



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 10, 2026 – 07:38 AM UTC

PDB ID : 4FEX / pdb_00004fex
Title : Crystal structure of the aminoglycoside phosphotransferase APH(3')-Ia, with substrate kanamycin and small molecule inhibitor tyrphostin AG1478
Authors : Stogios, P.J.; Evdokimova, E.; Wawrzak, Z.; Minasov, G.; Egorova, O.; Di Leo, R.; Shakya, T.; Spanogiannopoulos, P.; Wright, G.D.; Savchenko, A.; Anderson, W.F.; Center for Structural Genomics of Infectious Diseases (CSGID)
Deposited on : 2012-05-30
Resolution : 2.71 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](#) ①) were used in the production of this report:

MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtrriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

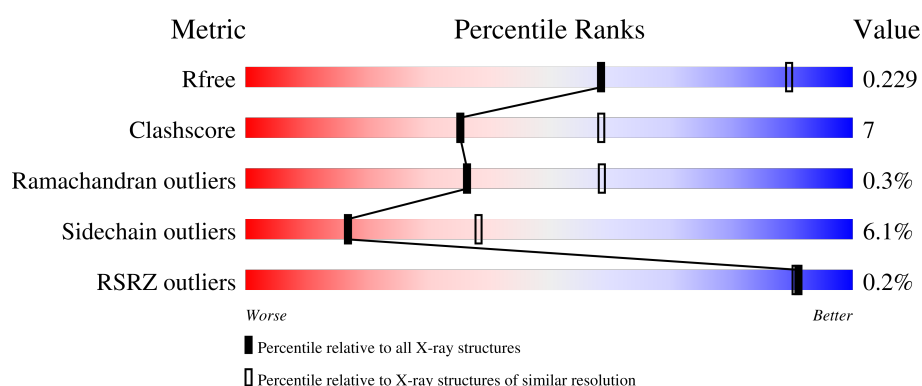
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.71 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}	180053	4348 (2.74-2.70)
Clashscore	190562	4665 (2.74-2.70)
Ramachandran outliers	187476	4584 (2.74-2.70)
Sidechain outliers	187428	4585 (2.74-2.70)
RSRZ outliers	180081	4348 (2.74-2.70)

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	272	
1	B	272	
1	C	272	
1	D	272	
1	E	272	

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
3	OTO	C	302	-	-	X	-
3	OTO	D	302	-	-	X	-

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 10846 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.

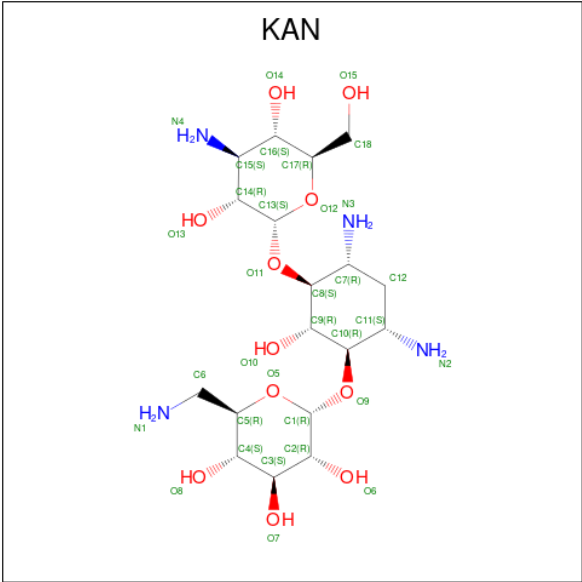
- Molecule 1 is a protein called Aminoglycoside 3'-phosphotransferase AphA1-IAB.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	254	Total	C	N	O	S	0	1	0
			2048	1312	349	377	10			
1	B	261	Total	C	N	O	S	0	2	0
			2120	1350	368	391	11			
1	C	261	Total	C	N	O	S	0	4	0
			2131	1361	368	391	11			
1	D	253	Total	C	N	O	S	0	3	0
			2051	1314	348	379	10			
1	E	254	Total	C	N	O	S	0	2	0
			2059	1318	353	378	10			

There are 5 discrepancies between the modelled and reference sequences:

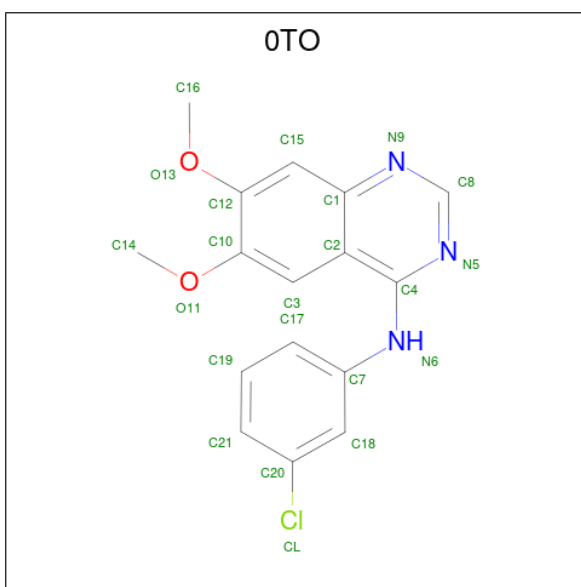
Chain	Residue	Modelled	Actual	Comment	Reference
A	0	GLY	-	expression tag	UNP B0VD92
B	0	GLY	-	expression tag	UNP B0VD92
C	0	GLY	-	expression tag	UNP B0VD92
D	0	GLY	-	expression tag	UNP B0VD92
E	0	GLY	-	expression tag	UNP B0VD92

- Molecule 2 is KANAMYCIN A (CCD ID: KAN) (formula: $C_{18}H_{36}N_4O_{11}$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			33	18	4	11		
2	B	1	Total	C	N	O	0	0
			33	18	4	11		
2	C	1	Total	C	N	O	0	0
			33	18	4	11		
2	D	1	Total	C	N	O	0	0
			33	18	4	11		
2	E	1	Total	C	N	O	0	0
			33	18	4	11		

- Molecule 3 is N-(3-chlorophenyl)-6,7-dimethoxyquinazolin-4-amine (CCD ID: 0TO) (formula: C₁₆H₁₄ClN₃O₂).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total 22	C 16	Cl 1	N 3	O 2	0	0
3	C	1	Total 22	C 16	Cl 1	N 3	O 2	0	0
3	D	1	Total 22	C 16	Cl 1	N 3	O 2	0	0
3	E	1	Total 22	C 16	Cl 1	N 3	O 2	0	0

- Molecule 4 is SODIUM ION (CCD ID: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total Na 1 1	0	0
4	B	1	Total Na 1 1	0	0

- Molecule 5 is ACETATE ION (CCD ID: ACT) (formula: $\text{C}_2\text{H}_3\text{O}_2$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	C	1	Total	C	O	0	0
			4	2	2		

- Molecule 6 is water.

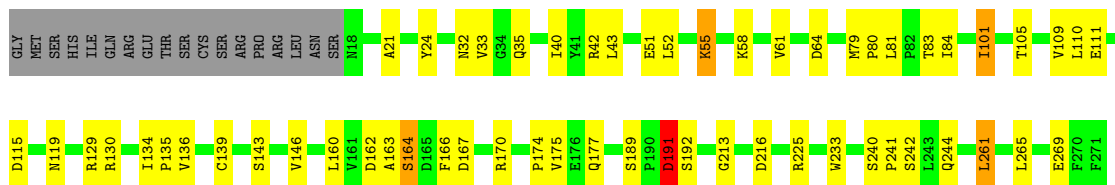
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	34	Total	O	0	3
			37	37		
6	B	41	Total	O	0	1
			42	42		
6	C	40	Total	O	0	0
			40	40		
6	D	25	Total	O	0	0
			25	25		
6	E	34	Total	O	0	0
			34	34		

3 Residue-property plots

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.

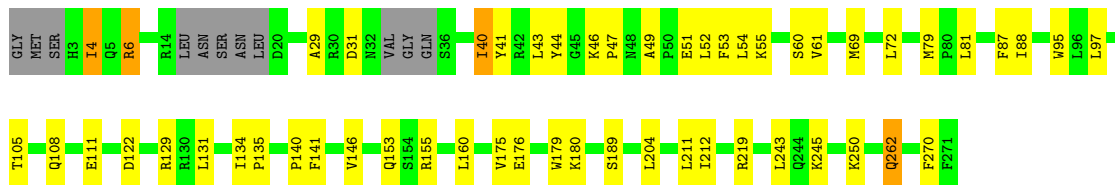
• Molecule 1: Aminoglycoside 3'-phosphotransferase AphA1-IAB

Chain A: 



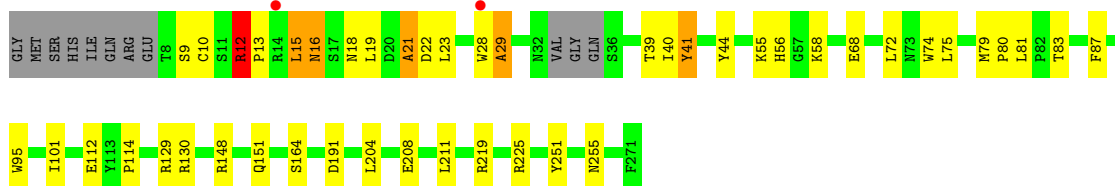
• Molecule 1: Aminoglycoside 3'-phosphotransferase AphA1-IAB

Chain B: 



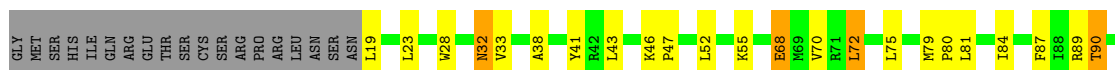
• Molecule 1: Aminoglycoside 3'-phosphotransferase AphA1-IAB

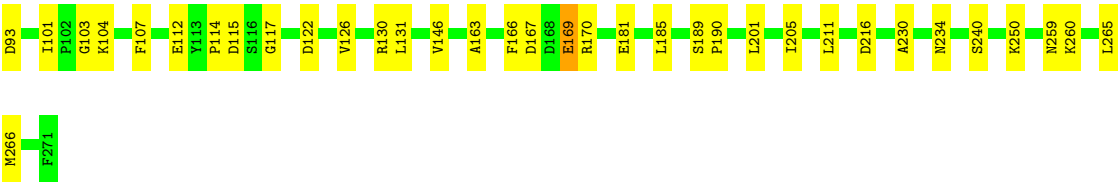
Chain C: 



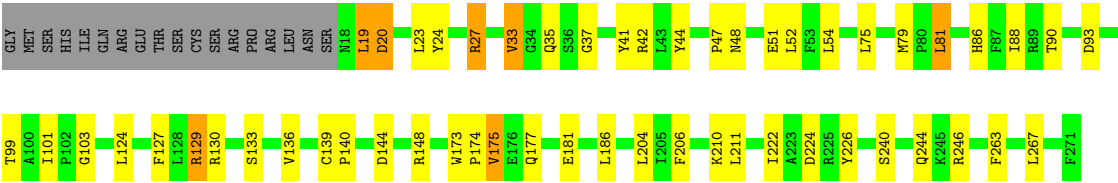
• Molecule 1: Aminoglycoside 3'-phosphotransferase AphA1-IAB

Chain D: 





• Molecule 1: Aminoglycoside 3'-phosphotransferase AphA1-IAB



4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	57.67Å 93.69Å 96.32Å 118.84° 103.56° 93.44°	Depositor
Resolution (Å)	19.90 – 2.71 19.90 – 2.71	Depositor EDS
% Data completeness (in resolution range)	97.9 (19.90-2.71) 92.0 (19.90-2.71)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.06	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.34 (at 2.71Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.7.3_928)	Depositor
R, R_{free}	0.184 , 0.240 0.173 , 0.229	Depositor DCC
R_{free} test set	2037 reflections (4.48%)	wwPDB-VP
Wilson B-factor (Å ²)	50.9	Xtriage
Anisotropy	0.354	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 36.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	0.002 for -h,-k,h+k+l	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	10846	wwPDB-VP
Average B, all atoms (Å ²)	53.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.20% 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

5.1 Standard geometry

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

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	0.54	0/2105	0.93	10/2858 (0.3%)
1	B	0.53	0/2177	0.88	0/2950
1	C	0.55	0/2193	0.86	2/2976 (0.1%)
1	D	0.53	0/2111	0.87	1/2866 (0.0%)
1	E	0.56	0/2116	0.90	0/2872
All	All	0.54	0/10702	0.89	13/14522 (0.1%)

There are no bond length outliers.

