wwPDB X-ray Structure Validation Summary Report (i)

Jun 13, 2024 – 01:19 AM EDT

PDB ID	:	3ETG
Title	:	Glutamate dehydrogenase complexed with GW5074
Authors	:	Li, M.; Smith, T.J.
Deposited on	:	2008-10-07
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 types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

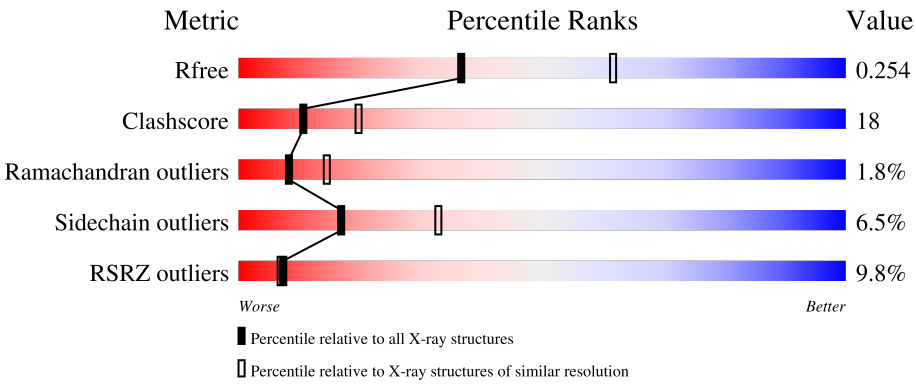
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	2.36.2
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

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	A	501	12% 64% 33% •
1	B	501	11% 64% 33% •
1	C	501	5% 64% 32% •
1	D	501	11% 65% 31% •
1	E	501	12% 62% 35% •

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Mol	Chain	Length	Quality of chain
1	F	501	8% 65% 32%

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
4	GTP	C	553	X	-	-	-
4	GTP	E	553	X	-	-	-
5	GWD	D	552	-	-	X	-

2 Entry composition (i)

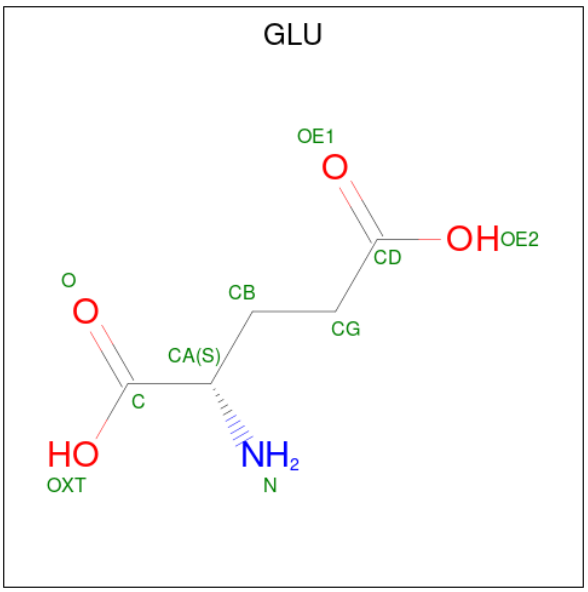
There are 6 unique types of molecules in this entry. The entry contains 24305 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Glutamate dehydrogenase.

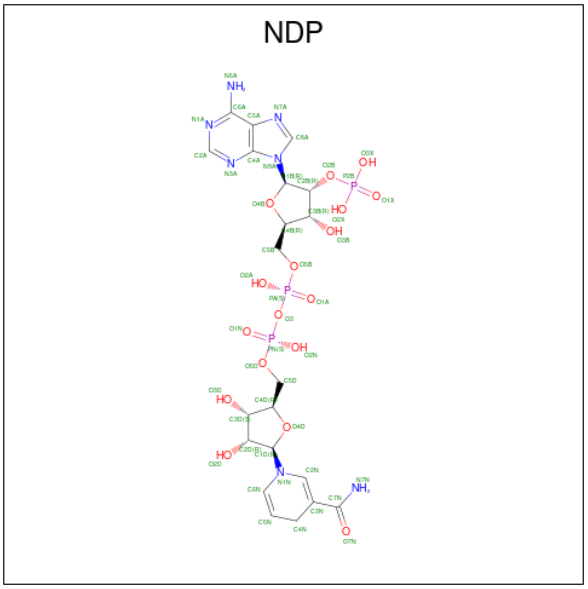
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	501	3915	2473	687	736	19	0	0	0
1	B	501	3915	2473	687	736	19	0	0	0
1	C	501	3915	2473	687	736	19	0	0	0
1	D	501	3915	2473	687	736	19	0	0	0
1	E	501	3915	2473	687	736	19	0	0	0
1	F	501	3915	2473	687	736	19	0	0	0

- Molecule 2 is GLUTAMIC ACID (three-letter code: GLU) (formula: $C_5H_9NO_4$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
2	A	1	9	5	1	3	0	0
2	B	1	9	5	1	3	0	0
2	C	1	9	5	1	3	0	0
2	D	1	9	5	1	3	0	0
2	E	1	9	5	1	3	0	0
2	F	1	9	5	1	3	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	A	1	48	21	7	17	3	0	0
3	B	1	48	21	7	17	3	0	0
3	C	1	48	21	7	17	3	0	0
3	D	1	48	21	7	17	3	0	0
3	E	1	48	21	7	17	3	0	0

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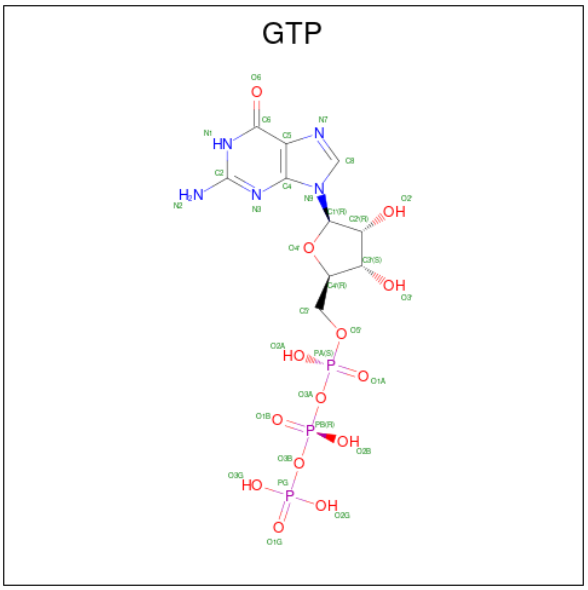
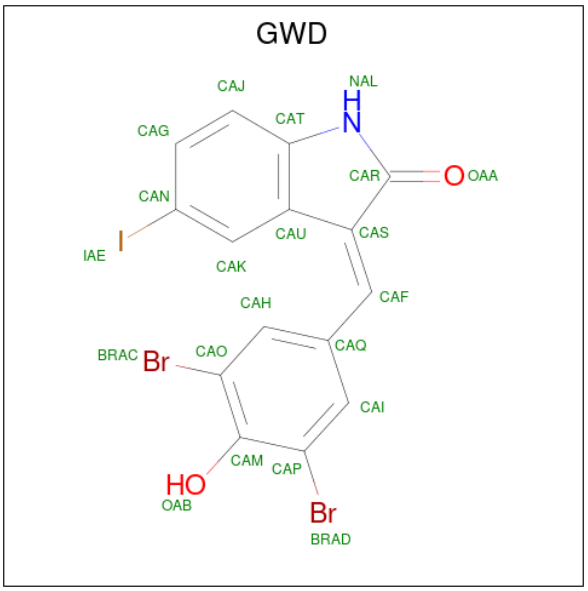
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
3	F	1	48	21	7	17	3	0	0

- Molecule 4 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula: $C_{10}H_{16}N_5O_{14}P_3$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
4	A	1	32	10	5	14	3	0	0
			Total	C	N	O	P		
4	B	1	32	10	5	14	3	0	0
			Total	C	N	O	P		
4	C	1	32	10	5	14	3	0	0
			Total	C	N	O	P		
4	D	1	32	10	5	14	3	0	0
			Total	C	N	O	P		
4	E	1	32	10	5	14	3	0	0
			Total	C	N	O	P		
4	F	1	32	10	5	14	3	0	0

- Molecule 5 is (3E)-3-[(3,5-dibromo-4-hydroxyphenyl)methylidene]-5-iodo-1,3-dihydro-2H-indol-2-one (three-letter code: GWD) (formula: $C_{15}H_8Br_2INO_2$).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
			Total	Br	C	I	N	O		
5	A	1	21	2	15	1	1	2	0	0
5	B	1	21	2	15	1	1	2	0	0
5	C	1	21	2	15	1	1	2	0	0
5	D	1	21	2	15	1	1	2	0	0
5	E	1	21	2	15	1	1	2	0	0
5	F	1	21	2	15	1	1	2	0	0

- Molecule 6 is water.

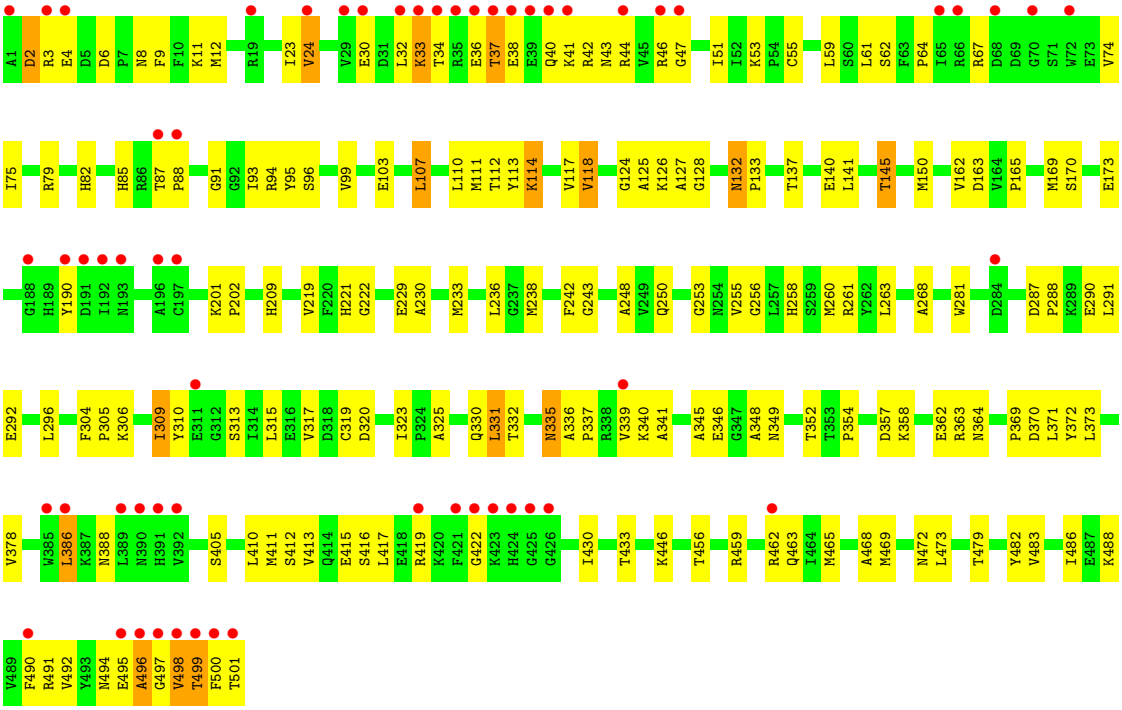
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
6	A	30	30	30	0	0
6	B	29	29	29	0	0
6	C	29	29	29	0	0
6	D	30	30	30	0	0
6	E	15	15	15	0	0
6	F	22	22	22	0	0

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.

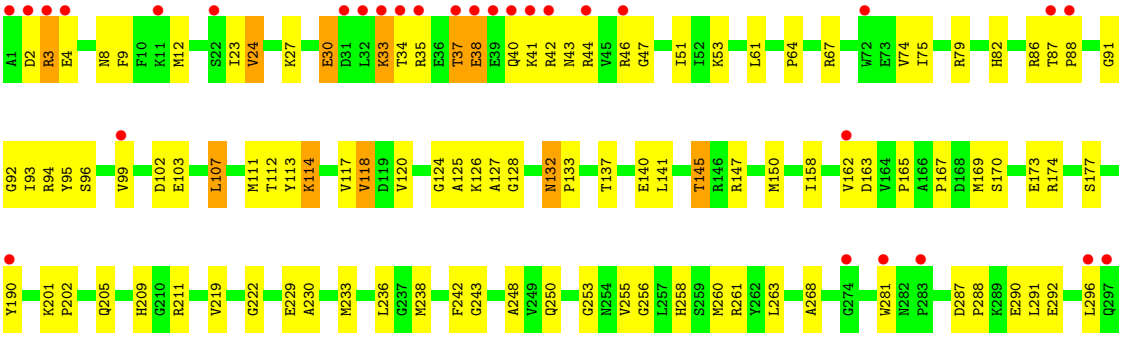
• Molecule 1: Glutamate dehydrogenase

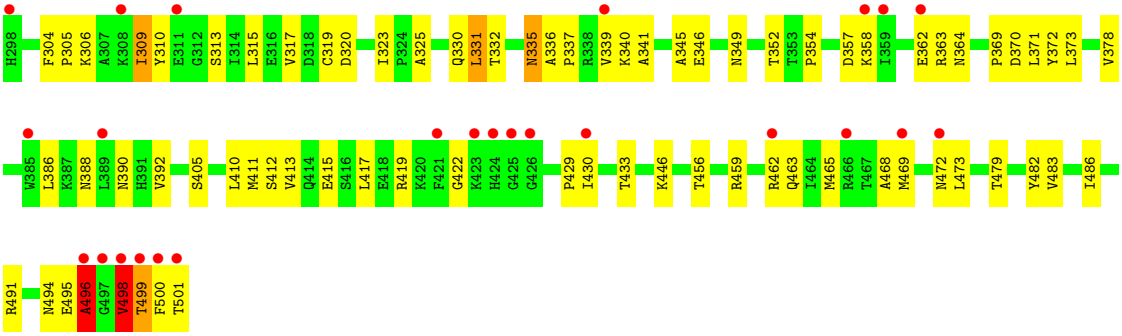
Chain A:



• Molecule 1: Glutamate dehydrogenase

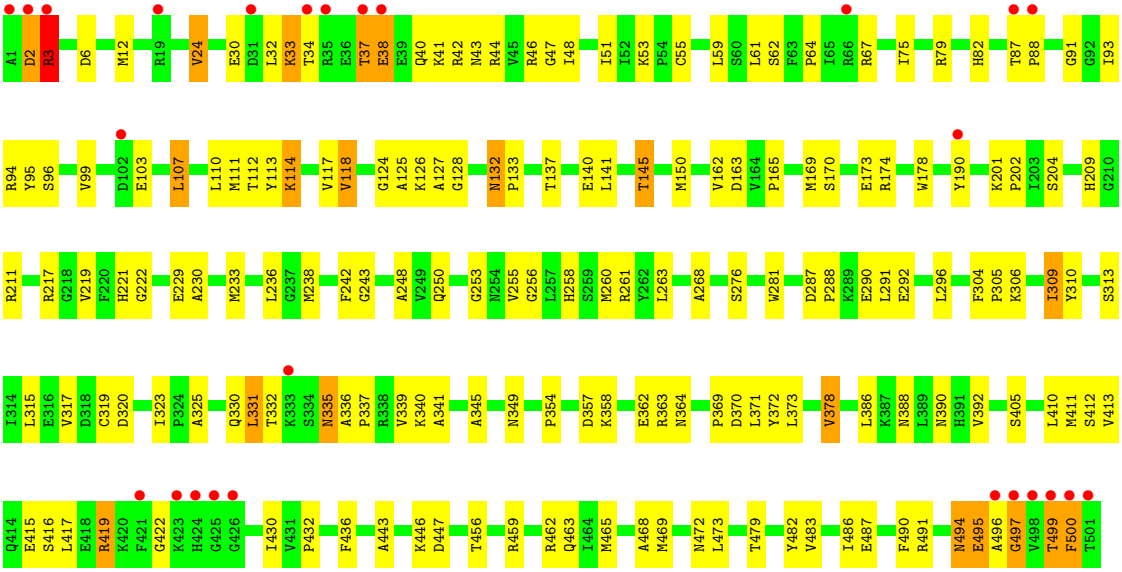
Chain B:





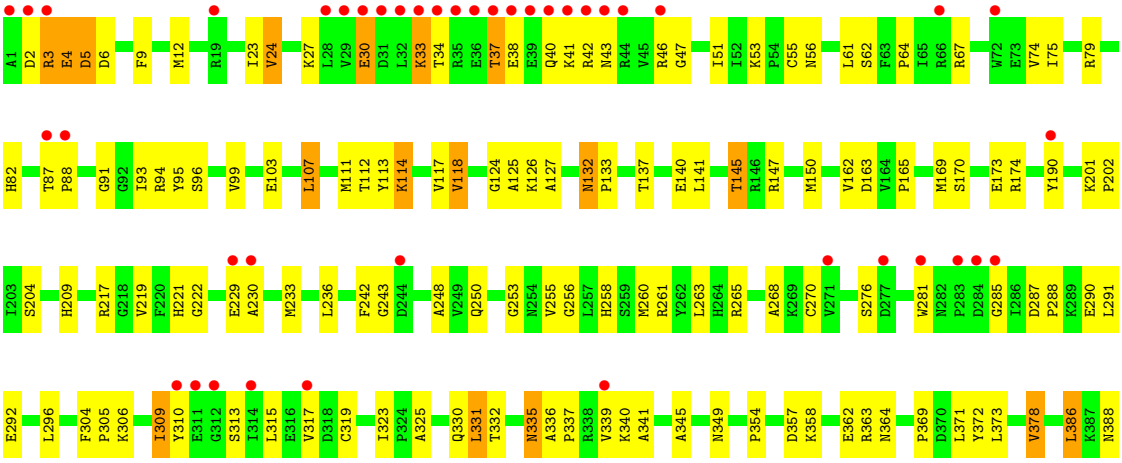
- Molecule 1: Glutamate dehydrogenase

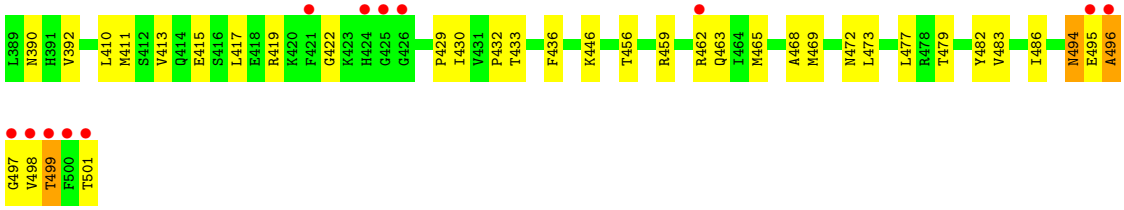
Chain C:



- Molecule 1: Glutamate dehydrogenase

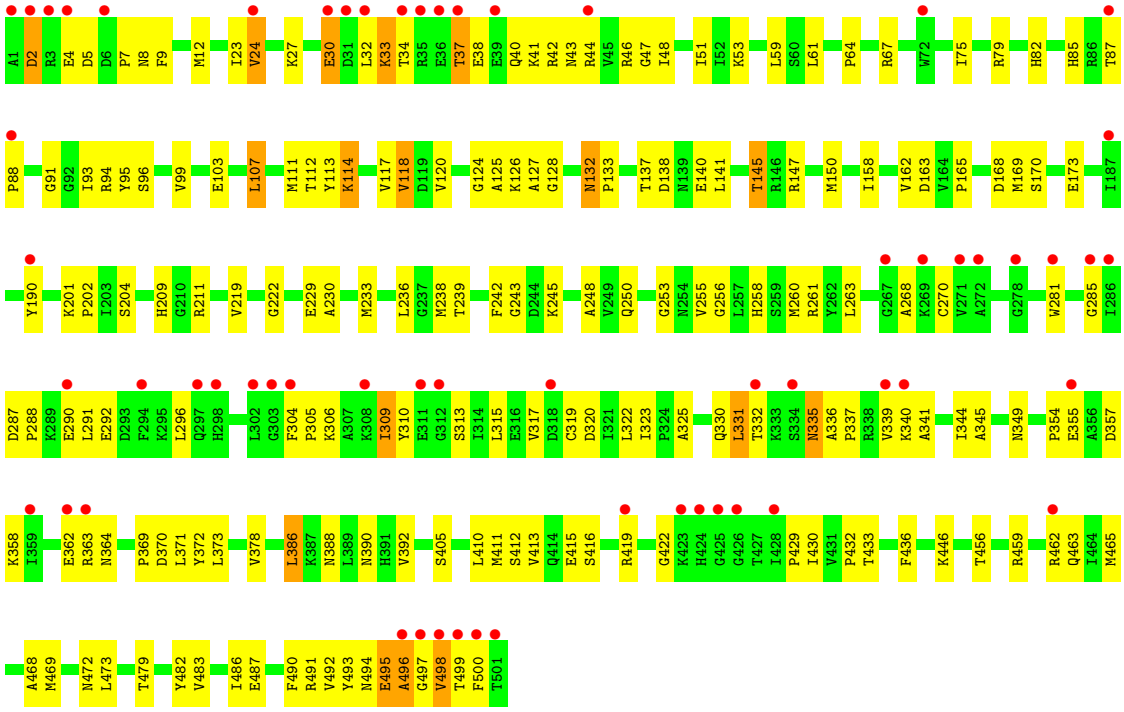
Chain D:





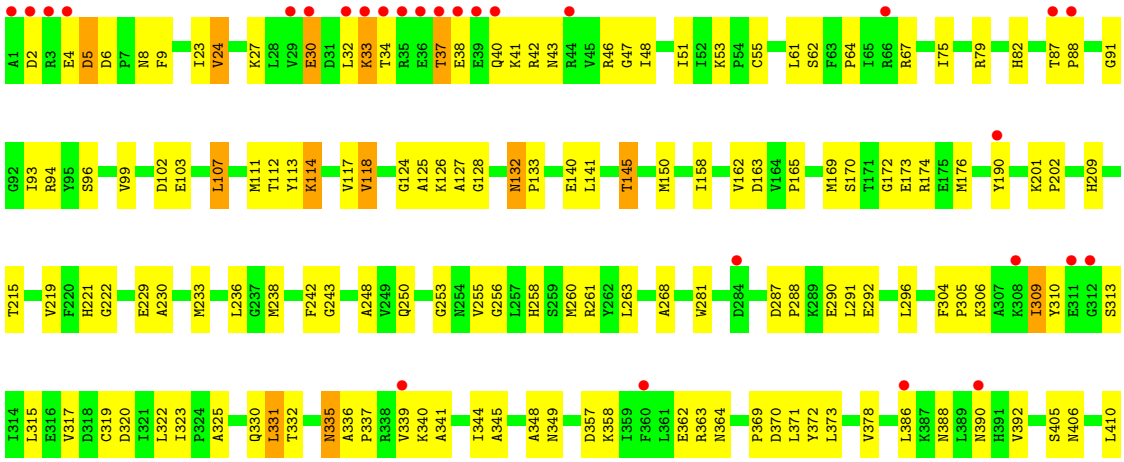
• Molecule 1: Glutamate dehydrogenase

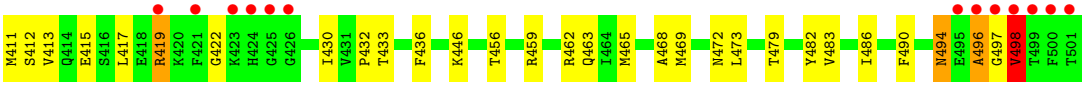
Chain E:



• Molecule 1: Glutamate dehydrogenase

Chain F:




M411
S412
V413
Q414
E415
S416
L417
E418
R419
K420
F421
G422
K423
H424
G425
G426
I430
V431
P432
T433
F436
K446
T456
R459
R462
Q463
I464
M465
A468
M469
N472
L473
T479
Y482
V483
I486
F490
N494
E495
A496
G497
V498
T499
F500
T501

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	122.30Å 102.20Å 167.70Å 90.00° 102.50° 90.00°	Depositor
Resolution (Å)	50.00 – 2.50 48.78 – 2.50	Depositor EDS
% Data completeness (in resolution range)	99.5 (50.00-2.50) 95.9 (48.78-2.50)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.08	Depositor
$< I/\sigma(I) >$ [1]	5.49 (at 2.51Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.244 , 0.258 0.238 , 0.254	Depositor DCC
R_{free} test set	7055 reflections (5.08%)	wwPDB-VP
Wilson B-factor (Å^2)	41.4	Xtriage
Anisotropy	0.575	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.37 , 45.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	24305	wwPDB-VP
Average B, all atoms (Å^2)	48.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.71% 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: GTP, GWD, 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	A	0.43	0/3998	0.71	0/5396
1	B	0.43	0/3998	0.86	5/5396 (0.1%)
1	C	0.45	0/3998	0.71	0/5396
1	D	0.44	0/3998	0.71	1/5396 (0.0%)
1	E	0.44	0/3998	0.71	0/5396
1	F	0.45	0/3998	0.85	4/5396 (0.1%)
All	All	0.44	0/23988	0.76	10/32376 (0.0%)

There are no bond length outliers.

The worst 5 of 10 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	F	419	ARG	NE-CZ-NH2	23.80	132.20	120.30
1	B	35	ARG	NE-CZ-NH1	-23.28	108.66	120.30
1	B	35	ARG	NE-CZ-NH2	22.96	131.78	120.30
1	F	419	ARG	NE-CZ-NH1	-22.75	108.93	120.30
1	B	35	ARG	CD-NE-CZ	11.71	140.00	123.60

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	3915	0	3880	145	0
1	B	3915	0	3880	155	0
1	C	3915	0	3880	153	0
1	D	3915	0	3880	149	0
1	E	3915	0	3880	160	0
1	F	3915	0	3880	144	0
2	A	9	0	5	1	0
2	B	9	0	5	2	0
2	C	9	0	5	2	0
2	D	9	0	5	1	0
2	E	9	0	5	3	0
2	F	9	0	5	0	0
3	A	48	0	26	6	0
3	B	48	0	26	8	0
3	C	48	0	26	9	0
3	D	48	0	26	5	0
3	E	48	0	26	6	0
3	F	48	0	26	7	0
4	A	32	0	11	1	0
4	B	32	0	10	2	0
4	C	32	0	12	0	0
4	D	32	0	10	2	0
4	E	32	0	12	3	0
4	F	32	0	10	1	0
5	A	21	0	7	3	0
5	B	21	0	8	5	0
5	C	21	0	7	3	0
5	D	21	0	7	7	0
5	E	21	0	7	5	0
5	F	21	0	7	3	0
6	A	30	0	0	1	0
6	B	29	0	0	3	0
6	C	29	0	0	3	0
6	D	30	0	0	5	0
6	E	15	0	0	0	0
6	F	22	0	0	1	0
All	All	24305	0	23574	879	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 18.

The worst 5 of 879 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:498:VAL:HG21	1:F:174:ARG:HG3	1.33	1.10
5:C:552:GWD:HAI	5:C:552:GWD:HAK	1.09	1.08
1:E:112:THR:HG22	1:E:124:GLY:H	1.18	1.08
5:F:552:GWD:HAI	5:F:552:GWD:HAK	1.09	1.07
5:D:552:GWD:HAK	5:D:552:GWD:HAI	1.09	1.07

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	499/501 (100%)	462 (93%)	27 (5%)	10 (2%)	7 12
1	B	499/501 (100%)	466 (93%)	25 (5%)	8 (2%)	9 17
1	C	499/501 (100%)	460 (92%)	28 (6%)	11 (2%)	6 10
1	D	499/501 (100%)	460 (92%)	30 (6%)	9 (2%)	8 14
1	E	499/501 (100%)	464 (93%)	27 (5%)	8 (2%)	9 17
1	F	499/501 (100%)	462 (93%)	29 (6%)	8 (2%)	9 17
All	All	2994/3006 (100%)	2774 (93%)	166 (6%)	54 (2%)	8 14

5 of 54 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	2	ASP
1	A	498	VAL
1	B	496	ALA
1	B	498	VAL
1	C	3	ARG

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	417/417 (100%)	391 (94%)	26 (6%)	18	35
1	B	417/417 (100%)	390 (94%)	27 (6%)	17	33
1	C	417/417 (100%)	391 (94%)	26 (6%)	18	35
1	D	417/417 (100%)	391 (94%)	26 (6%)	18	35
1	E	417/417 (100%)	389 (93%)	28 (7%)	16	31
1	F	417/417 (100%)	389 (93%)	28 (7%)	16	31
All	All	2502/2502 (100%)	2341 (94%)	161 (6%)	17	33

5 of 161 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	E	114	LYS
1	F	114	LYS
1	E	291	LEU
1	E	472	ASN
1	F	340	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 91 such sidechains are listed below:

Mol	Chain	Res	Type
1	D	424	HIS
1	E	390	ASN
1	E	8	ASN
1	E	205	GLN
1	F	8	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)

24 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	E	551	-	47,52,52	1.82	8 (17%)	61,80,80	2.58	25 (40%)
5	GWD	B	552	-	23,23,23	2.48	6 (26%)	34,34,34	1.63	8 (23%)
3	NDP	A	551	-	47,52,52	1.85	7 (14%)	61,80,80	2.67	24 (39%)
3	NDP	F	551	-	47,52,52	1.63	7 (14%)	61,80,80	2.66	22 (36%)
4	GTP	E	553	-	29,34,34	2.48	7 (24%)	35,54,54	4.81	15 (42%)
2	GLU	B	550	-	7,8,9	1.09	0	4,9,11	1.47	0
4	GTP	D	553	-	29,34,34	1.78	3 (10%)	35,54,54	3.45	13 (37%)
3	NDP	B	551	-	47,52,52	1.84	7 (14%)	61,80,80	2.61	20 (32%)
5	GWD	E	552	-	23,23,23	2.25	6 (26%)	34,34,34	1.61	6 (17%)
3	NDP	C	551	-	47,52,52	1.74	7 (14%)	61,80,80	2.87	22 (36%)
4	GTP	A	553	-	29,34,34	1.83	6 (20%)	35,54,54	3.70	15 (42%)
5	GWD	D	552	-	23,23,23	2.15	6 (26%)	34,34,34	1.63	6 (17%)
2	GLU	D	550	-	7,8,9	1.04	0	4,9,11	0.79	0
4	GTP	C	553	-	29,34,34	2.52	7 (24%)	35,54,54	5.50	19 (54%)
5	GWD	A	552	-	23,23,23	2.33	6 (26%)	34,34,34	1.70	8 (23%)
3	NDP	D	551	-	47,52,52	1.73	3 (6%)	61,80,80	2.64	21 (34%)
2	GLU	A	550	-	7,8,9	1.39	1 (14%)	4,9,11	0.88	0
5	GWD	C	552	-	23,23,23	2.40	6 (26%)	34,34,34	1.73	7 (20%)
2	GLU	E	550	-	7,8,9	0.98	0	4,9,11	0.92	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	GLU	C	550	-	7,8,9	1.64	2 (28%)	4,9,11	0.95	0
4	GTP	F	553	-	29,34,34	2.05	7 (24%)	35,54,54	5.81	14 (40%)
4	GTP	B	553	-	29,34,34	1.58	5 (17%)	35,54,54	6.44	14 (40%)
5	GWD	F	552	-	23,23,23	2.30	6 (26%)	34,34,34	1.57	6 (17%)
2	GLU	F	550	-	7,8,9	1.28	1 (14%)	4,9,11	1.45	1 (25%)

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	E	551	-	-	5/30/77/77	0/5/5/5
5	GWD	B	552	-	-	0/4/16/16	0/3/3/3
3	NDP	A	551	-	-	2/30/77/77	0/5/5/5
3	NDP	F	551	-	-	5/30/77/77	0/5/5/5
4	GTP	E	553	-	1/1/7/7	3/18/38/38	0/3/3/3
2	GLU	B	550	-	-	4/6/7/9	-
4	GTP	D	553	-	-	3/18/38/38	0/3/3/3
3	NDP	B	551	-	-	3/30/77/77	0/5/5/5
5	GWD	E	552	-	-	0/4/16/16	0/3/3/3
3	NDP	C	551	-	-	5/30/77/77	0/5/5/5
4	GTP	A	553	-	-	3/18/38/38	0/3/3/3
5	GWD	D	552	-	-	0/4/16/16	0/3/3/3
2	GLU	D	550	-	-	2/6/7/9	-
4	GTP	C	553	-	1/1/7/7	4/18/38/38	0/3/3/3
5	GWD	A	552	-	-	0/4/16/16	0/3/3/3
3	NDP	D	551	-	-	6/30/77/77	0/5/5/5
2	GLU	A	550	-	-	2/6/7/9	-
5	GWD	C	552	-	-	0/4/16/16	0/3/3/3
2	GLU	C	550	-	-	3/6/7/9	-
2	GLU	E	550	-	-	3/6/7/9	-
4	GTP	F	553	-	-	3/18/38/38	0/3/3/3
4	GTP	B	553	-	-	3/18/38/38	0/3/3/3
5	GWD	F	552	-	-	0/4/16/16	0/3/3/3
2	GLU	F	550	-	-	0/6/7/9	-

The worst 5 of 114 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	E	553	GTP	O4'-C1'	9.35	1.53	1.40
4	C	553	GTP	O4'-C1'	8.83	1.52	1.40
5	B	552	GWD	CAS-CAR	-8.67	1.38	1.50
5	C	552	GWD	CAS-CAR	-8.48	1.38	1.50
5	A	552	GWD	CAS-CAR	-8.08	1.39	1.50

The worst 5 of 266 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	B	553	GTP	C4'-O4'-C1'	-32.23	80.41	109.92
4	F	553	GTP	C4'-O4'-C1'	-29.69	82.74	109.92
4	C	553	GTP	O4'-C1'-N9	13.91	127.19	108.75
4	B	553	GTP	O4'-C1'-N9	13.22	126.27	108.75
4	C	553	GTP	O4'-C4'-C3'	-12.38	80.57	105.15

All (2) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
4	C	553	GTP	C4'
4	E	553	GTP	C4'

5 of 59 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	550	GLU	N-CA-CB-CG
2	A	550	GLU	C-CA-CB-CG
2	B	550	GLU	N-CA-CB-CG
2	B	550	GLU	C-CA-CB-CG
2	C	550	GLU	O-C-CA-CB

There are no ring outliers.

