Full wwPDB X-ray Structure Validation Report ⓘ

Oct 20, 2025 – 10:08 AM EDT

PDB ID	:	9MYF / pdb_00009myf
Title	:	Human malic enzyme 2 complex with inhibitor NPD-389
Authors	:	Krinkel, B.A.; Squire, C.J.; Loomes, K.M.
Deposited on	:	2025-01-21
Resolution	:	2.45 Å(reported)

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

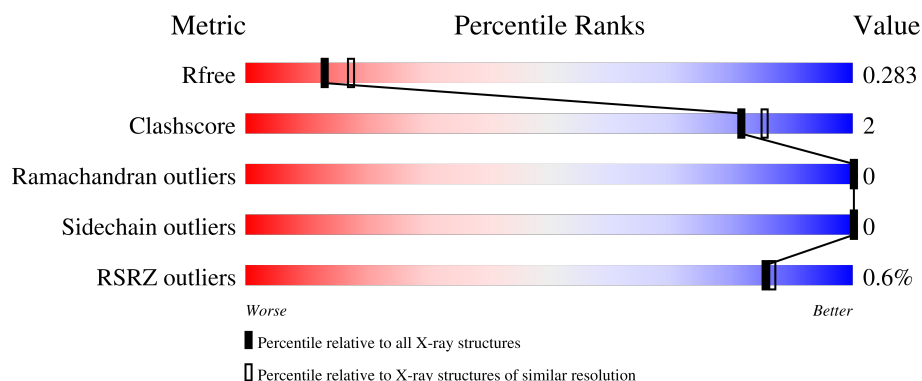|		
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.46

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 2.45 Å.

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

Metric	Percentile Ranks	Value
Rfree		0.283
Clashscore		2
Ramachandran outliers		0
Sidechain outliers		0
RSRZ outliers		0.6%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	1096 (2.46-2.46)
Clashscore	180529	1178 (2.46-2.46)
Ramachandran outliers	177936	1170 (2.46-2.46)
Sidechain outliers	177891	1170 (2.46-2.46)
RSRZ outliers	164620	1096 (2.46-2.46)

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	575	90% 6% ·
1	B	575	90% 6% ·

2 Entry composition ⓘ

There are 7 unique types of molecules in this entry. The entry contains 9018 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 NAD-dependent malic enzyme, mitochondrial.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	552	Total	C	N	O	S	0	2	0
			4354	2785	745	801	23			
1	B	553	Total	C	N	O	S	0	1	0
			4350	2787	741	799	23			

There are 18 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	18	MET	-	initiating methionine	UNP P23368
A	585	LEU	-	expression tag	UNP P23368
A	586	GLU	-	expression tag	UNP P23368
A	587	HIS	-	expression tag	UNP P23368
A	588	HIS	-	expression tag	UNP P23368
A	589	HIS	-	expression tag	UNP P23368
A	590	HIS	-	expression tag	UNP P23368
A	591	HIS	-	expression tag	UNP P23368
A	592	HIS	-	expression tag	UNP P23368
B	18	MET	-	initiating methionine	UNP P23368
B	585	LEU	-	expression tag	UNP P23368
B	586	GLU	-	expression tag	UNP P23368
B	587	HIS	-	expression tag	UNP P23368
B	588	HIS	-	expression tag	UNP P23368
B	589	HIS	-	expression tag	UNP P23368
B	590	HIS	-	expression tag	UNP P23368
B	591	HIS	-	expression tag	UNP P23368
B	592	HIS	-	expression tag	UNP P23368

- Molecule 2 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	Mg	0	0
			1	1		

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	B	1	Total 1	Mg 1	0	0

- Molecule 3 is 2 3 ,2 6 -dihydroxy-1 4 ,3 4 -dimethoxy[1 1 ,2 1 :2 4 ,3 1 -terphenyl]-2 2 ,2 5 -d ione (CCD ID: A1AE5) (formula: $C_{20}H_{16}O_6$) (labeled as "Ligand of Interest" by depositor).

A1AE5
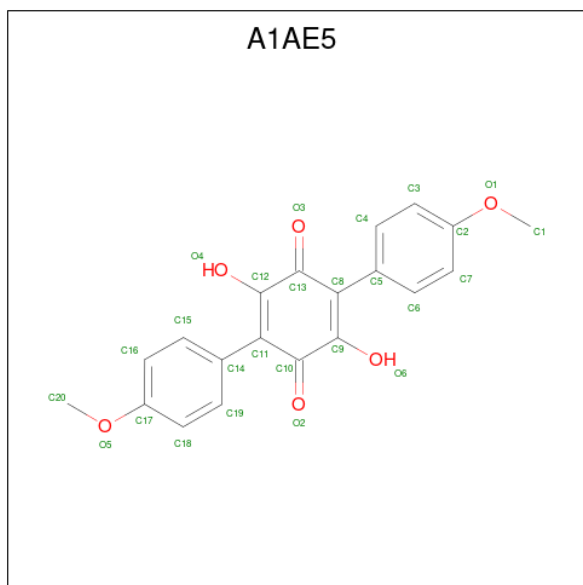
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total 26	C 20	O 6	0	0
3	B	1	Total 26	C 20	O 6	0	0

- Molecule 4 is SUCCINIC ACID (CCD ID: SIN) (formula: $C_4H_6O_4$).

SIN
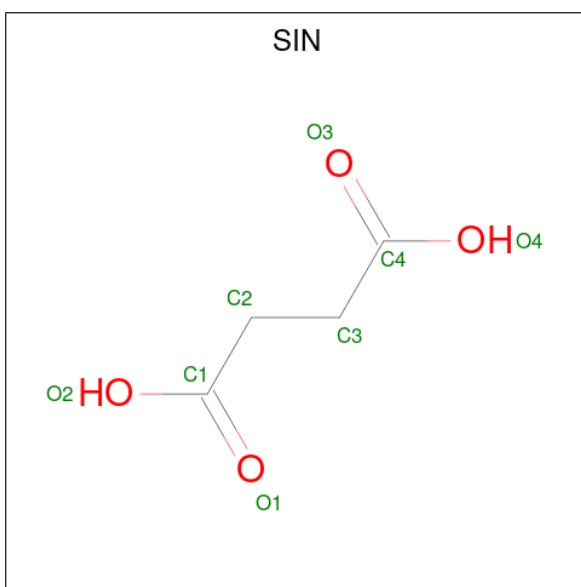
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total 8	C 4	O 4	0	0
4	A	1	Total 8	C 4	O 4	0	0

- Molecule 5 is NICOTINAMIDE-ADENINE-DINUCLEOTIDE (CCD ID: NAD) (formula: $C_{21}H_{27}N_7O_{14}P_2$).

