Full wwPDB X-ray Structure Validation Report ⓘ

Feb 6, 2023 – 03:43 pm GMT

PDB ID	:	7R3A
Title	:	Crystal structure of S-adenosyl-L-homocysteine hydrolase from Methanococcus maripaludis in complex with inosine
Authors	:	Saleem-Batcha, R.; Popadic, D.; Andexer, J.N.
Deposited on	:	2022-02-06
Resolution	:	2.53 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

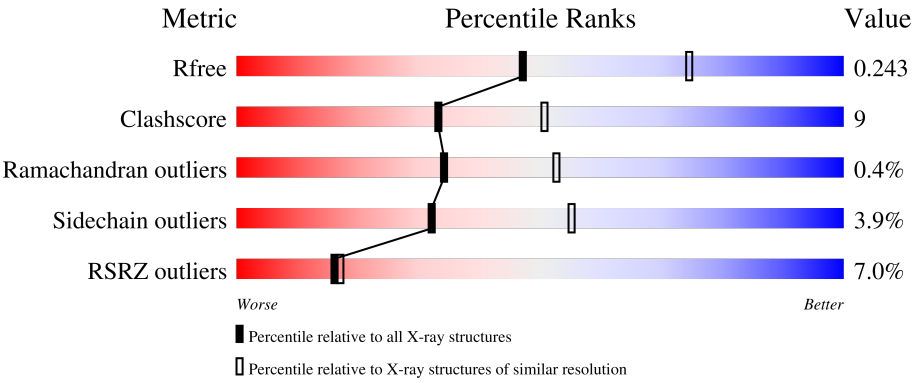
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.32.1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.32.1

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 2.53 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	5743 (2.54-2.50)
Clashscore	141614	6463 (2.54-2.50)
Ramachandran outliers	138981	6335 (2.54-2.50)
Sidechain outliers	138945	6337 (2.54-2.50)
RSRZ outliers	127900	5630 (2.54-2.50)

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	435	4% 79% 14% • 6%
1	B	435	3% 76% 18% • 6%
1	C	435	6% 74% 20% • 6%
1	D	435	4% 76% 17% • 6%
1	E	435	3% 74% 18% • 6%

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Mol	Chain	Length	Quality of chain
1	F	435	4% 71% 21% 6%
1	G	435	17% 76% 17% 6%
1	H	435	12% 67% 25% 6%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	NOS	G	502	-	-	X	-

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 26142 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 S-inosyl-L-homocysteine hydrolase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	411	Total	C	N	O	S	0	0	0
			3180	2005	539	613	23			
1	B	411	Total	C	N	O	S	0	0	0
			3180	2005	539	613	23			
1	C	411	Total	C	N	O	S	0	0	0
			3180	2005	539	613	23			
1	D	411	Total	C	N	O	S	0	0	0
			3180	2005	539	613	23			
1	E	411	Total	C	N	O	S	0	0	0
			3180	2005	539	613	23			
1	F	411	Total	C	N	O	S	0	0	0
			3180	2005	539	613	23			
1	G	411	Total	C	N	O	S	0	0	0
			3180	2005	539	613	23			
1	H	411	Total	C	N	O	S	0	0	0
			3180	2005	539	613	23			

There are 160 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	initiating methionine	UNP Q6LYR8
A	2	GLY	-	expression tag	UNP Q6LYR8
A	3	SER	-	expression tag	UNP Q6LYR8
A	4	SER	-	expression tag	UNP Q6LYR8
A	5	HIS	-	expression tag	UNP Q6LYR8
A	6	HIS	-	expression tag	UNP Q6LYR8
A	7	HIS	-	expression tag	UNP Q6LYR8
A	8	HIS	-	expression tag	UNP Q6LYR8
A	9	HIS	-	expression tag	UNP Q6LYR8
A	10	HIS	-	expression tag	UNP Q6LYR8
A	11	SER	-	expression tag	UNP Q6LYR8
A	12	SER	-	expression tag	UNP Q6LYR8
A	13	GLY	-	expression tag	UNP Q6LYR8

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Chain	Residue	Modelled	Actual	Comment	Reference
A	14	LEU	-	expression tag	UNP Q6LYR8
A	15	VAL	-	expression tag	UNP Q6LYR8
A	16	PRO	-	expression tag	UNP Q6LYR8
A	17	ARG	-	expression tag	UNP Q6LYR8
A	18	GLY	-	expression tag	UNP Q6LYR8
A	19	SER	-	expression tag	UNP Q6LYR8
A	20	HIS	-	expression tag	UNP Q6LYR8
B	1	MET	-	initiating methionine	UNP Q6LYR8
B	2	GLY	-	expression tag	UNP Q6LYR8
B	3	SER	-	expression tag	UNP Q6LYR8
B	4	SER	-	expression tag	UNP Q6LYR8
B	5	HIS	-	expression tag	UNP Q6LYR8
B	6	HIS	-	expression tag	UNP Q6LYR8
B	7	HIS	-	expression tag	UNP Q6LYR8
B	8	HIS	-	expression tag	UNP Q6LYR8
B	9	HIS	-	expression tag	UNP Q6LYR8
B	10	HIS	-	expression tag	UNP Q6LYR8
B	11	SER	-	expression tag	UNP Q6LYR8
B	12	SER	-	expression tag	UNP Q6LYR8
B	13	GLY	-	expression tag	UNP Q6LYR8
B	14	LEU	-	expression tag	UNP Q6LYR8
B	15	VAL	-	expression tag	UNP Q6LYR8
B	16	PRO	-	expression tag	UNP Q6LYR8
B	17	ARG	-	expression tag	UNP Q6LYR8
B	18	GLY	-	expression tag	UNP Q6LYR8
B	19	SER	-	expression tag	UNP Q6LYR8
B	20	HIS	-	expression tag	UNP Q6LYR8
C	1	MET	-	initiating methionine	UNP Q6LYR8
C	2	GLY	-	expression tag	UNP Q6LYR8
C	3	SER	-	expression tag	UNP Q6LYR8
C	4	SER	-	expression tag	UNP Q6LYR8
C	5	HIS	-	expression tag	UNP Q6LYR8
C	6	HIS	-	expression tag	UNP Q6LYR8
C	7	HIS	-	expression tag	UNP Q6LYR8
C	8	HIS	-	expression tag	UNP Q6LYR8
C	9	HIS	-	expression tag	UNP Q6LYR8
C	10	HIS	-	expression tag	UNP Q6LYR8
C	11	SER	-	expression tag	UNP Q6LYR8
C	12	SER	-	expression tag	UNP Q6LYR8
C	13	GLY	-	expression tag	UNP Q6LYR8
C	14	LEU	-	expression tag	UNP Q6LYR8
C	15	VAL	-	expression tag	UNP Q6LYR8

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Chain	Residue	Modelled	Actual	Comment	Reference
C	16	PRO	-	expression tag	UNP Q6LYR8
C	17	ARG	-	expression tag	UNP Q6LYR8
C	18	GLY	-	expression tag	UNP Q6LYR8
C	19	SER	-	expression tag	UNP Q6LYR8
C	20	HIS	-	expression tag	UNP Q6LYR8
D	1	MET	-	initiating methionine	UNP Q6LYR8
D	2	GLY	-	expression tag	UNP Q6LYR8
D	3	SER	-	expression tag	UNP Q6LYR8
D	4	SER	-	expression tag	UNP Q6LYR8
D	5	HIS	-	expression tag	UNP Q6LYR8
D	6	HIS	-	expression tag	UNP Q6LYR8
D	7	HIS	-	expression tag	UNP Q6LYR8
D	8	HIS	-	expression tag	UNP Q6LYR8
D	9	HIS	-	expression tag	UNP Q6LYR8
D	10	HIS	-	expression tag	UNP Q6LYR8
D	11	SER	-	expression tag	UNP Q6LYR8
D	12	SER	-	expression tag	UNP Q6LYR8
D	13	GLY	-	expression tag	UNP Q6LYR8
D	14	LEU	-	expression tag	UNP Q6LYR8
D	15	VAL	-	expression tag	UNP Q6LYR8
D	16	PRO	-	expression tag	UNP Q6LYR8
D	17	ARG	-	expression tag	UNP Q6LYR8
D	18	GLY	-	expression tag	UNP Q6LYR8
D	19	SER	-	expression tag	UNP Q6LYR8
D	20	HIS	-	expression tag	UNP Q6LYR8
E	1	MET	-	initiating methionine	UNP Q6LYR8
E	2	GLY	-	expression tag	UNP Q6LYR8
E	3	SER	-	expression tag	UNP Q6LYR8
E	4	SER	-	expression tag	UNP Q6LYR8
E	5	HIS	-	expression tag	UNP Q6LYR8
E	6	HIS	-	expression tag	UNP Q6LYR8
E	7	HIS	-	expression tag	UNP Q6LYR8
E	8	HIS	-	expression tag	UNP Q6LYR8
E	9	HIS	-	expression tag	UNP Q6LYR8
E	10	HIS	-	expression tag	UNP Q6LYR8
E	11	SER	-	expression tag	UNP Q6LYR8
E	12	SER	-	expression tag	UNP Q6LYR8
E	13	GLY	-	expression tag	UNP Q6LYR8
E	14	LEU	-	expression tag	UNP Q6LYR8
E	15	VAL	-	expression tag	UNP Q6LYR8
E	16	PRO	-	expression tag	UNP Q6LYR8
E	17	ARG	-	expression tag	UNP Q6LYR8

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Chain	Residue	Modelled	Actual	Comment	Reference
E	18	GLY	-	expression tag	UNP Q6LYR8
E	19	SER	-	expression tag	UNP Q6LYR8
E	20	HIS	-	expression tag	UNP Q6LYR8
F	1	MET	-	initiating methionine	UNP Q6LYR8
F	2	GLY	-	expression tag	UNP Q6LYR8
F	3	SER	-	expression tag	UNP Q6LYR8
F	4	SER	-	expression tag	UNP Q6LYR8
F	5	HIS	-	expression tag	UNP Q6LYR8
F	6	HIS	-	expression tag	UNP Q6LYR8
F	7	HIS	-	expression tag	UNP Q6LYR8
F	8	HIS	-	expression tag	UNP Q6LYR8
F	9	HIS	-	expression tag	UNP Q6LYR8
F	10	HIS	-	expression tag	UNP Q6LYR8
F	11	SER	-	expression tag	UNP Q6LYR8
F	12	SER	-	expression tag	UNP Q6LYR8
F	13	GLY	-	expression tag	UNP Q6LYR8
F	14	LEU	-	expression tag	UNP Q6LYR8
F	15	VAL	-	expression tag	UNP Q6LYR8
F	16	PRO	-	expression tag	UNP Q6LYR8
F	17	ARG	-	expression tag	UNP Q6LYR8
F	18	GLY	-	expression tag	UNP Q6LYR8
F	19	SER	-	expression tag	UNP Q6LYR8
F	20	HIS	-	expression tag	UNP Q6LYR8
G	1	MET	-	initiating methionine	UNP Q6LYR8
G	2	GLY	-	expression tag	UNP Q6LYR8
G	3	SER	-	expression tag	UNP Q6LYR8
G	4	SER	-	expression tag	UNP Q6LYR8
G	5	HIS	-	expression tag	UNP Q6LYR8
G	6	HIS	-	expression tag	UNP Q6LYR8
G	7	HIS	-	expression tag	UNP Q6LYR8
G	8	HIS	-	expression tag	UNP Q6LYR8
G	9	HIS	-	expression tag	UNP Q6LYR8
G	10	HIS	-	expression tag	UNP Q6LYR8
G	11	SER	-	expression tag	UNP Q6LYR8
G	12	SER	-	expression tag	UNP Q6LYR8
G	13	GLY	-	expression tag	UNP Q6LYR8
G	14	LEU	-	expression tag	UNP Q6LYR8
G	15	VAL	-	expression tag	UNP Q6LYR8
G	16	PRO	-	expression tag	UNP Q6LYR8
G	17	ARG	-	expression tag	UNP Q6LYR8
G	18	GLY	-	expression tag	UNP Q6LYR8
G	19	SER	-	expression tag	UNP Q6LYR8

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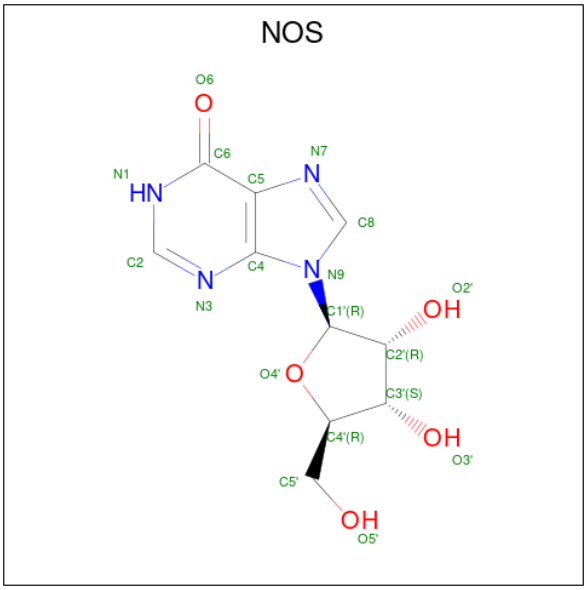
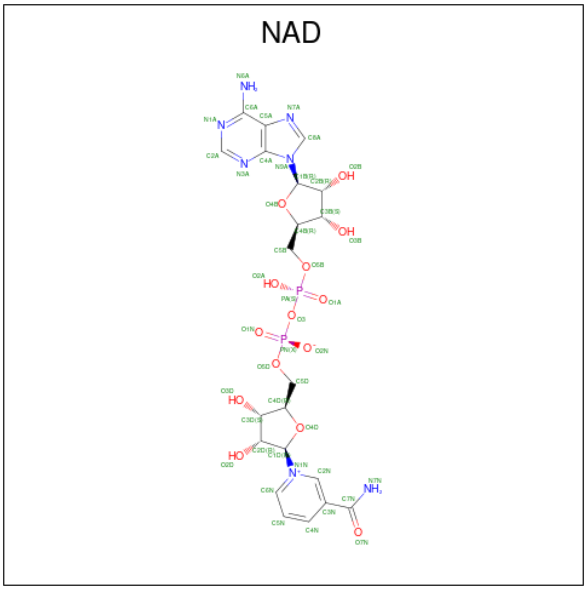
Chain	Residue	Modelled	Actual	Comment	Reference
G	20	HIS	-	expression tag	UNP Q6LYR8
H	1	MET	-	initiating methionine	UNP Q6LYR8
H	2	GLY	-	expression tag	UNP Q6LYR8
H	3	SER	-	expression tag	UNP Q6LYR8
H	4	SER	-	expression tag	UNP Q6LYR8
H	5	HIS	-	expression tag	UNP Q6LYR8
H	6	HIS	-	expression tag	UNP Q6LYR8
H	7	HIS	-	expression tag	UNP Q6LYR8
H	8	HIS	-	expression tag	UNP Q6LYR8
H	9	HIS	-	expression tag	UNP Q6LYR8
H	10	HIS	-	expression tag	UNP Q6LYR8
H	11	SER	-	expression tag	UNP Q6LYR8
H	12	SER	-	expression tag	UNP Q6LYR8
H	13	GLY	-	expression tag	UNP Q6LYR8
H	14	LEU	-	expression tag	UNP Q6LYR8
H	15	VAL	-	expression tag	UNP Q6LYR8
H	16	PRO	-	expression tag	UNP Q6LYR8
H	17	ARG	-	expression tag	UNP Q6LYR8
H	18	GLY	-	expression tag	UNP Q6LYR8
H	19	SER	-	expression tag	UNP Q6LYR8
H	20	HIS	-	expression tag	UNP Q6LYR8

- Molecule 2 is INOSINE (three-letter code: NOS) (formula: $C_{10}H_{12}N_4O_5$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			19	10	4	5		
2	B	1	Total	C	N	O	0	0
			19	10	4	5		
2	C	1	Total	C	N	O	0	0
			19	10	4	5		
2	D	1	Total	C	N	O	0	0
			19	10	4	5		
2	E	1	Total	C	N	O	0	0
			19	10	4	5		
2	F	1	Total	C	N	O	0	0
			19	10	4	5		
2	G	1	Total	C	N	O	0	0
			19	10	4	5		
2	H	1	Total	C	N	O	0	0
			19	10	4	5		

- Molecule 3 is NICOTINAMIDE-ADENINE-DINUCLEOTIDE (three-letter code: NAD) (formula: $C_{21}H_{27}N_7O_{14}P_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			44	21	7	14	2		
3	B	1	Total	C	N	O	P	0	0
			44	21	7	14	2		
3	C	1	Total	C	N	O	P	0	0
			44	21	7	14	2		

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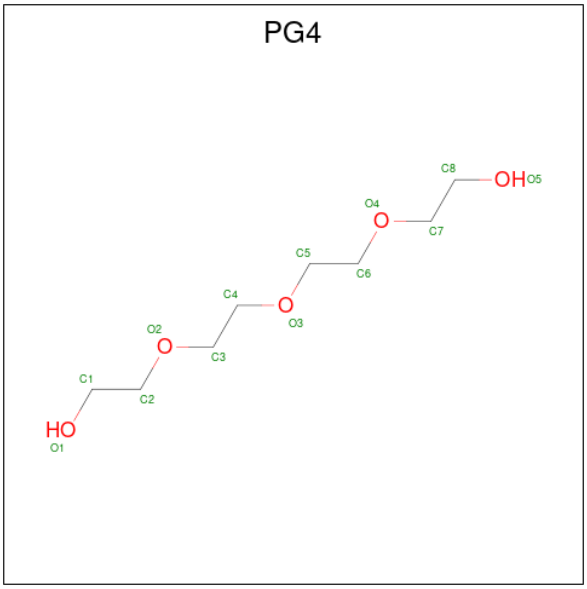
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	D	1	Total C N O P 44 21 7 14 2	0	0
3	E	1	Total C N O P 44 21 7 14 2	0	0
3	F	1	Total C N O P 44 21 7 14 2	0	0
3	G	1	Total C N O P 44 21 7 14 2	0	0
3	H	1	Total C N O P 44 21 7 14 2	0	0

- Molecule 4 is TETRAETHYLENE GLYCOL (three-letter code: PG4) (formula: $C_8H_{18}O_5$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 13 8 5	0	0
4	B	1	Total C O 13 8 5	0	0
4	C	1	Total C O 13 8 5	0	0
4	D	1	Total C O 13 8 5	0	0
4	E	1	Total C O 13 8 5	0	0
4	F	1	Total C O 13 8 5	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	G	1	Total C O 13 8 5	0	0
4	H	1	Total C O 13 8 5	0	0

- Molecule 5 is water.

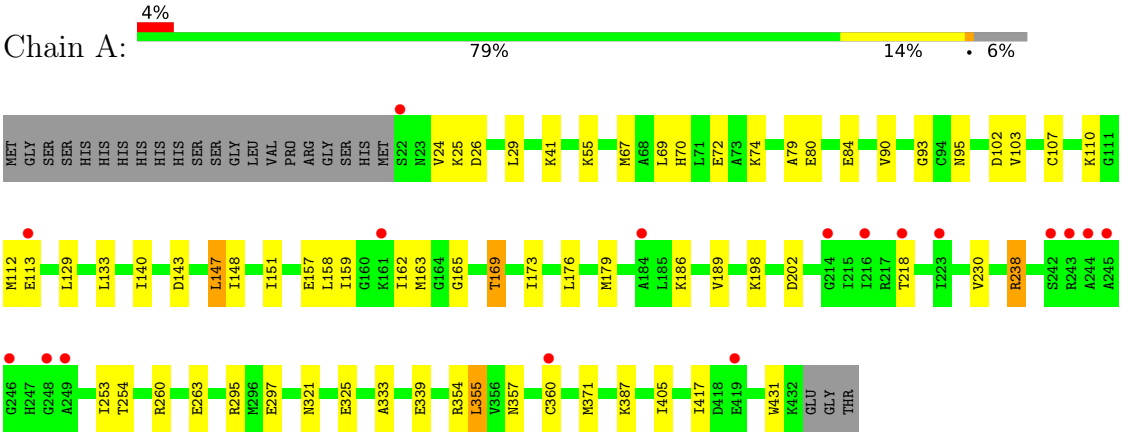
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	10	Total O 10 10	0	0
5	B	16	Total O 16 16	0	0
5	C	21	Total O 21 21	0	0
5	D	15	Total O 15 15	0	0
5	E	18	Total O 18 18	0	0
5	F	8	Total O 8 8	0	0
5	G	3	Total O 3 3	0	0
5	H	3	Total O 3 3	0	0

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.

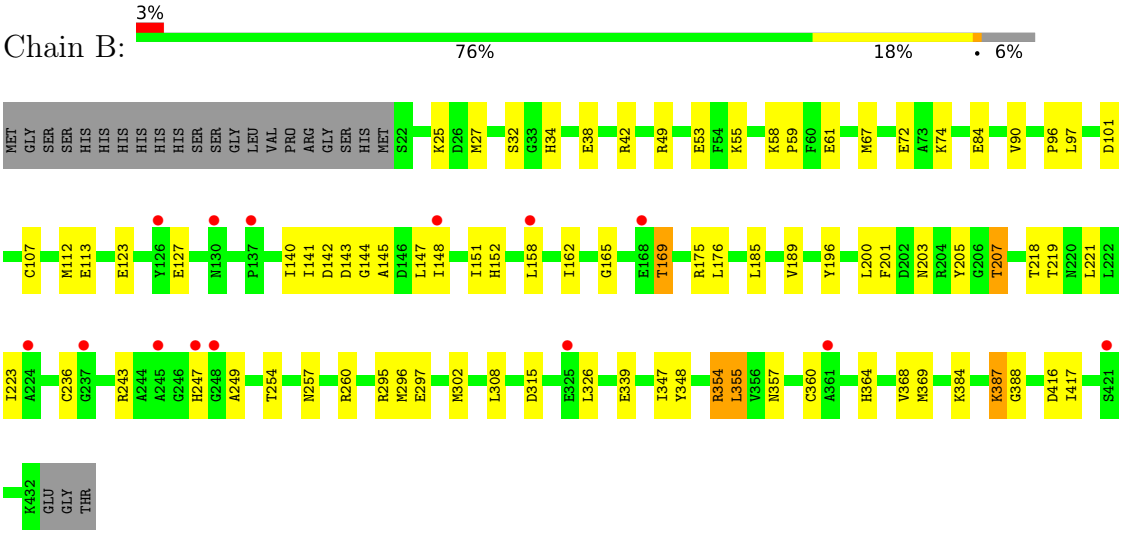
• Molecule 1: S-inosyl-L-homocysteine hydrolase

Chain A:



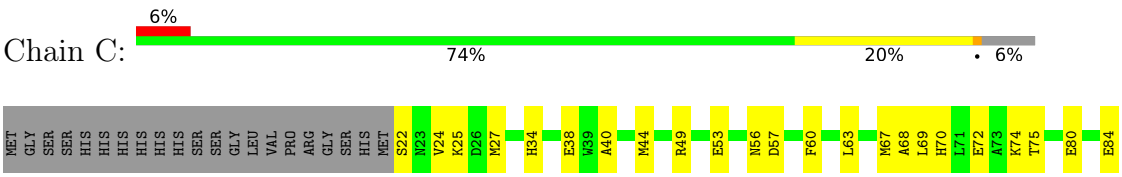
• Molecule 1: S-inosyl-L-homocysteine hydrolase

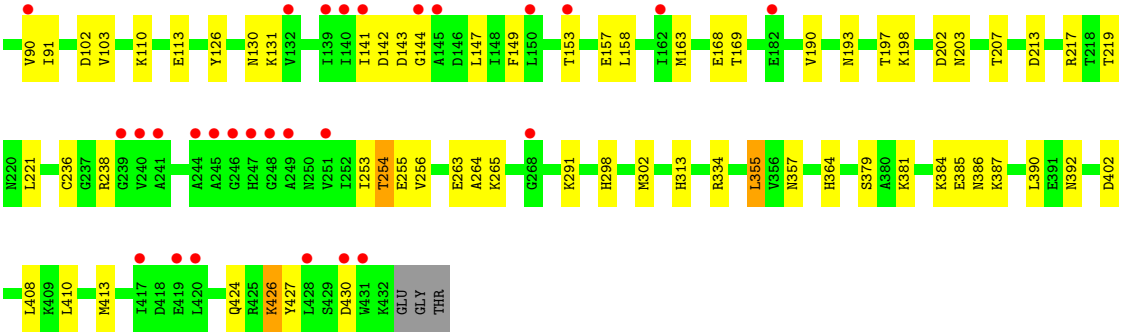
Chain B:



• Molecule 1: S-inosyl-L-homocysteine hydrolase

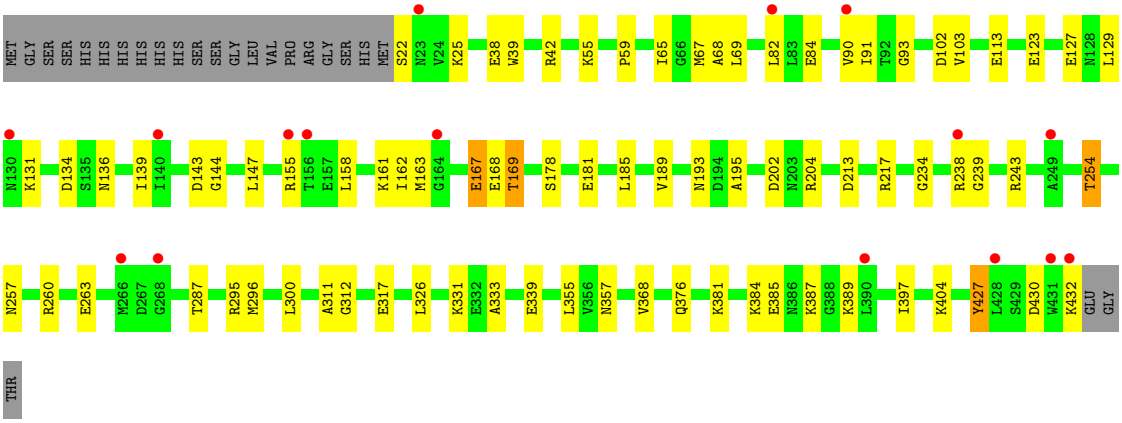
Chain C:





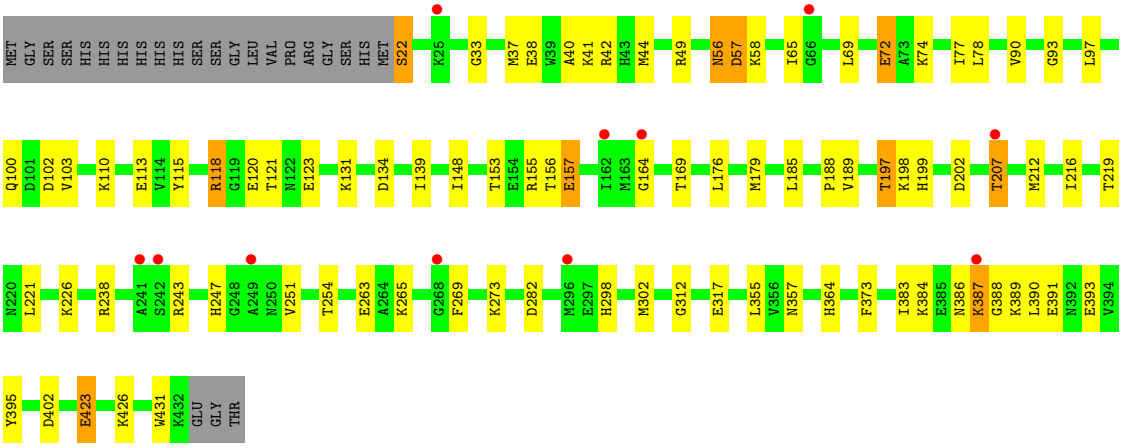
• Molecule 1: S-inosyl-L-homocysteine hydrolase

Chain D:



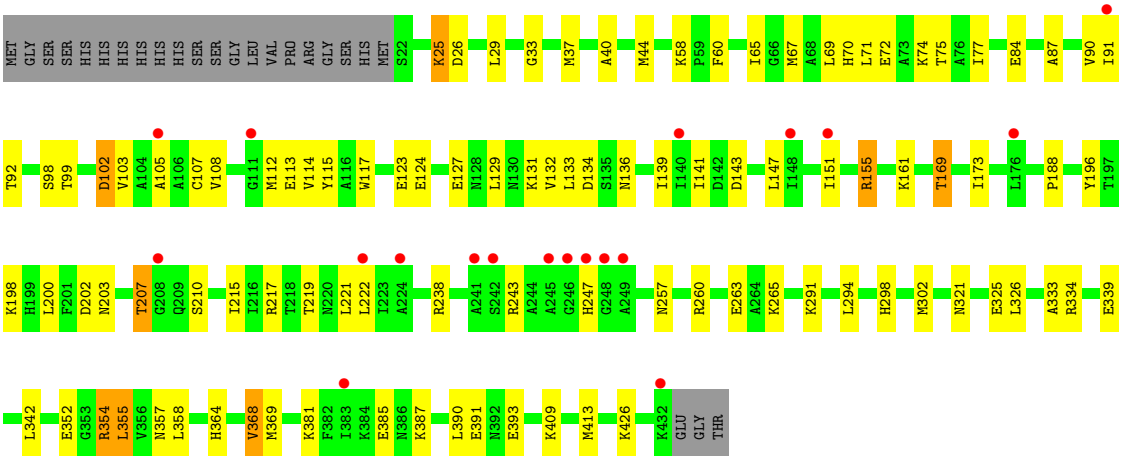
• Molecule 1: S-inosyl-L-homocysteine hydrolase

Chain E:



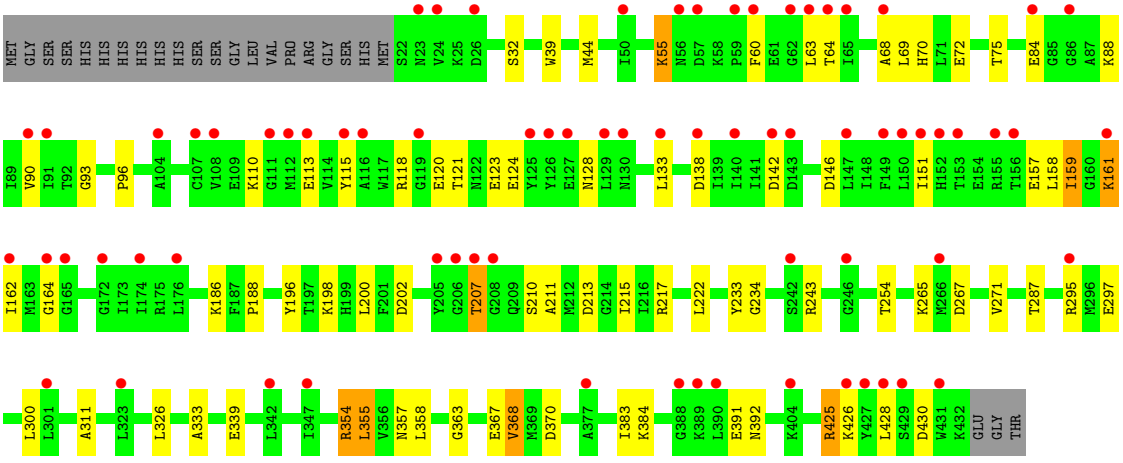
• Molecule 1: S-inosyl-L-homocysteine hydrolase

Chain F:



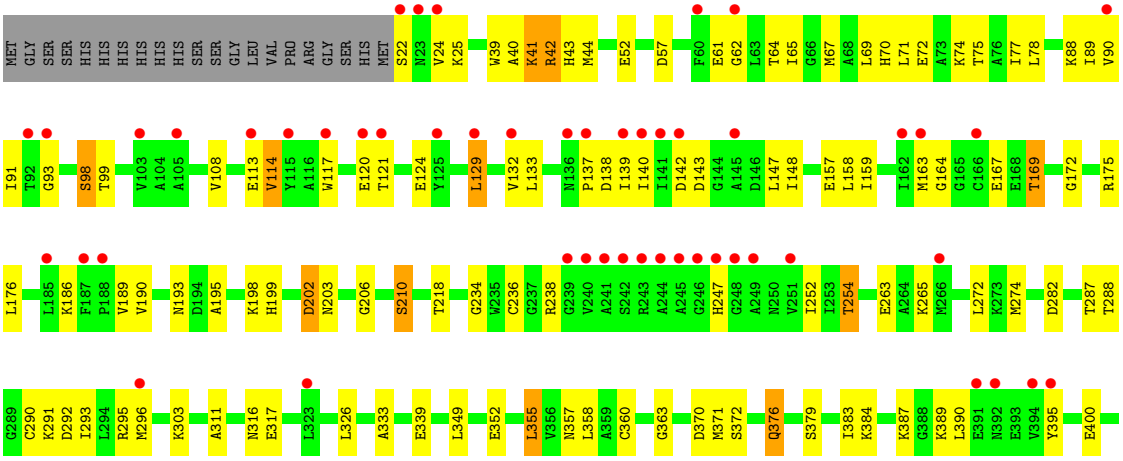
• Molecule 1: S-inosyl-L-homocysteine hydrolase

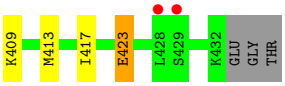
Chain G:



• Molecule 1: S-inosyl-L-homocysteine hydrolase

Chain H:




K409
M413
I417
E423
L428
S429
K432
GLU
GLY
THR

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	65.78Å 328.87Å 85.09Å 90.00° 107.23° 90.00°	Depositor
Resolution (Å)	47.86 – 2.53 47.85 – 2.53	Depositor EDS
% Data completeness (in resolution range)	97.4 (47.86-2.53) 97.4 (47.85-2.53)	Depositor EDS
R_{merge}	0.19	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.03 (at 2.54Å)	Xtriage
Refinement program	PHENIX 1.19.1_4122	Depositor
R, R_{free}	0.188 , 0.243 0.189 , 0.243	Depositor DCC
R_{free} test set	5569 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	47.6	Xtriage
Anisotropy	0.794	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.29 , 36.0	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	0.94	EDS
Total number of atoms	26142	wwPDB-VP
Average B, all atoms (Å^2)	70.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.76% 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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: NOS, PG4, NAD

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	0.29	0/3231	0.53	0/4353
1	B	0.28	0/3231	0.53	0/4353
1	C	0.31	0/3231	0.54	0/4353
1	D	0.28	0/3231	0.53	0/4353
1	E	0.29	0/3231	0.54	0/4353
1	F	0.27	0/3231	0.53	0/4353
1	G	0.26	0/3231	0.54	0/4353
1	H	0.28	0/3231	0.54	0/4353
All	All	0.28	0/25848	0.53	0/34824

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

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	3180	0	3178	44	0
1	B	3180	0	3178	51	0
1	C	3180	0	3178	54	0
1	D	3180	0	3178	49	0
1	E	3180	0	3178	51	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	3180	0	3178	59	0
1	G	3180	0	3178	61	0
1	H	3180	0	3178	83	0
2	A	19	0	11	3	0
2	B	19	0	11	1	0
2	C	19	0	11	3	0
2	D	19	0	11	2	0
2	E	19	0	11	0	0
2	F	19	0	11	3	0
2	G	19	0	11	7	0
2	H	19	0	11	3	0
3	A	44	0	26	3	0
3	B	44	0	26	2	0
3	C	44	0	26	3	0
3	D	44	0	26	3	0
3	E	44	0	26	2	0
3	F	44	0	26	2	0
3	G	44	0	26	6	0
3	H	44	0	26	4	0
4	A	13	0	18	1	0
4	B	13	0	18	3	0
4	C	13	0	18	0	0
4	D	13	0	18	4	0
4	E	13	0	18	0	0
4	F	13	0	18	4	0
4	G	13	0	18	0	0
4	H	13	0	18	0	0
5	A	10	0	0	0	0
5	B	16	0	0	0	0
5	C	21	0	0	1	0
5	D	15	0	0	0	0
5	E	18	0	0	1	0
5	F	8	0	0	0	0
5	G	3	0	0	0	0
5	H	3	0	0	0	0
All	All	26142	0	25864	445	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 9.

