



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 6, 2026 – 03:02 AM UTC

PDB ID : 8B6K / pdb_00008b6k
Title : The crystal structure of M644G variant of DNA Pol Epsilon containing dCTP in the polymerase active site
Authors : Parkash, V.; Johansson, E.
Deposited on : 2022-09-27
Resolution : 2.50 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
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
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

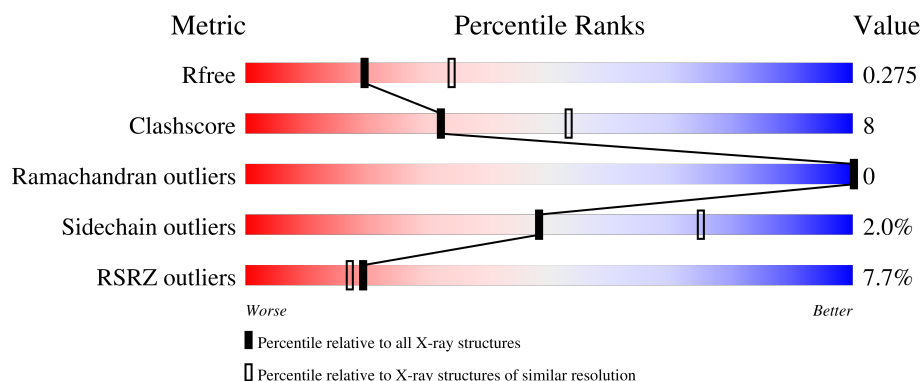
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

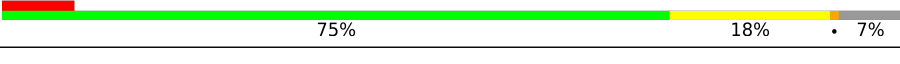
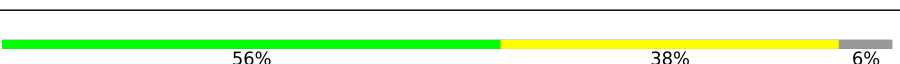
The reported resolution of this entry is 2.50 Å.

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	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	5829 (2.50-2.50)
Clashscore	190562	6492 (2.50-2.50)
Ramachandran outliers	187476	6378 (2.50-2.50)
Sidechain outliers	187428	6380 (2.50-2.50)
RSRZ outliers	180081	5833 (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 $\leq 5\%$. 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	1191	
1	B	1191	
2	C	11	
2	P	11	
3	D	16	

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Mol	Chain	Length	Quality of chain
3	T	16	 A horizontal bar chart showing the quality of chain T. The bar is divided into three segments: a green segment representing 62%, a yellow segment representing 31%, and a grey segment representing 6%. The percentages are labeled below the corresponding segments.

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 18700 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 DNA polymerase epsilon catalytic subunit A.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	1108	Total	C	N	O	S	0	0	0
			8799	5650	1458	1649	42			
1	B	1108	Total	C	N	O	S	0	0	0
			8781	5630	1461	1648	42			

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-4	GLY	-	expression tag	UNP P21951
A	-3	GLY	-	expression tag	UNP P21951
A	-2	ASP	-	expression tag	UNP P21951
A	-1	PRO	-	expression tag	UNP P21951
A	0	HIS	-	expression tag	UNP P21951
A	290	ALA	ASP	engineered mutation	UNP P21951
A	292	ALA	GLU	engineered mutation	UNP P21951
A	644	GLY	MET	engineered mutation	UNP P21951
B	-4	GLY	-	expression tag	UNP P21951
B	-3	GLY	-	expression tag	UNP P21951
B	-2	ASP	-	expression tag	UNP P21951
B	-1	PRO	-	expression tag	UNP P21951
B	0	HIS	-	expression tag	UNP P21951
B	290	ALA	ASP	engineered mutation	UNP P21951
B	292	ALA	GLU	engineered mutation	UNP P21951
B	644	GLY	MET	engineered mutation	UNP P21951

- Molecule 2 is a DNA chain called Primer DNA sequence.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	P	11	Total	C	N	O	P	3	0	0
			221	106	38	66	11			
2	C	11	Total	C	N	O	P	4	0	0
			221	106	38	66	11			

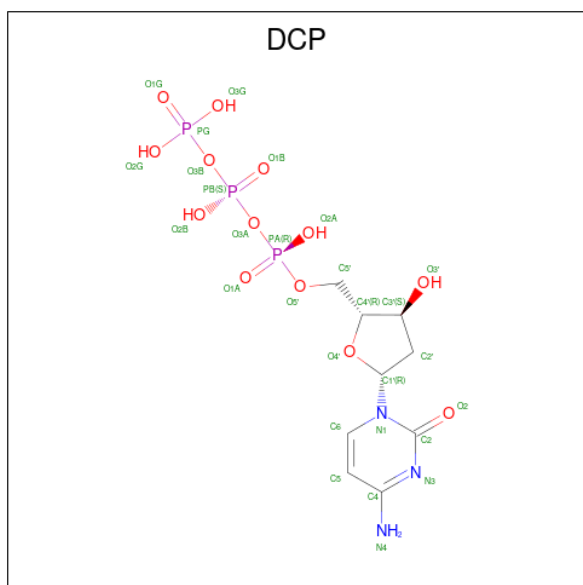
- Molecule 3 is a DNA chain called Template DNA sequence.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	T	15	Total	C	N	O	P	0	0	0
			310	147	57	91	15			
3	D	15	Total	C	N	O	P	0	0	0
			310	147	57	91	15			

- Molecule 4 is CALCIUM ION (CCD ID: CA) (formula: Ca).

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

- Molecule 5 is 2'-DEOXYCYTIDINE-5'-TRIPHOSPHATE (CCD ID: DCP) (formula: C₉H₁₆N₃O₁₃P₃) (labeled as "Ligand of Interest" by depositor).

