



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 21, 2021 – 12:16 PM EDT

PDB ID : 6WE3
Title : Human PARP14 (ARTD8), catalytic fragment in complex with compound 3
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Deposited on : 2020-04-01
Resolution : 1.95 Å(reported)

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

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

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.23.1
buster-report : 1.1.7 (2018)
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) : 2.23.1

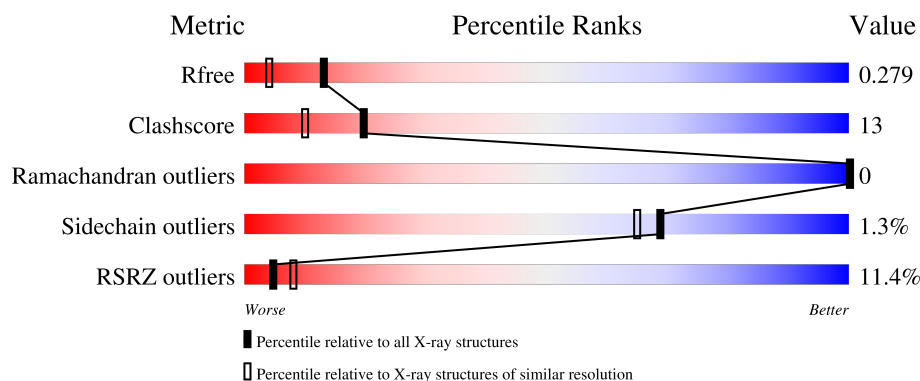
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.95 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	2580 (1.96-1.96)
Clashscore	141614	2705 (1.96-1.96)
Ramachandran outliers	138981	2678 (1.96-1.96)
Sidechain outliers	138945	2678 (1.96-1.96)
RSRZ outliers	127900	2539 (1.96-1.96)

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	194	
1	B	194	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	EDO	A	1905	-	-	X	-
3	EDO	A	1906	-	-	X	-
5	GOL	A	1910	-	-	X	-
6	SO4	A	1913	-	-	X	-

2 Entry composition

There are 8 unique types of molecules in this entry. The entry contains 3334 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.

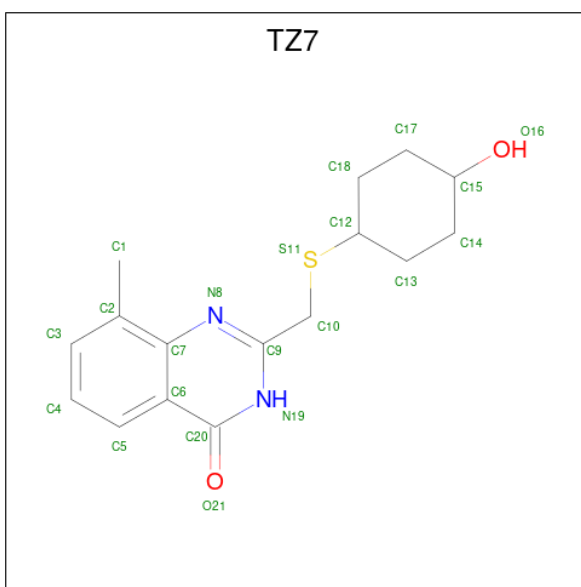
- Molecule 1 is a protein called Protein mono-ADP-ribosyltransferase PARP14.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	180	Total	C	N	O	S	0	6	0
			1512	959	269	280	4			
1	B	181	Total	C	N	O	S	0	8	0
			1519	961	269	285	4			

There are 6 discrepancies between the modelled and reference sequences:

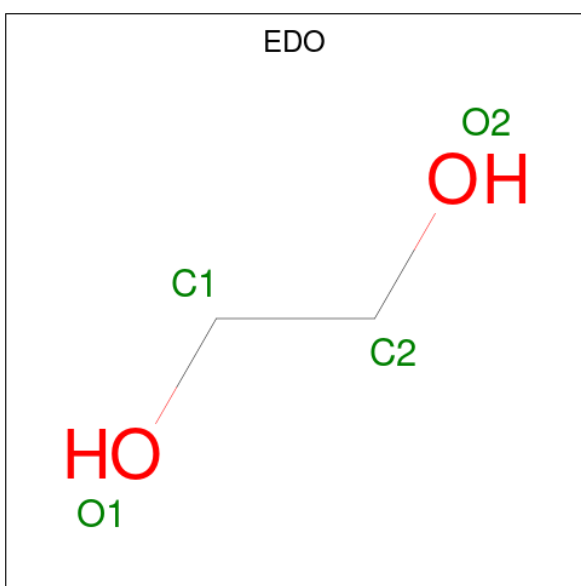
Chain	Residue	Modelled	Actual	Comment	Reference
A	1608	SER	-	expression tag	UNP Q460N5
A	1609	ASN	-	expression tag	UNP Q460N5
A	1610	ALA	-	expression tag	UNP Q460N5
B	1608	SER	-	expression tag	UNP Q460N5
B	1609	ASN	-	expression tag	UNP Q460N5
B	1610	ALA	-	expression tag	UNP Q460N5

- Molecule 2 is 2-[[[(trans-4-hydroxycyclohexyl)sulfanyl]methyl]-8-methylquinazolin-4(3H)-one (three-letter code: TZ7) (formula: C₁₆H₂₀N₂O₂S) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	S	0	0
			21	16	2	2	1		
2	B	1	Total	C	N	O	S	0	0
			21	16	2	2	1		

- Molecule 3 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C₂H₆O₂).



