Full wwPDB X-ray Structure Validation Report (i)

Jun 13, 2024 – 11:40 AM EDT

PDB ID	:	1NSD
Title	:	INFLUENZA B VIRUS NEURAMINIDASE CAN SYNTHESIZE ITS OWN INHIBITOR
Authors	:	Burmeister, W.P.; Ruigrok, R.W.H.; Cusack, S.
Deposited on	:	1993-05-24
Resolution	:	1.80 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 (i) 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 (1)) were used in the production of this report:

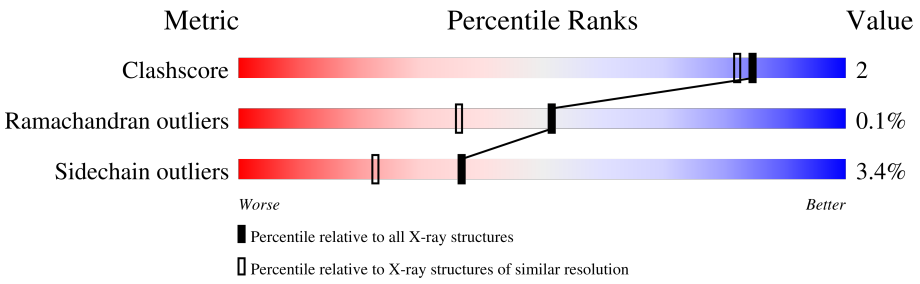
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

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 1.80 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))
Clashscore	141614	6793 (1.80-1.80)
Ramachandran outliers	138981	6697 (1.80-1.80)
Sidechain outliers	138945	6696 (1.80-1.80)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5%

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	390	85% 13% •
1	B	390	87% 12% •

2 Entry composition (i)

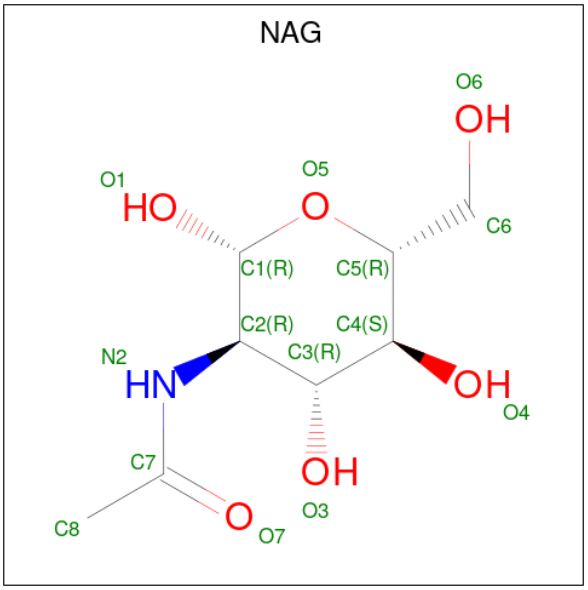
There are 5 unique types of molecules in this entry. The entry contains 9115 atoms, of which 2466 are hydrogens and 0 are deuteriums.

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 NEURAMINIDASE.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
1	A	390	3737	1899	701	533	575	29	5	0	0
1	B	390	3737	1899	701	533	575	29	5	0	0

- Molecule 2 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).

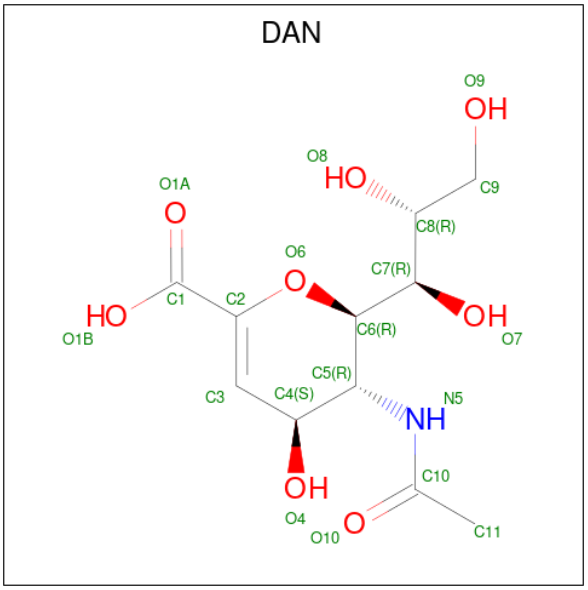


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	H	N	O		
2	A	1	28	8	14	1	5	0	0
2	B	1	28	8	14	1	5	0	0

