



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 9, 2023 – 05:40 PM EDT

PDB ID : 7JH4
Title : Crystal structure of NAD(P)H-flavin oxidoreductase (NfoR) from *S. aureus* complexed with reduced FMN and NAD⁺
Authors : Zheng, Y.; O'Neill, A.G.; Beaupre, B.A.; Liu, D.; Moran, G.R.
Deposited on : 2020-07-20
Resolution : 2.00 Å (reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.35.1
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.35.1

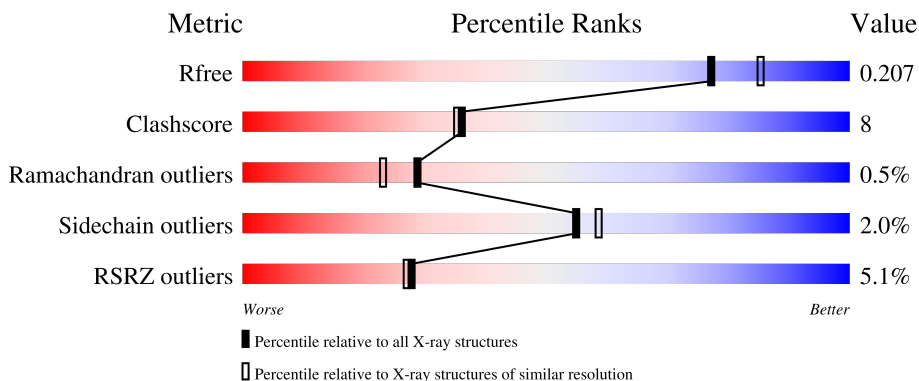
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.00 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	8085 (2.00-2.00)
Clashscore	141614	9178 (2.00-2.00)
Ramachandran outliers	138981	9054 (2.00-2.00)
Sidechain outliers	138945	9053 (2.00-2.00)
RSRZ outliers	127900	7900 (2.00-2.00)

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 $\leq 5\%$. 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	223	<div style="display: flex; align-items: center;"> <div style="width: 4%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 89%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 11%; height: 10px; background-color: yellow; margin-right: 5px;"></div> </div> <p style="margin-left: 40px;">89% 11%</p>
1	B	223	<div style="display: flex; align-items: center;"> <div style="width: 2%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 84%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 15%; height: 10px; background-color: yellow; margin-right: 5px;"></div> </div> <p style="margin-left: 40px;">84% 15%</p>
1	C	223	<div style="display: flex; align-items: center;"> <div style="width: 5%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 85%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 14%; height: 10px; background-color: yellow; margin-right: 5px;"></div> </div> <p style="margin-left: 40px;">85% 14%</p>
1	D	223	<div style="display: flex; align-items: center;"> <div style="width: 6%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 83%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 15%; height: 10px; background-color: yellow; margin-right: 5px;"></div> </div> <p style="margin-left: 40px;">83% 15%</p>
1	E	223	<div style="display: flex; align-items: center;"> <div style="width: 9%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 83%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 16%; height: 10px; background-color: yellow; margin-right: 5px;"></div> </div> <p style="margin-left: 40px;">83% 16%</p>

2 Entry composition [i](#)

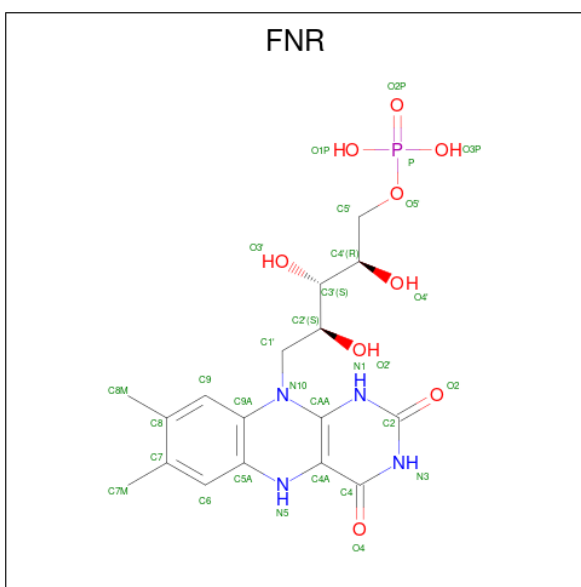
There are 4 unique types of molecules in this entry. The entry contains 9940 atoms, of which 105 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called NAD(P)H-dependent oxidoreductase.

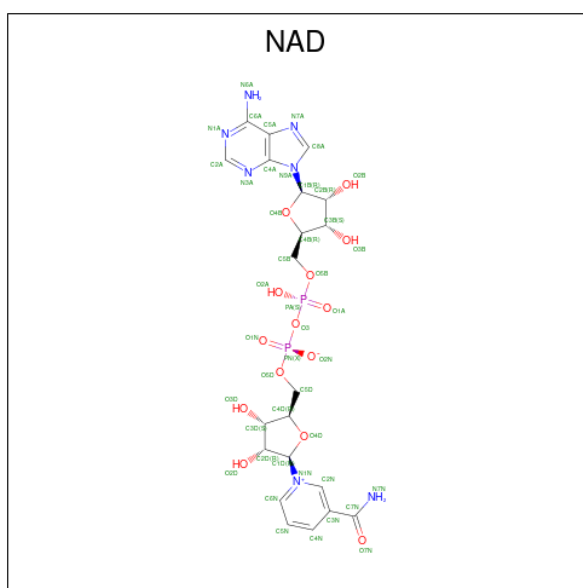
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	223	Total 1785	C 1134	N 301	O 341	S 9	0	2	0
1	B	223	Total 1778	C 1131	N 299	O 339	S 9	0	1	0
1	C	223	Total 1774	C 1125	N 299	O 341	S 9	0	0	0
1	D	223	Total 1785	C 1132	N 304	O 340	S 9	11	1	0
1	E	223	Total 1770	C 1123	N 299	O 339	S 9	0	0	0

- Molecule 2 is 1-DEOXY-1-(7,8-DIMETHYL-2,4-DIOXO-3,4-DIHYDRO-2H-BENZO[G]P TERIDIN-1-ID-10(5H)-YL)-5-O-PHOSPHONATO-D-RIBITOL (three-letter code: FNR) (formula: $C_{17}H_{23}N_4O_9P$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
2	A	1	Total	C	H	N	O	P	0	0
			52	17	21	4	9	1		
2	B	1	Total	C	H	N	O	P	0	0
			52	17	21	4	9	1		
2	C	1	Total	C	H	N	O	P	0	0
			52	17	21	4	9	1		
2	D	1	Total	C	H	N	O	P	0	0
			52	17	21	4	9	1		
2	E	1	Total	C	H	N	O	P	0	0
			52	17	21	4	9	1		

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



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	B	1	Total	C	N	O	0	0
			9	6	2	1		
3	C	1	Total	C	N	O	0	0
			9	6	2	1		

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	170	Total	O	0	0
			170	170		
4	B	169	Total	O	0	0
			169	169		

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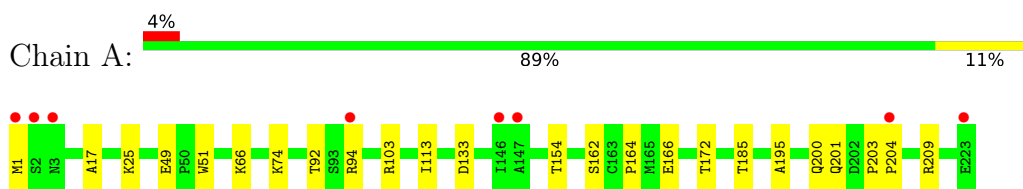
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	C	173	Total 173	O 173	0	0
4	D	134	Total 134	O 134	0	0
4	E	124	Total 124	O 124	0	0

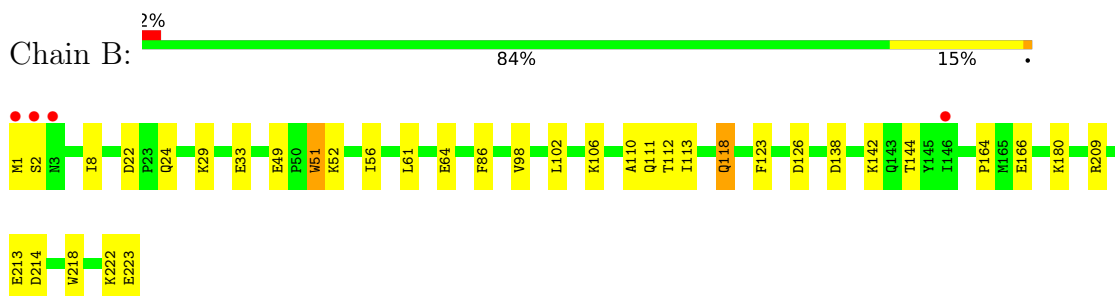
3 Residue-property plots i

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.

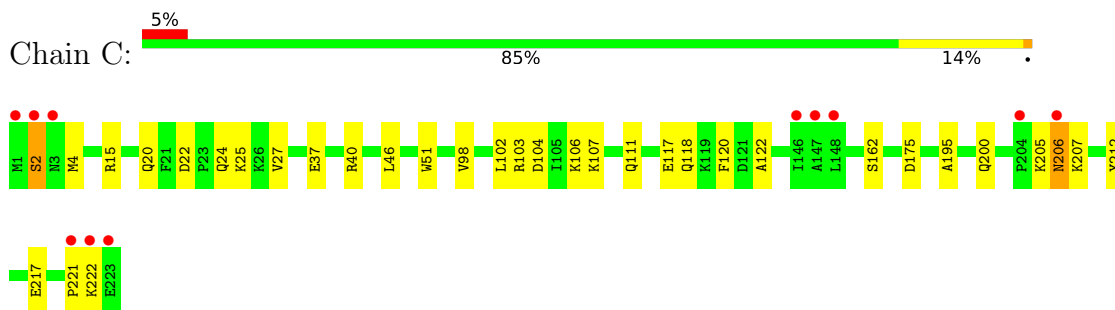
- Molecule 1: NAD(P)H-dependent oxidoreductase



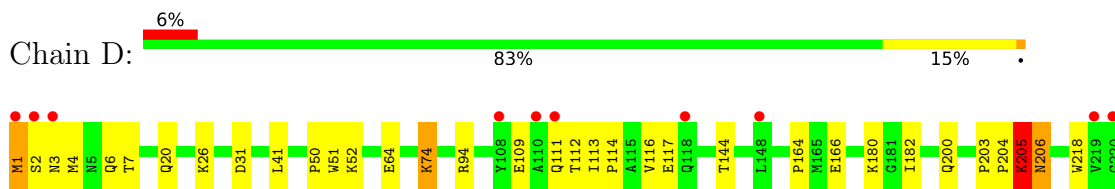
- Molecule 1: NAD(P)H-dependent oxidoreductase