All (445) 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:H:288:THR:HG23	1:H:290:CYS:H	1.29	0.97
1:C:207:THR:HG22	1:C:364:HIS:HE2	1.25	0.97
1:C:207:THR:HG22	1:C:364:HIS:NE2	1.80	0.95
1:B:58:LYS:O	1:B:61:GLU:HG3	1.70	0.92
1:E:254:THR:HG22	3:E:503:NAD:H2A	1.60	0.84
1:E:357:ASN:HD21	3:E:503:NAD:H72N	1.25	0.83
1:A:295:ARG:HH11	1:A:297:GLU:HG2	1.43	0.83
1:C:67:MET:HG2	1:C:141:ILE:HB	1.61	0.80
1:D:357:ASN:HD21	3:D:502:NAD:H72N	1.29	0.80
1:H:41:LYS:HB3	1:H:77:ILE:HD12	1.62	0.79
1:A:254:THR:HG22	3:A:502:NAD:H2A	1.63	0.79
1:B:67:MET:HG2	1:B:141:ILE:HB	1.65	0.77
1:C:254:THR:HG22	3:C:502:NAD:H2A	1.68	0.75
1:H:357:ASN:HD21	3:H:503:NAD:H72N	1.34	0.75
1:C:207:THR:HG22	1:C:364:HIS:CE1	2.21	0.75
1:D:257:ASN:HD21	4:D:503:PG4:H42	1.51	0.74
1:B:315:ASP:OD2	1:B:354:ARG:NH1	2.20	0.74
1:F:357:ASN:HD21	3:F:503:NAD:H72N	1.34	0.73
1:H:39:TRP:HA	1:H:42:ARG:HD2	1.70	0.73
1:H:193:ASN:HA	1:H:198:LYS:HD2	1.69	0.73
1:F:26:ASP:HB3	1:F:29:LEU:HG	1.70	0.72
2:G:502:NOS:H8	3:G:503:NAD:N7N	2.04	0.72
1:G:300:LEU:HD22	1:G:326:LEU:HD11	1.71	0.72
1:C:357:ASN:HD21	3:C:502:NAD:H72N	1.35	0.72
1:F:133:LEU:HD22	1:F:151:ILE:HD11	1.71	0.72
1:B:254:THR:HG22	3:B:502:NAD:H2A	1.72	0.71
1:D:287:THR:HG22	1:D:311:ALA:HB3	1.72	0.71
1:G:254:THR:HG22	3:G:503:NAD:H2A	1.72	0.71
1:G:157:GLU:HG2	1:G:158:LEU:HD12	1.72	0.70
1:G:295:ARG:NH2	1:G:297:GLU:OE2	2.25	0.70
1:C:190:VAL:HG21	1:C:379:SER:HB3	1.73	0.69
1:A:107:CYS:HB3	1:A:112:MET:HE2	1.74	0.69
1:G:164:GLY:HA3	1:G:383:ILE:HD12	1.74	0.68
1:F:215:ILE:O	1:F:219:THR:HG22	1.94	0.68
1:B:357:ASN:HD21	3:B:502:NAD:H72N	1.40	0.67
1:B:218:THR:HG21	1:B:360:CYS:HB3	1.77	0.66
1:H:254:THR:HG22	3:H:503:NAD:H2A	1.75	0.66
1:E:41:LYS:HB2	1:E:77:ILE:HD12	1.76	0.66
1:F:257:ASN:HD21	4:F:501:PG4:H32	1.60	0.65
1:E:134:ASP:OD1	1:E:155:ARG:NH2	2.31	0.64
1:A:357:ASN:HD21	3:A:502:NAD:H72N	1.44	0.63
1:A:176:LEU:HD13	1:A:189:VAL:HG11	1.81	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:218:THR:HG21	1:A:360:CYS:HB3	1.80	0.63
1:B:144:GLY:O	1:B:175:ARG:NH1	2.32	0.63
1:D:39:TRP:HA	1:D:42:ARG:HE	1.64	0.63
1:A:260:ARG:HE	4:A:503:PG4:H52	1.63	0.62
1:H:90:VAL:HG13	1:H:113:GLU:HB3	1.82	0.62
1:H:218:THR:HG21	1:H:360:CYS:HB3	1.81	0.62
1:F:67:MET:HG2	1:F:141:ILE:HB	1.82	0.62
1:H:210:SER:HB3	1:H:357:ASN:HB2	1.82	0.61
1:C:49:ARG:HD2	1:C:408:LEU:HD21	1.82	0.61
1:D:167:GLU:OE1	1:D:169:THR:N	2.30	0.61
1:B:58:LYS:O	1:B:61:GLU:CG	2.47	0.61
1:G:96:PRO:HG2	1:G:354:ARG:NH1	2.16	0.61
1:C:34:HIS:CE1	1:C:110:LYS:HE2	2.36	0.60
1:H:288:THR:HG23	1:H:290:CYS:N	2.09	0.60
1:E:238:ARG:HH22	1:E:263:GLU:CD	2.05	0.60
1:H:64:THR:OG1	1:H:137:PRO:HA	2.02	0.60
1:G:120:GLU:HB2	1:G:124:GLU:HB2	1.84	0.60
1:H:138:ASP:HB3	1:H:163:MET:HE1	1.83	0.60
1:H:288:THR:HG21	1:H:293:ILE:HG13	1.83	0.59
1:B:302:MET:HE1	1:B:308:LEU:HD11	1.84	0.59
1:C:80:GLU:O	1:C:84:GLU:HG2	2.02	0.59
1:F:71:LEU:HB3	1:F:99:THR:HG22	1.85	0.59
1:A:67:MET:HE1	1:A:79:ALA:HB2	1.84	0.59
1:A:95:ASN:HD21	1:A:354:ARG:HG2	1.68	0.59
1:G:96:PRO:HG2	1:G:354:ARG:HH11	1.66	0.59
1:H:71:LEU:HB3	1:H:99:THR:HG23	1.84	0.59
1:D:254:THR:HG22	3:D:502:NAD:H2A	1.83	0.59
1:G:158:LEU:HB3	1:G:162:ILE:HD13	1.83	0.59
1:H:175:ARG:HH11	1:H:175:ARG:HG2	1.66	0.59
1:B:295:ARG:HH11	1:B:297:GLU:HG2	1.68	0.59
1:G:355:LEU:HD13	1:G:358:LEU:HD12	1.85	0.58
1:C:238:ARG:NH2	1:C:263:GLU:OE2	2.35	0.58
1:C:381:LYS:O	1:C:385:GLU:HG3	2.03	0.58
1:D:178:SER:HA	1:D:181:GLU:HG3	1.86	0.58
1:A:90:VAL:HG13	1:A:113:GLU:HB3	1.86	0.58
1:F:69:LEU:HD23	1:F:143:ASP:HB2	1.84	0.57
1:E:72:GLU:HB3	1:E:100:GLN:HG3	1.87	0.57
1:F:65:ILE:HD12	1:F:139:ILE:HB	1.85	0.57
1:F:115:TYR:CD1	1:F:131:LYS:HE3	2.39	0.57
1:C:144:GLY:HA3	1:C:313:HIS:CE1	2.39	0.57
1:A:202:ASP:OD2	2:A:501:NOS:O2'	2.23	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:238:ARG:HH22	1:D:263:GLU:CD	2.07	0.57
1:D:144:GLY:N	1:D:167:GLU:OE2	2.36	0.57
1:C:69:LEU:HD23	1:C:143:ASP:HB2	1.86	0.57
1:H:129:LEU:HD13	1:H:147:LEU:HD23	1.87	0.57
1:E:207:THR:HG22	1:E:364:HIS:CE1	2.39	0.56
1:B:339:GLU:HG3	1:B:348:TYR:CE1	2.40	0.56
1:D:67:MET:HB2	1:D:91:ILE:HG13	1.87	0.56
1:D:123:GLU:O	1:D:127:GLU:HG3	2.04	0.56
1:H:288:THR:HG21	1:H:293:ILE:CG1	2.34	0.56
1:F:257:ASN:ND2	4:F:501:PG4:H32	2.20	0.56
1:H:296:MET:SD	1:H:326:LEU:HD11	2.45	0.56
1:F:196:TYR:O	1:F:200:LEU:HB2	2.05	0.56
1:A:148:ILE:HG21	1:A:176:LEU:HD21	1.88	0.56
1:H:234:GLY:O	1:H:238:ARG:HG3	2.06	0.55
1:B:55:LYS:HD2	1:B:84:GLU:HB3	1.89	0.55
1:C:40:ALA:O	1:C:44:MET:HG3	2.07	0.55
2:G:502:NOS:H8	3:G:503:NAD:H72N	1.69	0.55
1:H:190:VAL:HG11	1:H:379:SER:HB3	1.88	0.55
1:G:44:MET:HG2	1:G:370:ASP:HB2	1.88	0.55
1:E:121:THR:HG22	1:E:123:GLU:H	1.72	0.55
1:G:213:ASP:OD2	1:G:217:ARG:NH2	2.33	0.55
2:G:502:NOS:H2'	3:G:503:NAD:H71N	1.72	0.55
1:B:223:ILE:HG22	1:B:249:ALA:HB2	1.89	0.55
1:C:213:ASP:OD2	1:C:217:ARG:NH2	2.35	0.55
1:C:68:ALA:HB3	1:C:142:ASP:OD1	2.07	0.54
1:C:238:ARG:HH22	1:C:263:GLU:CD	2.11	0.54
1:F:368:VAL:HG13	1:G:222:LEU:HD22	1.89	0.54
1:C:67:MET:HB3	1:C:91:ILE:HD12	1.89	0.54
1:A:295:ARG:NH1	1:A:297:GLU:HG2	2.19	0.54
1:D:90:VAL:HG13	1:D:113:GLU:HB3	1.90	0.54
1:H:137:PRO:HD2	1:H:158:LEU:HD22	1.90	0.54
1:H:349:LEU:HD21	1:H:352:GLU:HA	1.89	0.54
1:B:97:LEU:HD12	1:B:354:ARG:HD3	1.89	0.54
1:D:333:ALA:HB2	1:D:339:GLU:HB2	1.90	0.54
1:G:426:LYS:NZ	1:G:430:ASP:HB2	2.23	0.53
1:E:238:ARG:NH2	1:E:263:GLU:OE2	2.41	0.53
1:E:148:ILE:HG21	1:E:176:LEU:HD21	1.90	0.53
1:E:197:THR:OG1	1:E:402:ASP:OD1	2.27	0.53
1:H:390:LEU:HD22	1:H:395:TYR:CE2	2.43	0.53
1:H:199:HIS:O	1:H:203:ASN:HB2	2.08	0.53
1:D:129:LEU:HD22	1:D:147:LEU:HD13	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:55:LYS:HZ2	1:G:84:GLU:C	2.11	0.53
1:D:202:ASP:OD2	2:D:501:NOS:O2'	2.27	0.53
1:H:142:ASP:OD2	1:H:143:ASP:N	2.42	0.52
1:H:198:LYS:HE2	1:H:202:ASP:OD2	2.09	0.52
1:H:140:ILE:HD12	1:H:147:LEU:HD13	1.90	0.52
1:G:60:PHE:HA	1:G:63:LEU:HD23	1.90	0.52
1:G:425:ARG:HG3	1:G:425:ARG:HH11	1.74	0.52
1:G:55:LYS:NZ	1:G:84:GLU:HB2	2.25	0.52
1:G:211:ALA:O	1:G:215:ILE:HG13	2.09	0.52
1:B:90:VAL:HG13	1:B:113:GLU:HB3	1.92	0.52
1:E:56:ASN:O	1:E:58:LYS:N	2.43	0.52
1:B:143:ASP:OD1	1:B:169:THR:OG1	2.28	0.52
1:H:287:THR:HG22	1:H:311:ALA:HB3	1.91	0.52
1:D:312:GLY:HA3	1:D:317:GLU:OE2	2.09	0.51
1:F:25:LYS:HG2	1:F:117:TRP:HB2	1.93	0.51
1:C:90:VAL:HG13	1:C:113:GLU:HB3	1.92	0.51
1:H:238:ARG:HH21	1:H:263:GLU:CD	2.14	0.51
1:C:67:MET:HE3	1:C:91:ILE:HD12	1.93	0.51
1:D:195:ALA:HB2	1:D:397:ILE:HD12	1.93	0.51
1:E:389:LYS:O	1:H:387:LYS:NZ	2.40	0.51
1:A:158:LEU:O	1:A:162:ILE:HG13	2.11	0.51
1:E:22:SER:HA	1:E:115:TYR:HE1	1.76	0.51
1:E:56:ASN:C	1:E:58:LYS:H	2.14	0.51
1:F:188:PRO:HG3	1:F:390:LEU:HB2	1.91	0.51
1:F:409:LYS:O	1:F:413:MET:HG3	2.10	0.51
1:H:400:GLU:CD	1:H:400:GLU:H	2.14	0.51
1:D:68:ALA:HB2	1:D:147:LEU:HD22	1.93	0.50
1:E:97:LEU:HD22	1:E:118:ARG:HE	1.76	0.50
1:F:33:GLY:O	1:F:37:MET:HG3	2.11	0.50
1:E:386:ASN:O	1:E:388:GLY:N	2.44	0.50
1:H:198:LYS:HG2	1:H:372:SER:OG	2.11	0.50
1:C:70:HIS:CE1	1:C:355:LEU:HD12	2.47	0.50
1:E:207:THR:HG22	1:E:364:HIS:NE2	2.26	0.50
1:F:60:PHE:HB3	1:F:87:ALA:HB2	1.93	0.50
1:F:107:CYS:HB3	1:F:112:MET:SD	2.52	0.50
1:F:129:LEU:HD22	1:F:147:LEU:HD21	1.92	0.50
1:H:41:LYS:HB3	1:H:77:ILE:CD1	2.36	0.50
1:H:133:LEU:HD23	1:H:158:LEU:HD13	1.93	0.50
1:H:238:ARG:NH2	1:H:263:GLU:OE2	2.44	0.50
1:H:129:LEU:O	1:H:132:VAL:HG22	2.10	0.50
1:F:381:LYS:O	1:F:385:GLU:HG3	2.11	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:195:ALA:O	1:H:199:HIS:HD2	1.95	0.50
1:E:386:ASN:HB3	1:E:390:LEU:HG	1.94	0.49
1:H:311:ALA:O	3:H:503:NAD:H2N	2.12	0.49
1:G:234:GLY:HA3	3:G:503:NAD:O5B	2.12	0.49
1:G:287:THR:HG22	1:G:311:ALA:HB3	1.93	0.49
1:B:257:ASN:HD22	4:B:503:PG4:H12	1.77	0.49
1:G:121:THR:OG1	1:G:124:GLU:HG3	2.13	0.49
1:H:143:ASP:OD1	1:H:169:THR:OG1	2.29	0.49
1:A:157:GLU:HG2	1:A:158:LEU:HD23	1.94	0.49
1:C:34:HIS:O	1:C:38:GLU:HG2	2.13	0.49
1:F:391:GLU:HB2	1:F:393:GLU:HG3	1.93	0.49
1:H:148:ILE:HD13	1:H:176:LEU:HD11	1.94	0.49
1:E:38:GLU:O	1:E:42:ARG:HD3	2.13	0.49
1:G:63:LEU:HD12	1:G:138:ASP:OD2	2.12	0.49
1:G:425:ARG:HH21	1:G:428:LEU:HD23	1.78	0.49
1:H:164:GLY:HA3	1:H:383:ILE:HD12	1.93	0.49
1:C:265:LYS:NZ	1:H:413:MET:HB3	2.28	0.49
1:A:80:GLU:O	1:A:84:GLU:HG2	2.13	0.48
1:A:80:GLU:OE2	1:A:110:LYS:HE2	2.12	0.48
1:E:387:LYS:HB3	1:E:387:LYS:HE3	1.55	0.48
1:F:136:ASN:O	1:F:161:LYS:NZ	2.46	0.48
1:D:260:ARG:HE	4:D:503:PG4:H51	1.79	0.48
1:H:91:ILE:HG23	1:H:114:VAL:HG12	1.93	0.48
1:C:207:THR:CG2	1:C:364:HIS:NE2	2.67	0.48
1:C:386:ASN:HB3	1:C:390:LEU:HG	1.96	0.48
1:F:333:ALA:HB2	1:F:339:GLU:HB2	1.96	0.48
1:A:198:LYS:HD3	1:A:202:ASP:HB3	1.95	0.48
1:C:202:ASP:OD2	2:C:501:NOS:O2'	2.31	0.48
1:E:247:HIS:HD2	5:E:617:HOH:O	1.97	0.48
1:B:207:THR:HG22	1:B:364:HIS:NE2	2.29	0.48
1:C:207:THR:CG2	1:C:364:HIS:CE1	2.94	0.48
1:D:38:GLU:O	1:D:42:ARG:HG3	2.13	0.48
1:D:102:ASP:OD1	1:D:103:VAL:N	2.47	0.48
1:G:425:ARG:HG3	1:G:425:ARG:NH1	2.29	0.48
1:A:129:LEU:HD22	1:A:147:LEU:CD1	2.44	0.47
1:C:60:PHE:HA	1:C:63:LEU:HD12	1.96	0.47
1:D:65:ILE:HG12	1:D:139:ILE:HB	1.96	0.47
1:A:159:ILE:HD12	1:A:186:LYS:HB2	1.96	0.47
1:B:196:TYR:O	1:B:200:LEU:HB2	2.13	0.47
1:F:123:GLU:O	1:F:127:GLU:HG3	2.14	0.47
1:F:321:ASN:O	1:F:325:GLU:HG3	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:352:GLU:OE1	1:F:354:ARG:NH1	2.46	0.47
1:G:196:TYR:O	1:G:200:LEU:HB2	2.13	0.47
1:B:257:ASN:ND2	4:B:503:PG4:H12	2.29	0.47
1:G:265:LYS:HG2	1:G:271:VAL:CG2	2.44	0.47
1:G:357:ASN:HD21	3:G:503:NAD:H72N	1.62	0.47
1:G:426:LYS:HZ2	1:G:430:ASP:HB2	1.79	0.47
1:B:74:LYS:HD2	1:B:369:MET:HB2	1.96	0.47
1:G:90:VAL:HG13	1:G:113:GLU:HB3	1.96	0.47
1:C:413:MET:HB2	1:H:265:LYS:HE3	1.96	0.47
1:F:75:THR:OG1	2:F:502:NOS:H2	2.14	0.47
1:G:69:LEU:O	1:G:93:GLY:HA2	2.15	0.47
1:C:74:LYS:HB2	1:C:74:LYS:HE2	1.76	0.47
1:F:74:LYS:HE3	1:F:369:MET:HG3	1.96	0.47
1:H:206:GLY:O	1:H:210:SER:HB2	2.14	0.47
1:G:55:LYS:HZ1	1:G:84:GLU:HB2	1.80	0.47
1:A:69:LEU:HD23	1:A:143:ASP:HB2	1.96	0.47
1:B:148:ILE:HG21	1:B:176:LEU:HD21	1.96	0.47
2:F:502:NOS:H8	3:F:503:NAD:N7N	2.30	0.47
1:H:75:THR:OG1	2:H:502:NOS:H2	2.15	0.47
1:B:107:CYS:O	1:B:112:MET:HG3	2.15	0.46
1:G:55:LYS:HB2	1:G:55:LYS:HE2	1.65	0.46
1:G:207:THR:HA	1:G:210:SER:OG	2.14	0.46
1:H:40:ALA:HB1	1:H:74:LYS:HG3	1.97	0.46
1:H:98:SER:HB2	1:H:358:LEU:HB3	1.97	0.46
1:C:49:ARG:O	1:C:53:GLU:HG3	2.15	0.46
1:E:78:LEU:HD22	1:E:373:PHE:CD1	2.50	0.46
1:F:198:LYS:HD3	1:F:202:ASP:HB3	1.97	0.46
1:F:221:LEU:HD22	1:G:367:GLU:OE2	2.14	0.46
1:H:138:ASP:HB3	1:H:163:MET:CE	2.45	0.46
1:B:260:ARG:HH21	4:B:503:PG4:H61	1.80	0.46
1:H:78:LEU:HD21	1:H:376:GLN:HG2	1.97	0.46
1:H:288:THR:HG22	1:H:317:GLU:OE1	2.16	0.46
1:D:300:LEU:HD21	1:D:326:LEU:HD21	1.98	0.46
1:E:40:ALA:O	1:E:44:MET:HG3	2.16	0.46
1:H:167:GLU:OE2	1:H:172:GLY:HA3	2.16	0.46
1:D:167:GLU:OE1	1:D:168:GLU:N	2.49	0.46
1:H:147:LEU:HD23	1:H:147:LEU:HA	1.79	0.46
1:H:423:GLU:H	1:H:423:GLU:CD	2.19	0.46
1:C:147:LEU:HD12	1:C:147:LEU:HA	1.76	0.46
1:E:74:LYS:HB2	1:E:74:LYS:HE2	1.70	0.46
1:E:102:ASP:OD1	1:E:103:VAL:N	2.49	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:34:HIS:O	1:B:38:GLU:HG2	2.15	0.46
1:C:102:ASP:OD1	1:C:103:VAL:N	2.49	0.46
1:D:381:LYS:O	1:D:385:GLU:HG3	2.15	0.46
1:E:22:SER:HA	1:E:115:TYR:CE1	2.51	0.46
1:H:65:ILE:HB	1:H:89:ILE:HD13	1.98	0.46
1:D:185:LEU:HD21	1:D:189:VAL:HG22	1.97	0.45
1:D:131:LYS:N	1:D:131:LYS:HD3	2.31	0.45
1:E:312:GLY:HA3	1:E:317:GLU:OE2	2.15	0.45
1:F:58:LYS:HE3	1:F:84:GLU:O	2.16	0.45
1:D:296:MET:SD	1:D:326:LEU:HG	2.56	0.45
1:E:391:GLU:HB3	1:E:393:GLU:HG2	1.97	0.45
1:C:207:THR:CG2	1:C:364:HIS:HE2	2.12	0.45
1:G:425:ARG:NH2	1:G:428:LEU:HB3	2.32	0.45
1:D:67:MET:HE1	1:D:82:LEU:HD12	1.97	0.45
1:E:188:PRO:HG3	1:E:390:LEU:HB2	1.98	0.45
1:A:169:THR:HG23	2:A:501:NOS:O3'	2.17	0.45
1:C:334:ARG:NH1	5:C:601:HOH:O	2.47	0.45
1:D:168:GLU:O	1:D:193:ASN:HB2	2.17	0.45
1:E:219:THR:HB	1:E:221:LEU:HG	1.99	0.45
1:B:219:THR:HB	1:B:221:LEU:HD12	1.98	0.45
1:C:24:VAL:HG12	1:C:25:LYS:N	2.32	0.45
1:C:163:MET:HE3	1:C:387:LYS:HG3	1.98	0.45
1:C:219:THR:HB	1:C:221:LEU:HG	1.97	0.45
1:B:25:LYS:HE2	1:B:101:ASP:OD2	2.18	0.44
4:D:503:PG4:H52	4:D:503:PG4:H31	1.72	0.44
1:C:126:TYR:O	1:C:130:ASN:ND2	2.51	0.44
1:C:168:GLU:HG2	2:C:501:NOS:O3'	2.16	0.44
1:F:298:HIS:O	1:F:302:MET:HG3	2.17	0.44
1:G:75:THR:HG22	2:G:502:NOS:H2	1.99	0.44
1:H:70:HIS:CE1	1:H:355:LEU:HD12	2.53	0.44
1:G:123:GLU:N	1:G:123:GLU:OE1	2.46	0.44
1:F:238:ARG:NH2	1:F:263:GLU:OE2	2.51	0.44
1:A:431:TRP:CG	1:E:179:MET:HG3	2.53	0.44
1:A:230:VAL:HB	1:A:253:ILE:HD13	2.00	0.44
1:E:113:GLU:OE2	1:E:115:TYR:OH	2.21	0.44
1:E:251:VAL:HB	1:E:269:PHE:CD1	2.53	0.44
1:G:118:ARG:HG2	1:G:118:ARG:HH11	1.83	0.44
1:C:27:MET:HE2	1:C:27:MET:HB3	1.84	0.44
1:D:234:GLY:HA3	3:D:502:NAD:O5B	2.17	0.44
1:E:65:ILE:HG12	1:E:139:ILE:HB	1.99	0.44
1:A:179:MET:HG2	1:E:431:TRP:CE2	2.51	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:387:LYS:HB3	1:B:388:GLY:H	1.68	0.44
1:B:302:MET:HE2	1:B:347:ILE:HD12	2.00	0.43
1:E:198:LYS:HD3	1:E:202:ASP:HB3	2.00	0.43
1:E:298:HIS:O	1:E:302:MET:HG3	2.18	0.43
1:G:333:ALA:HB2	1:G:339:GLU:HB2	1.99	0.43
1:C:197:THR:OG1	1:C:402:ASP:OD1	2.29	0.43
1:F:219:THR:OG1	1:G:39:TRP:HZ2	2.02	0.43
1:F:326:LEU:HB3	1:F:342:LEU:HG	1.99	0.43
1:G:198:LYS:HD3	1:G:202:ASP:HB3	2.01	0.43
1:H:69:LEU:O	1:H:93:GLY:HA2	2.18	0.43
1:B:247:HIS:HA	1:D:243:ARG:HD2	2.00	0.43
1:F:203:ASN:O	1:F:207:THR:HG23	2.18	0.43
1:G:188:PRO:HB3	1:G:391:GLU:O	2.19	0.43
1:A:70:HIS:CE1	1:A:355:LEU:HD12	2.53	0.43
1:D:163:MET:HE3	1:D:387:LYS:HG3	2.00	0.43
1:H:252:ILE:HG21	1:H:272:LEU:HD12	2.01	0.43
1:D:158:LEU:O	1:D:162:ILE:HG13	2.19	0.43
1:E:423:GLU:H	1:E:423:GLU:CD	2.22	0.43
1:F:102:ASP:OD1	1:F:103:VAL:HG23	2.19	0.43
1:G:70:HIS:O	1:G:75:THR:HG21	2.18	0.43
1:G:233:TYR:OH	1:G:267:ASP:OD2	2.24	0.43
1:H:175:ARG:HG2	1:H:175:ARG:NH1	2.33	0.43
1:A:140:ILE:O	1:A:165:GLY:HA2	2.19	0.43
1:G:354:ARG:HE	1:G:354:ARG:HB2	1.26	0.43
1:H:121:THR:HB	1:H:124:GLU:HG3	2.00	0.43
1:D:59:PRO:O	1:D:384:LYS:HD2	2.18	0.43
1:E:157:GLU:H	1:E:157:GLU:HG3	1.51	0.43
1:G:75:THR:CG2	2:G:502:NOS:H2	2.48	0.43
1:H:117:TRP:CE2	1:H:120:GLU:HG2	2.54	0.43
1:H:159:ILE:HD13	1:H:186:LYS:HB2	2.00	0.43
1:A:218:THR:CG2	1:A:360:CYS:HB3	2.47	0.43
1:B:147:LEU:O	1:B:151:ILE:HG13	2.19	0.43
1:B:302:MET:CE	1:B:347:ILE:HD12	2.49	0.43
1:F:70:HIS:CE1	1:F:355:LEU:HD12	2.53	0.43
1:F:260:ARG:HE	4:F:501:PG4:H41	1.84	0.43
1:H:24:VAL:HG12	1:H:25:LYS:H	1.83	0.43
1:H:108:VAL:HG23	1:H:114:VAL:CG2	2.49	0.43
1:B:96:PRO:HG2	1:B:354:ARG:NH2	2.34	0.43
1:B:417:ILE:HD12	1:B:417:ILE:HA	1.92	0.43
1:D:134:ASP:OD1	1:D:155:ARG:NH2	2.51	0.43
1:F:40:ALA:O	1:F:44:MET:HG3	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:363:GLY:HA3	2:G:502:NOS:O6	2.18	0.43
1:B:201:PHE:HA	1:B:205:TYR:HD2	1.84	0.43
1:E:115:TYR:CD2	1:E:131:LYS:HE3	2.54	0.43
1:G:68:ALA:HB3	1:G:142:ASP:OD1	2.19	0.43
1:H:169:THR:HG21	2:H:502:NOS:H5'1	2.00	0.43
1:B:142:ASP:OD2	1:B:145:ALA:HA	2.19	0.42
1:A:371:MET:HG2	1:A:405:ILE:CG2	2.50	0.42
1:B:169:THR:HG21	2:B:501:NOS:H5'1	2.00	0.42
1:C:298:HIS:O	1:C:302:MET:HG3	2.19	0.42
1:D:136:ASN:O	1:D:161:LYS:HE3	2.19	0.42
1:F:134:ASP:OD1	1:F:155:ARG:NH2	2.52	0.42
1:A:163:MET:HE3	1:A:387:LYS:HG3	2.01	0.42
1:C:410:LEU:HD12	1:C:410:LEU:HA	1.91	0.42
1:C:424:GLN:NE2	1:H:291:LYS:O	2.46	0.42
1:C:426:LYS:HG3	1:C:427:TYR:N	2.34	0.42
1:D:260:ARG:NE	4:D:503:PG4:H51	2.35	0.42
1:E:37:MET:HE1	1:E:110:LYS:HE3	2.02	0.42
1:F:77:ILE:HD13	1:F:77:ILE:HA	1.95	0.42
1:F:92:THR:HG22	1:F:132:VAL:HG21	2.01	0.42
1:B:42:ARG:O	1:B:42:ARG:HG2	2.19	0.42
1:B:49:ARG:NH1	1:B:49:ARG:HG3	2.34	0.42
1:B:185:LEU:HD21	1:B:189:VAL:HG22	2.01	0.42
1:F:247:HIS:HA	1:G:243:ARG:HD2	2.01	0.42
1:H:371:MET:SD	1:H:409:LYS:HG2	2.59	0.42
1:B:203:ASN:O	1:B:207:THR:HG23	2.20	0.42
1:C:256:VAL:C	1:H:417:ILE:HD11	2.39	0.42
1:H:140:ILE:HD13	1:H:140:ILE:HA	1.93	0.42
1:H:157:GLU:H	1:H:157:GLU:CD	2.22	0.42
1:F:91:ILE:HD12	1:F:91:ILE:N	2.34	0.42
1:H:67:MET:HE3	1:H:91:ILE:HD12	2.01	0.42
1:C:203:ASN:O	1:C:236:CYS:HA	2.20	0.42
1:E:390:LEU:HD22	1:E:395:TYR:CZ	2.55	0.42
1:F:90:VAL:HA	1:F:113:GLU:HB2	2.01	0.42
1:B:158:LEU:O	1:B:162:ILE:HG12	2.19	0.42
1:E:69:LEU:O	1:E:93:GLY:HA2	2.20	0.42
1:G:159:ILE:HG12	1:G:186:LYS:HB3	2.02	0.42
2:A:501:NOS:H3'	3:A:502:NAD:C4N	2.50	0.42
1:H:292:ASP:HB3	1:H:295:ARG:HD3	2.02	0.42
1:F:98:SER:HB2	1:F:358:LEU:HB3	2.01	0.41
1:A:102:ASP:OD1	1:A:103:VAL:N	2.53	0.41
1:A:295:ARG:HH11	1:A:295:ARG:HG3	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:59:PRO:O	1:B:384:LYS:HD2	2.20	0.41
1:D:143:ASP:OD1	1:D:169:THR:OG1	2.34	0.41
1:E:33:GLY:O	1:E:37:MET:HG3	2.20	0.41
1:G:55:LYS:HD3	1:G:55:LYS:HA	1.95	0.41
1:A:176:LEU:CD1	1:A:189:VAL:HG11	2.49	0.41
1:C:149:PHE:CZ	1:C:153:THR:HG21	2.55	0.41
3:C:502:NAD:H2D	3:C:502:NAD:H6N	1.82	0.41
1:D:55:LYS:NZ	1:D:84:GLU:OE1	2.54	0.41
1:D:389:LYS:HE3	1:D:389:LYS:HB3	1.79	0.41
1:F:222:LEU:HD22	1:G:368:VAL:HG23	2.02	0.41
1:H:42:ARG:HD3	1:H:43:HIS:CE1	2.55	0.41
1:B:203:ASN:O	1:B:236:CYS:HA	2.20	0.41
1:B:296:MET:SD	1:B:326:LEU:HD21	2.61	0.41
1:F:169:THR:HG23	2:F:502:NOS:O3'	2.19	0.41
1:A:238:ARG:NH2	1:A:263:GLU:OE1	2.53	0.41
1:A:321:ASN:O	1:A:325:GLU:HG3	2.21	0.41
1:E:226:LYS:HD2	1:E:282:ASP:HB3	2.02	0.41
1:H:61:GLU:OE2	1:H:62:GLY:N	2.54	0.41
2:H:502:NOS:H3'	3:H:503:NAD:C4N	2.51	0.41
1:B:49:ARG:O	1:B:53:GLU:HG3	2.21	0.41
1:B:74:LYS:HB2	1:B:74:LYS:HE2	1.83	0.41
1:B:123:GLU:O	1:B:127:GLU:HG3	2.20	0.41
1:D:213:ASP:O	1:D:217:ARG:HB3	2.20	0.41
1:D:427:TYR:HD1	1:D:427:TYR:O	2.03	0.41
1:E:185:LEU:HD21	1:E:189:VAL:HG23	2.01	0.41
1:F:65:ILE:HG22	1:F:67:MET:HG3	2.02	0.41
1:F:210:SER:OG	1:F:364:HIS:HD2	2.03	0.41
1:G:64:THR:HG22	1:G:88:LYS:HB2	2.02	0.41
1:A:333:ALA:HB2	1:A:339:GLU:HB2	2.03	0.41
1:E:90:VAL:HG13	1:E:113:GLU:HB3	2.02	0.41
1:F:334:ARG:HD2	1:G:39:TRP:CD1	2.55	0.41
1:G:358:LEU:HD21	2:G:502:NOS:C5	2.51	0.41
1:A:176:LEU:HD23	1:A:176:LEU:HA	1.73	0.41
1:D:204:ARG:O	1:D:239:GLY:HA3	2.21	0.41
1:G:115:TYR:HB3	1:G:128:ASN:OD1	2.20	0.41
1:H:282:ASP:OD2	1:H:303:LYS:NZ	2.41	0.41
1:H:291:LYS:HB3	1:H:316:ASN:OD1	2.20	0.41
1:A:24:VAL:HG12	1:A:25:LYS:N	2.36	0.41
1:B:140:ILE:O	1:B:165:GLY:HA2	2.21	0.41
1:C:75:THR:OG1	2:C:501:NOS:H2	2.20	0.41
1:C:253:ILE:HG13	1:C:264:ALA:HB1	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:158:LEU:HG	1:G:161:LYS:HZ1	1.86	0.41
1:H:44:MET:HG2	1:H:370:ASP:HB2	2.03	0.41
1:H:139:ILE:HG23	1:H:383:ILE:HG21	2.03	0.41
1:H:210:SER:OG	1:H:363:GLY:O	2.39	0.41
1:C:157:GLU:HG2	1:C:158:LEU:HD12	2.02	0.41
1:C:193:ASN:O	1:C:198:LYS:HB3	2.21	0.41
1:D:168:GLU:HG3	2:D:501:NOS:O3'	2.20	0.41
1:A:74:LYS:HB2	1:A:74:LYS:HE2	1.80	0.40
1:B:355:LEU:HA	1:B:355:LEU:HD23	1.85	0.40
1:H:69:LEU:HD23	1:H:143:ASP:HB2	2.03	0.40
1:H:333:ALA:HB2	1:H:339:GLU:HB2	2.03	0.40
1:A:169:THR:O	1:A:173:ILE:HG12	2.21	0.40
1:B:416:ASP:OD1	1:B:417:ILE:N	2.45	0.40
1:D:67:MET:CE	1:D:82:LEU:HD12	2.51	0.40
1:F:124:GLU:H	1:F:124:GLU:HG3	1.73	0.40
1:H:176:LEU:HD13	1:H:189:VAL:HG11	2.02	0.40
1:A:417:ILE:O	1:E:273:LYS:HE2	2.21	0.40
1:F:105:ALA:O	1:F:108:VAL:HG22	2.22	0.40
1:F:294:LEU:HD13	1:F:302:MET:HE1	2.03	0.40
1:G:75:THR:H	1:G:75:THR:HG23	1.69	0.40
1:H:203:ASN:O	1:H:236:CYS:HA	2.20	0.40
1:A:26:ASP:HB3	1:A:29:LEU:HD12	2.03	0.40
1:A:69:LEU:O	1:A:93:GLY:HA2	2.22	0.40
1:D:69:LEU:O	1:D:93:GLY:HA2	2.22	0.40
1:E:212:MET:O	1:E:216:ILE:HG13	2.21	0.40
1:F:67:MET:HE2	1:F:67:MET:HB2	1.71	0.40
1:F:169:THR:O	1:F:173:ILE:HG12	2.21	0.40
1:F:260:ARG:HH21	4:F:501:PG4:H41	1.86	0.40
1:G:158:LEU:HD23	1:G:161:LYS:HD2	2.03	0.40
1:G:265:LYS:HG2	1:G:271:VAL:HG23	2.02	0.40
1:A:133:LEU:HD13	1:A:151:ILE:HG12	2.03	0.40
1:D:65:ILE:HD13	1:D:82:LEU:HD13	2.03	0.40
1:D:430:ASP:OD1	1:D:432:LYS:NZ	2.55	0.40
1:E:164:GLY:HA3	1:E:383:ILE:HD12	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	409/435 (94%)	396 (97%)	12 (3%)	1 (0%)	47	67
1	B	409/435 (94%)	392 (96%)	15 (4%)	2 (0%)	29	47
1	C	409/435 (94%)	399 (98%)	9 (2%)	1 (0%)	47	67
1	D	409/435 (94%)	394 (96%)	14 (3%)	1 (0%)	47	67
1	E	409/435 (94%)	394 (96%)	12 (3%)	3 (1%)	22	37
1	F	409/435 (94%)	389 (95%)	17 (4%)	3 (1%)	22	37
1	G	409/435 (94%)	396 (97%)	12 (3%)	1 (0%)	47	67
1	H	409/435 (94%)	395 (97%)	13 (3%)	1 (0%)	47	67
All	All	3272/3480 (94%)	3155 (96%)	104 (3%)	13 (0%)	34	53

All (13) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	387	LYS
1	E	387	LYS
1	F	387	LYS
1	B	355	LEU
1	C	355	LEU
1	E	57	ASP
1	F	114	VAL
1	F	355	LEU
1	A	355	LEU
1	D	355	LEU
1	E	355	LEU
1	G	355	LEU
1	H	355	LEU

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	339/359 (94%)	333 (98%)	6 (2%)	59	80
1	B	339/359 (94%)	330 (97%)	9 (3%)	44	69
1	C	339/359 (94%)	326 (96%)	13 (4%)	33	56
1	D	339/359 (94%)	328 (97%)	11 (3%)	39	63
1	E	339/359 (94%)	320 (94%)	19 (6%)	21	38
1	F	339/359 (94%)	326 (96%)	13 (4%)	33	56
1	G	339/359 (94%)	324 (96%)	15 (4%)	28	49
1	H	339/359 (94%)	319 (94%)	20 (6%)	19	35
All	All	2712/2872 (94%)	2606 (96%)	106 (4%)	32	55

All (106) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	41	LYS
1	A	55	LYS
1	A	72	GLU
1	A	147	LEU
1	A	169	THR
1	A	238	ARG
1	B	27	MET
1	B	32	SER
1	B	72	GLU
1	B	152	HIS
1	B	169	THR
1	B	207	THR
1	B	243	ARG
1	B	354	ARG
1	B	368	VAL
1	C	22	SER
1	C	56	ASN
1	C	57	ASP
1	C	72	GLU

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Mol	Chain	Res	Type
1	C	131	LYS
1	C	169	THR
1	C	254	THR
1	C	255	GLU
1	C	291	LYS
1	C	384	LYS
1	C	392	ASN
1	C	426	LYS
1	C	430	ASP
1	D	22	SER
1	D	25	LYS
1	D	167	GLU
1	D	169	THR
1	D	254	THR
1	D	295	ARG
1	D	331	LYS
1	D	368	VAL
1	D	376	GLN
1	D	404	LYS
1	D	427	TYR
1	E	22	SER
1	E	49	ARG
1	E	56	ASN
1	E	57	ASP
1	E	72	GLU
1	E	118	ARG
1	E	120	GLU
1	E	153	THR
1	E	156	THR
1	E	157	GLU
1	E	169	THR
1	E	197	THR
1	E	199	HIS
1	E	207	THR
1	E	243	ARG
1	E	265	LYS
1	E	384	LYS
1	E	423	GLU
1	E	426	LYS
1	F	25	LYS
1	F	72	GLU
1	F	102	ASP

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Mol	Chain	Res	Type
1	F	155	ARG
1	F	169	THR
1	F	207	THR
1	F	217	ARG
1	F	243	ARG
1	F	265	LYS
1	F	291	LYS
1	F	354	ARG
1	F	368	VAL
1	F	426	LYS
1	G	32	SER
1	G	55	LYS
1	G	72	GLU
1	G	110	LYS
1	G	133	LEU
1	G	146	ASP
1	G	151	ILE
1	G	159	ILE
1	G	161	LYS
1	G	207	THR
1	G	354	ARG
1	G	368	VAL
1	G	384	LYS
1	G	392	ASN
1	G	425	ARG
1	H	22	SER
1	H	41	LYS
1	H	42	ARG
1	H	52	GLU
1	H	57	ASP
1	H	72	GLU
1	H	88	LYS
1	H	98	SER
1	H	114	VAL
1	H	129	LEU
1	H	169	THR
1	H	202	ASP
1	H	210	SER
1	H	247	HIS
1	H	254	THR
1	H	274	MET
1	H	376	GLN