- Molecule 3 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Ca		
3	A	2	2	2	0	0
			Total	Ca		
3	B	1	1	1	0	0

- Molecule 4 is 2-DEOXY-2,3-DEHYDRO-N-ACETYL-NEURAMINIC ACID (three-letter code: DAN) (formula: $C_{11}H_{17}NO_8$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	H	N	O		
4	A	1	36	11	16	1	8	0	0
			Total	C	H	N	O		
4	B	1	36	11	16	1	8	0	0

- Molecule 5 is water.

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	H	O		
5	A	257	769	512	257	0	0
			Total	H	O		
5	B	249	741	492	249	0	0

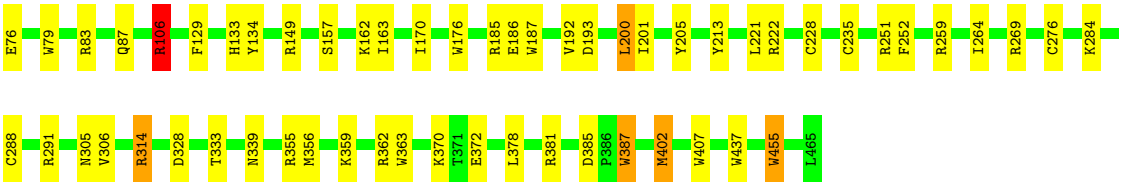
3 Residue-property plots (i)

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. 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. 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.

Note EDS was not executed.

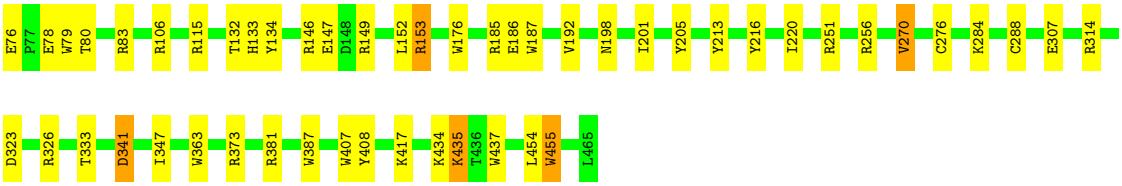
• Molecule 1: NEURAMINIDASE

Chain A: 85% 13%



• Molecule 1: NEURAMINIDASE

Chain B: 87% 12%



4 Data and refinement statistics (i)

Xtriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 31 2 1	Depositor
Cell constants a, b, c, α, β, γ	88.90Å 88.90Å 222.80Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	(Not available) – 1.80	Depositor
% Data completeness (in resolution range)	(Not available) ((Not available)-1.80)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	X-PLOR	Depositor
R, R_{free}	0.169 , (Not available)	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	9115	wwPDB-VP
Average B, all atoms ($Å^2$)	12.0	wwPDB-VP

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: CA, NAG, DAN

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	0.82	0/3109	1.45	50/4197 (1.2%)
1	B	0.83	0/3109	1.42	41/4197 (1.0%)
All	All	0.82	0/6218	1.44	91/8394 (1.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1

There are no bond length outliers.

