



# Full wwPDB X-ray Structure Validation Report ⓘ

Nov 14, 2022 – 12:10 pm GMT

PDB ID : 7Q93  
Title : Crystal Structure of Agrobacterium tumefaciens NADQ, NAD complex.  
Authors : Cianci, M.; Minazzato, G.; Heroux, A.; Raffaelli, N.; Sorci, L.; Gasparrini, M.  
Deposited on : 2021-11-11  
Resolution : 2.19 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 : 4.02b-467  
Mogul : 1.8.4, CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.31.2  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0267  
CCP4 : 7.1.010 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.31.2

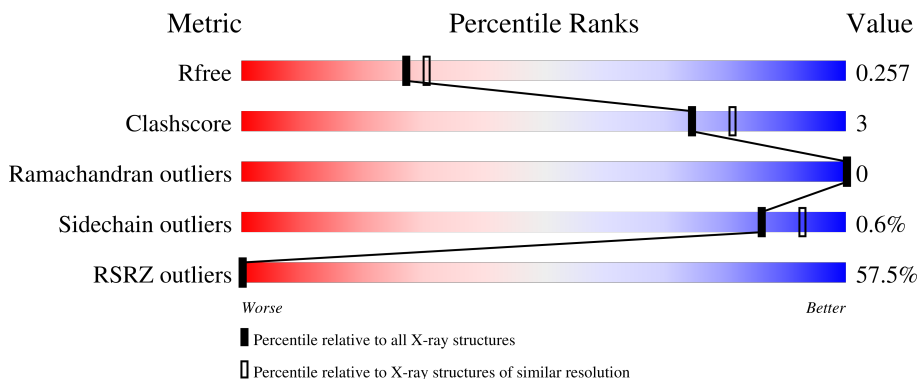
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.19 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	4898 (2.20-2.20)
Clashscore	141614	5594 (2.20-2.20)
Ramachandran outliers	138981	5503 (2.20-2.20)
Sidechain outliers	138945	5504 (2.20-2.20)
RSRZ outliers	127900	4800 (2.20-2.20)

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	336	
1	B	336	
1	C	336	
1	D	336	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard

residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	GOL	A	402	-	-	-	X

## 2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 9097 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 NADQ transcription factor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	Se			
1	A	271	2210	1406	402	398	4	0	0	0
1	B	263	2141	1365	388	384	4	0	0	0
1	C	269	2184	1393	395	392	4	0	0	0
1	D	273	2221	1413	407	398	3	0	0	0

There are 148 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-35	MSE	-	initiating methionine	UNP A9CG24
A	-34	ARG	-	expression tag	UNP A9CG24
A	-33	GLY	-	expression tag	UNP A9CG24
A	-32	SER	-	expression tag	UNP A9CG24
A	-31	HIS	-	expression tag	UNP A9CG24
A	-30	HIS	-	expression tag	UNP A9CG24
A	-29	HIS	-	expression tag	UNP A9CG24
A	-28	HIS	-	expression tag	UNP A9CG24
A	-27	HIS	-	expression tag	UNP A9CG24
A	-26	HIS	-	expression tag	UNP A9CG24
A	-25	GLY	-	expression tag	UNP A9CG24
A	-24	MSE	-	expression tag	UNP A9CG24
A	-23	ALA	-	expression tag	UNP A9CG24
A	-22	SER	-	expression tag	UNP A9CG24
A	-21	MSE	-	expression tag	UNP A9CG24
A	-20	THR	-	expression tag	UNP A9CG24
A	-19	GLY	-	expression tag	UNP A9CG24
A	-18	GLY	-	expression tag	UNP A9CG24
A	-17	GLN	-	expression tag	UNP A9CG24
A	-16	GLN	-	expression tag	UNP A9CG24
A	-15	MSE	-	expression tag	UNP A9CG24

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-14	GLY	-	expression tag	UNP A9CG24
A	-13	ARG	-	expression tag	UNP A9CG24
A	-12	ASP	-	expression tag	UNP A9CG24
A	-11	LEU	-	expression tag	UNP A9CG24
A	-10	TYR	-	expression tag	UNP A9CG24
A	-9	ASP	-	expression tag	UNP A9CG24
A	-8	ASP	-	expression tag	UNP A9CG24
A	-7	ASP	-	expression tag	UNP A9CG24
A	-6	ASP	-	expression tag	UNP A9CG24
A	-5	LYS	-	expression tag	UNP A9CG24
A	-4	ASP	-	expression tag	UNP A9CG24
A	-3	HIS	-	expression tag	UNP A9CG24
A	-2	PRO	-	expression tag	UNP A9CG24
A	-1	PHE	-	expression tag	UNP A9CG24
A	0	THR	-	expression tag	UNP A9CG24
A	1	VAL	-	expression tag	UNP A9CG24
B	-35	MSE	-	initiating methionine	UNP A9CG24
B	-34	ARG	-	expression tag	UNP A9CG24
B	-33	GLY	-	expression tag	UNP A9CG24
B	-32	SER	-	expression tag	UNP A9CG24
B	-31	HIS	-	expression tag	UNP A9CG24
B	-30	HIS	-	expression tag	UNP A9CG24
B	-29	HIS	-	expression tag	UNP A9CG24
B	-28	HIS	-	expression tag	UNP A9CG24
B	-27	HIS	-	expression tag	UNP A9CG24
B	-26	HIS	-	expression tag	UNP A9CG24
B	-25	GLY	-	expression tag	UNP A9CG24
B	-24	MSE	-	expression tag	UNP A9CG24
B	-23	ALA	-	expression tag	UNP A9CG24
B	-22	SER	-	expression tag	UNP A9CG24
B	-21	MSE	-	expression tag	UNP A9CG24
B	-20	THR	-	expression tag	UNP A9CG24
B	-19	GLY	-	expression tag	UNP A9CG24
B	-18	GLY	-	expression tag	UNP A9CG24
B	-17	GLN	-	expression tag	UNP A9CG24
B	-16	GLN	-	expression tag	UNP A9CG24
B	-15	MSE	-	expression tag	UNP A9CG24
B	-14	GLY	-	expression tag	UNP A9CG24
B	-13	ARG	-	expression tag	UNP A9CG24
B	-12	ASP	-	expression tag	UNP A9CG24
B	-11	LEU	-	expression tag	UNP A9CG24
B	-10	TYR	-	expression tag	UNP A9CG24

