wwPDB X-ray Structure Validation Summary Report (i)

Oct 23, 2021 – 01:17 PM EDT

PDB ID	:	4DBV
Title	:	GLYCERALDEHYDE-3-PHOSPHATE DEHYDROGENASE MUTANT WITH LEU 33 REPLACED BY THR, THR 34 REPLACED BY GLY, ASP 36 REPLACED BY GLY, LEU 187 REPLACED BY ALA, AND PRO 188 REPLACED BY SER COMPLEXED WITH NADP+
Authors	:	Didierjean, C.; Rahuel-Clermont, S.; Vitoux, B.; Dideberg, O.; Branlant, G.; Aubry, A.
Deposited on	:	1997-01-06
Resolution	:	2.50 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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 (i) symbol.

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

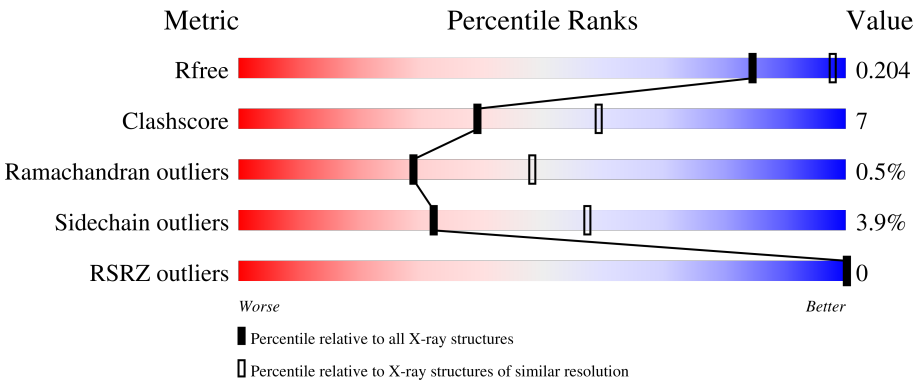
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.23.2
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.23.2

1 Overall quality at a glance (i)

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}	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	O	334	84% 14% •
1	P	334	82% 17% •
1	Q	334	85% 13% •
1	R	334	81% 16% •

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 10629 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.

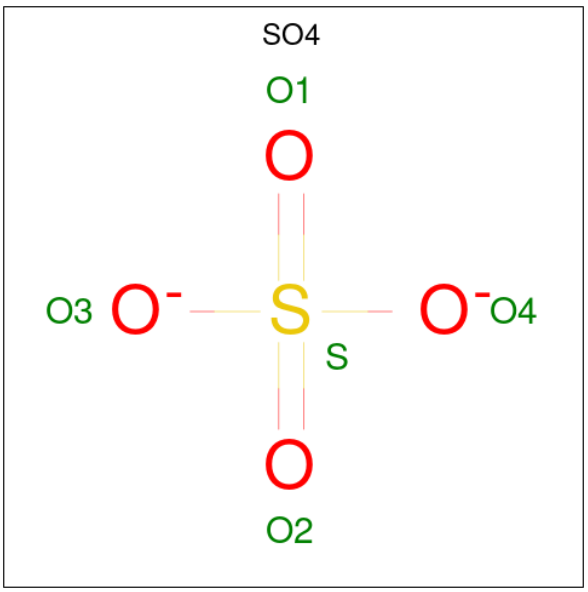
- Molecule 1 is a protein called GLYCERALDEHYDE-3-PHOSPHATE DEHYDROGENASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	O	334	2513	1571	445	488	9	0	0	0
1	P	334	2513	1571	445	488	9	0	0	0
1	Q	334	2513	1571	445	488	9	0	0	0
1	R	334	2513	1571	445	488	9	0	0	0

There are 20 discrepancies between the modelled and reference sequences:

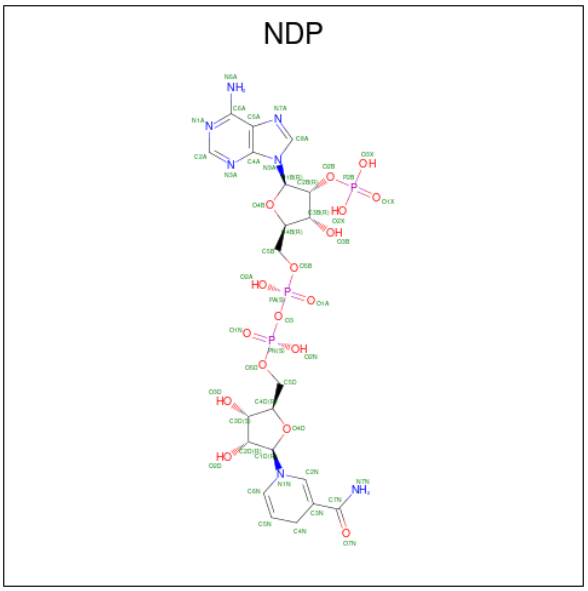
Chain	Residue	Modelled	Actual	Comment	Reference
O	33	THR	LEU	engineered mutation	UNP P00362
O	34	GLY	THR	engineered mutation	UNP P00362
O	36	GLY	ASP	engineered mutation	UNP P00362
O	187	ALA	LEU	engineered mutation	UNP P00362
O	188	SER	PRO	engineered mutation	UNP P00362
P	33	THR	LEU	engineered mutation	UNP P00362
P	34	GLY	THR	engineered mutation	UNP P00362
P	36	GLY	ASP	engineered mutation	UNP P00362
P	187	ALA	LEU	engineered mutation	UNP P00362
P	188	SER	PRO	engineered mutation	UNP P00362
Q	33	THR	LEU	engineered mutation	UNP P00362
Q	34	GLY	THR	engineered mutation	UNP P00362
Q	36	GLY	ASP	engineered mutation	UNP P00362
Q	187	ALA	LEU	engineered mutation	UNP P00362
Q	188	SER	PRO	engineered mutation	UNP P00362
R	33	THR	LEU	engineered mutation	UNP P00362
R	34	GLY	THR	engineered mutation	UNP P00362
R	36	GLY	ASP	engineered mutation	UNP P00362
R	187	ALA	LEU	engineered mutation	UNP P00362
R	188	SER	PRO	engineered mutation	UNP P00362

