WORLDWIDE PDB

PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Nov 16, 2023 – 05:19 AM JST

PDB ID	:	6KZE
Title	:	The crystal structue of PDE10A complexed with 4d
Authors	:	Yang, Y.; Zhang, S.; Zhou, Q.; Huang, Y.-Y.; Guo, L.; Luo, H.-B.
Deposited on	:	2019-09-24
Resolution	:	2.50 Å(reported)

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

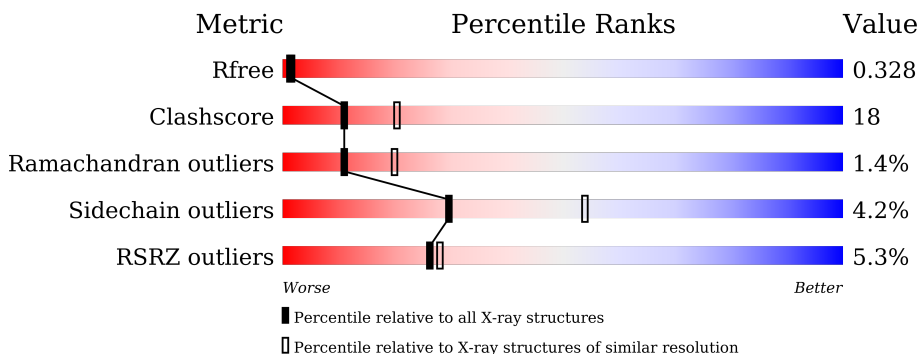|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 2.50 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	Percentile Ranks	Value
Rfree		0.328
Clashscore		18
Ramachandran outliers		1.4%
Sidechain outliers		4.2%
RSRZ outliers		5.3%

Worse ← → Better

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)
RSRZ outliers	127900	4559 (2.50-2.50)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	322	4% 59% 33% · 5%
1	B	322	6% 59% 38% ··

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2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 5236 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 cAMP and cAMP-inhibited cGMP 3',5'-cyclic phosphodiesterase 10A.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	306	Total	C	N	O	S	0	0	0
			2479	1585	424	448	22			
1	B	319	Total	C	N	O	S	0	0	0
			2589	1655	440	470	24			

- Molecule 2 is 8-[(E)-2-[5-methyl-1-[3-[3-(4-methylpiperazin-1-yl)propoxy]phenyl]benzimidazol-2-yl]ethenyl]quinoline (three-letter code: DZU) (formula: $C_{33}H_{35}N_5O$) (labeled as "Ligand of Interest" by depositor).
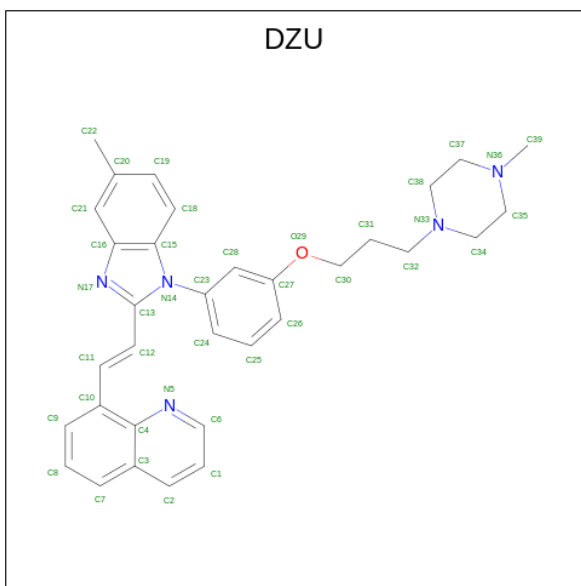
DZU

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			39	33	5	1		
2	B	1	Total	C	N	O	0	0
			39	33	5	1		

- Molecule 3 is ZINC ION (three-letter code: ZN) (formula: Zn).

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

- Molecule 4 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	46	Total 46	O 46	0	0
5	B	40	Total 40	O 40	0	0

