-C04	-2.32	120.14	124.12
2	A	501	7WR	C04-C03-C09	-2.26	118.37	120.60
2	A	501	7WR	C07-C09-C03	2.19	120.90	118.60
2	B	501	7WR	O13-C11-C05	2.18	120.52	114.85
3	A	502	TRS	C2-C-N	2.18	114.50	107.98
2	B	501	7WR	O02-C03-C04	-2.15	120.42	124.12
2	A	501	7WR	C04-C05-C11	-2.02	116.33	119.98

There are no chirality outliers.

All (18) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	501	7WR	C04-C03-O02-C01
2	C	501	7WR	C04-C03-O02-C01
2	A	501	7WR	C04-C03-O02-C01
2	B	501	7WR	C09-C03-O02-C01
2	A	501	7WR	C09-C03-O02-C01
4	A	503	PEG	C4-C3-O2-C2
3	B	502	TRS	C2-C-C1-O1
3	B	502	TRS	C2-C-C3-O3
2	C	501	7WR	C09-C03-O02-C01
3	B	502	TRS	N-C-C1-O1
3	B	502	TRS	C1-C-C2-O2
3	B	502	TRS	N-C-C2-O2
3	B	502	TRS	N-C-C3-O3
3	B	502	TRS	C1-C-C3-O3
3	A	502	TRS	C3-C-C2-O2
3	A	502	TRS	C2-C-C3-O3
3	B	502	TRS	C3-C-C1-O1
3	B	502	TRS	C3-C-C2-O2

There are no ring outliers.

6 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	501	7WR	1	0
3	B	502	TRS	1	0
5	A	505	EDO	1	0
3	A	502	TRS	2	0
2	B	501	7WR	1	0
4	A	503	PEG	3	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	457/474 (96%)	0.05	3 (0%) 87 91	12, 21, 35, 64	0
1	B	448/474 (94%)	0.18	15 (3%) 46 55	15, 28, 49, 60	0
1	C	430/474 (90%)	1.52	123 (28%) 0 0	27, 52, 73, 81	0
All	All	1335/1422 (93%)	0.57	141 (10%) 6 9	12, 30, 67, 81	0

All (141) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	327	ALA	8.3
1	C	279	ALA	7.9
1	C	272	ALA	7.5
1	C	13	ALA	7.1
1	C	300	TYR	6.6
1	C	113	ALA	6.2
1	C	330	PRO	6.1
1	C	131	TYR	5.6
1	C	276	TRP	5.5
1	C	277	LEU	5.4
1	C	309	TYR	5.1
1	C	99	PRO	5.1
1	C	328	ILE	4.9
1	B	454	VAL	4.8
1	C	105	GLY	4.7
1	C	211	ALA	4.6
1	C	82	SER	4.3
1	C	324	ALA	4.2
1	C	70	ASP	4.1
1	C	14	GLY	4.1
1	C	310	GLY	4.1
1	B	453	SER	4.0
1	C	15	GLY	3.9

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Mol	Chain	Res	Type	RSRZ
1	C	451	PRO	3.8
1	C	415	VAL	3.8
1	C	409	ILE	3.7
1	B	186	LEU	3.7
1	C	12	ALA	3.7
1	C	132	HIS	3.6
1	C	301	TYR	3.6
1	C	417	THR	3.6
1	C	307	ILE	3.6
1	C	5	THR	3.6
1	C	411	HIS	3.5
1	C	413	ILE	3.5
1	C	305	TYR	3.4
1	B	46	TRP	3.4
1	C	98	THR	3.4
1	C	77	ASP	3.4
1	C	308	GLY	3.4
1	C	275	GLU	3.3
1	C	257	ILE	3.3
1	C	71	ALA	3.2
1	C	423	TRP	3.2
1	C	94	TYR	3.2
1	C	186	LEU	3.2
1	C	128	TRP	3.2
1	C	252	LEU	3.2
1	C	108	ILE	3.2
1	C	332	THR	3.2
1	C	107	GLY	3.1
1	C	133	ALA	3.1
1	C	102	HIS	3.1
1	C	68	GLY	3.1
1	C	65	TYR	3.1
1	C	262	PRO	3.0
1	C	74	LEU	3.0
1	C	10	VAL	3.0
1	C	79	MET	3.0
1	C	78	THR	3.0
1	C	9	GLN	3.0
1	C	83	PRO	3.0
1	C	127	ASN	3.0
1	C	140	VAL	2.9
1	C	290	GLY	2.9

