wwPDB X-ray Structure Validation Summary Report (i)

Oct 5, 2023 – 01:54 PM EDT

PDB ID	:	6MOM
Title	:	Crystal structure of human Interleukin-1 receptor associated Kinase 4 (IRAK 4, CID 100300) in complex with compound NCC00371481 (BSI 107591)
Authors	:	Abendroth, J.; Mayclin, S.J.; Lorimer, D.D.; Starczynowski, D.; Hoyt, S.; Tawa, G.; Thomas, C.
Deposited on	:	2018-10-04
Resolution	:	2.10 Å(reported)

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

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

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

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

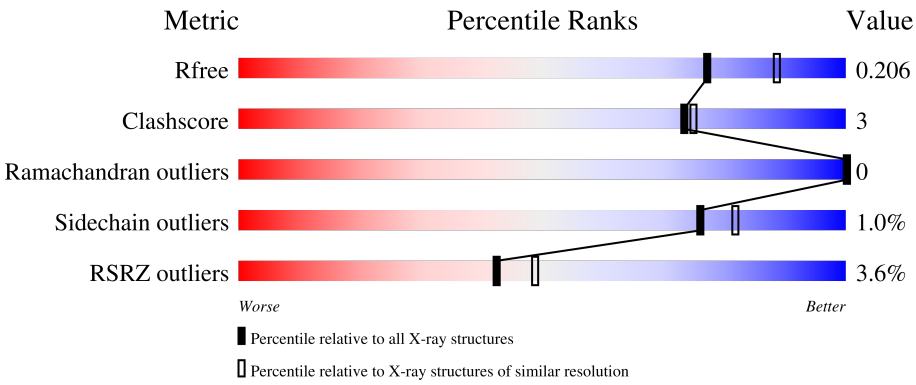
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35.1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35.1

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 2.10 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	5197 (2.10-2.10)
Clashscore	141614	5710 (2.10-2.10)
Ramachandran outliers	138981	5647 (2.10-2.10)
Sidechain outliers	138945	5648 (2.10-2.10)
RSRZ outliers	127900	5083 (2.10-2.10)

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	303	5%, 84%, 12%, 5%
1	B	303	3%, 87%, 8%, 5%
1	C	303	3%, 87%, 9%, •
1	D	303	4%, 90%, 8%, •

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 10331 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.

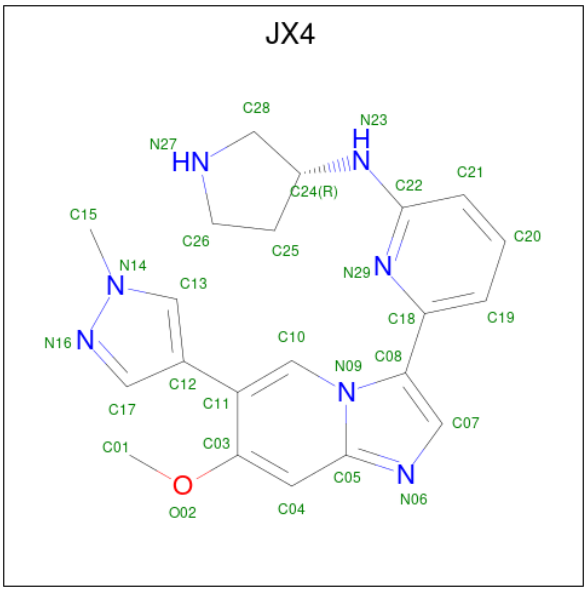
- Molecule 1 is a protein called Interleukin-1 receptor-associated kinase 4.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	P	S			
1	A	289	2260	1423	374	446	3	14	0	8	0
1	B	289	2318	1457	383	461	3	14	0	17	0
1	C	292	2293	1440	380	455	3	15	0	8	0
1	D	296	2325	1461	390	457	3	14	0	7	0

There are 8 discrepancies between the modelled and reference sequences:

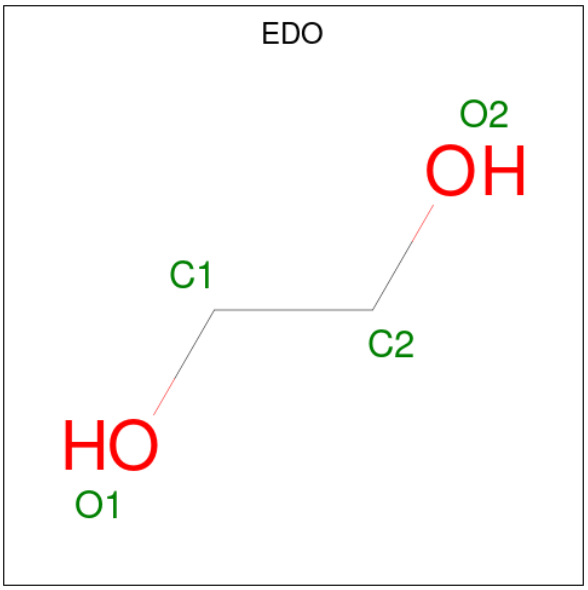
Chain	Residue	Modelled	Actual	Comment	Reference
A	158	GLY	-	expression tag	UNP Q9NWZ3
A	159	SER	-	expression tag	UNP Q9NWZ3
B	158	GLY	-	expression tag	UNP Q9NWZ3
B	159	SER	-	expression tag	UNP Q9NWZ3
C	158	GLY	-	expression tag	UNP Q9NWZ3
C	159	SER	-	expression tag	UNP Q9NWZ3
D	158	GLY	-	expression tag	UNP Q9NWZ3
D	159	SER	-	expression tag	UNP Q9NWZ3

- Molecule 2 is 6-[7-methoxy-6-(1-methyl-1H-pyrazol-4-yl)imidazo[1,2-a]pyridin-3-yl]-N-[(3R)-pyrrolidin-3-yl]pyridin-2-amine (three-letter code: JX4) (formula: $C_{21}H_{23}N_7O$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
2	A	1	29	21	7	1	0	0
			Total	C	N	O		
2	B	1	29	21	7	1	0	0
			Total	C	N	O		
2	C	1	29	21	7	1	0	0
			Total	C	N	O		
2	D	1	29	21	7	1	0	0

- Molecule 3 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
3	B	1	4	2	2	0	0
3	D	1	4	2	2	0	0

- Molecule 4 is water.

