Full wwPDB X-ray Structure Validation Report ⓘ

Jan 7, 2024 – 05:41 pm GMT

PDB ID	:	6GJK
Title	:	A degradation product of PD 404182 (P2742) bound to Histone Deacetylase-like Amidohydrolase
Authors	:	Kraemer, A.; Meyer-Almes, F.J.
Deposited on	:	2018-05-16
Resolution	:	1.47 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

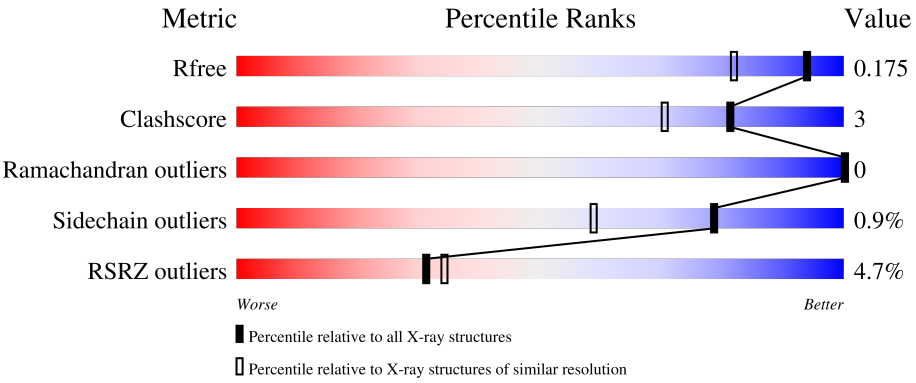
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 1.47 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	4690 (1.50-1.46)
Clashscore	141614	4955 (1.50-1.46)
Ramachandran outliers	138981	4846 (1.50-1.46)
Sidechain outliers	138945	4844 (1.50-1.46)
RSRZ outliers	127900	4614 (1.50-1.46)

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	375	5% 94% 5%
1	B	375	5% 94%

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
5	PEG	A	406[A]	-	-	X	-

2 Entry composition (i)

There are 9 unique types of molecules in this entry. The entry contains 6603 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 Histone deacetylase-like amidohydrolase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	369	Total	C	N	O	S	0	8	0
			2834	1774	513	528	19			
1	B	369	Total	C	N	O	S	0	3	0
			2788	1746	503	520	19			

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-5	MET	-	initiating methionine	UNP Q70I53
A	-4	HIS	-	expression tag	UNP Q70I53
A	-3	HIS	-	expression tag	UNP Q70I53
A	-2	HIS	-	expression tag	UNP Q70I53
A	-1	HIS	-	expression tag	UNP Q70I53
A	0	HIS	-	expression tag	UNP Q70I53
A	1	HIS	-	expression tag	UNP Q70I53
A	251	PRO	HIS	engineered mutation	UNP Q70I53
B	-5	MET	-	initiating methionine	UNP Q70I53
B	-4	HIS	-	expression tag	UNP Q70I53
B	-3	HIS	-	expression tag	UNP Q70I53
B	-2	HIS	-	expression tag	UNP Q70I53
B	-1	HIS	-	expression tag	UNP Q70I53
B	0	HIS	-	expression tag	UNP Q70I53
B	1	HIS	-	expression tag	UNP Q70I53
B	251	PRO	HIS	engineered mutation	UNP Q70I53

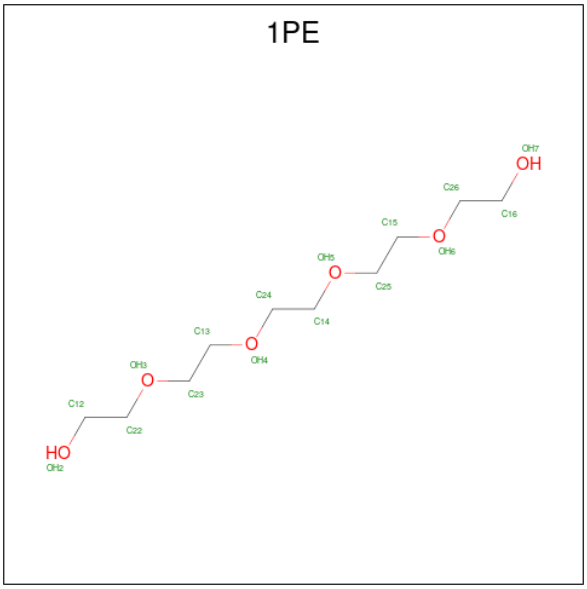
- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

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

- Molecule 3 is POTASSIUM ION (three-letter code: K) (formula: K).

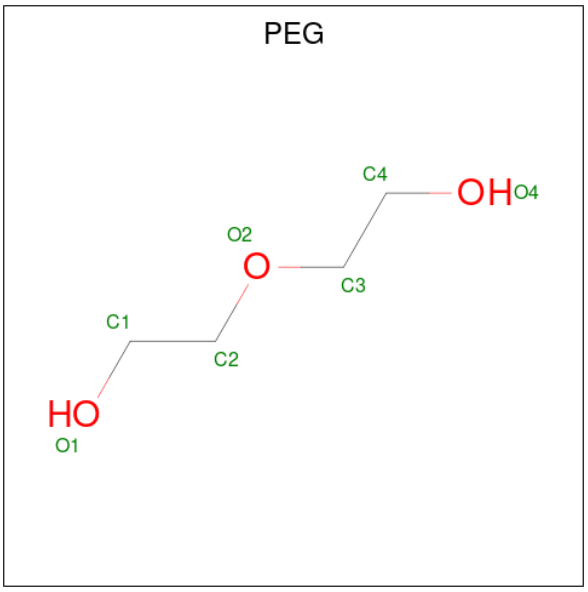
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	2	Total K 2 2	0	0
3	B	2	Total K 2 2	0	0

- Molecule 4 is PENTAETHYLENE GLYCOL (three-letter code: 1PE) (formula: $C_{10}H_{22}O_6$).



