Full wwPDB X-ray Structure Validation Report ⓘ

Sep 5, 2023 – 12:46 PM EDT

PDB ID	:	8F22
Title	:	HIV-CA Disulfide linked Hexamer bound to 11l capsid inhibitor.
Authors	:	Barnett, M.J.; Goldstone, D.C.
Deposited on	:	2022-11-06
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:

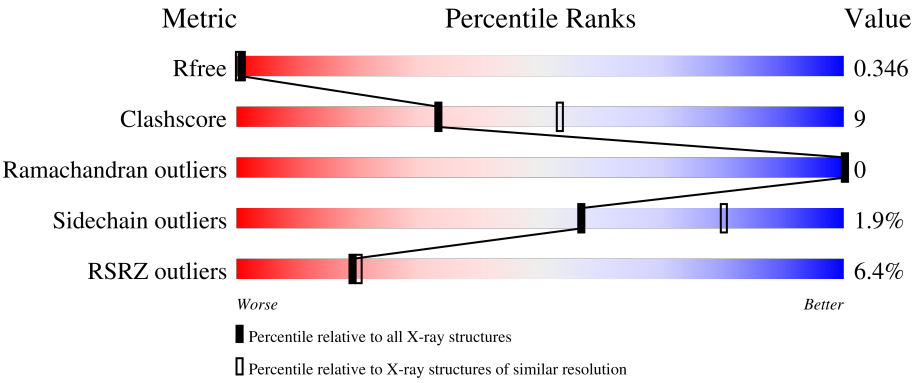
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35

1 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	224	4% 74% 17% • 8%
1	B	224	% 76% 12% • 11%
1	C	224	4% 76% 13% 10%
1	D	224	3% 78% 14% 8%
1	E	224	3% 73% 16% 11%

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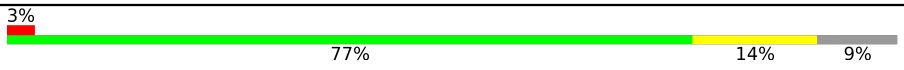
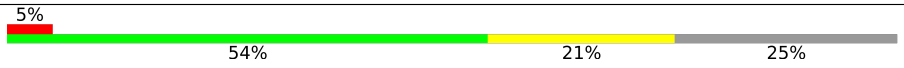
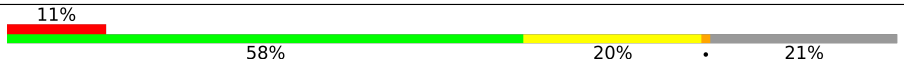
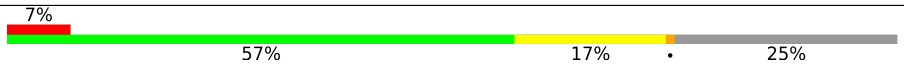
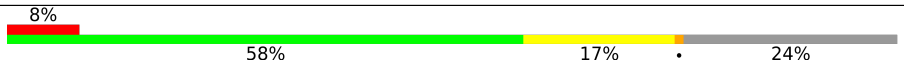
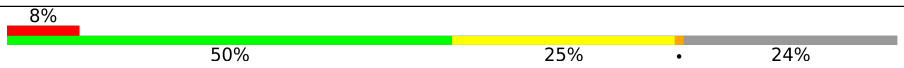
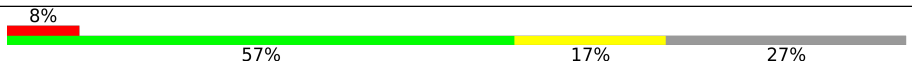
Mol	Chain	Length	Quality of chain
1	F	224	
1	G	224	
1	H	224	
1	I	224	
1	J	224	
1	K	224	
1	L	224	

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 17342 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 Capsid protein p24.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	206	Total	C	N	O	S	0	0	0
			1589	1002	275	298	14			
1	B	200	Total	C	N	O	S	0	0	0
			1545	975	269	288	13			
1	C	201	Total	C	N	O	S	0	0	0
			1550	976	269	292	13			
1	D	205	Total	C	N	O	S	0	0	0
			1568	988	268	298	14			
1	E	199	Total	C	N	O	S	0	0	0
			1542	974	263	291	14			
1	F	203	Total	C	N	O	S	0	0	0
			1577	995	275	293	14			
1	G	168	Total	C	N	O	S	0	0	0
			1252	788	213	240	11			
1	H	177	Total	C	N	O	S	0	2	0
			1338	851	222	254	11			
1	I	169	Total	C	N	O	S	0	0	0
			1245	788	207	240	10			
1	J	171	Total	C	N	O	S	0	0	0
			1307	827	220	249	11			
1	K	171	Total	C	N	O	S	0	0	0
			1306	825	220	251	10			
1	L	164	Total	C	N	O	S	0	0	0
			1259	799	210	238	12			

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	14	CYS	ALA	engineered mutation	UNP P12497
A	45	CYS	GLU	engineered mutation	UNP P12497
A	184	ALA	TRP	engineered mutation	UNP P12497
A	185	ALA	MET	engineered mutation	UNP P12497
B	14	CYS	ALA	engineered mutation	UNP P12497

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Chain	Residue	Modelled	Actual	Comment	Reference
B	45	CYS	GLU	engineered mutation	UNP P12497
B	184	ALA	TRP	engineered mutation	UNP P12497
B	185	ALA	MET	engineered mutation	UNP P12497
C	14	CYS	ALA	engineered mutation	UNP P12497
C	45	CYS	GLU	engineered mutation	UNP P12497
C	184	ALA	TRP	engineered mutation	UNP P12497
C	185	ALA	MET	engineered mutation	UNP P12497
D	14	CYS	ALA	engineered mutation	UNP P12497
D	45	CYS	GLU	engineered mutation	UNP P12497
D	184	ALA	TRP	engineered mutation	UNP P12497
D	185	ALA	MET	engineered mutation	UNP P12497
E	14	CYS	ALA	engineered mutation	UNP P12497
E	45	CYS	GLU	engineered mutation	UNP P12497
E	184	ALA	TRP	engineered mutation	UNP P12497
E	185	ALA	MET	engineered mutation	UNP P12497
F	14	CYS	ALA	engineered mutation	UNP P12497
F	45	CYS	GLU	engineered mutation	UNP P12497
F	184	ALA	TRP	engineered mutation	UNP P12497
F	185	ALA	MET	engineered mutation	UNP P12497
G	14	CYS	ALA	engineered mutation	UNP P12497
G	45	CYS	GLU	engineered mutation	UNP P12497
G	184	ALA	TRP	engineered mutation	UNP P12497
G	185	ALA	MET	engineered mutation	UNP P12497
H	14	CYS	ALA	engineered mutation	UNP P12497
H	45	CYS	GLU	engineered mutation	UNP P12497
H	184	ALA	TRP	engineered mutation	UNP P12497
H	185	ALA	MET	engineered mutation	UNP P12497
I	14	CYS	ALA	engineered mutation	UNP P12497
I	45	CYS	GLU	engineered mutation	UNP P12497
I	184	ALA	TRP	engineered mutation	UNP P12497
I	185	ALA	MET	engineered mutation	UNP P12497
J	14	CYS	ALA	engineered mutation	UNP P12497
J	45	CYS	GLU	engineered mutation	UNP P12497
J	184	ALA	TRP	engineered mutation	UNP P12497
J	185	ALA	MET	engineered mutation	UNP P12497
K	14	CYS	ALA	engineered mutation	UNP P12497
K	45	CYS	GLU	engineered mutation	UNP P12497
K	184	ALA	TRP	engineered mutation	UNP P12497
K	185	ALA	MET	engineered mutation	UNP P12497
L	14	CYS	ALA	engineered mutation	UNP P12497
L	45	CYS	GLU	engineered mutation	UNP P12497
L	184	ALA	TRP	engineered mutation	UNP P12497

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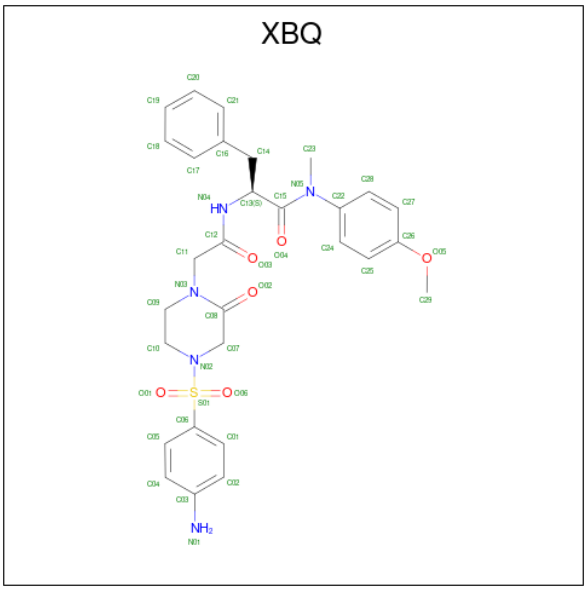
Chain	Residue	Modelled	Actual	Comment	Reference
L	185	ALA	MET	engineered mutation	UNP P12497

- Molecule 2 is Nalpha-{[4-(4-aminobenzene-1-sulfonyl)-2-oxopiperazin-1-yl]acetyl}-N-(4-methoxyphenyl)-N-methyl-L-phenylalaninamide (three-letter code: XBQ) (formula: $C_{29}H_{33}N_5O_6S$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	S	0	0
			41	29	5	6	1		
2	B	1	Total	C	N	O	S	0	0
			41	29	5	6	1		
2	C	1	Total	C	N	O	S	0	0
			41	29	5	6	1		
2	D	1	Total	C	N	O	S	0	0
			41	29	5	6	1		
2	E	1	Total	C	N	O	S	0	0
			41	29	5	6	1		
2	F	1	Total	C	N	O	S	0	0
			41	29	5	6	1		

- Molecule 3 is water.

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

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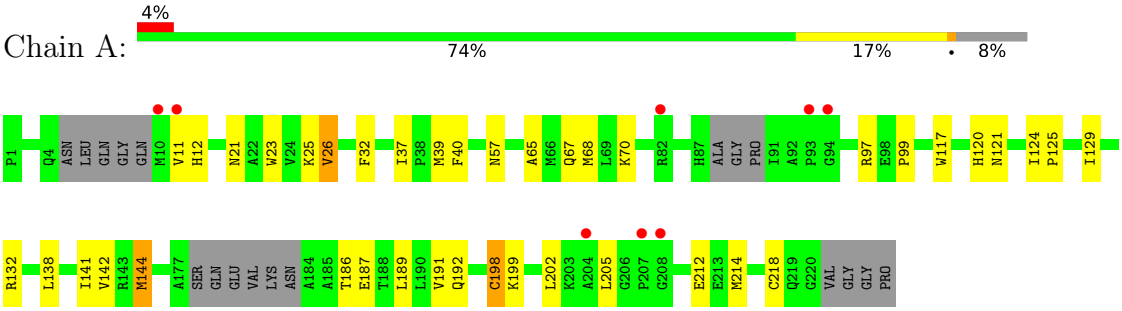
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	C	5	Total O 5 5	0	0
3	D	4	Total O 4 4	0	0
3	E	2	Total O 2 2	0	0
3	F	1	Total O 1 1	0	0
3	H	1	Total O 1 1	0	0

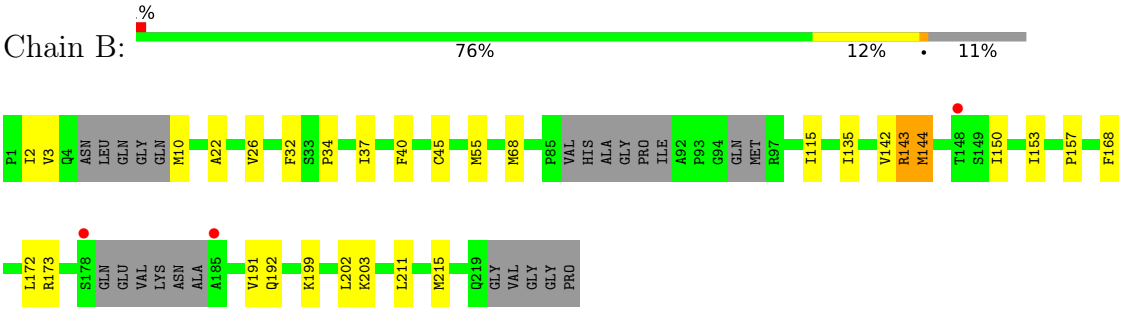
3 Residue-property plots (i)

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.