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	84	ILE	CB-CA-C	-6.00	105.44	111.80
1	A	191	ASP	N-CA-C	-5.83	100.28	109.50
1	C	12	ARG	CA-C-N	5.80	127.08	119.84
1	C	12	ARG	C-N-CA	5.80	127.08	119.84
1	A	240	SER	CA-C-N	5.65	125.18	119.19
1	A	240	SER	C-N-CA	5.65	125.18	119.19
1	A	139	CYS	CA-C-N	5.54	126.59	120.45
1	A	139	CYS	C-N-CA	5.54	126.59	120.45
1	A	101	ILE	CA-C-N	5.42	125.68	119.83
1	A	101	ILE	C-N-CA	5.42	125.68	119.83
1	D	84	ILE	CB-CA-C	-5.31	105.50	111.23
1	A	189	SER	CA-C-N	-5.21	114.59	119.85
1	A	189	SER	C-N-CA	-5.21	114.59	119.85

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	2048	0	1989	29	0
1	B	2120	0	2050	31	0
1	C	2131	0	2069	31	0
1	D	2051	0	1991	33	0
1	E	2059	0	2001	30	0
2	A	33	0	36	0	0
2	B	33	0	36	0	0
2	C	33	0	36	1	0
2	D	33	0	36	1	0
2	E	33	0	36	0	0
3	A	22	0	14	3	0
3	C	22	0	14	7	0
3	D	22	0	14	7	0
3	E	22	0	14	4	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
5	C	4	0	3	0	0
6	A	37	0	0	2	0
6	B	42	0	0	3	0
6	C	40	0	0	1	0
6	D	25	0	0	0	0
6	E	34	0	0	1	0
All	All	10846	0	10339	156	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 7.

All (156) 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:55:LYS:HZ1	3:C:302:OTO:H1	1.37	0.90
1:C:79:MET:HE1	1:C:130[B]:ARG:HG2	1.54	0.89
3:E:302:OTO:N5	3:E:302:OTO:H2	1.99	0.76
1:C:101:ILE:O	3:C:302:OTO:H11	1.90	0.72
1:B:79:MET:HE3	1:B:131:LEU:HA	1.74	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:33:VAL:HG13	1:E:37:GLY:HA2	1.75	0.69
1:C:219:ARG:NH2	6:C:425:HOH:O	2.26	0.68
1:C:79:MET:HE1	1:C:130[A]:ARG:HG3	1.76	0.67
1:C:39:THR:HG22	1:C:41:TYR:HE1	1.60	0.66
3:C:302:OTO:N5	3:C:302:OTO:H2	2.09	0.66
1:B:40:ILE:HD13	1:B:55:LYS:HG2	1.77	0.65
1:E:19:LEU:HD11	1:E:88:ILE:HD11	1.78	0.65
1:A:32:ASN:HD22	1:B:6:ARG:HG3	1.62	0.64
1:D:79:MET:HE1	1:D:130:ARG:HG2	1.80	0.64
3:D:302:OTO:H2	3:D:302:OTO:N5	2.12	0.64
1:C:55:LYS:NZ	3:C:302:OTO:H1	2.12	0.64
1:C:87:PHE:HB3	1:D:89:ARG:HB3	1.80	0.64
1:C:12:ARG:HH22	1:C:15:LEU:HD22	1.61	0.63
1:A:174:PRO:HG2	1:A:177:GLN:HB2	1.79	0.63
1:C:21:ALA:O	1:C:23:LEU:N	2.32	0.63
1:D:79:MET:HE3	1:D:131:LEU:HA	1.83	0.61
1:B:43:LEU:HB2	1:B:52:LEU:HB2	1.81	0.61
1:D:205:ILE:HD12	3:D:302:OTO:H13	1.82	0.60
1:E:124:LEU:HD22	1:E:204:LEU:HD13	1.85	0.59
1:A:191:ASP:OD2	1:A:225:ARG:NH1	2.36	0.59
1:D:68:GLU:OE1	3:D:302:OTO:H1	2.03	0.58
1:D:181:GLU:HB3	1:D:266:MET:HE1	1.84	0.58
1:D:55:LYS:HD2	3:D:302:OTO:H3	1.84	0.58
3:A:302:OTO:N5	3:A:302:OTO:H2	2.19	0.57
1:C:79:MET:HE1	1:C:130[A]:ARG:CG	2.33	0.56
1:E:173:TRP:CZ3	1:E:181:GLU:HG3	2.40	0.56
1:C:29:ALA:HB2	1:C:44:TYR:HE2	1.70	0.56
1:B:122:ASP:OD1	1:B:250:LYS:HG3	2.06	0.55
1:E:41:TYR:HB2	1:E:54:LEU:HB3	1.89	0.55
1:A:42:ARG:NH2	1:A:51:GLU:OE1	2.39	0.55
1:B:155:ARG:NH2	1:B:270:PHE:O	2.38	0.55
1:A:170:ARG:NH1	1:A:269:GLU:OE2	2.39	0.55
1:B:219:ARG:NH2	6:B:421:HOH:O	2.39	0.54
1:D:43[A]:LEU:HB2	1:D:52:LEU:HB2	1.89	0.54
1:D:90:THR:HG22	1:D:93:ASP:H	1.72	0.54
1:E:130:ARG:O	1:E:133:SER:OG	2.24	0.54
1:B:105:THR:OG1	1:B:108:GLN:HG3	2.08	0.54
1:D:101:ILE:O	3:D:302:OTO:H11	2.07	0.53
1:A:21:ALA:HA	1:A:24:TYR:CE2	2.43	0.53
1:E:148:ARG:HB3	1:E:267:LEU:HD21	1.90	0.53
1:D:80:PRO:O	1:D:81:LEU:HD23	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:40:ILE:C	1:C:41:TYR:HD1	2.18	0.52
1:A:101:ILE:H	3:A:302:OTO:H6	1.75	0.52
1:C:79:MET:HA	1:C:79:MET:HE2	1.91	0.52
1:C:101:ILE:H	3:C:302:OTO:C8	2.22	0.52
1:E:27:ARG:HG2	1:E:44:TYR:CZ	2.43	0.52
1:D:75:LEU:HD23	1:D:81:LEU:HD11	1.92	0.51
1:C:129:ARG:HD2	1:C:251:TYR:O	2.09	0.51
1:D:185:LEU:HB3	1:D:259:ASN:OD1	2.10	0.51
1:A:43[B]:LEU:HB2	1:A:52:LEU:HB2	1.93	0.51
1:A:43[A]:LEU:HB2	1:A:52:LEU:HB2	1.94	0.50
1:A:162:ASP:OD1	1:A:164:SER:HB3	2.12	0.50
1:C:56:HIS:HB2	1:C:95:TRP:CE3	2.47	0.49
1:E:173:TRP:HZ3	1:E:181:GLU:HG3	1.76	0.49
1:A:80:PRO:O	1:A:81:LEU:HD23	2.13	0.49
1:C:112:GLU:C	1:C:114:PRO:HD3	2.37	0.49
1:E:103:GLY:O	3:E:302:OTO:H12	2.12	0.49
1:E:206:PHE:CZ	1:E:211:LEU:HB2	2.47	0.49
1:E:75:LEU:HD23	1:E:81:LEU:HD21	1.94	0.49
1:B:175:VAL:HG23	6:B:404:HOH:O	2.13	0.49
1:C:74:TRP:CZ3	1:C:75:LEU:HD13	2.47	0.49
1:B:262[A]:GLN:NE2	6:B:435:HOH:O	2.42	0.48
1:A:80:PRO:HG2	1:A:213:GLY:HA2	1.95	0.48
1:D:122:ASP:OD1	1:D:250:LYS:HG3	2.13	0.48
1:B:31:ASP:HA	1:E:210:LYS:NZ	2.29	0.48
1:B:29:ALA:HB2	1:B:44:TYR:HE1	1.79	0.48
1:B:4:ILE:HB	1:B:6:ARG:HD3	1.96	0.48
1:C:148:ARG:NH1	1:C:151:GLN:OE1	2.46	0.48
1:A:166:PHE:HZ	1:A:175:VAL:HG22	1.78	0.48
1:A:101:ILE:H	3:A:302:OTO:C8	2.27	0.47
1:A:241:PRO:HA	1:A:244:GLN:OE1	2.15	0.47
1:D:90:THR:HG22	1:D:93:ASP:N	2.30	0.47
1:D:32:ASN:HA	1:D:33:VAL:HA	1.76	0.47
3:E:302:OTO:N5	3:E:302:OTO:C18	2.67	0.46
1:D:234:ASN:HB2	1:D:265:LEU:HD21	1.96	0.46
1:C:204:LEU:HB3	1:C:211:LEU:HD11	1.98	0.46
1:E:240:SER:O	1:E:244:GLN:HG3	2.16	0.46
1:E:79:MET:HE3	1:E:127:PHE:CZ	2.50	0.46
1:B:72:LEU:HD23	1:B:81:LEU:HD23	1.96	0.46
1:A:167:ASP:HB2	1:A:170:ARG:NH1	2.31	0.46
1:D:103:GLY:O	3:D:302:OTO:H12	2.16	0.46
1:A:163:ALA:HA	1:A:166:PHE:CE1	2.51	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:166:PHE:HA	1:A:269:GLU:OE1	2.15	0.46
1:A:136:VAL:HG13	6:A:427:HOH:O	2.16	0.45
1:D:46:LYS:HA	1:D:47:PRO:HD3	1.74	0.45
1:E:101:ILE:O	3:E:302:OTO:H11	2.16	0.45
1:E:136:VAL:HB	1:E:222:ILE:HD13	1.99	0.45
1:A:79:MET:HE1	1:A:130:ARG:HG2	1.98	0.45
3:D:302:OTO:N5	3:D:302:OTO:C18	2.79	0.45
1:B:54:LEU:HD13	1:B:97:LEU:HD13	1.99	0.44
1:C:72:LEU:HD23	1:C:81:LEU:HD13	1.98	0.44
1:B:6:ARG:H	1:B:6:ARG:HG2	1.55	0.44
1:B:140:PRO:HG2	1:B:141:PHE:CE2	2.52	0.44
1:C:16:ASN:OD1	1:C:16:ASN:N	2.46	0.44
1:D:38:ALA:HB3	1:D:55:LYS:HE3	1.98	0.44
1:B:47:PRO:C	1:B:49:ALA:H	2.26	0.44
1:C:75:LEU:HB3	1:C:81:LEU:HD11	1.99	0.44
2:C:301:KAN:HN21	2:C:301:KAN:H5	1.82	0.44
1:A:40:ILE:HG12	1:A:55:LYS:HG2	1.99	0.43
1:B:204:LEU:HB3	1:B:211:LEU:HD11	1.99	0.43
1:D:189:SER:HA	1:D:190:PRO:HD3	1.76	0.43
1:A:33:VAL:N	1:A:35:GLN:OE1	2.51	0.43
1:B:88:ILE:HG23	1:B:95:TRP:HB2	2.00	0.43
1:E:20:ASP:O	1:E:24:TYR:N	2.51	0.43
1:E:51:GLU:O	1:E:52:LEU:HD23	2.18	0.43
1:E:27:ARG:HG2	1:E:44:TYR:OH	2.18	0.43
1:E:175:VAL:HG23	6:E:418:HOH:O	2.18	0.43
1:C:68:GLU:OE2	3:C:302:OTO:H1	2.18	0.43
1:D:112:GLU:C	1:D:114:PRO:HD3	2.44	0.43
1:A:58:LYS:HE2	1:A:58:LYS:HB3	1.75	0.43
1:B:31:ASP:HA	1:E:210:LYS:HZ2	1.84	0.43
1:B:153:GLN:HB2	1:B:179:TRP:CH2	2.53	0.43
1:D:72:LEU:HD23	1:D:72:LEU:HA	1.89	0.43
1:A:265:LEU:HD23	1:A:265:LEU:HA	1.71	0.43
1:C:191:ASP:OD2	1:C:225:ARG:NE	2.39	0.43
1:D:72:LEU:HD23	1:D:81:LEU:HD13	2.01	0.43
1:C:80:PRO:O	1:C:81:LEU:HD23	2.19	0.42
1:A:61:VAL:HA	1:A:64:ASP:OD2	2.19	0.42
1:E:139:CYS:HA	1:E:140:PRO:HD2	1.78	0.42
1:C:13:PRO:HG3	1:D:41:TYR:CZ	2.55	0.42
1:A:80:PRO:HA	6:A:433:HOH:O	2.20	0.42
1:D:107:PHE:HB2	1:D:201:LEU:HB3	2.02	0.42
1:A:105:THR:O	1:A:109:VAL:HG23	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:47:PRO:O	1:E:48:ASN:HB2	2.20	0.42
1:C:9:SER:O	1:C:10:CYS:HB3	2.20	0.42
1:D:169:GLU:H	1:D:169:GLU:CD	2.22	0.42
1:E:90:THR:OG1	1:E:93:ASP:HB2	2.20	0.42
1:A:134:ILE:HA	1:A:135:PRO:HD3	1.92	0.41
1:B:243:LEU:HD23	1:B:243:LEU:HA	1.82	0.41
3:C:302:OTO:N5	3:C:302:OTO:C18	2.77	0.41
1:D:163:ALA:HA	1:D:166:PHE:CE1	2.54	0.41
1:B:160:LEU:HD23	1:B:160:LEU:HA	1.83	0.41
1:B:88:ILE:CG2	1:B:95:TRP:HB2	2.50	0.41
1:B:134:ILE:HA	1:B:135:PRO:HD3	1.78	0.41
1:C:148:ARG:HA	1:C:148:ARG:HD3	1.87	0.41
1:E:186:LEU:HD21	1:E:263:PHE:CE1	2.56	0.41
1:B:69:MET:HG3	1:B:87:PHE:CG	2.55	0.41
1:A:233:TRP:CE3	1:A:261:LEU:HD11	2.55	0.41
1:B:46:LYS:HB3	1:B:49:ALA:HB3	2.02	0.41
1:D:87:PHE:CE1	1:D:89:ARG:HB2	2.56	0.41
1:D:167:ASP:HB2	1:D:170:ARG:NH1	2.35	0.41
1:B:111:GLU:HG2	1:E:246:ARG:CZ	2.50	0.41
1:D:230:ALA:HB1	1:D:265:LEU:HG	2.03	0.41
2:D:301:KAN:HN21	2:D:301:KAN:H5	1.85	0.41
1:E:129:ARG:HD3	1:E:129:ARG:HA	1.74	0.41
1:E:174:PRO:HD2	1:E:177:GLN:OE1	2.21	0.41
1:B:245:LYS:HA	1:B:245:LYS:HD3	1.91	0.41
1:E:224:ASP:OD1	1:E:226:TYR:HB2	2.20	0.41
1:D:19:LEU:O	1:D:23:LEU:HG	2.21	0.40
1:C:13:PRO:HD2	1:D:28:TRP:CZ3	2.56	0.40
1:B:41:TYR:O	1:B:53:PHE:HA	2.22	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	253/272 (93%)	235 (93%)	18 (7%)	0	100	100
1	B	257/272 (94%)	238 (93%)	19 (7%)	0	100	100
1	C	261/272 (96%)	248 (95%)	10 (4%)	3 (1%)	11	27
1	D	254/272 (93%)	242 (95%)	11 (4%)	1 (0%)	30	52
1	E	254/272 (93%)	242 (95%)	12 (5%)	0	100	100
All	All	1279/1360 (94%)	1205 (94%)	70 (6%)	4 (0%)	36	59

