Full wwPDB X-ray Structure Validation Report (i)

Mar 11, 2025 – 06:07 PM EDT

PDB ID	:	8V0Z
Title	:	HIV-1 Integrase F185H W131C Complexed with Allosteric Inhibitor BI-D
Authors	:	Montermoso, S.; Gupta, K.; Eilers, G.; Bushman, F.D.; Van Duyne, G.D.
Deposited on	:	2023-11-18
Resolution	:	4.56 Å(reported)

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

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

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

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

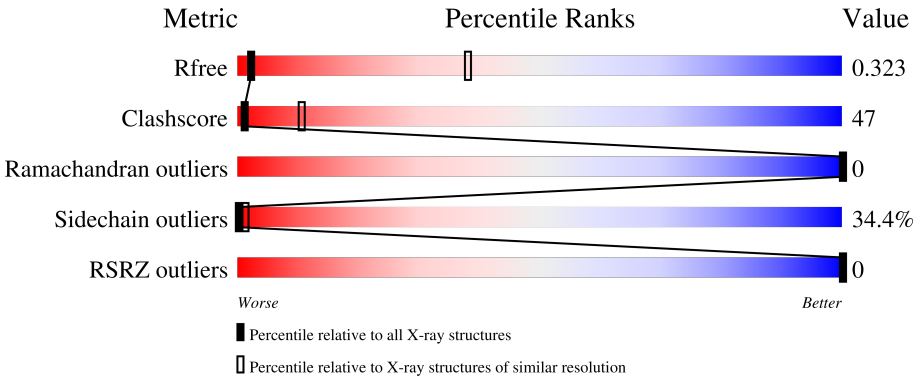
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.21
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.004 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.41.4

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 4.56 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}	164625	1063 (5.22-3.90)
Clashscore	180529	1118 (5.22-3.90)
Ramachandran outliers	177936	1013 (5.22-3.90)
Sidechain outliers	177891	1013 (5.22-3.88)
RSRZ outliers	164620	1059 (5.22-3.90)

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	293	23% 35% 12% · 27%
1	B	293	19% 38% 15% · 26%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 4311 atoms, of which 866 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.

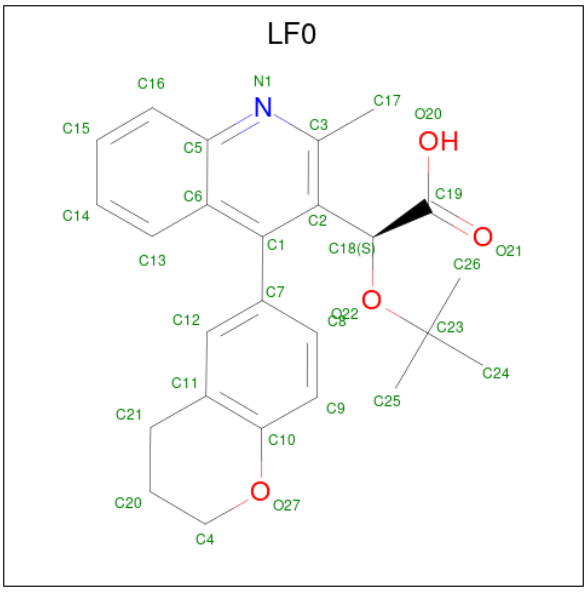
- Molecule 1 is a protein called Integrase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	215	Total	C	H	N	O	S	0	0	0
			2098	1074	406	303	308	7			
1	B	216	Total	C	H	N	O	S	0	0	0
			2101	1073	408	305	308	7			

There are 18 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	HIS	-	cloning artifact	UNP P12497
A	15	ALA	TYR	engineered mutation	UNP P12497
A	131	CYS	TRP	engineered mutation	UNP P12497
A	185	HIS	PHE	engineered mutation	UNP P12497
A	289	CYS	-	expression tag	UNP P12497
A	290	THR	-	expression tag	UNP P12497
A	291	LEU	-	expression tag	UNP P12497
A	292	GLU	-	expression tag	UNP P12497
A	293	TYR	-	expression tag	UNP P12497
B	1	HIS	-	cloning artifact	UNP P12497
B	15	ALA	TYR	engineered mutation	UNP P12497
B	131	CYS	TRP	engineered mutation	UNP P12497
B	185	HIS	PHE	engineered mutation	UNP P12497
B	289	CYS	-	expression tag	UNP P12497
B	290	THR	-	expression tag	UNP P12497
B	291	LEU	-	expression tag	UNP P12497
B	292	GLU	-	expression tag	UNP P12497
B	293	TYR	-	expression tag	UNP P12497

- Molecule 2 is (2S)-tert-butoxy[4-(3,4-dihydro-2H-chromen-6-yl)-2-methylquinolin-3-yl]ethanoic acid (three-letter code: LF0) (formula: $C_{25}H_{27}NO_4$) (labeled as "Ligand of Interest" by depositor).



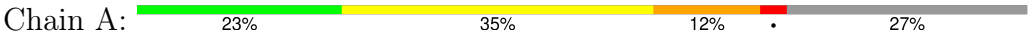
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	H	N	O	0	0
			56	25	26	1	4		
2	B	1	Total	C	H	N	O	0	0
			56	25	26	1	4		

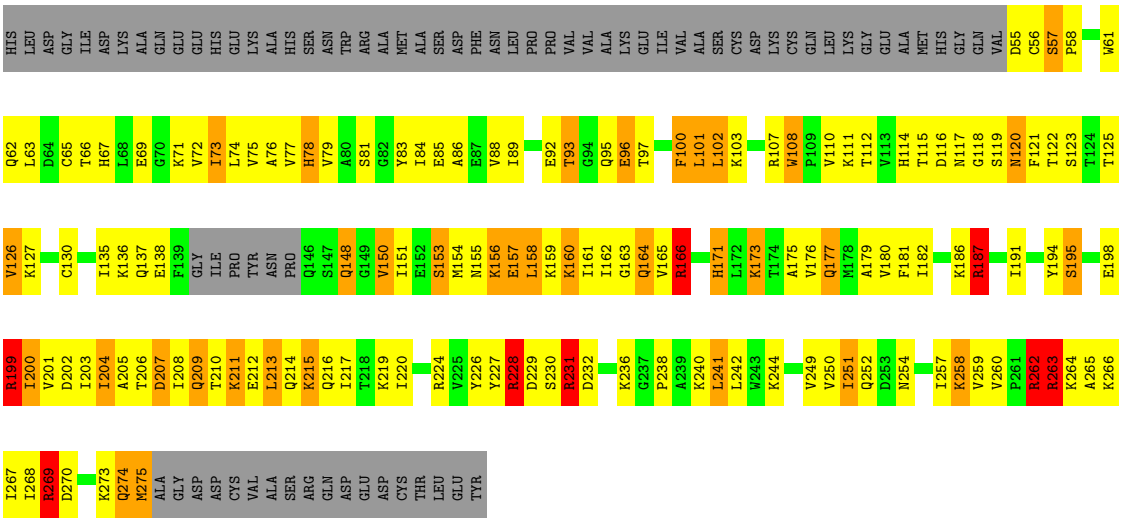
3 Residue-property plots (i)

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: Integrase

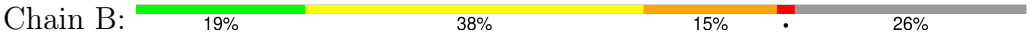
Chain A:

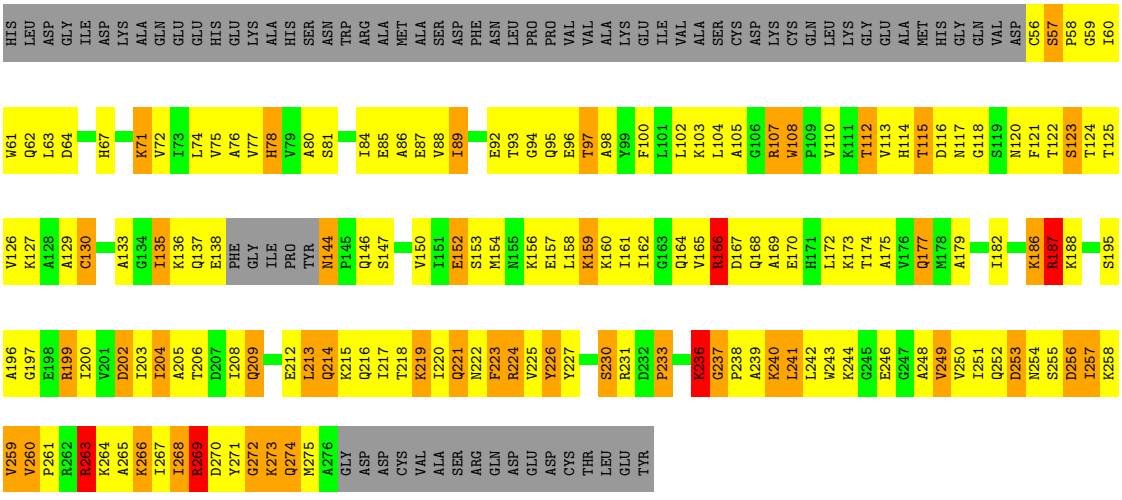




• Molecule 1: Integrase

Chain B:





4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 61 2 2	Depositor
Cell constants a, b, c, α, β, γ	104.95Å 104.95Å 245.13Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	20.00 – 4.56 20.00 – 4.56	Depositor EDS
% Data completeness (in resolution range)	95.7 (20.00-4.56) 77.8 (20.00-4.56)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	0.40 (at 4.45Å)	Xtriage
Refinement program	CNS 1.3	Depositor
R, R_{free}	0.329 , 0.334 0.327 , 0.323	Depositor DCC
R_{free} test set	4448 reflections (10.19%)	wwPDB-VP
Wilson B-factor (Å^2)	204.2	Xtriage
Anisotropy	0.033	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 227.8	EDS
L-test for twinning[2]	$< \|L\| > = 0.45$, $< L^2 > = 0.28$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	4311	wwPDB-VP
Average B, all atoms (Å^2)	261.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 10.33% 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: LF0

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	0.45	0/1723	1.11	16/2323 (0.7%)
1	B	0.49	1/1724 (0.1%)	1.12	14/2326 (0.6%)
All	All	0.47	1/3447 (0.0%)	1.12	30/4649 (0.6%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	8
1	B	0	6
All	All	0	14

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	263	ARG	CG-CD	5.29	1.65	1.51

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	262	ARG	NE-CZ-NH2	-13.52	113.54	120.30
1	B	263	ARG	NE-CZ-NH1	-13.41	113.59	120.30
1	B	263	ARG	NE-CZ-NH2	13.07	126.83	120.30
1	A	231	ARG	NE-CZ-NH2	-11.69	114.45	120.30
1	A	187	ARG	NE-CZ-NH1	-11.25	114.68	120.30
1	A	228	ARG	NE-CZ-NH2	-10.47	115.06	120.30
1	A	263	ARG	NE-CZ-NH1	-10.20	115.20	120.30
1	B	166	ARG	NE-CZ-NH1	-9.54	115.53	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	262	ARG	NE-CZ-NH1	9.42	125.01	120.30
1	A	187	ARG	NE-CZ-NH2	9.33	124.96	120.30
1	B	269	ARG	NE-CZ-NH1	-9.31	115.64	120.30
1	A	263	ARG	NE-CZ-NH2	9.18	124.89	120.30
1	B	269	ARG	NE-CZ-NH2	8.77	124.69	120.30
1	A	231	ARG	NE-CZ-NH1	8.04	124.32	120.30
1	B	166	ARG	NE-CZ-NH2	8.02	124.31	120.30
1	B	237	GLY	N-CA-C	-7.93	93.28	113.10
1	A	199	ARG	NE-CZ-NH1	-7.55	116.52	120.30
1	B	271	TYR	N-CA-C	-7.42	90.95	111.00
1	A	199	ARG	NE-CZ-NH2	7.19	123.90	120.30
1	B	236	LYS	CB-CA-C	-6.80	96.80	110.40
1	A	228	ARG	NE-CZ-NH1	6.72	123.66	120.30
1	B	263	ARG	CG-CD-NE	-6.71	97.70	111.80
1	A	166	ARG	NE-CZ-NH1	-5.94	117.33	120.30
1	A	78	HIS	N-CA-C	-5.92	95.03	111.00
1	A	269	ARG	NE-CZ-NH2	-5.43	117.59	120.30
1	B	253	ASP	N-CA-C	-5.29	96.72	111.00
1	B	272	GLY	N-CA-C	5.28	126.29	113.10
1	B	187	ARG	NE-CZ-NH1	-5.27	117.66	120.30
1	B	236	LYS	N-CA-C	5.15	124.91	111.00
1	A	166	ARG	NE-CZ-NH2	5.06	122.83	120.30

There are no chirality outliers.

All (14) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	166	ARG	Sidechain
1	A	187	ARG	Sidechain
1	A	199	ARG	Sidechain
1	A	228	ARG	Sidechain
1	A	231	ARG	Sidechain
1	A	262	ARG	Sidechain
1	A	263	ARG	Sidechain
1	A	269	ARG	Sidechain
1	B	166	ARG	Sidechain
1	B	187	ARG	Sidechain
1	B	199	ARG	Sidechain
1	B	231	ARG	Sidechain
1	B	263	ARG	Sidechain
1	B	269	ARG	Sidechain

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1692	406	1725	160	0
1	B	1693	408	1730	174	0
2	A	30	26	26	4	0
2	B	30	26	26	1	0
All	All	3445	866	3507	326	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 47.