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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: cAMP and cAMP-inhibited cGMP 3',5'-cyclic phosphodiesterase 10A
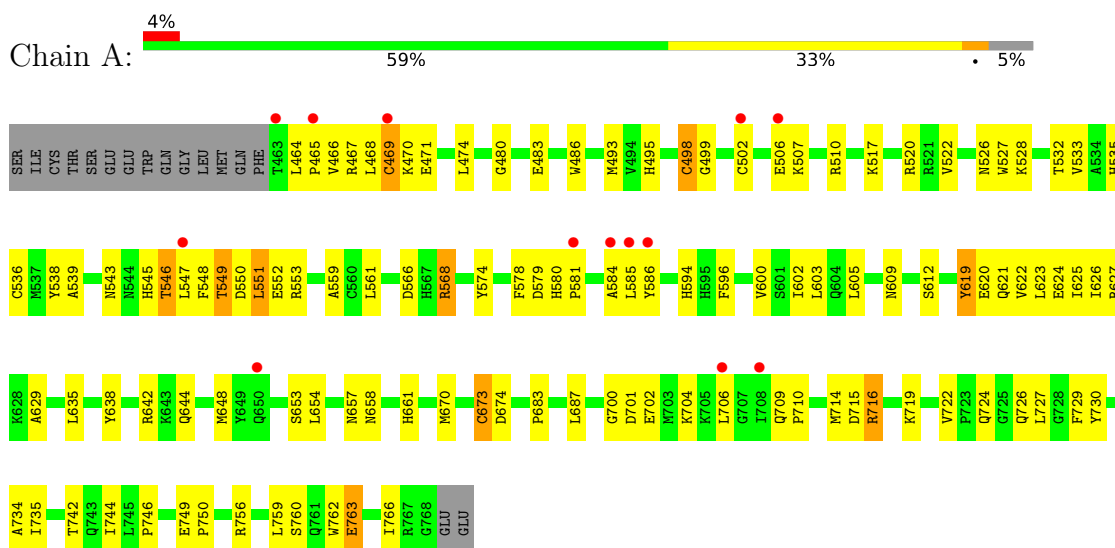
• Molecule 1: cAMP and cAMP-inhibited cGMP 3',5'-cyclic phosphodiesterase 10A
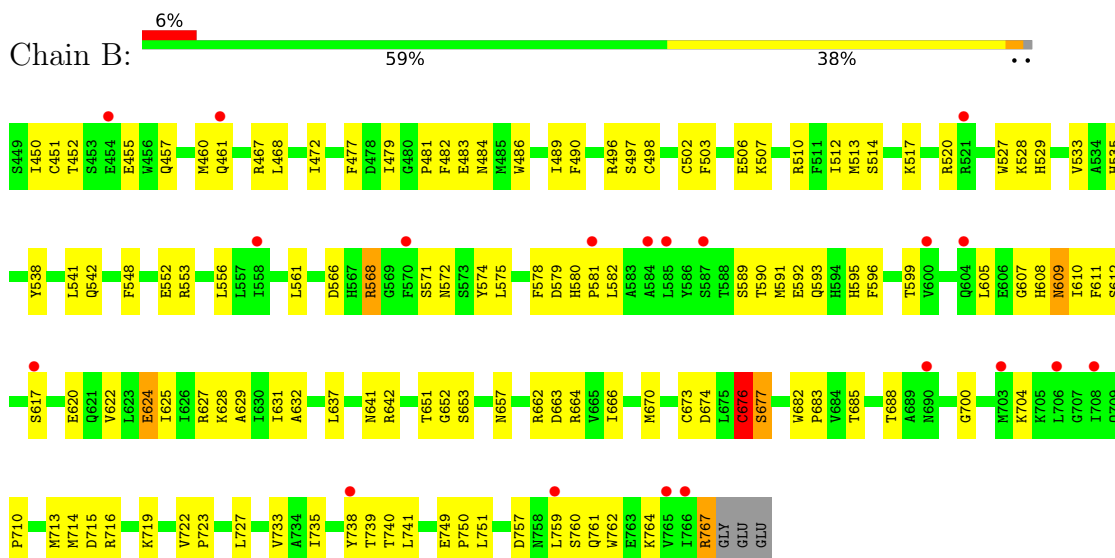
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	49.49Å 81.15Å 162.13Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	22.27 – 2.50 22.27 – 2.50	Depositor EDS
% Data completeness (in resolution range)	99.1 (22.27-2.50) 99.1 (22.27-2.50)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.85 (at 2.50Å)	Xtriage
Refinement program	PHENIX 1.10_2155	Depositor
R, R_{free}	0.242 , 0.328 0.243 , 0.328	Depositor DCC
R_{free} test set	1107 reflections (4.79%)	wwPDB-VP
Wilson B-factor (Å^2)	39.7	Xtriage
Anisotropy	0.172	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 50.1	EDS
L-test for twinning[2]	$< |L| > = 0.43, < L^2 > = 0.26$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	5236	wwPDB-VP
Average B, all atoms (Å^2)	43.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.15% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5   Model quality ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: DZU, ZN, MG

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	0.57	1/2540 (0.0%)	0.64	0/3440
1	B	0.65	3/2653 (0.1%)	0.67	0/3593
All	All	0.61	4/5193 (0.1%)	0.66	0/7033

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	673	CYS	CB-SG	-5.78	1.72	1.81
1	B	767	ARG	NE-CZ	-5.58	1.25	1.33
1	B	767	ARG	CZ-NH2	-5.43	1.25	1.33
1	B	767	ARG	CZ-NH1	-5.08	1.26	1.33

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	2479	0	2457	83	0
1	B	2589	0	2557	103	0
2	A	39	0	0	2	0
2	B	39	0	0	3	0
3	A	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	1	0	0	0	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
5	A	46	0	0	6	0
5	B	40	0	0	10	0
All	All	5236	0	5014	184	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 18.

