Full wwPDB X-ray Structure Validation Report (i)

Jun 11, 2024 – 06:17 PM EDT

PDB ID	:	6MXZ
Title	:	Structure of 53BP1 Tudor domains in complex with small molecule UNC3474
Authors	:	Cui, G.; Botuyan, M.V.; Schuller, D.J.; Mer, G.
Deposited on	:	2018-10-31
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 (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:

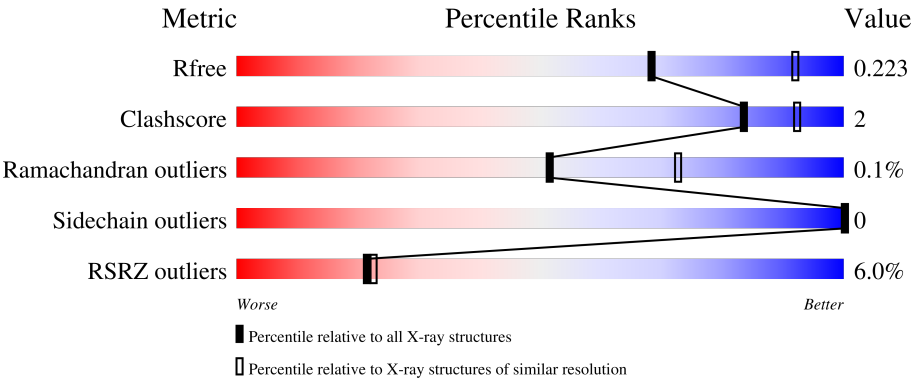
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36.2
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

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	123	9% 89% 8%
1	B	123	3% 88% 9%
1	C	123	2% 92% 5%
1	D	123	3% 89% 9%
1	E	123	3% 95%

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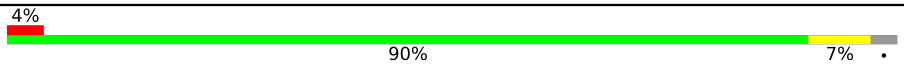
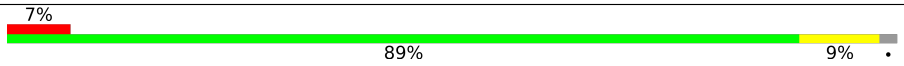
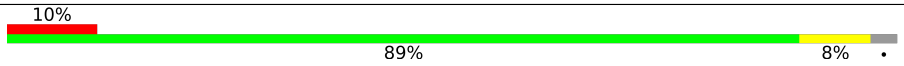
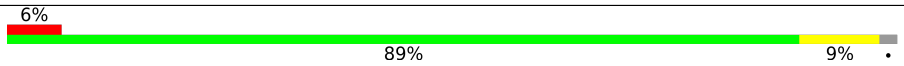
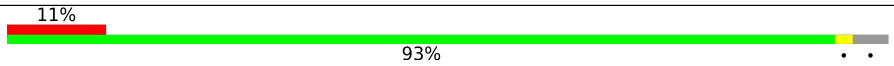
Mol	Chain	Length	Quality of chain
1	F	123	
1	G	123	
1	H	123	
1	I	123	
1	J	123	

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 22156 atoms, of which 10706 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 TP53-binding protein 1.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	119	Total	C	H	N	O	S	26	24	0
			2165	699	1080	180	202	4			
1	B	120	Total	C	H	N	O	S	14	19	0
			2144	694	1067	179	200	4			
1	C	119	Total	C	H	N	O	S	21	14	0
			2064	667	1022	172	200	3			
1	D	120	Total	C	H	N	O	S	17	15	0
			2070	664	1031	173	199	3			
1	E	120	Total	C	H	N	O	S	33	19	0
			2126	682	1060	180	199	5			
1	F	119	Total	C	H	N	O	S	17	20	0
			2105	677	1044	176	204	4			
1	G	121	Total	C	H	N	O	S	59	29	0
			2299	737	1143	194	221	4			
1	H	119	Total	C	H	N	O	S	9	18	0
			2045	661	1008	173	200	3			
1	I	120	Total	C	H	N	O	S	42	19	0
			2067	664	1026	172	201	4			
1	J	118	Total	C	H	N	O	S	37	5	0
			1896	611	938	161	183	3			

There are 30 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1481	GLY	-	expression tag	UNP Q12888
A	1482	HIS	-	expression tag	UNP Q12888
A	1483	MET	-	expression tag	UNP Q12888
B	1481	GLY	-	expression tag	UNP Q12888
B	1482	HIS	-	expression tag	UNP Q12888
B	1483	MET	-	expression tag	UNP Q12888
C	1481	GLY	-	expression tag	UNP Q12888
C	1482	HIS	-	expression tag	UNP Q12888
C	1483	MET	-	expression tag	UNP Q12888