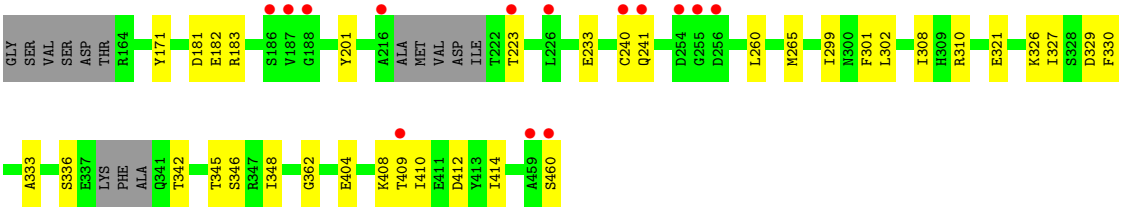
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
4	A	219	227	227	0	8
4	B	249	261	261	0	13
4	C	237	243	243	0	6
4	D	277	280	280	0	3

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.

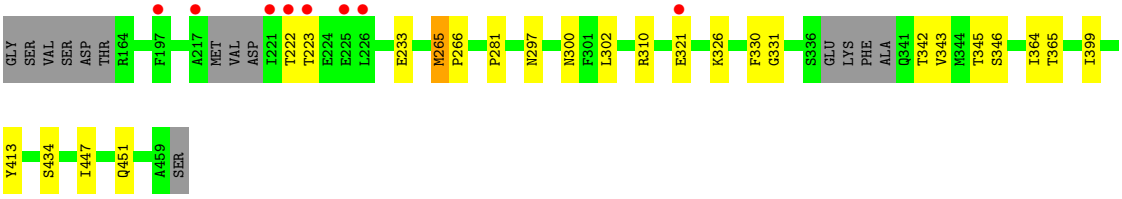
• Molecule 1: Interleukin-1 receptor-associated kinase 4

Chain A:



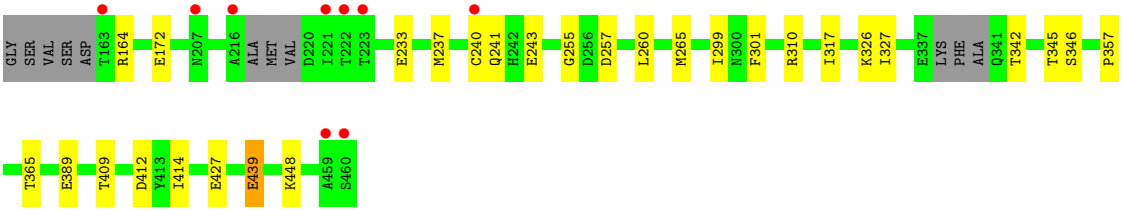
• Molecule 1: Interleukin-1 receptor-associated kinase 4

Chain B:



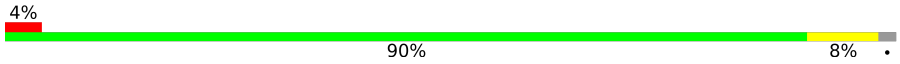
• Molecule 1: Interleukin-1 receptor-associated kinase 4

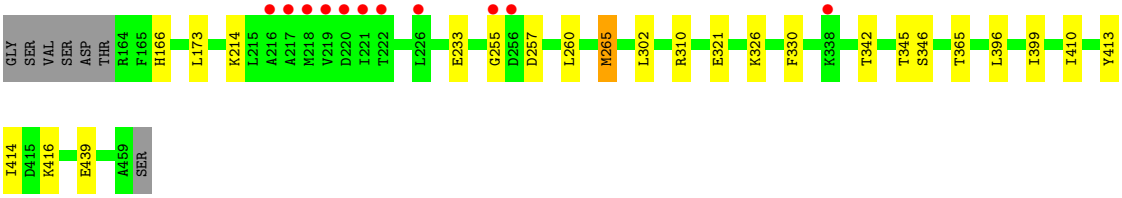
Chain C:



• Molecule 1: Interleukin-1 receptor-associated kinase 4

Chain D:




GLY
SER
VAL
SER
ASP
THR
R164
F165
H166
L173
K214
L215
A216
A217
M218
V219
D220
I221
T222
L226
E233
G255
D256
D257
L260
M265
L302
R310
E321
K326
F330
K338
T342
T345
S346
T365
L396
I399
I410
Y413
I414
D415
K416
E439
A459
SER

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	138.29Å 141.91Å 87.89Å 90.00° 126.22° 90.00°	Depositor
Resolution (Å)	45.73 – 2.10 45.73 – 2.10	Depositor EDS
% Data completeness (in resolution range)	99.3 (45.73-2.10) 99.3 (45.73-2.10)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	4.97 (at 2.10Å)	Xtriage
Refinement program	PHENIX	Depositor
R, R_{free}	0.167 , 0.207 0.167 , 0.206	Depositor DCC
R_{free} test set	2041 reflections (2.58%)	wwPDB-VP
Wilson B-factor (Å^2)	24.1	Xtriage
Anisotropy	0.161	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 57.8	EDS
L-test for twinning[2]	$< \|L\| > = 0.52$, $< L^2 > = 0.36$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	10331	wwPDB-VP
Average B, all atoms (Å^2)	32.0	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 35.59 % 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 5.6949e-04. 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 (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: EDO, TPO, JX4, SEP

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	0.37	0/2287	0.56	0/3085
1	B	0.40	0/2361	0.57	1/3189 (0.0%)
1	C	0.39	0/2316	0.58	0/3122
1	D	0.39	0/2351	0.59	1/3174 (0.0%)
All	All	0.39	0/9315	0.57	2/12570 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	265	MET	CG-SD-CE	-5.50	91.39	100.20
1	B	265	MET	CG-SD-CE	-5.45	91.47	100.20

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2260	0	2192	20	1
1	B	2318	0	2239	12	0
1	C	2293	0	2229	14	1
1	D	2325	0	2274	17	0
2	A	29	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	29	0	0	0	0
2	C	29	0	0	0	0
2	D	29	0	0	0	0
3	B	4	0	6	0	0
3	D	4	0	6	0	0
4	A	227	0	0	4	0
4	B	261	0	0	1	0
4	C	243	0	0	2	0
4	D	280	0	0	4	0
All	All	10331	0	8946	61	1

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.

