Full wwPDB X-ray Structure Validation Report ⓘ

Nov 20, 2024 – 12:04 PM EST

PDB ID	:	9AV8
Title	:	Design and application of synthetic 17B-HSD13 substrates to drug discovery, and to reveal preserved catalytic activity of protective human variants
Authors	:	Liu, S.; Garnsey, M.
Deposited on	:	2024-03-01
Resolution	:	2.59 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:

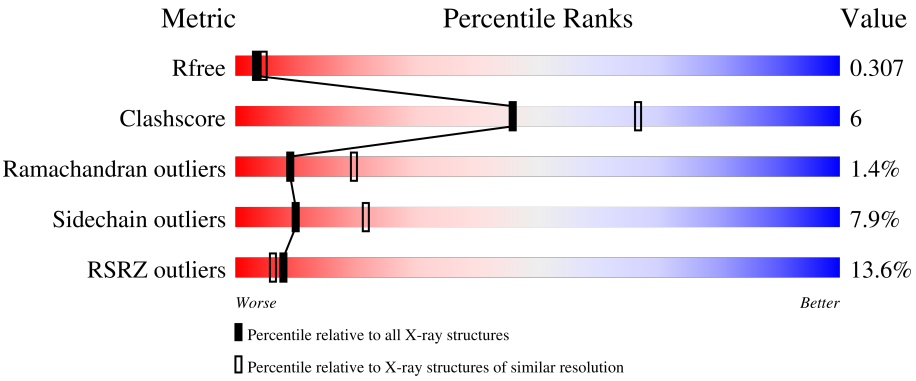
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.21
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 2.59 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}	164625	3775 (2.60-2.60)
Clashscore	180529	4181 (2.60-2.60)
Ramachandran outliers	177936	4129 (2.60-2.60)
Sidechain outliers	177891	4129 (2.60-2.60)
RSRZ outliers	164620	3775 (2.60-2.60)

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	315	12% 69% 16% • 14%
1	B	315	10% 60% 17% • 23%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 4266 atoms, of which 1 is hydrogen 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 Hydroxysteroid 17-beta dehydrogenase 13.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	271	Total	C	N	O	S	0	0	0
			2113	1372	355	378	8			
1	B	244	Total	C	N	O	S	0	0	0
			1896	1224	323	341	8			

There are 50 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	0	MET	-	expression tag	UNP A0A8C0PP93
A	1	GLY	-	expression tag	UNP A0A8C0PP93
A	177	GLU	GLY	engineered mutation	UNP A0A8C0PP93
A	178	GLY	VAL	engineered mutation	UNP A0A8C0PP93
A	198	GLY	ALA	engineered mutation	UNP A0A8C0PP93
A	201	SER	LEU	engineered mutation	UNP A0A8C0PP93
A	205	ALA	THR	engineered mutation	UNP A0A8C0PP93
A	236	VAL	ILE	engineered mutation	UNP A0A8C0PP93
A	263	ILE	TYR	engineered mutation	UNP A0A8C0PP93
A	266	PHE	TYR	engineered mutation	UNP A0A8C0PP93
A	293	VAL	ILE	engineered mutation	UNP A0A8C0PP93
A	301	GLY	-	expression tag	UNP A0A8C0PP93
A	302	SER	-	expression tag	UNP A0A8C0PP93
A	303	GLY	-	expression tag	UNP A0A8C0PP93
A	304	HIS	-	expression tag	UNP A0A8C0PP93
A	305	HIS	-	expression tag	UNP A0A8C0PP93
A	306	HIS	-	expression tag	UNP A0A8C0PP93
A	307	HIS	-	expression tag	UNP A0A8C0PP93
A	308	HIS	-	expression tag	UNP A0A8C0PP93
A	309	HIS	-	expression tag	UNP A0A8C0PP93
A	310	HIS	-	expression tag	UNP A0A8C0PP93
A	311	HIS	-	expression tag	UNP A0A8C0PP93
A	312	HIS	-	expression tag	UNP A0A8C0PP93
A	313	HIS	-	expression tag	UNP A0A8C0PP93
A	314	HIS	-	expression tag	UNP A0A8C0PP93