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Mol	Chain	Res	Type	RSRZ
1	C	4	PRO	2.9
1	C	75	LEU	2.9
1	C	183	LEU	2.9
1	B	234	GLY	2.9
1	C	95	VAL	2.9
1	C	375	THR	2.9
1	C	118	VAL	2.8
1	B	180	GLY	2.8
1	C	190	ASN	2.8
1	C	117	PHE	2.8
1	C	304	PRO	2.8
1	C	278	PRO	2.7
1	A	459	THR	2.7
1	C	187	LYS	2.7
1	C	124	PRO	2.7
1	C	214	LEU	2.7
1	C	104	ILE	2.6
1	C	189	PHE	2.6
1	C	101	GLY	2.6
1	C	212	PRO	2.6
1	C	66	ILE	2.6
1	C	143	VAL	2.6
1	C	119	TYR	2.6
1	C	325	LEU	2.6
1	C	100	TYR	2.5
1	C	331	ALA	2.5
1	C	321	GLY	2.5
1	C	67	ARG	2.5
1	B	192	ALA	2.5
1	C	280	ASN	2.5
1	C	31	TYR	2.5
1	C	142	ILE	2.5
1	C	112	LEU	2.5
1	C	297	ILE	2.5
1	B	206	HIS	2.5
1	C	144	HIS	2.5
1	B	197	ALA	2.4
1	C	96	PRO	2.4
1	C	319	PHE	2.4
1	C	73	LYS	2.4
1	B	173	ASP	2.4
1	C	295	SER	2.4

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Mol	Chain	Res	Type	RSRZ
1	C	111	TYR	2.3
1	A	458	GLU	2.3
1	C	188	PHE	2.3
1	C	76	SER	2.3
1	C	181	GLY	2.3
1	C	416	GLY	2.3
1	B	237	PHE	2.2
1	C	103	VAL	2.2
1	B	229	ALA	2.2
1	C	302	VAL	2.2
1	C	80	ILE	2.2
1	C	293	VAL	2.2
1	C	303	ASN	2.2
1	C	370	ALA	2.2
1	C	21	LEU	2.2
1	B	188	PHE	2.2
1	B	189	PHE	2.1
1	C	130	MET	2.1
1	C	420	THR	2.1
1	C	428	GLY	2.1
1	C	91	ALA	2.1
1	C	377	ALA	2.1
1	C	8	GLU	2.1
1	C	172	TRP	2.1
1	C	296	ASN	2.1
1	B	232	GLU	2.1
1	C	11	LEU	2.1
1	C	408	THR	2.1
1	C	81	ASN	2.0
1	C	141	ASP	2.0
1	C	97	VAL	2.0
1	C	184	GLU	2.0
1	A	456	ALA	2.0
1	C	174	VAL	2.0

6.2 Non-standard residues in protein, DNA, RNA chains

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
3	TRS	B	502	8/8	0.77	0.17	33,36,39,40	0
3	TRS	A	502	8/8	0.82	0.18	14,24,29,31	0
2	7WR	C	501	13/13	0.83	0.16	44,49,58,59	0
5	EDO	A	505	4/4	0.86	0.14	27,30,32,37	0
4	PEG	A	503	7/7	0.88	0.21	22,25,29,33	0
2	7WR	B	501	13/13	0.92	0.17	22,27,35,35	0
5	EDO	B	503	4/4	0.94	0.13	21,21,22,22	0
5	EDO	A	506	4/4	0.95	0.16	16,21,23,25	0
5	EDO	A	504	4/4	0.97	0.15	18,18,20,20	0
2	7WR	A	501	13/13	0.97	0.11	14,17,22,23	0

6.5 Other polymers [i](#)

There are no such residues in this entry.