



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2026 – 04:23 PM UTC

PDB ID : 2H0V / pdb_00002h0v
Title : Crystal structure of a putative quercetin 2,3-dioxygenase (yxag, bsu39980) from bacillus subtilis at 2.60 Å resolution
Authors : Joint Center for Structural Genomics (JCSG)
Deposited on : 2006-05-15
Resolution : 2.60 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

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 : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

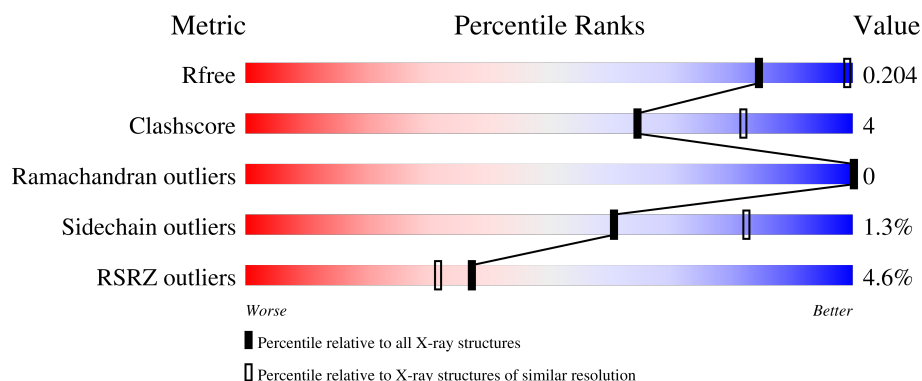
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.60 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	4008 (2.60-2.60)
Clashscore	190562	4347 (2.60-2.60)
Ramachandran outliers	187476	4277 (2.60-2.60)
Sidechain outliers	187428	4277 (2.60-2.60)
RSRZ outliers	180081	4008 (2.60-2.60)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments 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	338	5% 92% 7% .
1	B	338	4% 90% 8% ..

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 5640 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 Quercetin 2,3-dioxygenase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	335	Total	C	N	O	S	Se	0	1	0
			2614	1661	449	493	3	8			
1	B	335	Total	C	N	O	S	Se	0	0	0
			2602	1652	443	496	3	8			

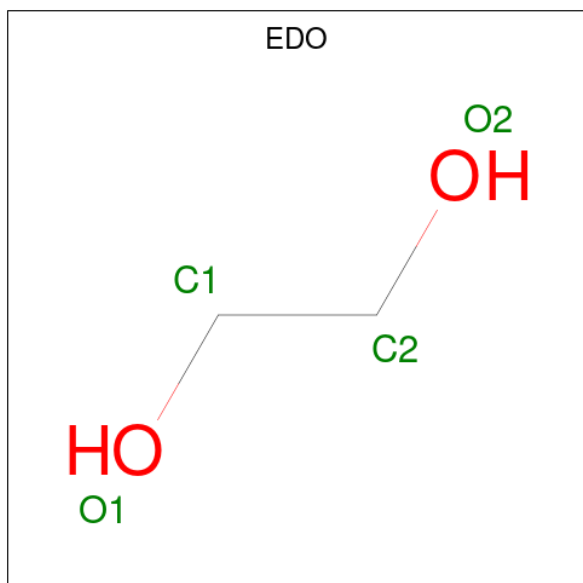
There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	0	GLY	-	expression tag	UNP P42106
A	1	MSE	MET	modified residue	UNP P42106
A	14	MSE	MET	modified residue	UNP P42106
A	36	MSE	MET	modified residue	UNP P42106
A	107	MSE	MET	modified residue	UNP P42106
A	119	MSE	MET	modified residue	UNP P42106
A	160	ASP	THR	SEE REMARK 999	UNP P42106
A	250	MSE	MET	modified residue	UNP P42106
A	252	MSE	MET	modified residue	UNP P42106
A	286	MSE	MET	modified residue	UNP P42106
A	314	GLU	LYS	SEE REMARK 999	UNP P42106
A	335	MSE	MET	modified residue	UNP P42106
B	0	GLY	-	expression tag	UNP P42106
B	1	MSE	MET	modified residue	UNP P42106
B	14	MSE	MET	modified residue	UNP P42106
B	36	MSE	MET	modified residue	UNP P42106
B	107	MSE	MET	modified residue	UNP P42106
B	119	MSE	MET	modified residue	UNP P42106
B	160	ASP	THR	SEE REMARK 999	UNP P42106
B	250	MSE	MET	modified residue	UNP P42106
B	252	MSE	MET	modified residue	UNP P42106
B	286	MSE	MET	modified residue	UNP P42106
B	314	GLU	LYS	SEE REMARK 999	UNP P42106
B	335	MSE	MET	modified residue	UNP P42106