- Molecule 1: NAD(P)H-dependent oxidoreductase

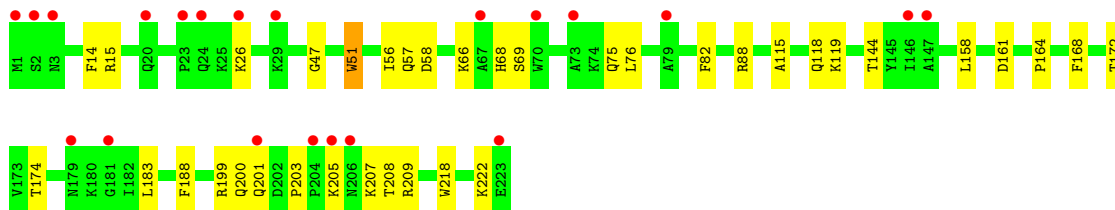
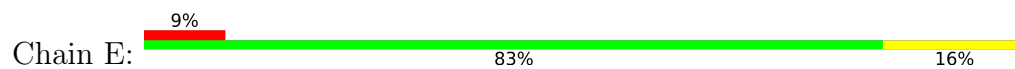


- Molecule 1: NAD(P)H-dependent oxidoreductase





● Molecule 1: NAD(P)H-dependent oxidoreductase



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	174.80Å 84.84Å 107.70Å 90.00° 124.30° 90.00°	Depositor
Resolution (Å)	36.10 – 2.00 36.10 – 2.00	Depositor EDS
% Data completeness (in resolution range)	79.8 (36.10-2.00) 79.8 (36.10-2.00)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.98 (at 2.00Å)	Xtrriage
Refinement program	PHENIX 1.17.1_3660, REFMAC 5.0	Depositor
R, R_{free}	0.169 , 0.207 0.169 , 0.207	Depositor DCC
R_{free} test set	3418 reflections (4.89%)	wwPDB-VP
Wilson B-factor (Å ²)	24.7	Xtrriage
Anisotropy	0.188	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 51.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	9940	wwPDB-VP
Average B, all atoms (Å ²)	34.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.99% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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, FNR

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	0.38	0/1832	0.51	0/2479
1	B	0.37	0/1822	0.51	0/2465
1	C	0.42	0/1815	0.51	0/2458
1	D	0.36	0/1826	0.49	0/2471
1	E	0.38	0/1811	0.48	0/2453
All	All	0.38	0/9106	0.50	0/12326

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	D	0	2

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	D	204	PRO	Peptide
1	D	205	LYS	Peptide

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	1785	0	1741	20	0
1	B	1778	0	1731	30	0
1	C	1774	0	1711	22	0
1	D	1785	0	1730	43	0
1	E	1770	0	1707	31	0
2	A	31	21	21	5	0
2	B	31	21	22	3	0
2	C	31	21	22	1	0
2	D	31	21	22	3	0
2	E	31	21	21	1	0
3	B	9	0	6	1	0
3	C	9	0	6	0	0
4	A	170	0	0	11	0
4	B	169	0	0	8	2
4	C	173	0	0	7	2
4	D	134	0	0	7	0
4	E	124	0	0	7	2
All	All	9835	105	8740	142	3

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 8.

All (142) 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:C:104:ASP:OD2	4:C:401:HOH:O	1.85	0.94
1:A:172:THR:OG1	4:A:401:HOH:O	1.85	0.91
1:C:15:ARG:O	1:C:207:LYS:NZ	2.03	0.91
1:C:111:GLN:NE2	4:C:403:HOH:O	2.03	0.91
1:B:2:SER:O	4:B:401:HOH:O	1.96	0.82
1:B:213:GLU:OE2	4:B:402:HOH:O	1.97	0.81
1:E:15:ARG:O	1:E:207:LYS:NZ	2.14	0.80
1:C:27:VAL:O	4:C:402:HOH:O	2.00	0.80
1:A:133:ASP:OD1	4:A:403:HOH:O	2.01	0.79
1:A:203:PRO:O	4:A:402:HOH:O	1.99	0.79
1:E:58:ASP:OD2	4:E:401:HOH:O	2.02	0.78
1:D:109:GLU:HG3	1:D:111:GLN:CG	2.14	0.77
1:B:110:ALA:HA	1:B:113:ILE:HD12	1.65	0.77
1:E:14:PHE:O	4:E:402:HOH:O	2.03	0.75
1:B:214:ASP:OD2	4:B:404:HOH:O	2.04	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:200:GLN:HB3	1:E:201:GLN:OE1	1.86	0.74
1:B:213:GLU:OE1	4:B:406:HOH:O	2.05	0.74
1:D:31:ASP:OD2	4:D:402:HOH:O	2.06	0.73
1:A:201:GLN:HB2	4:A:412:HOH:O	1.90	0.71
1:C:117:GLU:OE2	4:C:405:HOH:O	2.08	0.71
1:E:118:GLN:NE2	4:E:406:HOH:O	2.23	0.71
1:C:22:ASP:OD2	1:C:25:LYS:HD2	1.93	0.69
1:E:200:GLN:N	4:E:405:HOH:O	2.23	0.69
1:C:118:GLN:HE22	1:C:122:ALA:HB2	1.58	0.68
1:D:109:GLU:HG3	1:D:111:GLN:HG2	1.74	0.68
1:E:208:THR:OG1	4:E:404:HOH:O	2.13	0.67
1:B:22:ASP:OD1	1:B:24:GLN:HG2	1.95	0.67
1:D:205:LYS:HZ3	1:D:206:ASN:HA	1.59	0.66
1:D:109:GLU:HG3	1:D:111:GLN:HG3	1.78	0.66
1:D:3:ASN:OD1	4:D:403:HOH:O	2.12	0.66
1:B:29:LYS:O	1:B:33:GLU:HG2	1.96	0.65
1:A:94:ARG:NH1	4:A:408:HOH:O	2.29	0.65
1:D:7:THR:O	4:D:404:HOH:O	2.15	0.65
1:D:218:TRP:NE1	1:D:222:LYS:HE3	2.12	0.65
1:C:175:ASP:OD1	4:C:406:HOH:O	2.14	0.64
1:D:20:GLN:NE2	1:D:200:GLN:HG2	2.13	0.64
1:B:166:GLU:HG3	2:B:301:FNR:H7	1.80	0.64
1:D:180:LYS:HB3	1:D:182:ILE:HD12	1.79	0.64
1:C:20:GLN:NE2	1:C:200:GLN:OE1	2.31	0.63
1:B:223:GLU:HB2	4:B:410:HOH:O	1.97	0.61
2:A:301:FNR:H5'1	4:B:441:HOH:O	2.01	0.61
1:D:20:GLN:HG3	1:D:74:LYS:CE	2.31	0.60
1:E:75:GLN:OE1	1:E:75:GLN:N	2.30	0.60
1:C:37:GLU:OE1	1:C:40:ARG:NH1	2.34	0.60
1:D:20:GLN:HG3	1:D:74:LYS:HE3	1.84	0.59
1:D:164:PRO:HG2	2:D:301:FNR:C9	2.33	0.58
1:D:205:LYS:NZ	1:D:206:ASN:HA	2.19	0.58
1:D:3:ASN:HA	4:D:417:HOH:O	2.03	0.58
1:A:66:LYS:HE3	4:A:525:HOH:O	2.04	0.57
1:B:222:LYS:O	1:B:223:GLU:HG2	2.06	0.55
1:D:203:PRO:O	1:D:205:LYS:HB2	2.07	0.55
1:B:56:ILE:HG23	1:B:61:LEU:HD23	1.89	0.55
1:E:161:ASP:OD2	1:E:199:ARG:HB3	2.06	0.55
1:E:174:THR:HG23	1:E:183:LEU:CD2	2.37	0.54
1:D:221:PRO:HD2	1:E:57:GLN:HB2	1.90	0.54
1:B:123:PHE:CE1	3:B:302:NAD:H5N	2.44	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:112:THR:O	1:D:116:VAL:HG23	2.08	0.53
1:D:20:GLN:HE21	1:D:200:GLN:HG2	1.74	0.53
1:B:213:GLU:OE1	1:B:213:GLU:HA	2.09	0.52
1:B:222:LYS:O	1:B:223:GLU:CB	2.57	0.52
1:D:205:LYS:CG	1:D:206:ASN:N	2.72	0.52
1:D:64:GLU:OE2	1:D:180:LYS:HE2	2.09	0.52
1:D:1:MET:CE	1:D:3:ASN:H	2.22	0.52
1:B:218:TRP:NE1	1:B:222:LYS:HE2	2.25	0.52
1:E:88:ARG:HG2	1:E:188:PHE:CE1	2.44	0.52
1:C:207:LYS:HE3	4:C:536:HOH:O	2.10	0.51
1:A:74:LYS:HG2	4:A:414:HOH:O	2.08	0.51
1:D:94:ARG:NE	4:D:407:HOH:O	2.41	0.51
1:E:56:ILE:O	1:E:56:ILE:HG13	2.10	0.51
1:E:68:HIS:CD2	1:E:172:THR:HG21	2.46	0.51
1:A:166:GLU:H	2:A:301:FNR:H5	1.57	0.51
1:D:51:TRP:HB3	1:D:144:THR:HG22	1.92	0.50
1:C:106:LYS:O	1:C:107:LYS:HB2	2.10	0.50
1:A:103:ARG:HG2	1:A:113:ILE:CD1	2.41	0.50
1:D:94:ARG:HH22	1:D:117:GLU:HB3	1.76	0.50
1:A:164:PRO:HG2	2:A:301:FNR:C9	2.42	0.50
1:D:113:ILE:HB	1:D:114:PRO:HD3	1.92	0.50
1:B:222:LYS:O	1:B:223:GLU:HB2	2.12	0.50
1:C:46:LEU:HD22	1:C:120:PHE:CE1	2.46	0.49
1:D:180:LYS:CB	1:D:182:ILE:HD12	2.42	0.49
1:D:6:GLN:HA	1:D:6:GLN:OE1	2.12	0.49
1:D:109:GLU:HA	1:D:109:GLU:OE1	2.13	0.49
1:B:51:TRP:HB3	1:B:144:THR:HG22	1.95	0.49
1:B:164:PRO:HG2	2:B:301:FNR:C9	2.43	0.49
1:E:56:ILE:HD11	1:E:82:PHE:CD2	2.49	0.48
1:D:4:MET:HB3	1:E:158:LEU:HD23	1.96	0.48
1:E:200:GLN:HB2	4:E:405:HOH:O	2.13	0.48
1:A:92:THR:OG1	1:A:94:ARG:HB2	2.14	0.47
1:B:111:GLN:HG3	1:B:112:THR:HG23	1.96	0.47
1:C:118:GLN:O	1:C:118:GLN:NE2	2.48	0.47
1:A:17:ALA:HB2	2:A:301:FNR:H4	1.96	0.47
1:D:205:LYS:HG2	1:D:206:ASN:N	2.30	0.47
1:C:222:LYS:HD3	1:C:222:LYS:O	2.15	0.46
1:E:164:PRO:HG2	2:E:301:FNR:C9	2.46	0.46
1:E:119:LYS:HD3	4:E:440:HOH:O	2.15	0.45
1:B:98:VAL:O	1:B:102:LEU:HG	2.16	0.45
1:E:66:LYS:HA	1:E:76:LEU:CD1	2.47	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:154:THR:HG23	1:B:8:ILE:HG21	1.99	0.45
1:E:174:THR:HG23	1:E:183:LEU:HD21	1.98	0.45
1:D:20:GLN:OE1	1:D:74:LYS:HE2	2.17	0.45
1:E:218:TRP:CD2	1:E:222:LYS:HG3	2.52	0.44
1:E:115:ALA:HA	1:E:118:GLN:NE2	2.31	0.44
1:D:50:PRO:HG3	4:D:419:HOH:O	2.18	0.44
1:E:199:ARG:NH1	1:E:203:PRO:HD3	2.32	0.44
1:C:22:ASP:CG	1:C:25:LYS:HD2	2.38	0.44
1:D:1:MET:HA	1:D:1:MET:HE3	2.00	0.44
1:B:52:LYS:NZ	4:B:413:HOH:O	2.46	0.44
1:D:1:MET:HE1	1:D:3:ASN:HB3	2.00	0.44
1:D:218:TRP:CD1	1:D:222:LYS:HE3	2.53	0.43
1:C:162:SER:HA	1:C:195:ALA:O	2.19	0.43
1:D:203:PRO:HG2	1:D:205:LYS:HG3	2.01	0.43
1:B:118:GLN:HE22	1:C:103:ARG:NH1	2.16	0.43
1:B:218:TRP:CD1	1:B:222:LYS:HE2	2.54	0.43
1:C:207:LYS:HE3	1:C:207:LYS:HB2	1.86	0.42
2:C:301:FNR:HN1	2:C:301:FNR:H1'1	1.72	0.42
1:A:25:LYS:HE3	4:A:440:HOH:O	2.19	0.42
1:A:66:LYS:NZ	4:A:404:HOH:O	2.16	0.42
2:B:301:FNR:O4'	2:B:301:FNR:O2'	2.30	0.42
1:E:66:LYS:HB3	1:E:66:LYS:HE3	1.85	0.42
1:B:64:GLU:OE2	1:B:180:LYS:HE3	2.19	0.42
1:E:51:TRP:HB3	1:E:144:THR:HG22	2.01	0.42
1:E:69:SER:HA	1:E:168:PHE:HA	2.00	0.42
1:C:98:VAL:O	1:C:102:LEU:HG	2.19	0.42
1:A:49:GLU:OE2	1:B:209:ARG:HA	2.19	0.42
1:A:209:ARG:HA	1:B:49:GLU:OE2	2.20	0.42
1:B:138:ASP:O	1:B:142:LYS:HG3	2.19	0.42
1:A:162:SER:HA	1:A:195:ALA:O	2.20	0.42
1:D:1:MET:HE2	1:D:3:ASN:N	2.34	0.42
1:C:206:ASN:OD1	1:C:206:ASN:N	2.53	0.41
1:C:217:GLU:HG3	4:C:415:HOH:O	2.20	0.41
1:A:74:LYS:HE2	4:A:539:HOH:O	2.19	0.41
1:D:41:LEU:O	1:E:209:ARG:NH2	2.54	0.41
2:A:301:FNR:O2'	2:A:301:FNR:O4'	2.36	0.41
1:A:204:PRO:HD2	4:A:458:HOH:O	2.21	0.41
1:D:52:LYS:HB2	4:D:414:HOH:O	2.21	0.41
1:B:51:TRP:HA	1:B:86:PHE:O	2.21	0.40
1:D:180:LYS:HB3	1:D:182:ILE:CD1	2.47	0.40
1:D:166:GLU:H	2:D:301:FNR:H5	1.69	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:223:GLU:HG3	1:E:26:LYS:NZ	2.37	0.40
2:D:301:FNR:H2	1:E:47:GLY:HA2	2.03	0.40
1:B:112:THR:OG1	4:B:403:HOH:O	2.02	0.40
1:E:203:PRO:C	1:E:205:LYS:H	2.25	0.40

