



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 28, 2023 – 12:10 PM JST

PDB ID : 7XR9
Title : Crystal structure of DgpA with glucose
Authors : Ma, W.; He, P.
Deposited on : 2022-05-09
Resolution : 2.42 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 : 2.32.2
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) : 2.32.2

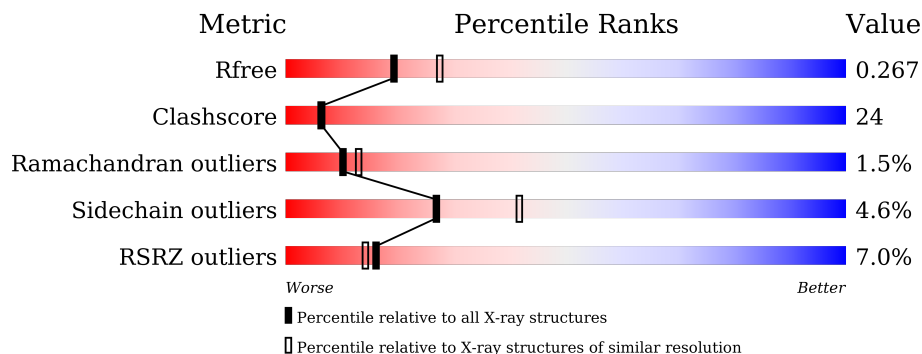
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.42 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	4647 (2.44-2.40)
Clashscore	141614	5161 (2.44-2.40)
Ramachandran outliers	138981	5073 (2.44-2.40)
Sidechain outliers	138945	5074 (2.44-2.40)
RSRZ outliers	127900	4543 (2.44-2.40)

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	367	
1	B	367	
1	C	367	
1	D	367	
1	E	367	
1	F	367	

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	BGC	A	401	-	-	-	X
2	BGC	F	401	-	-	-	X

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 16422 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.

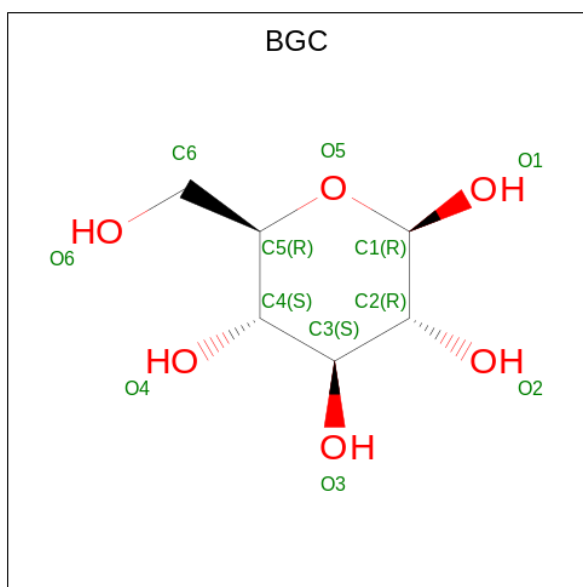
- Molecule 1 is a protein called DgpA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	344	2574	1612	443	503	16	0	0	0
1	B	354	2687	1687	463	520	17	0	0	0
1	C	350	2674	1680	460	517	17	0	0	0
1	D	350	2639	1658	452	513	16	0	0	0
1	E	353	2679	1682	461	520	16	0	0	0
1	F	350	2621	1652	437	516	16	0	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	0	GLY	-	expression tag	UNP A0A3Q9WWX8
B	0	GLY	-	expression tag	UNP A0A3Q9WWX8
C	0	GLY	-	expression tag	UNP A0A3Q9WWX8
D	0	GLY	-	expression tag	UNP A0A3Q9WWX8
E	0	GLY	-	expression tag	UNP A0A3Q9WWX8
F	0	GLY	-	expression tag	UNP A0A3Q9WWX8

- Molecule 2 is beta-D-glucopyranose (three-letter code: BGC) (formula: C₆H₁₂O₆) (labeled as "Ligand of Interest" by depositor).



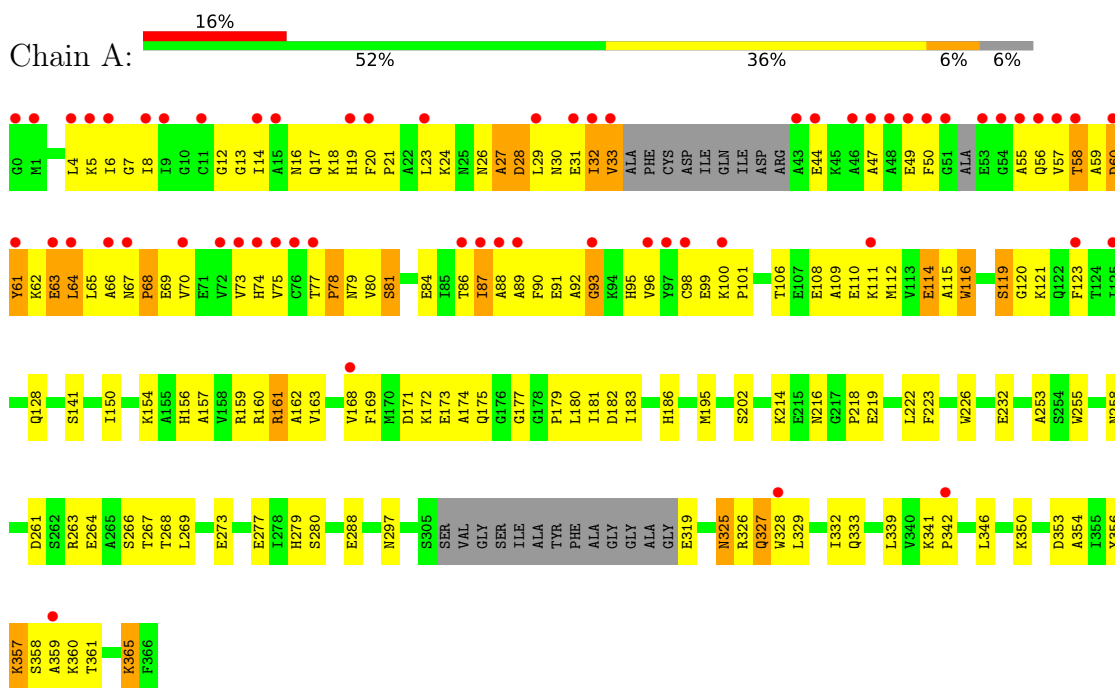
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C O 12 6 6	0	0
2	C	1	Total C O 12 6 6	0	0
2	D	1	Total C O 12 6 6	0	0
2	E	1	Total C O 12 6 6	0	0
2	F	1	Total C O 12 6 6	0	0

- Molecule 3 is NICOTINAMIDE-ADENINE-DINUCLEOTIDE (three-letter code: NAD) (formula: $C_{21}H_{27}N_7O_{14}P_2$).

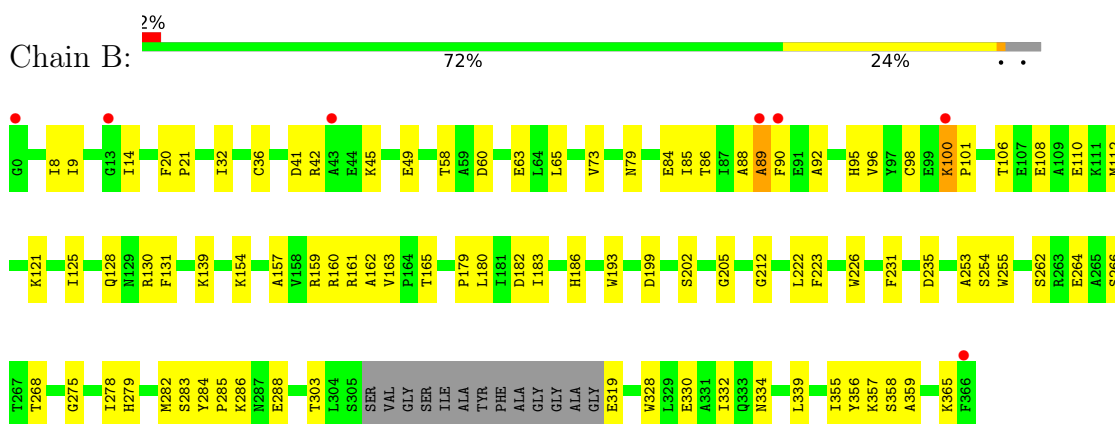
3 Residue-property plots i

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: DgpA

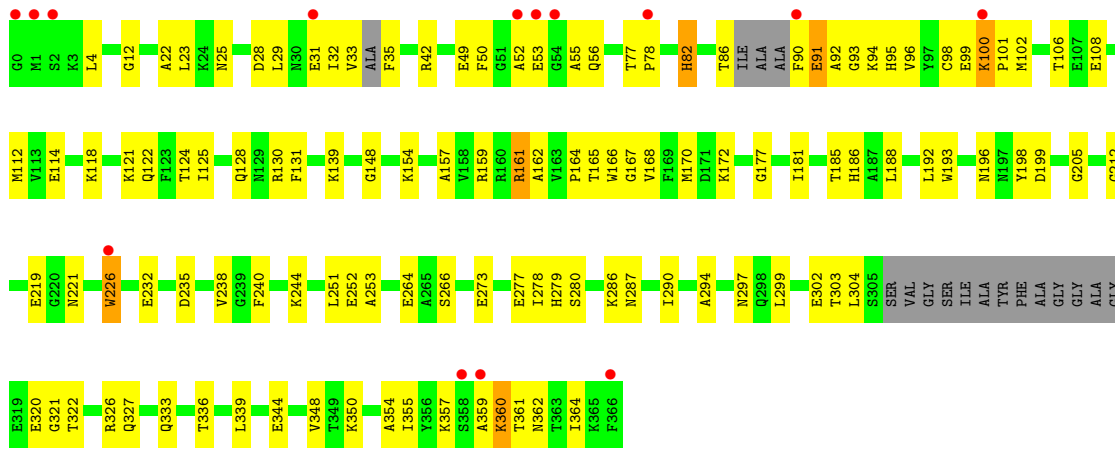


- Molecule 1: DgpA

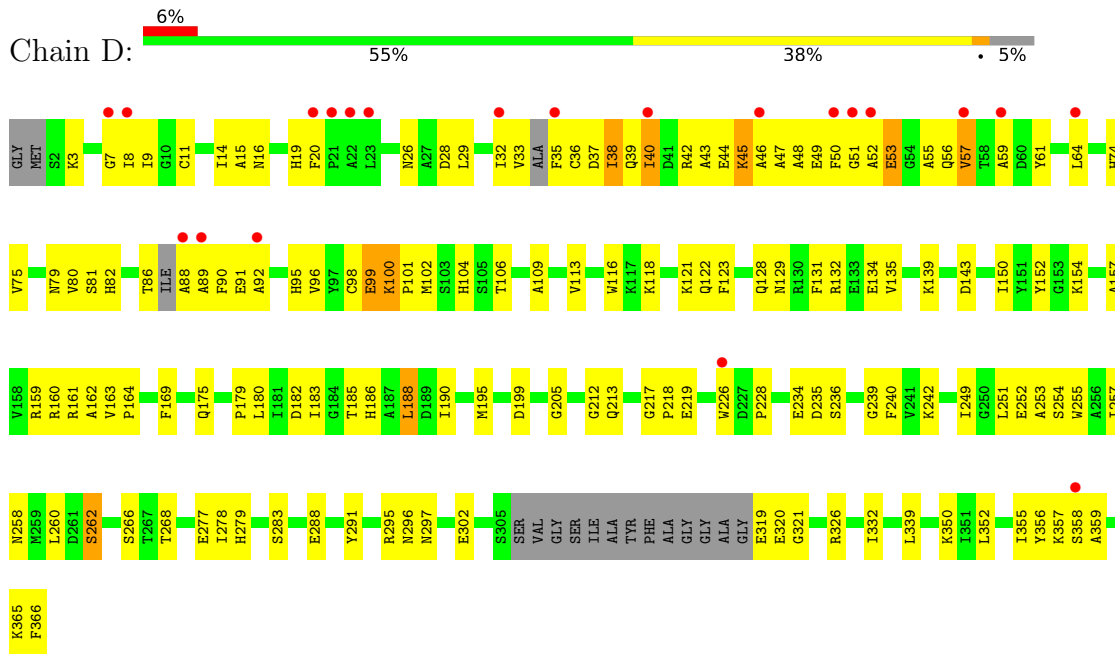


- Molecule 1: DgpA

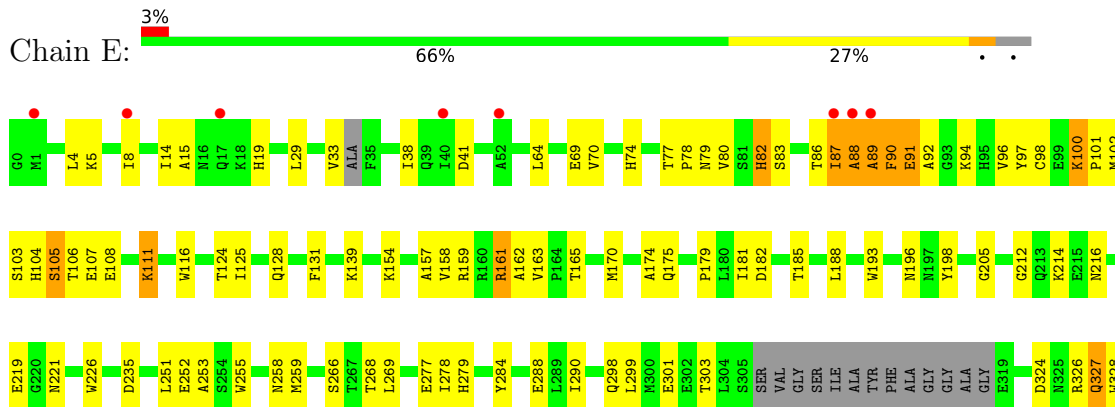




• Molecule 1: DgpA

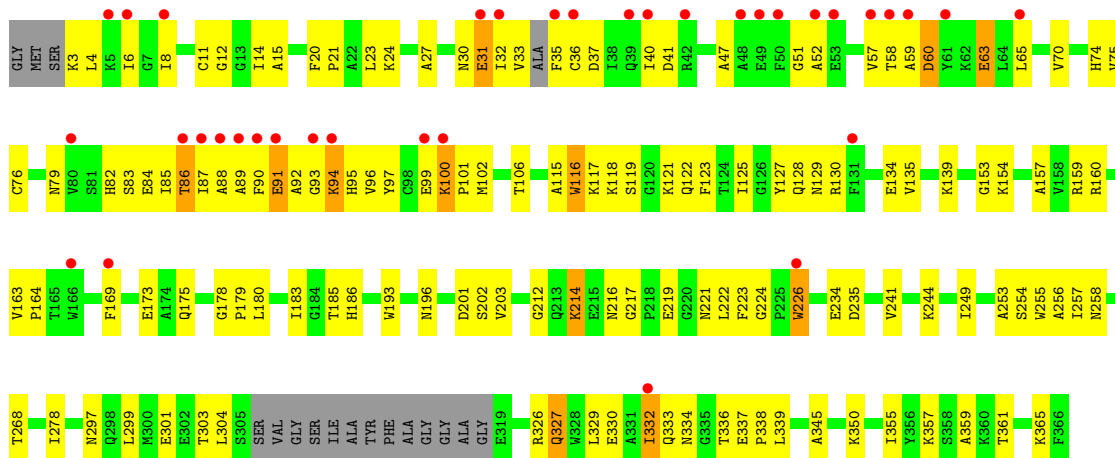


• Molecule 1: DgpA





• Molecule 1: DgpA



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	94.33Å 128.99Å 204.82Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	22.50 – 2.42 54.57 – 2.42	Depositor EDS
% Data completeness (in resolution range)	100.0 (22.50-2.42) 91.1 (54.57-2.42)	Depositor EDS
R_{merge}	0.17	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	0.84 (at 2.42Å)	Xtrriage
Refinement program	PHENIX (1.16_3549: ???)	Depositor
R, R_{free}	0.222 , 0.267 0.238 , 0.267	Depositor DCC
R_{free} test set	4799 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å ²)	41.3	Xtrriage
Anisotropy	0.303	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 40.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	16422	wwPDB-VP
Average B, all atoms (Å ²)	55.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.07% 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: BGC, NAD

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.58	0/2621	0.85	0/3548
1	B	0.49	0/2738	0.66	0/3703
1	C	0.53	0/2723	0.66	0/3677
1	D	0.62	0/2688	0.77	0/3640
1	E	0.56	0/2729	0.71	0/3691
1	F	0.97	0/2671	0.95	0/3621
All	All	0.65	0/16170	0.77	0/21880

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	2574	0	2448	186	0
1	B	2687	0	2598	92	0
1	C	2674	0	2591	119	0
1	D	2639	0	2514	144	0
1	E	2679	0	2586	95	0
1	F	2621	0	2485	151	0
2	A	12	0	12	5	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	C	12	0	11	1	0
2	D	12	0	11	5	0
2	E	12	0	11	0	0
2	F	12	0	12	1	0
3	A	44	0	26	7	0
3	B	44	0	26	6	0
3	C	44	0	25	7	0
3	D	44	0	26	7	0
3	E	44	0	25	6	0
3	F	44	0	25	10	0
4	A	33	0	0	0	0
4	B	53	0	0	0	0
4	C	31	0	0	2	0
4	D	30	0	0	2	0
4	E	40	0	0	0	0
4	F	37	0	0	2	0
All	All	16422	0	15432	766	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 24.

All (766) 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:F:6:ILE:HB	1:F:32:ILE:CD1	1.76	1.15
1:D:86:THR:C	1:D:88:ALA:N	2.01	1.14
1:A:56:GLN:HE21	1:A:63:GLU:HB3	1.08	1.09
1:A:100:LYS:HE2	1:A:186:HIS:NE2	1.71	1.05
1:A:44:GLU:O	1:A:57:VAL:HG11	1.56	1.03
1:A:56:GLN:NE2	1:A:63:GLU:HB3	1.71	1.03
1:D:40:ILE:HG23	1:D:59:ALA:HB2	1.38	1.02
1:F:6:ILE:CB	1:F:32:ILE:HD12	1.88	1.02
1:A:79:ASN:HD22	1:A:175:GLN:CD	1.64	1.01
1:E:100:LYS:HB3	1:E:101:PRO:HD3	1.37	1.01
1:C:100:LYS:HD2	1:C:185:THR:HG21	1.42	0.97
1:E:165:THR:HA	1:E:170:MET:HE1	1.44	0.97
1:F:35:PHE:CE2	1:F:47:ALA:HA	2.00	0.96
1:B:84:GLU:O	1:B:88:ALA:HB2	1.66	0.96
1:D:52:ALA:HB1	1:D:55:ALA:HB2	1.44	0.95
1:F:6:ILE:HB	1:F:32:ILE:HD12	0.96	0.95
1:A:78:PRO:HG3	1:A:168:VAL:HG11	1.51	0.93