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-9	ASP	-	expression tag	UNP A9CG24
B	-8	ASP	-	expression tag	UNP A9CG24
B	-7	ASP	-	expression tag	UNP A9CG24
B	-6	ASP	-	expression tag	UNP A9CG24
B	-5	LYS	-	expression tag	UNP A9CG24
B	-4	ASP	-	expression tag	UNP A9CG24
B	-3	HIS	-	expression tag	UNP A9CG24
B	-2	PRO	-	expression tag	UNP A9CG24
B	-1	PHE	-	expression tag	UNP A9CG24
B	0	THR	-	expression tag	UNP A9CG24
B	1	VAL	-	expression tag	UNP A9CG24
C	-35	MSE	-	initiating methionine	UNP A9CG24
C	-34	ARG	-	expression tag	UNP A9CG24
C	-33	GLY	-	expression tag	UNP A9CG24
C	-32	SER	-	expression tag	UNP A9CG24
C	-31	HIS	-	expression tag	UNP A9CG24
C	-30	HIS	-	expression tag	UNP A9CG24
C	-29	HIS	-	expression tag	UNP A9CG24
C	-28	HIS	-	expression tag	UNP A9CG24
C	-27	HIS	-	expression tag	UNP A9CG24
C	-26	HIS	-	expression tag	UNP A9CG24
C	-25	GLY	-	expression tag	UNP A9CG24
C	-24	MSE	-	expression tag	UNP A9CG24
C	-23	ALA	-	expression tag	UNP A9CG24
C	-22	SER	-	expression tag	UNP A9CG24
C	-21	MSE	-	expression tag	UNP A9CG24
C	-20	THR	-	expression tag	UNP A9CG24
C	-19	GLY	-	expression tag	UNP A9CG24
C	-18	GLY	-	expression tag	UNP A9CG24
C	-17	GLN	-	expression tag	UNP A9CG24
C	-16	GLN	-	expression tag	UNP A9CG24
C	-15	MSE	-	expression tag	UNP A9CG24
C	-14	GLY	-	expression tag	UNP A9CG24
C	-13	ARG	-	expression tag	UNP A9CG24
C	-12	ASP	-	expression tag	UNP A9CG24
C	-11	LEU	-	expression tag	UNP A9CG24
C	-10	TYR	-	expression tag	UNP A9CG24
C	-9	ASP	-	expression tag	UNP A9CG24
C	-8	ASP	-	expression tag	UNP A9CG24
C	-7	ASP	-	expression tag	UNP A9CG24
C	-6	ASP	-	expression tag	UNP A9CG24
C	-5	LYS	-	expression tag	UNP A9CG24

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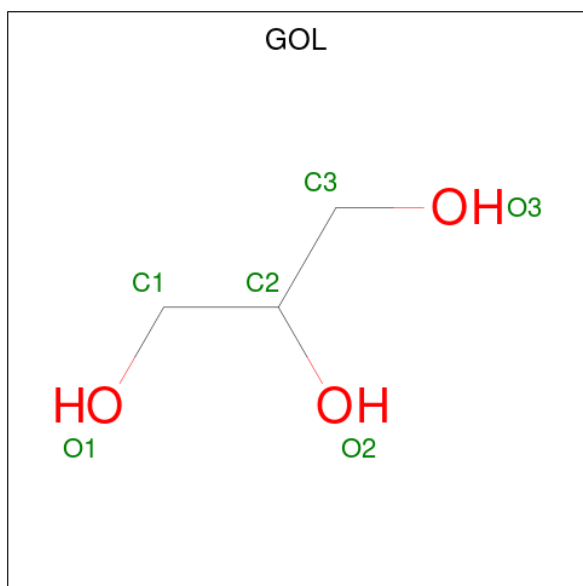
Chain	Residue	Modelled	Actual	Comment	Reference
C	-4	ASP	-	expression tag	UNP A9CG24
C	-3	HIS	-	expression tag	UNP A9CG24
C	-2	PRO	-	expression tag	UNP A9CG24
C	-1	PHE	-	expression tag	UNP A9CG24
C	0	THR	-	expression tag	UNP A9CG24
C	1	VAL	-	expression tag	UNP A9CG24
D	-35	MSE	-	initiating methionine	UNP A9CG24
D	-34	ARG	-	expression tag	UNP A9CG24
D	-33	GLY	-	expression tag	UNP A9CG24
D	-32	SER	-	expression tag	UNP A9CG24
D	-31	HIS	-	expression tag	UNP A9CG24
D	-30	HIS	-	expression tag	UNP A9CG24
D	-29	HIS	-	expression tag	UNP A9CG24
D	-28	HIS	-	expression tag	UNP A9CG24
D	-27	HIS	-	expression tag	UNP A9CG24
D	-26	HIS	-	expression tag	UNP A9CG24
D	-25	GLY	-	expression tag	UNP A9CG24
D	-24	MSE	-	expression tag	UNP A9CG24
D	-23	ALA	-	expression tag	UNP A9CG24
D	-22	SER	-	expression tag	UNP A9CG24
D	-21	MSE	-	expression tag	UNP A9CG24
D	-20	THR	-	expression tag	UNP A9CG24
D	-19	GLY	-	expression tag	UNP A9CG24
D	-18	GLY	-	expression tag	UNP A9CG24
D	-17	GLN	-	expression tag	UNP A9CG24
D	-16	GLN	-	expression tag	UNP A9CG24
D	-15	MSE	-	expression tag	UNP A9CG24
D	-14	GLY	-	expression tag	UNP A9CG24
D	-13	ARG	-	expression tag	UNP A9CG24
D	-12	ASP	-	expression tag	UNP A9CG24
D	-11	LEU	-	expression tag	UNP A9CG24
D	-10	TYR	-	expression tag	UNP A9CG24
D	-9	ASP	-	expression tag	UNP A9CG24
D	-8	ASP	-	expression tag	UNP A9CG24
D	-7	ASP	-	expression tag	UNP A9CG24
D	-6	ASP	-	expression tag	UNP A9CG24
D	-5	LYS	-	expression tag	UNP A9CG24
D	-4	ASP	-	expression tag	UNP A9CG24
D	-3	HIS	-	expression tag	UNP A9CG24
D	-2	PRO	-	expression tag	UNP A9CG24
D	-1	PHE	-	expression tag	UNP A9CG24
D	0	THR	-	expression tag	UNP A9CG24

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Chain	Residue	Modelled	Actual	Comment	Reference
D	1	VAL	-	expression tag	UNP A9CG24

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



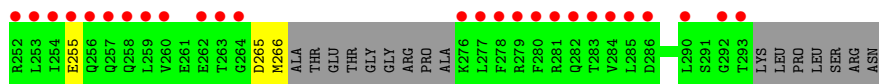
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			6	3	3		
2	A	1	Total	C	O	0	0
			6	3	3		
2	C	1	Total	C	O	0	0
			6	3	3		