All (3) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:C:538:HOH:O	4:E:434:HOH:O[2_656]	2.10	0.10
4:B:496:HOH:O	4:E:411:HOH:O[4_545]	2.12	0.08
4:B:511:HOH:O	4:C:568:HOH:O[2_646]	2.18	0.02

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	223/223 (100%)	217 (97%)	6 (3%)	0	100	100
1	B	222/223 (100%)	217 (98%)	5 (2%)	0	100	100
1	C	221/223 (99%)	212 (96%)	5 (2%)	4 (2%)	8	3
1	D	222/223 (100%)	214 (96%)	6 (3%)	2 (1%)	17	11
1	E	221/223 (99%)	213 (96%)	8 (4%)	0	100	100
All	All	1109/1115 (100%)	1073 (97%)	30 (3%)	6 (0%)	29	23

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	206	ASN
1	C	2	SER
1	D	205	LYS

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Mol	Chain	Res	Type
1	C	205	LYS
1	C	212	TYR
1	C	221	PRO

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	194/194 (100%)	189 (97%)	5 (3%)	46	48
1	B	192/194 (99%)	186 (97%)	6 (3%)	40	40
1	C	191/194 (98%)	186 (97%)	5 (3%)	46	48
1	D	192/194 (99%)	188 (98%)	4 (2%)	53	57
1	E	190/194 (98%)	189 (100%)	1 (0%)	88	92
All	All	959/970 (99%)	938 (98%)	21 (2%)	55	55

All (21) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1	MET
1	A	51	TRP
1	A	185[A]	THR
1	A	185[B]	THR
1	A	200	GLN
1	B	1	MET
1	B	51	TRP
1	B	106[A]	LYS
1	B	106[B]	LYS
1	B	118	GLN
1	B	126	ASP
1	C	2	SER
1	C	4	MET
1	C	24	GLN
1	C	51	TRP
1	C	206	ASN

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Mol	Chain	Res	Type
1	D	1	MET
1	D	2	SER
1	D	26	LYS
1	D	74	LYS
1	E	51	TRP

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

Mol	Chain	Res	Type
1	B	24	GLN
1	B	118	GLN
1	B	206	ASN
1	C	118	GLN
1	C	179	ASN
1	D	200	GLN
1	D	206	ASN
1	E	118	GLN
1	E	179	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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

7 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	FNR	E	301	-	32,33,33	3.92	15 (46%)	40,50,50	1.64	9 (22%)
2	FNR	C	301	-	32,33,33	3.61	12 (37%)	40,50,50	1.57	8 (20%)
3	NAD	B	302	-	9,9,48	2.71	1 (11%)	11,11,73	1.30	2 (18%)
2	FNR	B	301	-	32,33,33	3.62	14 (43%)	40,50,50	1.83	9 (22%)
3	NAD	C	302	-	9,9,48	2.70	1 (11%)	11,11,73	1.50	2 (18%)
2	FNR	A	301	-	32,33,33	3.73	14 (43%)	40,50,50	1.99	11 (27%)
2	FNR	D	301	-	32,33,33	3.68	12 (37%)	40,50,50	1.47	8 (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	FNR	E	301	-	-	5/18/18/18	0/3/3/3
2	FNR	C	301	-	-	1/18/18/18	0/3/3/3
3	NAD	B	302	-	-	0/4/4/62	0/1/1/5
2	FNR	B	301	-	-	8/18/18/18	0/3/3/3
3	NAD	C	302	-	-	0/4/4/62	0/1/1/5
2	FNR	A	301	-	-	8/18/18/18	0/3/3/3
2	FNR	D	301	-	-	1/18/18/18	0/3/3/3

All (69) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	301	FNR	C5A-C9A	-10.14	1.29	1.40
2	D	301	FNR	C5A-C9A	-9.27	1.30	1.40
2	E	301	FNR	C5A-C9A	-9.15	1.30	1.40
2	E	301	FNR	O4-C4	8.75	1.40	1.23
2	B	301	FNR	C5A-C9A	-8.73	1.30	1.40
2	C	301	FNR	C5A-C9A	-8.69	1.30	1.40
2	A	301	FNR	O4-C4	8.17	1.39	1.23
2	D	301	FNR	O2-C2	8.14	1.40	1.23
2	B	301	FNR	O4-C4	8.09	1.39	1.23
2	E	301	FNR	O2-C2	7.98	1.40	1.23
2	C	301	FNR	O4-C4	7.70	1.38	1.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	301	FNR	O4-C4	7.61	1.38	1.23
2	E	301	FNR	C6-C5A	7.42	1.51	1.39
2	B	301	FNR	O2-C2	7.41	1.38	1.23
2	A	301	FNR	O2-C2	7.37	1.38	1.23
3	B	302	NAD	C7N-N7N	7.32	1.46	1.33
3	C	302	NAD	C7N-N7N	7.26	1.46	1.33
2	C	301	FNR	O2-C2	7.22	1.38	1.23
2	A	301	FNR	C9-C9A	7.11	1.51	1.39
2	C	301	FNR	C6-C5A	7.00	1.50	1.39
2	C	301	FNR	C9-C9A	6.74	1.50	1.39
2	E	301	FNR	C9-C9A	6.71	1.50	1.39
2	B	301	FNR	C6-C5A	6.67	1.49	1.39
2	D	301	FNR	C9-C9A	6.65	1.50	1.39
2	B	301	FNR	C9-C9A	6.54	1.50	1.39
2	E	301	FNR	CAA-N1	6.44	1.48	1.37
2	A	301	FNR	C6-C5A	6.28	1.49	1.39
2	D	301	FNR	C6-C5A	6.14	1.49	1.39
2	A	301	FNR	CAA-N1	6.12	1.48	1.37
2	D	301	FNR	CAA-N1	6.09	1.48	1.37
2	B	301	FNR	CAA-N1	5.88	1.47	1.37
2	C	301	FNR	CAA-N1	5.87	1.47	1.37
2	C	301	FNR	C9A-N10	4.64	1.49	1.41
2	E	301	FNR	C2-N1	4.60	1.45	1.37
2	E	301	FNR	C4A-C4	4.31	1.53	1.42
2	C	301	FNR	C4A-C4	4.13	1.52	1.42
2	D	301	FNR	C2-N1	4.09	1.44	1.37
2	B	301	FNR	C4A-C4	4.01	1.52	1.42
2	D	301	FNR	C4A-C4	3.92	1.52	1.42
2	D	301	FNR	C5A-N5	3.85	1.46	1.39
2	A	301	FNR	C4A-C4	3.71	1.51	1.42
2	E	301	FNR	CAA-N10	3.70	1.45	1.38
2	E	301	FNR	C5A-N5	3.62	1.46	1.39
2	B	301	FNR	C2-N1	3.61	1.43	1.37
2	D	301	FNR	CAA-N10	3.56	1.44	1.38
2	E	301	FNR	C4A-N5	3.52	1.43	1.35
2	B	301	FNR	CAA-N10	3.49	1.44	1.38
2	A	301	FNR	C2-N1	3.42	1.43	1.37
2	E	301	FNR	C9A-N10	3.33	1.47	1.41
2	C	301	FNR	C2-N1	3.28	1.43	1.37
2	B	301	FNR	C5A-N5	3.19	1.45	1.39
2	B	301	FNR	C9A-N10	3.16	1.46	1.41
2	D	301	FNR	C4A-N5	3.07	1.42	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	301	FNR	C4A-N5	3.07	1.42	1.35
2	A	301	FNR	C5A-N5	3.06	1.45	1.39
2	A	301	FNR	CAA-N10	3.03	1.43	1.38
2	A	301	FNR	C4A-N5	2.97	1.42	1.35
2	D	301	FNR	C9A-N10	2.93	1.46	1.41
2	B	301	FNR	C4A-N5	2.89	1.42	1.35
2	C	301	FNR	CAA-N10	2.87	1.43	1.38
2	C	301	FNR	C5A-N5	2.63	1.44	1.39
2	E	301	FNR	C2-N3	2.35	1.41	1.37
2	A	301	FNR	C9A-N10	2.32	1.45	1.41
2	B	301	FNR	O2'-C2'	-2.28	1.38	1.43
2	A	301	FNR	P-O3P	-2.27	1.46	1.54
2	E	301	FNR	P-O3P	-2.22	1.46	1.54
2	B	301	FNR	C2-N3	2.21	1.41	1.37
2	A	301	FNR	O5'-C5'	-2.19	1.36	1.44
2	E	301	FNR	P-O1P	-2.13	1.46	1.54