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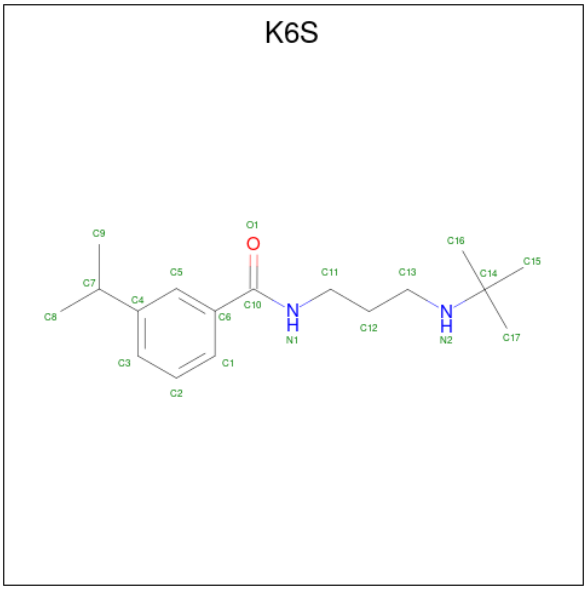
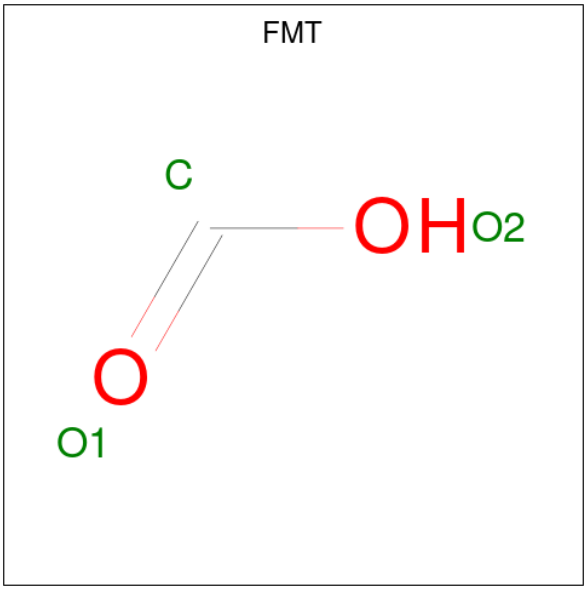
Chain	Residue	Modelled	Actual	Comment	Reference
D	1481	GLY	-	expression tag	UNP Q12888
D	1482	HIS	-	expression tag	UNP Q12888
D	1483	MET	-	expression tag	UNP Q12888
E	1481	GLY	-	expression tag	UNP Q12888
E	1482	HIS	-	expression tag	UNP Q12888
E	1483	MET	-	expression tag	UNP Q12888
F	1481	GLY	-	expression tag	UNP Q12888
F	1482	HIS	-	expression tag	UNP Q12888
F	1483	MET	-	expression tag	UNP Q12888
G	1481	GLY	-	expression tag	UNP Q12888
G	1482	HIS	-	expression tag	UNP Q12888
G	1483	MET	-	expression tag	UNP Q12888
H	1481	GLY	-	expression tag	UNP Q12888
H	1482	HIS	-	expression tag	UNP Q12888
H	1483	MET	-	expression tag	UNP Q12888
I	1481	GLY	-	expression tag	UNP Q12888
I	1482	HIS	-	expression tag	UNP Q12888
I	1483	MET	-	expression tag	UNP Q12888
J	1481	GLY	-	expression tag	UNP Q12888
J	1482	HIS	-	expression tag	UNP Q12888
J	1483	MET	-	expression tag	UNP Q12888

- Molecule 2 is N-[3-(tert-butylamino)propyl]-3-(propan-2-yl)benzamide (three-letter code: K6S) (formula: $C_{17}H_{28}N_2O$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	H	N	O	0	1
			96	34	56	4	2		
2	D	1	Total	C	H	N	O	0	1
			96	34	56	4	2		
2	E	1	Total	C	H	N	O	0	1
			96	34	56	4	2		
2	H	1	Total	C	H	N	O	0	1
			96	34	56	4	2		
2	I	1	Total	C	H	N	O	0	1
			96	34	56	4	2		

- Molecule 3 is FORMIC ACID (three-letter code: FMT) (formula: CH_2O_2).



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

- Molecule 4 is water.

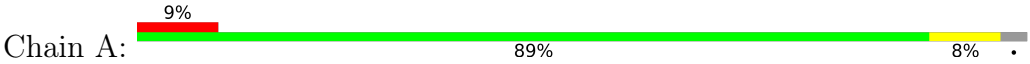
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	84	Total O 84 84	0	0
4	B	84	Total O 84 84	0	0
4	C	62	Total O 62 62	0	0
4	D	73	Total O 73 73	0	0
4	E	68	Total O 68 68	0	0
4	F	66	Total O 66 66	0	0
4	G	65	Total O 65 65	0	0
4	H	60	Total O 60 60	0	0
4	I	64	Total O 64 64	0	0
4	J	41	Total O 41 41	0	0

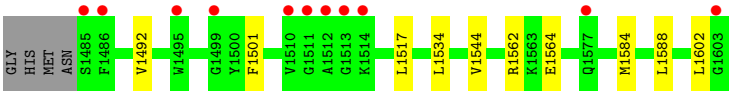
3 Residue-property plots (i)

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: TP53-binding protein 1

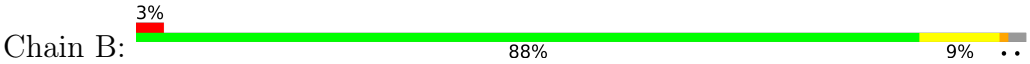
Chain A:





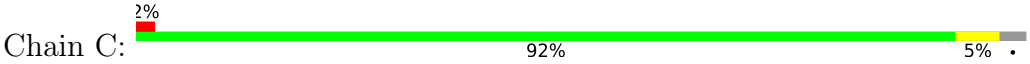
• Molecule 1: TP53-binding protein 1

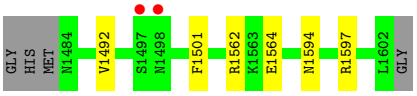
Chain B:



• Molecule 1: TP53-binding protein 1

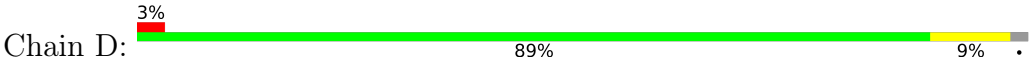
Chain C:





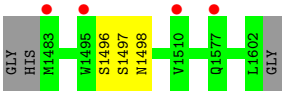
• Molecule 1: TP53-binding protein 1

Chain D:



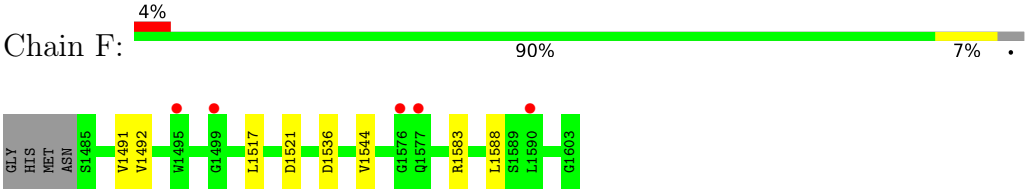
• Molecule 1: TP53-binding protein 1

Chain E:



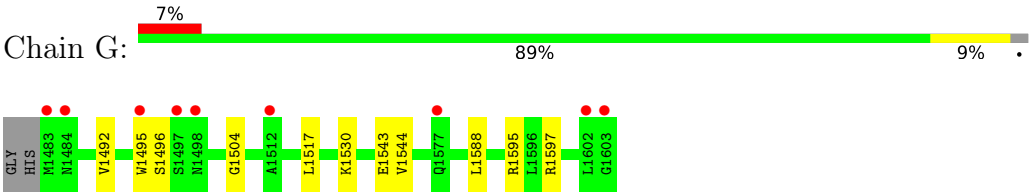
• Molecule 1: TP53-binding protein 1

Chain F:



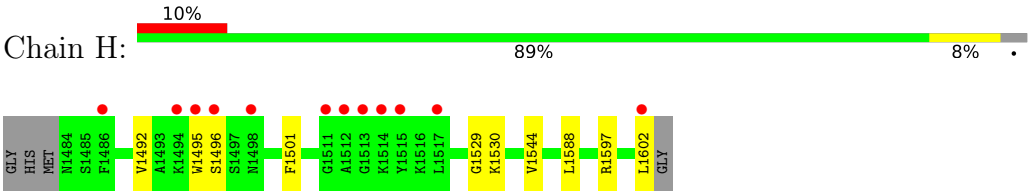
• Molecule 1: TP53-binding protein 1

Chain G:



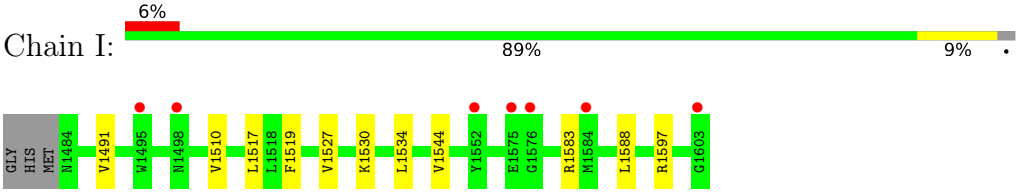
• Molecule 1: TP53-binding protein 1

Chain H:



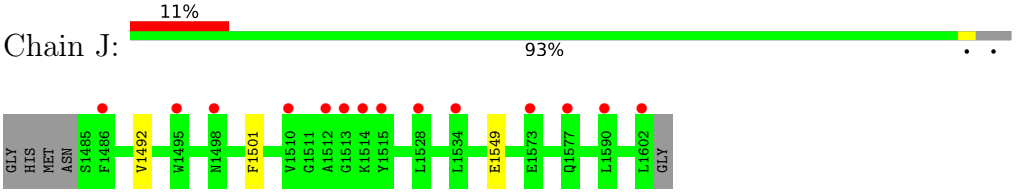
• Molecule 1: TP53-binding protein 1

Chain I:



• Molecule 1: TP53-binding protein 1

Chain J:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	68.67Å 160.71Å 182.65Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	17.60 – 2.50 45.66 – 2.46	Depositor EDS
% Data completeness (in resolution range)	97.6 (17.60-2.50) 95.0 (45.66-2.46)	Depositor EDS
R_{merge}	0.04	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.89 (at 2.45Å)	Xtriage
Refinement program	PHENIX 1.13_2998	Depositor
R, R_{free}	0.191 , 0.223 0.191 , 0.223	Depositor DCC
R_{free} test set	3537 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å^2)	45.9	Xtriage
Anisotropy	0.028	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.40 , 54.3	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	22156	wwPDB-VP
Average B, all atoms (Å^2)	61.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.49% of the height of the origin peak. No significant pseudotranslation is detected.*

[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: K6S, FMT

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	0.26	0/1171	0.45	0/1575
1	B	0.25	0/1145	0.44	0/1539
1	C	0.25	0/1092	0.45	0/1469
1	D	0.26	0/1096	0.44	0/1474
1	E	0.25	0/1141	0.44	0/1533
1	F	0.25	0/1140	0.45	0/1531
1	G	0.25	0/1247	0.46	0/1676
1	H	0.25	0/1108	0.44	0/1492
1	I	0.25	0/1127	0.46	0/1515
1	J	0.28	0/1006	0.46	0/1352
All	All	0.25	0/11273	0.45	0/15156

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	1085	1080	1028	6	0
1	B	1077	1067	1041	9	0
1	C	1042	1022	1004	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	D	1039	1031	1003	7	0
1	E	1066	1060	1012	2	0
1	F	1061	1044	991	5	0
1	G	1156	1143	1084	6	0
1	H	1037	1008	963	5	0
1	I	1041	1026	969	7	0
1	J	958	938	918	2	0
2	A	40	56	0	1	0
2	D	40	56	0	1	0
2	E	40	56	0	1	0
2	H	40	56	0	0	0
2	I	40	56	0	0	0
3	B	3	1	1	0	0
3	D	6	2	2	0	0
3	F	6	2	2	0	0
3	G	3	1	1	0	0
3	H	3	1	1	0	0
4	A	84	0	0	1	0
4	B	84	0	0	0	0
4	C	62	0	0	0	0
4	D	73	0	0	0	0
4	E	68	0	0	0	0
4	F	66	0	0	0	0
4	G	65	0	0	0	0
4	H	60	0	0	0	0
4	I	64	0	0	0	0
4	J	41	0	0	0	0
All	All	11450	10706	10020	51	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 2.