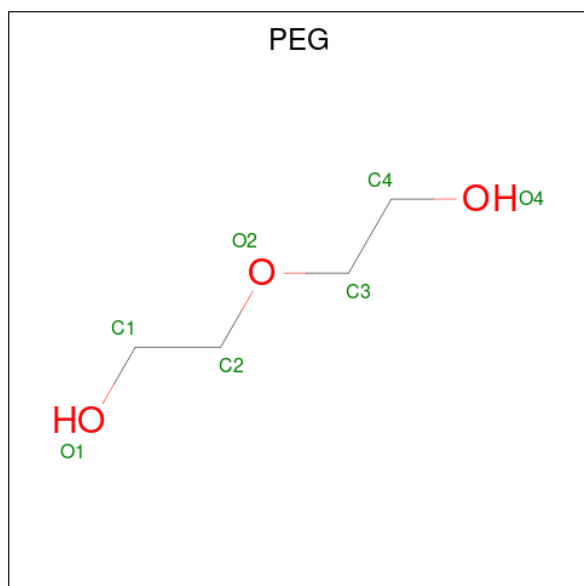
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			4	2	2		
3	A	1	Total	C	O	0	0
			4	2	2		

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

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



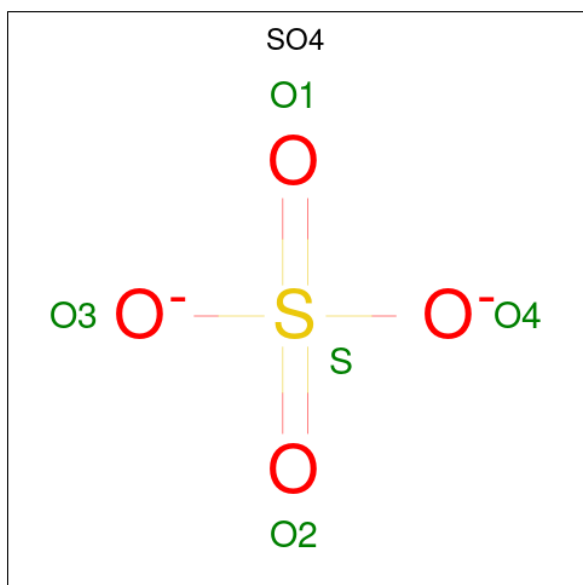
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 7 4 3	0	0
4	B	1	Total C O 7 4 3	0	0

- Molecule 5 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



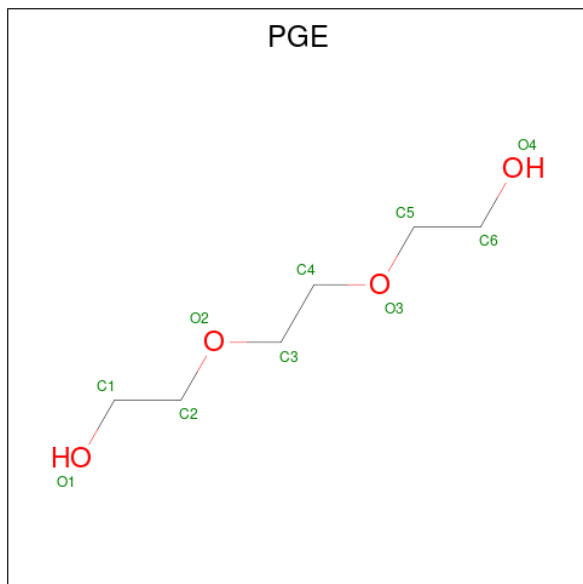
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			6	3	3		
5	A	1	Total	C	O	0	0
			6	3	3		
5	B	1	Total	C	O	0	0
			6	3	3		
5	B	1	Total	C	O	0	0
			6	3	3		

- Molecule 6 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total	O	S	0	0
			5	4	1		
6	A	1	Total	O	S	0	0
			5	4	1		
6	A	1	Total	O	S	0	0
			5	4	1		

- Molecule 7 is TRIETHYLENE GLYCOL (three-letter code: PGE) (formula: C₆H₁₄O₄).



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

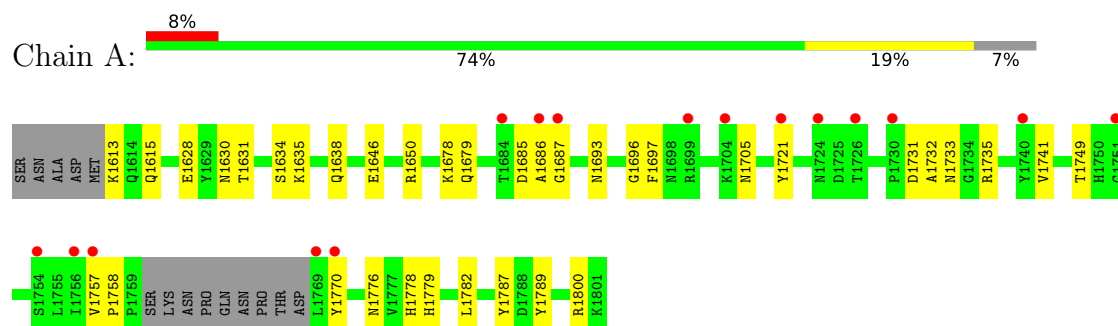
- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	85	Total	O	0	0
			85	85		
8	B	73	Total	O	0	0
			73	73		

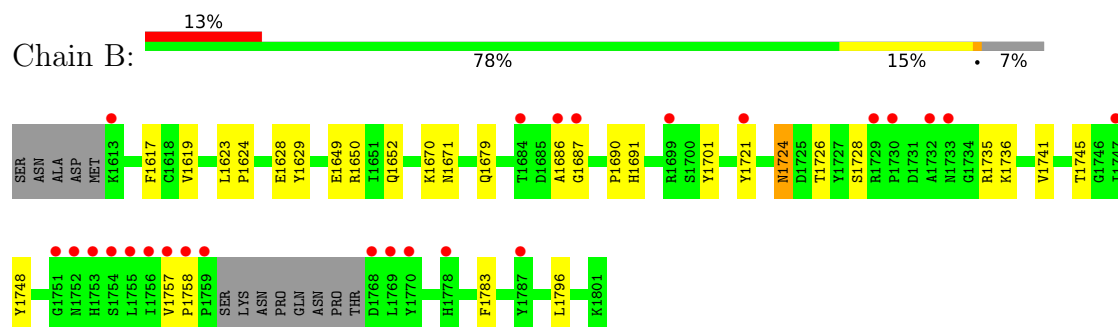
3 Residue-property plots

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: Protein mono-ADP-ribosyltransferase PARP14



