



# Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 10:50 AM UTC

PDB ID : 8TDF / pdb\_00008tdf  
Title : Structure of Alistipes sp. Glucoside-3-dehydrogenase AL3  
Authors : Lazarski, A.C.; Worrall, L.J.; Strynadka, N.C.J.  
Deposited on : 2023-07-02  
Resolution : 2.10 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](mailto: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>.

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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 : wwPDB partial adaption of 1.1.7 (2018)  
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)  
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) : 2.49

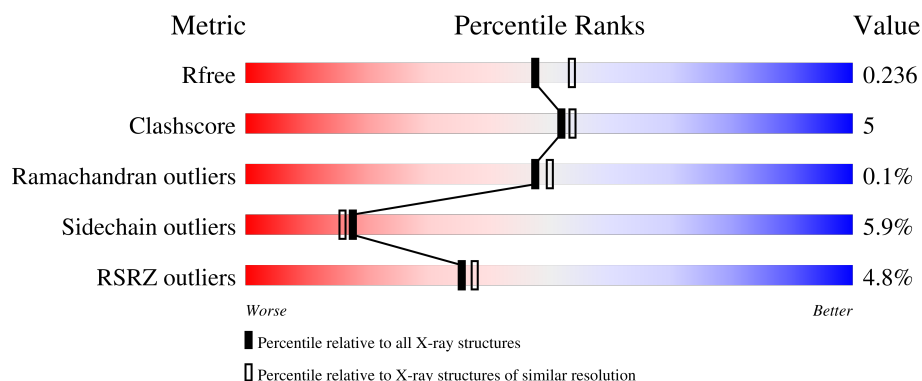
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.10 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))
$R_{free}$	180053	6658 (2.10-2.10)
Clashscore	190562	7164 (2.10-2.10)
Ramachandran outliers	187476	7099 (2.10-2.10)
Sidechain outliers	187428	7100 (2.10-2.10)
RSRZ outliers	180081	6662 (2.10-2.10)

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  $\geq 3$ , 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  $\leq 5\%$ . 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	467	<div> <div>0%</div> <div>82%</div> <div>12%</div> <div>..</div> </div>
1	B	467	<div> <div>2%</div> <div>82%</div> <div>13%</div> <div>..</div> </div>
1	C	467	<div> <div>9%</div> <div>80%</div> <div>14%</div> <div>...</div> </div>
1	D	467	<div> <div>7%</div> <div>82%</div> <div>12%</div> <div>..</div> </div>

## 2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 14839 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 Dehydrogenase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	452	Total	C	N	O	S	0	0	0
			3565	2274	618	652	21			
1	B	452	Total	C	N	O	S	0	0	0
			3565	2274	618	652	21			
1	C	452	Total	C	N	O	S	0	0	0
			3561	2271	617	652	21			
1	D	452	Total	C	N	O	S	0	0	0
			3558	2270	617	650	21			

There are 28 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	30	MET	-	initiating methionine	UNP A0A4Y1WH70
A	491	HIS	-	expression tag	UNP A0A4Y1WH70
A	492	HIS	-	expression tag	UNP A0A4Y1WH70
A	493	HIS	-	expression tag	UNP A0A4Y1WH70
A	494	HIS	-	expression tag	UNP A0A4Y1WH70
A	495	HIS	-	expression tag	UNP A0A4Y1WH70
A	496	HIS	-	expression tag	UNP A0A4Y1WH70
B	30	MET	-	initiating methionine	UNP A0A4Y1WH70
B	491	HIS	-	expression tag	UNP A0A4Y1WH70
B	492	HIS	-	expression tag	UNP A0A4Y1WH70
B	493	HIS	-	expression tag	UNP A0A4Y1WH70
B	494	HIS	-	expression tag	UNP A0A4Y1WH70
B	495	HIS	-	expression tag	UNP A0A4Y1WH70
B	496	HIS	-	expression tag	UNP A0A4Y1WH70
C	30	MET	-	initiating methionine	UNP A0A4Y1WH70
C	491	HIS	-	expression tag	UNP A0A4Y1WH70
C	492	HIS	-	expression tag	UNP A0A4Y1WH70
C	493	HIS	-	expression tag	UNP A0A4Y1WH70
C	494	HIS	-	expression tag	UNP A0A4Y1WH70
C	495	HIS	-	expression tag	UNP A0A4Y1WH70
C	496	HIS	-	expression tag	UNP A0A4Y1WH70

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Chain	Residue	Modelled	Actual	Comment	Reference
D	30	MET	-	initiating methionine	UNP A0A4Y1WH70
D	491	HIS	-	expression tag	UNP A0A4Y1WH70
D	492	HIS	-	expression tag	UNP A0A4Y1WH70
D	493	HIS	-	expression tag	UNP A0A4Y1WH70
D	494	HIS	-	expression tag	UNP A0A4Y1WH70
D	495	HIS	-	expression tag	UNP A0A4Y1WH70
D	496	HIS	-	expression tag	UNP A0A4Y1WH70

- # NAD

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	236	Total O 236 236	0	0



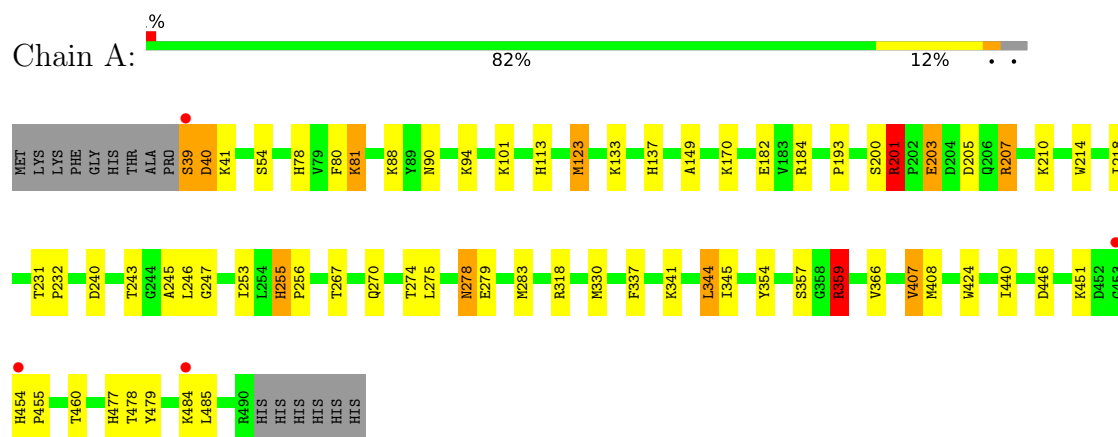
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	B	87	Total 87	O 87	0	0
3	C	60	Total 60	O 60	0	0
3	D	31	Total 31	O 31	0	0

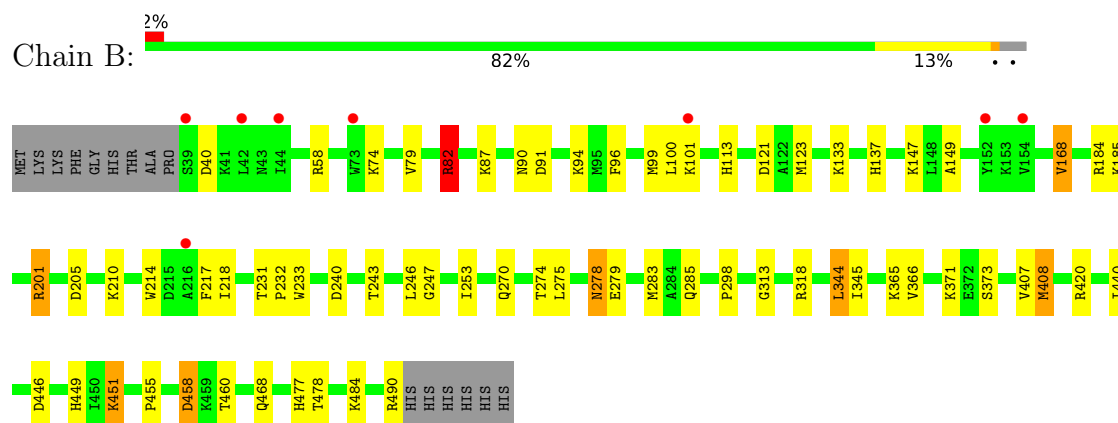
### 3 Residue-property plots [i](#)

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.