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4:LEU:HD12	1:A:333:GLN:HG2	1.48	0.92
1:D:52:ALA:CB	1:D:55:ALA:HB2	1.98	0.92
1:A:79:ASN:ND2	1:A:175:GLN:CD	2.24	0.91
1:D:9:ILE:HD13	1:D:61:TYR:HB2	1.52	0.91
1:A:61:TYR:HB2	3:A:402:NAD:N1A	1.86	0.91
1:C:86:THR:HG23	1:C:96:VAL:HG11	1.52	0.91
1:A:5:LYS:HA	1:A:31:GLU:HB3	1.51	0.90
1:A:44:GLU:O	1:A:57:VAL:CG1	2.20	0.89
1:A:79:ASN:ND2	1:A:175:GLN:NE2	2.20	0.88
1:D:100:LYS:HB3	1:D:101:PRO:HD3	1.55	0.87
1:A:106:THR:HG23	1:A:350:LYS:HG2	1.56	0.85
1:A:86:THR:HG23	1:A:96:VAL:HG11	1.59	0.84
1:F:8:ILE:HD13	1:F:20:PHE:HE1	1.42	0.84
1:F:86:THR:HG23	1:F:96:VAL:HG21	1.58	0.84
1:A:75:VAL:HG22	1:A:98:CYS:HA	1.59	0.83
1:D:212:GLY:O	1:D:226:TRP:CZ3	2.31	0.83
1:D:26:ASN:OD1	1:D:326:ARG:HD2	1.78	0.83
1:C:100:LYS:HD2	1:C:185:THR:CG2	2.09	0.83
1:D:128:GLN:HE22	3:D:402:NAD:H72N	1.26	0.83
1:E:87:ILE:O	1:E:88:ALA:C	2.18	0.82
1:E:87:ILE:HD11	1:E:111:LYS:HB2	1.60	0.82
1:D:212:GLY:O	1:D:226:TRP:HZ3	1.63	0.81
1:F:65:LEU:HD13	1:F:89:ALA:O	1.81	0.80
1:D:56:GLN:OE1	1:D:64:LEU:HA	1.82	0.80
1:A:159:ARG:HD3	1:A:162:ALA:HB3	1.63	0.79
1:B:100:LYS:HD2	1:B:186:HIS:NE2	1.97	0.79
1:C:212:GLY:O	1:C:226:TRP:HZ3	1.65	0.79
1:C:90:PHE:C	1:C:92:ALA:H	1.86	0.79
1:A:62:LYS:HA	1:A:65:LEU:HD13	1.65	0.78
1:E:91:GLU:HG2	1:E:116:TRP:HA	1.64	0.77
1:F:122:GLN:HG3	1:F:332:ILE:HG22	1.64	0.77
1:F:8:ILE:HD13	1:F:20:PHE:CE1	2.18	0.77
1:F:100:LYS:HG3	1:F:101:PRO:HD3	1.67	0.77
1:C:357:LYS:HD2	1:C:364:ILE:HG12	1.66	0.76
1:A:64:LEU:C	1:A:66:ALA:N	2.34	0.76
1:F:86:THR:HA	1:F:90:PHE:CB	2.15	0.76
1:E:88:ALA:O	1:E:89:ALA:C	2.23	0.76
1:D:100:LYS:HE2	1:D:101:PRO:HG3	1.68	0.75
1:F:163:VAL:HG22	1:F:255:TRP:HB3	1.68	0.75
1:C:172:LYS:O	1:C:172:LYS:HD3	1.85	0.75
1:E:100:LYS:HB3	1:E:101:PRO:CD	2.15	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:60:ASP:OD1	1:A:63:GLU:HB2	1.87	0.75
1:D:188:LEU:HG	1:D:251:LEU:HD12	1.69	0.75
1:E:212:GLY:O	1:E:226:TRP:HZ3	1.69	0.75
1:A:58:THR:OG1	1:A:59:ALA:N	2.20	0.74
1:A:106:THR:CG2	1:A:350:LYS:HG2	2.16	0.74
1:E:100:LYS:CB	1:E:101:PRO:HD3	2.17	0.74
1:B:100:LYS:HG3	1:B:101:PRO:HD3	1.68	0.74
1:B:212:GLY:O	1:B:226:TRP:HZ3	1.70	0.74
1:D:129:ASN:OD1	1:D:132:ARG:NH1	2.20	0.74
1:C:168:VAL:HG13	3:C:402:NAD:O2A	1.86	0.73
1:E:161:ARG:HG2	1:E:221:ASN:HA	1.70	0.73
1:C:177:GLY:N	1:C:181:ILE:HD11	2.04	0.73
1:B:100:LYS:HE2	1:B:101:PRO:HG3	1.71	0.72
1:C:124:THR:O	1:C:125:ILE:HD13	1.88	0.72
1:C:128:GLN:HE22	3:C:402:NAD:H72N	1.35	0.72
1:F:212:GLY:O	1:F:226:TRP:HZ3	1.71	0.72
1:A:60:ASP:OD2	1:A:63:GLU:N	2.23	0.72
1:A:79:ASN:HD21	1:A:175:GLN:NE2	1.88	0.72
1:F:40:ILE:HB	1:F:59:ALA:HB2	1.72	0.72
1:A:128:GLN:HE22	3:A:402:NAD:H72N	1.36	0.72
1:A:171:ASP:OD2	1:A:174:ALA:CB	2.36	0.72
1:E:87:ILE:O	1:E:89:ALA:N	2.22	0.72
1:E:82:HIS:CE1	3:E:402:NAD:O3D	2.43	0.72
1:C:188:LEU:O	1:C:188:LEU:HD23	1.90	0.72
1:F:88:ALA:HA	1:F:92:ALA:H	1.54	0.72
1:F:116:TRP:CD1	1:F:123:PHE:HB2	2.24	0.71
1:A:4:LEU:CD1	1:A:333:GLN:HG2	2.19	0.71
1:A:20:PHE:HB2	1:A:21:PRO:HD3	1.72	0.71
1:A:84:GLU:O	1:A:89:ALA:HB2	1.90	0.71
1:D:100:LYS:HE2	1:D:101:PRO:HD3	1.73	0.71
1:F:65:LEU:HD22	1:F:94:LYS:HE3	1.72	0.71
1:C:286:LYS:HD2	1:C:287:ASN:N	2.05	0.71
1:B:212:GLY:O	1:B:226:TRP:CZ3	2.44	0.71
1:A:297:ASN:HA	1:F:219:GLU:HG2	1.74	0.70
1:A:44:GLU:O	1:A:57:VAL:CB	2.39	0.70
1:A:64:LEU:C	1:A:66:ALA:H	1.94	0.70
1:F:326:ARG:O	1:F:330:GLU:HG3	1.91	0.70
1:A:8:ILE:HG12	1:A:20:PHE:HE1	1.55	0.70
1:F:106:THR:HG23	1:F:350:LYS:HG2	1.73	0.70
1:B:319:GLU:OE1	1:B:319:GLU:HA	1.91	0.70
1:A:44:GLU:HA	1:A:57:VAL:HB	1.74	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:163:VAL:HG22	1:E:255:TRP:HB3	1.74	0.70
1:B:262:SER:HB2	1:B:283:SER:OG	1.92	0.69
1:A:359:ALA:C	1:A:361:THR:H	1.94	0.69
1:C:100:LYS:HD3	1:C:186:HIS:NE2	2.07	0.69
1:A:78:PRO:HD3	3:A:402:NAD:H51A	1.74	0.69
1:B:88:ALA:C	1:B:90:PHE:H	1.95	0.69
1:F:130:ARG:HA	1:F:135:VAL:HG11	1.73	0.69
1:B:128:GLN:HE22	3:B:401:NAD:H72N	1.41	0.69
1:D:33:VAL:O	1:D:35:PHE:N	2.25	0.69
1:D:139:LYS:HE3	1:D:143:ASP:OD2	1.92	0.69
1:C:82:HIS:CE1	3:C:402:NAD:O3D	2.45	0.69
1:A:27:ALA:O	1:A:29:LEU:N	2.26	0.69
1:B:9:ILE:HD12	1:B:73:VAL:HG13	1.74	0.69
1:F:100:LYS:HD3	1:F:186:HIS:NE2	2.08	0.69
1:A:219:GLU:HG3	1:F:297:ASN:HA	1.74	0.69
1:F:169:PHE:HA	1:F:175:GLN:HG3	1.75	0.69
1:A:214:LYS:NZ	1:A:216:ASN:OD1	2.25	0.68
1:B:60:ASP:HB3	1:B:63:GLU:HG2	1.74	0.68
1:B:89:ALA:HA	1:B:92:ALA:CB	2.23	0.68
1:A:159:ARG:NH2	2:A:401:BGC:H1	2.08	0.68
1:F:75:VAL:HG21	1:F:86:THR:OG1	1.93	0.68
1:A:4:LEU:HD12	1:A:333:GLN:CG	2.23	0.68
1:B:88:ALA:C	1:B:90:PHE:N	2.45	0.68
1:A:14:ILE:HG21	1:A:99:GLU:HG3	1.75	0.68
1:E:105:SER:OG	1:E:108:GLU:HB2	1.92	0.68
1:F:201:ASP:CG	1:F:365:LYS:HE2	2.14	0.68
1:A:60:ASP:CG	1:A:63:GLU:H	1.97	0.68
1:D:100:LYS:HE2	1:D:101:PRO:CG	2.25	0.67
1:F:33:VAL:HG21	1:F:70:VAL:HG12	1.75	0.67
1:A:67:ASN:O	1:A:70:VAL:HG23	1.94	0.67
1:F:83:SER:O	1:F:87:ILE:HG12	1.95	0.67
1:D:44:GLU:O	1:D:46:ALA:N	2.27	0.67
1:A:57:VAL:O	1:A:58:THR:O	2.12	0.67
1:A:95:HIS:ND1	1:A:121:LYS:HB3	2.09	0.67
1:D:45:LYS:O	1:D:49:GLU:HG3	1.95	0.67
1:A:75:VAL:CG2	1:A:98:CYS:HA	2.25	0.67
1:B:89:ALA:HA	1:B:92:ALA:HB3	1.76	0.66
1:E:77:THR:O	3:E:402:NAD:H4D	1.95	0.66
1:E:106:THR:CG2	1:E:350:LYS:HG3	2.25	0.66
1:A:84:GLU:C	1:A:86:THR:H	1.98	0.66
1:A:56:GLN:OE1	1:A:56:GLN:N	2.21	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4:LEU:O	1:A:31:GLU:N	2.28	0.65
1:F:23:LEU:HD22	1:F:32:ILE:HD11	1.77	0.65
1:D:57:VAL:HG22	1:D:57:VAL:O	1.96	0.65
1:E:87:ILE:HD11	1:E:111:LYS:CB	2.25	0.65
1:C:359:ALA:C	1:C:361:THR:H	1.99	0.65
1:D:100:LYS:HE2	1:D:101:PRO:CD	2.26	0.65
1:E:82:HIS:NE2	3:E:402:NAD:O3D	2.29	0.65
1:E:212:GLY:O	1:E:226:TRP:CZ3	2.49	0.65
1:D:100:LYS:HE3	1:D:182:ASP:O	1.97	0.65
1:A:87:ILE:C	1:A:89:ALA:H	1.98	0.65
1:A:268:THR:O	1:A:269:LEU:HD23	1.97	0.65
1:A:100:LYS:HE2	1:A:186:HIS:CE1	2.32	0.64
1:A:119:SER:O	1:A:121:LYS:N	2.25	0.64
1:B:357:LYS:C	1:B:359:ALA:H	2.00	0.64
1:D:11:CYS:O	1:D:16:ASN:ND2	2.30	0.64
1:A:67:ASN:O	1:A:69:GLU:N	2.30	0.64
1:C:165:THR:HA	1:C:170:MET:CE	2.27	0.64
1:C:199:ASP:OD1	1:C:244:LYS:HG3	1.98	0.64
1:A:114:GLU:HG3	1:A:115:ALA:H	1.63	0.64
1:B:285:PRO:O	1:B:286:LYS:HD3	1.98	0.64
1:F:87:ILE:O	1:F:89:ALA:N	2.25	0.64
1:F:91:GLU:HG2	1:F:115:ALA:O	1.97	0.64
1:A:4:LEU:CD1	1:A:332:ILE:HG13	2.28	0.64
1:E:90:PHE:C	1:E:92:ALA:H	2.01	0.64
1:D:100:LYS:HD3	1:D:186:HIS:NE2	2.13	0.63
1:B:100:LYS:HE2	1:B:101:PRO:HD3	1.80	0.63
1:C:100:LYS:NZ	1:C:101:PRO:HG3	2.14	0.63
1:A:141:SER:HB3	1:D:295:ARG:HH21	1.63	0.63
1:C:82:HIS:NE2	3:C:402:NAD:O3D	2.32	0.63
1:A:16:ASN:OD1	1:A:20:PHE:HD2	1.82	0.63
1:C:31:GLU:OE1	1:C:52:ALA:HB1	1.98	0.63
1:D:161:ARG:NH2	1:D:258:ASN:OD1	2.32	0.63
1:A:7:GLY:O	1:A:73:VAL:HA	1.99	0.63
1:A:14:ILE:O	1:A:19:HIS:HD2	1.82	0.63
1:A:87:ILE:O	1:A:89:ALA:N	2.26	0.63
1:C:159:ARG:HD3	1:C:162:ALA:HB3	1.81	0.63
1:D:7:GLY:C	1:D:8:ILE:HD13	2.20	0.63
1:B:328:TRP:CZ2	1:B:332:ILE:HD11	2.33	0.62
1:F:117:LYS:O	1:F:119:SER:N	2.30	0.62
1:B:42:ARG:NH2	3:B:401:NAD:O3B	2.31	0.62
1:D:169:PHE:HA	1:D:175:GLN:HG3	1.80	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:84:GLU:C	1:A:86:THR:N	2.52	0.62
1:C:29:LEU:CD2	1:C:326:ARG:NH2	2.62	0.62
1:E:100:LYS:O	1:E:101:PRO:C	2.38	0.62
1:E:15:ALA:HA	1:E:19:HIS:HB2	1.80	0.62
1:F:33:VAL:HG21	1:F:70:VAL:CG1	2.29	0.62
1:F:201:ASP:OD2	1:F:365:LYS:HE2	2.00	0.62
1:C:212:GLY:O	1:C:226:TRP:CZ3	2.52	0.62
1:E:5:LYS:HE3	1:E:69:GLU:O	1.99	0.61
1:F:40:ILE:HD11	1:F:57:VAL:HG12	1.82	0.61
1:C:33:VAL:HG23	1:C:55:ALA:HA	1.82	0.61
1:E:357:LYS:C	1:E:359:ALA:H	2.03	0.61
1:A:100:LYS:CE	1:A:186:HIS:NE2	2.58	0.61
1:F:40:ILE:HD11	1:F:57:VAL:O	2.01	0.61
1:B:100:LYS:HE2	1:B:101:PRO:CG	2.29	0.61
1:D:11:CYS:SG	1:D:36:CYS:O	2.56	0.61
1:F:79:ASN:HD21	1:F:101:PRO:HG2	1.65	0.61
1:A:88:ALA:H	1:A:91:GLU:CB	2.14	0.61
3:F:402:NAD:H6N	3:F:402:NAD:O1N	2.01	0.61
1:A:111:LYS:HA	1:A:114:GLU:HG2	1.83	0.61
1:C:33:VAL:HG23	1:C:56:GLN:H	1.65	0.61
1:A:319:GLU:HA	1:A:319:GLU:OE1	2.00	0.61
1:E:106:THR:HG23	1:E:350:LYS:HG3	1.83	0.60
1:E:327:GLN:OE1	1:E:339:LEU:N	2.26	0.60
1:A:180:LEU:HB3	1:A:356:TYR:OH	2.00	0.60
1:A:6:ILE:N	1:A:31:GLU:O	2.20	0.60
1:A:150:ILE:HG21	1:A:195:MET:HG2	1.84	0.60
1:A:64:LEU:O	1:A:66:ALA:N	2.34	0.60
1:B:98:CYS:O	1:B:125:ILE:HA	2.01	0.60
1:D:8:ILE:HG13	1:D:20:PHE:HE1	1.66	0.60
1:D:159:ARG:HD3	1:D:162:ALA:HB3	1.82	0.60
1:D:279:HIS:HB2	1:D:288:GLU:HB2	1.82	0.60
1:F:83:SER:O	1:F:87:ILE:HG23	2.01	0.60
1:B:8:ILE:HD12	1:B:32:ILE:HG21	1.83	0.60
1:D:28:ASP:OD2	1:D:29:LEU:CD1	2.50	0.60
1:B:131:PHE:CE1	1:B:339:LEU:HD23	2.37	0.60
1:C:165:THR:HA	1:C:170:MET:HE1	1.83	0.60
1:F:88:ALA:O	1:F:92:ALA:N	2.35	0.60
1:E:128:GLN:HE22	3:E:402:NAD:H72N	1.48	0.59
1:F:88:ALA:O	1:F:89:ALA:C	2.40	0.59
1:D:52:ALA:O	1:D:53:GLU:C	2.39	0.59
1:B:89:ALA:CA	1:B:92:ALA:HB3	2.33	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:106:THR:O	1:B:110:GLU:HG3	2.01	0.59
1:C:286:LYS:HD2	1:C:287:ASN:H	1.68	0.59
1:C:357:LYS:HG2	1:C:360:LYS:HE3	1.85	0.59
1:D:39:GLN:HB2	1:D:42:ARG:CB	2.31	0.59
1:B:205:GLY:HA3	1:B:355:ILE:HG23	1.83	0.59
1:C:297:ASN:HA	1:D:219:GLU:HG3	1.83	0.59
1:D:188:LEU:HG	1:D:251:LEU:CD1	2.33	0.59
1:A:60:ASP:OD2	1:A:62:LYS:N	2.36	0.59
1:C:90:PHE:C	1:C:92:ALA:N	2.53	0.59
1:D:44:GLU:C	1:D:46:ALA:H	2.05	0.59
1:E:107:GLU:O	1:E:111:LYS:HG3	2.02	0.59
1:F:74:HIS:CD2	1:F:97:TYR:HB3	2.38	0.59
1:A:171:ASP:OD2	1:A:174:ALA:HB3	2.03	0.59
1:F:128:GLN:HE22	3:F:402:NAD:H72N	1.49	0.59
1:A:64:LEU:O	1:A:65:LEU:C	2.38	0.58
1:D:234:GLU:OE1	1:D:234:GLU:N	2.30	0.58
1:E:88:ALA:O	1:E:90:PHE:N	2.36	0.58
1:F:35:PHE:CD2	1:F:47:ALA:HB2	2.38	0.58
1:F:216:ASN:O	1:F:219:GLU:HB2	2.03	0.58
1:D:357:LYS:C	1:D:359:ALA:H	2.05	0.58
1:B:90:PHE:C	1:B:92:ALA:H	2.06	0.58
1:E:90:PHE:C	1:E:92:ALA:N	2.56	0.58
1:E:214:LYS:HE3	1:E:216:ASN:OD1	2.03	0.58
1:B:212:GLY:HA2	1:B:226:TRP:CH2	2.38	0.58
1:E:159:ARG:HD3	1:E:162:ALA:HB3	1.85	0.58
1:A:60:ASP:CG	1:A:61:TYR:N	2.56	0.58
1:F:88:ALA:CA	1:F:92:ALA:H	2.15	0.58
1:F:117:LYS:C	1:F:119:SER:H	2.07	0.58
1:A:13:GLY:O	1:A:17:GLN:N	2.31	0.58
1:C:32:ILE:CG2	1:C:35:PHE:CZ	2.87	0.58
1:A:157:ALA:O	1:A:253:ALA:HA	2.04	0.58
1:B:183:ILE:HD11	1:B:254:SER:O	2.04	0.58
1:C:108:GLU:O	1:C:112:MET:HG3	2.04	0.58
1:A:67:ASN:N	1:A:68:PRO:HD3	2.19	0.58
1:B:89:ALA:O	1:B:92:ALA:HB3	2.03	0.58
1:D:109:ALA:O	1:D:113:VAL:HG23	2.03	0.58
1:D:205:GLY:HA3	1:D:355:ILE:HG23	1.86	0.58
1:D:44:GLU:C	1:D:46:ALA:N	2.58	0.57
1:D:79:ASN:HD22	1:D:82:HIS:CE1	2.21	0.57
1:F:8:ILE:HD12	1:F:32:ILE:HG21	1.86	0.57
1:F:127:TYR:OH	1:F:185:THR:OG1	2.21	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:100:LYS:CD	1:C:185:THR:HG21	2.25	0.57
1:F:179:PRO:HD3	1:F:255:TRP:CE3	2.39	0.57
1:A:47:ALA:H	1:A:57:VAL:HG12	1.68	0.57
1:D:188:LEU:HD12	1:D:352:LEU:HD21	1.86	0.57
1:D:52:ALA:HB1	1:D:55:ALA:CB	2.27	0.57
1:A:60:ASP:CG	1:A:63:GLU:HB2	2.24	0.57
1:C:49:GLU:HB2	1:C:50:PHE:CD1	2.40	0.57
1:B:100:LYS:HE2	1:B:101:PRO:CD	2.35	0.57
1:C:100:LYS:HZ2	1:C:101:PRO:HG3	1.69	0.57
1:F:60:ASP:O	1:F:63:GLU:HB2	2.05	0.57
1:F:95:HIS:CE1	1:F:121:LYS:HD3	2.39	0.57
1:C:294:ALA:HB1	1:D:219:GLU:HG2	1.87	0.57
1:D:95:HIS:CE1	1:D:121:LYS:HD3	2.39	0.57
1:F:3:LYS:HE3	1:F:27:ALA:O	2.05	0.57
1:A:68:PRO:C	1:A:70:VAL:H	2.05	0.56
1:B:159:ARG:HD3	1:B:162:ALA:HB3	1.85	0.56
1:F:164:PRO:HB2	1:F:169:PHE:CD2	2.39	0.56
1:A:325:ASN:HD21	1:A:329:LEU:HD11	1.70	0.56
1:B:222:LEU:HD23	1:B:223:PHE:CZ	2.39	0.56
1:C:25:ASN:HD22	1:C:322:THR:HG21	1.69	0.56
1:A:168:VAL:HG13	3:A:402:NAD:O2A	2.05	0.56
1:B:266:SER:HB3	1:B:278:ILE:O	2.06	0.56
1:B:282:MET:HE3	1:B:282:MET:HA	1.87	0.56
1:C:172:LYS:HB2	1:C:232:GLU:HG3	1.88	0.56
1:F:31:GLU:C	1:F:32:ILE:HD13	2.25	0.56
1:D:75:VAL:HB	1:D:98:CYS:HA	1.87	0.56
1:A:47:ALA:H	1:A:57:VAL:CG1	2.19	0.56
1:D:154:LYS:HB2	1:D:268:THR:HB	1.87	0.56
1:F:100:LYS:HA	1:F:125:ILE:HG22	1.87	0.56
1:F:160:ARG:O	1:F:256:ALA:HA	2.04	0.56
1:A:159:ARG:HH22	2:A:401:BGC:H1	1.70	0.56
1:C:154:LYS:HE3	1:D:252:GLU:OE2	2.06	0.56
1:D:50:PHE:O	1:D:52:ALA:N	2.39	0.56
1:B:303:THR:HG22	1:F:301:GLU:HG3	1.88	0.56
1:F:222:LEU:O	1:F:223:PHE:HB2	2.06	0.56
1:A:26:ASN:O	1:A:27:ALA:C	2.44	0.56
1:D:266:SER:HB3	1:D:278:ILE:O	2.06	0.56
1:E:89:ALA:O	1:E:90:PHE:CB	2.53	0.56
1:A:44:GLU:O	1:A:57:VAL:HB	2.06	0.55
1:A:56:GLN:HG2	1:A:58:THR:HG22	1.88	0.55
1:A:87:ILE:C	1:A:89:ALA:N	2.59	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:282:MET:HA	1:B:282:MET:CE	2.35	0.55
1:D:79:ASN:ND2	3:D:402:NAD:O3D	2.39	0.55
1:F:79:ASN:ND2	1:F:101:PRO:HG2	2.21	0.55
1:F:357:LYS:C	1:F:359:ALA:H	2.10	0.55
1:A:61:TYR:CD1	1:A:61:TYR:C	2.80	0.55
1:A:150:ILE:CG2	1:A:195:MET:HG2	2.37	0.55
1:A:279:HIS:HB2	1:A:288:GLU:HB2	1.88	0.55
1:E:205:GLY:HA3	1:E:355:ILE:HG23	1.88	0.55
1:F:4:LEU:CD1	1:F:332:ILE:HG13	2.36	0.55
1:F:99:GLU:HG3	3:F:402:NAD:H1D	1.88	0.55
1:A:78:PRO:CG	1:A:168:VAL:HG11	2.31	0.55
1:A:114:GLU:HG3	1:A:115:ALA:N	2.22	0.55
1:B:8:ILE:HD13	1:B:20:PHE:HE1	1.71	0.55
1:C:32:ILE:HG22	1:C:35:PHE:CE1	2.41	0.55
1:A:75:VAL:HG23	1:A:75:VAL:O	2.05	0.55
1:B:88:ALA:O	1:B:90:PHE:N	2.39	0.55
1:C:251:LEU:HD23	1:C:252:GLU:N	2.22	0.55
1:A:179:PRO:HA	1:A:182:ASP:HB3	1.88	0.55
1:C:277:GLU:OE1	1:C:279:HIS:NE2	2.32	0.55
1:D:28:ASP:OD2	1:D:29:LEU:HD12	2.05	0.55
1:D:100:LYS:CB	1:D:101:PRO:HD3	2.34	0.55
1:E:158:VAL:HG11	1:E:259:MET:HE1	1.88	0.55
1:F:30:ASN:HD22	1:F:329:LEU:CD1	2.19	0.55
1:A:4:LEU:HD13	1:A:332:ILE:CD1	2.37	0.55
1:C:357:LYS:O	1:C:360:LYS:HG2	2.07	0.54
1:E:79:ASN:ND2	3:E:402:NAD:O3D	2.40	0.54
1:A:86:THR:HG22	1:A:87:ILE:H	1.72	0.54
1:A:110:GLU:HG3	1:A:346:LEU:HD11	1.88	0.54
1:A:169:PHE:CE1	2:A:401:BGC:H3	2.43	0.54
1:C:12:GLY:HA3	3:C:402:NAD:O5B	2.07	0.54
1:F:106:THR:CG2	1:F:350:LYS:HG2	2.38	0.54
1:D:159:ARG:HH12	2:D:401:BGC:C6	2.21	0.54
1:B:90:PHE:C	1:B:92:ALA:N	2.61	0.54
1:F:86:THR:O	1:F:91:GLU:OE1	2.25	0.54
1:C:185:THR:HG23	1:C:186:HIS:N	2.22	0.54
1:D:89:ALA:O	1:D:92:ALA:HB3	2.08	0.54
1:B:95:HIS:CE1	1:B:121:LYS:HD2	2.43	0.54
1:B:157:ALA:O	1:B:253:ALA:HA	2.07	0.54
1:B:202:SER:HB3	1:B:365:LYS:HD3	1.89	0.54
1:D:164:PRO:HG3	2:D:401:BGC:O6	2.07	0.54
1:F:35:PHE:CD2	1:F:47:ALA:HA	2.41	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:108:GLU:O	1:B:112:MET:HG3	2.08	0.53
1:F:6:ILE:CB	1:F:32:ILE:CD1	2.66	0.53
1:F:201:ASP:O	1:F:365:LYS:HD2	2.08	0.53
1:F:35:PHE:CD2	1:F:47:ALA:CB	2.92	0.53
1:E:165:THR:HA	1:E:170:MET:CE	2.27	0.53
1:A:67:ASN:C	1:A:69:GLU:N	2.61	0.53
1:B:86:THR:HG23	1:B:96:VAL:HG11	1.89	0.53
1:C:32:ILE:HG21	1:C:35:PHE:CZ	2.44	0.53
1:B:8:ILE:HD12	1:B:32:ILE:CG2	2.39	0.53
1:C:49:GLU:HB2	1:C:50:PHE:CE1	2.44	0.53
1:D:100:LYS:HZ3	3:D:402:NAD:C2N	2.22	0.53
1:D:128:GLN:NE2	3:D:402:NAD:H72N	2.02	0.53
1:B:226:TRP:CZ3	1:B:231:PHE:CD2	2.97	0.53
1:C:198:TYR:CZ	1:C:344:GLU:HG2	2.44	0.52
1:D:46:ALA:C	1:D:48:ALA:H	2.11	0.52
1:E:106:THR:HG21	1:E:350:LYS:HG3	1.91	0.52
1:F:93:GLY:C	1:F:94:LYS:HG3	2.30	0.52
1:F:95:HIS:ND1	1:F:121:LYS:HD3	2.23	0.52
1:B:20:PHE:HB2	1:B:21:PRO:HD3	1.90	0.52
1:C:266:SER:HB3	1:C:278:ILE:O	2.09	0.52
1:D:277:GLU:OE1	1:D:279:HIS:NE2	2.29	0.52
1:D:14:ILE:HG21	1:D:99:GLU:HG3	1.90	0.52
1:A:68:PRO:C	1:A:70:VAL:N	2.62	0.52
1:B:279:HIS:HB3	1:B:284:TYR:CE1	2.45	0.52
1:A:79:ASN:ND2	1:A:175:GLN:OE1	2.35	0.52
1:A:359:ALA:C	1:A:361:THR:N	2.61	0.52
1:C:196:ASN:ND2	4:C:506:HOH:O	2.43	0.52
1:D:157:ALA:O	1:D:253:ALA:HA	2.09	0.52
1:E:266:SER:HB3	1:E:278:ILE:O	2.09	0.52
2:F:401:BGC:H3	3:F:402:NAD:C4N	2.39	0.52
1:A:4:LEU:HD13	1:A:332:ILE:HG13	1.92	0.52
1:D:7:GLY:O	1:D:8:ILE:HD13	2.10	0.52
1:F:79:ASN:ND2	3:F:402:NAD:O3D	2.43	0.52
1:F:87:ILE:C	1:F:89:ALA:N	2.63	0.52
1:C:122:GLN:NE2	1:C:336:THR:O	2.43	0.51
1:D:20:PHE:HB3	1:D:50:PHE:CZ	2.44	0.51
1:B:180:LEU:HD23	1:B:356:TYR:CE2	2.45	0.51
1:C:361:THR:O	1:C:361:THR:HG23	2.10	0.51
1:A:61:TYR:CB	3:A:402:NAD:N1A	2.69	0.51
1:A:79:ASN:OD1	1:A:101:PRO:HG2	2.11	0.51
1:C:354:ALA:O	1:C:364:ILE:HD13	2.10	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:157:ALA:O	1:C:253:ALA:HA	2.11	0.51
1:B:100:LYS:HD3	3:B:401:NAD:C2N	2.41	0.51
1:F:33:VAL:O	1:F:35:PHE:N	2.44	0.51
1:F:327:GLN:OE1	1:F:338:PRO:HA	2.11	0.51
1:D:46:ALA:C	1:D:48:ALA:N	2.63	0.51
1:F:20:PHE:HB2	1:F:21:PRO:HD3	1.93	0.51
1:F:100:LYS:CG	1:F:101:PRO:HD3	2.40	0.51
1:C:188:LEU:HD23	1:C:188:LEU:C	2.31	0.51
1:D:46:ALA:O	1:D:50:PHE:HB2	2.10	0.51
1:A:329:LEU:O	1:A:332:ILE:HG12	2.11	0.50
1:C:290:ILE:HG21	1:D:260:LEU:HD22	1.93	0.50