• Molecule 1: Protein mono-ADP-ribosyltransferase PARP14



4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	82.35Å 144.66Å 82.54Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	41.65 – 1.95 41.61 – 1.95	Depositor EDS
% Data completeness (in resolution range)	98.6 (41.65-1.95) 98.6 (41.61-1.95)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.50 (at 1.95Å)	Xtriage
Refinement program	REFMAC 5.8.0258	Depositor
R, R_{free}	0.237 , 0.273 0.250 , 0.279	Depositor DCC
R_{free} test set	1725 reflections (4.82%)	wwPDB-VP
Wilson B-factor (Å ²)	35.6	Xtriage
Anisotropy	0.189	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 54.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	0.000 for 1/2*h+1/2*k,3/2*h-1/2*k,-l 0.000 for 1/2*h-1/2*k,-3/2*h-1/2*k,-l	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	3334	wwPDB-VP
Average B, all atoms (Å ²)	46.0	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 62.71 % 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 1.0814e-05. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: PEG, EDO, GOL, SO4, TZ7, PGE

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	0.72	0/1553	0.89	0/2107
1	B	0.73	0/1560	0.86	0/2118
All	All	0.73	0/3113	0.88	0/4225

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1512	0	1443	50	0
1	B	1519	0	1436	33	0
2	A	21	0	0	0	0
2	B	21	0	0	0	0
3	A	24	0	34	13	0
3	B	16	0	24	4	0
4	A	7	0	10	1	0
4	B	7	0	10	2	0
5	A	12	0	16	9	0
5	B	12	0	16	0	0
6	A	15	0	0	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	B	10	0	14	3	0
8	A	85	0	0	8	0
8	B	73	0	0	2	0
All	All	3334	0	3003	79	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 13.

