Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2026 – 08:43 AM UTC

PDB ID	:	8GK5 / pdb_00008gk5
Title	:	EGFR(T790M/V948R) kinase in complex with osimertinib and benzimidazole allosteric inhibitor
Authors	:	Beyett, T.S.; Eck, M.J.
Deposited on	:	2023-03-17
Resolution	:	2.30 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:

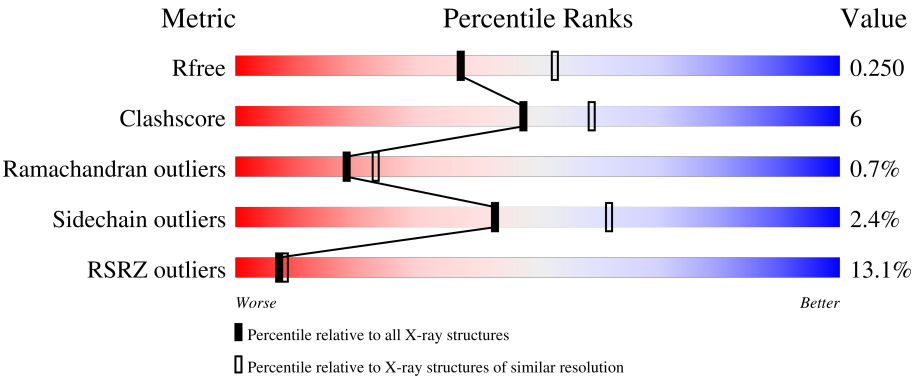
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal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

1 Overall quality at a glance

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	6319 (2.30-2.30)
Clashscore	190562	6919 (2.30-2.30)
Ramachandran outliers	187476	6854 (2.30-2.30)
Sidechain outliers	187428	6854 (2.30-2.30)
RSRZ outliers	180081	6325 (2.30-2.30)

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	331	10% 71% 17% • 11%
1	B	331	8% 77% 10% • 12%
1	C	331	19% 73% 15% • 11%
1	D	331	10% 78% 10% • 11%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 9905 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.

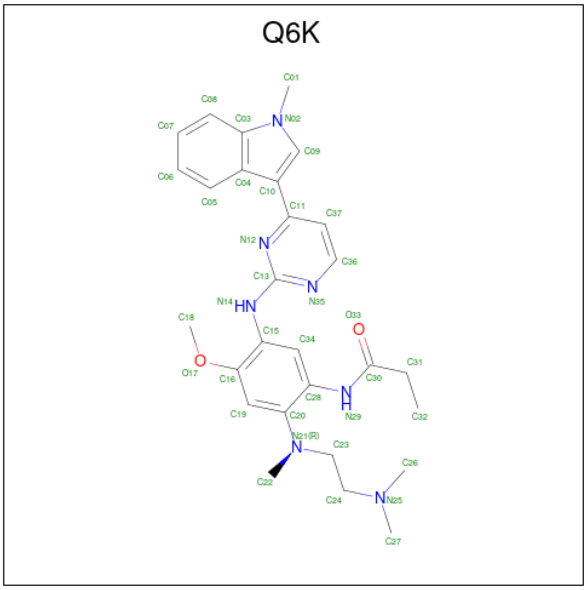
- Molecule 1 is a protein called Epidermal growth factor receptor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	294	Total	C	N	O	S	0	0	0
			2372	1523	402	428	19			
1	B	292	Total	C	N	O	S	0	0	0
			2358	1513	401	425	19			
1	C	293	Total	C	N	O	S	0	0	0
			2363	1516	402	426	19			
1	D	294	Total	C	N	O	S	0	0	0
			2372	1522	404	427	19			

There are 20 discrepancies between the modelled and reference sequences:

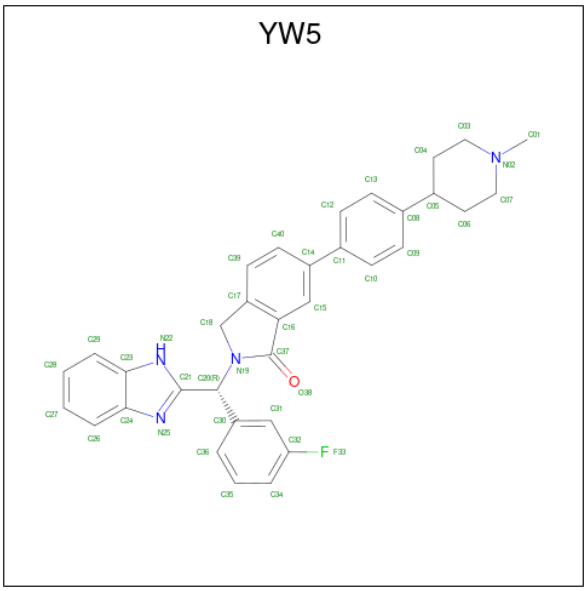
Chain	Residue	Modelled	Actual	Comment	Reference
A	692	GLY	-	expression tag	UNP P00533
A	693	SER	-	expression tag	UNP P00533
A	694	THR	-	expression tag	UNP P00533
A	790	MET	THR	engineered mutation	UNP P00533
A	948	ARG	VAL	engineered mutation	UNP P00533
B	692	GLY	-	expression tag	UNP P00533
B	693	SER	-	expression tag	UNP P00533
B	694	THR	-	expression tag	UNP P00533
B	790	MET	THR	engineered mutation	UNP P00533
B	948	ARG	VAL	engineered mutation	UNP P00533
C	692	GLY	-	expression tag	UNP P00533
C	693	SER	-	expression tag	UNP P00533
C	694	THR	-	expression tag	UNP P00533
C	790	MET	THR	engineered mutation	UNP P00533
C	948	ARG	VAL	engineered mutation	UNP P00533
D	692	GLY	-	expression tag	UNP P00533
D	693	SER	-	expression tag	UNP P00533
D	694	THR	-	expression tag	UNP P00533
D	790	MET	THR	engineered mutation	UNP P00533
D	948	ARG	VAL	engineered mutation	UNP P00533

- Molecule 2 is {N}-[2-[2-(dimethylamino)ethyl-methyl-amino]-4-methoxy-5-[[4-(1-methylindol-3-yl)pyrimidin-2-yl]amino]phenyl]propanamide (CCD ID: Q6K) (formula: $C_{28}H_{35}N_7O_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			37	28	7	2		
2	B	1	Total	C	N	O	0	0
			37	28	7	2		
2	C	1	Total	C	N	O	0	0
			37	28	7	2		
2	D	1	Total	C	N	O	0	0
			37	28	7	2		

- Molecule 3 is 2-[(R)-(1H-benzimidazol-2-yl)(3-fluorophenyl)methyl]-6-[4-(1-methylpiperidin-4-yl)phenyl]-2,3-dihydro-1H-isoindol-1-one (CCD ID: YW5) (formula: $C_{34}H_{31}FN_4O$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C F N O 40 34 1 4 1	0	0
3	B	1	Total C F N O 40 34 1 4 1	0	0
3	C	1	Total C F N O 40 34 1 4 1	0	0
3	D	1	Total C F N O 40 34 1 4 1	0	0

- Molecule 4 is water.

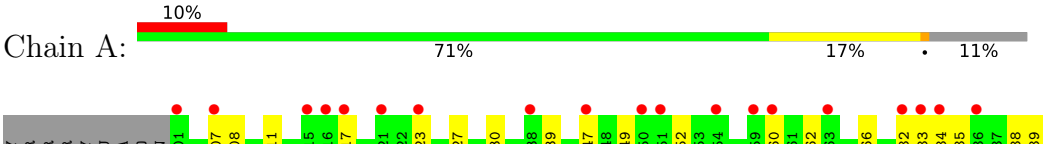
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	37	Total O 37 37	0	0
4	B	41	Total O 41 41	0	0
4	C	25	Total O 25 25	0	0
4	D	29	Total O 29 29	0	0

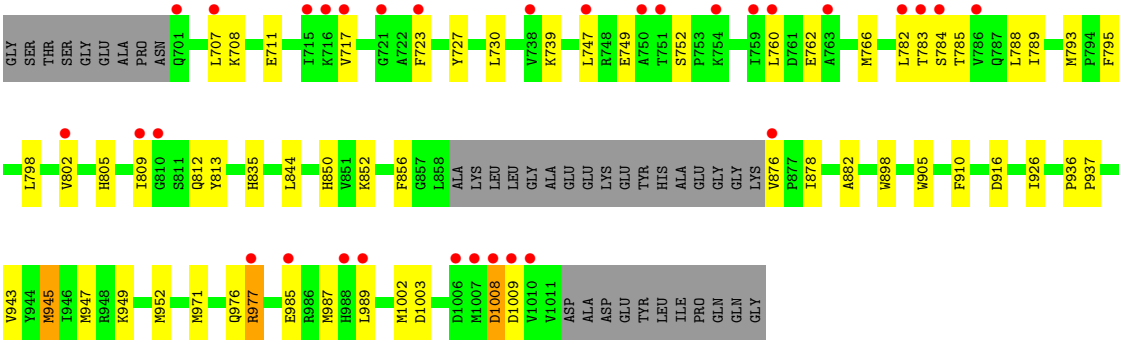
3 Residue-property plots (i)

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: Epidermal growth factor receptor

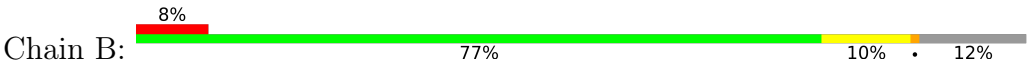
Chain A:

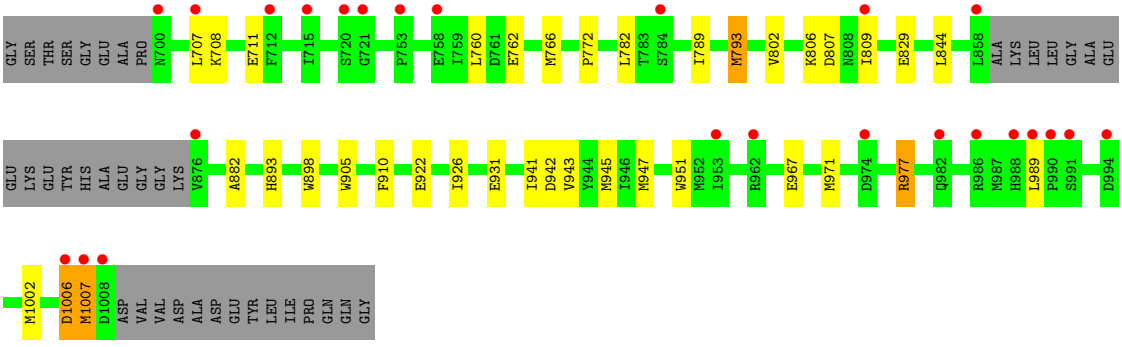




• Molecule 1: Epidermal growth factor receptor

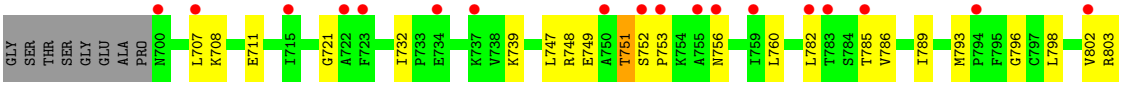
Chain B:

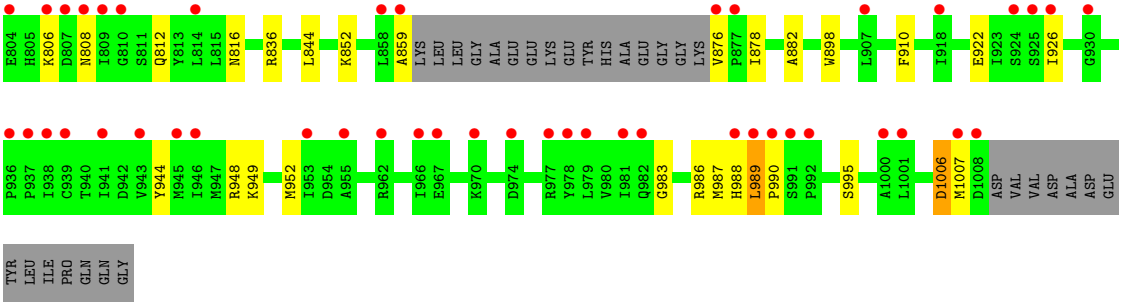




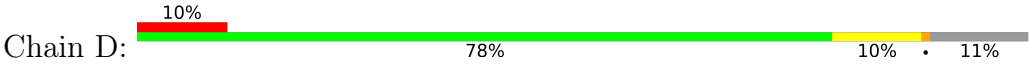
• Molecule 1: Epidermal growth factor receptor