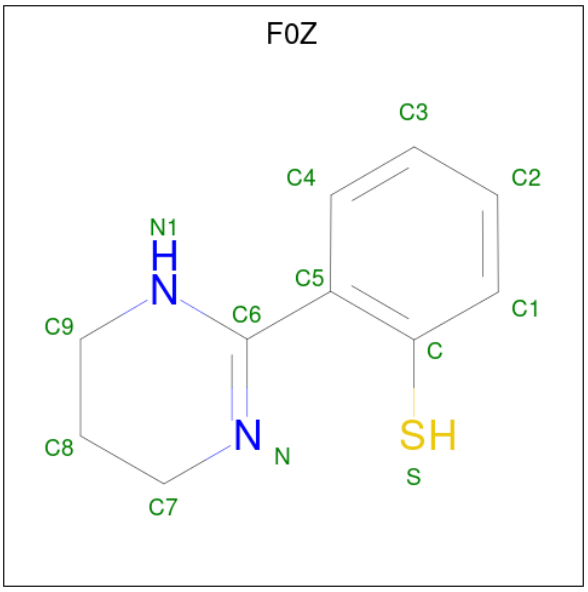
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 11 7 4	0	0
4	B	1	Total C O 16 10 6	0	0

- Molecule 5 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).



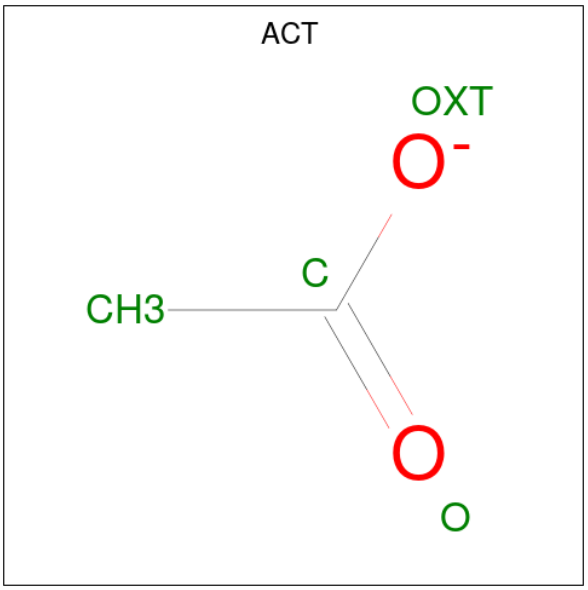
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			7	4	3		
5	A	1	Total	C	O	0	1
			14	8	6		
5	B	1	Total	C	O	0	0
			7	4	3		
5	B	1	Total	C	O	0	0
			7	4	3		
5	B	1	Total	C	O	0	0
			7	4	3		
5	B	1	Total	C	O	0	0
			7	4	3		

- Molecule 6 is 2-(1,4,5,6-tetrahydropyrimidin-2-yl)benzenethiol (three-letter code: F0Z) (formula: $C_{10}H_{12}N_2S$) (labeled as "Ligand of Interest" by depositor).



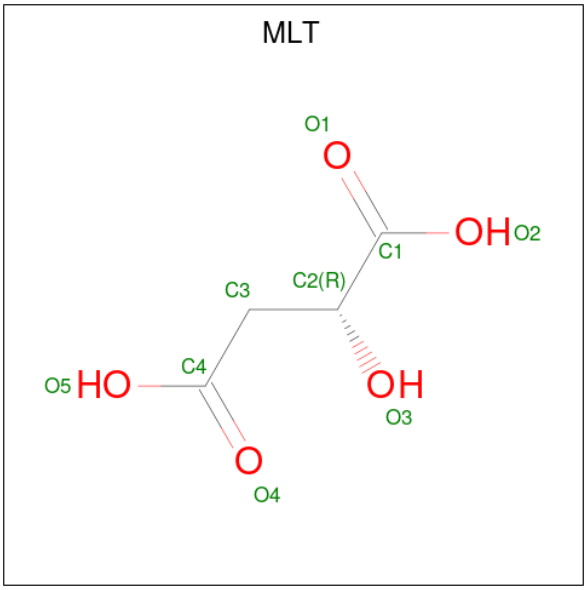
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	1	Total C N S 13 10 2 1	0	0
6	A	1	Total C N S 13 10 2 1	0	0
6	B	1	Total C N S 13 10 2 1	0	0
6	B	1	Total C N S 13 10 2 1	0	0

- Molecule 7 is ACETATE ION (three-letter code: ACT) (formula: $C_2H_3O_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	1	Total C O 4 2 2	0	0
7	B	1	Total C O 4 2 2	0	0

- Molecule 8 is D-MALATE (three-letter code: MLT) (formula: $C_4H_6O_5$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	1	Total C O 9 4 5	0	0

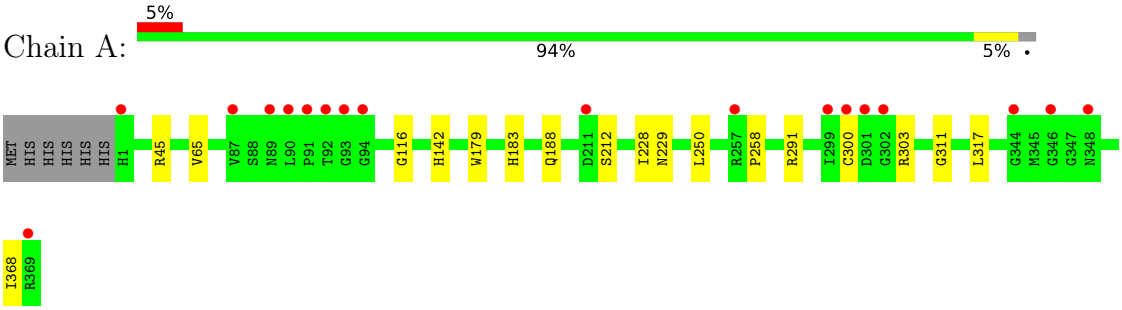
- Molecule 9 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
9	A	436	Total O 436 436	0	0
9	B	394	Total O 394 394	0	0

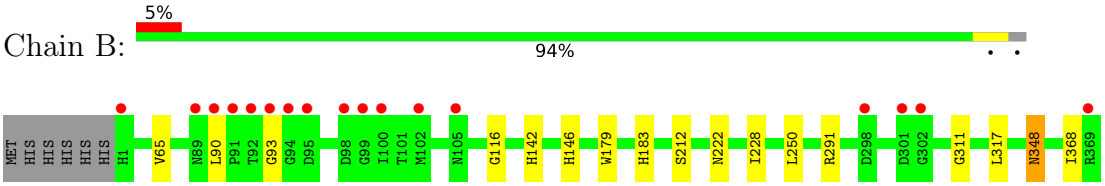
3 Residue-property plots (i)

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: Histone deacetylase-like amidohydrolase