All (79) 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:1613:LYS:CB	1:B:1623:LEU:HD21	2.00	0.92
1:A:1613:LYS:HB2	1:B:1623:LEU:HD21	1.54	0.89
1:A:1787:TYR:O	5:A:1910:GOL:H11	1.73	0.87
1:B:1724:ASN:HD22	1:B:1726:THR:H	1.23	0.87
1:A:1776:ASN:ND2	1:A:1779:HIS:H	1.78	0.80
1:A:1789:TYR:H	5:A:1910:GOL:C2	1.96	0.78
3:A:1906:EDO:O1	3:B:1904:EDO:H22	1.84	0.77
1:A:1789:TYR:H	5:A:1910:GOL:H2	1.50	0.76
1:A:1782[B]:LEU:C	1:A:1782[B]:LEU:HD23	2.07	0.75
1:A:1789:TYR:N	5:A:1910:GOL:H2	2.02	0.74
1:B:1649[B]:GLU:OE1	1:B:1796:LEU:HD23	1.88	0.73
1:A:1613:LYS:HB3	1:B:1623:LEU:HD21	1.72	0.72
1:A:1697:PHE:H	5:A:1910:GOL:H31	1.54	0.71
1:A:1613:LYS:HB3	1:B:1623:LEU:CD2	2.21	0.71
3:A:1906:EDO:H11	8:A:2019:HOH:O	1.91	0.69
1:A:1749[B]:THR:HG21	1:A:1770:TYR:CZ	2.28	0.68
1:A:1787:TYR:O	5:A:1910:GOL:C1	2.42	0.67
3:A:1906:EDO:C1	8:A:2019:HOH:O	2.42	0.67
1:A:1776:ASN:ND2	1:A:1779:HIS:N	2.43	0.67
3:A:1905:EDO:H21	1:B:1617:PHE:HZ	1.61	0.65
1:A:1635:LYS:HB2	3:A:1902:EDO:H11	1.77	0.65
1:A:1732:ALA:H	3:B:1904:EDO:H11	1.63	0.62
1:B:1691:HIS:HB2	7:B:1906:PGE:H4	1.81	0.62
1:A:1613:LYS:CB	1:B:1623:LEU:CD2	2.75	0.62
1:A:1697:PHE:H	5:A:1910:GOL:C3	2.12	0.62
3:A:1905:EDO:H22	1:B:1690:PRO:HB3	1.81	0.62
1:A:1749[B]:THR:HG23	1:A:1770:TYR:CE1	2.35	0.62
1:A:1646:GLU:OE1	1:A:1735:ARG:NH1	2.34	0.61
1:A:1782[B]:LEU:C	1:A:1782[B]:LEU:CD2	2.70	0.60
1:B:1724:ASN:ND2	1:B:1726:THR:H	1.99	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1619:VAL:HG13	1:B:1649[B]:GLU:HG3	1.85	0.58
1:A:1731:ASP:HB2	3:B:1904:EDO:H11	1.86	0.57
1:B:1745[B]:THR:HG22	1:B:1748:TYR:CD2	2.39	0.57
1:A:1789:TYR:N	5:A:1910:GOL:C2	2.65	0.56
1:A:1696:GLY:HA3	5:A:1910:GOL:O3	2.06	0.56
1:A:1685:ASP:HB2	3:A:1906:EDO:H12	1.90	0.53
1:A:1628:GLU:OE1	1:A:1650:ARG:NH1	2.42	0.52
1:A:1749[B]:THR:CG2	1:A:1770:TYR:CZ	2.91	0.52
1:B:1628:GLU:OE1	1:B:1650:ARG:NH1	2.42	0.52
1:A:1693:ASN:OD1	3:A:1905:EDO:H12	2.12	0.50
1:B:1735:ARG:HB2	8:B:2014:HOH:O	2.12	0.49
1:B:1745[B]:THR:HG23	1:B:1783:PHE:CD2	2.47	0.49
1:A:1638:GLN:NE2	6:A:1913:SO4:O3	2.39	0.48
1:A:1778:HIS:HE1	8:A:2060:HOH:O	1.96	0.48
1:B:1691:HIS:CB	7:B:1906:PGE:H4	2.44	0.48
1:B:1701:TYR:HA	3:B:1903:EDO:H11	1.96	0.48
8:A:2042:HOH:O	1:B:1690:PRO:HG2	2.14	0.47
1:B:1745[B]:THR:HG23	1:B:1783:PHE:CE2	2.50	0.47
1:A:1776:ASN:HD22	1:A:1779:HIS:CA	2.28	0.47
1:B:1652:GLN:HB3	4:B:1907:PEG:H42	1.96	0.47
1:A:1749[B]:THR:CG2	1:A:1770:TYR:CE1	2.97	0.47
1:A:1705:ASN:HA	8:A:2046:HOH:O	2.16	0.46
1:B:1624:PRO:HA	1:B:1629:TYR:CD1	2.50	0.46
1:B:1652:GLN:HB3	4:B:1907:PEG:C4	2.45	0.46
1:B:1670:LYS:HE2	1:B:1671:ASN:OD1	2.15	0.46
1:A:1687:GLY:HA2	1:B:1686:ALA:HB1	1.97	0.46
1:A:1757:VAL:HB	1:A:1758:PRO:HD2	1.97	0.46
1:B:1757:VAL:HB	1:B:1758:PRO:HD2	1.97	0.46
1:A:1635:LYS:CB	3:A:1902:EDO:H11	2.45	0.45
1:A:1776:ASN:HD22	1:A:1779:HIS:HB2	1.81	0.45
1:B:1691:HIS:ND1	7:B:1906:PGE:C4	2.80	0.45
3:A:1905:EDO:H21	1:B:1617:PHE:CZ	2.47	0.45
1:A:1631:THR:HG23	4:A:1908:PEG:H31	1.99	0.45
1:A:1634:SER:HB3	3:A:1902:EDO:H22	1.99	0.44
1:B:1728:SER:O	1:B:1736:LYS:NZ	2.50	0.44
1:A:1735:ARG:NH1	3:A:1907:EDO:H12	2.33	0.43
1:A:1615:GLN:NE2	8:A:2004:HOH:O	2.35	0.43
1:A:1679:GLN:HA	1:A:1741:VAL:O	2.19	0.43
1:A:1776:ASN:HD22	1:A:1779:HIS:H	1.63	0.43
3:A:1905:EDO:H22	1:B:1690:PRO:CB	2.45	0.43
1:B:1679:GLN:HA	1:B:1741:VAL:O	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1778:HIS:CE1	8:A:2060:HOH:O	2.71	0.42
1:A:1678:LYS:HD3	8:A:2015:HOH:O	2.18	0.42
1:A:1776:ASN:ND2	1:A:1779:HIS:HB2	2.35	0.41
1:A:1638:GLN:NE2	6:A:1913:SO4:O2	2.53	0.41
1:A:1776:ASN:HD22	1:A:1779:HIS:N	2.13	0.41
1:A:1733:ASN:O	1:A:1800:ARG:NH1	2.53	0.41
1:A:1686:ALA:HB1	1:B:1687:GLY:HA2	2.02	0.40
1:B:1735:ARG:HD2	8:B:2063:HOH: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	182/194 (94%)	179 (98%)	3 (2%)	0	100	100
1	B	183/194 (94%)	179 (98%)	4 (2%)	0	100	100
All	All	365/388 (94%)	358 (98%)	7 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	163/170 (96%)	160 (98%)	3 (2%)	59	53

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	164/170 (96%)	162 (99%)	2 (1%)	71	68
All	All	327/340 (96%)	322 (98%)	5 (2%)	69	60

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1630[A]	ASN
1	A	1630[B]	ASN
1	A	1721	TYR
1	B	1721	TYR
1	B	1724	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	1693	ASN
1	A	1776	ASN
1	B	1615	GLN
1	B	1693	ASN
1	B	1724	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 monosaccharides in this entry.

5.6 Ligand geometry ⓘ

22 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
6	SO4	A	1911	-	4,4,4	0.36	0	6,6,6	0.07	0
2	TZ7	A	1901	-	22,23,23	1.34	3 (13%)	24,32,32	3.04	10 (41%)
3	EDO	B	1903	-	3,3,3	0.13	0	2,2,2	0.34	0
3	EDO	A	1906	-	3,3,3	0.71	0	2,2,2	0.52	0
5	GOL	B	1908	-	5,5,5	0.15	0	5,5,5	0.32	0
7	PGE	B	1906	-	9,9,9	0.30	0	8,8,8	0.40	0
5	GOL	A	1909	-	5,5,5	0.12	0	5,5,5	0.40	0
3	EDO	A	1905	-	3,3,3	0.79	0	2,2,2	0.31	0
3	EDO	B	1905	-	3,3,3	0.20	0	2,2,2	0.16	0
5	GOL	A	1910	-	5,5,5	0.12	0	5,5,5	0.44	0
4	PEG	B	1907	-	6,6,6	0.16	0	5,5,5	0.28	0
6	SO4	A	1913	-	4,4,4	0.39	0	6,6,6	0.08	0
4	PEG	A	1908	-	6,6,6	0.27	0	5,5,5	0.12	0
3	EDO	A	1907	-	3,3,3	0.09	0	2,2,2	0.33	0
3	EDO	A	1903	-	3,3,3	0.13	0	2,2,2	0.24	0
3	EDO	A	1904	-	3,3,3	0.10	0	2,2,2	0.23	0
3	EDO	B	1904	-	3,3,3	0.16	0	2,2,2	0.92	0
6	SO4	A	1912	-	4,4,4	0.39	0	6,6,6	0.09	0
3	EDO	B	1902	-	3,3,3	0.08	0	2,2,2	0.26	0
5	GOL	B	1909	-	5,5,5	0.13	0	5,5,5	0.45	0
3	EDO	A	1902	-	3,3,3	0.54	0	2,2,2	0.69	0
2	TZ7	B	1901	-	22,23,23	1.62	3 (13%)	24,32,32	3.42	10 (41%)