- Molecule 2 is SULFATE ION (three-letter code: SO4) (formula: O_4S).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	O	S			
2	O	1	5	4	1		0	0
			Total	O	S			
2	O	1	5	4	1		0	0
			Total	O	S			
2	P	1	5	4	1		0	0
			Total	O	S			
2	P	1	5	4	1		0	0
			Total	O	S			
2	Q	1	5	4	1		0	0
			Total	O	S			
2	Q	1	5	4	1		0	0
			Total	O	S			
2	R	1	5	4	1		0	0
			Total	O	S			
2	R	1	5	4	1		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
			Total	C	N	O	P		
3	O	1	48	21	7	17	3	0	0
			Total	C	N	O	P		
3	P	1	48	21	7	17	3	0	0
			Total	C	N	O	P		
3	Q	1	48	21	7	17	3	0	0
			Total	C	N	O	P		
3	R	1	48	21	7	17	3	0	0

- Molecule 4 is water.

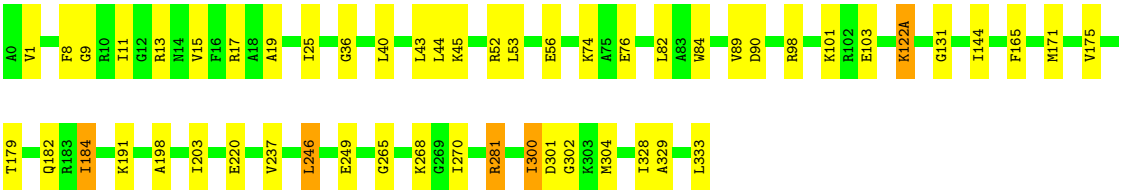
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
4	O	92	92	92	0	0
			Total	O		
4	P	102	102	102	0	0
			Total	O		
4	Q	72	72	72	0	0
			Total	O		
4	R	79	79	79	0	0

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

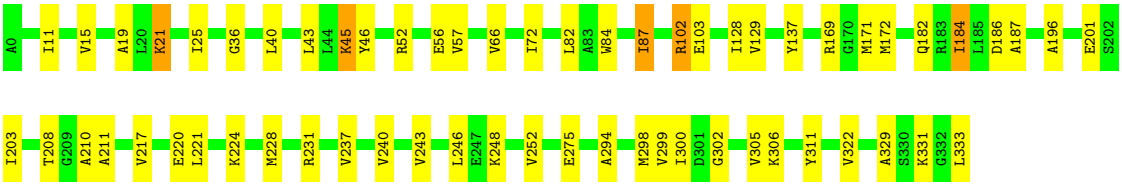
• Molecule 1: GLYCERALDEHYDE-3-PHOSPHATE DEHYDROGENASE

Chain O:



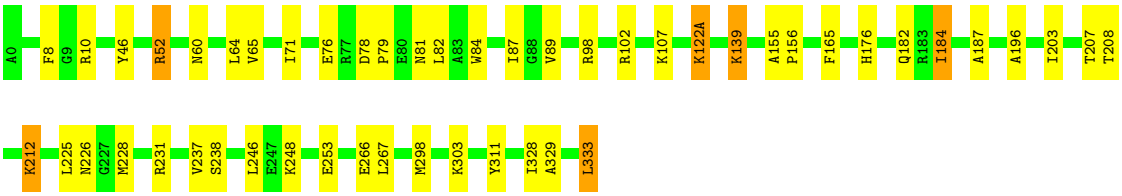
• Molecule 1: GLYCERALDEHYDE-3-PHOSPHATE DEHYDROGENASE

Chain P:



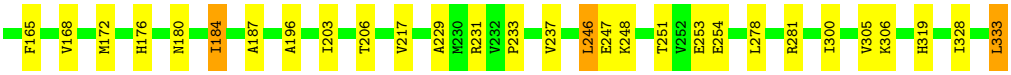
• Molecule 1: GLYCERALDEHYDE-3-PHOSPHATE DEHYDROGENASE

Chain Q:



• Molecule 1: GLYCERALDEHYDE-3-PHOSPHATE DEHYDROGENASE

Chain R:


F165
V168
M172
H176
N180
I184
A187
A196
I203
T206
V217
A229
M230
R231
V232
P233
V237
L246
E247
K248
T251
V252
E253
E254
L278
R281
I300
V305
K306
H319
I328
L333

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α, β, γ	134.14Å 123.95Å 96.73Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	8.00 – 2.50 8.00 – 2.50	Depositor EDS
% Data completeness (in resolution range)	89.4 (8.00-2.50) 94.7 (8.00-2.50)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.05	Depositor
$< I/\sigma(I) >$ [1]	4.96 (at 2.49Å)	Xtriage
Refinement program	X-PLOR 3.1	Depositor
R, R_{free}	0.147 , 0.219 0.147 , 0.204	Depositor DCC
R_{free} test set	5422 reflections (10.17%)	wwPDB-VP
Wilson B-factor (Å^2)	29.1	Xtriage
Anisotropy	0.261	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.27 , 68.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	10629	wwPDB-VP
Average B, all atoms (Å^2)	25.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 13.92% of the height of the origin peak. No significant pseudotranslation is detected.*

[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 (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: SO4, NDP

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	O	0.48	0/2548	0.74	2/3454 (0.1%)
1	P	0.47	0/2548	0.74	1/3454 (0.0%)
1	Q	0.46	0/2548	0.73	1/3454 (0.0%)
1	R	0.45	0/2548	0.74	1/3454 (0.0%)
All	All	0.46	0/10192	0.74	5/13816 (0.0%)

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	O	175	VAL	N-CA-C	-6.36	93.82	111.00
1	O	203	ILE	N-CA-C	-5.85	95.20	111.00
1	P	203	ILE	N-CA-C	-5.70	95.60	111.00
1	Q	203	ILE	N-CA-C	-5.56	95.98	111.00
1	R	203	ILE	N-CA-C	-5.39	96.46	111.00

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	O	2513	0	2555	41	0
1	P	2513	0	2555	42	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	Q	2513	0	2555	42	0
1	R	2513	0	2555	41	0
2	O	10	0	0	0	0
2	P	10	0	0	1	0
2	Q	10	0	0	0	0
2	R	10	0	0	0	0
3	O	48	0	26	4	0
3	P	48	0	26	0	0
3	Q	48	0	26	0	0
3	R	48	0	26	1	0
4	O	92	0	0	3	0
4	P	102	0	0	3	0
4	Q	72	0	0	3	0
4	R	79	0	0	0	0
All	All	10629	0	10324	153	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 7.

The worst 5 of 153 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:Q:184:ILE:HD12	1:Q:184:ILE:H	1.38	0.87
1:O:300:ILE:HD12	1:O:304:MET:HB3	1.61	0.82
1:Q:139:LYS:HB3	1:Q:139:LYS:NZ	1.99	0.78
1:P:184:ILE:H	1:P:184:ILE:HD12	1.48	0.76
1:P:102:ARG:HH11	1:P:102:ARG:HG3	1.56	0.71

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	O	332/334 (99%)	319 (96%)	11 (3%)	2 (1%)	25	43
1	P	332/334 (99%)	319 (96%)	11 (3%)	2 (1%)	25	43
1	Q	332/334 (99%)	319 (96%)	12 (4%)	1 (0%)	41	61
1	R	332/334 (99%)	317 (96%)	13 (4%)	2 (1%)	25	43
All	All	1328/1336 (99%)	1274 (96%)	47 (4%)	7 (0%)	29	48

5 of 7 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	O	237	VAL
1	P	237	VAL
1	Q	237	VAL
1	R	237	VAL
1	O	198	ALA

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	O	269/269 (100%)	260 (97%)	9 (3%)	38	64
1	P	269/269 (100%)	259 (96%)	10 (4%)	34	60
1	Q	269/269 (100%)	259 (96%)	10 (4%)	34	60
1	R	269/269 (100%)	256 (95%)	13 (5%)	25	48
All	All	1076/1076 (100%)	1034 (96%)	42 (4%)	32	57

5 of 42 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	Q	333	LEU
1	R	103	GLU
1	R	2	LYS
1	R	45	LYS
1	R	172	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 20 such sidechains are listed below:

Mol	Chain	Res	Type
1	Q	319	HIS
1	R	152	ASN
1	R	319	HIS
1	R	256	ASN
1	P	146	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