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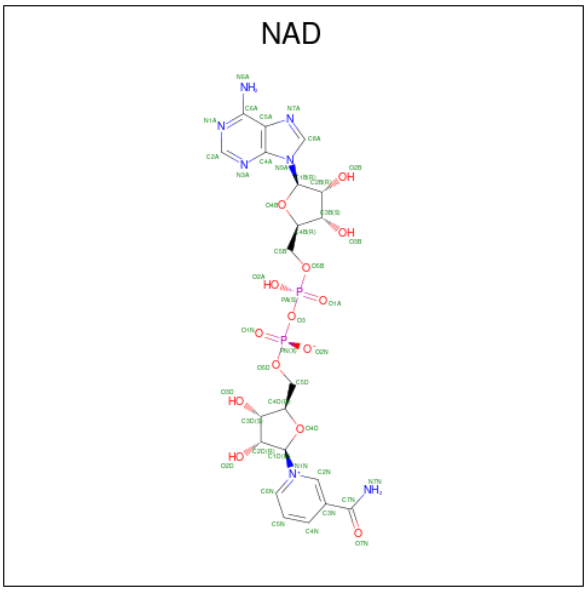
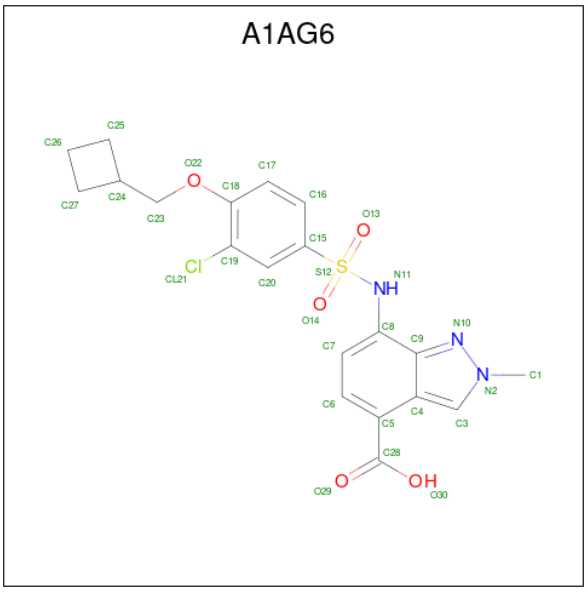
Chain	Residue	Modelled	Actual	Comment	Reference
B	0	MET	-	expression tag	UNP A0A8C0PP93
B	1	GLY	-	expression tag	UNP A0A8C0PP93
B	177	GLU	GLY	engineered mutation	UNP A0A8C0PP93
B	178	GLY	VAL	engineered mutation	UNP A0A8C0PP93
B	198	GLY	ALA	engineered mutation	UNP A0A8C0PP93
B	201	SER	LEU	engineered mutation	UNP A0A8C0PP93
B	205	ALA	THR	engineered mutation	UNP A0A8C0PP93
B	236	VAL	ILE	engineered mutation	UNP A0A8C0PP93
B	263	ILE	TYR	engineered mutation	UNP A0A8C0PP93
B	266	PHE	TYR	engineered mutation	UNP A0A8C0PP93
B	293	VAL	ILE	engineered mutation	UNP A0A8C0PP93
B	301	GLY	-	expression tag	UNP A0A8C0PP93
B	302	SER	-	expression tag	UNP A0A8C0PP93
B	303	GLY	-	expression tag	UNP A0A8C0PP93
B	304	HIS	-	expression tag	UNP A0A8C0PP93
B	305	HIS	-	expression tag	UNP A0A8C0PP93
B	306	HIS	-	expression tag	UNP A0A8C0PP93
B	307	HIS	-	expression tag	UNP A0A8C0PP93
B	308	HIS	-	expression tag	UNP A0A8C0PP93
B	309	HIS	-	expression tag	UNP A0A8C0PP93
B	310	HIS	-	expression tag	UNP A0A8C0PP93
B	311	HIS	-	expression tag	UNP A0A8C0PP93
B	312	HIS	-	expression tag	UNP A0A8C0PP93
B	313	HIS	-	expression tag	UNP A0A8C0PP93
B	314	HIS	-	expression tag	UNP A0A8C0PP93

- Molecule 2 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
2	A	1	Total	C	N	O	P	0	0
			44	21	7	14	2		
2	B	1	Total	C	N	O	P	0	0
			44	21	7	14	2		

- Molecule 3 is 7-[3-chloro-4-(cyclobutylmethoxy)benzene-1-sulfonamido]-2-methyl-2H-indazole-4-carboxylic acid (three-letter code: A1AG6) (formula: $C_{20}H_{20}ClN_3O_5S$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms							ZeroOcc	AltConf
3	A	1	Total	C	Cl	H	N	O	S	1	0
			31	20	1	1	3	5	1		

- Molecule 4 is water.

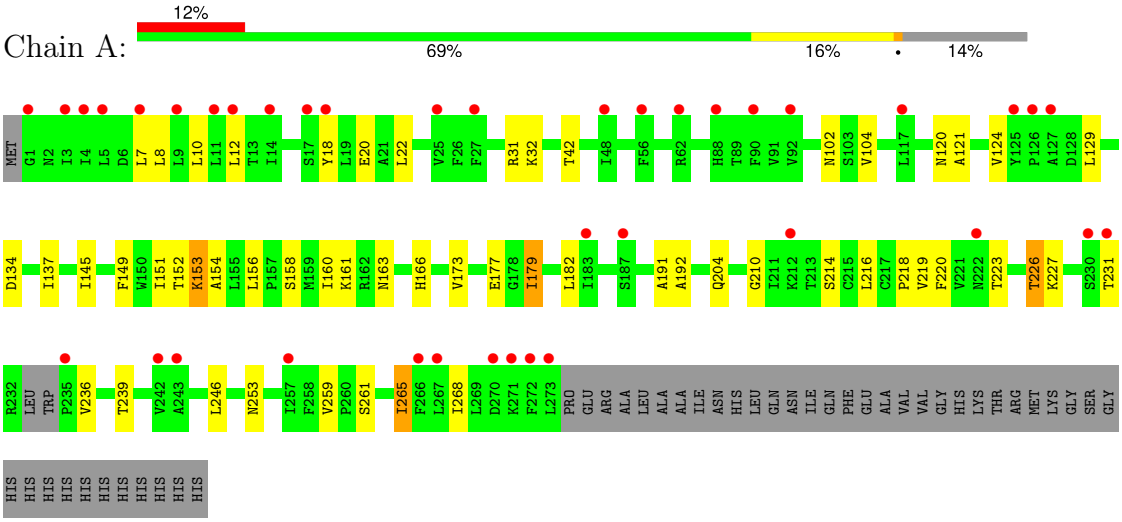
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	75	Total O 75 75	0	0
4	B	63	Total O 63 63	0	0

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.

