WORLDWIDE wwPDB PROTEIN DATA BANK

wwPDB X-ray Structure Validation Summary Report ⓘ

May 26, 2020 – 10:01 am BST

PDB ID	:	2XDR
Title	:	CRYSTALLOGRAPHIC STRUCTURE OF BETAINE ALDEHYDE DEHY-DROGENASE MUTANT E252A FROM PSEUDOMONAS AERUGINOSA
Authors	:	Diaz-Sanchez, A.G.; Gonzalez-Segura, L.; Rudino-Pinera, E.; Lira-Rocha, A.; Munoz-Clares, R.A.
Deposited on	:	2010-05-06
Resolution	:	2.30 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 ⓘ symbol.

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

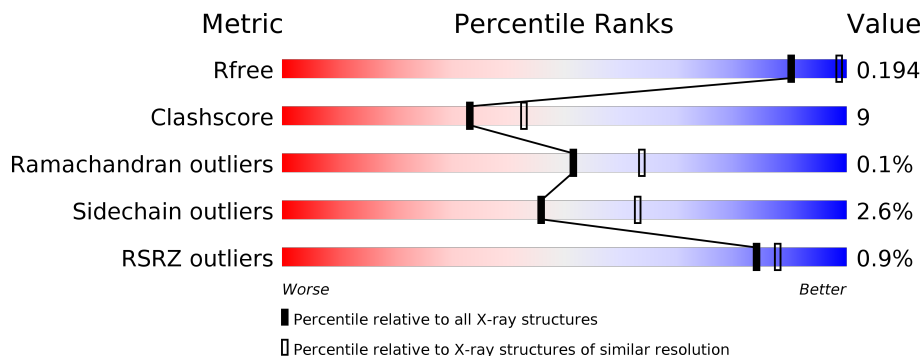|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.11
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.11

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.

Metric	Percentile Ranks	Value
Rfree		0.194
Clashscore		9
Ramachandran outliers		0.1%
Sidechain outliers		2.6%
RSRZ outliers		0.9%

■ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	5042 (2.30-2.30)
Clashscore	141614	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (2.30-2.30)
RSRZ outliers	127900	4938 (2.30-2.30)

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 <=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	489	85% 13% •
1	B	489	% 85% 14% •
1	C	489	2% 83% 16% •
1	D	489	% 86% 13% •

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 crite-

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	TOE	A	1492	-	-	X	-

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 17057 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 BETAINE ALDEHYDE DEHYDROGENASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	489	Total 3782	C 2373	N 665	O 729	S 15	0	6	0
1	B	489	Total 3775	C 2369	N 667	O 724	S 15	0	4	0
1	C	489	Total 3792	C 2379	N 669	O 728	S 16	0	5	0
1	D	489	Total 3815	C 2390	N 675	O 735	S 15	0	6	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	252	ALA	GLU	engineered mutation	UNP Q9HTJ1
B	252	ALA	GLU	engineered mutation	UNP Q9HTJ1
C	252	ALA	GLU	engineered mutation	UNP Q9HTJ1
D	252	ALA	GLU	engineered mutation	UNP Q9HTJ1

- Molecule 2 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).

GOL

C3

OH O3

C1 C2

HO OH

O1 O2

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total 6	C 3	O 3	0	0
2	B	1	Total 6	C 3	O 3	0	0
2	B	1	Total 6	C 3	O 3	0	0
2	B	1	Total 6	C 3	O 3	0	0
2	B	1	Total 6	C 3	O 3	0	0
2	C	1	Total 6	C 3	O 3	0	0
2	C	1	Total 6	C 3	O 3	0	0
2	C	1	Total 6	C 3	O 3	0	0
2	C	1	Total 6	C 3	O 3	0	0
2	C	1	Total 6	C 3	O 3	0	0
2	D	1	Total 6	C 3	O 3	0	0
2	D	1	Total 6	C 3	O 3	0	0
2	D	1	Total 6	C 3	O 3	0	0
2	D	1	Total 6	C 3	O 3	0	0

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- Molecule 3 is 2-[2-(2-METHOXY-ETHOXY)-ETHOXY]-ETHOXYL (three-letter code: TOE) (formula: $C_7H_{16}O_4$).
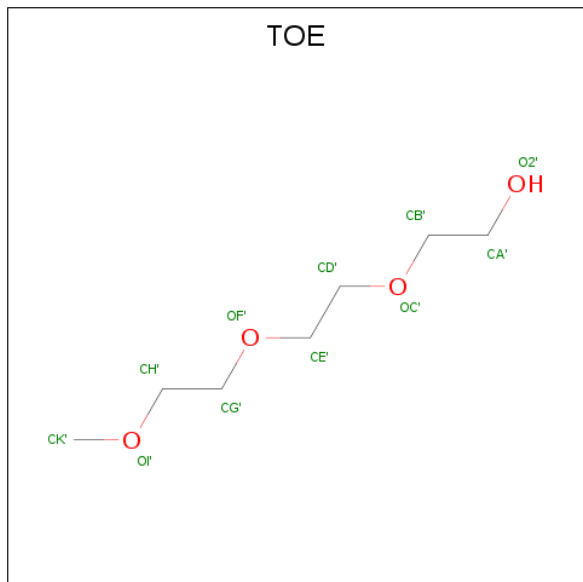
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total 11	C 7	O 4	0	0

- Molecule 4 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	B	2	Total 2	K 2	0	0
4	A	2	Total 2	K 2	0	0
4	D	2	Total 2	K 2	0	0
4	C	2	Total 2	K 2	0	0