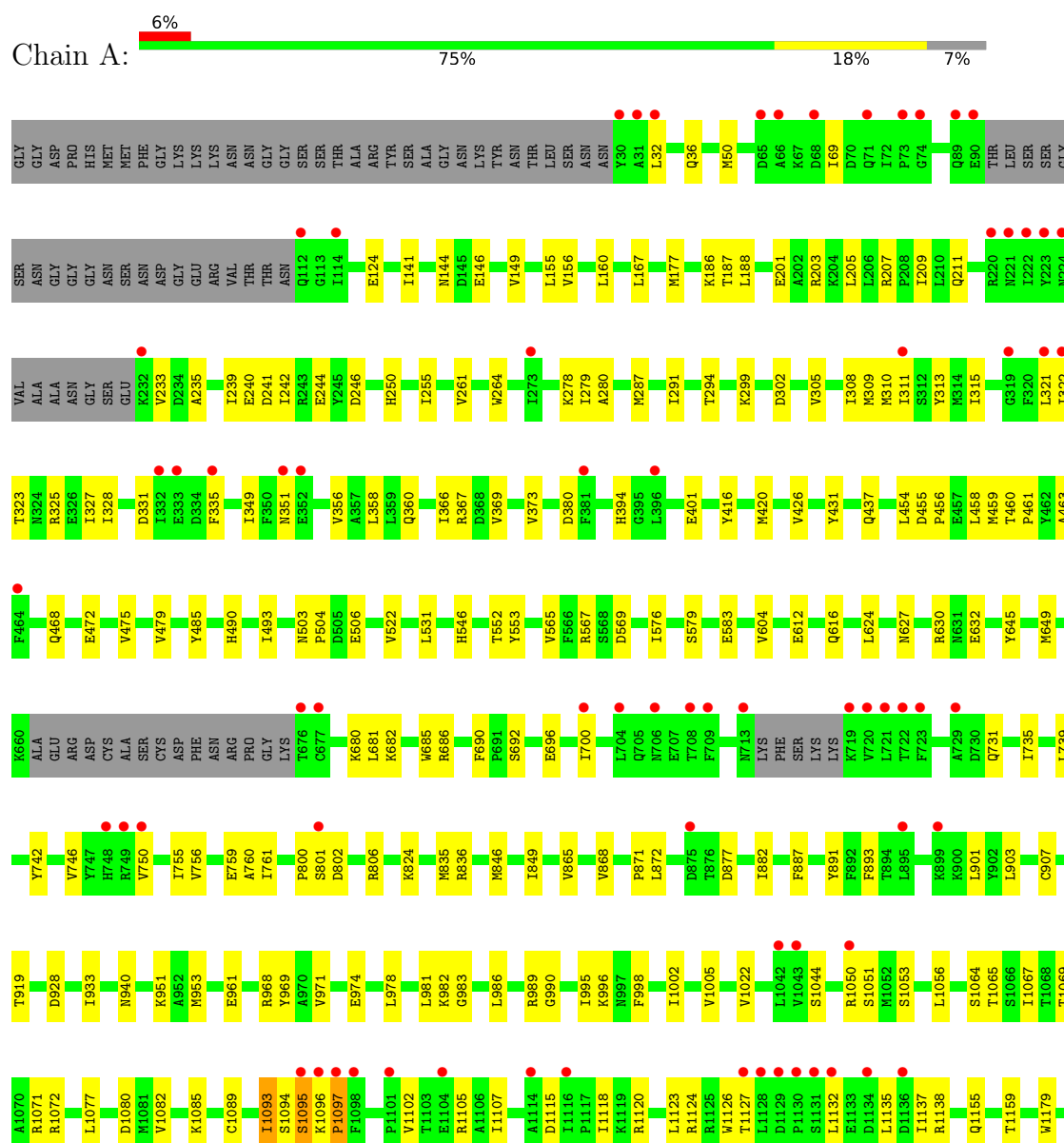


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	A	1	Total	C	N	O	P	0	0
			28	9	3	13	3		
5	B	1	Total	C	N	O	P	0	0
			28	9	3	13	3		

3 Residue-property plots

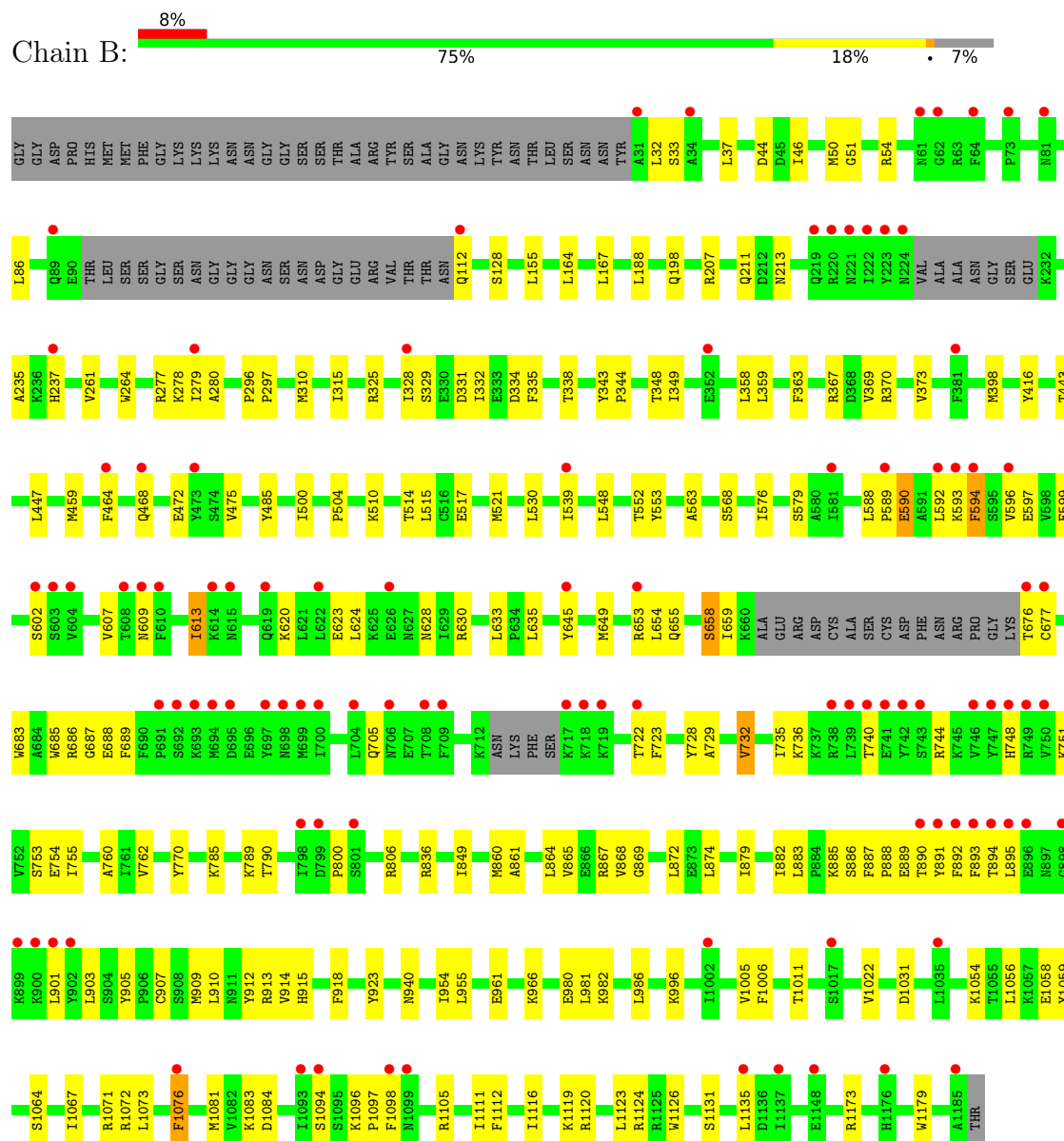
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: DNA polymerase epsilon catalytic subunit A

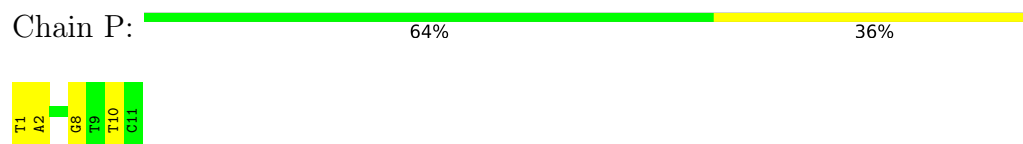




- Molecule 1: DNA polymerase epsilon catalytic subunit A



- Molecule 2: Primer DNA sequence

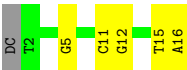


- Molecule 2: Primer DNA sequence





- Molecule 3: Template DNA sequence



- Molecule 3: Template DNA sequence



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	154.37Å 70.42Å 158.66Å 90.00° 112.69° 90.00°	Depositor
Resolution (Å)	86.72 – 2.50 86.72 – 2.50	Depositor EDS
% Data completeness (in resolution range)	99.5 (86.72-2.50) 99.7 (86.72-2.50)	Depositor EDS
R_{merge}	0.20	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.64 (at 2.51Å)	Xtriage
Refinement program	PHENIX 1.20.1_4487	Depositor
R, R_{free}	0.228 , 0.260 0.245 , 0.275	Depositor DCC
R_{free} test set	5671 reflections (5.18%)	wwPDB-VP
Wilson B-factor (Å ²)	34.7	Xtriage
Anisotropy	0.316	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 71.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.29$	Xtriage
Estimated twinning fraction	0.000 for l,-k,h	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	18700	wwPDB-VP
Average B, all atoms (Å ²)	59.0	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 57.97 % 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 2.1906e-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 [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: DCP, DOC, CA

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	0.19	0/9003	0.36	2/12209 (0.0%)
1	B	0.21	0/8983	0.39	0/12181
2	C	0.24	0/226	0.41	0/346
2	P	0.28	0/226	0.44	0/346
3	D	0.24	0/347	0.39	0/534
3	T	0.25	0/347	0.39	0/534
All	All	0.21	0/19132	0.38	2/26150 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1097	PRO	N-CA-C	-6.53	100.26	110.50
1	A	1095	SER	N-CA-C	-6.19	105.48	113.16

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	8799	0	8472	136	0
1	B	8781	0	8439	145	0
2	C	221	0	125	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	P	221	0	125	3	0
3	D	310	0	170	6	0
3	T	310	0	170	3	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
5	A	28	0	12	2	0
5	B	28	0	12	3	0
All	All	18700	0	17525	288	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 8.