1:D:131:PHE:CZ	1:D:339:LEU:HD23	2.46	0.50
1:F:212:GLY:HA2	1:F:226:TRP:CH2	2.47	0.50
1:B:222:LEU:HD23	1:B:223:PHE:CE1	2.46	0.50
1:D:52:ALA:HB3	1:D:55:ALA:HB2	1.87	0.50
1:D:122:GLN:HB2	1:D:332:ILE:CD1	2.41	0.50
1:E:364:ILE:HG22	1:E:366:PHE:CE1	2.47	0.50
1:A:325:ASN:O	1:A:328:TRP:HB3	2.11	0.50
1:C:172:LYS:HD3	1:C:172:LYS:C	2.32	0.50
1:D:131:PHE:CE1	1:D:339:LEU:HD22	2.47	0.50
1:A:8:ILE:HG12	1:A:20:PHE:CE1	2.42	0.50
1:B:41:ASP:OD1	1:B:42:ARG:N	2.45	0.50
1:E:8:ILE:HD13	1:E:74:HIS:HB2	1.92	0.50
1:F:99:GLU:OE2	3:F:402:NAD:H2N	2.11	0.50
1:F:153:GLY:O	1:F:249:ILE:HA	2.12	0.50
1:A:67:ASN:N	1:A:68:PRO:CD	2.74	0.50
1:C:188:LEU:HD23	1:C:192:LEU:HG	1.94	0.50
1:D:104:HIS:ND1	1:D:104:HIS:N	2.59	0.50
1:D:217:GLY:N	1:D:218:PRO:CD	2.75	0.50
1:A:67:ASN:C	1:A:69:GLU:H	2.15	0.50
1:A:171:ASP:OD2	1:A:174:ALA:HB2	2.11	0.50
1:A:154:LYS:O	1:A:267:THR:HA	2.12	0.49
1:B:130:ARG:HD3	1:B:193:TRP:CE2	2.47	0.49
1:C:114:GLU:O	1:C:118:LYS:HG3	2.12	0.49
1:C:359:ALA:C	1:C:361:THR:N	2.65	0.49
1:A:171:ASP:OD2	1:A:174:ALA:N	2.39	0.49
1:B:79:ASN:OD1	1:B:101:PRO:HG2	2.12	0.49
1:C:219:GLU:HG2	1:D:297:ASN:HA	1.93	0.49
2:D:401:BGC:H3	3:D:402:NAD:C5N	2.42	0.49
1:F:4:LEU:O	1:F:30:ASN:HA	2.11	0.49
1:C:29:LEU:HD23	1:C:326:ARG:NH2	2.27	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:56:GLN:NE2	1:A:63:GLU:O	2.36	0.49
1:C:161:ARG:HG2	1:C:221:ASN:HA	1.93	0.49
1:A:353:ASP:O	1:A:357:LYS:HD3	2.12	0.49
1:B:60:ASP:OD2	1:B:63:GLU:OE1	2.31	0.49
1:D:106:THR:CG2	1:D:350:LYS:HA	2.43	0.49
1:A:114:GLU:O	1:A:115:ALA:C	2.45	0.49
1:B:357:LYS:C	1:B:359:ALA:N	2.66	0.49
1:C:280:SER:HB2	1:C:287:ASN:OD1	2.13	0.49
1:D:106:THR:HG22	1:D:350:LYS:HA	1.94	0.49
1:D:188:LEU:HD12	1:D:352:LEU:CD2	2.41	0.49
1:C:93:GLY:O	1:C:121:LYS:HE2	2.13	0.49
1:D:15:ALA:HA	1:D:19:HIS:HB2	1.93	0.49
1:F:87:ILE:O	1:F:87:ILE:HG13	2.13	0.49
1:D:213:GLN:HG2	1:D:228:PRO:O	2.13	0.49
1:E:163:VAL:CG2	1:E:255:TRP:HB3	2.42	0.49
1:F:12:GLY:HA3	3:F:402:NAD:O5B	2.13	0.49
1:B:100:LYS:HE3	1:B:182:ASP:O	2.12	0.48
1:B:154:LYS:HB2	1:B:268:THR:HB	1.94	0.48
1:C:360:LYS:HZ2	1:C:362:ASN:HB2	1.78	0.48
1:A:23:LEU:O	1:A:27:ALA:N	2.46	0.48
1:A:273:GLU:OE1	1:F:214:LYS:NZ	2.43	0.48
1:E:29:LEU:HD23	1:E:333:GLN:OE1	2.13	0.48
1:E:277:GLU:OE1	1:E:279:HIS:NE2	2.29	0.48
1:F:24:LYS:O	1:F:27:ALA:N	2.47	0.48
1:E:279:HIS:HB2	1:E:288:GLU:HB2	1.95	0.48
1:A:55:ALA:HB1	1:A:56:GLN:OE1	2.13	0.48
1:A:109:ALA:HA	1:A:112:MET:HE3	1.95	0.48
1:A:202:SER:HB3	1:A:365:LYS:HE2	1.94	0.48
1:E:4:LEU:HD11	1:E:332:ILE:CG2	2.43	0.48
1:F:327:GLN:OE1	1:F:339:LEU:N	2.46	0.48
1:A:65:LEU:HD12	1:A:65:LEU:N	2.28	0.48
1:D:86:THR:HG23	1:D:96:VAL:HG11	1.94	0.48
1:A:77:THR:HB	1:A:81:SER:HB2	1.95	0.48
1:A:79:ASN:OD1	1:A:101:PRO:HB2	2.14	0.48
1:C:157:ALA:HA	1:C:264:GLU:HA	1.96	0.48
1:A:14:ILE:HG13	1:A:18:LYS:HD3	1.96	0.48
1:D:28:ASP:OD2	1:D:29:LEU:HD11	2.14	0.47
1:E:33:VAL:HG23	1:E:70:VAL:HG12	1.95	0.47
1:E:357:LYS:C	1:E:359:ALA:N	2.67	0.47
1:B:330:GLU:O	1:B:334:ASN:ND2	2.47	0.47
1:F:221:ASN:ND2	1:F:222:LEU:O	2.47	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:61:TYR:CD1	1:A:61:TYR:O	2.66	0.47
1:B:85:ILE:O	1:B:90:PHE:CB	2.62	0.47
1:B:89:ALA:HA	1:B:92:ALA:HB2	1.95	0.47
1:D:212:GLY:O	1:D:226:TRP:CH2	2.67	0.47
1:C:188:LEU:CD2	1:C:192:LEU:HG	2.44	0.47
1:D:242:LYS:NZ	4:D:505:HOH:O	2.47	0.47
1:E:82:HIS:HE2	3:E:402:NAD:HO3N	1.62	0.47
1:A:163:VAL:HG22	1:A:255:TRP:HB3	1.95	0.47
1:E:80:VAL:HA	1:E:104:HIS:CE1	2.50	0.47
1:A:90:PHE:C	1:A:92:ALA:N	2.67	0.47
1:D:116:TRP:CD1	1:D:123:PHE:HB2	2.49	0.47
1:E:100:LYS:CB	1:E:101:PRO:CD	2.85	0.47
1:A:99:GLU:OE2	1:A:100:LYS:N	2.47	0.47
1:B:89:ALA:C	1:B:92:ALA:HB3	2.35	0.47
1:B:163:VAL:HG22	1:B:255:TRP:HB3	1.96	0.47
1:D:29:LEU:CD1	1:D:326:ARG:NH1	2.78	0.47
1:D:100:LYS:HD2	1:D:185:THR:CG2	2.44	0.47
1:E:161:ARG:HG2	1:E:221:ASN:CA	2.39	0.47
1:E:198:TYR:CZ	1:E:344:GLU:HG2	2.50	0.47
1:F:35:PHE:HE2	1:F:51:GLY:HA2	1.80	0.47
1:A:61:TYR:HA	3:A:402:NAD:H2A	1.96	0.47
1:D:129:ASN:HB3	1:D:190:ILE:HD11	1.97	0.47
1:B:226:TRP:CE3	1:B:231:PHE:HD2	2.33	0.47
1:E:78:PRO:HB3	1:E:174:ALA:HB1	1.96	0.47
1:C:302:GLU:HA	1:E:301:GLU:O	2.14	0.47
1:D:29:LEU:HD12	1:D:29:LEU:N	2.30	0.47
1:D:38:ILE:H	1:D:38:ILE:HG13	1.50	0.47
1:D:262:SER:O	1:D:283:SER:HB2	2.15	0.47
1:A:91:GLU:C	1:A:93:GLY:N	2.69	0.46
1:C:212:GLY:HA2	1:C:226:TRP:CH2	2.50	0.46
1:D:79:ASN:HD21	1:D:101:PRO:HG2	1.80	0.46
1:D:118:LYS:HE2	1:D:118:LYS:HB2	1.60	0.46
1:C:99:GLU:OE1	3:C:402:NAD:H2N	2.15	0.46
1:F:6:ILE:HG13	1:F:23:LEU:CD2	2.46	0.46
1:F:88:ALA:H	1:F:91:GLU:HB2	1.81	0.46
1:C:52:ALA:O	1:C:53:GLU:HB3	2.16	0.46
1:F:179:PRO:HD3	1:F:255:TRP:CD2	2.51	0.46
1:A:168:VAL:CG1	3:A:402:NAD:O2A	2.63	0.46
1:B:100:LYS:CG	3:B:401:NAD:H2N	2.45	0.46
1:C:28:ASP:N	1:C:28:ASP:OD1	2.49	0.46
1:C:168:VAL:CG1	3:C:402:NAD:O2A	2.61	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:36:CYS:HA	1:F:58:THR:O	2.16	0.46
1:C:238:VAL:HG12	1:D:240:PHE:HE1	1.80	0.46
1:D:236:SER:HB3	1:D:254:SER:OG	2.15	0.46
1:E:29:LEU:HD11	1:E:326:ARG:NH1	2.31	0.46
1:F:88:ALA:HA	1:F:92:ALA:N	2.26	0.46
1:A:181:ILE:HG23	1:A:356:TYR:HE2	1.81	0.46
1:C:106:THR:CG2	1:C:350:LYS:HG2	2.46	0.46
1:E:83:SER:O	1:E:87:ILE:N	2.26	0.46
1:F:117:LYS:C	1:F:119:SER:N	2.67	0.46
1:C:28:ASP:CG	1:C:29:LEU:HD22	2.36	0.46
1:D:90:PHE:C	1:D:92:ALA:N	2.67	0.46
1:E:154:LYS:HB2	1:E:268:THR:HB	1.98	0.46
1:F:4:LEU:HD11	1:F:333:GLN:HG3	1.98	0.46
1:C:299:LEU:HD13	1:D:160:ARG:CD	2.45	0.46
1:D:35:PHE:CZ	1:D:50:PHE:HB2	2.51	0.46
1:E:100:LYS:HD3	1:E:185:THR:OG1	2.15	0.46
1:F:127:TYR:HH	1:F:185:THR:HG1	1.60	0.46
1:F:303:THR:HG22	1:F:304:LEU:N	2.31	0.46
1:A:27:ALA:C	1:A:29:LEU:H	2.19	0.46
1:A:33:VAL:O	1:A:33:VAL:HG22	2.15	0.46
1:A:175:GLN:OE1	1:A:175:GLN:HA	2.16	0.46
1:C:299:LEU:HD13	1:D:160:ARG:HD3	1.98	0.46
1:A:63:GLU:C	1:A:64:LEU:O	2.53	0.45
1:B:130:ARG:HD3	1:B:193:TRP:CD2	2.50	0.45
1:B:160:ARG:HD3	1:E:299:LEU:HD13	1.97	0.45
1:C:100:LYS:HB3	1:C:101:PRO:HD3	1.97	0.45
1:E:163:VAL:HG22	1:E:255:TRP:CB	2.45	0.45
1:A:64:LEU:O	1:A:65:LEU:HB2	2.16	0.45
1:C:100:LYS:HD3	1:C:186:HIS:CE1	2.50	0.45
1:E:103:SER:OG	1:E:104:HIS:N	2.49	0.45
1:E:268:THR:O	1:E:269:LEU:HD23	2.16	0.45
1:B:179:PRO:HB3	1:B:255:TRP:CD1	2.51	0.45
1:C:4:LEU:HD11	1:C:333:GLN:HG3	1.98	0.45
1:F:3:LYS:HB2	1:F:3:LYS:NZ	2.31	0.45
1:F:169:PHE:HZ	3:F:402:NAD:O1N	2.00	0.45
1:F:201:ASP:HB2	1:F:244:LYS:HG2	1.98	0.45
1:F:214:LYS:HB3	1:F:214:LYS:HE3	1.47	0.45
1:A:86:THR:HG22	1:A:87:ILE:N	2.31	0.45
1:A:268:THR:C	1:A:269:LEU:HD23	2.37	0.45
1:D:35:PHE:HZ	1:D:50:PHE:HB2	1.81	0.45
1:F:40:ILE:HD13	1:F:59:ALA:N	2.31	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:77:THR:HB	1:C:78:PRO:CD	2.47	0.45
1:D:91:GLU:OE1	1:D:91:GLU:HA	2.16	0.45
1:D:159:ARG:NH1	2:D:401:BGC:O6	2.45	0.45
1:F:11:CYS:HA	1:F:15:ALA:CB	2.47	0.45
1:B:100:LYS:CE	1:B:101:PRO:HG3	2.43	0.45
1:B:226:TRP:CZ3	1:B:231:PHE:HD2	2.35	0.45
1:F:88:ALA:O	1:F:92:ALA:HB3	2.16	0.45
1:F:93:GLY:HA3	1:F:94:LYS:HE2	1.99	0.45
1:F:99:GLU:HG3	3:F:402:NAD:C1D	2.46	0.45
1:F:217:GLY:C	1:F:219:GLU:H	2.20	0.45
1:A:157:ALA:HA	1:A:264:GLU:HA	1.98	0.45
1:B:63:GLU:OE2	1:B:63:GLU:HA	2.16	0.45
1:C:148:GLY:HA3	1:C:273:GLU:HG2	1.97	0.45
1:C:205:GLY:HA3	1:C:355:ILE:HG23	1.99	0.45
1:D:357:LYS:C	1:D:359:ALA:N	2.70	0.45
1:E:364:ILE:HD12	1:E:364:ILE:N	2.31	0.45
1:F:14:ILE:CG2	1:F:76:CYS:HB3	2.47	0.45
1:D:180:LEU:HD23	1:D:356:TYR:CE2	2.52	0.45
1:F:330:GLU:O	1:F:334:ASN:HB2	2.17	0.45
1:C:131:PHE:CE1	1:C:339:LEU:HD23	2.52	0.45
1:C:299:LEU:HD13	1:D:160:ARG:NE	2.32	0.45
1:D:150:ILE:HG21	1:D:195:MET:HG2	1.99	0.45
1:F:83:SER:O	1:F:87:ILE:CG2	2.65	0.45
1:A:14:ILE:CG2	1:A:99:GLU:HG3	2.45	0.44
1:A:359:ALA:O	1:A:361:THR:N	2.50	0.44
1:F:258:ASN:HB2	4:F:512:HOH:O	2.17	0.44
1:D:357:LYS:O	1:D:359:ALA:N	2.49	0.44
1:E:139:LYS:HG2	1:E:193:TRP:CH2	2.53	0.44
1:A:358:SER:O	1:A:361:THR:N	2.50	0.44
1:D:8:ILE:HG13	1:D:20:PHE:CE1	2.49	0.44
1:A:75:VAL:CG2	1:A:75:VAL:O	2.65	0.44
1:A:161:ARG:NH2	1:A:258:ASN:OD1	2.50	0.44
1:B:131:PHE:CZ	1:B:339:LEU:HD23	2.52	0.44
1:F:35:PHE:CE2	1:F:51:GLY:HA2	2.51	0.44
1:A:7:GLY:O	1:A:74:HIS:N	2.40	0.44
1:A:112:MET:C	1:A:114:GLU:N	2.70	0.44
1:A:159:ARG:NH2	1:A:183:ILE:HG21	2.33	0.44
1:B:65:LEU:HD22	1:B:90:PHE:HA	1.98	0.44
1:C:29:LEU:CD2	1:C:326:ARG:HH22	2.30	0.44
1:D:291:TYR:HB2	1:D:302:GLU:HB3	2.00	0.44
1:E:86:THR:HG23	1:E:96:VAL:HG11	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:212:GLY:O	1:F:226:TRP:CZ3	2.60	0.44
1:A:354:ALA:HA	1:A:357:LYS:HB2	2.00	0.44
1:E:88:ALA:O	1:E:91:GLU:N	2.50	0.44
1:C:101:PRO:O	1:C:102:MET:C	2.55	0.44
1:D:320:GLU:HG2	1:D:321:GLY:N	2.32	0.44
1:E:327:GLN:HE21	1:E:327:GLN:HB3	1.61	0.44
1:B:100:LYS:HG2	3:B:401:NAD:H2N	2.00	0.44
1:C:286:LYS:HE3	1:C:287:ASN:O	2.18	0.44
1:C:320:GLU:HG2	1:C:321:GLY:N	2.32	0.44
1:D:100:LYS:HG2	1:D:185:THR:HG21	2.00	0.44
1:F:37:ASP:HA	3:F:402:NAD:N3A	2.32	0.44
1:F:129:ASN:HD22	1:F:129:ASN:H	1.66	0.44
1:F:221:ASN:C	1:F:222:LEU:O	2.55	0.44
1:A:61:TYR:O	1:A:61:TYR:HD1	2.00	0.44
1:A:159:ARG:HB2	1:A:255:TRP:HA	2.00	0.44
1:B:100:LYS:CG	1:B:101:PRO:HD3	2.43	0.44
1:D:82:HIS:CE1	3:D:402:NAD:HO3N	2.35	0.44
1:A:44:GLU:CA	1:A:57:VAL:HB	2.44	0.43
1:A:86:THR:CG2	1:A:96:VAL:HG11	2.38	0.43
1:B:275:GLY:HA3	1:E:258:ASN:O	2.18	0.43
1:B:279:HIS:HB2	1:B:288:GLU:HB2	1.99	0.43
1:B:357:LYS:O	1:B:359:ALA:N	2.49	0.43
1:C:100:LYS:CB	1:C:101:PRO:HD3	2.48	0.43
1:C:188:LEU:C	1:C:188:LEU:CD2	2.86	0.43
1:F:180:LEU:HD21	1:F:355:ILE:HB	1.98	0.43
1:A:114:GLU:CG	1:A:115:ALA:N	2.81	0.43
1:A:182:ASP:OD1	2:A:401:BGC:O4	2.35	0.43
1:C:90:PHE:O	1:C:92:ALA:N	2.51	0.43
1:D:80:VAL:HG13	1:D:81:SER:N	2.33	0.43
1:F:33:VAL:O	1:F:33:VAL:HG23	2.17	0.43
1:F:214:LYS:NZ	1:F:216:ASN:OD1	2.41	0.43
1:F:222:LEU:C	1:F:224:GLY:H	2.21	0.43
1:C:166:TRP:CD1	1:C:167:GLY:N	2.87	0.43
1:C:290:ILE:HG21	1:D:260:LEU:CD2	2.48	0.43
1:E:106:THR:HG23	1:E:350:LYS:CG	2.49	0.43
1:E:290:ILE:HG12	1:E:303:THR:HG22	2.00	0.43
1:F:35:PHE:CZ	1:F:47:ALA:HA	2.52	0.43
1:B:180:LEU:HD23	1:B:356:TYR:CZ	2.53	0.43
1:C:359:ALA:O	1:C:361:THR:N	2.51	0.43
1:D:8:ILE:HD13	1:D:8:ILE:N	2.34	0.43
1:E:90:PHE:O	1:E:92:ALA:N	2.51	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:122:GLN:HA	4:D:502:HOH:O	2.19	0.43
1:D:212:GLY:HA2	1:D:226:TRP:CH2	2.53	0.43
1:F:31:GLU:O	1:F:32:ILE:HD13	2.18	0.43
1:B:45:LYS:CG	1:B:49:GLU:OE2	2.66	0.43
1:E:106:THR:CG2	1:E:350:LYS:CD	2.96	0.43
1:F:135:VAL:HG22	1:F:278:ILE:HD13	2.00	0.43
1:B:128:GLN:NE2	3:B:401:NAD:H72N	2.12	0.43
1:C:186:HIS:ND1	4:C:501:HOH:O	2.21	0.43
1:A:108:GLU:O	1:A:112:MET:HE2	2.19	0.43
1:C:23:LEU:HD13	1:C:32:ILE:HD11	2.01	0.43
1:E:82:HIS:CD2	1:E:98:CYS:SG	3.11	0.43
1:E:279:HIS:HB3	1:E:284:TYR:CE2	2.54	0.43
1:F:234:GLU:O	1:F:234:GLU:HG2	2.18	0.43
1:A:19:HIS:ND1	1:A:74:HIS:ND1	2.66	0.43
1:A:172:LYS:N	1:A:232:GLU:OE1	2.32	0.43
1:F:99:GLU:O	1:F:125:ILE:HG23	2.19	0.43
1:F:244:LYS:NZ	1:F:365:LYS:HZ1	2.17	0.43
1:A:14:ILE:HG21	1:A:99:GLU:CG	2.46	0.43
1:A:56:GLN:HE22	1:A:63:GLU:C	2.20	0.43
1:A:177:GLY:N	1:A:181:ILE:HD11	2.34	0.43
1:B:154:LYS:HE3	1:E:252:GLU:OE2	2.18	0.43
1:B:157:ALA:HA	1:B:264:GLU:HA	2.00	0.43
1:D:163:VAL:HG22	1:D:255:TRP:HB3	2.01	0.43
1:D:254:SER:OG	1:D:257:ILE:HB	2.19	0.43
1:E:87:ILE:HG23	1:E:88:ALA:N	2.33	0.43
1:F:303:THR:HG22	1:F:304:LEU:H	1.83	0.43
1:A:154:LYS:HE3	4:F:507:HOH:O	2.19	0.42
1:C:29:LEU:HD21	1:C:326:ARG:NH2	2.31	0.42
1:D:239:GLY:HA3	1:D:355:ILE:HD13	1.99	0.42
1:B:139:LYS:HE2	1:B:193:TRP:CE2	2.53	0.42
1:C:252:GLU:OE1	1:D:152:TYR:OH	2.33	0.42
1:F:88:ALA:C	1:F:92:ALA:H	2.23	0.42
1:C:360:LYS:HZ1	1:C:364:ILE:HG13	1.84	0.42
1:F:160:ARG:HA	1:F:257:ILE:O	2.20	0.42
1:A:156:HIS:HB2	1:A:266:SER:HB2	2.01	0.42
1:A:261:ASP:OD2	1:A:263:ARG:NH2	2.52	0.42
1:C:164:PRO:O	1:C:170:MET:HE2	2.19	0.42
1:D:14:ILE:HD12	1:D:14:ILE:HA	1.74	0.42
1:D:64:LEU:O	1:D:64:LEU:HD23	2.19	0.42
1:E:64:LEU:HD23	1:E:64:LEU:C	2.39	0.42
1:E:131:PHE:CD2	1:E:324:ASP:HB2	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:100:LYS:NZ	2:A:401:BGC:O4	2.52	0.42
1:B:14:ILE:HD12	1:B:14:ILE:HA	1.83	0.42
1:C:82:HIS:CD2	1:C:98:CYS:SG	3.12	0.42
1:D:319:GLU:OE2	1:D:319:GLU:HA	2.19	0.42
1:E:157:ALA:O	1:E:253:ALA:HA	2.19	0.42
1:F:15:ALA:HB1	1:F:20:PHE:CZ	2.54	0.42
1:F:84:GLU:C	1:F:85:ILE:O	2.54	0.42
1:F:139:LYS:HE2	1:F:193:TRP:CE2	2.54	0.42
1:A:14:ILE:HD12	1:A:14:ILE:HA	1.82	0.42
1:E:181:ILE:HG23	1:E:356:TYR:HE2	1.85	0.42
1:A:159:ARG:NH2	1:A:264:GLU:OE2	2.53	0.42
1:A:109:ALA:HA	1:A:112:MET:CE	2.49	0.42
2:D:401:BGC:H3	3:D:402:NAD:C4N	2.49	0.42
1:E:4:LEU:HD11	1:E:332:ILE:HG22	2.00	0.42
1:B:9:ILE:HD12	1:B:73:VAL:CG1	2.45	0.42
1:B:90:PHE:O	1:B:92:ALA:N	2.52	0.42
1:C:106:THR:HG23	1:C:350:LYS:CG	2.50	0.42
1:D:32:ILE:CG2	1:D:35:PHE:CE1	3.03	0.42
1:D:64:LEU:HD23	1:D:64:LEU:C	2.40	0.42
1:E:83:SER:O	1:E:87:ILE:HB	2.19	0.42
1:F:35:PHE:CD2	1:F:47:ALA:CA	3.03	0.42
1:F:36:CYS:SG	1:F:37:ASP:N	2.92	0.42
1:F:79:ASN:HD22	1:F:82:HIS:CE1	2.38	0.42
1:F:130:ARG:HA	1:F:135:VAL:CG1	2.47	0.42
1:A:27:ALA:C	1:A:29:LEU:N	2.73	0.42
1:A:32:ILE:H	1:A:32:ILE:HG13	1.29	0.42
1:A:80:VAL:HG11	1:A:173:GLU:O	2.20	0.42
1:C:188:LEU:HD22	1:C:348:VAL:HG22	2.01	0.42
1:A:327:GLN:OE1	1:A:339:LEU:N	2.35	0.41
1:C:159:ARG:HH22	2:C:401:BGC:C5	2.32	0.41
1:E:175:GLN:O	1:E:181:ILE:HD11	2.20	0.41
1:F:86:THR:O	1:F:86:THR:HG22	2.20	0.41
1:F:357:LYS:C	1:F:359:ALA:N	2.73	0.41
1:B:36:CYS:HA	1:B:58:THR:O	2.20	0.41
1:B:180:LEU:HB3	1:B:356:TYR:OH	2.20	0.41
1:D:29:LEU:HD11	1:D:326:ARG:NH1	2.35	0.41
1:E:124:THR:O	1:E:125:ILE:HD13	2.20	0.41
1:E:179:PRO:HA	1:E:182:ASP:HB3	2.02	0.41
1:A:222:LEU:HD23	1:A:223:PHE:CZ	2.56	0.41
1:C:139:LYS:HE2	1:C:193:TRP:NE1	2.36	0.41
1:C:304:LEU:HD21	1:E:298:GLN:OE1	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:157:ALA:HB1	1:D:183:ILE:HG13	2.02	0.41
1:F:134:GLU:HG2	1:F:135:VAL:N	2.35	0.41
1:D:8:ILE:HD12	1:D:74:HIS:HB2	2.02	0.41
1:D:188:LEU:HD23	1:D:188:LEU:HA	1.82	0.41
1:E:80:VAL:HA	1:E:104:HIS:HE1	1.85	0.41
1:E:188:LEU:HD13	1:E:251:LEU:HD12	2.02	0.41
1:C:240:PHE:HB2	1:D:240:PHE:CD1	2.55	0.41
1:F:203:VAL:HG22	1:F:241:VAL:HG13	2.02	0.41
1:A:26:ASN:OD1	1:A:326:ARG:NE	2.54	0.41
1:A:100:LYS:HG3	1:A:186:HIS:CE1	2.56	0.41
1:A:327:GLN:HE21	1:A:327:GLN:HB3	1.66	0.41
1:C:130:ARG:HD3	1:C:193:TRP:CE3	2.55	0.41
1:D:29:LEU:CD1	1:D:326:ARG:HH12	2.33	0.41
1:E:100:LYS:O	1:E:102:MET:N	2.54	0.41
1:E:106:THR:CG2	1:E:350:LYS:CG	2.97	0.41
1:F:327:GLN:HE21	1:F:327:GLN:HB3	1.65	0.41
1:B:165:THR:HG22	1:B:226:TRP:HB3	2.03	0.41
1:D:36:CYS:SG	1:D:37:ASP:N	2.93	0.41
1:E:216:ASN:ND2	1:E:216:ASN:H	2.18	0.41
1:A:179:PRO:HB3	1:A:255:TRP:CD1	2.56	0.41
1:A:160:ARG:HD3	1:F:299:LEU:HD13	2.02	0.41
1:C:130:ARG:HD3	1:C:193:TRP:CD2	2.55	0.41
1:D:134:GLU:HG2	1:D:135:VAL:N	2.35	0.41
1:D:179:PRO:HB3	1:D:255:TRP:CD1	2.56	0.41
1:D:195:MET:CE	1:D:249:ILE:HD11	2.50	0.41
1:F:154:LYS:HB2	1:F:268:THR:HB	2.03	0.41
1:F:178:GLY:HA3	1:F:179:PRO:HD2	1.75	0.41
1:A:90:PHE:C	1:A:92:ALA:H	2.23	0.41
1:C:22:ALA:HA	1:C:322:THR:HG22	2.03	0.41
1:C:252:GLU:OE1	1:D:154:LYS:HE3	2.20	0.41
1:F:157:ALA:O	1:F:253:ALA:HA	2.20	0.41
1:D:365:LYS:HD3	1:D:366:PHE:N	2.37	0.40
1:E:124:THR:HG22	1:E:328:TRP:CZ3	2.56	0.40
1:F:125:ILE:HG13	1:F:345:ALA:CB	2.51	0.40
1:C:95:HIS:ND1	1:C:122:GLN:HB2	2.37	0.40
1:E:139:LYS:HE2	1:E:193:TRP:CE2	2.55	0.40
1:F:65:LEU:HD13	1:F:89:ALA:C	2.40	0.40
1:F:100:LYS:HD2	1:F:185:THR:HG21	2.03	0.40
1:A:116:TRP:CD1	1:A:123:PHE:HB2	2.57	0.40
1:A:141:SER:OG	1:D:296:ASN:ND2	2.53	0.40
1:A:268:THR:HG23	1:A:277:GLU:HB3	2.04	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:341:LYS:HA	1:A:342:PRO:HD3	1.95	0.40
1:C:25:ASN:ND2	1:C:322:THR:HG21	2.35	0.40
1:D:3:LYS:NZ	1:D:28:ASP:HA	2.36	0.40
1:D:43:ALA:O	1:D:47:ALA:N	2.40	0.40
1:F:183:ILE:HD11	1:F:254:SER:O	2.22	0.40
1:F:336:THR:OG1	1:F:337:GLU:N	2.54	0.40
1:C:106:THR:HG21	1:C:350:LYS:HG2	2.04	0.40
1:E:216:ASN:O	1:E:219:GLU:HB2	2.20	0.40
1:F:93:GLY:HA3	1:F:94:LYS:NZ	2.36	0.40
1:A:218:PRO:HA	1:A:226:TRP:CZ3	2.55	0.40
1:C:31:GLU:HB2	1:C:52:ALA:HB2	2.04	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	336/367 (92%)	296 (88%)	28 (8%)	12 (4%)	3 2
1	B	350/367 (95%)	332 (95%)	16 (5%)	2 (1%)	25 35
1	C	342/367 (93%)	321 (94%)	18 (5%)	3 (1%)	17 24
1	D	342/367 (93%)	314 (92%)	22 (6%)	6 (2%)	8 10
1	E	347/367 (95%)	326 (94%)	16 (5%)	5 (1%)	11 14
1	F	344/367 (94%)	312 (91%)	29 (8%)	3 (1%)	17 24
All	All	2061/2202 (94%)	1901 (92%)	129 (6%)	31 (2%)	10 13