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	22	ASP
1	C	21	ALA
1	C	29	ALA
1	D	117	GLY

5.3.2 Protein sidechains ⓘ

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	222/238 (93%)	206 (93%)	16 (7%)	13	31
1	B	231/238 (97%)	217 (94%)	14 (6%)	17	38
1	C	233/238 (98%)	220 (94%)	13 (6%)	19	42
1	D	223/238 (94%)	208 (93%)	15 (7%)	15	34
1	E	223/238 (94%)	210 (94%)	13 (6%)	18	41
All	All	1132/1190 (95%)	1061 (94%)	71 (6%)	17	37

All (71) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	55	LYS
1	A	83	THR
1	A	110	LEU
1	A	111	GLU

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Mol	Chain	Res	Type
1	A	115	ASP
1	A	119	ASN
1	A	129	ARG
1	A	143	SER
1	A	146	VAL
1	A	160	LEU
1	A	164	SER
1	A	191	ASP
1	A	192	SER
1	A	216	ASP
1	A	242	SER
1	A	261	LEU
1	B	4	ILE
1	B	6	ARG
1	B	40	ILE
1	B	51	GLU
1	B	60	SER
1	B	61	VAL
1	B	129	ARG
1	B	146	VAL
1	B	176	GLU
1	B	180	LYS
1	B	189	SER
1	B	212	ILE
1	B	262[A]	GLN
1	B	262[B]	GLN
1	C	12	ARG
1	C	15	LEU
1	C	16	ASN
1	C	18	ASN
1	C	19	LEU
1	C	28[A]	TRP
1	C	28[B]	TRP
1	C	41	TYR
1	C	58	LYS
1	C	83	THR
1	C	164	SER
1	C	208	GLU
1	C	255	ASN
1	D	32	ASN
1	D	68	GLU
1	D	70	VAL

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Mol	Chain	Res	Type
1	D	72	LEU
1	D	90	THR
1	D	104	LYS
1	D	115[A]	ASP
1	D	115[B]	ASP
1	D	126	VAL
1	D	146	VAL
1	D	169	GLU
1	D	211	LEU
1	D	216	ASP
1	D	240	SER
1	D	260	LYS
1	E	19	LEU
1	E	20	ASP
1	E	23	LEU
1	E	27	ARG
1	E	33	VAL
1	E	35	GLN
1	E	42	ARG
1	E	81	LEU
1	E	86	HIS
1	E	99	THR
1	E	129	ARG
1	E	144	ASP
1	E	175	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	32	ASN
1	B	86	HIS
1	B	153	GLN
1	B	227	GLN
1	C	119	ASN
1	D	138	ASN
1	D	227	GLN
1	D	255	ASN
1	D	262	GLN
1	E	138	ASN
1	E	151	GLN
1	E	153	GLN
1	E	234	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 12 ligands modelled in this entry, 2 are monoatomic - leaving 10 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$
3	OTO	D	302	-	24,24,24	1.81	5 (20%)	33,33,33	4.35	17 (51%)
2	KAN	E	301	-	34,35,35	0.98	1 (2%)	47,52,52	1.74	11 (23%)
2	KAN	B	301	-	34,35,35	0.76	1 (2%)	47,52,52	1.82	6 (12%)
2	KAN	C	301	-	34,35,35	0.91	2 (5%)	47,52,52	1.42	8 (17%)
3	OTO	C	302	-	24,24,24	1.56	3 (12%)	33,33,33	3.56	18 (54%)
3	OTO	E	302	-	24,24,24	1.43	4 (16%)	33,33,33	3.42	17 (51%)
5	ACT	C	303	-	3,3,3	0.91	0	3,3,3	1.06	0
2	KAN	A	301	-	34,35,35	0.85	1 (2%)	47,52,52	1.56	7 (14%)
3	OTO	A	302	-	24,24,24	1.57	4 (16%)	33,33,33	3.76	16 (48%)
2	KAN	D	301	-	34,35,35	0.85	1 (2%)	47,52,52	1.64	8 (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
3	OTO	D	302	-	-	4/8/8/8	0/3/3/3
2	KAN	E	301	-	-	2/12/72/72	0/3/3/3
2	KAN	B	301	-	-	2/12/72/72	0/3/3/3
2	KAN	C	301	-	-	2/12/72/72	0/3/3/3
3	OTO	C	302	-	-	4/8/8/8	0/3/3/3
3	OTO	E	302	-	-	4/8/8/8	0/3/3/3
2	KAN	A	301	-	-	2/12/72/72	0/3/3/3
3	OTO	A	302	-	-	4/8/8/8	0/3/3/3
2	KAN	D	301	-	-	2/12/72/72	0/3/3/3

All (22) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	302	OTO	C4-C2	-5.84	1.37	1.44
3	C	302	OTO	C4-C2	-4.69	1.39	1.44
3	A	302	OTO	C4-C2	-4.62	1.39	1.44
3	E	302	OTO	C4-C2	-3.56	1.40	1.44
3	D	302	OTO	C7-N6	-3.46	1.33	1.40
3	C	302	OTO	C7-N6	-3.19	1.33	1.40
3	E	302	OTO	C7-N6	-2.88	1.34	1.40
3	A	302	OTO	C7-N6	-2.85	1.34	1.40
3	D	302	OTO	C2-C1	-2.79	1.38	1.42
3	C	302	OTO	C2-C1	-2.71	1.38	1.42
2	A	301	KAN	C14-C15	-2.71	1.50	1.53
2	C	301	KAN	C14-C15	-2.59	1.50	1.53
3	D	302	OTO	C15-C1	-2.45	1.38	1.41
3	E	302	OTO	C15-C1	-2.42	1.38	1.41
3	E	302	OTO	C1-N9	-2.35	1.33	1.37
3	A	302	OTO	C1-N9	-2.35	1.33	1.37
2	C	301	KAN	O11-C13	2.31	1.48	1.41
3	D	302	OTO	C1-N9	-2.24	1.33	1.37
2	E	301	KAN	O5-C1	2.17	1.47	1.41
3	A	302	OTO	C15-C12	2.14	1.40	1.36
2	B	301	KAN	C14-C15	-2.02	1.51	1.53
2	D	301	KAN	O11-C13	2.00	1.47	1.41

All (108) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	302	OTO	O11-C10-C12	8.90	127.47	115.40
3	D	302	OTO	O11-C10-C3	-8.71	114.14	125.16