• Molecule 1: Histone deacetylase-like amidohydrolase



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 42 21 2	Depositor
Cell constants a, b, c, α, β, γ	100.68Å 100.68Å 175.53Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	87.77 – 1.47 23.73 – 1.47	Depositor EDS
% Data completeness (in resolution range)	99.9 (87.77-1.47) 100.0 (23.73-1.47)	Depositor EDS
R_{merge}	0.15	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.49 (at 1.47Å)	Xtriage
Refinement program	REFMAC 5.8.0158	Depositor
R, R_{free}	0.144 , 0.174 0.145 , 0.175	Depositor DCC
R_{free} test set	7461 reflections (4.91%)	wwPDB-VP
Wilson B-factor (Å^2)	12.6	Xtriage
Anisotropy	0.447	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 47.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	6603	wwPDB-VP
Average B, all atoms (Å^2)	17.0	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 49.80 % 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 7.0830e-05. 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: ZN, 1PE, PEG, MLT, F0Z, K, ACT

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	0.45	0/2903	0.71	0/3956
1	B	0.45	0/2856	0.72	0/3893
All	All	0.45	0/5759	0.72	0/7849

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	2834	0	2738	12	0
1	B	2788	0	2694	14	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
3	A	2	0	0	0	0
3	B	2	0	0	0	0
4	A	11	0	13	0	0
4	B	16	0	22	1	0
5	A	21	0	30	4	0
5	B	28	0	40	0	0
6	A	26	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	B	26	0	0	0	0
7	A	4	0	3	0	0
7	B	4	0	3	0	0
8	A	9	0	4	0	0
9	A	436	0	0	2	0
9	B	394	0	0	3	0
All	All	6603	0	5547	29	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 (29) 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:348[A]:ASN:H	1:B:348[A]:ASN:HD22	1.06	0.97
1:B:228:ILE:HD11	1:B:368:ILE:HD11	1.60	0.82
1:B:348[A]:ASN:HD22	1:B:348[A]:ASN:N	1.77	0.80
5:A:406[A]:PEG:H11	5:A:406[A]:PEG:H41	1.66	0.77
1:A:228:ILE:HD11	1:A:368:ILE:HD11	1.71	0.73
1:B:348[A]:ASN:H	1:B:348[A]:ASN:ND2	1.82	0.72
5:A:406[A]:PEG:C1	5:A:406[A]:PEG:C4	2.77	0.61
1:B:222:ASN:HB3	4:B:404:1PE:H261	1.83	0.60
5:A:406[A]:PEG:H11	5:A:406[A]:PEG:C4	2.30	0.60
1:A:183:HIS:HE1	1:A:229:ASN:HD21	1.51	0.57
1:A:45:ARG:HG3	9:A:534:HOH:O	2.08	0.54
1:A:258:PRO:O	1:A:300:CYS:HB3	2.10	0.50
1:B:93:GLY:C	9:B:524:HOH:O	2.49	0.50
1:B:228:ILE:CD1	1:B:368:ILE:HD11	2.37	0.50
1:A:183:HIS:HD2	1:A:212:SER:OG	1.98	0.46
1:A:228:ILE:CD1	1:A:368:ILE:HD11	2.44	0.46
1:A:311:GLY:HA3	1:A:317:LEU:HD12	1.98	0.46
1:A:188:GLN:HE21	5:A:406[A]:PEG:H31	1.80	0.46
1:B:65:VAL:O	1:B:116:GLY:HA3	2.16	0.46
1:B:348[A]:ASN:N	1:B:348[A]:ASN:ND2	2.50	0.45
1:B:183:HIS:HD2	1:B:212:SER:OG	2.00	0.45
1:A:65:VAL:O	1:A:116:GLY:HA3	2.18	0.44
1:A:183:HIS:CE1	1:A:229:ASN:HD21	2.32	0.43
1:B:146:HIS:HE1	9:B:828:HOH:O	2.00	0.43
1:A:303[B]:ARG:NE	9:A:509:HOH:O	2.51	0.43
1:A:250:LEU:HD11	1:A:291:ARG:HB3	2.01	0.43
1:B:311:GLY:HA3	1:B:317:LEU:HD12	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:90:LEU:HD22	9:B:524:HOH:O	2.21	0.41
1:B:250:LEU:HD11	1:B:291:ARG:HB3	2.03	0.41

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	375/375 (100%)	363 (97%)	12 (3%)	0	100	100
1	B	370/375 (99%)	362 (98%)	8 (2%)	0	100	100
All	All	745/750 (99%)	725 (97%)	20 (3%)	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	290/288 (101%)	288 (99%)	2 (1%)	84	68
1	B	284/288 (99%)	280 (99%)	4 (1%)	67	40
All	All	574/576 (100%)	568 (99%)	6 (1%)	78	54

All (6) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	142	HIS
1	A	179	TRP
1	B	142	HIS
1	B	179	TRP
1	B	348[A]	ASN
1	B	348[B]	ASN

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	105	ASN
1	A	183	HIS
1	A	203	HIS
1	A	229	ASN
1	B	183	HIS
1	B	224	HIS

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 22 ligands modelled in this entry, 6 are monoatomic - leaving 16 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	$\#\|Z\|>2$
7	ACT	A	409	2	3,3,3	1.02	0	3,3,3	1.70	2 (66%)
7	ACT	B	411	2	3,3,3	1.09	0	3,3,3	1.30	0
5	PEG	A	405	-	6,6,6	0.55	0	5,5,5	0.36	0
5	PEG	A	406[B]	-	6,6,6	0.47	0	5,5,5	0.25	0
4	1PE	B	404	-	15,15,15	0.62	0	14,14,14	0.81	0
5	PEG	A	406[A]	-	6,6,6	0.39	0	5,5,5	0.40	0
6	F0Z	A	407	1	13,14,14	0.72	0	14,18,18	1.45	1 (7%)
6	F0Z	A	408	1	13,14,14	0.84	0	14,18,18	1.97	2 (14%)
6	F0Z	B	409	1	13,14,14	0.59	0	14,18,18	1.48	2 (14%)
6	F0Z	B	410	1	13,14,14	0.73	0	14,18,18	1.96	4 (28%)
5	PEG	B	408	-	6,6,6	0.60	0	5,5,5	0.37	0
5	PEG	B	405	-	6,6,6	0.42	0	5,5,5	0.24	0
8	MLT	A	410	-	8,8,8	1.06	0	10,10,10	1.29	2 (20%)
4	1PE	A	404	-	10,10,15	0.54	0	9,9,14	0.98	0
5	PEG	B	407	-	6,6,6	0.50	0	5,5,5	0.32	0
5	PEG	B	406	-	6,6,6	0.58	0	5,5,5	0.63	0

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
5	PEG	A	405	-	-	2/4/4/4	-
5	PEG	A	406[B]	-	-	3/4/4/4	-
4	1PE	B	404	-	-	6/13/13/13	-
5	PEG	A	406[A]	-	-	1/4/4/4	-
6	F0Z	A	407	1	-	0/4/12/12	0/2/2/2
6	F0Z	A	408	1	-	4/4/12/12	0/2/2/2
6	F0Z	B	409	1	-	4/4/12/12	0/2/2/2
6	F0Z	B	410	1	-	2/4/12/12	0/2/2/2
5	PEG	B	408	-	-	2/4/4/4	-
5	PEG	B	405	-	-	1/4/4/4	-
8	MLT	A	410	-	-	5/8/8/8	-
4	1PE	A	404	-	-	6/8/8/13	-
5	PEG	B	407	-	-	2/4/4/4	-
5	PEG	B	406	-	-	1/4/4/4	-

There are no bond length outliers.