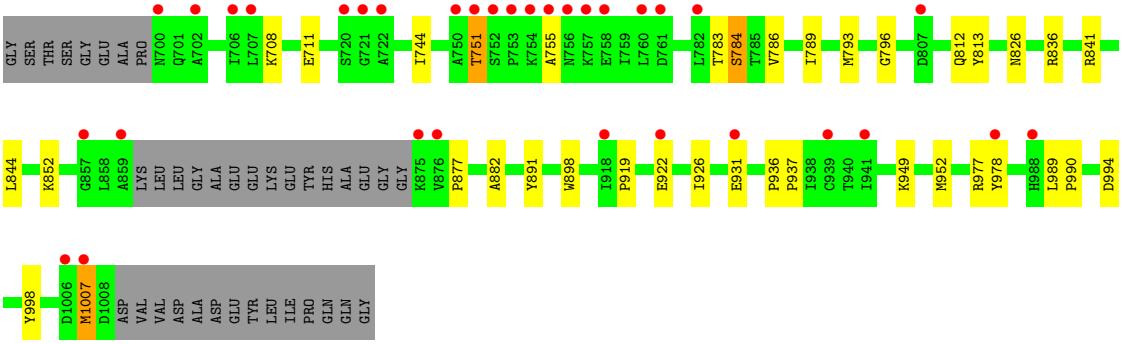
Chain C:





• Molecule 1: Epidermal growth factor receptor





4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	170.57Å 73.06Å 119.11Å 90.00° 118.84° 90.00°	Depositor
Resolution (Å)	65.63 – 2.30 65.63 – 2.30	Depositor EDS
% Data completeness (in resolution range)	90.7 (65.63-2.30) 82.4 (65.63-2.30)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	0.88 (at 2.29Å)	Xtriage
Refinement program	PHENIX (1.20.1_4487: ???)	Depositor
R, R_{free}	0.222 , 0.252 0.222 , 0.250	Depositor DCC
R_{free} test set	2830 reflections (4.95%)	wwPDB-VP
Wilson B-factor (Å^2)	36.4	Xtriage
Anisotropy	0.247	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	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	9905	wwPDB-VP
Average B, all atoms (Å^2)	57.0	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 51.00 % 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 5.9740e-05. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: YW5, Q6K

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	0.23	0/2424	0.43	0/3279
1	B	0.18	0/2410	0.40	0/3259
1	C	0.17	0/2415	0.41	0/3266
1	D	0.19	0/2424	0.43	0/3277
All	All	0.19	0/9673	0.42	0/13081

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	2372	0	2411	38	0
1	B	2358	0	2395	24	0
1	C	2363	0	2400	26	0
1	D	2372	0	2413	27	0
2	A	37	0	0	0	0
2	B	37	0	0	0	0
2	C	37	0	0	1	0
2	D	37	0	0	1	0
3	A	40	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	40	0	0	0	0
3	C	40	0	0	0	0
3	D	40	0	0	0	0
4	A	37	0	0	0	0
4	B	41	0	0	1	0
4	C	25	0	0	0	0
4	D	29	0	0	3	0
All	All	9905	0	9619	109	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 6.

All (109) 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:D:989:LEU:HG	1:D:990:PRO:HD2	1.69	0.73
1:A:793:MET:HE1	1:A:852:LYS:HD3	1.74	0.69
1:B:926:ILE:HB	1:B:931:GLU:OE1	1.96	0.65
1:A:802:VAL:HG12	1:A:910:PHE:HA	1.78	0.64
1:A:936:PRO:HA	1:B:945:MET:HE3	1.79	0.64
1:A:945:MET:HE3	1:D:936:PRO:HA	1.79	0.64
1:C:749:GLU:HG3	1:C:751:THR:HG23	1.80	0.63
1:A:876:VAL:HG23	1:A:878:ILE:HG12	1.83	0.61
1:B:802:VAL:HG12	1:B:910:PHE:HA	1.84	0.60
1:A:760:LEU:HD11	1:A:782:LEU:HD11	1.84	0.59
1:A:783:THR:O	1:A:785:THR:N	2.36	0.58
1:D:852:LYS:NZ	4:D:1204:HOH:O	2.37	0.57
1:D:826:ASN:ND2	4:D:1201:HOH:O	2.36	0.56
1:C:802:VAL:HG12	1:C:910:PHE:HA	1.89	0.55
1:C:949:LYS:HG2	1:C:952:MET:HE2	1.89	0.55
1:A:812:GLN:HG2	1:A:989:LEU:HG	1.90	0.53
1:C:793:MET:HE1	1:C:852:LYS:HD3	1.90	0.53
1:A:835:HIS:CD2	1:A:856:PHE:HB3	2.45	0.52
1:C:876:VAL:HG23	1:C:878:ILE:HG12	1.92	0.52
1:C:1006:ASP:OD1	1:C:1006:ASP:N	2.42	0.52
1:A:813:TYR:CE2	1:A:989:LEU:HD23	2.45	0.51
1:C:760:LEU:HD11	1:C:782:LEU:HD11	1.92	0.51
1:D:994:ASP:HB3	1:D:998:TYR:CZ	2.45	0.51
1:A:882:ALA:HA	1:A:898:TRP:CD2	2.46	0.50
1:A:802:VAL:HA	1:A:809:ILE:HD11	1.93	0.50
1:A:717:VAL:HG22	1:A:727:TYR:CE2	2.46	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:753:PRO:HA	1:C:756:ASN:HB2	1.94	0.50
1:D:919:PRO:HD2	1:D:922:GLU:OE1	2.12	0.50
1:C:812:GLN:HE21	1:C:816:ASN:HD21	1.60	0.49
1:A:802:VAL:CG1	1:A:910:PHE:HA	2.42	0.49
1:C:749:GLU:O	1:C:785:THR:HG22	2.12	0.49
1:C:793:MET:HG3	1:C:844:LEU:HB3	1.95	0.49
1:B:793:MET:HA	1:B:793:MET:HE2	1.93	0.49
1:C:732:ILE:HG13	1:C:739:LYS:HG2	1.93	0.49
1:A:937:PRO:HD3	1:B:945:MET:HE3	1.96	0.48
1:B:802:VAL:CG1	1:B:910:PHE:HA	2.43	0.48
1:B:922:GLU:O	1:B:926:ILE:HG23	2.13	0.48
1:A:976:GLN:NE2	1:A:985:GLU:OE2	2.34	0.48
1:D:793:MET:HG3	1:D:844:LEU:HB3	1.96	0.48
1:D:796:GLY:HA2	2:D:1101:Q6K:C34	2.44	0.48
1:D:882:ALA:HA	1:D:898:TRP:CD2	2.48	0.48
1:A:905:TRP:HD1	1:A:947:MET:HE1	1.79	0.48
1:B:793:MET:HG3	1:B:844:LEU:HB3	1.97	0.47
1:D:926:ILE:HG23	1:D:931:GLU:HB2	1.95	0.47
1:C:836:ARG:HD3	1:C:859:ALA:HB3	1.97	0.47
1:B:1007:MET:HE3	1:B:1007:MET:HB3	1.83	0.46
1:A:730:LEU:HD13	1:A:739:LYS:HD2	1.97	0.46
1:A:795:PHE:HE2	1:A:1002:MET:HE1	1.79	0.46
1:D:751:THR:HG22	1:D:755:ALA:HB3	1.97	0.46
1:C:988:HIS:CE1	1:C:990:PRO:HA	2.50	0.46
1:A:943:VAL:HG22	1:A:971:MET:HE1	1.96	0.46
1:B:882:ALA:HA	1:B:898:TRP:CD2	2.51	0.46
1:D:977:ARG:HG3	1:D:978:TYR:CD2	2.51	0.46
1:A:762:GLU:O	1:A:766:MET:HG2	2.15	0.45
1:B:708:LYS:O	1:B:711:GLU:HG2	2.16	0.45
1:A:926:ILE:HD11	1:B:977:ARG:HE	1.82	0.45
1:B:941:ILE:HG13	1:B:945:MET:SD	2.57	0.45
1:D:783:THR:O	1:D:784:SER:C	2.60	0.45
1:A:793:MET:HG3	1:A:844:LEU:HB3	1.99	0.45
1:D:949:LYS:HG2	1:D:952:MET:HE2	1.98	0.45
1:C:882:ALA:HA	1:C:898:TRP:CD2	2.52	0.44
1:D:813:TYR:OH	1:D:990:PRO:HD3	2.17	0.44
1:A:916:ASP:HB3	4:B:1211:HOH:O	2.18	0.44
1:D:841:ARG:HH22	1:D:877:PRO:HB3	1.81	0.44
1:A:977:ARG:HD2	1:D:931:GLU:OE1	2.17	0.44
1:B:1002:MET:HE2	1:B:1002:MET:HB3	1.77	0.44
1:C:708:LYS:HE2	1:C:708:LYS:HB3	1.83	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:807:ASP:C	1:B:809:ILE:H	2.26	0.43
1:A:798:LEU:O	1:A:802:VAL:HG23	2.19	0.43
1:A:805:HIS:O	1:A:809:ILE:HG13	2.17	0.43
1:B:829:GLU:HA	1:B:893:HIS:NE2	2.33	0.43
1:A:977:ARG:HG3	1:D:926:ILE:HG12	2.00	0.43
1:D:751:THR:OG1	1:D:786:VAL:HG23	2.18	0.43
1:A:708:LYS:HE2	1:A:708:LYS:HB3	1.79	0.43
1:C:747:LEU:HD12	1:C:786:VAL:HB	2.00	0.43
1:D:708:LYS:O	1:D:711:GLU:HG2	2.18	0.43
1:D:836:ARG:HD3	1:D:891:TYR:CG	2.53	0.43
1:C:708:LYS:O	1:C:711:GLU:HG2	2.19	0.43
1:C:988:HIS:HE1	1:C:990:PRO:HA	1.84	0.42
1:B:772:PRO:HB3	1:B:1007:MET:HG3	2.01	0.42
1:C:798:LEU:O	1:C:802:VAL:HG23	2.19	0.42
1:C:707:LEU:HD12	1:C:789:ILE:HD13	2.00	0.42
1:D:812:GLN:HG2	1:D:989:LEU:HD22	2.00	0.42
1:C:796:GLY:HA2	2:C:1101:Q6K:C34	2.50	0.42
1:C:802:VAL:CG1	1:C:910:PHE:HA	2.49	0.42
1:C:983:GLY:O	1:C:987:MET:HG2	2.20	0.42
1:A:723:PHE:O	1:A:747:LEU:HA	2.20	0.42
1:C:803:ARG:O	1:C:806:LYS:HG3	2.19	0.42
1:A:788:LEU:C	1:A:789:ILE:HD12	2.45	0.41
1:A:708:LYS:O	1:A:711:GLU:HG2	2.19	0.41
1:A:850:HIS:ND1	1:A:1003:ASP:OD2	2.53	0.41
1:B:760:LEU:HD11	1:B:782:LEU:HD11	2.02	0.41
1:A:749:GLU:O	1:A:785:THR:HG23	2.19	0.41
1:A:812:GLN:CG	1:A:989:LEU:HG	2.50	0.41
1:D:852:LYS:NZ	4:D:1202:HOH:O	2.37	0.41
1:A:795:PHE:CE2	1:A:1002:MET:HE1	2.55	0.41
1:A:949:LYS:HG2	1:A:952:MET:HE2	2.02	0.41
1:B:943:VAL:HG22	1:B:971:MET:HE1	2.03	0.41
1:C:944:TYR:CZ	1:C:948:ARG:HD3	2.56	0.41
1:D:744:ILE:HG12	1:D:789:ILE:HG13	2.03	0.41
1:B:707:LEU:HD12	1:B:789:ILE:HD13	2.02	0.41
1:D:836:ARG:HD3	1:D:891:TYR:CD1	2.55	0.41
1:D:936:PRO:HA	1:D:937:PRO:HD3	1.97	0.41
1:A:707:LEU:HD12	1:A:789:ILE:HD13	2.03	0.40
1:D:708:LYS:HE2	1:D:708:LYS:HB3	1.89	0.40
1:B:762:GLU:O	1:B:766:MET:HG2	2.21	0.40
1:B:942:ASP:OD1	1:B:942:ASP:N	2.55	0.40
1:B:898:TRP:CE3	1:B:951:TRP:HA	2.57	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:905:TRP:HD1	1:B:947:MET:HE1	1.86	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	290/331 (88%)	277 (96%)	11 (4%)	2 (1%)	18	23
1	B	288/331 (87%)	279 (97%)	8 (3%)	1 (0%)	36	46
1	C	289/331 (87%)	276 (96%)	10 (4%)	3 (1%)	12	15
1	D	290/331 (88%)	282 (97%)	6 (2%)	2 (1%)	18	23
All	All	1157/1324 (87%)	1114 (96%)	35 (3%)	8 (1%)	18	23