The worst 5 of 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:233[B]:GLU:HG2	1:C:260:LEU:HD13	1.68	0.76
1:A:233[B]:GLU:HG2	1:A:260:LEU:HD13	1.75	0.68
1:B:265:MET:HE1	1:B:326:LYS:HG3	1.78	0.65
1:A:321[B]:GLU:H	1:A:321[B]:GLU:CD	2.01	0.64
1:D:214:LYS:NZ	4:D:602:HOH:O	2.30	0.64

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:171:TYR:OH	1:C:172[A]:GLU:OE2[2_555]	2.11	0.09

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	288/303 (95%)	284 (99%)	4 (1%)	0	100	100
1	B	297/303 (98%)	292 (98%)	5 (2%)	0	100	100
1	C	291/303 (96%)	285 (98%)	6 (2%)	0	100	100
1	D	298/303 (98%)	291 (98%)	7 (2%)	0	100	100
All	All	1174/1212 (97%)	1152 (98%)	22 (2%)	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	240/260 (92%)	239 (100%)	1 (0%)	91	94
1	B	248/260 (95%)	246 (99%)	2 (1%)	81	86
1	C	245/260 (94%)	239 (98%)	6 (2%)	49	53
1	D	248/260 (95%)	247 (100%)	1 (0%)	91	94
All	All	981/1040 (94%)	971 (99%)	10 (1%)	76	82

5 of 10 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	427	GLU
1	C	439	GLU
1	D	365	THR
1	C	237	MET
1	C	243[A]	GLU

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)

12 non-standard protein/DNA/RNA residues are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
1	TPO	B	345	1	8,10,11	1.24	1 (12%)	10,14,16	1.29	1 (10%)
1	SEP	C	346	1	8,9,10	1.58	1 (12%)	8,12,14	1.09	1 (12%)
1	TPO	D	342	1	8,10,11	1.67	1 (12%)	10,14,16	1.88	1 (10%)
1	SEP	D	346	1	8,9,10	1.56	1 (12%)	8,12,14	1.02	1 (12%)
1	TPO	A	342	1	8,10,11	1.62	1 (12%)	10,14,16	1.53	1 (10%)
1	TPO	C	342	1	8,10,11	1.16	0	10,14,16	1.42	1 (10%)
1	TPO	A	345	1	8,10,11	1.68	2 (25%)	10,14,16	1.56	2 (20%)
1	SEP	A	346	1	8,9,10	1.56	1 (12%)	8,12,14	0.86	0
1	TPO	C	345	1	8,10,11	1.19	0	10,14,16	1.52	1 (10%)
1	TPO	B	342	1	8,10,11	1.74	1 (12%)	10,14,16	1.83	1 (10%)
1	TPO	D	345	1	8,10,11	1.72	2 (25%)	10,14,16	1.15	1 (10%)
1	SEP	B	346	1	8,9,10	1.58	1 (12%)	8,12,14	1.08	1 (12%)

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
1	TPO	B	345	1	-	4/9/11/13	-
1	SEP	C	346	1	-	3/5/8/10	-
1	TPO	D	342	1	-	1/9/11/13	-
1	SEP	D	346	1	-	3/5/8/10	-
1	TPO	A	342	1	-	1/9/11/13	-
1	TPO	C	342	1	-	1/9/11/13	-
1	TPO	A	345	1	-	3/9/11/13	-
1	SEP	A	346	1	-	2/5/8/10	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	TPO	C	345	1	-	4/9/11/13	-
1	TPO	B	342	1	-	0/9/11/13	-
1	TPO	D	345	1	-	2/9/11/13	-
1	SEP	B	346	1	-	3/5/8/10	-

The worst 5 of 12 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	342	TPO	P-O1P	3.49	1.61	1.50
1	D	345	TPO	P-O1P	3.44	1.61	1.50
1	C	346	SEP	P-O1P	3.43	1.61	1.50
1	B	346	SEP	P-O1P	3.42	1.61	1.50
1	A	342	TPO	P-O1P	3.42	1.61	1.50

The worst 5 of 12 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	342	TPO	P-OG1-CB	-5.28	107.26	123.21
1	D	342	TPO	P-OG1-CB	-5.27	107.30	123.21
1	A	342	TPO	P-OG1-CB	-4.21	110.50	123.21
1	C	342	TPO	P-OG1-CB	-3.82	111.67	123.21
1	A	345	TPO	P-OG1-CB	-3.34	113.11	123.21

There are no chirality outliers.

5 of 27 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	345	TPO	N-CA-CB-OG1
1	A	345	TPO	O-C-CA-CB
1	B	345	TPO	N-CA-CB-OG1
1	B	345	TPO	O-C-CA-CB
1	B	345	TPO	CB-OG1-P-O1P

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

6 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	JX4	A	500	-	27,33,33	0.95	1 (3%)	27,47,47	1.16	2 (7%)
3	EDO	B	501	-	3,3,3	0.50	0	2,2,2	0.32	0
3	EDO	D	501	-	3,3,3	0.48	0	2,2,2	0.33	0
2	JX4	C	500	-	27,33,33	1.07	3 (11%)	27,47,47	1.20	1 (3%)
2	JX4	D	500	-	27,33,33	1.04	3 (11%)	27,47,47	1.36	3 (11%)
2	JX4	B	500	-	27,33,33	1.18	3 (11%)	27,47,47	1.29	3 (11%)