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

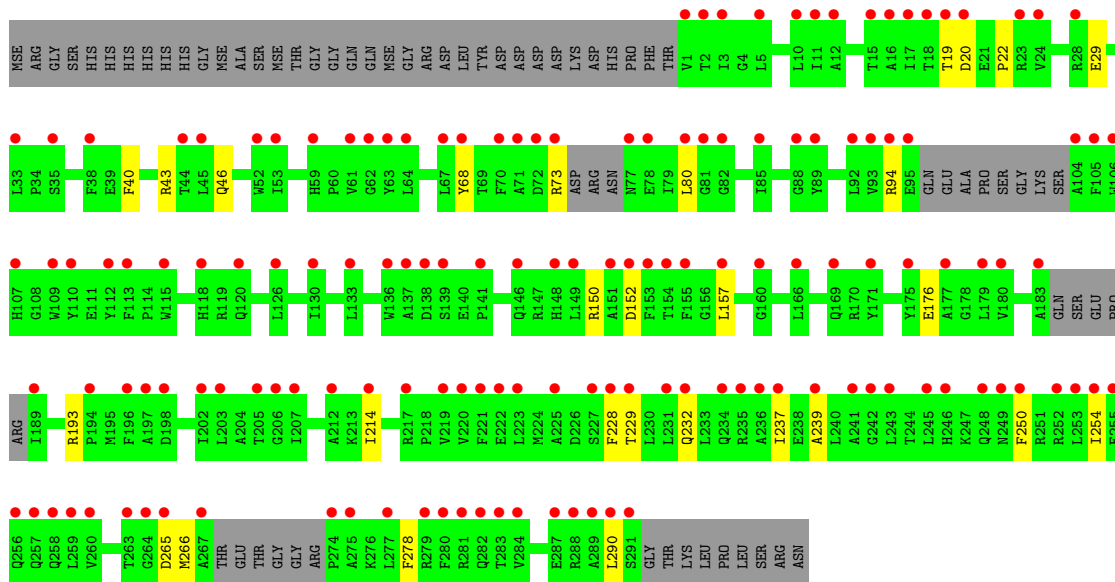




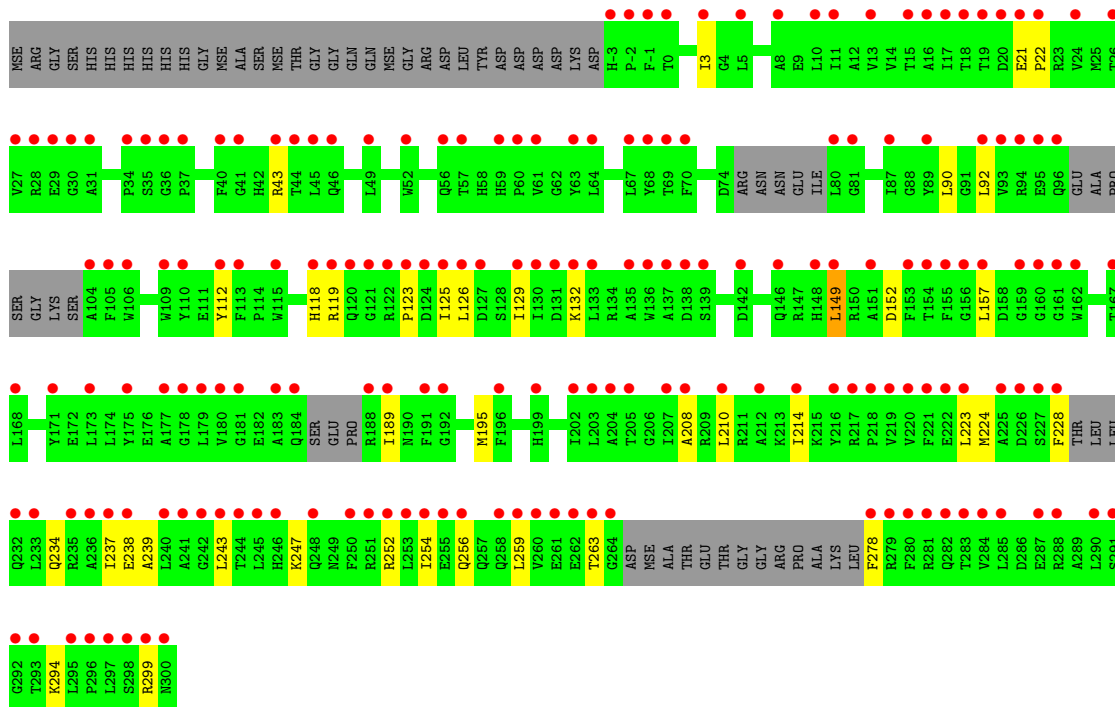




● Molecule 1: NADQ transcription factor



● Molecule 1: NADQ transcription factor



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	58.66Å 133.72Å 87.80Å 90.00° 101.05° 90.00°	Depositor
Resolution (Å)	86.17 – 2.19 86.17 – 2.19	Depositor EDS
% Data completeness (in resolution range)	98.7 (86.17-2.19) 98.7 (86.17-2.19)	Depositor EDS
$R_{merge}$	0.06	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.85 (at 2.18Å)	Xtriage
Refinement program	PHENIX 1.19.2_4158	Depositor
R, $R_{free}$	0.228 , 0.259 0.225 , 0.257	Depositor DCC
$R_{free}$ test set	3402 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	41.1	Xtriage
Anisotropy	0.327	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	(Not available) , (Not available)	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	9097	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	50.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.74% 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: GOL, NAD, K

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	0.25	0/2255	0.51	0/3039
1	B	0.24	0/2185	0.50	0/2945
1	C	0.24	0/2229	0.51	0/3005
1	D	0.24	0/2268	0.52	0/3058
All	All	0.24	0/8937	0.51	0/12047

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2210	0	2165	8	0
1	B	2141	0	2103	11	0
1	C	2184	0	2148	18	0
1	D	2221	0	2174	24	0
2	A	12	0	16	0	0
2	C	6	0	8	0	0
3	D	44	0	26	1	0
4	D	1	0	0	0	0
5	A	93	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	B	57	0	0	0	0
5	C	71	0	0	1	0
5	D	57	0	0	0	0
All	All	9097	0	8640	56	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 3.