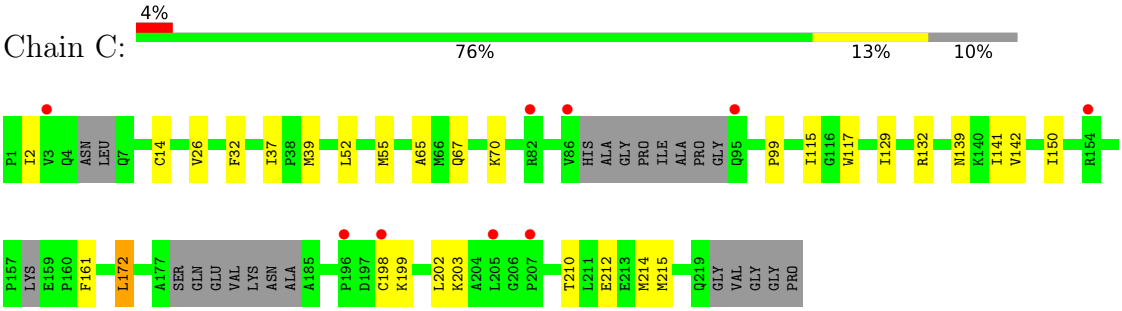
• Molecule 1: Capsid protein p24



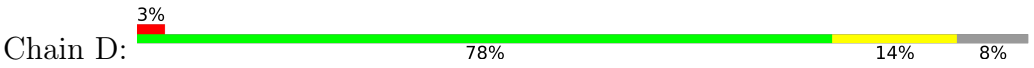
• Molecule 1: Capsid protein p24

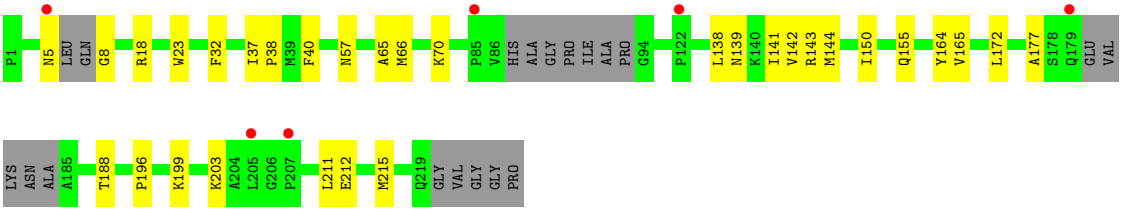


• Molecule 1: Capsid protein p24



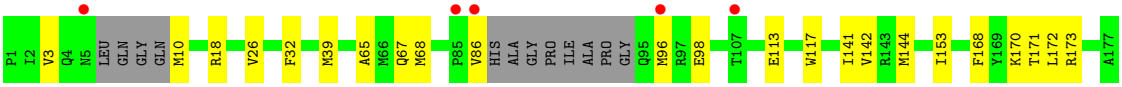
• Molecule 1: Capsid protein p24





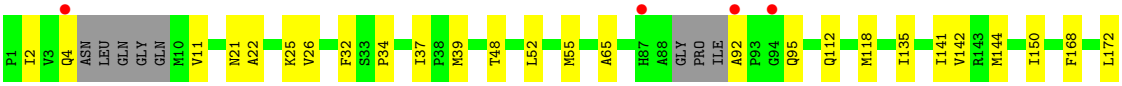
• Molecule 1: Capsid protein p24

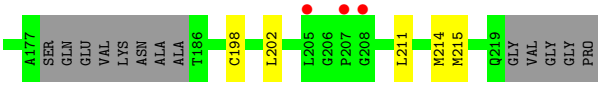
Chain E:



• Molecule 1: Capsid protein p24

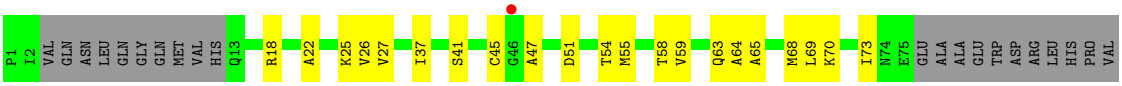
Chain F:

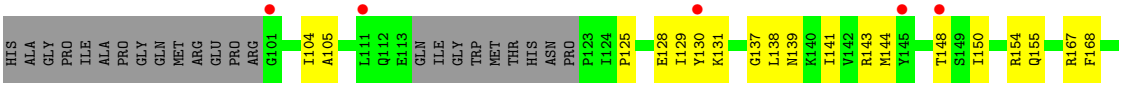


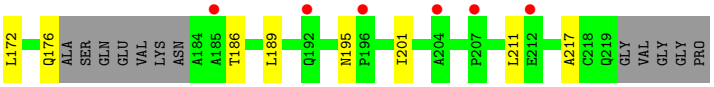


• Molecule 1: Capsid protein p24

Chain G:

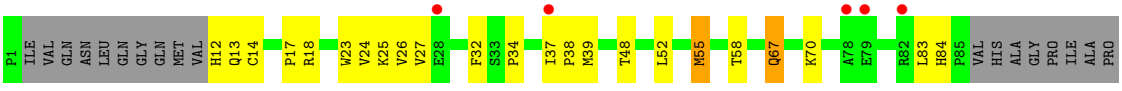


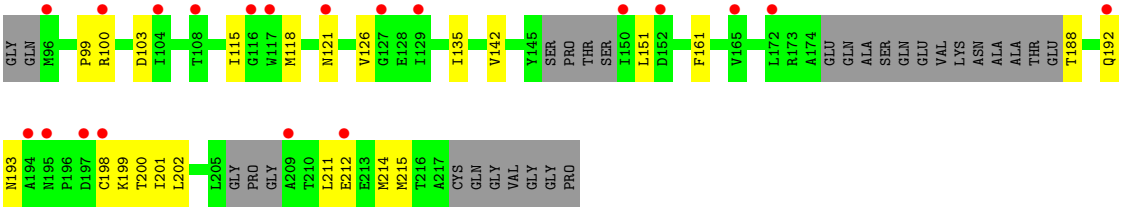




• Molecule 1: Capsid protein p24

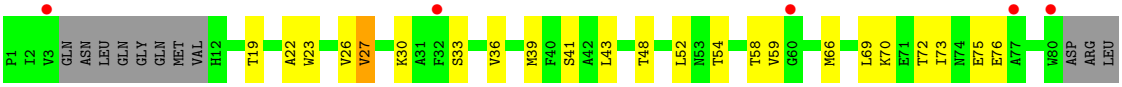
Chain H:

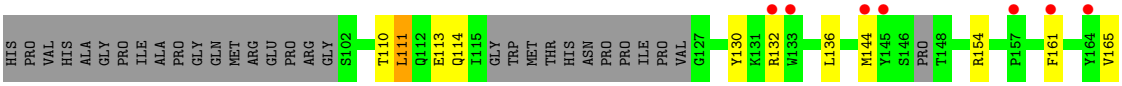




• Molecule 1: Capsid protein p24

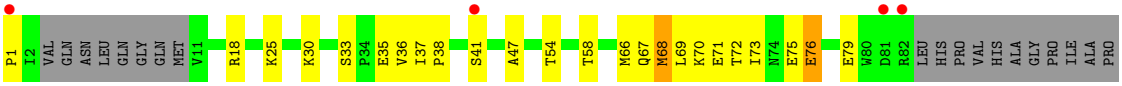
Chain I:

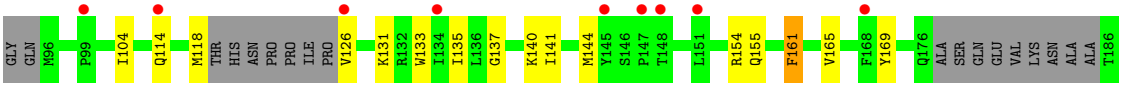


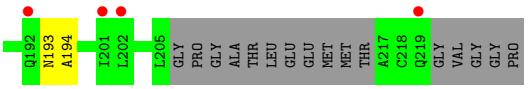


• Molecule 1: Capsid protein p24

Chain J:

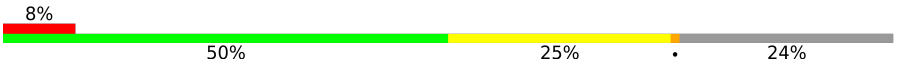


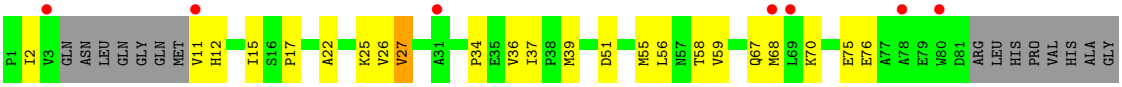


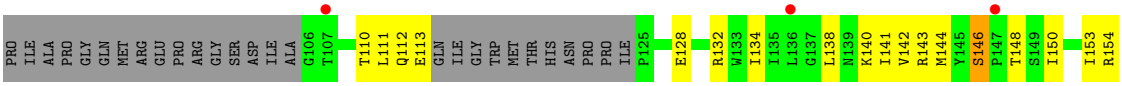


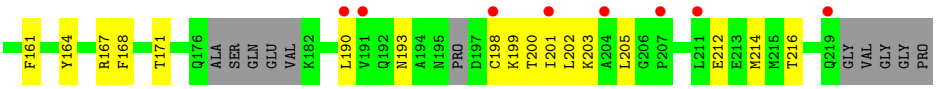
• Molecule 1: Capsid protein p24

Chain K:



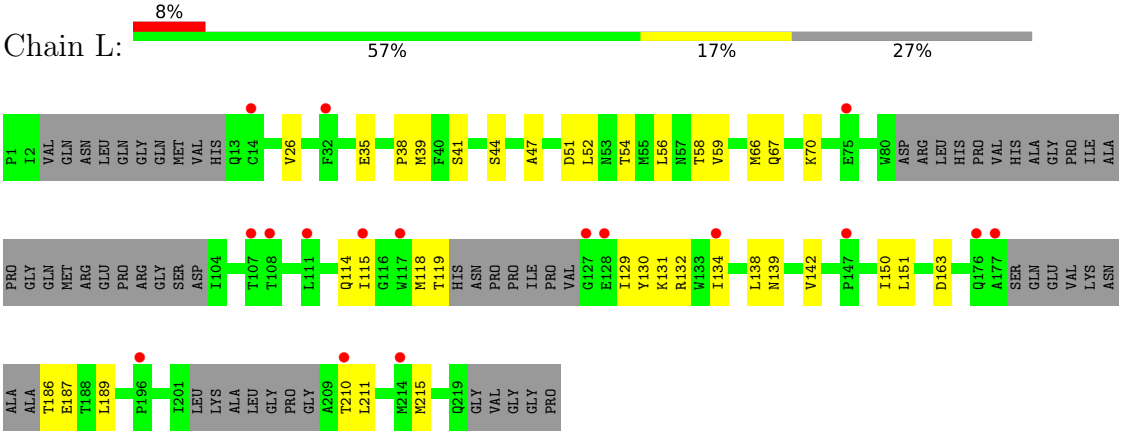






• Molecule 1: Capsid protein p24

Chain L:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	90.95Å 91.19Å 116.27Å 87.17° 78.77° 60.37°	Depositor
Resolution (Å)	15.89 – 2.50 15.89 – 2.50	Depositor EDS
% Data completeness (in resolution range)	97.0 (15.89-2.50) 97.0 (15.89-2.50)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.39 (at 2.48Å)	Xtriage
Refinement program	PHENIX 1.20.1_4487	Depositor
R, R_{free}	0.310 , 0.347 0.310 , 0.346	Depositor DCC
R_{free} test set	5353 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å^2)	20.7	Xtriage
Anisotropy	0.010	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.26 , 50.9	EDS
L-test for twinning[2]	$< \|L\| > = 0.43$, $< L^2 > = 0.25$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.77	EDS
Total number of atoms	17342	wwPDB-VP
Average B, all atoms (Å^2)	48.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.70% 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: XBQ

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	0.30	0/1622	0.58	0/2203
1	B	0.30	0/1576	0.55	1/2139 (0.0%)
1	C	0.29	0/1580	0.54	0/2144
1	D	0.30	0/1599	0.53	0/2172
1	E	0.28	0/1573	0.53	0/2137
1	F	0.28	0/1610	0.53	0/2186
1	G	0.26	0/1272	0.49	0/1727
1	H	0.37	0/1365	0.59	0/1858
1	I	0.24	0/1264	0.44	0/1718
1	J	0.26	0/1329	0.45	0/1801
1	K	0.26	0/1326	0.46	0/1796
1	L	0.26	0/1279	0.45	0/1734
All	All	0.28	0/17395	0.52	1/23615 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	144	MET	CB-CG-SD	5.31	128.34	112.40

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	1589	0	1573	27	0
1	B	1545	0	1539	22	0
1	C	1550	0	1524	20	0
1	D	1568	0	1538	23	0
1	E	1542	0	1527	23	0
1	F	1577	0	1573	27	0
1	G	1252	0	1215	39	0
1	H	1338	0	1273	29	0
1	I	1245	0	1183	22	0
1	J	1307	0	1262	26	0
1	K	1306	0	1284	35	0
1	L	1259	0	1235	22	0
2	A	41	0	0	1	0
2	B	41	0	0	0	0
2	C	41	0	0	1	0
2	D	41	0	0	1	0
2	E	41	0	0	0	0
2	F	41	0	0	1	0
3	A	2	0	0	0	0
3	B	3	0	0	0	0
3	C	5	0	0	0	0
3	D	4	0	0	0	0
3	E	2	0	0	0	0
3	F	1	0	0	0	0
3	H	1	0	0	0	0
All	All	17342	0	16726	292	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 9.