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Mol	Chain	Res	Type
1	H	384	LYS
1	H	389	LYS
1	H	423	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	364	HIS
1	C	56	ASN
1	C	313	HIS
1	C	357	ASN
1	D	257	ASN
1	D	357	ASN
1	E	364	HIS
1	F	34	HIS
1	F	357	ASN
1	F	364	HIS
1	G	364	HIS
1	H	43	HIS
1	H	199	HIS

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	$\#\|Z\| > 2$
2	NOS	E	502	-	17,21,21	2.12	5 (29%)	17,31,31	1.02	1 (5%)
3	NAD	A	502	-	42,48,48	1.54	7 (16%)	50,73,73	1.73	14 (28%)
3	NAD	E	503	-	42,48,48	1.52	5 (11%)	50,73,73	1.72	13 (26%)
3	NAD	H	503	-	42,48,48	1.53	5 (11%)	50,73,73	1.67	13 (26%)
3	NAD	C	502	-	42,48,48	1.52	6 (14%)	50,73,73	1.68	13 (26%)
3	NAD	F	503	-	42,48,48	1.54	7 (16%)	50,73,73	1.79	15 (30%)
2	NOS	C	501	-	17,21,21	2.10	5 (29%)	17,31,31	1.06	1 (5%)
4	PG4	F	501	-	12,12,12	0.14	0	11,11,11	0.13	0
3	NAD	B	502	-	42,48,48	1.53	8 (19%)	50,73,73	1.78	15 (30%)
2	NOS	B	501	-	17,21,21	2.10	5 (29%)	17,31,31	1.05	1 (5%)
4	PG4	D	503	-	12,12,12	0.16	0	11,11,11	0.17	0
4	PG4	G	501	-	12,12,12	0.16	0	11,11,11	0.15	0
2	NOS	H	502	-	17,21,21	2.11	5 (29%)	17,31,31	1.04	1 (5%)
2	NOS	D	501	-	17,21,21	2.13	5 (29%)	17,31,31	1.05	1 (5%)
3	NAD	D	502	-	42,48,48	1.54	6 (14%)	50,73,73	1.72	13 (26%)
2	NOS	F	502	-	17,21,21	2.12	5 (29%)	17,31,31	1.03	1 (5%)
2	NOS	G	502	-	17,21,21	2.09	5 (29%)	17,31,31	1.00	1 (5%)
2	NOS	A	501	-	17,21,21	2.08	5 (29%)	17,31,31	1.02	1 (5%)
4	PG4	H	501	-	12,12,12	0.18	0	11,11,11	0.11	0
4	PG4	A	503	-	12,12,12	0.20	0	11,11,11	0.13	0
4	PG4	E	501	-	12,12,12	0.19	0	11,11,11	0.15	0
3	NAD	G	503	-	42,48,48	1.50	5 (11%)	50,73,73	1.76	13 (26%)
4	PG4	C	503	-	12,12,12	0.17	0	11,11,11	0.10	0
4	PG4	B	503	-	12,12,12	0.17	0	11,11,11	0.10	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NOS	E	502	-	-	0/2/22/22	0/3/3/3
3	NAD	A	502	-	-	9/26/62/62	0/5/5/5

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAD	E	503	-	-	12/26/62/62	0/5/5/5
3	NAD	H	503	-	-	9/26/62/62	0/5/5/5
3	NAD	C	502	-	-	9/26/62/62	0/5/5/5
3	NAD	F	503	-	-	9/26/62/62	0/5/5/5
2	NOS	C	501	-	-	0/2/22/22	0/3/3/3
4	PG4	F	501	-	-	4/10/10/10	-
3	NAD	B	502	-	-	13/26/62/62	0/5/5/5
2	NOS	B	501	-	-	1/2/22/22	0/3/3/3
4	PG4	D	503	-	-	4/10/10/10	-
4	PG4	G	501	-	-	2/10/10/10	-
2	NOS	H	502	-	-	0/2/22/22	0/3/3/3
2	NOS	D	501	-	-	0/2/22/22	0/3/3/3
3	NAD	D	502	-	-	9/26/62/62	0/5/5/5
2	NOS	F	502	-	-	0/2/22/22	0/3/3/3
2	NOS	G	502	-	-	0/2/22/22	0/3/3/3
2	NOS	A	501	-	-	0/2/22/22	0/3/3/3
4	PG4	H	501	-	-	4/10/10/10	-
4	PG4	A	503	-	-	4/10/10/10	-
4	PG4	E	501	-	-	4/10/10/10	-
3	NAD	G	503	-	-	9/26/62/62	0/5/5/5
4	PG4	C	503	-	-	4/10/10/10	-
4	PG4	B	503	-	-	4/10/10/10	-

All (89) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	501	NOS	O6-C6	6.13	1.35	1.23
2	E	502	NOS	O6-C6	6.12	1.35	1.23
2	H	502	NOS	O6-C6	6.03	1.35	1.23
2	G	502	NOS	O6-C6	5.94	1.35	1.23
2	B	501	NOS	O6-C6	5.93	1.35	1.23
2	F	502	NOS	O6-C6	5.92	1.35	1.23
2	C	501	NOS	O6-C6	5.85	1.35	1.23
2	A	501	NOS	O6-C6	5.80	1.35	1.23
3	E	503	NAD	PN-O5D	5.08	1.79	1.59
3	F	503	NAD	PN-O5D	5.01	1.79	1.59
3	H	503	NAD	PN-O5D	4.96	1.79	1.59
3	G	503	NAD	PN-O5D	4.90	1.79	1.59
3	D	502	NAD	PN-O5D	4.86	1.79	1.59

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	502	NAD	PN-O5D	4.81	1.78	1.59
3	A	502	NAD	PN-O5D	4.70	1.78	1.59
3	B	502	NAD	PN-O5D	4.64	1.78	1.59
3	E	503	NAD	PA-O5B	4.19	1.76	1.59
2	F	502	NOS	C5-C6	-4.11	1.39	1.47
3	C	502	NAD	PA-O5B	4.00	1.75	1.59
2	B	501	NOS	C5-C6	-4.00	1.39	1.47
2	C	501	NOS	C5-C6	-3.99	1.39	1.47
3	A	502	NAD	PA-O5B	3.98	1.75	1.59
2	D	501	NOS	C5-C6	-3.91	1.39	1.47
3	D	502	NAD	PA-O5B	3.90	1.75	1.59
2	H	502	NOS	C5-C6	-3.88	1.39	1.47
3	H	503	NAD	PA-O5B	3.88	1.75	1.59
2	G	502	NOS	C5-C6	-3.86	1.39	1.47
2	E	502	NOS	C5-C6	-3.86	1.39	1.47
2	A	501	NOS	C5-C6	-3.85	1.39	1.47
3	F	503	NAD	PA-O5B	3.83	1.74	1.59
3	B	502	NAD	PA-O5B	3.73	1.74	1.59
3	G	503	NAD	PA-O5B	3.60	1.73	1.59
2	A	501	NOS	C6-N1	-2.98	1.32	1.38
2	G	502	NOS	C6-N1	-2.97	1.32	1.38
2	C	501	NOS	C6-N1	-2.96	1.32	1.38
2	D	501	NOS	C6-N1	-2.96	1.32	1.38
2	F	502	NOS	C6-N1	-2.95	1.32	1.38
2	B	501	NOS	C6-N1	-2.94	1.32	1.38
2	E	502	NOS	C6-N1	-2.93	1.32	1.38
2	H	502	NOS	C6-N1	-2.92	1.32	1.38
3	F	503	NAD	C2A-N3A	2.72	1.36	1.32
3	A	502	NAD	C7N-N7N	2.59	1.37	1.33
3	D	502	NAD	C7N-N7N	2.53	1.37	1.33
3	A	502	NAD	C2D-C1D	2.51	1.57	1.53
3	A	502	NAD	C2B-C1B	2.48	1.57	1.53
3	F	503	NAD	C7N-N7N	2.48	1.37	1.33
3	G	503	NAD	C2B-C1B	2.46	1.57	1.53
3	E	503	NAD	C7N-N7N	2.45	1.37	1.33
3	H	503	NAD	C2B-C1B	2.44	1.57	1.53
3	C	502	NAD	C7N-N7N	2.40	1.37	1.33
3	D	502	NAD	C2N-N1N	2.40	1.37	1.35
3	H	503	NAD	C7N-N7N	2.38	1.37	1.33
3	B	502	NAD	C7N-N7N	2.34	1.37	1.33
3	D	502	NAD	C2B-C1B	2.34	1.57	1.53
3	A	502	NAD	O5D-C5D	-2.33	1.35	1.44

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	F	503	NAD	C4A-N3A	2.29	1.38	1.35
3	E	503	NAD	C2A-N3A	2.26	1.35	1.32
3	A	502	NAD	C2A-N3A	2.26	1.35	1.32
3	C	502	NAD	C2B-C1B	2.24	1.57	1.53
3	B	502	NAD	O3D-C3D	-2.20	1.37	1.43
3	B	502	NAD	C2B-C1B	2.17	1.57	1.53
3	G	503	NAD	C2A-N3A	2.17	1.35	1.32
2	C	501	NOS	C2-N3	2.15	1.33	1.29
2	B	501	NOS	C5-C4	-2.14	1.37	1.43
2	D	501	NOS	C2-N3	2.14	1.33	1.29
3	C	502	NAD	C2A-N3A	2.13	1.35	1.32
3	F	503	NAD	C2N-N1N	2.13	1.37	1.35
3	G	503	NAD	C7N-N7N	2.12	1.37	1.33
3	B	502	NAD	O2D-C2D	-2.11	1.38	1.43
2	F	502	NOS	C5-C4	-2.09	1.37	1.43
2	H	502	NOS	C2-N3	2.09	1.33	1.29
2	E	502	NOS	C2-N3	2.09	1.33	1.29
2	D	501	NOS	C5-C4	-2.08	1.37	1.43
2	E	502	NOS	C5-C4	-2.08	1.37	1.43
2	A	501	NOS	C2-N3	2.08	1.33	1.29
3	H	503	NAD	C2A-N3A	2.07	1.35	1.32
2	A	501	NOS	C5-C4	-2.07	1.37	1.43
3	F	503	NAD	C2A-N1A	2.06	1.37	1.33
3	B	502	NAD	O5D-C5D	-2.06	1.36	1.44
2	H	502	NOS	C5-C4	-2.06	1.37	1.43
2	C	501	NOS	C5-C4	-2.05	1.37	1.43
3	C	502	NAD	O2D-C2D	-2.05	1.38	1.43
2	B	501	NOS	C2-N3	2.05	1.33	1.29
2	G	502	NOS	C5-C4	-2.04	1.37	1.43
3	E	503	NAD	C2A-N1A	2.03	1.37	1.33
3	D	502	NAD	C2A-N3A	2.03	1.35	1.32
2	F	502	NOS	C2-N3	2.02	1.33	1.29
3	B	502	NAD	C4A-N3A	2.02	1.38	1.35
2	G	502	NOS	C2-N3	2.01	1.33	1.29

All (117) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	H	503	NAD	PN-O3-PA	-5.23	114.88	132.83
3	B	502	NAD	PN-O3-PA	-5.21	114.95	132.83
3	E	503	NAD	PN-O3-PA	-5.02	115.60	132.83
3	C	502	NAD	PN-O3-PA	-5.02	115.61	132.83

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	F	503	NAD	PN-O3-PA	-4.83	116.25	132.83
3	D	502	NAD	PN-O3-PA	-4.82	116.29	132.83
3	G	503	NAD	PN-O3-PA	-4.76	116.48	132.83
3	A	502	NAD	PN-O3-PA	-4.63	116.95	132.83
3	E	503	NAD	O2A-PA-O1A	3.85	131.28	112.24
3	B	502	NAD	O2A-PA-O1A	3.82	131.10	112.24
3	A	502	NAD	O2A-PA-O1A	3.80	131.02	112.24
3	C	502	NAD	O2A-PA-O1A	3.78	130.91	112.24
3	A	502	NAD	O2N-PN-O1N	3.75	130.80	112.24
3	G	503	NAD	O2A-PA-O1A	3.75	130.76	112.24
3	D	502	NAD	O2A-PA-O1A	3.73	130.67	112.24
3	F	503	NAD	O2A-PA-O1A	3.73	130.66	112.24
3	H	503	NAD	O2A-PA-O1A	3.70	130.53	112.24
3	D	502	NAD	O2N-PN-O1N	3.70	130.52	112.24
3	B	502	NAD	O2N-PN-O1N	3.67	130.37	112.24
3	G	503	NAD	O2N-PN-O1N	3.66	130.32	112.24
3	F	503	NAD	O2N-PN-O1N	3.66	130.31	112.24
3	C	502	NAD	O2N-PN-O1N	3.57	129.90	112.24
3	H	503	NAD	O2N-PN-O1N	3.54	129.76	112.24
3	F	503	NAD	O4B-C1B-C2B	-3.46	101.86	106.93
3	E	503	NAD	O2N-PN-O1N	3.45	129.31	112.24
3	D	502	NAD	O5B-PA-O1A	-3.16	96.74	109.07
3	E	503	NAD	O4B-C1B-C2B	-3.10	102.39	106.93
3	F	503	NAD	O5D-PN-O1N	-2.99	97.40	109.07
3	F	503	NAD	C3D-C2D-C1D	-2.96	96.52	100.98
3	G	503	NAD	O5B-PA-O1A	-2.95	97.53	109.07
3	D	502	NAD	PN-O5D-C5D	-2.93	104.51	121.68
2	B	501	NOS	C5-C6-N1	2.88	119.04	113.95
2	H	502	NOS	C5-C6-N1	2.88	119.03	113.95
2	C	501	NOS	C5-C6-N1	2.86	119.00	113.95
3	B	502	NAD	O5B-PA-O1A	-2.85	97.94	109.07
2	G	502	NOS	C5-C6-N1	2.84	118.96	113.95
3	G	503	NAD	C1B-N9A-C4A	-2.84	121.66	126.64
2	F	502	NOS	C5-C6-N1	2.80	118.90	113.95
2	D	501	NOS	C5-C6-N1	2.80	118.89	113.95
3	H	503	NAD	O5D-PN-O1N	-2.79	98.18	109.07
3	G	503	NAD	PN-O5D-C5D	-2.77	105.41	121.68
2	E	502	NOS	C5-C6-N1	2.77	118.84	113.95
3	E	503	NAD	PN-O5D-C5D	-2.77	105.44	121.68
2	A	501	NOS	C5-C6-N1	2.77	118.84	113.95
3	C	502	NAD	O5B-PA-O1A	-2.75	98.30	109.07
3	C	502	NAD	O5D-PN-O1N	-2.74	98.37	109.07

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	B	502	NAD	O7N-C7N-C3N	2.68	122.84	119.63
3	A	502	NAD	O5D-PN-O1N	-2.68	98.61	109.07
3	D	502	NAD	O5D-PN-O1N	-2.64	98.76	109.07
3	F	503	NAD	O5B-PA-O1A	-2.64	98.77	109.07
3	B	502	NAD	O5D-PN-O1N	-2.63	98.78	109.07
3	B	502	NAD	PN-O5D-C5D	-2.62	106.29	121.68
3	H	503	NAD	O5B-PA-O1A	-2.62	98.82	109.07
3	A	502	NAD	C5B-C4B-C3B	-2.57	105.56	115.18
3	C	502	NAD	C5B-C4B-C3B	-2.55	105.61	115.18
3	G	503	NAD	C5B-C4B-C3B	-2.55	105.64	115.18
3	A	502	NAD	PA-O5B-C5B	-2.53	106.86	121.68
3	A	502	NAD	PN-O5D-C5D	-2.52	106.92	121.68
3	E	503	NAD	O5D-PN-O1N	-2.51	99.24	109.07
3	B	502	NAD	O4B-C1B-C2B	-2.51	103.25	106.93
3	A	502	NAD	O4B-C1B-C2B	-2.51	103.25	106.93
3	F	503	NAD	O2N-PN-O5D	-2.51	96.08	107.75
3	D	502	NAD	C5B-C4B-C3B	-2.50	105.82	115.18
3	G	503	NAD	O5D-PN-O1N	-2.50	99.32	109.07
3	A	502	NAD	O5B-PA-O1A	-2.47	99.43	109.07
3	G	503	NAD	PA-O5B-C5B	-2.46	107.28	121.68
3	B	502	NAD	C5D-C4D-C3D	-2.45	105.98	115.18
3	C	502	NAD	PA-O5B-C5B	-2.45	107.34	121.68
3	H	503	NAD	O2N-PN-O5D	-2.44	96.39	107.75
3	G	503	NAD	O4B-C1B-C2B	-2.44	103.36	106.93
3	E	503	NAD	O5B-PA-O1A	-2.44	99.55	109.07
3	G	503	NAD	C3D-C2D-C1D	-2.42	97.33	100.98
3	D	502	NAD	O3B-C3B-C4B	-2.41	104.07	111.05
3	D	502	NAD	C1B-N9A-C4A	-2.41	122.41	126.64
3	C	502	NAD	PN-O5D-C5D	-2.40	107.62	121.68
3	D	502	NAD	O4B-C1B-C2B	-2.40	103.42	106.93
3	G	503	NAD	O2N-PN-O5D	-2.39	96.65	107.75
3	B	502	NAD	PA-O5B-C5B	-2.39	107.68	121.68
3	B	502	NAD	C5B-C4B-C3B	-2.38	106.27	115.18
3	F	503	NAD	O7N-C7N-C3N	2.36	122.46	119.63
3	B	502	NAD	O2N-PN-O5D	-2.35	96.82	107.75
3	B	502	NAD	O3B-C3B-C4B	-2.35	104.25	111.05
3	B	502	NAD	C1B-N9A-C4A	-2.35	122.51	126.64
3	E	503	NAD	C5B-C4B-C3B	-2.34	106.42	115.18
3	H	503	NAD	PA-O5B-C5B	-2.33	108.01	121.68
3	F	503	NAD	C5B-C4B-C3B	-2.32	106.48	115.18
3	D	502	NAD	O2N-PN-O5D	-2.29	97.10	107.75
3	G	503	NAD	O3B-C3B-C4B	-2.29	104.44	111.05

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C	502	NAD	O2N-PN-O5D	-2.29	97.13	107.75
3	E	503	NAD	PA-O5B-C5B	-2.27	108.35	121.68
3	D	502	NAD	PA-O5B-C5B	-2.27	108.36	121.68
3	H	503	NAD	PN-O5D-C5D	-2.27	108.39	121.68
3	F	503	NAD	PA-O5B-C5B	-2.27	108.39	121.68
3	A	502	NAD	O7N-C7N-C3N	2.27	122.34	119.63
3	C	502	NAD	C1B-N9A-C4A	-2.26	122.68	126.64
3	A	502	NAD	O2N-PN-O5D	-2.25	97.30	107.75
3	E	503	NAD	O2N-PN-O5D	-2.24	97.34	107.75
3	H	503	NAD	C5B-C4B-C3B	-2.23	106.81	115.18
3	F	503	NAD	PN-O5D-C5D	-2.21	108.70	121.68
3	F	503	NAD	O3B-C3B-C4B	-2.20	104.69	111.05
3	C	502	NAD	O4B-C1B-C2B	-2.20	103.71	106.93
3	E	503	NAD	C5D-C4D-C3D	-2.17	107.04	115.18
3	H	503	NAD	O7N-C7N-C3N	2.17	122.23	119.63
3	D	502	NAD	O7N-C7N-C3N	2.16	122.22	119.63
3	E	503	NAD	O3B-C3B-C4B	-2.13	104.89	111.05
3	C	502	NAD	O7N-C7N-C3N	2.12	122.16	119.63
3	F	503	NAD	C1B-N9A-C4A	-2.10	122.95	126.64
3	A	502	NAD	O3D-C3D-C4D	-2.09	105.00	111.05
3	A	502	NAD	C1B-N9A-C4A	-2.08	122.98	126.64
3	H	503	NAD	O3B-C3B-C4B	-2.06	105.08	111.05
3	F	503	NAD	O3D-C3D-C4D	-2.06	105.09	111.05
3	B	502	NAD	O3D-C3D-C4D	-2.06	105.10	111.05
3	A	502	NAD	O3B-C3B-C4B	-2.06	105.11	111.05
3	H	503	NAD	C5D-C4D-C3D	-2.05	107.49	115.18
3	H	503	NAD	C1B-N9A-C4A	-2.05	123.05	126.64
3	C	502	NAD	C5D-C4D-C3D	-2.04	107.54	115.18
3	E	503	NAD	O7N-C7N-C3N	2.04	122.07	119.63

There are no chirality outliers.

All (110) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	502	NAD	C5B-O5B-PA-O1A
3	A	502	NAD	O4B-C4B-C5B-O5B
3	A	502	NAD	O4D-C1D-N1N-C2N
3	A	502	NAD	O4D-C1D-N1N-C6N
3	A	502	NAD	C2D-C1D-N1N-C2N
3	A	502	NAD	C2D-C1D-N1N-C6N
3	B	502	NAD	C5B-O5B-PA-O1A
3	B	502	NAD	O4D-C1D-N1N-C2N

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Mol	Chain	Res	Type	Atoms
3	B	502	NAD	O4D-C1D-N1N-C6N
3	B	502	NAD	C2D-C1D-N1N-C2N
3	B	502	NAD	C2D-C1D-N1N-C6N
3	C	502	NAD	C5B-O5B-PA-O1A
3	C	502	NAD	O4D-C1D-N1N-C2N
3	C	502	NAD	O4D-C1D-N1N-C6N
3	C	502	NAD	C2D-C1D-N1N-C2N
3	C	502	NAD	C2D-C1D-N1N-C6N
3	D	502	NAD	C5D-O5D-PN-O3
3	D	502	NAD	O4D-C1D-N1N-C2N
3	D	502	NAD	O4D-C1D-N1N-C6N
3	D	502	NAD	C2D-C1D-N1N-C2N
3	D	502	NAD	C2D-C1D-N1N-C6N
3	E	503	NAD	C5B-O5B-PA-O1A
3	E	503	NAD	C5D-O5D-PN-O3
3	E	503	NAD	O4D-C1D-N1N-C2N
3	E	503	NAD	O4D-C1D-N1N-C6N
3	E	503	NAD	C2D-C1D-N1N-C2N
3	E	503	NAD	C2D-C1D-N1N-C6N
3	F	503	NAD	C5B-O5B-PA-O1A
3	F	503	NAD	O4D-C1D-N1N-C2N
3	F	503	NAD	O4D-C1D-N1N-C6N
3	F	503	NAD	C2D-C1D-N1N-C2N
3	F	503	NAD	C2D-C1D-N1N-C6N
3	G	503	NAD	O4D-C1D-N1N-C2N
3	G	503	NAD	O4D-C1D-N1N-C6N
3	G	503	NAD	C2D-C1D-N1N-C2N
3	G	503	NAD	C2D-C1D-N1N-C6N
3	H	503	NAD	C5B-O5B-PA-O1A
3	H	503	NAD	O4D-C1D-N1N-C2N
3	H	503	NAD	O4D-C1D-N1N-C6N
3	H	503	NAD	C2D-C1D-N1N-C2N
3	H	503	NAD	C2D-C1D-N1N-C6N
3	A	502	NAD	C3B-C4B-C5B-O5B
3	B	502	NAD	O4B-C4B-C5B-O5B
3	B	502	NAD	C3B-C4B-C5B-O5B
3	C	502	NAD	O4B-C4B-C5B-O5B
3	C	502	NAD	C3B-C4B-C5B-O5B
3	E	503	NAD	O4B-C4B-C5B-O5B
3	E	503	NAD	C3B-C4B-C5B-O5B
3	F	503	NAD	O4B-C4B-C5B-O5B
3	H	503	NAD	O4B-C4B-C5B-O5B

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Mol	Chain	Res	Type	Atoms
3	H	503	NAD	C3B-C4B-C5B-O5B
3	F	503	NAD	C3B-C4B-C5B-O5B
4	B	503	PG4	C6-C5-O3-C4
3	E	503	NAD	O4D-C4D-C5D-O5D
3	B	502	NAD	O4D-C4D-C5D-O5D
4	A	503	PG4	O4-C7-C8-O5
4	C	503	PG4	O4-C7-C8-O5
4	E	501	PG4	O1-C1-C2-O2
4	E	501	PG4	O4-C7-C8-O5
4	H	501	PG4	O4-C7-C8-O5
4	D	503	PG4	O2-C3-C4-O3
4	A	503	PG4	O1-C1-C2-O2
4	C	503	PG4	O1-C1-C2-O2
4	H	501	PG4	O1-C1-C2-O2
4	B	503	PG4	C4-C3-O2-C2
4	C	503	PG4	O3-C5-C6-O4
4	E	501	PG4	O3-C5-C6-O4
4	A	503	PG4	O3-C5-C6-O4
4	H	501	PG4	O3-C5-C6-O4
3	A	502	NAD	C5B-O5B-PA-O3
3	B	502	NAD	C5D-O5D-PN-O3
3	G	503	NAD	C5D-O5D-PN-O3
3	D	502	NAD	O4B-C4B-C5B-O5B
4	D	503	PG4	C3-C4-O3-C5
3	A	502	NAD	C5B-O5B-PA-O2A
3	B	502	NAD	C5B-O5B-PA-O2A
3	C	502	NAD	C5B-O5B-PA-O2A
3	E	503	NAD	C5B-O5B-PA-O2A
3	F	503	NAD	C5B-O5B-PA-O2A
3	H	503	NAD	C5B-O5B-PA-O2A
4	F	501	PG4	O1-C1-C2-O2
3	D	502	NAD	O4D-C4D-C5D-O5D
4	B	503	PG4	O2-C3-C4-O3
4	F	501	PG4	C6-C5-O3-C4
3	G	503	NAD	O4B-C4B-C5B-O5B
4	C	503	PG4	C8-C7-O4-C6
3	D	502	NAD	C3B-C4B-C5B-O5B
4	H	501	PG4	C8-C7-O4-C6
4	A	503	PG4	C8-C7-O4-C6
4	E	501	PG4	C8-C7-O4-C6
3	E	503	NAD	C3D-C4D-C5D-O5D
3	G	503	NAD	O4D-C4D-C5D-O5D

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Mol	Chain	Res	Type	Atoms
4	B	503	PG4	O3-C5-C6-O4
4	D	503	PG4	C4-C3-O2-C2
3	B	502	NAD	C5B-O5B-PA-O3
3	C	502	NAD	C5B-O5B-PA-O3
3	E	503	NAD	C5B-O5B-PA-O3
3	F	503	NAD	C5B-O5B-PA-O3
3	H	503	NAD	C5B-O5B-PA-O3
4	G	501	PG4	O2-C3-C4-O3
3	B	502	NAD	C3D-C4D-C5D-O5D
3	B	502	NAD	PA-O3-PN-O1N
2	B	501	NOS	C3'-C4'-C5'-O5'
4	F	501	PG4	O2-C3-C4-O3
3	D	502	NAD	C3D-C4D-C5D-O5D
3	G	503	NAD	C3B-C4B-C5B-O5B
4	G	501	PG4	O3-C5-C6-O4
4	F	501	PG4	O3-C5-C6-O4
4	D	503	PG4	O3-C5-C6-O4
3	G	503	NAD	C2N-C3N-C7N-N7N

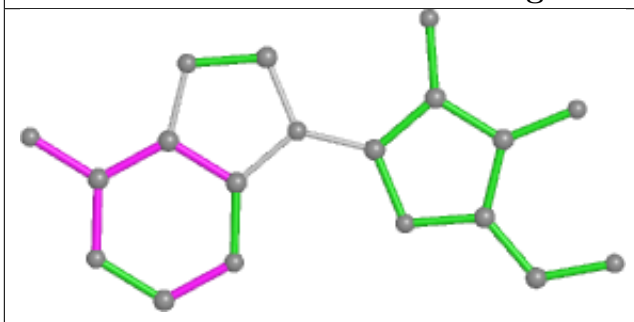
There are no ring outliers.