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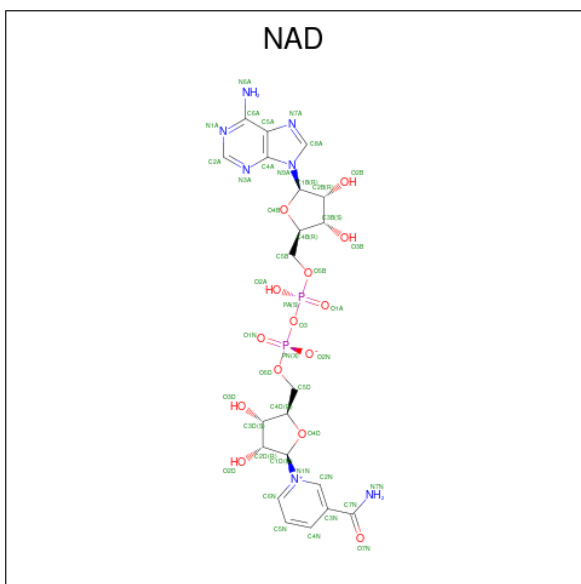
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	A	1	Total 44	C 21	N 7	O 14	P 2	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	A	1	Total	C	N	O	P	0	0
			44	21	7	14	2		
5	B	1	Total	C	N	O	P	0	0
			44	21	7	14	2		
5	B	1	Total	C	N	O	P	0	0
			36	15	6	13	2		

- Molecule 6 is PHOSPHATE ION (CCD ID: PO4) (formula: O_4P).
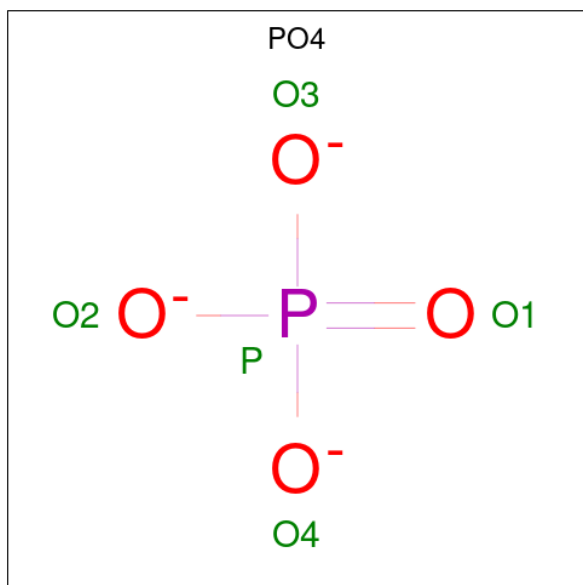
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total	O	P	0	0
			5	4	1		

- Molecule 7 is water.

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	35	Total	O	0	0
			35	35		
7	B	36	Total	O	0	0
			36	36		

3 Residue-property plots ⓘ

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: NAD-dependent malic enzyme, mitochondrial

Chain A:

• Molecule 1: NAD-dependent malic enzyme, mitochondrial

Chain B:
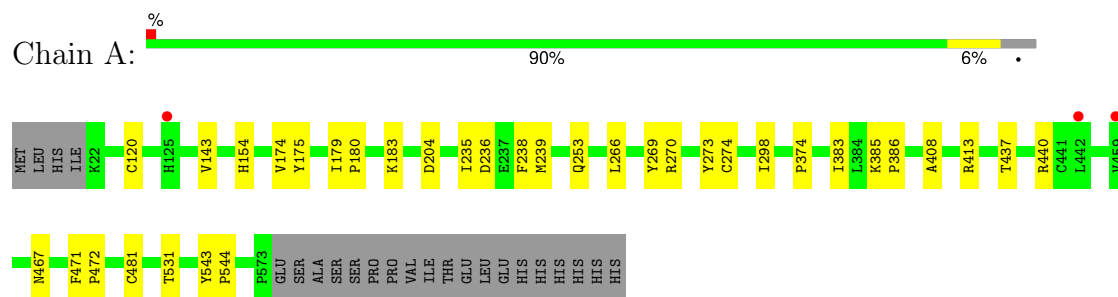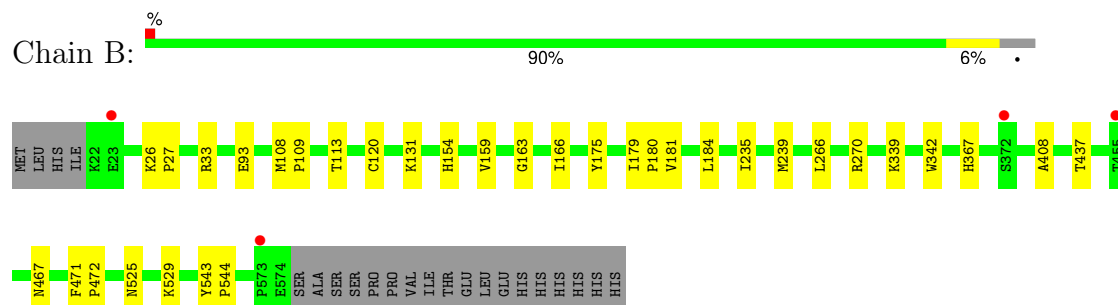
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	204.05Å 58.92Å 106.93Å 90.00° 101.94° 90.00°	Depositor
Resolution (Å)	49.22 – 2.45 49.22 – 2.45	Depositor EDS
% Data completeness (in resolution range)	100.0 (49.22-2.45) 100.0 (49.22-2.45)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.50 (at 2.45Å)	Xtriage
Refinement program	REFMAC 5.8.0425	Depositor
R, R_{free}	0.229 , 0.278 0.237 , 0.283	Depositor DCC
R_{free} test set	2378 reflections (5.15%)	wwPDB-VP
Wilson B-factor (Å^2)	51.0	Xtriage
Anisotropy	0.267	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 21.2	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	9018	wwPDB-VP
Average B, all atoms (Å^2)	68.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.84% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.

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

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: A1AE5, NAD, MG, PO4, SIN

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	0.45	0/4452	0.87	0/6032
1	B	0.46	0/4448	0.88	0/6027
All	All	0.45	0/8900	0.88	0/12059

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	4354	0	4363	21	0
1	B	4350	0	4365	20	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
3	A	26	0	0	2	0
3	B	26	0	0	2	0
4	A	16	0	8	0	0
5	A	88	0	52	1	0
5	B	80	0	46	1	0
6	A	5	0	0	0	0
7	A	35	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	B	36	0	0	0	0
All	All	9018	0	8834	42	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 2.