All (31) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	27	ALA

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Mol	Chain	Res	Type
1	A	28	ASP
1	A	58	THR
1	D	51	GLY
1	D	100	LYS
1	E	88	ALA
1	E	90	PHE
1	E	100	LYS
1	A	360	LYS
1	C	360	LYS
1	D	45	LYS
1	D	53	GLU
1	F	52	ALA
1	F	118	LYS
1	A	50	PHE
1	B	358	SER
1	E	89	ALA
1	F	102	MET
1	A	64	LEU
1	A	68	PRO
1	A	87	ILE
1	E	358	SER
1	C	91	GLU
1	C	100	LYS
1	D	358	SER
1	B	89	ALA
1	D	57	VAL
1	A	78	PRO
1	A	120	GLY
1	A	12	GLY
1	A	93	GLY

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	259/294 (88%)	240 (93%)	19 (7%)	14 21

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	275/294 (94%)	271 (98%)	4 (2%)	65	79
1	C	276/294 (94%)	267 (97%)	9 (3%)	38	56
1	D	267/294 (91%)	259 (97%)	8 (3%)	41	59
1	E	275/294 (94%)	260 (94%)	15 (6%)	21	33
1	F	265/294 (90%)	246 (93%)	19 (7%)	14	22
All	All	1617/1764 (92%)	1543 (95%)	74 (5%)	27	42

All (74) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	24	LYS
1	A	28	ASP
1	A	30	ASN
1	A	32	ILE
1	A	33	VAL
1	A	49	GLU
1	A	60	ASP
1	A	61	TYR
1	A	63	GLU
1	A	81	SER
1	A	114	GLU
1	A	116	TRP
1	A	119	SER
1	A	161	ARG
1	A	280	SER
1	A	325	ASN
1	A	327	GLN
1	A	357	LYS
1	A	365	LYS
1	B	100	LYS
1	B	161	ARG
1	B	199	ASP
1	B	235	ASP
1	C	42	ARG
1	C	82	HIS
1	C	91	GLU
1	C	94	LYS
1	C	161	ARG
1	C	226	TRP
1	C	235	ASP

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Mol	Chain	Res	Type
1	C	303	THR
1	C	327	GLN
1	D	38	ILE
1	D	40	ILE
1	D	99	GLU
1	D	102	MET
1	D	188	LEU
1	D	199	ASP
1	D	235	ASP
1	D	262	SER
1	E	14	ILE
1	E	38	ILE
1	E	41	ASP
1	E	82	HIS
1	E	87	ILE
1	E	91	GLU
1	E	94	LYS
1	E	97	TYR
1	E	105	SER
1	E	111	LYS
1	E	161	ARG
1	E	196	ASN
1	E	235	ASP
1	E	327	GLN
1	E	362	ASN
1	F	31	GLU
1	F	41	ASP
1	F	60	ASP
1	F	63	GLU
1	F	86	THR
1	F	91	GLU
1	F	94	LYS
1	F	100	LYS
1	F	116	TRP
1	F	159	ARG
1	F	173	GLU
1	F	196	ASN
1	F	202	SER
1	F	214	LYS
1	F	226	TRP
1	F	235	ASP
1	F	327	GLN

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Mol	Chain	Res	Type
1	F	332	ILE
1	F	361	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (17) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	30	ASN
1	A	67	ASN
1	A	79	ASN
1	A	122	GLN
1	A	128	GLN
1	A	325	ASN
1	B	128	GLN
1	D	79	ASN
1	D	196	ASN
1	E	79	ASN
1	E	104	HIS
1	E	196	ASN
1	F	30	ASN
1	F	79	ASN
1	F	128	GLN
1	F	129	ASN
1	F	196	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](#)

11 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	BGC	E	401	-	12,12,12	1.27	1 (8%)	17,17,17	0.80	0
3	NAD	A	402	-	42,48,48	2.16	17 (40%)	50,73,73	1.57	7 (14%)
3	NAD	E	402	-	42,48,48	4.04	22 (52%)	50,73,73	2.44	16 (32%)
2	BGC	C	401	-	12,12,12	1.42	2 (16%)	17,17,17	1.43	3 (17%)
2	BGC	D	401	-	12,12,12	1.30	1 (8%)	17,17,17	1.05	2 (11%)
2	BGC	F	401	-	12,12,12	1.31	1 (8%)	17,17,17	0.82	0
3	NAD	C	402	-	42,48,48	3.92	21 (50%)	50,73,73	2.34	14 (28%)
3	NAD	F	402	-	42,48,48	3.84	18 (42%)	50,73,73	2.30	9 (18%)
3	NAD	B	401	-	42,48,48	3.78	17 (40%)	50,73,73	2.30	9 (18%)
2	BGC	A	401	-	12,12,12	0.79	0	17,17,17	1.19	2 (11%)
3	NAD	D	402	-	42,48,48	0.69	1 (2%)	50,73,73	0.76	2 (4%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	BGC	E	401	-	-	2/2/22/22	0/1/1/1
3	NAD	A	402	-	-	5/26/62/62	0/5/5/5
3	NAD	E	402	-	-	7/26/62/62	0/5/5/5
2	BGC	C	401	-	-	2/2/22/22	0/1/1/1
2	BGC	D	401	-	-	2/2/22/22	0/1/1/1
2	BGC	F	401	-	-	2/2/22/22	0/1/1/1
3	NAD	C	402	-	-	10/26/62/62	0/5/5/5
3	NAD	F	402	-	-	9/26/62/62	0/5/5/5
3	NAD	B	401	-	-	12/26/62/62	0/5/5/5
2	BGC	A	401	-	-	2/2/22/22	0/1/1/1
3	NAD	D	402	-	-	5/26/62/62	0/5/5/5