19 monomers are involved in 53 short contacts:

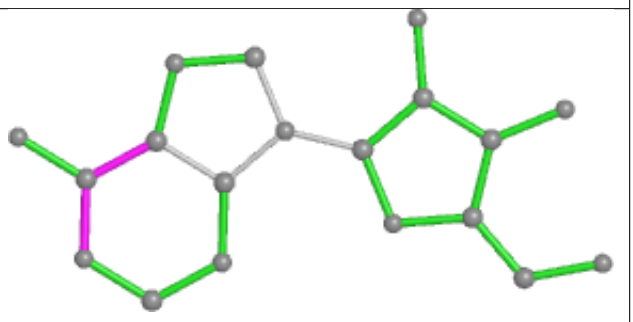
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	502	NAD	3	0
3	E	503	NAD	2	0
3	H	503	NAD	4	0
3	C	502	NAD	3	0
3	F	503	NAD	2	0
2	C	501	NOS	3	0
4	F	501	PG4	4	0
3	B	502	NAD	2	0
2	B	501	NOS	1	0
4	D	503	PG4	4	0
2	H	502	NOS	3	0
2	D	501	NOS	2	0
3	D	502	NAD	3	0
2	F	502	NOS	3	0
2	G	502	NOS	7	0
2	A	501	NOS	3	0
4	A	503	PG4	1	0
3	G	503	NAD	6	0
4	B	503	PG4	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.

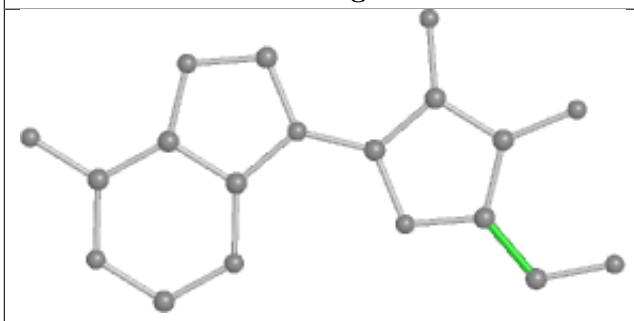
Ligand NOS E 502



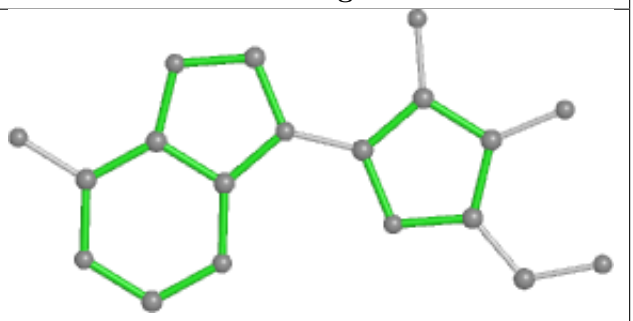
Bond lengths



Bond angles

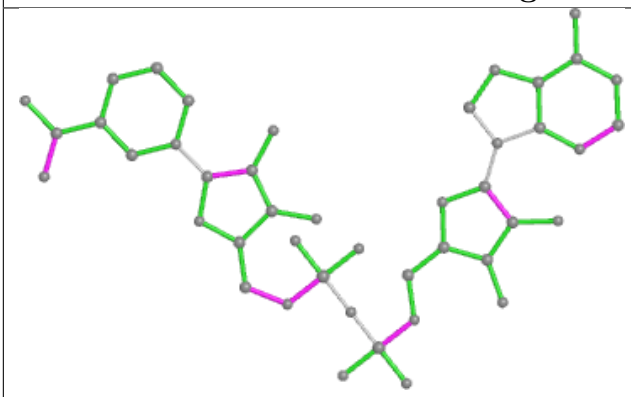


Torsions

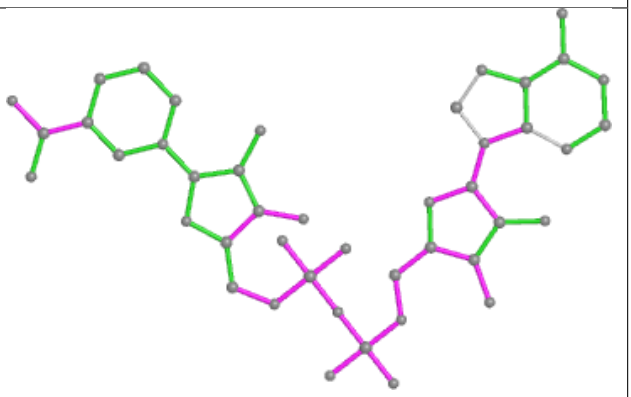


Rings

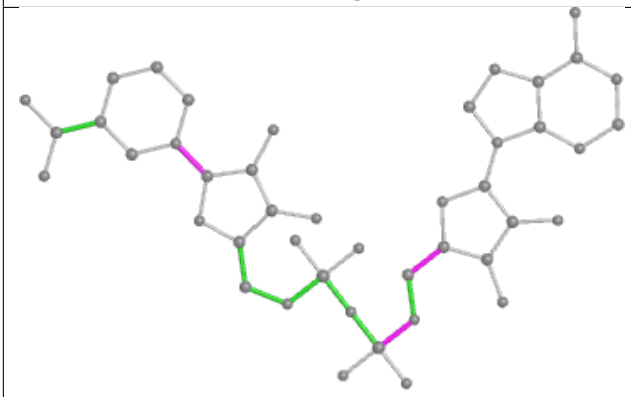
Ligand NAD A 502



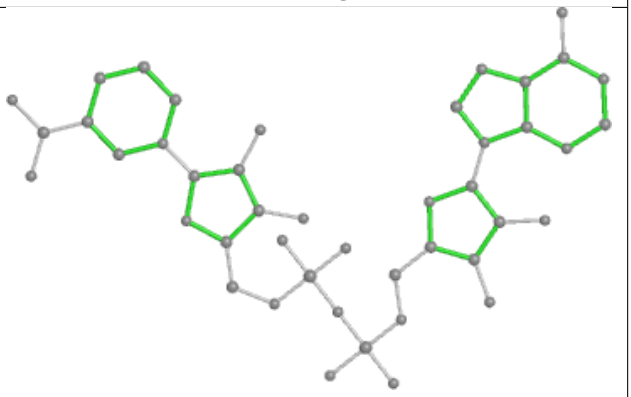
Bond lengths



Bond angles

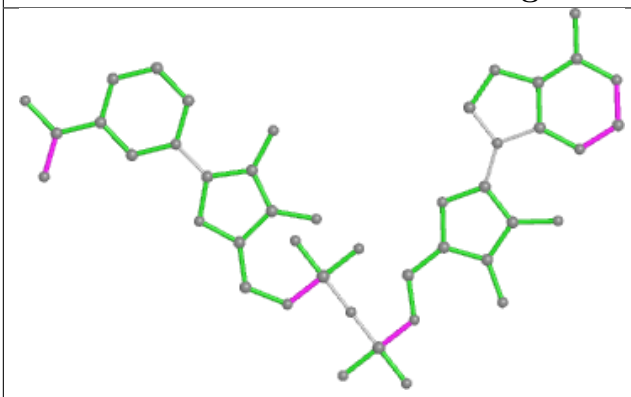


Torsions

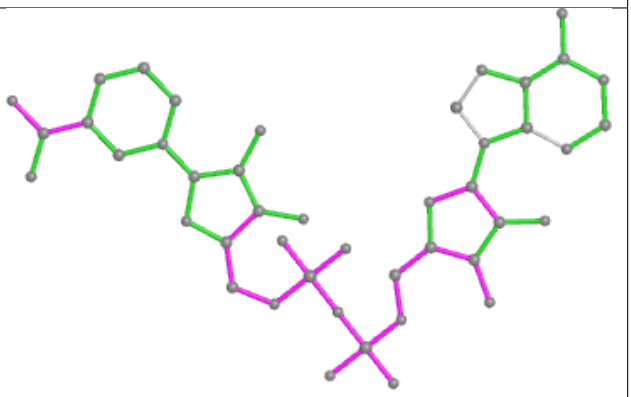


Rings

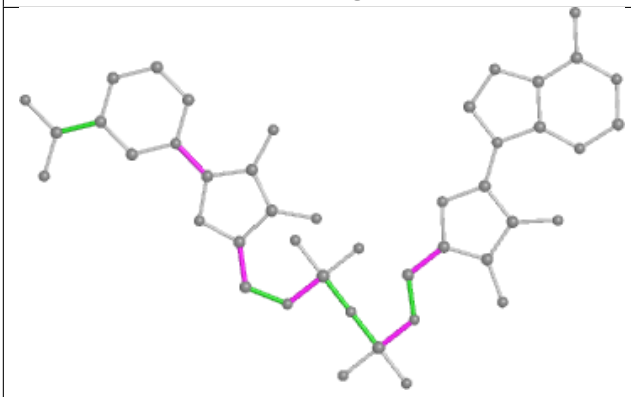
Ligand NAD E 503



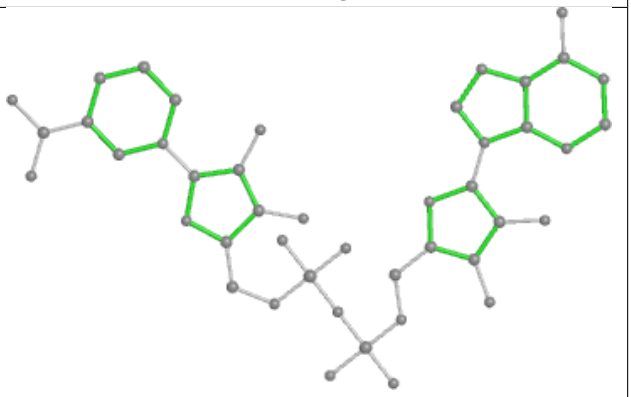
Bond lengths



Bond angles

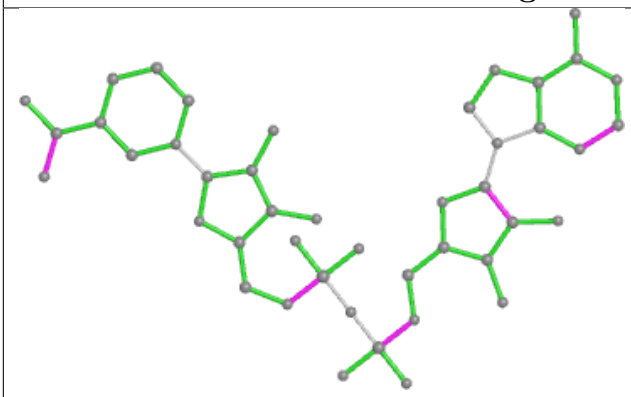


Torsions



Rings

Ligand NAD H 503



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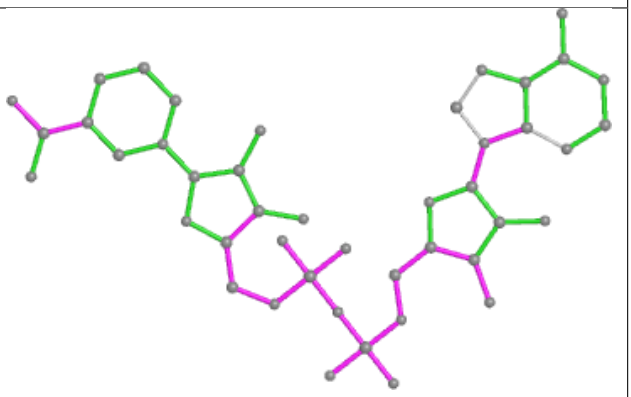
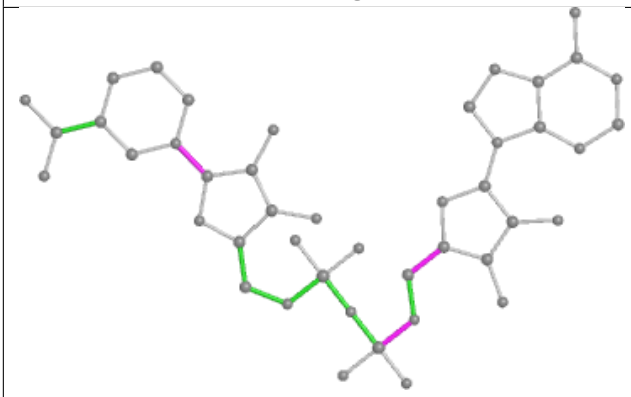


Bond angles



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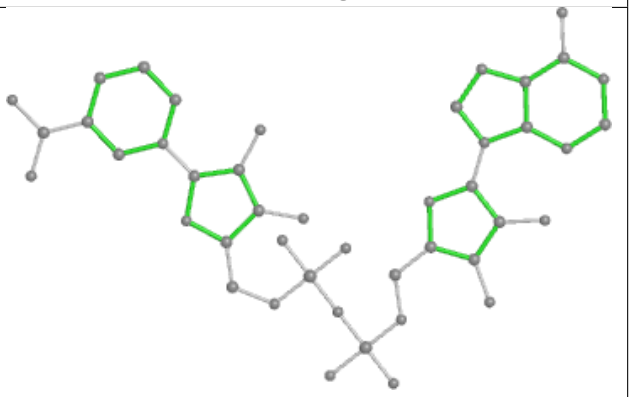
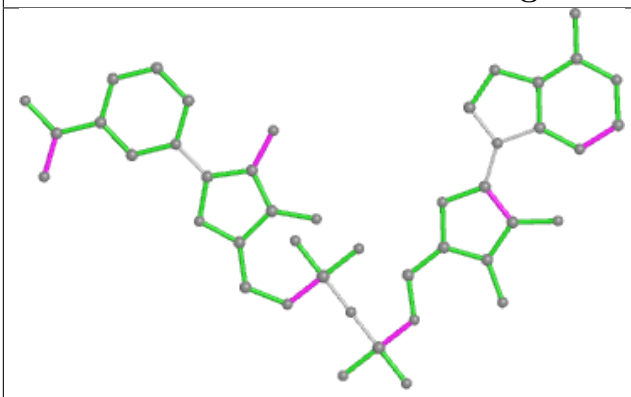


Rings

Ligand NAD C 502



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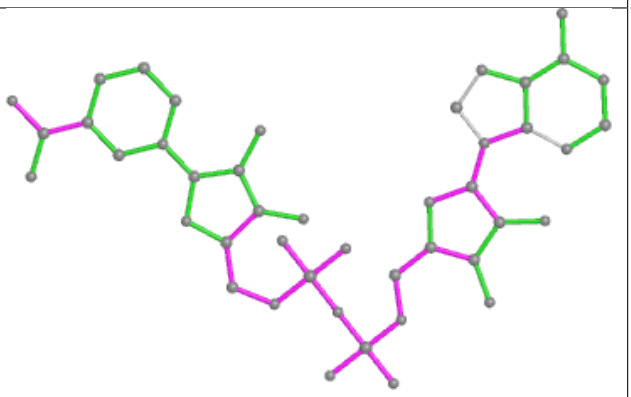
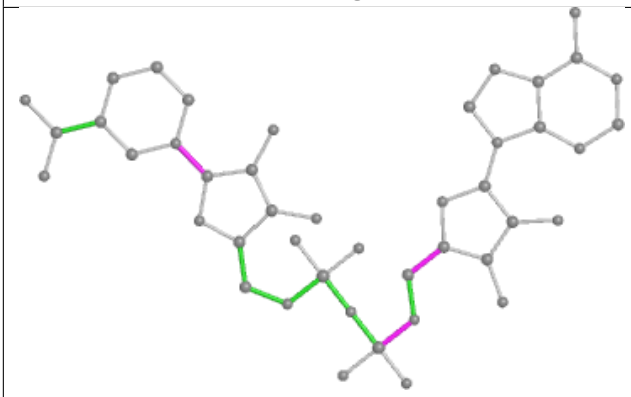


Bond angles



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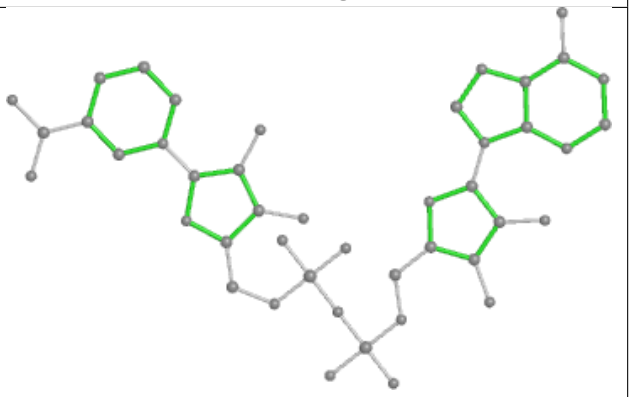
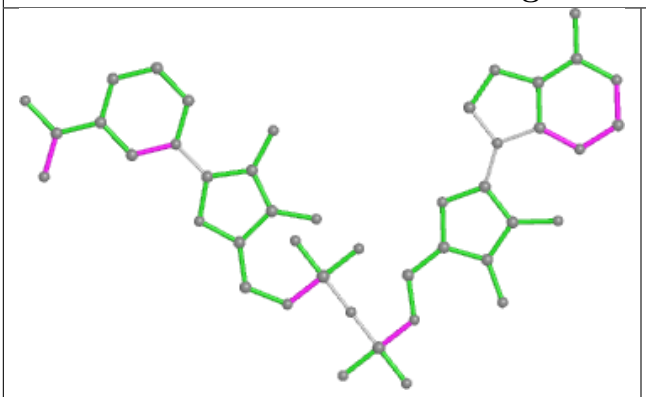
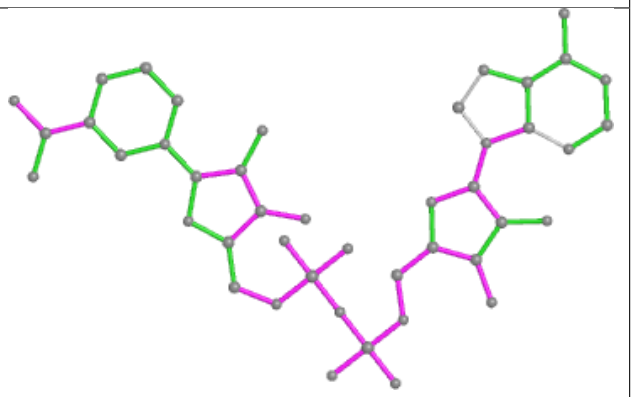


Rings

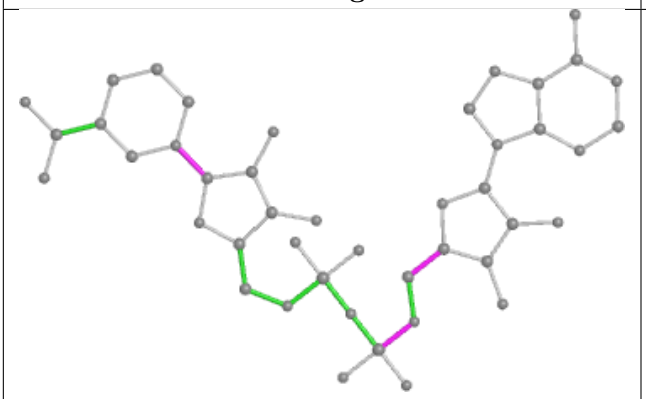
Ligand NAD F 503



Bond lengths



Bond angles



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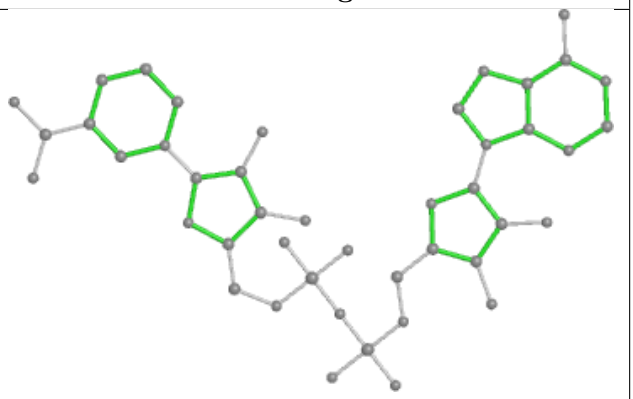
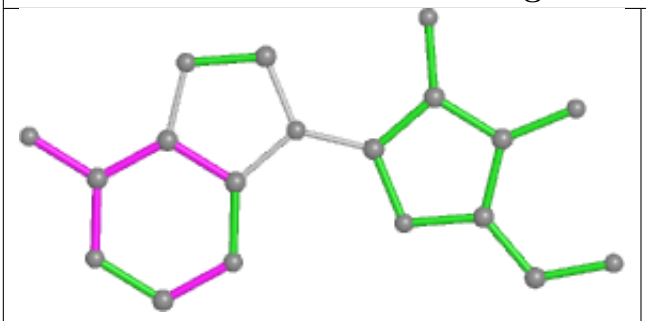


Rings

Ligand NOS C 501



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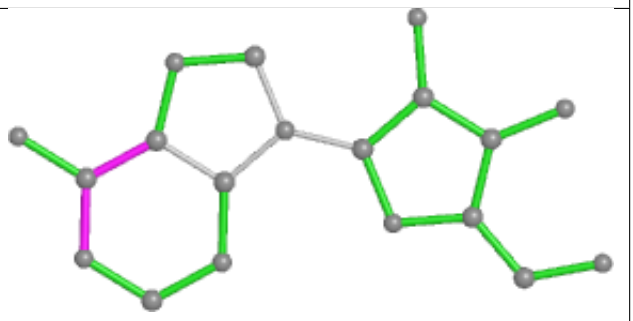
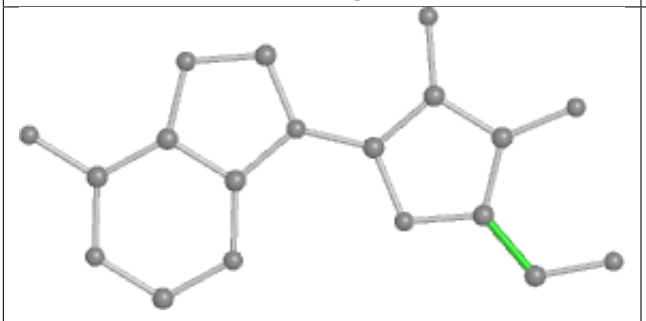


Bond angles



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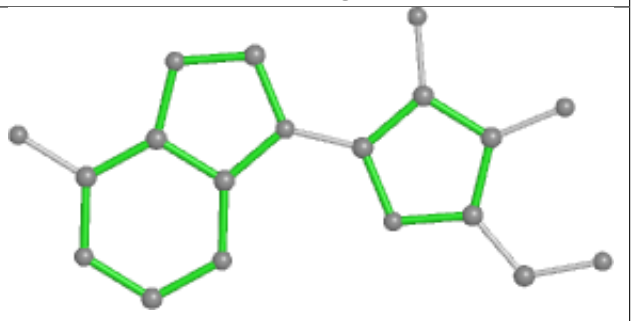
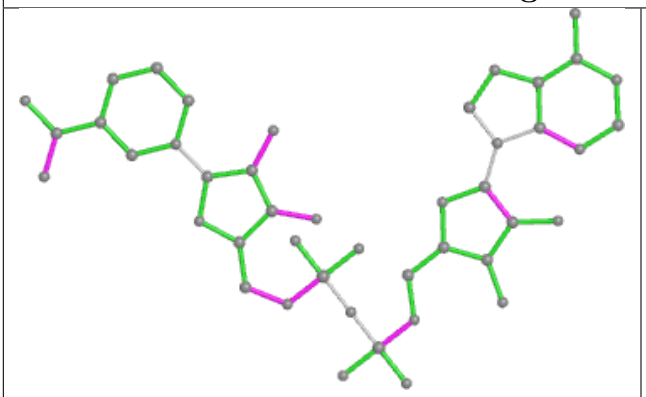
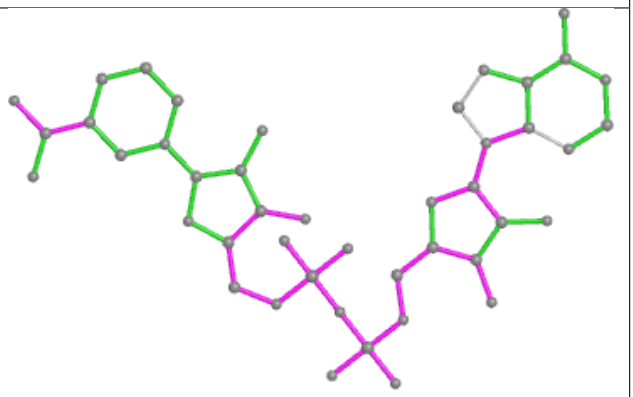