- Molecule 2 is FE (III) ION (CCD ID: FE) (formula: Fe).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	2	Total	Fe	0	0
			2	2		
2	B	2	Total	Fe	0	0
			2	2		

- Molecule 3 is 1,2-ETHANEDIOL (CCD ID: EDO) (formula: C₂H₆O₂).



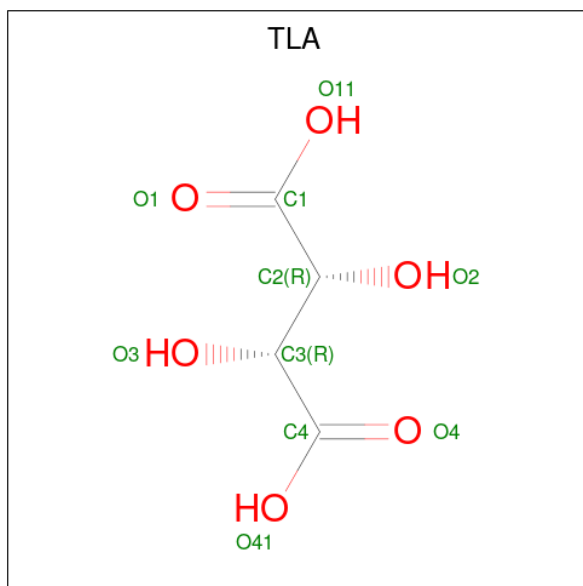
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			4	2	2		
3	A	1	Total	C	O	0	0
			4	2	2		
3	A	1	Total	C	O	0	0
			4	2	2		
3	A	1	Total	C	O	0	0
			4	2	2		
3	A	1	Total	C	O	0	0
			4	2	2		
3	A	1	Total	C	O	0	0
			4	2	2		
3	B	1	Total	C	O	0	0
			4	2	2		

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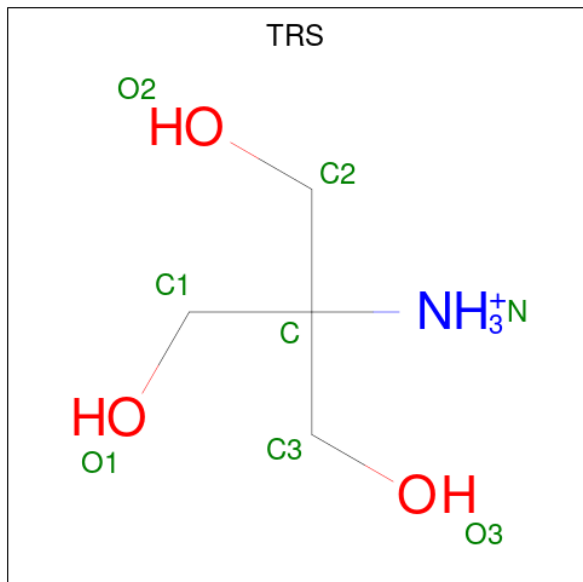
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	B	1	Total	C	O	0	0
			4	2	2		
3	B	1	Total	C	O	0	0
			4	2	2		
3	B	1	Total	C	O	0	0
			4	2	2		
3	B	1	Total	C	O	0	0
			4	2	2		
3	B	1	Total	C	O	0	0
			4	2	2		
3	B	1	Total	C	O	0	0
			4	2	2		
3	B	1	Total	C	O	0	0
			4	2	2		