All (292) 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:37:ILE:HD11	1:B:142:VAL:HG21	1.51	0.93
1:F:37:ILE:HD11	1:F:142:VAL:HG21	1.54	0.89
1:A:202:LEU:HD22	1:A:214:MET:HG2	1.56	0.86
1:C:212:GLU:HG3	1:D:144:MET:HE1	1.61	0.82
1:G:27:VAL:HG11	1:G:59:VAL:HG22	1.67	0.77
1:K:110:THR:HG22	1:K:113:GLU:HG2	1.67	0.75
1:G:18:ARG:HD3	1:H:17:PRO:HB2	1.70	0.73
1:G:104:ILE:HG21	1:G:129:ILE:HG23	1.69	0.73
1:J:154:ARG:HA	1:J:193:ASN:HB3	1.70	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:150:ILE:HG12	1:G:186:THR:HG21	1.70	0.73
1:D:165:VAL:HG11	1:D:215:MET:HE2	1.71	0.73
1:F:92:ALA:HB1	1:F:95:GLN:HB2	1.70	0.72
1:L:186:THR:OG1	1:L:187:GLU:N	2.22	0.71
1:H:192:GLN:HA	1:H:199:LYS:HE3	1.70	0.71
1:G:68:MET:HG3	1:L:211:LEU:HD23	1.72	0.71
1:D:150:ILE:HD12	1:D:172:LEU:HD13	1.71	0.70
1:C:52:LEU:HA	1:C:55:MET:HE2	1.73	0.70
1:C:210:THR:O	1:C:214:MET:HG3	1.91	0.69
1:G:139:ASN:O	1:G:143:ARG:HG3	1.92	0.69
1:C:26:VAL:HG21	1:C:39:MET:HG2	1.75	0.69
1:L:26:VAL:HG21	1:L:39:MET:HG2	1.73	0.68
1:L:150:ILE:HD12	1:L:150:ILE:H	1.58	0.68
1:H:37:ILE:HD11	1:H:142:VAL:HG21	1.77	0.66
1:L:130:TYR:O	1:L:134:ILE:HG13	1.97	0.65
1:A:26:VAL:HG21	1:A:39:MET:HG2	1.79	0.63
1:A:68:MET:HE1	1:A:144:MET:HE1	1.80	0.63
1:E:202:LEU:HD22	1:E:214:MET:HG2	1.79	0.63
1:I:132:ARG:O	1:I:136:LEU:HG	1.99	0.62
1:G:63:GLN:H	1:G:63:GLN:CD	2.03	0.62
1:G:47:ALA:HB1	1:G:51:ASP:HB2	1.80	0.62
1:K:56:LEU:HD11	1:K:134:ILE:HD13	1.81	0.62
1:I:110:THR:HG22	1:I:113:GLU:HB2	1.81	0.62
1:D:5:ASN:OD1	1:D:8:GLY:N	2.33	0.62
1:L:129:ILE:HA	1:L:132:ARG:HD2	1.82	0.61
1:F:65:ALA:HB1	1:F:141:ILE:HD13	1.82	0.61
1:D:143:ARG:NE	1:D:177:ALA:O	2.32	0.60
1:E:212:GLU:HG3	1:F:144:MET:HE1	1.82	0.60
1:H:12:HIS:HB2	1:H:115:ILE:HD11	1.82	0.60
1:J:161:PHE:O	1:J:165:VAL:HG23	2.01	0.60
1:J:76:GLU:HG2	1:J:133:TRP:CD1	2.37	0.60
1:H:48:THR:O	1:H:52:LEU:HD12	2.00	0.60
1:I:22:ALA:O	1:I:26:VAL:HG13	2.02	0.59
1:H:151:LEU:HA	1:H:193:ASN:HD21	1.67	0.59
1:F:202:LEU:HD22	1:F:214:MET:HG2	1.84	0.59
1:G:45:CYS:HB3	1:H:14:CYS:SG	2.43	0.59
1:A:192:GLN:O	1:A:199:LYS:NZ	2.36	0.59
1:A:11:VAL:HB	1:F:4:GLN:NE2	2.17	0.58
1:C:161:PHE:CD2	1:C:215:MET:HG2	2.39	0.58
1:I:33:SER:O	1:I:36:VAL:HG22	2.04	0.58
1:I:76:GLU:HG3	1:I:136:LEU:HD12	1.86	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:153:ILE:HG21	1:B:168:PHE:HA	1.86	0.57
1:D:65:ALA:HB1	1:D:141:ILE:HD13	1.86	0.57
1:J:68:MET:O	1:J:72:THR:HG23	2.04	0.57
1:H:198:CYS:O	1:H:201:ILE:HG22	2.04	0.57
1:L:66:MET:O	1:L:70:LYS:HG2	2.04	0.57
1:B:37:ILE:HG23	1:B:135:ILE:HD12	1.85	0.57
1:H:118:MET:HG3	1:H:126:VAL:HG22	1.87	0.57
1:G:65:ALA:HB1	1:G:141:ILE:HD13	1.86	0.57
1:F:21:ASN:HD21	1:F:25:LYS:HE2	1.70	0.56
1:B:2:ILE:HD11	1:B:115:ILE:HG12	1.86	0.56
1:G:18:ARG:NE	1:H:18:ARG:HG2	2.20	0.56
1:G:186:THR:HG23	1:G:189:LEU:HD12	1.87	0.56
1:I:23:TRP:O	1:I:27:VAL:HG22	2.05	0.56
1:F:21:ASN:O	1:F:25:LYS:HG2	2.05	0.56
1:J:33:SER:O	1:J:36:VAL:HG12	2.06	0.56
1:J:114:GLN:O	1:J:118:MET:HG3	2.06	0.56
1:C:2:ILE:HD11	1:C:115:ILE:HG12	1.89	0.55
1:A:67:GLN:HA	1:A:70:LYS:HD2	1.88	0.55
1:G:137:GLY:O	1:G:141:ILE:HG13	2.06	0.55
1:H:67:GLN:NE2	1:H:70:LYS:HB2	2.22	0.55
1:F:32:PHE:O	1:F:142:VAL:HG22	2.06	0.55
1:E:68:MET:HE1	1:E:144:MET:SD	2.47	0.55
1:G:18:ARG:HE	1:H:18:ARG:HG2	1.73	0.54
1:G:69:LEU:O	1:G:73:ILE:HG23	2.08	0.54
1:H:211:LEU:O	1:H:215:MET:HG3	2.07	0.54
1:G:22:ALA:O	1:G:26:VAL:HG22	2.06	0.54
1:K:199:LYS:O	1:K:203:LYS:N	2.41	0.54
1:D:211:LEU:O	1:D:215:MET:HG3	2.07	0.54
1:G:138:LEU:HD13	1:G:141:ILE:HD12	1.90	0.54
1:K:2:ILE:HD12	1:K:12:HIS:HA	1.89	0.54
1:L:67:GLN:HE22	1:L:70:LYS:HE2	1.72	0.53
1:H:188:THR:O	1:H:192:GLN:HG3	2.09	0.53
1:K:34:PRO:O	1:K:37:ILE:HD12	2.08	0.53
1:L:47:ALA:HB1	1:L:51:ASP:HB2	1.91	0.53
1:H:32:PHE:O	1:H:142:VAL:HG22	2.08	0.53
1:D:32:PHE:O	1:D:142:VAL:HG22	2.09	0.52
1:H:161:PHE:CE1	1:H:202:LEU:HD11	2.44	0.52
1:D:23:TRP:CZ3	1:D:40:PHE:HB2	2.44	0.52
1:D:199:LYS:O	1:D:203:LYS:HG3	2.09	0.52
1:G:70:LYS:O	1:G:73:ILE:HG12	2.09	0.52
1:G:104:ILE:HG22	1:G:130:TYR:HB2	1.91	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:199:LYS:HE2	1:K:200:THR:N	2.24	0.52
1:L:52:LEU:HD21	1:L:131:LYS:HG3	1.91	0.52
1:I:52:LEU:HD12	1:I:130:TYR:CD2	2.45	0.52
1:K:212:GLU:O	1:K:216:THR:HG23	2.09	0.52
1:E:113:GLU:HB3	1:E:117:TRP:CZ3	2.45	0.51
1:I:69:LEU:O	1:I:73:ILE:HG23	2.09	0.51
1:C:161:PHE:HD2	1:C:215:MET:HG2	1.75	0.51
1:I:70:LYS:O	1:I:73:ILE:HG12	2.10	0.51
1:A:12:HIS:N	1:F:4:GLN:HE22	2.08	0.51
1:K:67:GLN:HA	1:K:70:LYS:HE2	1.93	0.51
1:J:54:THR:O	1:J:58:THR:HG23	2.10	0.51
1:F:48:THR:HG22	1:F:118:MET:SD	2.51	0.51
1:K:22:ALA:O	1:K:26:VAL:HG13	2.10	0.51
1:H:26:VAL:HG21	1:H:39:MET:HG2	1.93	0.51
1:A:129:ILE:O	1:A:132:ARG:HG2	2.11	0.51
1:L:44:SER:OG	1:L:131:LYS:HD3	2.11	0.50
1:K:154:ARG:HA	1:K:193:ASN:HB3	1.93	0.50
1:L:115:ILE:O	1:L:119:THR:HG23	2.11	0.50
1:F:22:ALA:O	1:F:26:VAL:HG13	2.11	0.50
1:B:157:PRO:HB3	1:H:121:ASN:HB2	1.94	0.50
1:C:32:PHE:O	1:C:142:VAL:HG22	2.11	0.50
1:I:212:GLU:HG2	1:J:144:MET:SD	2.51	0.50
1:J:69:LEU:O	1:J:73:ILE:HG23	2.10	0.50
1:E:86:VAL:HG13	1:E:98:GLU:HB2	1.94	0.50
1:G:201:ILE:HG21	1:G:217:ALA:O	2.12	0.50
1:G:150:ILE:HD11	1:G:168:PHE:CZ	2.47	0.50
1:C:67:GLN:HA	1:C:70:LYS:HD2	1.94	0.49
1:H:83:LEU:HB3	1:H:84:HIS:CD2	2.46	0.49
1:D:155:GLN:HB3	1:D:164:TYR:CG	2.47	0.49
1:A:212:GLU:HB2	1:B:68:MET:CE	2.42	0.49
1:G:105:ALA:HA	1:G:130:TYR:CE2	2.47	0.49
1:A:57:ASN:OD1	2:A:300:XBQ:N04	2.45	0.49
1:L:119:THR:O	1:L:119:THR:OG1	2.27	0.49
1:C:65:ALA:HB1	1:C:141:ILE:HD13	1.94	0.49
1:J:1:PRO:HA	1:J:47:ALA:HA	1.94	0.49
1:D:37:ILE:HD12	1:D:138:LEU:HD13	1.94	0.49
1:G:41:SER:HA	1:G:131:LYS:HE3	1.94	0.49
1:G:125:PRO:HB2	1:G:128:GLU:HB3	1.95	0.49
1:K:68:MET:HB3	1:K:141:ILE:HD11	1.95	0.48
1:G:172:LEU:O	1:G:176:GLN:N	2.43	0.48
1:H:212:GLU:HG3	1:I:144:MET:SD	2.53	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:37:ILE:HD11	1:C:142:VAL:HG21	1.95	0.48
1:H:37:ILE:HG21	1:H:135:ILE:HG23	1.94	0.48
1:C:198:CYS:O	1:C:202:LEU:HG	2.13	0.48
1:K:198:CYS:O	1:K:202:LEU:N	2.44	0.48
1:F:150:ILE:HD11	1:F:168:PHE:CZ	2.49	0.48
1:B:32:PHE:O	1:B:142:VAL:HG22	2.13	0.48
1:B:191:VAL:HG22	1:B:202:LEU:HD13	1.96	0.48
1:C:99:PRO:HG3	1:C:117:TRP:CD2	2.49	0.48
1:G:54:THR:O	1:G:58:THR:HG23	2.14	0.48
1:K:110:THR:HG23	1:K:112:GLN:H	1.78	0.48
1:K:140:LYS:O	1:K:144:MET:HG2	2.14	0.48
1:A:97:ARG:O	1:A:117:TRP:NE1	2.37	0.48
1:F:34:PRO:O	1:F:37:ILE:HD12	2.14	0.48
1:I:54:THR:O	1:I:58:THR:HG23	2.14	0.48
1:B:199:LYS:O	1:B:203:LYS:HG3	2.14	0.47
1:E:153:ILE:HD11	1:E:171:THR:HG21	1.96	0.47
1:J:76:GLU:O	1:J:79:GLU:HG3	2.13	0.47
1:B:150:ILE:HG12	1:B:172:LEU:HD13	1.94	0.47
1:D:66:MET:O	1:D:70:LYS:HG3	2.14	0.47
1:D:212:GLU:HG3	1:E:144:MET:SD	2.54	0.47
1:C:52:LEU:HA	1:C:55:MET:CE	2.43	0.47
1:H:24:VAL:HG12	1:H:25:LYS:HE2	1.96	0.47
1:L:54:THR:O	1:L:58:THR:HG23	2.13	0.47
1:D:139:ASN:HB3	1:D:177:ALA:O	2.14	0.47
1:F:112:GLN:O	1:F:112:GLN:NE2	2.47	0.47
1:F:2:ILE:HA	1:F:11:VAL:O	2.15	0.47
1:G:125:PRO:O	1:G:129:ILE:HG22	2.15	0.47
1:J:104:ILE:HG12	1:J:126:VAL:HG12	1.97	0.47
1:B:40:PHE:HD2	1:B:135:ILE:HD11	1.78	0.47
1:F:26:VAL:HG11	1:F:39:MET:HG2	1.97	0.47
1:L:56:LEU:O	1:L:59:VAL:HG22	2.15	0.47
1:E:65:ALA:HB1	1:E:141:ILE:HD13	1.95	0.46
1:F:55:MET:HE2	1:F:55:MET:HB2	1.62	0.46
1:B:34:PRO:O	1:B:37:ILE:HD12	2.16	0.46
1:A:65:ALA:HB1	1:A:141:ILE:HD13	1.97	0.46
1:D:150:ILE:HD12	1:D:172:LEU:CD1	2.43	0.46
1:J:37:ILE:HB	1:J:38:PRO:HD3	1.98	0.46
1:K:143:ARG:HA	1:K:146:SER:HB3	1.97	0.46
1:G:51:ASP:O	1:G:55:MET:HG3	2.15	0.46
1:J:71:GLU:O	1:J:75:GLU:HG3	2.15	0.46
1:J:155:GLN:HB3	1:J:194:ALA:HA	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:27:VAL:HG11	1:K:59:VAL:HG13	1.97	0.46
1:A:99:PRO:HG3	1:A:117:TRP:CD2	2.51	0.46
1:E:26:VAL:HG11	1:E:39:MET:HG2	1.97	0.46
1:K:15:ILE:HD11	1:K:51:ASP:HB3	1.97	0.46
1:K:153:ILE:HD12	1:K:167:ARG:NE	2.31	0.46
1:D:57:ASN:OD1	2:D:300:XBQ:N04	2.49	0.46
1:H:34:PRO:O	1:H:37:ILE:HD12	2.15	0.46
1:B:143:ARG:NH2	1:B:144:MET:HB2	2.31	0.46
1:G:154:ARG:O	1:G:167:ARG:NH2	2.49	0.46
1:H:25:LYS:HA	1:H:25:LYS:HD3	1.80	0.46
1:K:2:ILE:HD11	1:K:11:VAL:O	2.16	0.46
1:G:144:MET:HE2	1:G:144:MET:HB2	1.81	0.46
1:I:48:THR:O	1:I:52:LEU:HG	2.16	0.46
1:J:18:ARG:HG2	1:K:17:PRO:HB2	1.97	0.46
1:J:25:LYS:HD2	1:J:25:LYS:HA	1.75	0.45
1:A:32:PHE:O	1:A:142:VAL:HG22	2.16	0.45
1:C:129:ILE:HG12	1:C:132:ARG:HH12	1.80	0.45
1:A:186:THR:HG22	1:A:189:LEU:H	1.81	0.45
1:K:26:VAL:HG11	1:K:39:MET:HG2	1.99	0.45
1:A:198:CYS:O	1:A:202:LEU:HG	2.15	0.45
1:G:105:ALA:HA	1:G:130:TYR:CD2	2.51	0.45
1:A:212:GLU:HB2	1:B:68:MET:HE2	1.98	0.45
1:E:170:LYS:HB3	1:E:170:LYS:HE2	1.81	0.45
1:E:212:GLU:HG3	1:F:144:MET:CE	2.46	0.45
1:B:3:VAL:O	1:B:10:MET:HA	2.17	0.45
1:J:30:LYS:HD3	1:J:35:GLU:HG3	1.99	0.45
1:L:189:LEU:HD13	1:L:189:LEU:HA	1.84	0.45
1:K:153:ILE:HG21	1:K:168:PHE:HA	1.99	0.45
1:I:197:ASP:O	1:I:201:ILE:HD13	2.17	0.45
1:J:66:MET:O	1:J:70:LYS:HG3	2.17	0.45
1:F:150:ILE:HD13	1:F:172:LEU:HD13	1.99	0.45
1:G:155:GLN:HB3	1:G:195:ASN:H	1.82	0.45
1:E:32:PHE:O	1:E:142:VAL:HG22	2.17	0.44
1:L:138:LEU:O	1:L:142:VAL:HG13	2.17	0.44
1:B:22:ALA:O	1:B:26:VAL:HG22	2.16	0.44
1:B:45:CYS:HB3	1:C:14:CYS:SG	2.57	0.44
1:B:211:LEU:O	1:B:215:MET:HG3	2.17	0.44
1:E:211:LEU:O	1:E:215:MET:HG3	2.17	0.44
1:G:150:ILE:HD11	1:G:168:PHE:CE2	2.51	0.44
1:K:202:LEU:HD22	1:K:214:MET:HG2	1.99	0.44
1:J:67:GLN:HA	1:J:70:LYS:HD2	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:211:LEU:HD12	1:G:211:LEU:HA	1.84	0.44
1:L:52:LEU:HD22	1:L:134:ILE:HD12	1.98	0.44
1:C:199:LYS:HG2	1:C:203:LYS:HE3	1.99	0.44
1:D:18:ARG:NH1	1:E:18:ARG:HG2	2.33	0.44
1:I:59:VAL:HG11	1:I:66:MET:HG3	2.00	0.44
1:J:131:LYS:O	1:J:135:ILE:HG13	2.17	0.44
1:B:173:ARG:NE	2:C:300:XBQ:O02	2.51	0.43
1:E:168:PHE:CD2	1:E:190:LEU:HD13	2.53	0.43
1:K:25:LYS:HA	1:K:25:LYS:HD3	1.74	0.43
1:E:172:LEU:HD12	1:E:172:LEU:HA	1.89	0.43
1:G:186:THR:CG2	1:G:189:LEU:HD12	2.48	0.43
1:I:168:PHE:HE2	1:I:190:LEU:HB2	1.83	0.43
1:A:144:MET:HB2	1:A:144:MET:HE2	1.49	0.43
1:I:30:LYS:HA	1:I:30:LYS:HD3	1.80	0.43
1:D:172:LEU:HD12	1:D:172:LEU:HA	1.90	0.43
1:H:100:ARG:HG2	1:H:103:ASP:OD2	2.19	0.43
1:J:169:TYR:CZ	1:K:67:GLN:HG2	2.53	0.43
1:K:55:MET:O	1:K:58:THR:HG22	2.19	0.43
1:F:211:LEU:O	1:F:215:MET:HG3	2.18	0.43
1:I:154:ARG:HA	1:I:193:ASN:HB3	2.01	0.43
1:D:165:VAL:HG11	1:D:215:MET:CE	2.44	0.43
1:I:111:LEU:O	1:I:114:GLN:HG2	2.19	0.43
1:K:212:GLU:OE1	1:K:212:GLU:N	2.42	0.43
1:A:120:HIS:CG	1:A:121:ASN:N	2.87	0.43
1:G:64:ALA:HB1	1:L:215:MET:CE	2.48	0.43
1:A:124:ILE:HA	1:A:125:PRO:HD3	1.87	0.42
1:A:12:HIS:O	1:F:4:GLN:NE2	2.51	0.42
1:L:35:GLU:O	1:L:38:PRO:HG2	2.20	0.42
1:E:198:CYS:O	1:E:202:LEU:HG	2.19	0.42
1:A:187:GLU:O	1:A:191:VAL:HG23	2.19	0.42
1:B:192:GLN:HA	1:B:199:LYS:HE2	2.02	0.42
1:D:211:LEU:HD22	1:E:67:GLN:CG	2.50	0.42
1:K:128:GLU:O	1:K:132:ARG:HG3	2.20	0.42
1:E:212:GLU:O	1:E:216:THR:HG22	2.20	0.42
1:G:55:MET:O	1:G:58:THR:OG1	2.34	0.42
1:K:150:ILE:HD12	1:K:150:ILE:HA	1.93	0.42
1:A:37:ILE:HD12	1:A:138:LEU:HB3	2.01	0.42
1:D:37:ILE:N	1:D:38:PRO:HD2	2.35	0.42
1:F:52:LEU:HA	1:F:55:MET:HE2	2.02	0.42
1:H:23:TRP:O	1:H:27:VAL:HG23	2.20	0.42
1:J:140:LYS:O	1:J:144:MET:HG3	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:75:GLU:HG2	1:K:76:GLU:OE2	2.20	0.42
1:K:161:PHE:CZ	1:K:202:LEU:HD11	2.54	0.42
1:I:19:THR:HG23	1:I:43:LEU:HD22	2.02	0.42
1:E:199:LYS:O	1:E:203:LYS:HG3	2.20	0.41
1:G:37:ILE:HG12	1:G:138:LEU:HB3	2.02	0.41
1:K:138:LEU:O	1:K:142:VAL:HG23	2.20	0.41
1:D:196:PRO:HA	1:D:199:LYS:HB3	2.03	0.41
1:I:161:PHE:O	1:I:165:VAL:HG23	2.21	0.41
1:A:68:MET:HE3	1:A:68:MET:HB3	1.64	0.41
1:C:150:ILE:HG12	1:C:172:LEU:HD12	2.03	0.41
1:F:150:ILE:HD11	1:F:168:PHE:CE2	2.55	0.41
1:H:55:MET:O	1:H:58:THR:HG22	2.19	0.41
1:C:202:LEU:HD22	1:C:214:MET:HE3	2.03	0.41
1:K:201:ILE:O	1:K:205:LEU:HD13	2.20	0.41
1:L:114:GLN:O	1:L:118:MET:HG2	2.21	0.41
1:B:143:ARG:NH1	1:B:144:MET:HA	2.35	0.41
1:F:21:ASN:ND2	1:F:25:LYS:HE2	2.35	0.41
1:C:37:ILE:HD13	1:C:139:ASN:OD1	2.21	0.41
1:G:68:MET:HB3	1:G:68:MET:HE2	1.71	0.41
1:K:164:TYR:OH	1:K:190:LEU:O	2.22	0.41
1:L:139:ASN:O	1:L:142:VAL:HG22	2.20	0.41
1:A:21:ASN:O	1:A:25:LYS:HG2	2.21	0.41
1:E:173:ARG:HA	2:F:300:XBQ:O01	2.21	0.41
1:J:137:GLY:O	1:J:141:ILE:HG12	2.21	0.41
1:K:150:ILE:HD13	1:K:171:THR:HB	2.03	0.41
1:E:205:LEU:HD23	1:E:205:LEU:HA	1.89	0.40
1:A:202:LEU:O	1:A:205:LEU:HB2	2.21	0.40
1:I:72:THR:O	1:I:75:GLU:HB2	2.21	0.40
1:F:37:ILE:HG21	1:F:135:ILE:HG23	2.03	0.40
1:F:198:CYS:O	1:F:202:LEU:HG	2.22	0.40
1:E:68:MET:HE3	1:E:68:MET:HB3	1.85	0.40
1:H:37:ILE:HB	1:H:38:PRO:HD3	2.03	0.40
1:A:23:TRP:CZ3	1:A:40:PHE:HB2	2.56	0.40
1:B:40:PHE:CE1	1:B:55:MET:HE2	2.56	0.40
1:J:41:SER:HB2	1:J:135:ILE:HD11	2.02	0.40
1:J:76:GLU:HG2	1:J:133:TRP:CG	2.55	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	198/224 (88%)	196 (99%)	2 (1%)	0	100	100
1	B	190/224 (85%)	188 (99%)	2 (1%)	0	100	100
1	C	191/224 (85%)	190 (100%)	1 (0%)	0	100	100
1	D	197/224 (88%)	197 (100%)	0	0	100	100
1	E	191/224 (85%)	190 (100%)	1 (0%)	0	100	100
1	F	195/224 (87%)	193 (99%)	2 (1%)	0	100	100
1	G	158/224 (70%)	154 (98%)	4 (2%)	0	100	100
1	H	166/224 (74%)	165 (99%)	1 (1%)	0	100	100
1	I	157/224 (70%)	150 (96%)	7 (4%)	0	100	100
1	J	159/224 (71%)	155 (98%)	4 (2%)	0	100	100
1	K	159/224 (71%)	153 (96%)	6 (4%)	0	100	100
1	L	152/224 (68%)	149 (98%)	3 (2%)	0	100	100
All	All	2113/2688 (79%)	2080 (98%)	33 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	172/188 (92%)	168 (98%)	4 (2%)	50	76
1	B	168/188 (89%)	167 (99%)	1 (1%)	86	95

