Full wwPDB X-ray Structure Validation Report ⓘ

Apr 25, 2022 – 04:19 pm BST

PDB ID	:	7P1S
Title	:	Structure of KDNase from Trichophyton Rubrum in complex with 2,3-didehydro-2,3-dideoxy-D-glycero-D-galacto-nonulosonic acid.
Authors	:	Gloster, T.M.; McMahon, S.A.
Deposited on	:	2021-07-02
Resolution	:	1.92 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 following versions of software and data (see references ⓘ) were used in the production of this report:

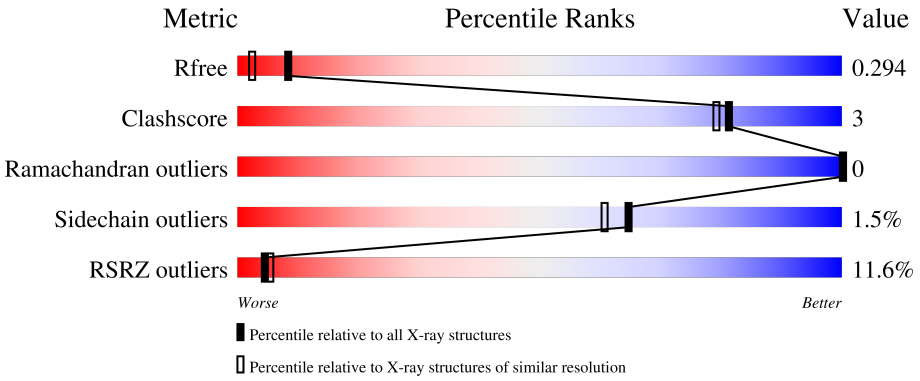
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.28
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0267
CCP4	:	7.1.010 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.28

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 1.92 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	7937 (1.94-1.90)
Clashscore	141614	8644 (1.94-1.90)
Ramachandran outliers	138981	8530 (1.94-1.90)
Sidechain outliers	138945	8530 (1.94-1.90)
RSRZ outliers	127900	7793 (1.94-1.90)

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% 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	386	7% 91% 7% •
1	B	386	5% 92% 6% ••
1	C	386	6% 93% 6% •
1	D	386	28% 92% 6% •

2 Entry composition

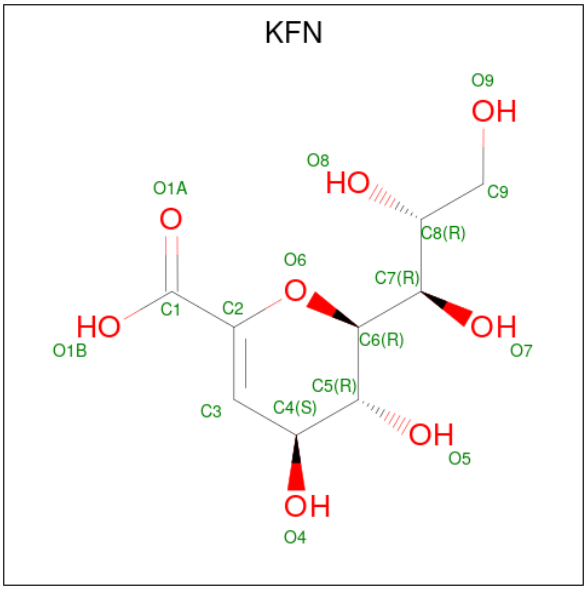
There are 4 unique types of molecules in this entry. The entry contains 12526 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Extracellular sialidase/neuraminidase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	380	Total	C	N	O	S	0	0	0
			2917	1808	536	561	12			
1	B	381	Total	C	N	O	S	0	0	0
			2925	1812	537	564	12			
1	C	381	Total	C	N	O	S	0	0	0
			2925	1812	537	564	12			
1	D	381	Total	C	N	O	S	0	0	0
			2921	1810	537	562	12			

- Molecule 2 is 2,6-anhydro-3-deoxy-D-glycero-D-galacto-non-2-enonic acid (three-letter code: KFN) (formula: $C_9H_{14}O_8$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			17	9	8		
2	B	1	Total	C	O	0	0
			17	9	8		

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	C	1	Total C O 17 9 8	0	0
2	D	1	Total C O 17 9 8	0	0

- Molecule 3 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total Na 1 1	0	0
3	B	1	Total Na 1 1	0	0
3	C	1	Total Na 1 1	0	0
3	D	1	Total Na 1 1	0	0

- Molecule 4 is water.

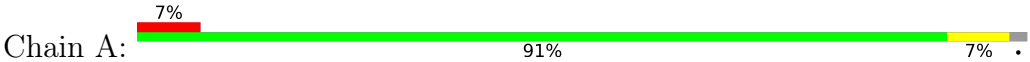
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	258	Total O 258 258	0	0
4	B	187	Total O 187 187	0	0
4	C	194	Total O 194 194	0	0
4	D	127	Total O 127 127	0	0

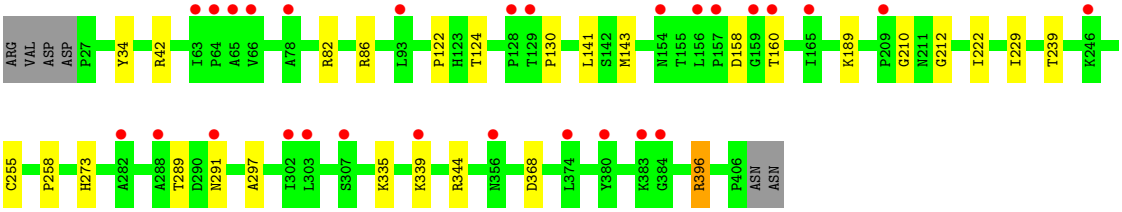
3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Extracellular sialidase/neuraminidase

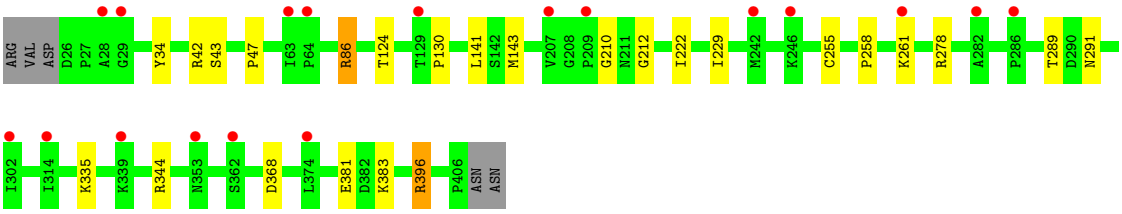
Chain A:





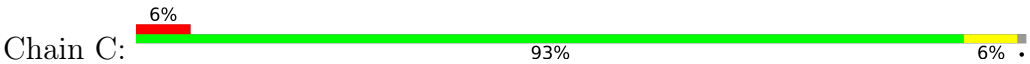
• Molecule 1: Extracellular sialidase/neuraminidase

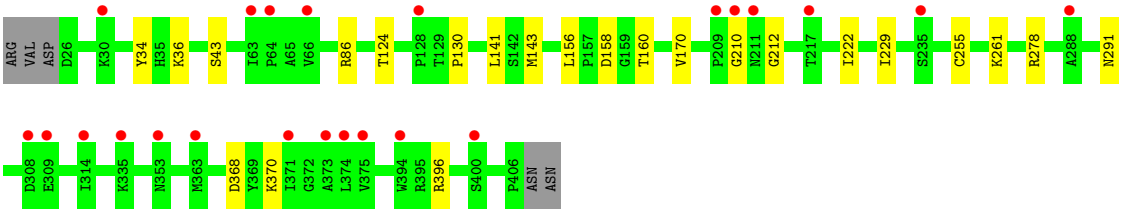
Chain B:



• Molecule 1: Extracellular sialidase/neuraminidase

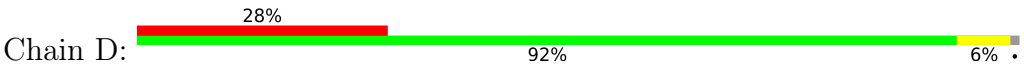
Chain C:

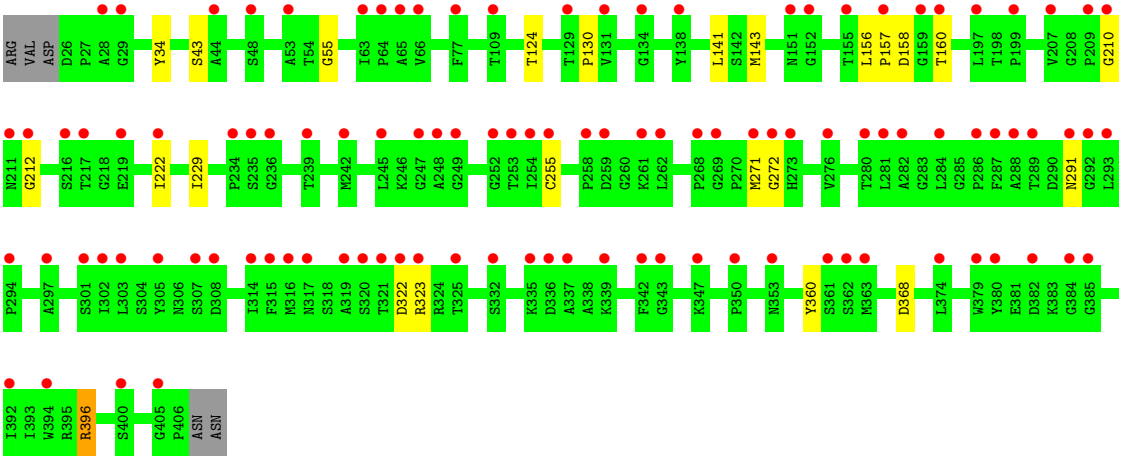




• Molecule 1: Extracellular sialidase/neuraminidase

Chain D:




ARG VAL ASP D26 P27 A28 G29 Y34 S43 A44 S48 A53 T54 G55 I63 P64 A65 V66 F77 T109 T124 T129 P130 V131 G134 Y138 L141 S142 M143 N151 G152 T155 L156 P157 D158 G159 T160 L197 T198 P199 V207 G208 P209 G210
N211 G212 S216 T217 G218 E219 I222 I229 P234 S235 G236 T239 M242 L245 K246 G247 A248 G249 G252 T253 I254 C255 P258 D259 G260 K261 L262 P268 G269 P270 M271 G272 H273 V276 T280 L281 A282 G283 L284 G285 P286 F287 A288 T289 D290 N291 G292 L293
P294 A297 S301 I302 L303 S304 Y305 N306 S307 D308 I314 F315 M316 N317 S318 A319 S320 T321 D322 R323 H324 T326 S332 K335 D336 A337 A338 K339 F342 G343 K347 P350 N353 Y360 S361 S362 M363 D368 L374 W379 Y380 E381 D382 K383 G384 G385
I392 I393 W394 R395 R396 S400 G405 P406 ASN ASN

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	48.65Å 179.01Å 97.29Å 90.00° 104.04° 90.00°	Depositor
Resolution (Å)	179.01 – 1.92 29.72 – 1.92	Depositor EDS
% Data completeness (in resolution range)	92.3 (179.01-1.92) 92.4 (29.72-1.92)	Depositor EDS
R_{merge}	0.14	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.20 (at 1.92Å)	Xtriage
Refinement program	REFMAC 5.8.0218	Depositor
R, R_{free}	0.260 , 0.289 0.265 , 0.294	Depositor DCC
R_{free} test set	5690 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å^2)	23.2	Xtriage
Anisotropy	0.364	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	(Not available) , (Not available)	EDS
L-test for twinning[2]	$< \|L\| > = 0.46$, $< L^2 > = 0.29$	Xtriage
Estimated twinning fraction	0.000 for h,-k,-h-l	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	12526	wwPDB-VP
Average B, all atoms (Å^2)	31.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 63.35 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 9.8043e-06. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: NA, KFN

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	0.55	0/2987	0.71	2/4050 (0.0%)
1	B	0.57	0/2995	0.72	2/4062 (0.0%)
1	C	0.54	0/2995	0.72	0/4062
1	D	0.49	1/2991 (0.0%)	0.70	1/4057 (0.0%)
All	All	0.54	1/11968 (0.0%)	0.71	5/16231 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	360	TYR	C-N	-5.60	1.21	1.34

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	396	ARG	NE-CZ-NH1	5.97	123.28	120.30
1	B	396	ARG	NE-CZ-NH1	5.88	123.24	120.30
1	A	396	ARG	NE-CZ-NH2	-5.86	117.37	120.30
1	B	396	ARG	NE-CZ-NH2	-5.72	117.44	120.30
1	D	396	ARG	NE-CZ-NH1	5.06	122.83	120.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2917	0	2830	20	0
1	B	2925	0	2833	18	0
1	C	2925	0	2833	12	0
1	D	2921	0	2828	13	0
2	A	17	0	5	0	0
2	B	17	0	5	0	0
2	C	17	0	5	0	0
2	D	17	0	6	0	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
4	A	258	0	0	7	0
4	B	187	0	0	9	0
4	C	194	0	0	3	0
4	D	127	0	0	4	0
All	All	12526	0	11345	61	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 3.