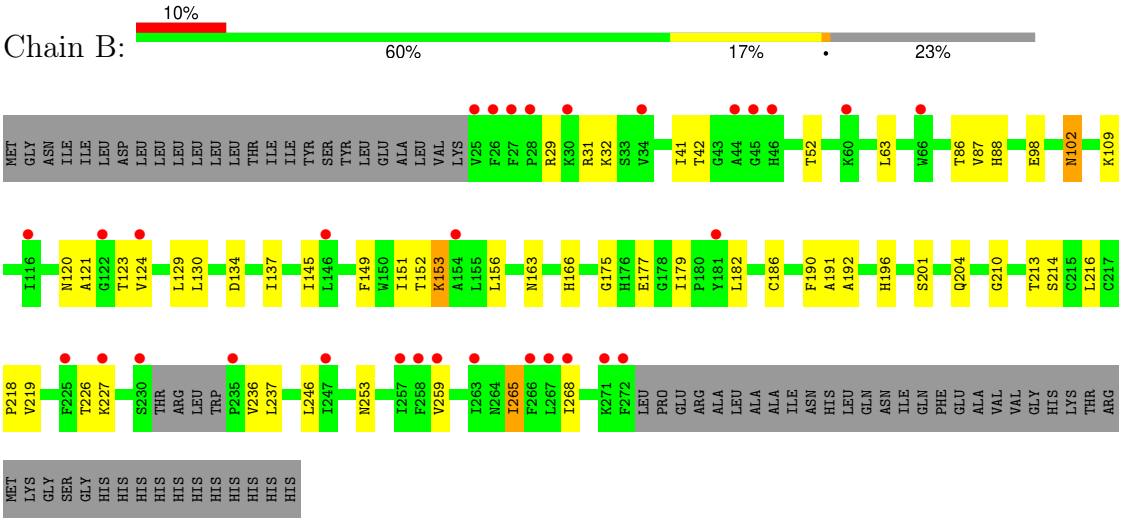
• Molecule 1: Hydroxysteroid 17-beta dehydrogenase 13

Chain A:



• Molecule 1: Hydroxysteroid 17-beta dehydrogenase 13

Chain B:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α, β, γ	77.68Å 185.24Å 64.45Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	29.29 – 2.59 29.29 – 2.59	Depositor EDS
% Data completeness (in resolution range)	42.8 (29.29-2.59) 42.7 (29.29-2.59)	Depositor EDS
R_{merge}	0.20	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.70 (at 2.61Å)	Xtriage
Refinement program	BUSTER 2.11.8	Depositor
R, R_{free}	0.250 , 0.306 0.250 , 0.307	Depositor DCC
R_{free} test set	625 reflections (4.93%)	wwPDB-VP
Wilson B-factor (Å^2)	47.2	Xtriage
Anisotropy	0.170	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 75.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.40$, $< L^2 > = 0.22$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.85	EDS
Total number of atoms	4266	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 5.58% 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: A1AG6, 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	0.37	0/2155	0.55	0/2921
1	B	0.35	0/1936	0.55	0/2622
All	All	0.36	0/4091	0.55	0/5543

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	2113	0	2197	23	0
1	B	1896	0	1944	24	0
2	A	44	0	26	1	0
2	B	44	0	26	1	0
3	A	30	1	0	0	0
4	A	75	0	0	0	0
4	B	63	0	0	0	0
All	All	4265	1	4193	47	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 6.