All (49) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	301	FNR	O4'-C4'-C5'	-6.06	96.29	109.92
2	B	301	FNR	O4'-C4'-C5'	-4.99	98.71	109.92
2	C	301	FNR	C4-N3-C2	-4.58	119.74	126.34
2	B	301	FNR	C4-N3-C2	-4.54	119.79	126.34
2	E	301	FNR	C4-N3-C2	-4.44	119.94	126.34
2	A	301	FNR	O3P-P-O5'	4.27	118.11	106.73
2	B	301	FNR	O3P-P-O5'	4.22	117.97	106.73
2	A	301	FNR	C4-N3-C2	-4.13	120.39	126.34
2	E	301	FNR	O3P-P-O5'	3.89	117.08	106.73
2	D	301	FNR	C4-N3-C2	-3.88	120.75	126.34
2	A	301	FNR	C4'-C3'-C2'	-3.65	105.77	113.36
2	C	301	FNR	O1P-P-O5'	3.49	116.01	106.73
2	A	301	FNR	O4'-C4'-C3'	3.32	117.18	109.10
2	A	301	FNR	C1'-C2'-C3'	-3.26	100.68	109.79
2	B	301	FNR	C4'-C3'-C2'	-3.14	106.83	113.36
2	B	301	FNR	O4-C4-C4A	-2.98	120.42	127.24
2	D	301	FNR	O5'-P-O2P	2.96	114.78	106.47
2	E	301	FNR	O4-C4-C4A	-2.94	120.50	127.24
2	A	301	FNR	O3'-C3'-C2'	2.93	115.89	108.81
2	A	301	FNR	O4-C4-C4A	-2.88	120.65	127.24
2	C	301	FNR	N3-C2-N1	2.81	120.32	115.80
3	B	302	NAD	C4N-C3N-C2N	2.80	120.81	117.63

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	301	FNR	C5'-C4'-C3'	-2.73	106.93	112.20
2	E	301	FNR	N3-C2-N1	2.65	120.06	115.80
3	C	302	NAD	C3N-C2N-N1N	-2.65	119.57	123.49
2	B	301	FNR	N3-C2-N1	2.65	120.05	115.80
2	C	301	FNR	C4A-C4-N3	2.62	120.11	112.31
3	C	302	NAD	C4N-C3N-C2N	2.58	120.55	117.63
2	C	301	FNR	C6-C5A-C9A	2.55	122.37	119.67
2	B	301	FNR	O1P-P-O5'	2.54	113.50	106.73
2	D	301	FNR	O3P-P-O5'	2.49	113.37	106.73
2	D	301	FNR	N3-C2-N1	2.48	119.78	115.80
2	D	301	FNR	O4-C4-C4A	-2.47	121.58	127.24
2	E	301	FNR	C4A-C4-N3	2.46	119.65	112.31
2	A	301	FNR	C4A-C4-N3	2.44	119.57	112.31
2	E	301	FNR	O1P-P-O5'	2.40	113.11	106.73
2	E	301	FNR	C5'-C4'-C3'	-2.38	107.61	112.20
2	E	301	FNR	O5'-P-O2P	2.36	113.08	106.47
2	D	301	FNR	C4A-C4-N3	2.35	119.31	112.31
2	B	301	FNR	C4A-C4-N3	2.33	119.25	112.31
2	A	301	FNR	N3-C2-N1	2.30	119.50	115.80
2	C	301	FNR	O4-C4-C4A	-2.24	122.12	127.24
2	B	301	FNR	O1P-P-O2P	-2.18	102.13	110.68
2	A	301	FNR	C1'-N10-C9A	-2.17	116.89	120.51
2	E	301	FNR	C1'-N10-C9A	-2.15	116.93	120.51
3	B	302	NAD	C3N-C2N-N1N	-2.14	120.33	123.49
2	C	301	FNR	O4'-C4'-C3'	-2.13	103.93	109.10
2	D	301	FNR	O1P-P-O2P	-2.04	102.71	110.68
2	C	301	FNR	O5'-P-O2P	2.02	112.15	106.47

There are no chirality outliers.

All (23) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	301	FNR	C2'-C1'-N10-CAA
2	A	301	FNR	C3'-C4'-C5'-O5'
2	B	301	FNR	C2'-C1'-N10-CAA
2	B	301	FNR	C2'-C3'-C4'-C5'
2	B	301	FNR	O3'-C3'-C4'-C5'
2	B	301	FNR	C3'-C4'-C5'-O5'
2	C	301	FNR	C2'-C1'-N10-CAA
2	D	301	FNR	C2'-C1'-N10-CAA
2	E	301	FNR	C2'-C1'-N10-CAA
2	E	301	FNR	C5'-O5'-P-O1P

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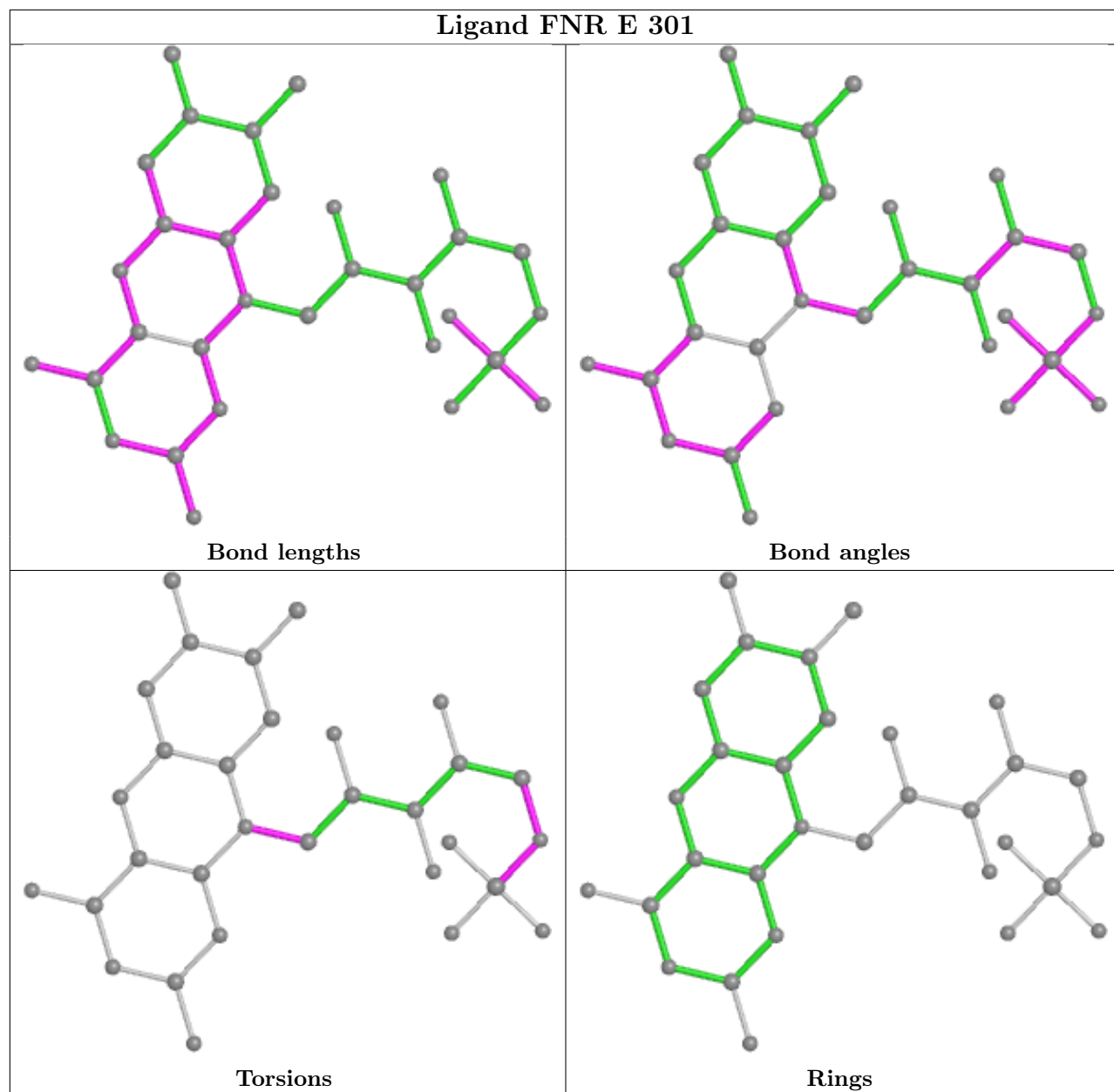
Mol	Chain	Res	Type	Atoms
2	E	301	FNR	C5'-O5'-P-O3P
2	A	301	FNR	C2'-C3'-C4'-C5'
2	A	301	FNR	O3'-C3'-C4'-C5'
2	B	301	FNR	O3'-C3'-C4'-O4'
2	B	301	FNR	C2'-C3'-C4'-O4'
2	E	301	FNR	C5'-O5'-P-O2P
2	A	301	FNR	O4'-C4'-C5'-O5'
2	B	301	FNR	C4'-C5'-O5'-P
2	E	301	FNR	C4'-C5'-O5'-P
2	A	301	FNR	C4'-C5'-O5'-P
2	B	301	FNR	O4'-C4'-C5'-O5'
2	A	301	FNR	C2'-C3'-C4'-O4'
2	A	301	FNR	C5'-O5'-P-O3P