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	A	408	F0Z	C7-N-C6	5.23	128.18	116.81
6	B	410	F0Z	C7-N-C6	5.04	127.76	116.81
6	B	409	F0Z	C7-N-C6	4.85	127.36	116.81
6	A	407	F0Z	C7-N-C6	4.25	126.04	116.81
6	A	408	F0Z	C1-C-C5	-2.78	116.34	119.08
6	B	410	F0Z	C5-C-S	2.74	127.92	120.77
8	A	410	MLT	O2-C1-C2	2.56	118.35	112.72
7	A	409	ACT	OXT-C-O	-2.12	114.24	122.05
6	B	410	F0Z	C5-C6-N1	2.12	121.26	118.14
6	B	410	F0Z	C4-C5-C6	-2.06	113.00	118.50
8	A	410	MLT	O5-C4-C3	2.05	120.64	114.07
7	A	409	ACT	OXT-C-CH3	2.04	123.63	115.18
6	B	409	F0Z	C8-C7-N	-2.03	107.35	113.34

There are no chirality outliers.

All (39) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	B	409	F0Z	C-C5-C6-N
6	B	409	F0Z	C4-C5-C6-N1
6	B	409	F0Z	C4-C5-C6-N
8	A	410	MLT	O2-C1-C2-C3
4	B	404	1PE	OH7-C16-C26-OH6
5	A	406[B]	PEG	O2-C3-C4-O4
5	B	407	PEG	O1-C1-C2-O2
5	B	408	PEG	O2-C3-C4-O4
4	A	404	1PE	OH2-C12-C22-OH3
4	B	404	1PE	OH2-C12-C22-OH3
5	A	405	PEG	O1-C1-C2-O2
5	A	406[A]	PEG	O2-C3-C4-O4
5	A	406[B]	PEG	O1-C1-C2-O2
6	B	409	F0Z	C-C5-C6-N1
6	B	410	F0Z	C-C5-C6-N1
6	B	410	F0Z	C-C5-C6-N
4	A	404	1PE	OH4-C13-C23-OH3
8	A	410	MLT	O1-C1-C2-C3
5	B	407	PEG	O2-C3-C4-O4
5	B	408	PEG	C4-C3-O2-C2
4	B	404	1PE	OH6-C15-C25-OH5
4	A	404	1PE	C13-C23-OH3-C22
6	A	408	F0Z	C4-C5-C6-N1

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Mol	Chain	Res	Type	Atoms
5	B	405	PEG	O2-C3-C4-O4
6	A	408	F0Z	C-C5-C6-N1
6	A	408	F0Z	C4-C5-C6-N
4	A	404	1PE	C12-C22-OH3-C23
6	A	408	F0Z	C-C5-C6-N
5	A	406[B]	PEG	C4-C3-O2-C2
8	A	410	MLT	C2-C3-C4-O4
8	A	410	MLT	C2-C3-C4-O5
4	B	404	1PE	C14-C24-OH4-C13
5	B	406	PEG	O1-C1-C2-O2
4	B	404	1PE	OH4-C13-C23-OH3
4	A	404	1PE	C14-C24-OH4-C13
8	A	410	MLT	O2-C1-C2-O3
5	A	405	PEG	O2-C3-C4-O4
4	A	404	1PE	OH5-C14-C24-OH4
4	B	404	1PE	C13-C23-OH3-C22

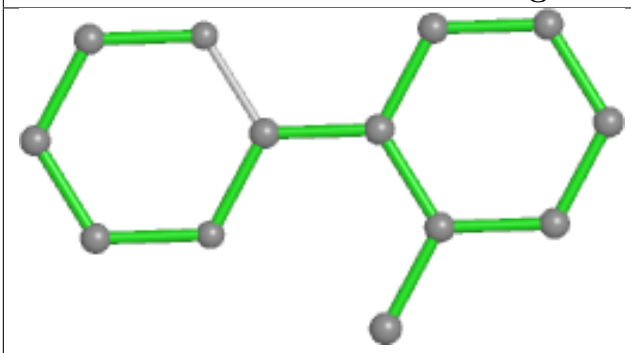
There are no ring outliers.

2 monomers are involved in 5 short contacts:

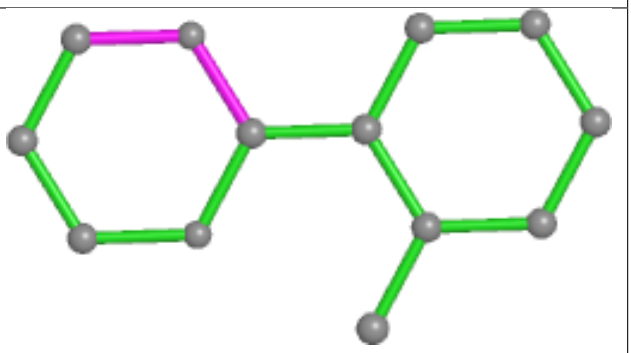
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	404	1PE	1	0
5	A	406[A]	PEG	4	0

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 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.