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	302	OTO	C3-C2-C4	-8.17	118.20	124.84
3	A	302	OTO	C4-C2-C1	8.05	120.62	115.86
3	E	302	OTO	C8-N5-C4	7.96	122.78	116.60
3	A	302	OTO	C2-C4-N5	-7.78	115.59	121.35
3	A	302	OTO	C3-C2-C4	-7.73	118.56	124.84
3	E	302	OTO	C16-O13-C12	-7.62	106.34	117.51
3	D	302	OTO	C4-C2-C1	7.52	120.30	115.86
3	D	302	OTO	C2-C4-N5	-7.19	116.03	121.35
3	D	302	OTO	C8-N5-C4	7.07	122.09	116.60
3	A	302	OTO	C8-N5-C4	6.98	122.02	116.60
3	E	302	OTO	C2-C4-N5	-6.82	116.30	121.35
3	D	302	OTO	O13-C12-C15	-6.46	116.98	125.16
3	D	302	OTO	N6-C4-N5	6.21	125.69	118.71
3	C	302	OTO	C8-N5-C4	6.18	121.40	116.60
3	D	302	OTO	O13-C12-C10	6.14	123.73	115.40
3	C	302	OTO	C3-C2-C4	-6.06	119.92	124.84
2	B	301	KAN	C6-C5-C4	-5.89	99.04	112.80
2	D	301	KAN	C6-C5-C4	-5.88	99.05	112.80
3	C	302	OTO	N9-C8-N5	-5.76	120.85	128.67
3	A	302	OTO	C14-O11-C10	-5.67	109.20	117.51
3	C	302	OTO	C16-O13-C12	-5.58	109.32	117.51
3	A	302	OTO	C16-O13-C12	-5.55	109.37	117.51
2	B	301	KAN	C18-C17-C16	-5.53	99.43	113.02
3	C	302	OTO	O13-C12-C15	-5.32	118.42	125.16
2	A	301	KAN	O5-C5-C6	5.28	116.21	106.07
3	C	302	OTO	C4-C2-C1	5.27	118.97	115.86
3	C	302	OTO	N6-C4-N5	5.26	124.63	118.71
3	E	302	OTO	C4-C2-C1	5.24	118.96	115.86
3	D	302	OTO	N9-C8-N5	-5.22	121.59	128.67
3	A	302	OTO	N6-C4-N5	5.21	124.56	118.71
2	E	301	KAN	O12-C17-C18	5.16	119.22	106.44
2	B	301	KAN	O5-C5-C6	5.09	115.85	106.07
3	D	302	OTO	C7-C18-C20	5.05	122.85	118.72
3	E	302	OTO	N9-C8-N5	-5.01	121.87	128.67
3	C	302	OTO	C8-N9-C1	4.96	121.08	115.43
3	A	302	OTO	O11-C10-C3	-4.96	118.88	125.16
3	E	302	OTO	O13-C12-C15	-4.94	118.90	125.16
3	C	302	OTO	O13-C12-C10	4.76	121.86	115.40
3	E	302	OTO	C7-C18-C20	4.70	122.56	118.72
3	A	302	OTO	N9-C8-N5	-4.68	122.32	128.67
3	C	302	OTO	O11-C10-C12	4.62	121.67	115.40
3	A	302	OTO	C7-C18-C20	4.59	122.48	118.72

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	302	OTO	C7-C18-C20	4.58	122.47	118.72
3	C	302	OTO	C2-C4-N5	-4.49	118.02	121.35
3	E	302	OTO	O13-C12-C10	4.49	121.49	115.40
3	C	302	OTO	O11-C10-C3	-4.34	119.66	125.16
3	D	302	OTO	C16-O13-C12	-4.10	111.50	117.51
3	A	302	OTO	O11-C10-C12	4.07	120.92	115.40
2	D	301	KAN	O5-C5-C6	3.97	113.70	106.07
3	E	302	OTO	C14-O11-C10	-3.95	111.72	117.51
2	E	301	KAN	O11-C8-C9	3.92	117.19	107.23
2	D	301	KAN	O11-C8-C9	3.91	117.16	107.23
2	C	301	KAN	C18-C17-C16	-3.87	103.52	113.02
3	E	302	OTO	O11-C10-C3	-3.84	120.29	125.16
2	C	301	KAN	O5-C5-C6	3.69	113.15	106.07
3	E	302	OTO	C8-N9-C1	3.67	119.60	115.43
3	E	302	OTO	C3-C2-C4	-3.65	121.87	124.84
2	B	301	KAN	O11-C8-C9	3.59	116.34	107.23
3	C	302	OTO	C2-C1-N9	-3.54	119.07	122.82
3	D	302	OTO	C8-N9-C1	3.51	119.42	115.43
2	E	301	KAN	C18-C17-C16	-3.48	104.48	113.02
3	A	302	OTO	O13-C12-C15	-3.48	120.76	125.16
2	C	301	KAN	O12-C17-C18	3.47	115.03	106.44
3	C	302	OTO	C21-C20-C18	-3.33	117.18	121.53
3	C	302	OTO	C14-O11-C10	-3.27	112.72	117.51
3	A	302	OTO	C8-N9-C1	3.26	119.13	115.43
2	A	301	KAN	O11-C8-C9	3.18	115.31	107.23
2	A	301	KAN	C18-C17-C16	-3.16	105.27	113.02
3	C	302	OTO	C15-C1-N9	3.12	121.60	118.01
3	E	302	OTO	O11-C10-C12	3.07	119.57	115.40
3	C	302	OTO	C2-C4-N6	-3.06	116.67	119.77
3	A	302	OTO	O13-C12-C10	3.01	119.48	115.40
3	A	302	OTO	C2-C1-N9	-2.99	119.65	122.82
2	C	301	KAN	O11-C8-C9	2.90	114.59	107.23
3	D	302	OTO	C2-C1-N9	-2.89	119.76	122.82
3	A	302	OTO	C17-C7-C18	-2.88	116.18	119.66
2	B	301	KAN	C16-C15-C14	-2.83	104.92	111.06
2	E	301	KAN	O5-C5-C6	2.78	111.42	106.07
2	C	301	KAN	C16-C15-C14	-2.70	105.20	111.06
2	A	301	KAN	O9-C1-O5	-2.70	103.59	110.69
3	E	302	OTO	N6-C4-N5	2.68	121.73	118.71
3	D	302	OTO	C2-C4-N6	-2.65	117.08	119.77
2	E	301	KAN	C10-C9-C8	2.56	114.29	109.11
2	E	301	KAN	O9-C10-C9	2.54	113.69	107.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	302	0TO	C15-C1-N9	2.50	120.89	118.01
2	E	301	KAN	O13-C14-C13	-2.50	104.13	110.08
3	E	302	0TO	C2-C1-N9	-2.49	120.18	122.82
2	E	301	KAN	C16-C15-C14	-2.39	105.87	111.06
2	E	301	KAN	C13-C14-C15	2.37	113.58	110.40
2	A	301	KAN	C16-C15-C14	-2.34	105.97	111.06
3	D	302	0TO	C21-C20-CL	2.31	122.77	119.36
2	D	301	KAN	C17-C16-C15	-2.31	108.12	110.67
2	C	301	KAN	O9-C1-O5	-2.29	104.67	110.69
2	E	301	KAN	O9-C1-O5	-2.26	104.75	110.69
2	A	301	KAN	O9-C10-C9	2.22	112.86	107.23
2	E	301	KAN	O12-C13-C14	-2.21	105.82	110.37
2	D	301	KAN	C10-C9-C8	2.16	113.48	109.11
2	C	301	KAN	C6-C5-C4	-2.15	107.78	112.80
2	C	301	KAN	C10-C9-C8	2.13	113.44	109.11
2	D	301	KAN	O12-C17-C18	2.10	111.64	106.44
3	E	302	0TO	C21-C20-C18	-2.10	118.79	121.53
2	B	301	KAN	O9-C1-O5	-2.07	105.26	110.69
2	D	301	KAN	C16-C15-C14	-2.06	106.59	111.06
2	A	301	KAN	O11-C8-C7	-2.02	104.36	109.18
2	D	301	KAN	O13-C14-C13	-2.01	105.28	110.08
3	E	302	0TO	C21-C20-CL	2.00	122.31	119.36

There are no chirality outliers.

All (26) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	D	302	0TO	C3-C10-O11-C14
3	D	302	0TO	C12-C10-O11-C14
3	C	302	0TO	C15-C12-O13-C16
3	A	302	0TO	C3-C10-O11-C14
3	A	302	0TO	C12-C10-O11-C14
3	C	302	0TO	C10-C12-O13-C16
3	E	302	0TO	C10-C12-O13-C16
2	C	301	KAN	C9-C8-O11-C13
3	A	302	0TO	C10-C12-O13-C16
3	E	302	0TO	C12-C10-O11-C14
3	E	302	0TO	C15-C12-O13-C16
2	D	301	KAN	C9-C8-O11-C13
3	E	302	0TO	C3-C10-O11-C14
2	B	301	KAN	C9-C8-O11-C13
3	A	302	0TO	C15-C12-O13-C16

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Mol	Chain	Res	Type	Atoms
2	A	301	KAN	C9-C8-O11-C13
3	C	302	OTO	C12-C10-O11-C14
2	E	301	KAN	C9-C8-O11-C13
3	D	302	OTO	C10-C12-O13-C16
2	C	301	KAN	C9-C10-O9-C1
2	B	301	KAN	C9-C10-O9-C1
2	E	301	KAN	C9-C10-O9-C1
3	C	302	OTO	C3-C10-O11-C14
2	D	301	KAN	C9-C10-O9-C1
3	D	302	OTO	C15-C12-O13-C16
2	A	301	KAN	C9-C10-O9-C1

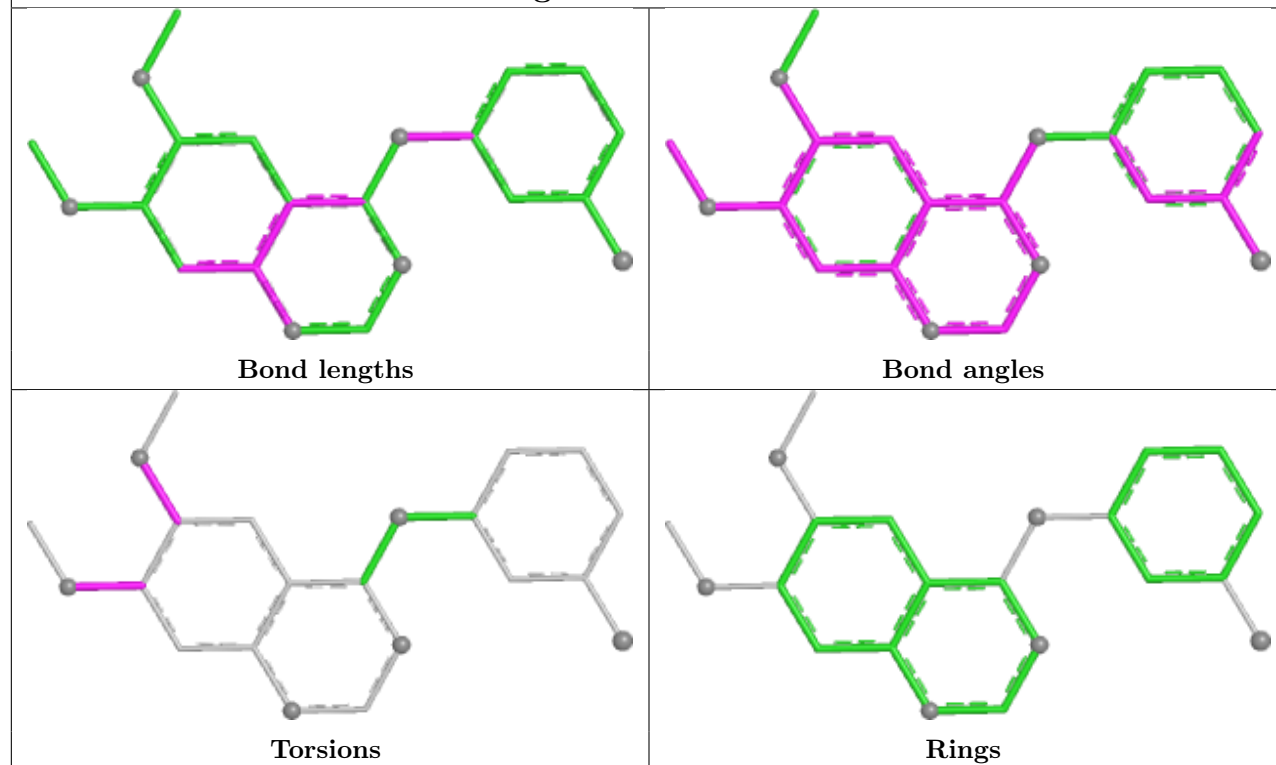
There are no ring outliers.