22 monomers are involved in 78 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	E	551	NDP	6	0
5	B	552	GWD	5	0
3	A	551	NDP	6	0
3	F	551	NDP	7	0
4	E	553	GTP	3	0
2	B	550	GLU	2	0
4	D	553	GTP	2	0
3	B	551	NDP	8	0

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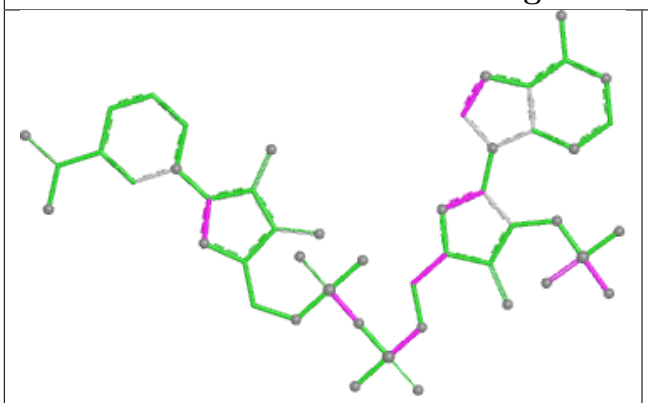
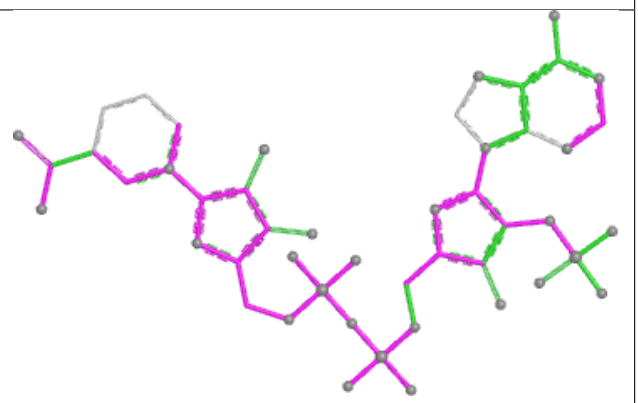
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	E	552	GWD	5	0
3	C	551	NDP	9	0
4	A	553	GTP	1	0
5	D	552	GWD	7	0
2	D	550	GLU	1	0
5	A	552	GWD	3	0
3	D	551	NDP	5	0
2	A	550	GLU	1	0
5	C	552	GWD	3	0
2	E	550	GLU	3	0
2	C	550	GLU	2	0
4	F	553	GTP	1	0
4	B	553	GTP	2	0
5	F	552	GWD	3	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less 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.

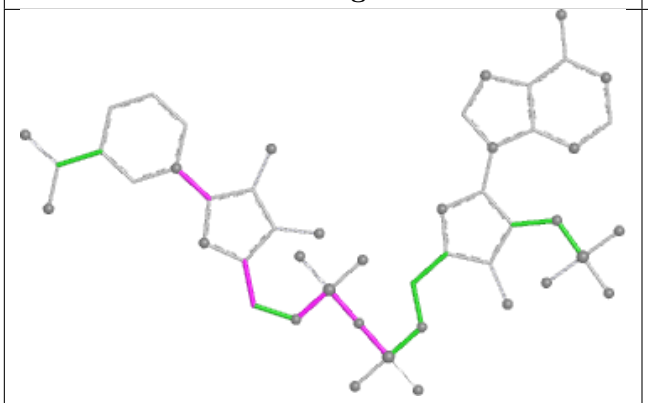
Ligand NDP E 551



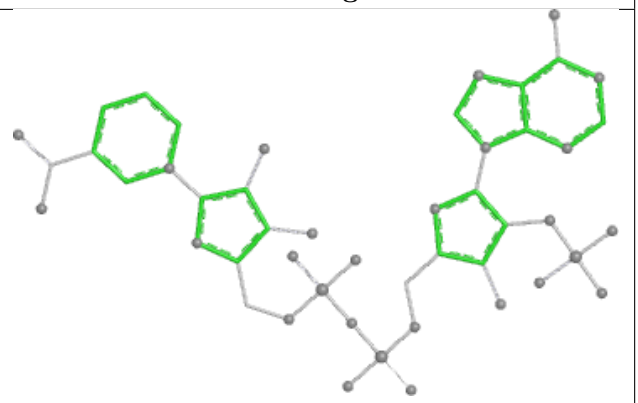
Bond lengths



Bond angles

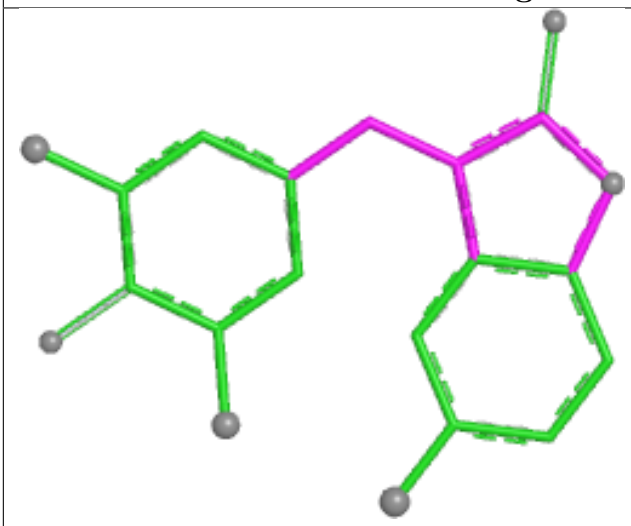


Torsions

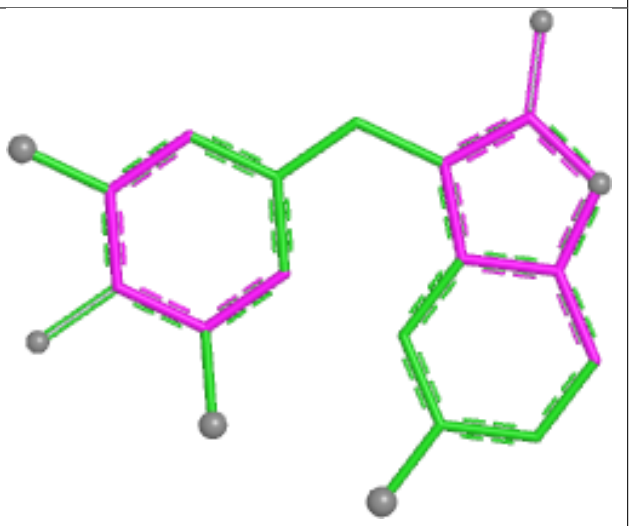


Rings

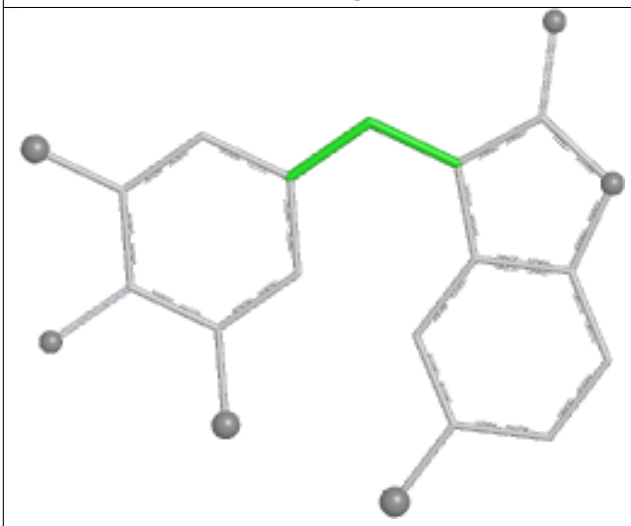
Ligand GWD B 552



Bond lengths



Bond angles



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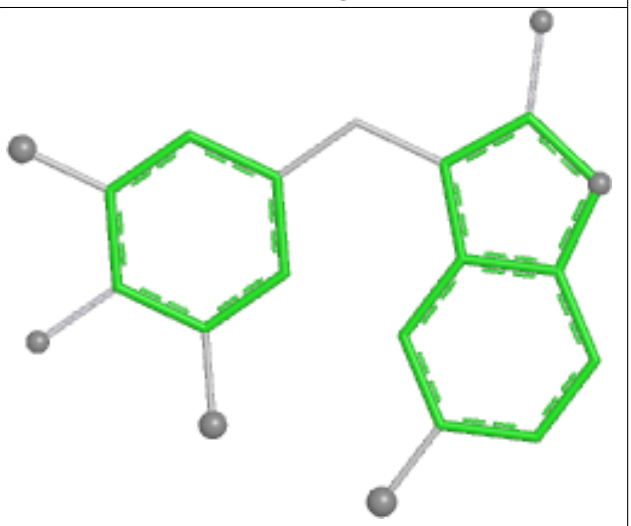
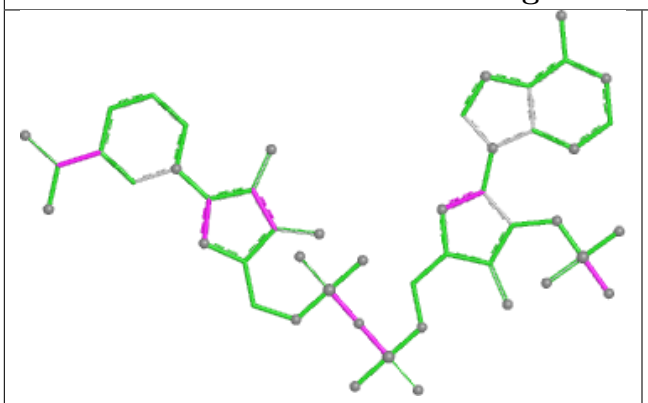
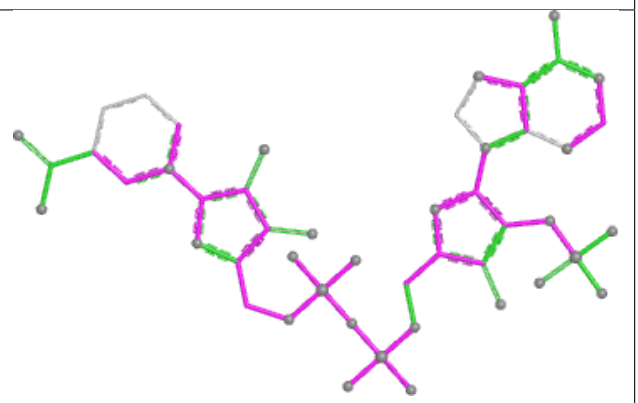