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	TZ7	A	1901	-	-	0/5/15/15	0/3/3/3
3	EDO	B	1903	-	-	0/1/1/1	-
3	EDO	A	1906	-	-	1/1/1/1	-
7	PGE	B	1906	-	-	5/7/7/7	-
5	GOL	B	1908	-	-	2/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	GOL	A	1909	-	-	4/4/4/4	-
3	EDO	A	1905	-	-	0/1/1/1	-
3	EDO	B	1905	-	-	0/1/1/1	-
5	GOL	A	1910	-	-	2/4/4/4	-
4	PEG	B	1907	-	-	3/4/4/4	-
4	PEG	A	1908	-	-	2/4/4/4	-
3	EDO	A	1907	-	-	1/1/1/1	-
3	EDO	A	1903	-	-	1/1/1/1	-
3	EDO	A	1904	-	-	1/1/1/1	-
3	EDO	B	1904	-	-	0/1/1/1	-
3	EDO	B	1902	-	-	1/1/1/1	-
5	GOL	B	1909	-	-	0/4/4/4	-
3	EDO	A	1902	-	-	1/1/1/1	-
2	TZ7	B	1901	-	-	1/5/15/15	0/3/3/3

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1901	TZ7	C10-C9	4.58	1.55	1.50
2	B	1901	TZ7	C9-N19	3.54	1.38	1.33
2	B	1901	TZ7	C20-N19	3.16	1.38	1.33
2	A	1901	TZ7	C9-N19	3.08	1.38	1.33
2	A	1901	TZ7	C12-S11	-2.52	1.78	1.83
2	A	1901	TZ7	C10-C9	2.51	1.53	1.50

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	1901	TZ7	C6-C20-N19	-10.44	117.12	124.40
2	A	1901	TZ7	C6-C20-N19	-9.13	118.03	124.40
2	A	1901	TZ7	C9-N8-C7	7.97	121.83	115.45
2	B	1901	TZ7	C9-N8-C7	7.83	121.73	115.45
2	B	1901	TZ7	C5-C6-C7	4.66	122.13	118.14
2	B	1901	TZ7	C13-C14-C15	-4.21	104.41	111.61
2	B	1901	TZ7	N8-C9-N19	-4.11	120.63	126.06
2	B	1901	TZ7	C20-C6-C7	-3.92	117.03	119.98
2	A	1901	TZ7	C20-C6-C7	-3.72	117.18	119.98
2	A	1901	TZ7	C13-C14-C15	-3.20	106.13	111.61
2	A	1901	TZ7	N8-C9-N19	-3.00	122.09	126.06
2	A	1901	TZ7	C18-C17-C15	-2.87	106.71	111.61
2	A	1901	TZ7	C6-C7-N8	-2.85	119.40	123.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	1901	TZ7	C2-C7-C6	-2.77	117.61	120.00
2	B	1901	TZ7	C2-C7-N8	2.62	121.18	118.12
2	A	1901	TZ7	C17-C18-C12	-2.41	106.38	113.34
2	B	1901	TZ7	C18-C17-C15	-2.39	107.53	111.61
2	A	1901	TZ7	C14-C13-C12	-2.36	106.53	113.34
2	B	1901	TZ7	C10-S11-C12	2.33	105.84	101.67
2	A	1901	TZ7	C2-C7-N8	2.30	120.81	118.12

There are no chirality outliers.

All (25) torsion outliers are listed below:

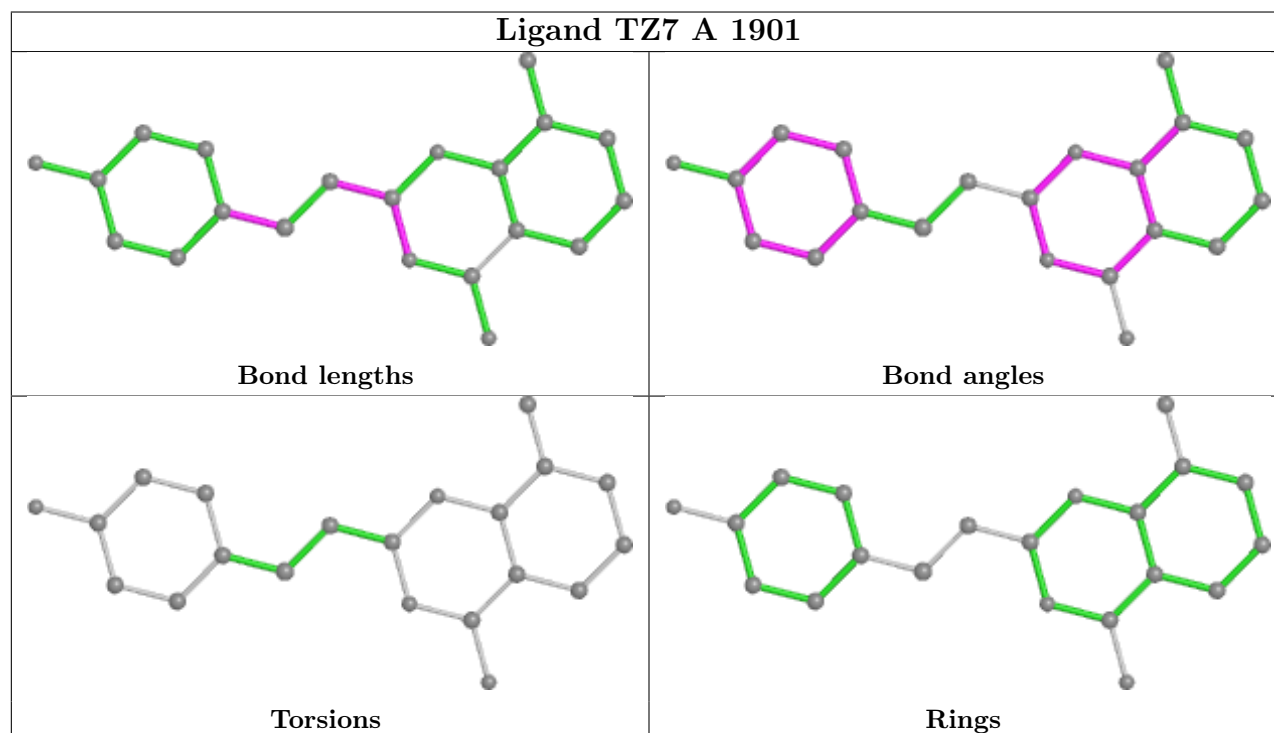
Mol	Chain	Res	Type	Atoms
5	A	1909	GOL	C1-C2-C3-O3
5	B	1908	GOL	O1-C1-C2-C3
7	B	1906	PGE	O3-C5-C6-O4
4	B	1907	PEG	O2-C3-C4-O4
5	A	1909	GOL	O1-C1-C2-C3
5	A	1910	GOL	O1-C1-C2-C3
4	A	1908	PEG	O2-C3-C4-O4
5	A	1909	GOL	O1-C1-C2-O2
5	B	1908	GOL	O1-C1-C2-O2
3	A	1903	EDO	O1-C1-C2-O2
3	A	1904	EDO	O1-C1-C2-O2
3	A	1906	EDO	O1-C1-C2-O2
5	A	1909	GOL	O2-C2-C3-O3
7	B	1906	PGE	O1-C1-C2-O2
3	A	1902	EDO	O1-C1-C2-O2
4	A	1908	PEG	O1-C1-C2-O2
5	A	1910	GOL	O1-C1-C2-O2
7	B	1906	PGE	C1-C2-O2-C3
4	B	1907	PEG	C4-C3-O2-C2
2	B	1901	TZ7	C13-C12-S11-C10
7	B	1906	PGE	O2-C3-C4-O3
4	B	1907	PEG	C1-C2-O2-C3
3	A	1907	EDO	O1-C1-C2-O2
7	B	1906	PGE	C3-C4-O3-C5
3	B	1902	EDO	O1-C1-C2-O2

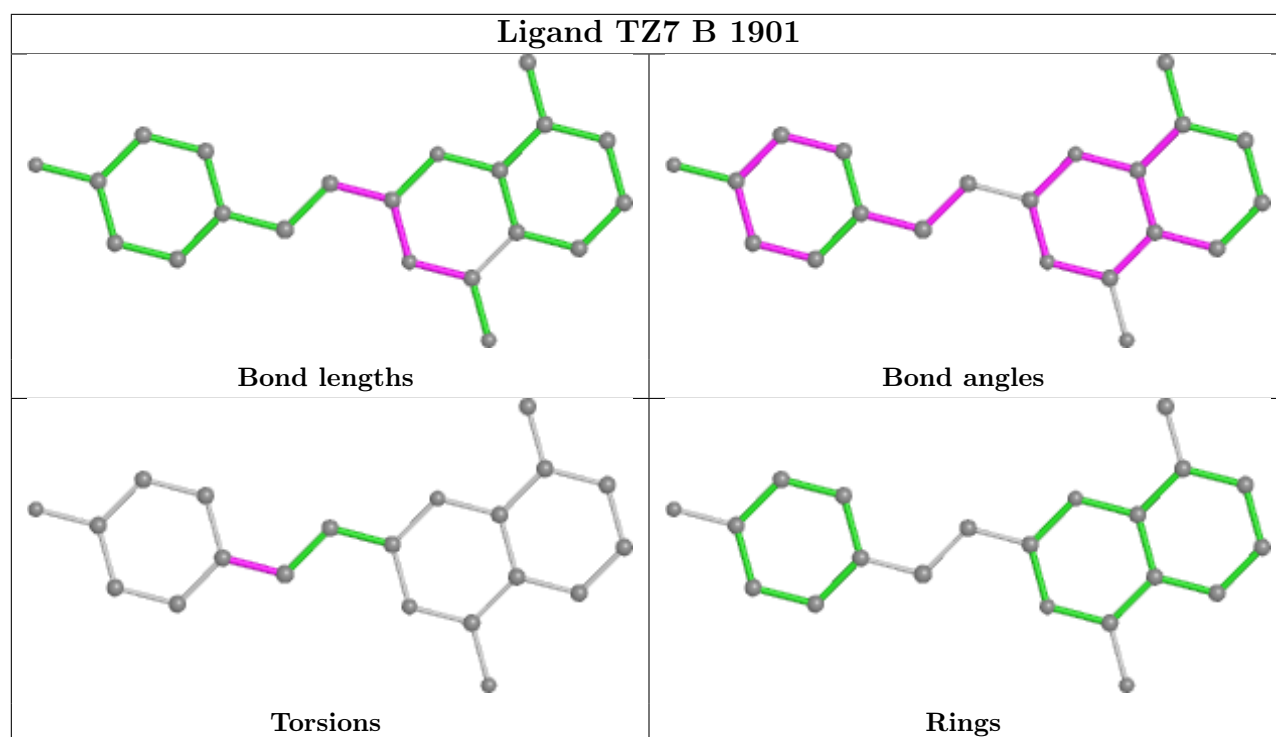
There are no ring outliers.