All (184) 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:551:LEU:CD2	1:A:622:VAL:HG12	1.46	1.42
1:A:551:LEU:HD21	1:A:622:VAL:CG1	1.57	1.31
1:A:551:LEU:HD23	1:A:622:VAL:HG12	1.28	1.15
1:A:551:LEU:HD21	1:A:622:VAL:HG12	1.13	0.99
1:A:551:LEU:CD2	1:A:622:VAL:CG1	2.27	0.98
1:B:727:LEU:HD12	1:B:759:LEU:HD11	1.48	0.95
1:A:551:LEU:HD21	1:A:622:VAL:HG13	1.48	0.94
1:A:704:LYS:HD3	1:A:710:PRO:HD3	1.51	0.92
1:B:716:ARG:HG2	1:B:719:LYS:HE2	1.56	0.88
1:B:674:ASP:OD2	5:B:901:HOH:O	1.97	0.79
1:B:498:CYS:O	1:B:502:CYS:HB2	1.84	0.78
1:B:641:ASN:HA	1:B:664:ARG:NH2	2.03	0.74
1:A:760:SER:OG	1:B:467:ARG:NH2	2.22	0.72
1:B:517:LYS:NZ	5:B:902:HOH:O	2.20	0.72
1:A:546:THR:HG23	1:A:547:LEU:HD12	1.71	0.72
1:A:568:ARG:NH1	5:A:902:HOH:O	2.22	0.71
1:B:609:ASN:HD21	1:B:611:PHE:HB2	1.55	0.71
1:A:539:ALA:O	1:A:543:ASN:ND2	2.25	0.69
1:B:629:ALA:HB1	1:B:670:MET:CE	2.23	0.68
1:B:574:TYR:HD1	1:B:575:LEU:HD23	1.59	0.68
1:A:483:GLU:HA	1:A:486:TRP:CE2	2.30	0.67
1:B:710:PRO:HG2	1:B:715:ASP:OD2	1.94	0.67
1:B:735:ILE:O	1:B:739:THR:HG23	1.95	0.67
1:B:506:GLU:OE1	1:B:510:ARG:NH1	2.25	0.67
1:B:727:LEU:HD12	1:B:759:LEU:CD1	2.22	0.67
1:A:581:PRO:O	1:A:584:ALA:HB3	1.95	0.66
1:B:506:GLU:HB2	5:B:933:HOH:O	1.96	0.66
1:A:756:ARG:NH2	5:A:905:HOH:O	2.27	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:651:THR:O	1:B:653:SER:N	2.30	0.65
1:B:503:PHE:CD1	1:B:610:ILE:HB	2.32	0.64
1:B:520:ARG:NH1	1:B:566:ASP:OD1	2.28	0.64
1:A:506:GLU:OE1	1:A:510:ARG:NH2	2.30	0.64
1:B:529:HIS:CE1	1:B:674:ASP:OD1	2.49	0.63
1:A:749:GLU:HG3	1:A:750:PRO:HD3	1.80	0.63
1:B:738:TYR:CD1	1:B:751:LEU:HB3	2.33	0.63
1:A:495:HIS:HA	1:A:499:GLY:O	1.99	0.62
1:A:498:CYS:HB2	1:A:502:CYS:SG	2.38	0.62
1:B:506:GLU:O	1:B:510:ARG:HG3	1.99	0.62
1:A:704:LYS:NZ	1:A:709:GLN:HA	2.14	0.61
1:B:713:MET:HG2	2:B:801:DZU:C16	2.32	0.60
1:B:548:PHE:O	1:B:553:ARG:NH1	2.34	0.60
1:B:533:VAL:CG2	1:B:674:ASP:HA	2.31	0.60
1:B:578:PHE:O	1:B:580:HIS:N	2.35	0.60
1:B:566:ASP:OD2	1:B:568:ARG:NH1	2.33	0.59
1:B:704:LYS:HE3	1:B:710:PRO:HG3	1.85	0.58
1:B:477:PHE:HE2	1:B:479:ILE:HG22	1.68	0.58
1:B:486:TRP:CH2	1:B:528:LYS:HB2	2.39	0.58
1:A:507:LYS:NZ	1:A:612:SER:OG	2.35	0.58
1:B:483:GLU:HA	1:B:486:TRP:CE2	2.39	0.58
1:A:470:LYS:NZ	1:A:474:LEU:HD21	2.19	0.57
1:A:580:HIS:CE1	5:A:902:HOH:O	2.57	0.57
1:A:549:THR:OG1	1:A:552:GLU:HB2	2.05	0.57
1:A:683:PRO:O	1:A:687:LEU:HG	2.05	0.56
1:A:704:LYS:CD	1:A:710:PRO:HD3	2.29	0.56
1:A:468:LEU:O	1:A:471:GLU:N	2.38	0.56
1:B:641:ASN:HA	1:B:664:ARG:HH22	1.70	0.55
1:A:520:ARG:NE	1:A:566:ASP:OD1	2.24	0.55
1:A:493:MET:SD	1:A:535:HIS:HA	2.47	0.55
1:B:507:LYS:HE3	1:B:607:GLY:O	2.06	0.55
1:B:533:VAL:HG22	1:B:673:CYS:O	2.06	0.54
1:B:605:LEU:HB2	1:B:608:HIS:HB2	1.89	0.54
1:B:710:PRO:HA	5:B:906:HOH:O	2.07	0.54
1:A:756:ARG:NH2	5:A:911:HOH:O	2.39	0.54
1:B:700:GLY:HA3	1:B:714:MET:O	2.07	0.54
1:B:589:SER:O	1:B:593:GLN:HG3	2.07	0.54
1:B:541:LEU:HD13	1:B:553:ARG:HG2	1.90	0.54
1:B:629:ALA:HB1	1:B:670:MET:HE2	1.87	0.54
1:A:724:GLN:HA	1:A:766:ILE:HD11	1.90	0.53
1:B:481:PRO:HG2	1:B:482:PHE:CE2	2.43	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:477:PHE:CE2	1:B:479:ILE:HG22	2.44	0.53
1:A:549:THR:O	1:A:553:ARG:HG3	2.09	0.52
1:A:464:LEU:HD21	1:A:468:LEU:HD12	1.91	0.52
1:A:702:GLU:O	1:A:706:LEU:HD12	2.10	0.52
1:B:764:LYS:HA	1:B:767:ARG:HG2	1.90	0.52
1:B:533:VAL:HG22	1:B:674:ASP:HA	1.90	0.51
1:B:628:LYS:NZ	1:B:663:ASP:OD2	2.38	0.50
1:A:701:ASP:OD1	1:A:716:ARG:NH1	2.44	0.50
1:A:624:GLU:OE2	1:A:627:ARG:NH2	2.42	0.50
1:B:572:ASN:OD1	1:B:590:THR:N	2.45	0.50
1:A:727:LEU:HD23	1:B:683:PRO:HB2	1.94	0.49
1:B:568:ARG:NH2	1:B:582:LEU:HD11	2.27	0.49
1:B:490:PHE:CE2	1:B:561:LEU:HD22	2.47	0.49
1:A:730:TYR:HA	1:A:734:ALA:HB3	1.92	0.49
1:A:483:GLU:HA	1:A:486:TRP:CD2	2.47	0.49
1:B:624:GLU:OE2	1:B:627:ARG:NH2	2.30	0.49
1:B:760:SER:O	1:B:764:LYS:HG2	2.13	0.49
1:A:704:LYS:HZ2	1:A:709:GLN:HA	1.77	0.49
1:B:677:SER:HB3	1:B:688:THR:HG21	1.94	0.49
1:A:704:LYS:NZ	1:A:709:GLN:CA	2.76	0.48
1:B:533:VAL:HG21	1:B:674:ASP:HA	1.93	0.48
1:A:596:PHE:O	1:A:600:VAL:HG23	2.13	0.48
1:A:466:VAL:O	1:A:469:CYS:HB2	2.13	0.48
1:A:522:VAL:HG23	1:A:526:ASN:HB3	1.95	0.48