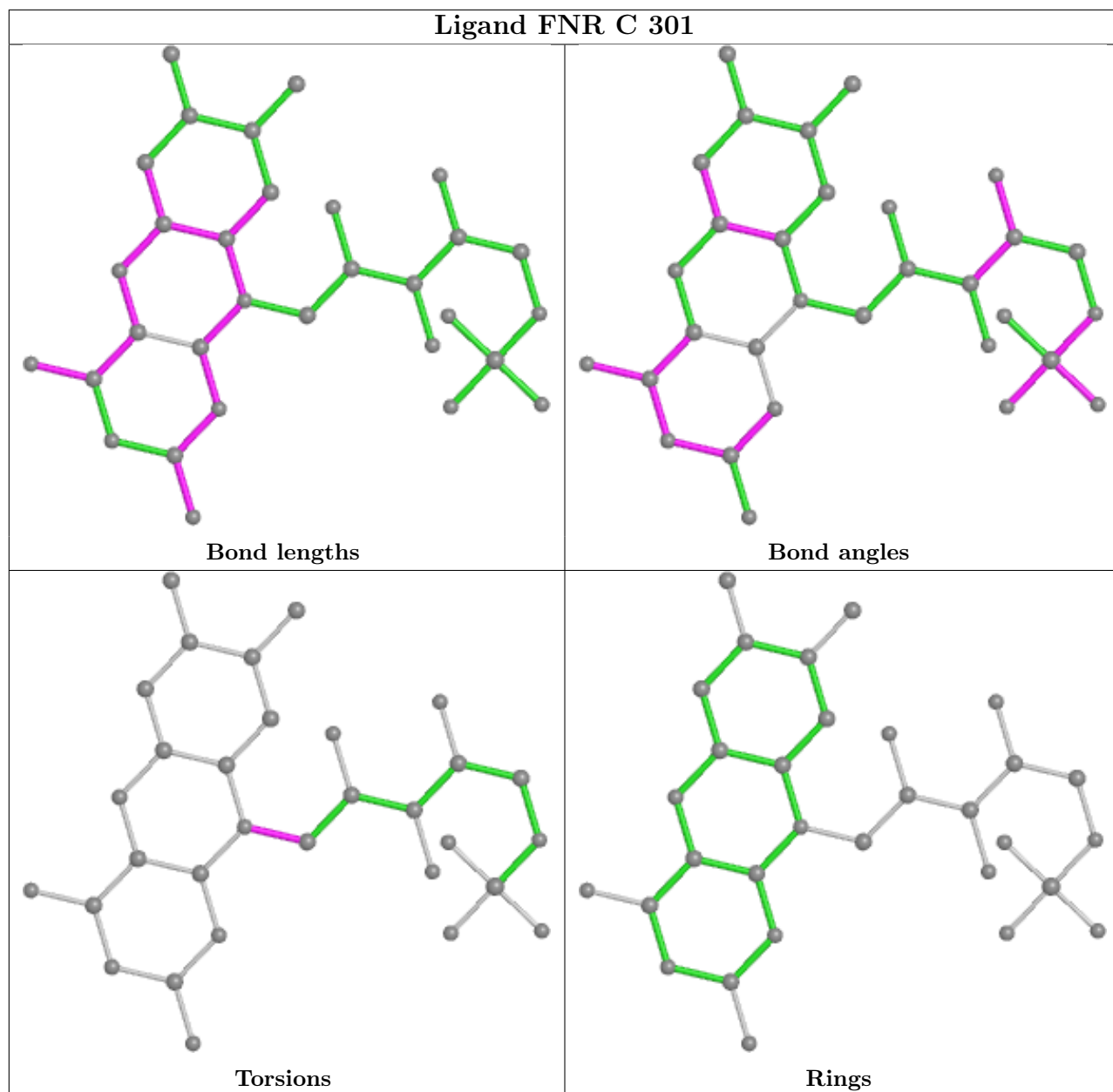
There are no ring outliers.

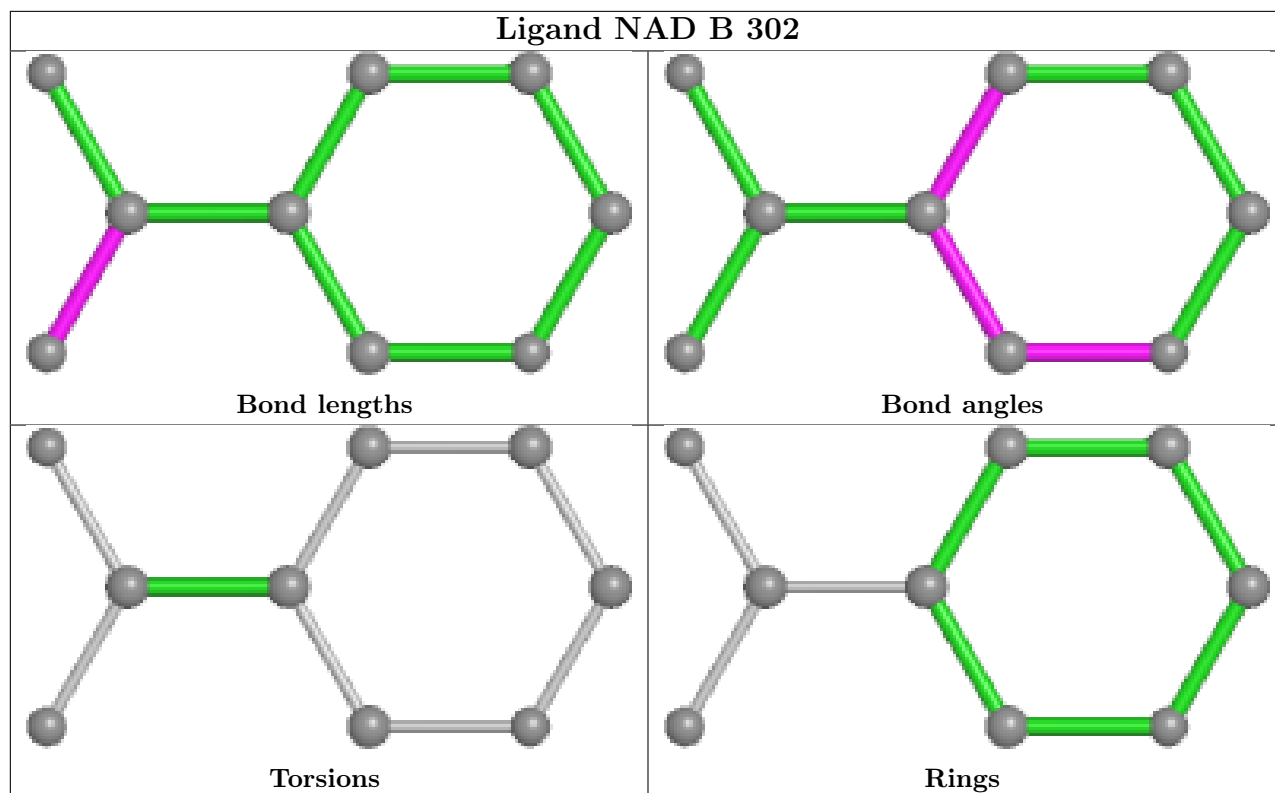
6 monomers are involved in 14 short contacts:

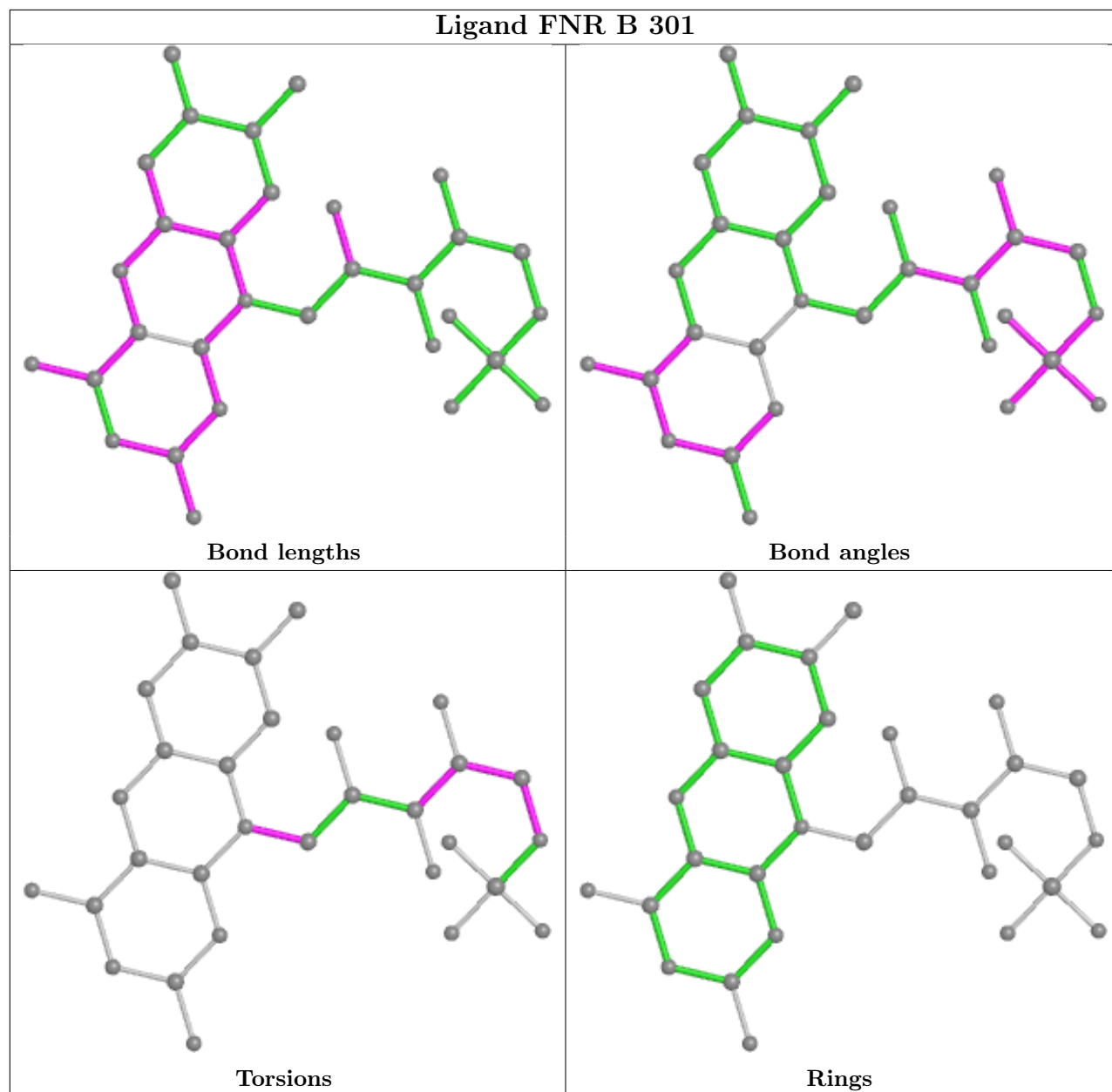
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	E	301	FNR	1	0
2	C	301	FNR	1	0
3	B	302	NAD	1	0
2	B	301	FNR	3	0
2	A	301	FNR	5	0
2	D	301	FNR	3	0