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1008	ASP
1	C	751	THR
1	D	1007	MET
1	C	989	LEU
1	D	784	SER
1	A	784	SER
1	B	1006	ASP
1	C	721	GLY

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	264/290 (91%)	258 (98%)	6 (2%)	44	63
1	B	262/290 (90%)	255 (97%)	7 (3%)	39	58
1	C	262/290 (90%)	252 (96%)	10 (4%)	29	44
1	D	263/290 (91%)	261 (99%)	2 (1%)	73	86
All	All	1051/1160 (91%)	1026 (98%)	25 (2%)	43	62

All (25) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	752	SER
1	A	945	MET
1	A	977	ARG
1	A	987	MET
1	A	1008	ASP
1	A	1009	ASP
1	B	793	MET
1	B	806	LYS
1	B	967	GLU
1	B	977	ARG
1	B	989	LEU
1	B	1006	ASP
1	B	1007	MET
1	C	748	ARG
1	C	752	SER
1	C	808	ASN
1	C	922	GLU
1	C	926	ILE
1	C	986	ARG
1	C	989	LEU
1	C	995	SER
1	C	1006	ASP
1	C	1007	MET
1	D	751	THR
1	D	1007	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	888	HIS
1	A	988	HIS
1	B	888	HIS
1	C	773	HIS
1	C	812	GLN
1	C	849	GLN
1	C	988	HIS
1	D	805	HIS
1	D	812	GLN
1	D	816	ASN
1	D	894	GLN

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 oligosaccharides in this entry.

5.6 Ligand geometry (i)

8 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	$\#\|Z\| > 2$
3	YW5	D	1102	-	46,46,46	3.31	22 (47%)	63,67,67	3.35	17 (26%)
3	YW5	B	1102	-	46,46,46	2.89	21 (45%)	63,67,67	3.02	17 (26%)
2	Q6K	B	1101	1	40,40,40	1.40	7 (17%)	56,56,56	1.74	15 (26%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	Q6K	C	1101	1	40,40,40	1.48	5 (12%)	56,56,56	1.59	15 (26%)
2	Q6K	A	1101	1	40,40,40	1.51	8 (20%)	56,56,56	1.65	14 (25%)
2	Q6K	D	1101	1	40,40,40	1.60	8 (20%)	56,56,56	1.65	15 (26%)
3	YW5	C	1102	-	46,46,46	3.15	23 (50%)	63,67,67	3.26	20 (31%)
3	YW5	A	1102	-	46,46,46	3.17	23 (50%)	63,67,67	3.20	20 (31%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	YW5	D	1102	-	-	5/18/42/42	0/7/7/7
3	YW5	B	1102	-	-	3/18/42/42	0/7/7/7
2	Q6K	B	1101	1	-	6/25/25/25	0/4/4/4
2	Q6K	C	1101	1	-	6/25/25/25	0/4/4/4
2	Q6K	A	1101	1	-	10/25/25/25	0/4/4/4
2	Q6K	D	1101	1	-	6/25/25/25	0/4/4/4
3	YW5	C	1102	-	-	2/18/42/42	0/7/7/7
3	YW5	A	1102	-	-	2/18/42/42	0/7/7/7

All (117) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	1102	YW5	C30-C20	9.66	1.64	1.52
3	C	1102	YW5	C30-C20	8.60	1.63	1.52
3	A	1102	YW5	C30-C20	8.46	1.63	1.52
3	B	1102	YW5	C30-C20	8.22	1.62	1.52
3	A	1102	YW5	C21-N25	7.96	1.43	1.32
3	B	1102	YW5	C21-N25	7.65	1.43	1.32
3	D	1102	YW5	C21-N25	7.57	1.42	1.32
3	C	1102	YW5	C21-N25	7.46	1.42	1.32
3	C	1102	YW5	C18-C17	6.84	1.59	1.50
3	D	1102	YW5	C18-C17	6.42	1.58	1.50
3	D	1102	YW5	C16-C37	6.15	1.58	1.48
3	A	1102	YW5	C18-C17	6.11	1.58	1.50
3	D	1102	YW5	C37-N19	5.96	1.42	1.36
3	B	1102	YW5	C18-C17	5.69	1.57	1.50
3	C	1102	YW5	C20-N19	5.60	1.53	1.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	1102	YW5	C37-N19	5.50	1.41	1.36
3	D	1102	YW5	C20-N19	5.38	1.53	1.46
3	A	1102	YW5	C18-N19	5.30	1.52	1.47
3	A	1102	YW5	C20-C21	5.25	1.62	1.51
3	C	1102	YW5	C16-C37	5.16	1.57	1.48
3	A	1102	YW5	C16-C37	5.03	1.56	1.48
3	A	1102	YW5	C20-N19	4.99	1.52	1.46
3	C	1102	YW5	C18-N19	4.90	1.52	1.47
3	A	1102	YW5	C37-N19	4.86	1.41	1.36
3	D	1102	YW5	C14-C11	4.81	1.60	1.49
3	C	1102	YW5	C14-C11	4.60	1.60	1.49
3	D	1102	YW5	C18-N19	4.60	1.52	1.47
3	B	1102	YW5	C18-N19	4.55	1.52	1.47
3	D	1102	YW5	C20-C21	4.45	1.60	1.51
3	A	1102	YW5	C23-N22	4.25	1.46	1.38
3	B	1102	YW5	C16-C37	4.19	1.55	1.48
3	A	1102	YW5	C14-C11	4.17	1.58	1.49
3	C	1102	YW5	C20-C21	4.16	1.59	1.51
3	B	1102	YW5	C23-N22	4.12	1.46	1.38
3	B	1102	YW5	C20-C21	4.09	1.59	1.51
3	B	1102	YW5	C37-N19	4.01	1.40	1.36
3	D	1102	YW5	C23-N22	3.79	1.45	1.38
3	B	1102	YW5	C20-N19	3.51	1.50	1.46
3	D	1102	YW5	C29-C23	3.49	1.45	1.39
3	C	1102	YW5	C23-N22	3.48	1.45	1.38
3	A	1102	YW5	C08-C05	3.46	1.59	1.52
3	B	1102	YW5	C14-C11	3.42	1.57	1.49
3	D	1102	YW5	C07-N02	3.37	1.54	1.46
3	D	1102	YW5	C03-N02	3.33	1.54	1.46
3	B	1102	YW5	C07-N02	3.33	1.54	1.46
2	D	1101	Q6K	C13-N35	3.30	1.39	1.34
3	C	1102	YW5	C29-C23	3.26	1.45	1.39
3	A	1102	YW5	C29-C23	3.17	1.44	1.39
2	D	1101	Q6K	C30-N29	3.09	1.42	1.35
3	B	1102	YW5	C29-C23	3.04	1.44	1.39
2	C	1101	Q6K	C09-N02	3.02	1.41	1.37
2	C	1101	Q6K	C13-N35	3.00	1.38	1.34
2	B	1101	Q6K	C09-N02	2.98	1.41	1.37
2	A	1101	Q6K	C13-N35	2.98	1.38	1.34
2	B	1101	Q6K	C13-N35	2.95	1.38	1.34
3	D	1102	YW5	C08-C05	2.93	1.58	1.52
2	C	1101	Q6K	C30-N29	2.93	1.41	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1101	Q6K	C30-N29	2.92	1.41	1.35
3	C	1102	YW5	C28-C27	2.91	1.44	1.38
2	D	1101	Q6K	C28-C20	2.90	1.43	1.40
3	B	1102	YW5	C03-N02	2.88	1.53	1.46
2	A	1101	Q6K	C09-N02	2.87	1.41	1.37
2	D	1101	Q6K	C09-N02	2.86	1.41	1.37
3	D	1102	YW5	C28-C27	2.81	1.44	1.38
3	A	1102	YW5	C28-C27	2.79	1.44	1.38
3	B	1102	YW5	C28-C27	2.75	1.44	1.38
3	B	1102	YW5	C08-C05	2.74	1.57	1.52
3	A	1102	YW5	C36-C30	2.73	1.43	1.39
3	C	1102	YW5	C08-C05	2.73	1.57	1.52
2	B	1101	Q6K	C30-N29	2.73	1.41	1.35
2	D	1101	Q6K	C15-N14	2.71	1.47	1.39
3	A	1102	YW5	C04-C05	2.68	1.60	1.53
3	D	1102	YW5	C36-C30	2.65	1.43	1.39
3	D	1102	YW5	C40-C14	2.62	1.44	1.39
3	A	1102	YW5	C07-N02	2.60	1.52	1.46
3	C	1102	YW5	C07-N02	2.59	1.52	1.46
3	C	1102	YW5	C03-N02	2.54	1.52	1.46
3	B	1102	YW5	C36-C30	2.52	1.43	1.39
3	C	1102	YW5	C40-C14	2.49	1.44	1.39
3	D	1102	YW5	C31-C32	2.48	1.41	1.37
3	A	1102	YW5	C26-C24	2.48	1.43	1.40
3	C	1102	YW5	C36-C30	2.48	1.43	1.39
3	B	1102	YW5	C40-C39	2.48	1.42	1.38
2	A	1101	Q6K	C28-C20	2.48	1.43	1.40
3	A	1102	YW5	C40-C39	2.46	1.42	1.38
3	C	1102	YW5	C40-C39	2.46	1.42	1.38
2	A	1101	Q6K	C13-N12	2.45	1.41	1.34
3	B	1102	YW5	C40-C14	2.45	1.44	1.39
3	D	1102	YW5	C40-C39	2.42	1.42	1.38
2	C	1101	Q6K	C28-C20	2.40	1.43	1.40
3	B	1102	YW5	C39-C17	2.38	1.43	1.39
2	C	1101	Q6K	C15-N14	2.34	1.46	1.39
3	D	1102	YW5	C15-C16	2.33	1.43	1.39
2	D	1101	Q6K	C09-C10	2.33	1.39	1.37
2	A	1101	Q6K	C15-N14	2.32	1.46	1.39
3	A	1102	YW5	C40-C14	2.31	1.44	1.39
3	C	1102	YW5	C13-C12	2.28	1.42	1.38
2	D	1101	Q6K	C13-N14	2.24	1.41	1.36
3	C	1102	YW5	C39-C17	2.23	1.43	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	1102	YW5	C39-C17	2.20	1.43	1.39
3	C	1102	YW5	C26-C24	2.19	1.43	1.40
3	D	1102	YW5	C13-C12	2.19	1.42	1.38
3	A	1102	YW5	C31-C32	2.19	1.41	1.37
3	C	1102	YW5	C31-C32	2.19	1.41	1.37
3	D	1102	YW5	C39-C17	2.18	1.43	1.39
3	B	1102	YW5	C26-C24	2.18	1.43	1.40
3	A	1102	YW5	C03-N02	2.18	1.51	1.46
2	A	1101	Q6K	C09-C10	2.13	1.39	1.37
2	B	1101	Q6K	C09-C10	2.12	1.39	1.37
2	D	1101	Q6K	C34-C28	2.11	1.42	1.39
3	B	1102	YW5	C10-C09	2.08	1.42	1.38
3	A	1102	YW5	C10-C09	2.07	1.42	1.38
2	B	1101	Q6K	C24-N25	2.07	1.53	1.46
2	B	1101	Q6K	C28-C20	2.06	1.42	1.40
3	C	1102	YW5	C15-C16	2.03	1.43	1.39
2	A	1101	Q6K	C04-C03	2.03	1.43	1.41
2	B	1101	Q6K	C15-N14	2.01	1.45	1.39