All (288) 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:1097:PRO:HD2	1:A:1105:ARG:HG2	1.38	1.02
1:A:1096:LYS:HB2	1:A:1097:PRO:HD3	1.51	0.92
1:B:655:GLN:HG3	1:B:658:SER:HB2	1.56	0.88
1:A:1096:LYS:HB3	1:A:1127:THR:HB	1.61	0.81
1:A:919:THR:HG22	1:A:940:ASN:HD22	1.47	0.80
1:B:597:GLU:HA	1:B:602:SER:O	1.82	0.78
1:A:455:ASP:HB3	1:A:458:LEU:HD12	1.65	0.77
1:A:1094:SER:HB2	1:A:1096:LYS:HG2	1.68	0.76
1:B:800:PRO:HA	1:B:806:ARG:HD2	1.67	0.75
1:B:164:LEU:HD21	1:B:167:LEU:HD12	1.68	0.74
1:B:1120:ARG:HG2	1:B:1135:LEU:HD11	1.72	0.72
1:A:454:LEU:HD12	1:A:459:MET:HG2	1.73	0.69
1:A:287:MET:HE1	1:A:366:ILE:HG12	1.74	0.68
1:A:315:ILE:HG21	1:A:369:VAL:HG21	1.74	0.68
1:B:613:ILE:HD13	1:B:891:TYR:HB3	1.75	0.68
1:A:953:MET:HG3	1:A:971:VAL:HG22	1.75	0.68
1:A:1097:PRO:CD	1:A:1105:ARG:HG2	2.21	0.67
1:B:37:LEU:HG	1:B:86:LEU:HD23	1.77	0.66
1:A:1056:LEU:HB3	1:A:1082:VAL:HG11	1.77	0.65
1:A:1123:LEU:O	1:A:1127:THR:HG23	1.96	0.65
1:A:456:PRO:HA	1:A:459:MET:HG3	1.78	0.65
1:B:653:ARG:HG3	1:B:923:TYR:CE2	2.31	0.65
1:B:676:THR:O	1:B:677:CYS:HB3	1.97	0.65
1:A:335:PHE:HE1	1:A:349:ILE:HD11	1.60	0.65
1:B:329:SER:HB3	1:B:464:PHE:HD1	1.63	0.64
1:B:722:THR:HG22	1:B:723:PHE:N	2.13	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:279:ILE:HG13	1:A:280:ALA:H	1.64	0.63
1:B:155:LEU:HD12	1:B:235:ALA:HB3	1.80	0.63
1:A:309:MET:HG2	1:A:327:ILE:HG21	1.80	0.63
1:A:250:HIS:NE2	1:A:506:GLU:OE2	2.32	0.62
1:B:588:LEU:O	1:B:592:LEU:HB2	2.00	0.62
1:B:893:PHE:HB2	1:B:901:LEU:HB2	1.80	0.62
1:A:1064:SER:OG	1:A:1067:ILE:HG13	1.99	0.61
1:B:981:LEU:HD21	1:B:986:LEU:HD23	1.81	0.61
1:B:1031:ASP:OD2	1:B:1173:ARG:NH2	2.33	0.60
1:B:315:ILE:HD13	1:B:369:VAL:HG11	1.84	0.60
1:B:539:ILE:HD12	1:B:539:ILE:H	1.68	0.59
1:B:872:LEU:HD11	1:B:882:ILE:HG23	1.83	0.59
1:A:627:ASN:HB2	1:A:630:ARG:NH1	2.18	0.59
1:B:539:ILE:HD13	1:B:728:TYR:HE2	1.67	0.59
1:A:356:VAL:O	1:A:360:GLN:HG3	2.03	0.58
1:A:681:LEU:HB2	1:A:849:ILE:HD13	1.85	0.58
1:B:728:TYR:O	1:B:732:VAL:HG13	2.03	0.58
1:A:308:ILE:HD11	1:A:358:LEU:HD21	1.85	0.58
1:B:1120:ARG:O	1:B:1124:ARG:HG3	2.04	0.57
1:A:731:GLN:O	1:A:735:ILE:HG13	2.05	0.57
1:B:50:MET:HE1	1:B:367:ARG:HA	1.85	0.57
1:A:1005:VAL:HG21	1:A:1022:VAL:HG21	1.85	0.57
1:A:291:ILE:HG22	1:A:311:ILE:HG12	1.86	0.57
2:C:10:DT:H2''	2:C:11:DOC:H5'	1.85	0.57
1:A:426:VAL:HG12	1:A:437:GLN:HG2	1.87	0.56
1:B:358:LEU:HD23	1:B:359:LEU:HD23	1.87	0.56
1:B:50:MET:HG3	1:B:416:TYR:CZ	2.42	0.55
1:B:861:ALA:O	1:B:865:VAL:HG23	2.06	0.55
1:B:443:THR:HG23	1:B:447:LEU:HD12	1.87	0.55
1:A:891:TYR:HB2	1:A:903:LEU:HD23	1.87	0.55
1:A:680:LYS:HE3	1:A:761:ILE:HD11	1.89	0.55
1:A:124:GLU:OE1	1:A:278:LYS:NZ	2.30	0.55
1:A:146:GLU:HG2	1:A:187:THR:HB	1.89	0.55
1:B:1056:LEU:HD21	1:B:1071:ARG:HG3	1.89	0.55
1:A:209:ILE:HG21	1:A:239:ILE:HD12	1.90	0.54
1:B:677:CYS:SG	1:B:677:CYS:O	2.64	0.54
1:A:503:ASN:OD1	1:A:506:GLU:HG3	2.08	0.54
1:A:1115:ASP:HB3	1:A:1118:ILE:CD1	2.38	0.54
1:B:207:ARG:O	1:B:211:GLN:HG3	2.08	0.53
1:B:50:MET:HG3	1:B:416:TYR:CE2	2.43	0.53
1:B:112:GLN:OE1	1:B:198:GLN:NE2	2.42	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:905:TYR:O	1:B:909:MET:HB3	2.09	0.53
1:B:593:LYS:HA	1:B:596:VAL:HG22	1.91	0.53
1:A:800:PRO:HA	1:A:806:ARG:HD2	1.91	0.53
1:A:1124:ARG:HG2	1:A:1132:LEU:HB3	1.91	0.53
1:A:201:GLU:O	1:A:205:LEU:HG	2.09	0.52
1:A:576:ILE:HG12	1:A:624:LEU:HD22	1.92	0.52
1:B:213:ASN:HD21	1:B:237:HIS:HA	1.73	0.52
1:A:1056:LEU:HB3	1:A:1082:VAL:CG1	2.40	0.52
1:B:334:ASP:OD1	1:B:349:ILE:HG12	2.09	0.52
1:B:688:GLU:OE1	1:B:751:LYS:HD3	2.09	0.52
1:B:954:ILE:HD13	1:B:1006:PHE:CD2	2.45	0.52
1:B:910:LEU:O	1:B:914:VAL:HG23	2.10	0.52
1:A:951:LYS:HB2	1:A:974:GLU:HA	1.91	0.52
1:B:683:TRP:HB3	1:B:849:ILE:HG13	1.92	0.52
1:B:1119:LYS:HG2	1:B:1123:LEU:HD11	1.91	0.52
1:A:325:ARG:NE	1:A:331:ASP:OD1	2.29	0.51
1:B:649:MET:HA	1:B:654:LEU:HB2	1.91	0.51
1:B:705:GLN:HG3	1:B:723:PHE:CD2	2.44	0.51
1:A:485:TYR:CZ	1:A:490:HIS:HB2	2.45	0.51
1:B:732:VAL:HA	1:B:735:ILE:HD12	1.92	0.51
1:A:865:VAL:HG12	1:A:871:PRO:HD3	1.91	0.51
1:B:329:SER:HB3	1:B:464:PHE:CD1	2.45	0.51
1:A:760:ALA:HB3	1:A:849:ILE:HD11	1.92	0.51
1:A:468:GLN:O	1:A:472:GLU:HG3	2.10	0.51
1:B:468:GLN:O	1:B:472:GLU:HG3	2.11	0.51
1:B:722:THR:CG2	1:B:723:PHE:N	2.74	0.51
1:B:966:LYS:HD3	3:D:9:DC:H5''	1.94	0.50
1:B:588:LEU:N	1:B:589:PRO:CD	2.75	0.50
1:B:213:ASN:ND2	1:B:237:HIS:HA	2.26	0.50
1:B:1005:VAL:HG21	1:B:1022:VAL:HG21	1.92	0.50
1:B:279:ILE:HG13	1:B:280:ALA:H	1.76	0.50
1:A:836:ARG:HB2	3:T:5:DG:H4'	1.93	0.50
1:A:261:VAL:HG11	1:A:504:PRO:HD3	1.93	0.50
1:B:590:GLU:HB3	1:B:912:TYR:CE1	2.47	0.49
1:B:594:PHE:CE1	1:B:915:HIS:CD2	3.00	0.49
1:A:203:ARG:HH21	1:A:207:ARG:NH2	2.09	0.49
1:A:155:LEU:HD12	1:A:235:ALA:HB3	1.93	0.49
1:B:864:LEU:O	1:B:868:VAL:HG12	2.12	0.49
1:B:961:GLU:HB2	1:B:1179:TRP:CD2	2.47	0.49
1:B:659:ILE:HD13	1:B:762:VAL:HG22	1.94	0.49
1:B:1054:LYS:HE2	1:B:1059:TYR:CE1	2.48	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:2:DT:H2'	3:D:3:DC:O4'	2.13	0.48
1:A:928:ASP:HB3	1:A:933:ILE:HD12	1.96	0.48
1:B:980:GLU:HB3	1:B:982:LYS:HE3	1.94	0.48
1:B:645:TYR:CG	5:B:1202:DCP:H2'2	2.49	0.48
1:B:649:MET:HA	1:B:654:LEU:HD12	1.95	0.48
1:A:264:TRP:CE3	1:A:278:LYS:HD3	2.48	0.48
1:A:420:MET:HE1	1:A:493:ILE:HG21	1.96	0.48
1:B:332:ILE:HB	1:B:349:ILE:HG21	1.96	0.48
1:A:50:MET:HG3	1:A:416:TYR:CZ	2.49	0.48
1:A:986:LEU:HA	1:A:996:LYS:HG2	1.96	0.48
1:B:609:ASN:ND2	1:B:894:THR:OG1	2.46	0.48
1:B:1083:LYS:HZ2	1:B:1084:ASP:CG	2.22	0.48
1:B:1054:LYS:HE3	1:B:1058:GLU:HB2	1.95	0.47
1:B:1116:ILE:O	1:B:1120:ARG:HG3	2.14	0.47
1:A:645:TYR:CG	5:A:1202:DCP:H2'2	2.49	0.47
1:B:510:LYS:HD2	1:B:514:THR:HG21	1.95	0.47
1:B:986:LEU:HA	1:B:996:LYS:HG2	1.97	0.47
1:A:299:LYS:HE3	1:A:1077:LEU:HD22	1.96	0.47
1:A:552:THR:HG22	1:A:553:TYR:N	2.29	0.47
1:B:1072:ARG:HB3	1:B:1126:TRP:CZ2	2.48	0.47
1:A:969:TYR:CZ	1:A:982:LYS:HG3	2.49	0.47
1:B:918:PHE:O	1:B:940:ASN:ND2	2.48	0.47
1:B:1096:LYS:HG2	1:B:1098:PHE:CE1	2.49	0.47
1:A:246:ASP:OD1	1:A:246:ASP:N	2.48	0.47
1:B:751:LYS:HE3	1:B:751:LYS:HB2	1.53	0.47
1:A:475:VAL:O	1:A:479:VAL:HG23	2.15	0.47
1:A:872:LEU:HD11	1:A:882:ILE:HG23	1.95	0.47
1:A:1072:ARG:HB3	1:A:1126:TRP:CZ2	2.50	0.47
1:B:500:ILE:HD13	1:B:515:LEU:HD22	1.97	0.47
1:B:1119:LYS:C	1:B:1123:LEU:HD12	2.40	0.47
1:A:156:VAL:HG23	1:A:167:LEU:HD11	1.97	0.47
1:A:244:GLU:HG2	1:A:531:LEU:HB2	1.97	0.47
1:A:287:MET:HE1	1:A:366:ILE:CG1	2.44	0.47
1:A:868:VAL:HG11	1:A:887:PHE:CE1	2.50	0.47
1:A:1069:THR:HB	1:A:1089:CYS:HB3	1.97	0.47
1:B:33:SER:HB2	1:B:86:LEU:HD21	1.96	0.47
1:B:592:LEU:HD11	1:B:903:LEU:HD21	1.97	0.47
1:A:978:LEU:HD21	1:A:981:LEU:HB2	1.97	0.46
5:B:1202:DCP:H6	5:B:1202:DCP:O5'	2.16	0.46