6 monomers are involved in 23 short contacts:

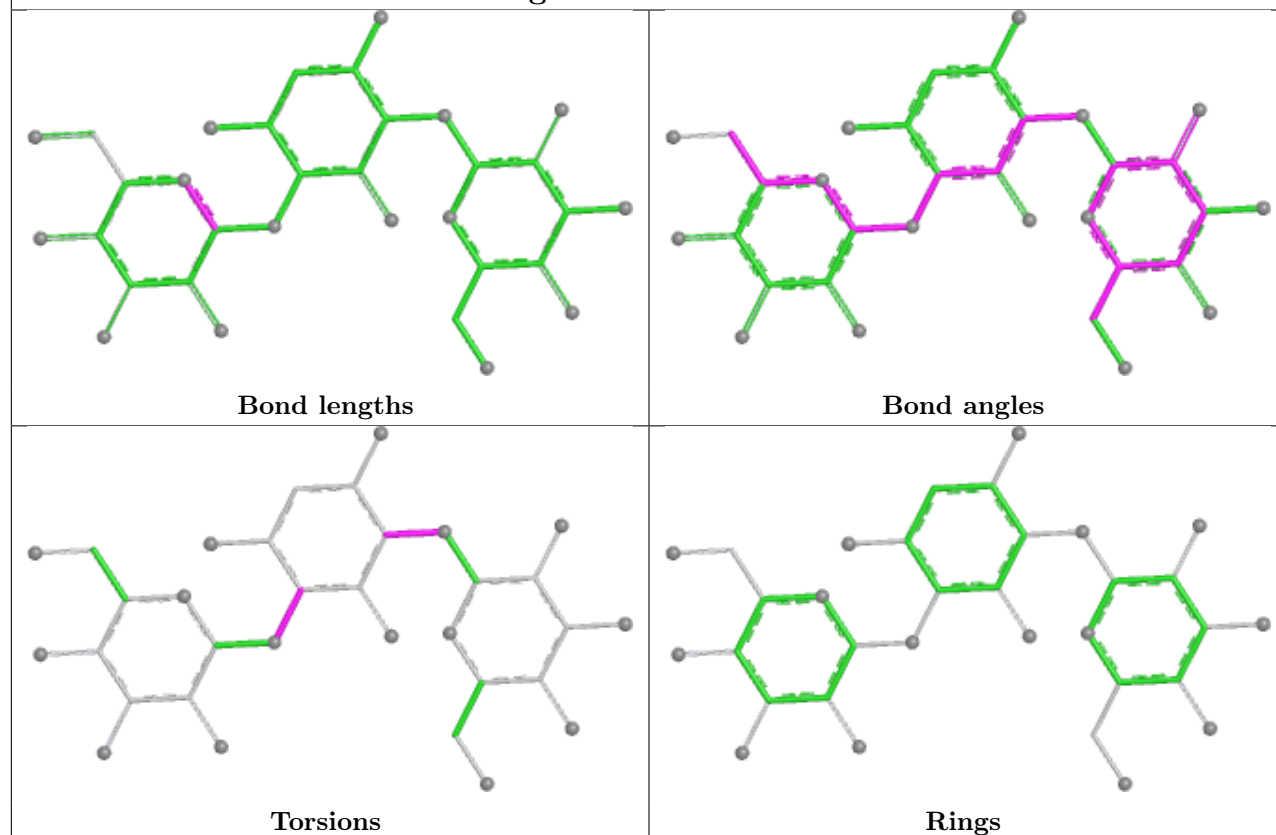
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	D	302	OTO	7	0
2	C	301	KAN	1	0
3	C	302	OTO	7	0
3	E	302	OTO	4	0
3	A	302	OTO	3	0
2	D	301	KAN	1	0

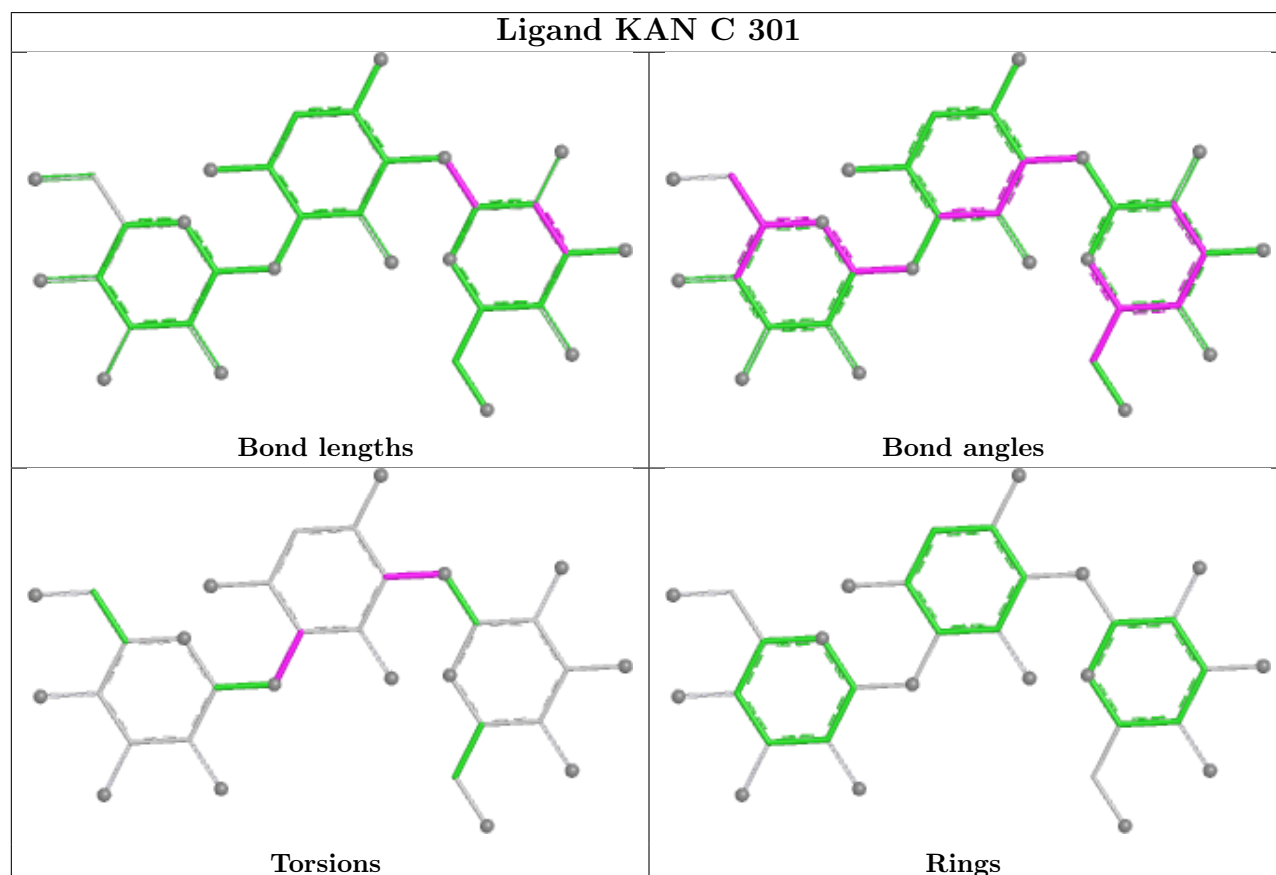
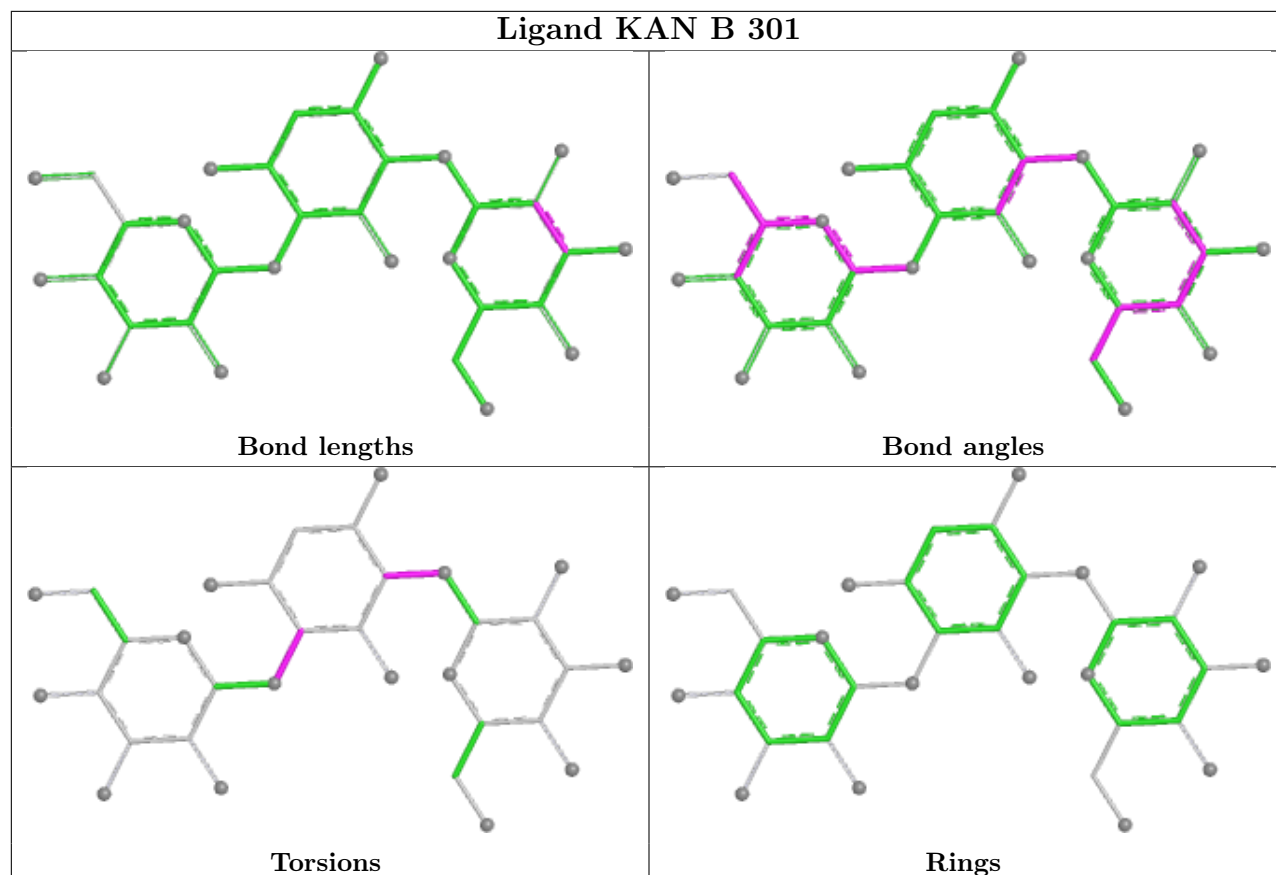
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand 0TO D 302

