



Full wwPDB X-ray Structure Validation Report ⓘ

May 13, 2020 – 12:06 am BST

PDB ID : 3UM5
Title : Double mutant (A16V+S108T) Plasmodium falciparum dihydrofolate reductase-thymidylate synthase (PfDHFR-TS-T9/94) complexed with pyrimethamine, NADPH, and dUMP
Authors : Vanichtanankul, J.; Kamchonwongpaisan, S.; Chitnumsub, P.; Yuthavong, Y.
Deposited on : 2011-11-12
Resolution : 2.40 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 : 2.11
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) : 2.11

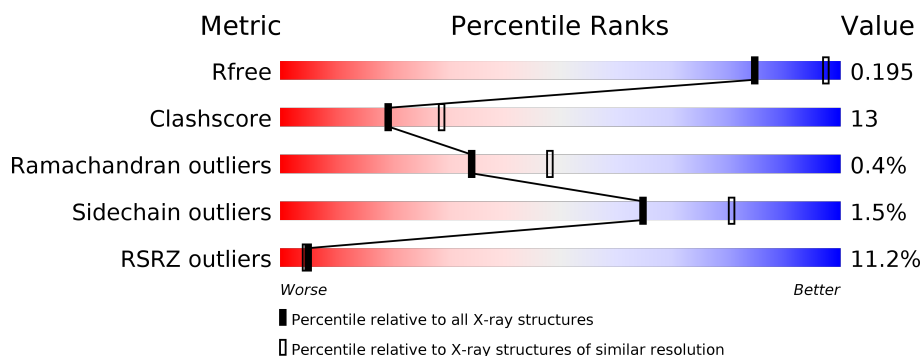
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.40 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	3907 (2.40-2.40)
Clashscore	141614	4398 (2.40-2.40)
Ramachandran outliers	138981	4318 (2.40-2.40)
Sidechain outliers	138945	4319 (2.40-2.40)
RSRZ outliers	127900	3811 (2.40-2.40)

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 on 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	608	<div> <div>6%</div> <div>70%</div> <div>19%</div> <div>10%</div> </div>
1	B	608	<div> <div>14%</div> <div>62%</div> <div>26%</div> <div>• 11%</div> </div>

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
2	CP6	A	609	-	X	-	-
2	CP6	B	709	-	X	-	-

2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 10007 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.

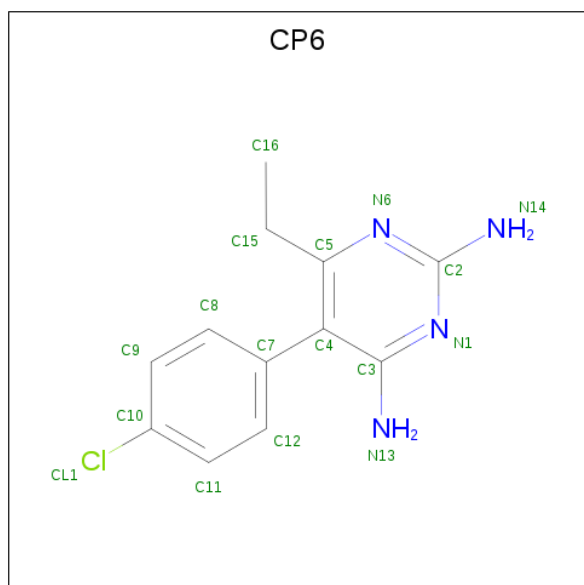
- Molecule 1 is a protein called Bifunctional dihydrofolate reductase-thymidylate synthase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	546	Total	C	N	O	S	0	0	0
			4539	2930	749	832	28			
1	B	544	Total	C	N	O	S	0	0	0
			4517	2916	746	829	26			

There are 4 discrepancies between the modelled and reference sequences:

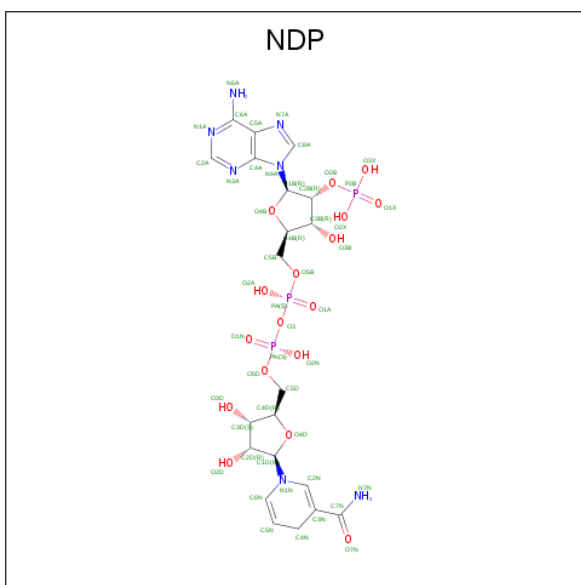
Chain	Residue	Modelled	Actual	Comment	Reference
A	16	VAL	ALA	ENGINEERED MUTATION	UNP A7UD81
A	108	THR	SER	ENGINEERED MUTATION	UNP A7UD81
B	16	VAL	ALA	ENGINEERED MUTATION	UNP A7UD81
B	108	THR	SER	ENGINEERED MUTATION	UNP A7UD81

- Molecule 2 is 5-(4-CHLORO-PHENYL)-6-ETHYL-PYRIMIDINE-2,4-DIAMINE (three-letter code: CP6) (formula: C₁₂H₁₃ClN₄).



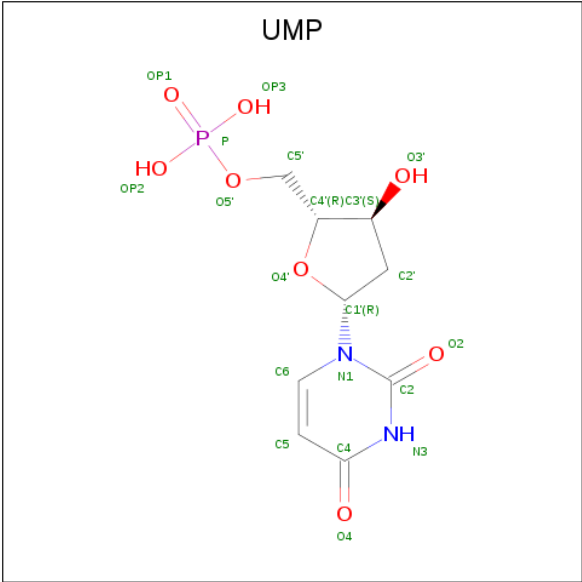
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total 17	C 12	Cl 1	N 4	0	0
2	B	1	Total 17	C 12	Cl 1	N 4	0	0

- Molecule 3 is NADPH DIHYDRO-NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (three-letter code: NDP) (formula: $C_{21}H_{30}N_7O_{17}P_3$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total 48	C 21	N 7	O 17	P 3	0	0
3	B	1	Total 48	C 21	N 7	O 17	P 3	0	0

- Molecule 4 is 2'-DEOXYURIDINE 5'-MONOPHOSPHATE (three-letter code: UMP) (formula: $\text{C}_9\text{H}_{13}\text{N}_2\text{O}_8\text{P}$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total	C	N	O	P	0	0
			20	9	2	8	1		
4	B	1	Total	C	N	O	P	0	0
			20	9	2	8	1		

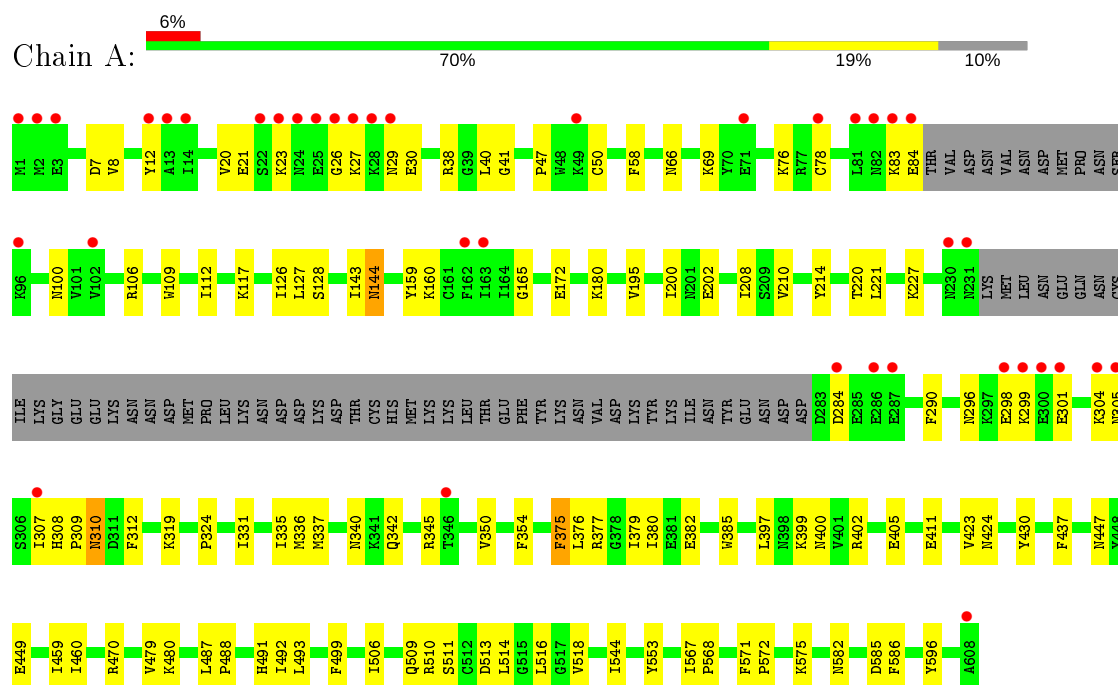
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	417	Total	O	0	0
			417	417		
5	B	364	Total	O	0	0
			364	364		