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	JX4	A	500	-	-	0/14/21/21	0/5/5/5
3	EDO	B	501	-	-	0/1/1/1	-
3	EDO	D	501	-	-	0/1/1/1	-
2	JX4	C	500	-	-	0/14/21/21	0/5/5/5
2	JX4	D	500	-	-	0/14/21/21	0/5/5/5
2	JX4	B	500	-	-	0/14/21/21	0/5/5/5

The worst 5 of 10 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	500	JX4	C10-C11	-2.95	1.34	1.39
2	B	500	JX4	C11-C03	2.90	1.46	1.40
2	D	500	JX4	C10-C11	-2.63	1.34	1.39
2	A	500	JX4	C11-C03	2.53	1.45	1.40
2	D	500	JX4	C11-C03	2.49	1.45	1.40

The worst 5 of 9 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	D	500	JX4	C18-N29-C22	4.42	121.37	118.06
2	C	500	JX4	C18-N29-C22	4.13	121.16	118.06
2	A	500	JX4	C18-N29-C22	3.91	120.99	118.06
2	B	500	JX4	C01-O02-C03	3.68	123.09	117.53
2	B	500	JX4	C18-N29-C22	3.36	120.58	118.06

There are no chirality outliers.

There are no torsion outliers.

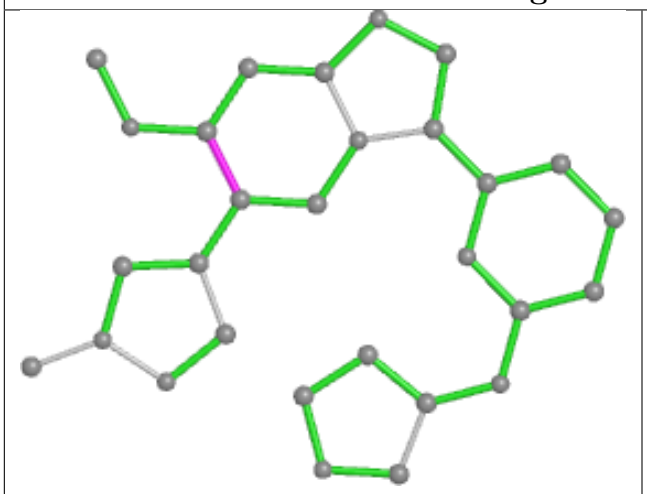
There are no ring outliers.

1 monomer is involved in 1 short contact:

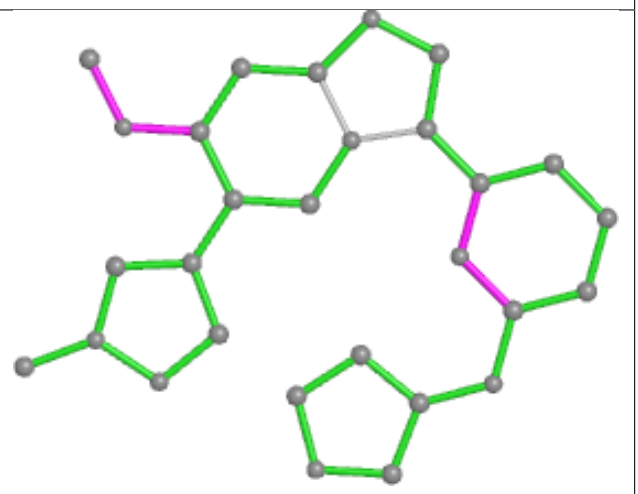
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	500	JX4	1	0

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 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.