All (47) 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:158:SER:HA	1:A:161:LYS:HE2	1.50	0.94
1:A:179:ILE:HD11	1:A:182:LEU:HD12	1.58	0.85
1:A:166:HIS:HE1	1:A:253:ASN:HD22	1.31	0.78
1:B:166:HIS:HE1	1:B:253:ASN:HD22	1.32	0.77
1:A:166:HIS:CE1	1:A:253:ASN:HD22	2.10	0.70
1:B:218:PRO:HB3	1:B:259:VAL:HB	1.75	0.69
1:B:166:HIS:CE1	1:B:253:ASN:HD22	2.10	0.68
1:A:218:PRO:HB3	1:A:259:VAL:HB	1.77	0.67
1:A:124:VAL:HG11	1:A:226:THR:HG22	1.80	0.63
1:A:163:ASN:O	1:A:210:GLY:HA3	1.99	0.62
1:A:223:THR:HG22	1:A:239:THR:HG22	1.79	0.62
1:A:156:LEU:HB3	1:B:130:LEU:HD21	1.81	0.62
1:B:163:ASN:O	1:B:210:GLY:HA3	2.01	0.61
1:B:63:LEU:HB2	1:B:87:VAL:HG22	1.82	0.61
1:B:42:THR:O	1:B:120:ASN:HB3	2.03	0.59
1:A:42:THR:O	1:A:120:ASN:HB3	2.03	0.58
1:A:191:ALA:HB2	1:B:191:ALA:HB2	1.87	0.57
1:B:124:VAL:HG11	1:B:226:THR:HG23	1.86	0.56
1:A:42:THR:HG21	1:A:151:ILE:HD13	1.88	0.56
1:A:179:ILE:HD11	1:A:182:LEU:CD1	2.36	0.55
1:A:32:LYS:NZ	1:A:253:ASN:HD21	2.05	0.54
1:B:32:LYS:NZ	1:B:253:ASN:HD21	2.05	0.54
1:A:166:HIS:CE1	1:A:253:ASN:ND2	2.78	0.51
1:B:166:HIS:CE1	1:B:253:ASN:ND2	2.79	0.50
1:B:86:THR:HG22	1:B:88:HIS:CE1	2.47	0.50
1:A:152:THR:O	1:A:156:LEU:HB2	2.12	0.50
1:B:216:LEU:HB2	1:B:246:LEU:HD13	1.95	0.49
1:A:216:LEU:HB2	1:A:246:LEU:HD13	1.95	0.48
1:A:104:VAL:HG11	1:A:154:ALA:HB1	1.97	0.47
1:B:42:THR:HG21	1:B:151:ILE:HD13	1.98	0.46
1:B:149:PHE:O	1:B:153:LYS:HB2	2.16	0.46
1:B:196:HIS:CE1	1:B:213:THR:HB	2.50	0.45
1:A:149:PHE:O	1:A:153:LYS:HB2	2.17	0.44
1:B:145:ILE:HD13	1:B:192:ALA:HA	1.99	0.44
1:A:265:ILE:HA	1:A:268:ILE:HD12	2.00	0.44
1:A:145:ILE:HD13	1:A:192:ALA:HA	2.00	0.43
1:B:265:ILE:HA	1:B:268:ILE:HD12	2.00	0.43
1:A:220:PHE:HB3	1:A:236:VAL:HG22	2.01	0.42
2:A:401:NAD:N7N	2:A:401:NAD:O2N	2.52	0.42
1:A:134:ASP:HA	1:A:137:ILE:HD12	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:98:GLU:O	1:B:102:ASN:HB2	2.21	0.41
2:B:401:NAD:O2N	2:B:401:NAD:N7N	2.53	0.41
1:B:152:THR:O	1:B:156:LEU:HB2	2.20	0.41
1:B:182:LEU:O	1:B:186:CYS:SG	2.78	0.41
1:B:41:ILE:HD13	1:B:52:THR:HG22	2.03	0.40
1:B:175:GLY:HA2	1:B:190:PHE:HA	2.04	0.40
1:B:134:ASP:HA	1:B:137:ILE:HD12	2.03	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	267/315 (85%)	247 (92%)	17 (6%)	3 (1%)	12 26
1	B	240/315 (76%)	223 (93%)	13 (5%)	4 (2%)	7 16
All	All	507/630 (80%)	470 (93%)	30 (6%)	7 (1%)	9 19

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	261	SER
1	A	121	ALA
1	A	219	VAL
1	B	236	VAL
1	B	121	ALA
1	B	219	VAL
1	B	29	ARG

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	234/271 (86%)	213 (91%)	21 (9%)	8 16
1	B	209/271 (77%)	195 (93%)	14 (7%)	13 29
All	All	443/542 (82%)	408 (92%)	35 (8%)	10 21

All (35) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	7	LEU
1	A	8	LEU
1	A	10	LEU
1	A	12	LEU
1	A	18	TYR
1	A	20	GLU
1	A	22	LEU
1	A	31	ARG
1	A	102	ASN
1	A	129	LEU
1	A	153	LYS
1	A	160	ILE
1	A	173	VAL
1	A	177	GLU
1	A	179	ILE
1	A	204	GLN
1	A	214	SER
1	A	226	THR
1	A	227	LYS
1	A	231	THR
1	A	265	ILE
1	B	31	ARG
1	B	102	ASN
1	B	109	LYS
1	B	123	THR
1	B	129	LEU
1	B	153	LYS

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Mol	Chain	Res	Type
1	B	177	GLU
1	B	179	ILE
1	B	201	SER
1	B	204	GLN
1	B	214	SER
1	B	227	LYS
1	B	237	LEU
1	B	265	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	119	ASN
1	A	166	HIS
1	A	253	ASN
1	B	88	HIS
1	B	166	HIS
1	B	196	HIS
1	B	253	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

3 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The

Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
3	A1AG6	A	402	-	29,33,33	0.44	0	39,49,49	0.54	0
2	NAD	A	401	-	42,48,48	0.62	0	50,73,73	0.68	1 (2%)
2	NAD	B	401	-	42,48,48	0.64	0	50,73,73	0.69	2 (4%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	A1AG6	A	402	-	-	15/20/26/26	0/4/4/4
2	NAD	A	401	-	-	2/26/62/62	0/5/5/5
2	NAD	B	401	-	-	2/26/62/62	0/5/5/5

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	401	NAD	C5A-C6A-N6A	2.45	124.05	120.31
2	A	401	NAD	C5A-C6A-N6A	2.33	123.87	120.31
2	B	401	NAD	C4B-O4B-C1B	-2.07	108.03	109.92

There are no chirality outliers.

