Full wwPDB X-ray Structure Validation Report ⓘ

Sep 20, 2023 – 01:53 AM EDT

PDB ID	:	5HCV
Title	:	Identification of Spirooxindole and Dibenzoxazepine Motifs as Potent Mineralocorticoid Receptor Antagonists
Authors	:	Chen, G.; McKeever, B.M.
Deposited on	:	2016-01-04
Resolution	:	2.50 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:

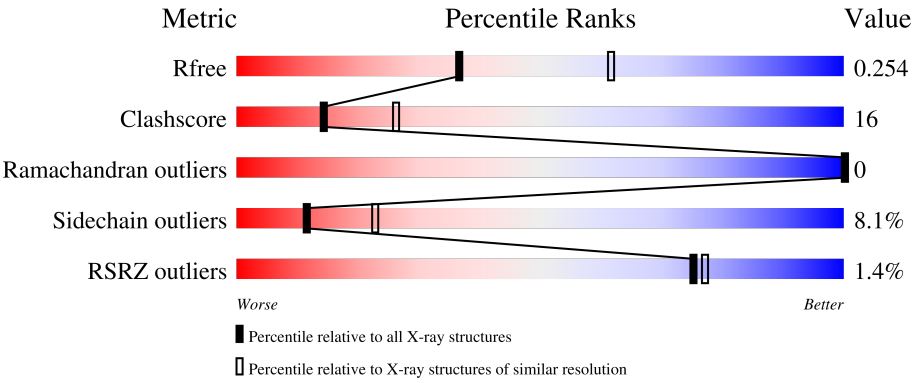
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35.1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & 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 2.50 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	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)
RSRZ outliers	127900	4559 (2.50-2.50)

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	257	2% 61% 27% 8%
1	B	257	63% 26% 10%
1	C	257	57% 27% 5% 11%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 6089 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.

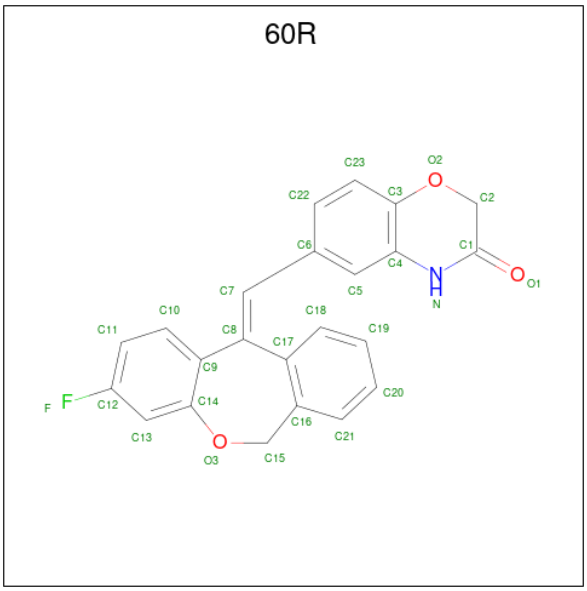
- Molecule 1 is a protein called Mineralocorticoid receptor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	236	Total	C	N	O	S	0	0	0
			1939	1262	312	352	13			
1	B	232	Total	C	N	O	S	0	0	0
			1912	1248	306	345	13			
1	C	229	Total	C	N	O	S	0	0	0
			1893	1238	303	339	13			

There are 15 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	728	GLY	-	expression tag	UNP P08235
A	729	SER	-	expression tag	UNP P08235
A	730	HIS	-	expression tag	UNP P08235
A	731	MET	-	expression tag	UNP P08235
A	808	SER	CYS	engineered mutation	UNP P08235
B	728	GLY	-	expression tag	UNP P08235
B	729	SER	-	expression tag	UNP P08235
B	730	HIS	-	expression tag	UNP P08235
B	731	MET	-	expression tag	UNP P08235
B	808	SER	CYS	engineered mutation	UNP P08235
C	728	GLY	-	expression tag	UNP P08235
C	729	SER	-	expression tag	UNP P08235
C	730	HIS	-	expression tag	UNP P08235
C	731	MET	-	expression tag	UNP P08235
C	808	SER	CYS	engineered mutation	UNP P08235

- Molecule 2 is 6-[({E})-(3-fluoranyl-6 {H}-benzo[c][1]benzoxepin-11-ylidene)methyl]-4 {H}-1,4-benzoxazin-3-one (three-letter code: 60R) (formula: $C_{23}H_{16}FNO_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C F N O 28 23 1 1 3	0	0
2	B	1	Total C F N O 28 23 1 1 3	0	0
2	C	1	Total C F N O 28 23 1 1 3	0	0

- Molecule 3 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	B	1	Total Cl 1 1	0	0

- Molecule 4 is water.

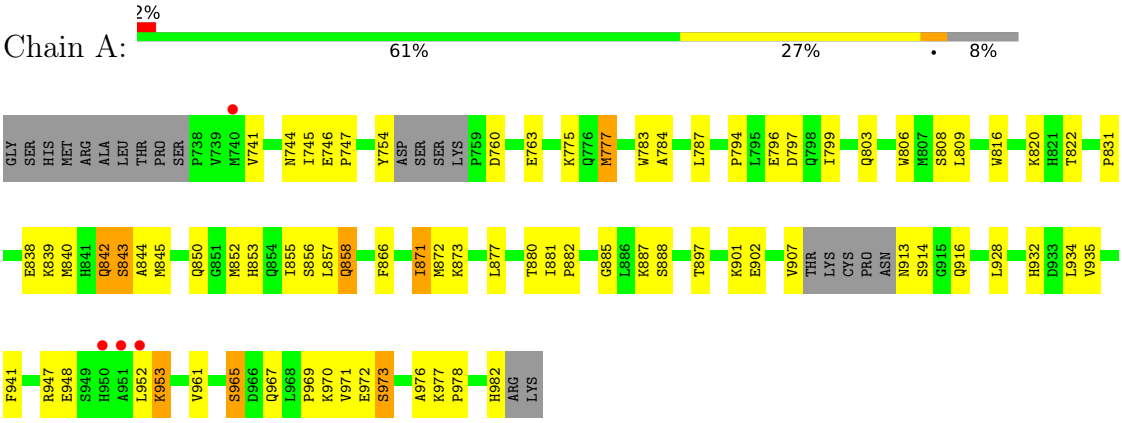
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	94	Total O 94 94	0	0
4	B	90	Total O 90 90	0	0
4	C	76	Total O 76 76	0	0

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.