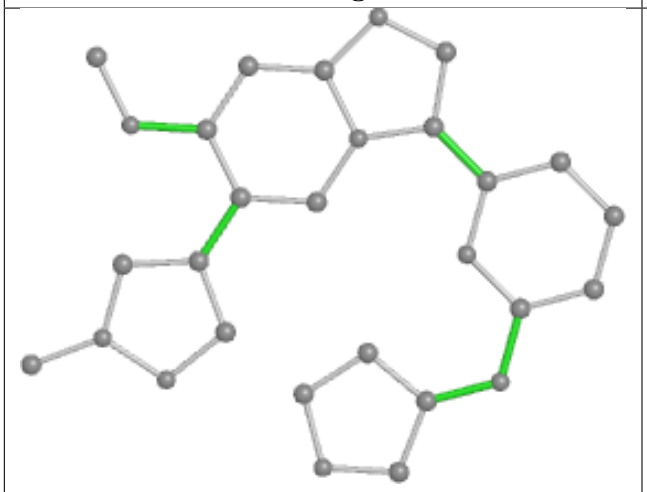
Ligand JX4 A 500



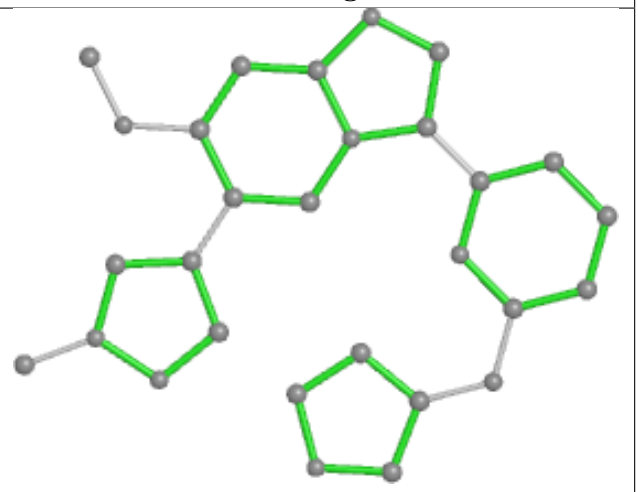
Bond lengths



Bond angles

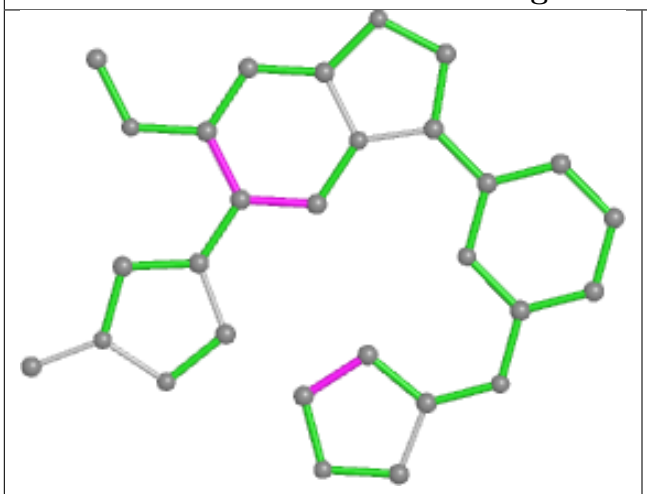


Torsions

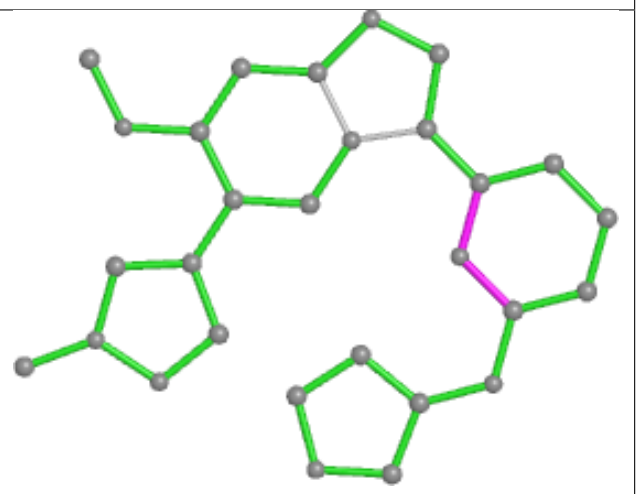


Rings

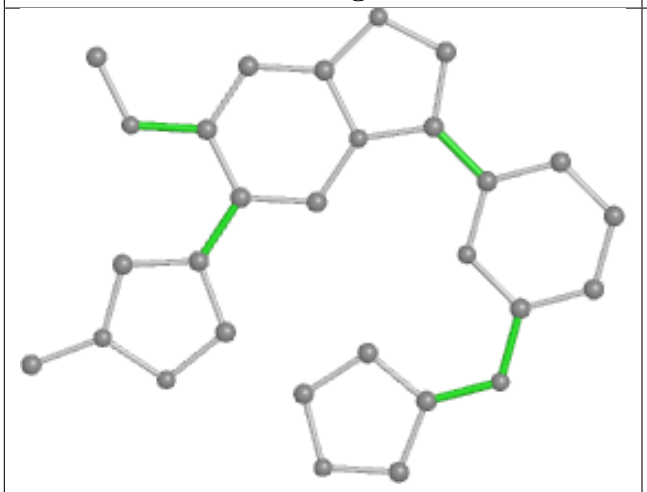
Ligand JX4 C 500



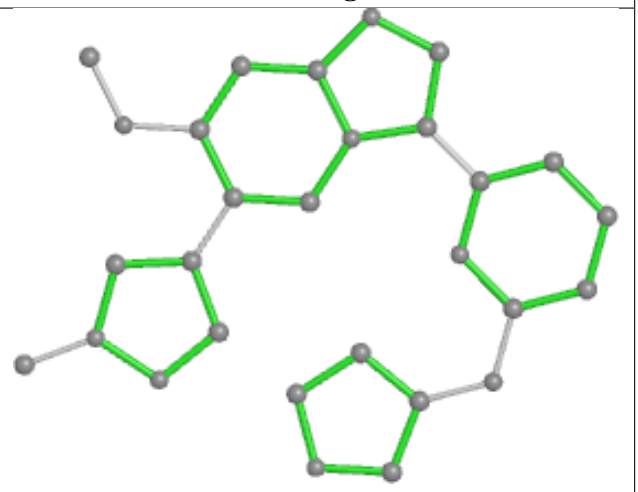
Bond lengths



Bond angles

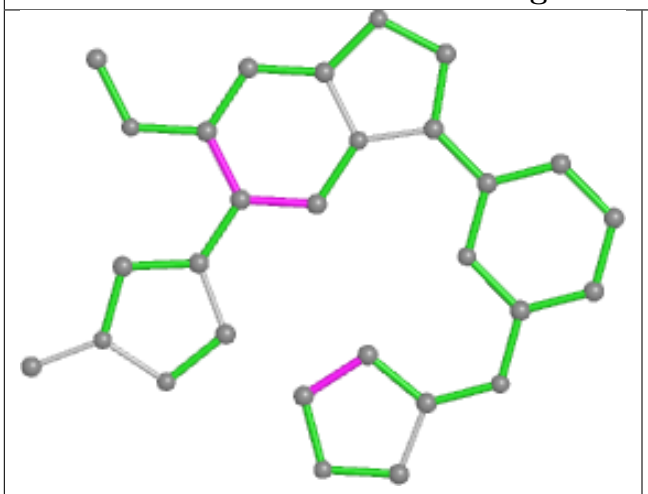


Torsions

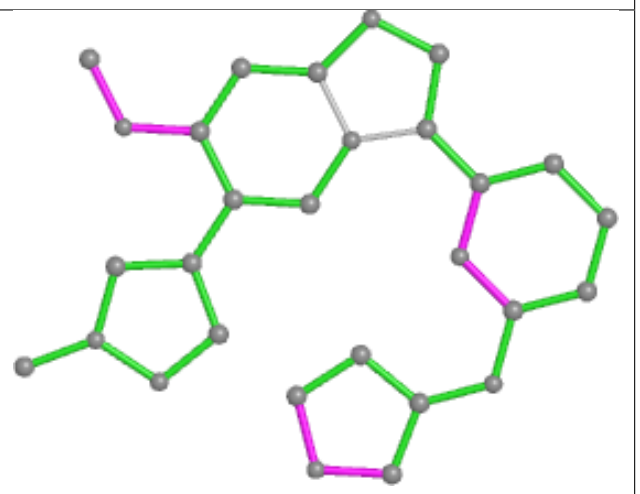


Rings

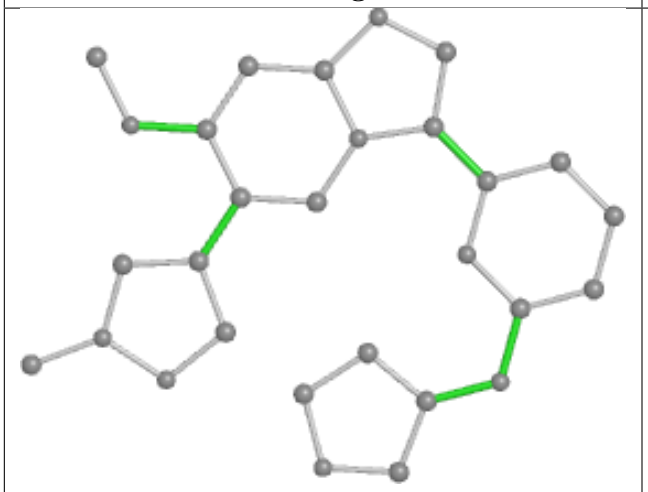