All (326) 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:269:ARG:HB3	1:B:272:GLY:HA2	1.40	1.02
1:B:224:ARG:HH11	1:B:224:ARG:HB3	1.31	0.91
1:B:225:VAL:HG22	1:B:267:ILE:HG23	1.52	0.90
1:A:110:VAL:HB	1:A:135:ILE:HD11	1.56	0.88
1:B:224:ARG:HB2	1:B:270:ASP:HB2	1.56	0.85
1:B:60:ILE:HG12	1:B:112:THR:HG23	1.59	0.85
1:A:209:GLN:O	1:A:212:GLU:HG3	1.76	0.85
1:A:204:ILE:O	1:A:208:ILE:HG12	1.78	0.84
1:B:223:PHE:HA	1:B:269:ARG:HA	1.62	0.82
1:A:207:ASP:N	1:A:207:ASP:OD1	2.12	0.80
1:A:148:GLN:HA	1:A:151:ILE:HD12	1.63	0.80
1:A:208:ILE:HA	1:A:211:LYS:NZ	1.98	0.80
1:B:252:GLN:HG3	1:B:257:ILE:HA	1.62	0.79
1:A:62:GLN:HB3	1:A:79:VAL:HG12	1.63	0.79
1:A:179:ALA:HA	1:A:182:ILE:HD12	1.65	0.79
1:A:205:ALA:HA	1:A:208:ILE:HG12	1.65	0.77
1:B:110:VAL:O	1:B:135:ILE:HD12	1.84	0.77
1:A:181:PHE:CE1	1:B:105:ALA:HB1	2.20	0.76
1:A:159:LYS:HA	1:A:162:ILE:HB	1.69	0.74
1:B:224:ARG:CB	1:B:270:ASP:HB2	2.18	0.73
1:A:208:ILE:CD1	1:A:211:LYS:HZ1	2.01	0.73
1:B:63:LEU:HG	1:B:76:ALA:HA	1.70	0.72
1:A:211:LYS:HB3	1:A:211:LYS:HZ3	1.54	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:135:ILE:N	1:B:135:ILE:HD13	2.04	0.72
1:A:72:VAL:HG23	1:A:89:ILE:HB	1.71	0.71
1:A:208:ILE:HD12	1:A:211:LYS:HZ1	1.55	0.71
1:A:205:ALA:HA	1:A:208:ILE:CG1	2.21	0.71
1:A:241:LEU:HD12	1:A:249:VAL:HG13	1.72	0.71
1:B:225:VAL:HG13	1:B:267:ILE:HG13	1.73	0.71
1:B:268:ILE:HD12	1:B:273:LYS:HB3	1.73	0.70
1:B:239:ALA:HB1	1:B:252:GLN:O	1.92	0.69
1:A:207:ASP:HA	1:A:210:THR:HB	1.74	0.69
1:B:269:ARG:HB2	1:B:269:ARG:HH21	1.57	0.69
1:A:118:GLY:O	1:A:122:THR:HG23	1.93	0.68
1:A:207:ASP:HA	1:A:210:THR:CB	2.23	0.68
1:B:144:ASN:HB3	1:B:147:SER:HB2	1.75	0.68
1:B:74:LEU:HD22	1:B:100:PHE:HD2	1.59	0.68
1:A:73:ILE:HA	1:A:89:ILE:HG13	1.76	0.68
1:A:224:ARG:HH11	1:A:238:PRO:HB2	1.58	0.67
1:A:73:ILE:HB	1:A:88:VAL:HA	1.76	0.67
1:B:269:ARG:HH11	1:B:274:GLN:HG2	1.58	0.67
1:A:115:THR:HG21	1:A:121:PHE:HB2	1.75	0.67
1:B:115:THR:HG21	1:B:121:PHE:CG	2.30	0.67
1:B:152:GLU:O	1:B:156:LYS:HG2	1.95	0.66
1:A:162:ILE:HA	1:A:165:VAL:HG22	1.77	0.66
1:A:120:ASN:O	1:A:126:VAL:HG11	1.96	0.66
1:A:200:ILE:HG22	1:A:202:ASP:HB3	1.78	0.66
1:B:242:LEU:HD12	1:B:250:VAL:HG12	1.79	0.65
1:A:204:ILE:C	1:A:207:ASP:OD1	2.35	0.65
1:A:208:ILE:HA	1:A:211:LYS:HZ1	1.59	0.64
1:B:67:HIS:HB2	1:B:72:VAL:HG22	1.80	0.64
1:A:63:LEU:HB3	1:A:74:LEU:HD21	1.78	0.64
1:B:224:ARG:HD2	1:B:240:LYS:HA	1.80	0.64
1:A:77:VAL:HG12	1:A:78:HIS:O	1.98	0.63
1:A:200:ILE:HG13	1:A:203:ILE:HD13	1.79	0.63
1:B:118:GLY:HA3	1:B:121:PHE:CD1	2.33	0.63
1:A:73:ILE:HD12	1:A:176:VAL:HG11	1.81	0.63
1:A:162:ILE:HG23	1:A:175:ALA:HB1	1.80	0.62
1:B:162:ILE:HA	1:B:165:VAL:HG22	1.79	0.62
1:A:181:PHE:HE1	1:B:105:ALA:HB1	1.65	0.62
1:A:200:ILE:HB	1:A:203:ILE:H	1.64	0.62
1:A:242:LEU:HB2	1:A:250:VAL:HG12	1.80	0.62
1:B:230:SER:HB3	1:B:233:PRO:HD2	1.80	0.62
1:B:249:VAL:HG12	1:B:251:ILE:HG23	1.82	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:252:GLN:CG	1:B:257:ILE:HA	2.30	0.62
1:B:165:VAL:HG23	1:B:175:ALA:HB1	1.80	0.62
1:A:214:GLN:HA	1:A:217:ILE:HB	1.82	0.62
1:B:266:LYS:HA	1:B:266:LYS:NZ	2.14	0.61
1:A:228:ARG:O	1:A:264:LYS:HE3	2.00	0.61
1:B:224:ARG:CG	1:B:270:ASP:HB2	2.30	0.61
1:A:107:ARG:HD3	1:B:107:ARG:HD3	1.82	0.61
1:A:107:ARG:HG3	1:A:108:TRP:CD1	2.35	0.61
2:A:301:LF0:H21	1:B:95:GLN:HB3	1.82	0.61
1:B:269:ARG:CB	1:B:272:GLY:HA2	2.25	0.61
1:B:204:ILE:O	1:B:208:ILE:HG13	2.01	0.61
1:B:202:ASP:O	1:B:206:THR:HG23	2.00	0.60
1:B:118:GLY:O	1:B:122:THR:HG23	2.00	0.60
1:B:57:SER:N	1:B:58:PRO:HD2	2.16	0.60
1:A:241:LEU:HA	1:A:251:ILE:HA	1.84	0.60
1:B:224:ARG:HG3	1:B:270:ASP:HB2	1.83	0.60
1:A:229:ASP:H	1:A:236:LYS:NZ	1.99	0.60
1:B:78:HIS:CE1	1:B:80:ALA:HB3	2.37	0.60
1:A:229:ASP:HB2	1:A:236:LYS:HE2	1.82	0.60
1:A:251:ILE:HD11	1:A:258:LYS:HB2	1.84	0.59
2:A:301:LF0:H2	1:B:129:ALA:HB2	1.83	0.59
1:A:202:ASP:O	1:A:206:THR:HG23	2.02	0.59
1:B:61:TRP:CD1	1:B:110:VAL:HG13	2.37	0.59
1:B:214:GLN:HA	1:B:217:ILE:HD12	1.83	0.59
1:B:74:LEU:HD22	1:B:100:PHE:CD2	2.38	0.58
1:B:97:THR:HG22	1:B:126:VAL:HG22	1.86	0.58
1:A:83:TYR:CE1	1:B:107:ARG:HA	2.38	0.58
1:A:112:THR:HA	1:A:135:ILE:HG23	1.85	0.57
1:A:114:HIS:HA	1:A:138:GLU:HB3	1.85	0.57
1:B:241:LEU:HA	1:B:251:ILE:HG22	1.86	0.57
1:A:77:VAL:HG13	1:A:83:TYR:O	2.04	0.57
1:A:228:ARG:HB3	1:A:228:ARG:HH11	1.69	0.57
1:B:224:ARG:HH12	1:B:238:PRO:C	2.07	0.57
1:B:253:ASP:HB2	1:B:258:LYS:HZ1	1.69	0.57
1:A:61:TRP:CD1	1:A:110:VAL:HG22	2.39	0.57
1:A:207:ASP:HA	1:A:210:THR:OG1	2.04	0.57
2:A:301:LF0:C26	1:B:95:GLN:HB3	2.34	0.57
1:A:210:THR:HA	1:A:213:LEU:HB3	1.86	0.56
1:A:208:ILE:HA	1:A:211:LYS:HZ3	1.69	0.56
1:B:104:LEU:HD12	1:B:107:ARG:HH21	1.70	0.56
1:A:205:ALA:O	1:A:208:ILE:HB	2.06	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:209:GLN:O	1:B:213:LEU:HD22	2.05	0.56
1:A:211:LYS:NZ	1:A:211:LYS:HB3	2.19	0.56
1:A:107:ARG:HD2	1:A:108:TRP:HE1	1.70	0.56
1:B:110:VAL:O	1:B:135:ILE:HG23	2.06	0.55
1:B:74:LEU:HD23	1:B:75:VAL:N	2.21	0.55
1:A:150:VAL:O	1:A:154:MET:HG3	2.07	0.55
1:B:257:ILE:O	1:B:257:ILE:HG13	2.07	0.55
1:A:250:VAL:HA	1:A:259:VAL:HG13	1.87	0.55
1:B:135:ILE:N	1:B:135:ILE:CD1	2.70	0.54
1:B:253:ASP:C	1:B:255:SER:H	2.10	0.54
1:A:162:ILE:HD11	1:A:176:VAL:HA	1.89	0.54
1:B:130:CYS:O	1:B:133:ALA:HB3	2.07	0.54
1:B:214:GLN:O	1:B:217:ILE:HB	2.08	0.54
1:B:159:LYS:HA	1:B:162:ILE:HB	1.88	0.54
1:B:95:GLN:O	1:B:98:ALA:HB3	2.08	0.54
1:B:146:GLN:O	1:B:150:VAL:HG23	2.08	0.54
1:A:163:GLY:HA2	1:A:166:ARG:HB2	1.89	0.54
1:B:112:THR:HA	1:B:136:LYS:H	1.71	0.54
1:B:224:ARG:HB3	1:B:224:ARG:NH1	2.13	0.54
1:B:60:ILE:HG12	1:B:112:THR:CG2	2.36	0.53
1:B:242:LEU:HD21	1:B:252:GLN:HB2	1.91	0.53
1:A:162:ILE:HG12	1:A:175:ALA:HB1	1.88	0.53
1:B:224:ARG:NH2	1:B:239:ALA:HA	2.24	0.53
1:B:252:GLN:HG2	1:B:256:ASP:O	2.08	0.53
1:A:205:ALA:HA	1:A:208:ILE:HB	1.89	0.53
1:B:261:PRO:HG2	1:B:264:LYS:HB2	1.90	0.53
1:A:78:HIS:HB3	1:A:81:SER:OG	2.08	0.53
1:B:213:LEU:O	1:B:217:ILE:HD12	2.08	0.53
1:A:159:LYS:CA	1:A:162:ILE:HB	2.37	0.53
1:A:202:ASP:HA	1:A:205:ALA:HB3	1.91	0.53
1:A:111:LYS:O	1:A:135:ILE:HA	2.09	0.53
1:A:216:GLN:O	1:A:220:ILE:HG12	2.09	0.52
1:B:118:GLY:HA3	1:B:121:PHE:HD1	1.74	0.52
1:B:225:VAL:CG1	1:B:267:ILE:HG13	2.39	0.52
1:B:212:GLU:HG3	1:B:213:LEU:HD13	1.91	0.52
1:A:102:LEU:HD21	1:B:177:GLN:HB3	1.91	0.52
1:B:212:GLU:O	1:B:216:GLN:HG2	2.10	0.52
1:B:161:ILE:O	1:B:165:VAL:HG13	2.09	0.52
1:A:242:LEU:H	1:A:251:ILE:HA	1.75	0.52
1:B:161:ILE:HG21	1:B:179:ALA:HB1	1.93	0.51
1:A:229:ASP:CB	1:A:236:LYS:HE2	2.40	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:236:LYS:HG3	1:A:258:LYS:NZ	2.25	0.51
1:B:166:ARG:HH22	1:B:172:LEU:N	2.08	0.51
1:A:230:SER:HB3	1:A:231:ARG:HE	1.75	0.51
1:A:195:SER:HB2	1:A:198:GLU:HB2	1.92	0.51
1:A:273:LYS:HD3	1:A:274:GLN:HB2	1.93	0.51
1:B:224:ARG:NE	1:B:240:LYS:HG3	2.26	0.51
1:B:164:GLN:O	1:B:168:GLN:NE2	2.44	0.50
1:B:81:SER:O	1:B:196:ALA:HB1	2.10	0.50
1:B:159:LYS:HA	1:B:162:ILE:HD12	1.94	0.50
1:A:229:ASP:HB2	1:A:236:LYS:CE	2.41	0.50
1:B:95:GLN:HG3	1:B:125:THR:HG21	1.92	0.50
1:B:197:GLY:O	1:B:200:ILE:HG22	2.11	0.50
1:B:244:LYS:HA	1:B:249:VAL:HG22	1.93	0.50
1:A:118:GLY:HA2	1:A:121:PHE:HB3	1.93	0.50
1:B:186:LYS:HD3	1:B:187:ARG:N	2.26	0.50
1:B:112:THR:HA	1:B:135:ILE:HG22	1.94	0.50
1:A:61:TRP:CD1	1:A:110:VAL:HG13	2.47	0.50
1:A:171:HIS:HB3	1:A:173:LYS:HG3	1.93	0.50
1:B:89:ILE:HD12	1:B:89:ILE:H	1.77	0.50
1:A:201:VAL:O	1:A:204:ILE:HG22	2.12	0.50