Rings

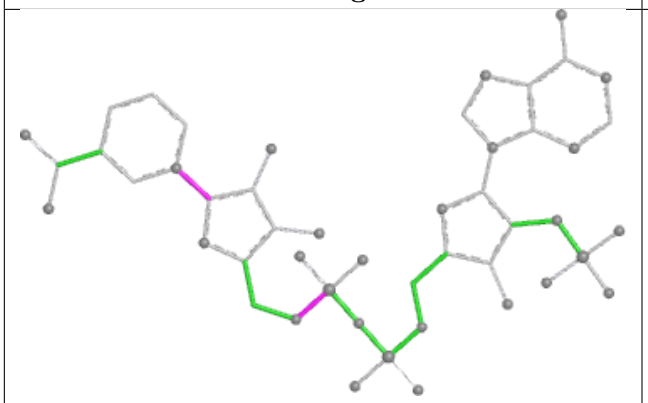
Ligand NDP A 551



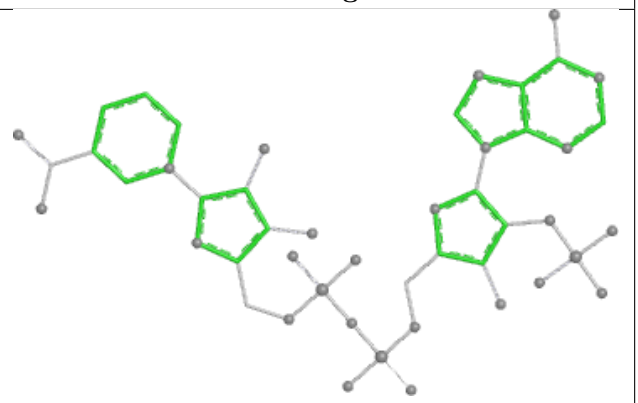
Bond lengths



Bond angles

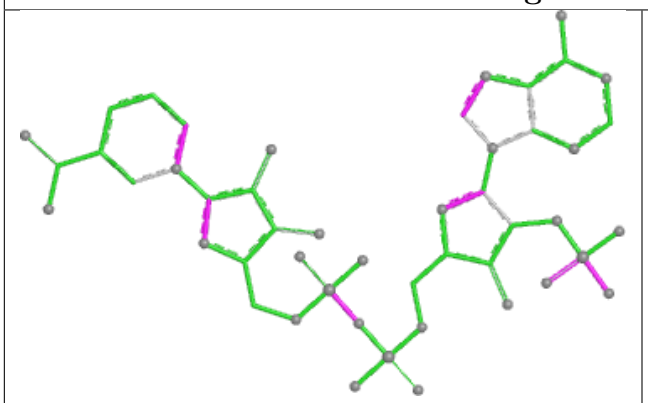


Torsions

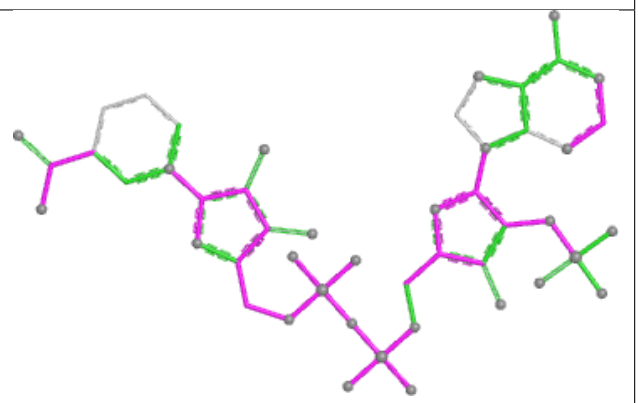


Rings

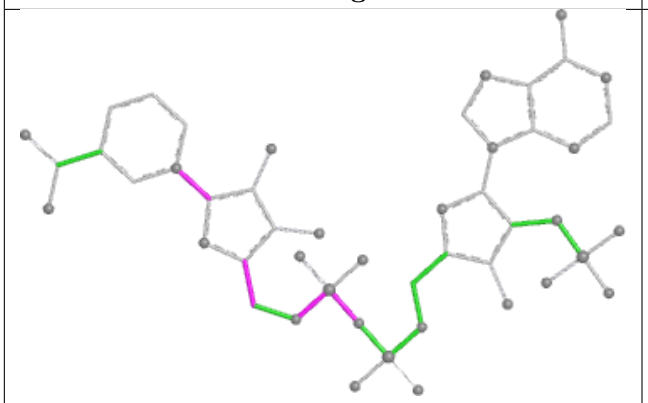
Ligand NDP F 551



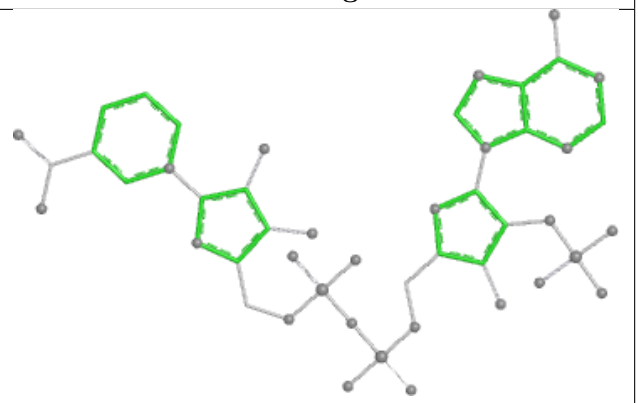
Bond lengths



Bond angles

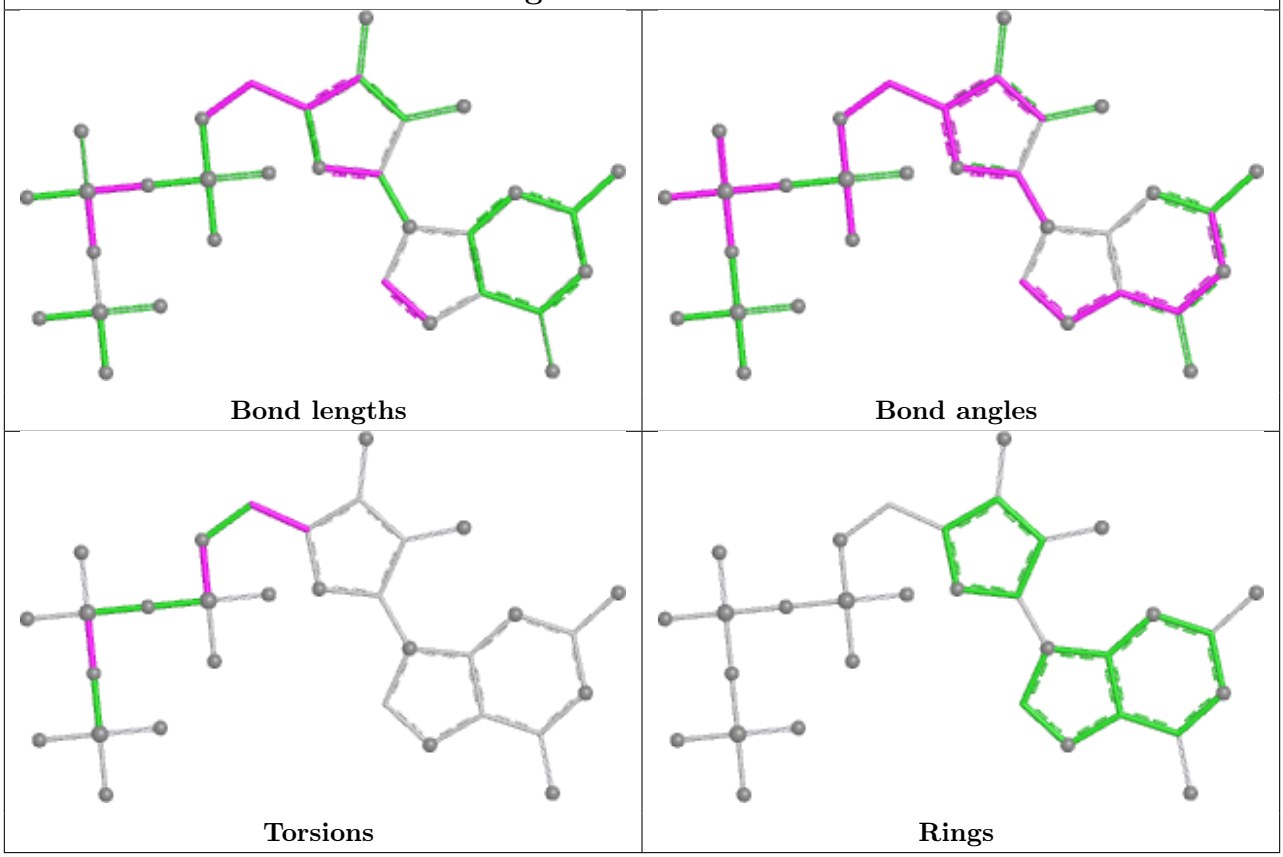


Torsions

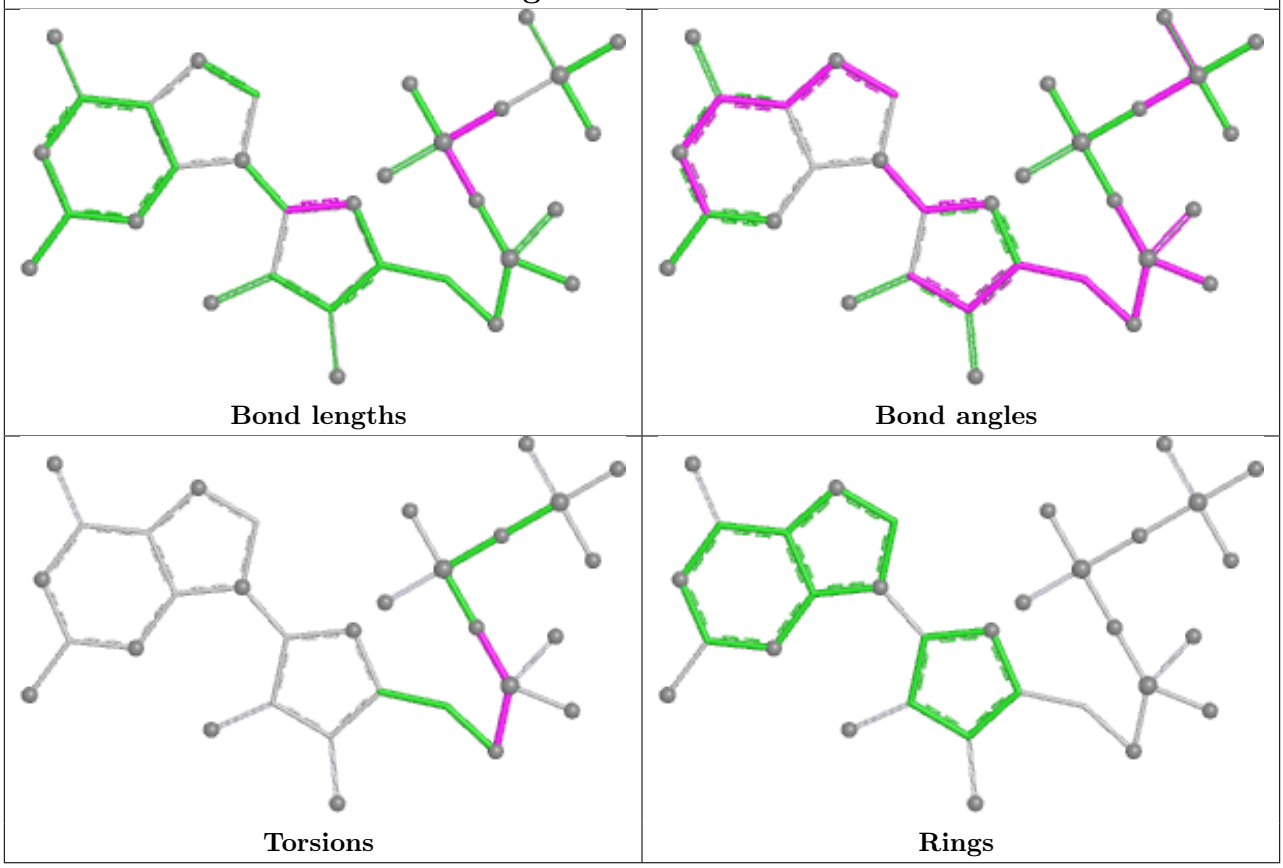


Rings

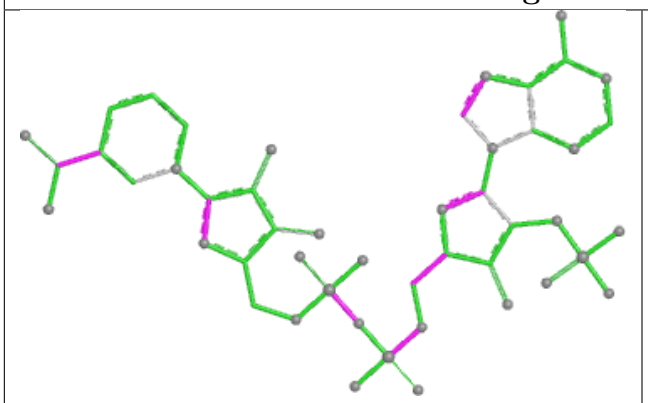
Ligand GTP E 553



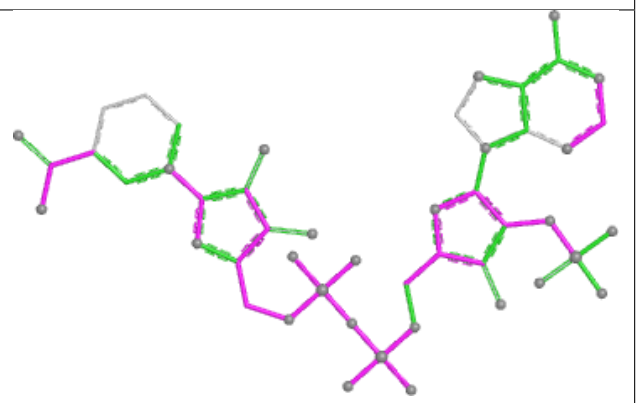
Ligand GTP D 553



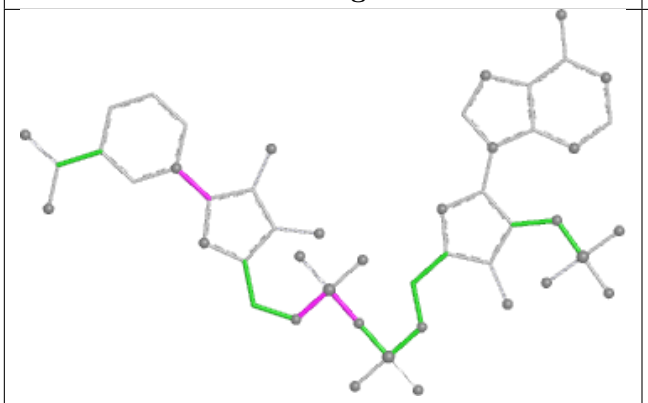
Ligand NDP B 551



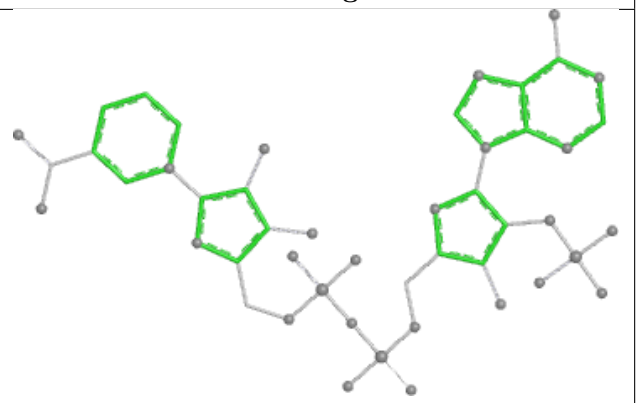
Bond lengths



Bond angles

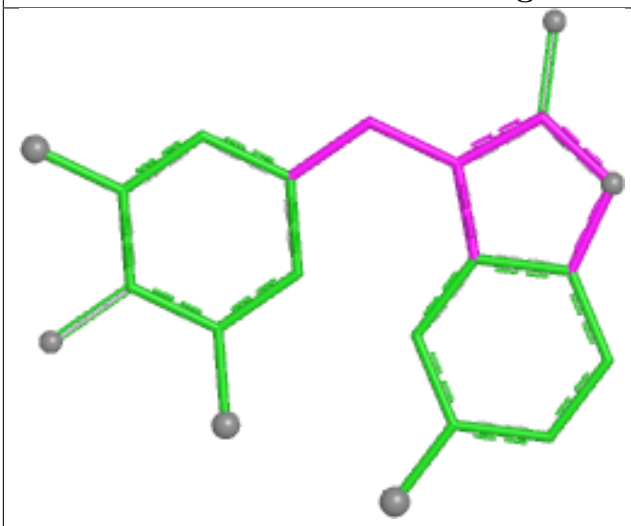


Torsions



Rings

Ligand GWD E 552



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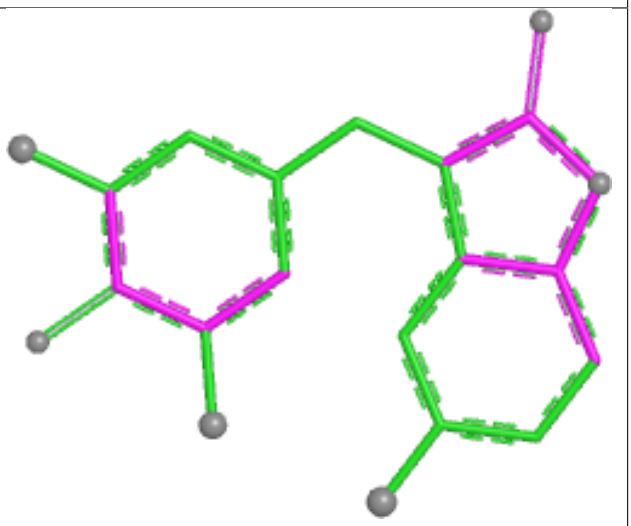
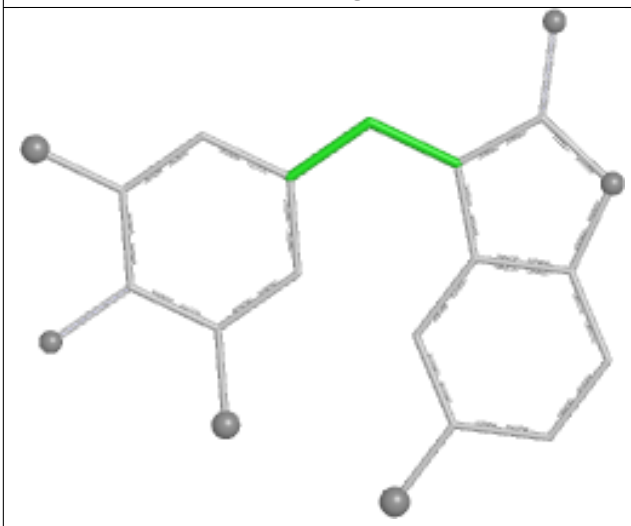


Bond angles



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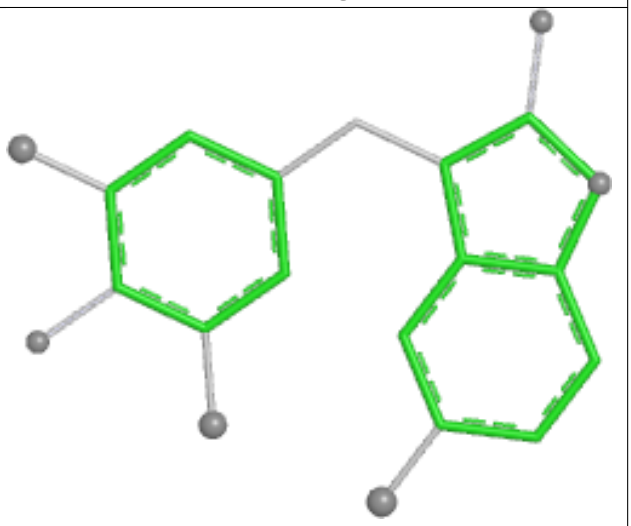
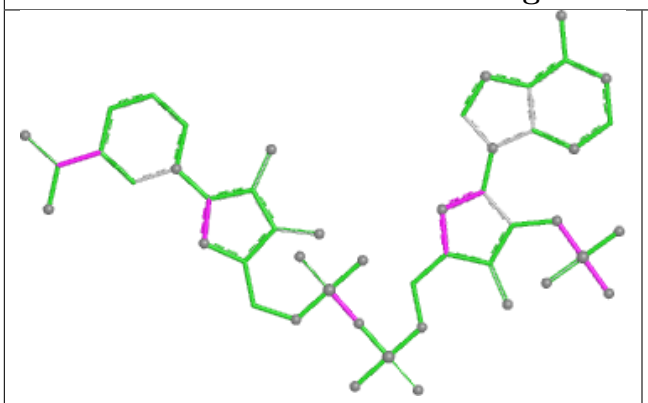


Rings

Ligand NDP C 551



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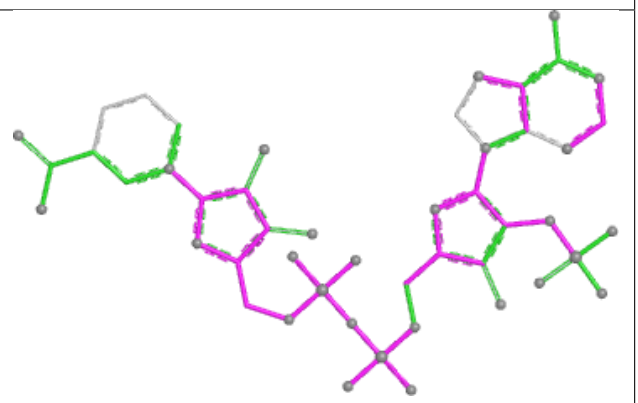
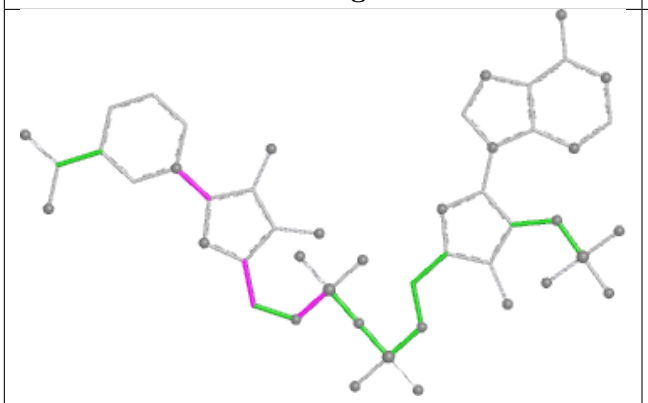
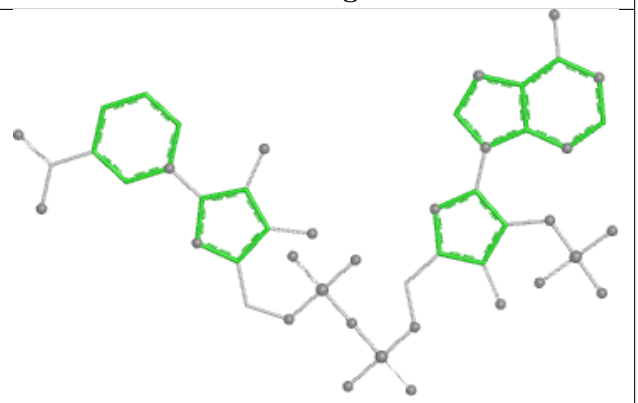