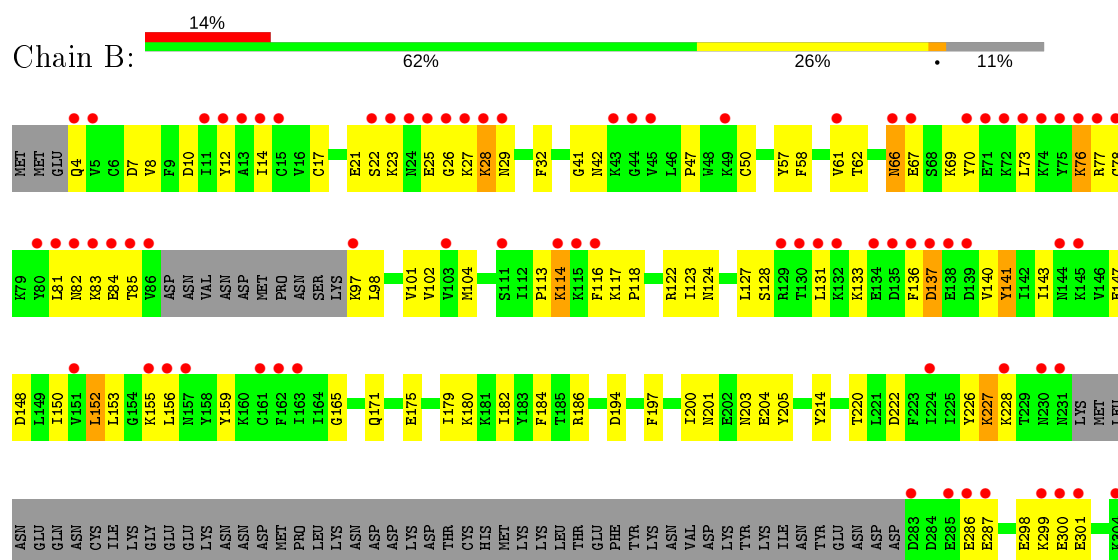
3 Residue-property plots [i](#)

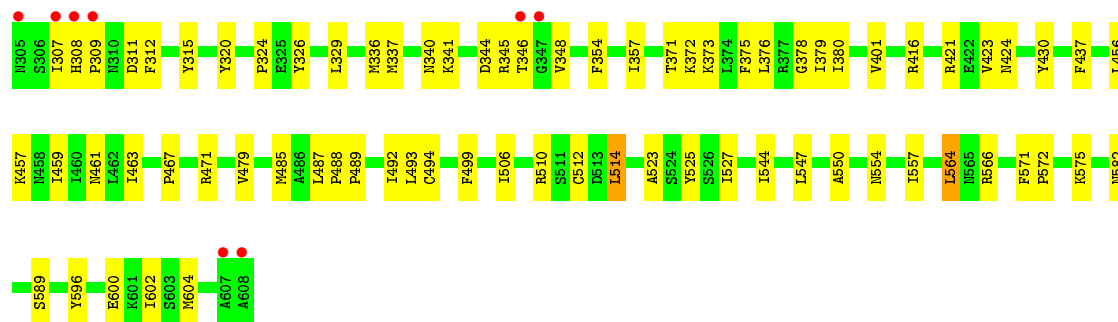
These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are 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: Bifunctional dihydrofolate reductase-thymidylate synthase



- Molecule 1: Bifunctional dihydrofolate reductase-thymidylate synthase





4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	56.53Å 155.12Å 165.26Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	28.28 – 2.40 28.27 – 2.40	Depositor EDS
% Data completeness (in resolution range)	98.6 (28.28-2.40) 98.6 (28.27-2.40)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.54 (at 2.39Å)	Xtriage
Refinement program	CNS 1.2	Depositor
R, R_{free}	0.202 , 0.254 0.195 , 0.195	Depositor DCC
R_{free} test set	2838 reflections (4.97%)	wwPDB-VP
Wilson B-factor (Å ²)	37.6	Xtriage
Anisotropy	0.423	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 56.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	10007	wwPDB-VP
Average B, all atoms (Å ²)	46.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.33% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: NDP, UMP, CP6

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	0.35	0/4644	0.61	0/6267
1	B	0.34	0/4622	0.58	1/6241 (0.0%)
All	All	0.35	0/9266	0.59	1/12508 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	401	VAL	N-CA-C	-5.31	96.67	111.00