1:B:230:SER:HB3	1:B:233:PRO:CD	2.42	0.50
1:B:253:ASP:HB3	1:B:255:SER:OG	2.12	0.50
1:A:212:GLU:HA	1:A:215:LYS:HD3	1.92	0.49
1:A:71:LYS:HE2	1:A:88:VAL:HG22	1.94	0.49
1:A:162:ILE:HD11	1:A:179:ALA:HB2	1.93	0.49
1:B:266:LYS:HZ2	1:B:267:ILE:HD12	1.76	0.49
1:A:213:LEU:O	1:A:217:ILE:HG13	2.12	0.49
1:B:77:VAL:HG22	1:B:84:ILE:HG12	1.94	0.49
1:B:124:THR:HA	1:B:127:LYS:HD3	1.93	0.49
1:A:275:MET:SD	1:A:275:MET:N	2.86	0.49
1:B:225:VAL:HG13	1:B:266:LYS:O	2.13	0.49
1:B:256:ASP:O	1:B:258:LYS:HG3	2.13	0.49
1:B:187:ARG:HA	1:B:195:SER:HB2	1.95	0.49
1:A:61:TRP:HB2	1:A:110:VAL:HG11	1.95	0.48
1:B:225:VAL:HG22	1:B:267:ILE:CG2	2.33	0.48
1:B:241:LEU:HA	1:B:251:ILE:HA	1.94	0.48
1:A:241:LEU:HD12	1:A:249:VAL:CG1	2.42	0.48
1:B:236:LYS:CG	1:B:237:GLY:N	2.73	0.48
1:A:241:LEU:HD23	1:A:241:LEU:O	2.12	0.48
1:B:252:GLN:HG2	1:B:256:ASP:C	2.34	0.48
1:A:81:SER:HB2	1:A:199:ARG:CB	2.44	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:63:LEU:CG	1:B:76:ALA:HA	2.42	0.48
1:A:226:TYR:CD1	1:A:226:TYR:N	2.81	0.48
1:A:66:THR:OG1	1:A:73:ILE:HG12	2.14	0.47
1:A:244:LYS:HA	1:A:249:VAL:HG22	1.95	0.47
1:B:61:TRP:CD1	1:B:110:VAL:HG22	2.49	0.47
1:A:229:ASP:OD2	1:A:236:LYS:HE2	2.13	0.47
1:A:162:ILE:O	1:A:166:ARG:N	2.48	0.47
1:A:229:ASP:CG	1:A:236:LYS:HE2	2.35	0.47
1:B:200:ILE:O	1:B:204:ILE:HD13	2.15	0.47
1:A:100:PHE:HA	1:A:103:LYS:HE3	1.97	0.47
1:A:207:ASP:O	1:A:210:THR:HB	2.15	0.47
1:B:74:LEU:HD23	1:B:75:VAL:H	1.79	0.47
1:B:76:ALA:HB3	1:B:85:GLU:O	2.15	0.47
1:B:219:LYS:HE3	1:B:220:ILE:HG13	1.97	0.47
1:B:249:VAL:CG1	1:B:251:ILE:HG23	2.44	0.47
1:B:115:THR:HG23	1:B:117:ASN:CA	2.44	0.47
1:B:158:LEU:O	1:B:162:ILE:N	2.48	0.47
1:B:214:GLN:HA	1:B:217:ILE:CD1	2.45	0.46
1:B:242:LEU:N	1:B:250:VAL:O	2.49	0.46
1:A:274:GLN:O	1:A:275:MET:C	2.53	0.46
1:A:150:VAL:HA	1:A:153:SER:HB3	1.98	0.46
1:A:205:ALA:HA	1:A:208:ILE:CB	2.45	0.46
1:B:150:VAL:HG12	1:B:154:MET:HG2	1.98	0.46
1:A:229:ASP:HB2	1:A:236:LYS:HZ1	1.80	0.46
1:A:61:TRP:CH2	1:A:108:TRP:CD1	3.03	0.46
1:B:67:HIS:HA	1:B:72:VAL:HA	1.96	0.46
1:B:241:LEU:HD12	1:B:243:TRP:O	2.16	0.46
1:B:214:GLN:O	1:B:218:THR:HG23	2.16	0.46
1:B:268:ILE:CD1	1:B:273:LYS:HB3	2.44	0.46
1:A:210:THR:HG23	1:A:213:LEU:HD22	1.97	0.46
1:A:268:ILE:HG22	1:A:269:ARG:O	2.16	0.46
1:B:61:TRP:CE3	1:B:104:LEU:HD21	2.51	0.46
1:A:57:SER:N	1:A:58:PRO:CD	2.79	0.46
1:A:97:THR:HG22	1:A:101:LEU:CD1	2.46	0.46
1:B:94:GLY:HA2	1:B:120:ASN:CB	2.45	0.46
1:B:117:ASN:HD21	1:B:122:THR:HG22	1.81	0.45
1:A:66:THR:CG2	1:A:73:ILE:HG12	2.46	0.45
1:A:155:ASN:O	1:A:159:LYS:HG3	2.16	0.45
1:A:202:ASP:O	1:A:206:THR:N	2.47	0.45
1:A:229:ASP:H	1:A:236:LYS:HZ3	1.63	0.45
1:B:71:LYS:CE	1:B:88:VAL:HG13	2.46	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:61:TRP:HB2	1:A:110:VAL:CG1	2.46	0.45
1:A:204:ILE:HA	1:A:207:ASP:OD2	2.16	0.45
1:A:208:ILE:HD13	1:A:211:LYS:HZ1	1.80	0.45
1:B:225:VAL:HG12	1:B:265:ALA:HB1	1.98	0.45
1:B:274:GLN:O	1:B:275:MET:C	2.55	0.45
1:A:161:ILE:HA	1:A:164:GLN:NE2	2.32	0.45
1:B:226:TYR:HB2	1:B:236:LYS:HD2	1.99	0.45
1:B:81:SER:OG	1:B:200:ILE:HD12	2.17	0.45
1:A:83:TYR:CE2	1:A:85:GLU:HB2	2.52	0.45
1:A:228:ARG:O	1:A:264:LYS:CE	2.64	0.45
1:A:71:LYS:HE2	1:A:88:VAL:CG2	2.46	0.44
1:A:56:CYS:SG	1:A:57:SER:N	2.90	0.44
1:A:262:ARG:O	1:A:265:ALA:HB3	2.17	0.44
1:B:165:VAL:CG2	1:B:175:ALA:HB1	2.45	0.44
1:A:179:ALA:O	1:A:182:ILE:HB	2.17	0.44
1:A:177:GLN:HE22	1:A:180:VAL:HG11	1.81	0.44
1:B:227:TYR:O	1:B:236:LYS:HB3	2.17	0.44
1:A:62:GLN:CB	1:A:79:VAL:HG12	2.41	0.44
1:B:57:SER:N	1:B:58:PRO:CD	2.81	0.44
1:A:177:GLN:HB3	1:B:102:LEU:CD2	2.48	0.44
1:B:67:HIS:CB	1:B:72:VAL:HG22	2.46	0.44
1:B:72:VAL:O	1:B:89:ILE:HD12	2.18	0.44
1:A:81:SER:HB2	1:A:199:ARG:HB3	1.99	0.44
1:A:251:ILE:HG13	1:A:258:LYS:O	2.17	0.44
1:B:227:TYR:H	1:B:236:LYS:HB2	1.83	0.44
1:A:83:TYR:CZ	1:B:107:ARG:HA	2.53	0.43
1:A:236:LYS:HG3	1:A:258:LYS:HZ3	1.82	0.43
1:A:115:THR:HG23	1:A:115:THR:O	2.18	0.43
1:A:226:TYR:O	1:A:266:LYS:NZ	2.51	0.43
1:A:158:LEU:CG	1:A:179:ALA:HB1	2.48	0.43
1:A:61:TRP:CG	1:A:110:VAL:HG22	2.53	0.43
1:A:107:ARG:HG3	1:A:108:TRP:NE1	2.32	0.43
1:B:62:GLN:C	1:B:63:LEU:HD12	2.38	0.43
1:A:250:VAL:HG13	1:A:259:VAL:HG13	2.01	0.43
1:B:202:ASP:O	1:B:205:ALA:HB3	2.19	0.43
1:A:78:HIS:HB3	1:A:81:SER:CB	2.48	0.43
1:B:221:GLN:HE21	1:B:222:ASN:HD22	1.65	0.43
1:B:240:LYS:NZ	1:B:254:ASN:HD22	2.17	0.43
1:A:63:LEU:HA	1:A:75:VAL:O	2.19	0.43
1:A:130:CYS:HB3	1:A:135:ILE:O	2.18	0.43
1:B:253:ASP:HB2	1:B:258:LYS:NZ	2.34	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:83:TYR:HB2	1:A:199:ARG:HD3	2.01	0.43
1:B:104:LEU:CD1	1:B:107:ARG:HH21	2.31	0.43
1:B:243:TRP:HB3	1:B:250:VAL:CG2	2.49	0.43
1:A:158:LEU:HG	1:A:179:ALA:HB1	2.01	0.42
1:A:162:ILE:HG23	1:A:175:ALA:CB	2.49	0.42
1:B:213:LEU:C	1:B:217:ILE:HD12	2.39	0.42
1:B:224:ARG:HH11	1:B:224:ARG:CB	2.16	0.42
1:B:257:ILE:O	1:B:257:ILE:CG1	2.67	0.42
1:B:107:ARG:HD2	1:B:108:TRP:CZ2	2.54	0.42
1:B:123:SER:HB2	1:B:125:THR:HG22	2.01	0.42
1:B:230:SER:HB2	1:B:233:PRO:HG2	2.00	0.42
1:B:162:ILE:O	1:B:165:VAL:HG22	2.19	0.42
1:B:59:GLY:O	1:B:110:VAL:HG13	2.18	0.42
1:B:219:LYS:HD2	1:B:220:ILE:N	2.34	0.42
1:A:117:ASN:HB3	1:A:120:ASN:HB2	2.02	0.42
1:A:156:LYS:HA	1:A:159:LYS:HB2	2.01	0.42
1:B:182:ILE:HD12	1:B:182:ILE:N	2.34	0.42
1:A:157:GLU:HA	1:A:160:LYS:HD3	2.02	0.42
1:A:160:LYS:HG2	1:A:161:ILE:N	2.34	0.42
1:A:267:ILE:N	1:A:267:ILE:HD12	2.35	0.42
1:B:61:TRP:CZ3	1:B:104:LEU:HD11	2.54	0.42
1:B:61:TRP:O	1:B:113:VAL:HA	2.20	0.42
1:B:74:LEU:HD13	1:B:100:PHE:CB	2.50	0.41
1:B:115:THR:HG23	1:B:117:ASN:C	2.40	0.41
1:B:174:THR:HG21	2:B:301:LF0:C24	2.50	0.41
1:B:263:ARG:HH22	1:B:264:LYS:HG2	1.84	0.41
1:A:205:ALA:CA	1:A:208:ILE:HB	2.51	0.41
1:A:75:VAL:HA	1:A:86:ALA:HA	2.02	0.41
1:A:83:TYR:CG	1:A:84:ILE:N	2.87	0.41
1:B:187:ARG:HA	1:B:195:SER:HA	2.03	0.41
1:A:76:ALA:HB2	1:A:100:PHE:HZ	1.85	0.41
1:A:206:THR:O	1:A:210:THR:N	2.51	0.41
1:B:94:GLY:HA2	1:B:120:ASN:HB3	2.01	0.41
1:B:259:VAL:O	1:B:260:VAL:HG13	2.21	0.41
1:A:97:THR:O	1:A:101:LEU:HD12	2.21	0.41
2:A:301:LF0:H2	1:B:129:ALA:CB	2.51	0.41
1:A:207:ASP:O	1:A:211:LYS:N	2.54	0.41
1:B:118:GLY:CA	1:B:121:PHE:HB2	2.51	0.41
1:B:187:ARG:CA	1:B:195:SER:HB2	2.50	0.41
1:A:93:THR:HG23	1:A:96:GLU:HG2	2.03	0.41
1:A:148:GLN:NE2	1:A:151:ILE:HB	2.36	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:250:VAL:HG13	1:A:259:VAL:HG22	2.02	0.41
1:A:177:GLN:CD	1:B:103:LYS:HA	2.42	0.40
1:B:166:ARG:HH11	1:B:169:ALA:HB3	1.86	0.40
1:B:187:ARG:HB3	1:B:195:SER:HB2	2.02	0.40
1:B:248:ALA:O	1:B:249:VAL:HG23	2.21	0.40
1:A:155:ASN:HA	1:A:158:LEU:HB2	2.02	0.40
1:B:74:LEU:O	1:B:86:ALA:HB1	2.21	0.40
1:B:133:ALA:HB1	1:B:135:ILE:CD1	2.52	0.40
1:B:252:GLN:HG3	1:B:257:ILE:CA	2.43	0.40
1:B:253:ASP:HB2	1:B:258:LYS:CE	2.52	0.40
1:A:83:TYR:HB2	1:A:199:ARG:HG2	2.04	0.40
1:A:153:SER:O	1:A:156:LYS:HG2	2.21	0.40
1:A:227:TYR:CD2	1:A:260:VAL:HG11	2.57	0.40
1:B:110:VAL:HB	1:B:135:ILE:HG13	2.04	0.40
1:B:199:ARG:O	1:B:203:ILE:HG13	2.20	0.40
1:B:114:HIS:CD2	1:B:138:GLU:HG3	2.57	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	211/293 (72%)	211 (100%)	0	0	100	100
1	B	212/293 (72%)	204 (96%)	8 (4%)	0	100	100
All	All	423/586 (72%)	415 (98%)	8 (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	180/244 (74%)	117 (65%)	63 (35%)	0 1
1	B	180/244 (74%)	119 (66%)	61 (34%)	0 1
All	All	360/488 (74%)	236 (66%)	124 (34%)	0 1