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	C	167/188 (89%)	166 (99%)	1 (1%)	86 95
1	D	169/188 (90%)	168 (99%)	1 (1%)	86 95
1	E	169/188 (90%)	165 (98%)	4 (2%)	49 74
1	F	172/188 (92%)	172 (100%)	0	100 100
1	G	131/188 (70%)	129 (98%)	2 (2%)	65 85
1	H	139/188 (74%)	134 (96%)	5 (4%)	35 61
1	I	126/188 (67%)	121 (96%)	5 (4%)	31 56
1	J	138/188 (73%)	135 (98%)	3 (2%)	52 77
1	K	140/188 (74%)	135 (96%)	5 (4%)	35 61
1	L	134/188 (71%)	130 (97%)	4 (3%)	41 68
All	All	1825/2256 (81%)	1790 (98%)	35 (2%)	57 80

All (35) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	26	VAL
1	A	144	MET
1	A	198	CYS
1	A	218	CYS
1	B	143	ARG
1	C	172	LEU
1	D	188	THR
1	E	3	VAL
1	E	10	MET
1	E	96	MET
1	E	186	THR
1	G	25	LYS
1	G	148	THR
1	H	13	GLN
1	H	55	MET
1	H	67	GLN
1	H	99	PRO
1	H	214[A]	MET
1	I	27	VAL
1	I	39	MET
1	I	41	SER
1	I	111	LEU
1	I	188	THR

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Mol	Chain	Res	Type
1	J	68	MET
1	J	76	GLU
1	J	161	PHE
1	K	27	VAL
1	K	36	VAL
1	K	111	LEU
1	K	146	SER
1	K	148	THR
1	L	41	SER
1	L	151	LEU
1	L	163	ASP
1	L	210	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	193	ASN
1	F	4	GLN
1	F	21	ASN
1	F	112	GLN
1	H	67	GLN
1	H	193	ASN
1	K	74	ASN
1	L	67	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

6 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	XBQ	B	300	-	44,44,44	1.89	3 (6%)	60,62,62	1.22	3 (5%)
2	XBQ	E	300	-	44,44,44	1.92	3 (6%)	60,62,62	0.59	2 (3%)
2	XBQ	C	300	-	44,44,44	1.91	3 (6%)	60,62,62	0.85	1 (1%)
2	XBQ	D	300	-	44,44,44	1.90	3 (6%)	60,62,62	1.15	4 (6%)
2	XBQ	F	300	-	44,44,44	1.90	3 (6%)	60,62,62	0.78	3 (5%)
2	XBQ	A	300	-	44,44,44	1.94	3 (6%)	60,62,62	0.75	2 (3%)

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	XBQ	B	300	-	-	4/38/51/51	0/3/4/4
2	XBQ	E	300	-	-	10/38/51/51	0/3/4/4
2	XBQ	C	300	-	-	11/38/51/51	0/4/4/4
2	XBQ	D	300	-	-	10/38/51/51	0/3/4/4
2	XBQ	F	300	-	-	11/38/51/51	0/3/4/4
2	XBQ	A	300	-	-	11/38/51/51	0/3/4/4