Rings

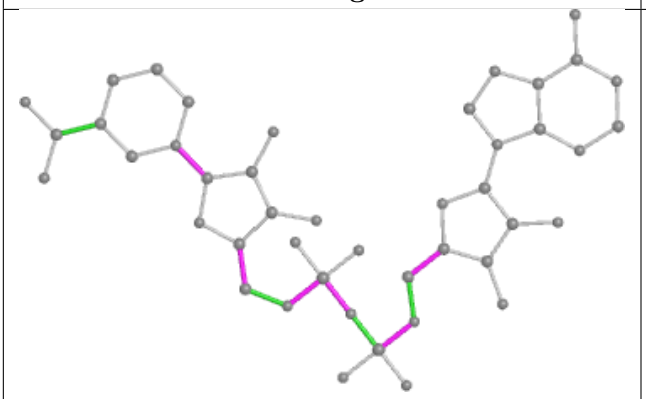
Ligand NAD B 502



Bond lengths



Bond angles



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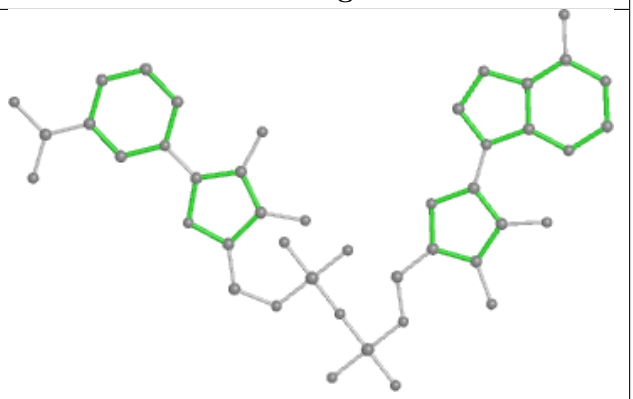
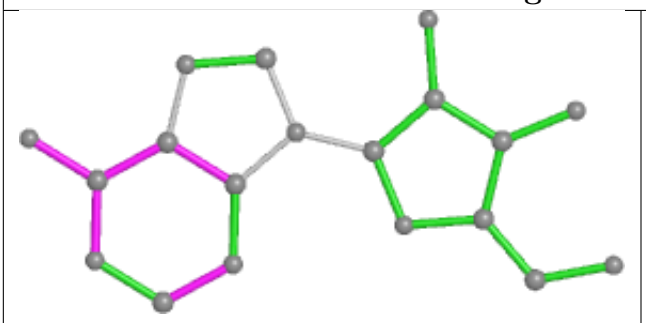


Rings

Ligand NOS B 501



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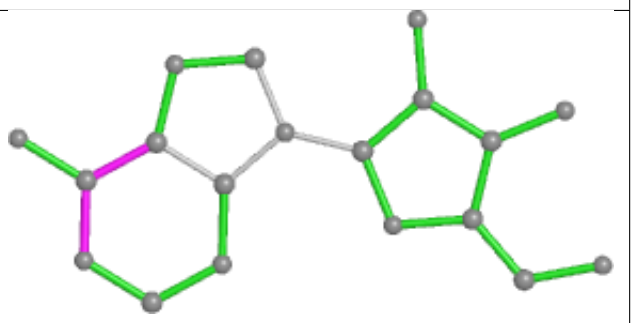
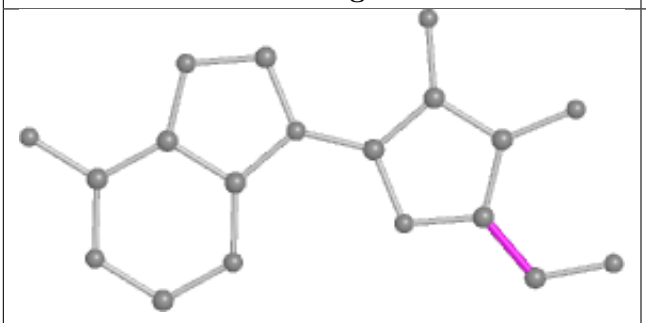


Bond angles



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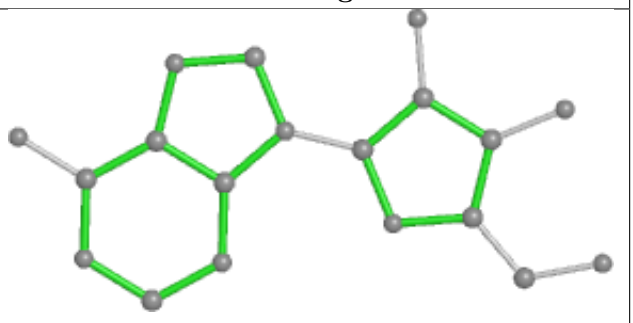
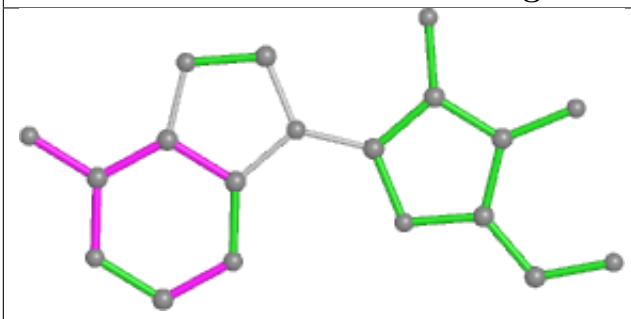


Rings

Ligand NOS H 502



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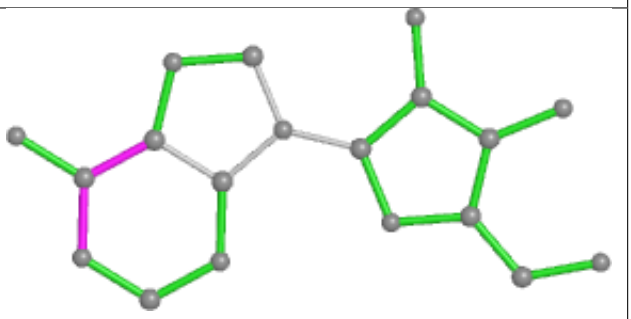

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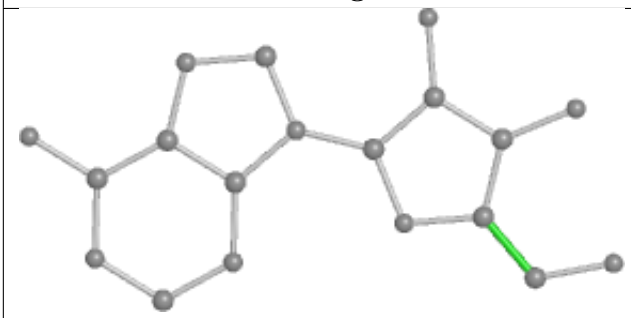
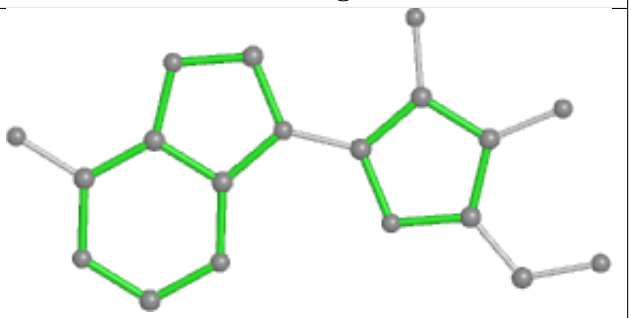
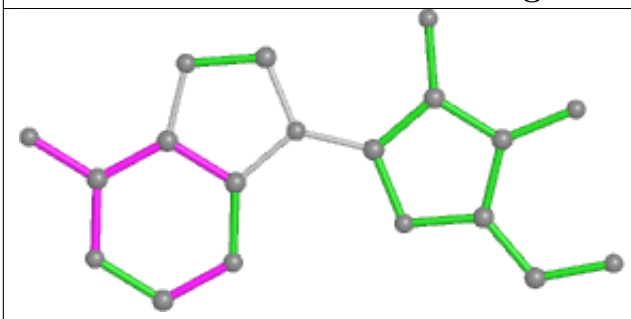


Torsions

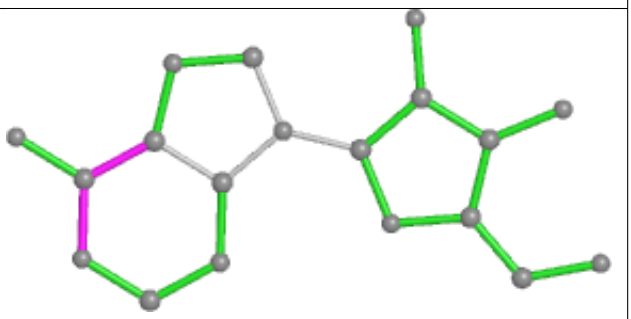


Rings

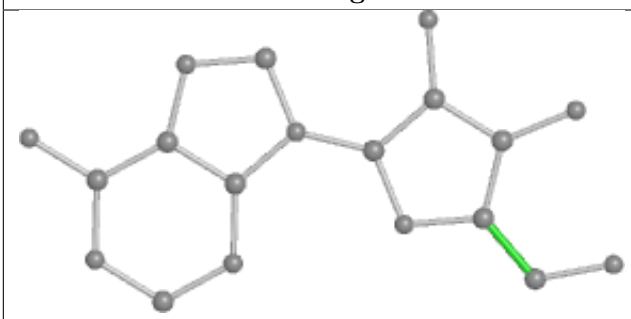
Ligand NOS D 501



Bond lengths



Bond angles



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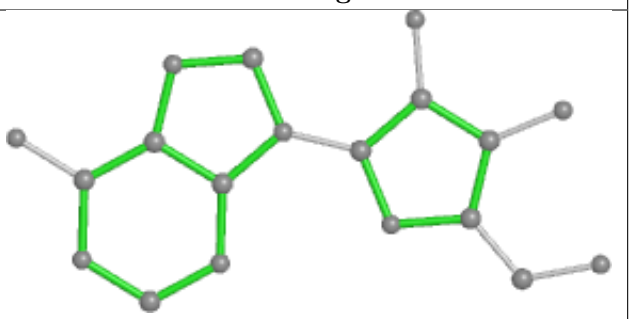
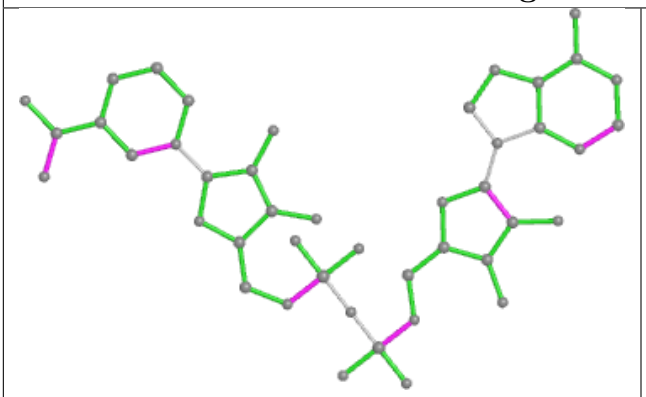
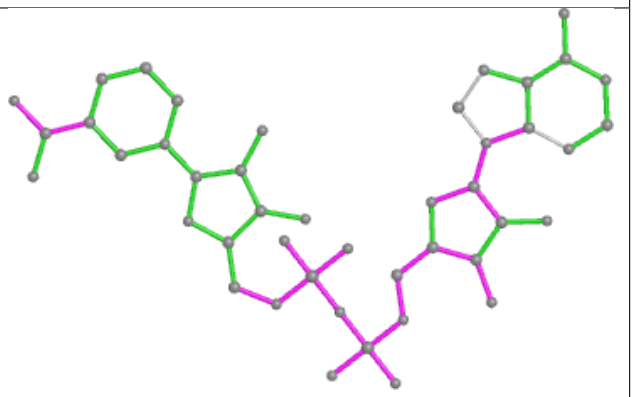


Rings

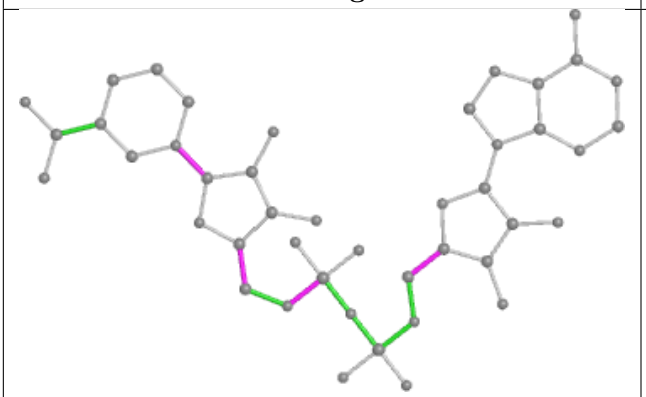
Ligand NAD D 502



Bond lengths



Bond angles



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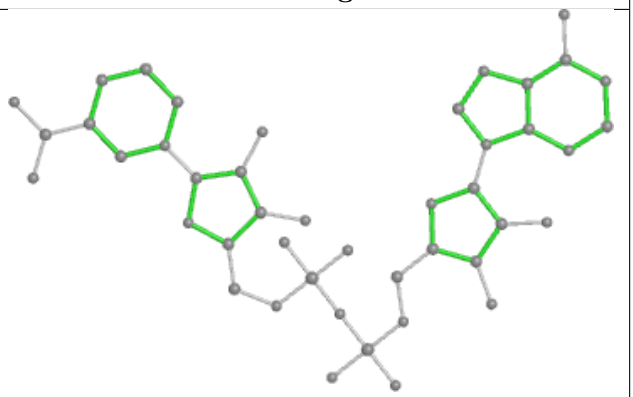
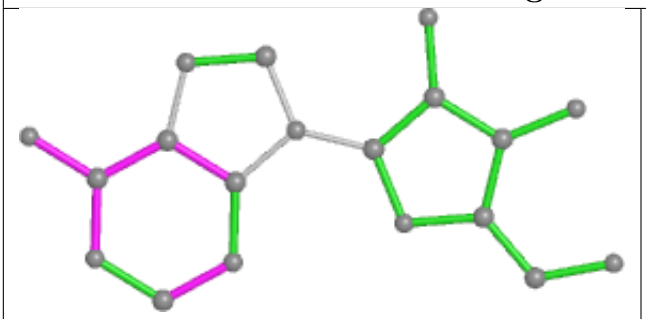
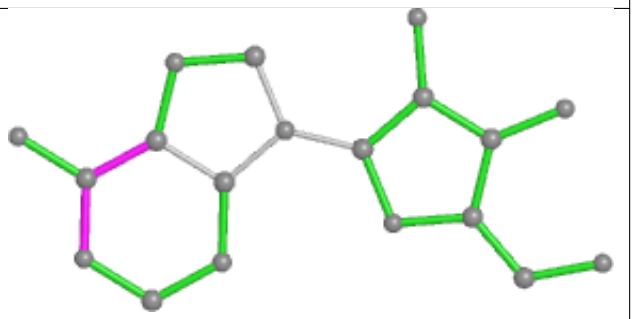


Rings

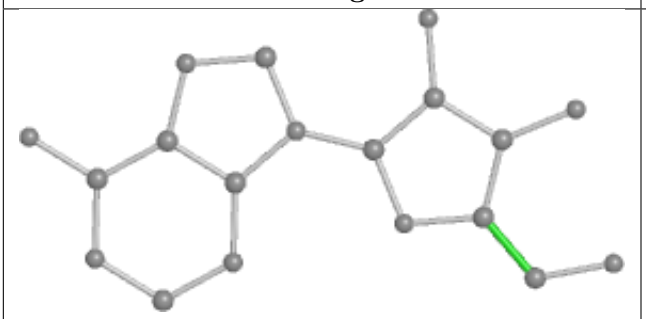
Ligand NOS F 502



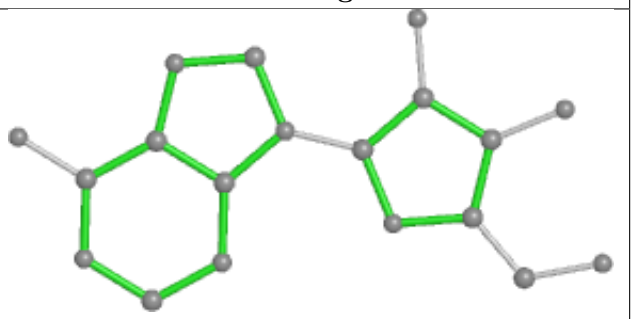
Bond lengths



Bond angles

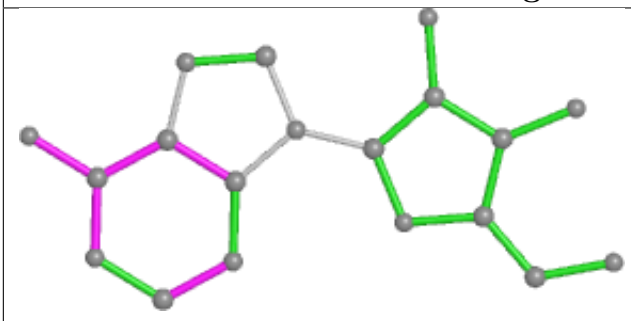


Torsions

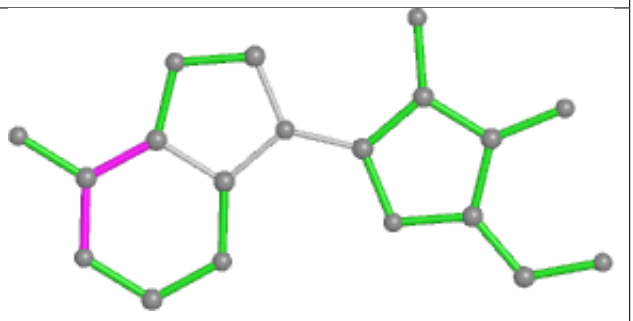


Rings

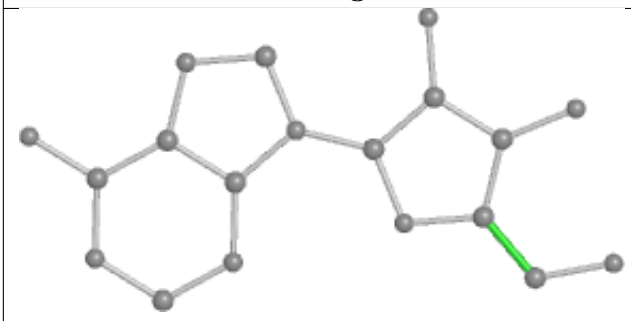
Ligand NOS G 502



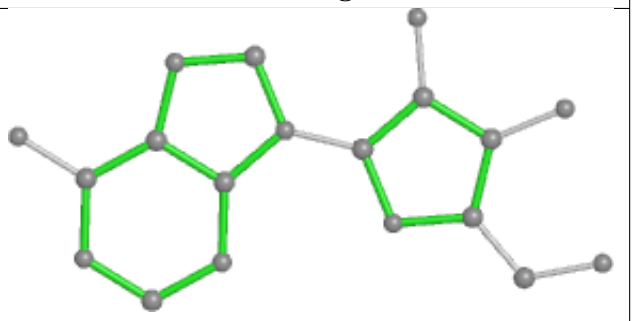
Bond lengths



Bond angles

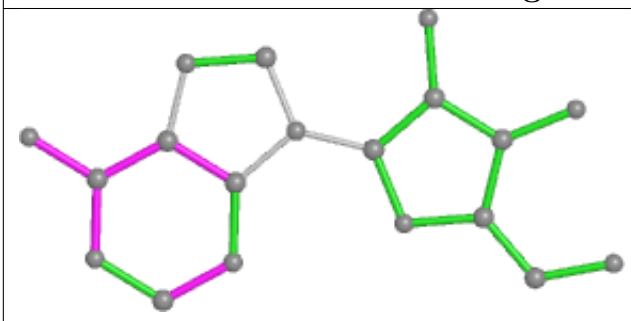


Torsions

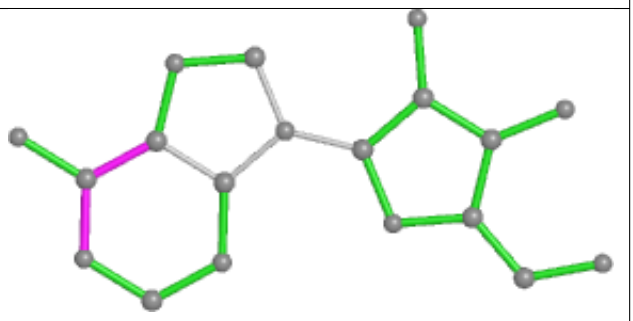


Rings

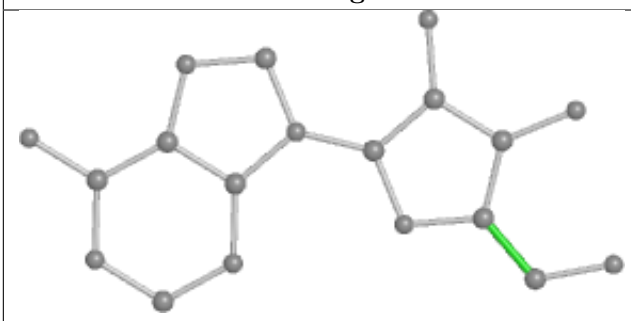
Ligand NOS A 501



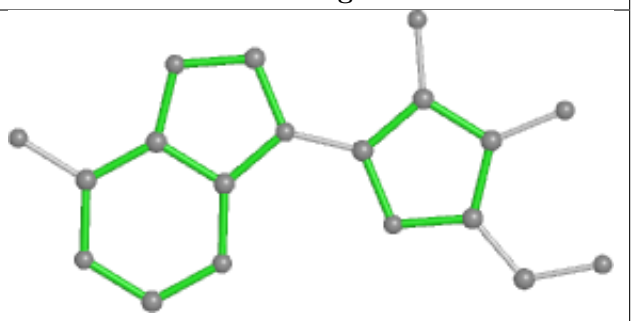
Bond lengths



Bond angles

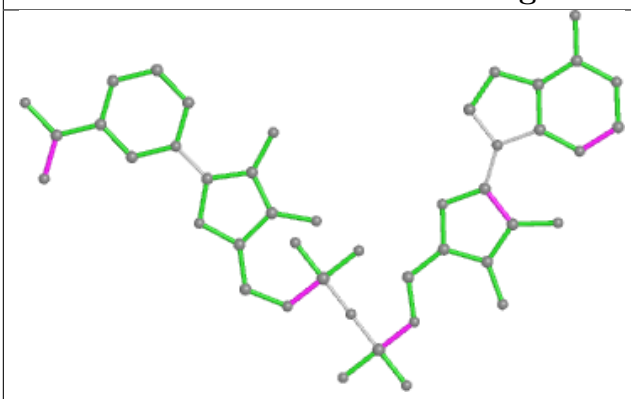


Torsions

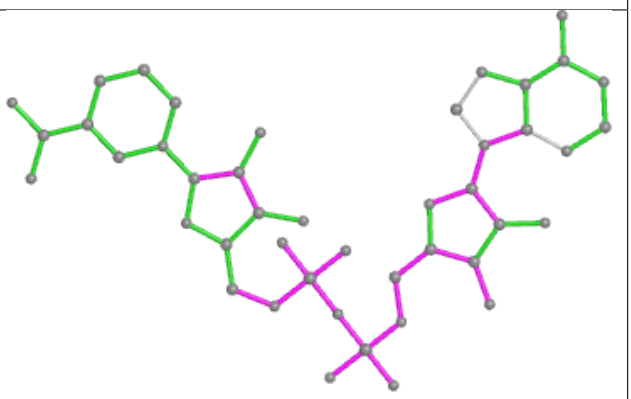


Rings

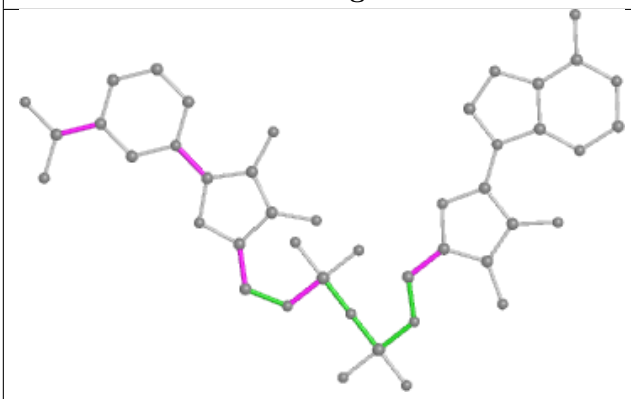
Ligand NAD G 503



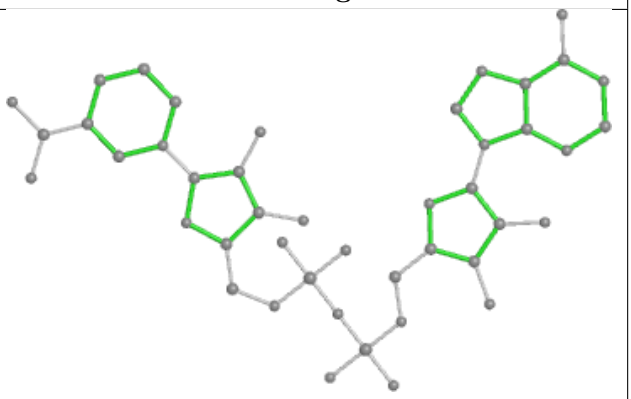
Bond lengths



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

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} 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	411/435 (94%)	0.22	17 (4%)	37	41	31, 54, 80, 98	0
1	B	411/435 (94%)	0.34	14 (3%)	45	49	33, 57, 84, 94	0
1	C	411/435 (94%)	0.51	28 (6%)	17	18	31, 66, 98, 111	0
1	D	411/435 (94%)	0.38	16 (3%)	39	43	32, 61, 98, 130	0
1	E	411/435 (94%)	0.32	11 (2%)	54	58	33, 62, 89, 102	0
1	F	411/435 (94%)	0.55	19 (4%)	32	35	36, 73, 100, 114	0
1	G	411/435 (94%)	0.97	73 (17%)	1	1	40, 92, 135, 146	0
1	H	411/435 (94%)	0.71	52 (12%)	3	3	42, 82, 118, 125	0
All	All	3288/3480 (94%)	0.50	230 (6%)	16	17	31, 67, 113, 146	0