12 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	R	336	-	45,52,52	1.62	9 (20%)	53,80,80	1.44	7 (13%)
3	NDP	O	336	-	45,52,52	1.56	7 (15%)	53,80,80	1.16	5 (9%)
2	SO4	Q	338	-	4,4,4	0.86	0	6,6,6	0.44	0
3	NDP	P	336	-	45,52,52	1.62	8 (17%)	53,80,80	1.29	5 (9%)
2	SO4	P	339	-	4,4,4	0.66	0	6,6,6	0.53	0
2	SO4	R	339	-	4,4,4	0.65	0	6,6,6	0.49	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	SO4	O	339	-	4,4,4	0.72	0	6,6,6	0.41	0
2	SO4	P	338	-	4,4,4	0.68	0	6,6,6	0.39	0
2	SO4	O	338	-	4,4,4	0.80	0	6,6,6	0.75	0
3	NDP	Q	336	-	45,52,52	1.60	8 (17%)	53,80,80	1.29	6 (11%)
2	SO4	R	338	-	4,4,4	1.00	0	6,6,6	0.21	0
2	SO4	Q	339	-	4,4,4	0.69	0	6,6,6	0.40	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NDP	R	336	-	-	4/30/77/77	0/5/5/5
3	NDP	O	336	-	-	6/30/77/77	0/5/5/5
3	NDP	Q	336	-	-	11/30/77/77	0/5/5/5
3	NDP	P	336	-	-	6/30/77/77	0/5/5/5

The worst 5 of 32 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	Q	336	NDP	C4N-C3N	-5.39	1.39	1.49
3	R	336	NDP	C4N-C3N	-5.17	1.39	1.49
3	O	336	NDP	C4N-C3N	-4.88	1.40	1.49
3	P	336	NDP	C4N-C3N	-4.28	1.41	1.49
3	R	336	NDP	P2B-O1X	3.93	1.63	1.50

The worst 5 of 23 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	Q	336	NDP	N3A-C2A-N1A	-4.42	121.77	128.68
3	P	336	NDP	N3A-C2A-N1A	-3.93	122.54	128.68
3	R	336	NDP	O4D-C1D-N1N	3.75	115.40	108.06
3	R	336	NDP	N3A-C2A-N1A	-3.63	123.00	128.68
3	R	336	NDP	C4A-C5A-N7A	3.43	112.97	109.40

There are no chirality outliers.

5 of 27 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	Q	336	NDP	C5B-O5B-PA-O1A
3	P	336	NDP	C2D-C1D-N1N-C6N
3	O	336	NDP	C2D-C1D-N1N-C6N
3	Q	336	NDP	C5B-O5B-PA-O3
3	Q	336	NDP	C2B-O2B-P2B-O3X

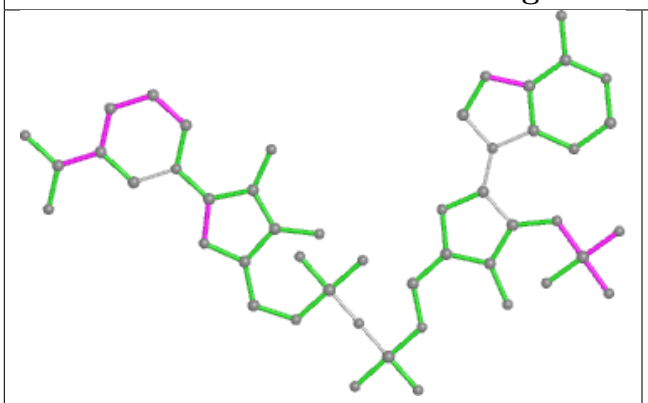
There are no ring outliers.

3 monomers are involved in 6 short contacts:

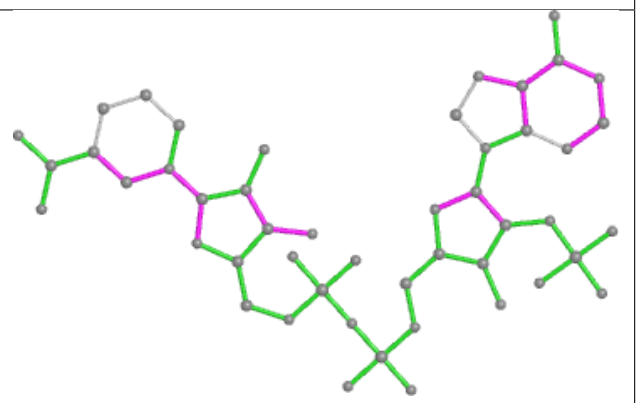
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	R	336	NDP	1	0
3	O	336	NDP	4	0
2	P	339	SO4	1	0

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.