All (42) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:467:ASN:HB2	3:A:602:A1AE5:C18	2.32	0.59
1:A:413:ARG:HG2	1:A:440:ARG:O	2.06	0.56
1:A:543:TYR:HA	1:A:544:PRO:C	2.31	0.55
1:B:179:ILE:HB	1:B:180:PRO:HD3	1.90	0.54
1:A:179:ILE:HB	1:A:180:PRO:HD3	1.92	0.51
1:B:543:TYR:HA	1:B:544:PRO:C	2.35	0.51
1:B:109:PRO:HA	1:B:113:THR:O	2.11	0.50
1:A:374:PRO:HG3	1:A:383:ILE:HD12	1.94	0.50
1:A:266:LEU:O	1:A:270:ARG:HB2	2.13	0.48
1:A:298:ILE:O	1:A:298:ILE:HG13	2.14	0.47
1:B:33:ARG:NH1	1:B:93:GLU:OE1	2.47	0.47
1:B:467:ASN:ND2	5:B:603:NAD:O7N	2.48	0.46
1:B:408:ALA:HB2	1:B:437:THR:HG22	1.98	0.46
1:B:131:LYS:HD3	1:B:181:VAL:HG11	1.98	0.45
1:B:342:TRP:CH2	1:B:367:HIS:HB2	2.51	0.45
1:A:408:ALA:HB2	1:A:437:THR:HG22	1.97	0.45
1:B:163:GLY:HA2	1:B:166:ILE:HD11	1.99	0.44
1:B:471:PHE:N	1:B:472:PRO:CD	2.80	0.44
3:A:602:A1AE5:C15	3:A:602:A1AE5:O2	2.62	0.44
1:A:471:PHE:N	1:A:472:PRO:CD	2.81	0.44
1:B:26:LYS:N	1:B:27:PRO:CD	2.80	0.44
1:B:108:MET:HB3	1:B:109:PRO:HD3	2.00	0.43
1:A:481:CYS:SG	1:A:531:THR:HG23	2.57	0.43
1:B:120:CYS:O	1:B:175:TYR:HB3	2.18	0.43
1:A:154[A]:HIS:CE1	1:B:154[A]:HIS:CE1	3.07	0.43
1:A:235:ILE:O	1:A:239:MET:HG2	2.20	0.42
1:B:525:ASN:O	1:B:529:LYS:HG2	2.18	0.42
1:B:235:ILE:O	1:B:239:MET:HG2	2.20	0.42
1:B:266:LEU:O	1:B:270:ARG:HB2	2.19	0.42
1:A:471:PHE:CG	1:A:472:PRO:HD3	2.54	0.42
1:B:159:VAL:HG23	1:B:184:LEU:HD21	2.02	0.41
1:A:385:LYS:N	1:A:386:PRO:CD	2.84	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:467:ASN:ND2	5:A:604:NAD:O7N	2.53	0.41
1:A:120:CYS:O	1:A:175:TYR:HB3	2.21	0.41
1:A:183:LYS:HE2	1:A:253:GLN:HE22	1.86	0.41
1:A:143:VAL:HG11	1:A:238:PHE:HA	2.02	0.41
3:B:602:A1AE5:O2	3:B:602:A1AE5:C15	2.68	0.41
1:A:174:VAL:HG12	1:A:204:ASP:HB2	2.03	0.41
1:A:236:ASP:OD1	1:A:269:TYR:OH	2.32	0.41
1:A:273:TYR:O	1:A:274:CYS:HB3	2.21	0.41
1:B:339:LYS:HA	1:B:367:HIS:CE1	2.57	0.40
1:B:467:ASN:HB2	3:B:602:A1AE5:C18	2.51	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	552/575 (96%)	527 (96%)	25 (4%)	0	100	100
1	B	552/575 (96%)	528 (96%)	24 (4%)	0	100	100
All	All	1104/1150 (96%)	1055 (96%)	49 (4%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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	464/490 (95%)	464 (100%)	0	100	100
1	B	463/490 (94%)	463 (100%)	0	100	100
All	All	927/980 (95%)	927 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	89	GLN
1	A	153	ASN
1	A	425	GLN
1	A	467	ASN
1	A	509	GLN
1	B	43	GLN
1	B	321	ASN
1	B	467	ASN
1	B	485	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 11 ligands modelled in this entry, 2 are monoatomic - leaving 9 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the

expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
4	SIN	A	603	-	7,7,7	1.13	0	8,8,8	1.01	0
3	A1AE5	B	602	2	28,28,28	2.06	6 (21%)	32,40,40	1.22	2 (6%)
5	NAD	A	605	-	42,48,48	0.69	0	50,73,73	0.59	0
3	A1AE5	A	602	2	28,28,28	2.07	6 (21%)	32,40,40	1.26	3 (9%)
4	SIN	A	607	-	7,7,7	1.16	0	8,8,8	1.04	0
5	NAD	B	603	-	42,48,48	0.58	0	50,73,73	0.67	1 (2%)
5	NAD	A	604	-	42,48,48	0.60	0	50,73,73	0.59	0
5	NAD	B	604	-	34,39,48	0.61	0	41,60,73	0.64	0
6	PO4	A	606	-	4,4,4	0.73	0	6,6,6	0.45	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
4	SIN	A	603	-	-	0/5/5/5	-
3	A1AE5	B	602	2	-	2/12/36/36	0/3/3/3
5	NAD	A	605	-	-	3/26/62/62	0/5/5/5
3	A1AE5	A	602	2	-	5/12/36/36	0/3/3/3
4	SIN	A	607	-	-	5/5/5/5	-
5	NAD	B	603	-	-	2/26/62/62	0/5/5/5
5	NAD	A	604	-	-	4/26/62/62	0/5/5/5
5	NAD	B	604	-	-	7/18/54/62	0/4/4/5

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	602	A1AE5	C14-C11	-5.42	1.39	1.49
3	A	602	A1AE5	C14-C11	-5.41	1.39	1.49
3	A	602	A1AE5	C5-C8	-5.40	1.39	1.49
3	B	602	A1AE5	C5-C8	-5.33	1.39	1.49
3	A	602	A1AE5	C9-C10	-4.16	1.39	1.50
3	B	602	A1AE5	C9-C10	-4.13	1.39	1.50
3	A	602	A1AE5	C12-C13	-4.09	1.39	1.50
3	B	602	A1AE5	C12-C13	-4.09	1.39	1.50
3	B	602	A1AE5	C11-C10	-3.41	1.39	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	602	A1AE5	C11-C10	-3.40	1.39	1.47
3	A	602	A1AE5	C8-C13	-3.36	1.39	1.47
3	B	602	A1AE5	C8-C13	-3.32	1.39	1.47

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	602	A1AE5	C1-O1-C2	-3.42	110.17	117.50
3	A	602	A1AE5	C20-O5-C17	-3.39	110.22	117.50
3	B	602	A1AE5	C20-O5-C17	-3.32	110.39	117.50
3	B	602	A1AE5	C1-O1-C2	-3.22	110.59	117.50
5	B	603	NAD	C4D-O4D-C1D	-2.46	107.67	109.92
3	A	602	A1AE5	O6-C9-C10	2.04	119.72	116.03

There are no chirality outliers.