All (91) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	251	ARG	NE-CZ-NH2	-10.53	115.03	120.30
1	A	185	ARG	NE-CZ-NH2	-8.70	115.95	120.30
1	B	251	ARG	NE-CZ-NH2	-8.68	115.96	120.30
1	A	187	TRP	CD1-CG-CD2	8.62	113.19	106.30
1	B	187	TRP	CD1-CG-CD2	8.55	113.14	106.30
1	A	79	TRP	CD1-CG-CD2	8.12	112.80	106.30
1	A	83	ARG	NE-CZ-NH2	-8.00	116.30	120.30
1	B	79	TRP	CD1-CG-CD2	7.93	112.65	106.30
1	B	176	TRP	CD1-CG-CD2	7.91	112.63	106.30
1	B	187	TRP	CE2-CD2-CG	-7.90	100.98	107.30
1	B	455	TRP	CD1-CG-CD2	7.86	112.58	106.30
1	A	437	TRP	CD1-CG-CD2	7.82	112.56	106.30
1	A	235	CYS	O-C-N	-7.77	110.27	122.70
1	A	176	TRP	CD1-CG-CD2	7.69	112.45	106.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	259	ARG	NE-CZ-NH1	7.64	124.12	120.30
1	A	79	TRP	CE2-CD2-CG	-7.47	101.32	107.30
1	B	79	TRP	CE2-CD2-CG	-7.46	101.33	107.30
1	B	314	ARG	NE-CZ-NH2	-7.45	116.57	120.30
1	A	363	TRP	CD1-CG-CD2	7.39	112.22	106.30
1	A	402	MET	CA-CB-CG	-7.33	100.84	113.30
1	A	187	TRP	CE2-CD2-CG	-7.24	101.51	107.30
1	B	363	TRP	CD1-CG-CD2	7.20	112.06	106.30
1	A	355	ARG	NE-CZ-NH2	-7.12	116.74	120.30
1	B	270	VAL	N-CA-CB	-7.05	95.98	111.50
1	B	176	TRP	CE2-CD2-CG	-7.05	101.66	107.30
1	A	407	TRP	CD1-CG-CD2	7.00	111.90	106.30
1	A	387	TRP	CD1-CG-CD2	6.96	111.87	106.30
1	B	149	ARG	NE-CZ-NH2	-6.86	116.87	120.30
1	B	437	TRP	CD1-CG-CD2	6.69	111.66	106.30
1	B	153	ARG	NE-CZ-NH2	-6.68	116.96	120.30
1	A	176	TRP	CE2-CD2-CG	-6.68	101.95	107.30
1	A	363	TRP	CE2-CD2-CG	-6.67	101.96	107.30
1	B	381	ARG	NE-CZ-NH1	6.63	123.61	120.30
1	A	437	TRP	CE2-CD2-CG	-6.53	102.08	107.30
1	A	455	TRP	CD1-CG-CD2	6.46	111.47	106.30
1	B	216	TYR	CB-CG-CD1	-6.43	117.14	121.00
1	B	455	TRP	CE2-CD2-CG	-6.39	102.19	107.30
1	B	153	ARG	NE-CZ-NH1	6.36	123.48	120.30
1	B	407	TRP	CE2-CD2-CG	-6.34	102.23	107.30
1	A	163	ILE	N-CA-C	-6.29	94.03	111.00
1	A	106	ARG	NE-CZ-NH2	-6.27	117.17	120.30
1	A	407	TRP	CE2-CD2-CG	-6.26	102.29	107.30
1	A	259	ARG	NE-CZ-NH2	-6.24	117.18	120.30
1	B	387	TRP	CD1-CG-CD2	6.17	111.23	106.30
1	B	326	ARG	NE-CZ-NH2	-6.04	117.28	120.30
1	B	407	TRP	CD1-CG-CD2	6.04	111.13	106.30
1	A	176	TRP	CB-CG-CD1	-5.98	119.23	127.00
1	B	363	TRP	CE2-CD2-CG	-5.95	102.54	107.30
1	B	83	ARG	NE-CZ-NH2	-5.93	117.34	120.30
1	A	149	ARG	NE-CZ-NH2	-5.90	117.35	120.30
1	A	291	ARG	NE-CZ-NH2	-5.84	117.38	120.30
1	A	176	TRP	CG-CD2-CE3	5.83	139.15	133.90
1	B	387	TRP	CE2-CD2-CG	-5.82	102.64	107.30
1	B	434	LYS	CA-CB-CG	5.80	126.16	113.40
1	B	146	ARG	NE-CZ-NH2	-5.76	117.42	120.30
1	A	222	ARG	NE-CZ-NH2	-5.71	117.44	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	387	TRP	CE2-CD2-CG	-5.70	102.74	107.30
1	B	437	TRP	CE2-CD2-CG	-5.68	102.76	107.30
1	B	79	TRP	CB-CG-CD1	-5.64	119.66	127.00
1	B	341	ASP	N-CA-CB	-5.63	100.47	110.60
1	A	455	TRP	CE2-CD2-CG	-5.62	102.80	107.30
1	B	455	TRP	CG-CD1-NE1	-5.62	104.48	110.10
1	B	115	ARG	NE-CZ-NH2	-5.59	117.50	120.30
1	A	372	GLU	OE1-CD-OE2	-5.58	116.61	123.30
1	A	79	TRP	CG-CD1-NE1	-5.57	104.53	110.10
1	A	314	ARG	NE-CZ-NH2	-5.55	117.53	120.30
1	B	408	TYR	CB-CG-CD2	-5.53	117.68	121.00
1	A	187	TRP	CG-CD1-NE1	-5.51	104.59	110.10
1	B	323	ASP	CB-CG-OD1	5.51	123.26	118.30
1	B	79	TRP	CG-CD2-CE3	5.50	138.85	133.90
1	A	387	TRP	CG-CD1-NE1	-5.46	104.64	110.10
1	A	362	ARG	NE-CZ-NH1	5.43	123.01	120.30
1	B	147	GLU	CA-CB-CG	5.41	125.31	113.40
1	B	434	LYS	N-CA-CB	-5.39	100.89	110.60
1	A	363	TRP	CG-CD1-NE1	-5.35	104.75	110.10
1	A	407	TRP	CG-CD1-NE1	-5.34	104.76	110.10
1	B	176	TRP	CB-CG-CD1	-5.31	120.10	127.00
1	A	193	ASP	CB-CG-OD1	5.29	123.06	118.30
1	A	79	TRP	CB-CG-CD1	-5.24	120.19	127.00
1	A	356	MET	CG-SD-CE	-5.23	91.83	100.20
1	B	187	TRP	CG-CD1-NE1	-5.22	104.88	110.10
1	A	149	ARG	NE-CZ-NH1	5.19	122.89	120.30
1	B	185	ARG	NE-CZ-NH2	-5.13	117.73	120.30
1	B	256	ARG	NE-CZ-NH2	-5.12	117.74	120.30
1	A	79	TRP	CG-CD2-CE3	5.12	138.50	133.90
1	A	222	ARG	NE-CZ-NH1	5.07	122.84	120.30
1	A	437	TRP	CG-CD1-NE1	-5.07	105.03	110.10
1	A	235	CYS	CA-C-N	5.06	128.33	117.20
1	A	455	TRP	CG-CD1-NE1	-5.05	105.05	110.10
1	A	176	TRP	CG-CD1-NE1	-5.03	105.07	110.10
1	A	385	ASP	CB-CG-OD1	5.00	122.80	118.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	162	LYS	Mainchain