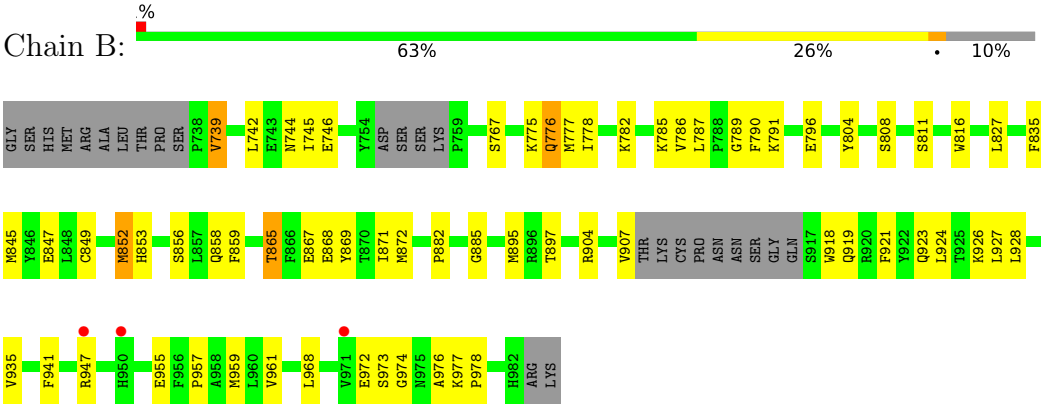
• Molecule 1: Mineralocorticoid receptor

Chain A:



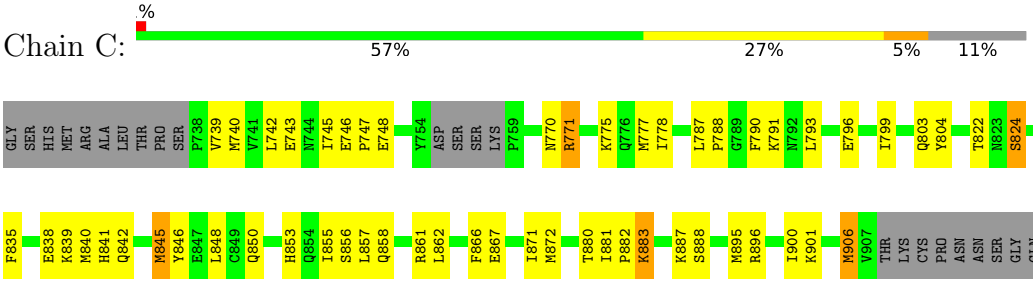
• Molecule 1: Mineralocorticoid receptor

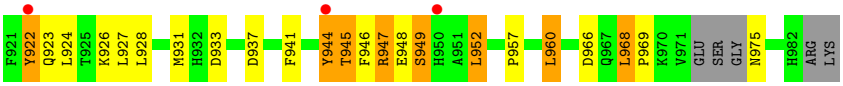
Chain B:



• Molecule 1: Mineralocorticoid receptor

Chain C:




F921
Y922
Q923
L924
T925
K926
L927
L928
M931
H932
D933
D937
F941
Y944
T945
F946
R947
E948
S949
H950
A951
L952
P957
L960
D966
Q967
L968
P969
K970
V971
GLU
SER
GLY
N975
H982
ARG
LYS

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 31	Depositor
Cell constants a, b, c, α, β, γ	121.50Å 121.50Å 44.41Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	44.41 – 2.50 44.41 – 2.50	Depositor EDS
% Data completeness (in resolution range)	100.0 (44.41-2.50) 100.0 (44.41-2.50)	Depositor EDS
R_{merge}	0.17	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.68 (at 2.51Å)	Xtriage
Refinement program	REFMAC 5.8.0071	Depositor
R, R_{free}	0.170 , 0.256 0.187 , 0.254	Depositor DCC
R_{free} test set	1292 reflections (5.09%)	wwPDB-VP
Wilson B-factor (Å^2)	36.1	Xtriage
Anisotropy	0.072	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 51.2	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.020 for -h,-k,l 0.039 for h,-h-k,-l 0.008 for -k,-h,-l	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	6089	wwPDB-VP
Average B, all atoms (Å^2)	50.0	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 32.23 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 9.7169e-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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CL, 60R

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	0.86	0/1985	0.81	0/2680
1	B	0.90	0/1958	0.82	0/2644
1	C	0.84	0/1938	0.76	0/2616
All	All	0.86	0/5881	0.80	0/7940

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	1939	0	1941	56	0
1	B	1912	0	1919	55	0
1	C	1893	0	1904	75	0
2	A	28	0	0	0	0
2	B	28	0	0	0	0
2	C	28	0	0	0	0
3	B	1	0	0	0	0
4	A	94	0	0	5	0
4	B	90	0	0	5	0
4	C	76	0	0	5	0
All	All	6089	0	5764	180	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 16.