All (28) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	604	NAD	O4D-C1D-N1N-C6N
5	A	605	NAD	PA-O3-PN-O5D
5	B	604	NAD	O4D-C4D-C5D-O5D
4	A	607	SIN	C1-C2-C3-C4
5	B	604	NAD	O4B-C4B-C5B-O5B
5	B	604	NAD	C3D-C4D-C5D-O5D
3	A	602	A1AE5	C3-C2-O1-C1
3	A	602	A1AE5	C7-C2-O1-C1
3	A	602	A1AE5	C16-C17-O5-C20
3	A	602	A1AE5	C18-C17-O5-C20
5	B	604	NAD	C3B-C4B-C5B-O5B
5	B	603	NAD	O4B-C4B-C5B-O5B
3	B	602	A1AE5	C16-C17-O5-C20
5	B	603	NAD	C3B-C4B-C5B-O5B
5	B	604	NAD	PA-O3-PN-O5D
3	B	602	A1AE5	C18-C17-O5-C20
5	A	604	NAD	O4B-C4B-C5B-O5B
5	B	604	NAD	C5D-O5D-PN-O1N
5	A	605	NAD	PN-O3-PA-O1A
5	A	604	NAD	O4D-C1D-N1N-C2N
3	A	602	A1AE5	C10-C11-C14-C19
5	A	604	NAD	C3B-C4B-C5B-O5B
4	A	607	SIN	C2-C3-C4-O3
5	A	605	NAD	PN-O3-PA-O2A

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Mol	Chain	Res	Type	Atoms
4	A	607	SIN	O2-C1-C2-C3
4	A	607	SIN	C2-C3-C4-O4
4	A	607	SIN	O1-C1-C2-C3
5	B	604	NAD	PN-O3-PA-O2A

There are no ring outliers.
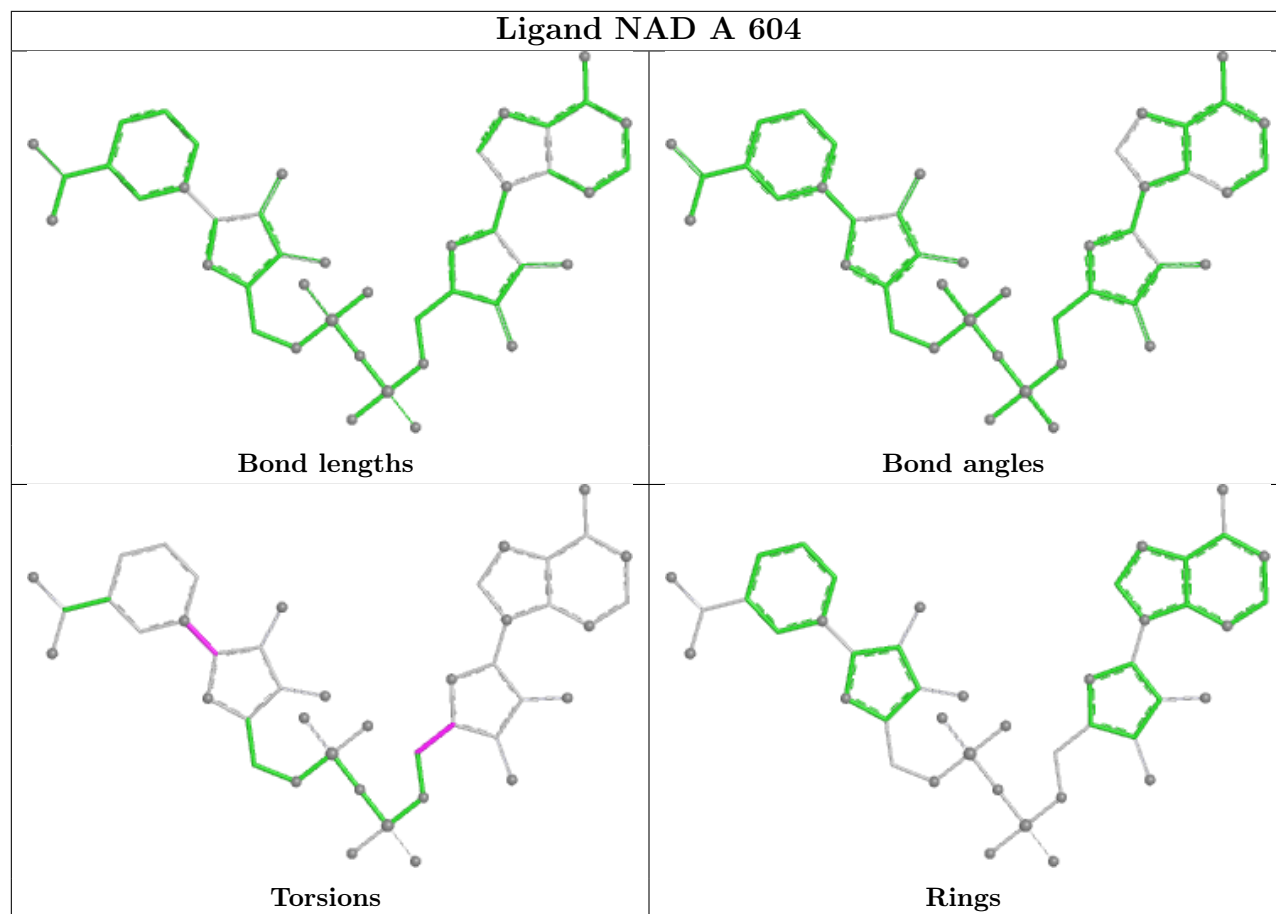
4 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	602	A1AE5	2	0
3	A	602	A1AE5	2	0
5	B	603	NAD	1	0
5	A	604	NAD	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand A1AE5 B 602

