



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 07:08 AM UTC

PDB ID : 2G26 / pdb_00002g26
Title : Ketopiperazine-Based Renin Inhibitors: Optimization of the "C" Ring
Authors : Holsworth, D.D.; Jalaiea, M.; Zhanga, E.; Mcconnella, P.
Deposited on : 2006-02-15
Resolution : 2.10 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

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

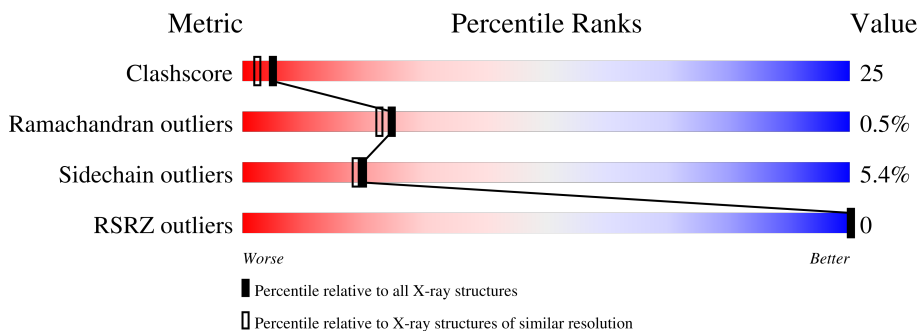
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION



The reported resolution of this entry is 2.10 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))
Clashscore	190562	7164 (2.10-2.10)
Ramachandran outliers	187476	7099 (2.10-2.10)
Sidechain outliers	187428	7100 (2.10-2.10)
RSRZ outliers	180081	6662 (2.10-2.10)

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 $\leq 5\%$. 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	333	 62% 32% 5% 1% 1%
1	B	333	 56% 37% 5% 1% 1%

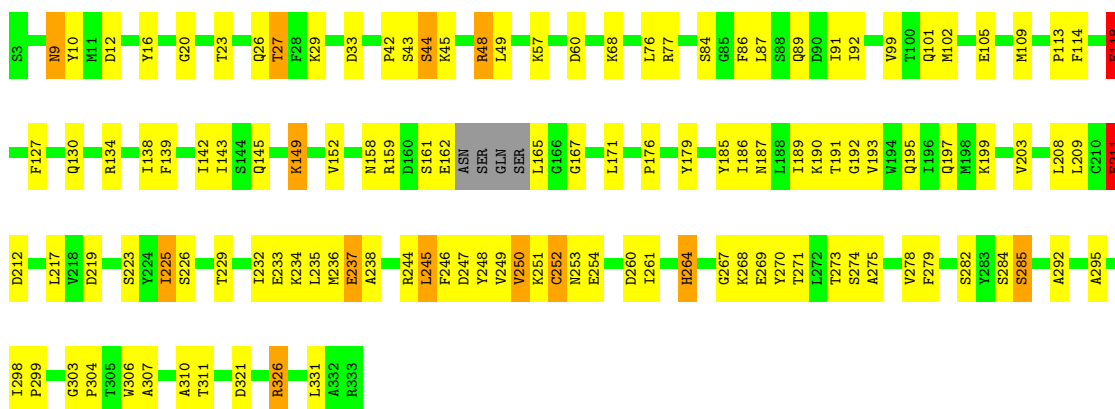
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	65	Total O 65 65	0	0
3	B	55	Total O 55 55	0	0

3 Residue-property plots

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.

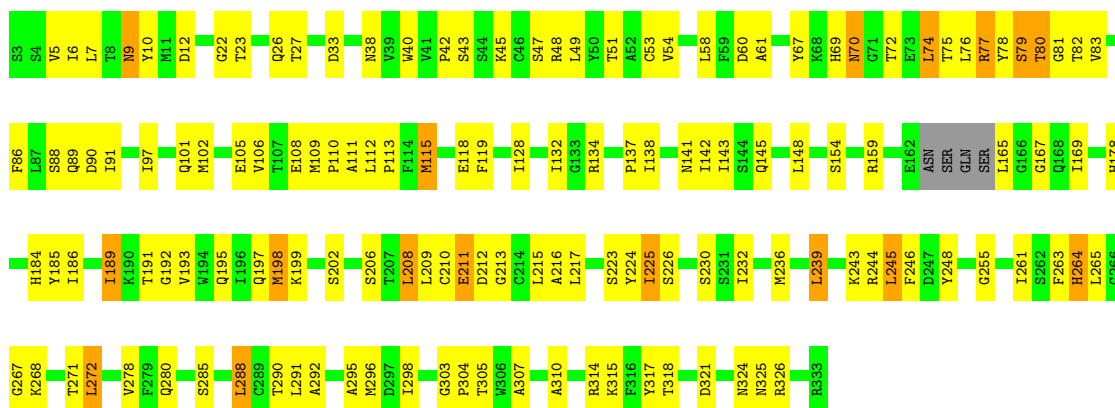
- Molecule 1: Renin

Chain A: 