Bond angles

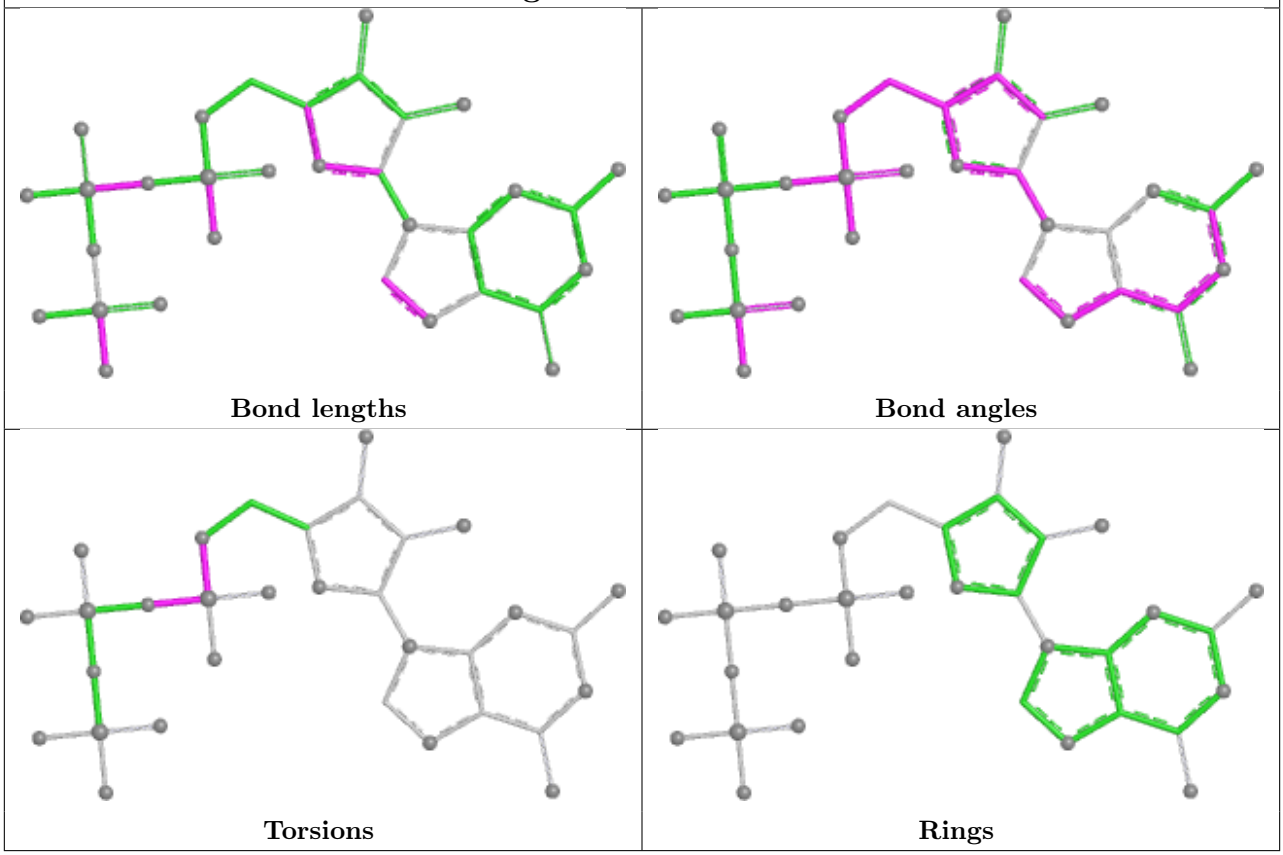


Torsions

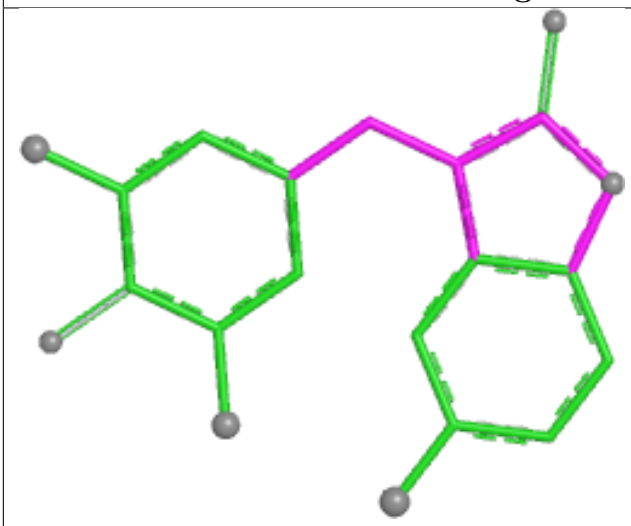


Rings

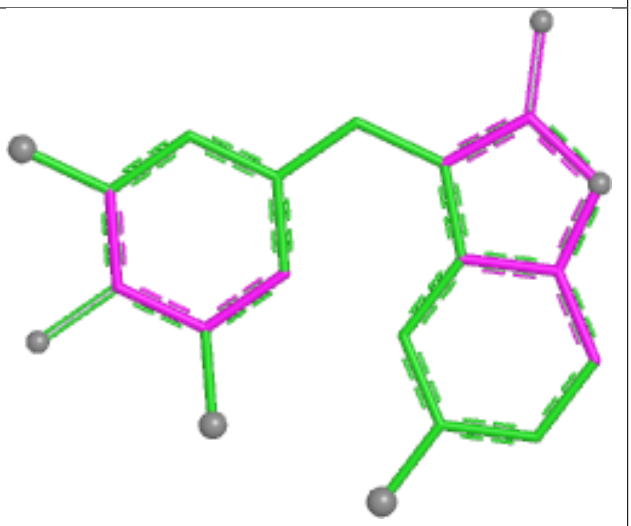
Ligand GTP A 553



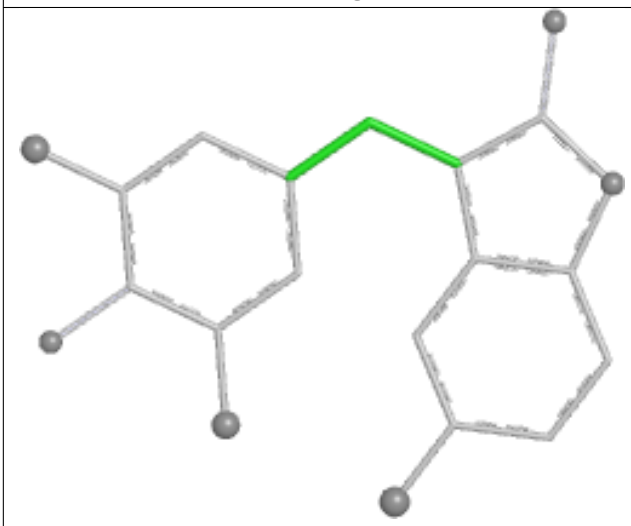
Ligand GWD D 552



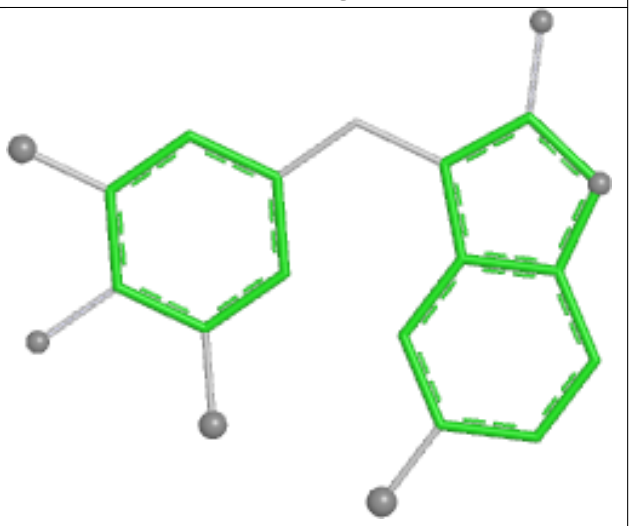
Bond lengths



Bond angles

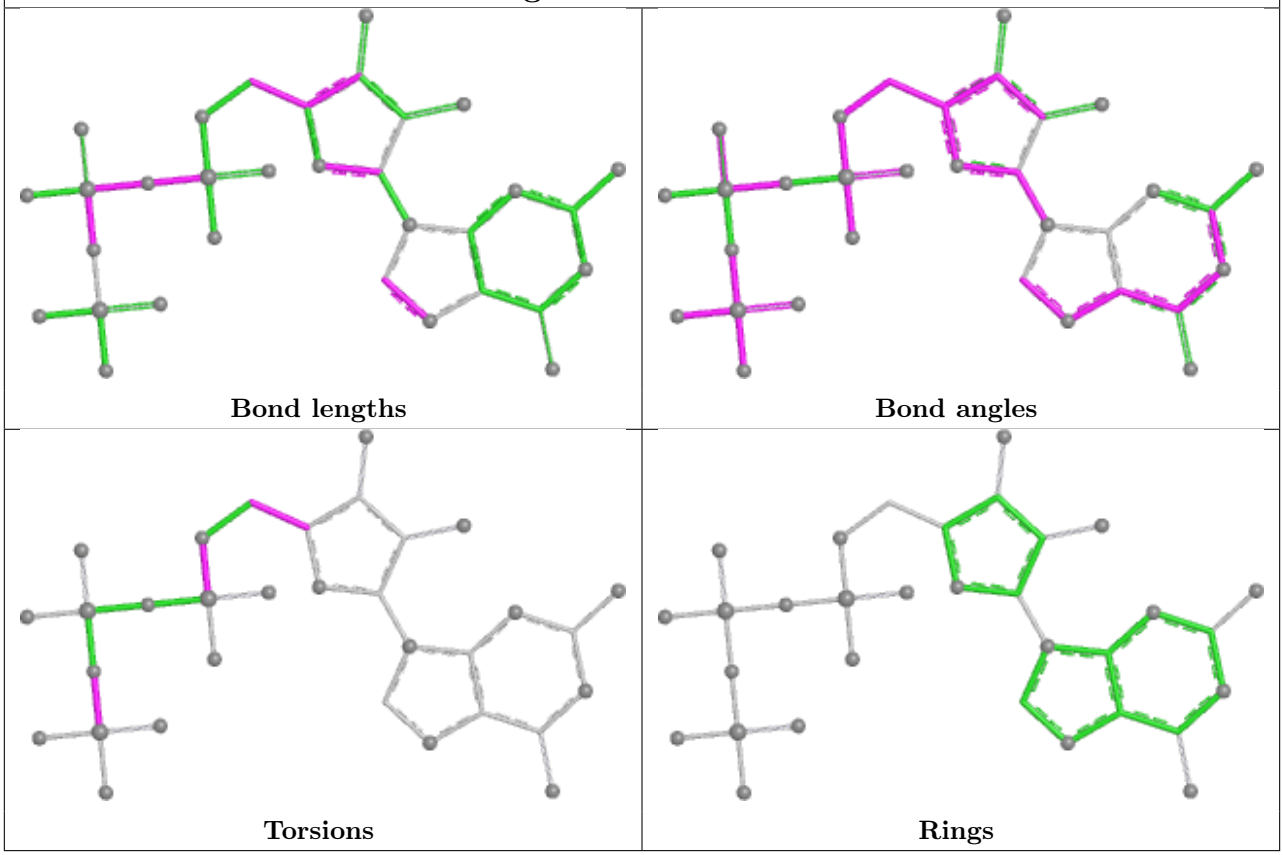


Torsions

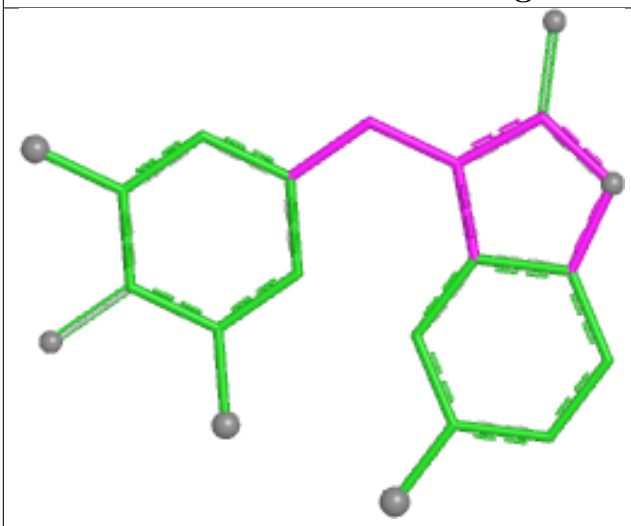


Rings

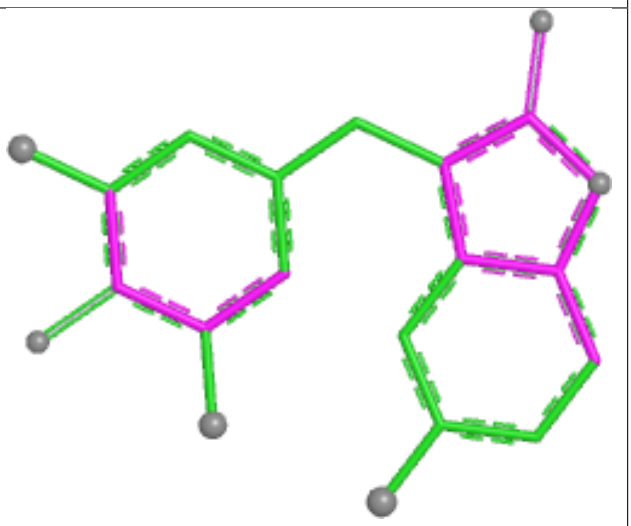
Ligand GTP C 553



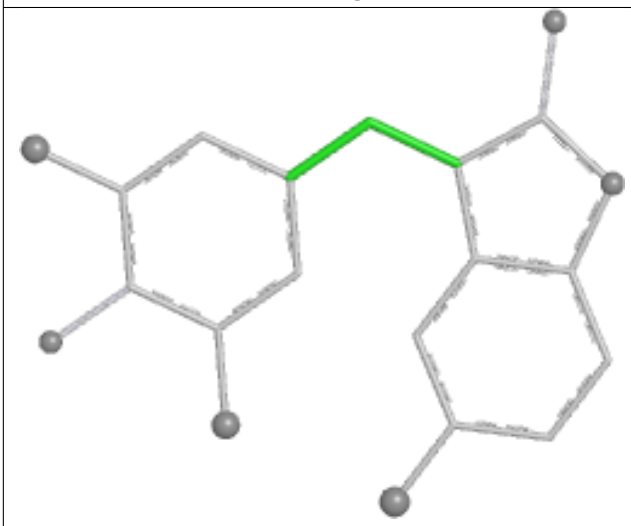
Ligand GWD A 552



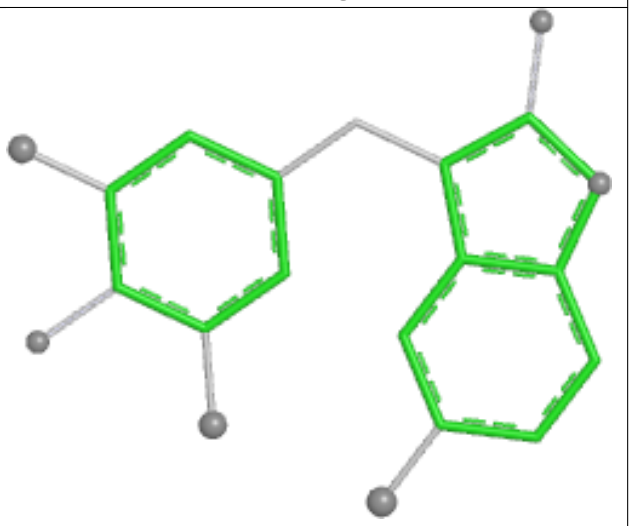
Bond lengths



Bond angles

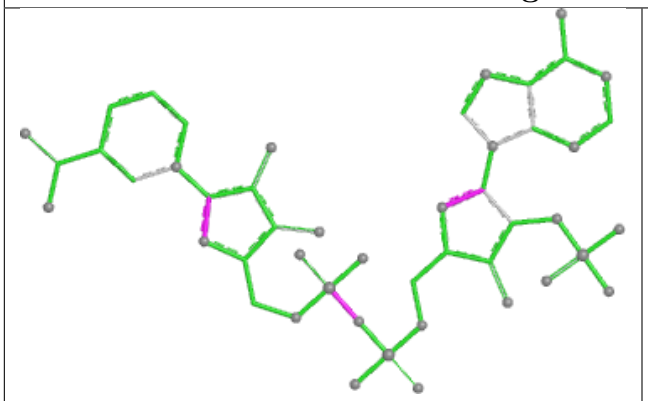


Torsions

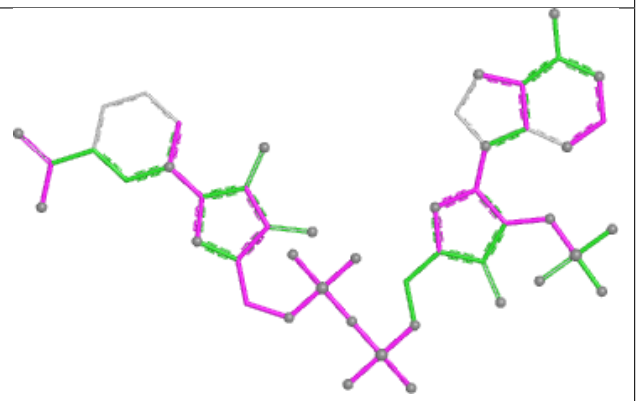


Rings

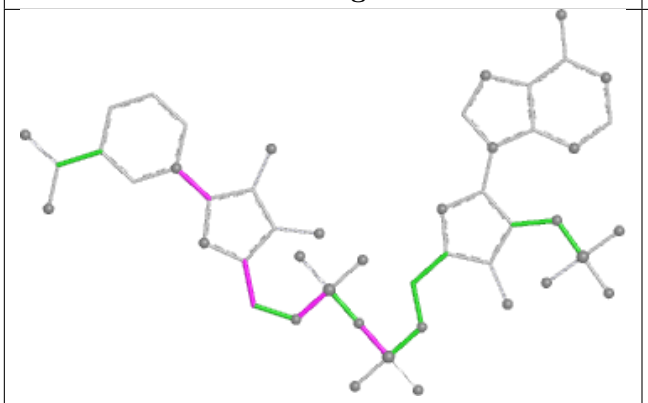
Ligand NDP D 551



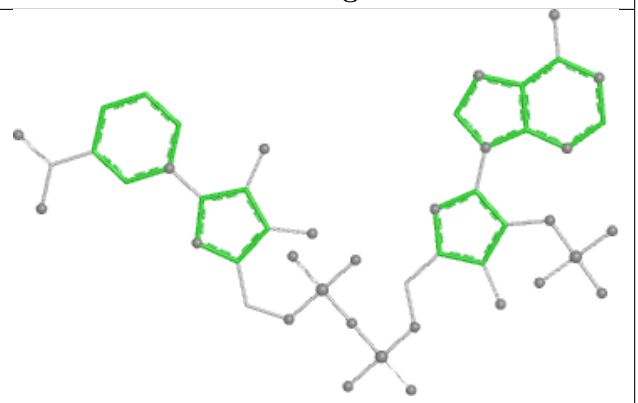
Bond lengths



Bond angles

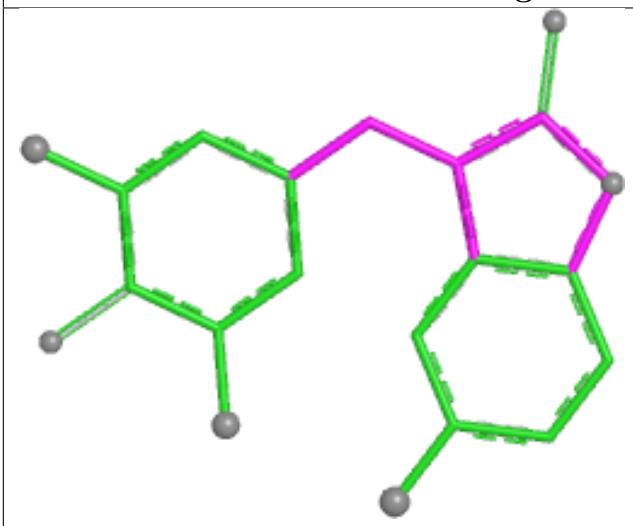


Torsions

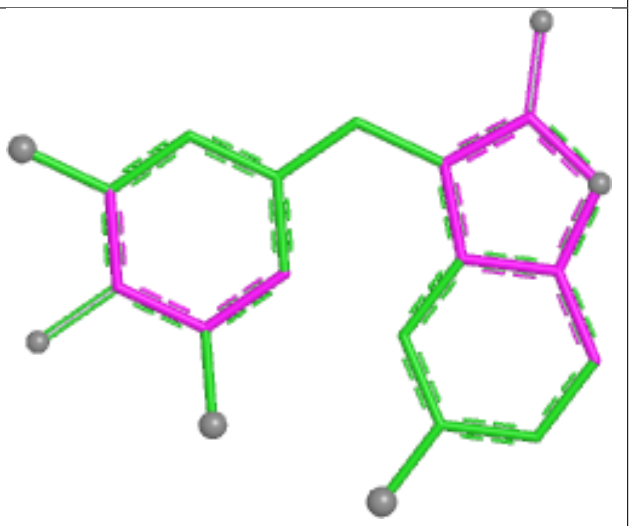


Rings

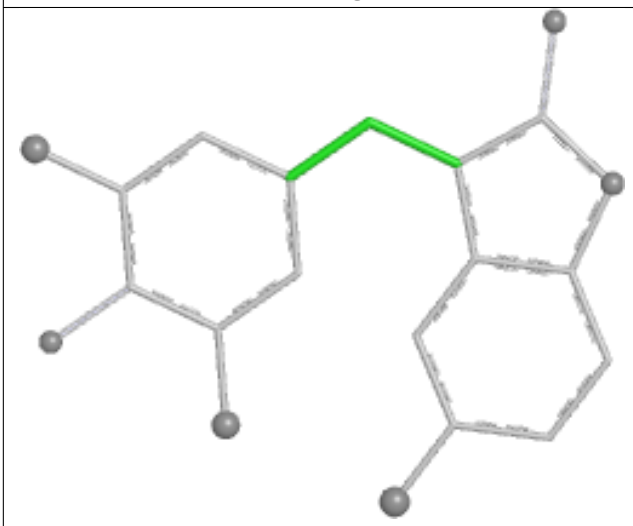
Ligand GWD C 552



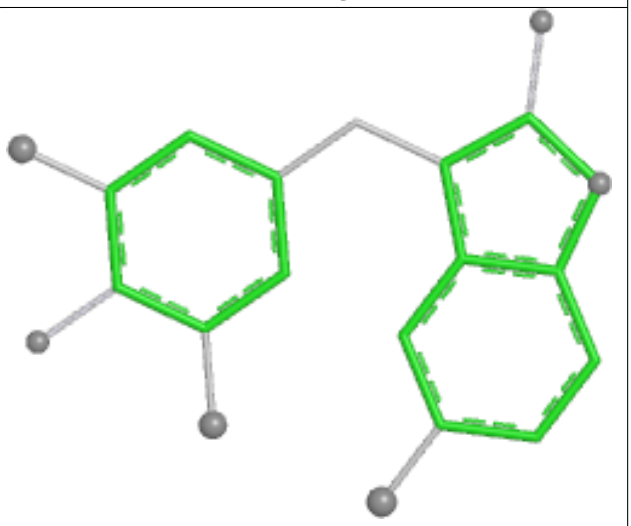
Bond lengths



Bond angles

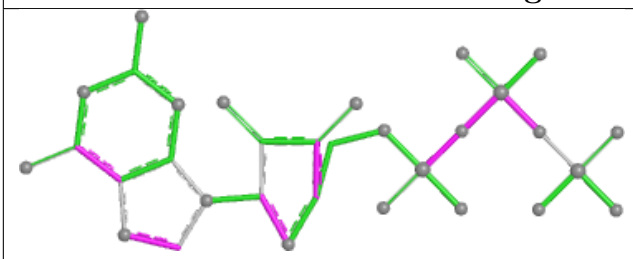


Torsions

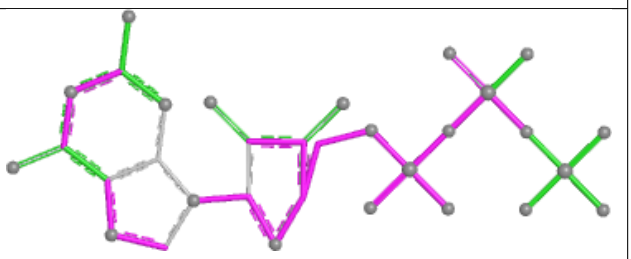


Rings

Ligand GTP F 553

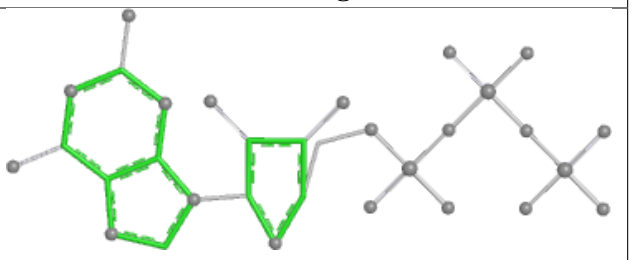


Bond lengths



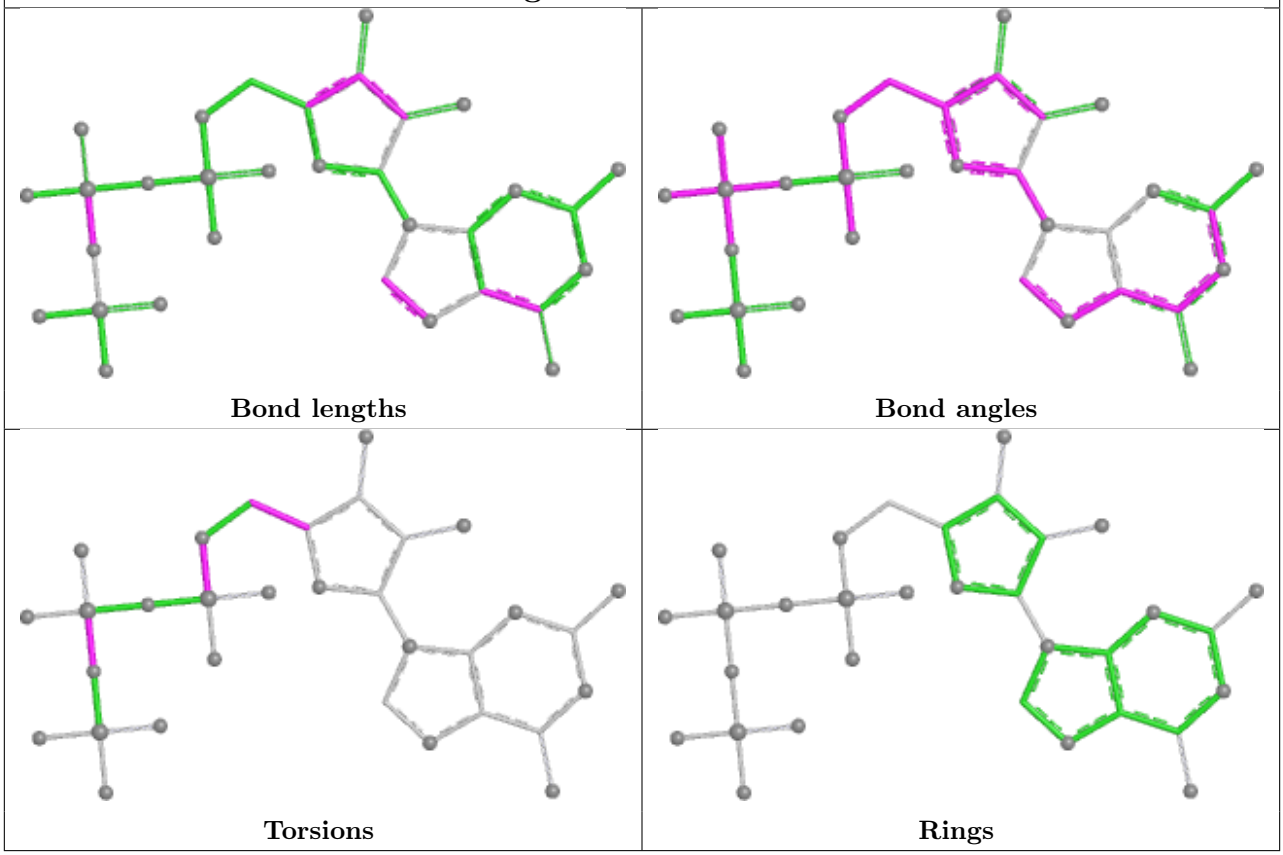
Bond angles

Torsions

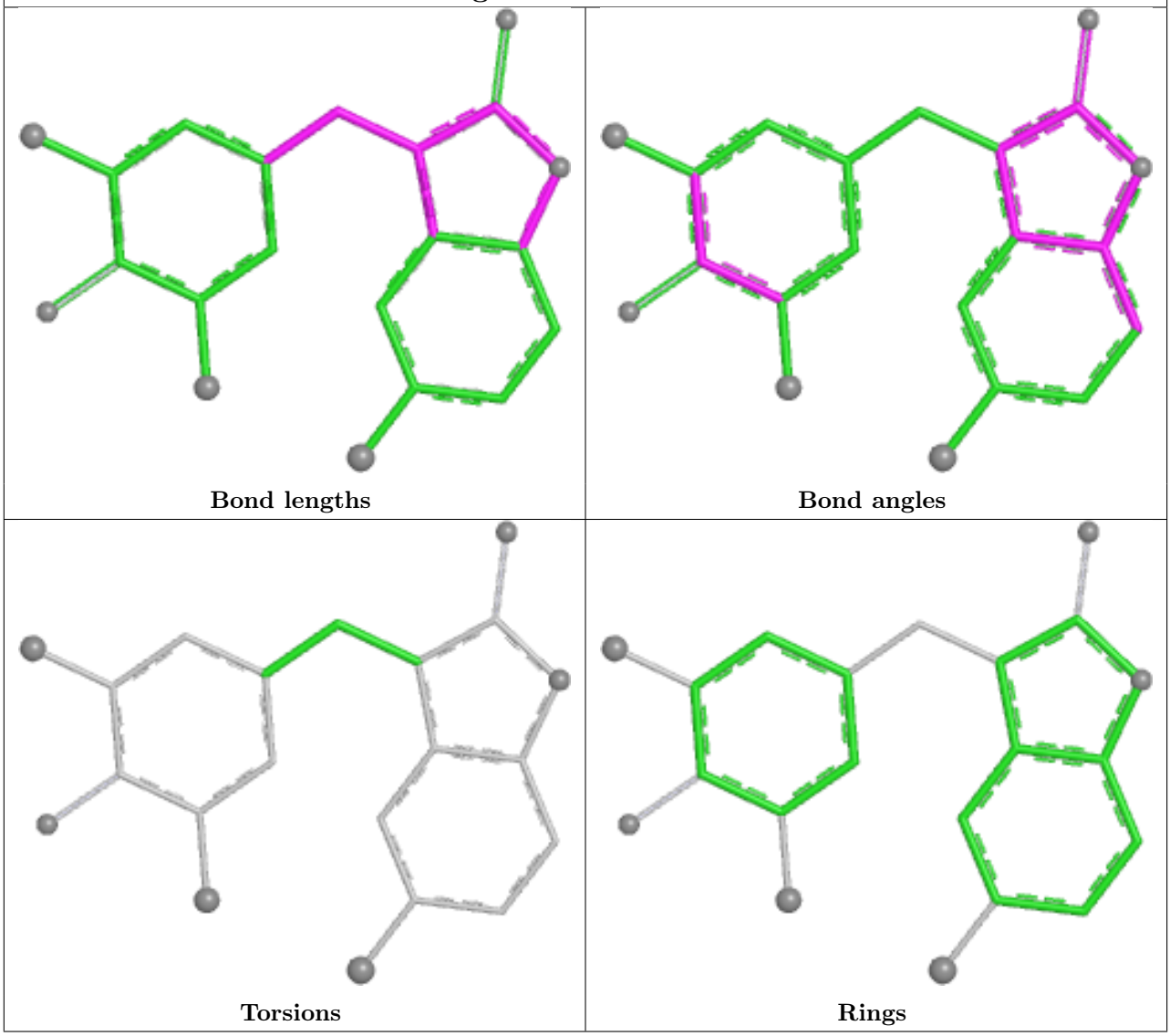


Rings

Ligand GTP B 553



Ligand GWD F 552



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	A	501/501 (100%)	0.77	59 (11%)	4	4	26, 46, 68, 78	0
1	B	501/501 (100%)	0.87	55 (10%)	5	5	26, 47, 69, 78	0
1	C	501/501 (100%)	0.48	26 (5%)	27	29	22, 45, 67, 78	0