Bond lengths   Bond angles

Torsions   Rings

Ligand NAD A 605

Bond lengths

Bond angles

Torsions

Rings

Ligand A1AE5 A 602

Bond lengths

Bond angles

Torsions

Rings

Ligand NAD B 603

Bond lengths

Bond angles

Torsions

Rings

Ligand NAD A 604

Bond lengths

Bond angles

Torsions

Rings

Ligand NAD B 604

Bond lengths

Bond angles

Torsions

Rings
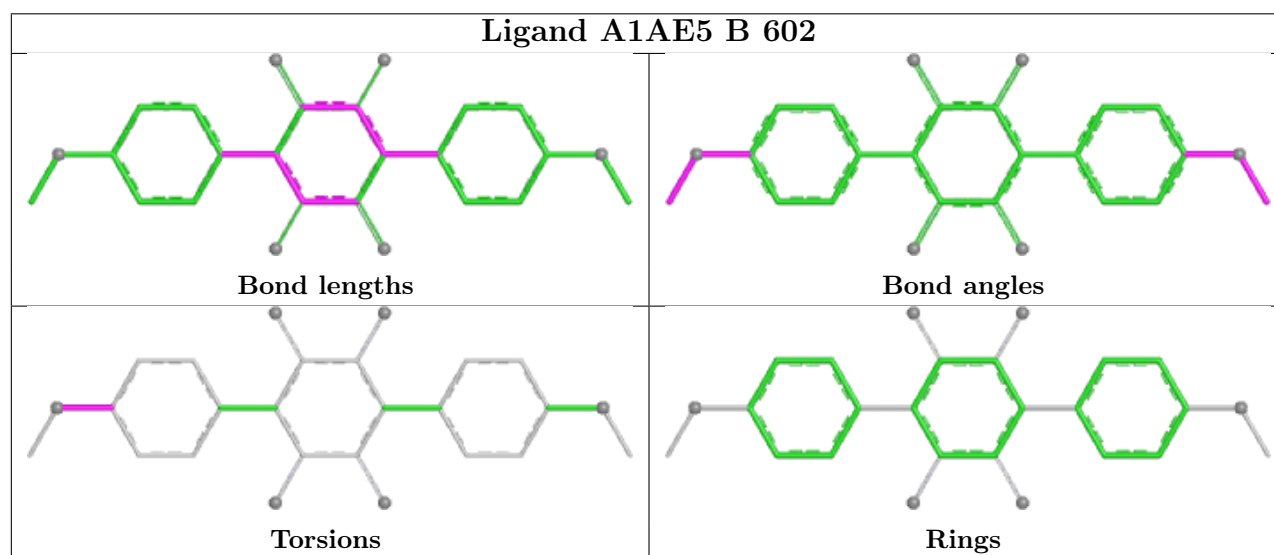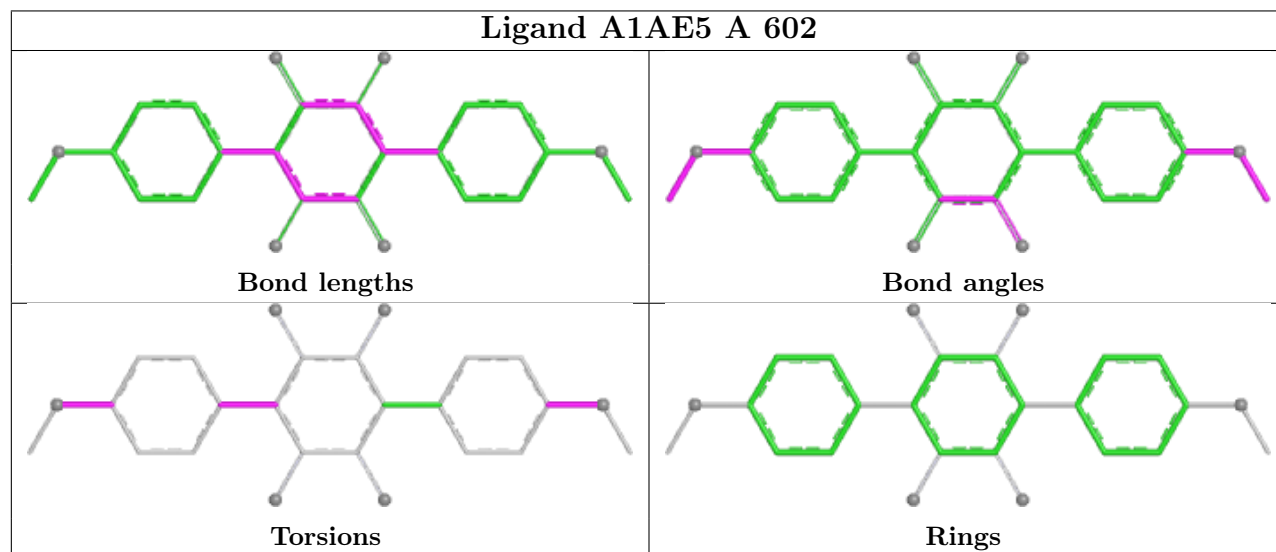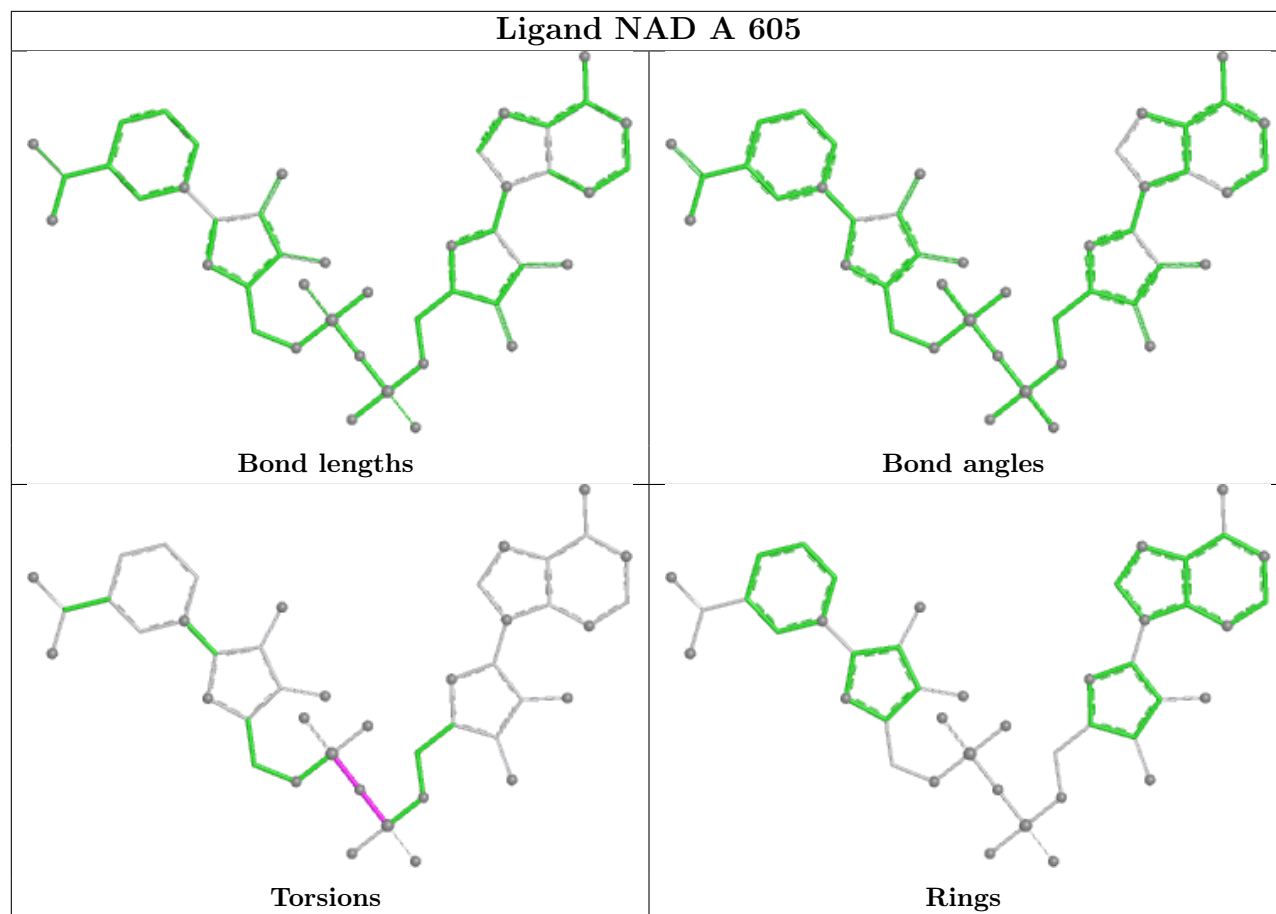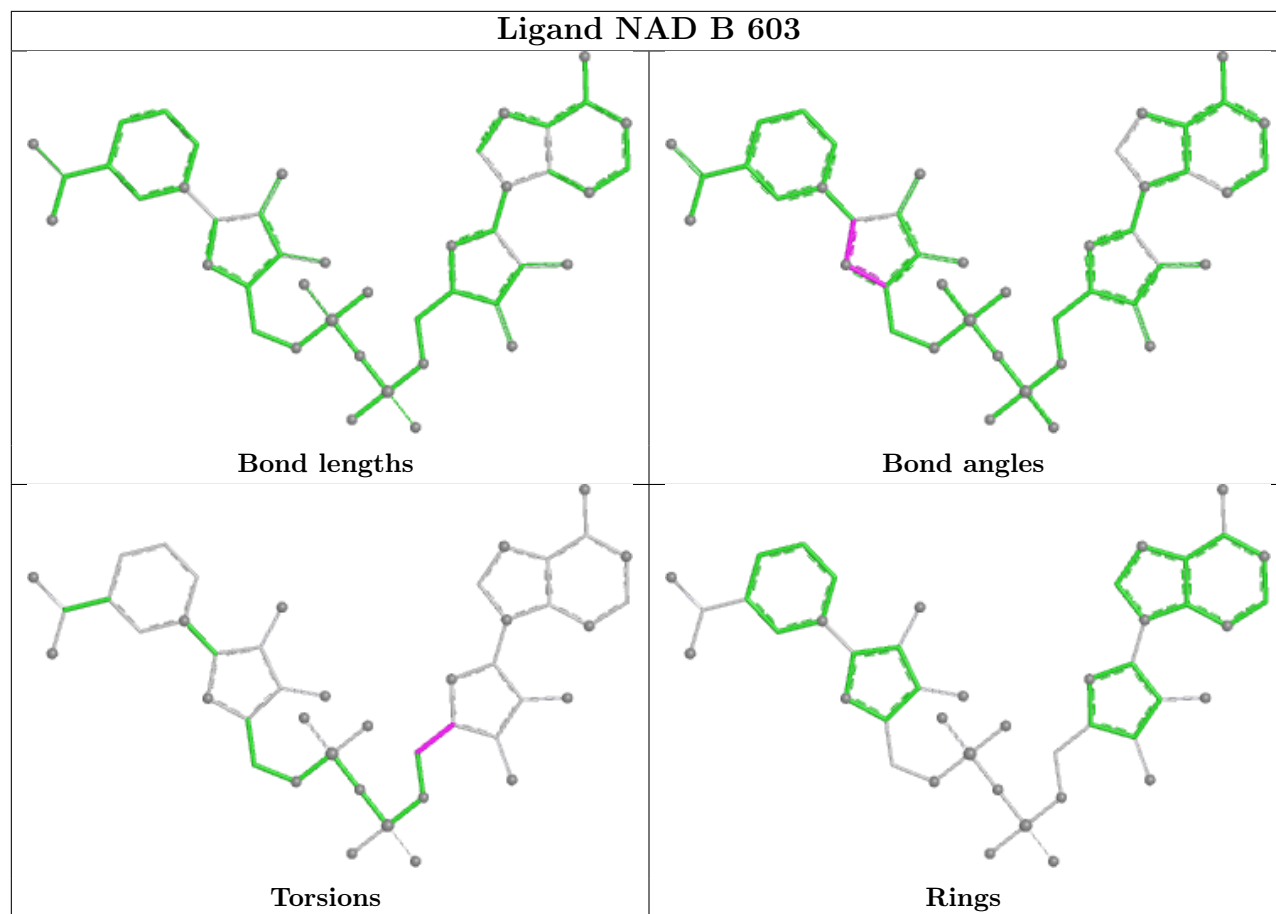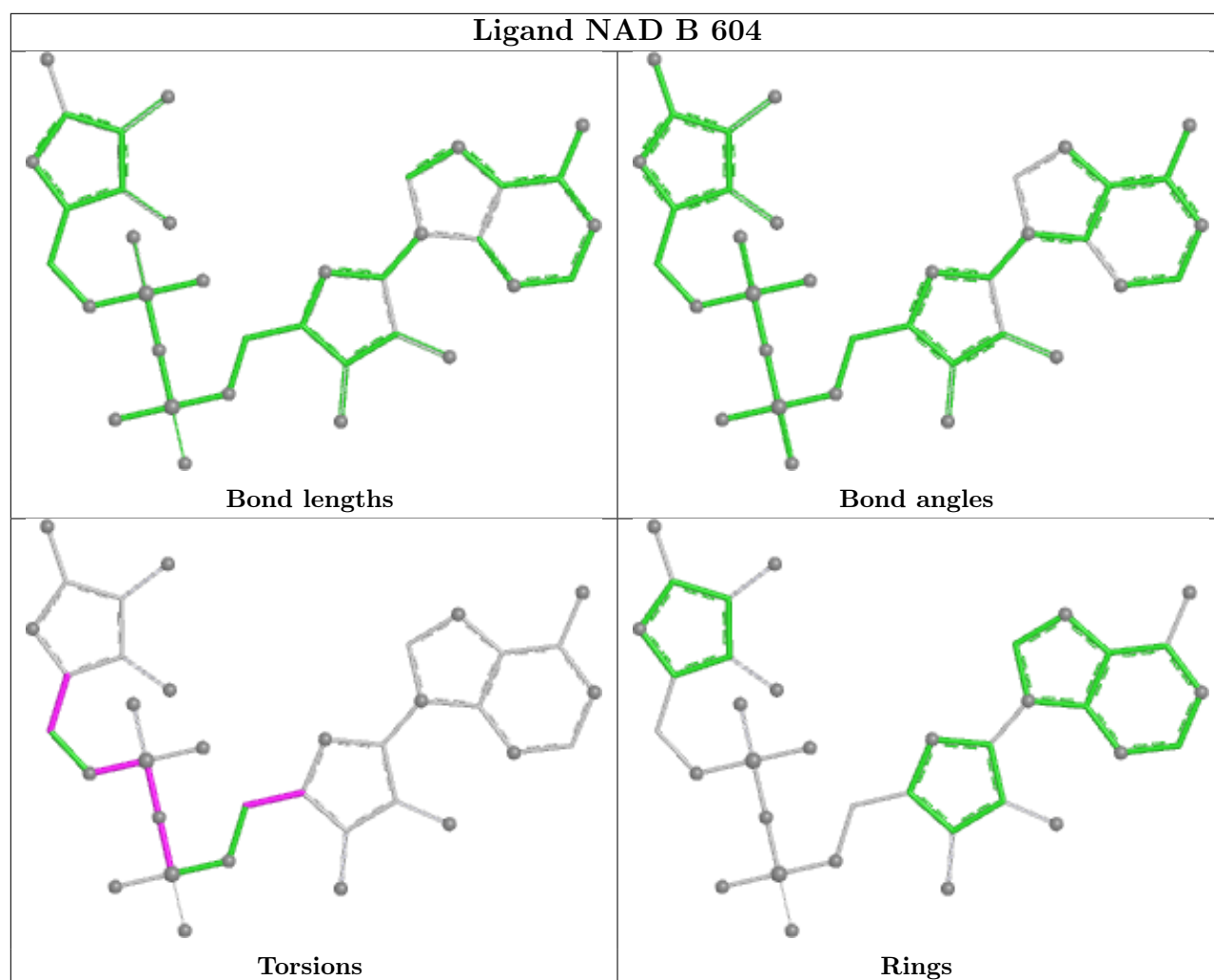
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data (i)