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	3036	701	2923	16	0
1	B	3036	701	2923	13	0
2	A	14	14	13	0	0
2	B	14	14	13	0	0
3	A	2	0	0	0	0
3	B	1	0	0	0	0
4	A	20	16	16	0	0
4	B	20	16	16	0	0
5	A	257	512	0	2	0
5	B	249	492	0	4	0
All	All	6649	2466	5904	28	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 2.

All (28) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:192:VAL:HG22	1:B:201:ILE:HD13	1.64	0.79
1:A:192:VAL:HG22	1:A:201:ILE:HD13	1.79	0.63
1:B:78:GLU:HB2	5:B:705:HOH:O	2.06	0.54
1:B:347:ILE:HD12	1:B:373:ARG:HG2	1.93	0.51
1:A:133:HIS:HE1	5:A:593:HOH:O	1.96	0.48
1:A:328:ASP:OD1	1:A:370:LYS:NZ	2.47	0.46
1:A:276:CYS:HB3	1:A:288:CYS:HB3	1.97	0.46
1:B:435:LYS:HE3	5:B:650:HOH:O	2.16	0.45
1:A:284:LYS:HE3	1:A:305:ASN:ND2	2.31	0.45
1:A:269:ARG:HH21	1:A:339:ASN:HD21	1.63	0.45
1:B:284:LYS:NZ	1:B:307:GLU:OE1	2.50	0.44
1:B:133:HIS:HD2	5:B:562:HOH:O	2.00	0.43
1:B:132:THR:O	1:B:153:ARG:HA	2.19	0.43
1:A:106:ARG:HD2	5:A:499:HOH:O	2.18	0.43
1:A:201:ILE:HB	1:A:213:TYR:HB3	2.01	0.43
1:B:417:LYS:HB3	1:B:417:LYS:HE2	1.64	0.43
1:B:276:CYS:HB3	1:B:288:CYS:HB3	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:252:PHE:HB2	1:A:264:ILE:HB	2.00	0.42
1:B:201:ILE:HB	1:B:213:TYR:HB3	2.01	0.41
1:A:76:GLU:N	1:A:76:GLU:OE1	2.53	0.41
1:B:186:GLU:HB3	1:B:205:TYR:CZ	2.55	0.41
1:A:201:ILE:HG12	1:A:221:LEU:HD21	2.02	0.41
1:B:80:THR:HG21	5:B:673:HOH:O	2.19	0.41
1:A:186:GLU:HB3	1:A:205:TYR:CZ	2.56	0.41
1:A:381:ARG:HA	1:A:381:ARG:HD2	1.92	0.41
1:A:129:PHE:CD2	1:A:157:SER:HB3	2.56	0.40
1:A:314:ARG:HB2	1:A:387:TRP:CD1	2.56	0.40
1:A:200:LEU:HG	1:B:454:LEU:HD12	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	388/390 (100%)	376 (97%)	12 (3%)	0	100	100
1	B	388/390 (100%)	375 (97%)	12 (3%)	1 (0%)	41	27
All	All	776/780 (100%)	751 (97%)	24 (3%)	1 (0%)	51	36