All (51) 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:J:1492:VAL:HG12	1:J:1501:PHE:HB3	1.66	0.75
1:D:1521:ASP:OD2	2:D:1701[B]:K6S:N2	2.23	0.71
1:B:1495[B]:TRP:O	1:B:1496[B]:SER:OG	2.09	0.67
1:C:1594:ASN:OD1	1:C:1597:ARG:NH1	2.28	0.65
1:A:1534[B]:LEU:HD12	1:A:1602:LEU:HD21	1.78	0.64
1:D:1492:VAL:HG12	1:D:1501:PHE:HB3	1.80	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:1536:ASP:OD1	1:F:1583:ARG:NH2	2.33	0.61
1:C:1492:VAL:HG12	1:C:1501:PHE:HB3	1.83	0.60
1:A:1562[B]:ARG:NH1	1:A:1564:GLU:OE1	2.36	0.59
1:H:1492:VAL:HG12	1:H:1501:PHE:HB3	1.84	0.59
2:A:1701[A]:K6S:N2	1:B:1521:ASP:OD2	2.35	0.59
1:I:1583[B]:ARG:NH1	1:J:1549:GLU:OE2	2.36	0.59
1:B:1492:VAL:HG12	1:B:1501[B]:PHE:HB3	1.87	0.57
1:A:1492[B]:VAL:HG12	1:A:1501[B]:PHE:HB3	1.87	0.56
1:D:1498[B]:ASN:OD1	1:D:1499[B]:GLY:N	2.38	0.56
1:E:1496[A]:SER:O	1:E:1497[A]:SER:OG	2.22	0.56
1:D:1534[A]:LEU:CD1	1:D:1602:LEU:HD21	2.36	0.54
1:G:1495[B]:TRP:O	1:G:1496[B]:SER:OG	2.20	0.54
1:H:1495[B]:TRP:O	1:H:1496[B]:SER:OG	2.22	0.51
1:A:1584[A]:MET:HE2	4:A:1883:HOH:O	2.11	0.50
1:B:1492:VAL:HG12	1:B:1501[A]:PHE:HB3	1.94	0.50
1:C:1562:ARG:NH2	1:C:1564[B]:GLU:OE2	2.44	0.49
1:G:1530:LYS:O	1:G:1597:ARG:NH1	2.46	0.48
1:B:1495[B]:TRP:O	1:B:1496[B]:SER:CB	2.62	0.48
1:I:1517[A]:LEU:HD11	1:I:1519:PHE:CZ	2.49	0.48
1:D:1534[A]:LEU:HD12	1:D:1602:LEU:HD21	1.97	0.47
1:E:1497[A]:SER:OG	1:E:1498[A]:ASN:N	2.48	0.46
1:D:1496[B]:SER:OG	1:D:1497[B]:SER:N	2.47	0.46
1:D:1530:LYS:O	1:D:1597:ARG:NH1	2.49	0.45
1:I:1530:LYS:O	1:I:1597:ARG:NH1	2.50	0.45
1:A:1544:VAL:HG12	1:A:1588:LEU:HD21	1.98	0.45
2:E:1701[A]:K6S:N2	1:F:1521:ASP:OD2	2.49	0.45
1:G:1543:GLU:OE1	1:G:1595:ARG:NH1	2.48	0.45
1:H:1529:GLY:C	1:H:1602:LEU:HD23	2.37	0.45
1:B:1494[B]:LYS:HB3	1:B:1531:ASP:HB3	1.98	0.44
1:B:1517[B]:LEU:HD12	1:B:1527:VAL:HG21	2.00	0.44
1:H:1544:VAL:HG12	1:H:1588:LEU:HD21	2.00	0.43
1:I:1544:VAL:HG12	1:I:1588:LEU:HD21	2.00	0.43
1:B:1496[B]:SER:OG	1:B:1497[B]:SER:N	2.51	0.43
1:H:1530:LYS:O	1:H:1597:ARG:NH1	2.53	0.42
1:G:1544:VAL:HG12	1:G:1588:LEU:HD21	2.02	0.42
1:B:1544:VAL:HG12	1:B:1588:LEU:HD21	2.02	0.42
1:I:1491:VAL:HG12	1:I:1534:LEU:HD12	2.02	0.41
1:F:1491:VAL:CG2	1:F:1517[B]:LEU:HD11	2.49	0.41
1:G:1504:GLY:HA3	1:G:1517[A]:LEU:HD21	2.02	0.41
1:I:1517[A]:LEU:HD21	1:I:1527:VAL:HG21	2.03	0.40
1:F:1544:VAL:HG12	1:F:1588:LEU:HD21	2.04	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	141/123 (115%)	133 (94%)	8 (6%)	0	100	100
1	B	137/123 (111%)	132 (96%)	3 (2%)	2 (2%)	10	18
1	C	131/123 (106%)	126 (96%)	5 (4%)	0	100	100
1	D	133/123 (108%)	128 (96%)	5 (4%)	0	100	100
1	E	136/123 (111%)	129 (95%)	7 (5%)	0	100	100
1	F	137/123 (111%)	132 (96%)	5 (4%)	0	100	100
1	G	150/123 (122%)	145 (97%)	5 (3%)	0	100	100
1	H	135/123 (110%)	128 (95%)	7 (5%)	0	100	100
1	I	137/123 (111%)	136 (99%)	1 (1%)	0	100	100
1	J	121/123 (98%)	119 (98%)	2 (2%)	0	100	100
All	All	1358/1230 (110%)	1308 (96%)	48 (4%)	2 (0%)	51	73

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	1496[A]	SER
1	B	1496[B]	SER

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	119/103 (116%)	119 (100%)	0	100	100
1	B	116/103 (113%)	116 (100%)	0	100	100
1	C	112/103 (109%)	112 (100%)	0	100	100
1	D	114/103 (111%)	114 (100%)	0	100	100
1	E	118/103 (115%)	118 (100%)	0	100	100
1	F	116/103 (113%)	116 (100%)	0	100	100
1	G	128/103 (124%)	128 (100%)	0	100	100
1	H	112/103 (109%)	112 (100%)	0	100	100
1	I	114/103 (111%)	114 (100%)	0	100	100
1	J	102/103 (99%)	102 (100%)	0	100	100
All	All	1151/1030 (112%)	1151 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