All (56) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:195:MSE:HE3	1:B:200:ARG:HG2	1.57	0.87
1:D:234:GLN:HE22	1:D:247:LYS:HA	1.46	0.80
1:D:132:LYS:HE2	1:D:189:ILE:HG12	1.73	0.70
1:A:22:PRO:HD3	1:A:239:ALA:HB1	1.74	0.69
1:A:28:ARG:HG3	1:A:31:ALA:HB3	1.77	0.66
1:B:23:ARG:HA	1:B:108:GLY:HA2	1.80	0.62
1:C:43:ARG:NH1	3:D:401:NAD:O1A	2.31	0.61
1:D:152:ASP:HA	1:D:157:LEU:H	1.65	0.60
1:D:123:PRO:HG2	1:D:126:LEU:HD23	1.85	0.59
1:D:90:LEU:HD21	1:D:210:LEU:HG	1.84	0.59
1:B:152:ASP:HA	1:B:157:LEU:H	1.68	0.59
1:C:228:PHE:O	1:C:278:PHE:N	2.35	0.58
1:C:290:LEU:HD21	1:D:149:LEU:HD23	1.85	0.57
1:B:22:PRO:HD3	1:B:239:ALA:HB1	1.86	0.57
1:D:214:ILE:HD12	1:D:237:ILE:HG23	1.86	0.57
1:D:208:ALA:HB1	1:D:299:ARG:HH22	1.70	0.55
1:C:229:THR:HG23	1:C:232:GLN:H	1.72	0.54
1:B:251:ARG:O	1:B:255:GLU:HG2	2.08	0.54
1:C:22:PRO:HD3	1:C:239:ALA:HB1	1.89	0.53
1:C:265:ASP:OD1	1:C:266:MSE:N	2.41	0.53
1:D:228:PHE:O	1:D:278:PHE:N	2.43	0.52
1:C:19:THR:OG1	1:C:20:ASP:N	2.39	0.52
1:D:112:TYR:CZ	1:D:195:MSE:HE3	2.45	0.52
1:A:246:HIS:ND1	1:A:249:ASN:OD1	2.42	0.49
1:D:252:ARG:HH12	1:D:256:GLN:HG2	1.77	0.49
1:D:22:PRO:HD3	1:D:239:ALA:HB1	1.94	0.48
1:B:90:LEU:HD21	1:B:210:LEU:HG	1.96	0.48
1:B:265:ASP:OD1	1:B:266:MSE:N	2.46	0.47
1:D:125:ILE:O	1:D:129:ILE:HG12	2.15	0.47
1:C:150:ARG:NH1	1:C:176:GLU:OE1	2.41	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:152:ASP:HA	1:D:157:LEU:N	2.30	0.46
1:C:29:GLU:O	1:C:193:ARG:NH2	2.47	0.45
1:B:92:LEU:HD21	1:B:210:LEU:HD11	1.99	0.45
1:C:214:ILE:HD12	1:C:237:ILE:HG23	1.98	0.45
1:C:73:ARG:CZ	1:D:43:ARG:HB2	2.46	0.45
1:B:94:ARG:HH12	1:B:225:ALA:HB2	1.82	0.45
1:B:128:SER:O	1:B:132:LYS:HG2	2.17	0.44
1:B:247:LYS:O	1:B:251:ARG:HG3	2.17	0.44
1:C:68:TYR:CG	1:D:294:LYS:HG3	2.53	0.44
1:D:238:GLU:HB2	1:D:243:LEU:O	2.18	0.44
1:C:80:LEU:HD11	1:D:3:ILE:HG21	1.99	0.43
1:D:21:GLU:OE2	1:D:119:ARG:NH2	2.48	0.43
1:D:224:MSE:HA	1:D:224:MSE:HE2	2.01	0.43
1:A:105:PHE:CD1	1:A:105:PHE:N	2.85	0.43
1:A:217:ARG:HG2	1:A:219:VAL:HG23	2.00	0.43
1:D:92:LEU:HD21	1:D:210:LEU:HD21	2.00	0.42
1:D:118:HIS:HB2	1:D:243:LEU:HD23	2.01	0.42
1:C:94:ARG:HA	1:C:94:ARG:HD2	1.81	0.42
1:C:152:ASP:HA	1:C:157:LEU:H	1.84	0.42
1:C:250:PHE:CE2	1:C:254:ILE:HD11	2.54	0.42
1:A:266:MSE:CE	1:A:274:PRO:HB2	2.50	0.41
1:D:254:ILE:HG23	1:D:259:LEU:HB2	2.02	0.41
1:D:92:LEU:HB3	1:D:223:LEU:HG	2.02	0.41
1:C:46:GLN:HG3	5:C:505:HOH:O	2.20	0.41
1:A:252:ARG:HD2	1:C:40:PHE:HB3	2.03	0.41
1:A:105:PHE:N	1:A:105:PHE:HD1	2.19	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	261/336 (78%)	256 (98%)	5 (2%)	0	100	100
1	B	253/336 (75%)	247 (98%)	6 (2%)	0	100	100
1	C	259/336 (77%)	251 (97%)	8 (3%)	0	100	100
1	D	261/336 (78%)	250 (96%)	11 (4%)	0	100	100
All	All	1034/1344 (77%)	1004 (97%)	30 (3%)	0	100	100

There are no Ramachandran outliers to report.

### 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	225/270 (83%)	224 (100%)	1 (0%)	91	96
1	B	218/270 (81%)	216 (99%)	2 (1%)	78	88
1	C	222/270 (82%)	222 (100%)	0	100	100
1	D	226/270 (84%)	224 (99%)	2 (1%)	78	88
All	All	891/1080 (82%)	886 (99%)	5 (1%)	86	93

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	105	PHE
1	B	94	ARG
1	B	198	ASP
1	D	149	LEU
1	D	263	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	D	234	GLN



### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 5 ligands modelled in this entry, 1 is monoatomic - leaving 4 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	GOL	A	401	-	5,5,5	0.94	0	5,5,5	1.26	1 (20%)
3	NAD	D	401	-	42,48,48	0.69	1 (2%)	50,73,73	0.78	2 (4%)
2	GOL	C	401	-	5,5,5	0.90	0	5,5,5	1.08	1 (20%)
2	GOL	A	402	-	5,5,5	0.88	0	5,5,5	1.13	1 (20%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GOL	A	401	-	-	0/4/4/4	-
3	NAD	D	401	-	-	2/26/62/62	0/5/5/5
2	GOL	C	401	-	-	0/4/4/4	-
2	GOL	A	402	-	-	0/4/4/4	-

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	401	NAD	C2N-N1N	2.33	1.37	1.35

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	401	NAD	C6N-N1N-C2N	-2.57	119.63	121.97
3	D	401	NAD	C5A-C6A-N6A	2.21	123.71	120.35
2	A	401	GOL	C3-C2-C1	-2.15	103.36	111.70
2	A	402	GOL	C3-C2-C1	-2.07	103.67	111.70
2	C	401	GOL	C3-C2-C1	-2.06	103.69	111.70

There are no chirality outliers.

All (2) torsion outliers are listed below:

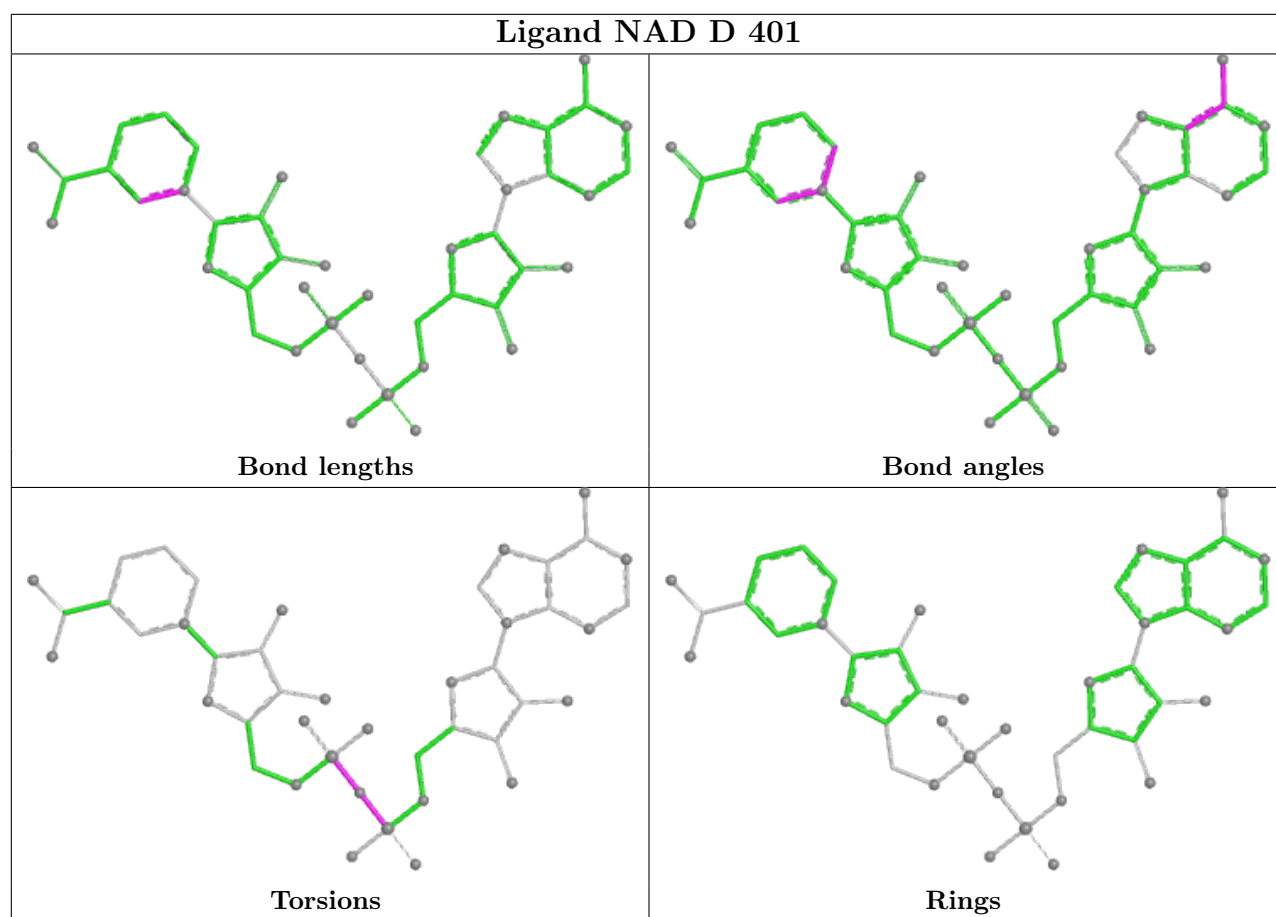
Mol	Chain	Res	Type	Atoms
3	D	401	NAD	PN-O3-PA-O5B
3	D	401	NAD	PA-O3-PN-O1N

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	D	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 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 [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, 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	267/336 (79%)	2.09	137 (51%) 0 0	26, 40, 59, 77	0
1	B	259/336 (77%)	2.52	140 (54%) 0 0	29, 47, 97, 119	0
1	C	265/336 (78%)	2.51	147 (55%) 0 0	25, 43, 83, 99	0
1	D	270/336 (80%)	2.98	186 (68%) 0 0	29, 52, 96, 110	0
All	All	1061/1344 (78%)	2.53	610 (57%) 0 0	25, 45, 90, 119	0

All (610) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	105	PHE	11.4
1	D	19	THR	11.2
1	D	233	LEU	10.9
1	C	1	VAL	10.5
1	D	17	ILE	10.1
1	C	275	ALA	10.0
1	D	245	LEU	9.2
1	B	256	GLN	9.1
1	C	246	HIS	8.5
1	C	254	ILE	8.3
1	A	157	LEU	8.3
1	C	104	ALA	8.2
1	C	256	GLN	8.0
1	C	81	GLY	8.0
1	B	276	LYS	7.9
1	B	250	PHE	7.9
1	D	225	ALA	7.7
1	D	264	GLY	7.7
1	B	257	GLN	7.7
1	C	19	THR	7.6
1	D	40	PHE	7.6

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	D	221	PHE	7.6
1	B	248	GLN	7.3
1	D	121	GLY	7.3
1	D	259	LEU	7.2
1	D	18	THR	7.2
1	D	297	LEU	7.1
1	B	225	ALA	7.1
1	D	296	PRO	6.9
1	B	258	GLN	6.9
1	D	149	LEU	6.8
1	B	230	LEU	6.7
1	B	20	ASP	6.6
1	D	243	LEU	6.6
1	D	236	ALA	6.4
1	B	227	SER	6.4
1	C	105	PHE	6.3
1	D	240	LEU	6.3
1	B	106	TRP	6.3
1	C	248	GLN	6.3
1	C	20	ASP	6.2
1	D	278	PHE	6.2
1	C	225	ALA	6.1
1	B	262	GLU	6.1
1	B	283	THR	6.1
1	C	290	LEU	6.0
1	D	237	ILE	5.9
1	B	285	LEU	5.9
1	B	104	ALA	5.9
1	B	293	THR	5.9
1	D	20	ASP	5.8
1	D	248	GLN	5.8
1	B	292	GLY	5.7
1	D	235	ARG	5.7
1	B	249	ASN	5.7
1	C	255	GLU	5.6
1	C	249	ASN	5.6
1	B	280	PHE	5.5
1	D	21	GLU	5.5
1	D	16	ALA	5.5
1	D	299	ARG	5.4
1	A	28	ARG	5.3
1	A	161	GLY	5.3

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	D	241	ALA	5.3
1	D	161	GLY	5.3
1	C	250	PHE	5.2
1	B	284	VAL	5.2
1	D	290	LEU	5.2
1	B	259	LEU	5.1
1	B	254	ILE	5.1
1	D	113	PHE	5.1
1	B	231	LEU	5.1
1	D	283	THR	5.1
1	D	284	VAL	5.0
1	C	289	ALA	5.0
1	D	292	GLY	5.0
1	B	278	PHE	5.0
1	B	244	THR	4.9
1	C	73	ARG	4.9
1	B	157	LEU	4.9
1	D	136	TRP	4.8
1	D	124	ASP	4.8
1	A	225	ALA	4.8
1	C	80	LEU	4.8
1	A	183	ALA	4.8
1	D	254	ILE	4.7
1	A	133	LEU	4.7
1	C	274	PRO	4.7
1	C	280	PHE	4.7
1	B	220	VAL	4.7
1	D	180	VAL	4.6
1	C	291	SER	4.6
1	C	3	ILE	4.6
1	D	246	HIS	4.6
1	D	189	ILE	4.6
1	A	3	ILE	4.5
1	A	158	ASP	4.5
1	D	94	ARG	4.5
1	D	160	GLY	4.5
1	C	77	ASN	4.5
1	A	68	TYR	4.4
1	D	263	THR	4.4
1	B	246	HIS	4.4
1	B	264	GLY	4.4
1	C	153	PHE	4.4