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	4539	0	4496	105	0
1	B	4517	0	4465	148	0
2	A	17	0	13	1	0
2	B	17	0	13	0	0
3	A	48	0	26	5	0
3	B	48	0	26	2	0
4	A	20	0	11	0	0
4	B	20	0	11	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	A	417	0	0	9	0
5	B	364	0	0	13	0
All	All	10007	0	9061	236	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 (236) 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:B:114:LYS:H	1:B:114:LYS:HE3	1.17	1.06
1:A:319:LYS:HG2	1:B:286:GLU:HG3	1.46	0.97
1:B:457:LYS:HE3	1:B:461:ASN:HD21	1.31	0.95
1:A:376:LEU:HD22	1:A:379:ILE:HD11	1.49	0.93
1:A:41:GLY:HA2	1:A:47:PRO:HD3	1.56	0.86
1:A:301:GLU:HB2	1:A:304:LYS:HB2	1.57	0.85
1:B:118:PRO:HB2	1:B:124:ASN:ND2	1.96	0.81
1:B:21:GLU:HG2	1:B:22:SER:H	1.42	0.81
1:B:41:GLY:HA2	1:B:47:PRO:HD3	1.63	0.80
1:B:98:LEU:H	1:B:98:LEU:HD23	1.51	0.75
1:B:171:GLN:HE21	1:B:175:GLU:HG3	1.52	0.74
1:B:114:LYS:H	1:B:114:LYS:CE	1.99	0.73
1:A:308:HIS:HB3	1:A:310:ASN:ND2	2.02	0.73
1:B:118:PRO:HB2	1:B:124:ASN:HD21	1.53	0.73
1:B:575:LYS:HG2	5:B:1707:HOH:O	1.89	0.71
1:A:582:ASN:HB2	1:A:585:ASP:OD2	1.92	0.69
1:B:114:LYS:HA	1:B:117:LYS:HG2	1.75	0.68
1:A:324:PRO:HG2	1:A:571:PHE:CE2	2.29	0.68
1:A:127:LEU:HD23	1:A:143:ILE:HG13	1.77	0.67
1:B:147:GLU:HA	1:B:150:ILE:HG12	1.76	0.66
1:A:112:ILE:O	1:A:117:LYS:HE3	1.95	0.66
1:A:376:LEU:HD22	1:A:379:ILE:CD1	2.25	0.65
1:B:12:TYR:CE1	1:B:180:LYS:HD3	2.31	0.65
1:A:27:LYS:HD2	1:A:27:LYS:N	2.11	0.65
1:B:127:LEU:HD23	1:B:143:ILE:HG13	1.77	0.65
1:B:376:LEU:HD22	1:B:379:ILE:HD11	1.77	0.65
1:B:197:PHE:HE1	1:B:200:ILE:HD11	1.62	0.64
1:B:201:ASN:HB3	1:B:204:GLU:HG2	1.79	0.64
1:B:114:LYS:HE3	1:B:114:LYS:N	2.02	0.63
1:A:324:PRO:HG2	1:A:571:PHE:HE2	1.64	0.63
1:B:29:ASN:HB2	1:B:32:PHE:CE1	2.34	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:23:LYS:HB3	1:B:23:LYS:NZ	2.13	0.62
1:B:21:GLU:HG2	1:B:22:SER:N	2.15	0.61
1:B:147:GLU:CD	1:B:147:GLU:H	2.02	0.61
1:B:227:LYS:NZ	1:B:227:LYS:HB3	2.16	0.61
1:A:411:GLU:HB2	5:A:1538:HOH:O	2.01	0.60
1:A:491:HIS:HD2	1:A:509:GLN:HG3	1.66	0.60
1:B:131:LEU:HG	1:B:136:PHE:HE1	1.67	0.59
1:A:290:PHE:HB2	1:B:320:TYR:OH	2.01	0.59
1:A:487:LEU:HD12	1:A:487:LEU:O	2.02	0.59
1:A:78:CYS:HB3	1:A:83:LYS:O	2.02	0.58
1:B:493:LEU:HD12	1:B:493:LEU:C	2.24	0.58
1:B:309:PRO:HA	1:B:312:PHE:HD2	1.68	0.58
1:B:378:GLY:HA3	5:B:1034:HOH:O	2.04	0.58
1:B:113:PRO:HG2	1:B:116:PHE:HD2	1.68	0.58
1:B:197:PHE:CE1	1:B:200:ILE:HD11	2.39	0.58
1:B:201:ASN:HD21	1:B:203:ASN:HB2	1.69	0.57
1:B:67:GLU:HG2	1:B:98:LEU:HD21	1.85	0.57
1:A:304:LYS:NZ	1:A:309:PRO:HG3	2.19	0.57
1:B:604:MET:HE3	5:B:1231:HOH:O	2.05	0.57
1:B:506:ILE:HG12	1:B:544:ILE:HB	1.85	0.57
1:B:336:MET:HE3	1:B:557:ILE:HG23	1.87	0.57
1:B:10:ASP:OD2	1:B:73:LEU:HD22	2.03	0.57
1:B:299:LYS:HG3	1:B:300:GLU:OE2	2.04	0.56
1:B:77:ARG:O	1:B:81:LEU:HG	2.04	0.56
1:A:299:LYS:O	1:A:299:LYS:HG3	2.04	0.56
1:A:26:GLY:C	1:A:27:LYS:HD2	2.26	0.56
1:A:402:ARG:HG2	1:A:402:ARG:HH11	1.71	0.56
1:A:23:LYS:HD2	1:A:30:GLU:OE1	2.06	0.56
1:A:109:TRP:O	1:A:117:LYS:HE2	2.06	0.56
1:A:23:LYS:NZ	1:A:23:LYS:HB2	2.21	0.56
1:B:512:CYS:SG	1:B:547:LEU:HD22	2.45	0.55
1:A:305:ASN:HD22	1:A:305:ASN:N	2.04	0.55
1:B:523:ALA:O	1:B:527:ILE:HG13	2.06	0.55
1:B:26:GLY:O	1:B:27:LYS:HB2	2.07	0.55
1:B:179:ILE:HB	1:B:205:TYR:OH	2.07	0.55
1:B:67:GLU:HA	1:B:98:LEU:HD21	1.89	0.54
1:A:506:ILE:HG12	1:A:544:ILE:HB	1.89	0.54
1:B:4:GLN:HG3	1:B:7:ASP:OD2	2.08	0.54
1:A:210:VAL:HB	5:A:1119:HOH:O	2.07	0.54
1:B:589:SER:HB3	5:B:1571:HOH:O	2.08	0.54
1:B:299:LYS:HG3	1:B:300:GLU:CD	2.28	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:457:LYS:HD2	5:B:1539:HOH:O	2.07	0.54
1:B:102:VAL:HG23	1:B:102:VAL:O	2.08	0.53
1:B:324:PRO:HB2	1:B:571:PHE:HE2	1.73	0.53
1:A:319:LYS:HG2	1:B:286:GLU:CG	2.31	0.53
1:A:354:PHE:CE2	1:B:506:ILE:HG13	2.43	0.53
1:B:308:HIS:HB2	1:B:311:ASP:OD2	2.09	0.53
1:A:447:ASN:OD1	1:A:449:GLU:HG2	2.09	0.52
1:A:202:GLU:HG2	5:A:1410:HOH:O	2.07	0.52
1:A:307:ILE:HD12	1:A:336:MET:O	2.10	0.52
1:B:329:LEU:HD22	1:B:564:LEU:HD12	1.90	0.52
1:A:301:GLU:OE1	1:A:337:MET:HB3	2.10	0.52
1:A:66:ASN:ND2	1:A:69:LYS:HE3	2.25	0.52
1:B:171:GLN:HE21	1:B:175:GLU:CG	2.19	0.52
1:B:457:LYS:HE3	1:B:461:ASN:ND2	2.11	0.52
1:B:128:SER:HB2	3:B:710:NDP:O3X	2.09	0.52
1:B:214:TYR:O	1:B:220:THR:HA	2.09	0.52
1:B:572:PRO:HB3	1:B:596:TYR:HA	1.92	0.52
1:A:397:LEU:HD21	1:A:405:GLU:HB2	1.92	0.51
1:B:29:ASN:HD22	1:B:32:PHE:HE1	1.57	0.51
1:A:83:LYS:O	1:A:84:GLU:HG3	2.10	0.51
1:A:284:ASP:HB3	1:B:69:LYS:HE2	1.93	0.51
1:A:309:PRO:HA	1:A:312:PHE:HD2	1.74	0.51
1:B:376:LEU:O	1:B:380:ILE:HG13	2.11	0.51
1:B:600:GLU:HG3	5:B:1140:HOH:O	2.10	0.51
1:B:67:GLU:HG2	1:B:98:LEU:CD2	2.41	0.51
1:B:22:SER:HB2	1:B:25:GLU:O	2.10	0.50
1:B:423:VAL:O	1:B:424:ASN:HB2	2.10	0.50
1:A:41:GLY:N	1:A:195:VAL:HG23	2.26	0.49
1:A:335:ILE:HD12	1:A:514:LEU:CD1	2.41	0.49
1:B:141:TYR:N	1:B:141:TYR:CD1	2.79	0.49
1:B:186:ARG:HB2	1:B:222:ASP:OD1	2.12	0.49
1:B:373:LYS:HE2	1:B:375:PHE:CE1	2.48	0.49
1:A:41:GLY:H	1:A:195:VAL:HG23	1.77	0.49
1:B:312:PHE:HB3	1:B:315:TYR:HB3	1.94	0.49
1:B:70:TYR:CG	1:B:98:LEU:HD13	2.47	0.49
1:A:20:VAL:HG21	1:A:38:ARG:HH11	1.77	0.49
1:A:165:GLY:HA3	3:A:610:NDP:C5N	2.43	0.49
1:B:287:GLU:HB3	5:B:1562:HOH:O	2.13	0.49
1:A:296:ASN:C	1:A:298:GLU:H	2.16	0.48
1:A:513:ASP:OD2	1:A:516:LEU:HB2	2.12	0.48
1:A:165:GLY:HA3	3:A:610:NDP:H5N	1.96	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:572:PRO:HB3	1:A:596:TYR:HA	1.94	0.48
1:B:28:LYS:NZ	1:B:28:LYS:HB3	2.28	0.48