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

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

17 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	K6S	I	1701[A]	-	20,20,20	0.18	0	26,27,27	0.22	0
2	K6S	H	1701[A]	-	20,20,20	0.18	0	26,27,27	0.18	0
2	K6S	D	1701[B]	-	20,20,20	0.19	0	26,27,27	0.18	0
2	K6S	A	1701[B]	-	20,20,20	0.17	0	26,27,27	0.25	0
3	FMT	D	1703	-	2,2,2	0.62	0	1,1,1	0.61	0
2	K6S	I	1701[B]	-	20,20,20	0.18	0	26,27,27	0.23	0
3	FMT	G	1701	-	2,2,2	0.62	0	1,1,1	0.61	0
3	FMT	F	1702	-	2,2,2	0.63	0	1,1,1	0.60	0
2	K6S	H	1701[B]	-	20,20,20	0.19	0	26,27,27	0.24	0
3	FMT	F	1701	-	2,2,2	0.61	0	1,1,1	0.60	0
2	K6S	A	1701[A]	-	20,20,20	0.18	0	26,27,27	0.21	0
2	K6S	E	1701[A]	-	20,20,20	0.18	0	26,27,27	0.19	0
3	FMT	B	1701	-	2,2,2	0.62	0	1,1,1	0.61	0
3	FMT	H	1702	-	2,2,2	0.62	0	1,1,1	0.61	0
2	K6S	D	1701[A]	-	20,20,20	0.20	0	26,27,27	0.26	0
3	FMT	D	1702	-	2,2,2	0.62	0	1,1,1	0.59	0
2	K6S	E	1701[B]	-	20,20,20	0.18	0	26,27,27	0.21	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
2	K6S	I	1701[A]	-	-	0/17/17/17	0/1/1/1
2	K6S	H	1701[A]	-	-	0/17/17/17	0/1/1/1
2	K6S	D	1701[B]	-	-	0/17/17/17	0/1/1/1
2	K6S	A	1701[B]	-	-	1/17/17/17	0/1/1/1
2	K6S	I	1701[B]	-	-	0/17/17/17	0/1/1/1
2	K6S	H	1701[B]	-	-	0/17/17/17	0/1/1/1
2	K6S	A	1701[A]	-	-	0/17/17/17	0/1/1/1
2	K6S	E	1701[A]	-	-	0/17/17/17	0/1/1/1
2	K6S	D	1701[A]	-	-	0/17/17/17	0/1/1/1
2	K6S	E	1701[B]	-	-	1/17/17/17	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	E	1701[B]	K6S	C12-C13-N2-C14
2	A	1701[B]	K6S	C12-C13-N2-C14

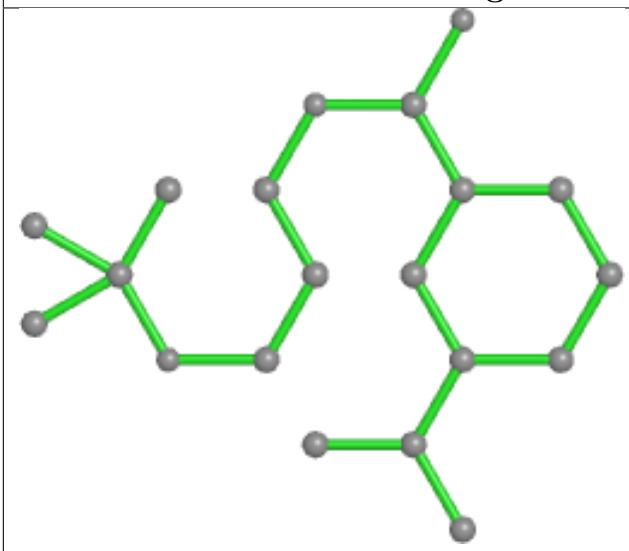
There are no ring outliers.

3 monomers are involved in 3 short contacts:

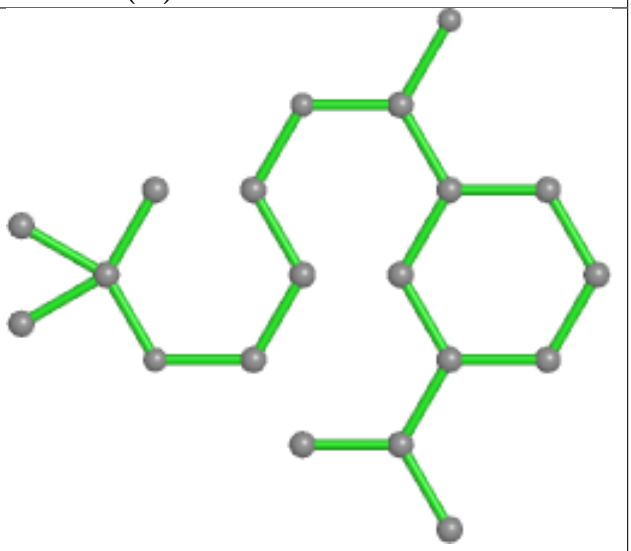
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	D	1701[B]	K6S	1	0
2	A	1701[A]	K6S	1	0
2	E	1701[A]	K6S	1	0

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.

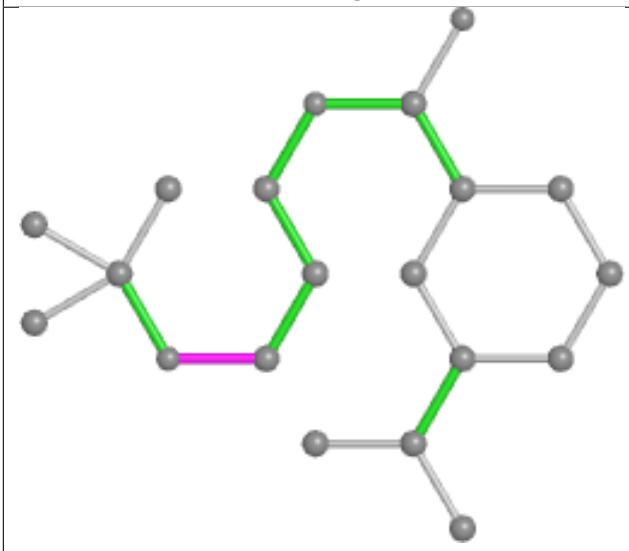
Ligand K6S A 1701 (B)