All (180) 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:804:TYR:HE2	1:B:882:PRO:HD3	1.21	1.01
1:A:839:LYS:HE3	1:A:842:GLN:HE21	1.31	0.95
1:C:840:MET:HE1	1:C:850:GLN:HG2	1.47	0.93
1:C:739:VAL:HG21	1:C:906:MET:SD	2.17	0.85
1:B:804:TYR:CE2	1:B:882:PRO:HD3	2.11	0.84
1:A:947:ARG:NH1	1:A:972:GLU:OE1	2.10	0.83
1:A:839:LYS:HE3	1:A:842:GLN:NE2	1.94	0.81
1:B:865:THR:HG22	1:B:868:GLU:H	1.44	0.81
1:B:776:GLN:HE21	1:B:776:GLN:HA	1.43	0.81
1:C:919:GLN:O	1:C:923:GLN:HG3	1.82	0.80
1:C:948:GLU:O	1:C:952:LEU:HG	1.83	0.79
1:A:784:ALA:HA	1:A:787:LEU:HD12	1.65	0.78
1:A:887:LYS:NZ	4:A:1101:HOH:O	2.16	0.77
1:C:787:LEU:O	1:C:791:LYS:HG2	1.84	0.77
1:A:746:GLU:HG3	1:A:747:PRO:HD2	1.68	0.75
1:A:809:LEU:HD11	1:A:877:LEU:HB2	1.69	0.74
1:B:918:TRP:CH2	1:C:944:TYR:CD2	2.75	0.74
1:C:841:HIS:HD2	4:C:1165:HOH:O	1.71	0.74
1:C:748:GLU:HG3	4:C:1121:HOH:O	1.88	0.74
1:C:941:PHE:O	1:C:945:THR:HG23	1.89	0.73
1:A:881:ILE:HB	1:A:882:PRO:HD2	1.68	0.73
1:A:799:ILE:O	1:A:803:GLN:HG3	1.88	0.72
1:A:969:PRO:O	1:A:973:SER:HB3	1.90	0.72
1:C:796:GLU:HG3	1:C:887:LYS:NZ	2.05	0.72
1:A:845:MET:HG3	1:A:941:PHE:HE2	1.55	0.72
1:A:897:THR:O	1:A:901:LYS:HG3	1.90	0.71
1:A:976:ALA:O	1:A:978:PRO:HD3	1.91	0.70
1:C:966:ASP:O	1:C:969:PRO:HD2	1.91	0.69
1:B:919:GLN:O	1:B:923:GLN:HG3	1.92	0.69
1:B:853:HIS:HD2	4:B:1175:HOH:O	1.76	0.68
1:C:796:GLU:H	1:C:796:GLU:CD	1.98	0.67
1:A:845:MET:HG3	1:A:941:PHE:CE2	2.29	0.67
1:C:840:MET:CE	1:C:850:GLN:HG2	2.24	0.65
1:A:746:GLU:CG	1:A:747:PRO:HD2	2.27	0.65
1:A:746:GLU:HG3	1:A:747:PRO:CD	2.26	0.64
1:B:907:VAL:C	4:B:1136:HOH:O	2.34	0.64
1:B:811:SER:HB3	1:B:852:MET:SD	2.38	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:865:THR:CG2	1:B:867:GLU:HB2	2.28	0.63
1:C:949:SER:HA	1:C:952:LEU:HD11	1.80	0.63
1:A:872:MET:HB3	1:A:928:LEU:HD21	1.80	0.63
1:A:853:HIS:CE1	1:A:857:LEU:HD11	2.34	0.62
1:B:865:THR:HB	1:B:868:GLU:OE1	1.99	0.62
1:B:845:MET:HG3	1:B:941:PHE:CE2	2.34	0.62
1:C:861:ARG:HG2	1:C:861:ARG:NH1	2.14	0.62
1:B:918:TRP:HH2	1:C:944:TYR:CD2	2.16	0.62
1:A:843:SER:O	1:A:844:ALA:HB3	2.00	0.61
1:C:948:GLU:HB3	1:C:952:LEU:HD21	1.83	0.61
1:C:824:SER:HB3	1:C:856:SER:HB3	1.82	0.61
1:C:799:ILE:O	1:C:803:GLN:HG3	2.00	0.61
1:C:957:PRO:HD2	1:C:960:LEU:HB2	1.82	0.61
1:A:982:HIS:HB3	1:B:847:GLU:OE1	2.00	0.60
1:C:743:GLU:HG2	1:C:866:PHE:CE2	2.36	0.60
1:C:861:ARG:HG2	1:C:861:ARG:HH11	1.64	0.60
1:B:845:MET:CG	1:B:941:PHE:CE2	2.84	0.60
1:C:941:PHE:O	1:C:945:THR:CG2	2.50	0.60
1:B:918:TRP:CH2	1:C:944:TYR:HD2	2.16	0.59
1:A:913:ASN:HD21	1:A:916:GLN:HB3	1.66	0.59
1:B:776:GLN:HA	1:B:776:GLN:NE2	2.17	0.59
1:A:953:LYS:NZ	4:A:1104:HOH:O	2.35	0.59
1:B:907:VAL:HG11	1:B:921:PHE:HB2	1.84	0.59
1:C:796:GLU:HG3	1:C:887:LYS:HZ1	1.67	0.58
1:A:952:LEU:O	1:A:953:LYS:HB2	2.03	0.58
1:A:796:GLU:H	1:A:796:GLU:CD	2.06	0.58
1:C:840:MET:HE1	1:C:850:GLN:CG	2.28	0.57
1:B:782:LYS:HA	1:B:785:LYS:HE3	1.86	0.57
1:A:948:GLU:O	1:A:952:LEU:HG	2.05	0.57
1:B:947:ARG:HH21	1:B:968:LEU:HD21	1.69	0.56
1:B:852:MET:SD	1:B:934:LEU:HD23	2.45	0.56
1:A:881:ILE:HB	1:A:882:PRO:CD	2.34	0.56
1:C:742:LEU:HD13	1:C:871:ILE:HD13	1.88	0.56
1:C:855:ILE:O	1:C:858:GLN:HB2	2.05	0.56
1:A:775:LYS:NZ	4:A:1102:HOH:O	2.24	0.55
1:C:804:TYR:HB3	1:C:880:THR:HB	1.88	0.55
1:A:845:MET:CG	1:A:941:PHE:CE2	2.89	0.55
1:B:767:SER:HB3	1:B:955:GLU:HB2	1.88	0.54
1:B:827:LEU:HB2	1:B:835:PHE:HB2	1.90	0.54
1:B:845:MET:HG3	1:B:941:PHE:HE2	1.72	0.54
1:B:776:GLN:HE21	1:B:776:GLN:CA	2.17	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:840:MET:HG2	1:B:849:CYS:HB3	1.89	0.53
1:A:840:MET:HE3	1:A:850:GLN:HG2	1.91	0.53
1:B:918:TRP:CZ2	1:C:944:TYR:HD2	2.26	0.53
1:C:770:ASN:HB3	1:C:957:PRO:HD3	1.90	0.53
1:A:913:ASN:ND2	1:A:916:GLN:HB3	2.23	0.53
1:B:745:ILE:HD13	1:B:786:VAL:HG23	1.91	0.53
1:C:883:LYS:H	1:C:975:ASN:ND2	2.06	0.53
1:C:848:LEU:HD21	1:C:937:ASP:HB3	1.92	0.52
1:A:754:TYR:OH	1:A:760:ASP:OD1	2.27	0.52
1:A:855:ILE:O	1:A:858:GLN:HB2	2.08	0.52
1:C:793:LEU:HD11	1:C:895:MET:HE1	1.92	0.52
1:A:902:GLU:OE1	1:A:902:GLU:HA	2.10	0.51
1:C:775:LYS:HA	1:C:778:ILE:HD12	1.93	0.51
1:C:771:ARG:HG3	1:C:771:ARG:HH11	1.75	0.51
1:A:882:PRO:HG2	1:A:885:GLY:O	2.10	0.51
1:C:845:MET:HG3	1:C:941:PHE:CE2	2.46	0.51