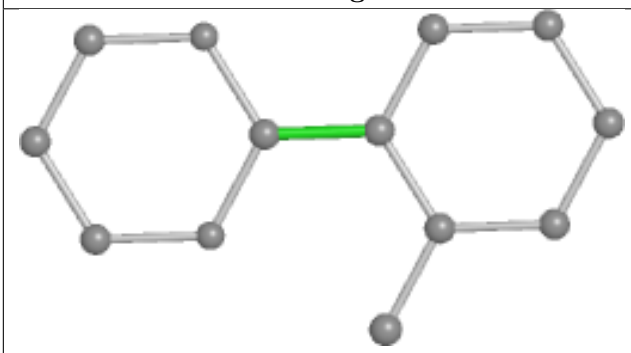
Ligand F0Z A 407



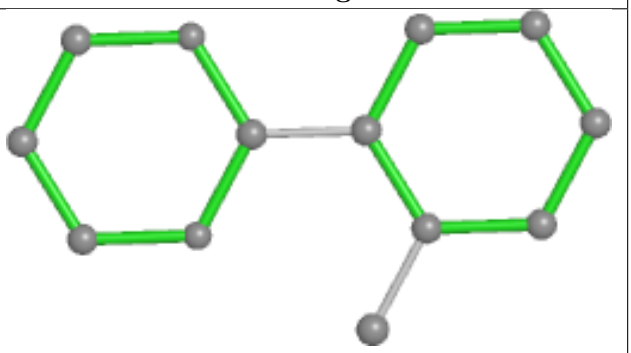
Bond lengths



Bond angles

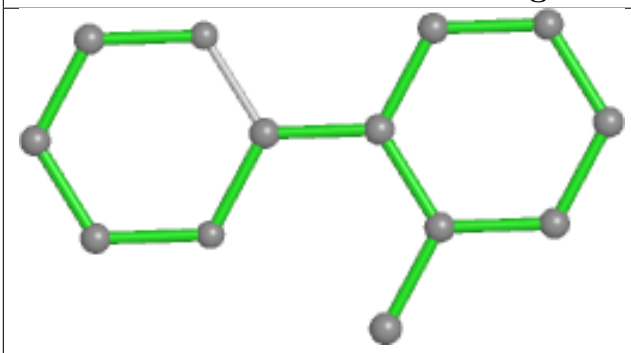


Torsions

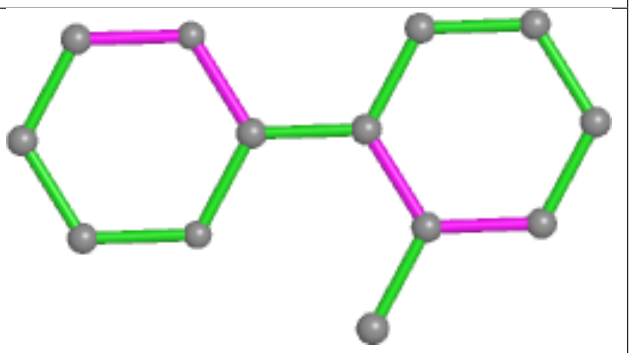


Rings

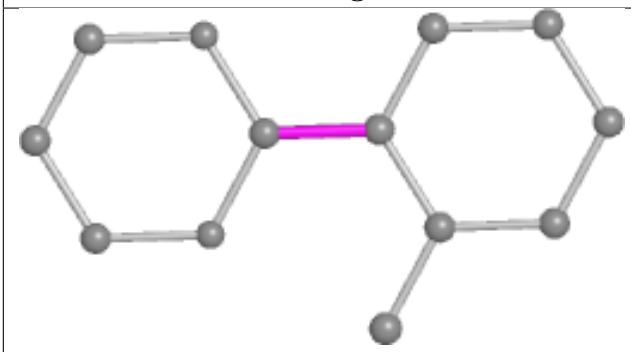
Ligand F0Z A 408



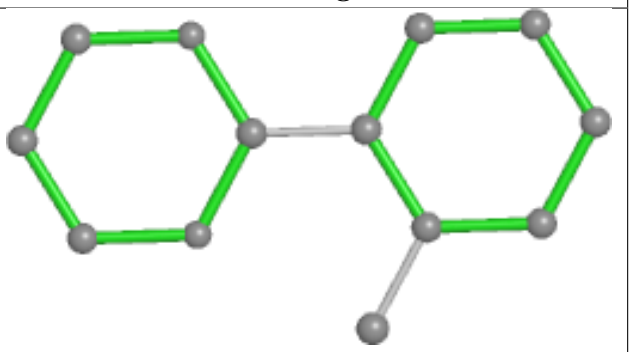
Bond lengths



Bond angles

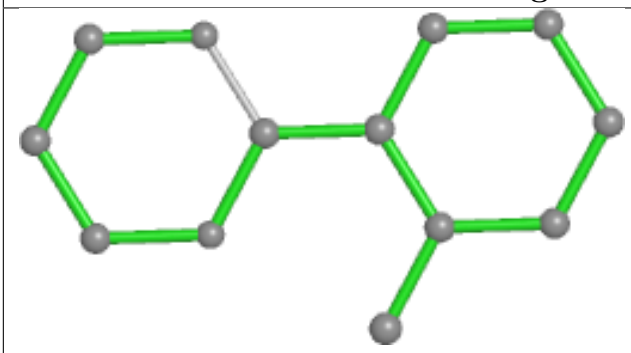


Torsions

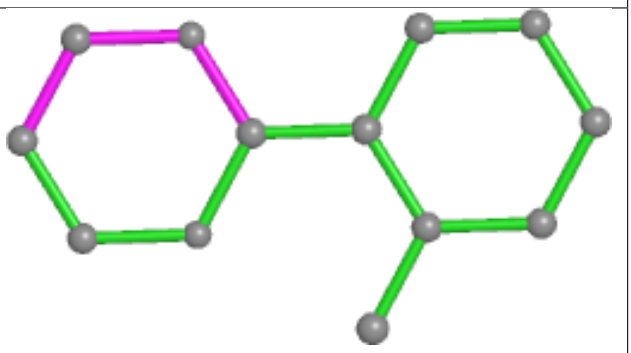


Rings

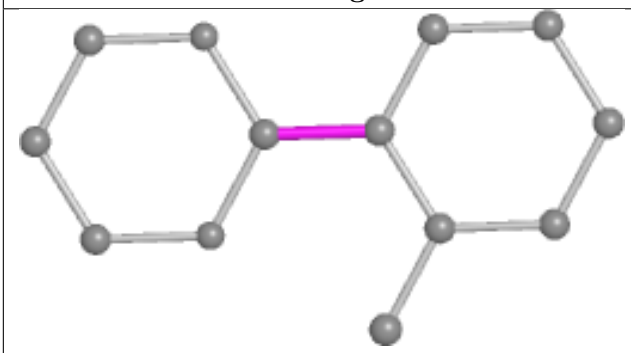
Ligand F0Z B 409



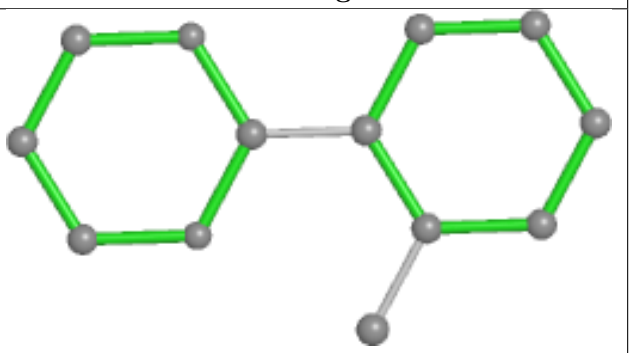
Bond lengths



Bond angles

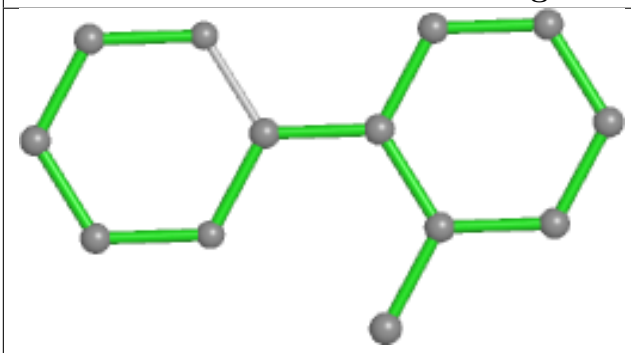


Torsions

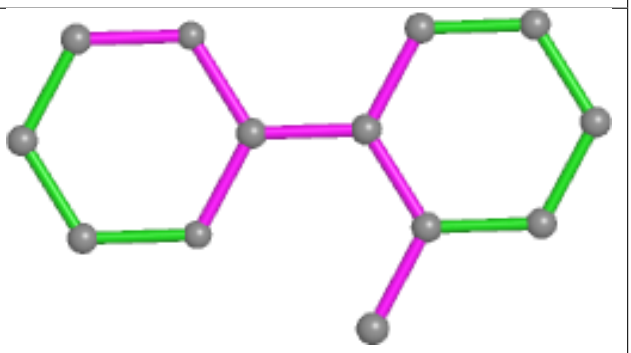


Rings

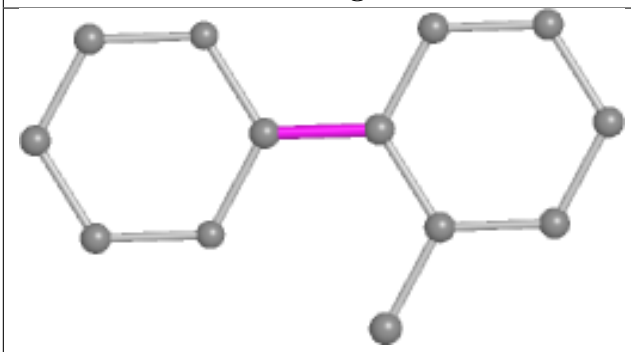
Ligand F0Z B 410



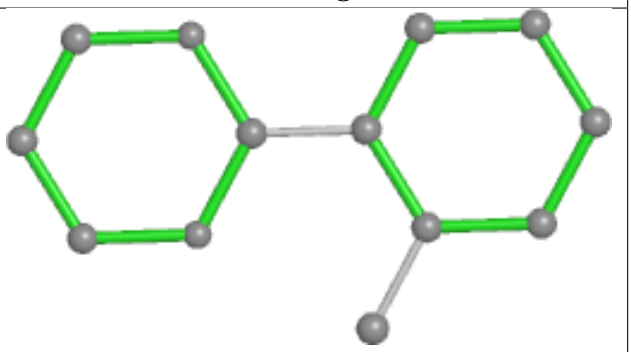
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	369/375 (98%)	0.06	18 (4%)	29	32	9, 14, 24, 42	0
1	B	369/375 (98%)	0.10	17 (4%)	32	35	8, 13, 28, 40	0
All	All	738/750 (98%)	0.08	35 (4%)	31	34	8, 14, 27, 42	0

All (35) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	93	GLY	7.4
1	B	102	MET	6.4
1	B	91	PRO	5.9