- Molecule 5 is NADPH DIHYDRO-NICOTINAMIDE-ADENINE-DINUCLEOTIDE PHOSPHATE (three-letter code: NDP) (formula: $C_{21}H_{30}N_7O_{17}P_3$).
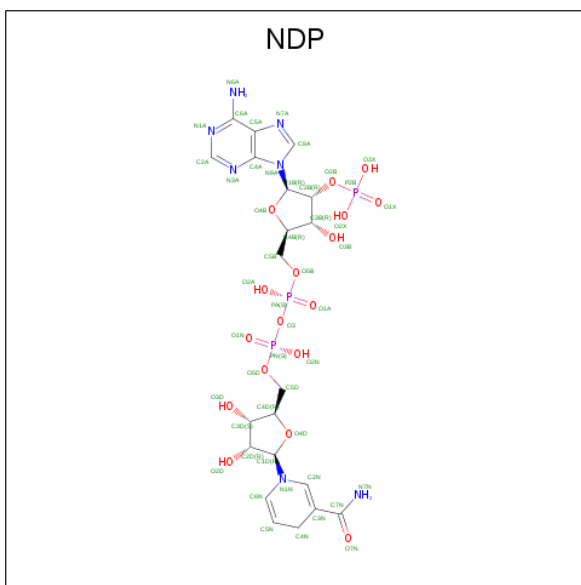
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	A	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
5	B	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
5	C	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
5	D	1	Total	C	N	O	P	0	0
			27	10	5	10	2		

- Molecule 6 is water.

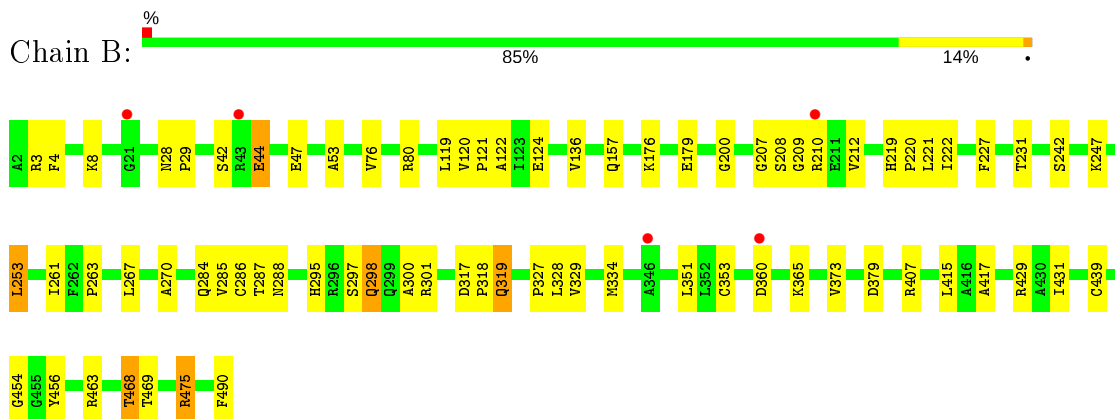| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	545	Total	O	0	0
			545	545		
6	B	390	Total	O	0	0
			390	390		
6	C	337	Total	O	0	0
			337	337		
6	D	410	Total	O	0	0
			410	410		

3 Residue-property plots ⓘ

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.
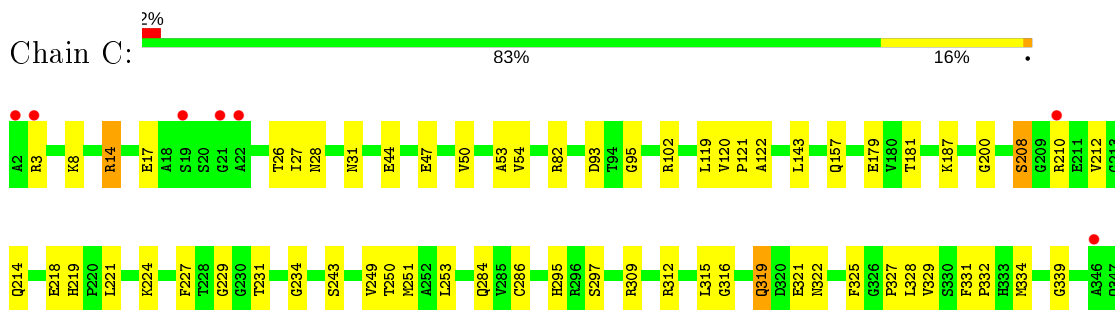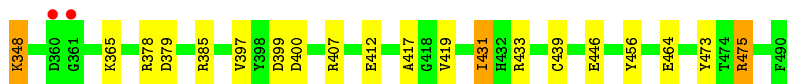
- Molecule 1: BETAINE ALDEHYDE DEHYDROGENASE
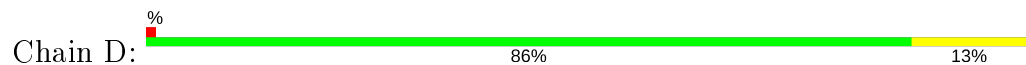

- Molecule 1: BETAINE ALDEHYDE DEHYDROGENASE

- Molecule 1: BETAINE ALDEHYDE DEHYDROGENASE

K348 D360 G361 K365 R378 D379 R385 V397 Y398 D399 D400 R407 E412 A417 G418 V419 I431 H432 R433 C439 E446 Y456 E464 Y473 T474 R475 F490

• Molecule 1: BETAINE ALDEHYDE DEHYDROGENASE

Chain D:

%

86%   13%

A2 E5 K9 R14 T26 R40 R43 E44 E47 R82 N83 I106 E126 V136 L143 A147 W152 Q157 K176 E211 V212 Q213 Q214 T217 E218 H219 P220 L221 I225 S226 F227 T228 G229 V237 M238 A239 S245 L246

T250 M251 A252 L253 I261 F262 P263 A270 Q284 H295 R296 S297 Q298 Q299 A300 R301 L315 P318 Q319 P327 L328 V329 L351 G354 T359 D360 G361 Y368 D379 D380 V397 R407 G414 V419 R429 A430 I431 G454 G455 Y456 R463

T468 H472 R475 F490

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 32 2 1	Depositor
Cell constants a, b, c, α, β, γ	151.56Å 151.56Å 242.41Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	29.88 – 2.30 29.88 – 2.30	Depositor EDS
% Data completeness (in resolution range)	99.0 (29.88-2.30) 97.7 (29.88-2.30)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	5.35 (at 2.31Å)	Xtriage
Refinement program	PHENIX (PHENIX.REFINE)	Depositor
R, R_{free}	0.160 , 0.200 0.153 , 0.194	Depositor DCC
R_{free} test set	7020 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å^2)	31.8	Xtriage
Anisotropy	0.092	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 58.9	EDS
L-test for twinning[2]	$< |L| > = 0.51, < L^2 > = 0.35$	Xtriage
Estimated twinning fraction	0.005 for -h,-k,l	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	17057	wwPDB-VP
Average B, all atoms (Å^2)	37.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.41% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.