Ligand JX4 D 500



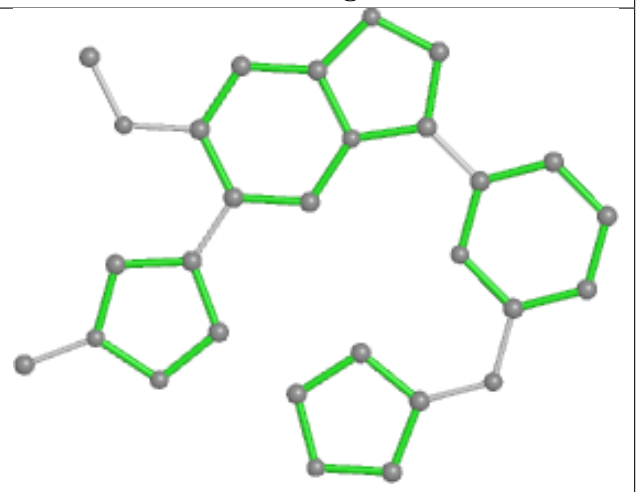
Bond lengths



Bond angles

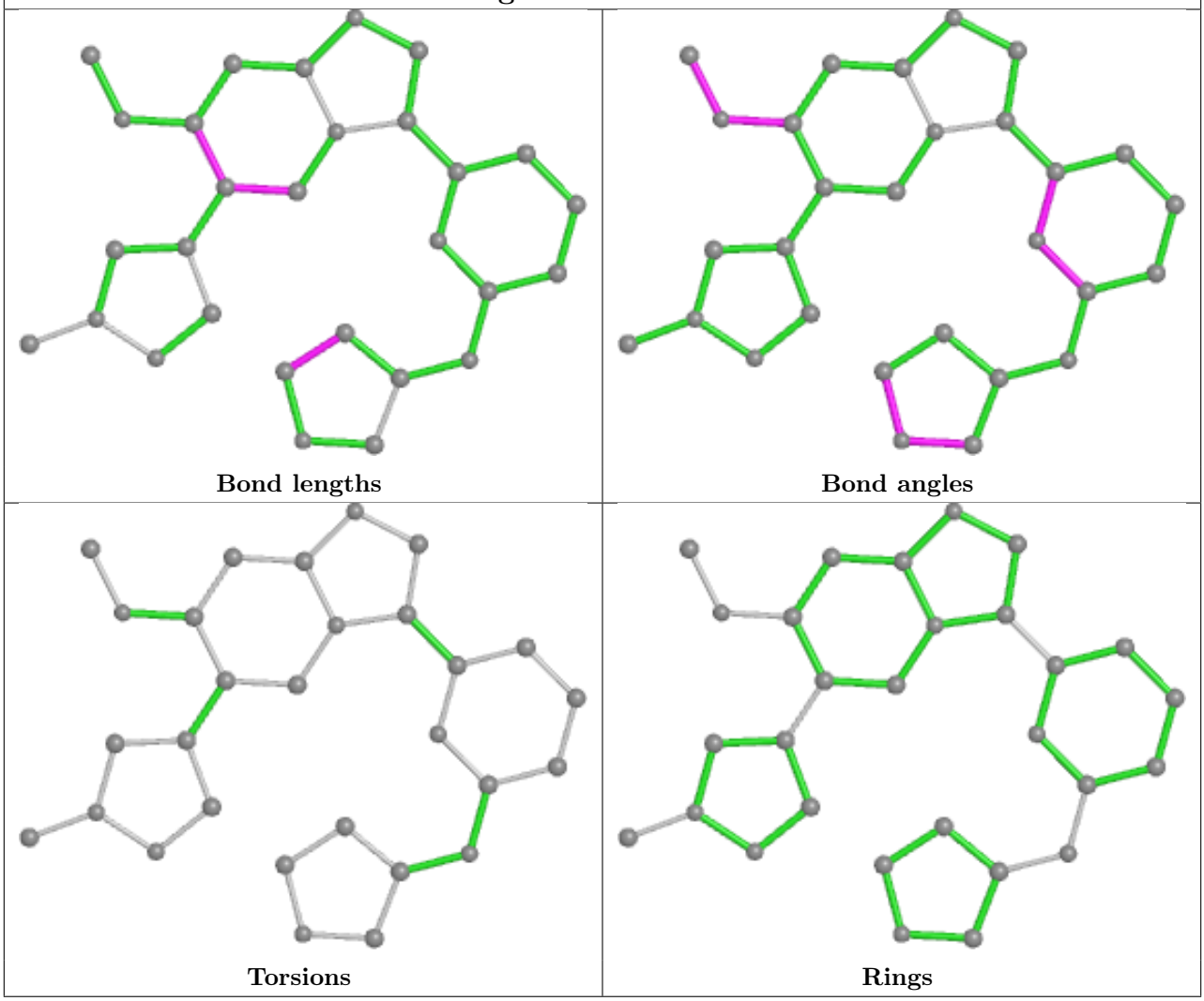


Torsions



Rings

Ligand JX4 B 500



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	286/303 (94%)	-0.21	14 (4%)	29	35	14, 29, 61, 87	0
1	B	286/303 (94%)	-0.16	8 (2%)	53	59	14, 27, 58, 89	0
1	C	289/303 (95%)	-0.19	9 (3%)	49	55	15, 28, 61, 101	0
1	D	293/303 (96%)	-0.17	11 (3%)	40	46	13, 26, 62, 97	0
All	All	1154/1212 (95%)	-0.18	42 (3%)	42	49	13, 27, 61, 101	0