1:C:840:MET:HE2	1:C:846:TYR:CE1	2.46	0.51
1:A:816:TRP:CZ2	1:A:866:PHE:HD1	2.29	0.51
1:C:796:GLU:HG2	1:C:887:LYS:HD2	1.92	0.50
1:B:928:LEU:O	1:B:931:MET:HB2	2.10	0.50
1:C:739:VAL:HG11	1:C:906:MET:HE2	1.93	0.50
1:C:949:SER:HA	1:C:952:LEU:CD1	2.40	0.50
1:A:852:MET:HA	1:A:934:LEU:HD21	1.94	0.50
1:C:838:GLU:O	1:C:842:GLN:HG3	2.12	0.49
1:A:794:PRO:O	1:A:797:ASP:HB2	2.12	0.49
1:C:853:HIS:CE1	1:C:857:LEU:HD11	2.47	0.49
1:C:793:LEU:HD11	1:C:895:MET:CE	2.42	0.49
1:C:867:GLU:HB3	1:C:906:MET:HG3	1.95	0.49
1:C:896:ARG:NH1	1:C:900:ILE:HD11	2.28	0.49
1:A:783:TRP:CZ2	1:A:873:LYS:HG2	2.48	0.48
1:C:835:PHE:CG	1:C:839:LYS:HB3	2.49	0.48
1:B:976:ALA:O	1:B:978:PRO:HD3	2.13	0.48
1:A:961:VAL:O	1:A:965:SER:OG	2.29	0.48
1:B:816:TRP:HB2	1:B:869:TYR:CE1	2.48	0.48
1:C:790:PHE:HA	1:C:895:MET:HE1	1.96	0.48
1:C:787:LEU:O	1:C:791:LYS:CG	2.57	0.48
1:C:861:ARG:HH11	1:C:861:ARG:CG	2.26	0.48
1:C:796:GLU:HG3	1:C:887:LYS:CE	2.44	0.47
1:C:928:LEU:O	1:C:931:MET:HB2	2.14	0.47
1:B:972:GLU:C	1:B:974:GLY:H	2.17	0.47
1:C:883:LYS:HB2	1:C:975:ASN:HA	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:862:LEU:O	1:C:920:ARG:NH2	2.37	0.47
1:B:739:VAL:HG23	1:B:871:ILE:HD11	1.97	0.46
1:C:858:GLN:O	1:C:862:LEU:HD12	2.15	0.46
1:B:745:ILE:HD11	1:B:787:LEU:HD23	1.97	0.46
1:B:790:PHE:HB2	1:B:895:MET:CE	2.45	0.46
1:C:946:PHE:O	1:C:949:SER:HB3	2.15	0.46
1:B:790:PHE:HB2	1:B:895:MET:HE3	1.98	0.46
1:B:853:HIS:CD2	4:B:1175:HOH:O	2.59	0.46
1:B:856:SER:O	1:B:859:PHE:HB2	2.16	0.46
1:B:923:GLN:O	1:B:926:LYS:HB3	2.16	0.46
1:B:872:MET:HB3	1:B:928:LEU:HD21	1.96	0.45
1:B:968:LEU:C	1:B:968:LEU:HD23	2.36	0.45
1:A:808:SER:HA	1:A:935:VAL:HG21	1.99	0.45
1:C:746:GLU:HA	1:C:747:PRO:HD3	1.78	0.45
1:C:829:PHE:HB2	1:C:833:LEU:O	2.16	0.45
1:A:932:HIS:HB3	4:A:1105:HOH:O	2.16	0.45
1:B:957:PRO:O	1:B:961:VAL:HG23	2.18	0.44
1:A:796:GLU:HG3	1:A:887:LYS:HD2	1.99	0.44
1:C:840:MET:CE	1:C:850:GLN:HE21	2.29	0.44
1:A:741:VAL:O	1:A:745:ILE:HG12	2.18	0.44
1:A:897:THR:HG22	1:A:901:LYS:HE3	1.98	0.44
1:B:789:GLY:HA2	4:B:1134:HOH:O	2.16	0.44
1:A:838:GLU:O	1:A:842:GLN:HG2	2.17	0.44
1:B:796:GLU:H	1:B:796:GLU:CD	2.20	0.44
1:A:839:LYS:HA	1:A:842:GLN:HG2	2.00	0.44
1:A:877:LEU:O	1:A:877:LEU:HG	2.17	0.44
1:C:960:LEU:HD12	1:C:960:LEU:HA	1.85	0.44
1:B:924:LEU:HD23	1:B:924:LEU:HA	1.81	0.43
1:C:838:GLU:HG2	4:C:1174:HOH:O	2.19	0.43
1:C:933:ASP:HB2	4:C:1117:HOH:O	2.19	0.43
1:C:947:ARG:HH11	1:C:968:LEU:HD21	1.83	0.43
1:B:977:LYS:HA	1:B:978:PRO:HD2	1.77	0.42
1:A:871:ILE:HD12	1:A:902:GLU:HG3	2.00	0.42
1:A:843:SER:O	1:A:844:ALA:CB	2.65	0.42
1:A:967:GLN:O	1:A:971:VAL:HG23	2.19	0.42
1:C:882:PRO:CB	4:C:1101:HOH:O	2.67	0.42
1:B:904:ARG:O	1:B:907:VAL:HG12	2.19	0.42
1:A:763:GLU:N	1:A:763:GLU:CD	2.73	0.42
1:A:831:PRO:HG3	4:A:1150:HOH:O	2.20	0.42
1:C:922:TYR:CD1	1:C:922:TYR:C	2.92	0.42
1:C:968:LEU:N	1:C:969:PRO:CD	2.83	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:881:ILE:HB	1:C:882:PRO:CD	2.49	0.42
1:C:948:GLU:HB3	1:C:952:LEU:CD2	2.49	0.41
1:B:852:MET:SD	1:B:934:LEU:CD2	3.08	0.41
1:C:920:ARG:O	1:C:924:LEU:HG	2.21	0.41
1:A:816:TRP:O	1:A:820:LYS:HG2	2.20	0.41
1:B:882:PRO:HG2	1:B:885:GLY:O	2.21	0.41
1:C:787:LEU:HA	1:C:788:PRO:HD3	1.98	0.41
1:A:763:GLU:CD	1:A:763:GLU:H	2.24	0.41
1:A:777:MET:CE	1:A:806:TRP:HB2	2.51	0.41
1:B:865:THR:HG23	1:B:867:GLU:OE1	2.21	0.41
1:C:839:LYS:HD3	1:C:839:LYS:HA	1.89	0.41
1:B:808:SER:HA	1:B:935:VAL:HG21	2.03	0.41
1:B:858:GLN:NE2	4:B:1102:HOH:O	2.52	0.41
1:B:865:THR:HG22	1:B:868:GLU:N	2.23	0.41
1:B:918:TRP:CZ3	1:C:948:GLU:HG2	2.55	0.41
1:C:840:MET:HB3	1:C:840:MET:HE3	1.81	0.40
1:C:872:MET:CE	1:C:927:LEU:HD23	2.51	0.40
1:A:809:LEU:HD23	1:A:809:LEU:HA	1.85	0.40
1:C:922:TYR:O	1:C:926:LYS:HB2	2.22	0.40
1:B:775:LYS:HA	1:B:778:ILE:HD12	2.02	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	230/257 (90%)	223 (97%)	7 (3%)	0	100	100
1	B	226/257 (88%)	220 (97%)	6 (3%)	0	100	100
1	C	221/257 (86%)	219 (99%)	2 (1%)	0	100	100
All	All	677/771 (88%)	662 (98%)	15 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	217/236 (92%)	200 (92%)	17 (8%)	12 24
1	B	214/236 (91%)	199 (93%)	15 (7%)	15 29
1	C	212/236 (90%)	192 (91%)	20 (9%)	8 17
All	All	643/708 (91%)	591 (92%)	52 (8%)	11 23