All (133) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C	1102	YW5	C18-N19-C37	-16.20	106.32	113.15
3	D	1102	YW5	C18-N19-C37	-16.15	106.34	113.15
3	A	1102	YW5	C18-N19-C37	-15.88	106.45	113.15
3	B	1102	YW5	C18-N19-C37	-14.96	106.84	113.15
3	D	1102	YW5	C17-C18-N19	9.27	107.24	102.31
3	D	1102	YW5	C07-C06-C05	8.35	120.77	111.00
3	C	1102	YW5	C16-C37-N19	8.34	111.72	106.42
3	C	1102	YW5	C17-C18-N19	8.32	106.73	102.31
3	A	1102	YW5	C17-C18-N19	8.16	106.65	102.31
3	B	1102	YW5	C07-C06-C05	8.12	120.50	111.00
3	A	1102	YW5	C16-C37-N19	8.02	111.52	106.42
3	B	1102	YW5	C16-C37-N19	7.81	111.39	106.42
3	B	1102	YW5	C17-C18-N19	7.69	106.40	102.31
3	D	1102	YW5	C16-C37-N19	7.67	111.30	106.42
3	C	1102	YW5	C03-C04-C05	7.58	119.87	111.00
3	D	1102	YW5	C03-C04-C05	7.38	119.64	111.00
3	C	1102	YW5	C07-C06-C05	7.08	119.29	111.00
3	A	1102	YW5	C03-C04-C05	6.99	119.18	111.00
3	A	1102	YW5	C06-C07-N02	-5.41	104.22	111.20
3	D	1102	YW5	C07-N02-C03	4.82	117.21	109.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	1102	YW5	C04-C03-N02	-4.77	105.04	111.20
3	A	1102	YW5	C07-C06-C05	4.74	116.55	111.00
2	B	1101	Q6K	O17-C16-C15	4.63	120.58	114.81
3	A	1102	YW5	O38-C37-N19	-4.45	121.81	125.34
3	B	1102	YW5	C04-C03-N02	-4.42	105.50	111.20
3	D	1102	YW5	C17-C16-C37	-4.36	106.57	108.94
3	B	1102	YW5	O38-C37-N19	-4.33	121.89	125.34
3	D	1102	YW5	O38-C37-N19	-4.25	121.96	125.34
3	C	1102	YW5	O38-C37-N19	-4.15	122.04	125.34
2	B	1101	Q6K	C34-C15-C16	-3.93	114.34	118.95
2	D	1101	Q6K	O17-C16-C15	3.91	119.68	114.81
2	A	1101	Q6K	C34-C15-C16	-3.89	114.39	118.95
2	A	1101	Q6K	O17-C16-C15	3.89	119.65	114.81
2	D	1101	Q6K	C34-C15-C16	-3.88	114.39	118.95
2	C	1101	Q6K	C34-C15-C16	-3.88	114.40	118.95
3	C	1102	YW5	C17-C16-C37	-3.80	106.88	108.94
2	B	1101	Q6K	C28-C20-N21	3.67	125.67	118.29
3	A	1102	YW5	C17-C16-C37	-3.53	107.02	108.94
2	D	1101	Q6K	C03-C04-C10	3.52	108.85	106.83
2	C	1101	Q6K	C03-C04-C10	3.40	108.78	106.83
2	B	1101	Q6K	O17-C16-C19	-3.37	118.27	124.08
2	B	1101	Q6K	C03-C04-C10	3.37	108.76	106.83
2	A	1101	Q6K	C19-C20-C28	-3.35	115.27	119.95
2	C	1101	Q6K	C19-C20-C28	-3.35	115.28	119.95
2	B	1101	Q6K	C20-C19-C16	3.25	124.90	118.01
2	C	1101	Q6K	O17-C16-C15	3.20	118.80	114.81
2	D	1101	Q6K	C19-C20-C28	-3.16	115.55	119.95
2	A	1101	Q6K	C03-C04-C10	3.15	108.64	106.83
3	B	1102	YW5	C17-C16-C37	-3.13	107.24	108.94
2	D	1101	Q6K	C20-C19-C16	3.05	124.47	118.01
2	B	1101	Q6K	C19-C20-C28	-3.02	115.74	119.95
3	C	1102	YW5	C07-N02-C03	3.02	114.34	109.54
2	A	1101	Q6K	C20-C19-C16	2.97	124.30	118.01
2	D	1101	Q6K	O17-C16-C19	-2.94	119.02	124.08
2	C	1101	Q6K	C20-C19-C16	2.90	124.16	118.01
2	A	1101	Q6K	C37-C11-N12	-2.89	119.55	122.92
2	A	1101	Q6K	O17-C16-C19	-2.88	119.11	124.08
3	D	1102	YW5	C18-N19-C20	-2.88	121.16	123.84
2	C	1101	Q6K	C37-C11-N12	-2.87	119.57	122.92
3	D	1102	YW5	C04-C03-N02	2.84	114.86	111.20
2	C	1101	Q6K	C11-N12-C13	2.81	119.00	116.87
2	D	1101	Q6K	C37-C11-N12	-2.81	119.64	122.92

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C	1102	YW5	C40-C14-C15	-2.81	114.37	118.23
3	D	1102	YW5	C40-C14-C15	-2.80	114.38	118.23
2	D	1101	Q6K	C11-N12-C13	2.77	118.97	116.87
3	A	1102	YW5	C23-C24-N25	-2.72	105.69	109.42
3	A	1102	YW5	C40-C14-C15	-2.69	114.52	118.23
2	B	1101	Q6K	C37-C11-N12	-2.69	119.78	122.92
2	B	1101	Q6K	C22-N21-C20	2.67	123.25	116.03
3	B	1102	YW5	C23-C24-N25	-2.67	105.77	109.42
2	A	1101	Q6K	C10-C11-N12	2.66	120.73	116.40
3	C	1102	YW5	C18-N19-C20	-2.65	121.37	123.84
3	A	1102	YW5	C29-C23-C24	-2.64	119.21	122.10
3	C	1102	YW5	C06-C07-N02	-2.58	107.86	111.20
2	D	1101	Q6K	N35-C13-N12	-2.57	123.94	126.42
3	D	1102	YW5	C04-C05-C08	2.57	118.75	112.67
3	B	1102	YW5	C29-C23-C24	-2.55	119.30	122.10
3	B	1102	YW5	C18-C17-C16	-2.55	108.13	109.73
2	D	1101	Q6K	C28-C20-N21	2.51	123.34	118.29
3	C	1102	YW5	C23-C24-N25	-2.50	105.99	109.42
2	A	1101	Q6K	N35-C13-N12	-2.49	124.01	126.42
3	B	1102	YW5	C40-C14-C15	-2.47	114.83	118.23
3	D	1102	YW5	C15-C16-C37	2.47	133.62	129.39
2	C	1101	Q6K	O17-C16-C19	-2.44	119.88	124.08
3	D	1102	YW5	C23-C24-N25	-2.42	106.10	109.42
3	B	1102	YW5	C03-C04-C05	2.42	113.83	111.00
2	D	1101	Q6K	C24-C23-N21	2.42	116.37	112.41
2	C	1101	Q6K	N35-C13-N12	-2.40	124.10	126.42
3	B	1102	YW5	C18-N19-C20	-2.35	121.65	123.84
3	C	1102	YW5	C30-C31-C32	2.34	121.27	118.74
3	C	1102	YW5	C30-C20-N19	2.33	114.72	112.07
2	B	1101	Q6K	C11-N12-C13	2.32	118.63	116.87
3	D	1102	YW5	C15-C14-C11	2.32	124.73	120.84
3	A	1102	YW5	C18-N19-C20	-2.27	121.73	123.84
2	D	1101	Q6K	C31-C30-N29	2.26	120.50	114.65
2	C	1101	Q6K	C24-C23-N21	2.26	116.12	112.41
2	B	1101	Q6K	C05-C04-C03	-2.24	116.65	119.24
3	D	1102	YW5	C29-C23-C24	-2.23	119.65	122.10
2	A	1101	Q6K	C04-C10-C09	-2.23	104.86	106.02
2	A	1101	Q6K	C31-C30-N29	2.22	120.37	114.65
3	B	1102	YW5	C01-N02-C07	-2.21	106.41	110.63
3	C	1102	YW5	C18-C17-C16	-2.21	108.34	109.73
2	A	1101	Q6K	C05-C04-C03	-2.20	116.70	119.24
2	C	1101	Q6K	C05-C04-C03	-2.20	116.70	119.24

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	1101	Q6K	C28-C20-N21	2.20	122.70	118.29
3	C	1102	YW5	C15-C16-C37	2.19	133.15	129.39
3	A	1102	YW5	C01-N02-C03	-2.19	106.46	110.63
3	A	1102	YW5	C18-C17-C16	-2.19	108.35	109.73
3	A	1102	YW5	C15-C16-C37	2.19	133.14	129.39
2	B	1101	Q6K	N35-C13-N12	-2.18	124.31	126.42
2	A	1101	Q6K	C11-N12-C13	2.18	118.52	116.87
2	C	1101	Q6K	C04-C10-C09	-2.18	104.89	106.02
2	B	1101	Q6K	C10-C11-N12	2.18	119.95	116.40
3	A	1102	YW5	C01-N02-C07	-2.16	106.53	110.63
3	C	1102	YW5	C29-C23-C24	-2.15	119.74	122.10
3	B	1102	YW5	C18-C17-C39	2.13	133.27	128.70
3	A	1102	YW5	C24-C23-N22	2.13	108.27	105.71
3	B	1102	YW5	C24-C23-N22	2.12	108.26	105.71
2	B	1101	Q6K	C24-C23-N21	2.11	115.87	112.41
2	D	1101	Q6K	C05-C04-C03	-2.10	116.81	119.24
2	C	1101	Q6K	C28-C20-N21	2.10	122.51	118.29
3	C	1102	YW5	C18-C17-C39	2.10	133.20	128.70
3	C	1102	YW5	C39-C17-C16	-2.08	118.46	120.28
3	B	1102	YW5	C06-C07-N02	2.05	113.84	111.20
2	D	1101	Q6K	C04-C10-C09	-2.04	104.96	106.02
2	D	1101	Q6K	C10-C11-N12	2.04	119.73	116.40
3	A	1102	YW5	C18-C17-C39	2.04	133.08	128.70
2	C	1101	Q6K	C31-C30-N29	2.03	119.90	114.65
3	C	1102	YW5	C15-C14-C11	2.03	124.24	120.84
3	D	1102	YW5	C30-C31-C32	2.02	120.92	118.74
2	B	1101	Q6K	C04-C10-C09	-2.02	104.97	106.02
3	A	1102	YW5	C26-C24-N25	2.00	133.89	128.21
2	C	1101	Q6K	C10-C11-N12	2.00	119.66	116.40

There are no chirality outliers.

All (40) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1101	Q6K	C23-C24-N25-C27
2	A	1101	Q6K	C24-C23-N21-C20
2	A	1101	Q6K	C24-C23-N21-C22
2	C	1101	Q6K	C24-C23-N21-C22
2	D	1101	Q6K	C24-C23-N21-C22
2	A	1101	Q6K	N21-C23-C24-N25
2	B	1101	Q6K	N21-C23-C24-N25
2	D	1101	Q6K	N21-C23-C24-N25

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Mol	Chain	Res	Type	Atoms
2	B	1101	Q6K	C28-C20-N21-C23
2	C	1101	Q6K	C28-C20-N21-C22
2	C	1101	Q6K	C23-C24-N25-C27
2	C	1101	Q6K	C15-C16-O17-C18
2	A	1101	Q6K	C19-C20-N21-C22
2	C	1101	Q6K	C19-C20-N21-C22
2	A	1101	Q6K	C28-C20-N21-C22
2	D	1101	Q6K	C15-C16-O17-C18
2	A	1101	Q6K	C23-C24-N25-C26
2	C	1101	Q6K	C19-C16-O17-C18
3	D	1102	YW5	C06-C05-C08-C13
2	D	1101	Q6K	C19-C16-O17-C18
2	A	1101	Q6K	C15-C16-O17-C18
2	B	1101	Q6K	C23-C24-N25-C27
3	B	1102	YW5	C10-C11-C14-C15
3	B	1102	YW5	C10-C11-C14-C40
3	D	1102	YW5	C10-C11-C14-C15
3	D	1102	YW5	C06-C05-C08-C09
2	A	1101	Q6K	C28-C20-N21-C23
2	A	1101	Q6K	C19-C16-O17-C18
3	C	1102	YW5	C10-C11-C14-C15
2	D	1101	Q6K	C19-C20-N21-C22
3	A	1102	YW5	C10-C11-C14-C15
3	D	1102	YW5	C10-C11-C14-C40
2	B	1101	Q6K	C19-C16-O17-C18
2	B	1101	Q6K	C19-C20-N21-C23
2	B	1101	Q6K	C15-C16-O17-C18
2	D	1101	Q6K	C23-C24-N25-C27
3	D	1102	YW5	C12-C11-C14-C15
3	A	1102	YW5	C10-C11-C14-C40
3	C	1102	YW5	C10-C11-C14-C40
3	B	1102	YW5	C12-C11-C14-C15

There are no ring outliers.