All (61) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:158:ASP:OD1	1:C:160:THR:HG22	1.76	0.84
1:D:158:ASP:OD1	1:D:160:THR:HG22	1.78	0.83
1:A:158:ASP:OD1	1:A:160:THR:HG22	1.79	0.82
1:B:289:THR:HB	4:B:745:HOH:O	1.79	0.81
1:A:273:HIS:HB2	1:A:289:THR:CG2	2.14	0.77
1:C:170:VAL:HG23	4:C:756:HOH:O	1.94	0.67
1:B:261:LYS:HE2	4:B:703:HOH:O	1.95	0.65
1:B:396:ARG:HD3	4:B:655:HOH:O	1.98	0.64
1:A:396:ARG:HD3	4:A:643:HOH:O	2.01	0.60
1:D:322:ASP:CG	4:D:603:HOH:O	2.40	0.59
1:A:212:GLY:HA3	1:A:222:ILE:HD13	1.87	0.56
1:C:261:LYS:HE3	1:C:278:ARG:HB3	1.87	0.56
1:C:212:GLY:HA3	1:C:222:ILE:HD13	1.88	0.55
1:D:212:GLY:HA3	1:D:222:ILE:HD13	1.88	0.55
1:B:212:GLY:HA3	1:B:222:ILE:HD13	1.89	0.54
1:A:344:ARG:HG3	4:A:628:HOH:O	2.08	0.53
1:B:396:ARG:CD	4:B:655:HOH:O	2.55	0.53
1:A:396:ARG:CD	4:A:643:HOH:O	2.57	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:189:LYS:HE3	4:A:637:HOH:O	2.10	0.52
1:A:42:ARG:NH1	4:A:613:HOH:O	2.41	0.52
1:A:368:ASP:OD2	1:A:396:ARG:NH2	2.42	0.52
1:B:368:ASP:OD2	1:B:396:ARG:NH2	2.41	0.51
1:A:258:PRO:HB2	1:A:335:LYS:HD3	1.92	0.51
1:D:368:ASP:OD2	1:D:396:ARG:NH2	2.42	0.50
1:C:222:ILE:HB	1:C:229:ILE:HB	1.95	0.49
1:B:222:ILE:HB	1:B:229:ILE:HB	1.95	0.48
1:B:383:LYS:HB2	4:B:628:HOH:O	2.12	0.48
1:C:368:ASP:OD2	1:C:396:ARG:NH2	2.43	0.48
1:C:370:LYS:NZ	4:C:603:HOH:O	2.38	0.48
1:D:222:ILE:HB	1:D:229:ILE:HB	1.96	0.47
1:A:222:ILE:HB	1:A:229:ILE:HB	1.95	0.47
1:B:47:PRO:HG2	4:B:629:HOH:O	2.14	0.47
1:B:344:ARG:HG3	4:B:602:HOH:O	2.14	0.47
1:A:82:ARG:NH2	4:A:624:HOH:O	2.47	0.46
1:D:157:PRO:C	4:D:629:HOH:O	2.54	0.46
1:B:258:PRO:HB2	1:B:335:LYS:HD2	1.97	0.46
1:B:124:THR:O	1:B:143:MET:HA	2.16	0.45
1:B:130:PRO:HD2	1:B:210:GLY:O	2.17	0.45
1:A:273:HIS:HB2	1:A:289:THR:HG23	1.94	0.45
1:D:124:THR:O	1:D:143:MET:HA	2.16	0.45
1:A:86:ARG:HD3	1:A:86:ARG:HA	1.74	0.45
1:D:130:PRO:HD2	1:D:210:GLY:O	2.17	0.45
1:C:130:PRO:HD2	1:C:210:GLY:O	2.18	0.44
1:A:124:THR:O	1:A:143:MET:HA	2.16	0.44
1:A:130:PRO:HD2	1:A:210:GLY:O	2.17	0.44
1:A:239:THR:HB	1:B:381:GLU:HB3	1.99	0.43
1:B:42:ARG:NH1	4:B:626:HOH:O	2.52	0.43
1:C:124:THR:O	1:C:143:MET:HA	2.19	0.43
1:A:34:TYR:CD1	1:A:34:TYR:C	2.93	0.42
1:D:156:LEU:HD12	1:D:160:THR:CG2	2.50	0.42
1:C:34:TYR:CD1	1:C:34:TYR:C	2.92	0.42
1:D:271:MET:C	4:D:601:HOH:O	2.59	0.42
1:C:156:LEU:HD12	1:C:160:THR:CG2	2.49	0.42
1:B:278:ARG:HD3	4:B:703:HOH:O	2.19	0.41
1:C:36:LYS:HE3	4:C:785:HOH:O	2.19	0.41
1:B:34:TYR:CD1	1:B:34:TYR:C	2.93	0.41
1:D:34:TYR:CD1	1:D:34:TYR:C	2.93	0.41
1:B:86:ARG:HA	1:B:86:ARG:HD2	1.79	0.41
1:A:297:ALA:HB3	4:A:808:HOH:O	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:122:PRO:HG3	1:D:55:GLY:O	2.21	0.40
1:D:272:GLY:N	4:D:601:HOH:O	2.53	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	378/386 (98%)	364 (96%)	14 (4%)	0	100	100
1	B	379/386 (98%)	366 (97%)	13 (3%)	0	100	100
1	C	379/386 (98%)	366 (97%)	13 (3%)	0	100	100
1	D	379/386 (98%)	365 (96%)	14 (4%)	0	100	100
All	All	1515/1544 (98%)	1461 (96%)	54 (4%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	309/315 (98%)	305 (99%)	4 (1%)	69	66
1	B	310/315 (98%)	305 (98%)	5 (2%)	62	58
1	C	310/315 (98%)	305 (98%)	5 (2%)	62	58

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	D	309/315 (98%)	304 (98%)	5 (2%)	62 58
All	All	1238/1260 (98%)	1219 (98%)	19 (2%)	65 61

All (19) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	141	LEU
1	A	255	CYS
1	A	291	ASN
1	A	339	LYS
1	B	43	SER
1	B	86	ARG
1	B	141	LEU
1	B	255	CYS
1	B	291	ASN
1	C	43	SER
1	C	86	ARG
1	C	141	LEU
1	C	255	CYS
1	C	291	ASN
1	D	43	SER
1	D	141	LEU
1	D	255	CYS
1	D	291	ASN
1	D	323	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

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 8 ligands modelled in this entry, 4 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	KFN	B	501	-	14,17,17	1.41	2 (14%)	16,24,24	1.24	2 (12%)
2	KFN	C	501	-	14,17,17	1.55	3 (21%)	16,24,24	1.16	1 (6%)
2	KFN	D	501	-	14,17,17	1.24	2 (14%)	16,24,24	1.30	1 (6%)
2	KFN	A	501	-	14,17,17	1.49	2 (14%)	16,24,24	0.98	1 (6%)

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	KFN	B	501	-	-	0/10/30/30	0/1/1/1
2	KFN	C	501	-	-	0/10/30/30	0/1/1/1
2	KFN	D	501	-	-	4/10/30/30	0/1/1/1
2	KFN	A	501	-	-	0/10/30/30	0/1/1/1

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	501	KFN	O6-C2	4.43	1.45	1.37
2	B	501	KFN	O6-C2	3.86	1.44	1.37
2	D	501	KFN	O6-C2	3.66	1.44	1.37
2	C	501	KFN	O6-C2	3.58	1.43	1.37
2	C	501	KFN	C3-C2	2.92	1.36	1.32
2	C	501	KFN	O6-C6	-2.86	1.41	1.46
2	A	501	KFN	O6-C6	-2.38	1.42	1.46
2	B	501	KFN	O6-C6	-2.37	1.42	1.46
2	D	501	KFN	O6-C6	-2.04	1.42	1.46

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	501	KFN	O9-C9-C8	-2.70	105.20	111.07
2	C	501	KFN	O9-C9-C8	-2.39	105.87	111.07
2	D	501	KFN	O4-C4-C5	-2.27	106.02	110.29
2	B	501	KFN	C5-C4-C3	-2.13	108.09	111.84
2	A	501	KFN	C4-C3-C2	-2.06	118.12	121.60

There are no chirality outliers.

All (4) torsion outliers are listed below:

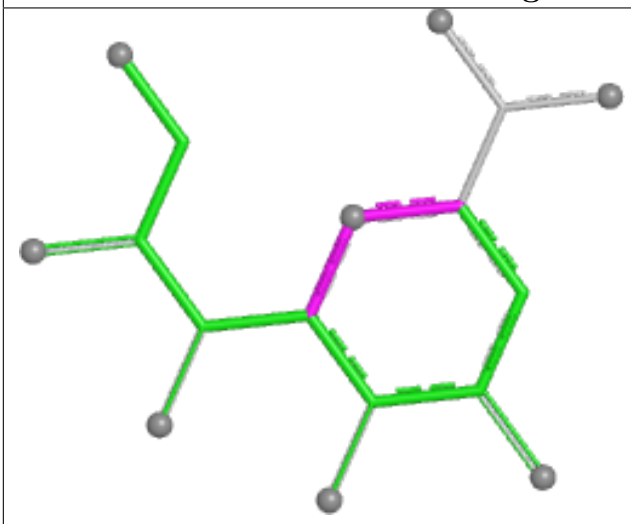
Mol	Chain	Res	Type	Atoms
2	D	501	KFN	C5-C6-C7-C8
2	D	501	KFN	C5-C6-C7-O7
2	D	501	KFN	O6-C6-C7-C8
2	D	501	KFN	O6-C6-C7-O7

There are no ring outliers.