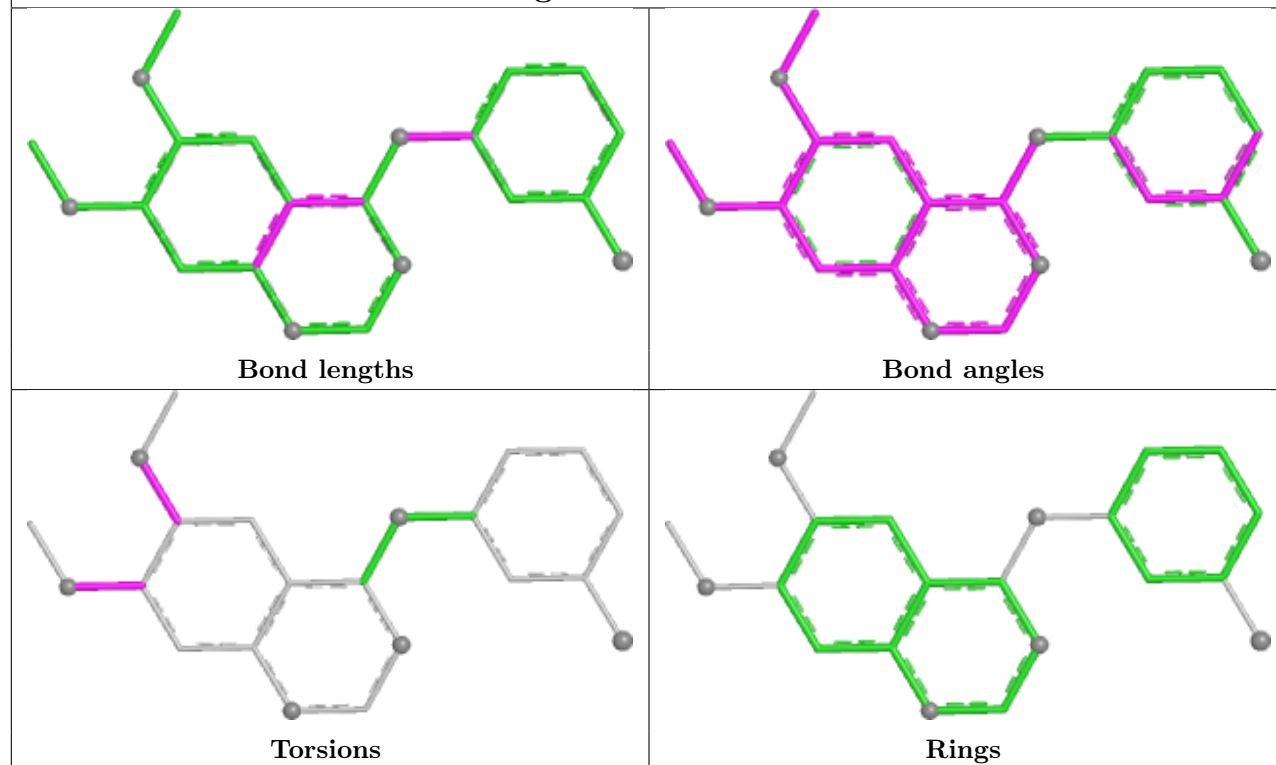


Ligand KAN E 301

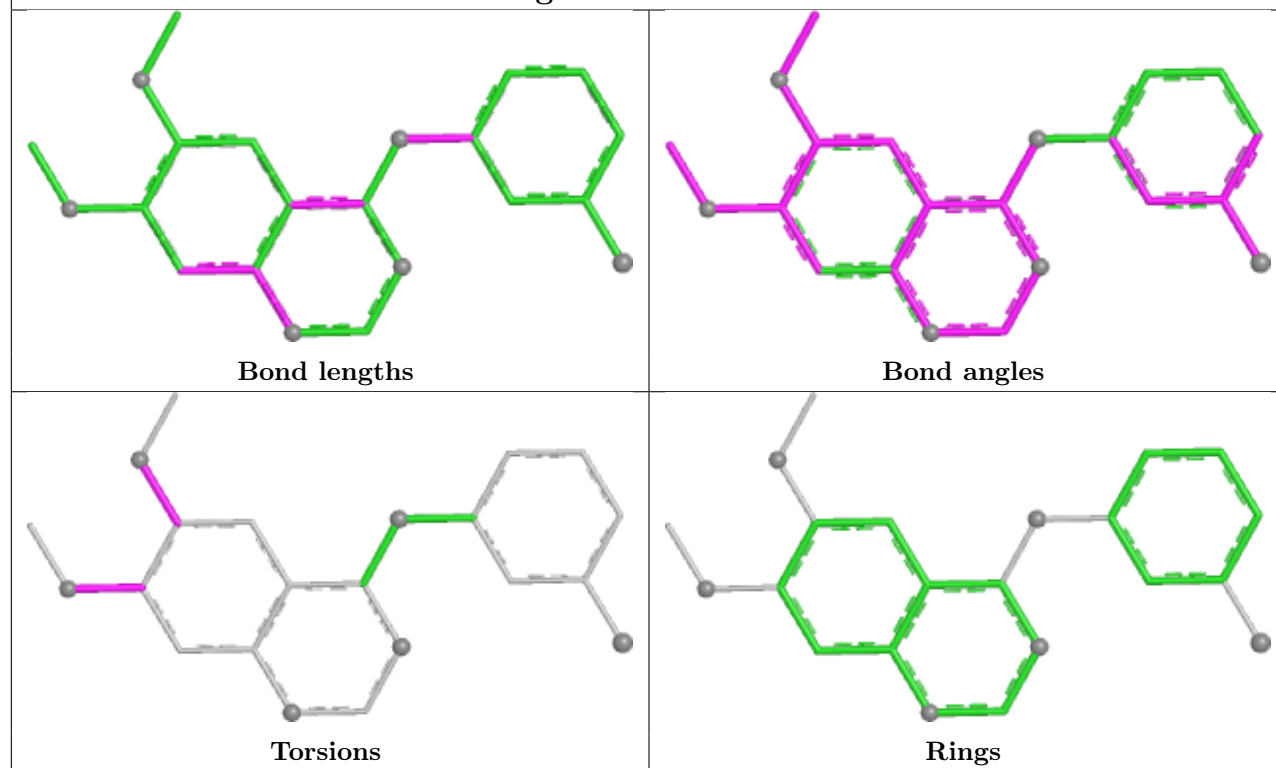


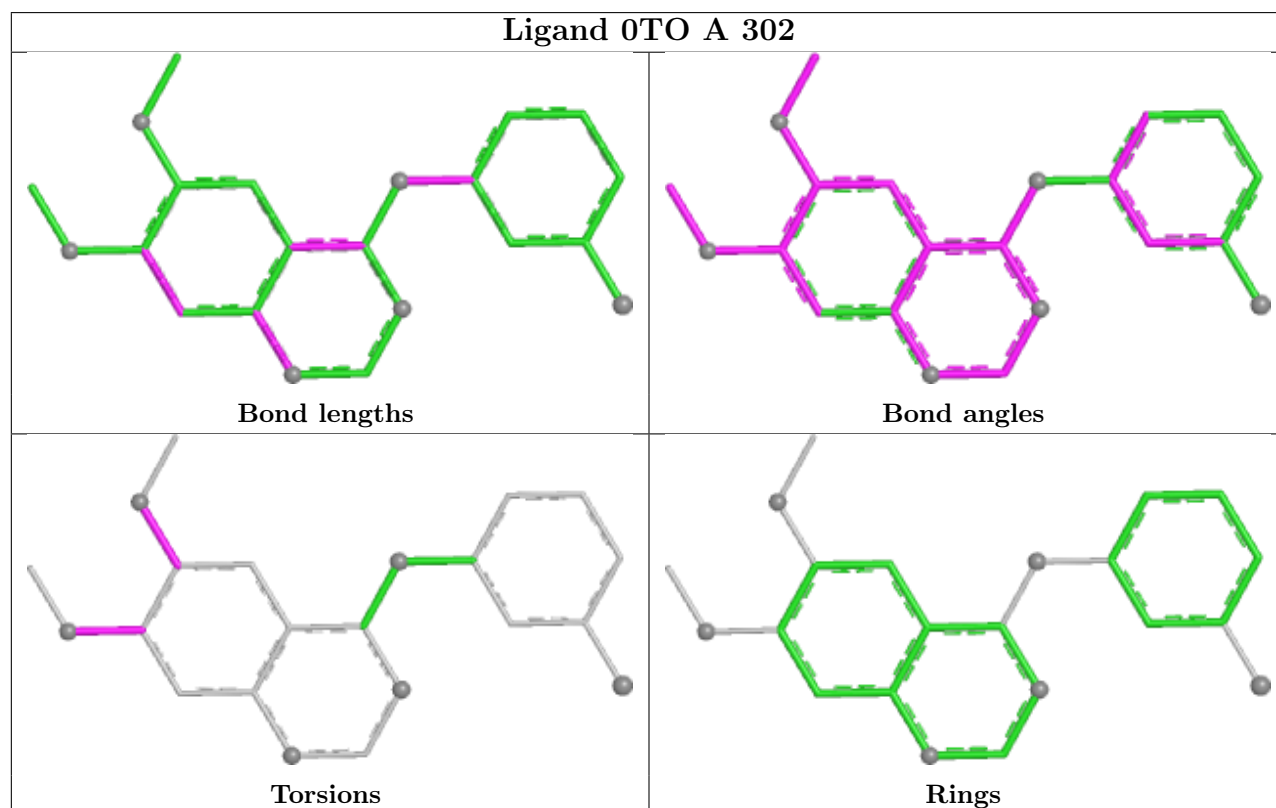
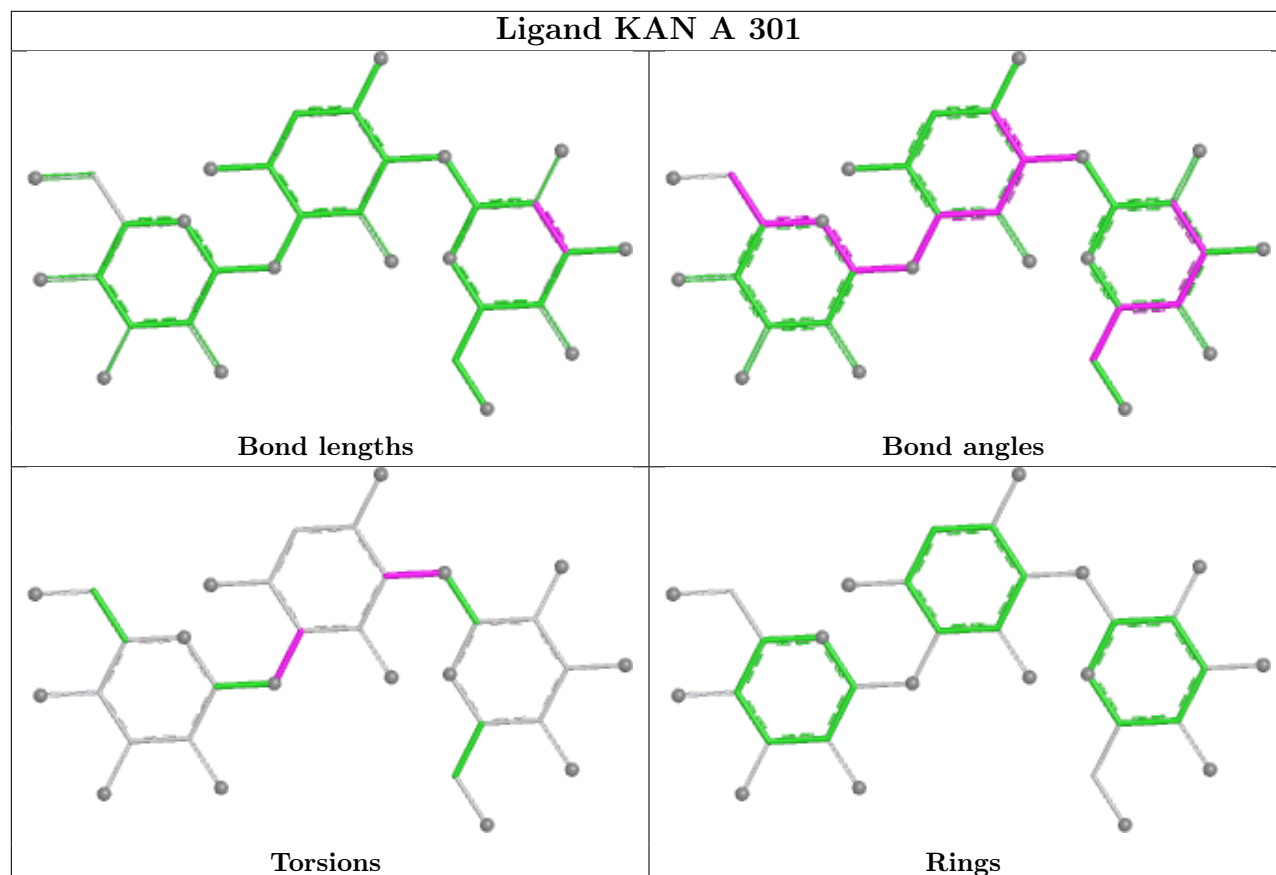