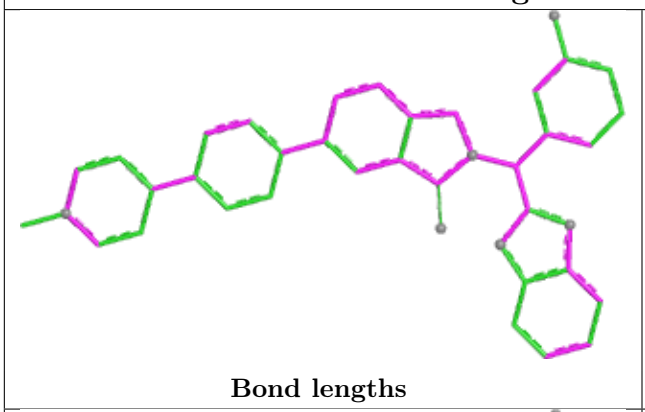
2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	1101	Q6K	1	0
2	D	1101	Q6K	1	0

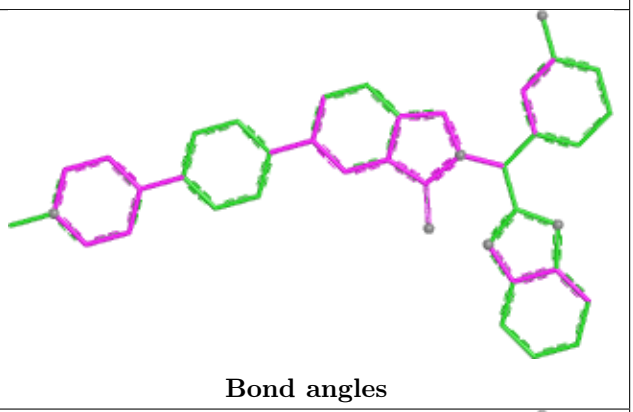
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In

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.

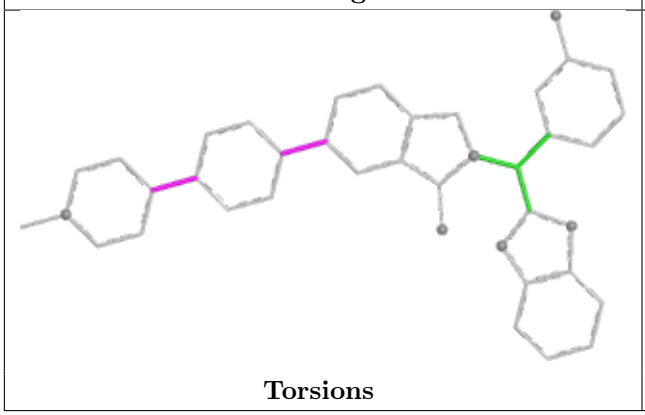
Ligand YW5 D 1102



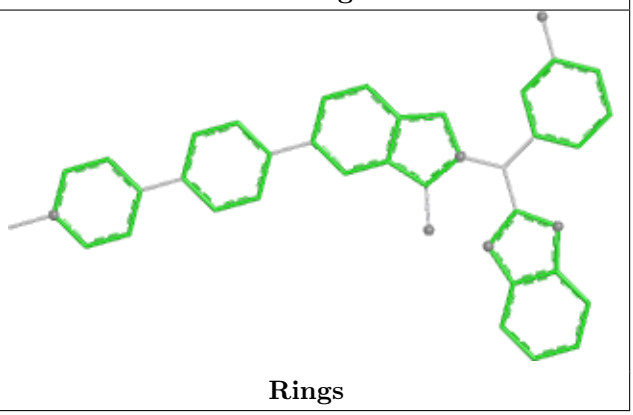
Bond lengths



Bond angles

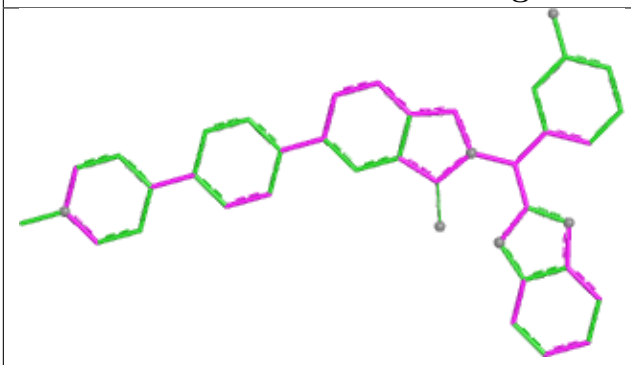


Torsions



Rings

Ligand YW5 B 1102



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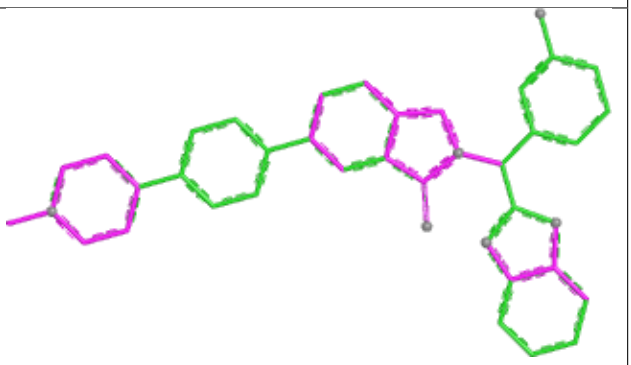
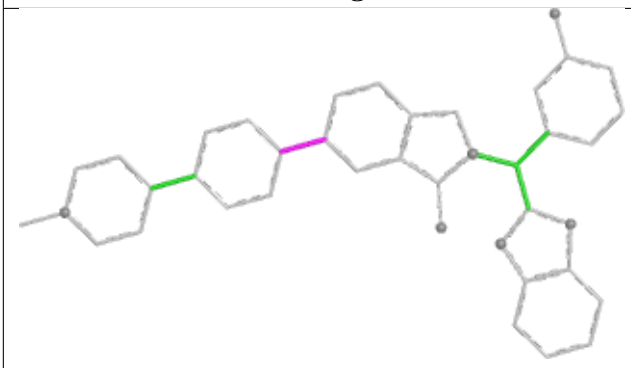


Bond angles



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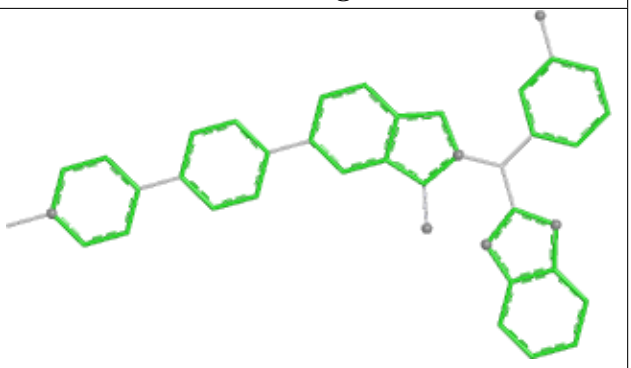
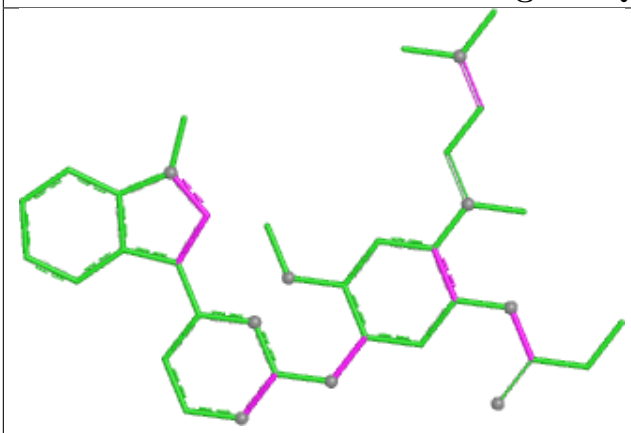
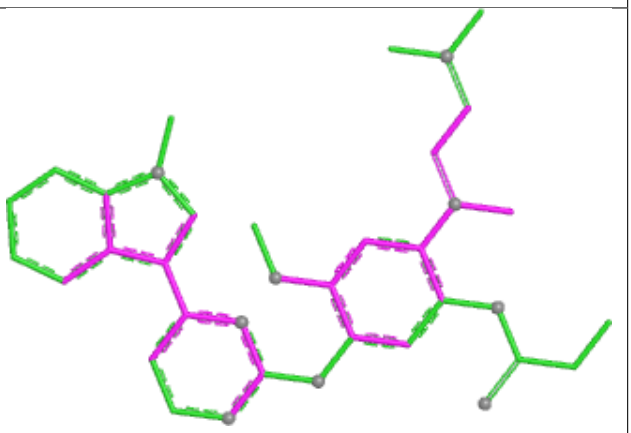


Rings

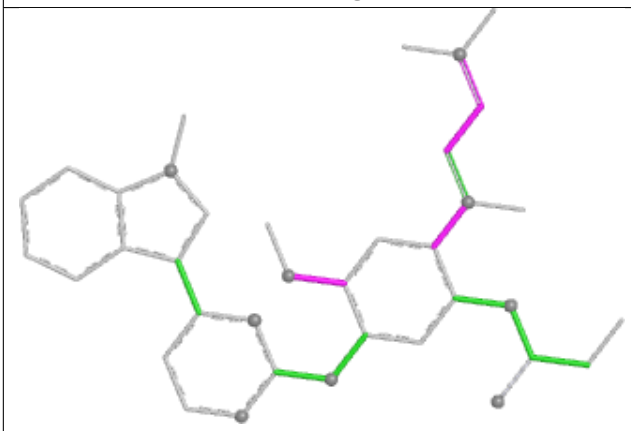
Ligand Q6K B 1101



Bond lengths



Bond angles



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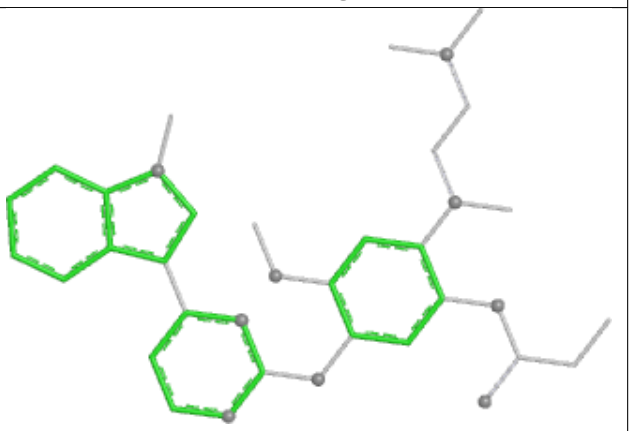
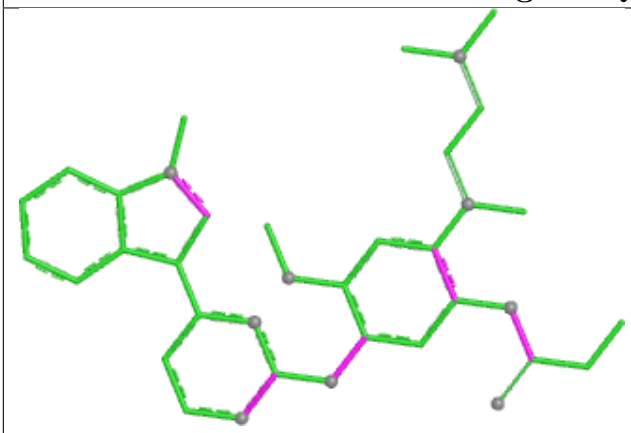


Rings

Ligand Q6K C 1101



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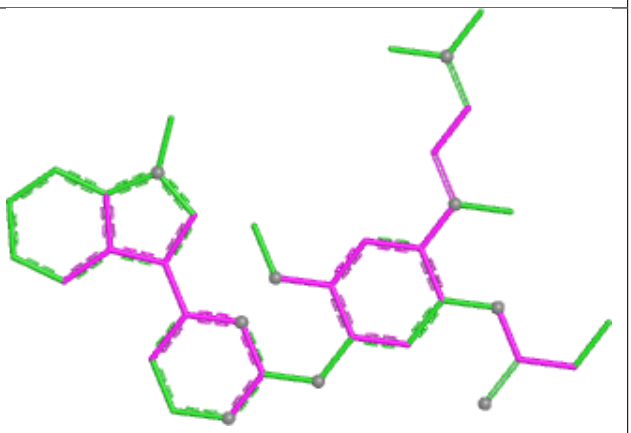