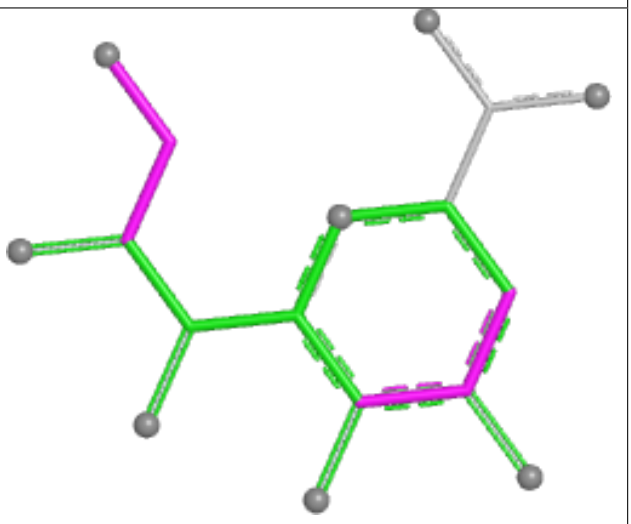
No monomer is involved in short contacts.

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.

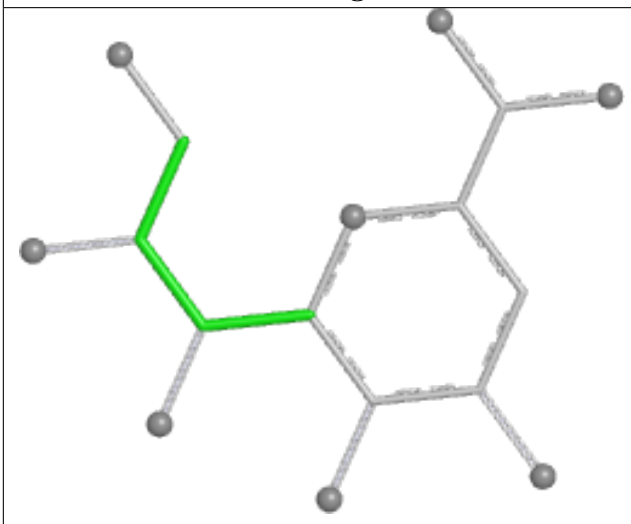
Ligand KFN B 501



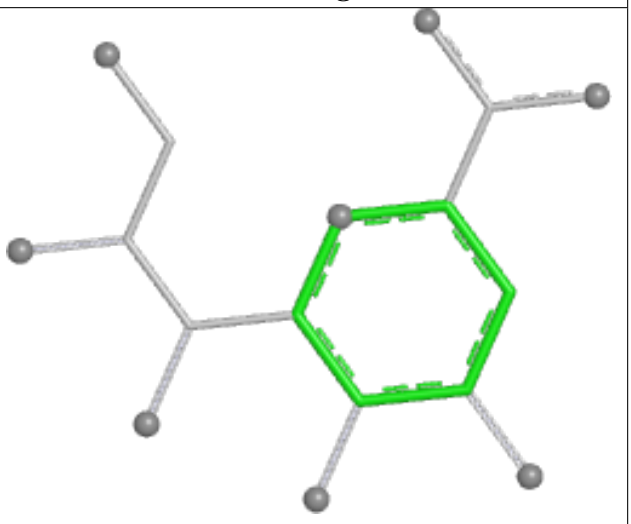
Bond lengths



Bond angles

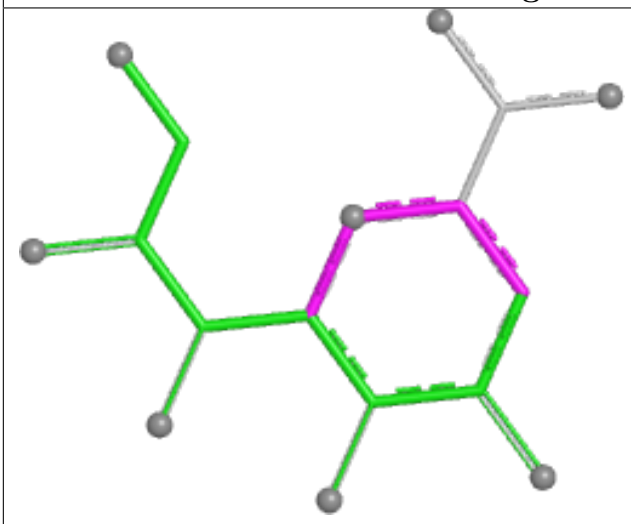


Torsions

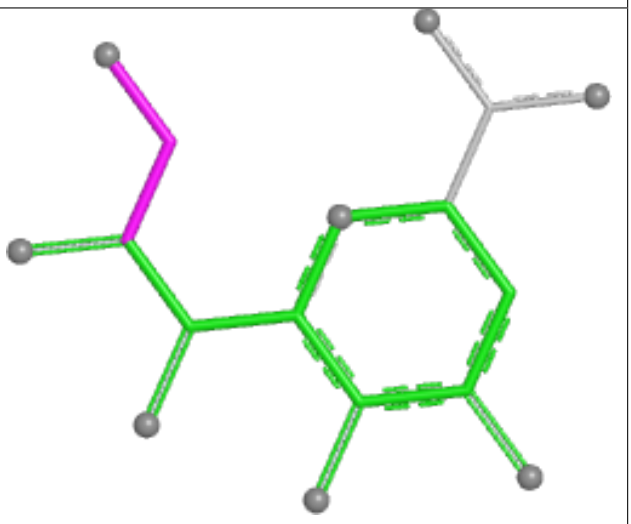


Rings

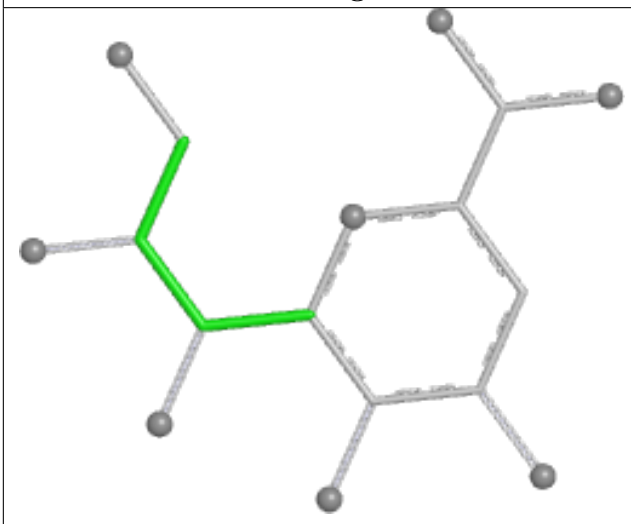
Ligand KFN C 501



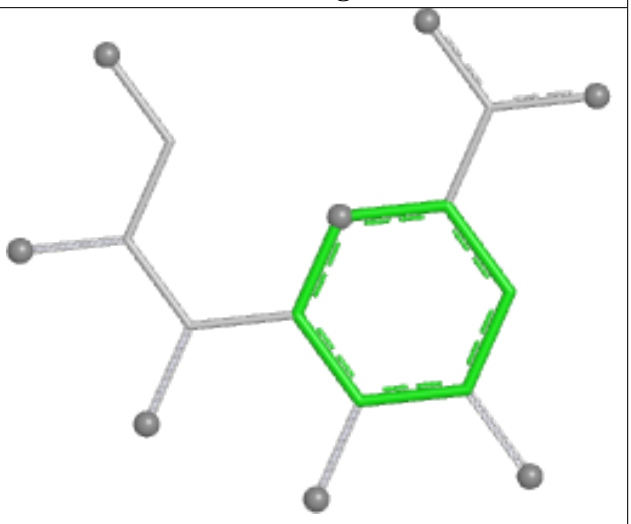
Bond lengths



Bond angles

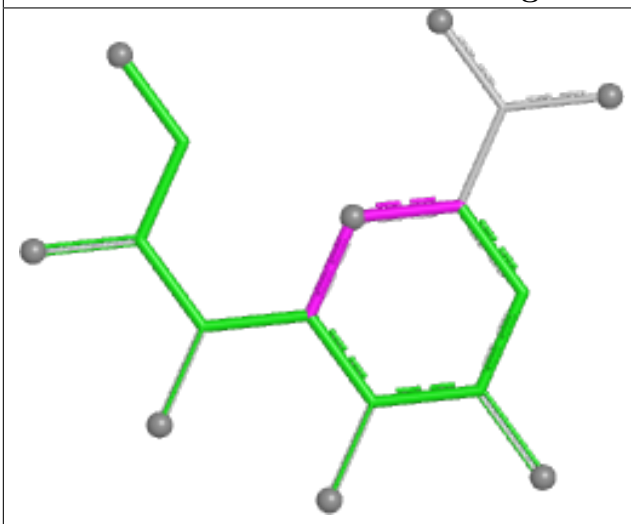


Torsions

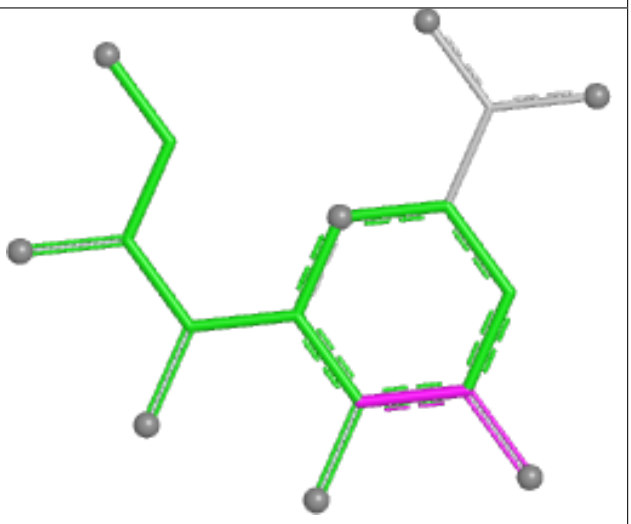


Rings

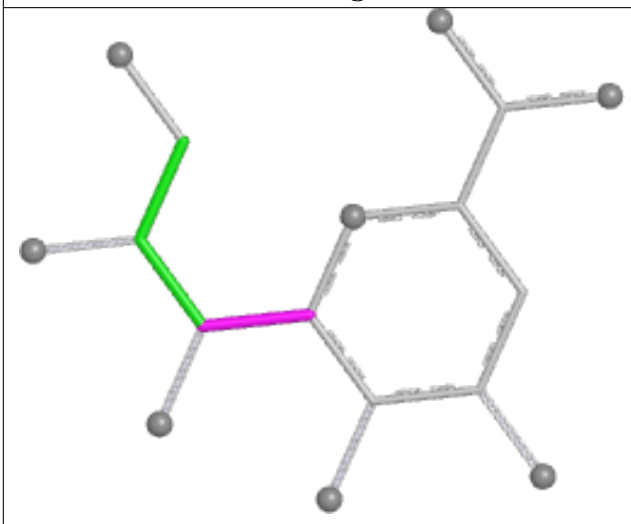
Ligand KFN D 501



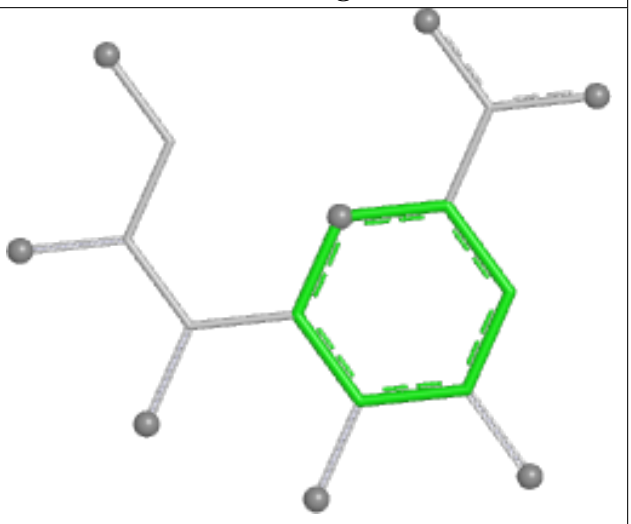
Bond lengths



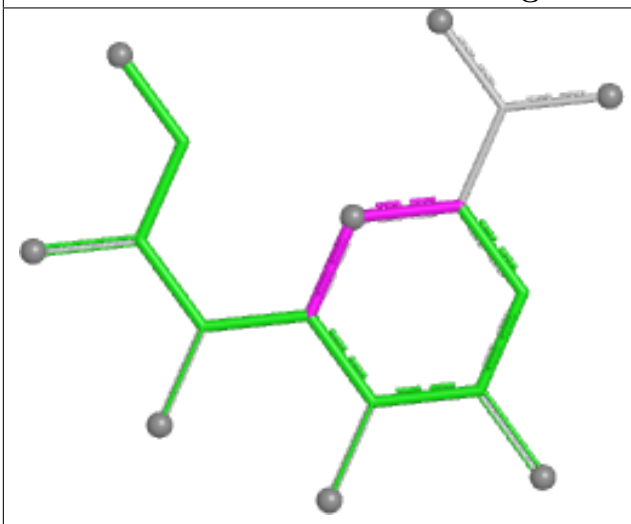
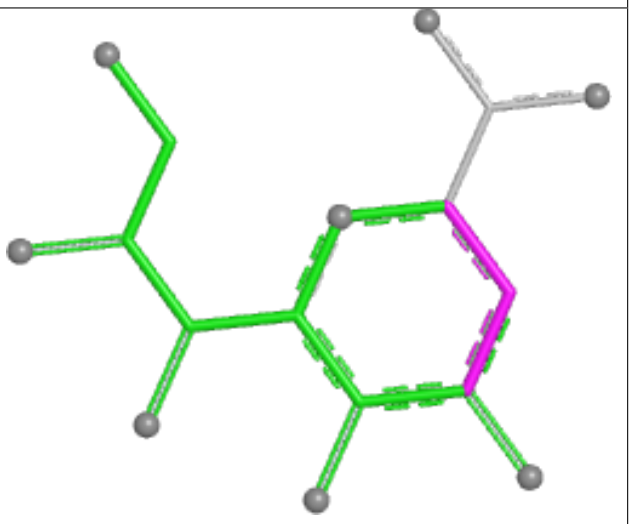
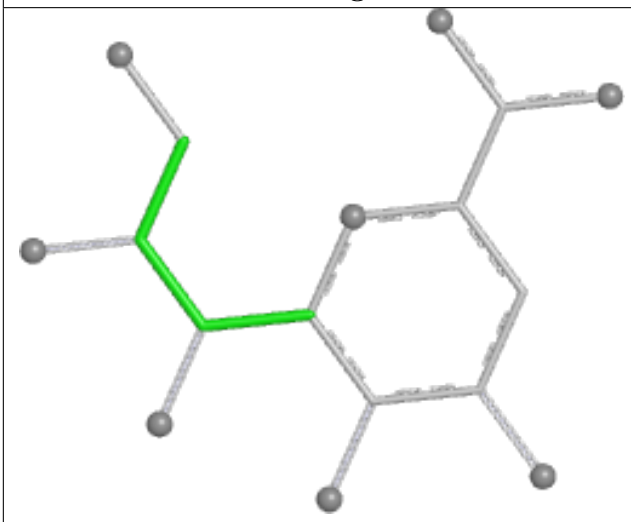
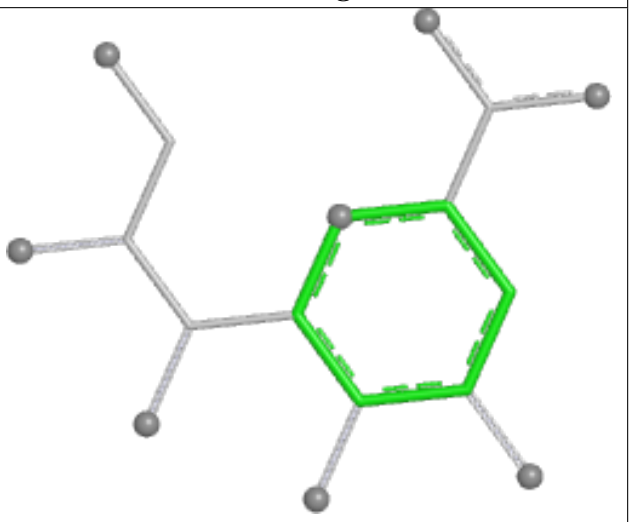
Bond angles



Torsions



Rings

Ligand KFN A 501	
 Bond lengths	 Bond angles
 Torsions	 Rings

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} 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	380/386 (98%)	0.59	28 (7%)	14	16	13, 28, 46, 82	0