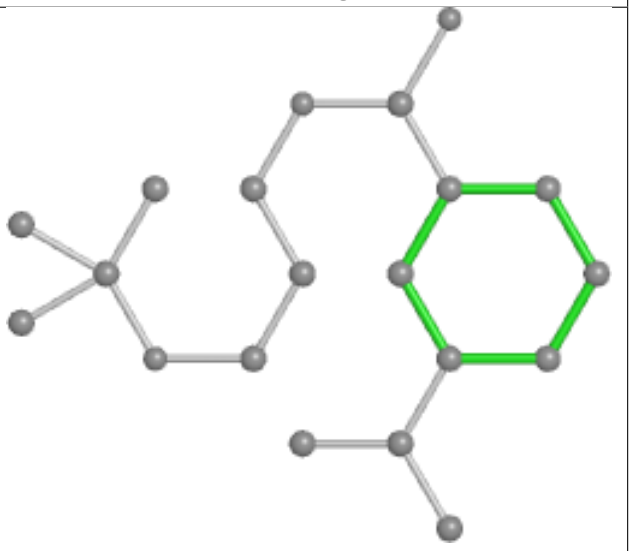
Bond lengths



Bond angles

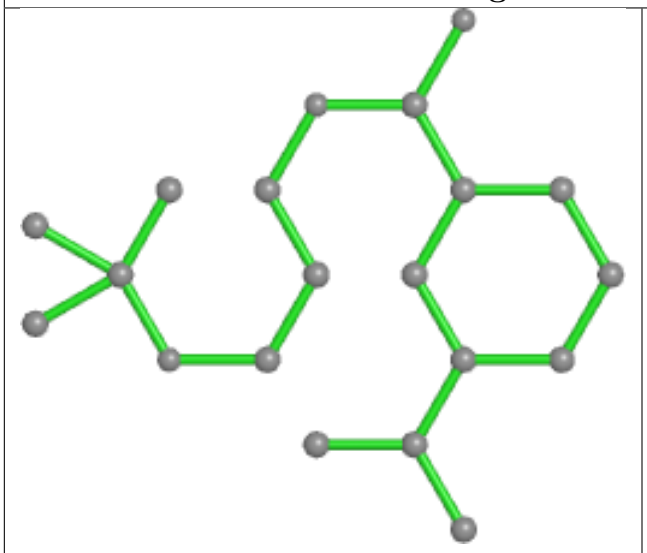


Torsions

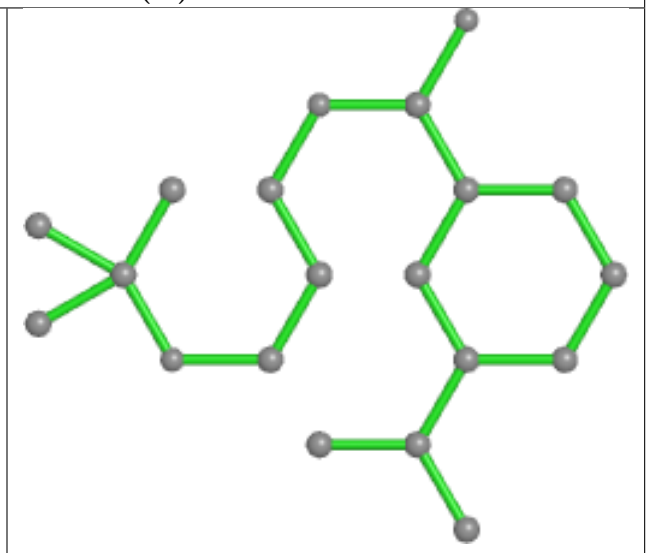


Rings

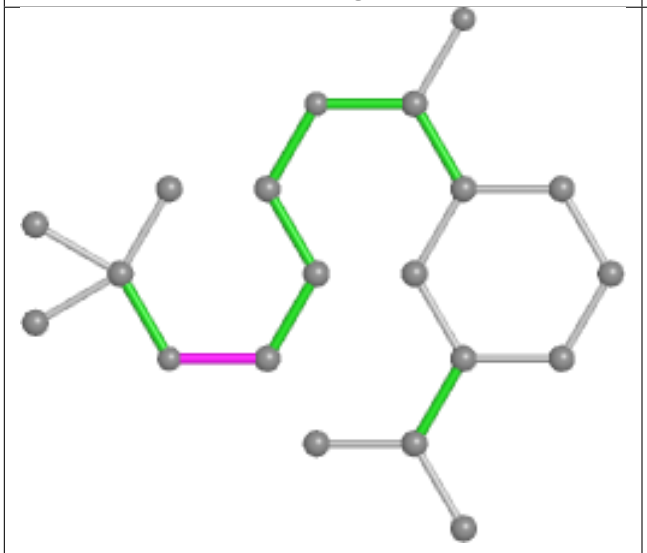
Ligand K6S E 1701 (B)