1	D	501/501 (100%)	0.76	54 (10%)	5	5	24, 46, 69, 78	0
1	E	501/501 (100%)	0.88	60 (11%)	4	4	28, 48, 69, 78	0
1	F	501/501 (100%)	0.68	41 (8%)	11	11	24, 46, 68, 78	0
All	All	3006/3006 (100%)	0.74	295 (9%)	7	7	22, 47, 69, 78	0

The worst 5 of 295 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	500	PHE	12.2
1	B	498	VAL	11.9
1	D	499	THR	10.8
1	E	497	GLY	10.1
1	A	499	THR	10.0

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

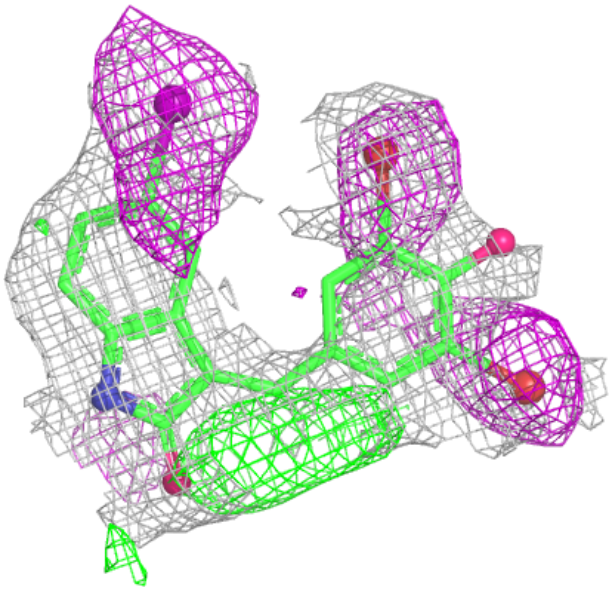
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

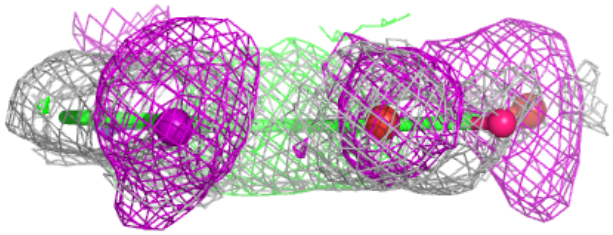
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
5	GWD	A	552	21/21	0.36	0.40	85,102,111,118	0
5	GWD	D	552	21/21	0.39	0.36	80,101,110,118	0
5	GWD	B	552	21/21	0.42	0.33	85,101,110,117	0
5	GWD	C	552	21/21	0.43	0.35	83,101,110,116	0
5	GWD	E	552	21/21	0.46	0.37	88,102,111,117	0
5	GWD	F	552	21/21	0.46	0.36	83,101,109,117	0
4	GTP	B	553	32/32	0.76	0.31	61,66,72,73	0
4	GTP	F	553	32/32	0.79	0.29	58,64,69,72	0
4	GTP	D	553	32/32	0.80	0.25	47,60,69,70	0
4	GTP	E	553	32/32	0.82	0.26	65,69,73,76	0
3	NDP	E	551	48/48	0.84	0.23	55,61,68,72	0
4	GTP	A	553	32/32	0.85	0.21	46,59,64,68	0
2	GLU	B	550	9/10	0.86	0.29	39,44,48,49	0
2	GLU	D	550	9/10	0.86	0.29	38,43,49,50	0
3	NDP	B	551	48/48	0.86	0.24	48,55,62,65	0
3	NDP	F	551	48/48	0.87	0.21	45,53,61,63	0
2	GLU	E	550	9/10	0.87	0.32	48,52,55,56	0
3	NDP	C	551	48/48	0.87	0.25	36,48,54,65	0
3	NDP	A	551	48/48	0.87	0.23	48,53,59,67	0
3	NDP	D	551	48/48	0.89	0.24	44,49,57,63	0
4	GTP	C	553	32/32	0.92	0.19	44,50,57,62	0
2	GLU	F	550	9/10	0.92	0.19	27,33,40,41	0
2	GLU	C	550	9/10	0.93	0.18	26,32,35,37	0
2	GLU	A	550	9/10	0.93	0.22	37,40,48,48	0