- Molecule 1: Renin

Chain B: 



4 Data and refinement statistics i

Property	Value	Source
Space group	P 21 3	Depositor
Cell constants a, b, c, α , β , γ	141.75Å 141.75Å 141.75Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 2.10 50.00 – 2.11	Depositor EDS
% Data completeness (in resolution range)	(Not available) (50.00-2.10) 97.7 (50.00-2.11)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	4.35 (at 2.10Å)	Xtrriage
Refinement program	CNS	Depositor
R, R_{free}	0.240 , 0.280 0.241 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å ²)	35.4	Xtrriage
Anisotropy	0.000	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 33.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.42$, $\langle L^2 \rangle = 0.25$	Xtrriage
Estimated twinning fraction	0.065 for l,-k,h	Xtrriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	5240	wwPDB-VP
Average B, all atoms (Å ²)	38.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.48% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section:
3LG

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	0.39	0/2598	0.97	14/3521 (0.4%)
1	B	0.38	0/2598	0.96	14/3521 (0.4%)
All	All	0.39	0/5196	0.97	28/7042 (0.4%)

There are no bond length outliers.

All (28) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	114	PHE	N-CA-C	7.40	121.41	112.38
1	B	213	GLY	N-CA-C	6.55	121.16	112.65
1	B	33	ASP	N-CA-C	6.53	119.55	107.99
1	B	178	HIS	N-CA-C	6.32	120.30	112.59
1	B	225	ILE	N-CA-C	-6.23	99.45	108.36
1	A	225	ILE	N-CA-C	-6.04	99.88	108.58
1	B	189	ILE	N-CA-C	-5.90	104.75	110.42
1	B	82	THR	N-CA-C	-5.82	105.07	113.21
1	A	219	ASP	N-CA-C	5.72	118.89	107.62
1	B	271	THR	N-CA-C	5.69	118.51	109.24
1	A	285	SER	N-CA-C	-5.66	106.33	113.18
1	A	33	ASP	N-CA-C	5.65	117.99	107.99
1	A	211	GLU	N-CA-C	-5.65	101.92	110.28
1	A	306	TRP	N-CA-C	-5.63	102.19	110.52
1	A	118	GLU	N-CA-C	-5.44	105.43	111.36
1	A	44	SER	N-CA-C	-5.31	105.90	112.38
1	B	184	HIS	N-CA-C	-5.20	100.42	108.90
1	B	285	SER	N-CA-C	-5.20	106.89	113.18
1	A	252	CYS	N-CA-C	5.20	117.62	111.33
1	B	318	THR	N-CA-C	5.20	117.37	108.90
1	B	211	GLU	N-CA-C	-5.17	102.03	110.20
1	A	271	THR	N-CA-C	5.17	118.23	109.76

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	70	ASN	N-CA-C	-5.11	99.91	110.80
1	A	299	PRO	CA-C-N	5.09	125.62	120.38
1	A	299	PRO	C-N-CA	5.09	125.62	120.38
1	B	27	THR	N-CA-C	5.03	117.76	109.76
1	A	49	LEU	N-CA-C	-5.03	106.41	112.54
1	B	118	GLU	N-CA-C	-5.01	106.68	112.89

There are no chirality outliers.

There are no planarity outliers.

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	2539	0	2472	112	0
1	B	2539	0	2472	140	0
2	B	42	0	34	3	0
3	A	65	0	0	2	0
3	B	55	0	0	3	0
All	All	5240	0	4978	252	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 25.