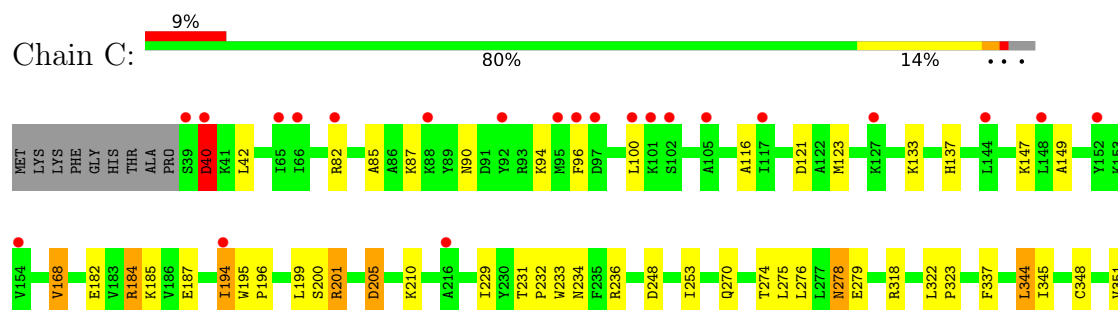
#### • Molecule 1: Dehydrogenase

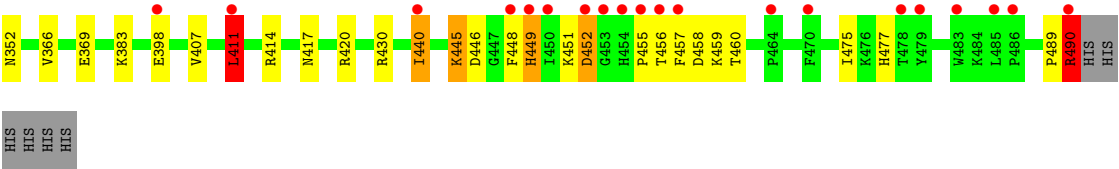


#### • Molecule 1: Dehydrogenase

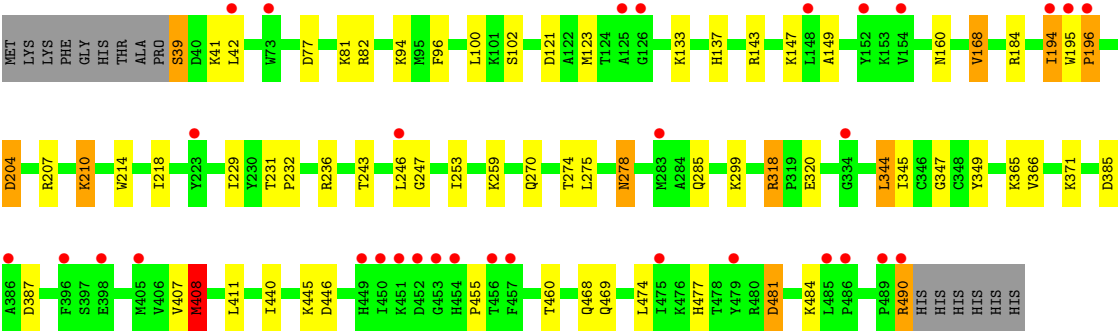
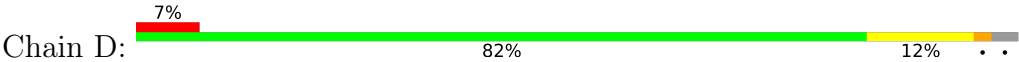


#### • Molecule 1: Dehydrogenase





● Molecule 1: Dehydrogenase



## 4 Data and refinement statistics

Property	Value	Source
Space group	I 1 2 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	180.63Å 56.75Å 220.45Å 90.00° 108.87° 90.00°	Depositor
Resolution (Å)	48.00 – 2.10 48.00 – 2.10	Depositor EDS
% Data completeness (in resolution range)	99.7 (48.00-2.10) 99.7 (48.00-2.10)	Depositor EDS
$R_{merge}$	0.17	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.71 (at 2.10Å)	Xtriage
Refinement program	REFMAC 5.8.0415	Depositor
R, $R_{free}$	0.198 , 0.233 0.206 , 0.236	Depositor DCC
$R_{free}$ test set	6343 reflections (5.11%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	37.1	Xtriage
Anisotropy	0.221	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.32 , 42.2	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	14839	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	53.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.76% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.



## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section:  
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	1.21	9/3664 (0.2%)	1.40	21/4977 (0.4%)
1	B	0.95	2/3664 (0.1%)	1.28	12/4977 (0.2%)
1	C	0.90	3/3660 (0.1%)	1.28	23/4973 (0.5%)
1	D	0.82	0/3657	1.24	13/4969 (0.3%)
All	All	0.98	14/14645 (0.1%)	1.30	69/19896 (0.3%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	6
1	B	0	5
1	C	0	5
1	D	0	5
All	All	0	21

All (14) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	352	ASN	C-O	-7.16	1.20	1.23
1	C	182	GLU	CD-OE1	6.76	1.38	1.25
1	A	330	MET	CG-SD	6.75	1.97	1.80
1	A	255	HIS	CE1-NE2	6.31	1.38	1.32
1	A	182	GLU	CD-OE1	6.15	1.37	1.25
1	A	359	ARG	CD-NE	-6.08	1.37	1.46
1	A	113	HIS	CE1-NE2	6.00	1.38	1.32
1	A	54	SER	CA-CB	-5.62	1.44	1.53
1	B	455	PRO	C-O	-5.58	1.17	1.23
1	A	341	LYS	C-O	-5.43	1.17	1.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	354	TYR	C-O	5.38	1.30	1.23
1	A	255	HIS	ND1-CE1	5.24	1.37	1.32
1	B	313	GLY	N-CA	5.01	1.51	1.45
1	C	184	ARG	CD-NE	-5.00	1.39	1.46

All (69) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	40	ASP	CB-CA-C	-10.63	87.59	111.30
1	B	168	VAL	CB-CA-C	-8.95	100.32	112.04
1	D	168	VAL	CB-CA-C	-8.77	100.56	112.04
1	C	168	VAL	CB-CA-C	-8.77	100.31	112.14
1	D	196	PRO	CB-CA-C	-8.40	100.79	111.71
1	C	449	HIS	CA-CB-CG	7.95	121.75	113.80
1	D	481	ASP	CA-CB-CG	7.67	120.27	112.60
1	B	458	ASP	CA-CB-CG	7.64	120.25	112.60
1	A	460	THR	CB-CA-C	7.41	121.75	109.53
1	C	449	HIS	CB-CG-CD2	-7.18	121.87	131.20
1	A	359	ARG	NE-CZ-NH1	7.09	128.59	121.50
1	C	234	ASN	CA-CB-CG	-6.89	105.71	112.60
1	C	205	ASP	CA-CB-CG	6.88	119.48	112.60
1	B	240	ASP	CA-CB-CG	6.78	119.38	112.60
1	C	449	HIS	CB-CG-ND1	6.76	132.84	122.70
1	A	337	PHE	CA-CB-CG	6.72	120.53	113.80
1	B	446	ASP	CA-CB-CG	-6.54	106.06	112.60
1	D	460	THR	CB-CA-C	6.48	120.22	109.53
1	B	121	ASP	CA-CB-CG	6.41	119.01	112.60
1	D	446	ASP	CA-CB-CG	-6.38	106.22	112.60
1	D	168	VAL	N-CA-CB	6.36	118.42	110.47
1	B	168	VAL	N-CA-CB	6.32	118.37	110.47
1	B	201	ARG	CB-CG-CD	-6.30	96.81	111.30
1	C	201	ARG	CB-CG-CD	-6.27	96.88	111.30
1	A	478	THR	CA-CB-OG1	-6.26	100.21	109.60
1	C	446	ASP	CA-CB-CG	-6.21	106.39	112.60
1	A	203	GLU	CB-CG-CD	6.18	123.11	112.60
1	C	205	ASP	CB-CA-C	6.10	119.79	109.84
1	D	408	MET	CB-CG-SD	-6.09	94.44	112.70
1	C	168	VAL	N-CA-CB	6.06	118.78	110.54
1	C	445	LYS	CB-CA-C	6.04	121.63	109.68
1	A	407	VAL	N-CA-CB	-6.00	98.45	111.05
1	A	201	ARG	CB-CG-CD	-5.97	97.56	111.30
1	A	446	ASP	CA-CB-CG	-5.95	106.65	112.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	449	HIS	CB-CA-C	5.93	121.66	110.62
1	A	240	ASP	CA-CB-CG	5.90	118.50	112.60
1	C	398	GLU	CB-CG-CD	5.79	122.45	112.60
1	C	411	LEU	CB-CA-C	-5.77	101.82	110.88
1	C	40	ASP	CA-CB-CG	5.75	118.35	112.60
1	C	82	ARG	CB-CG-CD	5.71	124.44	111.30
1	D	385	ASP	CA-CB-CG	5.69	118.29	112.60
1	A	407	VAL	CA-CB-CG1	5.68	120.05	110.40
1	A	123	MET	CG-SD-CE	-5.55	88.70	100.90
1	A	359	ARG	CD-NE-CZ	5.53	132.14	124.40
1	D	196	PRO	N-CA-C	5.48	119.83	110.95
1	A	203	GLU	N-CA-CB	-5.47	103.32	110.59
1	A	207	ARG	CB-CA-C	5.43	118.93	109.65
1	B	285	GLN	CG-CD-OE1	5.42	131.64	120.80
1	D	121	ASP	CA-CB-CG	5.41	118.01	112.60
1	A	454	HIS	CA-CB-CG	-5.41	108.39	113.80
1	C	460	THR	CB-CA-C	5.37	118.60	109.53
1	C	248	ASP	CA-CB-CG	5.36	117.96	112.60
1	D	387	ASP	CA-CB-CG	5.33	117.94	112.60
1	C	452	ASP	CA-CB-CG	5.27	117.87	112.60
1	A	267	THR	CA-CB-OG1	-5.26	101.71	109.60
1	B	460	THR	CB-CA-C	5.23	118.36	109.53
1	B	91	ASP	CA-CB-CG	5.22	117.82	112.60
1	D	468	GLN	CB-CG-CD	-5.19	103.77	112.60
1	A	205	ASP	CA-CB-CG	5.18	117.78	112.60
1	B	468	GLN	CB-CA-C	-5.17	102.76	110.88
1	C	337	PHE	CA-CB-CG	5.15	118.95	113.80
1	B	478	THR	CA-CB-OG1	-5.14	101.89	109.60
1	A	40	ASP	CA-CB-CG	5.10	117.70	112.60
1	A	203	GLU	CB-CA-C	5.10	117.30	109.03
1	C	369	GLU	CB-CA-C	5.10	119.23	110.81
1	C	121	ASP	CA-CB-CG	5.07	117.67	112.60
1	A	255	HIS	CA-C-O	5.07	123.29	118.63
1	D	469	GLN	CB-CG-CD	-5.06	104.00	112.60
1	C	182	GLU	CB-CG-CD	5.04	121.17	112.60