All (18) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	300	XBQ	C08-N03	9.39	1.46	1.34
2	E	300	XBQ	C08-N03	9.31	1.46	1.34
2	C	300	XBQ	C08-N03	9.23	1.46	1.34
2	F	300	XBQ	C08-N03	9.11	1.46	1.34
2	D	300	XBQ	C08-N03	9.06	1.46	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	300	XBQ	C08-N03	8.83	1.46	1.34
2	C	300	XBQ	O02-C08	8.17	1.41	1.23
2	B	300	XBQ	O02-C08	8.17	1.41	1.23
2	D	300	XBQ	O02-C08	8.17	1.41	1.23
2	A	300	XBQ	O02-C08	8.16	1.41	1.23
2	F	300	XBQ	O02-C08	8.16	1.41	1.23
2	E	300	XBQ	O02-C08	8.15	1.41	1.23
2	D	300	XBQ	C07-C08	2.97	1.57	1.51
2	F	300	XBQ	C07-C08	2.88	1.56	1.51
2	B	300	XBQ	C07-C08	2.88	1.56	1.51
2	E	300	XBQ	C07-C08	2.85	1.56	1.51
2	A	300	XBQ	C07-C08	2.82	1.56	1.51
2	C	300	XBQ	C07-C08	2.72	1.56	1.51

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	300	XBQ	C09-N03-C08	-7.25	116.20	123.71
2	D	300	XBQ	C09-N03-C08	-7.04	116.42	123.71
2	C	300	XBQ	C08-C07-N02	-5.06	107.74	115.12
2	B	300	XBQ	C07-C08-N03	-4.38	111.61	118.12
2	F	300	XBQ	C09-N03-C08	-3.33	120.26	123.71
2	A	300	XBQ	C08-C07-N02	-3.33	110.26	115.12
2	A	300	XBQ	C15-C13-N04	-3.08	101.61	108.81
2	D	300	XBQ	C07-C08-N03	-2.87	113.85	118.12
2	B	300	XBQ	O02-C08-C07	2.79	124.34	118.45
2	E	300	XBQ	C08-C07-N02	-2.62	111.31	115.12
2	D	300	XBQ	C07-N02-S01	2.48	121.94	116.97
2	F	300	XBQ	C08-C07-N02	2.45	118.69	115.12
2	F	300	XBQ	C10-N02-S01	2.43	121.47	117.05
2	D	300	XBQ	O02-C08-C07	2.06	122.81	118.45
2	E	300	XBQ	C15-C13-N04	-2.02	104.08	108.81

There are no chirality outliers.

All (57) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	C	300	XBQ	C10-N02-S01-C06
2	E	300	XBQ	C10-N02-S01-C06
2	C	300	XBQ	C10-N02-S01-O01
2	C	300	XBQ	C25-C26-O05-C29
2	B	300	XBQ	C27-C26-O05-C29

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Mol	Chain	Res	Type	Atoms
2	C	300	XBQ	C27-C26-O05-C29
2	E	300	XBQ	C25-C26-O05-C29
2	A	300	XBQ	C10-N02-S01-O01
2	C	300	XBQ	C10-N02-S01-O06
2	E	300	XBQ	C10-N02-S01-O01
2	E	300	XBQ	C10-N02-S01-O06
2	E	300	XBQ	C07-N02-S01-O01
2	E	300	XBQ	C27-C26-O05-C29
2	B	300	XBQ	C25-C26-O05-C29
2	F	300	XBQ	C27-C26-O05-C29
2	F	300	XBQ	C07-N02-S01-O01
2	F	300	XBQ	C25-C26-O05-C29
2	D	300	XBQ	C05-C06-S01-N02
2	D	300	XBQ	C25-C26-O05-C29
2	D	300	XBQ	C01-C06-S01-N02
2	A	300	XBQ	C10-N02-S01-C06
2	C	300	XBQ	C07-N02-S01-O01
2	E	300	XBQ	C07-N02-S01-C06
2	F	300	XBQ	C07-N02-S01-O06
2	D	300	XBQ	C27-C26-O05-C29
2	A	300	XBQ	O03-C12-N04-C13
2	A	300	XBQ	C10-N02-S01-O06
2	F	300	XBQ	C07-N02-S01-C06
2	A	300	XBQ	N04-C13-C14-C16
2	F	300	XBQ	C01-C06-S01-N02
2	F	300	XBQ	C05-C06-S01-N02
2	C	300	XBQ	C07-N02-S01-C06
2	A	300	XBQ	C11-C12-N04-C13
2	E	300	XBQ	N03-C11-C12-O03
2	C	300	XBQ	N03-C11-C12-N04
2	D	300	XBQ	N03-C11-C12-N04
2	E	300	XBQ	N03-C11-C12-N04
2	C	300	XBQ	N04-C13-C14-C16
2	F	300	XBQ	C05-C06-S01-O06
2	F	300	XBQ	C01-C06-S01-O06
2	D	300	XBQ	C01-C06-S01-O01
2	D	300	XBQ	C05-C06-S01-O01
2	C	300	XBQ	N03-C11-C12-O03
2	D	300	XBQ	N03-C11-C12-O03
2	F	300	XBQ	C10-N02-S01-O01
2	A	300	XBQ	C25-C26-O05-C29
2	A	300	XBQ	C27-C26-O05-C29

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Mol	Chain	Res	Type	Atoms
2	A	300	XBQ	C15-C13-C14-C16
2	E	300	XBQ	C07-N02-S01-O06
2	D	300	XBQ	C10-N02-S01-O06
2	B	300	XBQ	C10-N02-S01-O06
2	B	300	XBQ	C10-N02-S01-O01
2	D	300	XBQ	C10-N02-S01-O01
2	F	300	XBQ	C10-N02-S01-C06
2	A	300	XBQ	C07-N02-S01-O01
2	A	300	XBQ	C07-N02-S01-O06
2	C	300	XBQ	C15-C13-C14-C16

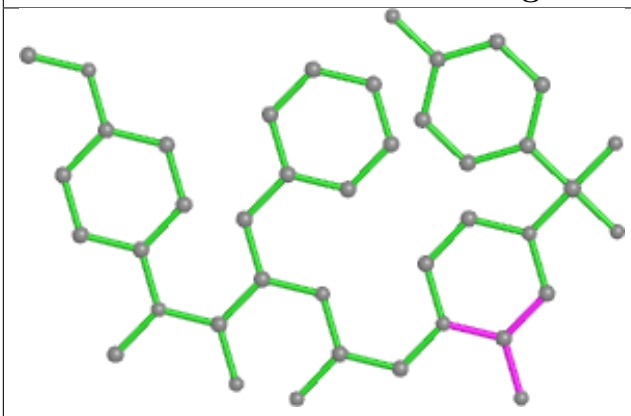
There are no ring outliers.

4 monomers are involved in 4 short contacts:

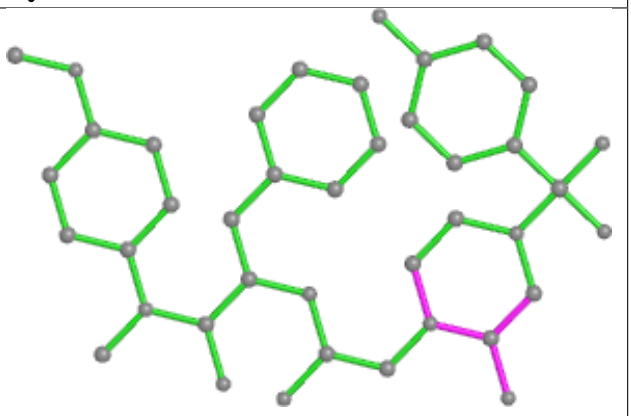
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	300	XBQ	1	0
2	D	300	XBQ	1	0
2	F	300	XBQ	1	0
2	A	300	XBQ	1	0

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.