1:B:23:LYS:HZ3	1:B:23:LYS:HB3	1.79	0.48
1:B:301:GLU:HB3	1:B:337:MET:O	2.13	0.48
1:B:113:PRO:CG	1:B:116:PHE:HD2	2.26	0.48
1:A:340:ASN:HB3	1:B:499:PHE:CE1	2.48	0.48
1:A:493:LEU:CD2	1:B:492:ILE:HG21	2.43	0.48
1:A:284:ASP:HB3	1:B:69:LYS:CE	2.43	0.48
1:A:221:LEU:HD23	1:A:221:LEU:N	2.28	0.48
1:B:201:ASN:HD22	1:B:204:GLU:HG2	1.79	0.48
1:A:106:ARG:HB2	1:A:128:SER:HB2	1.95	0.47
1:A:376:LEU:O	1:A:380:ILE:HG13	2.14	0.47
1:B:182:ILE:HB	1:B:226:TYR:HB2	1.95	0.47
1:B:357:ILE:O	1:B:357:ILE:HG23	2.14	0.47
1:A:506:ILE:HG13	1:B:354:PHE:CE2	2.49	0.47
1:B:114:LYS:HA	1:B:117:LYS:CG	2.43	0.47
1:B:582:ASN:HB2	5:B:1524:HOH:O	2.15	0.47
1:B:73:LEU:HA	1:B:76:LYS:HE3	1.97	0.47
1:B:57:TYR:O	1:B:61:VAL:HG23	2.14	0.47
1:B:101:VAL:HG22	1:B:123:ILE:HB	1.97	0.47
1:A:109:TRP:CE3	1:A:126:ILE:HD11	2.50	0.47
1:A:499:PHE:CE1	1:B:340:ASN:HB3	2.50	0.47
1:B:554:ASN:HB2	5:B:1151:HOH:O	2.15	0.47
1:B:346:THR:C	1:B:348:VAL:H	2.18	0.47
1:B:81:LEU:O	1:B:82:ASN:HB3	2.14	0.47
1:A:400:ASN:OD1	1:A:402:ARG:NH2	2.48	0.46
1:A:335:ILE:HD12	1:A:514:LEU:HD11	1.96	0.46
1:B:85:THR:O	1:B:85:THR:HG23	2.14	0.46
1:A:100:ASN:OD1	1:A:159:TYR:HB3	2.16	0.46
1:A:375:PHE:CD1	1:A:375:PHE:N	2.84	0.46
1:B:171:GLN:NE2	1:B:175:GLU:HG3	2.26	0.46
1:A:305:ASN:N	1:A:305:ASN:ND2	2.63	0.46
1:A:345:ARG:HG2	1:A:345:ARG:HH11	1.80	0.46
1:A:7:ASP:OD1	1:A:180:LYS:HE3	2.15	0.46
1:B:137:ASP:HB2	1:B:140:VAL:HG23	1.97	0.45
1:B:98:LEU:H	1:B:98:LEU:CD2	2.25	0.45
1:B:127:LEU:O	3:B:710:NDP:H1B	2.15	0.45
1:A:499:PHE:CZ	1:B:340:ASN:HB3	2.51	0.45
1:A:200:ILE:HG13	5:A:1211:HOH:O	2.16	0.45
1:B:131:LEU:HG	1:B:136:PHE:CE1	2.49	0.45
1:A:470:ARG:HH12	1:B:344:ASP:CB	2.29	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:12:TYR:CE2	1:A:160:LYS:HD3	2.52	0.45
1:A:567:ILE:HA	1:A:568:PRO:HD3	1.84	0.45
1:A:58:PHE:CZ	2:A:609:CP6:H12	2.52	0.45
1:A:377:ARG:NH1	5:A:1726:HOH:O	2.49	0.45
1:A:586:PHE:HB2	5:A:1059:HOH:O	2.17	0.45
1:A:510:ARG:HG3	1:A:511:SER:N	2.32	0.44
1:B:227:LYS:C	1:B:227:LYS:HD2	2.38	0.44
1:A:492:ILE:HG21	1:B:493:LEU:CD2	2.47	0.44
1:A:488:PRO:HG3	1:B:471:ARG:HD3	1.99	0.44
1:B:376:LEU:HD22	1:B:379:ILE:CD1	2.46	0.44
1:A:214:TYR:O	1:A:220:THR:HA	2.18	0.44
1:B:201:ASN:HB3	1:B:204:GLU:CG	2.47	0.44
1:A:437:PHE:CD1	1:B:479:VAL:HB	2.52	0.44
1:A:144:ASN:C	1:A:144:ASN:HD22	2.20	0.44
1:A:492:ILE:HD11	1:A:510:ARG:HD3	1.98	0.44
1:B:459:ILE:O	1:B:463:ILE:HG13	2.18	0.44
1:B:566:ARG:NH1	1:B:602:ILE:HD11	2.33	0.44
1:B:83:LYS:HG2	1:B:84:GLU:N	2.33	0.44
1:B:227:LYS:HD2	1:B:228:LYS:O	2.17	0.43
1:A:127:LEU:O	3:A:610:NDP:H1B	2.18	0.43
1:B:416:ARG:NH2	1:B:488:PRO:HD3	2.33	0.43
1:A:342:GLN:HG2	5:A:1129:HOH:O	2.18	0.43
1:B:467:PRO:HD2	5:B:1587:HOH:O	2.18	0.43
1:B:73:LEU:O	1:B:77:ARG:HG3	2.18	0.43
1:A:127:LEU:CD2	1:A:143:ILE:HG13	2.47	0.43
1:B:227:LYS:HZ3	1:B:227:LYS:HB3	1.82	0.43
1:B:312:PHE:CE1	1:B:564:LEU:HD23	2.53	0.43
1:B:98:LEU:N	1:B:98:LEU:HD23	2.27	0.43
1:B:14:ILE:HD13	1:B:58:PHE:HD1	1.84	0.43
1:B:171:GLN:NE2	1:B:175:GLU:CG	2.80	0.43
1:B:78:CYS:SG	1:B:85:THR:HG22	2.58	0.43
1:A:331:ILE:HG22	1:A:514:LEU:HD11	2.01	0.43
1:A:304:LYS:HG3	1:A:337:MET:CE	2.49	0.43
1:A:459:ILE:HG13	1:A:460:ILE:N	2.34	0.43
1:B:201:ASN:ND2	1:B:203:ASN:HB2	2.32	0.43
1:A:27:LYS:C	1:A:29:ASN:H	2.22	0.43
1:B:307:ILE:HD12	1:B:336:MET:HE2	2.01	0.43
1:B:326:TYR:HA	1:B:329:LEU:HB2	1.99	0.43
1:B:456:LEU:O	1:B:459:ILE:HG13	2.19	0.43
1:A:172:GLU:OE2	3:A:610:NDP:N7A	2.51	0.42
1:A:402:ARG:HG2	1:A:402:ARG:NH1	2.33	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:A:1515:HOH:O	1:B:345:ARG:HD2	2.19	0.42
1:A:208:ILE:HD13	1:A:227:LYS:HB2	2.01	0.42
1:A:23:LYS:HZ2	1:A:23:LYS:HB2	1.83	0.42
1:A:479:VAL:HB	1:B:437:PHE:CD1	2.54	0.42
1:B:494:CYS:SG	1:B:525:TYR:CE2	3.12	0.42
1:A:493:LEU:HD12	1:A:493:LEU:C	2.40	0.42
1:A:350:VAL:HG12	1:A:553:TYR:HA	2.01	0.42
1:B:485:MET:SD	1:B:489:PRO:HD3	2.59	0.42
1:A:514:LEU:CD2	1:A:518:VAL:HG21	2.50	0.42
1:B:371:THR:O	1:B:372:LYS:HB3	2.19	0.42
1:B:493:LEU:HD12	1:B:493:LEU:O	2.20	0.42
1:A:382:GLU:O	1:A:385:TRP:HB3	2.20	0.41
1:B:341:LYS:HE3	5:B:1752:HOH:O	2.20	0.41
1:B:153:LEU:C	1:B:155:LYS:H	2.24	0.41
1:B:298:GLU:OE1	1:B:298:GLU:HA	2.20	0.41
1:A:480:LYS:HD3	5:A:1115:HOH:O	2.19	0.41
1:B:42:ASN:HA	1:B:194:ASP:OD2	2.20	0.41
1:B:104:MET:HA	1:B:165:GLY:O	2.20	0.41
1:B:4:GLN:O	1:B:8:VAL:HG23	2.21	0.41
1:A:423:VAL:O	1:A:424:ASN:HB2	2.20	0.41
1:A:514:LEU:HD23	1:A:518:VAL:HG21	2.03	0.41
1:B:133:LYS:N	1:B:133:LYS:HD3	2.35	0.41
1:B:97:LYS:O	1:B:97:LYS:HG3	2.21	0.41
1:A:8:VAL:HA	1:A:76:LYS:HD3	2.03	0.41
1:B:21:GLU:CG	1:B:22:SER:H	2.23	0.41
1:A:309:PRO:HA	1:A:312:PHE:CD2	2.54	0.41
1:A:470:ARG:HH12	1:B:344:ASP:HB2	1.86	0.41
1:B:69:LYS:HD2	1:B:159:TYR:OH	2.21	0.41
1:B:66:ASN:OD1	1:B:69:LYS:HG3	2.20	0.41
1:A:23:LYS:NZ	1:A:23:LYS:CB	2.84	0.41
1:A:575:LYS:HD3	1:A:575:LYS:HA	1.79	0.41
1:A:40:LEU:O	3:A:610:NDP:H2N	2.20	0.41
1:B:17:CYS:HB2	1:B:184:PHE:CZ	2.55	0.41
1:B:62:THR:O	1:B:122:ARG:HG2	2.21	0.41
1:B:492:ILE:HD11	1:B:510:ARG:HD3	2.03	0.40
1:B:421:ARG:NH2	5:B:1498:HOH:O	2.51	0.40
1:A:304:LYS:HZ2	1:A:309:PRO:HG3	1.86	0.40
1:A:377:ARG:NH2	1:A:399:LYS:O	2.53	0.40
1:B:152:LEU:HD11	1:B:156:LEU:HD11	2.04	0.40
1:B:50:CYS:HA	5:B:1623:HOH:O	2.20	0.40
1:B:514:LEU:HD11	1:B:550:ALA:HB1	2.04	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	540/608 (89%)	508 (94%)	30 (6%)	2 (0%)	34	48
1	B	538/608 (88%)	490 (91%)	46 (9%)	2 (0%)	34	48
All	All	1078/1216 (89%)	998 (93%)	76 (7%)	4 (0%)	34	48