1:A:602:ILE:O	1:A:605:LEU:HB2	2.13	0.47
1:B:457:GLN:O	1:B:461:GLN:OE1	2.31	0.47
1:A:620:GLU:HA	1:A:623:LEU:HD23	1.95	0.47
1:A:629:ALA:HB1	1:A:670:MET:HG3	1.95	0.47
1:B:552:GLU:O	1:B:556:LEU:HG	2.14	0.47
1:B:605:LEU:HB2	1:B:608:HIS:CG	2.50	0.47
1:B:727:LEU:CD1	1:B:759:LEU:HD11	2.31	0.47
2:B:801:DZU:C12	2:B:801:DZU:C28	2.92	0.47
1:A:548:PHE:C	1:A:549:THR:O	2.49	0.47
1:B:542:GLN:HA	5:B:903:HOH:O	2.13	0.47
1:A:602:ILE:HA	1:A:605:LEU:HD13	1.96	0.47
1:B:676:CYS:HA	1:B:738:TYR:OH	2.15	0.47
1:B:457:GLN:O	1:B:460:MET:N	2.48	0.46
1:A:596:PHE:CD2	1:A:627:ARG:HG3	2.50	0.46
1:B:496:ARG:HA	1:B:496:ARG:HD2	1.82	0.46
1:B:592:GLU:HA	1:B:595:HIS:CD2	2.51	0.46
1:A:574:TYR:CE2	1:A:578:PHE:HE2	2.34	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:764:LYS:NZ	5:B:910:HOH:O	2.48	0.46
1:A:533:VAL:HG22	1:A:674:ASP:HA	1.98	0.45
1:B:568:ARG:HH21	1:B:582:LEU:HD11	1.81	0.45
1:B:452:THR:HG23	5:B:902:HOH:O	2.16	0.45
1:A:559:ALA:HB2	1:A:626:ILE:HG12	1.98	0.45
1:A:658:ASN:HB3	1:A:661:HIS:HB2	1.98	0.45
1:B:510:ARG:HE	1:B:607:GLY:HA3	1.81	0.45
1:A:729:PHE:HB2	2:A:801:DZU:C24	2.46	0.45
1:B:592:GLU:OE1	1:B:592:GLU:N	2.31	0.45
1:A:709:GLN:NE2	1:A:715:ASP:OD2	2.50	0.45
1:A:603:LEU:HD22	1:A:609:ASN:HA	1.99	0.44
1:A:653:SER:O	1:A:661:HIS:HE1	1.99	0.44
1:B:657:ASN:ND2	5:B:913:HOH:O	2.50	0.44
1:A:536:CYS:SG	1:A:673:CYS:HA	2.57	0.44
2:A:801:DZU:C24	2:A:801:DZU:C12	2.95	0.44
1:B:662:ARG:O	1:B:666:ILE:HG13	2.18	0.44
1:B:472:ILE:HD13	1:B:489:ILE:HG23	1.98	0.44
1:A:724:GLN:HB2	1:B:683:PRO:HG3	2.00	0.44
1:A:730:TYR:HB3	1:A:759:LEU:HD12	2.00	0.44
1:B:760:SER:O	1:B:764:LYS:HE3	2.17	0.44
1:A:535:HIS:O	1:A:538:TYR:HB3	2.18	0.44
1:B:450:ILE:HD12	1:B:605:LEU:HD13	2.00	0.44
1:B:580:HIS:CE1	1:B:582:LEU:HG	2.53	0.44
1:B:722:VAL:CB	1:B:723:PRO:HD3	2.48	0.44
1:A:527:TRP:CZ3	1:A:561:LEU:HD11	2.53	0.43
1:B:628:LYS:O	1:B:632:ALA:N	2.50	0.43
1:A:742:THR:HG23	1:A:749:GLU:HB3	2.01	0.43
1:A:744:ILE:O	1:A:746:PRO:HD3	2.19	0.43
1:A:464:LEU:HD23	1:A:465:PRO:O	2.19	0.43
1:B:592:GLU:HA	1:B:595:HIS:HD2	1.84	0.43
1:A:470:LYS:HZ1	1:A:474:LEU:HD21	1.82	0.43
1:A:586:TYR:CE2	1:A:594:HIS:HB2	2.54	0.43
1:A:726:GLN:HG3	1:A:762:TRP:CE2	2.54	0.43
1:B:580:HIS:CD2	1:B:581:PRO:HD2	2.54	0.43
1:A:735:ILE:HG21	1:B:481:PRO:HA	2.01	0.43
1:B:490:PHE:HD2	1:B:512:ILE:CD1	2.31	0.43
1:B:479:ILE:HG23	5:B:930:HOH:O	2.19	0.42
1:A:719:LYS:O	1:A:722:VAL:HB	2.19	0.42
1:B:591:MET:O	1:B:595:HIS:CD2	2.72	0.42
1:B:682:TRP:HA	1:B:685:THR:HB	2.02	0.42
1:B:574:TYR:CD1	1:B:575:LEU:HD23	2.48	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:596:PHE:O	1:B:599:THR:HB	2.19	0.42
1:A:619:TYR:O	1:A:621:GLN:N	2.53	0.42
1:B:617:SER:O	1:B:620:GLU:HG2	2.19	0.42
1:B:484:ASN:ND2	5:B:907:HOH:O	2.44	0.42
1:A:532:THR:HG23	5:A:930:HOH:O	2.20	0.42
1:A:700:GLY:HA3	1:A:714:MET:O	2.20	0.42
1:B:571:SER:HB2	2:B:801:DZU:C37	2.50	0.42
1:B:605:LEU:HD12	1:B:608:HIS:CD2	2.55	0.42
1:B:637:LEU:HD23	1:B:637:LEU:HA	1.73	0.42
1:A:464:LEU:HG	1:A:465:PRO:HD2	2.01	0.41
1:B:455:GLU:HB3	1:B:513:MET:HE2	2.02	0.41
1:B:610:ILE:H	1:B:610:ILE:HG12	1.57	0.41
1:A:644:GLN:O	1:A:648:MET:HG3	2.20	0.41
1:A:654:LEU:O	5:A:901:HOH:O	2.21	0.41
1:A:603:LEU:HD23	1:A:603:LEU:HA	1.91	0.41
1:B:535:HIS:O	1:B:538:TYR:HB3	2.20	0.41
1:B:593:GLN:HG2	1:B:631:ILE:HD12	2.02	0.41
1:B:749:GLU:N	1:B:750:PRO:CD	2.83	0.41
1:A:480:GLY:HA2	1:A:528:LYS:HE3	2.02	0.41
1:A:621:GLN:O	1:A:625:ILE:HD12	2.20	0.41
1:A:727:LEU:HD11	1:A:763:GLU:HG3	2.02	0.41
1:A:546:THR:HG23	1:A:547:LEU:CD1	2.46	0.41
1:B:757:ASP:N	1:B:757:ASP:OD1	2.52	0.41
1:A:749:GLU:N	1:A:750:PRO:CD	2.85	0.40
1:B:757:ASP:O	1:B:761:GLN:HG2	2.22	0.40
1:B:741:LEU:O	1:B:741:LEU:HG	2.21	0.40
1:B:762:TRP:CE3	1:B:762:TRP:HA	2.57	0.40
1:B:468:LEU:O	1:B:472:ILE:HG13	2.21	0.40
1:A:580:HIS:ND1	1:A:581:PRO:HD2	2.36	0.40
1:B:451:CYS:HB2	1:B:455:GLU:OE2	2.21	0.40
1:B:486:TRP:HE3	1:B:527:TRP:CD1	2.38	0.40
1:B:507:LYS:HE2	1:B:609:ASN:O	2.21	0.40
1:B:622:VAL:HA	1:B:625:ILE:HD12	2.04	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	304/322 (94%)	275 (90%)	24 (8%)	5 (2%)	9	17
1	B	317/322 (98%)	294 (93%)	19 (6%)	4 (1%)	12	21
All	All	621/644 (96%)	569 (92%)	43 (7%)	9 (1%)	11	20