All (252) 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:A:149:LYS:HE3	1:A:149:LYS:HA	1.42	1.00
1:B:43:SER:HB2	1:B:105:GLU:HB3	1.42	0.99
1:A:26:GLN:HE22	1:A:60:ASP:H	1.14	0.94
1:B:195:GLN:OE1	1:B:305:THR:HG21	1.71	0.91
1:A:158:ASN:ND2	1:A:159:ARG:H	1.68	0.91
1:A:187:ASN:HA	1:A:326:ARG:HB3	1.53	0.89
1:B:215:LEU:HB2	1:B:305:THR:HG22	1.58	0.86
1:A:9:ASN:HD21	1:A:12:ASP:H	1.24	0.86
1:B:208:LEU:HD23	1:B:209:LEU:HG	1.56	0.86

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:324:ASN:HB2	1:B:326:ARG:HD2	1.57	0.86
1:B:75:THR:C	1:B:76:LEU:HD22	2.01	0.84
1:A:158:ASN:HD22	1:A:159:ARG:H	1.26	0.83
1:B:111:ALA:O	1:B:115:MET:HB2	1.80	0.81
1:B:198:MET:HG2	1:B:265:LEU:CD2	2.11	0.80
1:A:229:THR:O	1:A:233:GLU:HG2	1.83	0.78
1:A:9:ASN:C	1:A:9:ASN:HD22	1.88	0.78
1:A:77:ARG:H	1:A:77:ARG:HD3	1.47	0.78
1:A:42:PRO:HG3	1:A:109:MET:HE1	1.65	0.77
1:B:43:SER:OG	1:B:45:LYS:HD3	1.86	0.76
1:B:77:ARG:H	1:B:77:ARG:HD2	1.49	0.76
1:B:9:ASN:HD21	1:B:12:ASP:H	1.34	0.76
1:B:321:ASP:HB3	1:B:326:ARG:HG2	1.67	0.76
1:B:26:GLN:HE22	1:B:60:ASP:H	1.29	0.75
1:A:199:LYS:NZ	1:A:267:GLY:H	1.83	0.75
1:B:45:LYS:N	1:B:45:LYS:HD2	2.02	0.74
1:B:206:SER:O	1:B:208:LEU:HD13	1.88	0.73
1:A:127:PHE:H	1:A:130:GLN:HE21	1.36	0.73
1:B:9:ASN:C	1:B:9:ASN:HD22	1.96	0.72
1:B:101:GLN:NE2	1:B:141:ASN:HD22	1.87	0.72
1:B:101:GLN:HE22	1:B:138:ILE:HA	1.53	0.72
1:A:9:ASN:HD22	1:A:10:TYR:N	1.87	0.72
1:B:78:TYR:HB3	1:B:81:GLY:HA3	1.72	0.72
1:A:99:VAL:HG12	1:A:145:GLN:OE1	1.91	0.71
1:A:159:ARG:HG2	1:A:159:ARG:HH11	1.54	0.71
1:A:225:ILE:HG13	1:A:311:THR:HB	1.70	0.71
1:B:101:GLN:NE2	1:B:138:ILE:HA	2.05	0.71
1:B:198:MET:HG3	1:B:216:ALA:HB2	1.74	0.70
1:A:203:VAL:HG22	1:A:261:ILE:HD12	1.73	0.69
1:A:273:THR:HG22	1:A:275:ALA:H	1.56	0.69
1:B:75:THR:O	1:B:76:LEU:HD22	1.91	0.69
1:A:211:GLU:CD	1:A:211:GLU:H	1.99	0.69
1:A:251:LYS:O	1:A:254:GLU:HG2	1.93	0.68
1:A:149:LYS:HE3	1:A:149:LYS:CA	2.19	0.66
1:A:158:ASN:ND2	1:A:159:ARG:N	2.43	0.66
1:A:9:ASN:C	1:A:9:ASN:ND2	2.53	0.65
1:B:198:MET:HG2	1:B:265:LEU:HD21	1.76	0.65
1:A:298:ILE:O	1:A:303:GLY:HA3	1.96	0.64
1:B:245:LEU:HD23	1:B:246:PHE:N	2.14	0.63
1:B:5:VAL:CG1	1:B:169:ILE:HB	2.28	0.63
1:B:9:ASN:C	1:B:9:ASN:ND2	2.57	0.62