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	220	ILE

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	324/324 (100%)	312 (96%)	12 (4%)	34	19
1	B	324/324 (100%)	314 (97%)	10 (3%)	40	25
All	All	648/648 (100%)	626 (97%)	22 (3%)	37	22

All (22) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	87	GLN
1	A	106	ARG
1	A	134	TYR
1	A	170	ILE
1	A	200	LEU
1	A	228	CYS
1	A	306	VAL
1	A	333	THR
1	A	359	LYS
1	A	378	LEU
1	A	402	MET
1	A	455	TRP
1	B	76	GLU
1	B	106	ARG
1	B	134	TYR
1	B	152	LEU
1	B	198	ASN
1	B	270	VAL
1	B	333	THR
1	B	341	ASP
1	B	435	LYS
1	B	455	TRP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	87	GLN
1	A	133	HIS
1	A	168	ASN
1	A	339	ASN
1	B	133	HIS
1	B	168	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)

Of 7 ligands modelled in this entry, 3 are monoatomic - leaving 4 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	NAG	A	466	1	14,14,15	0.66	0	17,19,21	1.59	2 (11%)
4	DAN	B	467	-	20,20,20	2.56	4 (20%)	23,28,28	1.19	3 (13%)
4	DAN	A	467	-	20,20,20	2.62	4 (20%)	23,28,28	1.24	3 (13%)
2	NAG	B	466	1	14,14,15	0.56	0	17,19,21	1.56	3 (17%)

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	NAG	A	466	1	-	1/6/23/26	0/1/1/1
4	DAN	B	467	-	-	0/18/34/34	0/1/1/1
4	DAN	A	467	-	-	0/18/34/34	0/1/1/1
2	NAG	B	466	1	-	0/6/23/26	0/1/1/1

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	467	DAN	C3-C2	10.06	1.48	1.33
4	B	467	DAN	C3-C2	9.74	1.48	1.33
4	B	467	DAN	C7-C6	3.01	1.56	1.53
4	A	467	DAN	C7-C6	2.97	1.56	1.53
4	B	467	DAN	C6-C5	2.48	1.57	1.53
4	B	467	DAN	O1B-C1	-2.31	1.23	1.30
4	A	467	DAN	C6-C5	2.30	1.56	1.53
4	A	467	DAN	O1B-C1	-2.27	1.24	1.30

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	466	NAG	C1-O5-C5	4.00	117.61	112.19
2	A	466	NAG	C1-O5-C5	3.91	117.48	112.19
2	B	466	NAG	C8-C7-N2	3.11	121.36	116.10
2	A	466	NAG	C8-C7-N2	2.83	120.89	116.10
4	A	467	DAN	O1B-C1-C2	2.70	120.95	114.20
4	B	467	DAN	O1B-C1-C2	2.53	120.50	114.20
4	B	467	DAN	O6-C2-C3	-2.49	121.71	124.61
2	B	466	NAG	C1-C2-N2	-2.26	106.62	110.49
4	A	467	DAN	O6-C2-C3	-2.24	121.99	124.61
4	A	467	DAN	O1B-C1-O1A	-2.10	118.81	123.61
4	B	467	DAN	O6-C2-C1	2.04	116.14	112.06