1:A:294:THR:HA	1:A:309:MET:HE3	1.97	0.46
1:B:1112:PHE:CE1	1:B:1123:LEU:HD21	2.50	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1082:VAL:HG12	1:A:1082:VAL:O	2.15	0.46
1:A:877:ASP:OD2	1:A:877:ASP:C	2.58	0.46
1:A:685:TRP:HE3	1:A:756:VAL:HG12	1.81	0.46
1:A:696:GLU:O	1:A:700:ILE:HD12	2.15	0.46
1:B:860:MET:HE1	1:B:914:VAL:HG22	1.97	0.46
1:B:1081:MET:HE3	1:B:1081:MET:HB3	1.74	0.46
1:A:160:LEU:HD23	1:A:205:LEU:HD12	1.97	0.46
1:A:990:GLY:O	1:A:996:LYS:HE3	2.15	0.46
1:A:1120:ARG:HB2	1:A:1135:LEU:HD11	1.98	0.46
1:B:32:LEU:HD12	1:B:32:LEU:H	1.81	0.46
1:B:895:LEU:HD23	1:B:895:LEU:HA	1.82	0.46
1:B:705:GLN:HA	1:B:723:PHE:CB	2.45	0.45
1:A:310:MET:HB3	1:A:321:LEU:HD11	1.98	0.45
1:B:623:GLU:OE1	1:B:630:ARG:NH2	2.47	0.45
1:A:207:ARG:O	1:A:211:GLN:HG2	2.16	0.45
1:A:458:LEU:C	1:A:461:PRO:HD2	2.41	0.45
1:B:736:LYS:O	1:B:740:THR:HG23	2.16	0.45
1:A:203:ARG:HE	1:A:207:ARG:NH2	2.15	0.45
1:A:998:PHE:CE1	1:A:1002:ILE:HD13	2.51	0.45
1:B:594:PHE:CE2	1:B:599:GLU:HG3	2.51	0.45
1:A:968:ARG:HG3	1:A:983:GLY:HA3	1.99	0.45
1:A:1072:ARG:HD3	1:A:1126:TRP:CE2	2.52	0.45
1:A:1096:LYS:N	1:A:1096:LYS:HD2	2.32	0.45
1:A:431:TYR:OH	1:A:824:LYS:HE2	2.17	0.45
1:A:835:MET:HE3	1:A:835:MET:HB3	1.82	0.45
1:B:785:LYS:HB2	1:B:785:LYS:HE3	1.85	0.45
1:B:548:LEU:HD23	1:B:689:PHE:HB3	1.99	0.45
1:B:909:MET:O	1:B:913:ARG:HG3	2.16	0.45
1:A:167:LEU:HD23	1:A:167:LEU:HA	1.81	0.45
1:A:313:TYR:HE1	1:A:322:ILE:HD12	1.82	0.45
1:B:705:GLN:HA	1:B:723:PHE:HB3	1.99	0.45
1:B:1119:LYS:O	1:B:1123:LEU:HD12	2.16	0.45
1:A:309:MET:HE1	1:A:460:THR:HA	1.97	0.44
1:B:653:ARG:HG3	1:B:923:TYR:CZ	2.52	0.44
1:A:1050:ARG:NH1	1:A:1065:THR:OG1	2.50	0.44
1:A:579:SER:O	1:A:583:GLU:HG3	2.18	0.44
1:B:459:MET:HE3	1:B:459:MET:HB3	1.86	0.44
1:B:552:THR:OG1	3:D:7:DA:H5"	2.18	0.44
1:A:1094:SER:OG	1:A:1105:ARG:HB3	2.18	0.44
2:P:1:DT:H2"	2:P:2:DA:C8	2.53	0.44
1:A:1093:ILE:HD13	1:A:1102:VAL:HB	1.99	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:338:THR:HG23	1:B:344:PRO:HA	2.01	0.43
1:B:363:PHE:CZ	1:B:398:MET:HG3	2.54	0.43
1:B:633:LEU:O	1:B:885:LYS:HB2	2.17	0.43
1:A:335:PHE:CE1	1:A:349:ILE:HD11	2.47	0.43
1:A:982:LYS:HB3	2:P:10:DT:H5''	1.99	0.43
1:A:961:GLU:HB2	1:A:1179:TRP:CD2	2.54	0.43
1:B:789:LYS:HE3	1:B:789:LYS:HB2	1.72	0.43
1:A:367:ARG:NH2	1:A:401:GLU:OE1	2.51	0.43
1:A:1053:SER:O	1:A:1085:LYS:HB2	2.18	0.43
1:B:50:MET:HE3	1:B:370:ARG:HA	2.00	0.43
1:B:869:GLY:HA3	1:B:883:LEU:HD23	1.99	0.43
1:A:893:PHE:HB2	1:A:901:LEU:HB2	2.01	0.43
1:B:687:GLY:O	1:B:753:SER:HA	2.19	0.43
1:A:302:ASP:HB3	1:A:305:VAL:HG12	2.00	0.43
1:B:261:VAL:HG11	1:B:504:PRO:HD3	2.01	0.43
1:B:576:ILE:HG23	1:B:868:VAL:HA	2.00	0.43
1:B:635:LEU:HD23	1:B:635:LEU:HA	1.85	0.43
1:B:836:ARG:HG3	3:D:5:DG:H4'	2.00	0.43
2:C:5:DC:H2''	2:C:6:DG:C8	2.54	0.43
1:A:1155:GLN:HA	1:A:1159:THR:OG1	2.19	0.43
1:B:593:LYS:O	1:B:594:PHE:C	2.62	0.43
1:B:594:PHE:HE1	1:B:915:HIS:CD2	2.37	0.43
1:A:186:LYS:HD3	1:A:188:LEU:HD21	2.01	0.42
1:B:889:GLU:HB3	1:B:890:THR:H	1.68	0.42
1:A:308:ILE:HD11	1:A:358:LEU:CD2	2.48	0.42
3:T:15:DT:H2''	3:T:16:DA:C8	2.54	0.42
1:B:744:ARG:HA	1:B:748:HIS:HA	2.01	0.42
1:A:1056:LEU:HD21	1:A:1071:ARG:HG3	2.01	0.42
1:B:579:SER:OG	1:B:867:ARG:NH2	2.52	0.42
1:B:1111:ILE:O	1:B:1119:LYS:HG3	2.19	0.42
1:A:323:THR:HB	1:A:328:ILE:HD11	2.01	0.42
1:B:329:SER:HB3	1:B:464:PHE:HA	2.02	0.42
1:A:241:ASP:OD1	1:A:242:ILE:N	2.53	0.42
1:B:325:ARG:NH1	1:B:331:ASP:OD1	2.41	0.42
1:B:623:GLU:CG	1:B:630:ARG:HH12	2.33	0.42
1:B:685:TRP:O	1:B:755:ILE:HA	2.20	0.42
1:B:892:PHE:HA	1:B:901:LEU:O	2.20	0.42
1:A:32:LEU:O	1:A:36:GLN:HG3	2.20	0.42
1:A:255:ILE:HG12	1:A:522:VAL:HG22	2.01	0.42
1:A:742:TYR:CZ	1:A:746:VAL:HG21	2.55	0.42
1:B:1096:LYS:HG2	1:B:1098:PHE:CD1	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:44:ASP:CG	1:B:54:ARG:HH12	2.27	0.41
1:A:177:MET:HE3	1:A:177:MET:HB2	1.89	0.41
1:A:356:VAL:HG13	1:A:394:HIS:CD2	2.55	0.41
1:B:51:GLY:O	1:B:128:SER:OG	2.32	0.41
1:B:373:VAL:HG11	1:B:485:TYR:CZ	2.54	0.41
1:B:874:LEU:HD12	1:B:879:ILE:HG12	2.02	0.41
1:A:1115:ASP:HB3	1:A:1118:ILE:HD12	2.03	0.41
1:B:655:GLN:HB3	1:B:770:TYR:HB3	2.02	0.41
1:A:325:ARG:HD2	1:A:325:ARG:HA	1.80	0.41
1:A:989:ARG:HH21	2:P:8:DG:P	2.43	0.41
1:A:612:GLU:O	1:A:616:GLN:HG3	2.21	0.41
1:A:1096:LYS:HB2	1:A:1097:PRO:CD	2.35	0.41
1:A:1096:LYS:HG3	1:A:1127:THR:HG22	2.03	0.41
1:A:1120:ARG:HD2	1:A:1124:ARG:CZ	2.51	0.41
1:B:1073:LEU:HD23	1:B:1073:LEU:HA	1.92	0.41
1:A:1096:LYS:HG3	1:A:1127:THR:CG2	2.51	0.41
1:B:563:ALA:HA	1:B:955:LEU:HB2	2.03	0.41
1:A:144:ASN:HB3	1:A:240:GLU:HG3	2.03	0.41
1:A:146:GLU:HA	1:A:149:VAL:HG23	2.01	0.41
1:A:567:ARG:HB3	1:A:569:ASP:OD1	2.20	0.41
1:A:700:ILE:HD13	1:A:739:LEU:CD2	2.51	0.41
1:A:328:ILE:HA	1:A:463:ALA:O	2.21	0.41
1:A:546:HIS:HB3	1:A:690:PHE:O	2.21	0.41
1:A:686:ARG:HG3	1:A:755:ILE:HG12	2.03	0.41
1:B:335:PHE:CE2	1:B:475:VAL:HG21	2.55	0.41
1:B:645:TYR:CD2	5:B:1202:DCP:H2'2	2.56	0.41
1:A:279:ILE:HG13	1:A:280:ALA:N	2.32	0.41
1:A:373:VAL:HG11	1:A:485:TYR:CZ	2.55	0.41
1:A:649:MET:HE3	1:A:846:MET:HE1	2.03	0.41
1:A:802:ASP:O	1:A:806:ARG:HG3	2.21	0.41
1:A:1107:ILE:HG23	1:A:1126:TRP:CE3	2.56	0.41
1:B:517:GLU:O	1:B:521:MET:HG3	2.21	0.41
1:B:552:THR:OG1	1:B:553:TYR:N	2.52	0.41
1:B:620:LYS:O	1:B:624:LEU:HG	2.19	0.41
1:B:686:ARG:NH2	3:D:8:DA:OP1	2.53	0.41
1:B:686:ARG:HH22	3:D:8:DA:P	2.43	0.41
1:B:1076:PHE:CD1	1:B:1076:PHE:C	2.99	0.41
1:B:1094:SER:O	1:B:1105:ARG:HD2	2.20	0.41
1:B:1096:LYS:HA	1:B:1097:PRO:C	2.46	0.41
1:B:887:PHE:CD1	1:B:888:PRO:HD2	2.56	0.41
1:B:447:LEU:HD23	1:B:447:LEU:HA	1.90	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:287:MET:HG3	1:A:315:ILE:HG13	2.02	0.40
1:B:264:TRP:CE3	1:B:278:LYS:HD3	2.56	0.40
1:B:310:MET:HE3	1:B:328:ILE:HG12	2.03	0.40
1:B:343:TYR:CZ	1:B:447:LEU:HD22	2.57	0.40
1:B:576:ILE:HD12	1:B:576:ILE:N	2.37	0.40
1:A:323:THR:OG1	1:A:351:ASN:HA	2.21	0.40
1:A:682:LYS:HG2	1:A:759:GLU:HG3	2.04	0.40
1:A:1080:ASP:OD1	1:A:1080:ASP:N	2.47	0.40
3:T:11:DC:H2"	3:T:12:DG:C8	2.56	0.40
1:B:188:LEU:HD11	1:B:530:LEU:HD22	2.04	0.40
1:B:722:THR:HG22	1:B:723:PHE:H	1.85	0.40
1:A:645:TYR:CD2	5:A:1202:DCP:H2'2	2.55	0.40
1:B:296:PRO:HA	1:B:297:PRO:HD3	1.98	0.40
1:B:685:TRP:CH2	1:B:687:GLY:HA3	2.56	0.40
1:B:729:ALA:O	1:B:732:VAL:HG22	2.21	0.40
1:B:760:ALA:HB3	1:B:849:ILE:HD11	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	1098/1191 (92%)	1055 (96%)	43 (4%)	0	100	100
1	B	1098/1191 (92%)	1055 (96%)	43 (4%)	0	100	100
All	All	2196/2382 (92%)	2110 (96%)	86 (4%)	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	933/1064 (88%)	915 (98%)	18 (2%)	50	76
1	B	929/1064 (87%)	909 (98%)	20 (2%)	45	73
All	All	1862/2128 (88%)	1824 (98%)	38 (2%)	48	75