All (19) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	401	NAD	O4D-C4D-C5D-O5D
2	B	401	NAD	O4D-C4D-C5D-O5D
3	A	402	A1AG6	O22-C23-C24-C25
3	A	402	A1AG6	O22-C23-C24-C27
3	A	402	A1AG6	C20-C15-S12-N11
3	A	402	A1AG6	C16-C15-S12-N11
2	B	401	NAD	C3D-C4D-C5D-O5D
2	A	401	NAD	C3D-C4D-C5D-O5D
3	A	402	A1AG6	O30-C28-C5-C4

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Mol	Chain	Res	Type	Atoms
3	A	402	A1AG6	C8-N11-S12-O13
3	A	402	A1AG6	O30-C28-C5-C6
3	A	402	A1AG6	C8-N11-S12-O14
3	A	402	A1AG6	O29-C28-C5-C4
3	A	402	A1AG6	C16-C15-S12-O14
3	A	402	A1AG6	C20-C15-S12-O14
3	A	402	A1AG6	O29-C28-C5-C6
3	A	402	A1AG6	C16-C15-S12-O13
3	A	402	A1AG6	C8-N11-S12-C15
3	A	402	A1AG6	C20-C15-S12-O13

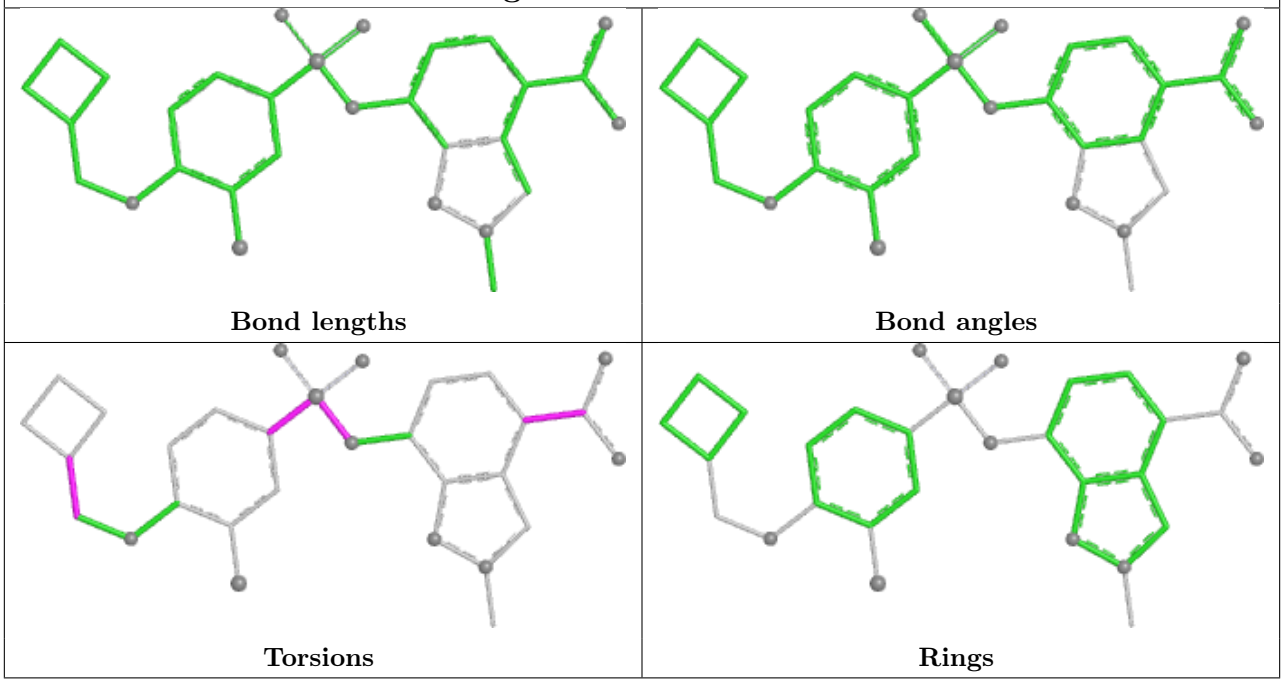
There are no ring outliers.

2 monomers are involved in 2 short contacts:

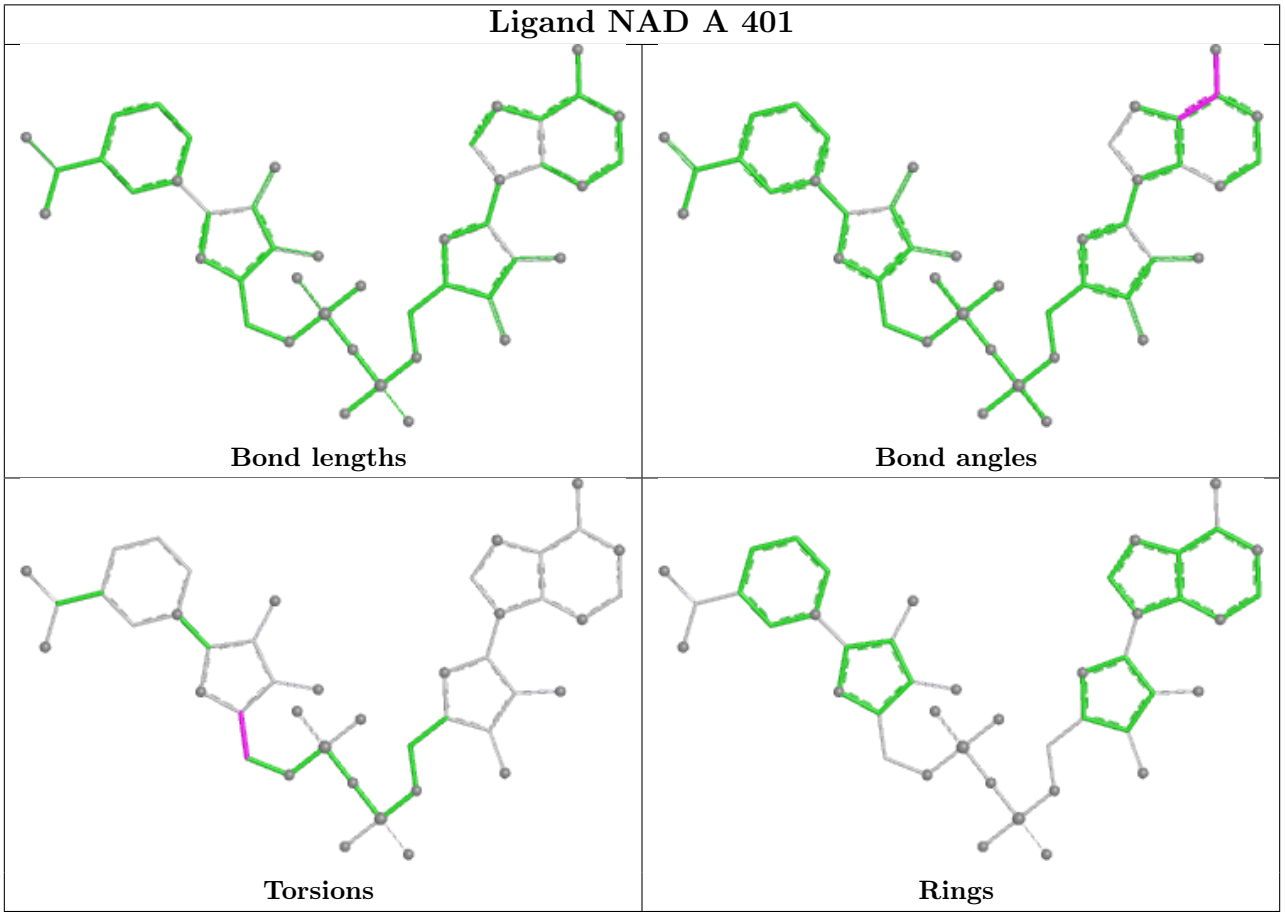
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	401	NAD	1	0
2	B	401	NAD	1	0

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.

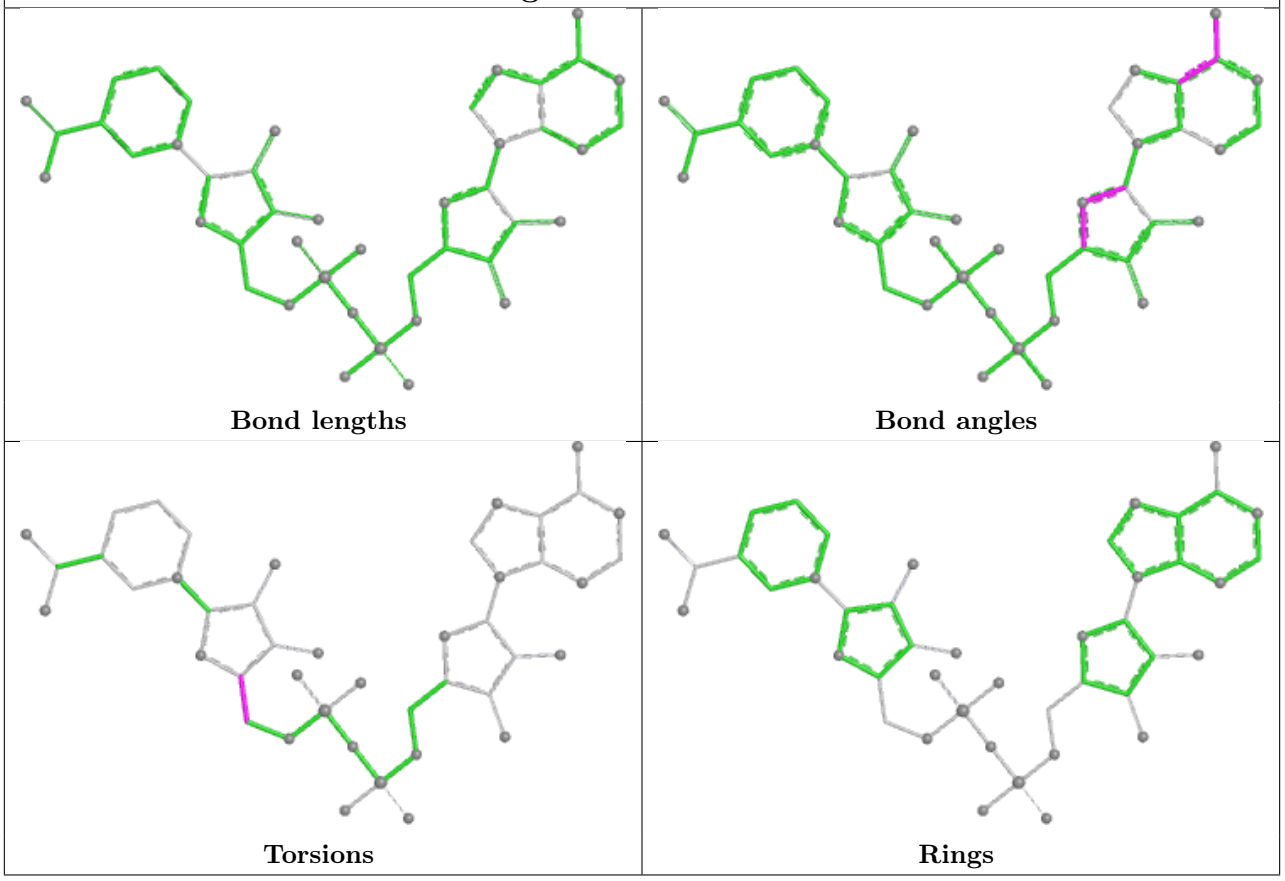
Ligand A1AG6 A 402



Ligand NAD A 401



Ligand NAD B 401



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	271/315 (86%)	0.88	39 (14%)	7	5	42, 65, 117, 141	0
1	B	244/315 (77%)	0.91	31 (12%)	9	7	36, 71, 110, 130	0
All	All	515/630 (81%)	0.89	70 (13%)	8	6	36, 67, 116, 141	0