1	B	94	GLY	5.5
1	B	90	LEU	5.4
1	A	299	ILE	5.0
1	B	92	THR	4.8
1	B	301	ASP	4.7
1	B	302	GLY	3.8
1	B	1	HIS	3.8
1	A	301[A]	ASP	3.7
1	A	302	GLY	3.7
1	A	1	HIS	3.5
1	B	105	ASN	3.5
1	B	369	ARG	3.3
1	A	92	THR	3.2
1	A	346	GLY	3.1
1	A	300	CYS	2.8
1	A	344	GLY	2.7
1	B	100	ILE	2.6
1	B	298[A]	ASP	2.6
1	A	369	ARG	2.6
1	A	91	PRO	2.6
1	B	95	ASP	2.5

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Mol	Chain	Res	Type	RSRZ
1	A	90	LEU	2.4
1	A	257	ARG	2.4
1	A	89	ASN	2.4
1	A	211	ASP	2.3
1	B	98	ASP	2.3
1	A	93	GLY	2.2
1	A	94	GLY	2.2
1	B	99	GLY	2.1
1	B	89	ASN	2.1
1	A	87	VAL	2.1
1	A	348	ASN	2.1

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
5	PEG	B	408	7/7	0.58	0.25	36,38,40,40	0
5	PEG	A	406[B]	7/7	0.59	0.29	26,27,28,31	7
5	PEG	A	406[A]	7/7	0.59	0.29	18,24,27,29	7
6	F0Z	B	410	13/13	0.65	0.30	35,38,42,51	0
4	1PE	B	404	16/16	0.66	0.26	24,41,48,51	0
6	F0Z	A	408	13/13	0.72	0.32	34,41,44,45	0
5	PEG	B	407	7/7	0.73	0.32	43,44,45,53	0
5	PEG	B	406	7/7	0.84	0.13	19,30,33,42	0
5	PEG	A	405	7/7	0.86	0.17	39,41,46,61	0
4	1PE	A	404	11/16	0.87	0.14	28,32,42,44	0
5	PEG	B	405	7/7	0.90	0.17	34,38,41,41	0
8	MLT	A	410	9/9	0.91	0.15	25,30,34,37	0