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

5 Model quality (i)

5.1 Standard geometry (i)

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

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	0.34	0/3853	0.51	0/5221
1	B	0.30	0/3843	0.48	0/5207
1	C	0.29	0/3860	0.48	0/5229
1	D	0.31	0/3883	0.48	0/5259
All	All	0.31	0/15439	0.49	0/20916

There are no bond length outliers.

There are no bond angle outliers.

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	3782	0	3753	68	1
1	B	3775	0	3751	66	0
1	C	3792	0	3765	74	0
1	D	3815	0	3779	54	0
2	A	6	0	8	1	0
2	B	24	0	32	4	0
2	C	30	0	40	6	0
2	D	24	0	32	3	0
3	A	11	0	16	7	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	A	2	0	0	0	0
4	B	2	0	0	0	0
4	C	2	0	0	0	0
4	D	2	0	0	0	0
5	A	27	0	11	3	0
5	B	27	0	11	2	0
5	C	27	0	11	3	0
5	D	27	0	11	2	0
6	A	545	0	0	22	0
6	B	390	0	0	15	0
6	C	337	0	0	15	0
6	D	410	0	0	13	0
All	All	17057	0	15220	262	1

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 9.

The worst 5 of 262 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:301[B]:ARG:HH21	1:B:301[B]:ARG:HG3	1.07	1.15
1:A:98:LEU:HD22	6:A:2374:HOH:O	1.55	1.04
1:A:219:HIS:HD2	1:A:221:LEU:H	1.14	0.94
1:C:27:ILE:HG22	1:C:28:ASN:H	1.30	0.93
1:B:301[B]:ARG:NH2	1:B:301[B]:ARG:HG3	1.85	0.85

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:378:ARG:NH1	1:A:378:ARG:NH1[6_555]	2.15	0.05

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	493/489 (101%)	476 (97%)	16 (3%)	1 (0%)	47	58
1	B	491/489 (100%)	472 (96%)	19 (4%)	0	100	100
1	C	493/489 (101%)	474 (96%)	19 (4%)	0	100	100
1	D	495/489 (101%)	478 (97%)	16 (3%)	1 (0%)	47	58
All	All	1972/1956 (101%)	1900 (96%)	70 (4%)	2 (0%)	51	64

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	414	GLY
1	D	414	GLY

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	395/389 (102%)	386 (98%)	9 (2%)	50	67
1	B	393/389 (101%)	380 (97%)	13 (3%)	38	53
1	C	395/389 (102%)	385 (98%)	10 (2%)	47	65
1	D	397/389 (102%)	385 (97%)	12 (3%)	41	57
All	All	1580/1556 (102%)	1536 (97%)	44 (3%)	46	60

5 of 44 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	429[B]	ARG
1	C	208	SER
1	D	251	MET
1	B	468	THR
1	C	14	ARG

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 24 such sidechains are listed below:

Mol	Chain	Res	Type
1	B	295	HIS
1	C	83	ASN
1	D	295	HIS
1	B	319	GLN
1	C	7	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

5.6 Ligand geometry ⓘ

Of 27 ligands modelled in this entry, 8 are monoatomic - leaving 19 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
2	GOL	C	1495	-	5,5,5	0.57	0	5,5,5	1.25	0
2	GOL	A	1491	-	5,5,5	0.55	0	5,5,5	1.44	1 (20%)
2	GOL	D	1493	-	5,5,5	0.58	0	5,5,5	1.37	1 (20%)
2	GOL	C	1491	-	5,5,5	0.56	0	5,5,5	1.22	0
2	GOL	B	1493	-	5,5,5	0.54	0	5,5,5	1.25	0
2	GOL	B	1494	-	5,5,5	0.54	0	5,5,5	1.27	0
2	GOL	D	1494	-	5,5,5	0.50	0	5,5,5	1.05	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
2	GOL	C	1494	-	5,5,5	0.50	0	5,5,5	1.25	0
2	GOL	C	1492	-	5,5,5	0.53	0	5,5,5	1.27	0
2	GOL	D	1491	-	5,5,5	0.55	0	5,5,5	1.29	0
2	GOL	C	1493	-	5,5,5	0.51	0	5,5,5	1.32	0
2	GOL	B	1492	-	5,5,5	0.55	0	5,5,5	1.27	0
2	GOL	B	1491	-	5,5,5	0.51	0	5,5,5	1.41	1 (20%)
2	GOL	D	1492	-	5,5,5	0.54	0	5,5,5	1.20	0
5	NDP	A	5502	-	25,29,52	2.86	11 (44%)	31,45,80	1.74	7 (22%)
5	NDP	B	5502	-	25,29,52	2.90	11 (44%)	31,45,80	1.76	7 (22%)
5	NDP	C	5502	-	25,29,52	2.87	11 (44%)	31,45,80	1.85	8 (25%)
3	TOE	A	1492	-	10,10,10	0.52	0	9,9,9	1.38	0
5	NDP	D	5502	-	25,29,52	2.84	11 (44%)	31,45,80	1.64	6 (19%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GOL	C	1495	-	-	0/4/4/4	-
2	GOL	A	1491	-	-	4/4/4/4	-
2	GOL	D	1493	-	-	2/4/4/4	-
2	GOL	C	1491	-	-	0/4/4/4	-
2	GOL	B	1493	-	-	1/4/4/4	-
2	GOL	B	1494	-	-	2/4/4/4	-
2	GOL	D	1494	-	-	1/4/4/4	-
2	GOL	C	1494	-	-	2/4/4/4	-
2	GOL	C	1492	-	-	2/4/4/4	-
2	GOL	D	1491	-	-	2/4/4/4	-
2	GOL	C	1493	-	-	0/4/4/4	-
2	GOL	B	1492	-	-	3/4/4/4	-
2	GOL	B	1491	-	-	2/4/4/4	-
2	GOL	D	1492	-	-	4/4/4/4	-
5	NDP	A	5502	-	-	3/11/31/77	0/3/3/5
5	NDP	B	5502	-	-	2/11/31/77	0/3/3/5
5	NDP	C	5502	-	-	5/11/31/77	0/3/3/5
3	TOE	A	1492	-	-	5/8/8/8	-
5	NDP	D	5502	-	-	3/11/31/77	0/3/3/5