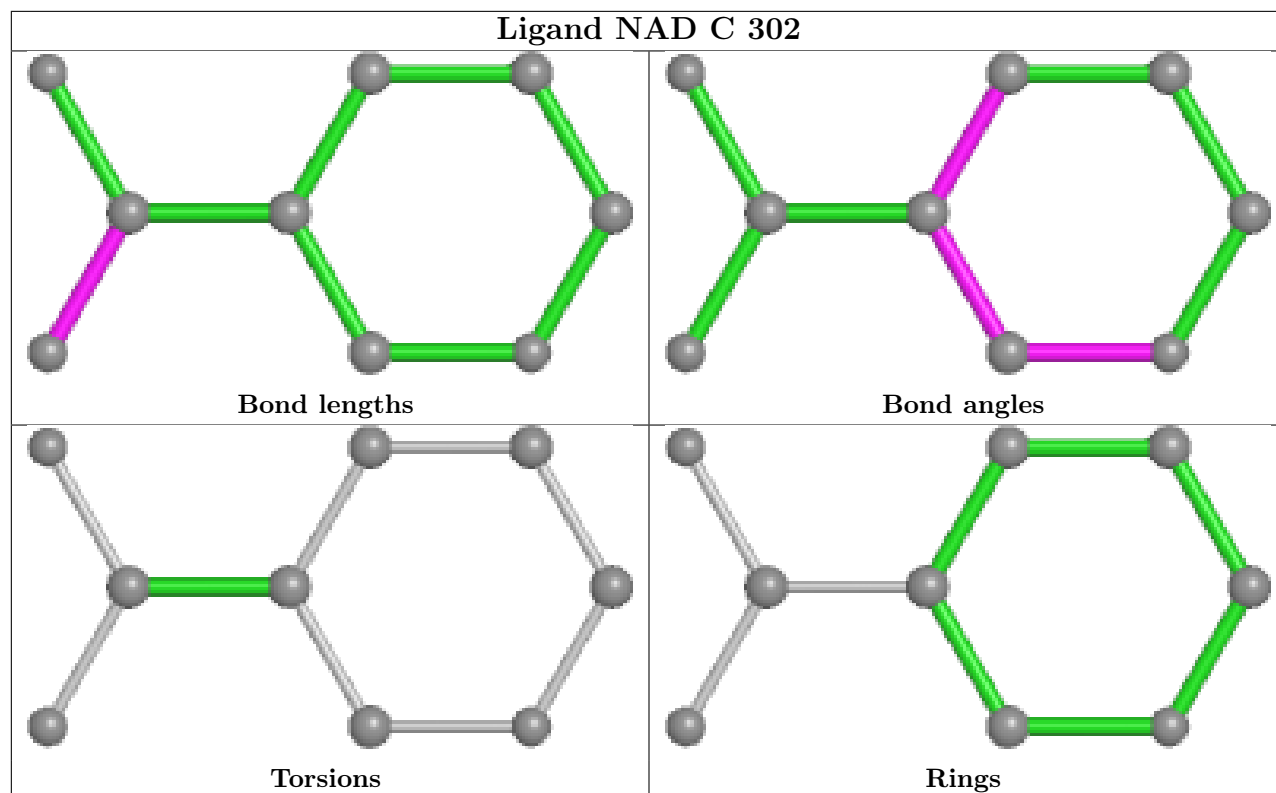
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

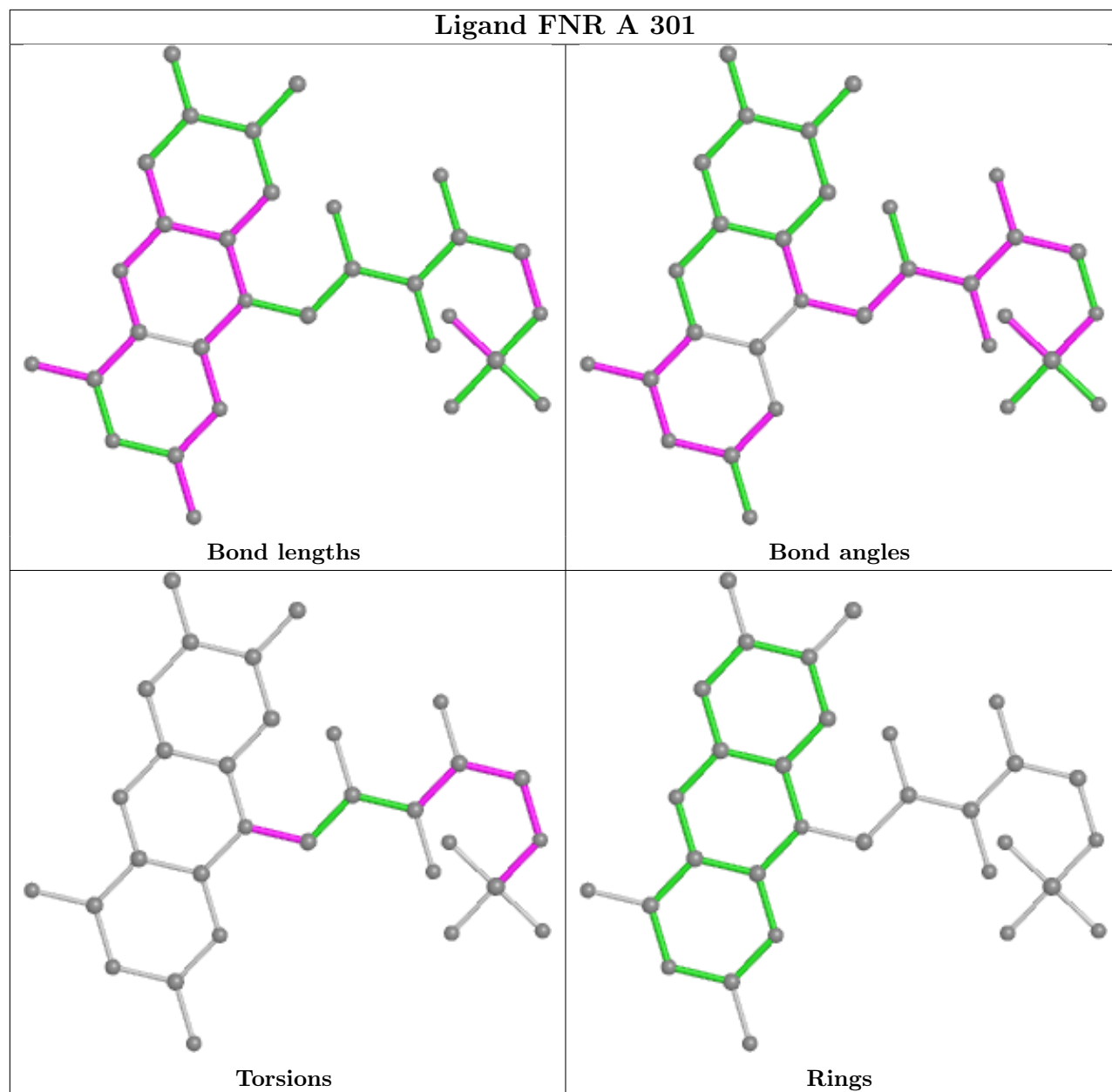


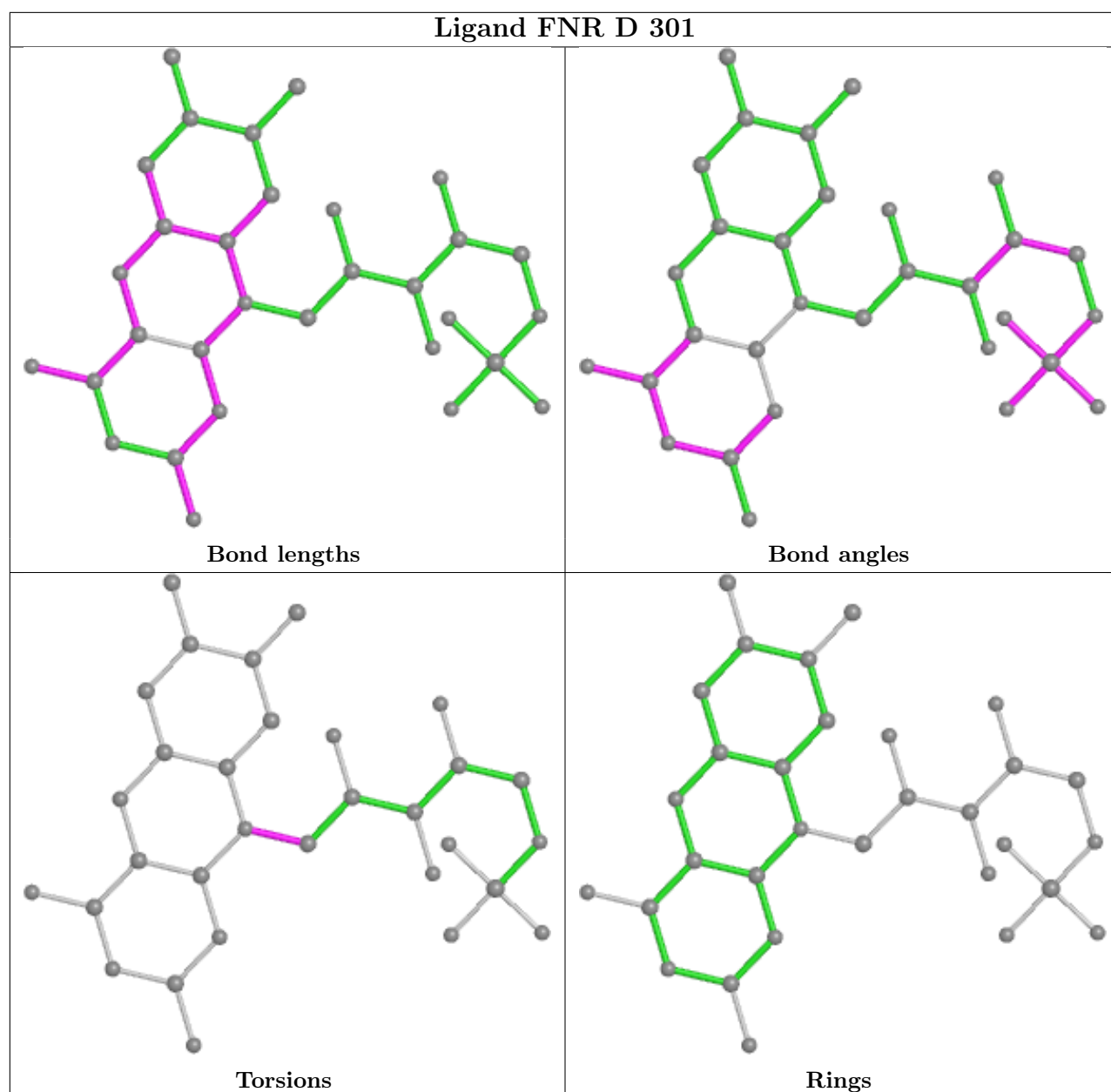












5.7 Other polymers [i](#)

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, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	223/223 (100%)	-0.25	8 (3%) 42 42	13, 27, 53, 95	0
1	B	223/223 (100%)	-0.31	4 (1%) 68 66	14, 29, 47, 101	0
1	C	223/223 (100%)	-0.16	11 (4%) 29 28	14, 29, 59, 95	0
1	D	223/223 (100%)	-0.02	13 (5%) 23 22	14, 32, 65, 109	0
1	E	223/223 (100%)	0.16	21 (9%) 8 8	12, 40, 78, 99	0
All	All	1115/1115 (100%)	-0.12	57 (5%) 28 27	12, 30, 66, 109	0