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	466	NAG	O5-C5-C6-O6

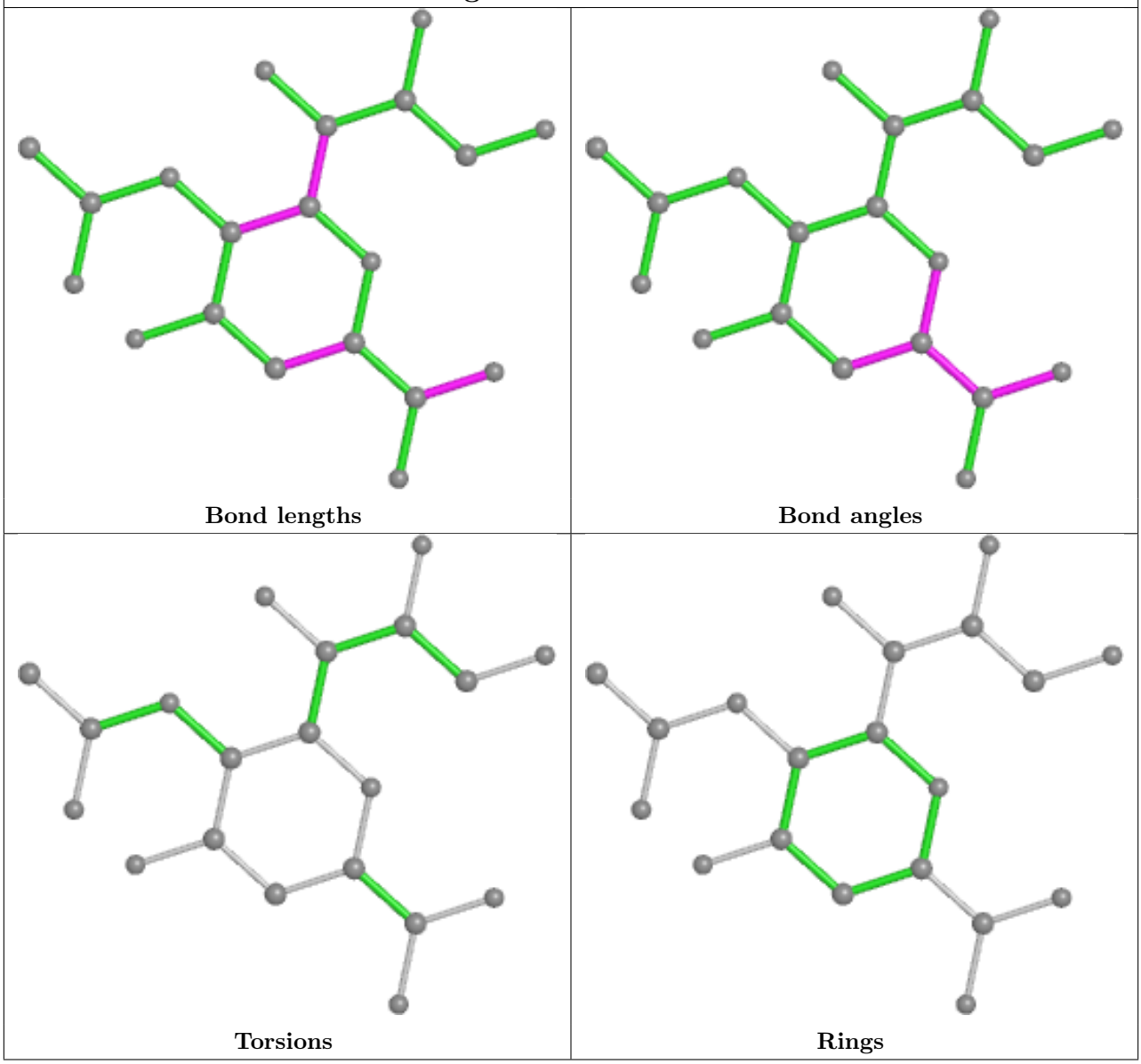
There are no ring outliers.

No monomer is involved in short contacts.