All (52) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	744	ASN
1	A	777	MET
1	A	822	THR
1	A	842	GLN
1	A	843	SER
1	A	856	SER
1	A	858	GLN
1	A	871	ILE
1	A	880	THR
1	A	888	SER
1	A	907	VAL
1	A	914	SER
1	A	953	LYS
1	A	965	SER
1	A	970	LYS
1	A	973	SER
1	A	977	LYS
1	B	739	VAL
1	B	742	LEU
1	B	744	ASN
1	B	746	GLU
1	B	776	GLN
1	B	777	MET

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Mol	Chain	Res	Type
1	B	791	LYS
1	B	839	LYS
1	B	852	MET
1	B	865	THR
1	B	897	THR
1	B	927	LEU
1	B	932	HIS
1	B	959	MET
1	B	973	SER
1	C	740	MET
1	C	745	ILE
1	C	771	ARG
1	C	777	MET
1	C	822	THR
1	C	824	SER
1	C	845	MET
1	C	883	LYS
1	C	888	SER
1	C	901	LYS
1	C	906	MET
1	C	920	ARG
1	C	922	TYR
1	C	944	TYR
1	C	945	THR
1	C	947	ARG
1	C	949	SER
1	C	952	LEU
1	C	960	LEU
1	C	968	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (17) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	776	GLN
1	A	779	GLN
1	A	842	GLN
1	A	850	GLN
1	A	853	HIS
1	A	913	ASN
1	B	776	GLN
1	B	779	GLN
1	B	821	HIS

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Mol	Chain	Res	Type
1	B	853	HIS
1	B	854	GLN
1	B	975	ASN
1	C	850	GLN
1	C	853	HIS
1	C	854	GLN
1	C	858	GLN
1	C	975	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 4 ligands modelled in this entry, 1 is monoatomic - leaving 3 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	60R	C	1001	-	31,32,32	1.44	4 (12%)	39,46,46	1.64	8 (20%)
2	60R	A	1001	-	31,32,32	1.92	3 (9%)	39,46,46	1.71	8 (20%)
2	60R	B	1001	-	31,32,32	1.90	5 (16%)	39,46,46	1.21	3 (7%)

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	60R	C	1001	-	-	0/4/26/26	0/5/5/5
2	60R	A	1001	-	-	0/4/26/26	0/5/5/5
2	60R	B	1001	-	-	0/4/26/26	0/5/5/5

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1001	60R	C17-C16	6.56	1.49	1.40
2	A	1001	60R	C17-C16	5.98	1.48	1.40
2	A	1001	60R	C9-C14	5.28	1.50	1.40
2	B	1001	60R	C9-C14	4.74	1.49	1.40
2	A	1001	60R	C4-C3	4.32	1.49	1.40
2	B	1001	60R	C4-C3	4.03	1.49	1.40
2	C	1001	60R	C17-C16	3.97	1.45	1.40
2	C	1001	60R	C9-C14	3.52	1.47	1.40
2	C	1001	60R	C4-C3	3.33	1.47	1.40
2	C	1001	60R	C4-N	-2.65	1.35	1.39
2	B	1001	60R	C4-N	-2.15	1.36	1.39
2	B	1001	60R	C11-C12	2.01	1.41	1.37

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	1001	60R	O2-C3-C23	4.83	124.60	116.85
2	C	1001	60R	O2-C3-C23	4.06	123.36	116.85
2	A	1001	60R	C21-C16-C17	3.58	122.76	118.47
2	A	1001	60R	O2-C3-C4	-3.22	115.39	121.58
2	A	1001	60R	C18-C17-C8	3.18	125.21	119.90
2	C	1001	60R	C22-C6-C5	3.16	122.65	118.71
2	B	1001	60R	O2-C3-C23	3.11	121.84	116.85
2	C	1001	60R	C4-N-C1	-3.10	120.66	124.49
2	C	1001	60R	O1-C1-N	2.99	124.07	121.43
2	C	1001	60R	C14-C13-C12	2.95	122.46	116.45
2	C	1001	60R	C13-C14-C9	-2.84	115.91	121.35
2	C	1001	60R	O2-C3-C4	-2.78	116.23	121.58
2	A	1001	60R	C22-C6-C5	2.52	121.86	118.71
2	A	1001	60R	C20-C19-C18	2.37	123.81	120.19
2	C	1001	60R	C5-C6-C7	-2.25	112.67	120.81
2	B	1001	60R	C10-C9-C8	-2.16	116.28	119.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	1001	60R	C22-C6-C5	2.11	121.33	118.71
2	A	1001	60R	C18-C17-C16	-2.02	117.25	119.43
2	A	1001	60R	C15-C16-C17	-2.01	116.13	120.12

There are no chirality outliers.

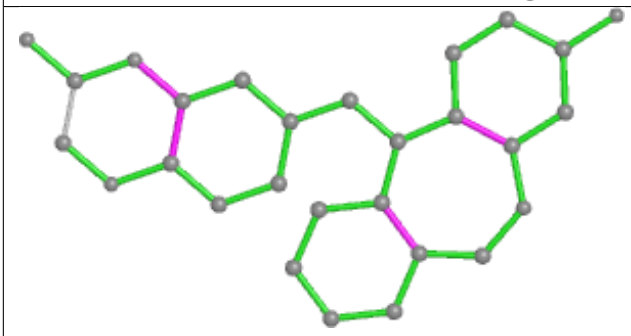
There are no torsion outliers.

There are no ring outliers.