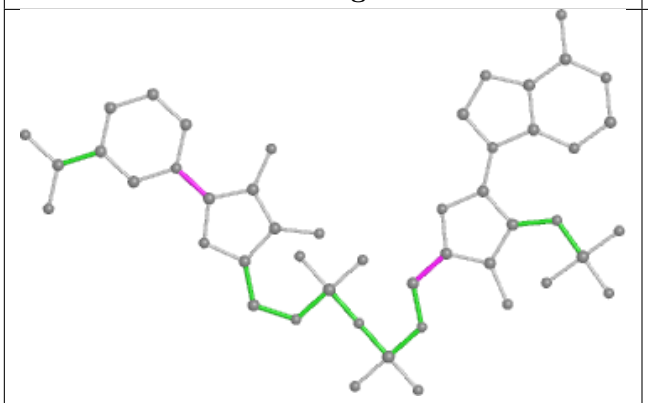
Ligand NDP R 336



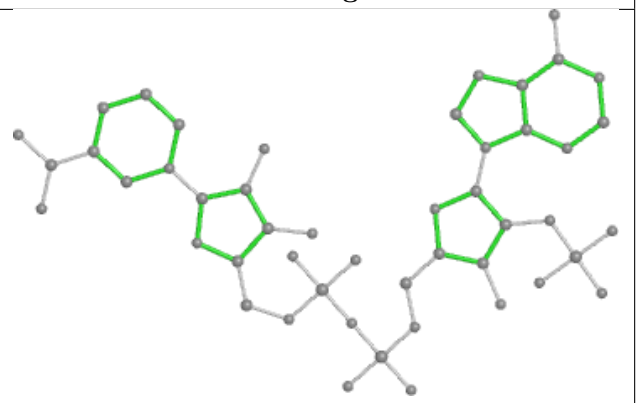
Bond lengths



Bond angles

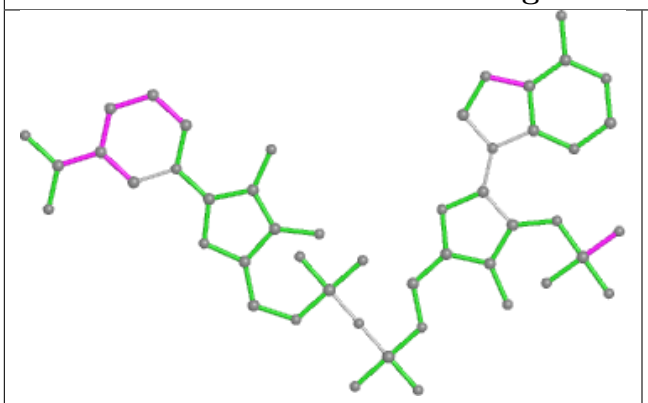


Torsions

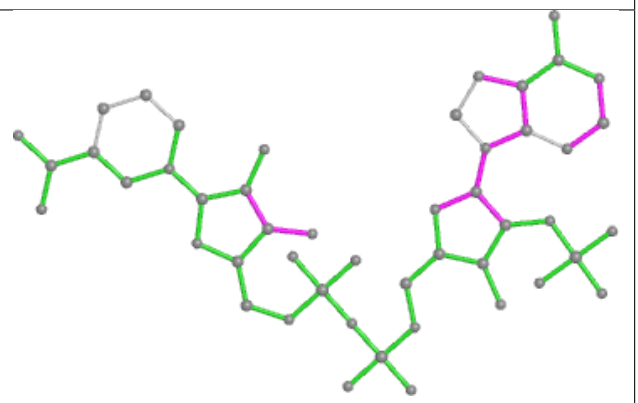


Rings

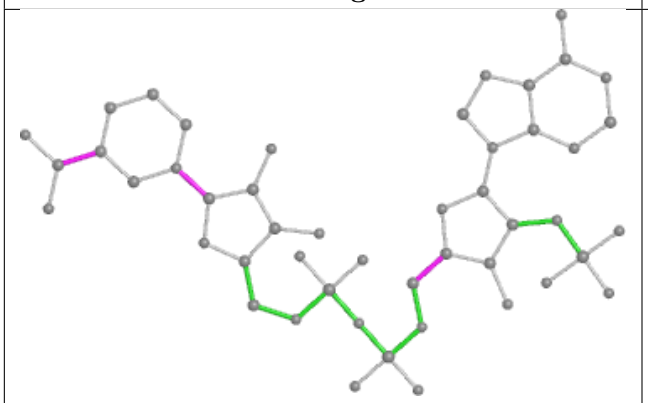
Ligand NDP O 336



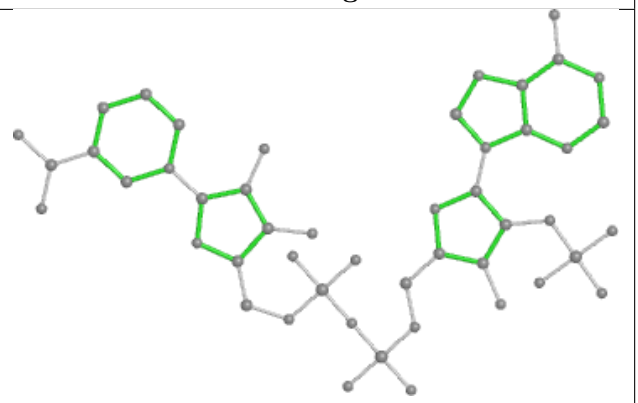
Bond lengths



Bond angles

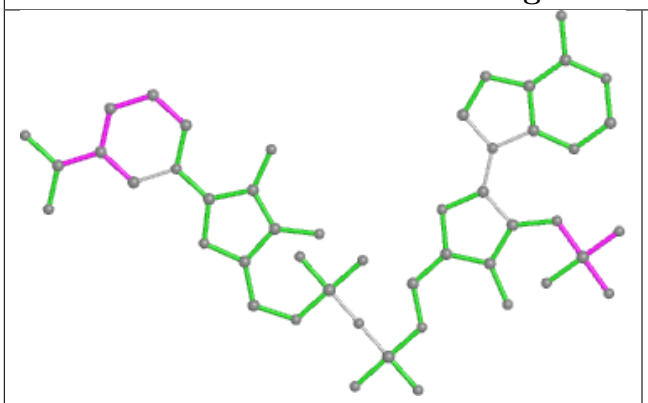


Torsions

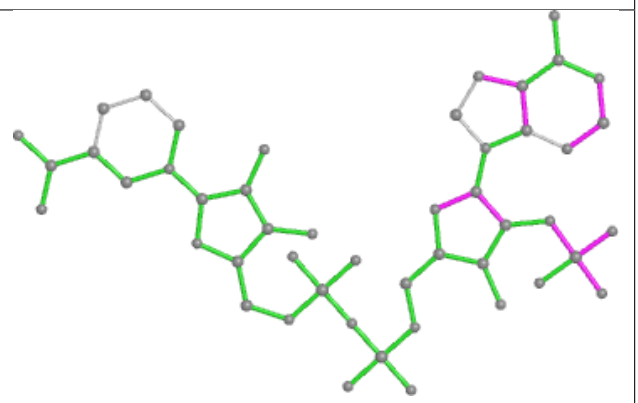


Rings

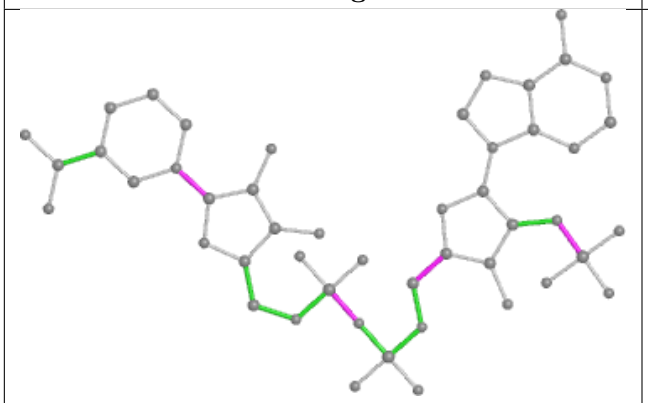
Ligand NDP P 336



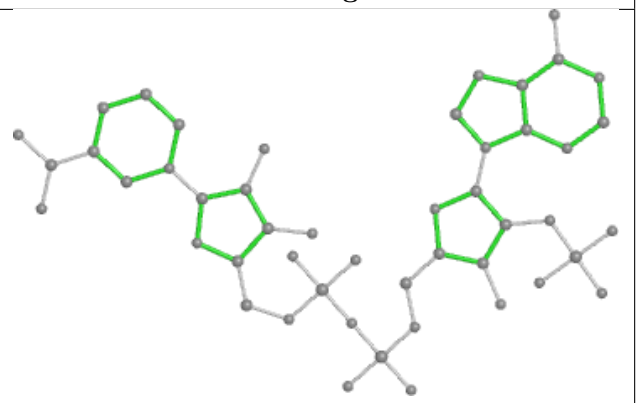
Bond lengths



Bond angles

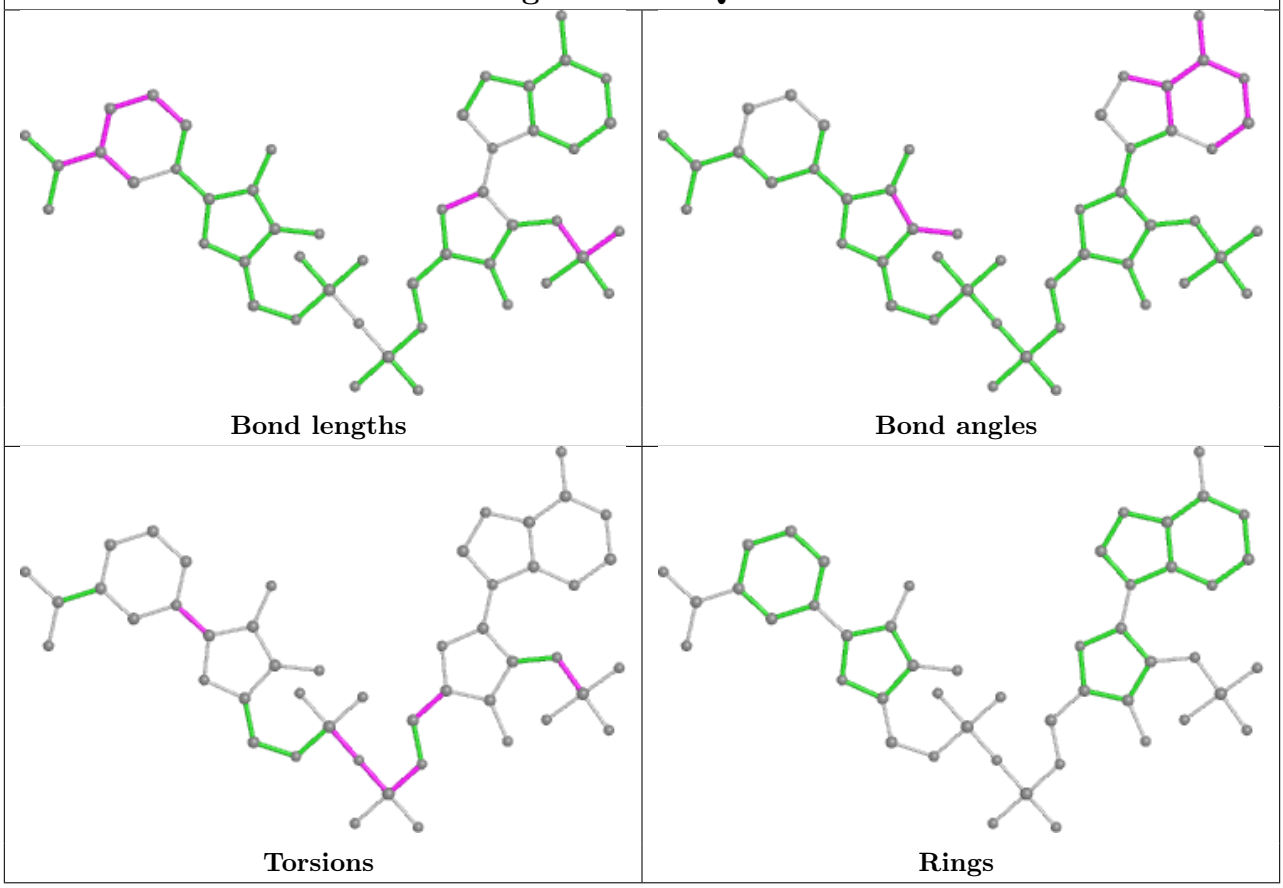