All (230) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	G	115	TYR	6.2
1	G	133	LEU	6.0
1	G	164	GLY	5.5
1	D	431	TRP	5.4
1	H	60	PHE	5.3
1	G	90	VAL	4.9
1	G	150	LEU	4.9
1	G	111	GLY	4.8
1	C	428	LEU	4.6
1	H	139	ILE	4.5
1	H	141	ILE	4.4
1	G	156	THR	4.4
1	H	132	VAL	4.3
1	G	116	ALA	4.2
1	G	108	VAL	4.2
1	H	140	ILE	4.2

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Mol	Chain	Res	Type	RSRZ
1	G	165	GLY	4.1
1	G	149	PHE	4.1
1	G	174	ILE	4.1
1	G	129	LEU	4.0
1	H	187	PHE	4.0
1	G	130	ASN	3.9
1	G	91	ILE	3.9
1	D	130	ASN	3.9
1	C	162	ILE	3.8
1	G	162	ILE	3.8
1	C	417	ILE	3.8
1	H	241	ALA	3.7
1	H	23	ASN	3.6
1	G	125	TYR	3.6
1	H	92	THR	3.6
1	G	205	TYR	3.6
1	G	62	GLY	3.6
1	G	84	GLU	3.6
1	G	140	ILE	3.6
1	G	107	CYS	3.6
1	G	59	PRO	3.5
1	G	104	ALA	3.5
1	C	239	GLY	3.4
1	H	117	TRP	3.4
1	G	56	ASN	3.4
1	H	125	TYR	3.3
1	G	57	ASP	3.3
1	H	323	LEU	3.3
1	G	431	TRP	3.3
1	G	60	PHE	3.3
1	G	377	ALA	3.3
1	F	432	LYS	3.2
1	C	140	ILE	3.2
1	E	296	MET	3.2
1	H	296	MET	3.2
1	C	249	ALA	3.1
1	D	156	THR	3.1
1	B	130	ASN	3.1
1	D	23	ASN	3.1
1	C	431	TRP	3.1
1	H	22	SER	3.1
1	H	245	ALA	3.1

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Mol	Chain	Res	Type	RSRZ
1	G	63	LEU	3.0
1	G	342	LEU	3.0
1	C	246	GLY	3.0
1	F	208	GLY	3.0
1	G	119	GLY	3.0
1	B	137	PRO	3.0
1	F	148	ILE	3.0
1	H	115	TYR	3.0
1	A	244	ALA	3.0
1	G	176	LEU	3.0
1	F	249	ALA	2.9
1	D	155	ARG	2.9
1	H	392	ASN	2.9
1	E	164	GLY	2.9
1	G	172	GLY	2.9
1	A	360	CYS	2.8
1	A	216	ILE	2.8
1	D	266	MET	2.8
1	F	247	HIS	2.8
1	A	248	GLY	2.8
1	C	244	ALA	2.8
1	G	64	THR	2.8
1	H	244	ALA	2.8
1	G	112	MET	2.8
1	G	347	ILE	2.8
1	H	121	THR	2.8
1	H	428	LEU	2.8
1	G	68	ALA	2.8
1	H	62	GLY	2.8
1	C	245	ALA	2.7
1	H	24	VAL	2.7
1	H	246	GLY	2.7
1	F	245	ALA	2.7
1	G	126	TYR	2.7
1	D	164	GLY	2.7
1	H	243	ARG	2.7
1	H	129	LEU	2.7
1	C	248	GLY	2.7
1	F	248	GLY	2.7
1	D	90	VAL	2.6
1	G	428	LEU	2.6
1	H	395	TYR	2.6

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Mol	Chain	Res	Type	RSRZ
1	H	266	MET	2.6
1	E	66	GLY	2.6
1	H	249	ALA	2.6
1	D	249	ALA	2.6
1	F	176	LEU	2.6
1	H	242	SER	2.6
1	H	166	CYS	2.6
1	G	427	TYR	2.6
1	G	147	LEU	2.5
1	G	50	ILE	2.5
1	A	214	GLY	2.5
1	C	182	GLU	2.5
1	G	161	LYS	2.5
1	D	428	LEU	2.5
1	C	153	THR	2.5
1	A	245	ALA	2.5
1	C	90	VAL	2.5
1	G	143	ASP	2.5
1	A	246	GLY	2.5
1	F	111	GLY	2.5
1	F	242	SER	2.5
1	G	65	ILE	2.5
1	G	152	HIS	2.5
1	H	90	VAL	2.5
1	G	142	ASP	2.4
1	C	145	ALA	2.4
1	C	141	ILE	2.4
1	G	151	ILE	2.4
1	H	142	ASP	2.4
1	H	145	ALA	2.4
1	A	22	SER	2.4
1	C	144	GLY	2.4
1	C	241	ALA	2.4
1	H	105	ALA	2.4
1	H	251	VAL	2.4
1	G	301	LEU	2.4
1	C	240	VAL	2.4
1	E	268	GLY	2.4
1	G	246	GLY	2.4
1	E	25	LYS	2.4
1	C	247	HIS	2.4
1	E	162	ILE	2.4

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Mol	Chain	Res	Type	RSRZ
1	E	207	THR	2.4
1	G	388	GLY	2.3
1	G	404	LYS	2.3
1	B	421	SER	2.3
1	F	140	ILE	2.3
1	B	245	ALA	2.3
1	G	242	SER	2.3
1	C	420	LEU	2.3
1	F	151	ILE	2.3
1	H	429	SER	2.3
1	H	391	GLU	2.3
1	F	241	ALA	2.3
1	G	208	GLY	2.3
1	G	390	LEU	2.3
1	C	419	GLU	2.3
1	D	238	ARG	2.3
1	F	246	GLY	2.3
1	G	153	THR	2.3
1	G	155	ARG	2.3
1	H	394	VAL	2.3
1	B	248	GLY	2.3
1	F	91	ILE	2.3
1	H	137	PRO	2.2
1	G	86	GLY	2.2
1	A	242	SER	2.2
1	G	138	ASP	2.2
1	C	139	ILE	2.2
1	F	105	ALA	2.2
1	G	113	GLU	2.2
1	B	148	ILE	2.2
1	F	224	ALA	2.2
1	G	389	LYS	2.2
1	G	295	ARG	2.2
1	G	127	GLU	2.2
1	H	113	GLU	2.2
1	G	266	MET	2.2
1	H	247	HIS	2.2
1	F	222	LEU	2.2
1	G	323	LEU	2.2
1	H	185	LEU	2.2
1	C	132	VAL	2.2
1	A	184	ALA	2.2

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Mol	Chain	Res	Type	RSRZ
1	B	158	LEU	2.2
1	D	390	LEU	2.2
1	H	136	ASN	2.2
1	B	247	HIS	2.2
1	G	24	VAL	2.2
1	E	249	ALA	2.2
1	A	243	ARG	2.2
1	G	429	SER	2.2
1	H	103	VAL	2.2
1	A	161	LYS	2.1
1	A	249	ALA	2.1
1	D	268	GLY	2.1
1	H	248	GLY	2.1
1	B	168	GLU	2.1
1	E	241	ALA	2.1
1	D	140	ILE	2.1
1	E	242	SER	2.1
1	H	163	MET	2.1
1	B	126	TYR	2.1
1	A	223	ILE	2.1
1	F	383	ILE	2.1
1	C	150	LEU	2.1
1	A	419	GLU	2.1
1	C	430	ASP	2.1
1	D	432	LYS	2.1
1	G	426	LYS	2.1
1	C	268	GLY	2.1
1	B	224	ALA	2.1
1	C	251	VAL	2.1
1	G	206	GLY	2.1
1	A	113	GLU	2.1
1	G	207	THR	2.1
1	D	82	LEU	2.1
1	G	23	ASN	2.1
1	H	120	GLU	2.1
1	A	218	THR	2.0
1	H	162	ILE	2.0
1	B	237	GLY	2.0
1	H	93	GLY	2.0
1	E	387	LYS	2.0
1	B	325	GLU	2.0
1	H	240	VAL	2.0

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Mol	Chain	Res	Type	RSRZ
1	B	361	ALA	2.0
1	H	239	GLY	2.0
1	G	26	ASP	2.0
1	H	188	PRO	2.0

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, 95^{th} 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
4	PG4	G	501	13/13	0.65	0.34	87,95,121,123	0
4	PG4	F	501	13/13	0.72	0.35	73,83,89,94	0
4	PG4	B	503	13/13	0.74	0.35	75,88,115,116	0
4	PG4	H	501	13/13	0.75	0.28	70,82,94,97	0
4	PG4	D	503	13/13	0.76	0.33	80,84,113,115	0
4	PG4	C	503	13/13	0.80	0.27	77,81,98,99	0
2	NOS	G	502	19/19	0.81	0.30	89,113,130,134	0
4	PG4	A	503	13/13	0.81	0.29	60,66,81,82	0
4	PG4	E	501	13/13	0.84	0.25	53,59,68,69	0
3	NAD	H	503	44/44	0.90	0.23	56,75,93,106	0
2	NOS	F	502	19/19	0.92	0.20	65,70,88,89	0
2	NOS	H	502	19/19	0.93	0.18	61,71,87,90	0
2	NOS	A	501	19/19	0.94	0.20	37,46,67,74	0
2	NOS	B	501	19/19	0.94	0.22	37,45,68,70	0
2	NOS	D	501	19/19	0.94	0.22	54,60,67,68	0
2	NOS	E	502	19/19	0.94	0.21	41,54,71,73	0
3	NAD	E	503	44/44	0.95	0.15	38,46,51,57	0
3	NAD	F	503	44/44	0.95	0.19	42,56,64,68	0
3	NAD	G	503	44/44	0.95	0.16	46,65,84,86	0

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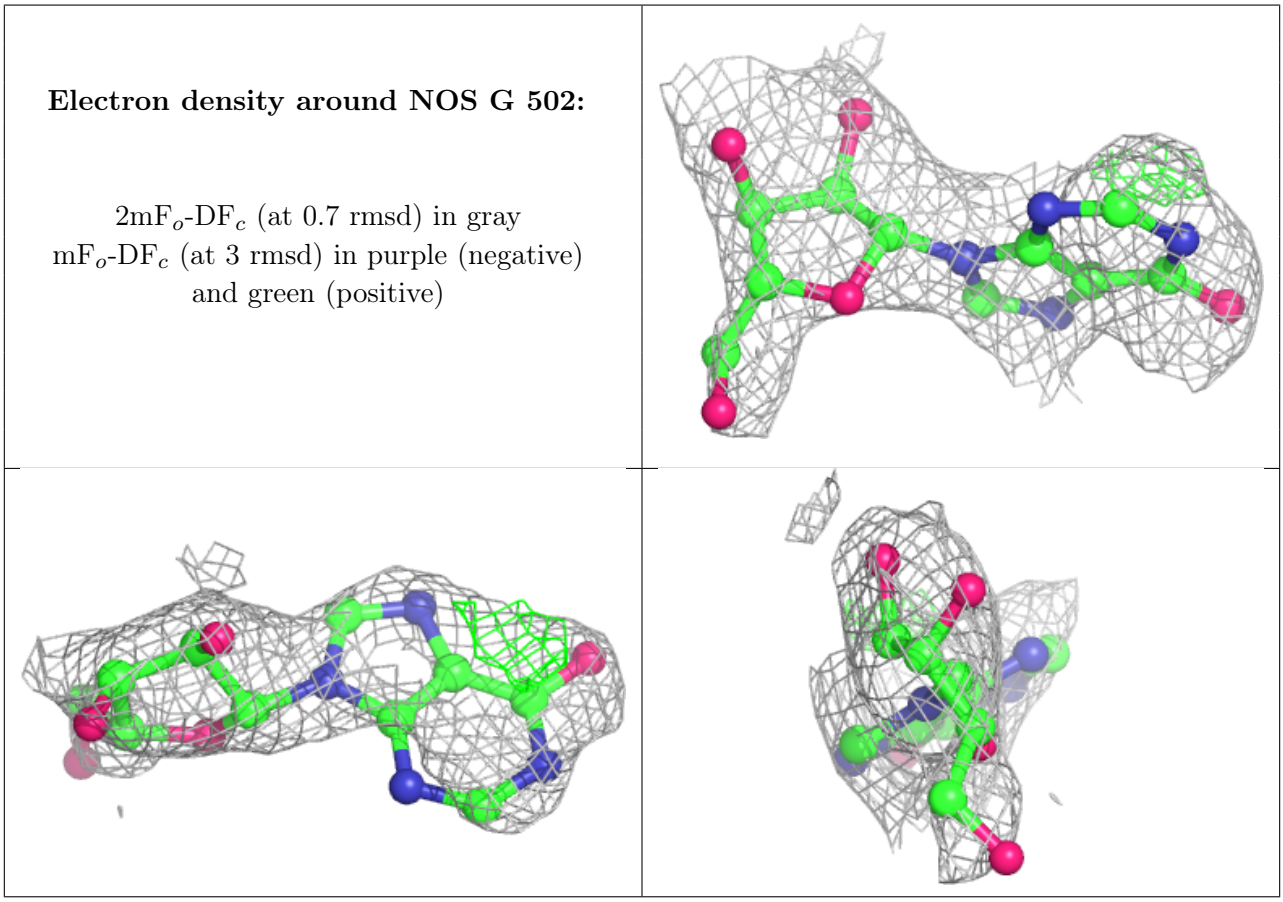
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	NOS	C	501	19/19	0.95	0.23	50,57,85,87	0
3	NAD	C	502	44/44	0.95	0.18	48,55,61,67	0
3	NAD	D	502	44/44	0.95	0.14	36,50,57,61	0
3	NAD	A	502	44/44	0.96	0.15	28,45,51,58	0
3	NAD	B	502	44/44	0.97	0.16	43,54,62,66	0

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.

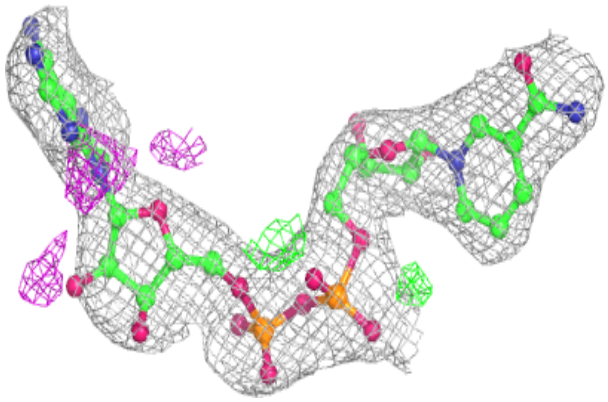
Electron density around NOS G 502:

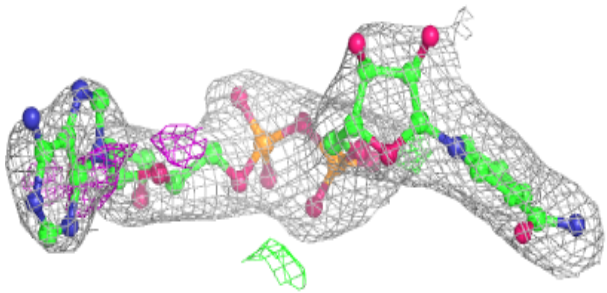
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

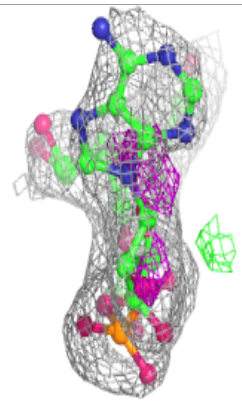


Electron density around NAD H 503:

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

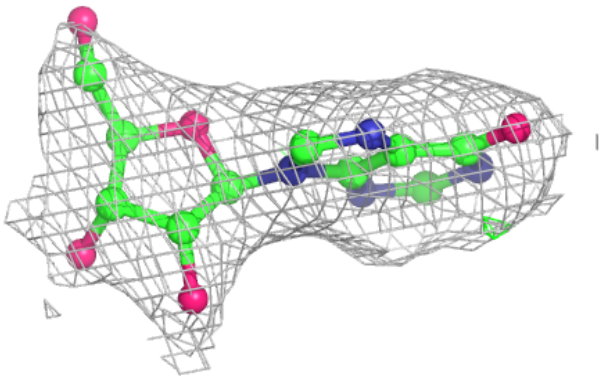


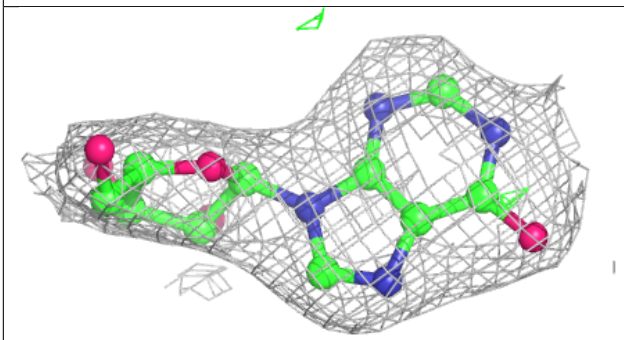


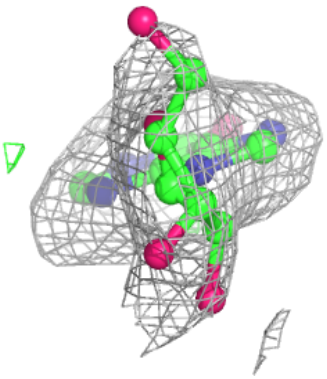


Electron density around NOS F 502:

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

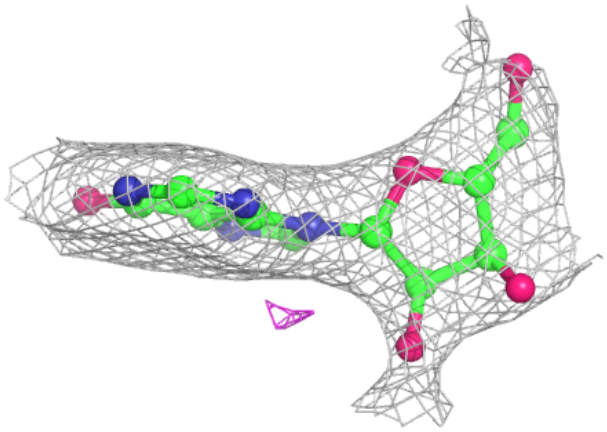


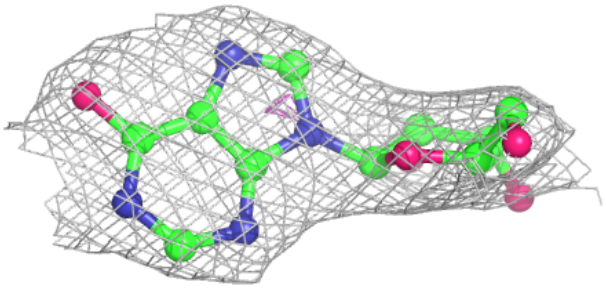


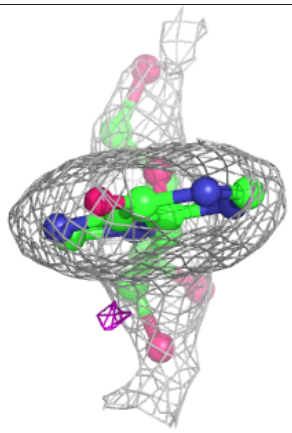


Electron density around NOS H 502:

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

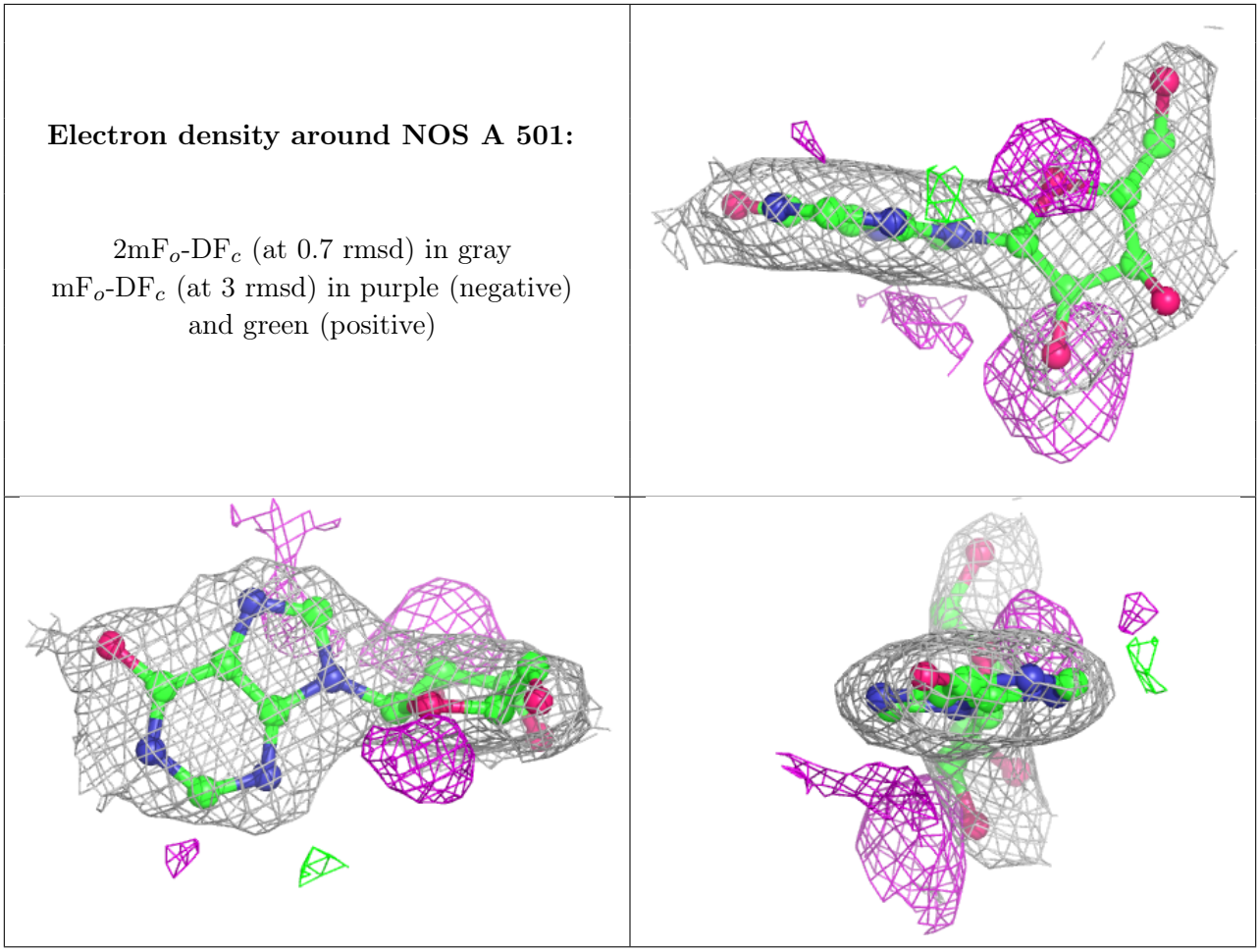






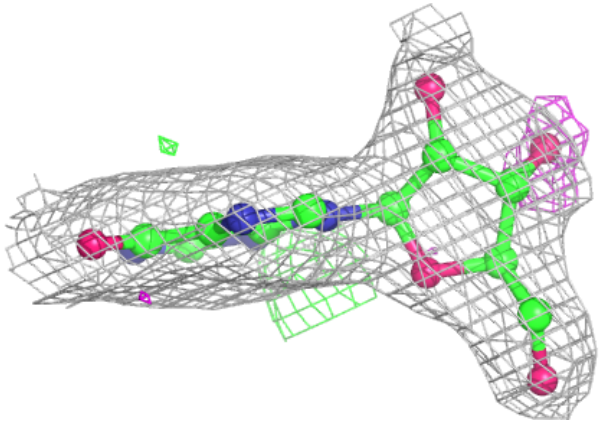
Electron density around NOS A 501:

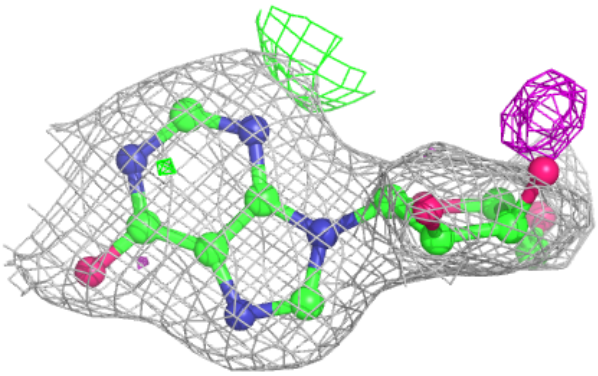
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