- Molecule 4 is L(+)-TARTARIC ACID (CCD ID: TLA) (formula: C₄H₆O₆).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			10	4	6		
4	B	1	Total	C	O	0	0
			10	4	6		

- Molecule 5 is 2-AMINO-2-HYDROXYMETHYL-PROPANE-1,3-DIOL (CCD ID: TRS) (formula: $C_4H_{12}NO_3$).



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

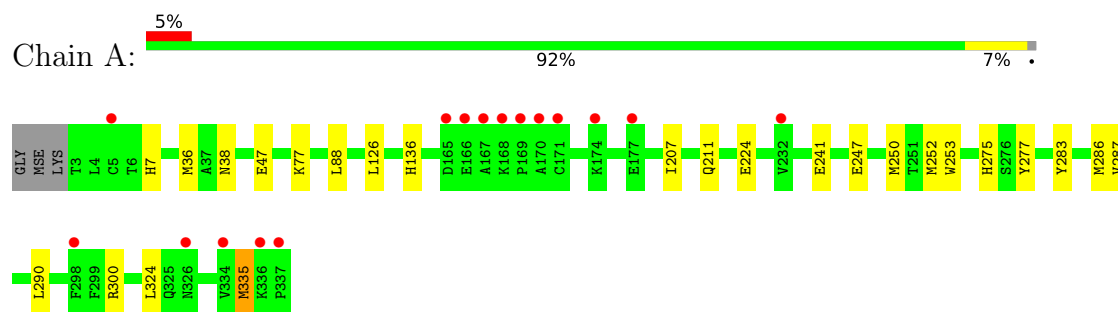
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	168	Total	O	0	0
			168	168		
6	B	144	Total	O	0	0
			144	144		

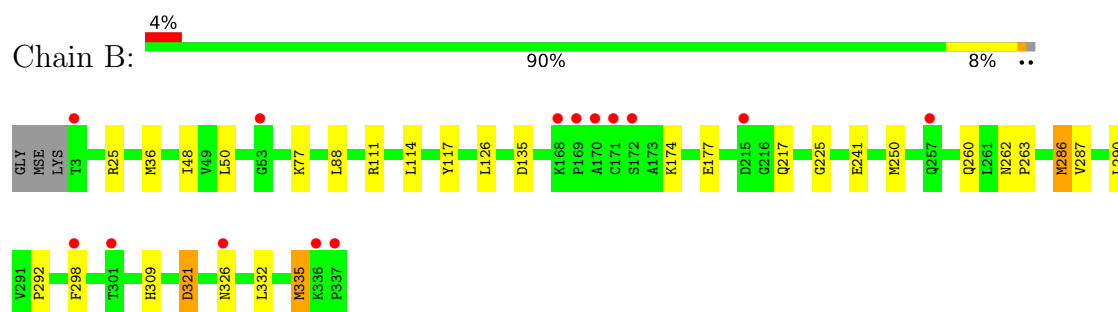
3 Residue-property plots [i](#)

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: Quercetin 2,3-dioxygenase



- Molecule 1: Quercetin 2,3-dioxygenase



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	97.42Å 128.66Å 133.89Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	29.78 – 2.60 29.78 – 2.60	Depositor EDS
% Data completeness (in resolution range)	99.6 (29.78-2.60) 99.6 (29.78-2.60)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	0.10	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.42 (at 2.61Å)	Xtriage
Refinement program	REFMAC 5.2.0005	Depositor
R, R_{free}	0.167 , 0.204 0.178 , 0.204	Depositor DCC
R_{free} test set	2666 reflections (5.09%)	wwPDB-VP
Wilson B-factor (Å ²)	44.7	Xtriage
Anisotropy	0.745	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 40.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	0.004 for -h,l,k	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	5640	wwPDB-VP
Average B, all atoms (Å ²)	45.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.00% 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: FE, EDO, TRS, TLA