All (124) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	55	ASP
1	A	57	SER
1	A	65	CYS
1	A	67	HIS
1	A	69	GLU
1	A	73	ILE
1	A	92	GLU
1	A	93	THR
1	A	95	GLN
1	A	96	GLU
1	A	100	PHE
1	A	101	LEU
1	A	102	LEU
1	A	108	TRP
1	A	116	ASP
1	A	119	SER
1	A	120	ASN
1	A	123	SER
1	A	125	THR
1	A	126	VAL
1	A	127	LYS
1	A	136	LYS
1	A	137	GLN
1	A	148	GLN
1	A	150	VAL
1	A	153	SER
1	A	156	LYS

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Mol	Chain	Res	Type
1	A	157	GLU
1	A	158	LEU
1	A	160	LYS
1	A	164	GLN
1	A	171	HIS
1	A	173	LYS
1	A	177	GLN
1	A	186	LYS
1	A	187	ARG
1	A	191	ILE
1	A	194	TYR
1	A	195	SER
1	A	199	ARG
1	A	200	ILE
1	A	204	ILE
1	A	207	ASP
1	A	209	GLN
1	A	211	LYS
1	A	213	LEU
1	A	215	LYS
1	A	219	LYS
1	A	228	ARG
1	A	231	ARG
1	A	232	ASP
1	A	240	LYS
1	A	241	LEU
1	A	251	ILE
1	A	252	GLN
1	A	254	ASN
1	A	257	ILE
1	A	258	LYS
1	A	263	ARG
1	A	269	ARG
1	A	270	ASP
1	A	274	GLN
1	A	275	MET
1	B	56	CYS
1	B	57	SER
1	B	64	ASP
1	B	71	LYS
1	B	78	HIS
1	B	87	GLU