6.1 Protein, DNA and RNA chains (i)

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	552/575 (96%)	-0.04	3 (0%)	87	88	32, 67, 96, 117	2 (0%)
1	B	553/575 (96%)	-0.02	4 (0%)	84	85	32, 66, 99, 116	1 (0%)
All	All	1105/1150 (96%)	-0.03	7 (0%)	85	87	32, 67, 98, 117	3 (0%)

All (7) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	23	GLU	2.5
1	B	372	SER	2.2
1	B	573	PRO	2.2
1	A	125	HIS	2.2
1	A	442	LEU	2.0
1	A	459	VAL	2.0
1	B	455	THR	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 oligosaccharides in this entry.

6.4 Ligands (i)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	SIN	A	603	8/8	0.73	0.20	92,99,101,103	0
6	PO4	A	606	5/5	0.78	0.09	105,106,107,108	0
3	A1AE5	B	602	26/26	0.82	0.11	62,72,78,83	0
4	SIN	A	607	8/8	0.83	0.11	75,84,89,90	0
3	A1AE5	A	602	26/26	0.87	0.10	72,76,77,78	0
5	NAD	B	604	36/44	0.90	0.08	46,57,84,89	0
5	NAD	A	605	44/44	0.90	0.09	51,66,106,109	0
5	NAD	A	604	44/44	0.93	0.08	60,67,86,89	0
5	NAD	B	603	44/44	0.93	0.08	54,65,77,79	0
2	MG	B	601	1/1	0.94	0.11	75,75,75,75	0
2	MG	A	601	1/1	0.96	0.07	74,74,74,74	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.
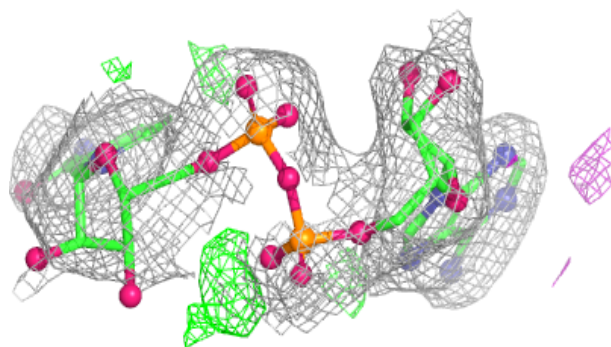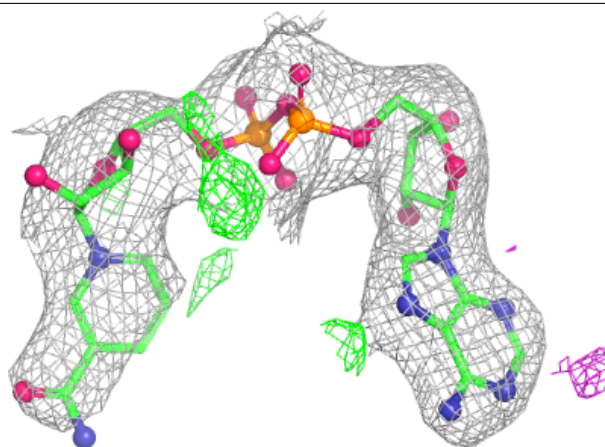