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	545	HIS
1	B	579	ASP
1	B	652	GLY
1	B	676	CYS
1	A	579	ASP
1	A	469	CYS
1	A	549	THR
1	A	619	TYR
1	B	733	VAL

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	276/291 (95%)	262 (95%)	14 (5%)	24	45
1	B	289/291 (99%)	279 (96%)	10 (4%)	36	62
All	All	565/582 (97%)	541 (96%)	24 (4%)	30	54

All (24) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	467	ARG
1	A	498	CYS
1	A	517	LYS
1	A	546	THR
1	A	550	ASP
1	A	551	LEU
1	A	568	ARG
1	A	585	LEU
1	A	635	LEU
1	A	638	TYR
1	A	642	ARG
1	A	657	ASN
1	A	716	ARG
1	A	763	GLU
1	B	497	SER
1	B	514	SER
1	B	568	ARG
1	B	609	ASN
1	B	612	SER
1	B	624	GLU
1	B	642	ARG
1	B	676	CYS
1	B	677	SER
1	B	740	THR

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	726	GLN
1	B	580	HIS
1	B	609	ASN
1	B	659	GLN
1	B	726	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 ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 6 ligands modelled in this entry, 4 are monoatomic - leaving 2 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	$\#|Z| > 2$
2	DZU	B	801	-	43,44,44	0.56	0	55,61,61	0.79	3 (5%)
2	DZU	A	801	-	43,44,44	0.57	0	55,61,61	0.76	2 (3%)

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	DZU	B	801	-	-	5/14/26/26	0/6/6/6
2	DZU	A	801	-	-	8/14/26/26	0/6/6/6

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	801	DZU	C12-C13-N14	-3.38	121.88	126.84
2	B	801	DZU	C12-C13-N14	-3.15	122.21	126.84
2	B	801	DZU	C24-C23-C28	-2.18	119.16	121.74
2	A	801	DZU	C24-C23-C28	-2.13	119.21	121.74

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	801	DZU	C21-C16-C15	-2.06	119.00	121.10

There are no chirality outliers.