The worst 5 of 44 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	5502	NDP	C2A-N3A	7.02	1.43	1.32
5	D	5502	NDP	C2A-N3A	6.84	1.43	1.32
5	B	5502	NDP	C2A-N3A	6.80	1.43	1.32
5	C	5502	NDP	C2A-N3A	6.74	1.43	1.32
5	C	5502	NDP	C8A-N7A	5.95	1.45	1.34

The worst 5 of 31 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
5	A	5502	NDP	N3A-C2A-N1A	-5.70	119.76	128.68
5	D	5502	NDP	N3A-C2A-N1A	-5.61	119.90	128.68
5	B	5502	NDP	N3A-C2A-N1A	-5.56	119.99	128.68
5	C	5502	NDP	N3A-C2A-N1A	-5.54	120.01	128.68
5	C	5502	NDP	O3B-C3B-C4B	3.55	121.33	111.05

There are no chirality outliers.

5 of 43 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	D	1493	GOL	O1-C1-C2-C3
2	B	1491	GOL	O1-C1-C2-C3
2	A	1491	GOL	O1-C1-C2-C3
2	C	1492	GOL	C1-C2-C3-O3
2	C	1492	GOL	O2-C2-C3-O3

There are no ring outliers.

15 monomers are involved in 30 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	1495	GOL	1	0
2	A	1491	GOL	1	0
2	C	1491	GOL	3	0
2	B	1493	GOL	2	0
2	B	1494	GOL	1	0
2	C	1492	GOL	1	0
2	D	1491	GOL	2	0
2	C	1493	GOL	1	0
2	B	1492	GOL	1	0
2	D	1492	GOL	1	0
5	A	5502	NDP	3	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	5502	NDP	2	0
5	C	5502	NDP	3	0
3	A	1492	TOE	7	0
5	D	5502	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 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 A 5502