All (101) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	402	NAD	O4D-C1D	-9.91	1.27	1.41
3	E	402	NAD	O4D-C1D	-9.89	1.27	1.41
3	F	402	NAD	O4D-C1D	-9.85	1.27	1.41
3	B	401	NAD	O4D-C1D	-9.74	1.27	1.41
3	B	401	NAD	C3B-C4B	-9.20	1.29	1.53
3	E	402	NAD	C3B-C4B	-9.13	1.29	1.53
3	F	402	NAD	C3B-C4B	-8.88	1.30	1.53
3	C	402	NAD	C3B-C4B	-8.86	1.30	1.53
3	F	402	NAD	C7N-N7N	8.50	1.49	1.33
3	E	402	NAD	C7N-N7N	8.44	1.49	1.33
3	B	401	NAD	C7N-N7N	8.34	1.48	1.33
3	F	402	NAD	C3D-C4D	-8.29	1.31	1.53
3	B	401	NAD	C3D-C4D	-8.25	1.31	1.53
3	C	402	NAD	C7N-N7N	8.23	1.48	1.33
3	E	402	NAD	O4B-C4B	8.04	1.63	1.45
3	F	402	NAD	O4D-C4D	7.92	1.62	1.45
3	C	402	NAD	O4B-C4B	7.82	1.62	1.45
3	E	402	NAD	C3D-C4D	-7.78	1.33	1.53
3	C	402	NAD	O4D-C4D	7.68	1.62	1.45
3	C	402	NAD	O3D-C3D	7.67	1.61	1.43
3	E	402	NAD	O4D-C4D	7.45	1.61	1.45
3	B	401	NAD	O4D-C4D	7.35	1.61	1.45
3	F	402	NAD	O4B-C4B	7.33	1.61	1.45
3	B	401	NAD	O4B-C4B	7.32	1.61	1.45
3	C	402	NAD	C3D-C4D	-7.26	1.34	1.53
3	E	402	NAD	O3D-C3D	7.08	1.59	1.43
3	F	402	NAD	O4B-C1B	-6.43	1.32	1.41
3	A	402	NAD	O4D-C1D	-6.32	1.32	1.41
3	B	401	NAD	O4B-C1B	-6.23	1.32	1.41
3	C	402	NAD	O4B-C1B	-6.11	1.32	1.41
3	E	402	NAD	O4B-C1B	-5.83	1.32	1.41
3	C	402	NAD	C3N-C7N	5.12	1.58	1.50
3	E	402	NAD	C3N-C7N	5.11	1.58	1.50
3	F	402	NAD	C3N-C7N	5.04	1.58	1.50
3	B	401	NAD	C3N-C7N	4.96	1.58	1.50
3	E	402	NAD	C4N-C3N	-4.87	1.31	1.39
3	A	402	NAD	C4N-C3N	-4.75	1.31	1.39
3	F	402	NAD	O3D-C3D	4.64	1.53	1.43
3	B	401	NAD	O3D-C3D	4.47	1.53	1.43
3	E	402	NAD	C6A-N6A	4.37	1.50	1.34
3	C	402	NAD	C6A-N6A	4.31	1.49	1.34
3	B	401	NAD	C6A-N6A	4.17	1.49	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	F	402	NAD	C6A-N6A	4.03	1.48	1.34
3	A	402	NAD	C6N-N1N	-3.92	1.25	1.35
2	C	401	BGC	O5-C1	3.52	1.51	1.42
2	F	401	BGC	O5-C1	3.46	1.51	1.42
3	F	402	NAD	O3B-C3B	3.39	1.51	1.43
3	E	402	NAD	C5N-C4N	3.37	1.46	1.38
2	D	401	BGC	O5-C1	3.31	1.51	1.42
3	C	402	NAD	O3B-C3B	3.29	1.50	1.43
2	E	401	BGC	O5-C1	3.22	1.50	1.42
3	A	402	NAD	C8A-N7A	-3.22	1.29	1.34
3	E	402	NAD	O3B-C3B	3.15	1.50	1.43
3	B	401	NAD	O3B-C3B	3.07	1.50	1.43
3	F	402	NAD	C2N-N1N	3.05	1.38	1.35
3	A	402	NAD	C5N-C4N	-2.98	1.32	1.38
3	A	402	NAD	C2D-C1D	-2.94	1.49	1.53
3	A	402	NAD	PA-O2A	-2.93	1.41	1.55
3	E	402	NAD	O2B-C2B	-2.92	1.36	1.43
3	C	402	NAD	C2N-N1N	2.87	1.38	1.35
3	C	402	NAD	C2A-N1A	2.86	1.39	1.33
3	A	402	NAD	O7N-C7N	-2.83	1.18	1.24
3	E	402	NAD	PA-O5B	2.78	1.70	1.59
3	E	402	NAD	C2A-N1A	2.73	1.39	1.33
3	E	402	NAD	C2D-C1D	2.70	1.57	1.53
3	B	401	NAD	C2N-N1N	2.68	1.38	1.35
3	F	402	NAD	O2B-C2B	-2.68	1.36	1.43
3	F	402	NAD	C2A-N1A	2.63	1.38	1.33
3	E	402	NAD	C2N-N1N	2.63	1.38	1.35
3	C	402	NAD	O2B-C2B	-2.63	1.36	1.43
3	B	401	NAD	C5A-C4A	-2.62	1.34	1.40
3	A	402	NAD	C2B-C1B	-2.61	1.49	1.53
3	B	401	NAD	C2A-N1A	2.60	1.38	1.33
3	A	402	NAD	C2N-C3N	-2.59	1.35	1.39
3	B	401	NAD	O2B-C2B	-2.58	1.36	1.43
3	F	402	NAD	C5A-C4A	-2.56	1.34	1.40
3	A	402	NAD	PN-O2N	-2.54	1.43	1.55
3	C	402	NAD	C2A-N3A	2.51	1.36	1.32
3	A	402	NAD	C2N-N1N	-2.47	1.31	1.35
3	C	402	NAD	PA-O5B	2.45	1.69	1.59
3	A	402	NAD	PA-O1A	-2.42	1.42	1.50
3	B	401	NAD	O7N-C7N	-2.41	1.19	1.24
3	D	402	NAD	C2N-N1N	2.39	1.37	1.35
3	E	402	NAD	C2A-N3A	2.36	1.35	1.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	E	402	NAD	C5B-C4B	2.33	1.58	1.51
3	C	402	NAD	C2D-C1D	2.33	1.57	1.53
3	E	402	NAD	O7N-C7N	-2.33	1.19	1.24
3	C	402	NAD	O7N-C7N	-2.29	1.19	1.24
3	F	402	NAD	O7N-C7N	-2.29	1.19	1.24
3	F	402	NAD	C2D-C1D	2.26	1.57	1.53
3	A	402	NAD	PN-O5D	-2.25	1.50	1.59
3	E	402	NAD	C5A-C4A	-2.21	1.35	1.40
3	C	402	NAD	C5A-C4A	-2.17	1.35	1.40
3	B	401	NAD	C2A-N3A	2.17	1.35	1.32
3	F	402	NAD	C2A-N3A	2.16	1.35	1.32
3	A	402	NAD	C5A-C4A	-2.12	1.35	1.40
2	C	401	BGC	O5-C5	2.11	1.49	1.44
3	C	402	NAD	C5B-C4B	2.09	1.58	1.51
3	A	402	NAD	O2B-C2B	-2.08	1.38	1.43
3	C	402	NAD	O2D-C2D	-2.04	1.38	1.43
3	A	402	NAD	O2D-C2D	-2.01	1.38	1.43

All (64) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	401	NAD	C1B-N9A-C4A	-9.43	110.08	126.64
3	F	402	NAD	C1B-N9A-C4A	-9.33	110.24	126.64
3	E	402	NAD	C5A-C6A-N6A	8.16	132.76	120.35
3	C	402	NAD	C5A-C6A-N6A	7.77	132.16	120.35
3	B	401	NAD	C5A-C6A-N6A	7.71	132.07	120.35
3	F	402	NAD	C5A-C6A-N6A	7.71	132.06	120.35
3	C	402	NAD	C1B-N9A-C4A	-7.06	114.23	126.64
3	E	402	NAD	C1B-N9A-C4A	-6.73	114.81	126.64
3	A	402	NAD	O2B-C2B-C1B	-6.24	87.80	110.85
3	B	401	NAD	N3A-C2A-N1A	-5.58	119.96	128.68
3	F	402	NAD	N3A-C2A-N1A	-5.47	120.14	128.68
3	F	402	NAD	N6A-C6A-N1A	-5.25	107.67	118.57
3	C	402	NAD	N3A-C2A-N1A	-5.13	120.66	128.68
3	E	402	NAD	N6A-C6A-N1A	-5.11	107.98	118.57
3	B	401	NAD	N6A-C6A-N1A	-5.05	108.08	118.57
3	E	402	NAD	N3A-C2A-N1A	-4.92	120.98	128.68
3	C	402	NAD	N6A-C6A-N1A	-4.83	108.55	118.57
2	C	401	BGC	O5-C5-C4	3.93	116.83	109.69
3	A	402	NAD	O3B-C3B-C4B	-3.82	100.01	111.05
3	E	402	NAD	C2N-C3N-C4N	3.65	122.39	118.26
3	C	402	NAD	C3B-C2B-C1B	3.57	106.36	100.98

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	402	NAD	C3B-C2B-C1B	3.55	106.33	100.98
3	C	402	NAD	C2D-C3D-C4D	-3.50	95.84	102.64
3	B	401	NAD	PN-O3-PA	-3.44	121.02	132.83
3	E	402	NAD	C2D-C3D-C4D	-3.33	96.18	102.64
3	E	402	NAD	O4B-C1B-C2B	-3.30	102.11	106.93
3	F	402	NAD	PN-O3-PA	-3.27	121.62	132.83
3	E	402	NAD	C6N-N1N-C2N	-3.24	119.02	121.97
3	C	402	NAD	O3D-C3D-C2D	3.21	122.20	111.82
3	C	402	NAD	PN-O3-PA	-3.18	121.91	132.83
3	C	402	NAD	C6N-N1N-C2N	-3.16	119.09	121.97
3	A	402	NAD	O4B-C4B-C3B	-3.06	99.05	105.11
3	A	402	NAD	C1B-N9A-C4A	3.03	131.96	126.64
3	E	402	NAD	PN-O3-PA	-2.98	122.60	132.83
3	A	402	NAD	O2N-PN-O1N	2.90	126.60	112.24
3	E	402	NAD	O3D-C3D-C2D	2.84	121.01	111.82
3	C	402	NAD	O4D-C1D-C2D	-2.76	102.89	106.93
3	F	402	NAD	C3B-C2B-C1B	2.75	105.12	100.98
3	B	401	NAD	C3N-C7N-N7N	2.66	120.95	117.75
2	D	401	BGC	C6-C5-C4	-2.59	106.94	113.00
3	A	402	NAD	O4D-C1D-C2D	-2.55	103.20	106.93
3	E	402	NAD	O4D-C1D-C2D	-2.53	103.22	106.93
3	E	402	NAD	C2B-C3B-C4B	2.51	107.53	102.64
3	F	402	NAD	O4D-C1D-C2D	-2.45	103.34	106.93
3	F	402	NAD	C6N-N1N-C2N	-2.44	119.75	121.97
3	E	402	NAD	O4D-C4D-C3D	2.41	109.89	105.11
3	D	402	NAD	C5A-C6A-N6A	2.40	124.00	120.35
3	E	402	NAD	C5N-C4N-C3N	-2.36	117.55	120.34
2	A	401	BGC	C4-C3-C2	2.34	114.91	110.82
2	C	401	BGC	C1-O5-C5	2.31	118.02	113.66
3	C	402	NAD	O7N-C7N-N7N	-2.29	119.32	122.58
3	C	402	NAD	C2B-C3B-C4B	2.28	107.07	102.64
2	C	401	BGC	C3-C4-C5	2.21	114.18	110.24
3	A	402	NAD	O2D-C2D-C1D	-2.17	102.85	110.85
3	C	402	NAD	O4B-C1B-C2B	-2.16	103.77	106.93
3	B	401	NAD	C2B-C3B-C4B	2.15	106.82	102.64
3	B	401	NAD	C6N-N1N-C2N	-2.15	120.02	121.97
3	B	401	NAD	O7N-C7N-N7N	-2.14	119.53	122.58
3	F	402	NAD	O4B-C4B-C3B	2.10	109.27	105.11
2	D	401	BGC	O5-C5-C4	2.10	113.51	109.69
2	A	401	BGC	O1-C1-O5	-2.08	104.13	110.38
3	E	402	NAD	C3N-C7N-N7N	2.06	120.22	117.75
3	C	402	NAD	C3N-C7N-N7N	2.03	120.18	117.75

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	402	NAD	O4B-C1B-C2B	-2.01	103.99	106.93

There are no chirality outliers.

All (58) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	402	NAD	O4B-C4B-C5B-O5B
3	A	402	NAD	O4D-C1D-N1N-C6N
3	A	402	NAD	C2D-C1D-N1N-C2N
3	A	402	NAD	C2D-C1D-N1N-C6N
3	B	401	NAD	C5B-O5B-PA-O2A
3	B	401	NAD	O4D-C1D-N1N-C2N
3	B	401	NAD	O4D-C1D-N1N-C6N
3	B	401	NAD	C2D-C1D-N1N-C2N
3	B	401	NAD	C2D-C1D-N1N-C6N
3	C	402	NAD	C5D-O5D-PN-O3
3	C	402	NAD	C5D-O5D-PN-O2N
3	C	402	NAD	O4D-C4D-C5D-O5D
3	C	402	NAD	C3D-C4D-C5D-O5D
3	C	402	NAD	O4D-C1D-N1N-C2N
3	C	402	NAD	O4D-C1D-N1N-C6N
3	C	402	NAD	C2D-C1D-N1N-C2N
3	D	402	NAD	O4D-C1D-N1N-C2N
3	D	402	NAD	O4D-C1D-N1N-C6N
3	D	402	NAD	C2D-C1D-N1N-C2N
3	D	402	NAD	C2D-C1D-N1N-C6N
3	E	402	NAD	O4D-C1D-N1N-C6N
3	F	402	NAD	C5B-O5B-PA-O2A
3	F	402	NAD	C3D-C4D-C5D-O5D
3	F	402	NAD	O4D-C1D-N1N-C6N
2	F	401	BGC	C4-C5-C6-O6
2	F	401	BGC	O5-C5-C6-O6
2	E	401	BGC	C4-C5-C6-O6
2	A	401	BGC	O5-C5-C6-O6
2	D	401	BGC	C4-C5-C6-O6
2	A	401	BGC	C4-C5-C6-O6
3	A	402	NAD	C3B-C4B-C5B-O5B
3	B	401	NAD	O4B-C4B-C5B-O5B
3	F	402	NAD	O4B-C4B-C5B-O5B
3	F	402	NAD	O4D-C4D-C5D-O5D
2	E	401	BGC	O5-C5-C6-O6
2	D	401	BGC	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
3	F	402	NAD	C3B-C4B-C5B-O5B
2	C	401	BGC	O5-C5-C6-O6
3	B	401	NAD	C3B-C4B-C5B-O5B
2	C	401	BGC	C4-C5-C6-O6
3	E	402	NAD	C3D-C4D-C5D-O5D
3	E	402	NAD	O4D-C4D-C5D-O5D
3	B	401	NAD	PN-O3-PA-O5B
3	F	402	NAD	PN-O3-PA-O5B
3	B	401	NAD	C5B-O5B-PA-O3
3	F	402	NAD	C5B-O5B-PA-O3
3	B	401	NAD	C5B-O5B-PA-O1A
3	C	402	NAD	C5D-O5D-PN-O1N
3	F	402	NAD	C5B-O5B-PA-O1A
3	B	401	NAD	PA-O3-PN-O2N
3	E	402	NAD	PA-O3-PN-O2N
3	C	402	NAD	C2D-C1D-N1N-C6N
3	D	402	NAD	O4B-C4B-C5B-O5B
3	E	402	NAD	O4B-C4B-C5B-O5B
3	B	401	NAD	PA-O3-PN-O1N
3	E	402	NAD	PA-O3-PN-O1N
3	E	402	NAD	C5D-O5D-PN-O1N
3	C	402	NAD	O4B-C4B-C5B-O5B

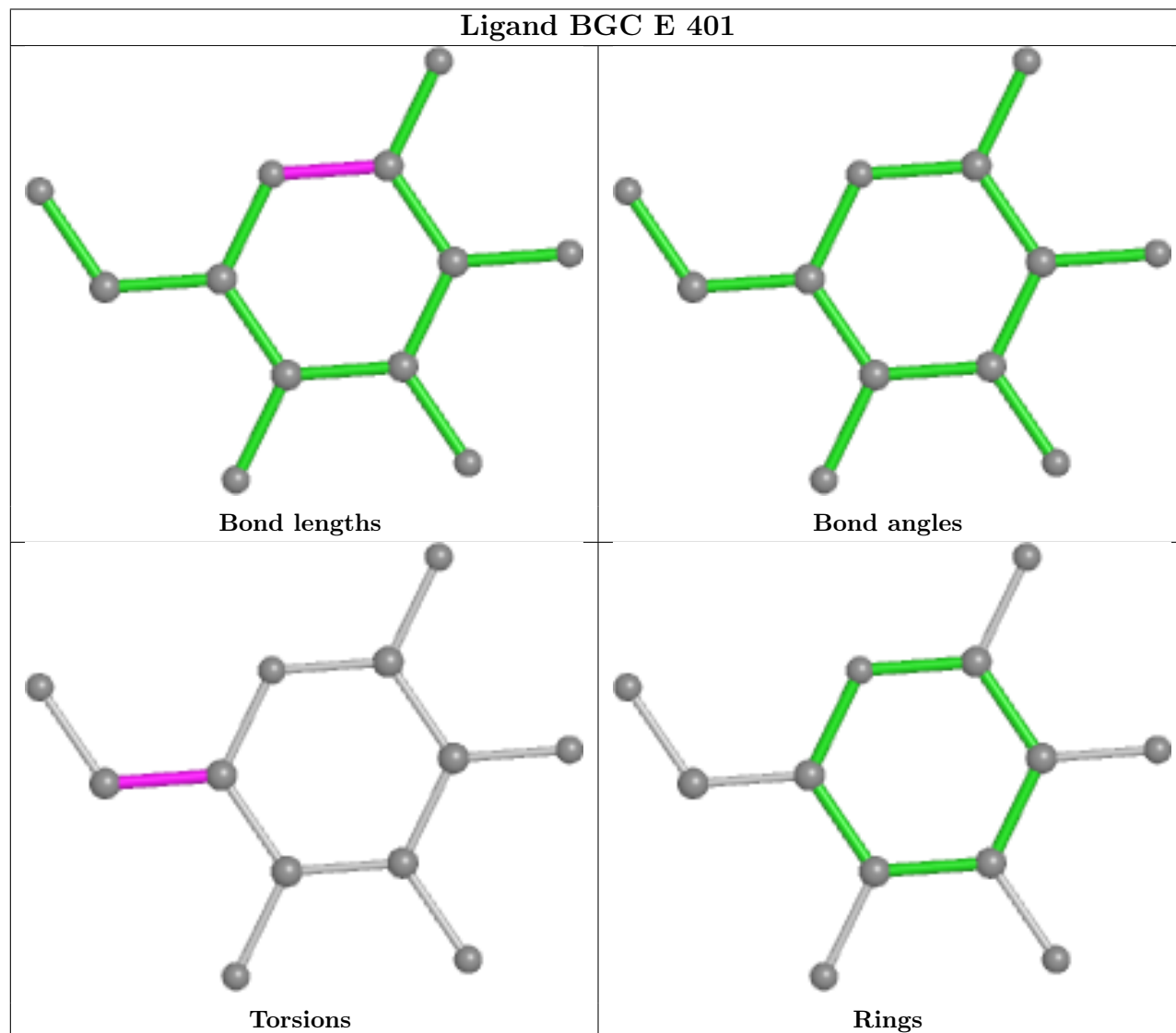
There are no ring outliers.

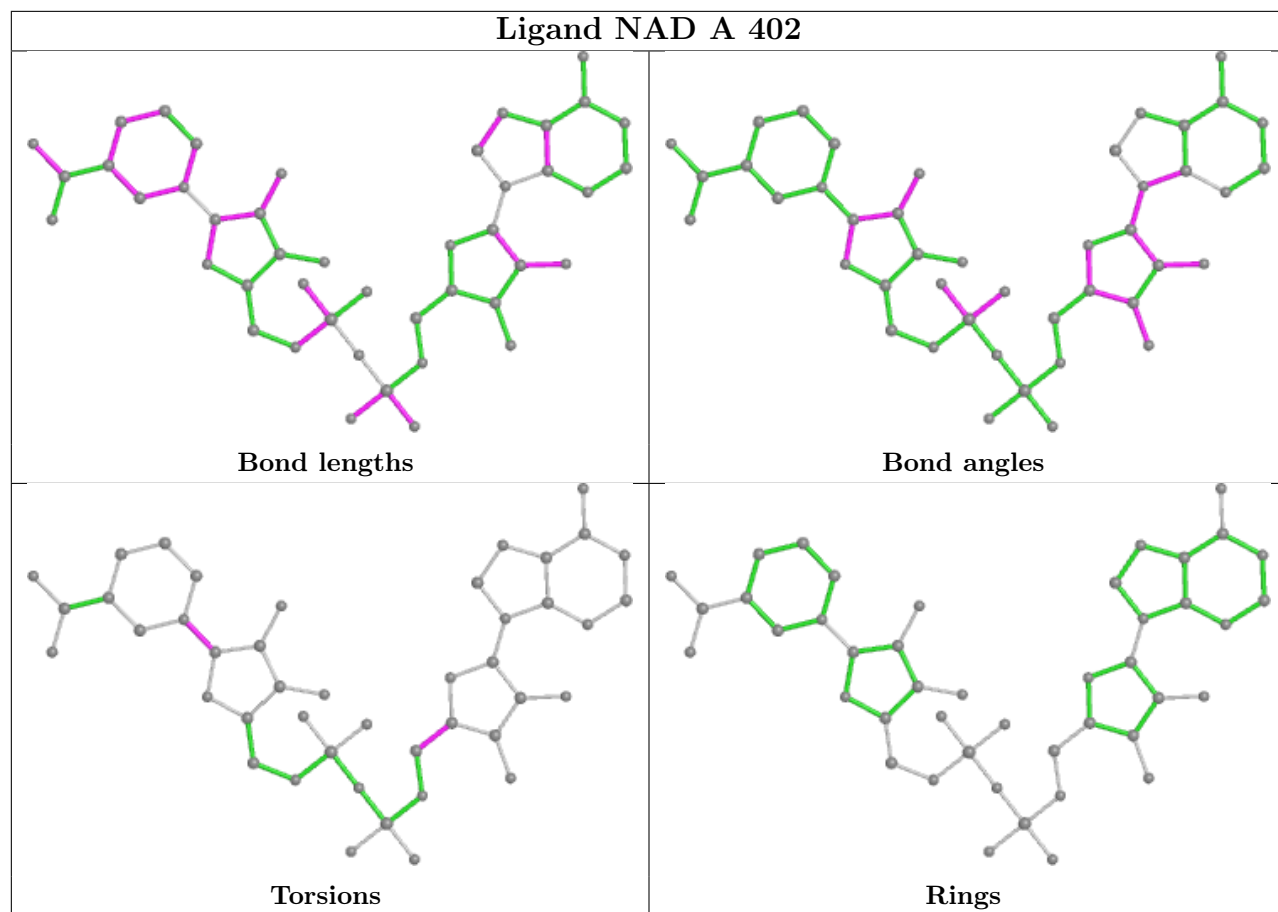
10 monomers are involved in 52 short contacts:

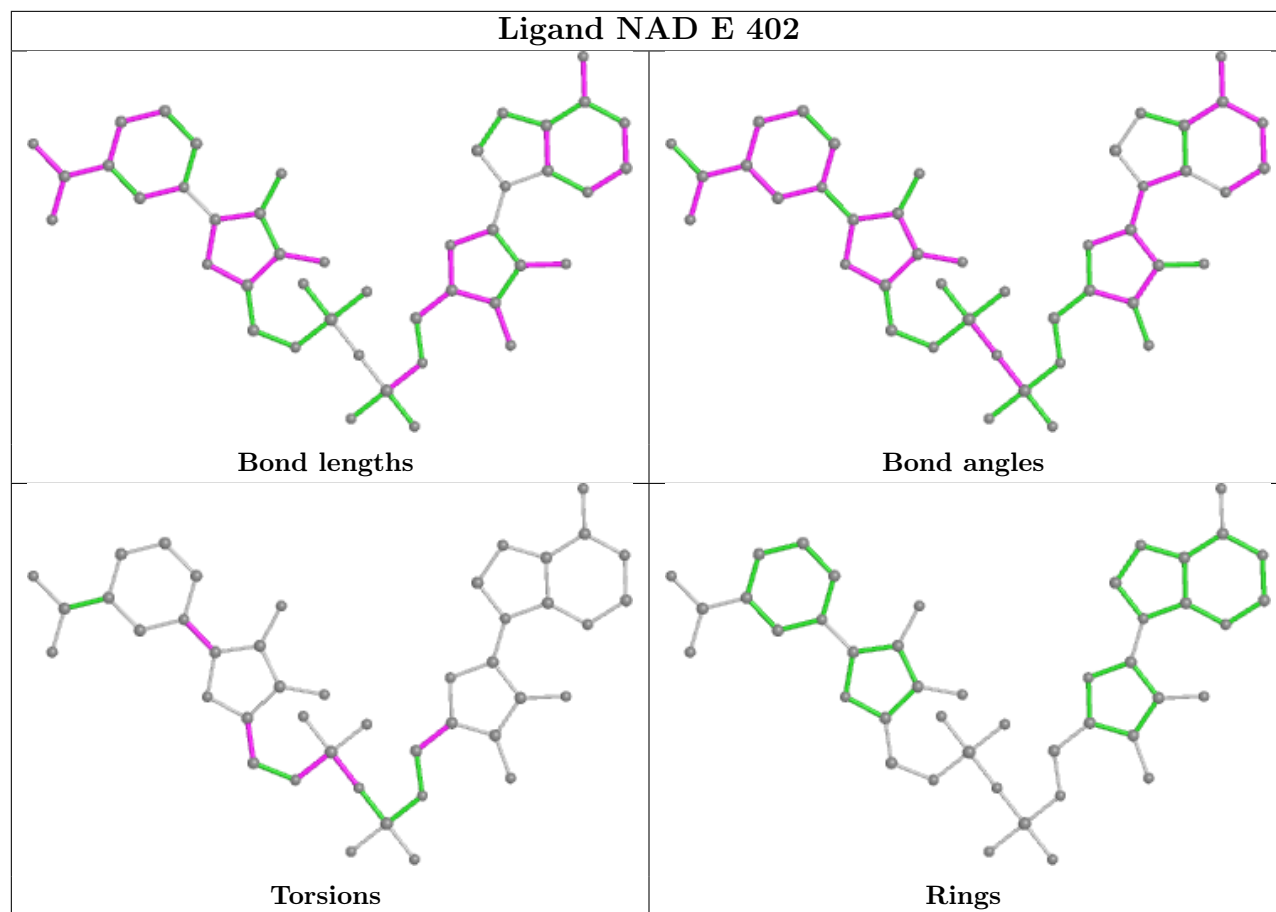
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	402	NAD	7	0
3	E	402	NAD	6	0
2	C	401	BGC	1	0
2	D	401	BGC	5	0
2	F	401	BGC	1	0
3	C	402	NAD	7	0
3	F	402	NAD	10	0
3	B	401	NAD	6	0
2	A	401	BGC	5	0
3	D	402	NAD	7	0

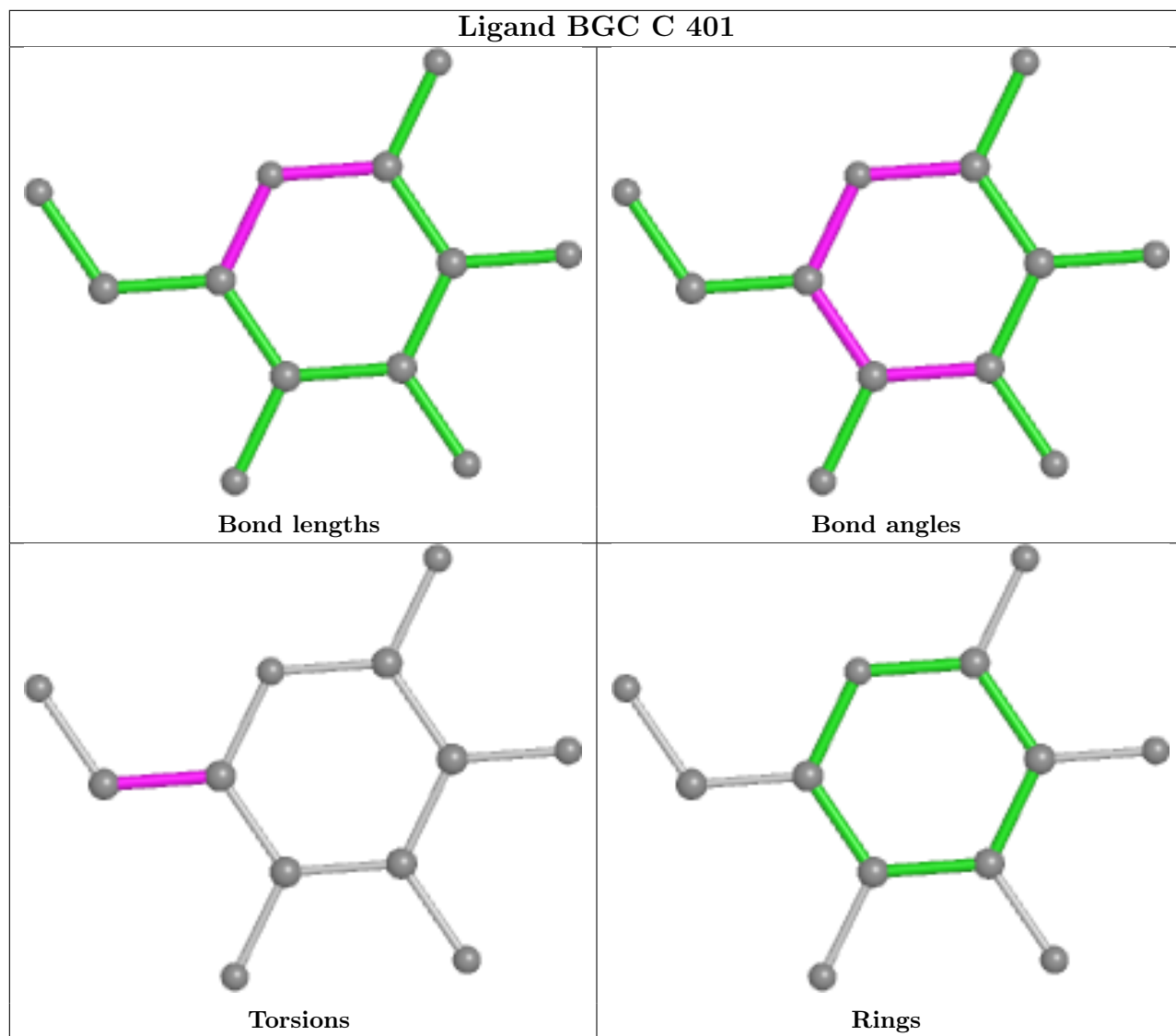
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is

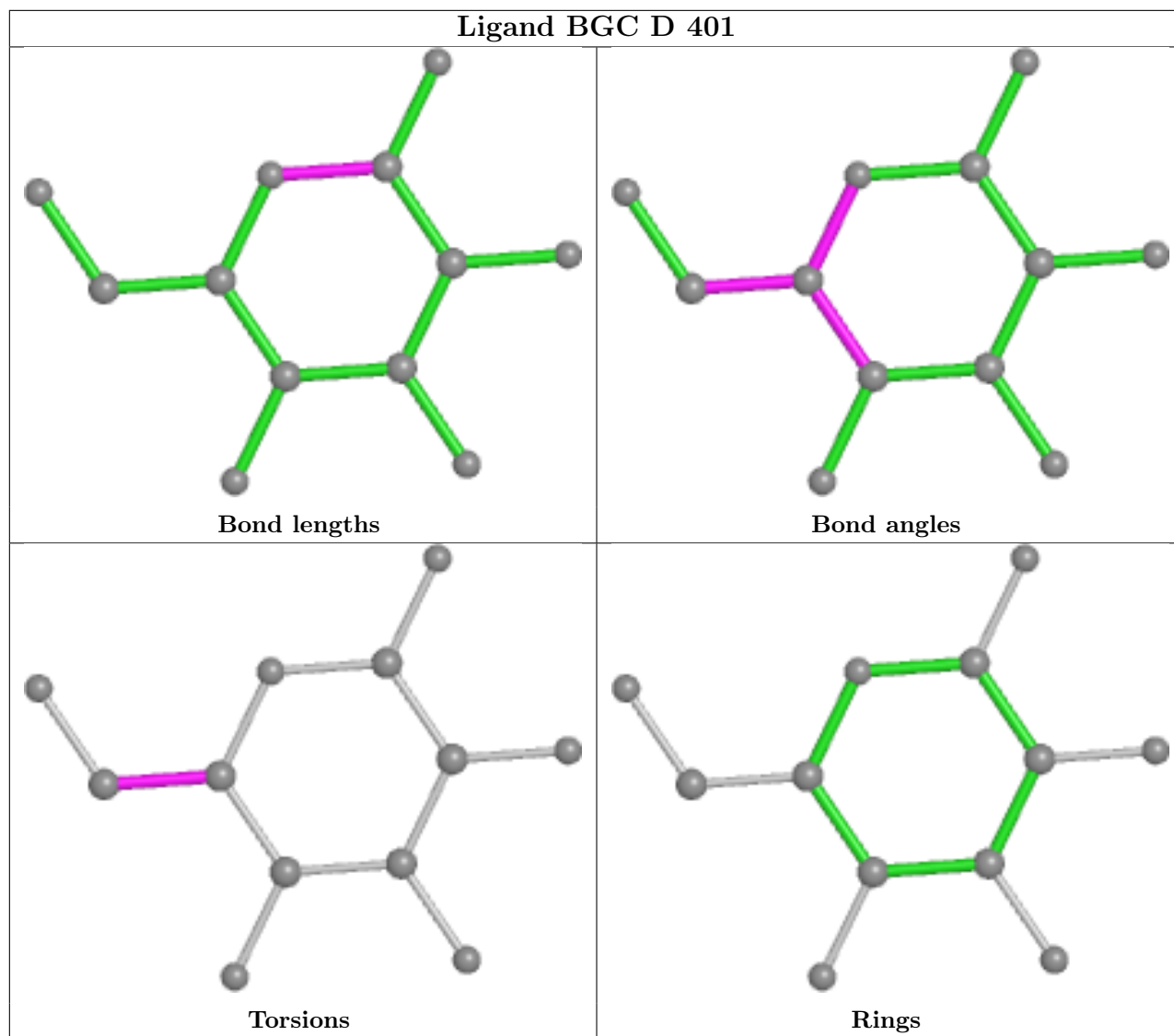
within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question 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.