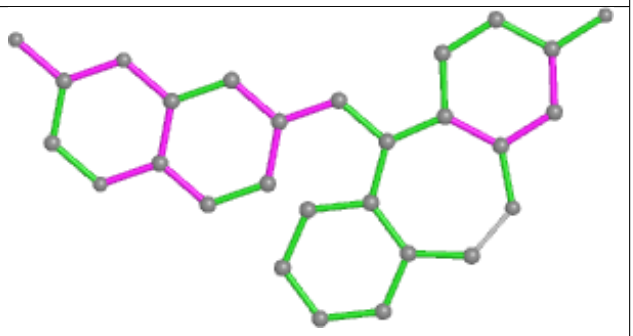
No monomer is involved in short contacts.

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

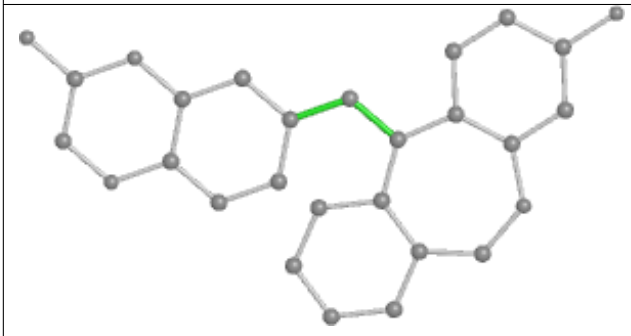
Ligand 60R C 1001



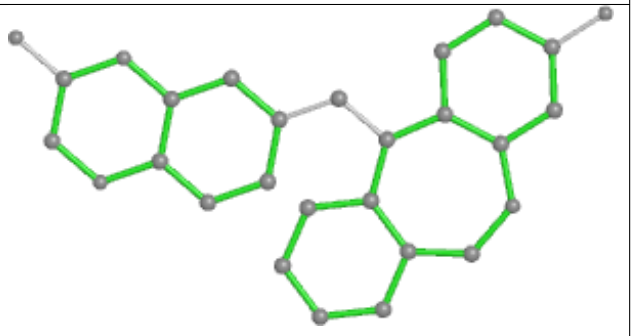
Bond lengths



Bond angles

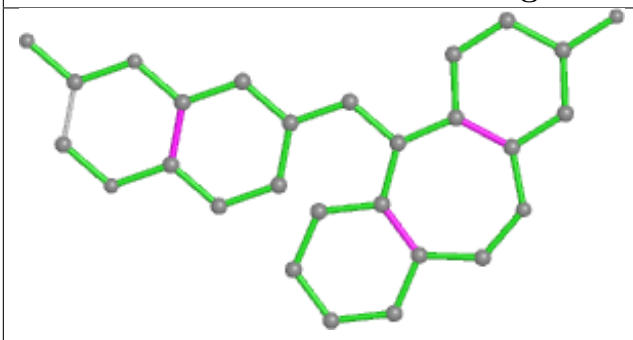


Torsions

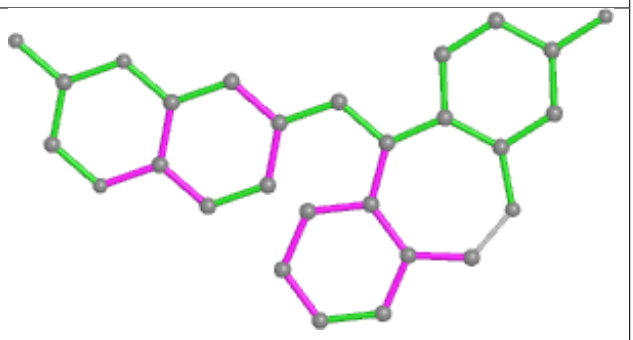


Rings

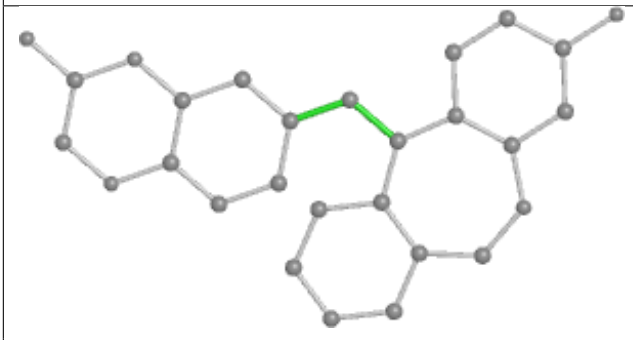
Ligand 60R A 1001



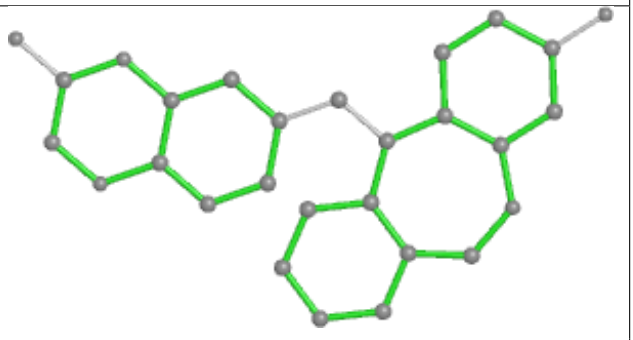
Bond lengths



Bond angles

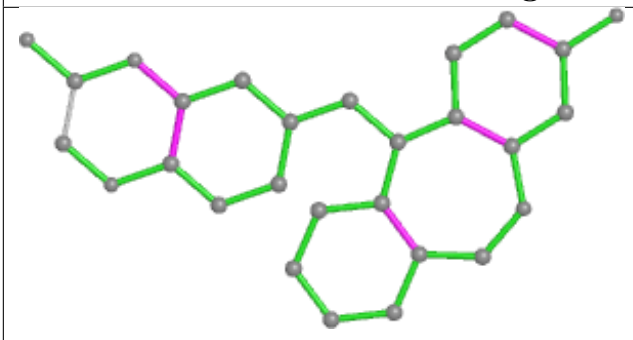


Torsions

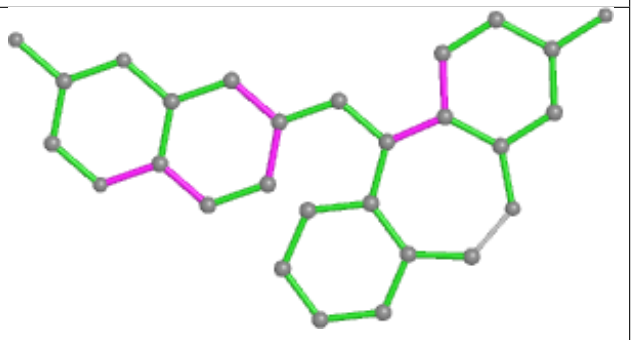


Rings

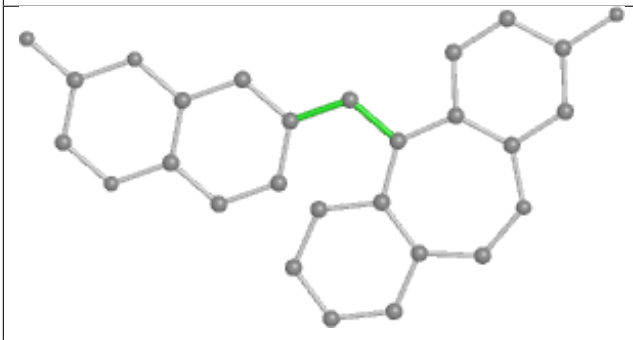
Ligand 60R B 1001



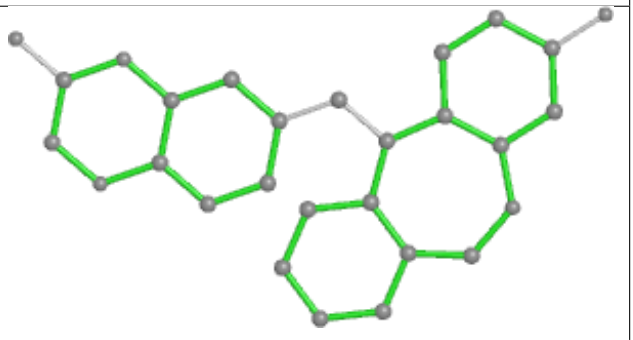
Bond lengths



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	236/257 (91%)	-0.12	4 (1%)	70	72	31, 47, 77, 93	0
1	B	232/257 (90%)	-0.18	3 (1%)	77	79	29, 46, 69, 87	0