All (38) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	69	ILE
1	A	141	ILE
1	A	233	VAL
1	A	380	ASP
1	A	565	VAL
1	A	604	VAL
1	A	632	GLU
1	A	692	SER
1	A	750	VAL
1	A	801	SER
1	A	907	CYS
1	A	995	ILE
1	A	1044	SER
1	A	1051	SER
1	A	1093	ILE
1	A	1095	SER
1	A	1137	ILE
1	A	1138	ARG
1	B	46	ILE
1	B	277	ARG
1	B	348	THR
1	B	568	SER
1	B	590	GLU
1	B	594	PHE
1	B	607	VAL
1	B	613	ILE
1	B	628	ASN

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Mol	Chain	Res	Type
1	B	658	SER
1	B	732	VAL
1	B	754	GLU
1	B	790	THR
1	B	886	SER
1	B	907	CYS
1	B	1011	THR
1	B	1064	SER
1	B	1067	ILE
1	B	1076	PHE
1	B	1131	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	71	GLN
1	A	150	ASN
1	A	179	ASN
1	A	270	GLN
1	A	859	GLN
1	A	915	HIS
1	A	973	ASN
1	A	1062	GLN
1	B	112	GLN
1	B	197	ASN
1	B	198	GLN
1	B	213	ASN
1	B	973	ASN
1	B	993	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