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	D	256	GLN	4.4
1	D	214	ILE	4.4
1	D	223	LEU	4.4
1	D	93	VAL	4.4
1	D	228	PHE	4.4
1	B	94	ARG	4.4
1	D	220	VAL	4.3
1	D	159	GLY	4.3
1	D	253	LEU	4.3
1	C	220	VAL	4.3
1	C	94	ARG	4.3
1	D	105	PHE	4.3
1	B	253	LEU	4.3
1	C	67	LEU	4.3
1	D	226	ASP	4.3
1	D	261	GLU	4.3
1	D	122	ARG	4.2
1	C	175	TYR	4.2
1	D	232	GLN	4.2
1	C	18	THR	4.2
1	A	52	TRP	4.2
1	D	24	VAL	4.2
1	D	293	THR	4.2
1	C	180	VAL	4.2
1	D	115	TRP	4.2
1	D	-3	HIS	4.2
1	C	236	ALA	4.1
1	D	260	VAL	4.0
1	C	257	GLN	4.0
1	D	60	PRO	4.0
1	D	148	HIS	4.0
1	D	153	PHE	4.0
1	D	280	PHE	4.0
1	B	196	PHE	4.0
1	D	36	GLY	3.9
1	A	80	LEU	3.9
1	C	258	GLN	3.9
1	C	63	TYR	3.9
1	B	18	THR	3.9
1	D	69	THR	3.9
1	B	202	ILE	3.9
1	A	153	PHE	3.9

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	D	258	GLN	3.9
1	B	281	ARG	3.8
1	A	19	THR	3.8
1	B	28	ARG	3.8
1	B	279	ARG	3.8
1	C	243	LEU	3.8
1	D	126	LEU	3.8
1	D	52	TRP	3.8
1	D	59	HIS	3.8
1	D	250	PHE	3.8
1	A	55	GLU	3.7
1	C	189	ILE	3.7
1	D	61	VAL	3.7
1	B	136	TRP	3.7
1	B	277	LEU	3.7
1	D	188	ARG	3.7
1	A	289	ALA	3.7
1	B	58	HIS	3.7
1	C	253	LEU	3.7
1	D	157	LEU	3.7
1	B	67	LEU	3.7
1	C	281	ARG	3.7
1	B	221	PHE	3.7
1	B	5	LEU	3.6
1	D	295	LEU	3.6
1	A	63	TYR	3.6
1	D	22	PRO	3.6
1	D	227	SER	3.6
1	C	110	TYR	3.6
1	D	118	HIS	3.6
1	D	162	TRP	3.6
1	C	245	LEU	3.6
1	D	109	TRP	3.6
1	D	63	TYR	3.6
1	C	82	GLY	3.6
1	A	280	PHE	3.5
1	B	68	TYR	3.5
1	C	206	GLY	3.5
1	D	125	ILE	3.5
1	B	143	SER	3.5
1	D	196	PHE	3.5
1	D	129	ILE	3.5

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	D	179	LEU	3.5
1	C	264	GLY	3.5
1	C	283	THR	3.4
1	C	92	LEU	3.4
1	D	262	GLU	3.4
1	C	71	ALA	3.4
1	B	260	VAL	3.4
1	B	40	PHE	3.4
1	B	226	ASP	3.4
1	D	27	VAL	3.4
1	C	68	TYR	3.4
1	B	125	ILE	3.4
1	B	123	PRO	3.4
1	B	1	VAL	3.4
1	D	37	PRO	3.4
1	C	146	GLN	3.4
1	B	153	PHE	3.3
1	C	221	PHE	3.3
1	D	-1	PHE	3.3
1	B	11	ILE	3.3
1	A	73	ARG	3.3
1	C	139	SER	3.3
1	C	16	ALA	3.3
1	A	144	ARG	3.3
1	A	106	TRP	3.3
1	B	216	TYR	3.3
1	B	140	GLU	3.3
1	B	159	GLY	3.3
1	C	196	PHE	3.3
1	C	259	LEU	3.3
1	B	124	ASP	3.2
1	A	267	ALA	3.2
1	B	219	VAL	3.2
1	B	55	GLU	3.2
1	A	11	ILE	3.2
1	D	49	LEU	3.2
1	C	107	HIS	3.2
1	A	113	PHE	3.2
1	A	61	VAL	3.2
1	B	286	ASP	3.2
1	C	252	ARG	3.2
1	D	279	ARG	3.2

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	A	81	GLY	3.2
1	A	77	ASN	3.2
1	D	146	GLN	3.2
1	A	89	TYR	3.2
1	B	45	LEU	3.2
1	A	24	VAL	3.2
1	B	15	THR	3.2
1	D	181	GLY	3.1
1	C	235	ARG	3.1
1	D	119	ARG	3.1
1	D	10	LEU	3.1
1	B	263	THR	3.1
1	C	17	ILE	3.1
1	B	93	VAL	3.1
1	D	219	VAL	3.1
1	C	277	LEU	3.1
1	D	285	LEU	3.1
1	B	189	ILE	3.1
1	A	284	VAL	3.1
1	A	123	PRO	3.1
1	A	243	LEU	3.1
1	D	137	ALA	3.1
1	C	263	THR	3.1
1	B	38	PHE	3.1
1	D	110	TYR	3.1
1	D	112	TYR	3.1
1	A	205	THR	3.0
1	D	44	THR	3.0
1	D	238	GLU	3.0
1	A	10	LEU	3.0
1	A	146	GLN	3.0
1	C	115	TRP	3.0
1	C	5	LEU	3.0
1	D	133	LEU	3.0
1	C	61	VAL	3.0
1	C	227	SER	3.0
1	B	109	TRP	3.0
1	D	151	ALA	3.0
1	D	218	PRO	3.0
1	B	171	TYR	3.0
1	B	205	THR	3.0
1	A	148	HIS	3.0

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	D	217	ARG	3.0
1	B	243	LEU	3.0
1	B	290	LEU	3.0
1	D	244	THR	3.0
1	D	-2	PRO	3.0
1	C	138	ASP	2.9
1	D	281	ARG	2.9
1	D	127	ASP	2.9
1	B	145	ALA	2.9
1	D	3	ILE	2.9
1	A	20	ASP	2.9
1	A	154	THR	2.9
1	B	251	ARG	2.9
1	A	216	TYR	2.9
1	A	162	TRP	2.9
1	B	105	PHE	2.9
1	C	95	GLU	2.9
1	B	204	ALA	2.9
1	A	109	TRP	2.9
1	A	90	LEU	2.9
1	D	5	LEU	2.9
1	A	130	ILE	2.8
1	B	71	ALA	2.8
1	D	139	SER	2.8
1	C	109	TRP	2.8
1	C	223	LEU	2.8
1	C	288	ARG	2.8
1	A	8	ALA	2.8
1	C	279	ARG	2.8
1	A	54	HIS	2.8
1	C	166	LEU	2.8
1	D	67	LEU	2.8
1	B	52	TRP	2.8
1	A	17	ILE	2.8
1	D	135	ALA	2.8
1	A	203	LEU	2.8
1	C	133	LEU	2.8
1	C	203	LEU	2.8
1	A	96	GLN	2.8
1	A	197	ALA	2.8
1	A	236	ALA	2.8
1	C	52	TRP	2.8