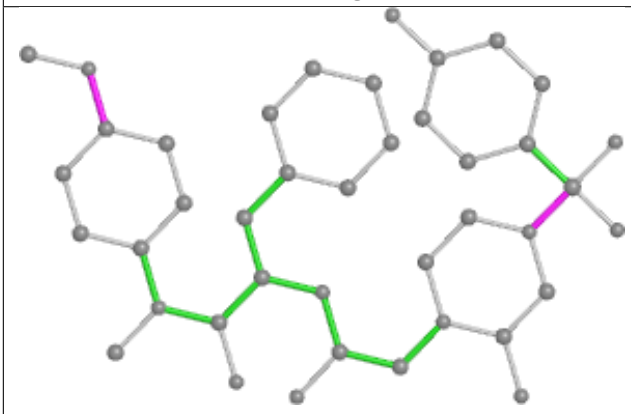
Ligand XBQ B 300



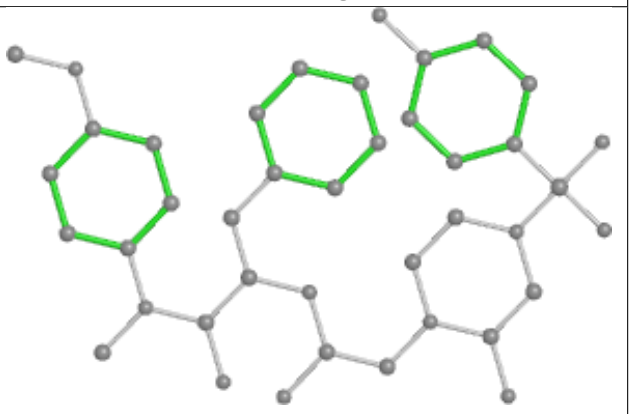
Bond lengths



Bond angles

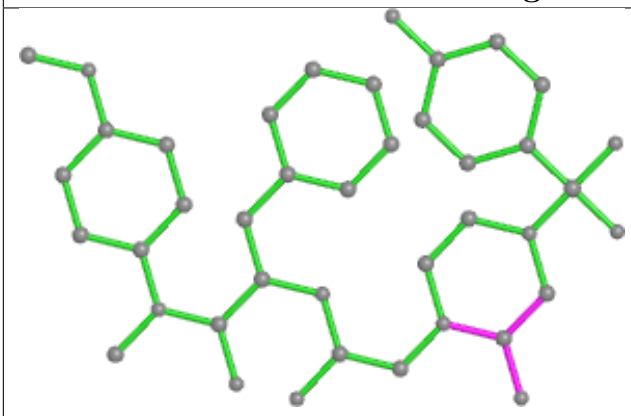


Torsions

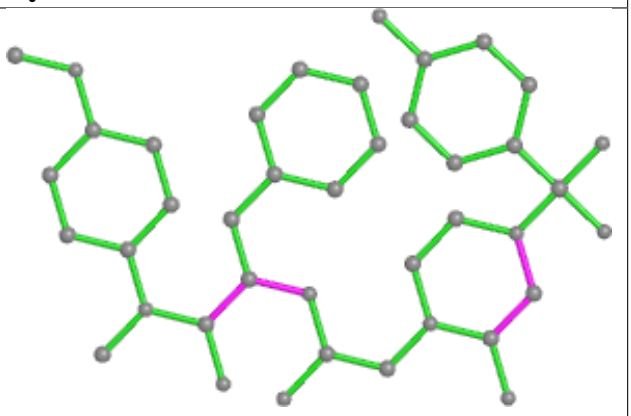


Rings

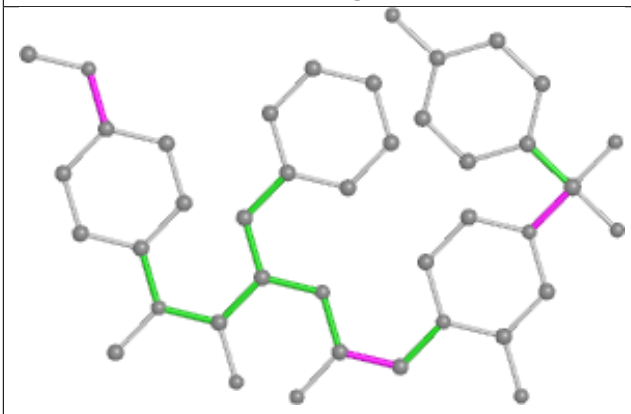
Ligand XBQ E 300



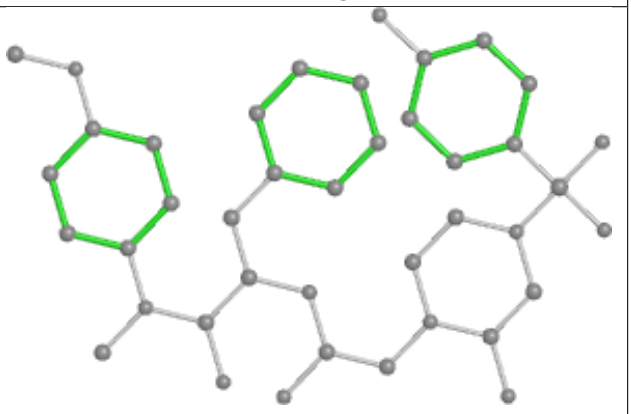
Bond lengths



Bond angles

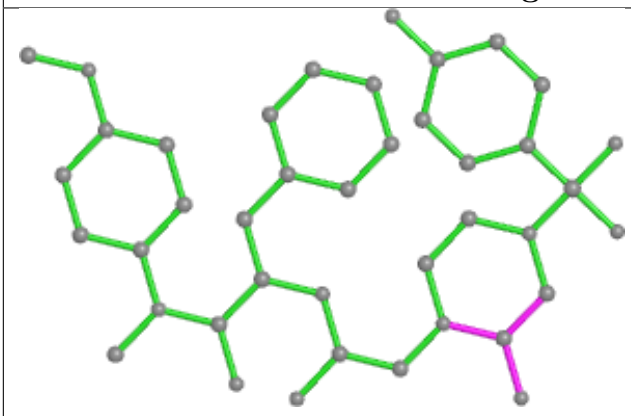


Torsions

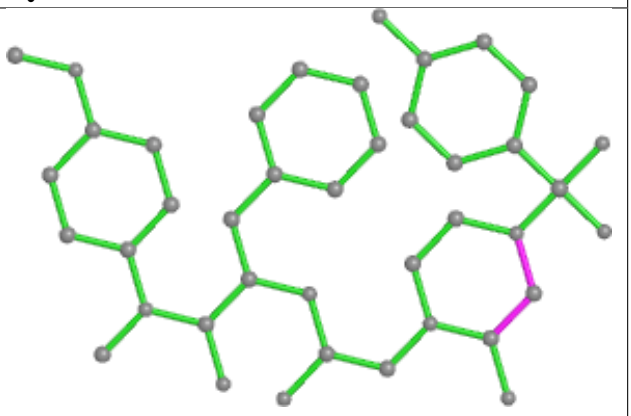


Rings

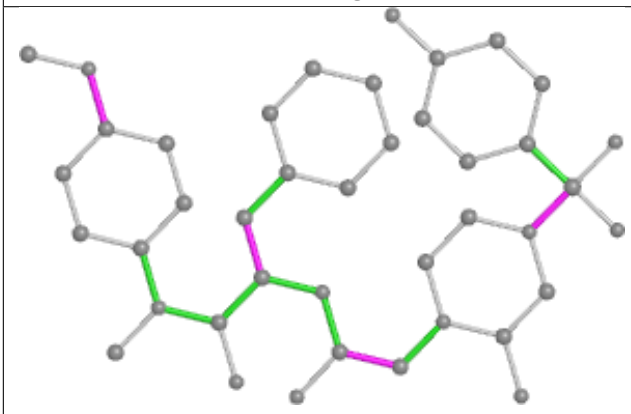
Ligand XBQ C 300



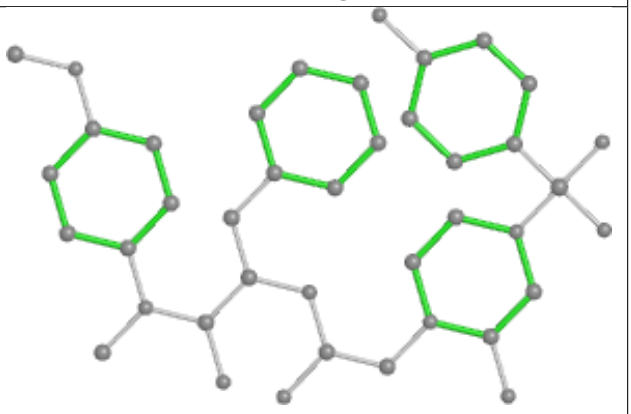
Bond lengths



Bond angles

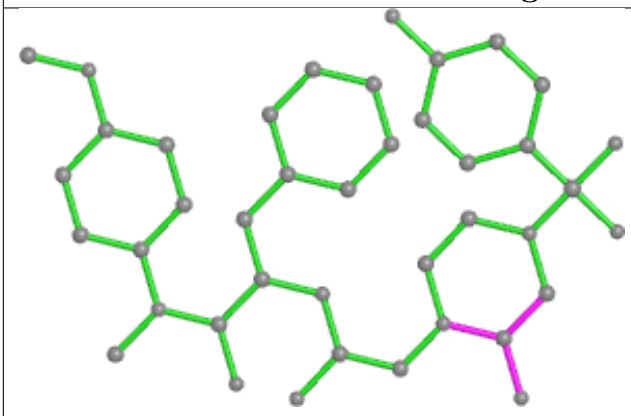


Torsions

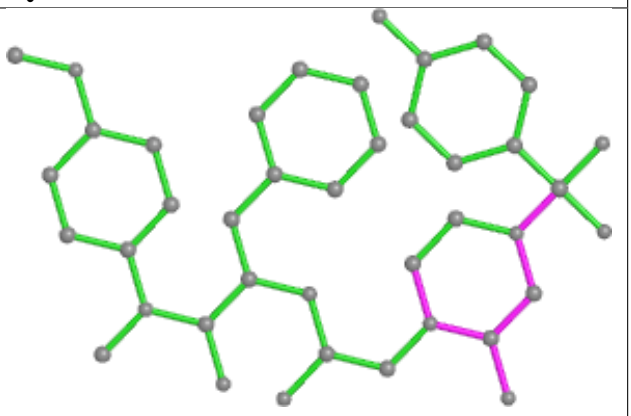


Rings

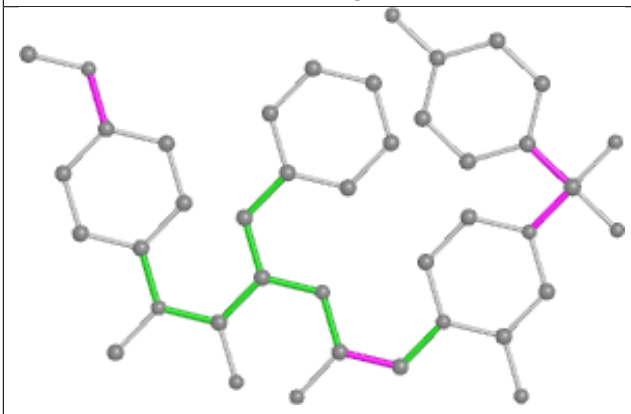
Ligand XBQ D 300



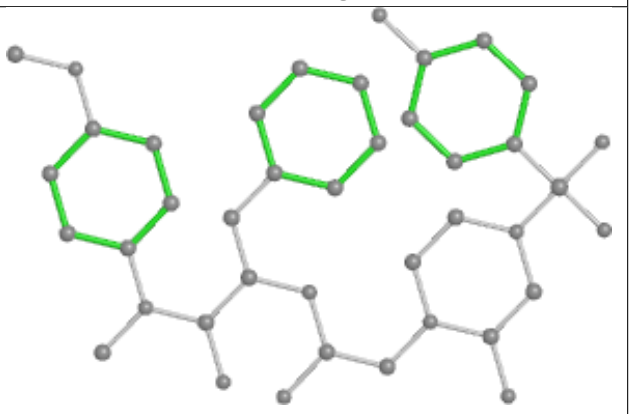
Bond lengths



Bond angles

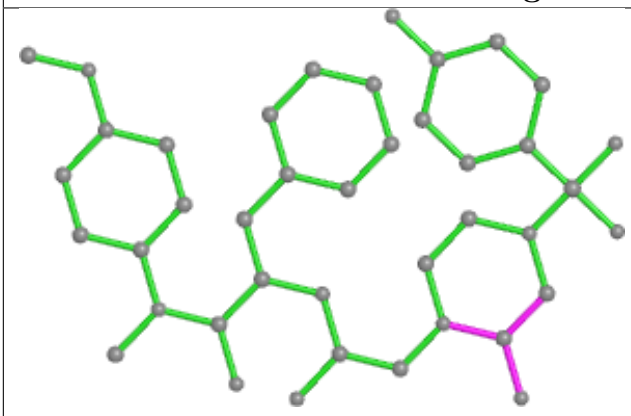


Torsions

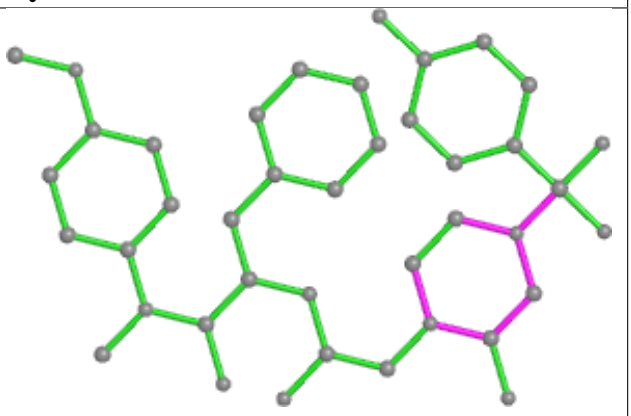


Rings

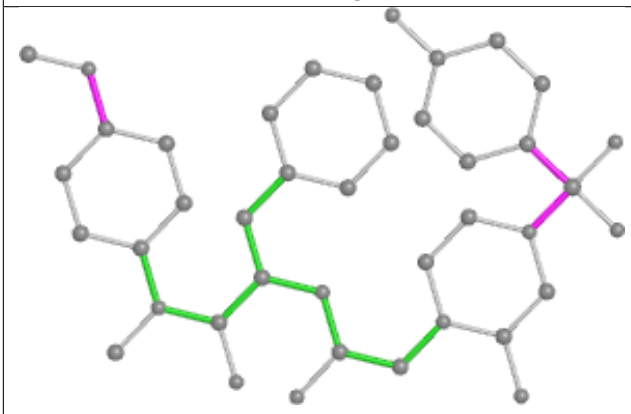
Ligand XBQ F 300



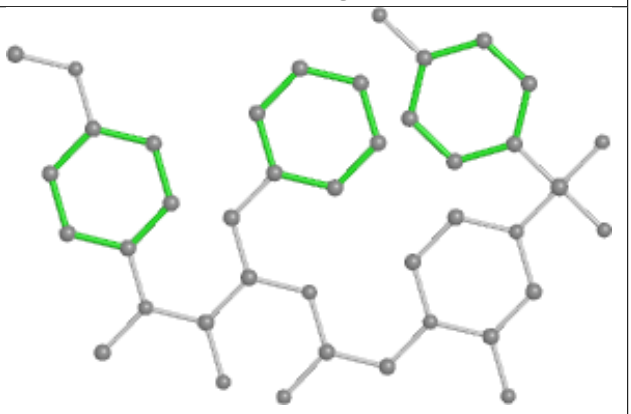
Bond lengths



Bond angles

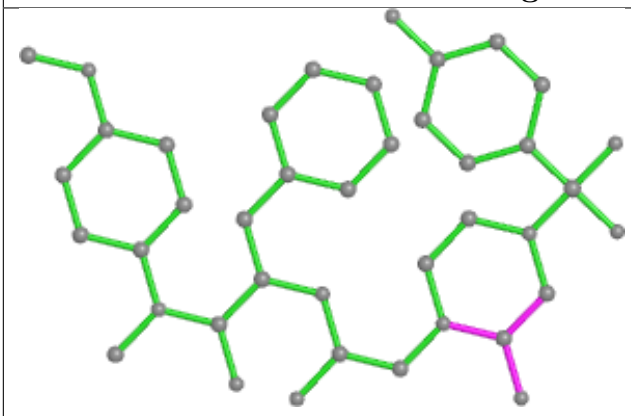


Torsions

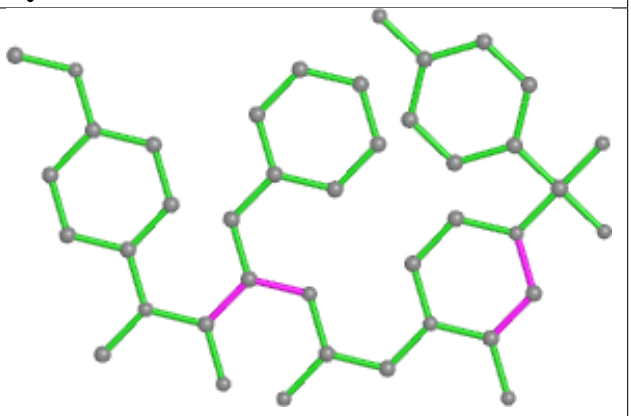


Rings

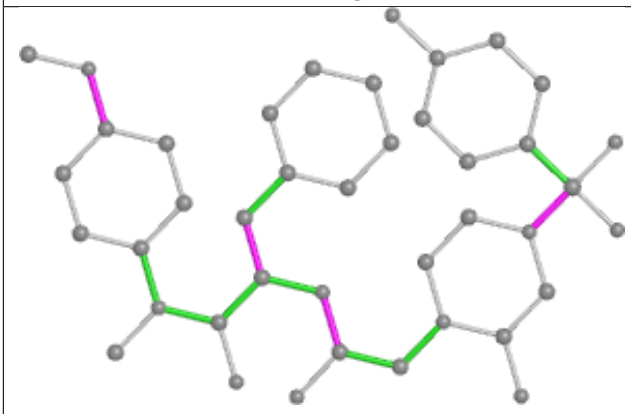
Ligand XBQ A 300



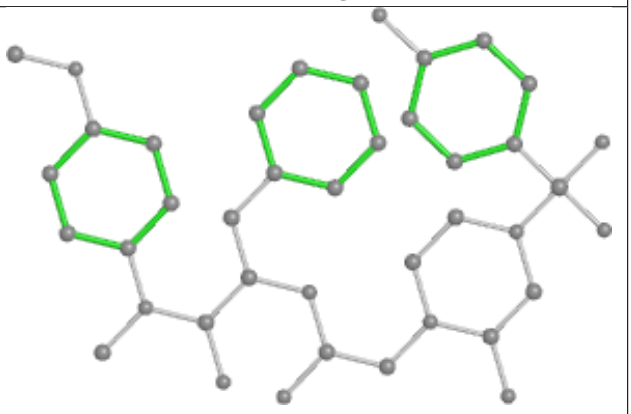
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

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	206/224 (91%)	0.12	8 (3%) 39 42	10, 33, 61, 81	0
1	B	200/224 (89%)	0.09	3 (1%) 73 75	9, 30, 55, 84	0
1	C	201/224 (89%)	0.27	9 (4%) 33 36	7, 33, 66, 86	0
1	D	205/224 (91%)	0.14	6 (2%) 51 55	10, 33, 61, 85	0
1	E	199/224 (88%)	0.10	6 (3%) 50 53	12, 34, 63, 76	0
1	F	203/224 (90%)	0.08	7 (3%) 45 48	8, 30, 61, 84	0
1	G	168/224 (75%)	0.77	12 (7%) 16 16	43, 62, 83, 94	0
1	H	177/224 (79%)	0.94	25 (14%) 2 2	44, 67, 89, 105	0
1	I	169/224 (75%)	0.76	15 (8%) 9 9	44, 65, 82, 90	0
1	J	171/224 (76%)	0.80	17 (9%) 7 7	45, 65, 84, 93	0
1	K	171/224 (76%)	0.78	18 (10%) 6 6	46, 66, 80, 96	0
1	L	164/224 (73%)	0.83	17 (10%) 6 6	43, 62, 87, 97	0
All	All	2234/2688 (83%)	0.45	143 (6%) 19 20	7, 52, 80, 105	0