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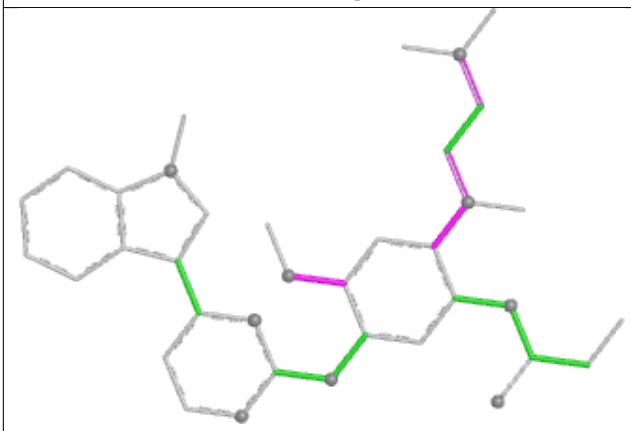

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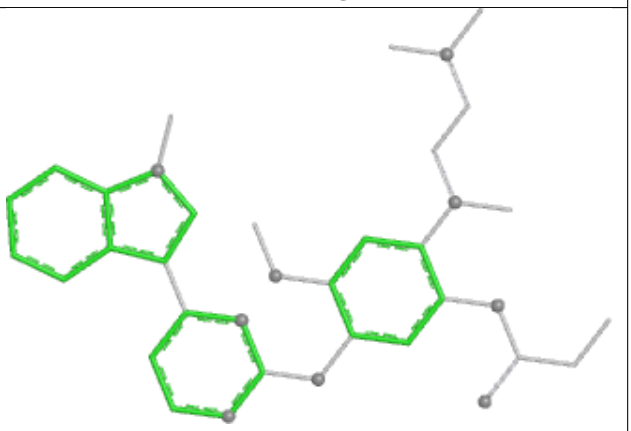
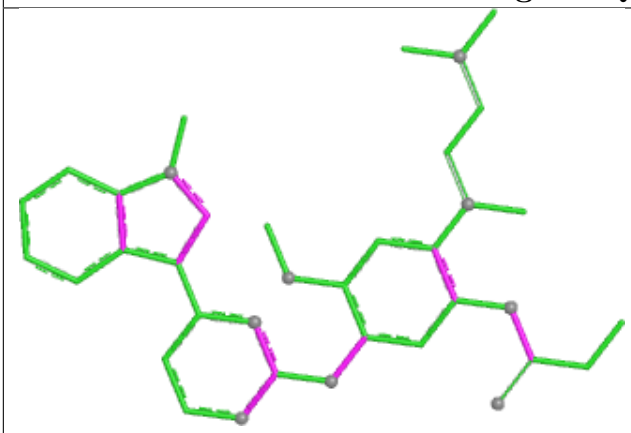


Rings

Ligand Q6K A 1101



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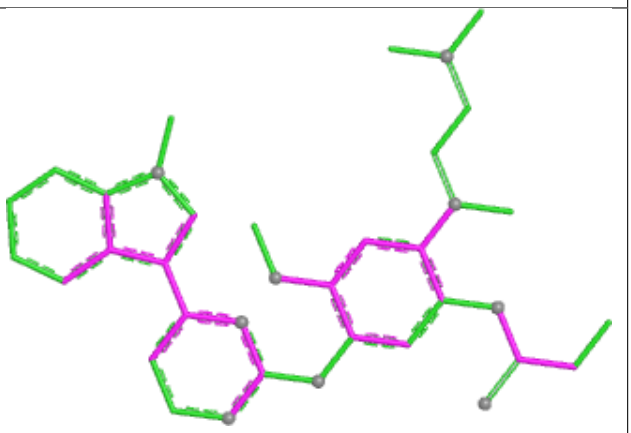

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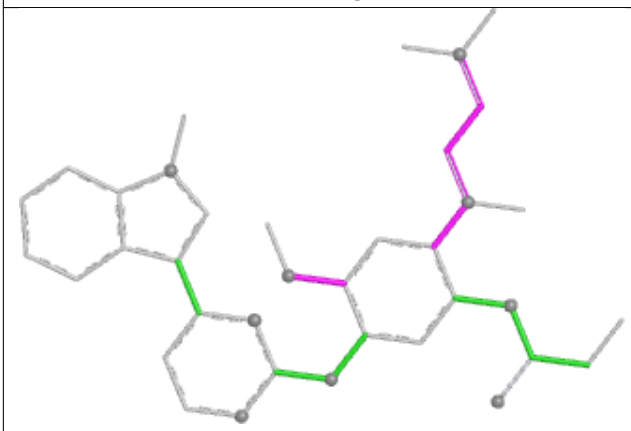

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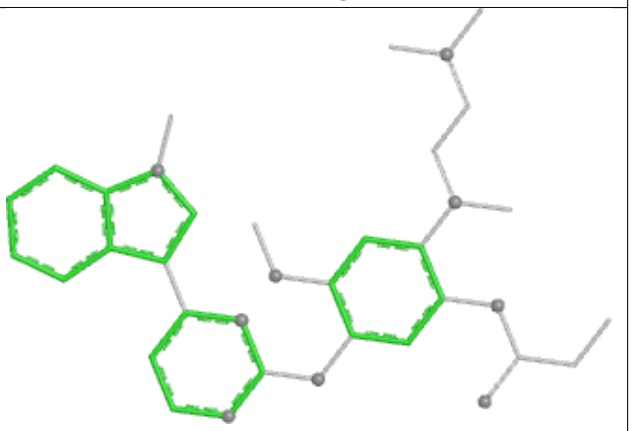

Rings

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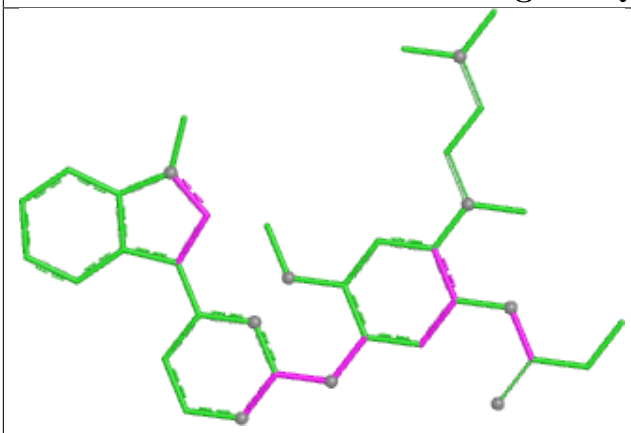

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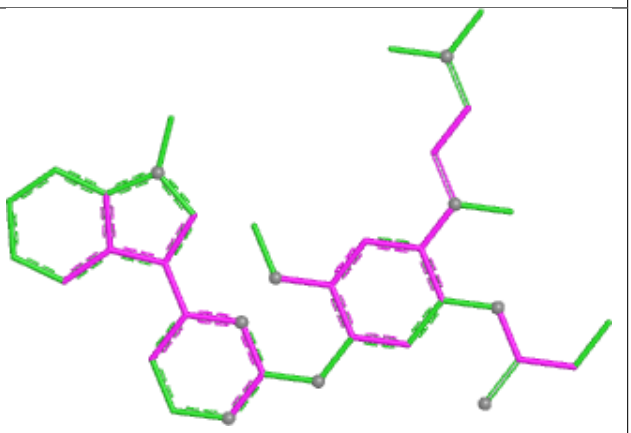

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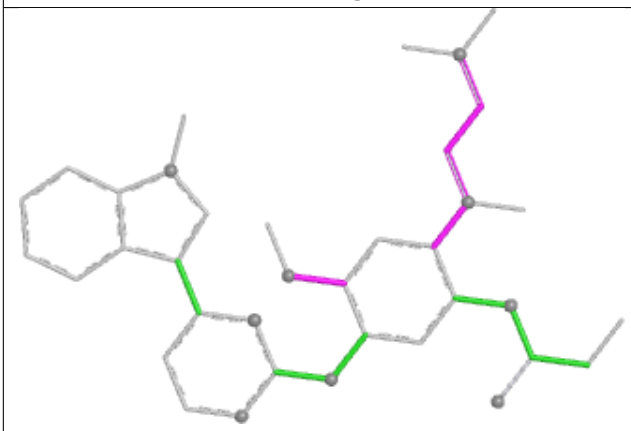

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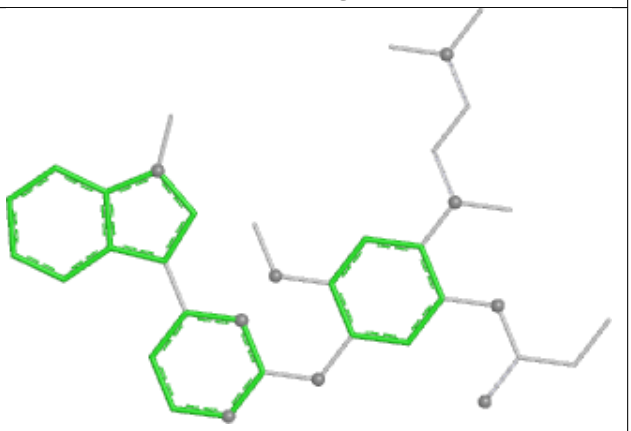
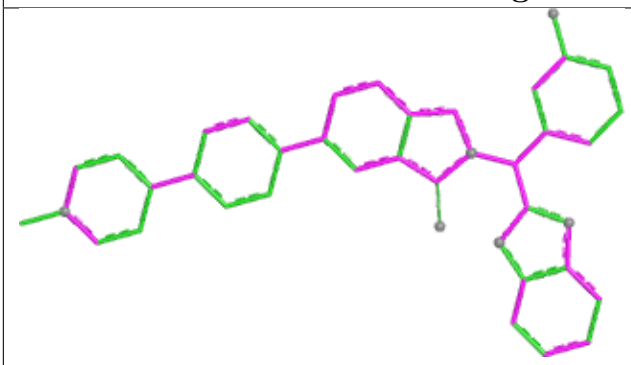
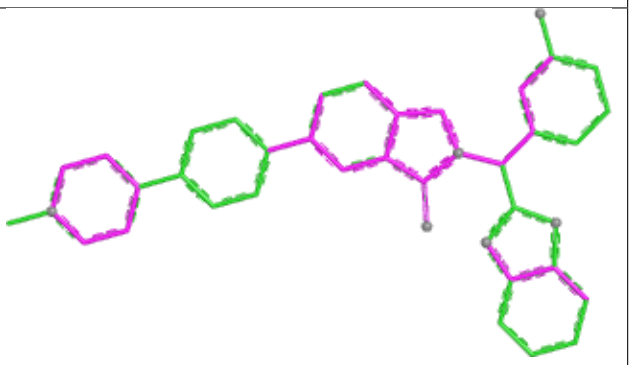