1	B	381/386 (98%)	0.48	18 (4%)	31	34	12, 26, 41, 50	0
1	C	381/386 (98%)	0.46	23 (6%)	21	24	13, 26, 42, 58	0
1	D	381/386 (98%)	1.39	107 (28%)	0	0	19, 43, 72, 85	0
All	All	1523/1544 (98%)	0.73	176 (11%)	4	5	12, 29, 58, 85	0

All (176) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	383	LYS	6.2
1	D	382	ASP	6.0
1	D	159	GLY	5.8
1	D	160	THR	5.6
1	D	322	ASP	4.9
1	D	321	THR	4.8
1	A	380	TYR	4.5
1	A	282	ALA	4.4
1	D	289	THR	4.3
1	D	384	GLY	4.2
1	D	157	PRO	4.2
1	D	281	LEU	4.1
1	C	288	ALA	4.0
1	A	384	GLY	4.0
1	D	284	LEU	4.0
1	D	374	LEU	3.8
1	D	280	THR	3.8
1	A	160	THR	3.7
1	C	373	ALA	3.7
1	D	288	ALA	3.7
1	D	217	THR	3.7

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Mol	Chain	Res	Type	RSRZ
1	A	291	ASN	3.6
1	D	248	ALA	3.6
1	C	63	ILE	3.5
1	D	236	GLY	3.5
1	A	165	ILE	3.5
1	D	320	SER	3.4
1	D	65	ALA	3.4
1	A	159	GLY	3.4
1	D	273	HIS	3.4
1	D	336	ASP	3.4
1	D	199	PRO	3.2
1	D	271	MET	3.2
1	D	308	ASP	3.2
1	D	282	ALA	3.2
1	B	28	ALA	3.2
1	D	293	LEU	3.2
1	D	291	ASN	3.2
1	D	216	SER	3.1
1	D	347	LYS	3.1
1	D	380	TYR	3.1