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	0.88	1/2674 (0.0%)	0.87	0/3623
1	B	0.88	1/2661 (0.0%)	0.86	2/3606 (0.1%)
All	All	0.88	2/5335 (0.0%)	0.86	2/7229 (0.0%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	335	MSE	SE-CE	8.53	2.21	1.95
1	A	335	MSE	SE-CE	6.96	2.16	1.95

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	225	GLY	CA-C-N	5.07	126.17	119.84
1	B	225	GLY	C-N-CA	5.07	126.17	119.84

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	2614	0	2498	17	0
1	B	2602	0	2466	21	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	A	2	0	0	0	0
2	B	2	0	0	0	0
3	A	32	0	47	6	0
3	B	40	0	58	3	0
4	A	10	0	3	0	0
4	B	10	0	3	0	0
5	A	8	0	12	3	0
5	B	8	0	12	0	0
6	A	168	0	0	3	0
6	B	144	0	0	0	0
All	All	5640	0	5099	41	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 4.

All (41) 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:335:MSE:SE	1:A:335:MSE:CE	2.16	1.44
1:B:335:MSE:SE	1:B:335:MSE:CE	2.21	1.38
1:A:250:MSE:HE1	1:A:286:MSE:HE2	1.57	0.87
1:A:136:HIS:ND1	6:A:672:HOH:O	2.21	0.72
1:A:250:MSE:CE	1:A:286:MSE:HE2	2.20	0.71
3:A:510:EDO:H21	3:B:505:EDO:H22	1.81	0.62
5:A:504:TRS:H21	1:B:309:HIS:ND1	2.17	0.59
5:A:504:TRS:C2	1:B:309:HIS:ND1	2.67	0.58
1:A:207:ILE:HD13	1:A:300:ARG:NH2	2.20	0.56
1:A:126:LEU:C	1:A:126:LEU:HD12	2.31	0.55
1:B:286:MSE:HG2	1:B:287:VAL:N	2.20	0.55
3:A:506:EDO:C2	1:B:111:ARG:HH11	2.20	0.54
3:A:506:EDO:H21	1:B:111:ARG:HH11	1.75	0.52
3:A:507:EDO:H22	3:B:508:EDO:H12	1.93	0.51
1:A:224:GLU:OE1	1:A:283:TYR:OH	2.21	0.51
1:A:38:ASN:HA	1:A:47:GLU:HG2	1.93	0.50
1:A:7:HIS:CE1	6:A:675:HOH:O	2.66	0.49
1:B:298:PHE:CG	1:B:332:LEU:HD22	2.48	0.49
1:B:250:MSE:HE1	1:B:286:MSE:HE2	1.95	0.47
1:A:286:MSE:HG2	1:A:287:VAL:N	2.31	0.46
1:A:36:MSE:HE1	6:A:585:HOH:O	2.14	0.46
1:A:247:GLU:OE2	3:A:507:EDO:H11	2.16	0.46
5:A:504:TRS:H22	1:B:309:HIS:ND1	2.30	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:126:LEU:C	1:B:126:LEU:HD12	2.42	0.45
1:B:321:ASP:OD1	1:B:321:ASP:N	2.50	0.45
1:B:241:GLU:HG2	1:B:290:LEU:HG	2.00	0.43
1:B:36:MSE:HE2	1:B:50:LEU:HB2	2.01	0.43
1:A:77:LYS:HB3	1:A:88:LEU:HD11	2.01	0.43
1:B:217:GLN:O	1:B:292:PRO:HA	2.18	0.42
1:A:241:GLU:HG2	1:A:290:LEU:HG	2.01	0.42
1:B:286:MSE:HE3	1:B:286:MSE:HB3	1.81	0.42
1:B:174:LYS:CE	1:B:177:GLU:OE2	2.67	0.42
1:A:252:MSE:HE3	1:A:277:TYR:HB3	2.02	0.41
1:B:48:ILE:HD13	1:B:117:TYR:CE1	2.56	0.41
1:B:77:LYS:HB3	1:B:88:LEU:HD11	2.02	0.41
3:A:510:EDO:H21	3:B:505:EDO:C2	2.47	0.41
1:B:25:ARG:HH21	1:B:135:ASP:HA	1.86	0.41
1:B:250:MSE:CE	1:B:286:MSE:HE2	2.51	0.41
1:B:262:ASN:HB3	1:B:263:PRO:HD2	2.02	0.41
1:A:207:ILE:CD1	1:A:300:ARG:NH2	2.85	0.40
1:A:253:TRP:O	1:A:275:HIS:HA	2.21	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	334/338 (99%)	323 (97%)	11 (3%)	0	100	100
1	B	333/338 (98%)	323 (97%)	10 (3%)	0	100	100
All	All	667/676 (99%)	646 (97%)	21 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	273/276 (99%)	271 (99%)	2 (1%)	76	89
1	B	269/276 (98%)	264 (98%)	5 (2%)	50	75
All	All	542/552 (98%)	535 (99%)	7 (1%)	61	82