All (143) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	185	ALA	5.5
1	H	192	GLN	5.1
1	C	207	PRO	4.3
1	F	92	ALA	4.3
1	C	86	VAL	4.0
1	H	195	ASN	3.9
1	K	147	PRO	3.7
1	H	117	TRP	3.6
1	D	85	PRO	3.6
1	E	5	ASN	3.6
1	E	86	VAL	3.5

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Mol	Chain	Res	Type	RSRZ
1	A	82	ARG	3.4
1	J	1	PRO	3.3
1	L	117	TRP	3.3
1	I	145	TYR	3.2
1	F	4	GLN	3.2
1	K	204	ALA	3.2
1	L	115	ILE	3.2
1	H	212	GLU	3.2
1	H	28	GLU	3.1
1	H	198	CYS	3.1
1	C	3	VAL	3.1
1	A	93	PRO	3.1
1	C	205	LEU	3.1
1	L	214	MET	3.0
1	I	3	VAL	3.0
1	H	197	ASP	3.0
1	K	11	VAL	3.0
1	A	208	GLY	3.0
1	J	201	ILE	3.0
1	A	204	ALA	2.8
1	D	205	LEU	2.8
1	I	172	LEU	2.8
1	K	80	TRP	2.8
1	E	96	MET	2.8
1	L	196	PRO	2.8
1	J	202	LEU	2.8
1	J	81	ASP	2.8
1	K	201	ILE	2.7
1	K	3	VAL	2.7
1	C	198	CYS	2.7
1	F	207	PRO	2.7
1	G	111	LEU	2.7
1	L	210	THR	2.7
1	L	176	GLN	2.7
1	H	150	ILE	2.7
1	A	207	PRO	2.6
1	J	219	GLN	2.6
1	I	80	TRP	2.6
1	D	122	PRO	2.6
1	K	31	ALA	2.6
1	A	94	GLY	2.6
1	I	60	GLY	2.6

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Mol	Chain	Res	Type	RSRZ
1	F	205	LEU	2.6
1	H	79	GLU	2.6
1	G	196	PRO	2.6
1	H	37	ILE	2.6
1	J	114	GLN	2.6
1	L	14	CYS	2.5
1	L	134	ILE	2.5
1	J	99	PRO	2.5
1	G	148	THR	2.5
1	H	104	ILE	2.5
1	H	100	ARG	2.5
1	K	107	THR	2.5
1	H	78	ALA	2.5
1	G	145	TYR	2.5
1	K	136	LEU	2.5
1	K	211	LEU	2.5
1	I	32	PHE	2.5
1	B	148	THR	2.5
1	H	194	ALA	2.5
1	G	130	TYR	2.4
1	C	95	GLN	2.4
1	K	68	MET	2.4
1	L	108	THR	2.4
1	F	208	GLY	2.4
1	J	192	GLN	2.4
1	A	10	MET	2.4
1	L	111	LEU	2.4
1	H	152	ASP	2.4
1	I	161	PHE	2.4
1	L	107	THR	2.4
1	I	190	LEU	2.4
1	L	32	PHE	2.3
1	H	108	THR	2.3
1	I	133	TRP	2.3
1	G	185	ALA	2.3
1	F	87	HIS	2.3
1	E	85	PRO	2.3
1	H	96	MET	2.3
1	I	77	ALA	2.3
1	J	148	THR	2.3
1	L	127	GLY	2.3
1	C	82	ARG	2.3

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Mol	Chain	Res	Type	RSRZ
1	H	172	LEU	2.3
1	L	177	ALA	2.3
1	A	11	VAL	2.3
1	H	209	ALA	2.3
1	K	190	LEU	2.3
1	H	121	ASN	2.3
1	K	198	CYS	2.3
1	B	178	SER	2.2
1	F	94	GLY	2.2
1	G	46	GLY	2.2
1	G	101	GLY	2.2
1	L	147	PRO	2.2
1	D	5	ASN	2.2
1	K	207	PRO	2.2
1	I	132	ARG	2.2
1	H	127	GLY	2.2
1	G	212	GLU	2.2
1	I	207	PRO	2.2
1	J	151	LEU	2.2
1	H	165	VAL	2.1
1	K	78	ALA	2.1
1	L	75	GLU	2.1
1	E	107	THR	2.1
1	G	192	GLN	2.1
1	L	128	GLU	2.1
1	J	82	ARG	2.1
1	J	145	TYR	2.1
1	H	129	ILE	2.1
1	H	82	ARG	2.1
1	C	196	PRO	2.1
1	I	157	PRO	2.1
1	K	69	LEU	2.1
1	D	179	GLN	2.1
1	I	144	MET	2.0
1	D	207	PRO	2.0
1	E	207	PRO	2.0
1	K	191	VAL	2.0
1	I	164	TYR	2.0
1	G	207	PRO	2.0
1	J	126	VAL	2.0
1	J	41	SER	2.0
1	J	168	PHE	2.0

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Mol	Chain	Res	Type	RSRZ
1	G	204	ALA	2.0
1	K	219	GLN	2.0
1	C	154	ARG	2.0
1	H	116	GLY	2.0
1	J	134	ILE	2.0
1	J	147	PRO	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)

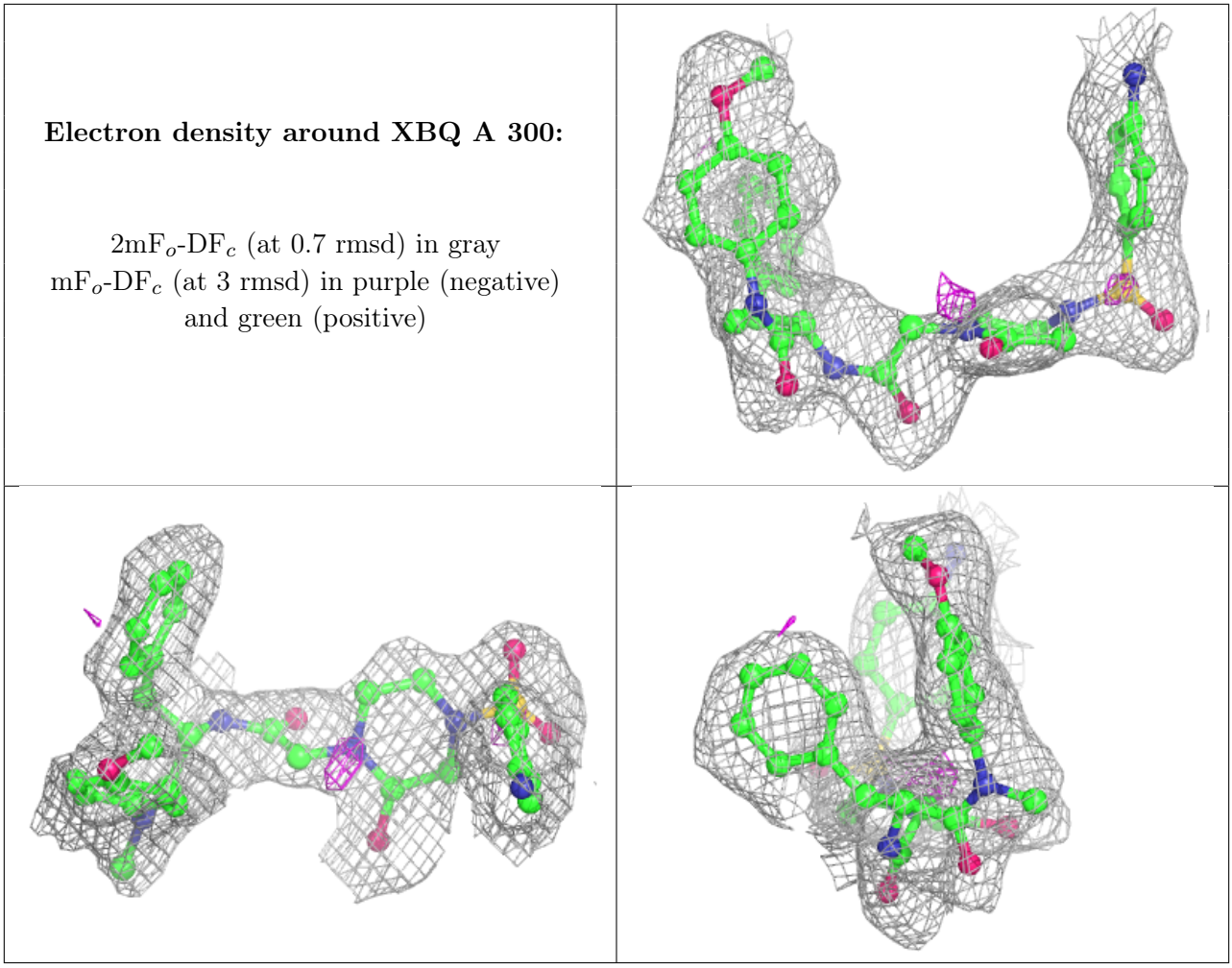
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' 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
2	XBQ	A	300	41/41	0.85	0.19	42,42,42,42	0
2	XBQ	B	300	41/41	0.86	0.23	48,48,48,48	0
2	XBQ	F	300	41/41	0.88	0.21	39,39,39,39	0
2	XBQ	E	300	41/41	0.89	0.21	42,42,42,42	0
2	XBQ	C	300	41/41	0.91	0.15	32,32,32,32	0
2	XBQ	D	300	41/41	0.92	0.15	31,31,31,31	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.

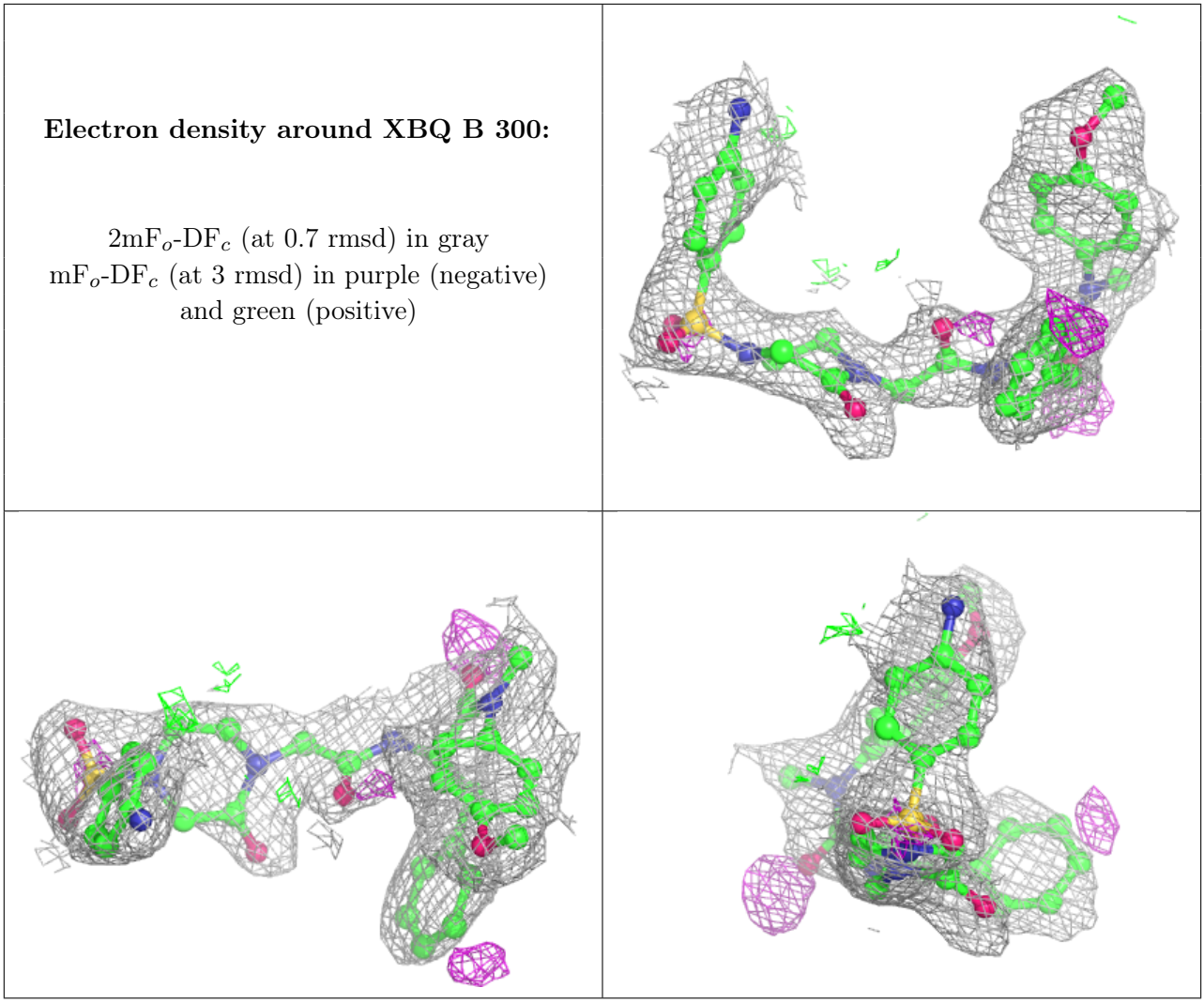
Electron density around XBQ A 300:

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



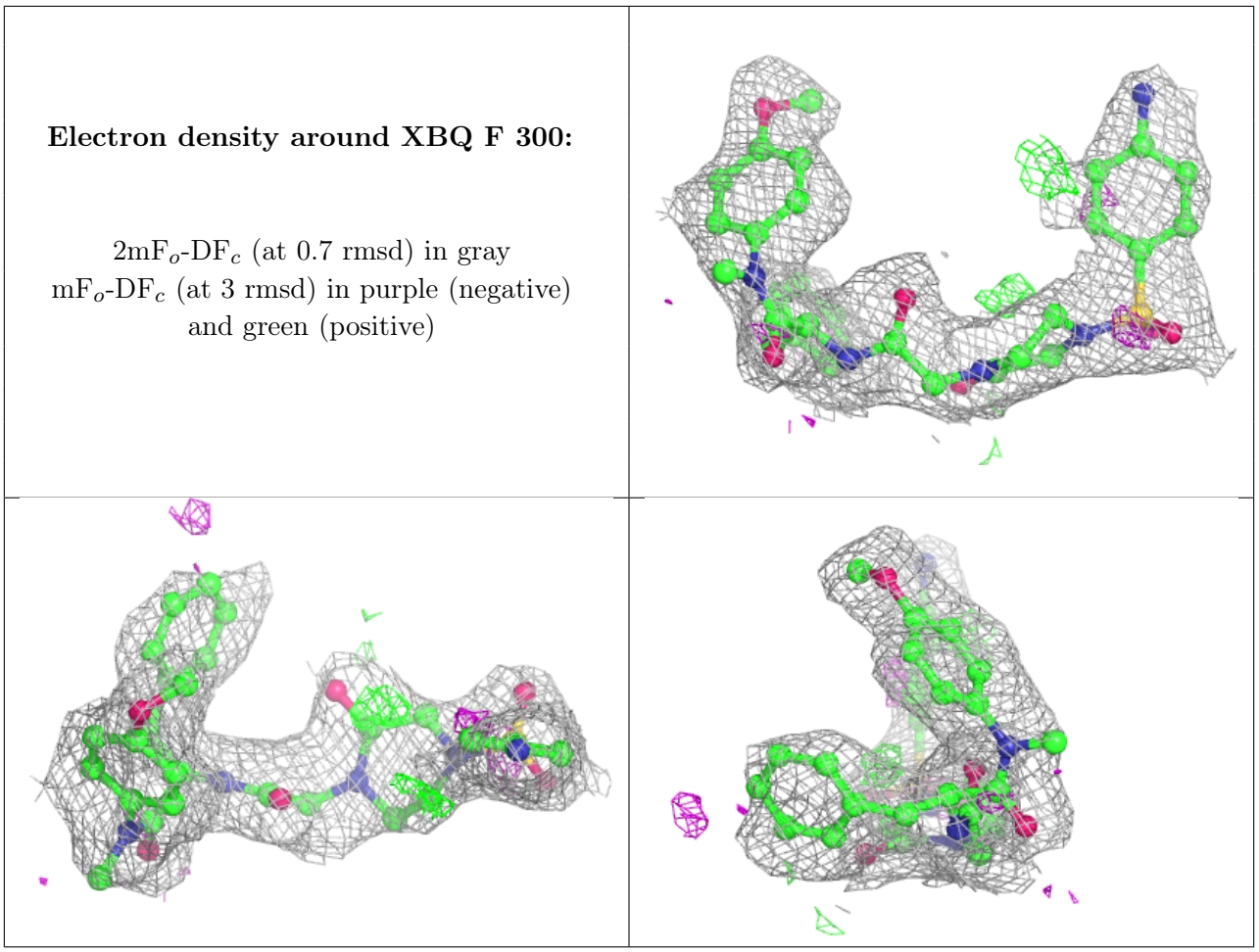
Electron density around XBQ B 300:

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



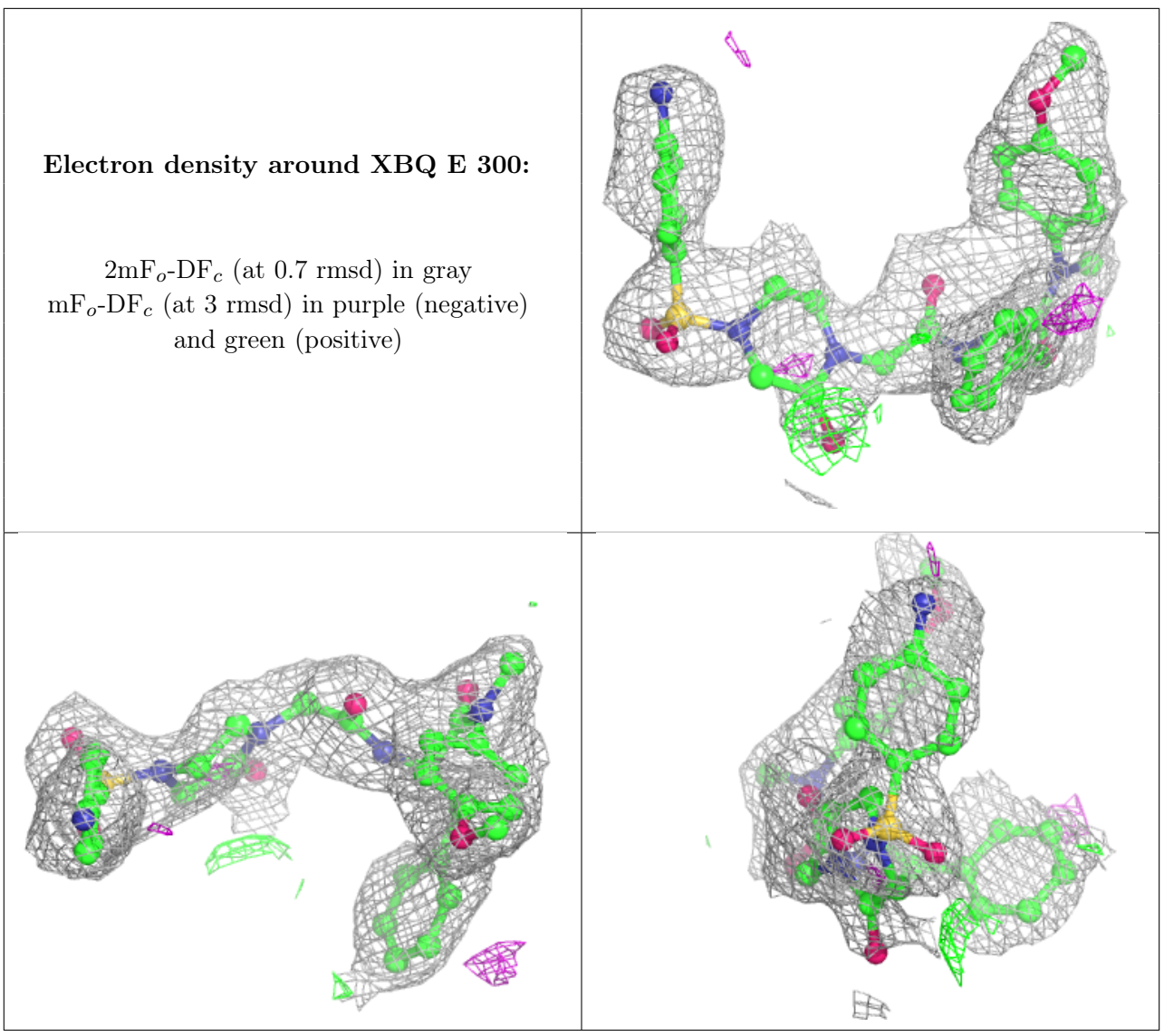
Electron density around XBQ F 300:

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



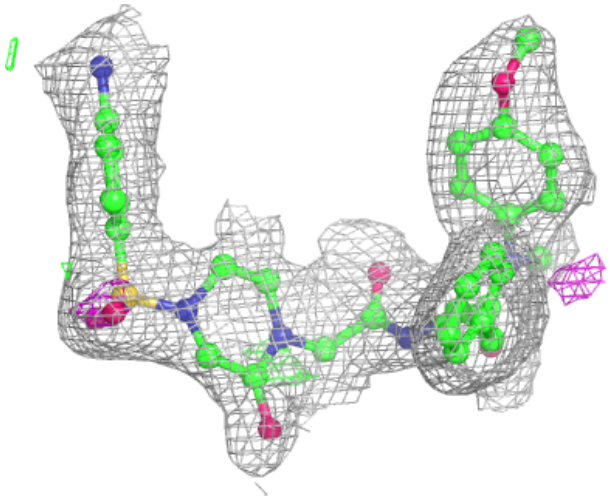
Electron density around XBQ E 300:

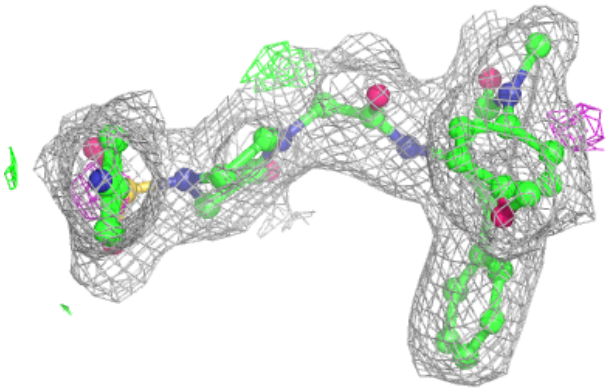
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

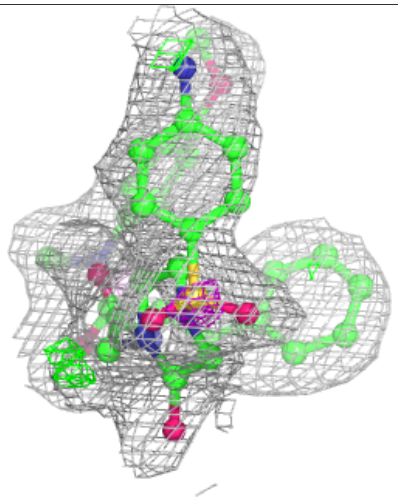


Electron density around XBQ C 300:

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

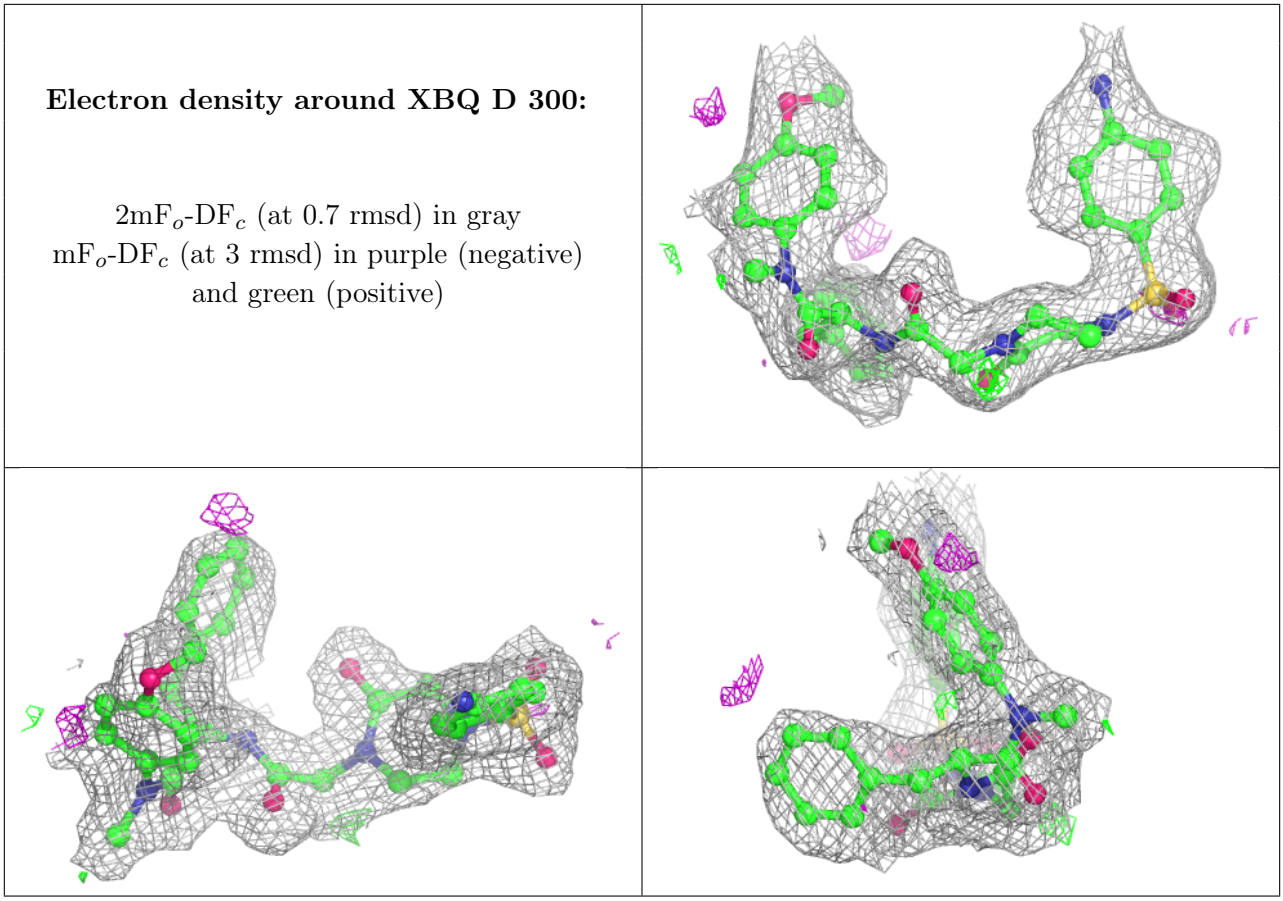






Electron density around XBQ D 300:

$2mF_o$-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

There are no such residues in this entry.