Electron density around A1AE5 B 602:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
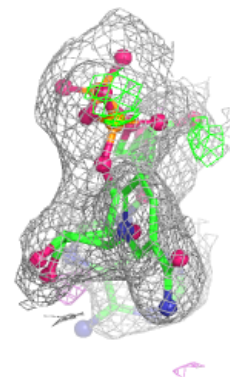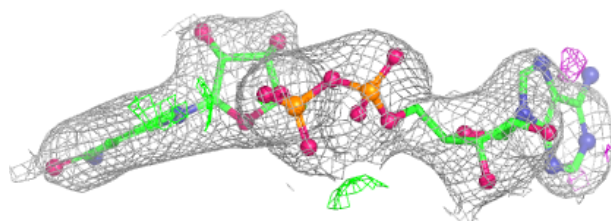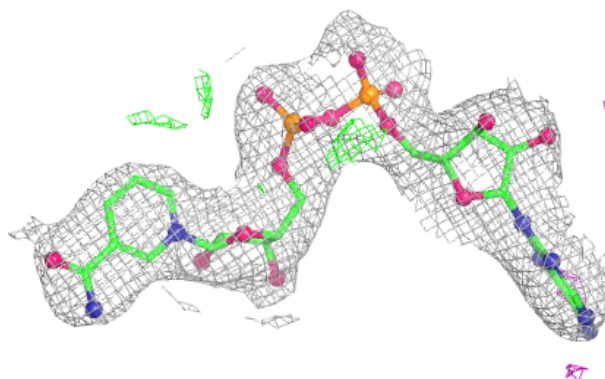mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)
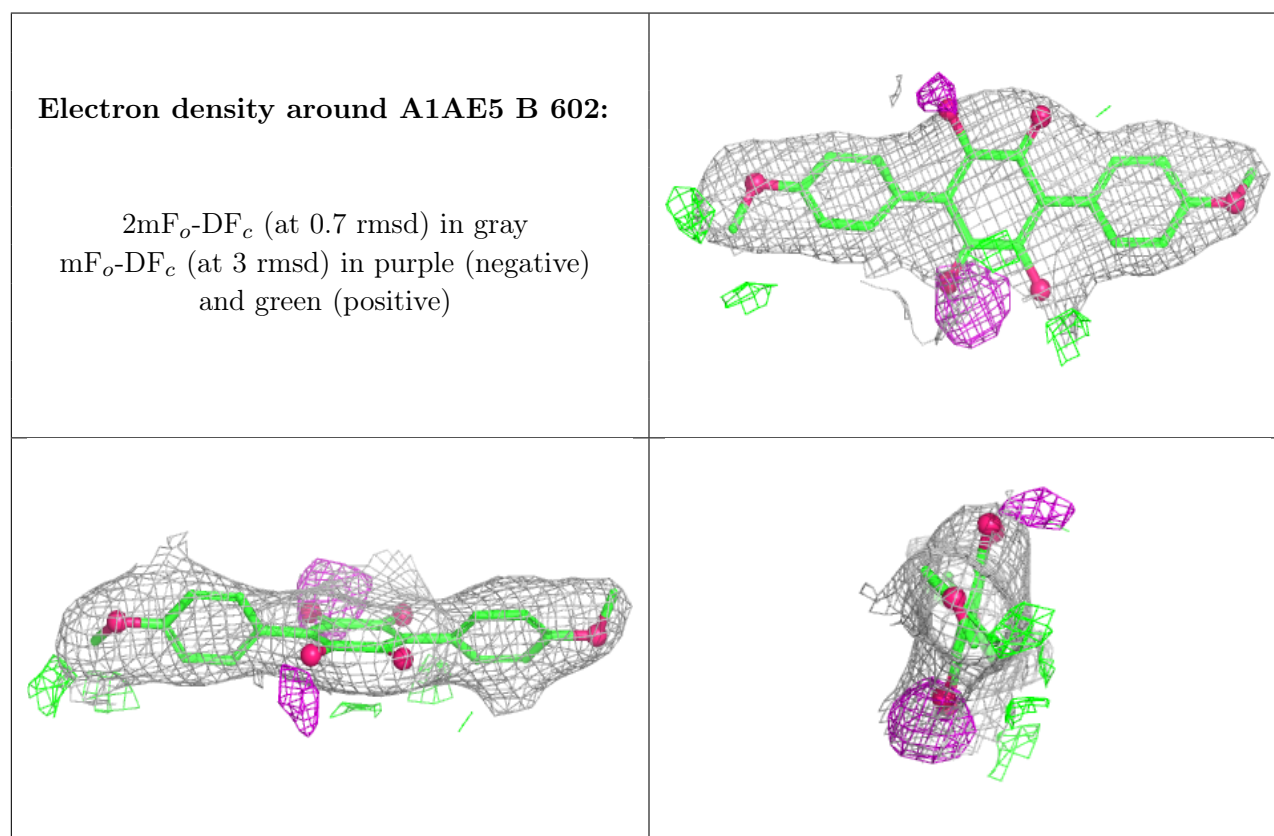
Electron density around A1AE5 A 602:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
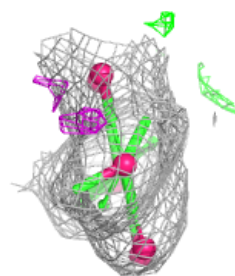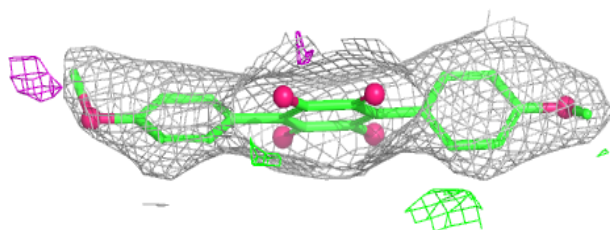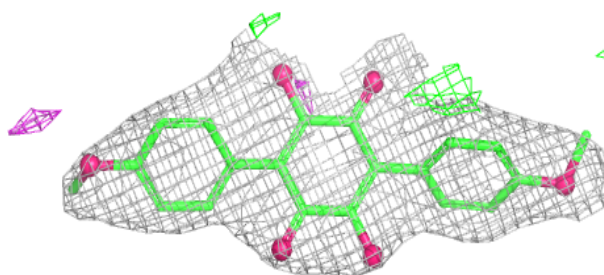
Electron density around NAD B 604:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
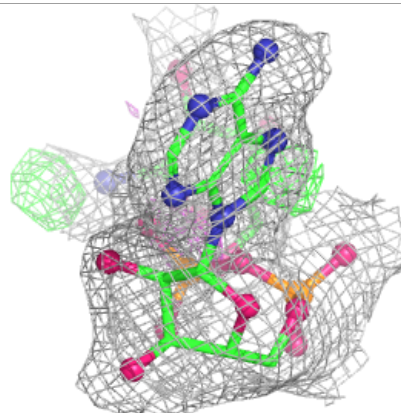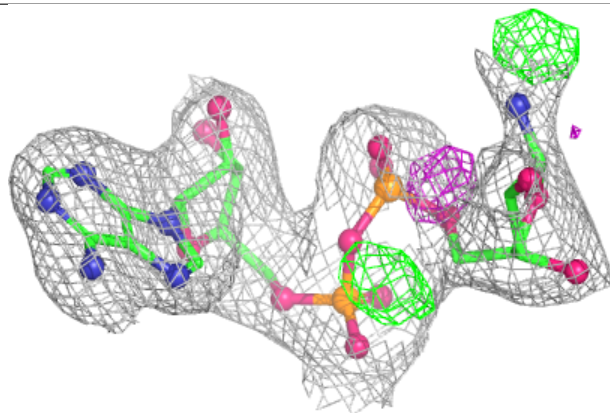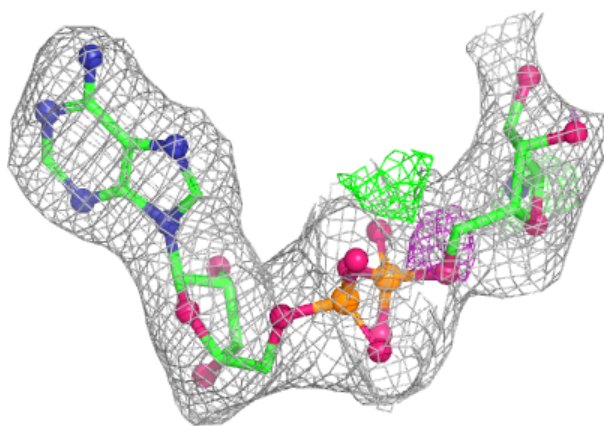
Electron density around NAD A 605:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
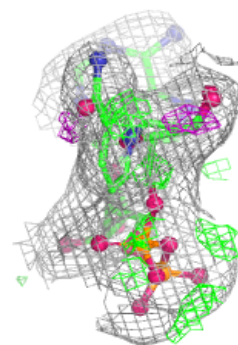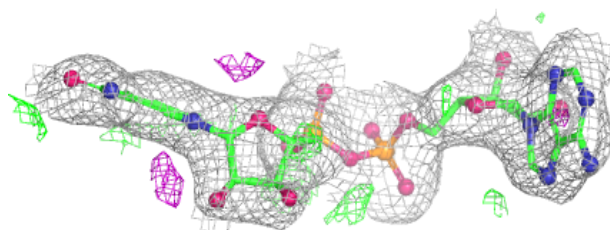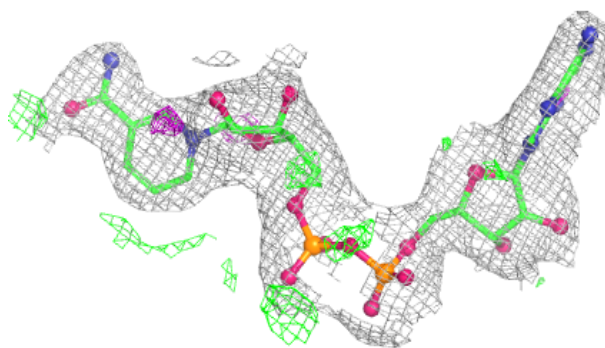mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
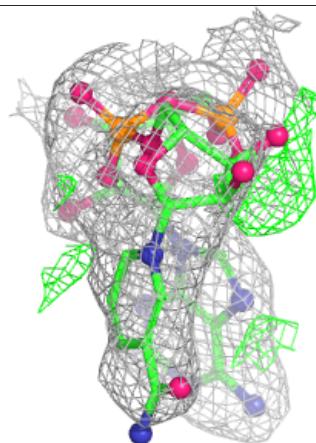
Electron density around NAD A 604:

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

Electron density around NAD B 603:

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.