There are no chirality outliers.

All (21) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	184	ARG	Sidechain
1	A	201	ARG	Sidechain

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Mol	Chain	Res	Type	Group
1	A	207	ARG	Sidechain
1	A	359	ARG	Sidechain
1	A	39	SER	Peptide
1	A	81	LYS	Mainchain
1	B	184	ARG	Sidechain
1	B	420	ARG	Sidechain
1	B	490	ARG	Sidechain
1	B	58	ARG	Sidechain
1	B	82	ARG	Sidechain
1	C	184	ARG	Sidechain
1	C	236	ARG	Sidechain
1	C	420	ARG	Sidechain
1	C	430	ARG	Sidechain
1	C	490	ARG	Sidechain
1	D	184	ARG	Sidechain
1	D	236	ARG	Sidechain
1	D	318	ARG	Sidechain
1	D	490	ARG	Sidechain
1	D	82	ARG	Sidechain

## 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	3565	0	3493	42	0
1	B	3565	0	3493	39	0
1	C	3561	0	3482	40	0
1	D	3558	0	3480	42	0
2	A	44	0	26	0	0
2	B	44	0	26	1	0
2	C	44	0	26	0	0
2	D	44	0	26	0	0
3	A	236	0	0	5	0
3	B	87	0	0	4	0
3	C	60	0	0	7	0
3	D	31	0	0	7	0
All	All	14839	0	14052	145	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 5.