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Mol	Chain	Res	Type
1	B	89	ILE
1	B	92	GLU
1	B	93	THR
1	B	96	GLU
1	B	97	THR
1	B	107	ARG
1	B	108	TRP
1	B	112	THR
1	B	115	THR
1	B	116	ASP
1	B	123	SER
1	B	130	CYS
1	B	135	ILE
1	B	137	GLN
1	B	144	ASN
1	B	152	GLU
1	B	153	SER
1	B	157	GLU
1	B	159	LYS
1	B	160	LYS
1	B	167	ASP
1	B	170	GLU
1	B	173	LYS
1	B	177	GLN
1	B	186	LYS
1	B	187	ARG
1	B	188	LYS
1	B	202	ASP
1	B	204	ILE
1	B	209	GLN
1	B	213	LEU
1	B	214	GLN
1	B	215	LYS
1	B	219	LYS
1	B	221	GLN
1	B	223	PHE
1	B	224	ARG
1	B	226	TYR
1	B	230	SER
1	B	233	PRO
1	B	236	LYS
1	B	240	LYS

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Mol	Chain	Res	Type
1	B	241	LEU
1	B	246	GLU
1	B	249	VAL
1	B	256	ASP
1	B	257	ILE
1	B	259	VAL
1	B	260	VAL
1	B	263	ARG
1	B	266	LYS
1	B	268	ILE
1	B	269	ARG
1	B	273	LYS
1	B	274	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	62	GLN
1	A	120	ASN
1	A	148	GLN
1	A	155	ASN
1	A	209	GLN
1	A	214	GLN
1	A	252	GLN
1	B	114	HIS
1	B	137	GLN
1	B	164	GLN
1	B	168	GLN
1	B	209	GLN
1	B	222	ASN
1	B	254	ASN
1	B	274	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 (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

2 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	LF0	A	301	-	31,33,33	2.99	6 (19%)	41,49,49	1.71	8 (19%)
2	LF0	B	301	-	31,33,33	2.99	6 (19%)	41,49,49	1.81	9 (21%)

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	LF0	A	301	-	-	2/17/24/24	0/4/4/4
2	LF0	B	301	-	-	3/17/24/24	0/4/4/4

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	301	LF0	C1-C7	-8.84	1.39	1.49
2	A	301	LF0	C1-C7	-8.69	1.39	1.49
2	A	301	LF0	C2-C18	-7.66	1.38	1.53
2	B	301	LF0	C2-C18	-7.56	1.39	1.53
2	A	301	LF0	C17-C3	-7.21	1.39	1.50
2	A	301	LF0	C21-C11	-7.17	1.39	1.51
2	B	301	LF0	C17-C3	-7.12	1.39	1.50
2	B	301	LF0	C21-C11	-7.11	1.39	1.51
2	B	301	LF0	C5-N1	-2.66	1.33	1.37
2	A	301	LF0	C5-N1	-2.55	1.33	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	301	LF0	C3-N1	2.34	1.35	1.32
2	B	301	LF0	C3-N1	2.33	1.35	1.32

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	301	LF0	C3-N1-C5	5.55	123.52	118.42
2	A	301	LF0	C3-N1-C5	5.43	123.41	118.42
2	A	301	LF0	C4-O27-C10	4.00	120.71	113.67
2	B	301	LF0	C6-C5-N1	-3.90	118.67	122.80
2	A	301	LF0	C6-C5-N1	-3.85	118.73	122.80
2	B	301	LF0	C4-O27-C10	3.77	120.31	113.67
2	B	301	LF0	C16-C5-C6	2.99	122.36	119.13
2	B	301	LF0	C12-C7-C1	2.93	125.35	119.91
2	A	301	LF0	C12-C7-C1	2.87	125.24	119.91
2	B	301	LF0	C13-C6-C5	-2.79	115.24	118.36
2	A	301	LF0	C16-C5-C6	2.56	121.89	119.13
2	B	301	LF0	C8-C7-C12	-2.22	115.17	118.23
2	A	301	LF0	C1-C6-C5	2.19	120.76	118.07
2	A	301	LF0	C8-C7-C12	-2.18	115.23	118.23
2	B	301	LF0	C1-C6-C5	2.18	120.74	118.07
2	A	301	LF0	C13-C6-C5	-2.12	115.99	118.36
2	B	301	LF0	C14-C15-C16	-2.08	117.61	120.40

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	301	LF0	C2-C18-C19-O20
2	A	301	LF0	C2-C18-C19-O21
2	B	301	LF0	C2-C18-C19-O20
2	B	301	LF0	C2-C18-C19-O21
2	B	301	LF0	O22-C18-C19-O21

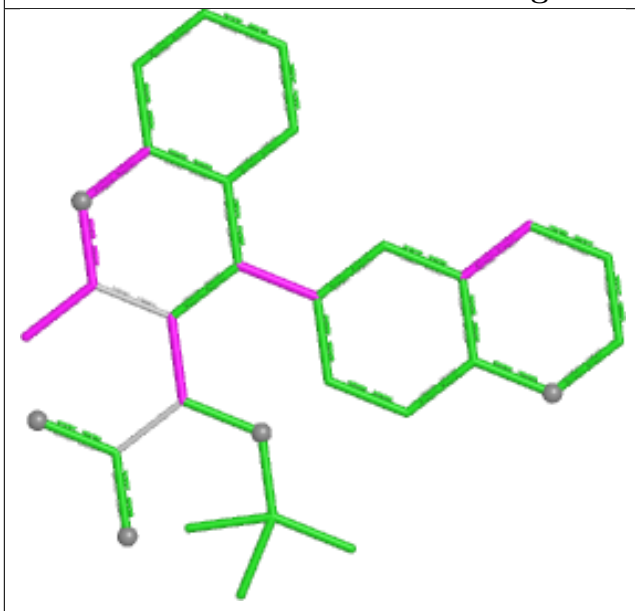
There are no ring outliers.