2 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The

Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	DOC	C	11	3,2	16,19,20	0.41	0	20,26,29	0.32	0
2	DOC	P	11	3,2	16,19,20	0.42	0	20,26,29	0.35	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
2	DOC	C	11	3,2	-	2/7/18/19	0/2/2/2
2	DOC	P	11	3,2	-	2/7/18/19	0/2/2/2

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	C	11	DOC	C3'-C4'-C5'-O5'
2	C	11	DOC	O4'-C4'-C5'-O5'
2	P	11	DOC	O4'-C4'-C5'-O5'
2	P	11	DOC	C3'-C4'-C5'-O5'

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	11	DOC	1	0

5.5 Carbohydrates

There are no oligosaccharides in this entry.

5.6 Ligand geometry

Of 4 ligands modelled in this entry, 2 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	$\# Z > 2$
5	DCP	B	1202	4	28,29,29	0.60	0	41,45,45	0.59	0
5	DCP	A	1202	4	28,29,29	0.62	0	41,45,45	0.59	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	DCP	B	1202	4	-	4/22/34/34	0/2/2/2
5	DCP	A	1202	4	-	1/22/34/34	0/2/2/2

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	1202	DCP	PB-O3B-PG-O2G
5	B	1202	DCP	PB-O3B-PG-O3G
5	B	1202	DCP	PA-O3A-PB-O2B
5	B	1202	DCP	PA-O3A-PB-O1B
5	B	1202	DCP	PB-O3B-PG-O2G

There are no ring outliers.

2 monomers are involved in 5 short contacts:

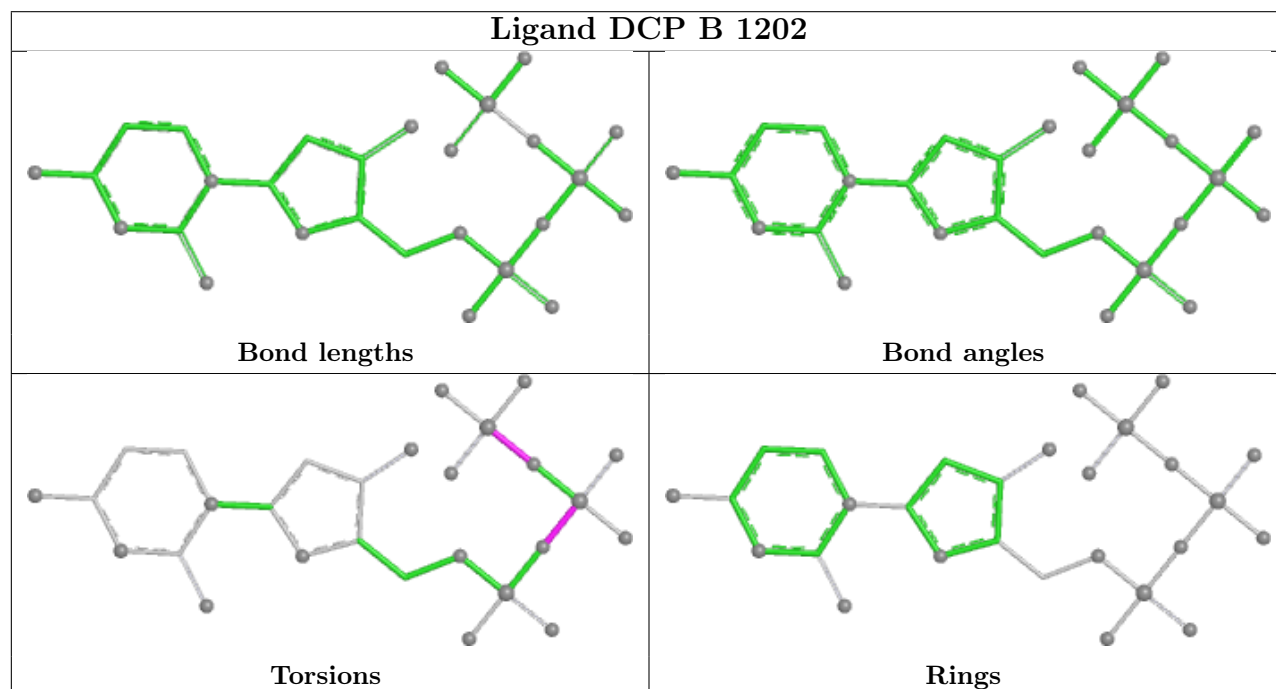
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	1202	DCP	3	0