1	D	66	VAL	3.1
1	D	254	ILE	3.1
1	D	319	ALA	3.1
1	D	63	ILE	3.1
1	A	374	LEU	3.0
1	D	353	ASN	3.0
1	C	374	LEU	2.9
1	D	337	ALA	2.9
1	C	375	VAL	2.9
1	D	262	LEU	2.9
1	D	302	ILE	2.9
1	C	210	GLY	2.9
1	A	157	PRO	2.8
1	D	379	TRP	2.8
1	C	314	ILE	2.8
1	D	234	PRO	2.8
1	D	303	LEU	2.8
1	C	64	PRO	2.8
1	D	134	GLY	2.8
1	A	307	SER	2.8
1	D	210	GLY	2.7
1	A	63	ILE	2.7

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Mol	Chain	Res	Type	RSRZ
1	D	392	ILE	2.7
1	C	30	LYS	2.7
1	D	29	GLY	2.7
1	D	272	GLY	2.7
1	D	316	MET	2.7
1	D	343	GLY	2.7
1	B	282	ALA	2.7
1	C	66	VAL	2.7
1	D	44	ALA	2.7
1	D	276	VAL	2.7
1	D	152	GLY	2.7
1	D	297	ALA	2.6
1	D	362	SER	2.6
1	C	211	ASN	2.6
1	A	128	PRO	2.6
1	D	286	PRO	2.6
1	A	209	PRO	2.6
1	D	138	TYR	2.6
1	D	335	LYS	2.6
1	A	66	VAL	2.6
1	A	288	ALA	2.5
1	D	325	THR	2.5
1	A	93	LEU	2.5
1	D	247	GLY	2.5
1	C	217	THR	2.5
1	D	64	PRO	2.5
1	D	219	GLU	2.5
1	D	242	MET	2.5
1	D	287	PHE	2.5
1	B	64	PRO	2.4
1	D	252	GLY	2.4
1	D	301	SER	2.4
1	B	63	ILE	2.4
1	D	131	VAL	2.4
1	D	207	VAL	2.4
1	A	156	LEU	2.4
1	C	209	PRO	2.4
1	D	77	PHE	2.4
1	D	245	LEU	2.4
1	D	212	GLY	2.4
1	C	335	LYS	2.4
1	D	294	PRO	2.4