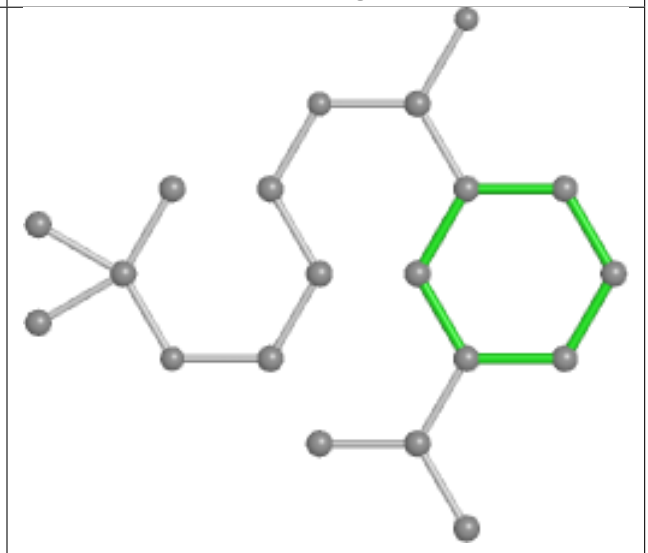
Bond lengths



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	119/123 (96%)	0.38	11 (9%) 9 9	30, 49, 87, 118	1 (0%)
1	B	120/123 (97%)	0.14	4 (3%) 46 50	30, 48, 68, 124	0
1	C	119/123 (96%)	0.21	2 (1%) 70 72	27, 53, 75, 97	5 (4%)
1	D	120/123 (97%)	0.11	4 (3%) 46 50	28, 45, 70, 127	3 (2%)
1	E	120/123 (97%)	0.28	4 (3%) 46 50	33, 49, 78, 140	3 (2%)
1	F	119/123 (96%)	0.35	5 (4%) 36 39	36, 56, 83, 98	1 (0%)
1	G	121/123 (98%)	0.30	9 (7%) 14 15	31, 49, 82, 151	1 (0%)
1	H	119/123 (96%)	0.43	12 (10%) 7 6	33, 56, 94, 112	2 (1%)
1	I	120/123 (97%)	0.27	7 (5%) 23 24	38, 56, 88, 148	4 (3%)
1	J	118/123 (95%)	0.72	14 (11%) 4 4	42, 70, 106, 136	4 (3%)
All	All	1195/1230 (97%)	0.32	72 (6%) 21 22	27, 53, 88, 151	24 (2%)

All (72) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	I	1552[A]	TYR	7.2
1	J	1512	ALA	5.6
1	H	1513	GLY	5.0
1	G	1483	MET	4.9
1	A	1511	GLY	4.8
1	J	1590	LEU	4.7
1	A	1512	ALA	4.3
1	I	1603	GLY	4.3
1	G	1484	ASN	4.1
1	J	1510	VAL	4.0
1	J	1602	LEU	4.0
1	H	1495[A]	TRP	4.0
1	C	1498[A]	ASN	3.8

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Mol	Chain	Res	Type	RSRZ
1	D	1495[A]	TRP	3.8
1	A	1495[A]	TRP	3.7
1	J	1486	PHE	3.6
1	F	1499[A]	GLY	3.6
1	C	1497[A]	SER	3.6
1	D	1603	GLY	3.6
1	E	1510	VAL	3.3
1	H	1511	GLY	3.3
1	A	1486	PHE	3.2
1	H	1496[A]	SER	3.1
1	G	1498[A]	ASN	3.1
1	H	1602	LEU	3.1
1	J	1515[A]	TYR	3.0
1	J	1513	GLY	3.0
1	G	1512	ALA	3.0
1	J	1514[A]	LYS	2.8
1	F	1577[A]	GLN	2.8
1	E	1483[A]	MET	2.8
1	J	1495	TRP	2.8
1	B	1497[A]	SER	2.7
1	J	1528	LEU	2.7
1	B	1498[A]	ASN	2.7
1	A	1485	SER	2.6
1	H	1515	TYR	2.6
1	A	1510	VAL	2.6
1	A	1513	GLY	2.6
1	H	1486	PHE	2.6
1	A	1577[A]	GLN	2.6
1	H	1494[A]	LYS	2.6
1	G	1603	GLY	2.5
1	H	1514	LYS	2.5
1	H	1512	ALA	2.5
1	A	1514	LYS	2.5
1	I	1498	ASN	2.5
1	F	1495[A]	TRP	2.4
1	A	1499[A]	GLY	2.4
1	F	1590	LEU	2.4
1	A	1603	GLY	2.4
1	E	1577[A]	GLN	2.4
1	B	1576	GLY	2.4
1	B	1603	GLY	2.4
1	I	1575	GLU	2.4

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Mol	Chain	Res	Type	RSRZ
1	J	1534	LEU	2.4
1	J	1573	GLU	2.3
1	F	1576	GLY	2.2
1	G	1497[A]	SER	2.2
1	G	1495[A]	TRP	2.1
1	H	1517[A]	LEU	2.1
1	E	1495[A]	TRP	2.1
1	G	1602	LEU	2.1
1	H	1498[A]	ASN	2.1
1	I	1584[A]	MET	2.1
1	D	1497[A]	SER	2.1
1	D	1528	LEU	2.0
1	J	1498	ASN	2.0
1	I	1576	GLY	2.0
1	I	1495	TRP	2.0
1	J	1577	GLN	2.0
1	G	1577	GLN	2.0

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	FMT	F	1701	3/3	0.83	0.28	58,58,59,71	0
2	K6S	D	1701[B]	20/20	0.86	0.29	41,51,52,53	48
2	K6S	I	1701[A]	20/20	0.86	0.30	58,70,71,72	48
2	K6S	I	1701[B]	20/20	0.86	0.30	58,70,71,72	48
2	K6S	D	1701[A]	20/20	0.86	0.29	42,51,52,53	48
2	K6S	E	1701[B]	20/20	0.87	0.28	41,50,56,57	48