Torsions



Rings

Ligand NDP Q 336



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 (i)

6.1 Protein, DNA and RNA chains (i)

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	O	334/334 (100%)	-1.14	0	100	100	8, 19, 48, 71	0
1	P	334/334 (100%)	-1.04	0	100	100	8, 21, 50, 79	0
1	Q	334/334 (100%)	-1.02	0	100	100	7, 23, 50, 67	0
1	R	334/334 (100%)	-1.00	0	100	100	8, 23, 53, 80	0
All	All	1336/1336 (100%)	-1.05	0	100	100	7, 21, 50, 80	0

There are no RSRZ outliers to report.

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

There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	SO4	O	339	5/5	0.95	0.14	67,68,73,74	0
2	SO4	P	339	5/5	0.95	0.14	84,84,87,87	0
2	SO4	R	339	5/5	0.96	0.12	70,70,72,74	0
2	SO4	Q	339	5/5	0.97	0.11	66,67,70,70	0

Continued on next page...

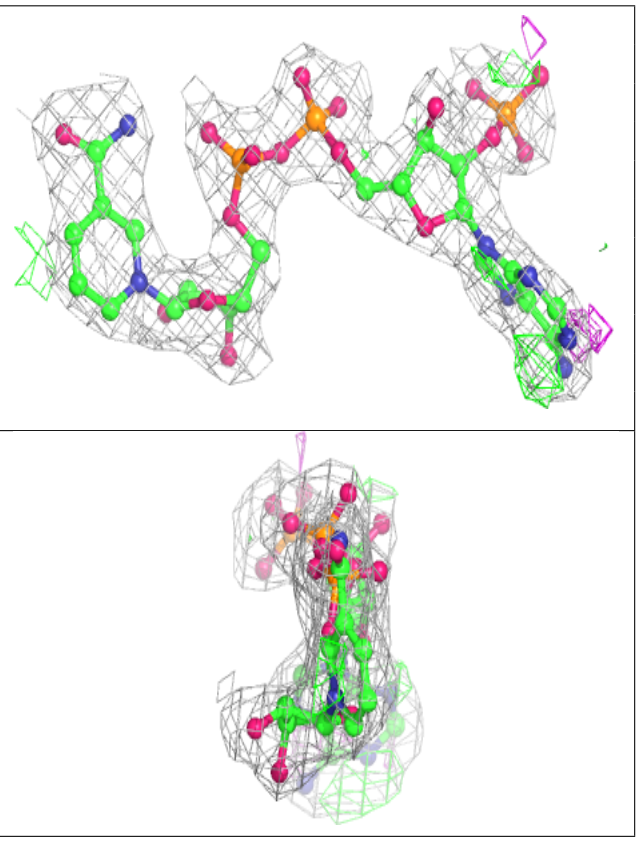
Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	NDP	R	336	48/48	0.97	0.09	12,20,58,64	0
3	NDP	P	336	48/48	0.98	0.07	12,19,54,60	0
3	NDP	Q	336	48/48	0.98	0.08	6,20,59,66	0
3	NDP	O	336	48/48	0.98	0.07	9,19,43,49	0
2	SO4	Q	338	5/5	0.99	0.07	32,35,39,48	0
2	SO4	P	338	5/5	0.99	0.07	36,37,43,44	0
2	SO4	R	338	5/5	0.99	0.07	34,38,42,44	0
2	SO4	O	338	5/5	0.99	0.06	33,35,41,43	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.