All (145) 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:283:MET:HE2	1:B:283:MET:SD	1.95	1.06
1:A:283:MET:HE1	1:B:283:MET:HB3	1.48	0.95
1:D:160:ASN:HB2	3:D:617:HOH:O	1.71	0.91
1:A:283:MET:HE1	1:B:283:MET:CB	2.02	0.89
1:A:283:MET:CE	1:B:283:MET:HB3	2.03	0.87
1:D:259:LYS:O	3:D:601:HOH:O	1.96	0.84
1:C:185:LYS:HE3	3:C:656:HOH:O	1.78	0.82
1:A:170:LYS:HE2	3:A:816:HOH:O	1.82	0.80
1:B:458:ASP:HB3	3:B:679:HOH:O	1.81	0.79
1:C:270:GLN:HE22	1:D:318:ARG:H	1.31	0.79
1:C:417:ASN:HB2	1:C:440:ILE:HD11	1.66	0.77
1:D:347:GLY:O	3:D:602:HOH:O	2.02	0.77
1:C:318:ARG:H	1:D:270:GLN:HE22	1.31	0.77
1:A:283:MET:CE	1:B:283:MET:SD	2.72	0.76
1:C:185:LYS:CE	3:C:656:HOH:O	2.30	0.76
1:A:270:GLN:HE22	1:B:318:ARG:H	1.33	0.76
1:A:318:ARG:H	1:B:270:GLN:HE22	1.35	0.73
1:C:195:TRP:HB3	1:C:233:TRP:CZ3	2.24	0.71
1:C:123:MET:HE1	1:C:149:ALA:HB2	1.73	0.71
1:C:187:GLU:OE2	3:C:602:HOH:O	2.07	0.71
1:B:185:LYS:NZ	3:B:601:HOH:O	2.17	0.71
1:A:40:ASP:HA	3:A:601:HOH:O	1.90	0.69
1:A:39:SER:O	3:A:601:HOH:O	2.11	0.69
1:D:285:GLN:NE2	3:D:603:HOH:O	2.25	0.67
1:A:123:MET:HE1	1:A:149:ALA:HB2	1.79	0.63
1:C:318:ARG:H	1:D:270:GLN:NE2	1.96	0.62
1:A:78:HIS:HD2	3:A:785:HOH:O	1.82	0.62
1:A:137:HIS:ND1	1:A:477:HIS:HE1	1.96	0.62
1:A:283:MET:HE3	1:B:274:THR:HG21	1.81	0.62
1:D:123:MET:HE1	1:D:149:ALA:HB2	1.81	0.62
1:D:137:HIS:ND1	1:D:477:HIS:HE1	1.97	0.62
1:B:137:HIS:ND1	1:B:477:HIS:HE1	1.99	0.60
1:C:137:HIS:ND1	1:C:477:HIS:HE1	1.97	0.60
1:B:123:MET:HE1	1:B:149:ALA:HB2	1.81	0.60
2:B:501:NAD:N7A	3:B:603:HOH:O	2.32	0.59
1:A:201:ARG:HD2	1:A:279:GLU:OE2	2.03	0.59
1:B:243:THR:OG1	1:B:247:GLY:HA3	2.04	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:194:ILE:HD12	1:D:195:TRP:HE3	1.69	0.58
1:C:278:ASN:H	1:C:278:ASN:HD22	1.52	0.57
1:D:344:LEU:HD12	1:D:345:ILE:N	2.19	0.57
1:C:194:ILE:HD11	1:D:455:PRO:HG3	1.86	0.57
1:A:344:LEU:HD12	1:A:345:ILE:N	2.20	0.57
1:A:283:MET:CE	1:B:283:MET:CB	2.72	0.56
1:B:344:LEU:HD12	1:B:345:ILE:N	2.19	0.56
1:D:123:MET:HE2	1:D:149:ALA:HA	1.87	0.56
1:A:243:THR:OG1	1:A:247:GLY:HA3	2.05	0.56
1:B:123:MET:CE	1:B:149:ALA:HA	2.35	0.56
1:A:78:HIS:HE1	3:A:611:HOH:O	1.89	0.55
1:C:276:LEU:HD21	1:C:414:ARG:HA	1.89	0.55
1:A:80:PHE:CG	1:A:88:LYS:HE3	2.42	0.55
1:C:348:CYS:O	1:C:351:VAL:HG13	2.07	0.55
1:D:204:ASP:OD2	1:D:204:ASP:N	2.37	0.55
1:B:278:ASN:H	1:B:278:ASN:HD22	1.56	0.54
1:B:123:MET:HE2	1:B:149:ALA:HA	1.90	0.53
1:B:449:HIS:CE1	1:B:451:LYS:HG2	2.43	0.53
1:D:231:THR:OG1	1:D:232:PRO:HA	2.08	0.53
1:D:344:LEU:HD12	1:D:344:LEU:C	2.34	0.53
1:C:414:ARG:O	3:C:603:HOH:O	2.19	0.52
1:B:231:THR:OG1	1:B:232:PRO:HA	2.09	0.52
1:C:455:PRO:HB2	1:C:457:PHE:CZ	2.44	0.52
1:B:344:LEU:HD12	1:B:344:LEU:C	2.35	0.52
1:D:160:ASN:C	3:D:617:HOH:O	2.51	0.52
1:C:322:LEU:HD12	1:C:323:PRO:HD2	1.91	0.51
1:C:344:LEU:HD12	1:C:345:ILE:N	2.26	0.51
1:C:489:PRO:O	1:C:490:ARG:HB2	2.11	0.51
1:A:344:LEU:HD12	1:A:344:LEU:C	2.36	0.51
1:A:80:PHE:CD2	1:A:88:LYS:HE3	2.45	0.50
1:A:357:SER:OG	1:A:359:ARG:HG3	2.11	0.50
1:B:87:LYS:HE2	1:B:99:MET:HE3	1.93	0.50
1:C:344:LEU:HD12	1:C:344:LEU:C	2.35	0.50
1:D:278:ASN:HD22	1:D:278:ASN:H	1.57	0.50
1:C:231:THR:OG1	1:C:232:PRO:HA	2.12	0.49
1:D:39:SER:HB3	1:D:41:LYS:HB2	1.94	0.49
1:C:96:PHE:O	1:C:100:LEU:HB2	2.12	0.49
1:D:243:THR:OG1	1:D:247:GLY:HA3	2.13	0.49
1:A:231:THR:OG1	1:A:232:PRO:HA	2.13	0.49
1:D:123:MET:CE	1:D:149:ALA:HA	2.42	0.49
1:A:123:MET:CE	1:A:149:ALA:HA	2.42	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:210:LYS:HE3	1:D:210:LYS:HA	1.94	0.48
1:B:201:ARG:HD2	1:B:279:GLU:OE2	2.14	0.48
1:B:96:PHE:O	1:B:100:LEU:HB2	2.14	0.48
1:D:349:TYR:HA	3:D:614:HOH:O	2.13	0.48
1:A:278:ASN:HD22	1:A:278:ASN:H	1.60	0.47
1:C:185:LYS:HE2	3:C:656:HOH:O	2.03	0.47
1:C:270:GLN:NE2	1:D:318:ARG:H	2.07	0.47
1:C:123:MET:HE2	1:C:149:ALA:HA	1.95	0.47
1:D:194:ILE:HD12	1:D:195:TRP:CE3	2.48	0.47
1:D:96:PHE:O	1:D:100:LEU:HB2	2.15	0.47
1:C:123:MET:CE	1:C:149:ALA:HA	2.44	0.47
1:C:448:PHE:CE2	1:D:196:PRO:HD3	2.49	0.47
1:A:408:MET:HB2	1:A:408:MET:HE2	1.52	0.47
1:C:201:ARG:HD2	1:C:279:GLU:OE2	2.15	0.46
1:B:79:VAL:HG13	1:B:82:ARG:HH21	1.81	0.46
1:D:195:TRP:HB2	1:D:196:PRO:HD2	1.97	0.46
1:B:113:HIS:HA	1:B:137:HIS:HB2	1.98	0.45
1:C:123:MET:HE1	1:C:149:ALA:CB	2.44	0.45
1:A:90:ASN:C	1:A:90:ASN:OD1	2.60	0.45
1:B:185:LYS:NZ	3:B:608:HOH:O	2.47	0.45
1:B:217:PHE:CD1	1:B:217:PHE:C	2.94	0.45
1:C:274:THR:O	1:C:275:LEU:C	2.60	0.44
1:C:85:ALA:HB3	3:C:650:HOH:O	2.17	0.44
1:C:116:ALA:CB	3:C:606:HOH:O	2.66	0.44
1:D:274:THR:O	1:D:275:LEU:C	2.61	0.44
1:D:285:GLN:NE2	3:D:607:HOH:O	2.47	0.44
1:A:255:HIS:HB3	1:A:256:PRO:HD3	1.99	0.44
1:D:411:LEU:HD21	1:D:474:LEU:HB3	2.00	0.43
1:A:193:PRO:HD3	1:A:245:ALA:HB2	2.00	0.43
1:A:283:MET:HE1	1:B:283:MET:HB2	1.93	0.43
1:B:90:ASN:OD1	1:B:90:ASN:C	2.61	0.43
1:C:194:ILE:CD1	1:D:455:PRO:HG3	2.49	0.43
1:B:278:ASN:HD22	1:B:278:ASN:N	2.17	0.43
1:B:371:LYS:HA	1:B:371:LYS:HD3	1.73	0.43
1:D:195:TRP:HB2	1:D:196:PRO:CD	2.49	0.43
1:A:123:MET:HE2	1:A:149:ALA:HA	1.99	0.43
1:A:408:MET:HE1	1:A:424:TRP:CE2	2.53	0.43
1:D:214:TRP:CZ2	1:D:218:ILE:HD11	2.54	0.42
1:C:411:LEU:HD11	1:C:475:ILE:HG13	2.01	0.42
1:A:270:GLN:NE2	1:B:318:ARG:H	2.09	0.42
1:D:77:ASP:OD1	1:D:81:LYS:HE3	2.18	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:94:LYS:HE2	1:A:94:LYS:HB3	1.72	0.42
1:C:440:ILE:HD12	1:C:440:ILE:HA	1.72	0.42
1:C:489:PRO:O	1:C:490:ARG:CB	2.68	0.42
1:D:408:MET:HE3	1:D:408:MET:HB3	1.53	0.42
1:A:455:PRO:HG3	1:B:233:TRP:CE2	2.55	0.42
1:A:123:MET:HE1	1:A:149:ALA:CB	2.48	0.42
1:C:40:ASP:O	1:C:383:LYS:NZ	2.50	0.42
1:A:214:TRP:CZ2	1:A:218:ILE:HD11	2.55	0.42
1:B:274:THR:O	1:B:275:LEU:C	2.62	0.42
1:A:274:THR:O	1:A:275:LEU:C	2.61	0.41
1:B:123:MET:CE	1:B:149:ALA:CA	2.97	0.41
1:D:137:HIS:CE1	1:D:477:HIS:HE1	2.38	0.41
1:B:214:TRP:CZ2	1:B:218:ILE:HD11	2.55	0.41
1:D:229:ILE:HD12	1:D:229:ILE:HA	1.97	0.41
1:C:459:LYS:HB2	1:C:459:LYS:HE2	1.92	0.41
1:D:143:ARG:CD	1:D:147:LYS:HE3	2.50	0.41
1:B:123:MET:HE1	1:B:149:ALA:CB	2.50	0.41
1:D:365:LYS:HA	1:D:365:LYS:HD3	1.90	0.41
1:A:40:ASP:HB3	1:A:41:LYS:H	1.67	0.41
1:B:408:MET:HE2	1:B:408:MET:HB3	1.76	0.41
1:C:90:ASN:OD1	1:C:90:ASN:C	2.65	0.40
1:D:123:MET:CE	1:D:149:ALA:CA	2.99	0.40
1:A:479:TYR:CE2	1:A:485:LEU:HG	2.56	0.40
1:C:196:PRO:HB2	1:C:199:LEU:HD11	2.04	0.40
1:D:39:SER:HB2	1:D:41:LYS:H	1.86	0.40
1:A:278:ASN:HD22	1:A:278:ASN:N	2.19	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	450/467 (96%)	439 (98%)	11 (2%)	0	100	100
1	B	450/467 (96%)	439 (98%)	10 (2%)	1 (0%)	43	44
1	C	450/467 (96%)	441 (98%)	9 (2%)	0	100	100
1	D	450/467 (96%)	439 (98%)	11 (2%)	0	100	100
All	All	1800/1868 (96%)	1758 (98%)	41 (2%)	1 (0%)	48	50

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	373	SER

### 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	376/389 (97%)	361 (96%)	15 (4%)	28	29
1	B	376/389 (97%)	354 (94%)	22 (6%)	18	16
1	C	375/389 (96%)	349 (93%)	26 (7%)	14	12
1	D	374/389 (96%)	349 (93%)	25 (7%)	15	12
All	All	1501/1556 (96%)	1413 (94%)	88 (6%)	18	16

All (88) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	81	LYS
1	A	101	LYS
1	A	133	LYS
1	A	200	SER
1	A	203	GLU
1	A	210	LYS
1	A	246	LEU
1	A	253	ILE
1	A	278	ASN
1	A	344	LEU

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Mol	Chain	Res	Type
1	A	366	VAL
1	A	407	VAL
1	A	440	ILE
1	A	451	LYS
1	A	484	LYS
1	B	40	ASP
1	B	74	LYS
1	B	82	ARG
1	B	94	LYS
1	B	101	LYS
1	B	133	LYS
1	B	147	LYS
1	B	168	VAL
1	B	205	ASP
1	B	210	LYS
1	B	246	LEU
1	B	253	ILE
1	B	278	ASN
1	B	298	PRO
1	B	344	LEU
1	B	365	LYS
1	B	366	VAL
1	B	407	VAL
1	B	408	MET
1	B	440	ILE
1	B	451	LYS
1	B	484	LYS
1	C	40	ASP
1	C	42	LEU
1	C	87	LYS
1	C	94	LYS
1	C	133	LYS
1	C	147	LYS
1	C	168	VAL
1	C	194	ILE
1	C	200	SER
1	C	205	ASP
1	C	210	LYS
1	C	229	ILE
1	C	253	ILE
1	C	278	ASN
1	C	344	LEU