All (13) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	801	DZU	C24-C23-N14-C13
2	B	801	DZU	C24-C23-N14-C13
2	B	801	DZU	C28-C23-N14-C13
2	A	801	DZU	O29-C30-C31-C32
2	A	801	DZU	C31-C32-N33-C38
2	A	801	DZU	C31-C32-N33-C34
2	A	801	DZU	C10-C11-C12-C13
2	B	801	DZU	C31-C30-O29-C27
2	B	801	DZU	O29-C30-C31-C32
2	B	801	DZU	C24-C23-N14-C15
2	A	801	DZU	C30-C31-C32-N33
2	A	801	DZU	C24-C23-N14-C15
2	A	801	DZU	C4-C10-C11-C12

There are no ring outliers.

2 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	801	DZU	3	0
2	A	801	DZU	2	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 then 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.

Ligand DZU B 801

Bond lengths

Bond angles

Torsions

Rings

Ligand DZU A 801

Bond lengths

Bond angles

Torsions

Rings
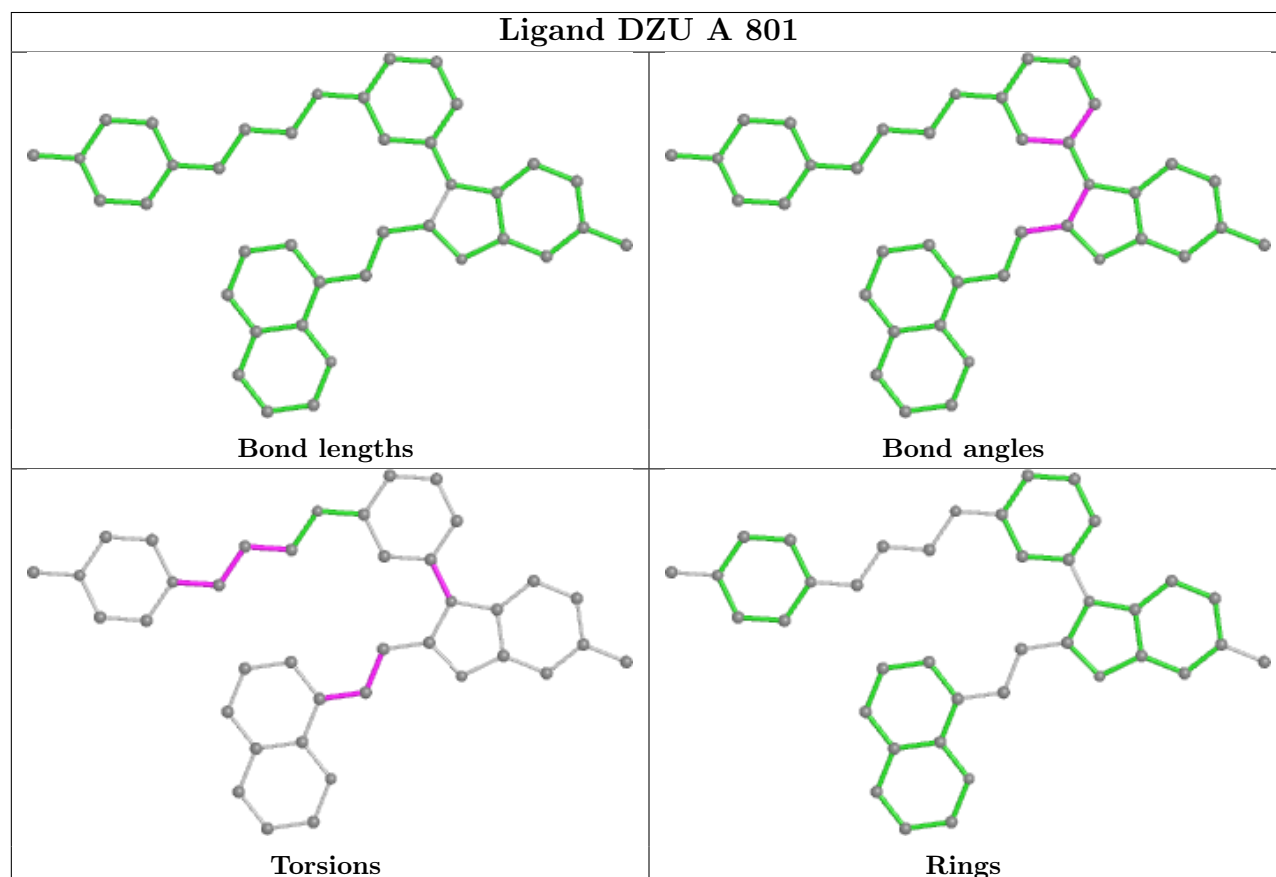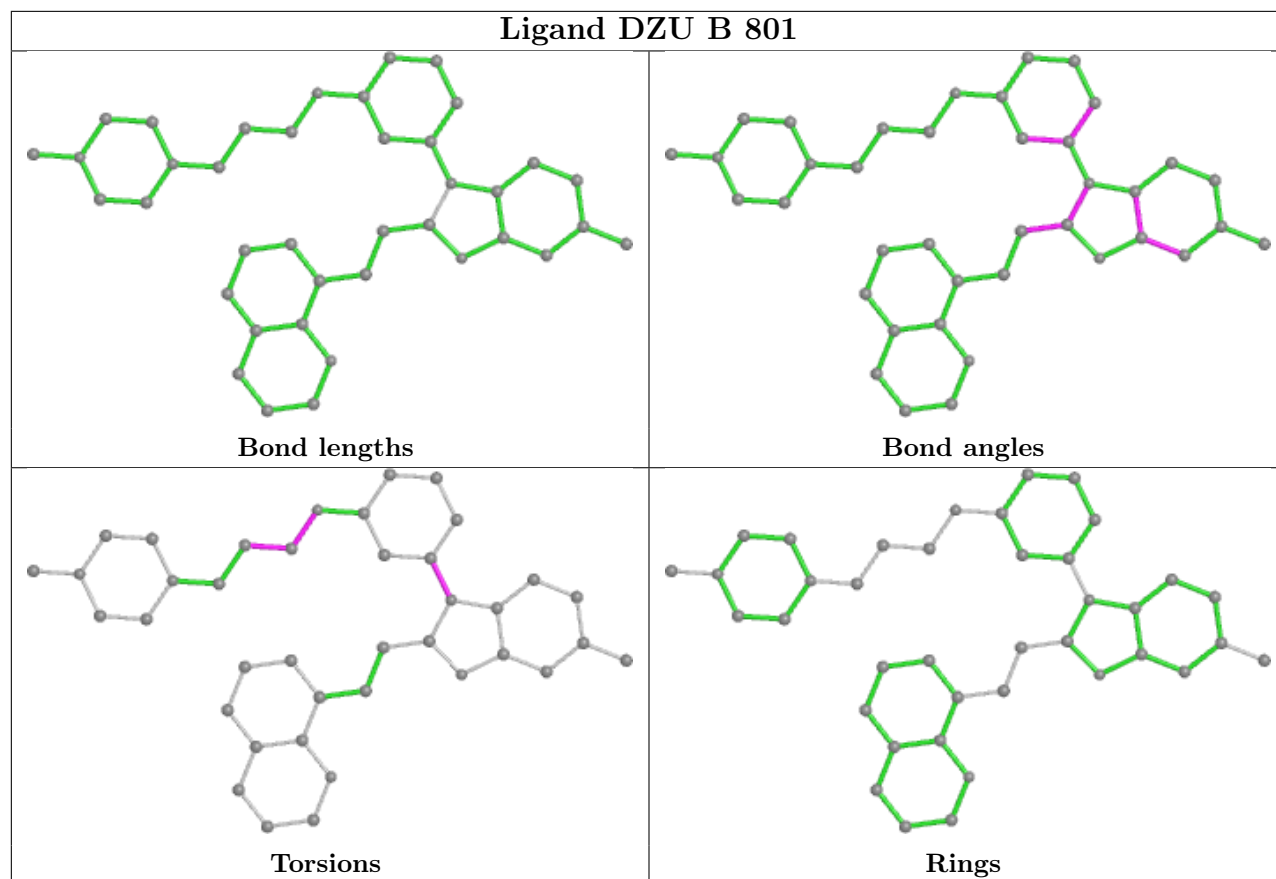
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