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	430	TYR
1	A	21	GLU
1	A	430	TYR
1	B	152	LEU

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	510/571 (89%)	506 (99%)	4 (1%)	81	91
1	B	507/571 (89%)	496 (98%)	11 (2%)	52	71
All	All	1017/1142 (89%)	1002 (98%)	15 (2%)	65	80

All (15) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	50	CYS
1	A	144	ASN
1	A	310	ASN
1	A	375	PHE
1	B	28	LYS
1	B	66	ASN
1	B	76	LYS
1	B	114	LYS
1	B	137	ASP
1	B	141	TYR
1	B	148	ASP
1	B	227	LYS
1	B	487	LEU
1	B	514	LEU
1	B	564	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (21) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	99	GLN
1	A	144	ASN
1	A	157	ASN
1	A	305	ASN
1	A	310	ASN
1	A	316	ASN
1	A	394	ASN
1	A	424	ASN
1	A	554	ASN
1	A	582	ASN
1	B	29	ASN
1	B	99	GLN
1	B	124	ASN
1	B	171	GLN
1	B	201	ASN
1	B	203	ASN
1	B	316	ASN
1	B	394	ASN
1	B	424	ASN
1	B	461	ASN
1	B	554	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 carbohydrates in this entry.

5.6 Ligand geometry ⓘ

6 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	$\# Z > 2$
3	NDP	A	610	-	45,52,52	1.35	5 (11%)	53,80,80	1.72	7 (13%)
4	UMP	A	611	-	18,21,21	2.00	5 (27%)	21,31,31	1.72	6 (28%)
2	CP6	B	709	-	18,18,18	3.79	14 (77%)	25,25,25	2.00	9 (36%)
2	CP6	A	609	-	18,18,18	3.54	15 (83%)	25,25,25	2.12	10 (40%)
4	UMP	B	711	-	18,21,21	2.02	3 (16%)	21,31,31	1.77	6 (28%)
3	NDP	B	710	-	45,52,52	1.43	7 (15%)	53,80,80	1.54	8 (15%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NDP	A	610	-	-	4/30/77/77	0/5/5/5
4	UMP	A	611	-	-	1/7/22/22	0/2/2/2
2	CP6	B	709	-	-	0/6/6/6	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	CP6	A	609	-	-	0/6/6/6	0/2/2/2
4	UMP	B	711	-	-	1/7/22/22	0/2/2/2
3	NDP	B	710	-	-	3/30/77/77	0/5/5/5

All (49) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	709	CP6	C4-C5	6.98	1.56	1.40
2	A	609	CP6	C4-C5	6.29	1.54	1.40
2	B	709	CP6	C9-C10	6.20	1.49	1.38
2	A	609	CP6	C9-C10	5.88	1.49	1.38
4	A	611	UMP	C4-N3	5.74	1.43	1.33
4	B	711	UMP	C4-N3	5.57	1.42	1.33
2	A	609	CP6	C12-C7	5.41	1.50	1.39
2	B	709	CP6	C12-C7	5.37	1.50	1.39
3	B	710	NDP	C6N-N1N	4.95	1.49	1.37
2	B	709	CP6	C4-C3	4.62	1.53	1.43
2	A	609	CP6	C10-CL1	-4.61	1.64	1.74
3	A	610	NDP	C6N-N1N	4.50	1.48	1.37
2	B	709	CP6	C12-C11	4.38	1.46	1.38
2	B	709	CP6	C3-N1	4.16	1.41	1.35
4	B	711	UMP	O4'-C1'	4.11	1.51	1.42
2	B	709	CP6	C9-C8	3.87	1.45	1.38
2	A	609	CP6	C4-C3	3.74	1.51	1.43
2	A	609	CP6	C12-C11	3.70	1.45	1.38
4	A	611	UMP	O4'-C1'	3.69	1.50	1.42
2	A	609	CP6	C2-N6	3.59	1.41	1.35
2	B	709	CP6	C10-CL1	-3.45	1.67	1.74
2	B	709	CP6	C2-N1	3.23	1.41	1.35
2	A	609	CP6	C3-N1	3.23	1.39	1.35
2	B	709	CP6	C2-N6	3.22	1.41	1.35
2	B	709	CP6	C2-N14	3.18	1.40	1.33
2	A	609	CP6	C2-N14	3.16	1.40	1.33
2	B	709	CP6	C8-C7	2.98	1.45	1.39
2	B	709	CP6	C11-C10	2.85	1.43	1.38
2	A	609	CP6	C4-C7	-2.77	1.45	1.50
3	B	710	NDP	C4A-N3A	2.77	1.39	1.35
2	A	609	CP6	C11-C10	2.72	1.43	1.38
2	B	709	CP6	C5-N6	2.71	1.39	1.34
4	A	611	UMP	P-OP3	-2.65	1.44	1.54
3	B	710	NDP	C7N-C3N	2.62	1.54	1.48
2	A	609	CP6	C8-C7	2.61	1.44	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	609	CP6	C9-C8	2.60	1.43	1.38
3	A	610	NDP	C7N-C3N	2.52	1.54	1.48
4	B	711	UMP	P-OP3	-2.46	1.45	1.54
2	A	609	CP6	C5-N6	2.38	1.38	1.34
2	A	609	CP6	C2-N1	2.32	1.39	1.35
3	A	610	NDP	C4A-N3A	2.31	1.38	1.35
4	A	611	UMP	P-OP1	-2.21	1.43	1.50
3	A	610	NDP	C8A-N7A	2.16	1.38	1.34
3	B	710	NDP	C5D-C4D	2.13	1.58	1.51
4	A	611	UMP	P-OP2	-2.12	1.46	1.54
3	B	710	NDP	C8A-N7A	2.11	1.38	1.34
3	A	610	NDP	C5D-C4D	2.11	1.58	1.51
3	B	710	NDP	PA-O2A	-2.04	1.45	1.55
3	B	710	NDP	O4D-C1D	2.03	1.46	1.42

All (46) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	710	NDP	N3A-C2A-N1A	-5.99	119.32	128.68
3	A	610	NDP	N3A-C2A-N1A	-5.84	119.55	128.68
3	A	610	NDP	C1D-N1N-C2N	-5.05	112.71	121.11
2	B	709	CP6	C2-N6-C5	4.40	119.91	116.24
3	A	610	NDP	O2B-C2B-C3B	-4.15	96.65	111.68
2	B	709	CP6	C3-C4-C5	-4.06	112.57	115.91
2	A	609	CP6	C15-C5-C4	-3.87	119.89	122.57
3	A	610	NDP	C1B-N9A-C4A	-3.68	120.18	126.64
3	B	710	NDP	O4B-C1B-C2B	-3.57	100.40	106.59
2	A	609	CP6	C2-N6-C5	3.47	119.13	116.24
4	A	611	UMP	C5-C4-N3	-3.44	115.74	123.31
2	A	609	CP6	C2-N1-C3	3.42	120.76	116.99
4	B	711	UMP	C5-C4-N3	-3.38	115.86	123.31
2	A	609	CP6	C7-C4-C3	3.37	125.31	120.42
2	A	609	CP6	C3-C4-C5	-3.36	113.14	115.91
2	A	609	CP6	C9-C10-CL1	-3.33	114.15	119.35
2	A	609	CP6	C11-C10-CL1	3.24	124.42	119.35
2	B	709	CP6	C11-C10-CL1	3.11	124.22	119.35
3	B	710	NDP	O2B-C2B-C3B	-3.08	100.52	111.68
3	B	710	NDP	C1D-N1N-C2N	-3.07	116.00	121.11
4	B	711	UMP	C2'-C1'-N1	3.04	121.28	114.27
4	B	711	UMP	O4'-C1'-C2'	-3.00	100.58	106.25
2	B	709	CP6	C15-C5-C4	-2.99	120.50	122.57
2	B	709	CP6	C2-N1-C3	2.90	120.19	116.99