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Mol	Chain	Res	Type
1	C	366	VAL
1	C	407	VAL
1	C	411	LEU
1	C	440	ILE
1	C	445	LYS
1	C	449	HIS
1	C	451	LYS
1	C	452	ASP
1	C	456	THR
1	C	458	ASP
1	C	490	ARG
1	D	39	SER
1	D	42	LEU
1	D	94	LYS
1	D	102	SER
1	D	133	LYS
1	D	168	VAL
1	D	194	ILE
1	D	204	ASP
1	D	207	ARG
1	D	210	LYS
1	D	246	LEU
1	D	253	ILE
1	D	278	ASN
1	D	299	LYS
1	D	320	GLU
1	D	344	LEU
1	D	366	VAL
1	D	371	LYS
1	D	407	VAL
1	D	408	MET
1	D	440	ILE
1	D	445	LYS
1	D	481	ASP
1	D	484	LYS
1	D	490	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (25) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	43	ASN
1	A	64	ASN

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Mol	Chain	Res	Type
1	A	78	HIS
1	A	234	ASN
1	A	270	GLN
1	A	278	ASN
1	A	285	GLN
1	A	469	GLN
1	A	477	HIS
1	B	270	GLN
1	B	278	ASN
1	B	285	GLN
1	B	449	HIS
1	B	469	GLN
1	B	477	HIS
1	C	43	ASN
1	C	64	ASN
1	C	270	GLN
1	C	278	ASN
1	C	477	HIS
1	D	43	ASN
1	D	270	GLN
1	D	278	ASN
1	D	469	GLN
1	D	477	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 oligosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

4 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	NAD	B	501	-	46,48,48	0.93	1 (2%)	64,73,73	1.13	5 (7%)
2	NAD	D	501	-	46,48,48	0.87	1 (2%)	64,73,73	1.03	3 (4%)
2	NAD	A	501	-	46,48,48	1.08	2 (4%)	64,73,73	1.20	8 (12%)
2	NAD	C	501	-	46,48,48	0.70	1 (2%)	64,73,73	1.03	3 (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
2	NAD	B	501	-	-	5/30/62/62	0/5/5/5
2	NAD	D	501	-	-	4/30/62/62	0/5/5/5
2	NAD	A	501	-	-	4/30/62/62	0/5/5/5
2	NAD	C	501	-	-	5/30/62/62	0/5/5/5

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	501	NAD	C2N-N1N	4.68	1.40	1.35
2	D	501	NAD	C2N-N1N	4.24	1.39	1.35
2	B	501	NAD	C2N-N1N	3.78	1.39	1.35
2	C	501	NAD	C2N-N1N	2.15	1.37	1.35
2	A	501	NAD	C7N-N7N	2.07	1.36	1.33

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	501	NAD	C6N-N1N-C2N	-4.23	118.28	121.88
2	D	501	NAD	C6N-N1N-C2N	-3.75	118.69	121.88
2	B	501	NAD	O2A-PA-O1A	3.49	128.69	112.44
2	B	501	NAD	O2N-PN-O3	3.49	116.70	107.27

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	501	NAD	C2N-C3N-C4N	-2.91	114.88	118.26
2	D	501	NAD	O3-PA-O1A	-2.85	102.12	110.70
2	B	501	NAD	O3D-C3D-C4D	-2.75	103.17	111.08
2	D	501	NAD	O2A-PA-O1A	2.72	125.08	112.44
2	B	501	NAD	O2D-C2D-C3D	-2.65	103.33	111.82
2	A	501	NAD	C6N-C5N-C4N	2.60	123.19	119.45
2	C	501	NAD	C2N-C3N-C4N	2.58	121.26	118.26
2	A	501	NAD	O2N-PN-O1N	2.56	124.35	112.44
2	A	501	NAD	C4D-O4D-C1D	-2.49	107.65	109.92
2	A	501	NAD	C6N-N1N-C2N	-2.46	119.79	121.88
2	A	501	NAD	O3-PN-O1N	-2.38	103.53	110.70
2	A	501	NAD	C3N-C7N-N7N	2.35	120.63	117.74
2	B	501	NAD	C6N-N1N-C2N	-2.24	119.97	121.88
2	A	501	NAD	O5B-C5B-C4B	-2.09	101.88	108.99
2	C	501	NAD	C5N-C4N-C3N	-2.04	118.36	120.36

There are no chirality outliers.

All (18) torsion outliers are listed below:

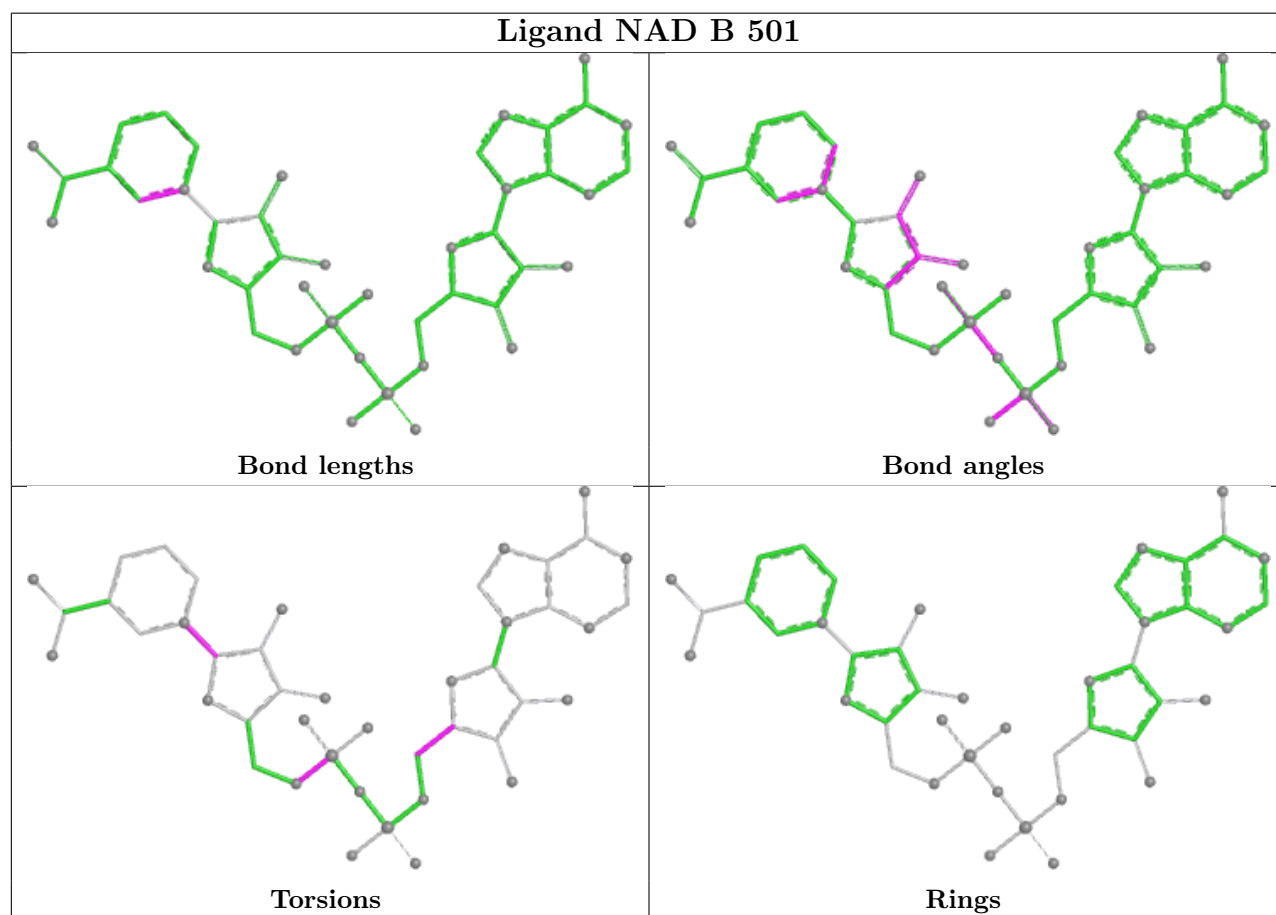
Mol	Chain	Res	Type	Atoms
2	A	501	NAD	C5D-O5D-PN-O2N
2	A	501	NAD	O4D-C1D-N1N-C2N
2	A	501	NAD	O4D-C1D-N1N-C6N
2	B	501	NAD	C5D-O5D-PN-O1N
2	B	501	NAD	O4D-C1D-N1N-C2N
2	B	501	NAD	O4D-C1D-N1N-C6N
2	C	501	NAD	C5D-O5D-PN-O2N
2	C	501	NAD	O4D-C1D-N1N-C2N
2	C	501	NAD	O4D-C1D-N1N-C6N
2	C	501	NAD	C2D-C1D-N1N-C2N
2	D	501	NAD	O4D-C1D-N1N-C2N
2	D	501	NAD	O4D-C1D-N1N-C6N
2	C	501	NAD	C5D-O5D-PN-O3
2	A	501	NAD	C2D-C1D-N1N-C2N
2	B	501	NAD	C2D-C1D-N1N-C2N
2	D	501	NAD	C2D-C1D-N1N-C6N
2	B	501	NAD	O4B-C4B-C5B-O5B
2	D	501	NAD	C2B-C1B-N9A-C8A