2 monomers are involved in 5 short contacts:

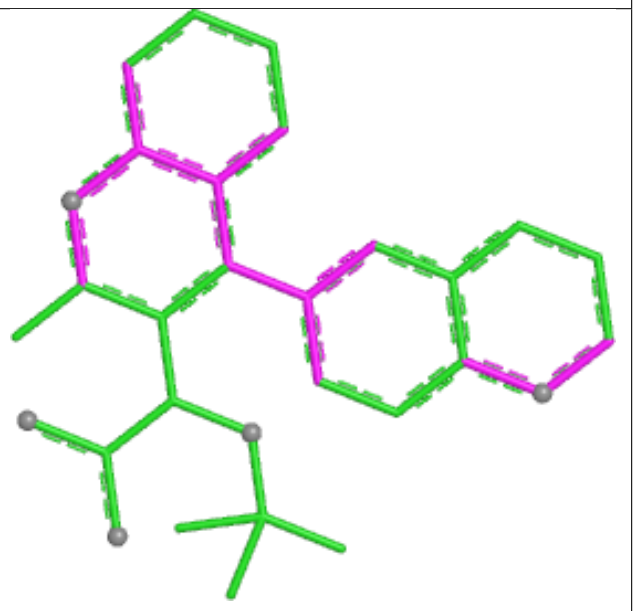
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	301	LF0	4	0
2	B	301	LF0	1	0

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.