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	611	UMP	O4'-C1'-C2'	-2.88	100.80	106.25
3	A	610	NDP	C3N-C2N-N1N	-2.88	118.99	123.10
4	A	611	UMP	C4'-O4'-C1'	2.84	116.30	109.45
4	B	711	UMP	C4'-O4'-C1'	2.83	116.29	109.45
3	B	710	NDP	C2A-N1A-C6A	2.82	123.58	118.75
4	B	711	UMP	O4'-C4'-C3'	-2.69	99.40	105.67
3	A	610	NDP	O4B-C1B-C2B	-2.65	101.99	106.59
4	A	611	UMP	C2'-C1'-N1	2.65	120.38	114.27
3	A	610	NDP	C2A-N1A-C6A	2.64	123.27	118.75
2	B	709	CP6	C9-C10-CL1	-2.55	115.38	119.35
4	A	611	UMP	O4'-C4'-C3'	-2.48	99.89	105.67
3	B	710	NDP	PN-O3-PA	-2.48	124.33	132.83
2	B	709	CP6	C7-C4-C3	2.45	123.97	120.42
4	A	611	UMP	C2'-C3'-C4'	2.45	107.86	102.76
3	B	710	NDP	C3N-C2N-N1N	-2.43	119.63	123.10
3	B	710	NDP	C1B-N9A-C4A	-2.40	122.42	126.64
2	A	609	CP6	C7-C4-C5	-2.36	121.55	123.46
4	B	711	UMP	C2'-C3'-C4'	2.30	107.56	102.76
2	B	709	CP6	C16-C15-C5	2.15	120.17	114.88
2	A	609	CP6	C4-C3-N1	-2.10	121.34	122.52
2	A	609	CP6	N13-C3-N1	2.03	119.90	117.03
2	B	709	CP6	N13-C3-N1	2.02	119.88	117.03

There are no chirality outliers.

All (9) torsion outliers are listed below:

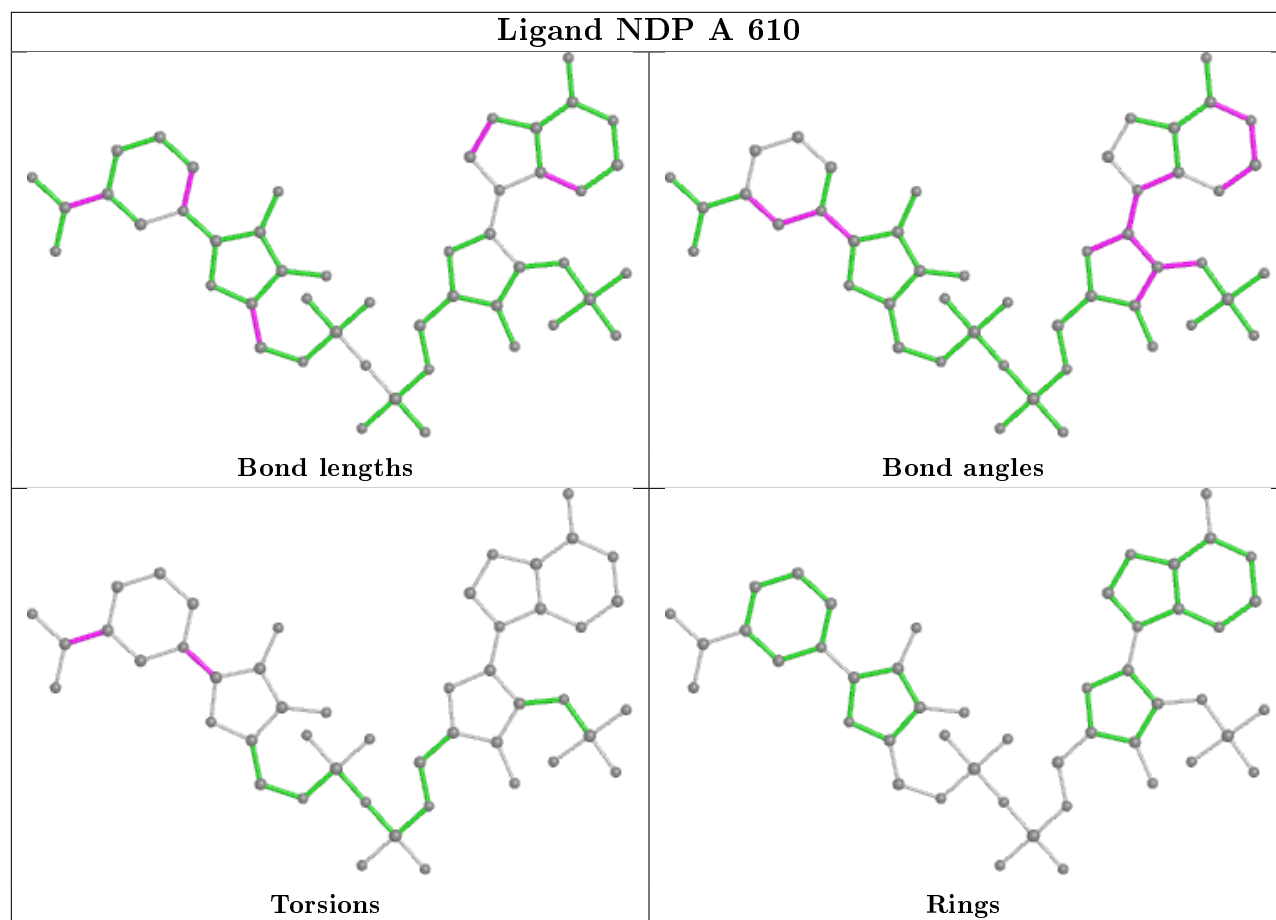
Mol	Chain	Res	Type	Atoms
3	A	610	NDP	O4D-C1D-N1N-C2N
3	B	710	NDP	O4D-C1D-N1N-C2N
3	A	610	NDP	C2D-C1D-N1N-C2N
3	B	710	NDP	C2D-C1D-N1N-C2N
4	B	711	UMP	O4'-C4'-C5'-O5'
3	A	610	NDP	O4D-C1D-N1N-C6N
4	A	611	UMP	O4'-C4'-C5'-O5'
3	A	610	NDP	C2N-C3N-C7N-N7N
3	B	710	NDP	C2N-C3N-C7N-N7N

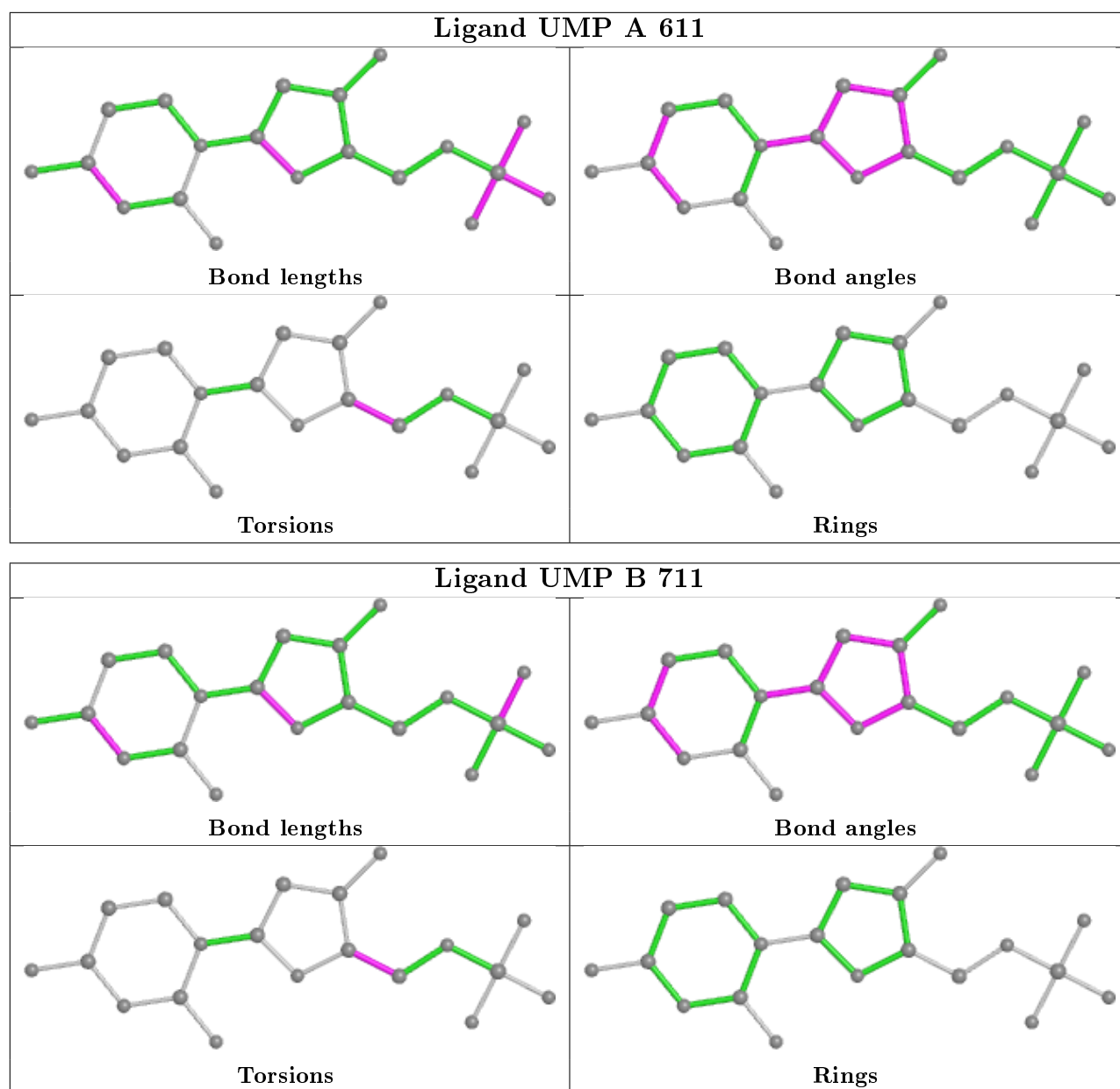
There are no ring outliers.