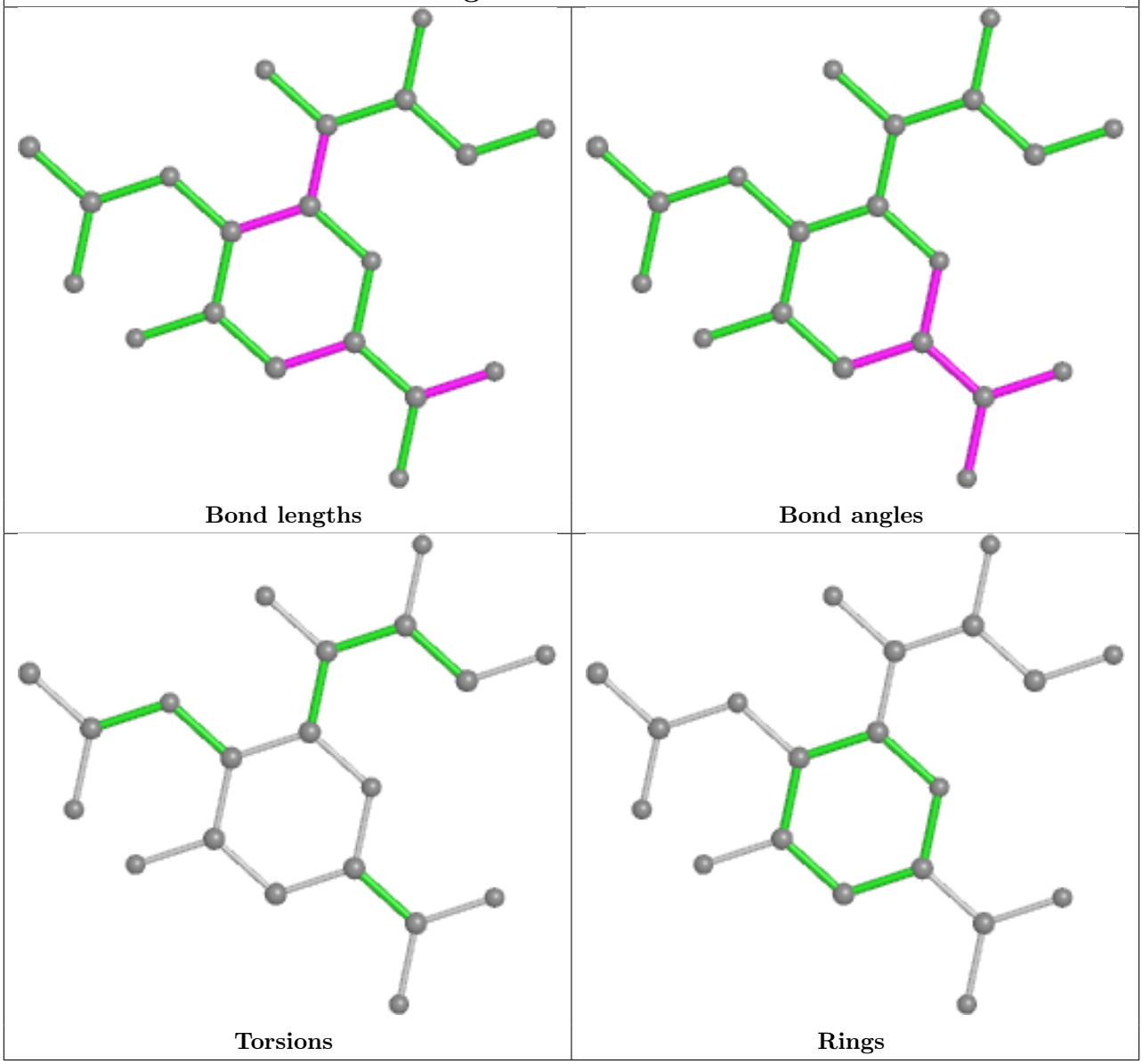
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the

average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand DAN B 467



Ligand DAN A 467



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data (i)

6.1 Protein, DNA and RNA chains (i)

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates (i)

EDS was not executed - this section is therefore empty.

6.4 Ligands (i)

EDS was not executed - this section is therefore empty.

6.5 Other polymers (i)

EDS was not executed - this section is therefore empty.