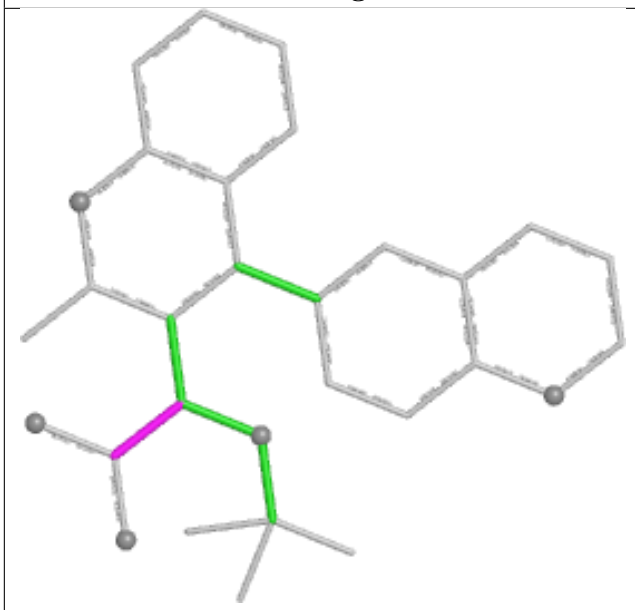
Ligand LF0 A 301



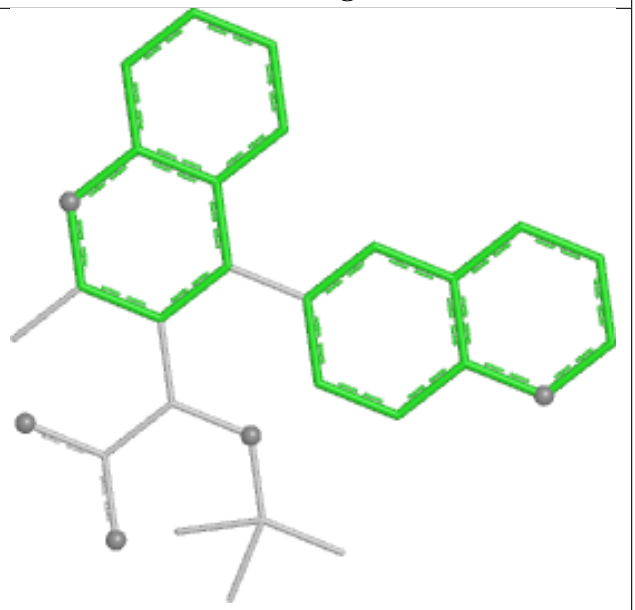
Bond lengths



Bond angles

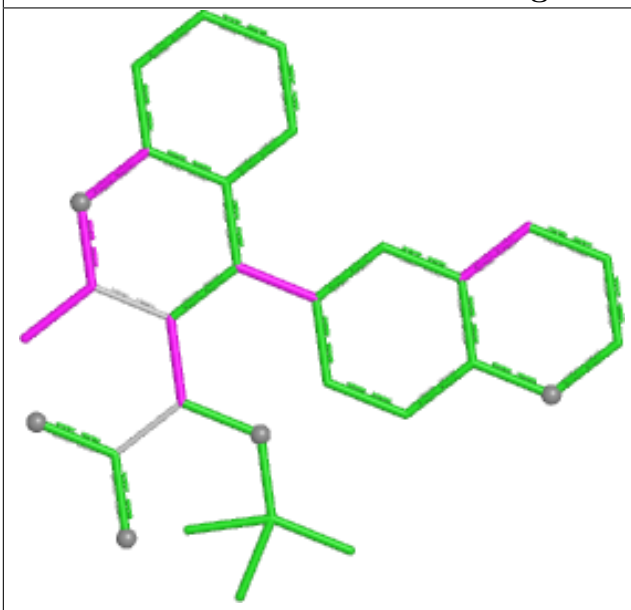


Torsions

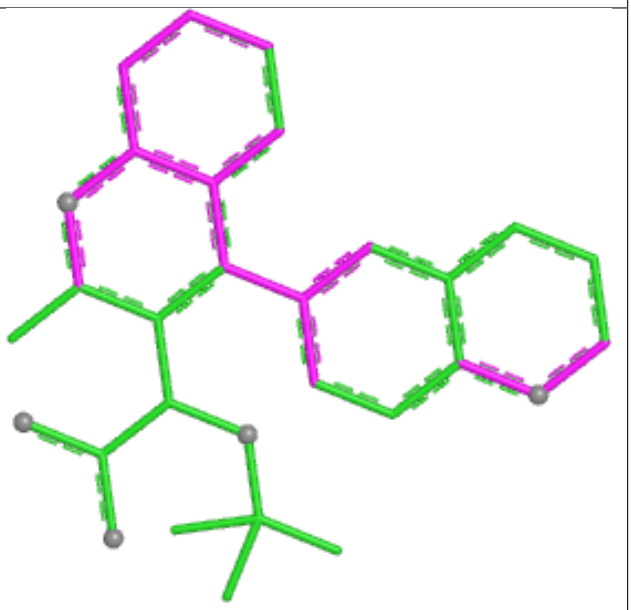


Rings

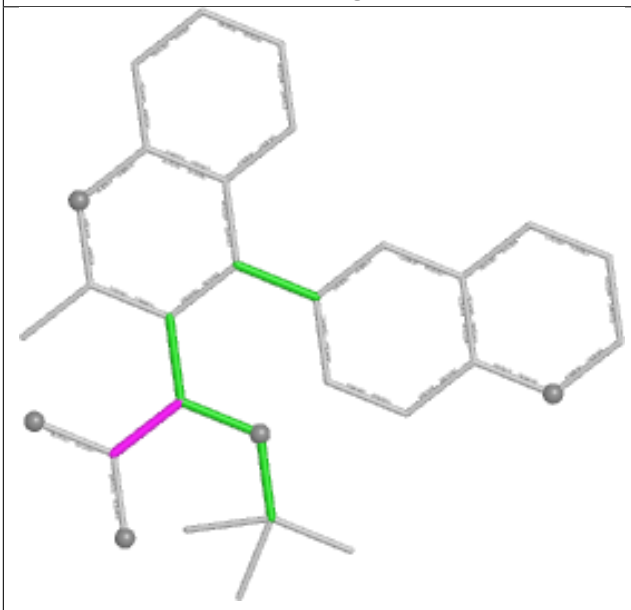
Ligand LF0 B 301



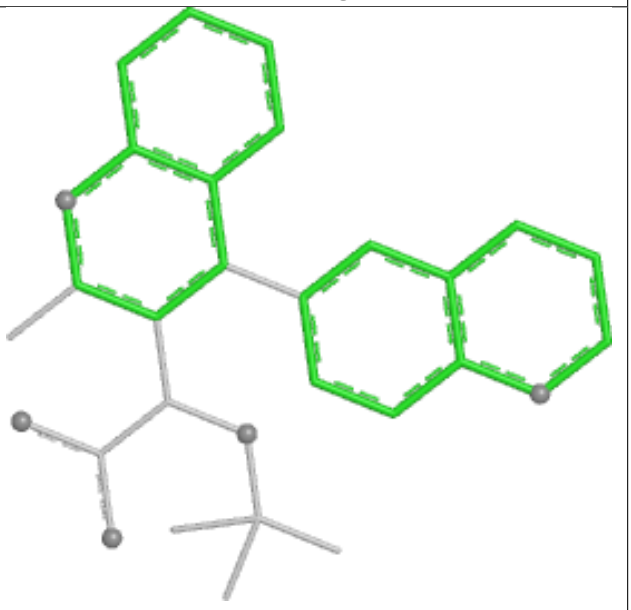
Bond lengths



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	215/293 (73%)	-0.49	0	100	100	167, 273, 300, 300	0
1	B	216/293 (73%)	-0.50	0	100	100	148, 261, 300, 300	0
All	All	431/586 (73%)	-0.50	0	100	100	148, 267, 300, 300	0

There are no RSRZ outliers to report.

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

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

6.3 Carbohydrates

There are no monosaccharides in this entry.

6.4 Ligands

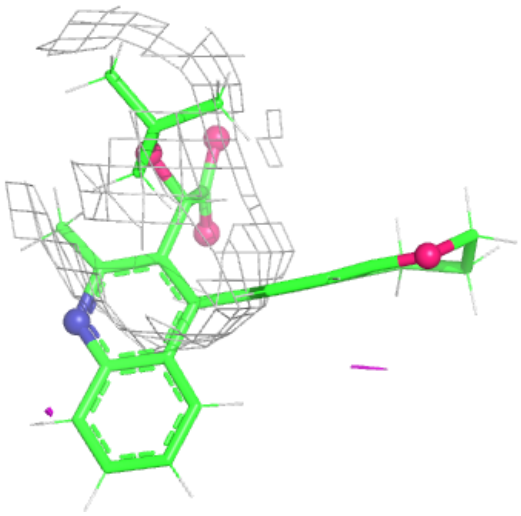
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9'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

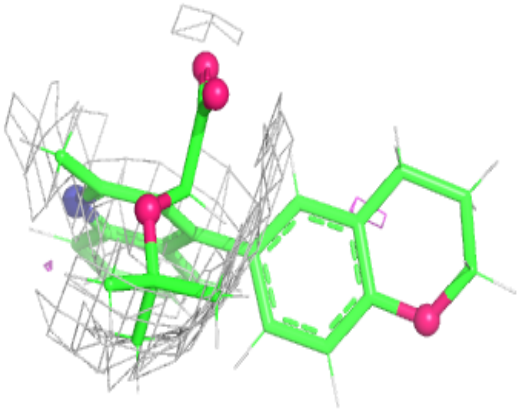
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	LF0	B	301	30/30	0.84	0.17	300,300,300,300	0
2	LF0	A	301	30/30	0.92	0.16	300,300,300,300	0

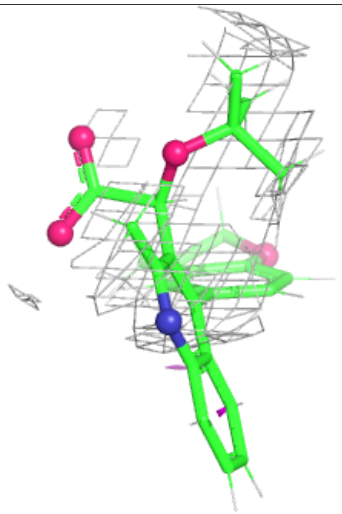
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around LF0 B 301:

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

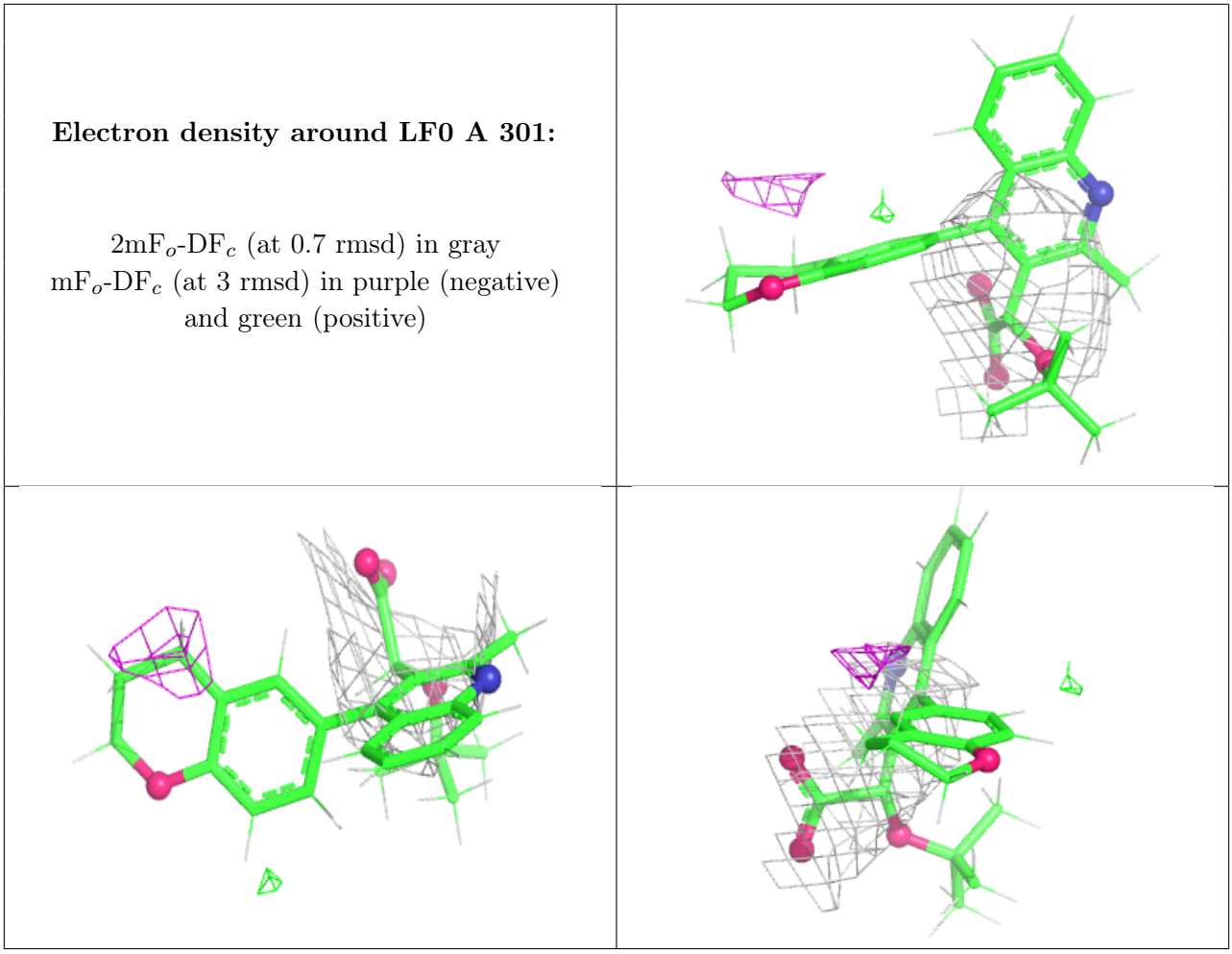






Electron density around LF0 A 301:

$2mF_o$-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.