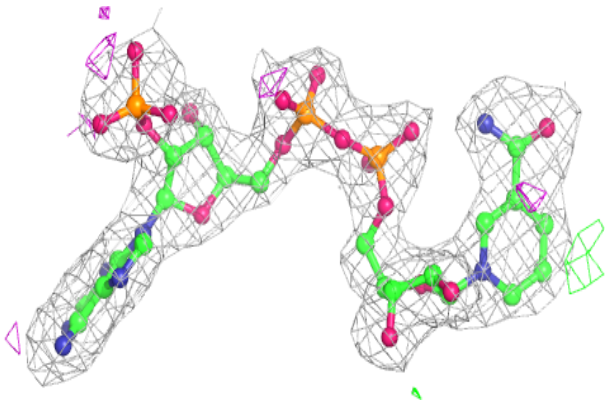
Electron density around NDP R 336:

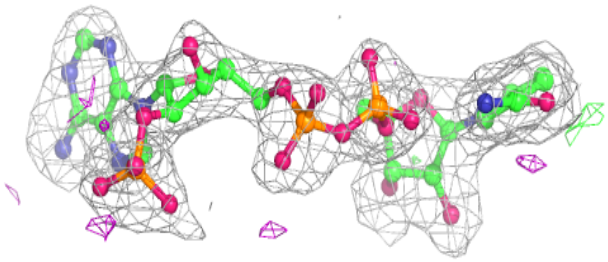
2mF_o-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

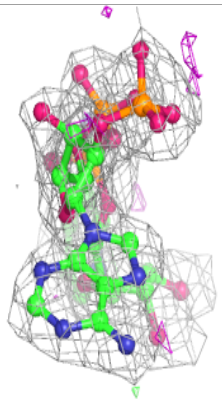


Electron density around NDP P 336:

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

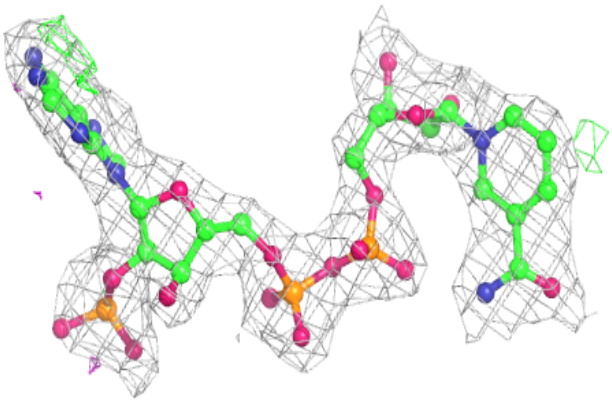


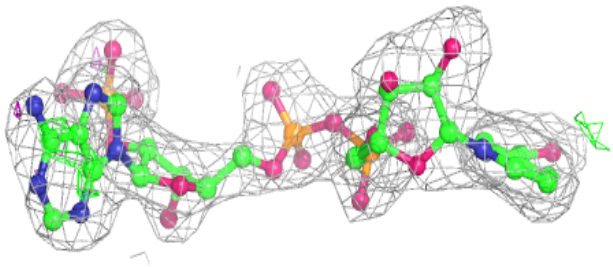


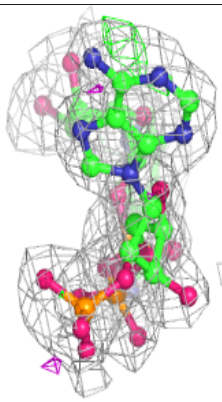


Electron density around NDP Q 336:

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

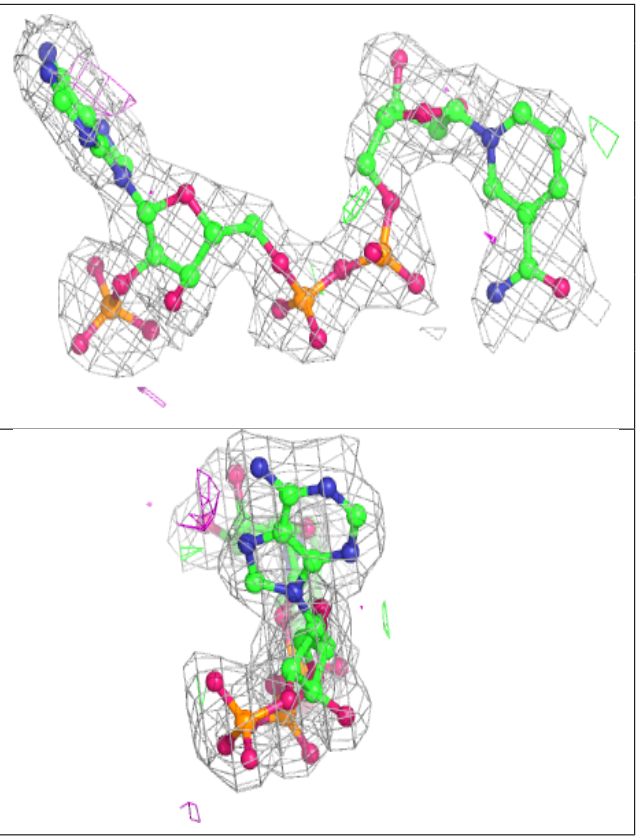






Electron density around NDP O 336:

$2mF_o$-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.