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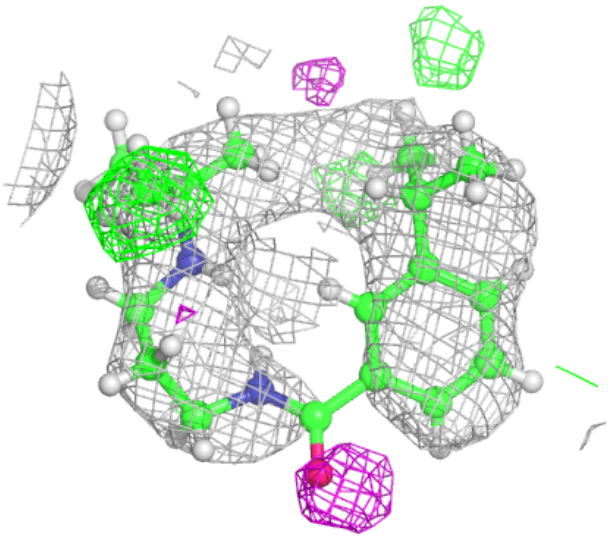
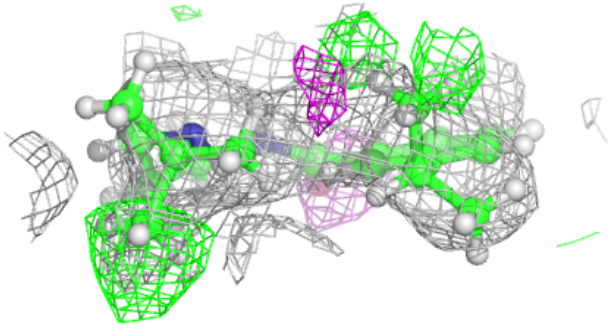
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	FMT	D	1703	3/3	0.87	0.19	66,67,68,81	0
2	K6S	E	1701[A]	20/20	0.87	0.28	40,50,56,57	48
3	FMT	F	1702	3/3	0.87	0.21	71,71,71,86	0
2	K6S	H	1701[A]	20/20	0.88	0.24	37,53,58,59	48
2	K6S	H	1701[B]	20/20	0.88	0.24	42,53,58,59	48
3	FMT	B	1701	3/3	0.88	0.18	58,59,60,71	0
2	K6S	A	1701[A]	20/20	0.89	0.28	42,51,54,54	48
2	K6S	A	1701[B]	20/20	0.89	0.28	42,51,54,55	48
3	FMT	D	1702	3/3	0.90	0.26	57,58,58,70	0
3	FMT	H	1702	3/3	0.91	0.18	54,54,55,66	0
3	FMT	G	1701	3/3	0.95	0.10	63,63,64,77	0

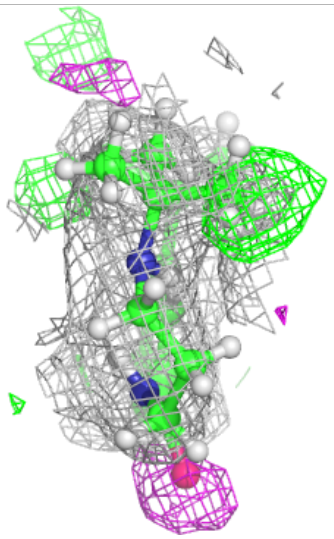
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around K6S E 1701 (B):

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

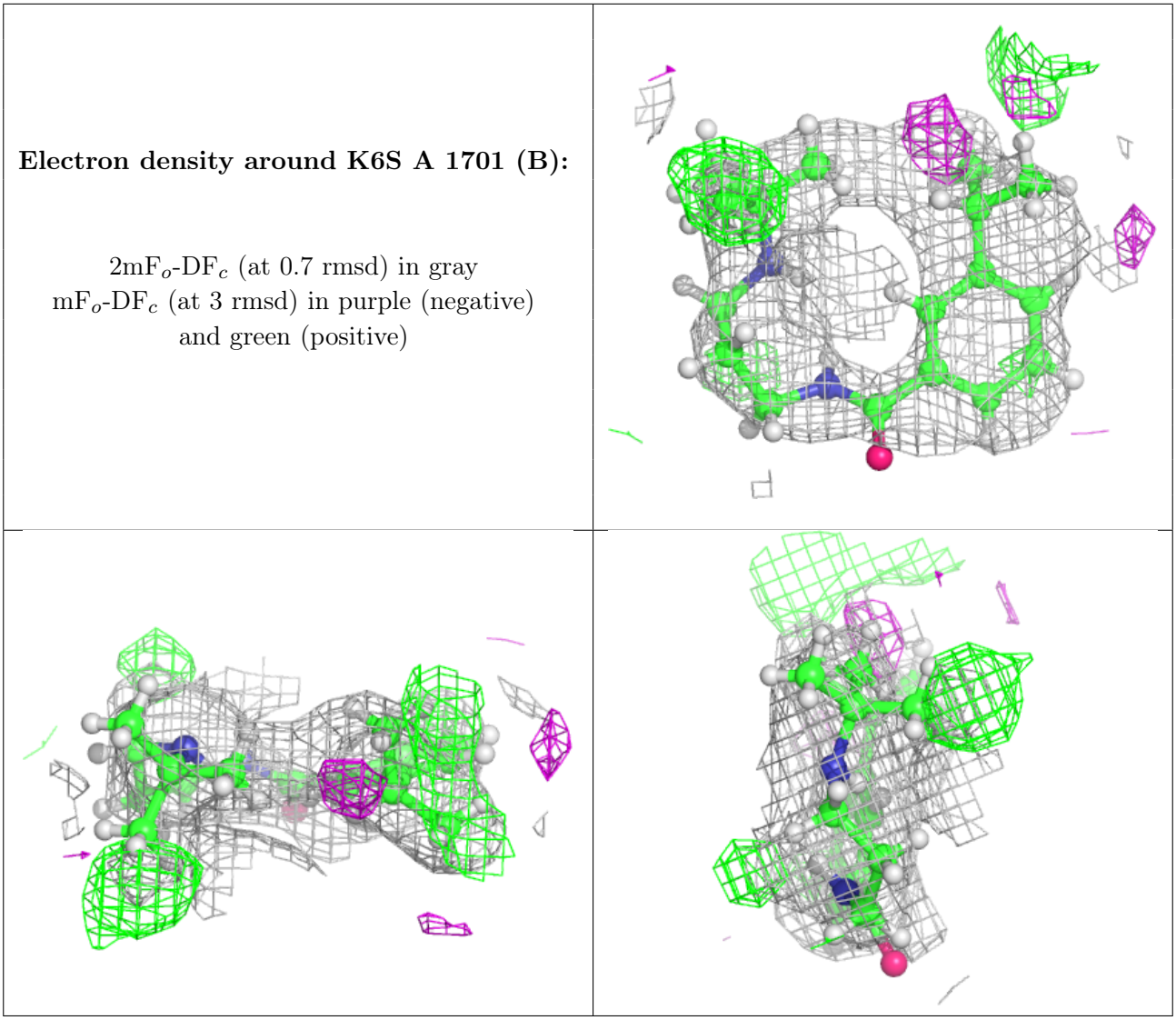






Electron density around K6S A 1701 (B):

$2mF_o$-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.