Bond lengths

Bond angles

Torsions

Rings

Ligand NDP B 5502

Bond lengths

Bond angles

Torsions

Rings

Ligand NDP C 5502

Bond lengths

Bond angles

Torsions

Rings

Ligand NDP D 5502

Bond lengths

Bond angles

Torsions

Rings
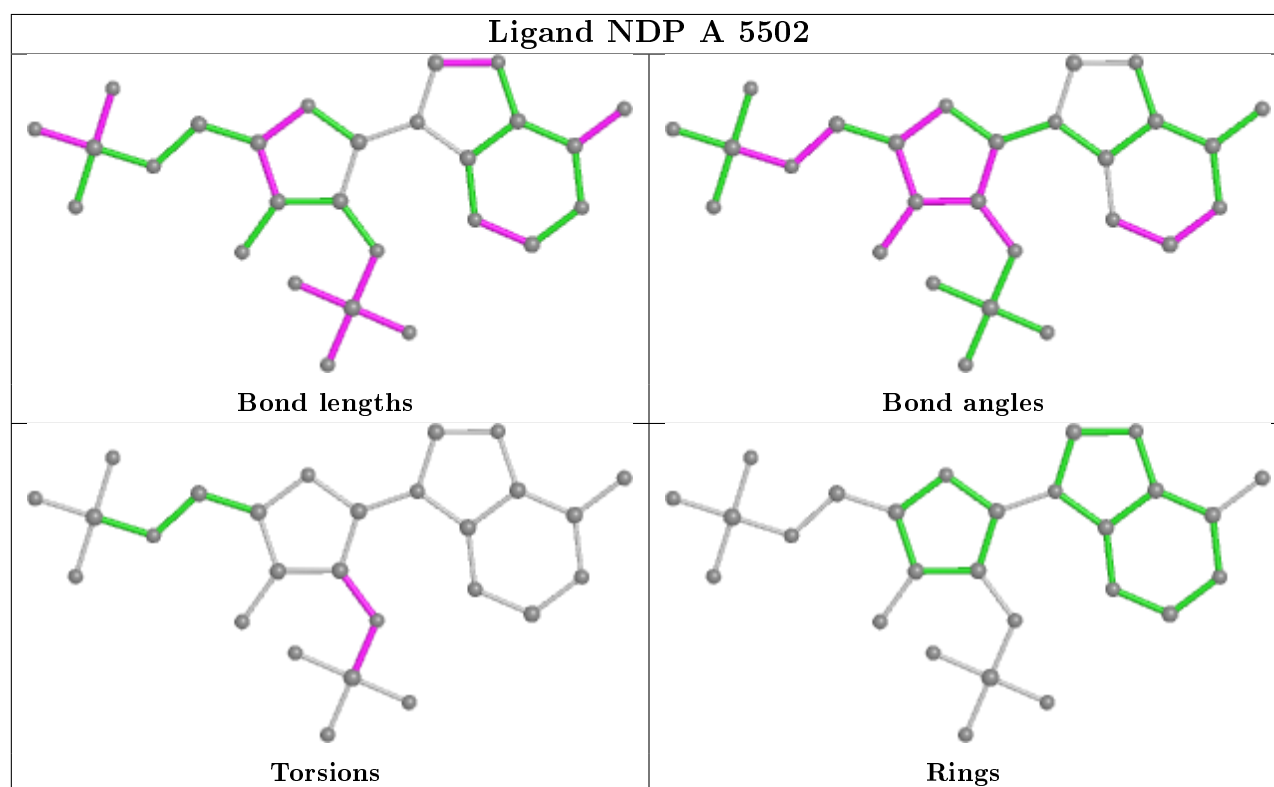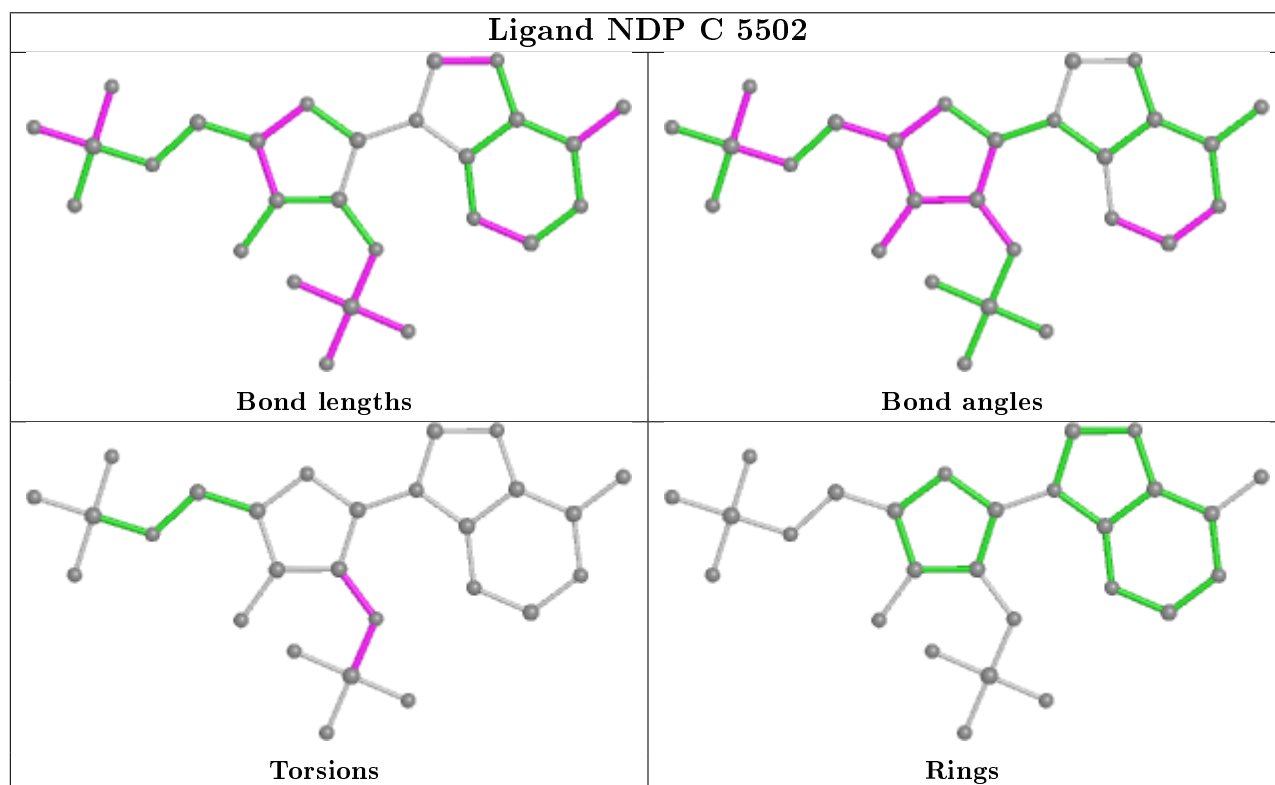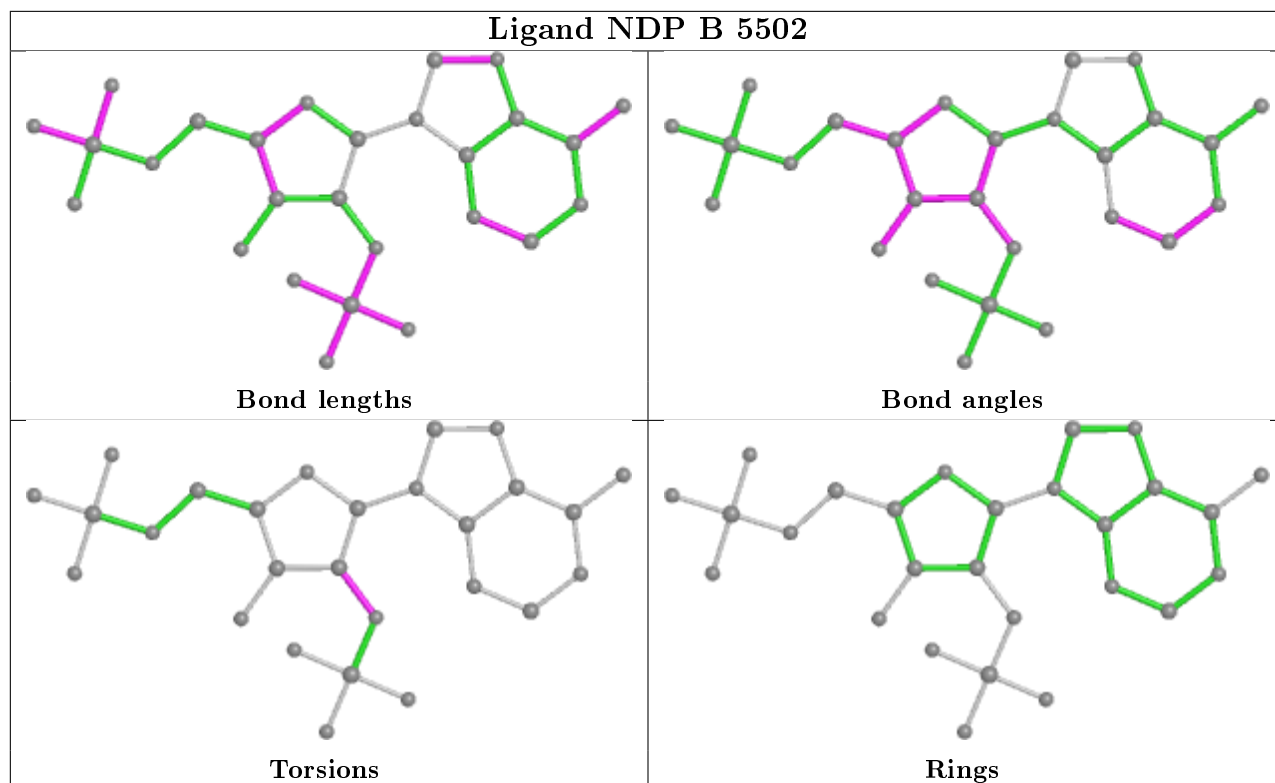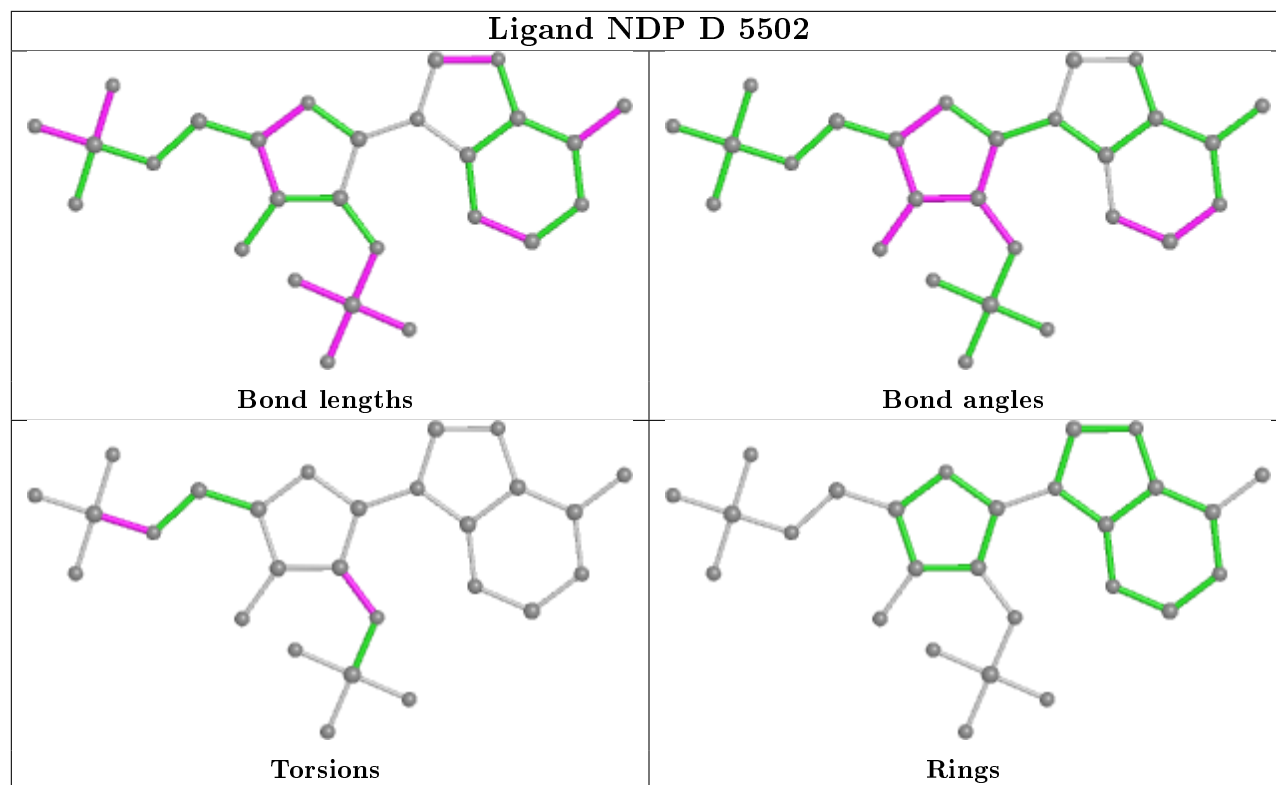
5.7 Other polymers (i)