All (7) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	211	GLN
1	A	324	LEU
1	B	114	LEU
1	B	260	GLN
1	B	286	MSE
1	B	321	ASP
1	B	326	ASN

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

Mol	Chain	Res	Type
1	A	125	HIS
1	A	203	GLN
1	A	217	GLN
1	A	260	GLN
1	B	203	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 [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 26 ligands modelled in this entry, 4 are monoatomic - leaving 22 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	EDO	B	511	-	3,3,3	0.55	0	2,2,2	0.28	0
3	EDO	A	510	-	3,3,3	0.43	0	2,2,2	0.49	0
3	EDO	A	509	-	3,3,3	0.41	0	2,2,2	0.53	0
3	EDO	A	507	-	3,3,3	0.28	0	2,2,2	1.53	1 (50%)
3	EDO	A	511	-	3,3,3	0.30	0	2,2,2	0.83	0
3	EDO	A	502	2	3,3,3	0.53	0	2,2,2	0.32	0
3	EDO	A	506	-	3,3,3	0.80	0	2,2,2	0.48	0
3	EDO	B	510	-	3,3,3	0.44	0	2,2,2	0.30	0
3	EDO	B	506	-	3,3,3	0.62	0	2,2,2	0.08	0
3	EDO	A	508	-	3,3,3	0.66	0	2,2,2	0.08	0
4	TLA	B	503	2	9,9,9	1.32	1 (11%)	12,12,12	1.22	1 (8%)
3	EDO	A	505	-	3,3,3	0.42	0	2,2,2	0.40	0
3	EDO	B	513	-	3,3,3	0.50	0	2,2,2	0.29	0
3	EDO	B	502	2	3,3,3	0.75	0	2,2,2	0.26	0
5	TRS	A	504	-	7,7,7	0.98	0	9,9,9	1.56	2 (22%)
4	TLA	A	503	2	9,9,9	1.29	1 (11%)	12,12,12	1.20	2 (16%)
3	EDO	B	505	-	3,3,3	0.44	0	2,2,2	0.67	0
3	EDO	B	508	-	3,3,3	0.49	0	2,2,2	0.31	0
3	EDO	B	509	-	3,3,3	0.59	0	2,2,2	0.38	0
3	EDO	B	512	-	3,3,3	0.47	0	2,2,2	0.34	0
5	TRS	B	504	-	7,7,7	0.98	0	9,9,9	1.61	2 (22%)
3	EDO	B	507	-	3,3,3	0.67	0	2,2,2	0.48	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns.