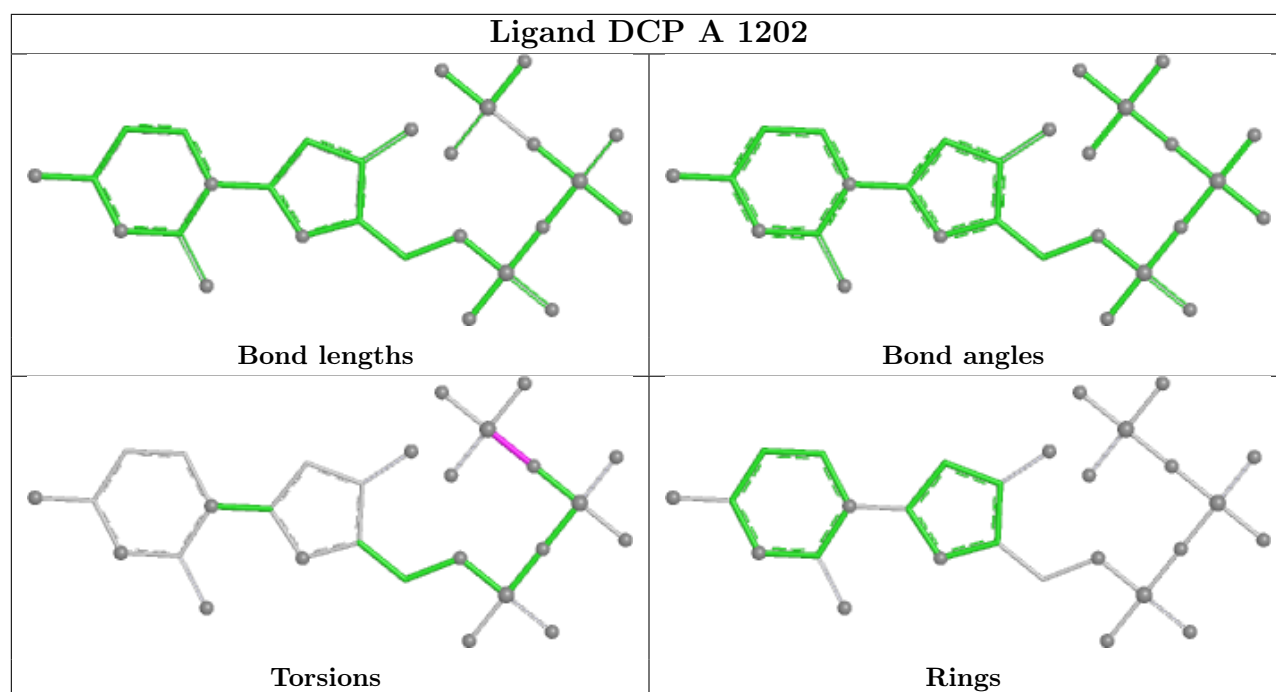
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Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	1202	DCP	2	0

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 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	1108/1191 (93%)	0.57	73 (6%) 24 21	26, 58, 91, 114	0
1	B	1108/1191 (93%)	0.74	101 (9%) 15 13	29, 60, 96, 126	0
2	C	10/11 (90%)	-0.35	0 100 100	37, 46, 60, 69	1 (10%)
2	P	10/11 (90%)	-0.17	0 100 100	36, 46, 63, 67	1 (10%)
3	D	15/16 (93%)	-0.30	0 100 100	29, 46, 84, 97	0
3	T	15/16 (93%)	-0.14	0 100 100	29, 54, 81, 95	0
All	All	2266/2436 (93%)	0.64	174 (7%) 19 17	26, 59, 93, 126	2 (0%)

All (174) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	32	LEU	5.3
1	B	801	SER	5.0
1	B	750	VAL	5.0
1	B	220	ARG	4.9
1	B	112	GLN	4.5
1	B	31	ALA	4.4
1	A	1096	LYS	4.3
1	A	223	TYR	4.3
1	A	1185	ALA	4.2
1	B	224	ASN	4.2
1	A	30	TYR	4.2
1	B	898	GLY	4.1
1	B	1185	ALA	4.0
1	B	615	ASN	3.8
1	A	220	ARG	3.7
1	B	223	TYR	3.7
1	B	699	MET	3.7
1	B	902	TYR	3.7
1	A	676	THR	3.6

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Mol	Chain	Res	Type	RSRZ
1	B	1137	ILE	3.6
1	B	896	GLU	3.5
1	B	901	LEU	3.5
1	A	1097	PRO	3.5
1	B	222	ILE	3.5
1	B	603	SER	3.4
1	A	720	VAL	3.3
1	A	31	ALA	3.3
1	B	743	SER	3.3
1	A	677	CYS	3.3
1	B	722	THR	3.3
1	B	62	GLY	3.3
1	B	693	LYS	3.2
1	A	66	ALA	3.2
1	B	738	ARG	3.2
1	B	717	LYS	3.2
1	B	1098	PHE	3.1
1	A	721	LEU	3.1
1	A	322	ILE	3.1
1	B	700	ILE	3.1
1	B	894	THR	3.1
1	A	224	ASN	3.1
1	A	1043	VAL	3.1
1	B	893	PHE	3.0
1	A	74	GLY	3.0
1	B	746	VAL	2.9
1	B	608	THR	2.9
1	B	691	PRO	2.9
1	A	222	ILE	2.9
1	B	704	LEU	2.9
1	A	221	ASN	2.9
1	A	1131	SER	2.9
1	A	722	THR	2.9
1	B	895	LEU	2.8
1	B	279	ILE	2.8
1	B	596	VAL	2.8
1	A	232	LYS	2.8
1	B	64	PHE	2.8
1	B	610	PHE	2.8
1	B	581	ILE	2.8
1	B	692	SER	2.8
1	B	742	TYR	2.8

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Mol	Chain	Res	Type	RSRZ
1	B	677	CYS	2.8
1	A	708	THR	2.7
1	A	723	PHE	2.7
1	A	381	PHE	2.7
1	B	709	PHE	2.7
1	B	899	LYS	2.7
1	B	464	PHE	2.7
1	A	73	PRO	2.7
1	A	750	VAL	2.7
1	A	71	GLN	2.7
1	A	112	GLN	2.7
1	A	1116	ILE	2.6
1	A	704	LEU	2.6
1	A	89	GLN	2.6
1	A	899	LYS	2.6
1	B	221	ASN	2.6
1	B	748	HIS	2.6
1	B	706	ASN	2.6
1	B	741	GLU	2.6
1	A	1098	PHE	2.6
1	B	219	GLN	2.6
1	B	589	PRO	2.5
1	B	798	ILE	2.5
1	A	333	GLU	2.5
1	A	464	PHE	2.5
1	B	381	PHE	2.5
1	B	739	LEU	2.5
1	B	593	LYS	2.5
1	A	68	ASP	2.5
1	B	1135	LEU	2.5
1	A	700	ILE	2.5
1	A	748	HIS	2.5
1	B	694	MET	2.5
1	B	73	PRO	2.4
1	B	473	TYR	2.4
1	B	891	TYR	2.4
1	A	1042	LEU	2.4
1	A	1050	ARG	2.4
1	B	592	LEU	2.4
1	B	619	GLN	2.4
1	B	676	THR	2.4
1	B	892	PHE	2.4

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Mol	Chain	Res	Type	RSRZ
1	A	729	ALA	2.4
1	B	718	LYS	2.4
1	A	396	LEU	2.4
1	B	695	ASP	2.4
1	A	709	PHE	2.4
1	A	706	ASN	2.4
1	B	614	LYS	2.4
1	A	1104	GLU	2.4
1	B	708	THR	2.3
1	B	237	HIS	2.3
1	B	799	ASP	2.3
1	B	697	TYR	2.3
1	B	740	THR	2.3
1	A	332	ILE	2.3
1	A	1134	ASP	2.3
1	B	352	GLU	2.3
1	B	604	VAL	2.3
1	B	1093	ILE	2.3
1	B	609	ASN	2.2
1	B	698	ASN	2.2
1	B	468	GLN	2.2
1	A	321	LEU	2.2
1	B	1035	LEU	2.2
1	A	352	GLU	2.2
1	B	653	ARG	2.2
1	A	719	LYS	2.2
1	B	89	GLN	2.2
1	B	328	ILE	2.2
1	B	602	SER	2.2
1	A	1129	ASP	2.2
1	B	594	PHE	2.2
1	A	713	ASN	2.2
1	A	1114	ALA	2.2
1	A	1132	LEU	2.2
1	A	801	SER	2.2
1	A	749	ARG	2.2
1	B	719	LYS	2.2
1	A	273	ILE	2.1
1	B	539	ILE	2.1
1	B	1002	ILE	2.1
1	A	875	ASP	2.1
1	A	1101	PRO	2.1