1	C	229/257 (89%)	-0.16	3 (1%)	77	79	35, 50, 74, 103	0
All	All	697/771 (90%)	-0.15	10 (1%)	75	77	29, 48, 74, 103	0

All (10) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	950	HIS	4.3
1	A	950	HIS	4.3
1	A	740	MET	3.8
1	A	951	ALA	3.7
1	B	971	VAL	2.6
1	B	947	ARG	2.4
1	C	922	TYR	2.3
1	C	950	HIS	2.3
1	A	952	LEU	2.1
1	C	944	TYR	2.1

6.2 Non-standard residues in protein, DNA, RNA chains

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

6.3 Carbohydrates

There are no monosaccharides in this entry.

6.4 Ligands

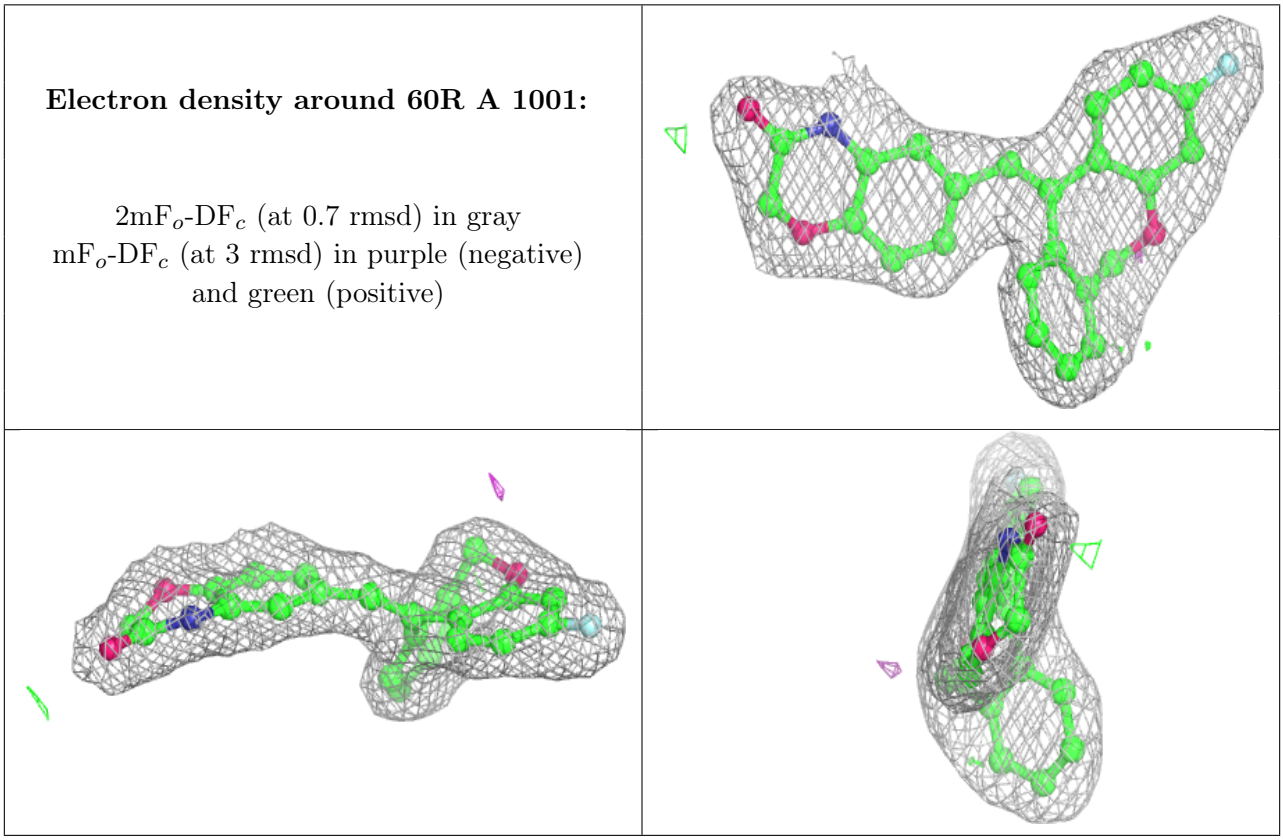
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' 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
3	CL	B	1002	1/1	0.94	0.21	30,30,30,30	0
2	60R	A	1001	28/28	0.96	0.15	30,34,45,48	0
2	60R	C	1001	28/28	0.97	0.12	33,38,42,45	0
2	60R	B	1001	28/28	0.98	0.12	28,32,41,45	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.