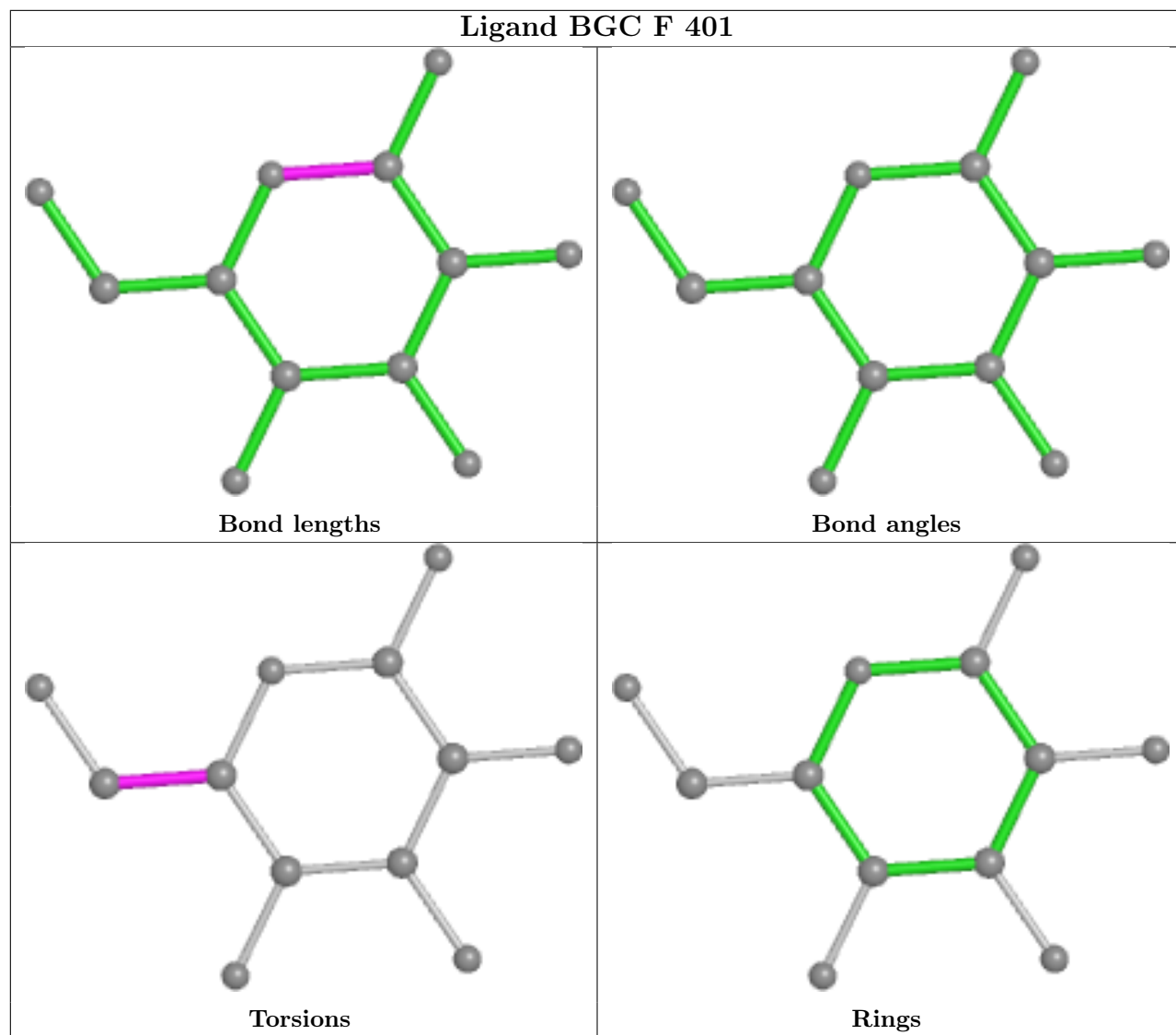


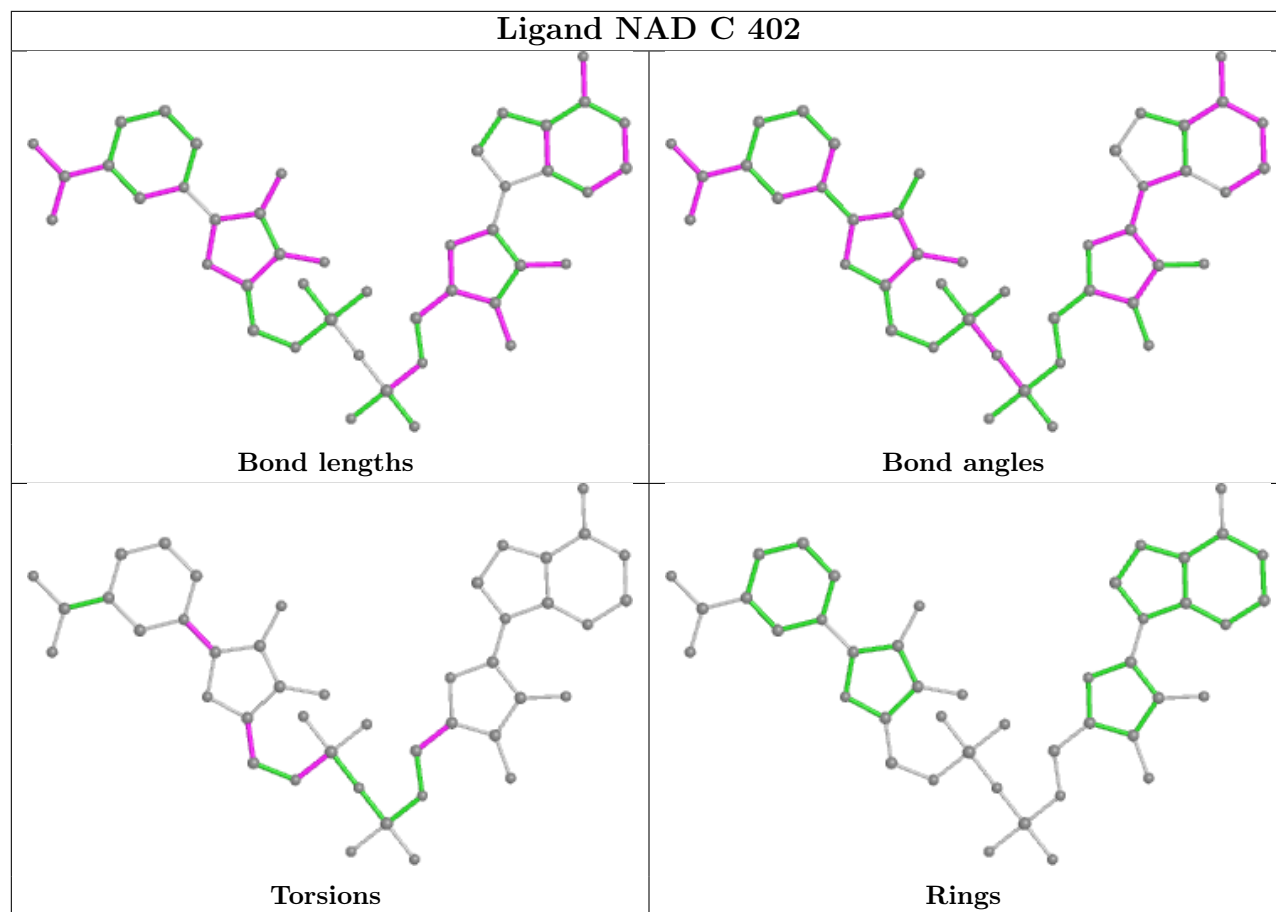


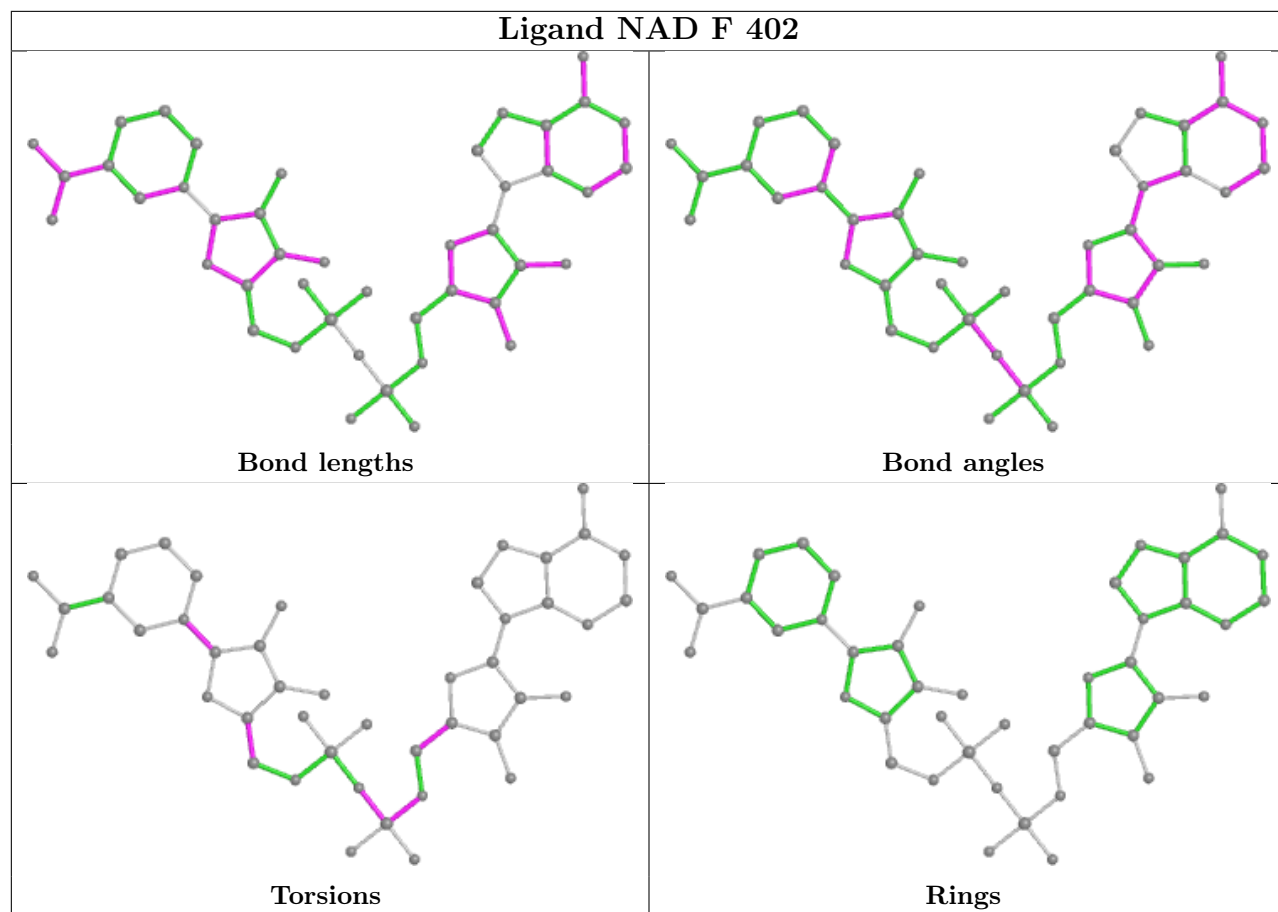


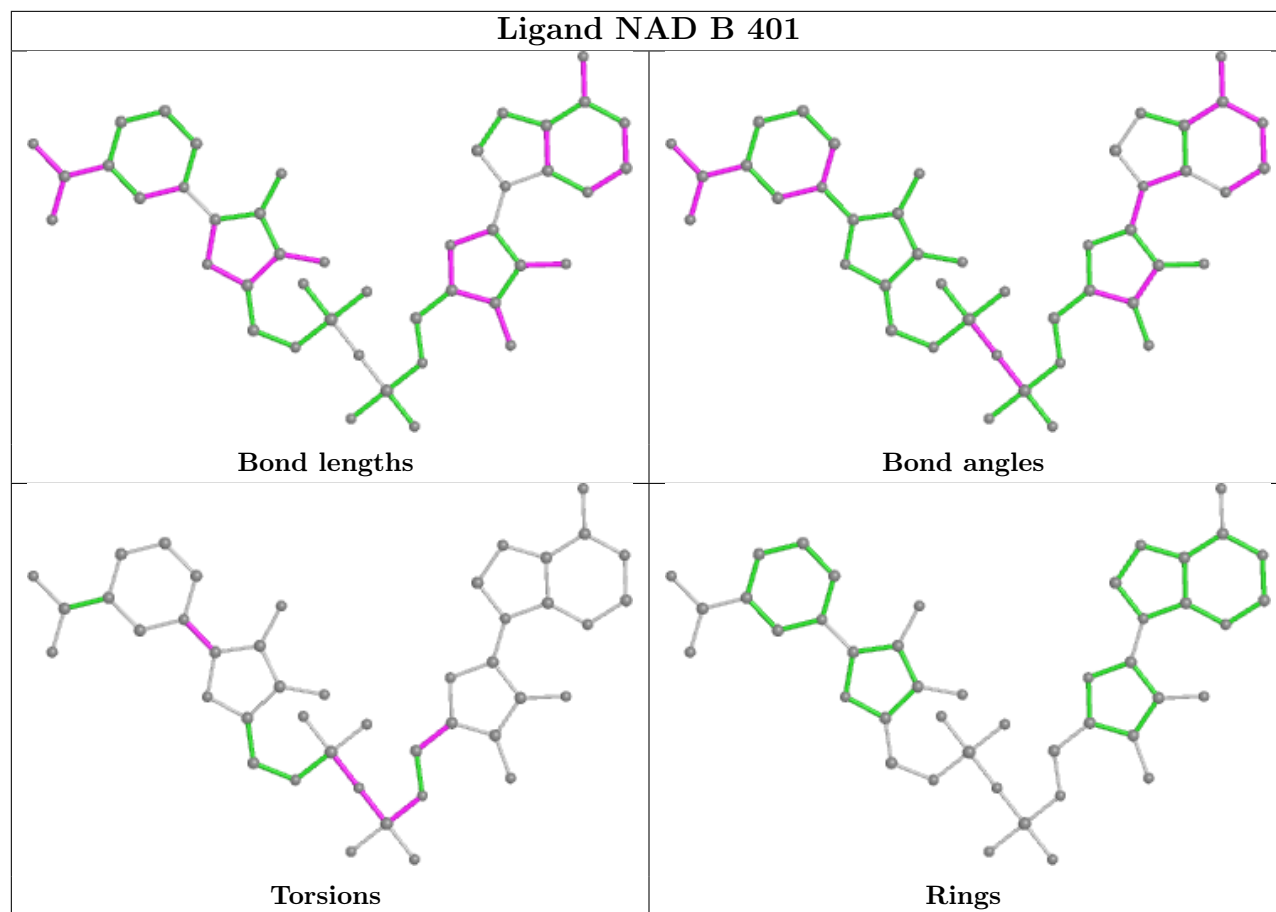


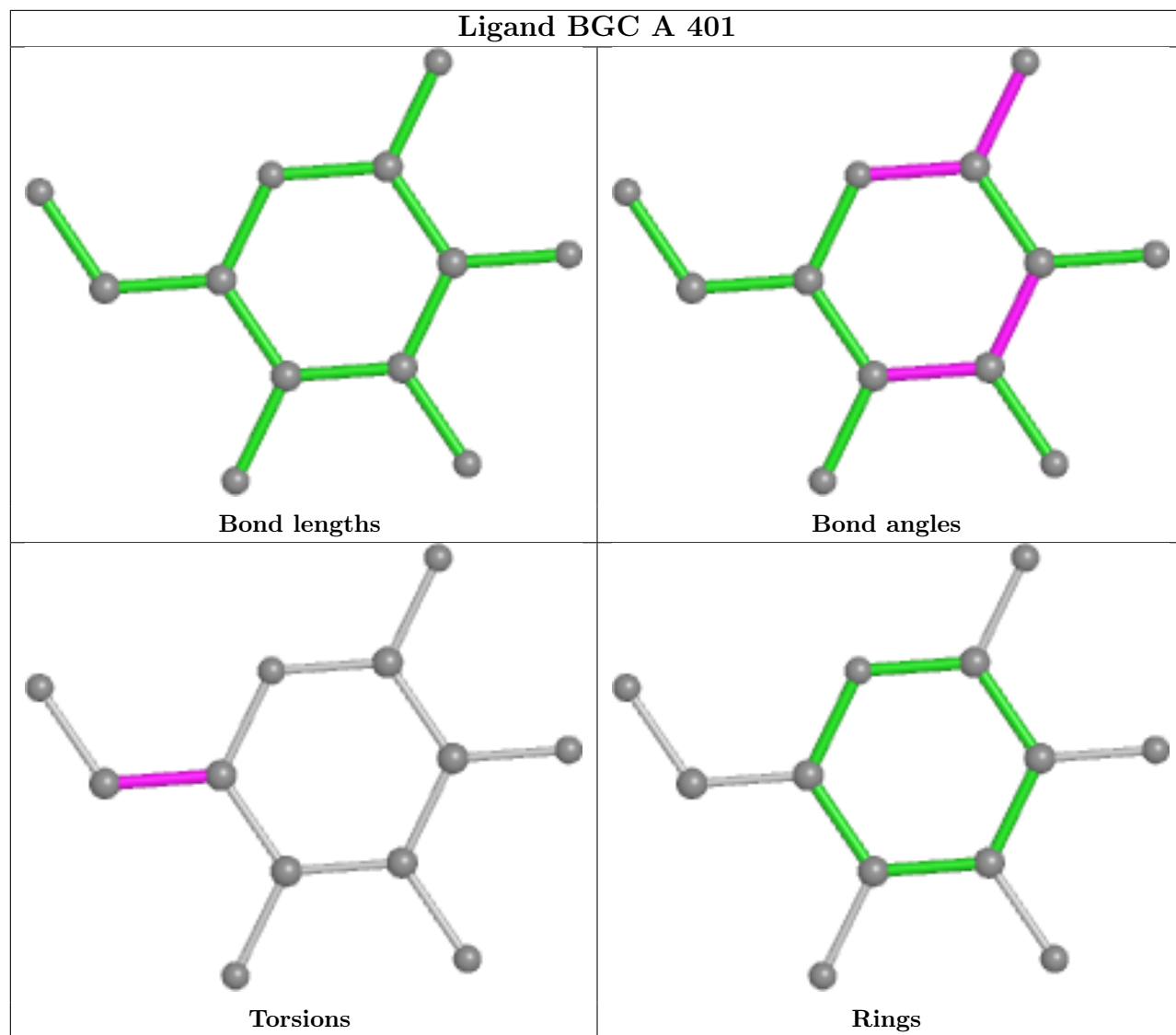


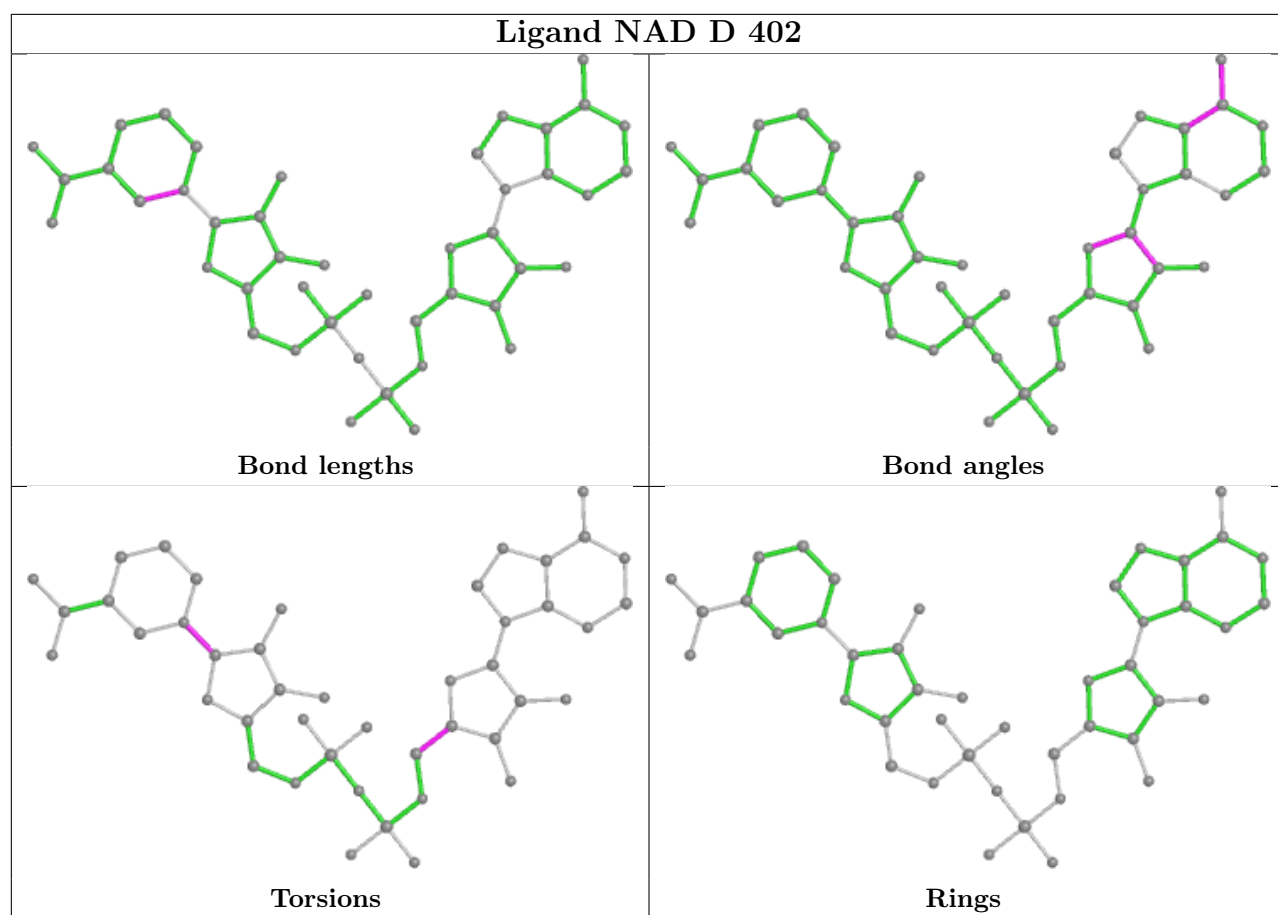












5.7 Other polymers [i](#)

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	344/367 (93%)	0.96	60 (17%) 1 1	30, 55, 110, 120	0
1	B	354/367 (96%)	0.17	7 (1%) 65 62	30, 46, 67, 94	0
1	C	350/367 (95%)	0.26	14 (4%) 38 36	30, 52, 75, 108	0
1	D	350/367 (95%)	0.43	21 (6%) 21 20	30, 54, 95, 126	0
1	E	353/367 (96%)	0.21	10 (2%) 53 50	30, 49, 69, 105	0
1	F	350/367 (95%)	0.65	36 (10%) 6 5	30, 56, 95, 109	0
All	All	2101/2202 (95%)	0.45	148 (7%) 16 14	30, 51, 93, 126	0

All (148) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	89	ALA	10.3
1	A	33	VAL	8.1
1	A	55	ALA	7.9
1	A	14	ILE	7.6
1	A	32	ILE	7.3
1	F	93	GLY	6.8
1	A	47	ALA	6.7
1	F	52	ALA	6.7
1	A	9	ILE	6.3
1	D	52	ALA	6.0
1	A	8	ILE	6.0
1	A	73	VAL	5.9
1	A	54	GLY	5.9
1	A	57	VAL	5.8
1	A	11	CYS	5.6
1	A	20	PHE	5.5
1	E	88	ALA	5.3
1	D	51	GLY	5.2
1	A	46	ALA	5.2

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Mol	Chain	Res	Type	RSRZ
1	F	100	LYS	5.1
1	A	15	ALA	5.1
1	C	52	ALA	5.1
1	A	23	LEU	5.0
1	A	168	VAL	5.0
1	D	88	ALA	5.0
1	C	366	PHE	4.8
1	D	50	PHE	4.7
1	F	94	LYS	4.7
1	A	87	ILE	4.4
1	F	57	VAL	4.3
1	D	8	ILE	4.3
1	A	123	PHE	4.2
1	C	100	LYS	4.2
1	D	46	ALA	4.1
1	A	100	LYS	4.1
1	F	89	ALA	4.1
1	F	86	THR	4.1
1	D	40	ILE	4.0
1	A	97	TYR	4.0
1	A	31	GLU	3.9
1	A	96	VAL	3.9
1	D	57	VAL	3.9
1	A	74	HIS	3.9
1	F	35	PHE	3.8
1	E	366	PHE	3.7
1	A	50	PHE	3.7
1	F	91	GLU	3.7
1	A	66	ALA	3.7
1	A	75	VAL	3.7
1	A	43	ALA	3.6
1	A	19	HIS	3.6
1	F	53	GLU	3.5
1	A	359	ALA	3.5
1	B	90	PHE	3.5
1	D	32	ILE	3.5
1	A	4	LEU	3.5
1	D	23	LEU	3.4
1	F	5	LYS	3.4
1	E	89	ALA	3.4
1	F	36	CYS	3.4
1	C	0	GLY	3.4

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Mol	Chain	Res	Type	RSRZ
1	F	49	GLU	3.4
1	A	70	VAL	3.3
1	A	77	THR	3.3
1	D	22	ALA	3.3
1	F	42	ARG	3.3
1	F	32	ILE	3.2
1	D	35	PHE	3.2
1	A	0	GLY	3.2
1	A	72	VAL	3.2
1	F	65	LEU	3.2
1	A	89	ALA	3.2
1	F	8	ILE	3.1
1	F	80	VAL	3.1
1	F	31	GLU	3.1
1	A	64	LEU	3.1
1	F	166	TRP	3.1
1	A	67	ASN	3.1
1	A	44	GLU	3.0
1	E	8	ILE	3.0
1	A	88	ALA	3.0
1	F	48	ALA	3.0
1	F	40	ILE	3.0
1	F	169	PHE	3.0
1	D	7	GLY	3.0
1	A	29	LEU	3.0
1	B	100	LYS	2.9
1	F	6	ILE	2.9
1	A	48	ALA	2.9
1	C	53	GLU	2.9
1	F	50	PHE	2.9
1	B	0	GLY	2.8
1	A	63	GLU	2.8
1	C	1	MET	2.8
1	A	61	TYR	2.7
1	F	90	PHE	2.7
1	F	88	ALA	2.7
1	A	328	TRP	2.7
1	F	226	TRP	2.7
1	D	358	SER	2.7
1	E	87	ILE	2.6
1	C	78	PRO	2.6
1	D	92	ALA	2.6

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Mol	Chain	Res	Type	RSRZ
1	A	93	GLY	2.6
1	A	58	THR	2.6
1	F	99	GLU	2.6
1	A	60	ASP	2.5
1	A	6	ILE	2.5
1	C	90	PHE	2.5
1	A	53	GLU	2.5
1	E	17	GLN	2.4
1	D	64	LEU	2.4
1	A	76	CYS	2.4
1	A	56	GLN	2.4
1	C	359	ALA	2.4
1	A	98	CYS	2.4
1	F	58	THR	2.4
1	B	366	PHE	2.4
1	A	86	THR	2.4
1	C	54	GLY	2.3
1	C	31	GLU	2.3
1	D	21	PRO	2.3
1	A	51	GLY	2.3
1	B	13	GLY	2.3
1	F	39	GLN	2.3
1	F	87	ILE	2.3
1	F	332	ILE	2.3
1	A	1	MET	2.2
1	E	52	ALA	2.2
1	A	5	LYS	2.2
1	A	125	ILE	2.2
1	C	226	TRP	2.2
1	A	111	LYS	2.2
1	E	40	ILE	2.2
1	D	226	TRP	2.2
1	A	342	PRO	2.1
1	F	131	PHE	2.1
1	C	358	SER	2.1
1	A	49	GLU	2.1
1	D	89	ALA	2.1
1	E	1	MET	2.1
1	E	358	SER	2.1
1	C	2	SER	2.1
1	B	43	ALA	2.1
1	F	59	ALA	2.1

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Mol	Chain	Res	Type	RSRZ
1	D	59	ALA	2.0
1	D	20	PHE	2.0
1	F	61	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 monosaccharides in this entry.

6.4 Ligands [i](#)

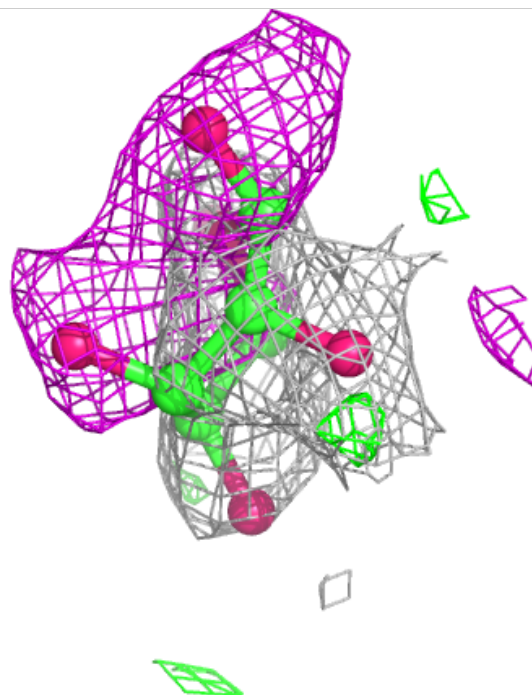
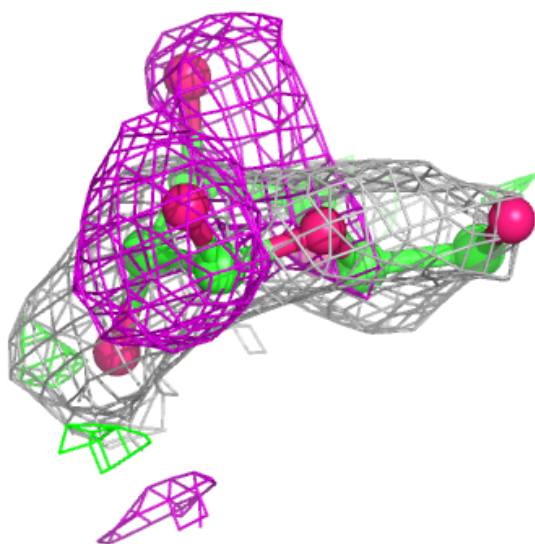
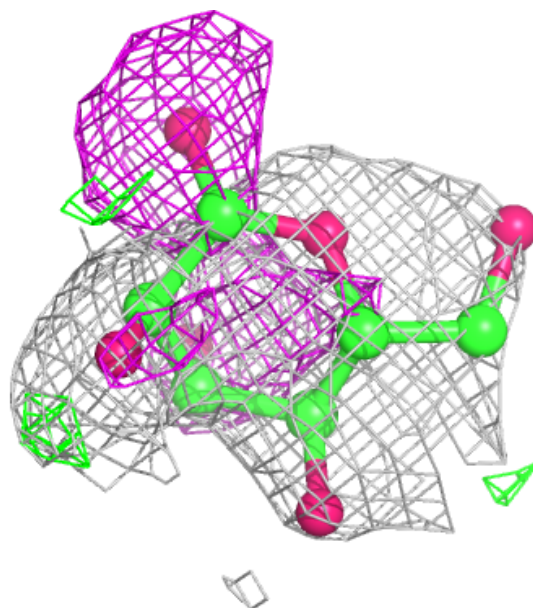
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