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	D	202	ILE	2.8
1	A	69	THR	2.8
1	C	287	GLU	2.8
1	C	89	TYR	2.8
1	C	24	VAL	2.8
1	C	260	VAL	2.8
1	D	208	ALA	2.8
1	D	242	GLY	2.8
1	B	133	LEU	2.8
1	C	136	TRP	2.7
1	D	155	PHE	2.7
1	A	138	ASP	2.7
1	C	151	ALA	2.7
1	D	212	ALA	2.7
1	D	56	GLN	2.7
1	A	273	ARG	2.7
1	D	192	GLY	2.7
1	B	17	ILE	2.7
1	B	228	PHE	2.7
1	B	255	GLU	2.7
1	A	49	LEU	2.7
1	A	67	LEU	2.7
1	B	10	LEU	2.7
1	B	110	TYR	2.7
1	B	236	ALA	2.7
1	B	252	ARG	2.7
1	D	80	LEU	2.7
1	D	104	ALA	2.7
1	B	180	VAL	2.7
1	C	2	THR	2.7
1	D	204	ALA	2.7
1	B	240	LEU	2.7
1	D	95	GLU	2.7
1	A	115	TRP	2.7
1	B	213	LYS	2.7
1	D	132	LYS	2.7
1	C	179	LEU	2.7
1	D	13	VAL	2.7
1	A	125	ILE	2.7
1	C	222	GLU	2.7
1	C	282	GLN	2.7
1	B	150	ARG	2.7

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	B	237	ILE	2.6
1	D	120	GLN	2.6
1	A	6	ALA	2.6
1	A	275	ALA	2.6
1	B	16	ALA	2.6
1	B	166	LEU	2.6
1	B	245	LEU	2.6
1	A	152	ASP	2.6
1	D	291	SER	2.6
1	B	149	LEU	2.6
1	C	72	ASP	2.6
1	B	63	TYR	2.6
1	C	106	TRP	2.6
1	A	204	ALA	2.6
1	D	130	ILE	2.6
1	A	35	SER	2.6
1	D	138	ASP	2.6
1	A	285	LEU	2.6
1	C	45	LEU	2.6
1	C	219	VAL	2.6
1	D	300	ASN	2.6
1	A	257	GLN	2.6
1	C	35	SER	2.6
1	C	78	GLU	2.6
1	D	35	SER	2.6
1	D	43	ARG	2.6
1	C	113	PHE	2.6
1	A	92	LEU	2.6
1	B	13	VAL	2.6
1	B	61	VAL	2.6
1	B	135	ALA	2.6
1	D	177	ALA	2.6
1	B	167	THR	2.6
1	C	207	ILE	2.6
1	D	106	TRP	2.6
1	A	196	PHE	2.6
1	A	250	PHE	2.6
1	D	70	PHE	2.6
1	A	274	PRO	2.6
1	B	23	ARG	2.5
1	B	235	ARG	2.5
1	D	45	LEU	2.6

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	A	93	VAL	2.5
1	A	180	VAL	2.5
1	C	171	TYR	2.5
1	D	26	THR	2.5
1	B	141	PRO	2.5
1	D	298	SER	2.5
1	C	267	ALA	2.5
1	D	31	ALA	2.5
1	C	160	GLY	2.5
1	B	232	GLN	2.5
1	D	28	ARG	2.5
1	A	37	PRO	2.5
1	A	87	ILE	2.5
1	A	202	ILE	2.5
1	B	90	LEU	2.5
1	A	190	ASN	2.5
1	C	197	ALA	2.5
1	B	130	ILE	2.5
1	B	73	ARG	2.5
1	B	233	LEU	2.5
1	C	265	ASP	2.5
1	A	26	THR	2.5
1	C	141	PRO	2.5
1	D	123	PRO	2.5
1	A	175	TYR	2.5
1	C	112	TYR	2.5
1	D	30	GLY	2.5
1	A	45	LEU	2.5
1	D	154	THR	2.5
1	A	124	ASP	2.5
1	D	175	TYR	2.5
1	C	11	ILE	2.5
1	C	237	ILE	2.5
1	A	221	PHE	2.5
1	B	113	PHE	2.5
1	B	218	PRO	2.4
1	C	15	THR	2.4
1	C	44	THR	2.4
1	C	149	LEU	2.4
1	A	13	VAL	2.4
1	A	291	SER	2.4
1	A	171	TYR	2.4

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	B	112	TYR	2.4
1	D	64	LEU	2.4
1	A	281	ARG	2.4
1	C	202	ILE	2.4
1	C	217	ARG	2.4
1	D	96	GLN	2.4
1	D	34	PRO	2.4
1	D	142	ASP	2.4
1	A	64	LEU	2.4
1	B	121	GLY	2.4
1	D	46	GLN	2.4
1	A	18	THR	2.4
1	A	44	THR	2.4
1	A	149	LEU	2.4
1	C	126	LEU	2.4
1	B	87	ILE	2.4
1	D	171	TYR	2.4
1	B	242	GLY	2.4
1	A	155	PHE	2.4
1	A	32	ALA	2.4
1	A	159	GLY	2.4
1	A	167	THR	2.4
1	B	207	ILE	2.4
1	C	155	PHE	2.3
1	B	21	GLU	2.3
1	D	222	GLU	2.3
1	D	251	ARG	2.3
1	A	31	ALA	2.3
1	C	198	ASP	2.3
1	A	85	ILE	2.3
1	B	129	ILE	2.3
1	D	29	GLU	2.3
1	D	89	TYR	2.3
1	A	210	LEU	2.3
1	B	282	GLN	2.3
1	C	28	ARG	2.3
1	A	95	GLU	2.3
1	C	137	ALA	2.3
1	B	26	THR	2.3
1	D	57	THR	2.3
1	D	87	ILE	2.3
1	D	288	ARG	2.3

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	C	118	HIS	2.3
1	D	173	LEU	2.3
1	A	143	SER	2.3
1	C	212	ALA	2.3
1	B	176	GLU	2.3
1	C	130	ILE	2.3
1	A	259	LEU	2.3
1	C	241	ALA	2.3
1	D	205	THR	2.3
1	A	214	ILE	2.3
1	B	146	GLN	2.3
1	D	92	LEU	2.3
1	D	203	LEU	2.3
1	D	282	GLN	2.3
1	A	191	PHE	2.3
1	C	284	VAL	2.3
1	A	136	TRP	2.3
1	A	184	GLN	2.3
1	C	53	ILE	2.3
1	C	85	ILE	2.3
1	A	137	ALA	2.2
1	B	177	ALA	2.2
1	B	208	ALA	2.2
1	B	241	ALA	2.2
1	D	8	ALA	2.2
1	D	210	LEU	2.2
1	A	263	THR	2.2
1	C	228	PHE	2.2
1	B	22	PRO	2.2
1	D	287	GLU	2.2
1	A	33	LEU	2.2
1	A	239	ALA	2.2
1	A	245	LEU	2.2
1	B	92	LEU	2.2
1	C	183	ALA	2.2
1	C	229	THR	2.2
1	A	27	VAL	2.2
1	C	23	ARG	2.2
1	A	22	PRO	2.2
1	A	207	ILE	2.2
1	C	214	ILE	2.2
1	A	246	HIS	2.2