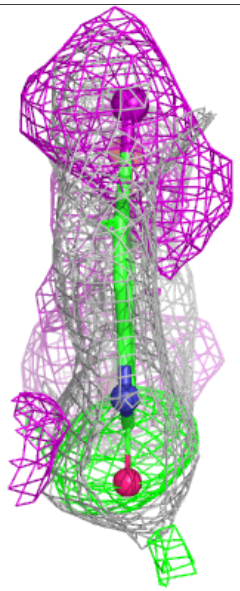
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around GWD A 552:

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

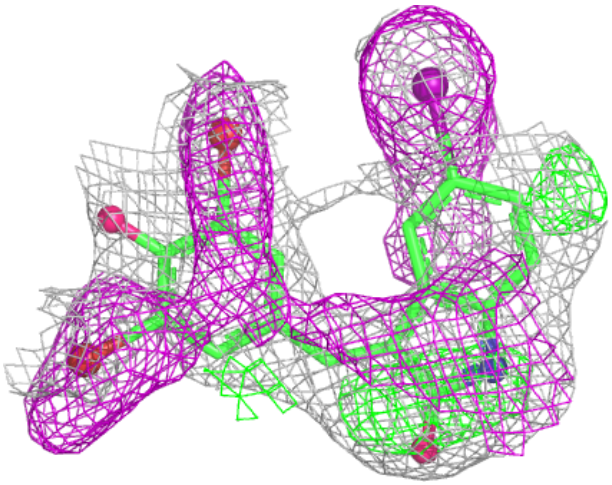


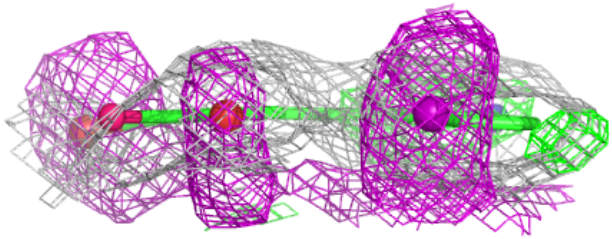


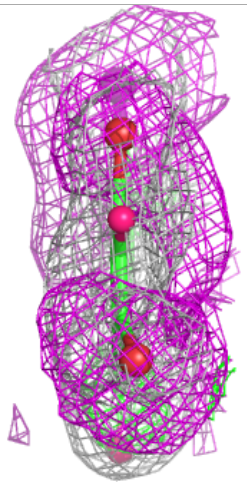


Electron density around GWD D 552:

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

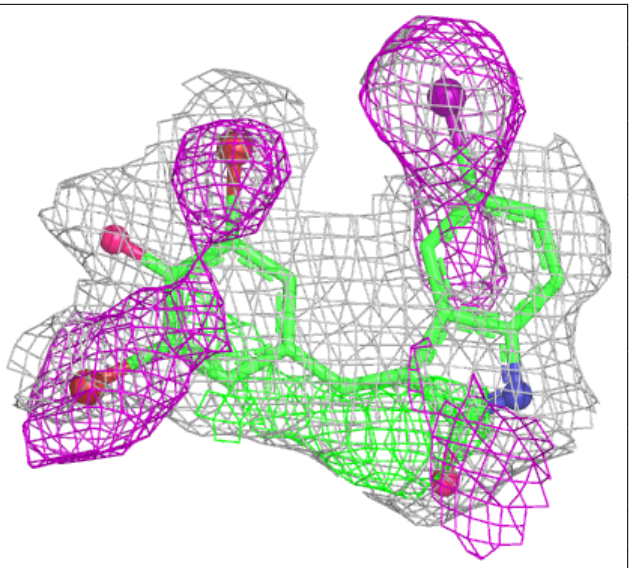


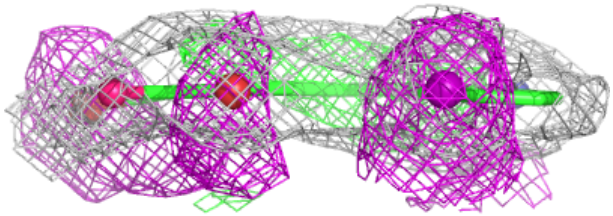


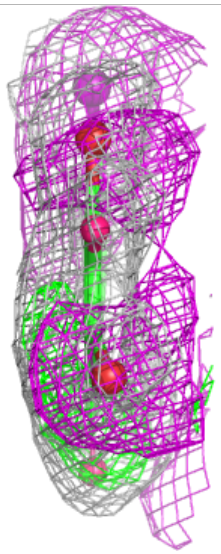


Electron density around GWD B 552:

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

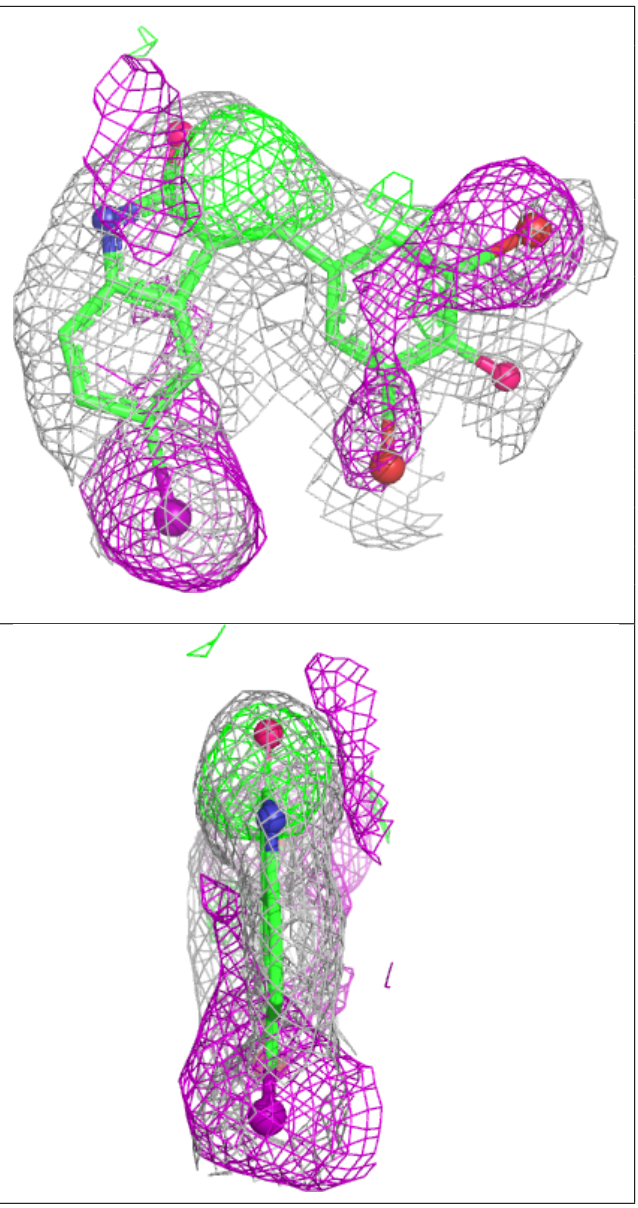






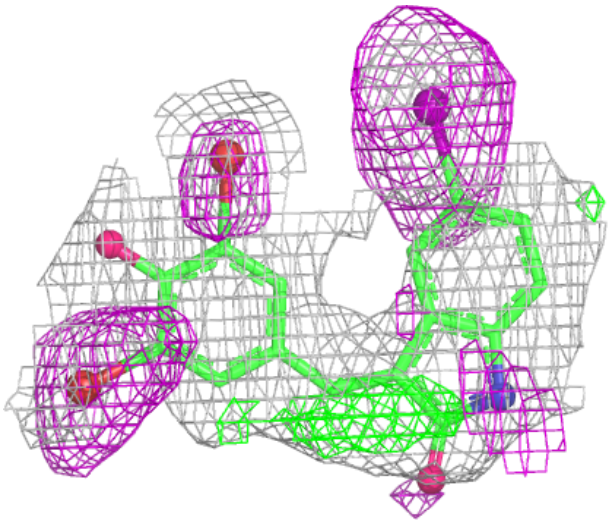
Electron density around GWD C 552:

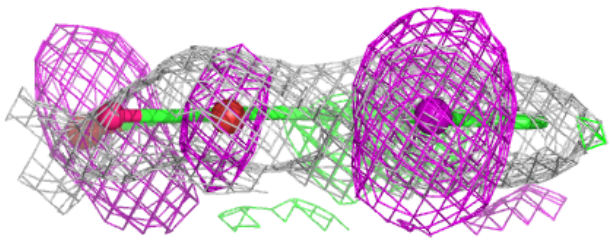
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

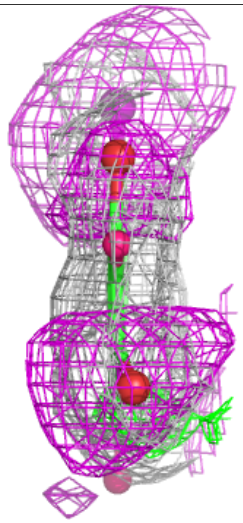


Electron density around GWD E 552:

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

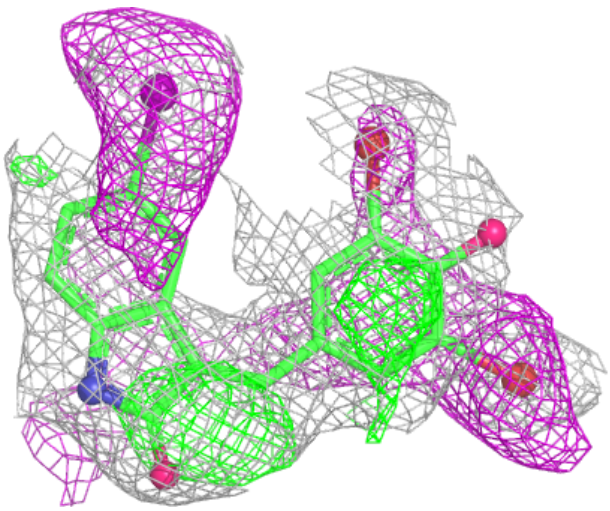


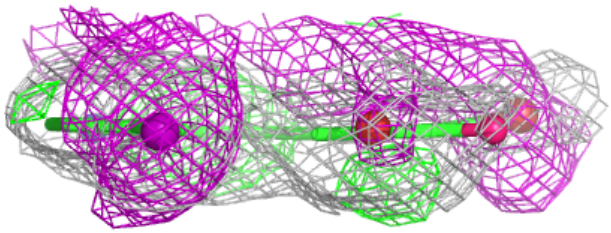


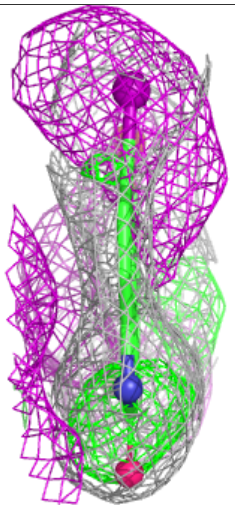


Electron density around GWD F 552:

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

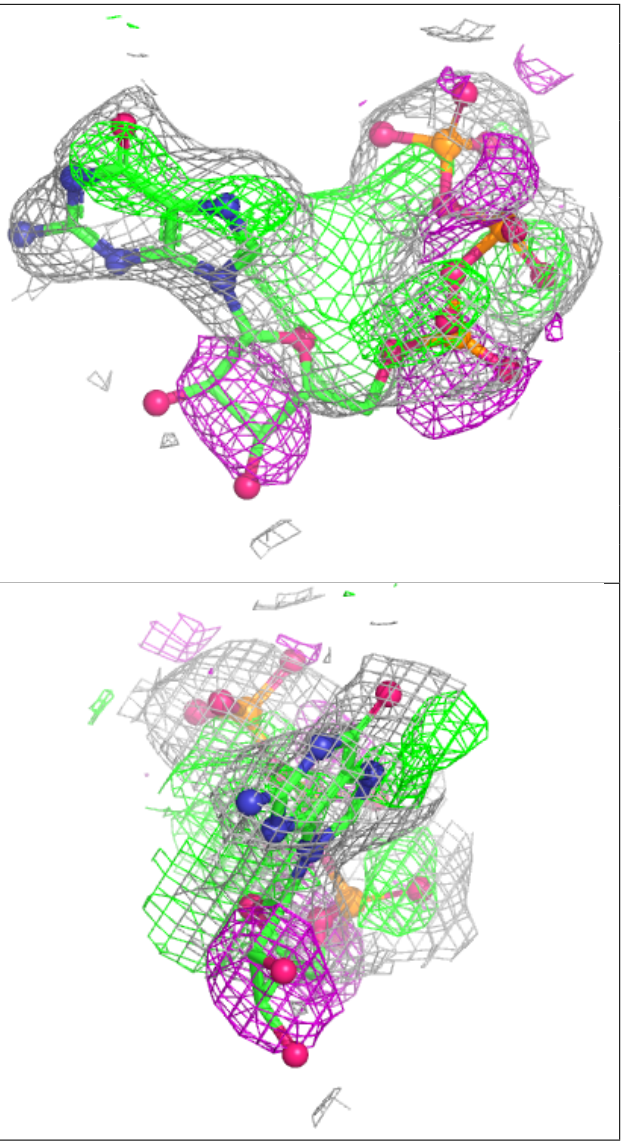






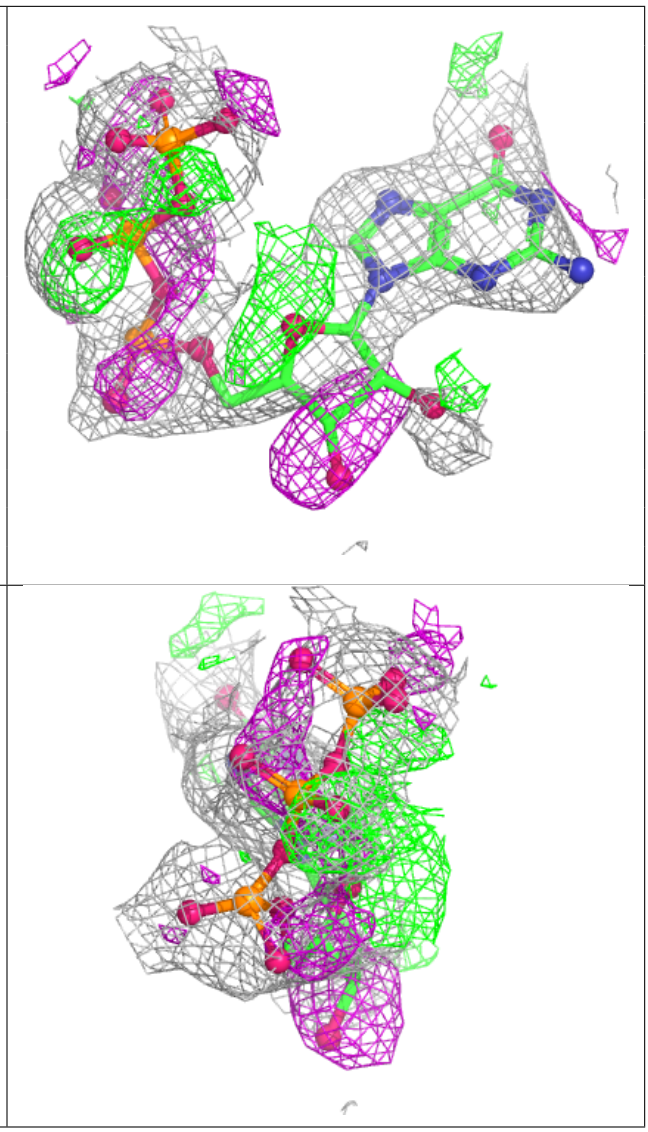
Electron density around GTP B 553:

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



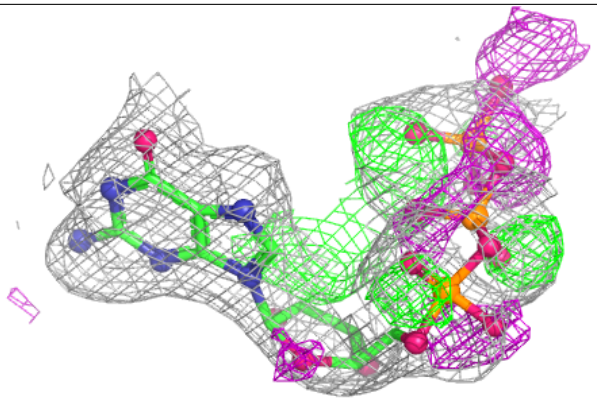
Electron density around GTP F 553:

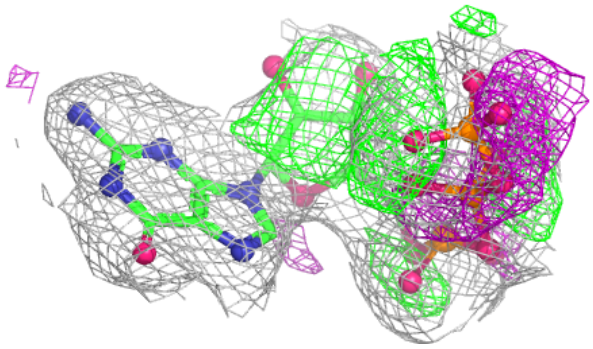
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