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Mol	Chain	Res	Type	RSRZ
1	B	1176	HIS	2.1
1	B	34	ALA	2.1
1	B	626	GLU	2.1
1	B	749	ARG	2.1
1	A	351	ASN	2.1
1	A	90	GLU	2.1
1	A	1095	SER	2.1
1	A	335	PHE	2.1
1	B	1076	PHE	2.1
1	A	895	LEU	2.1
1	B	747	TYR	2.1
1	A	1130	PRO	2.1
1	A	1128	LEU	2.0
1	B	61	ASN	2.0
1	B	81	ASN	2.0
1	B	622	LEU	2.0
1	B	1099	ASN	2.0
1	A	311	ILE	2.0
1	A	1127	THR	2.0
1	B	900	LYS	2.0
1	A	65	ASP	2.0
1	B	1094	SER	2.0
1	B	1148	GLU	2.0
1	A	319	GLY	2.0
1	A	114	ILE	2.0
1	B	890	THR	2.0
1	A	1136	ASP	2.0
1	B	645	TYR	2.0
1	B	1017	SER	2.0

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

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($\text{\AA}^2$)	Q<0.9
2	DOC	P	11	18/19	0.96	0.09	27,31,45,47	0
2	DOC	C	11	18/19	0.97	0.07	33,37,48,51	0

6.3 Carbohydrates [i](#)

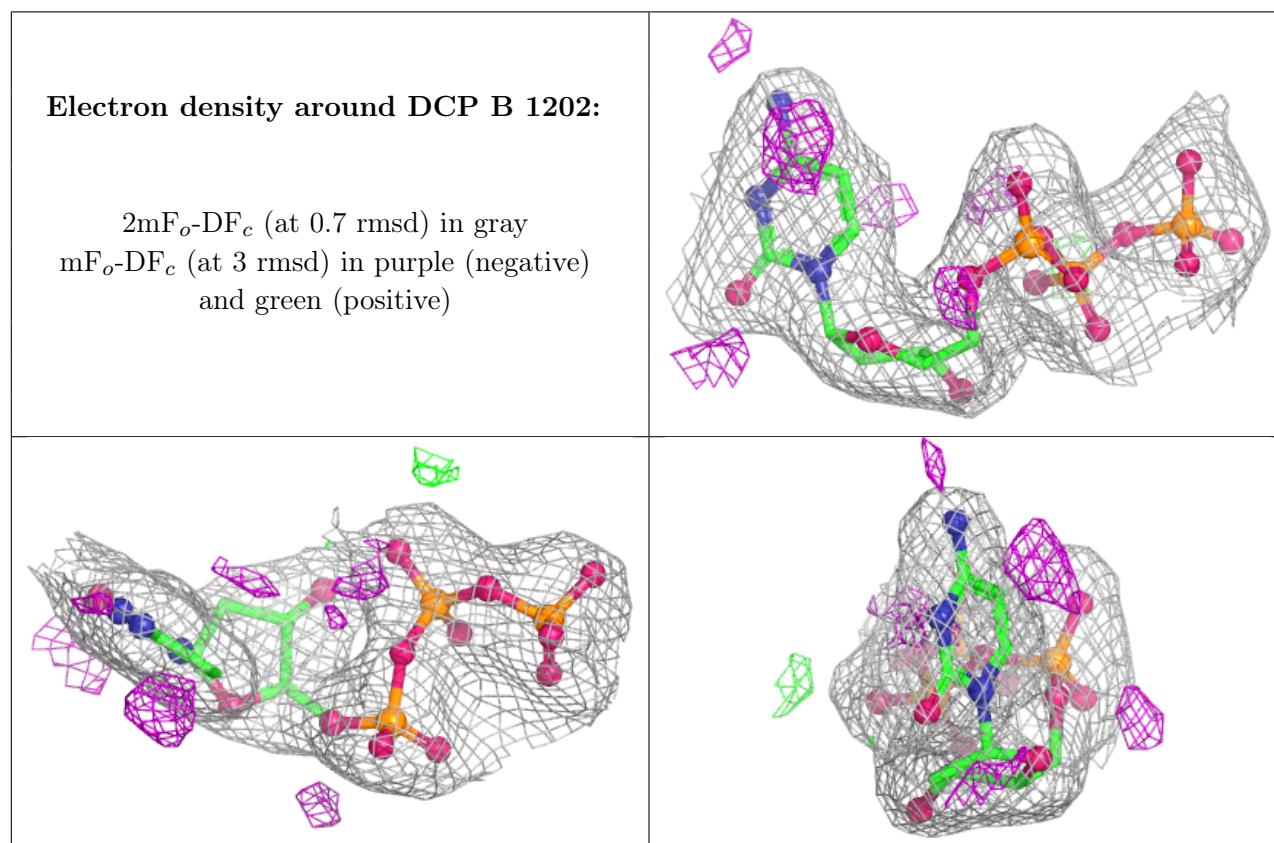
There are no oligosaccharides in this entry.

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.

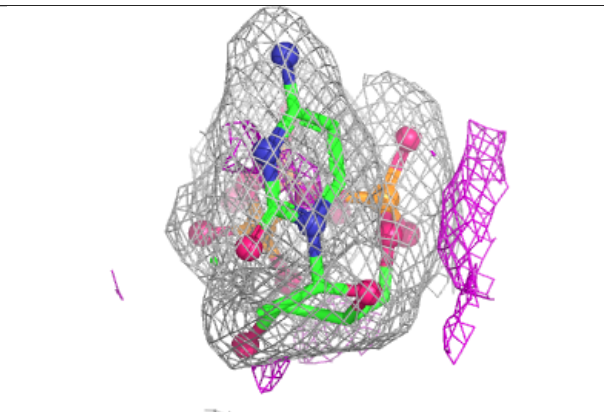
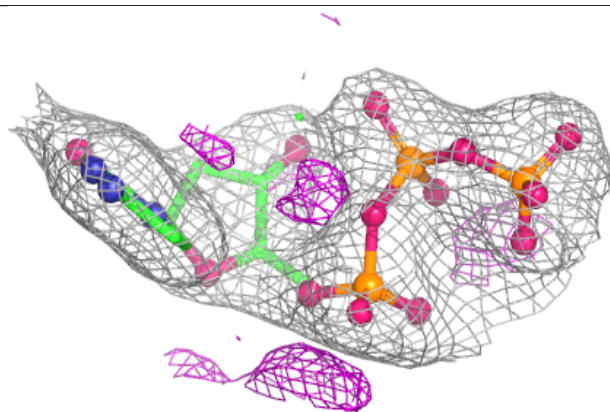
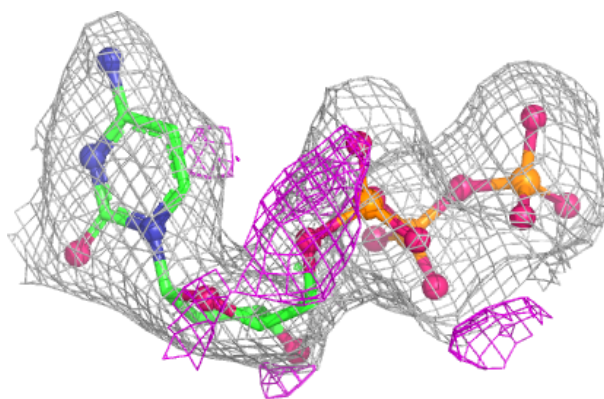
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
4	CA	A	1201	1/1	0.96	0.07	44,44,44,44	0
5	DCP	B	1202	28/28	0.96	0.07	23,35,41,51	0
5	DCP	A	1202	28/28	0.97	0.07	19,32,43,50	0
4	CA	B	1201	1/1	0.97	0.05	50,50,50,50	0

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 DCP A 1202:

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



6.5 Other polymers [i](#)

There are no such residues in this entry.