11 monomers are involved in 33 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	1903	EDO	1	0
3	A	1906	EDO	4	0
7	B	1906	PGE	3	0
3	A	1905	EDO	5	0
5	A	1910	GOL	9	0
4	B	1907	PEG	2	0
6	A	1913	SO4	2	0
4	A	1908	PEG	1	0
3	A	1907	EDO	1	0
3	B	1904	EDO	3	0
3	A	1902	EDO	3	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.





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	180/194 (92%)	0.80	16 (8%)	9 15	25, 39, 74, 94	0
1	B	181/194 (93%)	0.89	25 (13%)	2 4	25, 42, 79, 109	0
All	All	361/388 (93%)	0.85	41 (11%)	5 8	25, 41, 75, 109	0

All (41) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	1769	LEU	7.1
1	B	1751	GLY	6.3
1	A	1756	ILE	6.1
1	B	1768	ASP	4.7
1	B	1756	ILE	4.5
1	A	1704[A]	LYS	4.0
1	A	1751	GLY	3.9
1	A	1769	LEU	3.8
1	B	1686	ALA	3.6
1	A	1770	TYR	3.5
1	B	1732	ALA	3.5
1	B	1770	TYR	3.3
1	A	1754	SER	3.2
1	A	1721	TYR	3.1
1	B	1613	LYS	3.1
1	B	1757	VAL	3.1
1	B	1787	TYR	3.1
1	B	1733[A]	ASN	3.0
1	B	1721	TYR	2.8
1	A	1686	ALA	2.8
1	B	1754	SER	2.8
1	A	1687	GLY	2.8
1	A	1740	TYR	2.8
1	B	1753	HIS	2.7

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Mol	Chain	Res	Type	RSRZ
1	B	1687	GLY	2.7
1	B	1752	ASN	2.7
1	B	1730	PRO	2.7
1	B	1778	HIS	2.6
1	B	1758	PRO	2.6
1	A	1730	PRO	2.5
1	A	1684	THR	2.5
1	B	1684	THR	2.5
1	B	1759	PRO	2.3
1	A	1699	ARG	2.3
1	B	1699	ARG	2.2
1	B	1729	ARG	2.2
1	B	1755	LEU	2.2
1	B	1747	ILE	2.1
1	A	1726	THR	2.1
1	A	1757	VAL	2.0
1	A	1724	ASN	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.

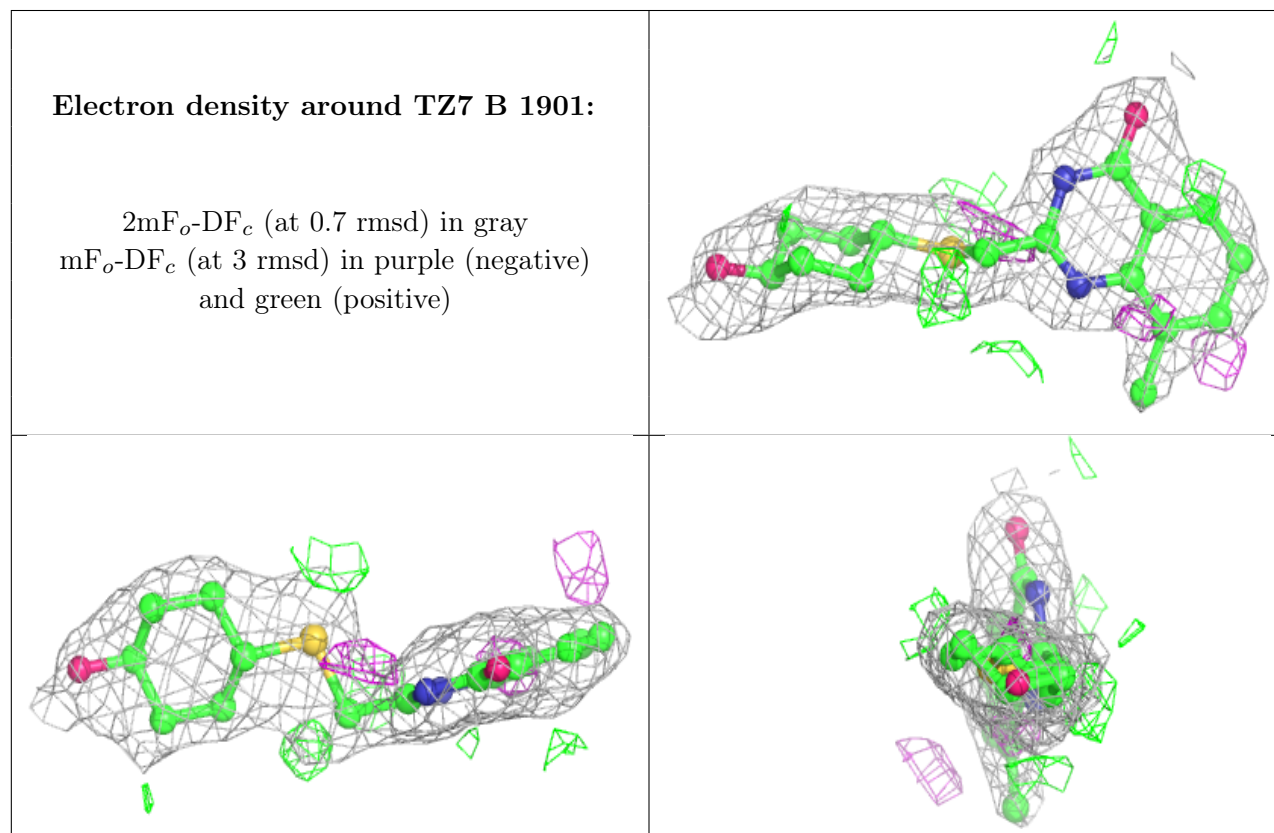
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
3	EDO	B	1902	4/4	0.58	0.17	68,74,75,76	0
3	EDO	A	1907	4/4	0.72	0.22	72,72,73,74	0
5	GOL	B	1909	6/6	0.73	0.37	40,51,59,59	0
5	GOL	A	1910	6/6	0.76	0.23	59,64,70,73	0
3	EDO	B	1903	4/4	0.77	0.29	66,68,68,73	0
6	SO4	A	1911	5/5	0.77	0.39	87,93,98,105	0