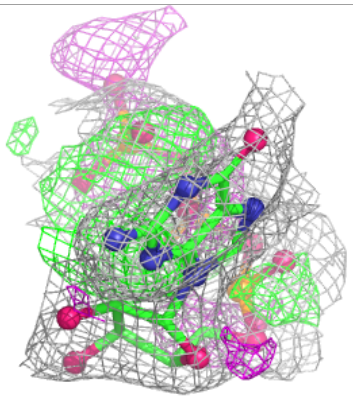


Electron density around GTP D 553:

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

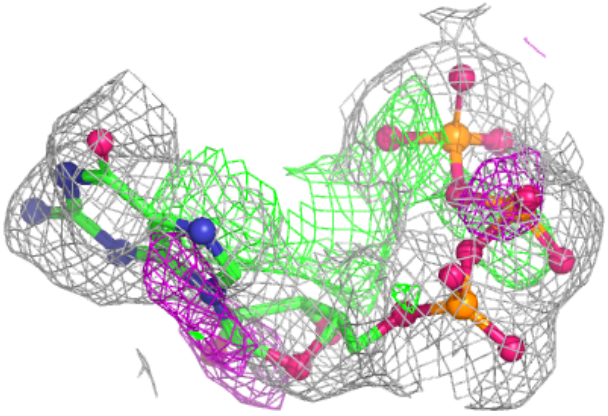


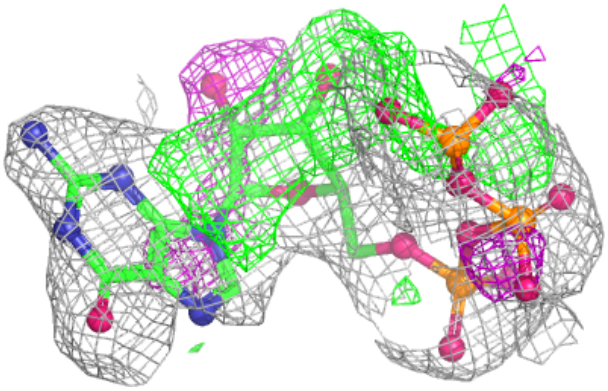


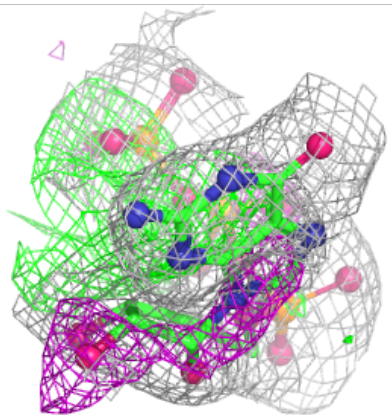


Electron density around GTP E 553:

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

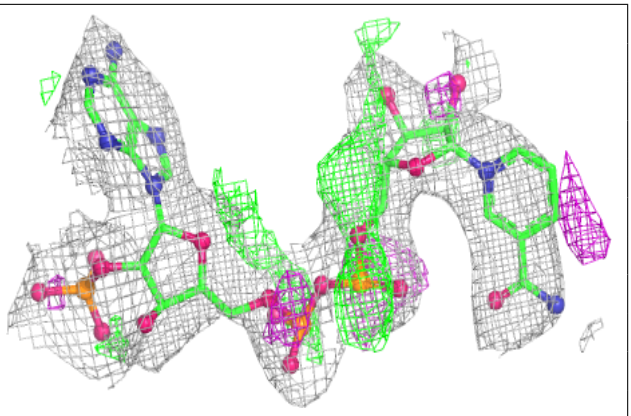


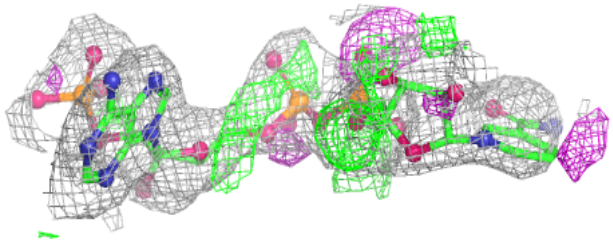


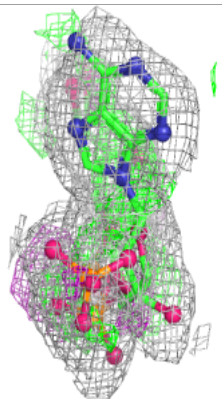


Electron density around NDP E 551:

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

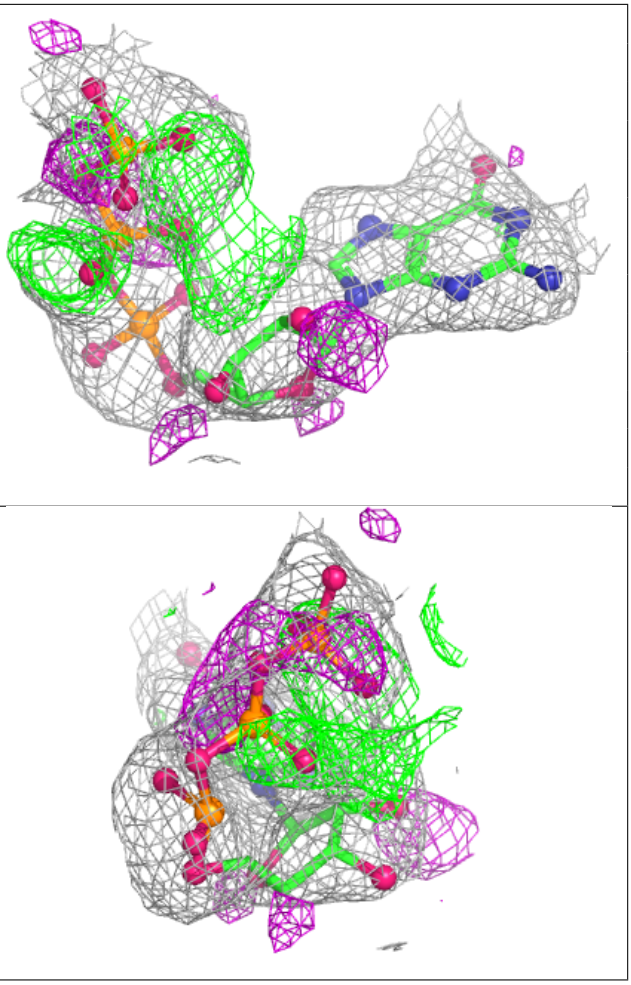






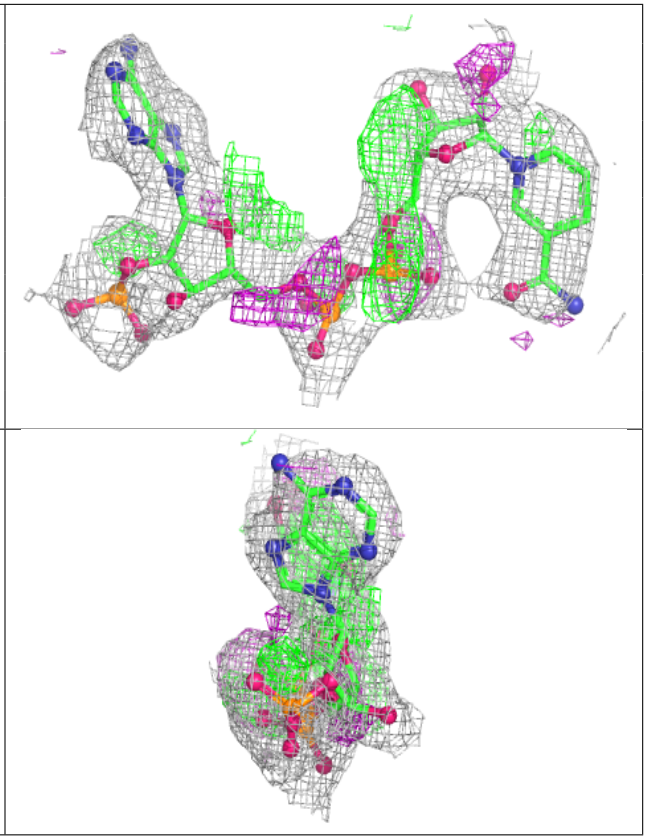
Electron density around GTP A 553:

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



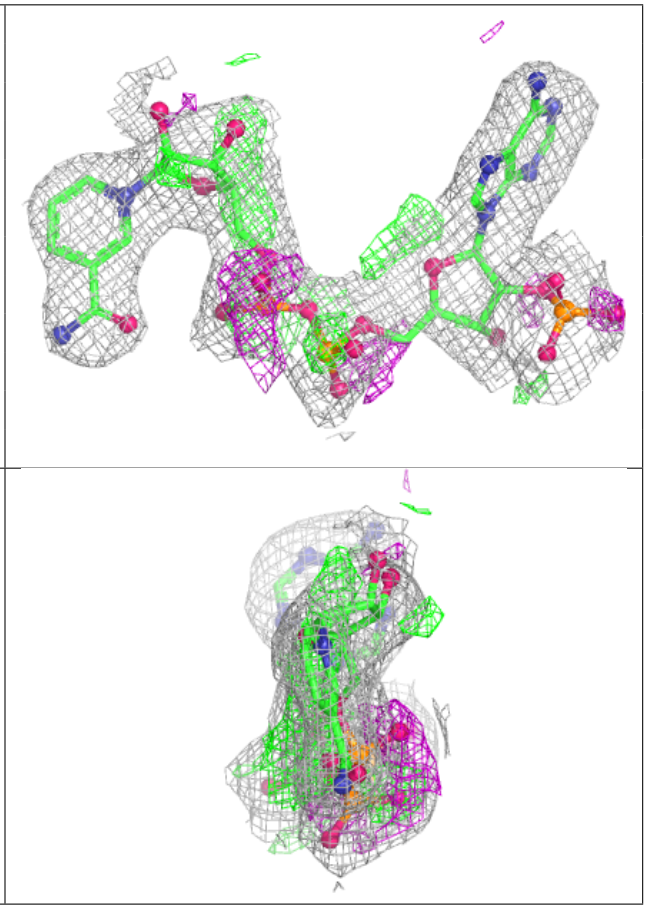
Electron density around NDP B 551:

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



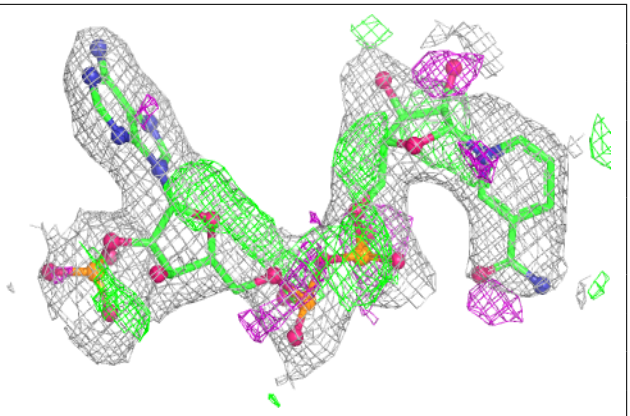
Electron density around NDP F 551:

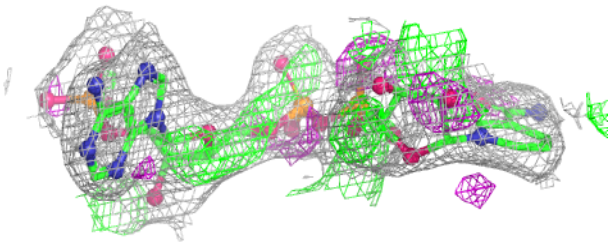
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

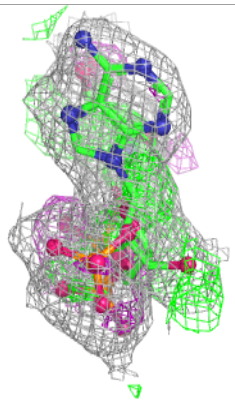


Electron density around NDP C 551:

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

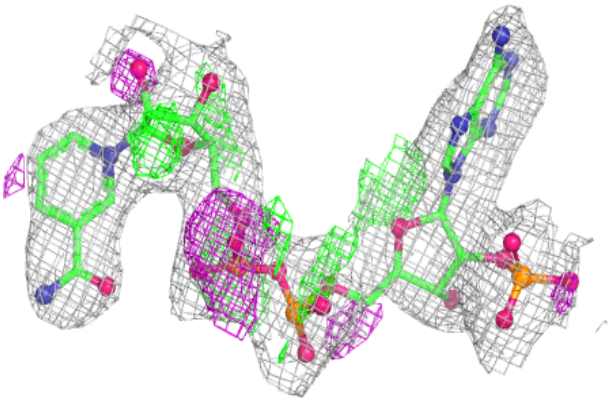


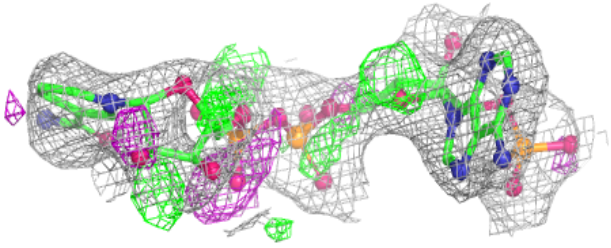


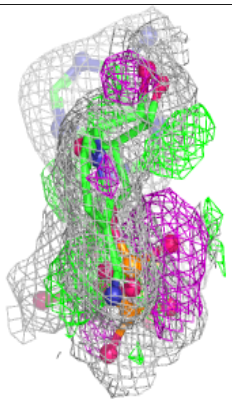


Electron density around NDP A 551:

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

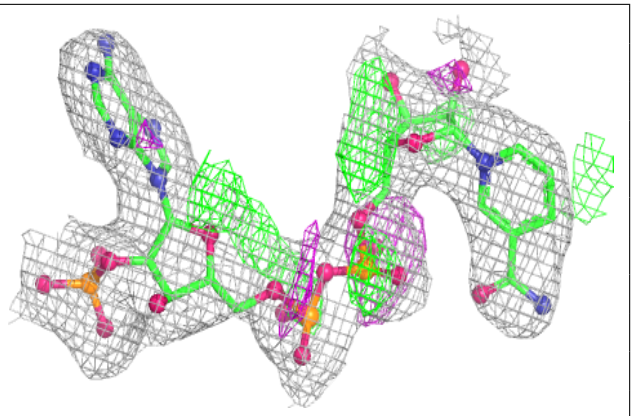


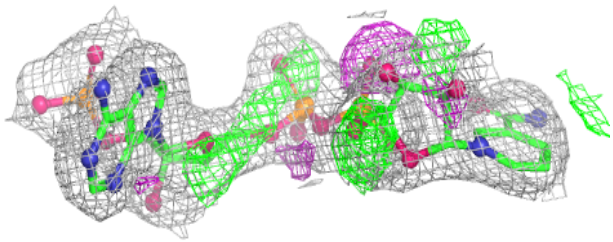


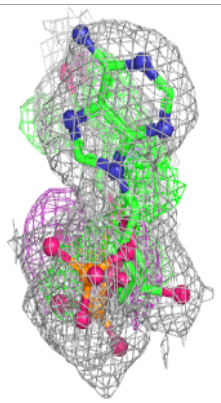


Electron density around NDP D 551:

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

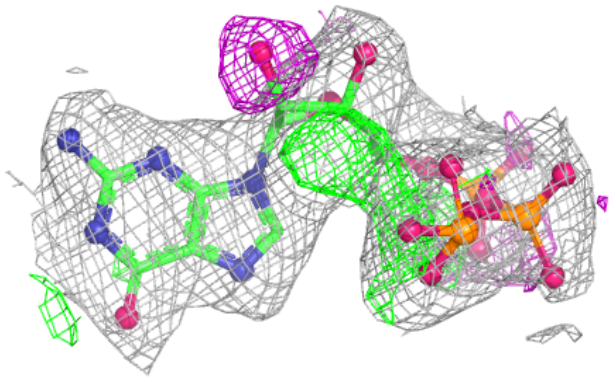


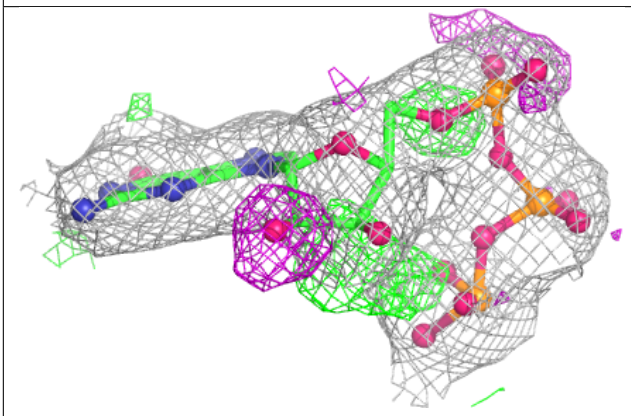


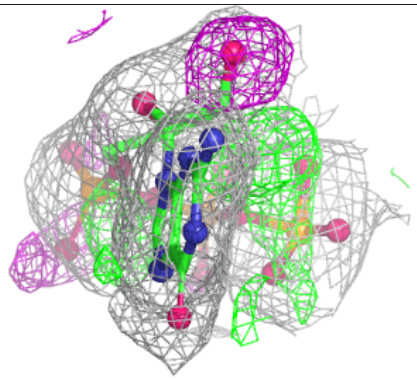


Electron density around GTP C 553:

$2mF_o$-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.