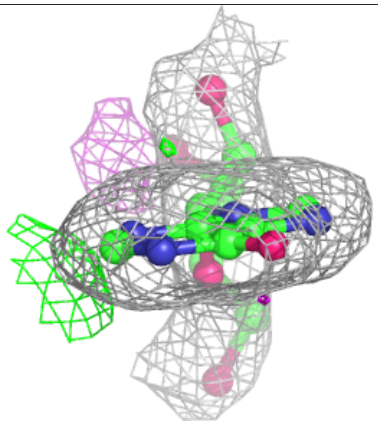


Electron density around NOS B 501:

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

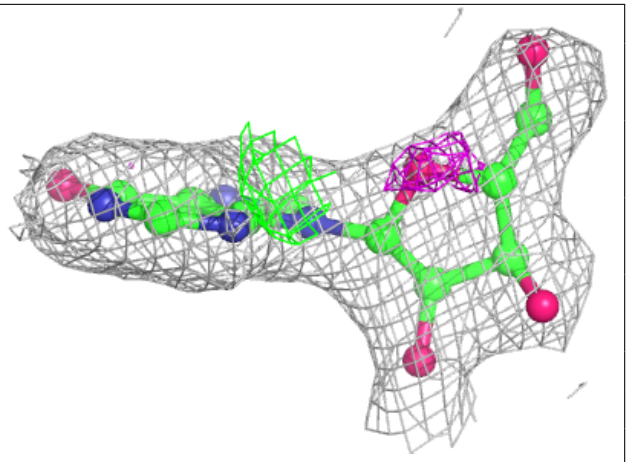


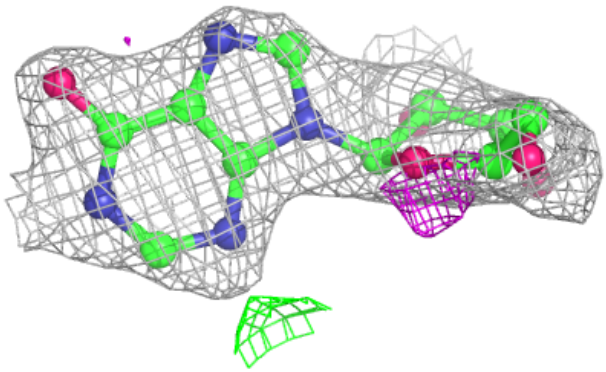


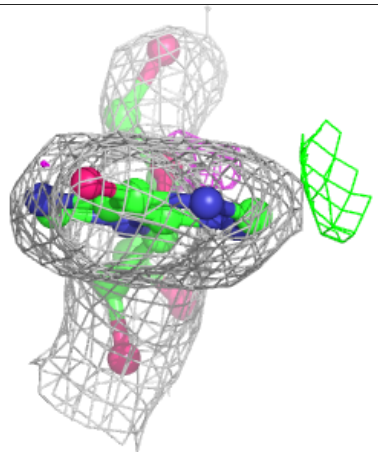


Electron density around NOS D 501:

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

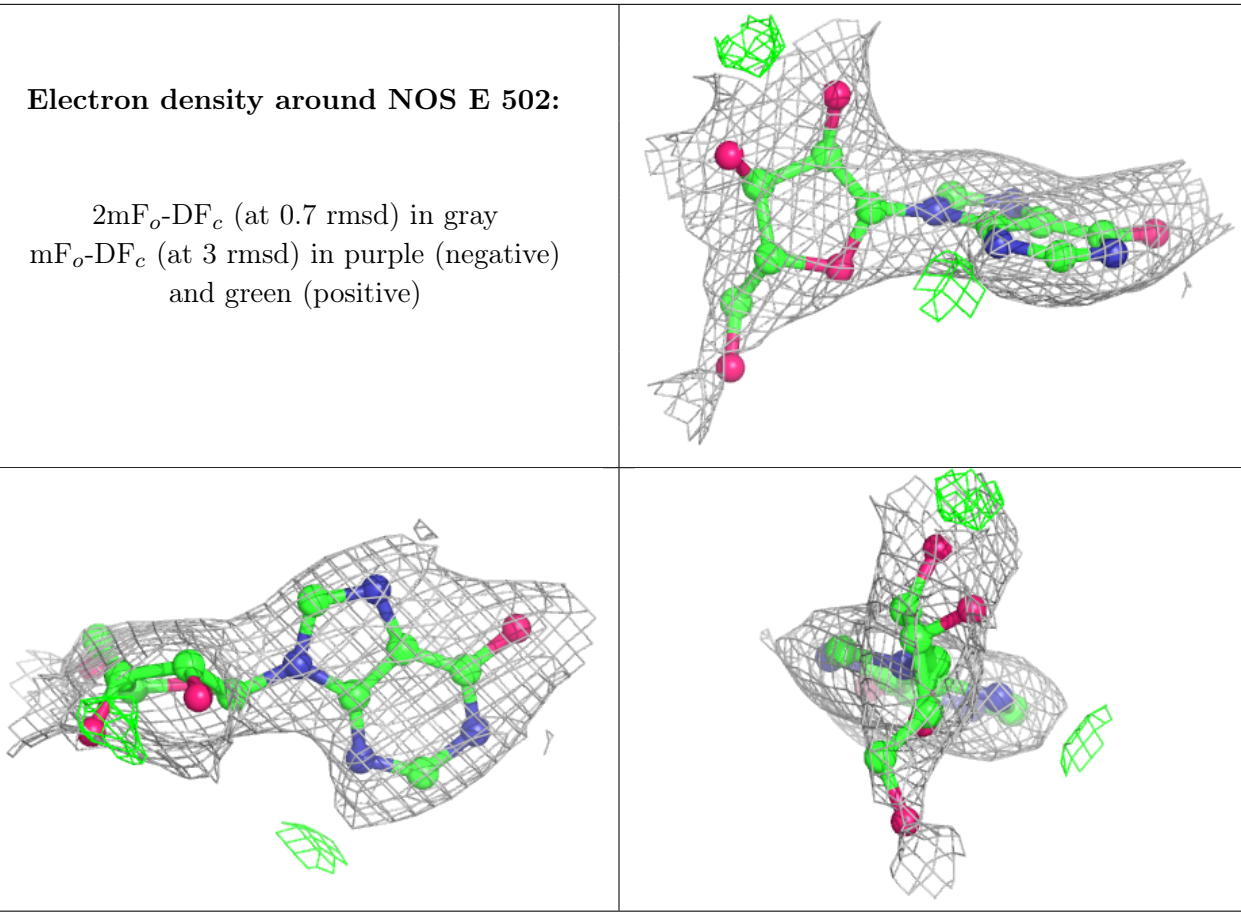






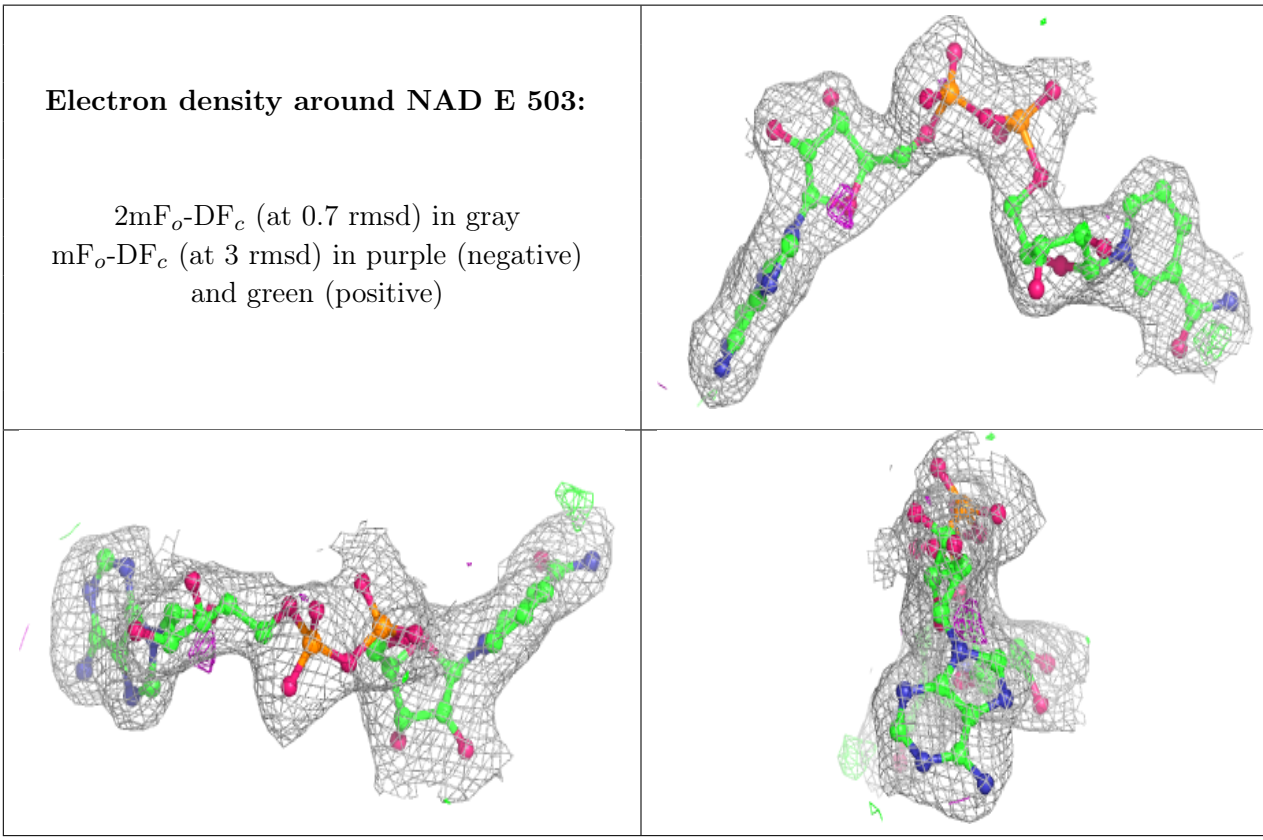
Electron density around NOS E 502:

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



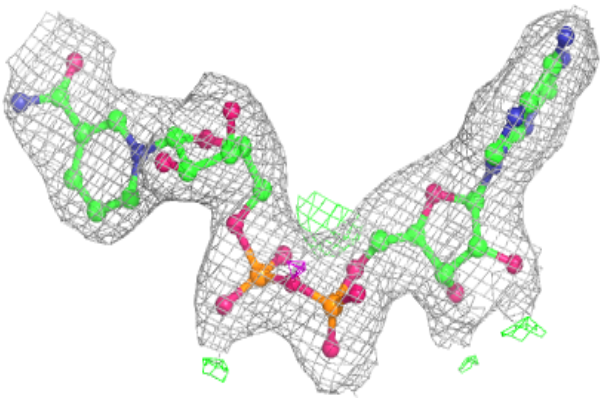
Electron density around NAD E 503:

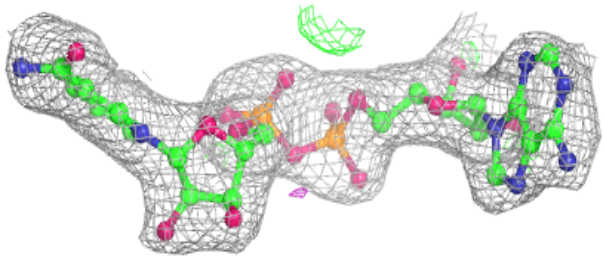
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

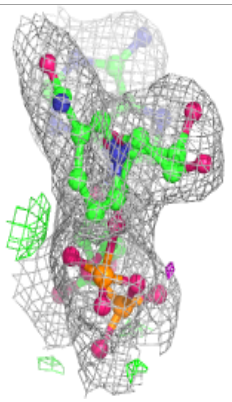


Electron density around NAD F 503:

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

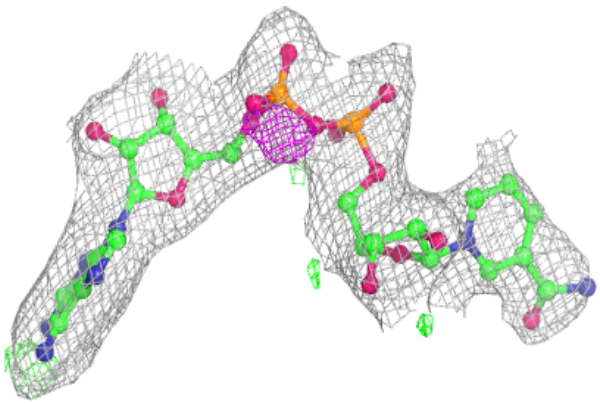


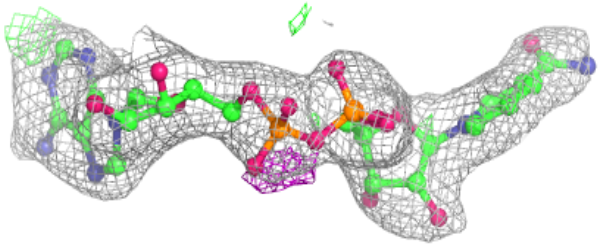


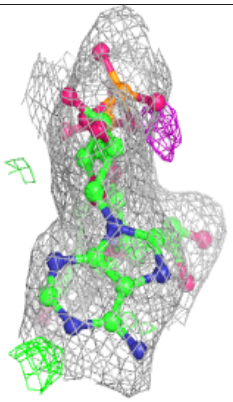


Electron density around NAD G 503:

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

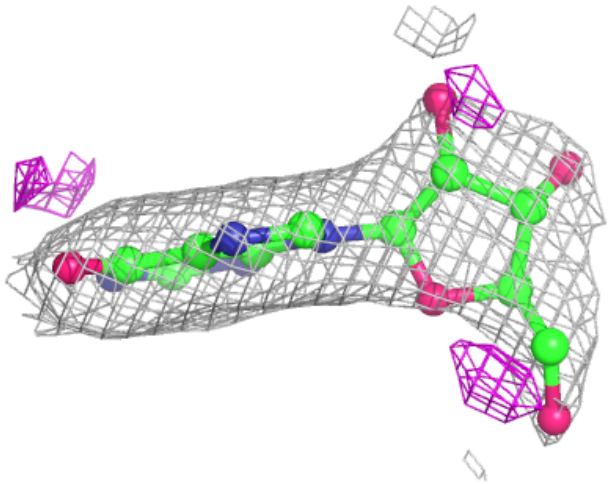


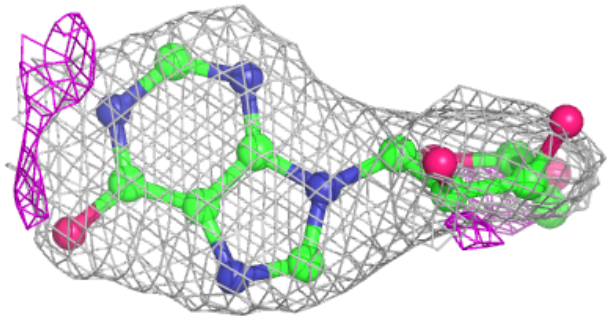


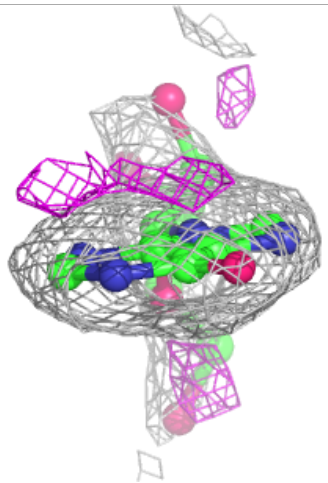


Electron density around NOS C 501:

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

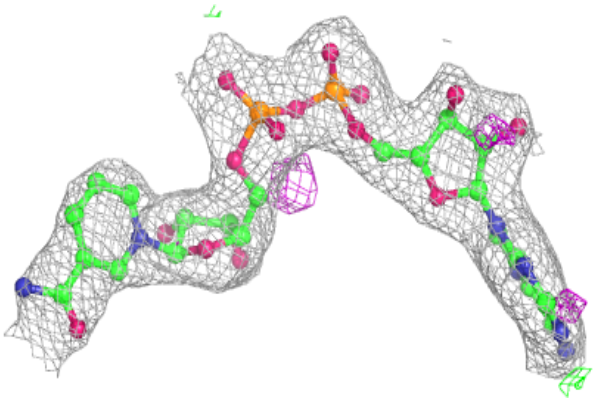


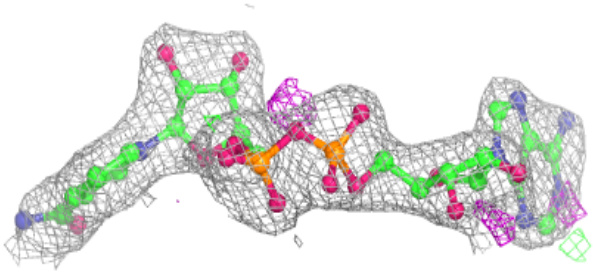


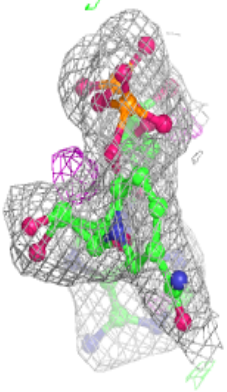


Electron density around NAD C 502:

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

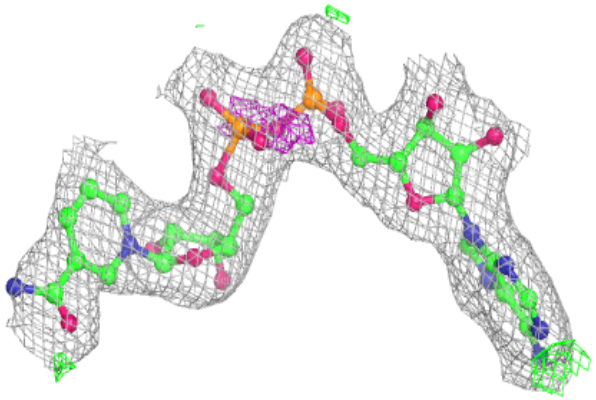


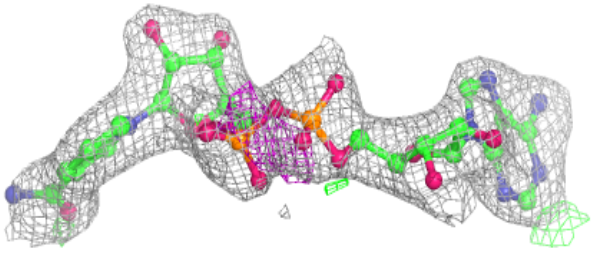


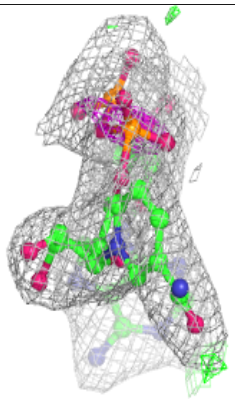


Electron density around NAD D 502:

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

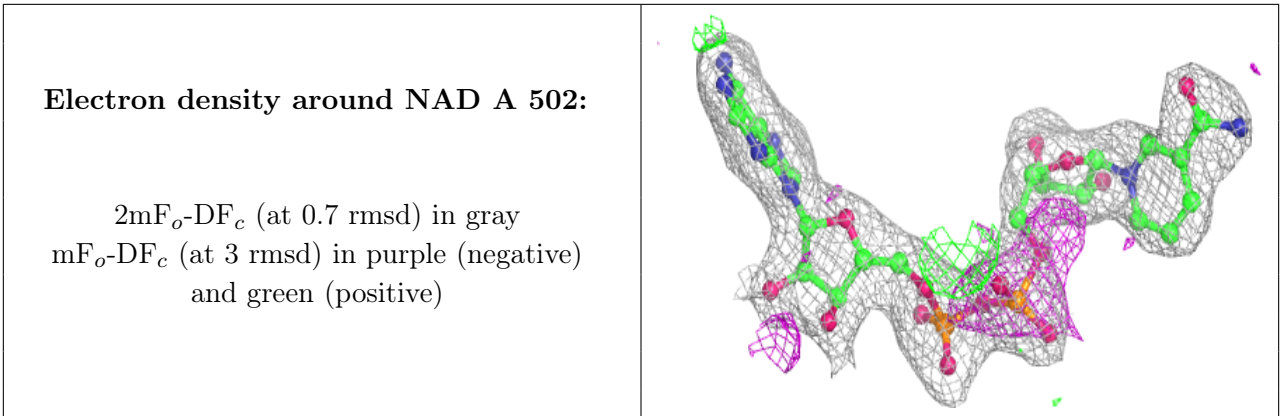


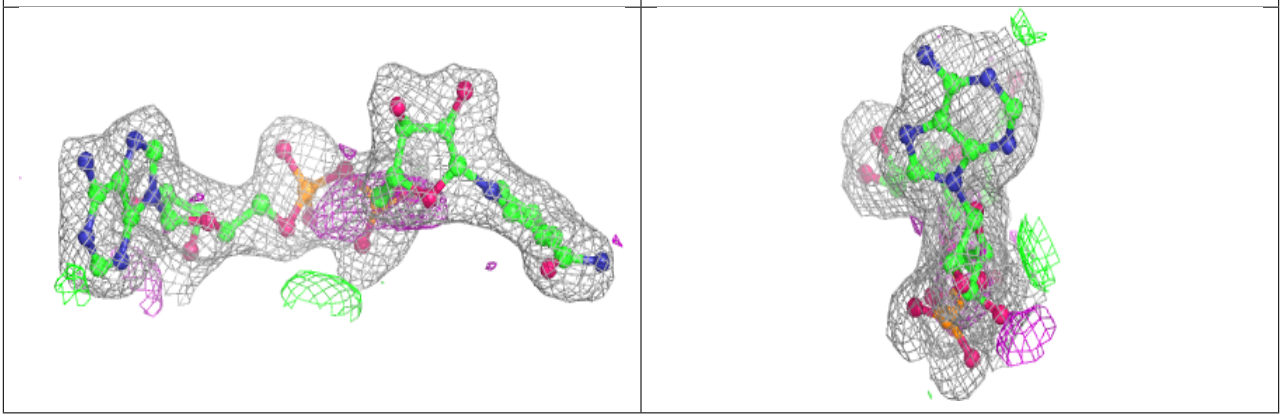




Electron density around NAD A 502:

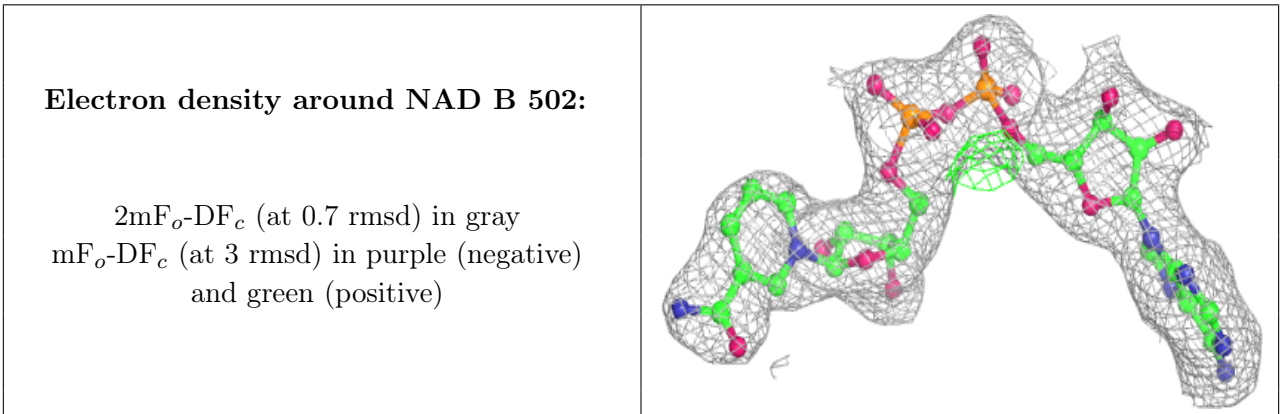
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

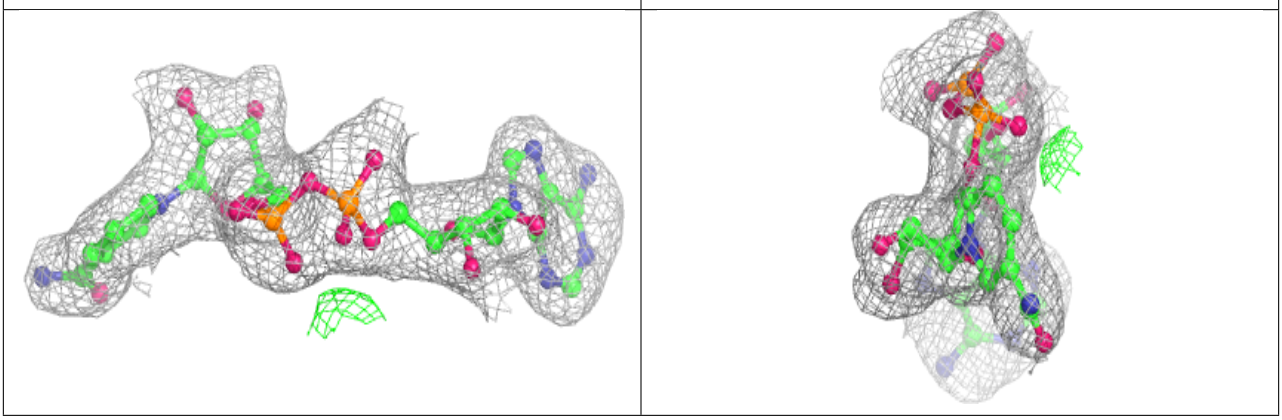




Electron density around NAD B 502:

$2mF_o$-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.