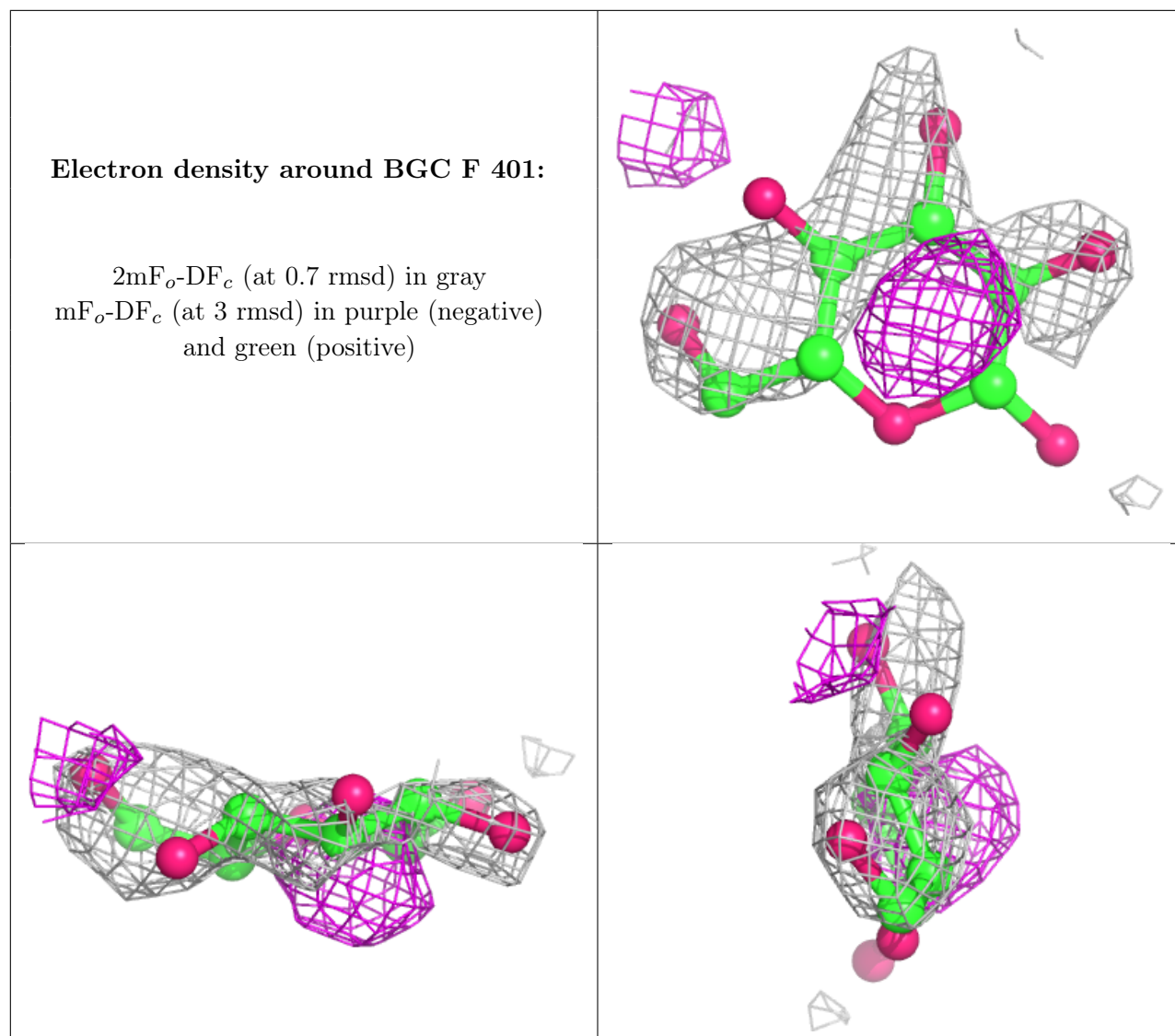
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	BGC	A	401	12/12	0.57	0.57	64,71,74,75	0
2	BGC	F	401	12/12	0.58	0.59	99,101,101,101	0
2	BGC	C	401	12/12	0.79	0.29	75,77,84,87	0
2	BGC	E	401	12/12	0.83	0.22	56,63,66,68	0
2	BGC	D	401	12/12	0.84	0.48	78,82,83,84	0
3	NAD	A	402	44/44	0.84	0.19	57,80,104,106	0
3	NAD	D	402	44/44	0.88	0.19	49,70,79,86	0
3	NAD	F	402	44/44	0.92	0.18	56,65,75,76	0
3	NAD	E	402	44/44	0.93	0.18	44,50,64,70	0
3	NAD	C	402	44/44	0.94	0.16	44,56,63,65	0
3	NAD	B	401	44/44	0.96	0.16	44,46,49,53	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 BGC A 401:

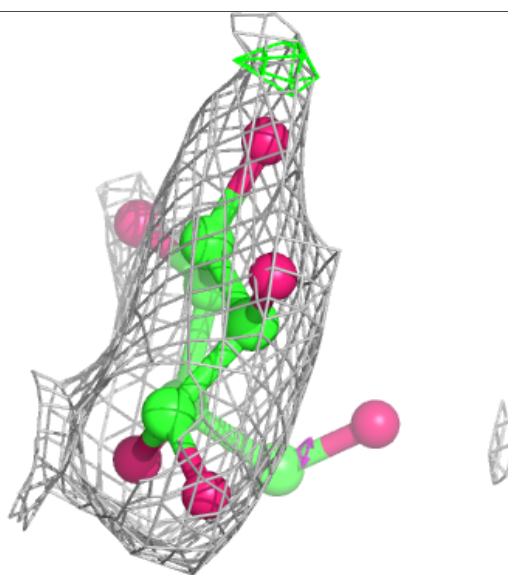
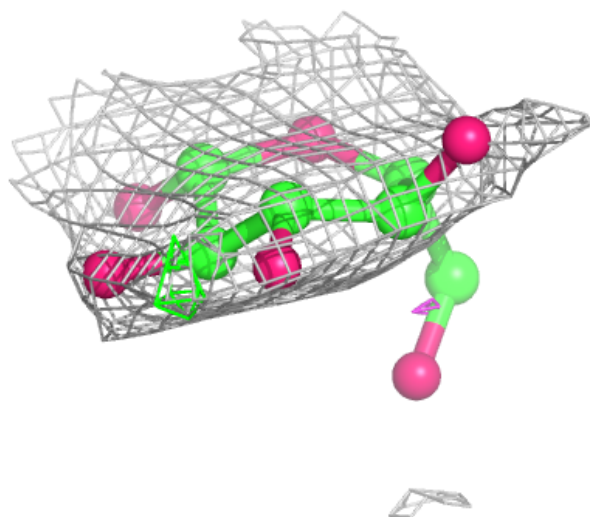
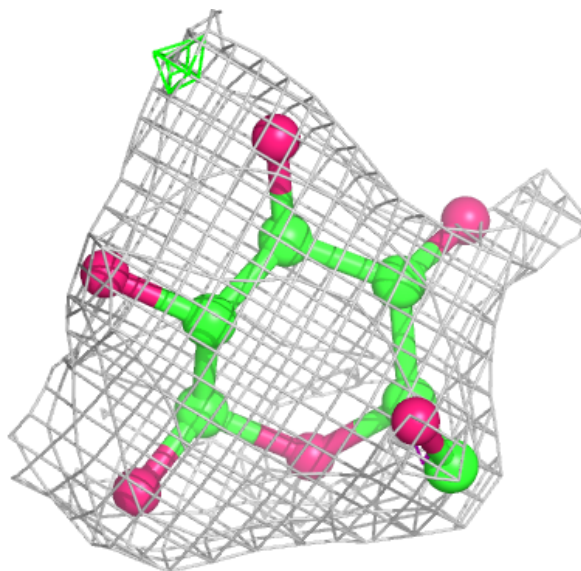
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





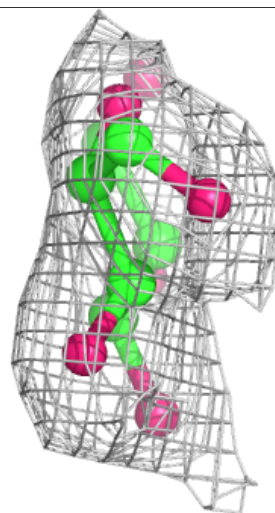
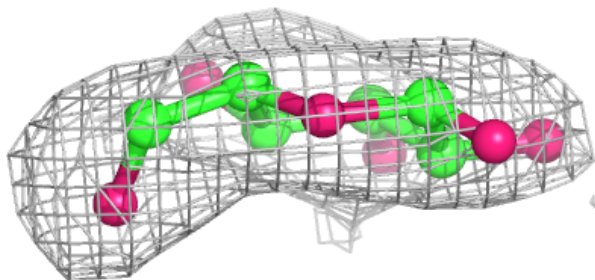
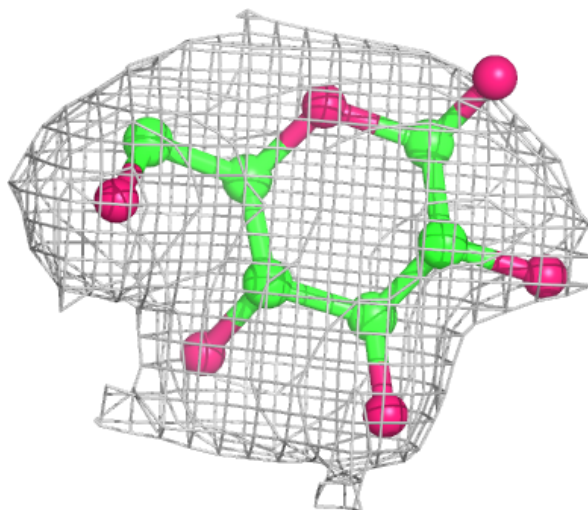
Electron density around BGC C 401:

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



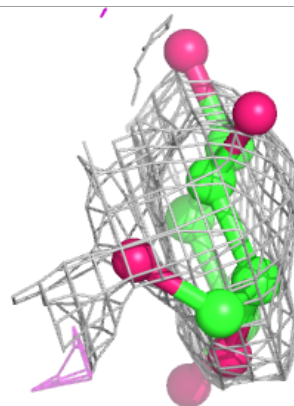
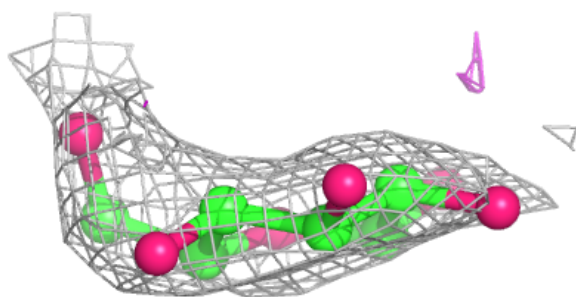
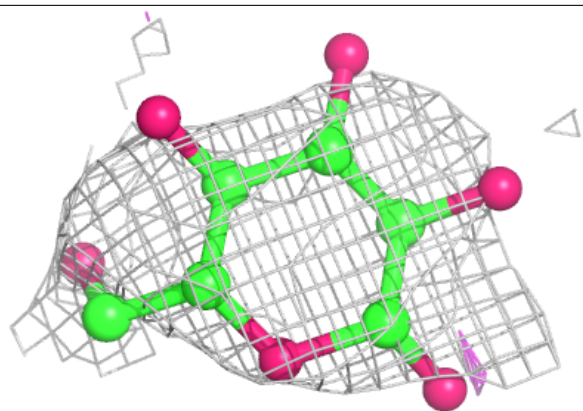
Electron density around BGC E 401:

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

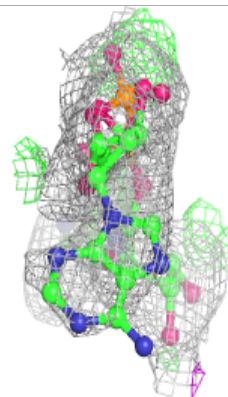
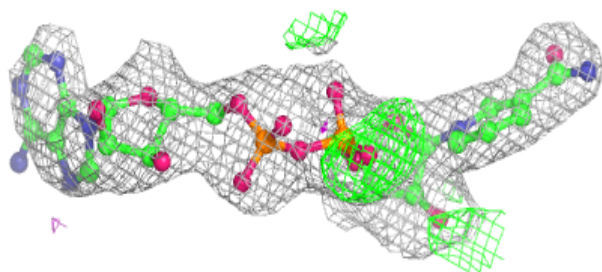
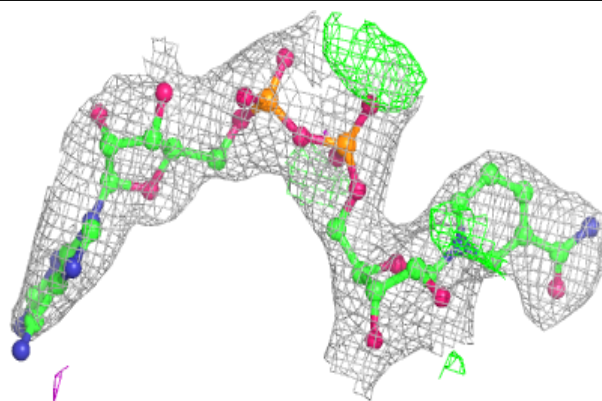


Electron density around BGC D 401:

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

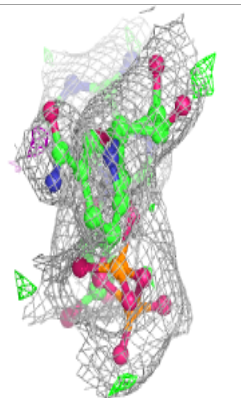
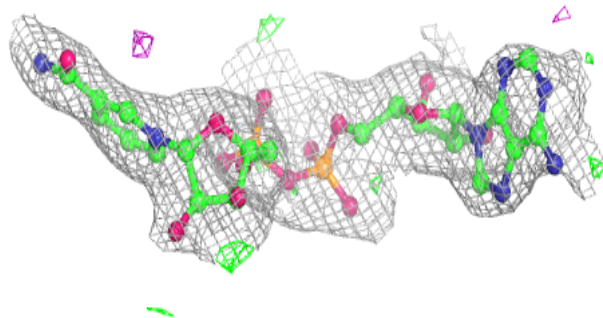
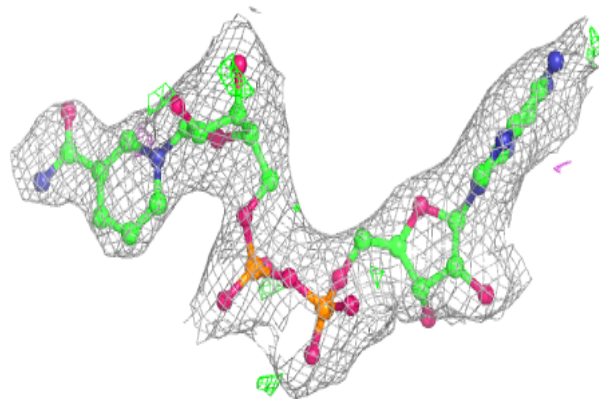
**Electron density around NAD A 402:**

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

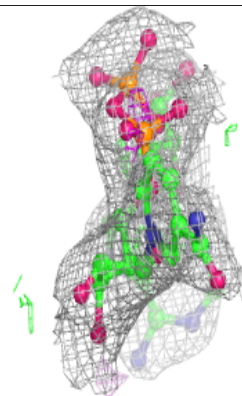
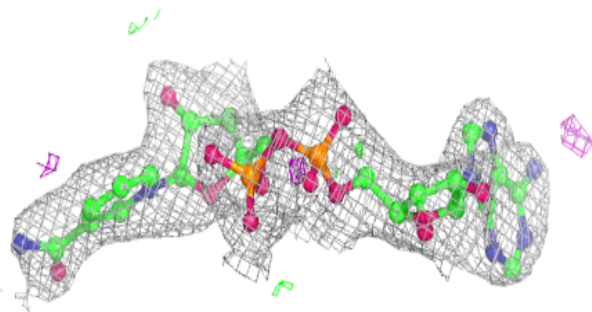
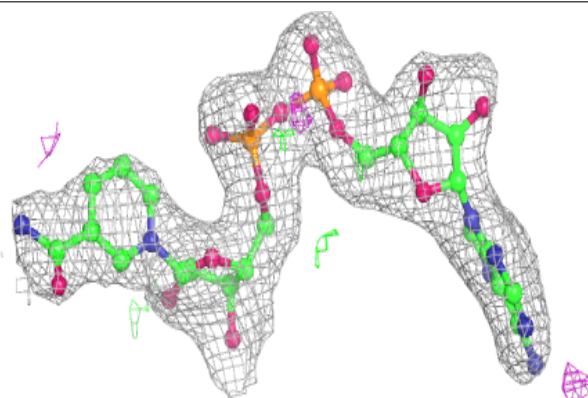


Electron density around NAD D 402:

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

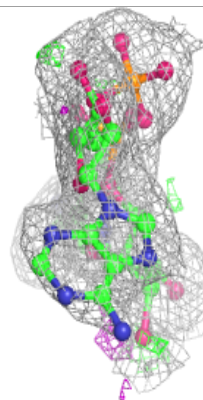
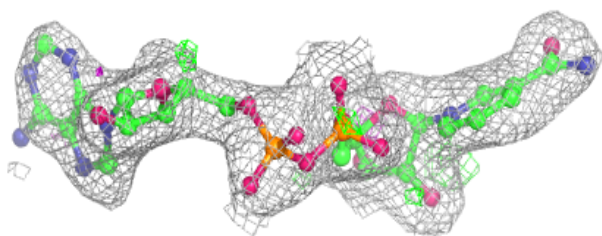
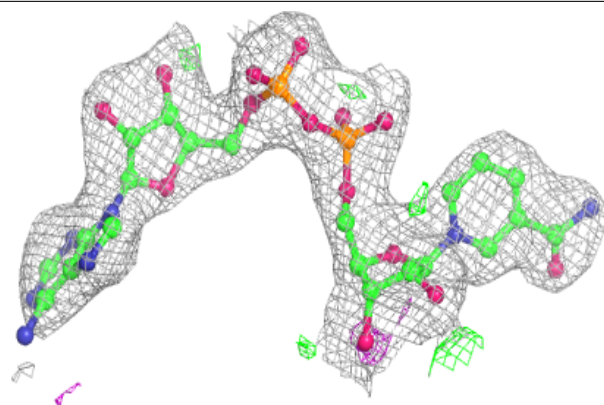
**Electron density around NAD F 402:**

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

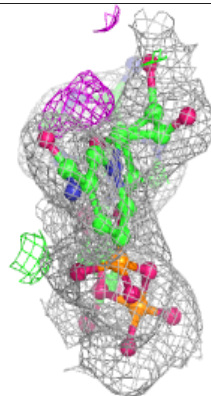
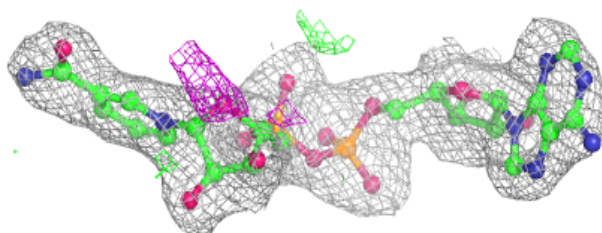
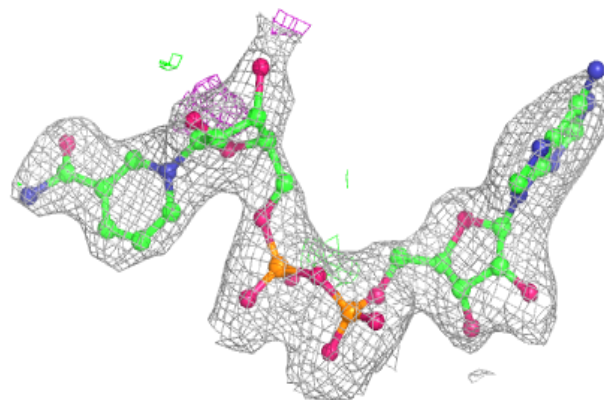


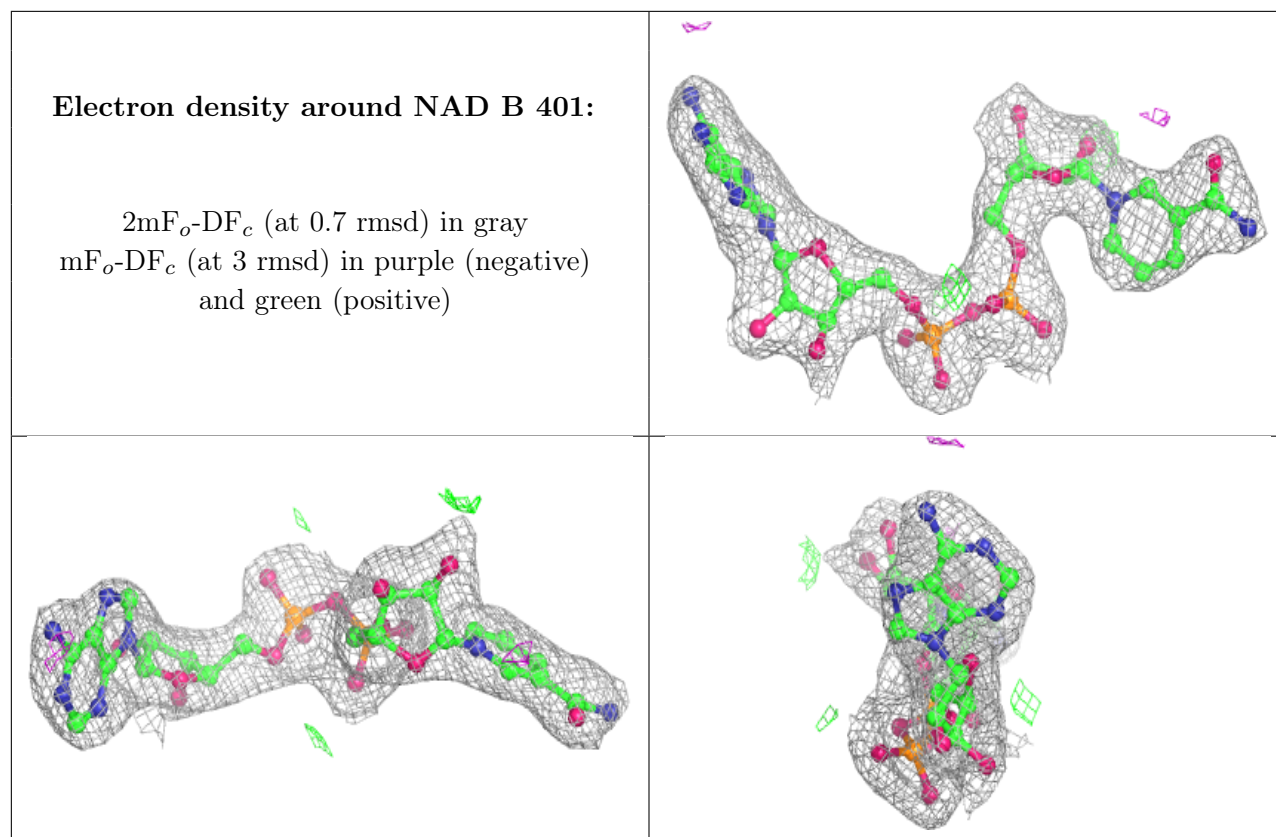
Electron density around NAD E 402:

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

**Electron density around NAD C 402:**

$2mF_o-DF_c$ (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.