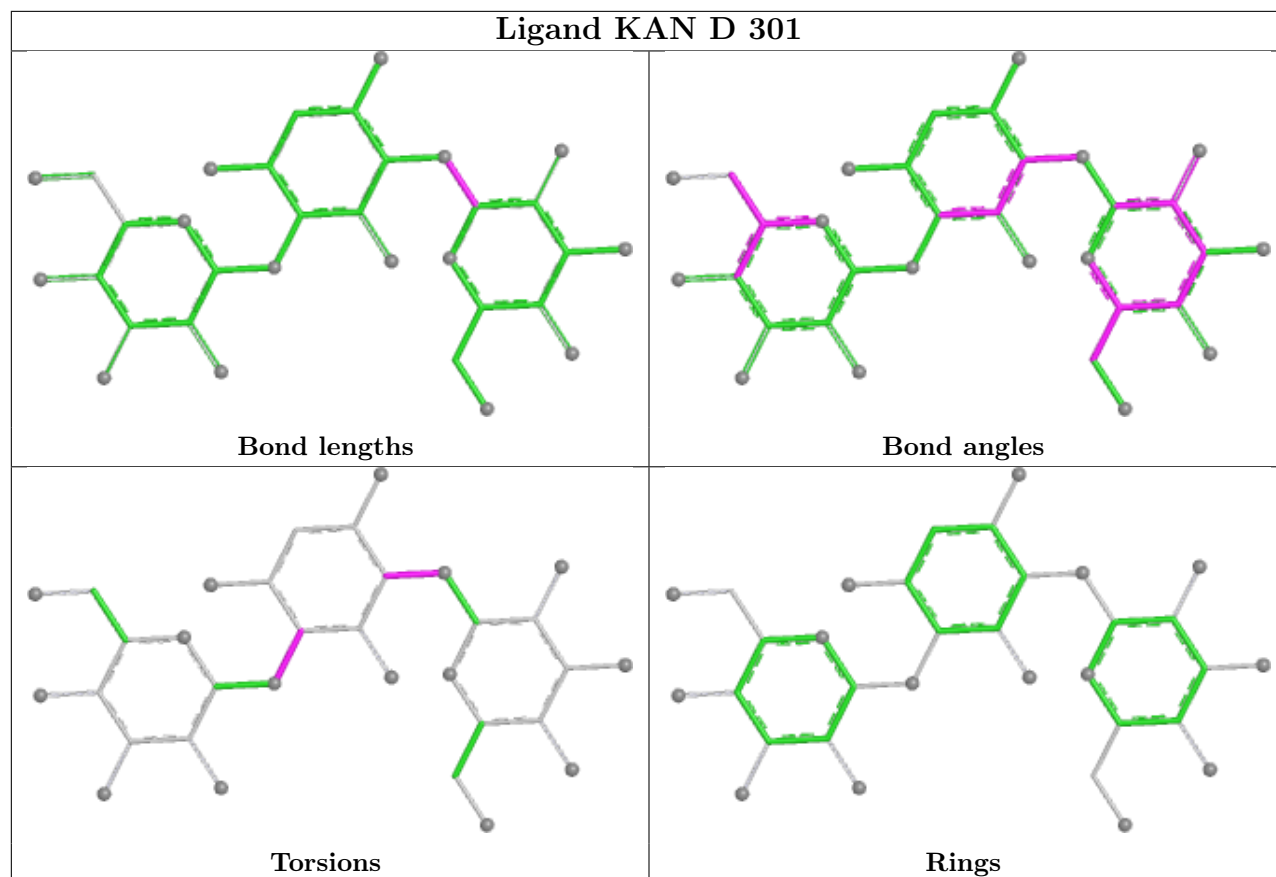
Ligand 0TO C 302



Ligand 0TO E 302







5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	254/272 (93%)	-0.59	0	100 100	28, 50, 79, 97	1 (0%)
1	B	261/272 (95%)	-0.55	0	100 100	22, 48, 108, 144	2 (0%)
1	C	261/272 (95%)	-0.55	2 (0%)	82 81	23, 46, 109, 150	4 (1%)
1	D	253/272 (93%)	-0.60	0	100 100	28, 49, 77, 101	3 (1%)
1	E	254/272 (93%)	-0.59	0	100 100	29, 48, 83, 111	2 (0%)
All	All	1283/1360 (94%)	-0.57	2 (0%)	91 90	22, 49, 90, 150	12 (0%)

All (2) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	28[A]	TRP	2.5
1	C	14	ARG	2.3

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 oligosaccharides in this entry.

6.4 Ligands [i](#)

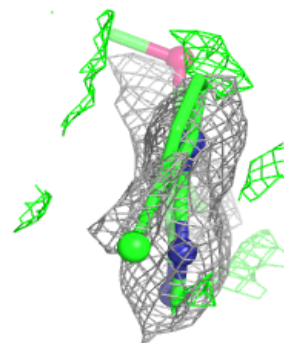
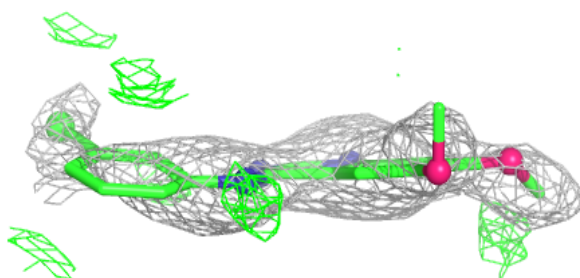
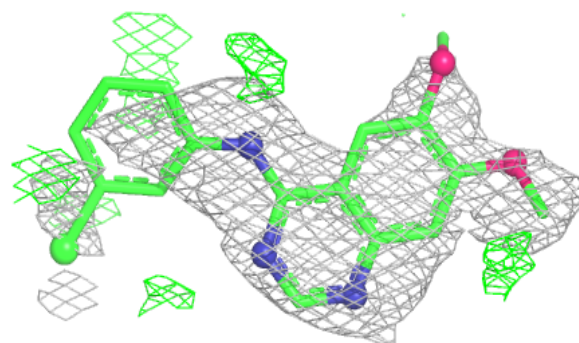
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled ‘Q < 0.9’ lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
3	OTO	A	302	22/22	0.75	0.18	46,62,76,82	22
3	OTO	C	302	22/22	0.76	0.18	62,73,78,86	22
4	NA	B	302	1/1	0.79	0.14	76,76,76,76	0
3	OTO	D	302	22/22	0.83	0.14	51,64,82,89	22
5	ACT	C	303	4/4	0.83	0.12	49,63,69,73	0
3	OTO	E	302	22/22	0.84	0.14	50,61,78,85	22
2	KAN	A	301	33/33	0.93	0.07	45,50,60,68	0
2	KAN	D	301	33/33	0.94	0.07	28,45,58,72	0
4	NA	A	303	1/1	0.94	0.04	57,57,57,57	0
2	KAN	E	301	33/33	0.95	0.07	24,39,50,61	0
2	KAN	C	301	33/33	0.95	0.07	27,39,45,57	0
2	KAN	B	301	33/33	0.96	0.06	27,37,47,62	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.

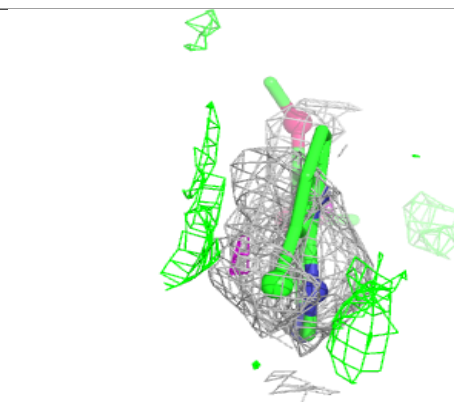
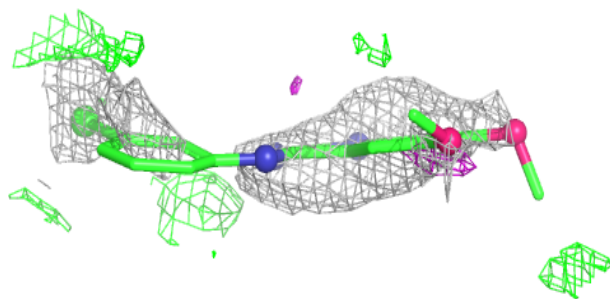
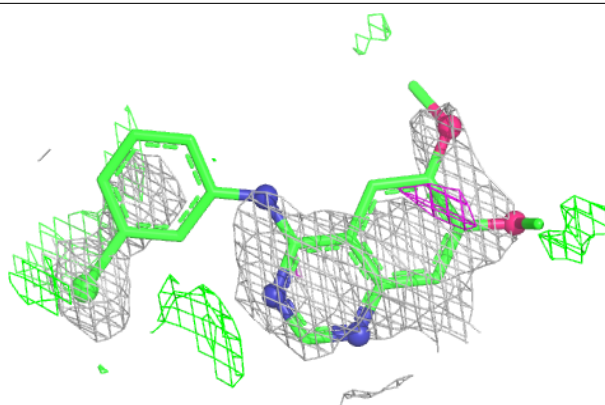
Electron density around OTO A 302:

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

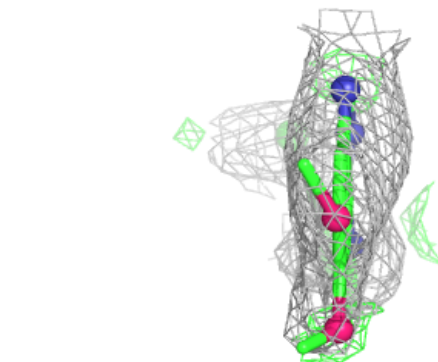
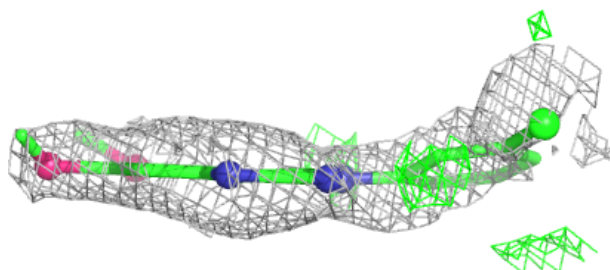
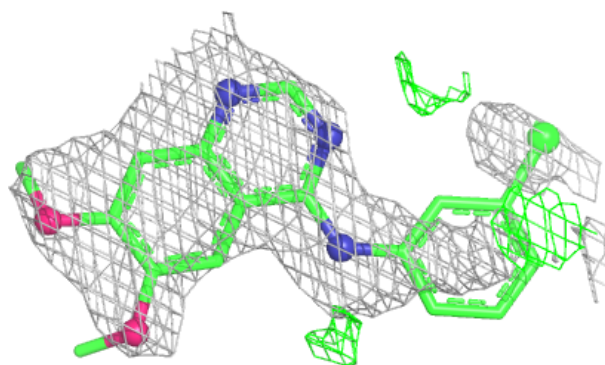


Electron density around 0TO C 302:

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

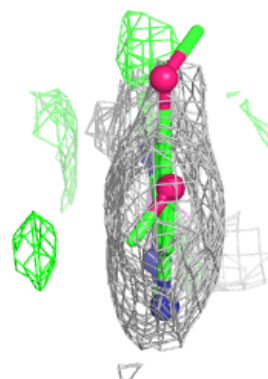
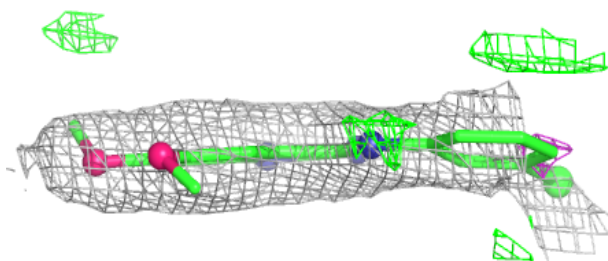
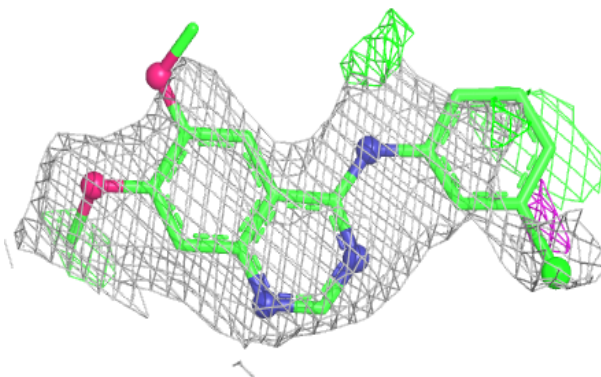
**Electron density around 0TO D 302:**

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

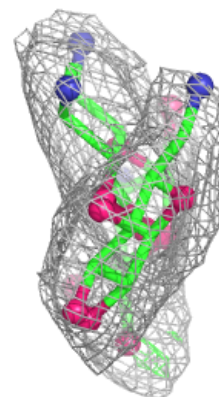
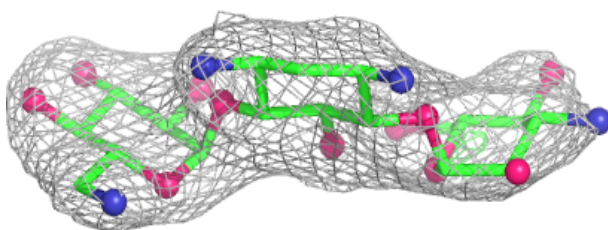
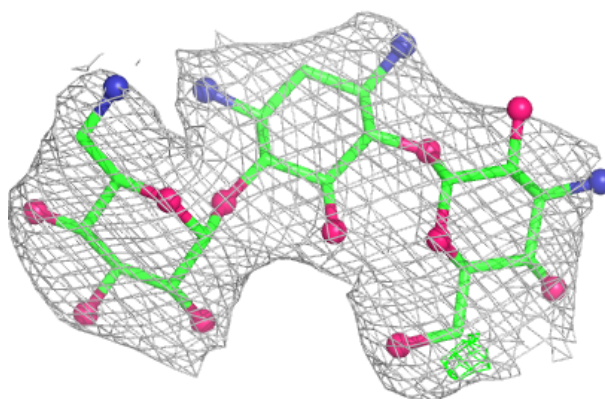


Electron density around 0TO E 302:

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

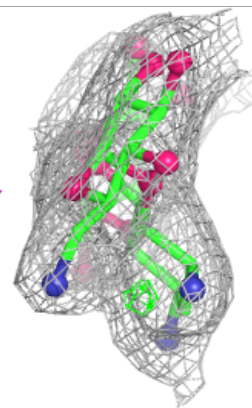
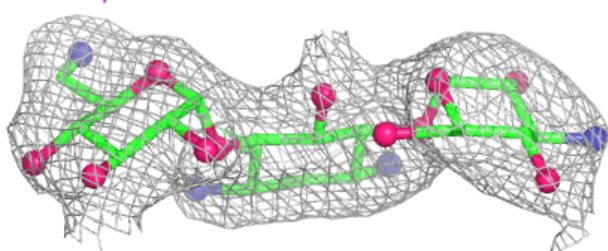
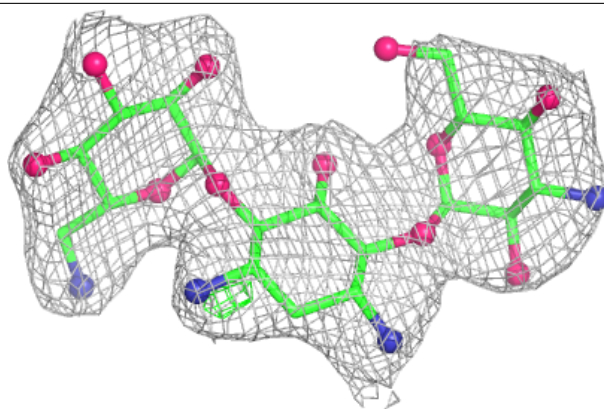
**Electron density around KAN A 301:**

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

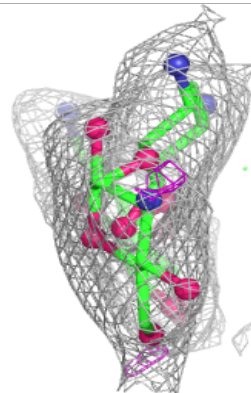
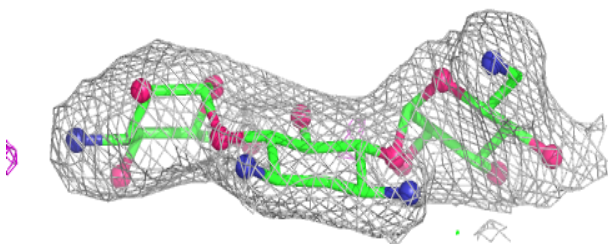
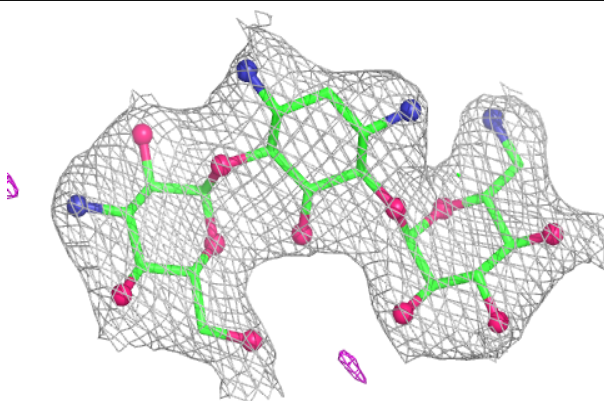


Electron density around KAN D 301:

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

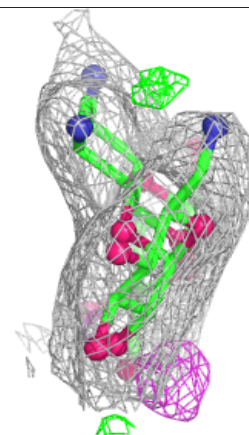
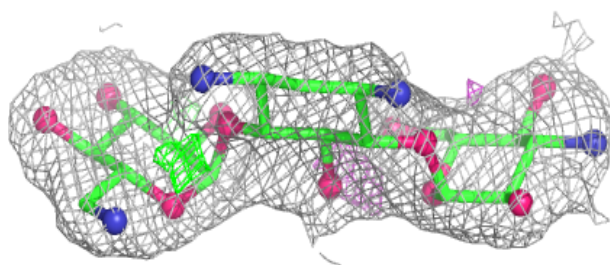
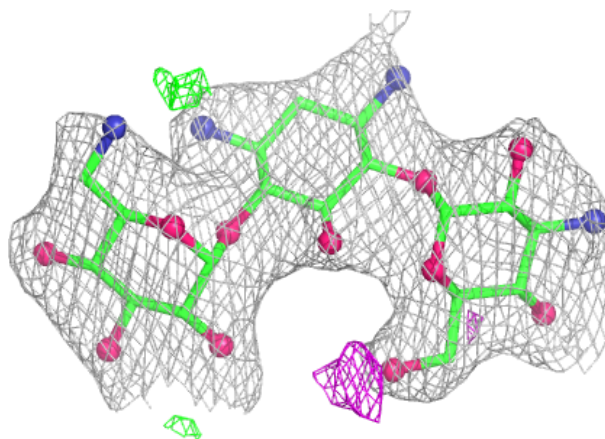
**Electron density around KAN E 301:**

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

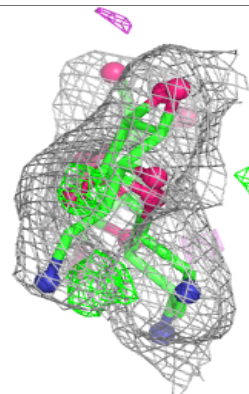
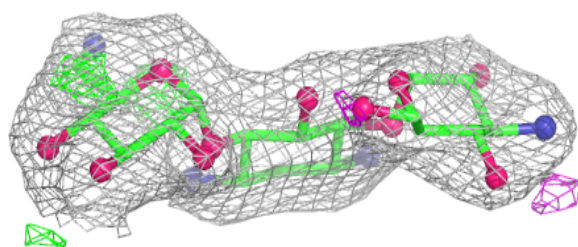
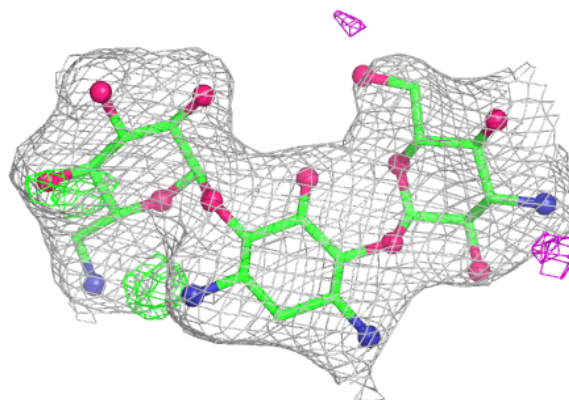


Electron density around KAN C 301:

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

**Electron density around KAN B 301:**

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



6.5 Other polymers [i](#)

There are no such residues in this entry.