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Mol	Chain	Res	Type	RSRZ
1	C	309	GLU	2.4
1	D	211	ASN	2.4
1	D	269	GLY	2.4
1	D	317	ASN	2.4
1	D	235	SER	2.3
1	D	268	PRO	2.3
1	B	314	ILE	2.3
1	D	332	SER	2.3
1	A	356	ASN	2.3
1	B	129	THR	2.3
1	D	155	THR	2.3
1	D	261	LYS	2.3
1	D	307	SER	2.3
1	C	363	MET	2.3
1	A	339	LYS	2.3
1	B	339	LYS	2.3
1	A	302	ILE	2.3
1	B	302	ILE	2.3
1	A	64	PRO	2.3
1	D	258	PRO	2.3
1	D	350	PRO	2.3
1	C	400	SER	2.3
1	D	405	GLY	2.3
1	D	253	THR	2.3
1	D	314	ILE	2.3
1	B	353	ASN	2.3
1	D	255	CYS	2.3
1	D	292	GLY	2.2
1	A	246	LYS	2.2
1	D	109	THR	2.2
1	A	303	LEU	2.2
1	D	151	ASN	2.2
1	D	239	THR	2.2
1	C	394	TRP	2.2
1	B	246	LYS	2.2
1	D	315	PHE	2.2
1	C	308	ASP	2.2
1	D	222	ILE	2.2
1	D	53	ALA	2.2
1	B	374	LEU	2.1
1	D	394	TRP	2.1
1	B	209	PRO	2.1

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Mol	Chain	Res	Type	RSRZ
1	B	242	MET	2.1
1	D	385	GLY	2.1
1	C	128	PRO	2.1
1	D	209	PRO	2.1
1	D	342	PHE	2.1
1	C	353	ASN	2.1
1	D	259	ASP	2.1
1	A	129	THR	2.1
1	D	129	THR	2.1
1	C	371	ILE	2.1
1	B	286	PRO	2.1
1	B	29	GLY	2.1
1	B	261	LYS	2.1
1	C	235	SER	2.1
1	D	323	ARG	2.1
1	B	362	SER	2.1
1	A	65	ALA	2.1
1	D	197	LEU	2.1
1	D	249	GLY	2.1
1	A	154	ASN	2.0
1	D	48	SER	2.0
1	D	400	SER	2.0
1	B	207	VAL	2.0
1	A	78	ALA	2.0
1	D	28	ALA	2.0
1	D	339	LYS	2.0
1	D	363	MET	2.0
1	D	361	SER	2.0
1	D	305	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)

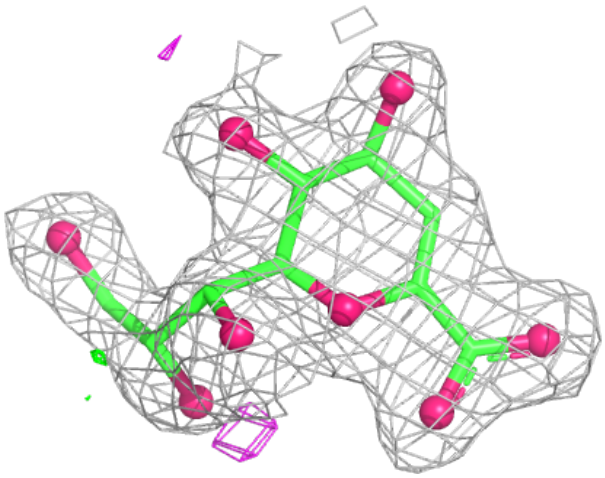
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9'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

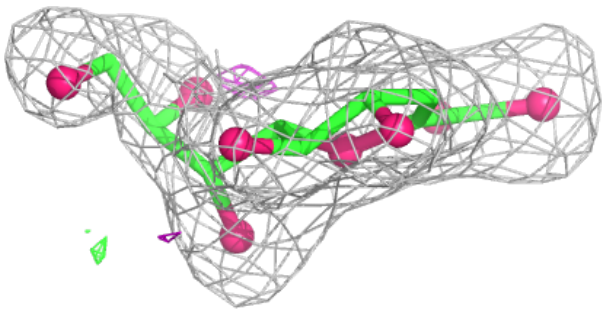
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	KFN	D	501	17/17	0.88	0.12	25,30,34,34	0
3	NA	A	502	1/1	0.90	0.09	37,37,37,37	0
2	KFN	A	501	17/17	0.92	0.13	21,25,28,28	0
2	KFN	C	501	17/17	0.93	0.10	17,19,21,23	0
2	KFN	B	501	17/17	0.94	0.10	17,20,24,24	0
3	NA	D	502	1/1	0.94	0.09	30,30,30,30	0
3	NA	C	502	1/1	0.96	0.06	22,22,22,22	0
3	NA	B	502	1/1	0.99	0.08	23,23,23,23	0

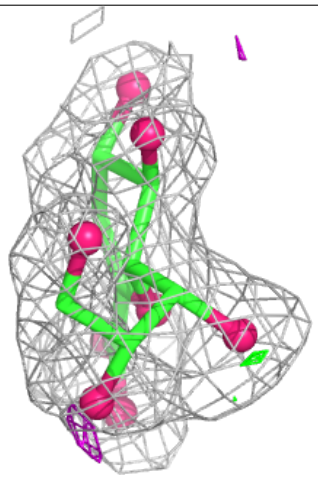
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around KFN D 501:

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

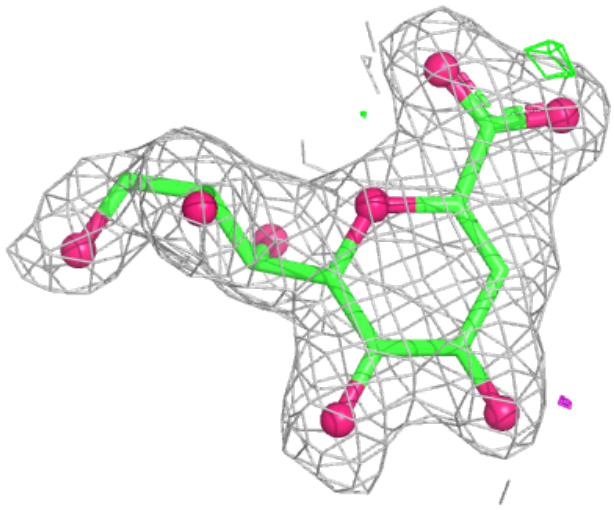


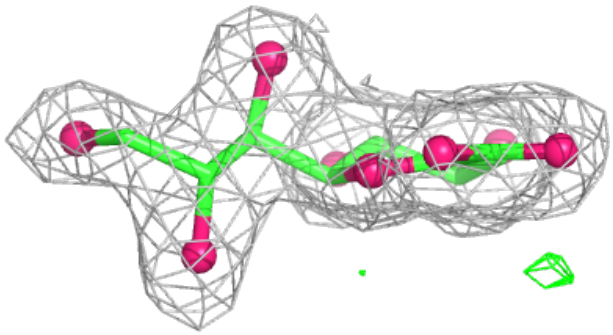


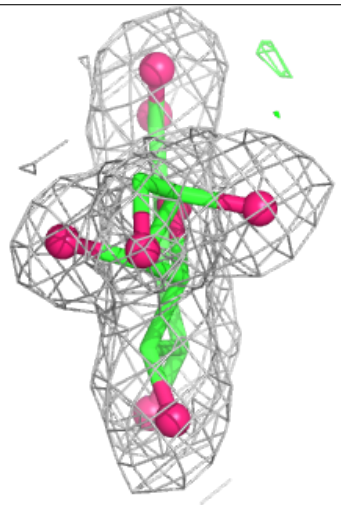


Electron density around KFN A 501:

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

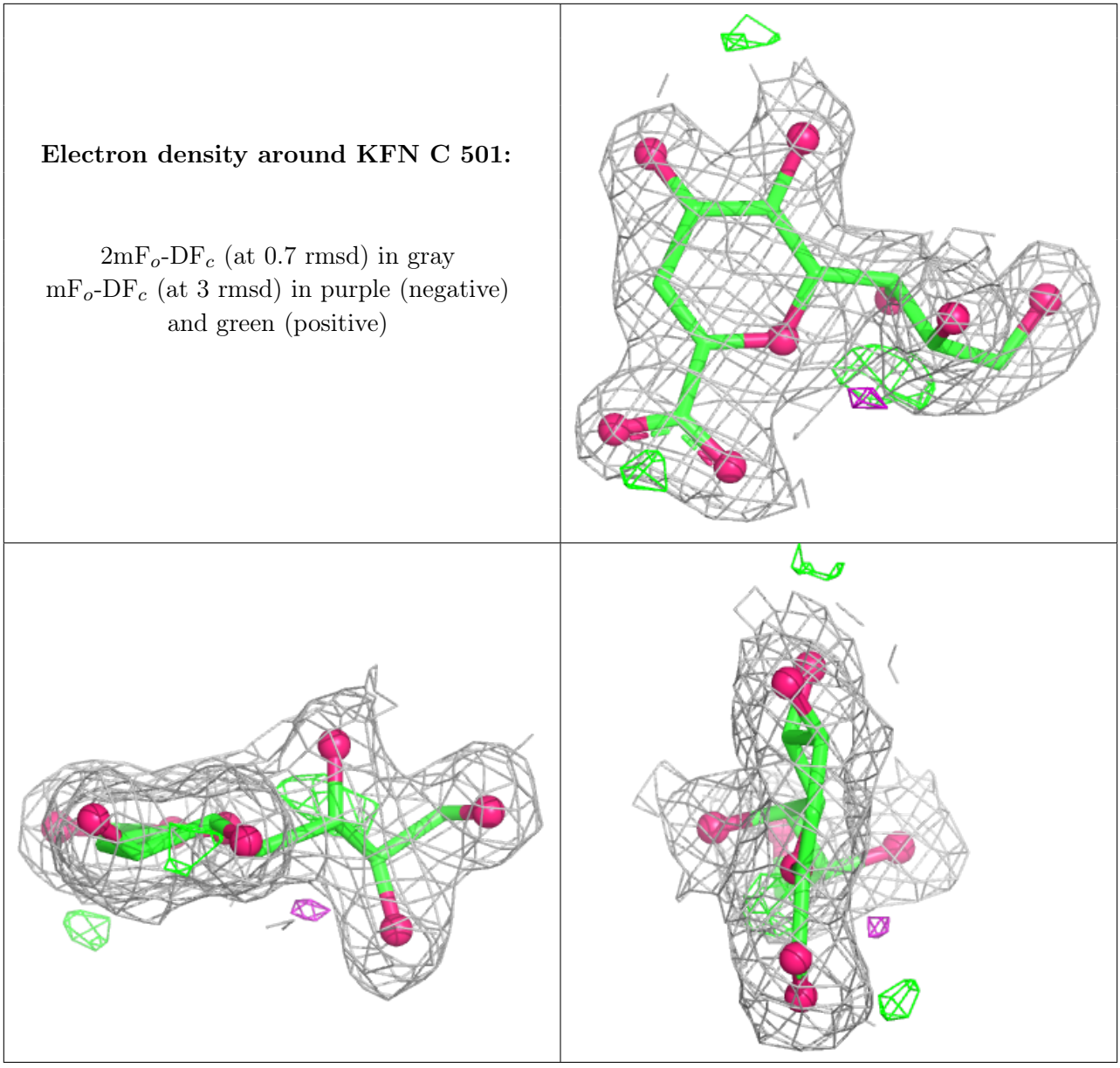






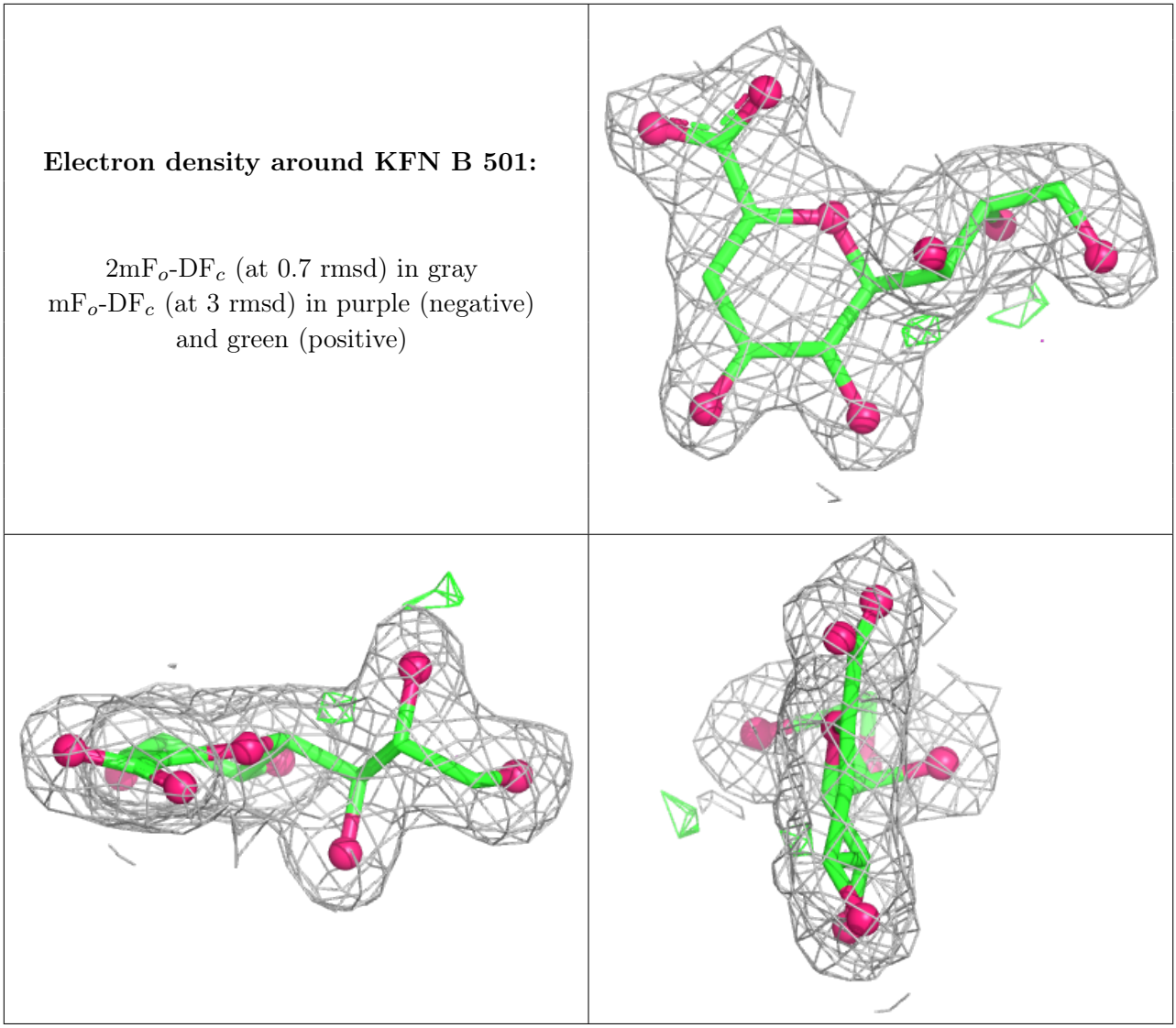
Electron density around KFN C 501:

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



Electron density around KFN B 501:

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



6.5 Other polymers (i)

There are no such residues in this entry.