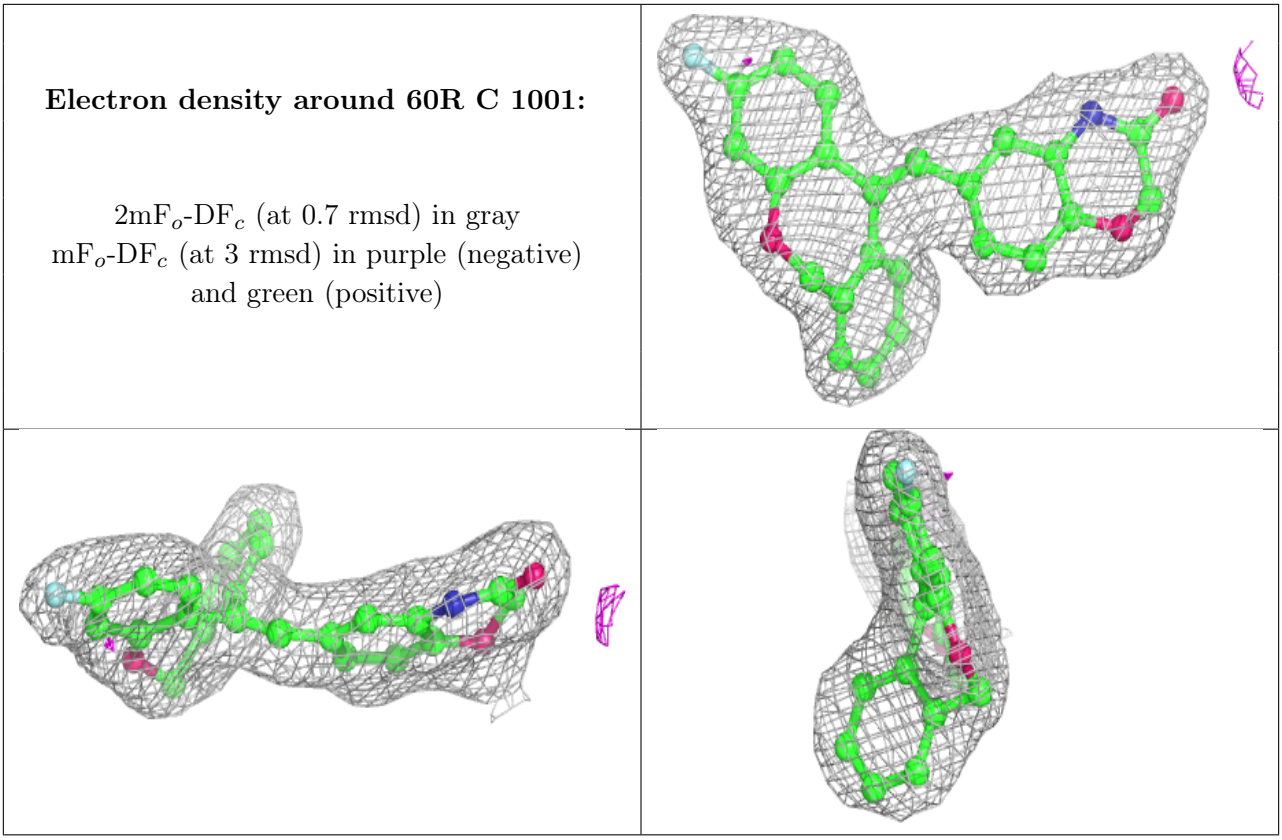
Electron density around 60R A 1001:

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



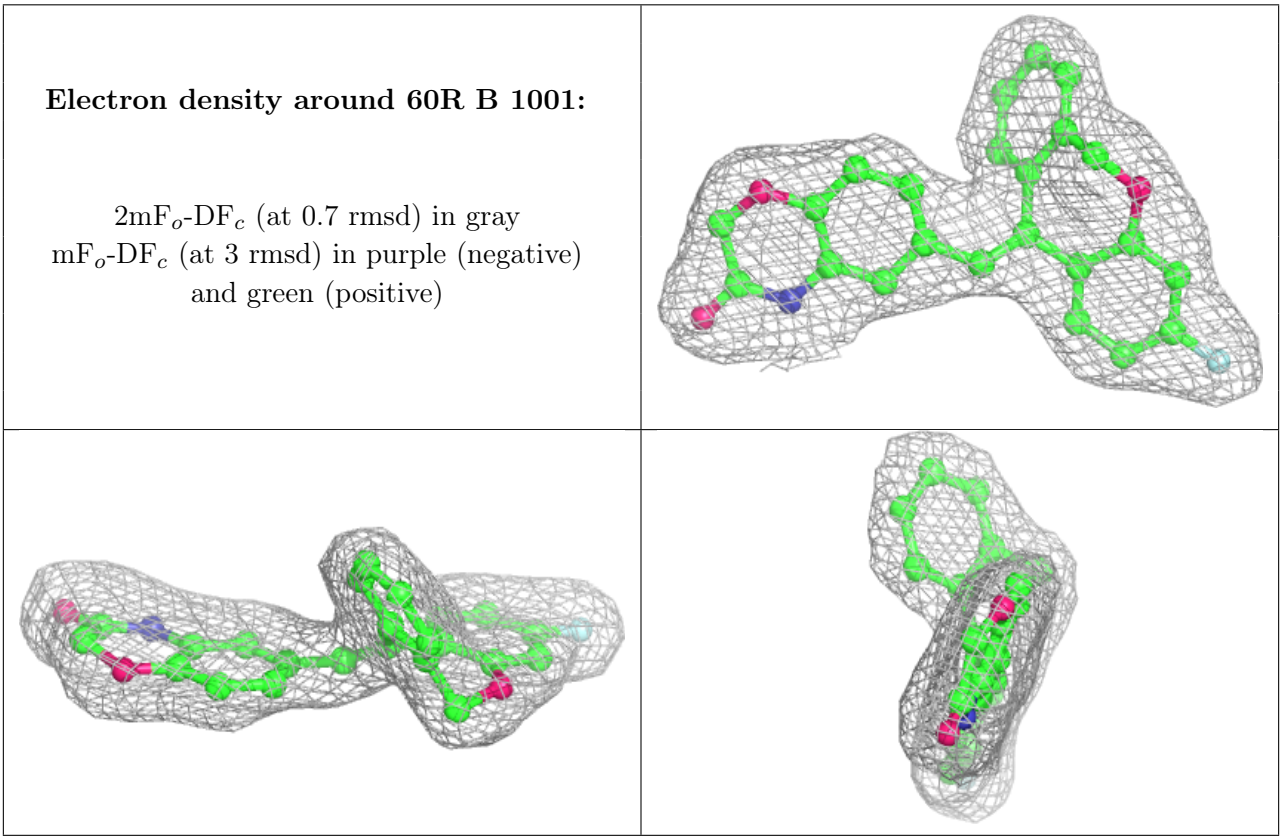
Electron density around 60R C 1001:

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



Electron density around 60R B 1001:

$2mF_o$-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.