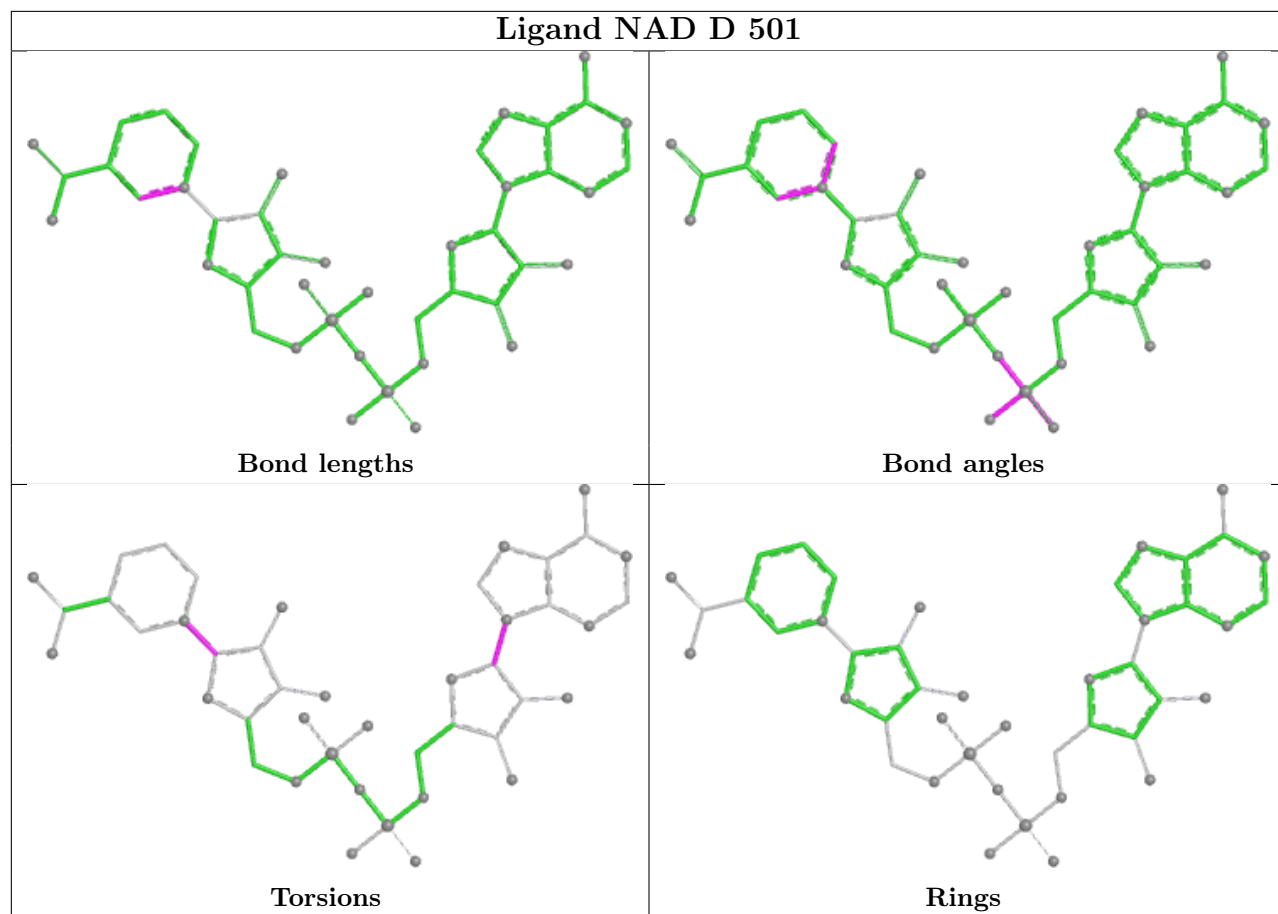
There are no ring outliers.

1 monomer is involved in 1 short contact:

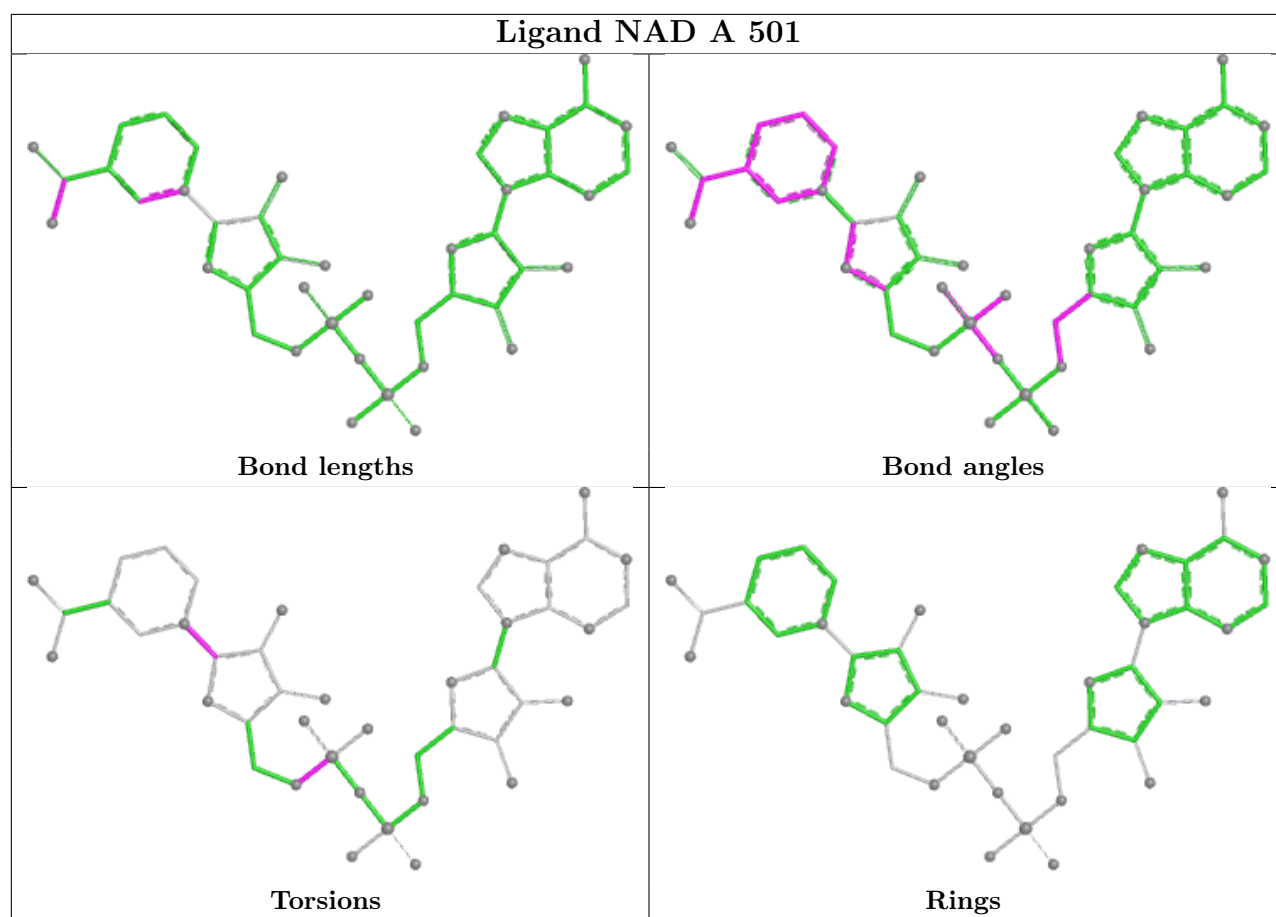
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	501	NAD	1	0