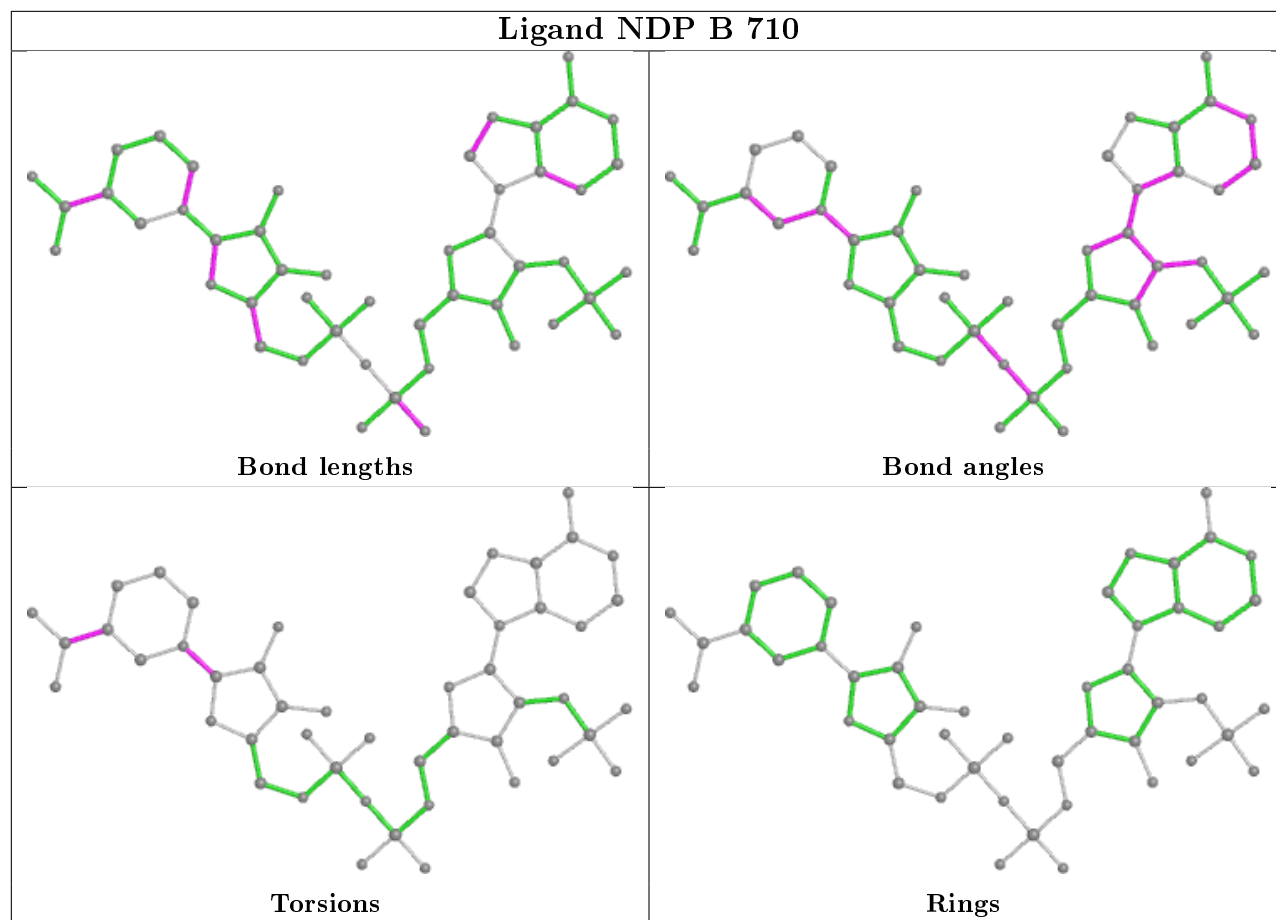
3 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	610	NDP	5	0
2	A	609	CP6	1	0
3	B	710	NDP	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	546/608 (89%)	-0.01	39 (7%) 16 14	21, 35, 86, 90	0
1	B	544/608 (89%)	0.39	83 (15%) 2 1	21, 43, 90, 90	0
All	All	1090/1216 (89%)	0.19	122 (11%) 5 4	21, 37, 90, 90	0

All (122) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	26	GLY	11.5
1	A	2	MET	9.7
1	B	27	LYS	9.1
1	A	1	MET	8.4
1	B	28	LYS	7.6
1	A	26	GLY	6.6
1	B	136	PHE	6.3
1	A	304	LYS	6.3
1	B	75	TYR	6.1
1	B	29	ASN	6.0
1	B	608	ALA	6.0
1	A	231	ASN	6.0
1	B	115	LYS	5.5
1	A	230	ASN	5.4
1	B	80	TYR	5.4
1	A	27	LYS	5.3
1	A	28	LYS	5.2
1	B	81	LEU	5.2
1	A	284	ASP	5.2
1	B	116	PHE	5.2
1	B	24	ASN	5.2
1	A	24	ASN	5.0
1	A	305	ASN	5.0
1	B	82	ASN	4.9

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Mol	Chain	Res	Type	RSRZ
1	A	608	ALA	4.7
1	A	299	LYS	4.6
1	B	73	LEU	4.5
1	B	231	ASN	4.4
1	B	230	ASN	4.3
1	A	298	GLU	4.3
1	B	78	CYS	4.3
1	B	14	ILE	4.2
1	A	300	GLU	4.2
1	B	134	GLU	4.2
1	B	130	THR	4.2
1	B	299	LYS	4.2
1	B	157	ASN	4.1
1	A	301	GLU	4.1
1	B	25	GLU	4.1
1	B	84	GLU	4.1
1	B	135	ASP	3.9
1	B	85	THR	3.9
1	A	84	GLU	3.9
1	B	70	TYR	3.9
1	B	97	LYS	3.9
1	B	132	LYS	3.8
1	B	23	LYS	3.8
1	A	346	THR	3.8
1	B	163	ILE	3.7
1	B	283	ASP	3.7
1	B	66	ASN	3.7
1	A	287	GLU	3.5
1	B	138	GLU	3.4
1	B	49	LYS	3.4
1	B	5	VAL	3.4
1	B	22	SER	3.4
1	B	307	ILE	3.4
1	A	3	GLU	3.4
1	A	29	ASN	3.3
1	B	76	LYS	3.3
1	B	346	THR	3.3
1	A	25	GLU	3.3
1	B	77	ARG	3.3
1	B	67	GLU	3.3
1	B	114	LYS	3.2
1	A	22	SER	3.2

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Mol	Chain	Res	Type	RSRZ
1	A	82	ASN	3.1
1	B	45	VAL	3.1
1	B	301	GLU	3.1
1	B	151	VAL	3.1
1	B	15	CYS	3.1
1	A	71	GLU	3.1
1	B	144	ASN	3.1
1	B	103	VAL	3.0
1	B	83	LYS	3.0
1	B	44	GLY	3.0
1	B	308	HIS	2.9
1	A	14	ILE	2.9
1	A	286	GLU	2.9
1	B	309	PRO	2.9
1	B	86	VAL	2.9
1	B	61	VAL	2.8
1	B	71	GLU	2.8
1	A	13	ALA	2.8
1	B	155	LYS	2.8
1	B	162	PHE	2.8
1	A	49	LYS	2.7
1	B	137	ASP	2.7
1	B	145	LYS	2.6
1	B	305	ASN	2.6
1	B	72	LYS	2.6
1	B	300	GLU	2.6
1	B	4	GLN	2.6
1	B	111	SER	2.6
1	A	83	LYS	2.6
1	B	161	CYS	2.6
1	A	96	LYS	2.5
1	B	285	GLU	2.5
1	B	228	LYS	2.5
1	A	307	ILE	2.5
1	A	78	CYS	2.4
1	B	11	ILE	2.4
1	B	304	LYS	2.4
1	A	102	VAL	2.4
1	B	286	GLU	2.4
1	A	163	ILE	2.3
1	B	129	ARG	2.3
1	B	139	ASP	2.3

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Mol	Chain	Res	Type	RSRZ
1	B	12	TYR	2.3
1	B	156	LEU	2.3
1	A	162	PHE	2.3
1	B	74	LYS	2.3
1	B	347	GLY	2.2
1	B	607	ALA	2.1
1	B	131	LEU	2.1
1	B	43	LYS	2.1
1	B	287	GLU	2.1
1	B	13	ALA	2.1
1	A	12	TYR	2.1
1	A	81	LEU	2.0
1	A	23	LYS	2.0
1	B	224	ILE	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 carbohydrates 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.