Rings

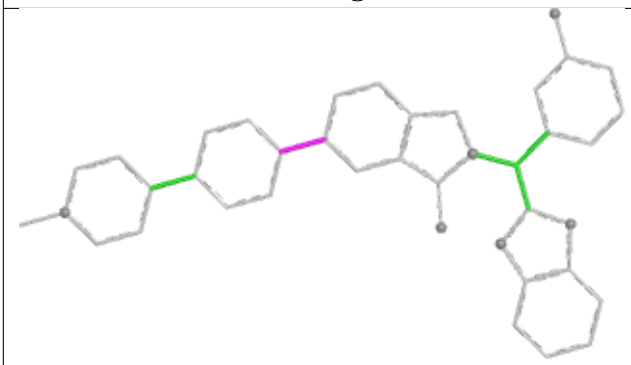
Ligand YW5 C 1102



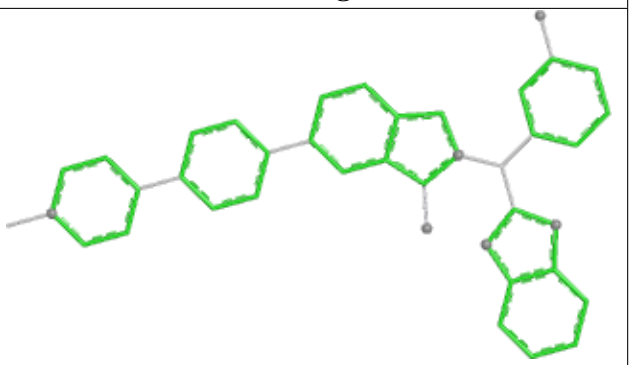
Bond lengths



Bond angles

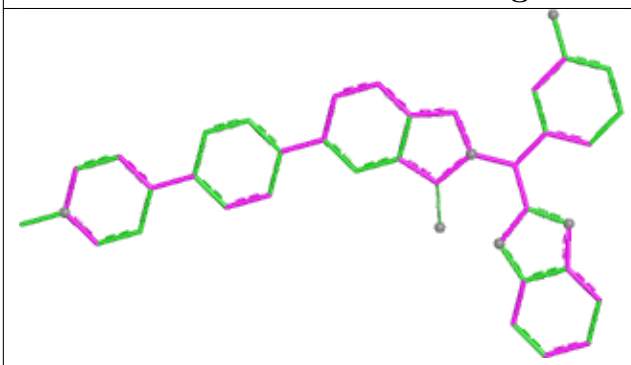


Torsions

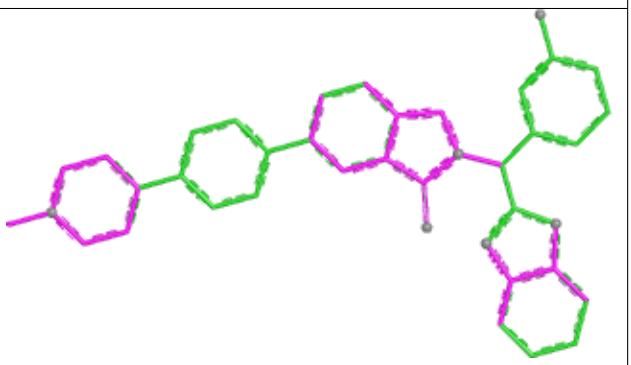


Rings

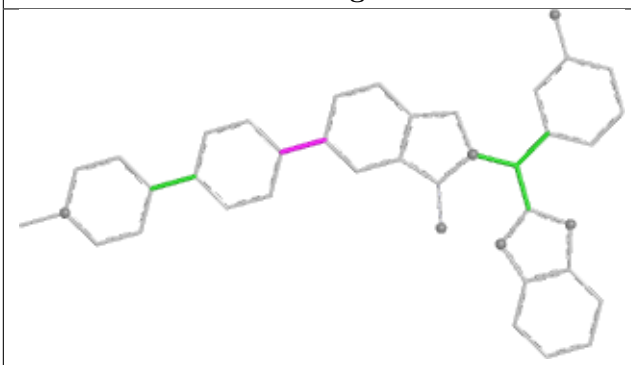
Ligand YW5 A 1102



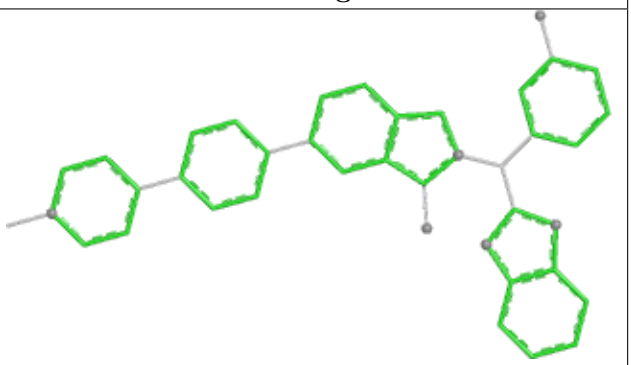
Bond lengths



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	294/331 (88%)	0.92	32 (10%) 10 12	29, 53, 87, 104	0
1	B	292/331 (88%)	0.74	25 (8%) 16 17	28, 49, 82, 105	0
1	C	293/331 (88%)	1.41	64 (21%) 2 2	43, 66, 90, 102	0
1	D	294/331 (88%)	0.95	33 (11%) 10 11	33, 53, 84, 111	0
All	All	1173/1324 (88%)	1.00	154 (13%) 7 8	28, 56, 88, 111	0

All (154) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	859	ALA	4.7
1	B	990	PRO	4.4
1	B	989	LEU	4.3
1	C	808	ASN	4.1
1	D	720	SER	4.1
1	D	721	GLY	4.1
1	B	721	GLY	4.0
1	C	981	ILE	4.0
1	C	990	PRO	3.9
1	C	722	ALA	3.9
1	A	1007	MET	3.8
1	A	809	ILE	3.8
1	A	1010	VAL	3.7
1	B	1007	MET	3.6
1	A	1006	ASP	3.6
1	D	722	ALA	3.6
1	B	1006	ASP	3.6
1	D	1006	ASP	3.6
1	C	794	PRO	3.6
1	D	859	ALA	3.5
1	C	858	LEU	3.4

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Mol	Chain	Res	Type	RSRZ
1	D	750	ALA	3.4
1	A	1009	ASP	3.4
1	D	782	LEU	3.3
1	A	750	ALA	3.3
1	B	707	LEU	3.3
1	C	945	MET	3.2
1	D	875	LYS	3.2
1	C	989	LEU	3.2
1	A	786	VAL	3.2
1	A	876	VAL	3.1
1	A	977	ARG	3.1
1	C	924	SER	3.1
1	B	1008	ASP	3.0
1	C	930	GLY	3.0
1	A	782	LEU	3.0
1	A	717	VAL	3.0
1	C	938	ILE	3.0
1	C	802	VAL	2.9
1	A	810	GLY	2.9
1	C	734	GLU	2.9
1	C	974	ASP	2.9
1	C	1008	ASP	2.9
1	C	955	ALA	2.9
1	D	754	LYS	2.9
1	B	700	ASN	2.9
1	B	784	SER	2.9
1	C	809	ILE	2.9
1	A	784	SER	2.9
1	C	991	SER	2.9
1	D	700	ASN	2.9
1	D	857	GLY	2.8
1	C	953	ILE	2.8
1	B	953	ILE	2.8
1	A	747	LEU	2.8
1	C	1000	ALA	2.8
1	B	988	HIS	2.8
1	C	807	ASP	2.8
1	C	753	PRO	2.8
1	C	876	VAL	2.8
1	C	970	LYS	2.7
1	D	922	GLU	2.7
1	D	988	HIS	2.7

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Mol	Chain	Res	Type	RSRZ
1	C	723	PHE	2.7
1	C	810	GLY	2.7
1	B	858	LEU	2.7
1	C	756	ASN	2.6
1	C	936	PRO	2.6
1	D	978	TYR	2.6
1	D	751	THR	2.6
1	C	941	ILE	2.6
1	C	982	GLN	2.6
1	A	715	ILE	2.6
1	A	716	LYS	2.6
1	C	925	SER	2.5
1	D	752	SER	2.5
1	D	760	LEU	2.5
1	A	707	LEU	2.5
1	D	702	ALA	2.5
1	C	967	GLU	2.5
1	C	992	PRO	2.5
1	B	758	GLU	2.4
1	C	804	GLU	2.4
1	C	752	SER	2.4
1	C	943	VAL	2.4
1	D	876	VAL	2.4
1	C	877	PRO	2.4
1	D	755	ALA	2.4
1	D	1007	MET	2.4
1	B	974	ASP	2.4
1	D	939	CYS	2.4
1	C	946	ILE	2.4
1	C	785	THR	2.4
1	A	759	ILE	2.4
1	C	782	LEU	2.4
1	C	977	ARG	2.4
1	B	715	ILE	2.3
1	C	715	ILE	2.3
1	D	758	GLU	2.3
1	C	700	ASN	2.3
1	C	979	LEU	2.3
1	B	753	PRO	2.3
1	D	753	PRO	2.3
1	B	986	ARG	2.3
1	A	1008	ASP	2.3

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Mol	Chain	Res	Type	RSRZ
1	C	937	PRO	2.3
1	C	988	HIS	2.3
1	B	982	GLN	2.3
1	C	806	LYS	2.3
1	A	738	VAL	2.3
1	D	761	ASP	2.2
1	A	783	THR	2.2
1	C	783	THR	2.2
1	B	720	SER	2.2
1	D	941	ILE	2.2
1	C	907	LEU	2.2
1	C	962	ARG	2.2
1	B	991	SER	2.2
1	B	712	PHE	2.2
1	A	985	GLU	2.2
1	C	750	ALA	2.2
1	D	706	ILE	2.2
1	A	802	VAL	2.2
1	A	723	PHE	2.2
1	C	978	TYR	2.1
1	C	707	LEU	2.1
1	C	918	ILE	2.1
1	D	918	ILE	2.1
1	C	1007	MET	2.1
1	D	756	ASN	2.1
1	A	760	LEU	2.1
1	B	809	ILE	2.1
1	C	814	LEU	2.1
1	C	926	ILE	2.1
1	C	966	ILE	2.1
1	B	994	ASP	2.1
1	B	876	VAL	2.1
1	A	701	GLN	2.1
1	A	721	GLY	2.1
1	C	755	ALA	2.1
1	D	931	GLU	2.1
1	D	807	ASP	2.1
1	B	962	ARG	2.1
1	C	939	CYS	2.1
1	C	737	LYS	2.1
1	A	989	LEU	2.1
1	C	1001	LEU	2.1

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Mol	Chain	Res	Type	RSRZ
1	D	707	LEU	2.1
1	A	754	LYS	2.0
1	A	751	THR	2.0
1	A	763	ALA	2.0
1	D	757	LYS	2.0
1	A	988	HIS	2.0
1	C	759	ILE	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 oligosaccharides in this entry.

6.4 Ligands (i)

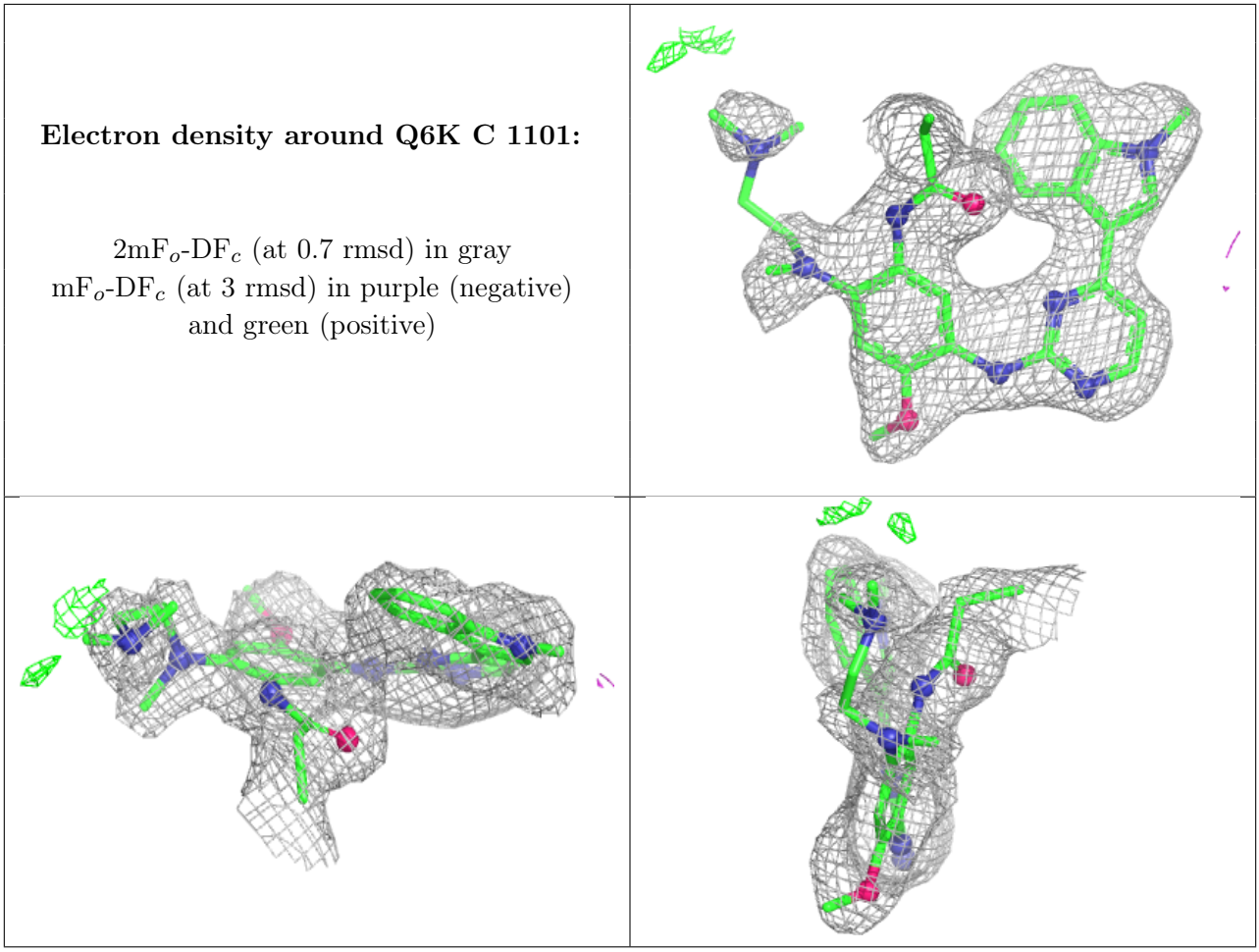
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' 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
2	Q6K	C	1101	37/37	0.86	0.14	51,61,78,84	0
2	Q6K	B	1101	37/37	0.88	0.13	26,43,64,72	0
2	Q6K	A	1101	37/37	0.88	0.14	39,48,66,79	0
3	YW5	A	1102	40/40	0.88	0.14	46,61,84,89	0
3	YW5	C	1102	40/40	0.89	0.15	37,50,82,89	0
2	Q6K	D	1101	37/37	0.90	0.13	37,47,69,72	0
3	YW5	D	1102	40/40	0.91	0.14	39,56,91,97	0
3	YW5	B	1102	40/40	0.92	0.12	31,41,89,94	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.