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:211:GLU:O	1:B:212:ASP:HB2	1.99	0.62
1:A:260:ASP:O	1:A:261:ILE:HD13	1.99	0.62
1:B:76:LEU:HD21	1:B:132:ILE:HG12	1.80	0.62
1:B:245:LEU:HB3	3:B:806:HOH:O	1.99	0.62
1:A:232:ILE:HG13	1:A:295:ALA:HA	1.82	0.62
1:B:83:VAL:HA	1:B:108:GLU:O	1.99	0.61
1:A:9:ASN:HD21	1:A:12:ASP:N	1.97	0.61
1:B:198:MET:HG2	1:B:265:LEU:HD23	1.83	0.61
1:B:199:LYS:HG2	1:B:264:HIS:O	2.01	0.60
1:B:321:ASP:OD1	1:B:326:ARG:HD3	2.00	0.60
1:B:199:LYS:HG3	1:B:264:HIS:HB2	1.83	0.60
1:B:9:ASN:HD21	1:B:12:ASP:N	2.01	0.59
1:A:199:LYS:HZ1	1:A:267:GLY:H	1.49	0.59
1:A:76:LEU:HD22	1:A:76:LEU:N	2.18	0.59
1:B:226:SER:OG	1:B:307:ALA:HB3	2.02	0.59
1:B:264:HIS:N	1:B:264:HIS:CD2	2.70	0.59
1:A:101:GLN:HE22	1:A:138:ILE:HA	1.67	0.59
1:A:158:ASN:HD22	1:A:159:ARG:N	1.96	0.59
1:A:211:GLU:O	1:A:212:ASP:HB2	2.03	0.59
1:A:101:GLN:NE2	1:A:138:ILE:HA	2.17	0.59
1:B:9:ASN:HD22	1:B:10:TYR:N	2.01	0.58
1:A:99:VAL:HG11	1:A:142:ILE:HG12	1.86	0.58
1:B:101:GLN:HG3	1:B:102:MET:N	2.19	0.58
1:A:27:THR:O	1:A:57:LYS:HG2	2.03	0.58
1:A:42:PRO:CG	1:A:109:MET:HE1	2.33	0.58
1:A:208:LEU:HD12	1:A:209:LEU:HG	1.86	0.58
1:A:245:LEU:HD22	1:A:246:PHE:CE2	2.39	0.57
1:B:290:THR:HG22	1:B:291:LEU:N	2.19	0.57
1:A:278:VAL:HG21	3:A:395:HOH:O	2.04	0.57
1:B:186:ILE:N	1:B:186:ILE:HD12	2.20	0.56
1:B:245:LEU:HD23	1:B:246:PHE:CB	2.35	0.56
1:A:77:ARG:H	1:A:77:ARG:CD	2.15	0.56
1:A:199:LYS:HZ2	1:A:267:GLY:H	1.52	0.56
1:B:81:GLY:HA2	1:B:110:PRO:HG2	1.87	0.56
1:B:43:SER:CB	1:B:105:GLU:HB3	2.28	0.56
1:B:159:ARG:HG3	1:B:314:ARG:HG2	1.88	0.55
1:B:255:GLY:HA3	1:B:280:GLN:HE22	1.71	0.55
1:B:23:THR:OG1	1:B:91:ILE:HD11	2.05	0.55
1:A:127:PHE:N	1:A:130:GLN:HE21	2.04	0.55
1:B:74:LEU:HD12	1:B:74:LEU:O	2.06	0.55
1:B:106:VAL:HG21	2:B:805:3LG:O2	2.07	0.55