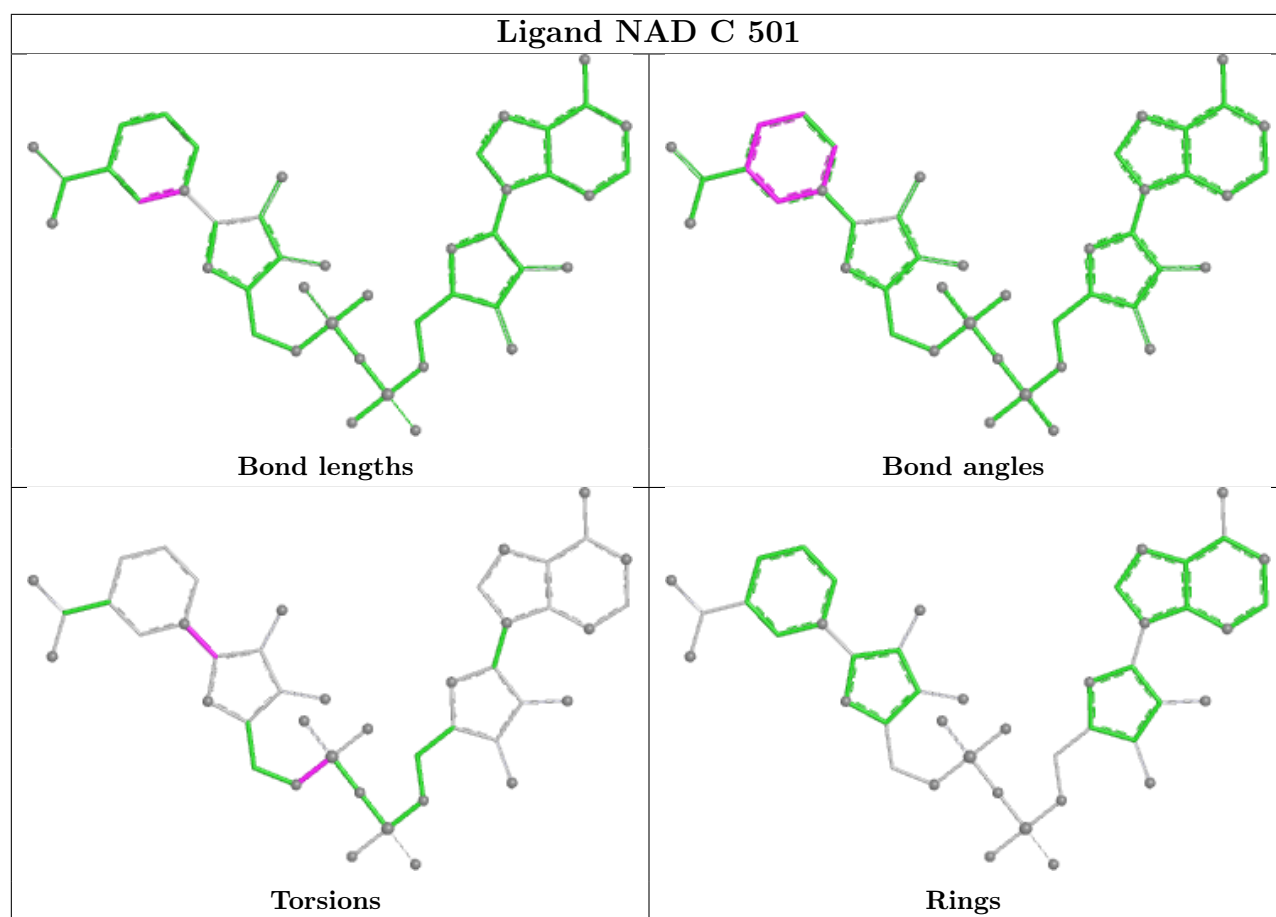
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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











## 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<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	452/467 (96%)	-0.37	4 (0%) 81 83	18, 29, 55, 97	0
1	B	452/467 (96%)	0.29	8 (1%) 67 70	26, 49, 88, 109	0
1	C	452/467 (96%)	0.69	42 (9%) 14 15	31, 57, 97, 122	0
1	D	452/467 (96%)	0.86	32 (7%) 22 23	41, 64, 98, 128	0
All	All	1808/1868 (96%)	0.37	86 (4%) 35 38	18, 51, 92, 128	0

All (86) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	101	LYS	5.0
1	D	452	ASP	4.5
1	D	457	PHE	3.9
1	C	457	PHE	3.8
1	D	196	PRO	3.7
1	A	39	SER	3.6
1	D	194	ILE	3.4
1	C	82	ARG	3.3
1	C	455	PRO	3.1
1	D	450	ILE	3.1
1	C	39	SER	3.1
1	D	246	LEU	3.1
1	D	490	ARG	3.0
1	D	451	LYS	3.0
1	D	489	PRO	2.9
1	C	479	TYR	2.9
1	D	195	TRP	2.9
1	D	152	TYR	2.9
1	D	386	ALA	2.8
1	C	448	PHE	2.7
1	C	194	ILE	2.7

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Mol	Chain	Res	Type	RSRZ
1	C	144	LEU	2.7
1	B	73	TRP	2.7
1	D	334	GLY	2.7
1	C	449	HIS	2.7
1	C	453	GLY	2.6
1	C	454	HIS	2.6
1	D	42	LEU	2.6
1	C	92	TYR	2.6
1	C	102	SER	2.6
1	C	485	LEU	2.6
1	C	100	LEU	2.5
1	B	154	VAL	2.5
1	A	484	LYS	2.5
1	C	117	ILE	2.5
1	C	40	ASP	2.4
1	C	216	ALA	2.3
1	C	490	ARG	2.3
1	C	65	ILE	2.3
1	C	450	ILE	2.3
1	C	478	THR	2.3
1	C	411	LEU	2.3
1	C	88	LYS	2.3
1	B	216	ALA	2.3
1	C	483	TRP	2.3
1	D	485	LEU	2.3
1	A	454	HIS	2.3
1	C	398	GLU	2.3
1	D	126	GLY	2.3
1	C	152	TYR	2.3
1	B	44	ILE	2.2
1	C	148	LEU	2.2
1	B	39	SER	2.2
1	C	470	PHE	2.2
1	C	440	ILE	2.2
1	C	154	VAL	2.2
1	C	464	PRO	2.2
1	D	154	VAL	2.2
1	D	453	GLY	2.2
1	C	105	ALA	2.2
1	B	152	TYR	2.2
1	C	486	PRO	2.1
1	D	125	ALA	2.1

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Mol	Chain	Res	Type	RSRZ
1	C	127	LYS	2.1
1	D	398	GLU	2.1
1	C	96	PHE	2.1
1	A	453	GLY	2.1
1	C	97	ASP	2.1
1	D	479	TYR	2.1
1	D	454	HIS	2.1
1	B	101	LYS	2.1
1	D	283	MET	2.1
1	D	456	THR	2.1
1	D	475	ILE	2.1
1	D	73	TRP	2.1
1	C	95	MET	2.0
1	D	148	LEU	2.0
1	D	486	PRO	2.0
1	C	66	ILE	2.0
1	D	396	PHE	2.0
1	D	405	MET	2.0
1	B	42	LEU	2.0
1	C	452	ASP	2.0
1	D	449	HIS	2.0
1	C	456	THR	2.0
1	D	223	TYR	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](#)