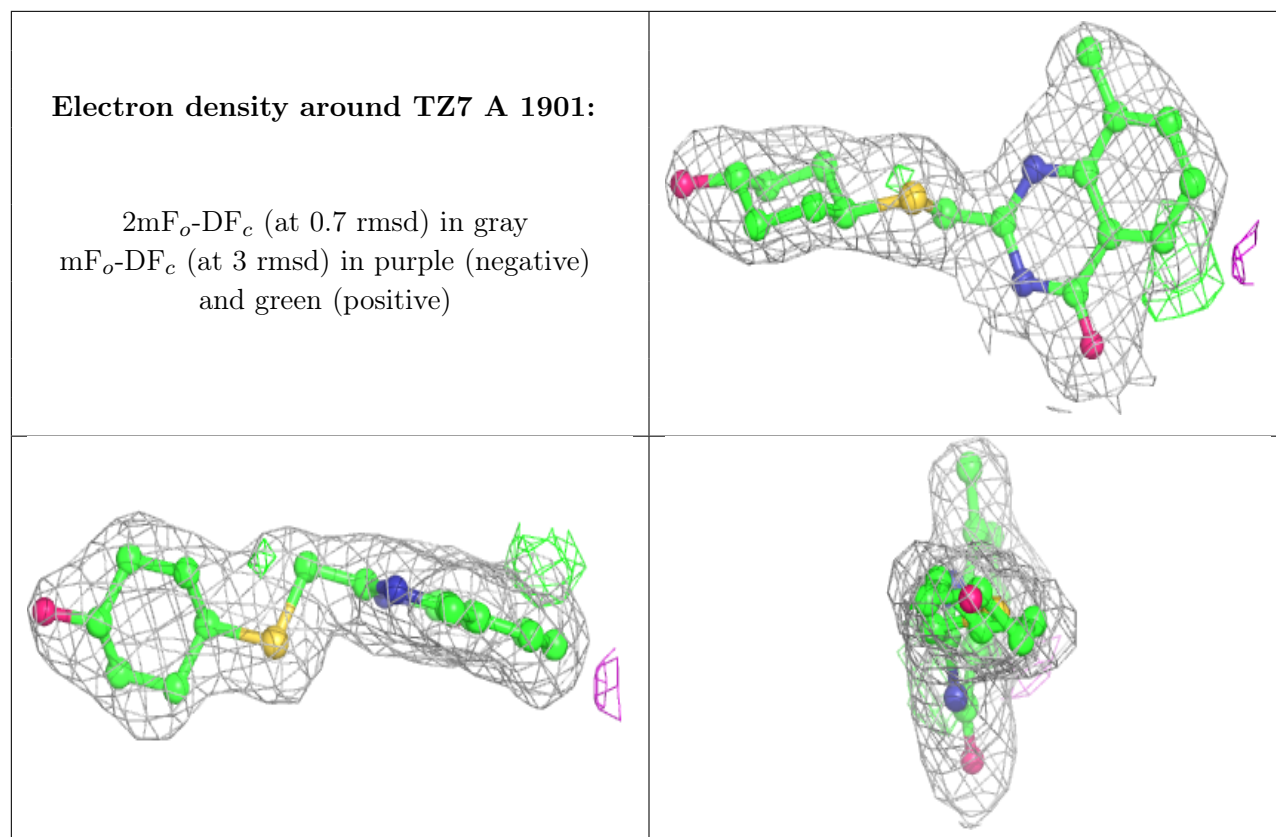
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
6	SO4	A	1913	5/5	0.78	0.32	108,112,121,129	0
4	PEG	A	1908	7/7	0.79	0.21	58,63,66,70	0
3	EDO	A	1902	4/4	0.80	0.22	52,53,55,56	0
7	PGE	B	1906	10/10	0.82	0.19	50,66,73,78	0
4	PEG	B	1907	7/7	0.83	0.14	56,57,63,64	0
3	EDO	A	1903	4/4	0.83	0.14	57,66,67,74	0
3	EDO	A	1904	4/4	0.84	0.20	61,62,63,65	0
5	GOL	A	1909	6/6	0.86	0.10	50,54,56,58	0
3	EDO	B	1905	4/4	0.86	0.23	55,61,62,65	0
2	TZ7	B	1901	21/21	0.89	0.17	33,42,47,51	0
5	GOL	B	1908	6/6	0.89	0.15	60,64,65,67	0
3	EDO	A	1906	4/4	0.90	0.28	35,43,51,53	0
3	EDO	B	1904	4/4	0.90	0.29	41,50,51,56	0
3	EDO	A	1905	4/4	0.95	0.15	25,40,41,43	0
2	TZ7	A	1901	21/21	0.95	0.18	29,39,45,54	0
6	SO4	A	1912	5/5	0.98	0.26	48,50,54,59	5

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.





6.5 Other polymers [i](#)

There are no such residues in this entry.