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(Å²)	Q<0.9
1	A	306/322 (95%)	0.36	13 (4%)	36	39	20, 39, 59, 68	0
1	B	319/322 (99%)	0.48	20 (6%)	20	21	21, 44, 72, 91	0
All	All	625/644 (97%)	0.42	33 (5%)	26	28	20, 42, 65, 91	0

All (33) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	585	LEU	6.6
1	A	469	CYS	4.5
1	A	706	LEU	3.7
1	B	708	ILE	3.7
1	B	706	LEU	3.6
1	B	604	GLN	3.5
1	B	581	PRO	3.3
1	A	650	GLN	3.1
1	B	703	MET	3.1
1	B	587	SER	3.1
1	A	584	ALA	3.1
1	B	617	SER	2.9
1	B	521	ARG	2.9
1	B	766	ILE	2.8
1	B	570	PHE	2.8
1	B	738	TYR	2.8
1	A	708	ILE	2.7
1	B	584	ALA	2.7
1	A	463	THR	2.5
1	B	558	ILE	2.5
1	A	581	PRO	2.5
1	B	585	LEU	2.4
1	B	461	GLN	2.4
1	B	765	VAL	2.4

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Mol	Chain	Res	Type	RSRZ
1	A	465	PRO	2.3
1	A	502	CYS	2.3
1	A	506	GLU	2.3
1	A	547	LEU	2.1
1	B	759	LEU	2.1
1	B	690	ASN	2.1
1	A	586	TYR	2.0
1	B	454	GLU	2.0
1	B	600	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 ⓘ