'-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	EDO	B	511	-	-	0/1/1/1	-
3	EDO	A	510	-	-	1/1/1/1	-
3	EDO	A	509	-	-	1/1/1/1	-
3	EDO	A	507	-	-	0/1/1/1	-
3	EDO	A	511	-	-	0/1/1/1	-
3	EDO	A	502	2	-	0/1/1/1	-
3	EDO	A	506	-	-	1/1/1/1	-
3	EDO	B	510	-	-	1/1/1/1	-
3	EDO	B	506	-	-	1/1/1/1	-
3	EDO	A	508	-	-	1/1/1/1	-
4	TLA	B	503	2	-	2/12/12/12	-
3	EDO	A	505	-	-	1/1/1/1	-
3	EDO	B	513	-	-	0/1/1/1	-
3	EDO	B	502	2	-	1/1/1/1	-
5	TRS	A	504	-	-	7/9/9/9	-
4	TLA	A	503	2	-	9/12/12/12	-
3	EDO	B	505	-	-	1/1/1/1	-
3	EDO	B	508	-	-	1/1/1/1	-
3	EDO	B	509	-	-	1/1/1/1	-
3	EDO	B	512	-	-	1/1/1/1	-
5	TRS	B	504	-	-	5/9/9/9	-
3	EDO	B	507	-	-	1/1/1/1	-

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	503	TLA	C2-C1	-2.19	1.49	1.52
4	B	503	TLA	C2-C1	-2.00	1.49	1.52

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	B	504	TRS	O2-C2-C	3.72	121.25	110.88
5	A	504	TRS	O2-C2-C	3.31	120.10	110.88
4	B	503	TLA	O3-C3-C2	-2.75	104.57	110.17
5	A	504	TRS	O1-C1-C	2.69	118.38	110.88
4	A	503	TLA	O11-C1-C2	2.27	119.62	113.31
5	B	504	TRS	O1-C1-C	2.18	116.96	110.88
3	A	507	EDO	O2-C2-C1	-2.07	96.66	112.39
4	A	503	TLA	O1-C1-C2	-2.02	116.25	121.62

There are no chirality outliers.

All (36) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	504	TRS	C1-C-C2-O2
5	A	504	TRS	C3-C-C2-O2
5	A	504	TRS	N-C-C2-O2
5	A	504	TRS	C1-C-C3-O3
5	A	504	TRS	C2-C-C3-O3
5	A	504	TRS	N-C-C3-O3
5	B	504	TRS	C2-C-C1-O1
5	B	504	TRS	C3-C-C1-O1
5	B	504	TRS	N-C-C1-O1
3	A	506	EDO	O1-C1-C2-O2
3	A	508	EDO	O1-C1-C2-O2
3	A	510	EDO	O1-C1-C2-O2
3	B	505	EDO	O1-C1-C2-O2
3	A	509	EDO	O1-C1-C2-O2
3	B	502	EDO	O1-C1-C2-O2
3	B	506	EDO	O1-C1-C2-O2
3	B	507	EDO	O1-C1-C2-O2
3	B	510	EDO	O1-C1-C2-O2
3	B	508	EDO	O1-C1-C2-O2
4	A	503	TLA	O2-C2-C3-O3
4	A	503	TLA	O2-C2-C3-C4
4	B	503	TLA	C2-C3-C4-O4
4	A	503	TLA	C1-C2-C3-O3
4	A	503	TLA	C2-C3-C4-O4
4	B	503	TLA	C2-C3-C4-O41
4	A	503	TLA	C2-C3-C4-O41
4	A	503	TLA	O3-C3-C4-O4
4	A	503	TLA	O3-C3-C4-O41
5	B	504	TRS	C3-C-C2-O2
3	B	509	EDO	O1-C1-C2-O2
3	A	505	EDO	O1-C1-C2-O2
3	B	512	EDO	O1-C1-C2-O2
5	A	504	TRS	C3-C-C1-O1
5	B	504	TRS	C1-C-C3-O3
4	A	503	TLA	C1-C2-C3-C4
4	A	503	TLA	O11-C1-C2-C3

There are no ring outliers.