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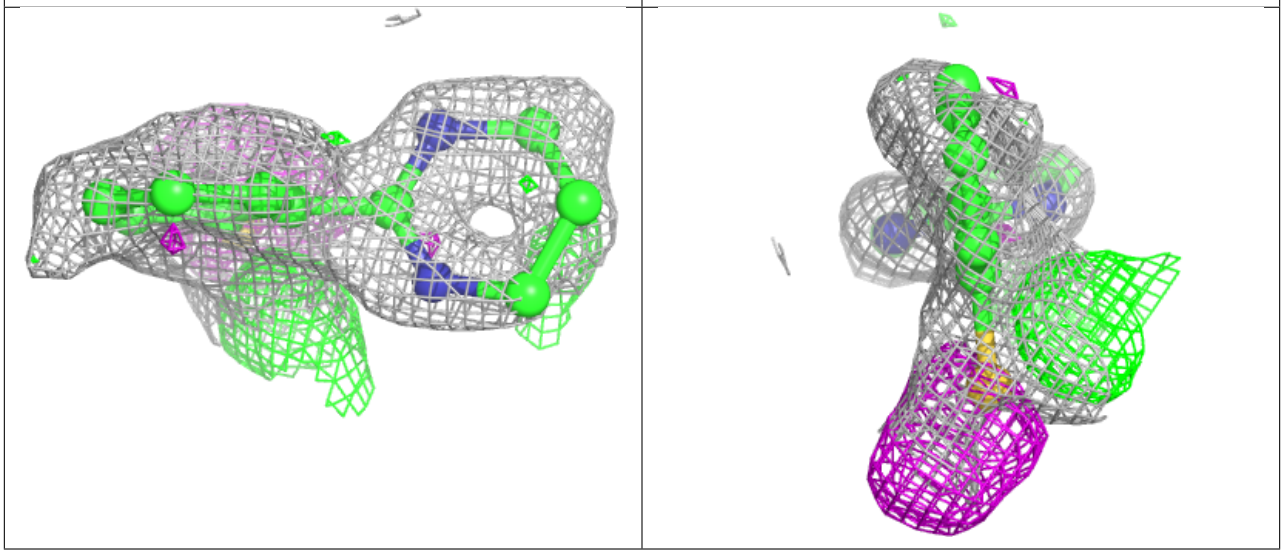
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
6	F0Z	A	407	13/13	0.93	0.11	14,19,21,21	0
6	F0Z	B	409	13/13	0.95	0.11	15,20,24,25	0
7	ACT	B	411	4/4	0.96	0.09	13,14,14,15	0
7	ACT	A	409	4/4	0.96	0.09	14,15,15,16	0
3	K	B	402	1/1	1.00	0.04	14,14,14,14	1
3	K	B	403	1/1	1.00	0.05	12,12,12,12	0
2	ZN	A	401	1/1	1.00	0.04	10,10,10,10	1
2	ZN	B	401	1/1	1.00	0.03	9,9,9,9	1
3	K	A	402	1/1	1.00	0.03	16,16,16,16	0
3	K	A	403	1/1	1.00	0.04	12,12,12,12	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.

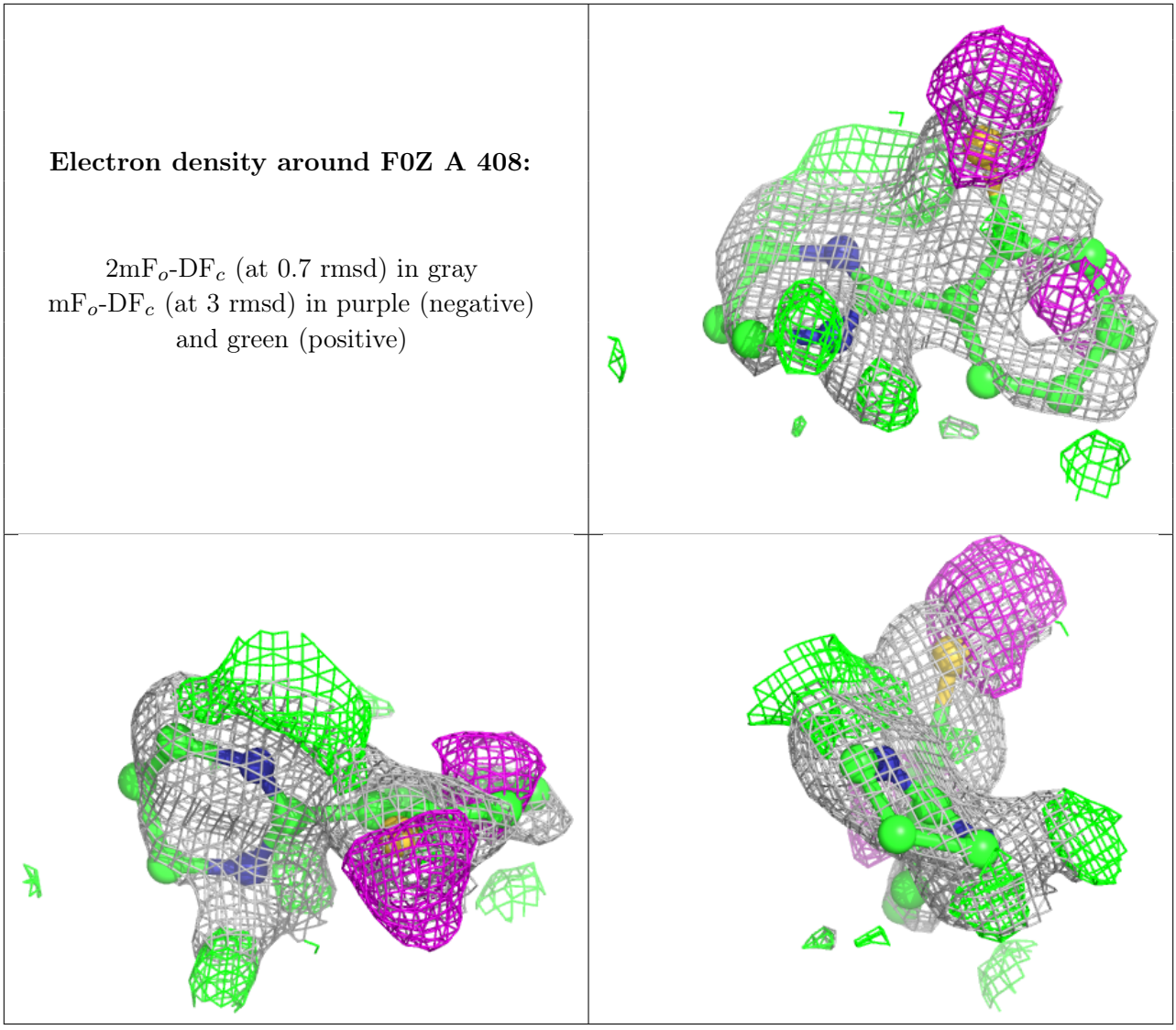
Electron density around F0Z B 410:

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



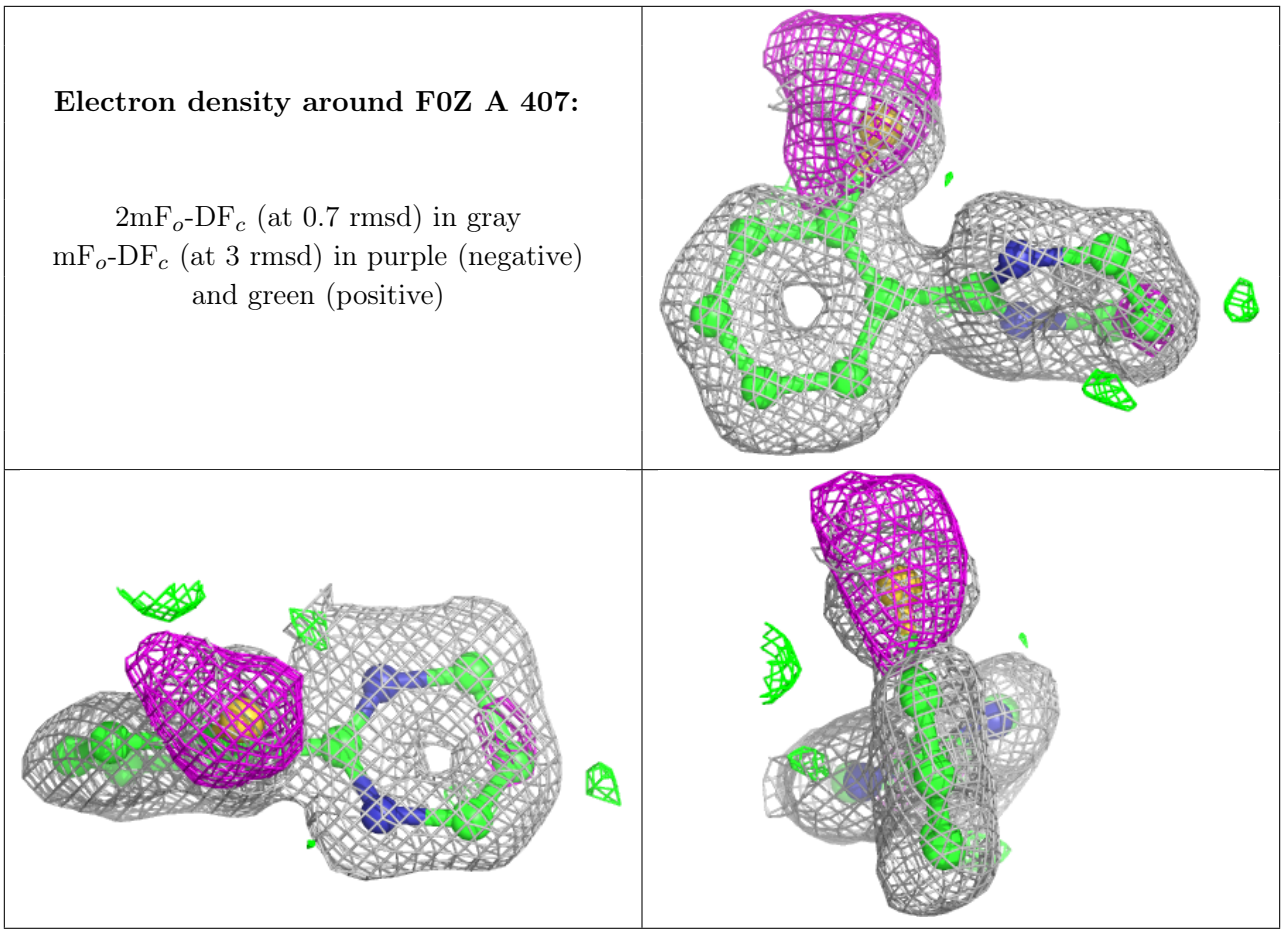
Electron density around F0Z A 408:

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



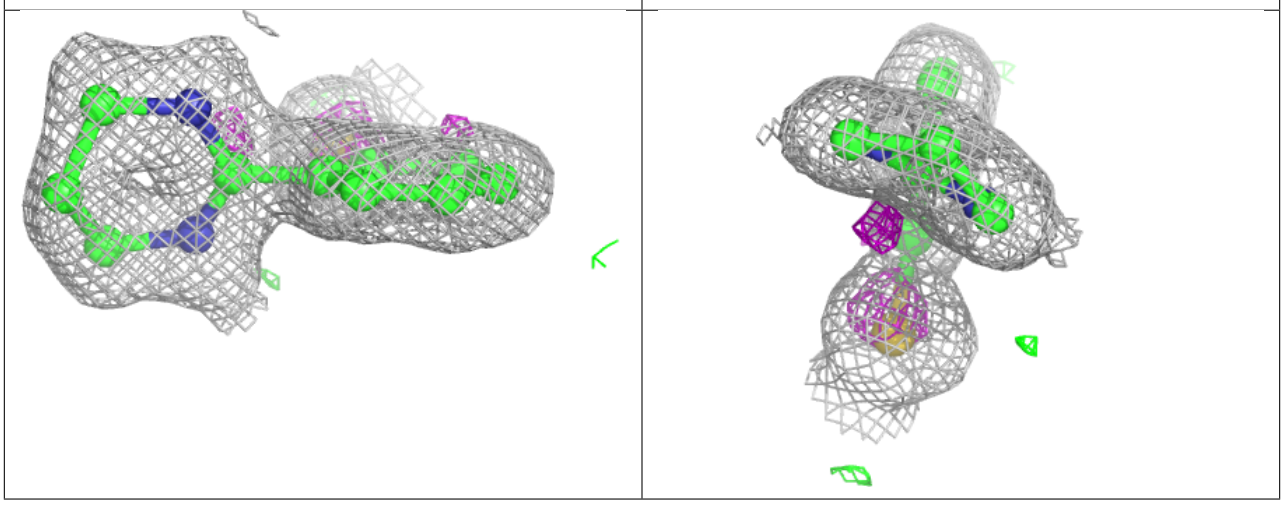
Electron density around F0Z A 407:

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



Electron density around F0Z B 409:

$2mF_o$-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.