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	D	199	HIS	2.2
1	B	49	LEU	2.2
1	B	215	LYS	2.2
1	C	157	LEU	2.2
1	D	81	GLY	2.2
1	B	162	TRP	2.2
1	C	12	ALA	2.2
1	D	11	ILE	2.2
1	C	10	LEU	2.2
1	C	242	GLY	2.2
1	A	220	VAL	2.2
1	A	248	GLN	2.2
1	C	232	GLN	2.2
1	A	249	ASN	2.2
1	B	214	ILE	2.2
1	D	168	LEU	2.2
1	B	175	TYR	2.2
1	C	38	PHE	2.2
1	C	70	PHE	2.2
1	A	16	ALA	2.2
1	A	88	GLY	2.2
1	A	208	ALA	2.2
1	C	234	GLN	2.1
1	D	184	GLN	2.1
1	B	115	TRP	2.1
1	C	93	VAL	2.1
1	A	206	GLY	2.1
1	D	0	THR	2.1
1	D	15	THR	2.1
1	D	167	THR	2.1
1	A	290	LEU	2.1
1	C	59	HIS	2.1
1	D	191	PHE	2.1
1	A	36	GLY	2.1
1	A	110	TYR	2.1
1	A	242	GLY	2.1
1	A	139	SER	2.1
1	C	205	THR	2.1
1	A	129	ILE	2.1
1	B	179	LEU	2.1
1	A	14	VAL	2.1
1	D	216	TYR	2.1

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	C	194	PRO	2.1
1	B	54	HIS	2.1
1	B	119	ARG	2.1
1	A	179	LEU	2.1
1	C	231	LEU	2.1
1	A	278	PHE	2.1
1	B	151	ALA	2.1
1	B	229	THR	2.1
1	D	252	ARG	2.1
1	C	120	GLN	2.1
1	A	178	GLY	2.1
1	C	64	LEU	2.1
1	C	152	ASP	2.1
1	A	122	ARG	2.0
1	A	120	GLN	2.0
1	B	33	LEU	2.0
1	B	223	LEU	2.0
1	C	33	LEU	2.0
1	D	207	ILE	2.0
1	C	169	GLN	2.0
1	A	71	ALA	2.0
1	B	69	THR	2.0
1	C	148	HIS	2.0
1	D	183	ALA	2.0
1	A	182	GLU	2.0
1	D	178	GLY	2.0
1	A	53	ILE	2.0
1	A	79	ILE	2.0
1	A	241	ALA	2.0
1	C	177	ALA	2.0
1	C	239	ALA	2.0
1	A	219	VAL	2.0
1	D	255	GLU	2.0
1	C	88	GLY	2.0
1	D	41	GLY	2.0
1	D	68	TYR	2.0
1	A	166	LEU	2.0
1	A	177	ALA	2.0
1	C	154	THR	2.0
1	B	217	ARG	2.0
1	C	62	GLY	2.0
1	D	131	ASP	2.0

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Mol	Chain	Res	Type	RSRZ
1	D	156	GLY	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](#)

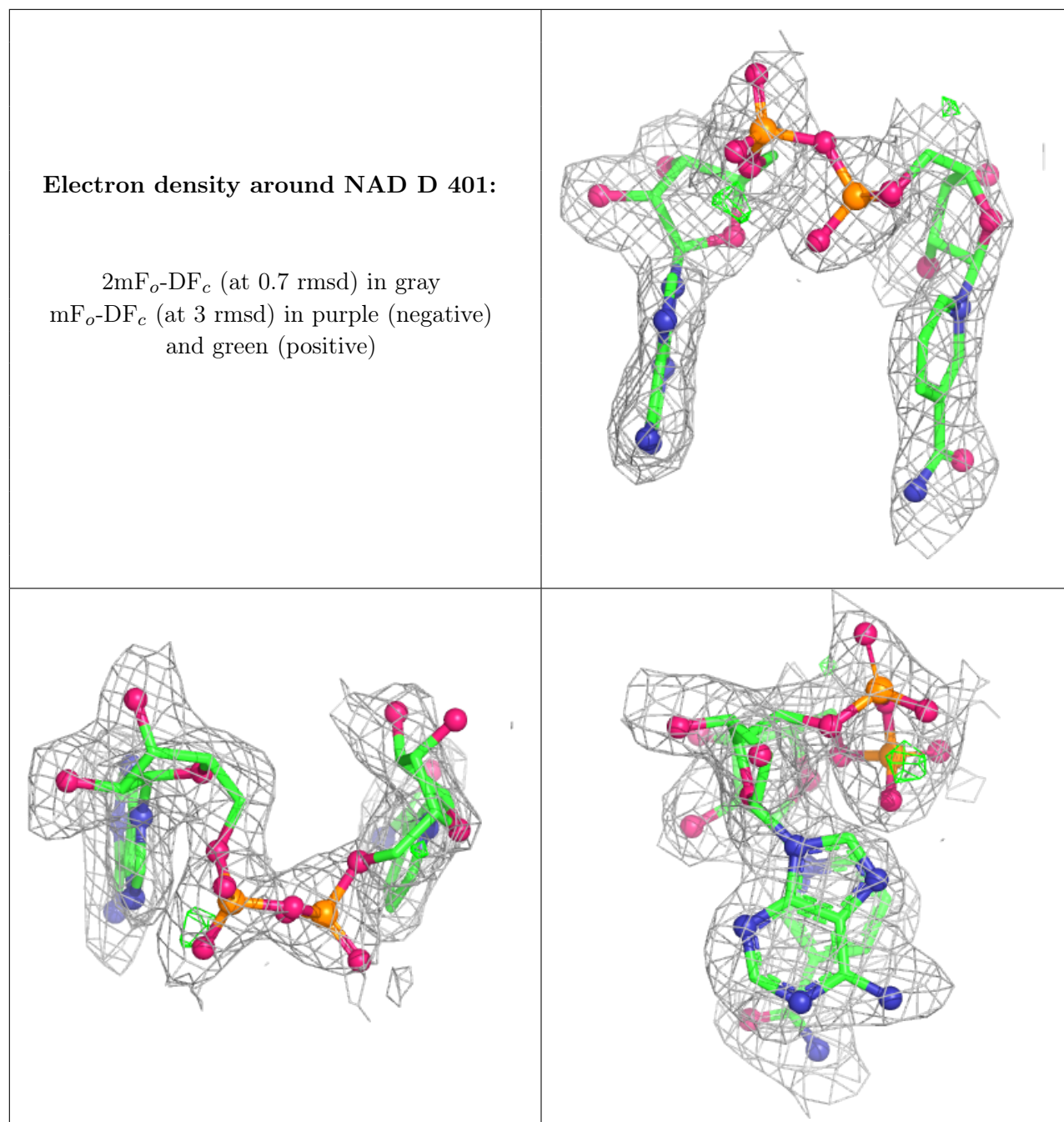
There are no monosaccharides in this entry.

## 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<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.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
2	GOL	C	401	6/6	0.64	0.23	56,60,61,62	0
2	GOL	A	402	6/6	0.73	0.44	41,57,66,74	0
3	NAD	D	401	44/44	0.77	0.30	34,44,58,60	0
2	GOL	A	401	6/6	0.82	0.38	57,59,64,74	0
4	K	D	402	1/1	0.97	0.25	38,38,38,38	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.



## 6.5 Other polymers [i](#)

There are no such residues in this entry.