The worst 5 of 42 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	226	LEU	5.6
1	D	217	ALA	5.4
1	A	460	SER	5.4
1	C	460	SER	4.0
1	C	240	CYS	3.7

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

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
1	TPO	B	342	11/12	0.81	0.24	74,82,93,94	0
1	SEP	C	346	10/11	0.87	0.24	43,64,99,102	0
1	TPO	C	342	11/12	0.90	0.14	32,43,60,65	0
1	TPO	A	342	11/12	0.90	0.15	52,62,76,78	0
1	TPO	D	342	11/12	0.90	0.18	45,57,75,77	0
1	SEP	B	346	10/11	0.91	0.17	47,53,80,84	0
1	SEP	A	346	10/11	0.92	0.16	44,57,92,93	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
1	SEP	D	346	10/11	0.92	0.15	41,48,77,79	0
1	TPO	C	345	11/12	0.94	0.10	28,40,48,57	0
1	TPO	A	345	11/12	0.94	0.11	34,43,47,50	0
1	TPO	B	345	11/12	0.95	0.12	32,48,52,58	0
1	TPO	D	345	11/12	0.96	0.10	31,42,44,52	0

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

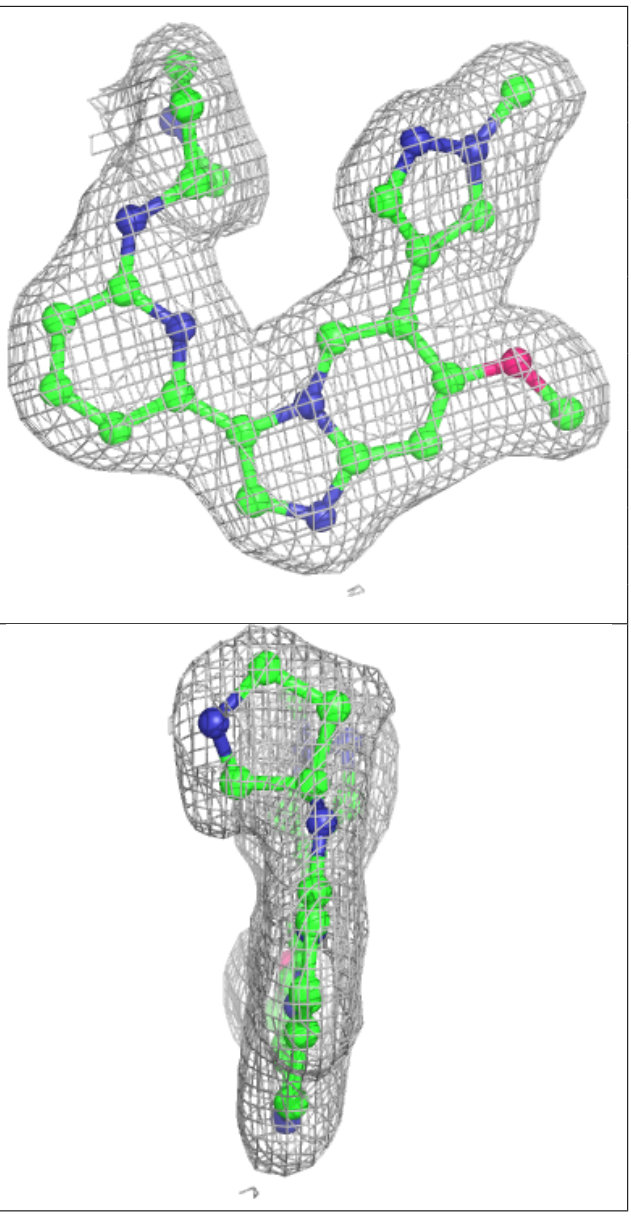
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	EDO	B	501	4/4	0.90	0.27	44,46,54,55	0
3	EDO	D	501	4/4	0.92	0.21	48,61,61,62	0
2	JX4	A	500	29/29	0.96	0.08	15,18,27,29	0
2	JX4	D	500	29/29	0.98	0.12	9,15,19,23	0
2	JX4	B	500	29/29	0.98	0.10	12,16,19,20	0
2	JX4	C	500	29/29	0.98	0.07	13,18,26,27	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.

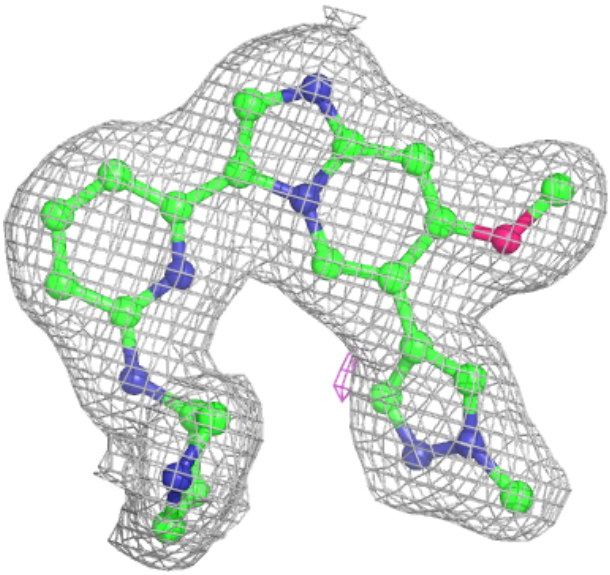
Electron density around JX4 A 500:

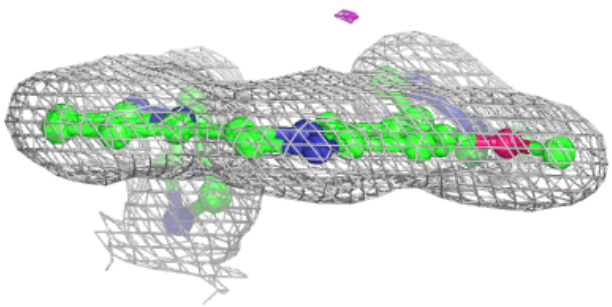
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

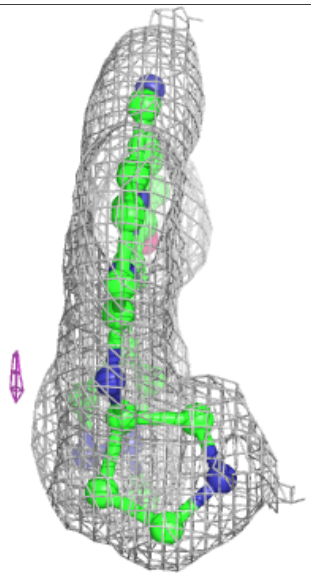


Electron density around JX4 D 500:

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

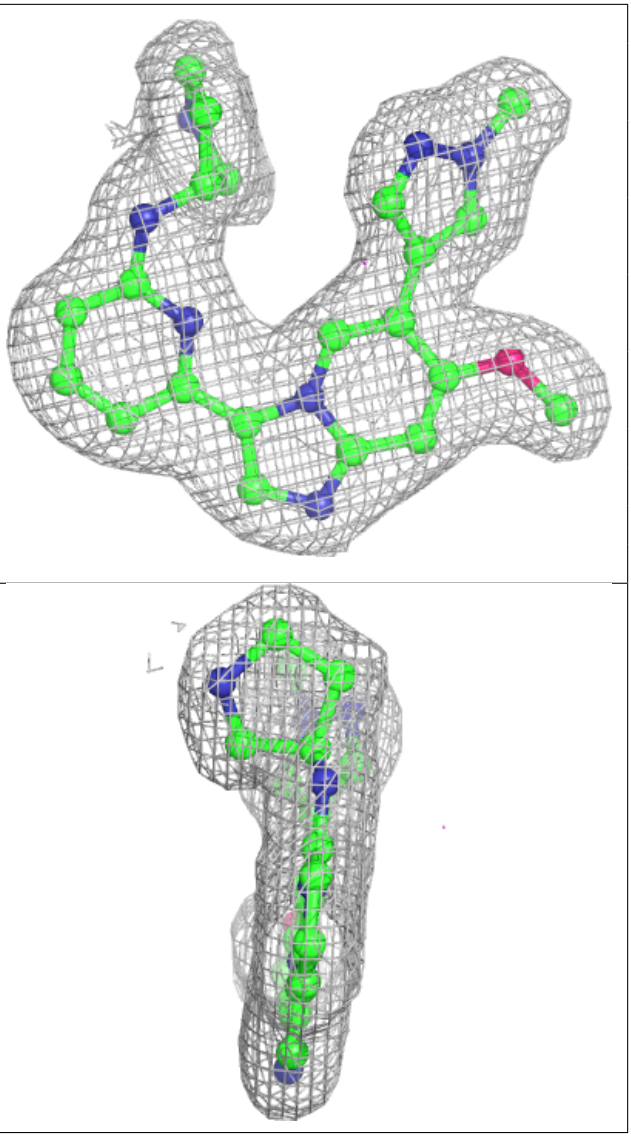






Electron density around JX4 B 500:

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



Electron density around JX4 C 500:

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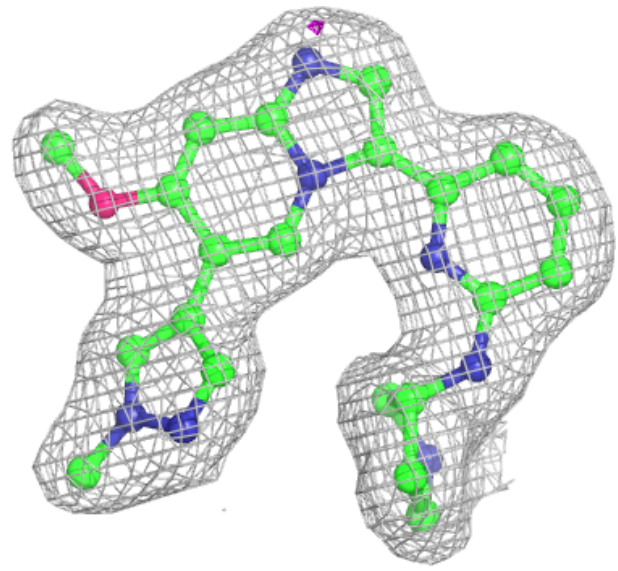
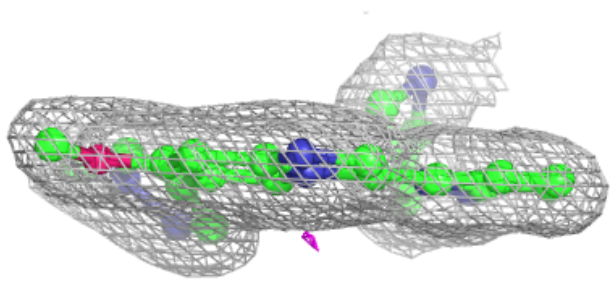
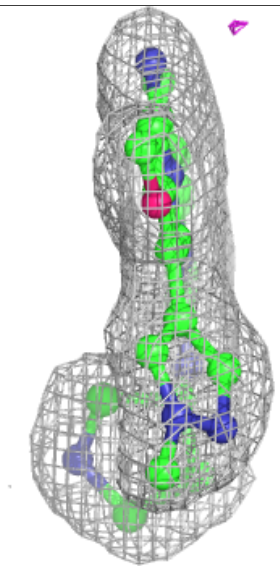
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)







6.5 Other polymers (i)

There are no such residues in this entry.