All (70) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	25	VAL	4.8
1	B	230	SER	4.5
1	A	7	LEU	4.2
1	B	263	ILE	4.1
1	A	3	ILE	4.0
1	B	124	VAL	4.0
1	A	231	THR	3.9
1	A	1	GLY	3.8
1	A	235	PRO	3.6
1	B	26	PHE	3.6
1	A	273	LEU	3.6
1	A	4	ILE	3.6
1	A	257	ILE	3.5
1	B	271	LYS	3.5
1	A	230	SER	3.3
1	B	27	PHE	3.3
1	B	34	VAL	3.3
1	A	222	ASN	3.3
1	A	9	LEU	3.1
1	A	242	VAL	3.1
1	A	117	LEU	3.0
1	B	122	GLY	3.0
1	A	12	LEU	3.0
1	A	56	PHE	3.0

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Mol	Chain	Res	Type	RSRZ
1	B	30	LYS	3.0
1	B	154	ALA	2.9
1	A	18	TYR	2.9
1	A	127	ALA	2.9
1	B	227	LYS	2.8
1	B	272	PHE	2.8
1	A	62	ARG	2.7
1	B	66	TRP	2.7
1	A	272	PHE	2.6
1	B	247	ILE	2.6
1	B	60	LYS	2.5
1	B	46	HIS	2.5
1	A	125	TYR	2.5
1	B	259	VAL	2.5
1	B	181	TYR	2.5
1	B	258	PHE	2.5
1	A	48	ILE	2.5
1	A	270	ASP	2.4
1	A	27	PHE	2.4
1	A	90	PHE	2.4
1	A	88	HIS	2.4
1	B	44	ALA	2.4
1	A	212	LYS	2.3
1	B	267	LEU	2.3
1	A	243	ALA	2.3
1	A	25	VAL	2.3
1	A	5	LEU	2.3
1	B	45	GLY	2.3
1	B	146	LEU	2.2
1	A	126	PRO	2.2
1	B	225	PHE	2.2
1	A	14	ILE	2.2
1	B	116	ILE	2.2
1	A	267	LEU	2.2
1	A	183	ILE	2.2
1	B	257	ILE	2.1
1	B	266	PHE	2.1
1	A	187	SER	2.1
1	B	28	PRO	2.1
1	A	17	SER	2.1
1	A	266	PHE	2.0
1	A	11	LEU	2.0

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Mol	Chain	Res	Type	RSRZ
1	A	92	VAL	2.0
1	A	271	LYS	2.0
1	B	235	PRO	2.0
1	B	268	ILE	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)

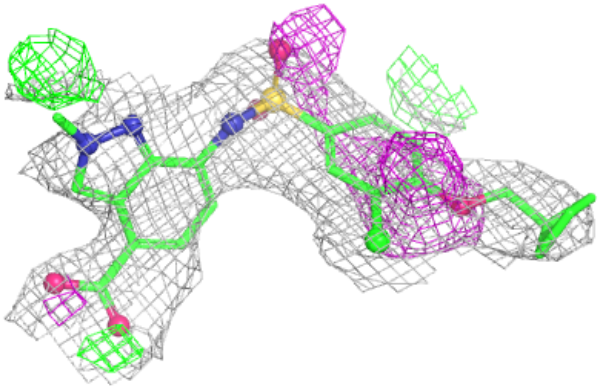
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9'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

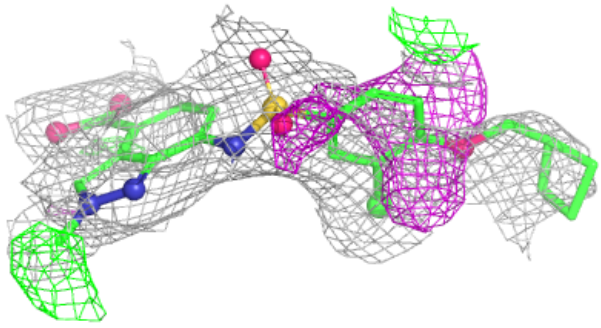
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	A1AG6	A	402	30/30	0.79	0.21	96,98,99,116	1
2	NAD	A	401	44/44	0.94	0.12	59,61,62,63	0
2	NAD	B	401	44/44	0.96	0.10	55,58,62,62	0

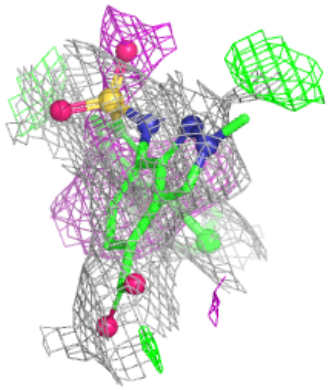
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around A1AG6 A 402:

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

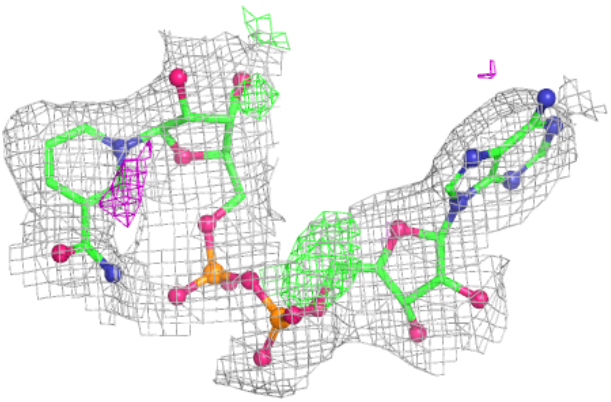


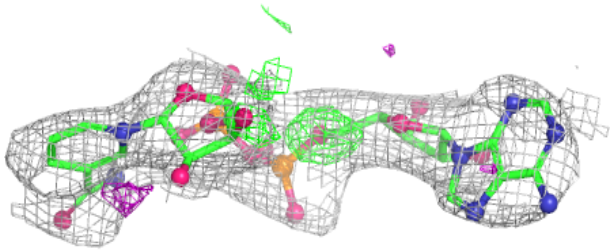


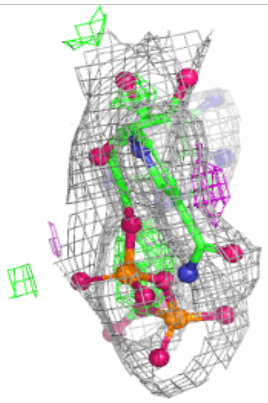


Electron density around NAD A 401:

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

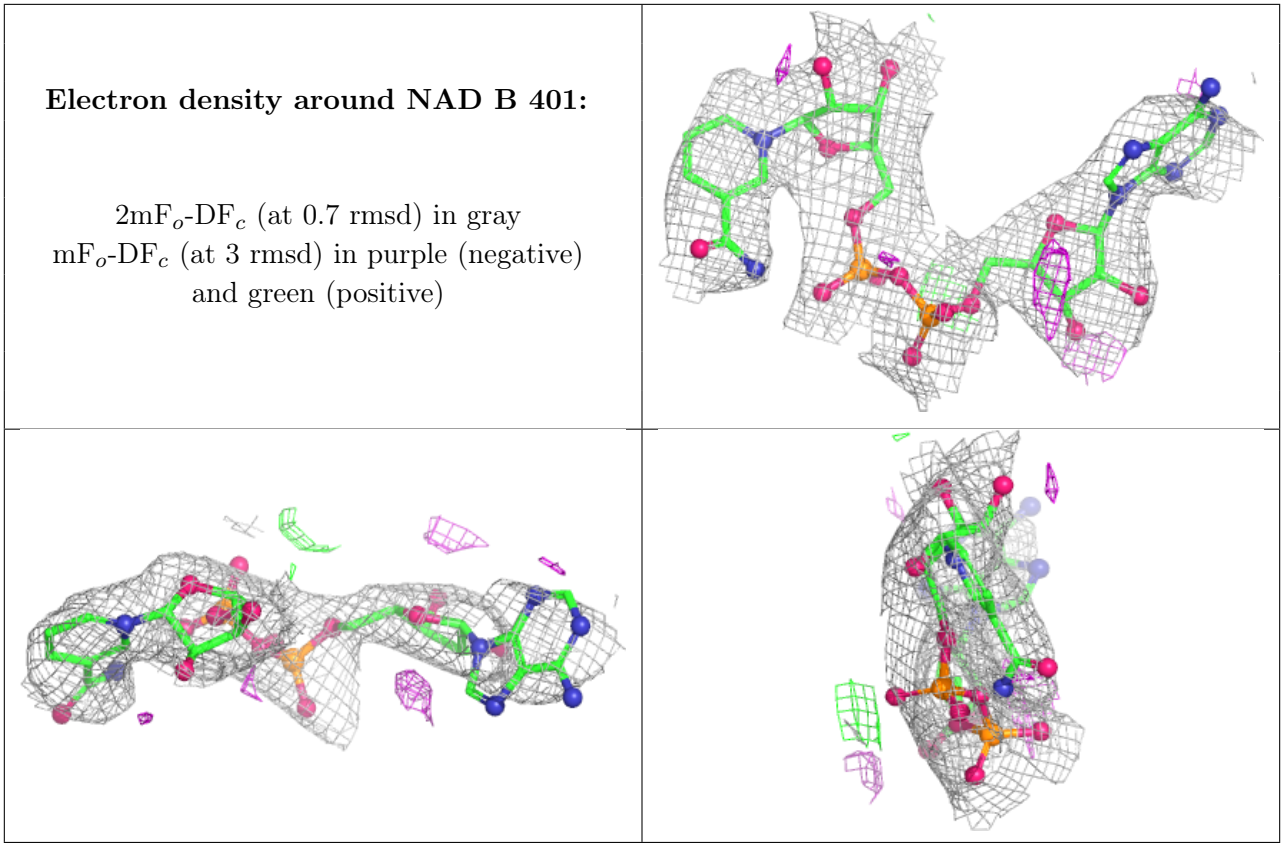






Electron density around NAD B 401:

$2mF_o$-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

There are no such residues in this entry.