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	489/489 (100%)	-0.60	0	100	100	14, 25, 43, 78	0
1	B	489/489 (100%)	-0.38	5 (1%)	82	86	14, 37, 63, 96	0
1	C	489/489 (100%)	-0.42	9 (1%)	68	74	21, 39, 60, 92	0
1	D	489/489 (100%)	-0.44	3 (0%)	89	92	17, 33, 58, 79	0
All	All	1956/1956 (100%)	-0.46	17 (0%)	84	88	14, 34, 59, 96	0

The worst 5 of 17 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	2	ALA	4.0
1	B	210	ARG	3.2
1	D	359	THR	3.0
1	C	346	ALA	3.0
1	C	21	GLY	2.8

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 carbohydrates 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(Å²)	Q<0.9
2	GOL	C	1494	6/6	0.67	0.38	77,92,98,100	0
2	GOL	B	1491	6/6	0.77	0.32	61,64,66,71	0
2	GOL	D	1493	6/6	0.83	0.29	57,60,76,84	0
3	TOE	A	1492	11/11	0.83	0.27	22,61,79,88	0
2	GOL	C	1495	6/6	0.84	0.39	70,86,87,90	0
2	GOL	A	1491	6/6	0.84	0.23	36,48,55,60	0
2	GOL	C	1493	6/6	0.86	0.26	60,79,86,90	0
5	NDP	B	5502	27/48	0.87	0.18	39,55,72,94	20
2	GOL	D	1491	6/6	0.89	0.19	38,81,89,94	0
2	GOL	C	1491	6/6	0.91	0.20	70,72,75,78	0
4	K	D	1496	1/1	0.91	0.11	67,67,67,67	0
2	GOL	B	1492	6/6	0.91	0.31	61,63,73,76	0
2	GOL	D	1494	6/6	0.91	0.14	53,56,60,62	0
4	K	C	1497	1/1	0.92	0.11	74,74,74,74	0
5	NDP	A	5502	27/48	0.92	0.15	23,38,58,90	23
4	K	B	5500	1/1	0.92	0.13	68,68,68,68	0