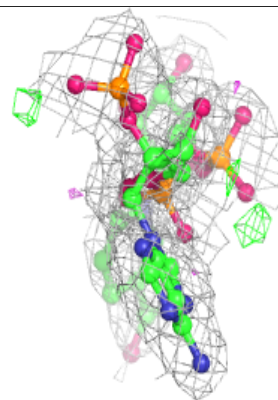
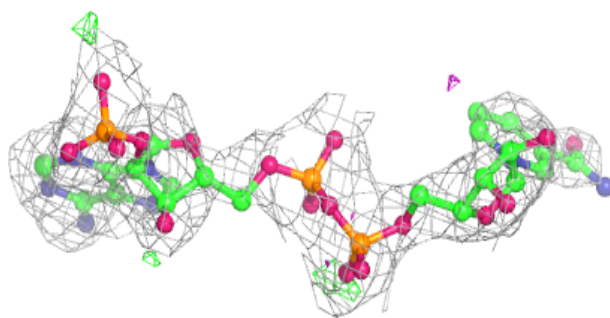
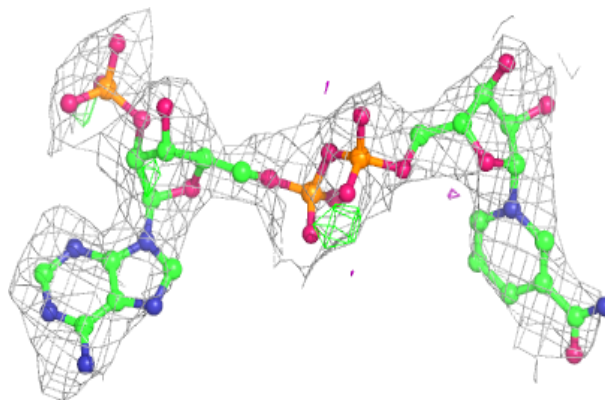
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	CP6	B	709	17/17	0.84	0.30	66,69,73,74	0
3	NDP	B	710	48/48	0.85	0.18	81,86,89,89	0
2	CP6	A	609	17/17	0.94	0.20	23,25,34,39	0
4	UMP	B	711	20/20	0.96	0.12	38,42,44,45	0
3	NDP	A	610	48/48	0.97	0.10	25,36,39,40	0
4	UMP	A	611	20/20	0.97	0.11	33,39,48,49	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.

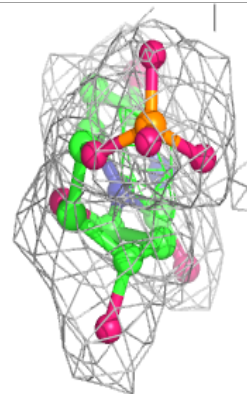
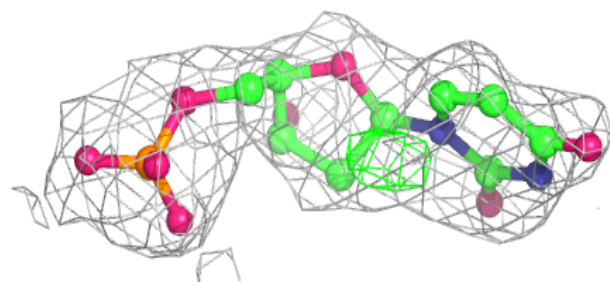
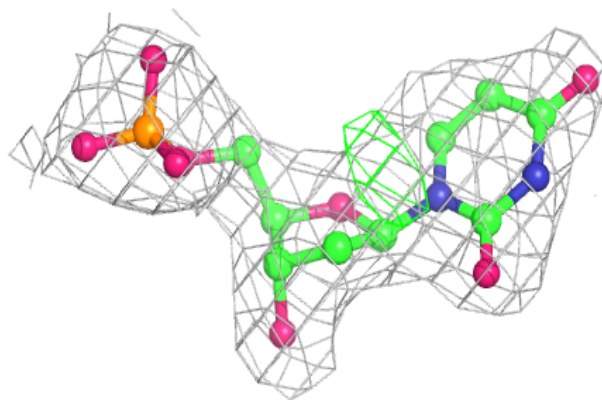
Electron density around NDP B 710:

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



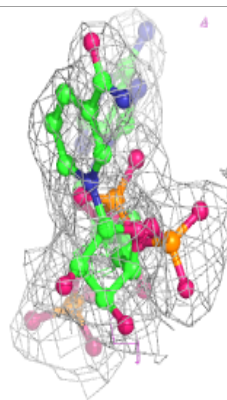
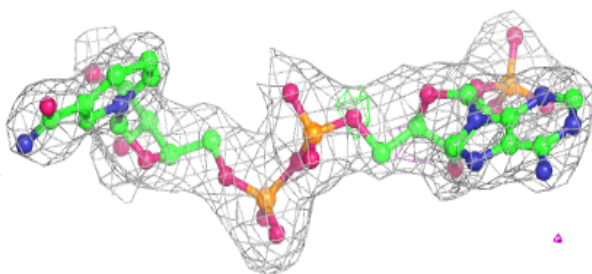
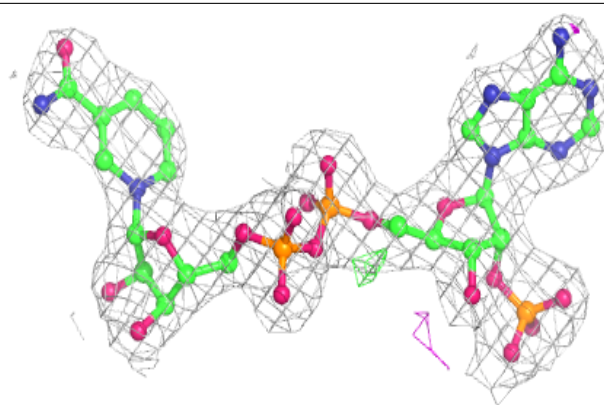
Electron density around UMP B 711:

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

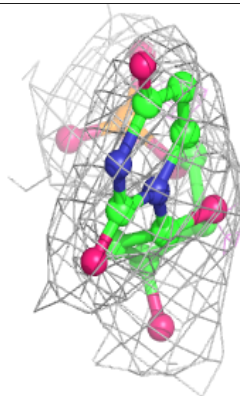
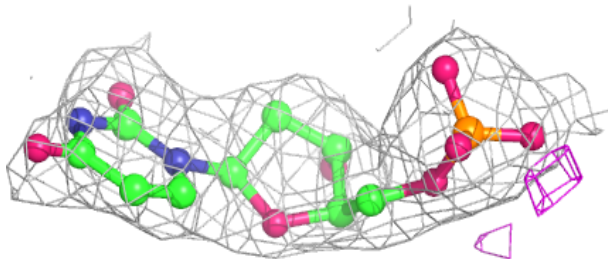
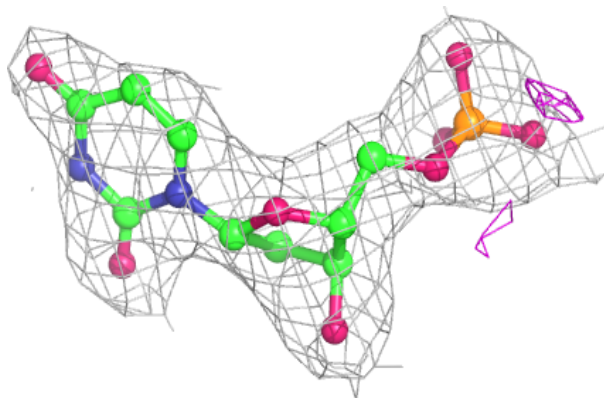


Electron density around NDP A 610:

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

**Electron density around UMP A 611:**

$2mF_o-DF_c$ (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.