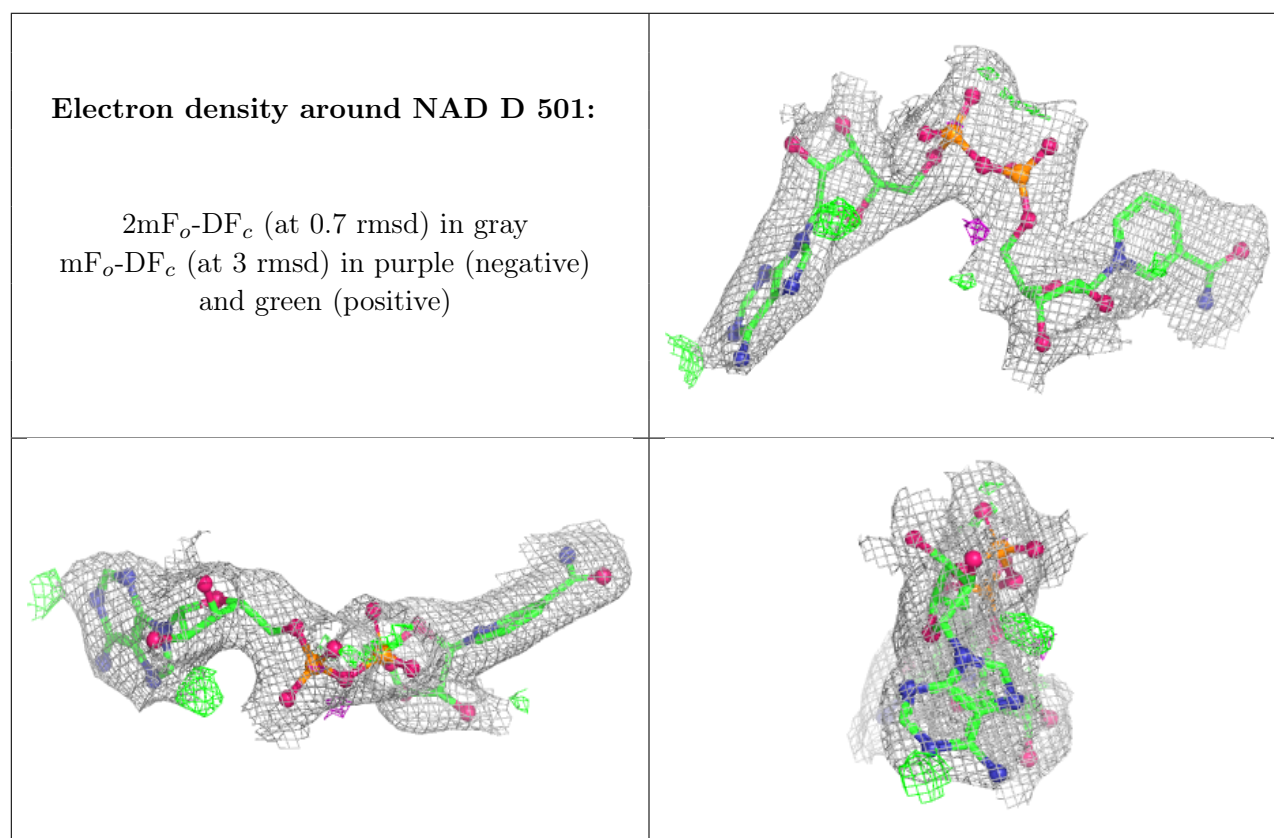
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q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

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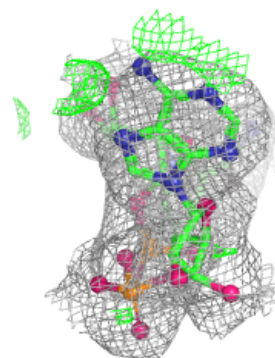
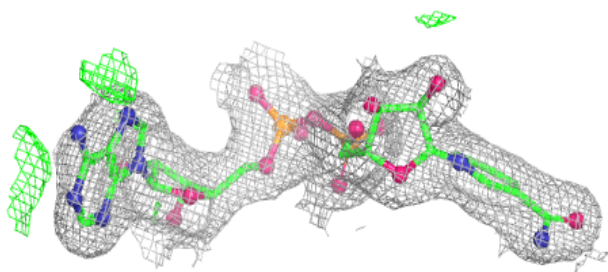
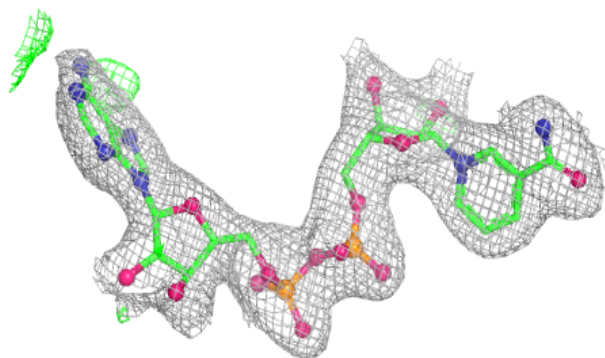
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
2	NAD	D	501	44/44	0.94	0.09	50,56,63,64	0
2	NAD	C	501	44/44	0.96	0.07	44,49,60,63	0
2	NAD	B	501	44/44	0.96	0.07	38,46,55,58	0
2	NAD	A	501	44/44	0.99	0.04	18,22,24,25	0

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.

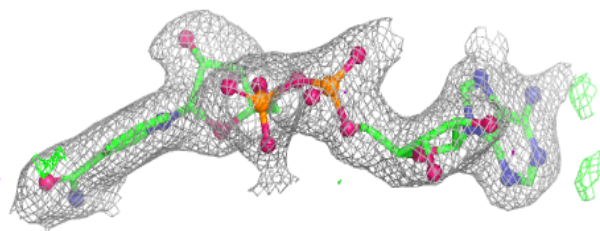
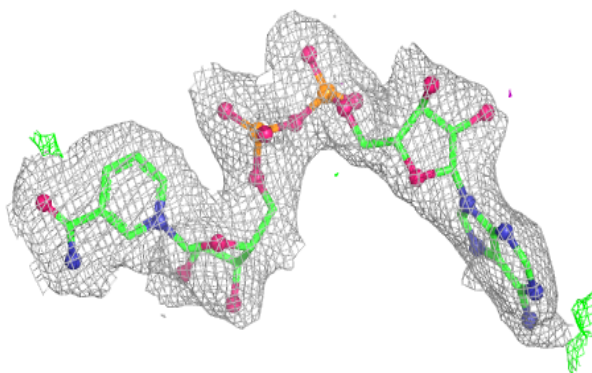


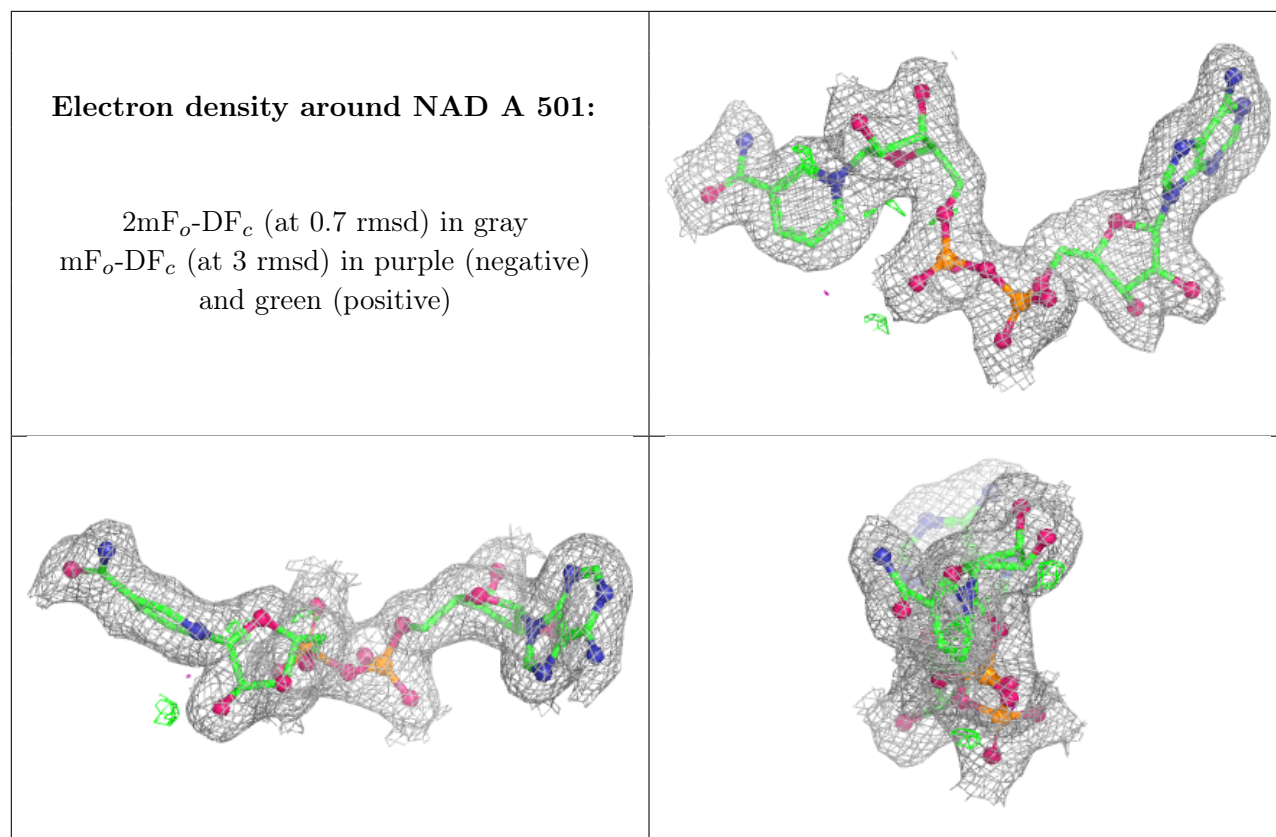
**Electron density around NAD C 501:**

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

**Electron density around NAD 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)





## 6.5 Other polymers ⓘ

There are no such residues in this entry.