2	GOL	C	1492	6/6	0.92	0.30	49,58,68,73	0
5	NDP	C	5502	27/48	0.92	0.16	34,52,80,95	20
2	GOL	B	1494	6/6	0.92	0.18	46,72,79,82	0
2	GOL	D	1492	6/6	0.93	0.26	54,67,71,74	0
4	K	C	1496	1/1	0.93	0.10	58,58,58,58	0
4	K	A	1494	1/1	0.94	0.10	48,48,48,48	0
2	GOL	B	1493	6/6	0.94	0.13	62,65,67,68	0
4	K	B	5501	1/1	0.94	0.10	50,50,50,50	0
4	K	A	1493	1/1	0.97	0.09	30,30,30,30	0
5	NDP	D	5502	27/48	0.97	0.10	22,33,54,87	12
4	K	D	1495	1/1	0.98	0.10	41,41,41,41	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.
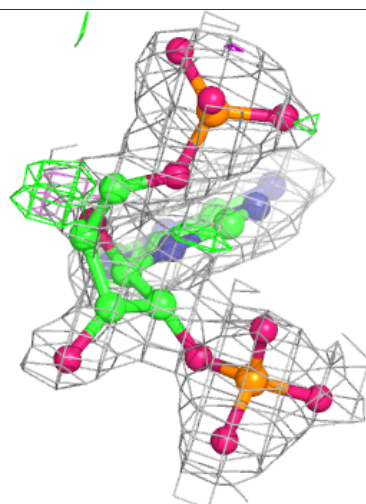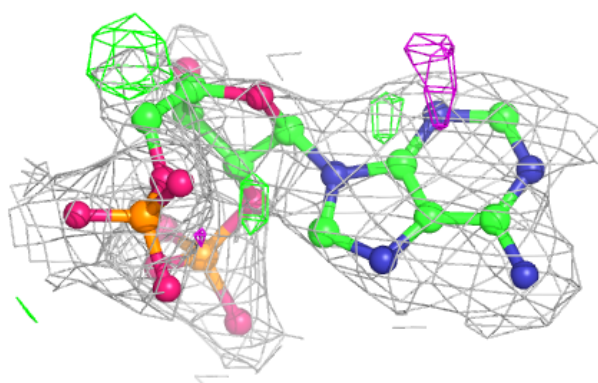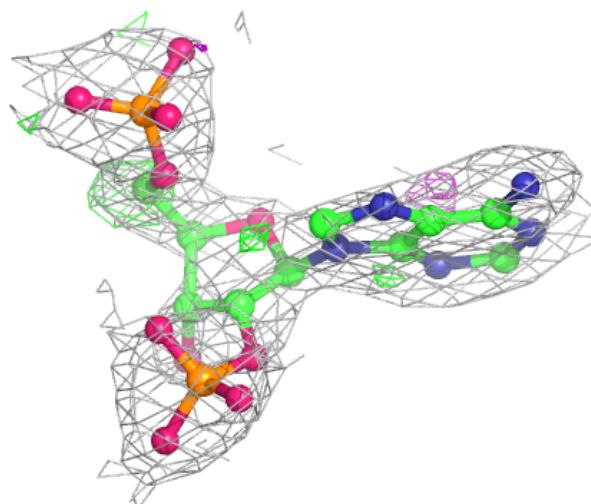
Electron density around NDP B 5502:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
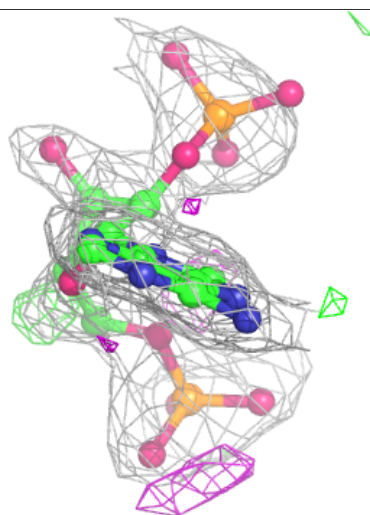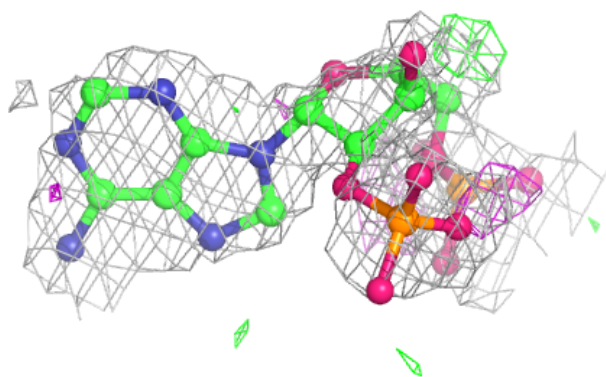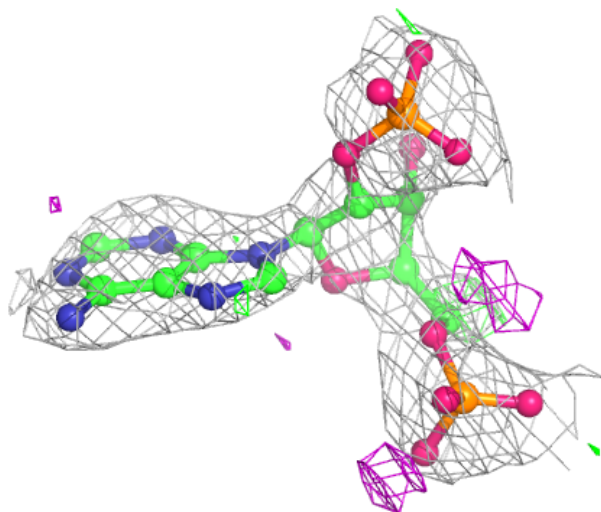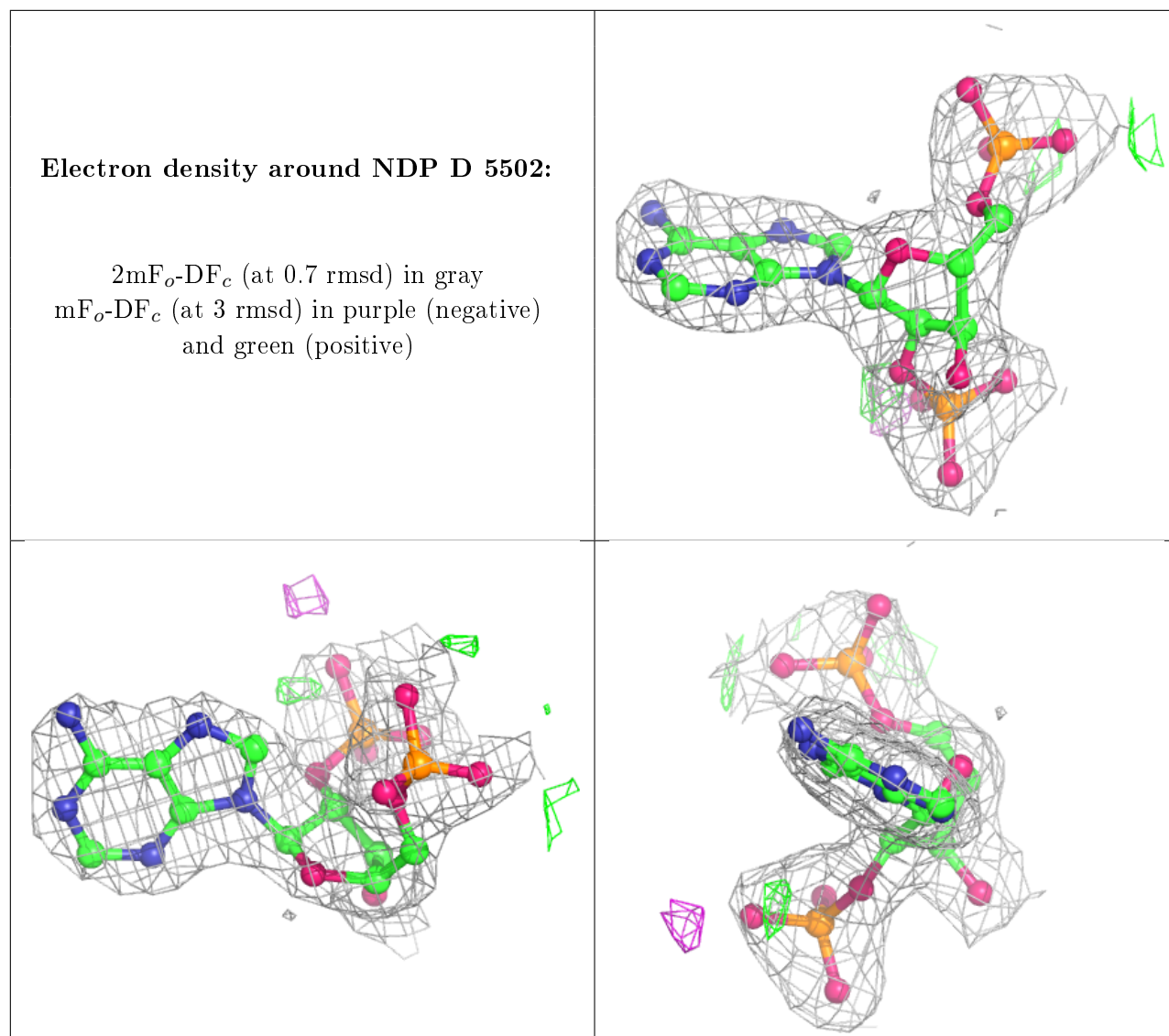and green (positive)
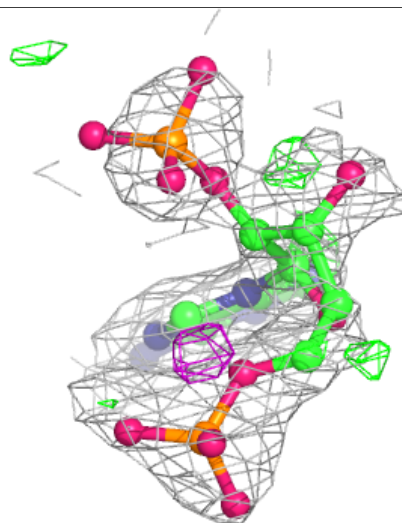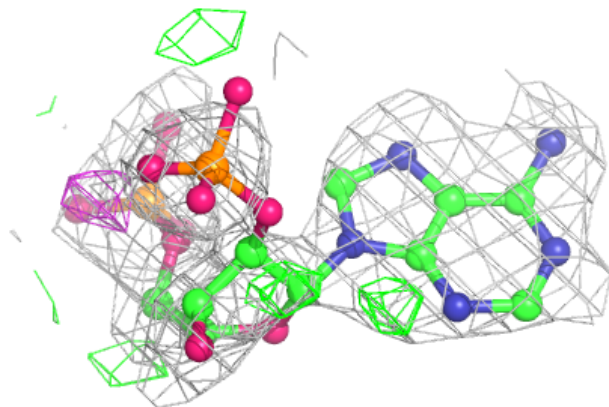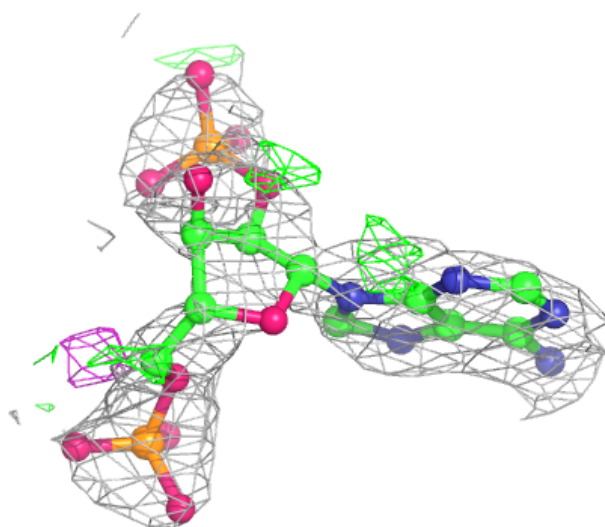
Electron density around NDP A 5502:

$2mF_o$-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 5502:

$2mF_o$-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 5502:

$2mF_o-DF_c$ (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.