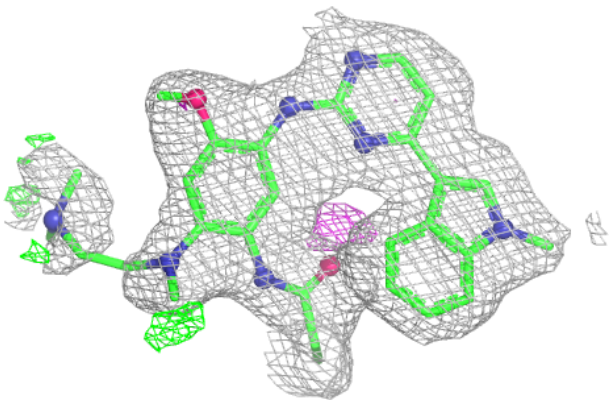
Electron density around Q6K C 1101:

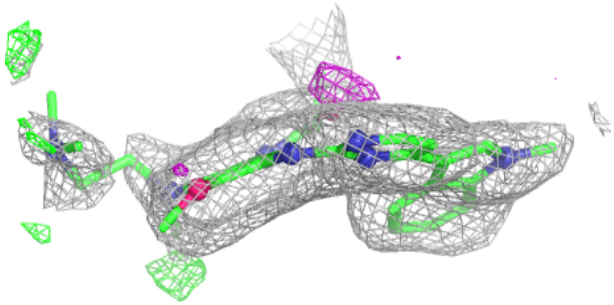
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

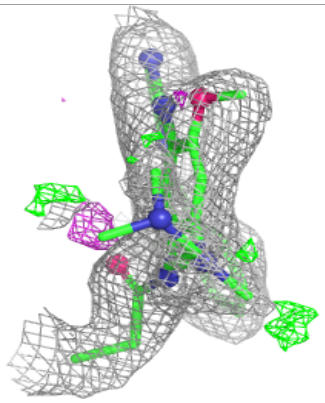


Electron density around Q6K B 1101:

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

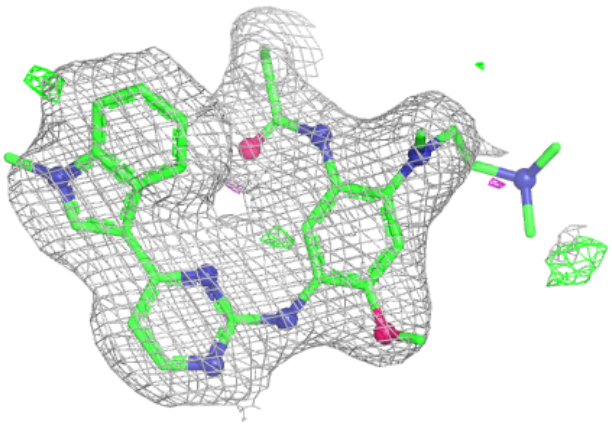


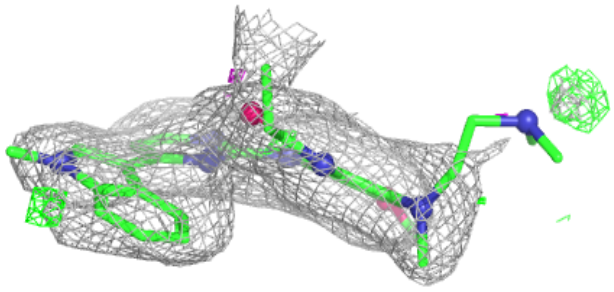


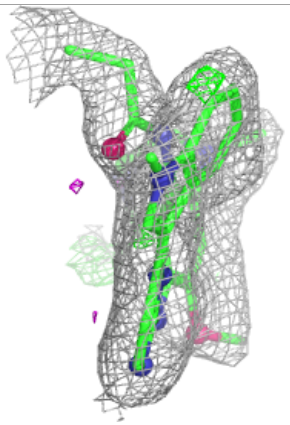


Electron density around Q6K A 1101:

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

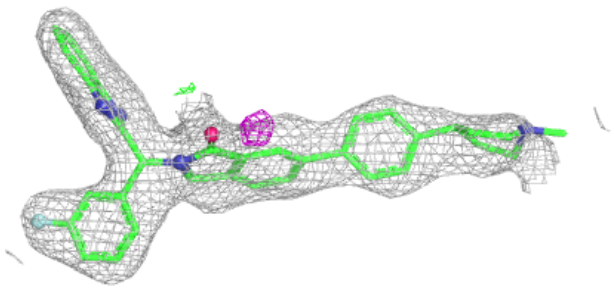


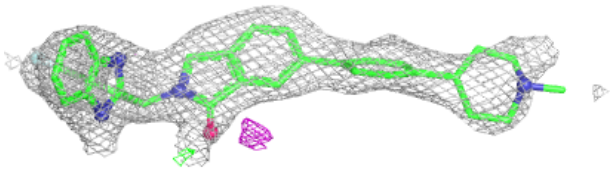


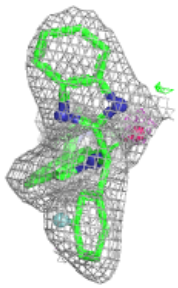


Electron density around YW5 A 1102:

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

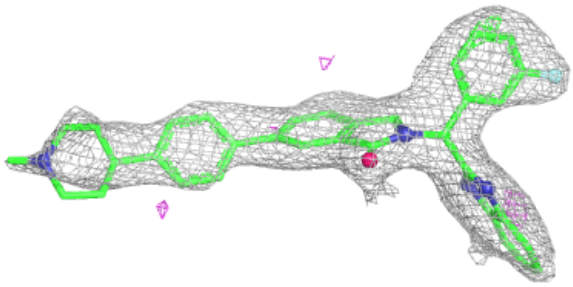


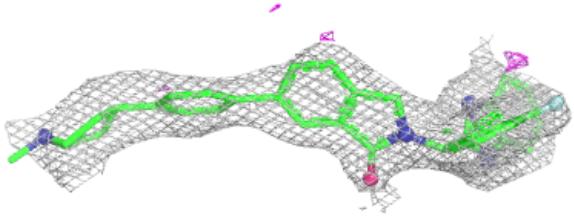


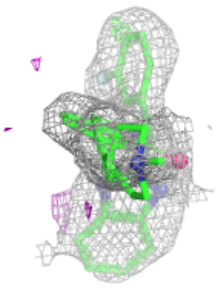


Electron density around YW5 C 1102:

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

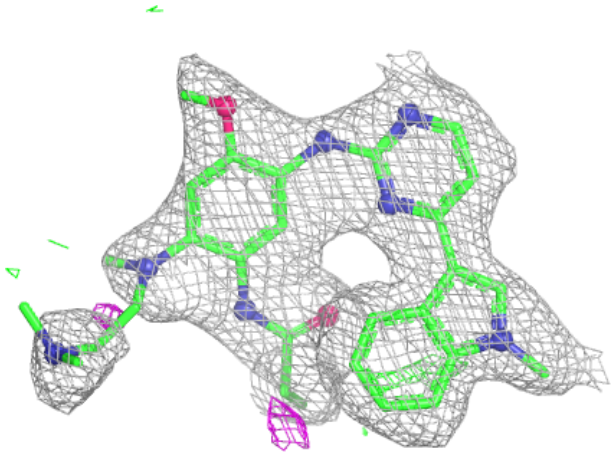


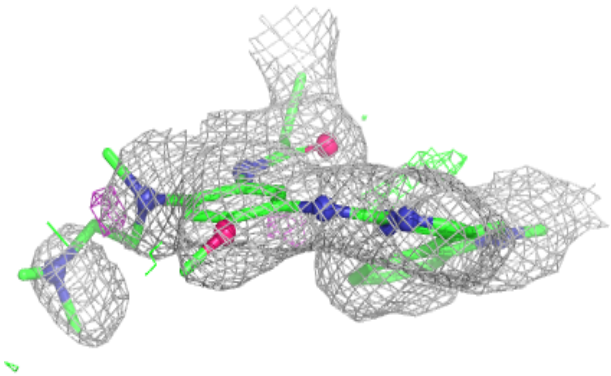


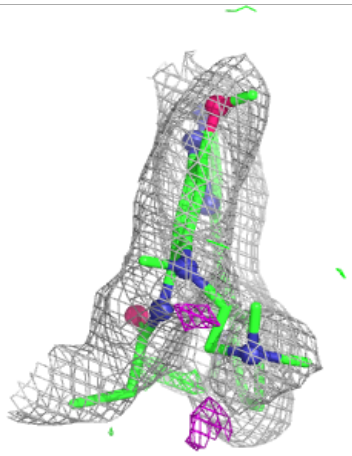


Electron density around Q6K D 1101:

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

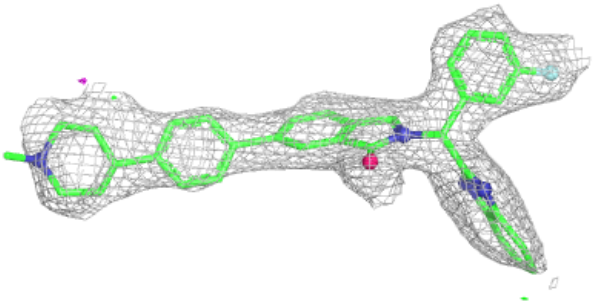


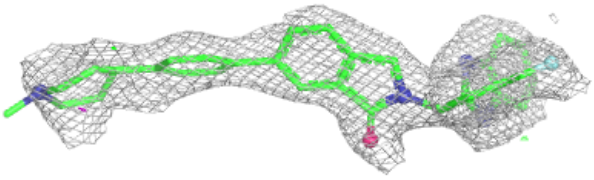


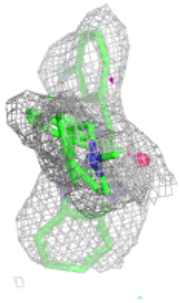


Electron density around YW5 D 1102:

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

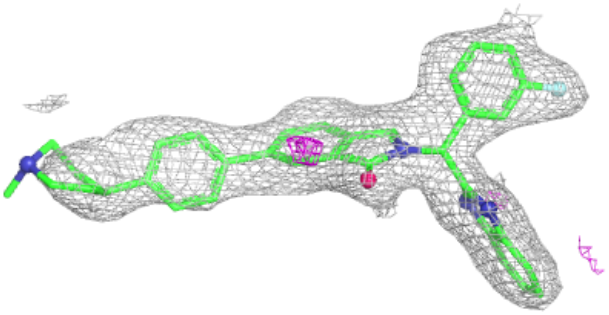


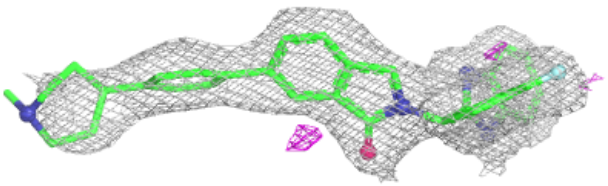


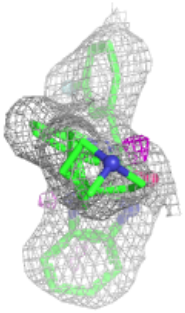


Electron density around YW5 B 1102:

$2mF_o$-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.