6 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	510	EDO	2	0
3	A	507	EDO	2	0
3	A	506	EDO	2	0
5	A	504	TRS	3	0
3	B	505	EDO	2	0
3	B	508	EDO	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	327/338 (96%)	-0.11	16 (4%) 35 29	19, 43, 62, 86	1 (0%)
1	B	327/338 (96%)	0.39	14 (4%) 40 34	36, 43, 61, 86	0
All	All	654/676 (96%)	0.14	30 (4%) 37 32	19, 43, 62, 86	1 (0%)

All (30) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	171	CYS	6.7
1	A	337	PRO	5.4
1	B	337	PRO	4.9
1	A	171	CYS	4.7
1	A	170	ALA	3.9
1	A	169	PRO	3.9
1	B	3	THR	3.6
1	A	168	LYS	3.5
1	A	174	LYS	3.5
1	A	167	ALA	3.5
1	A	298	PHE	3.4
1	B	170	ALA	3.4
1	B	336	LYS	3.3
1	B	298	PHE	3.2
1	A	165	ASP	3.1
1	A	166	GLU	2.8
1	B	172	SER	2.7
1	A	336	LYS	2.6
1	B	169	PRO	2.6
1	B	168	LYS	2.5
1	A	232	VAL	2.5
1	A	326	ASN	2.4
1	B	326	ASN	2.3
1	A	5	CYS	2.3

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Mol	Chain	Res	Type	RSRZ
1	B	53	GLY	2.3
1	A	177	GLU	2.2
1	B	257	GLN	2.2
1	B	301	THR	2.1
1	B	215	ASP	2.1
1	A	334	VAL	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 oligosaccharides 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	TRS	B	504	8/8	0.70	0.25	71,78,80,80	0
5	TRS	A	504	8/8	0.78	0.24	65,71,72,74	0
3	EDO	B	507	4/4	0.79	0.26	66,69,70,71	0
3	EDO	B	506	4/4	0.83	0.25	71,77,79,80	0
3	EDO	B	510	4/4	0.84	0.27	71,72,72,73	0
3	EDO	A	509	4/4	0.85	0.23	74,76,79,80	0
3	EDO	B	512	4/4	0.85	0.26	67,72,74,75	0
3	EDO	B	513	4/4	0.86	0.23	75,79,81,83	0
3	EDO	B	509	4/4	0.87	0.26	63,65,65,67	0
3	EDO	A	508	4/4	0.88	0.21	60,73,73,74	0
3	EDO	B	505	4/4	0.88	0.23	49,57,57,58	0
3	EDO	A	506	4/4	0.90	0.23	41,56,57,63	0
3	EDO	A	507	4/4	0.92	0.12	39,44,44,53	0
4	TLA	B	503	10/10	0.93	0.13	39,46,49,51	0
3	EDO	A	511	4/4	0.93	0.16	51,53,55,56	0
3	EDO	A	510	4/4	0.93	0.15	39,57,63,64	0
4	TLA	A	503	10/10	0.94	0.14	42,47,53,54	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
3	EDO	A	505	4/4	0.95	0.14	67,74,75,75	0
3	EDO	B	511	4/4	0.95	0.12	49,52,55,56	0
3	EDO	B	502	4/4	0.95	0.11	42,44,46,47	0
3	EDO	A	502	4/4	0.95	0.12	42,45,46,47	0
3	EDO	B	508	4/4	0.96	0.09	49,53,54,55	0
2	FE	B	500	1/1	0.99	0.05	44,44,44,44	0
2	FE	B	501	1/1	0.99	0.09	42,42,42,42	0
2	FE	A	500	1/1	1.00	0.03	43,43,43,43	0
2	FE	A	501	1/1	1.00	0.08	40,40,40,40	0

6.5 Other polymers [i](#)

There are no such residues in this entry.