All (57) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	1	MET	9.7
1	D	2	SER	9.0
1	D	1	MET	8.7
1	B	2	SER	7.8
1	C	1	MET	7.6
1	A	1	MET	7.5
1	E	1	MET	6.9
1	A	2	SER	6.5
1	E	2	SER	5.7
1	D	220	GLY	5.6
1	C	223	GLU	5.2
1	D	223	GLU	5.0
1	D	221	PRO	4.9
1	C	2	SER	4.8
1	E	70	TRP	4.2
1	C	222	LYS	4.0
1	E	206	ASN	3.8
1	A	146	ILE	3.4
1	E	204	PRO	3.4
1	D	3	ASN	3.3

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Mol	Chain	Res	Type	RSRZ
1	D	111	GLN	3.1
1	C	148	LEU	3.0
1	C	3	ASN	3.0
1	E	146	ILE	3.0
1	D	108	TYR	3.0
1	C	206	ASN	2.9
1	E	3	ASN	2.9
1	A	3	ASN	2.9
1	E	181	GLY	2.8
1	D	118	GLN	2.7
1	A	223	GLU	2.7
1	C	204	PRO	2.6
1	D	222	LYS	2.5
1	E	26	LYS	2.5
1	E	79	ALA	2.5
1	E	223	GLU	2.5
1	E	201	GLN	2.4
1	E	179	ASN	2.4
1	E	67	ALA	2.4
1	E	73	ALA	2.4
1	E	147	ALA	2.3
1	A	94	ARG	2.3
1	C	146	ILE	2.3
1	E	29	LYS	2.2
1	C	221	PRO	2.2
1	E	205	LYS	2.1
1	E	23	PRO	2.1
1	A	204	PRO	2.1
1	E	24	GLN	2.1
1	B	146	ILE	2.1
1	D	219	VAL	2.1
1	D	110	ALA	2.1
1	B	3	ASN	2.1
1	C	147	ALA	2.0
1	A	147	ALA	2.0
1	E	20	GLN	2.0
1	D	148	LEU	2.0

6.2 Non-standard residues in protein, DNA, RNA chains

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](#)

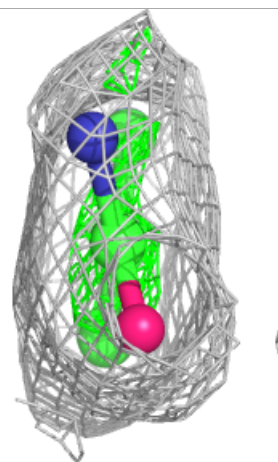
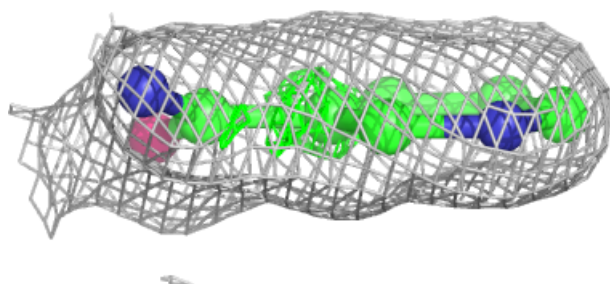
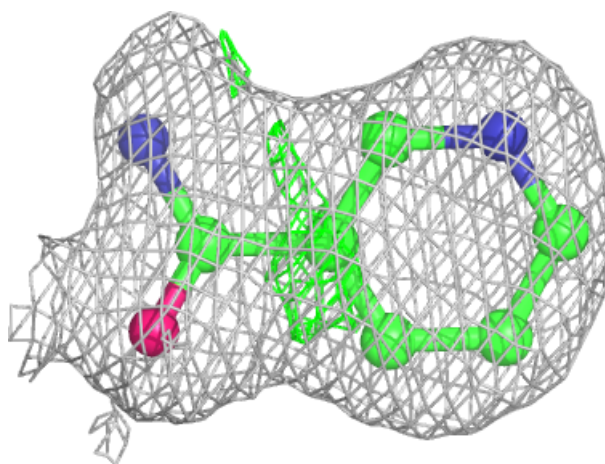
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	NAD	B	302	9/44	0.91	0.15	27,32,35,36	0
2	FNR	E	301	31/31	0.93	0.10	36,46,57,61	0
3	NAD	C	302	9/44	0.95	0.09	25,30,34,35	0
2	FNR	A	301	31/31	0.96	0.11	14,21,32,35	0
2	FNR	B	301	31/31	0.97	0.12	16,23,31,38	0
2	FNR	C	301	31/31	0.97	0.09	11,18,24,28	0
2	FNR	D	301	31/31	0.97	0.10	11,17,23,23	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.

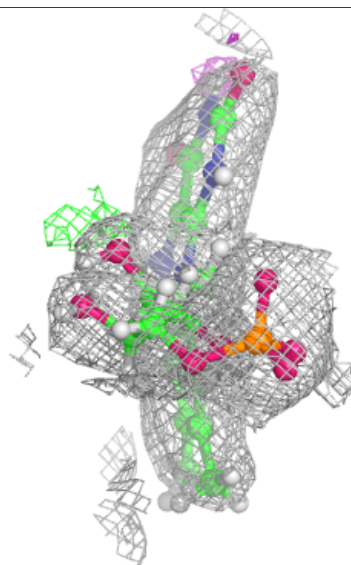
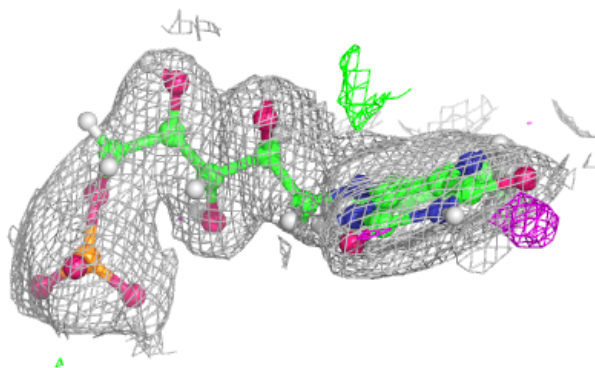
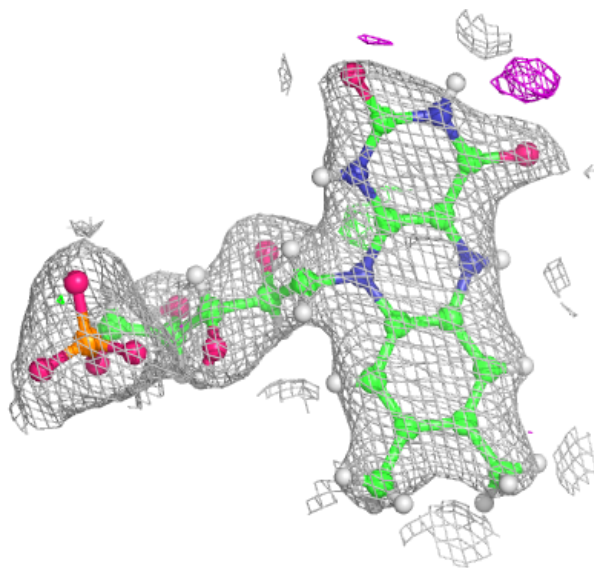
Electron density around NAD B 302:

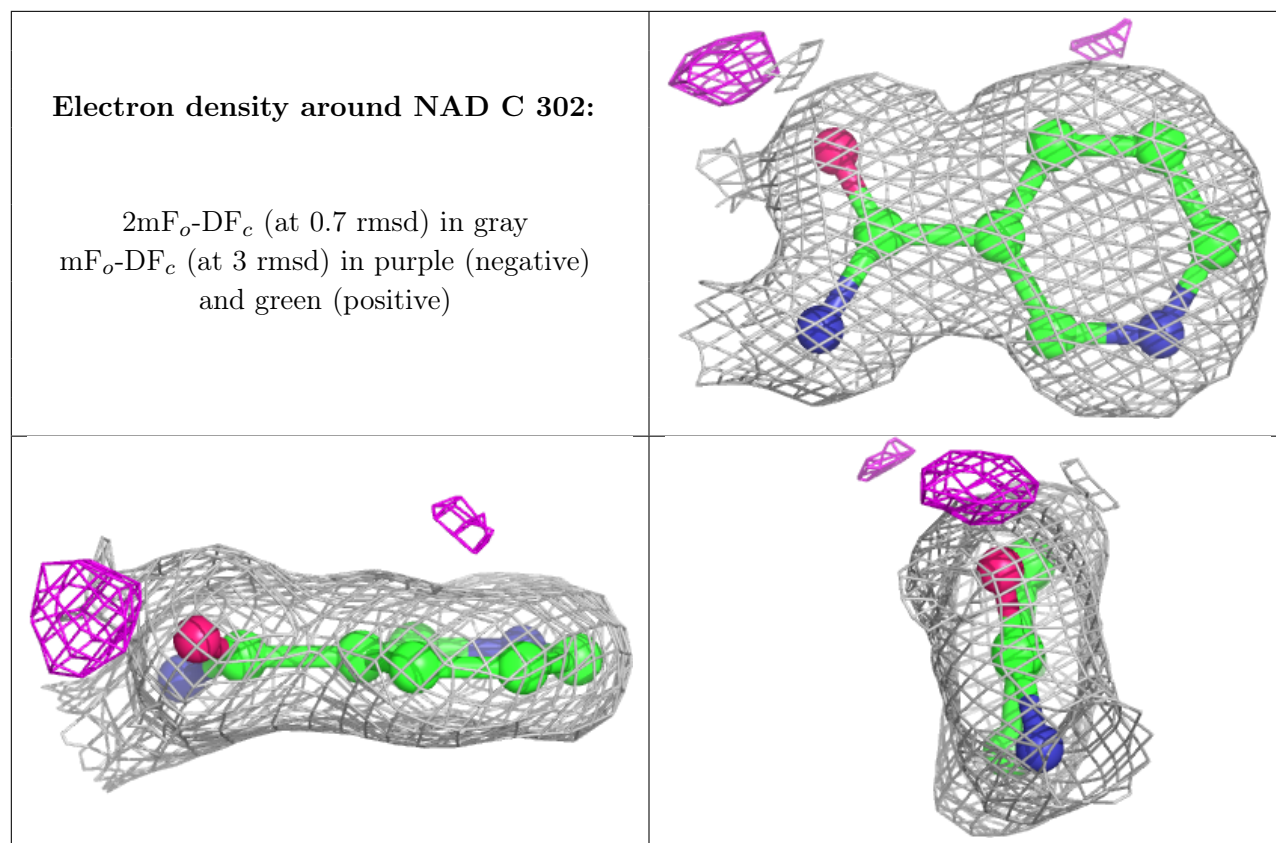
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around FNR E 301:

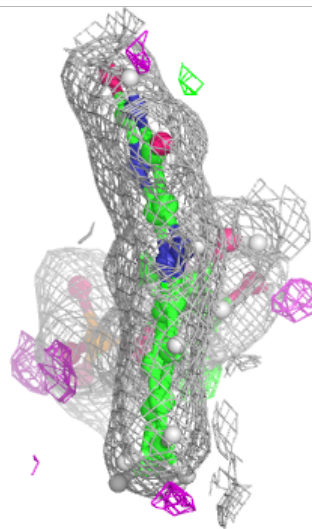
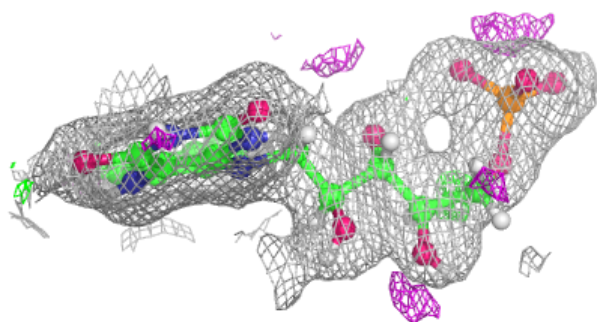
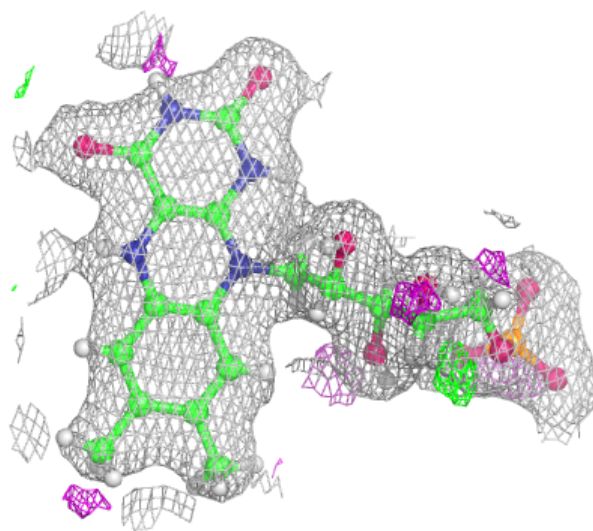
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





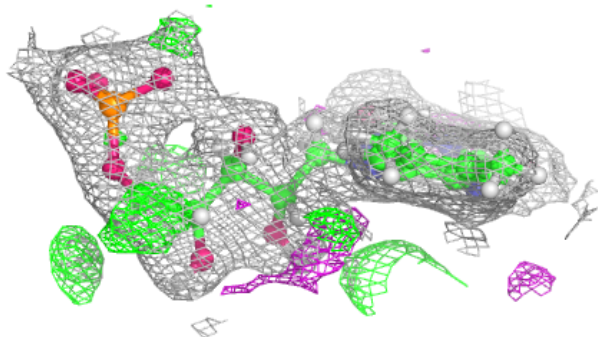
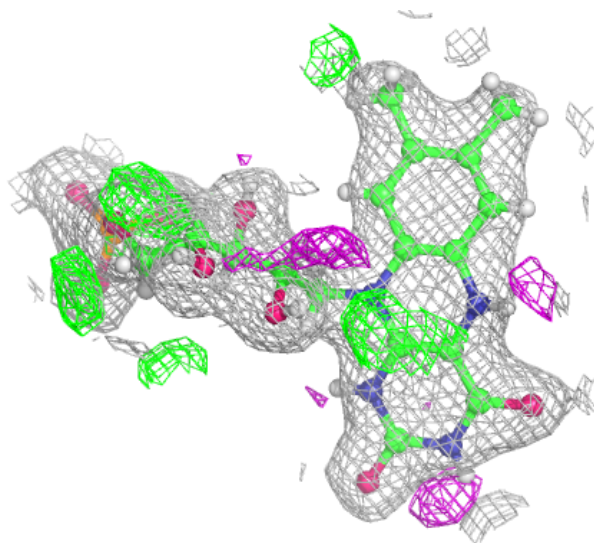
Electron density around FNR A 301:

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



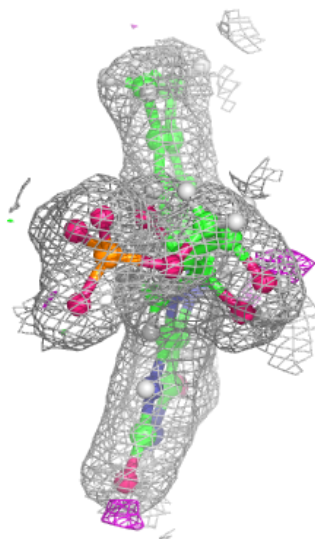
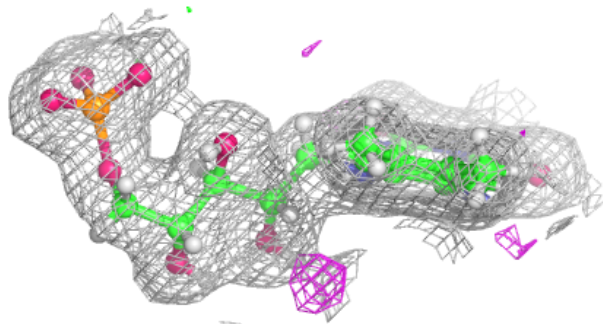
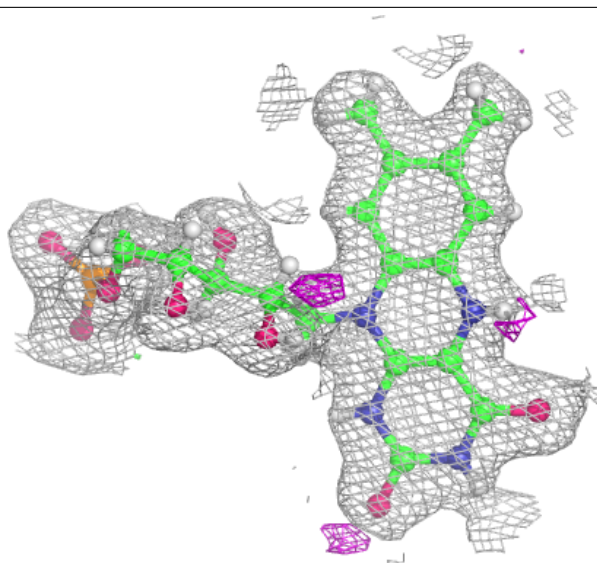
Electron density around FNR B 301:

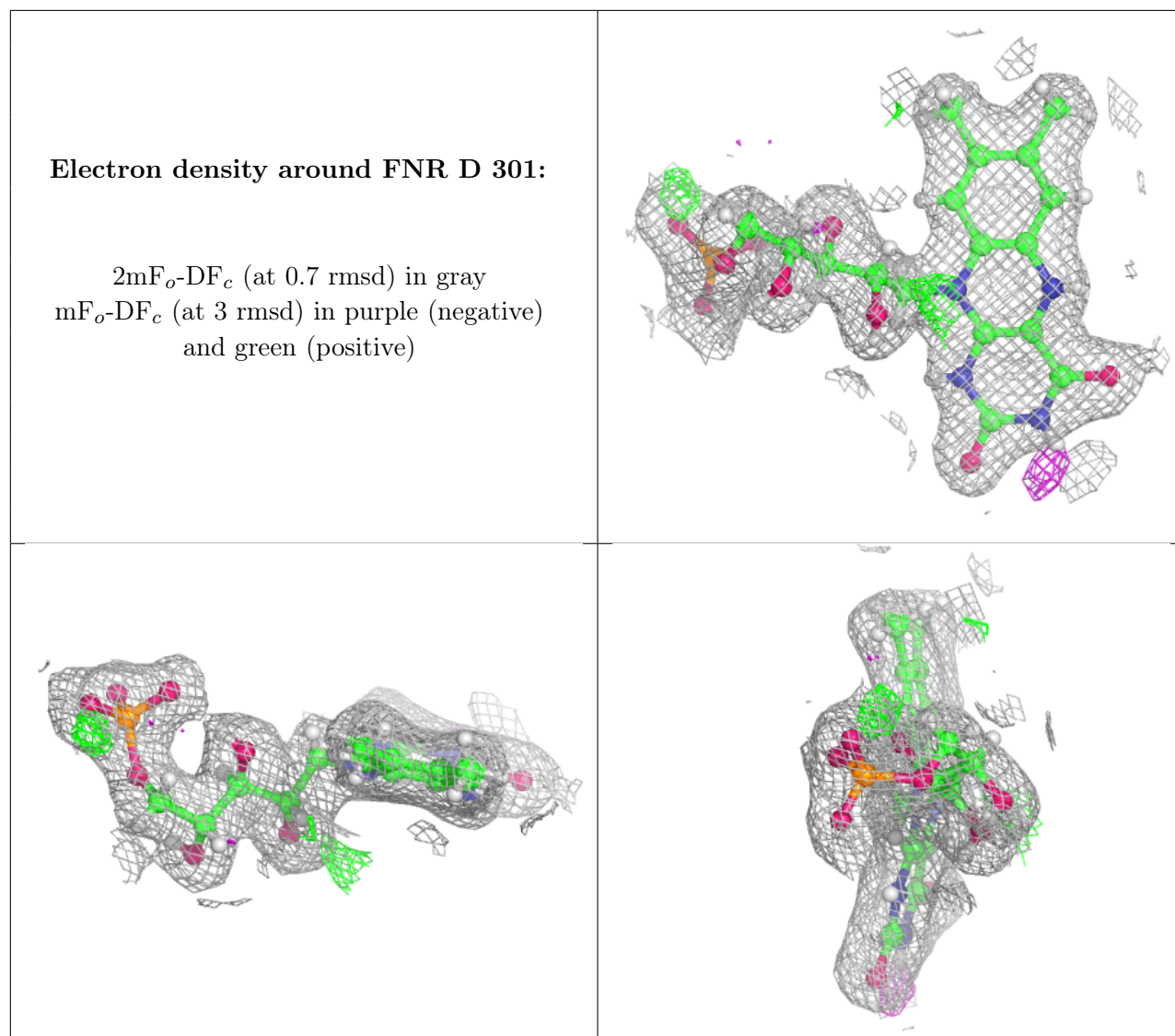
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around FNR C 301:

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





6.5 Other polymers [i](#)

There are no such residues in this entry.