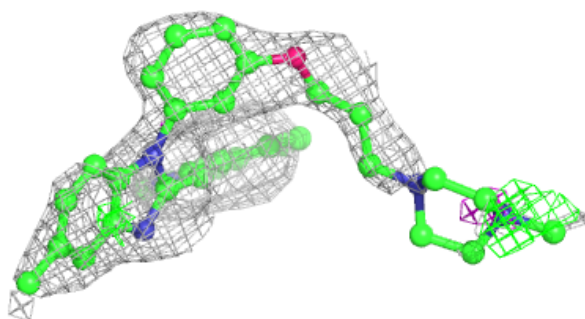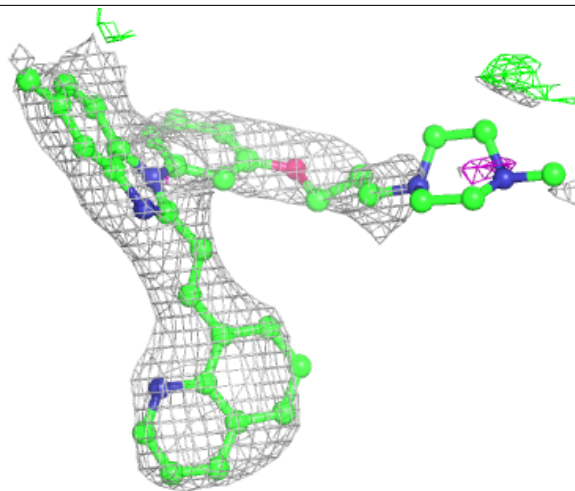There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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.
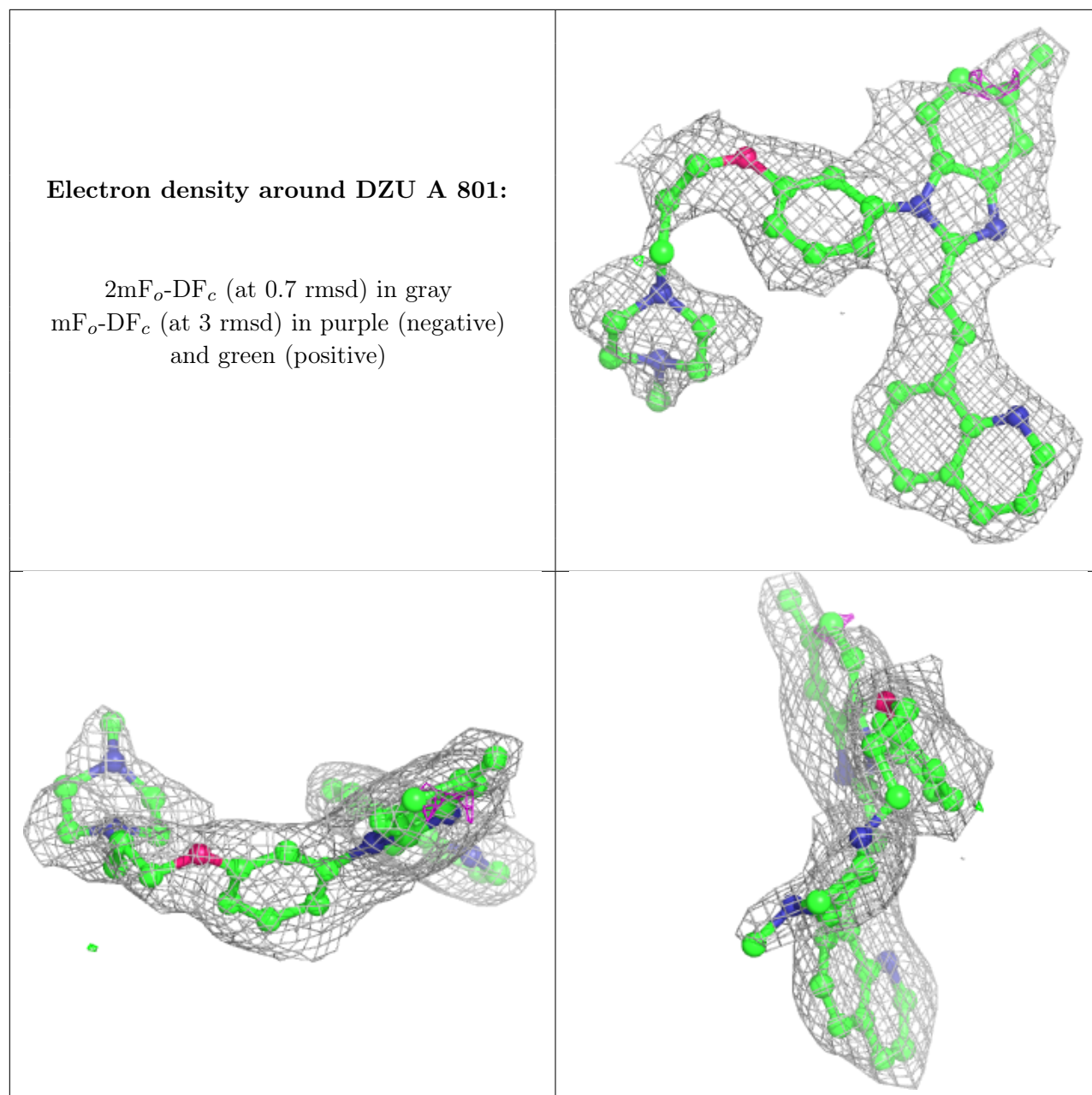
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	DZU	B	801	39/39	0.82	0.27	41,53,71,78	0
3	ZN	B	802	1/1	0.87	0.07	51,51,51,51	0
4	MG	A	803	1/1	0.87	0.09	27,27,27,27	0
2	DZU	A	801	39/39	0.88	0.19	16,36,59,62	0
4	MG	B	803	1/1	0.96	0.19	34,34,34,34	0
3	ZN	A	802	1/1	0.97	0.04	56,56,56,56	0

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.

Electron density around DZU B 801:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around DZU A 801:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

6.5　Other polymers ⓘ

There are no such residues in this entry.