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:226:SER:HB2	1:B:296:MET:HB3	1.89	0.54
1:A:68:LYS:HB2	1:A:89:GLN:HB3	1.88	0.54
1:A:235:LEU:C	1:A:235:LEU:HD23	2.33	0.54
1:A:127:PHE:H	1:A:130:GLN:NE2	2.04	0.54
1:A:253:ASN:OD1	1:A:285:SER:HA	2.08	0.54
1:A:264:HIS:CD2	1:A:264:HIS:N	2.75	0.54
1:B:296:MET:HE2	3:B:824:HOH:O	2.08	0.54
1:B:303:GLY:HA2	1:B:305:THR:HG23	1.90	0.54
1:B:61:ALA:HB1	1:B:67:TYR:CD1	2.43	0.53
1:B:199:LYS:HG3	1:B:264:HIS:CB	2.37	0.53
1:A:134:ARG:O	1:A:134:ARG:HG3	2.08	0.53
1:A:321:ASP:OD1	1:A:326:ARG:NH1	2.42	0.53
1:A:234:LYS:NZ	1:A:234:LYS:HB3	2.23	0.53
1:A:274:SER:O	1:A:278:VAL:HG22	2.07	0.53
1:B:278:VAL:HG22	1:B:291:LEU:CD2	2.39	0.53
1:A:185:TYR:CE2	1:A:326:ARG:NH1	2.77	0.53
1:B:143:ILE:HD13	1:B:148:LEU:HD12	1.91	0.53
1:B:43:SER:HB2	1:B:105:GLU:CB	2.28	0.52
1:B:80:THR:O	1:B:110:PRO:HG2	2.09	0.52
1:A:45:LYS:HD3	1:A:86:PHE:CZ	2.44	0.52
1:A:134:ARG:HG2	1:A:134:ARG:HH11	1.74	0.52
1:A:165:LEU:HD23	1:A:165:LEU:N	2.25	0.52
1:B:45:LYS:N	1:B:45:LYS:CD	2.73	0.52
1:B:208:LEU:HD13	1:B:208:LEU:H	1.74	0.52
1:A:250:VAL:HG22	1:A:254:GLU:OE2	2.09	0.51
1:B:9:ASN:ND2	1:B:12:ASP:H	2.06	0.51
1:B:223:SER:O	1:B:310:ALA:HB3	2.10	0.51
1:A:87:LEU:HB3	1:A:102:MET:HE1	1.93	0.51
1:A:303:GLY:HA2	1:A:304:PRO:C	2.36	0.51
1:B:304:PRO:O	1:B:305:THR:HG23	2.11	0.51
1:A:159:ARG:HG2	1:A:159:ARG:NH1	2.25	0.50
1:A:199:LYS:HZ2	1:A:267:GLY:N	2.09	0.50
1:B:272:LEU:HD22	1:B:315:LYS:HG2	1.93	0.50
1:B:89:GLN:HB2	1:B:102:MET:SD	2.50	0.50
1:B:142:ILE:O	1:B:145:GLN:HG2	2.11	0.50
1:B:193:VAL:HG12	1:B:195:GLN:HB2	1.92	0.50
1:A:149:LYS:HA	1:A:149:LYS:CE	2.28	0.50
1:B:101:GLN:HE22	1:B:141:ASN:HD22	1.55	0.50
1:A:127:PHE:CB	1:A:192:GLY:HA2	2.42	0.49
1:A:279:PHE:CE1	1:A:292:ALA:HB2	2.47	0.49
1:B:42:PRO:HG3	2:B:805:3LG:H8	1.94	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:226:SER:OG	1:A:307:ALA:HB3	2.12	0.49
1:B:51:THR:HG22	1:B:115:MET:SD	2.53	0.49
1:B:208:LEU:CD2	1:B:209:LEU:HG	2.36	0.49
1:A:10:TYR:CD1	1:A:118:GLU:HG3	2.47	0.49
1:B:232:ILE:HG13	1:B:295:ALA:HA	1.94	0.49
1:A:298:ILE:N	1:A:298:ILE:HD12	2.28	0.48
1:A:244:ARG:HD2	1:A:249:VAL:CG2	2.42	0.48
1:B:22:GLY:HA2	1:B:90:ASP:OD1	2.13	0.48
1:B:78:TYR:C	1:B:80:THR:N	2.71	0.48
1:A:42:PRO:CB	1:A:109:MET:HE1	2.44	0.48
1:A:165:LEU:HD12	1:A:167:GLY:O	2.13	0.48
1:A:9:ASN:ND2	1:A:12:ASP:H	2.01	0.48
1:B:224:TYR:HB3	1:B:292:ALA:O	2.14	0.48
1:B:154:SER:HB3	1:B:317:TYR:CE1	2.49	0.48
1:B:38:ASN:HD21	1:B:132:ILE:H	1.61	0.47
1:B:78:TYR:C	1:B:80:THR:H	2.21	0.47
1:A:273:THR:HG22	1:A:274:SER:N	2.29	0.47
1:B:245:LEU:HD23	1:B:246:PHE:HB2	1.96	0.47
1:A:252:CYS:HB2	1:A:284:SER:O	2.14	0.47
1:B:298:ILE:O	1:B:303:GLY:HA3	2.14	0.47
1:A:139:PHE:CE1	1:A:143:ILE:HD11	2.49	0.47
1:B:78:TYR:O	1:B:80:THR:N	2.47	0.47
1:B:51:THR:HG21	1:B:115:MET:HE2	1.96	0.47
1:A:244:ARG:HD2	1:A:249:VAL:HG22	1.96	0.47
1:A:274:SER:O	1:A:278:VAL:HG13	2.15	0.47
1:B:38:ASN:ND2	1:B:132:ILE:HB	2.29	0.47
1:A:139:PHE:O	1:A:143:ILE:HG13	2.15	0.47
1:A:273:THR:CG2	1:A:274:SER:N	2.77	0.47
1:B:6:ILE:HG23	1:B:165:LEU:CD1	2.44	0.47
1:B:215:LEU:CB	1:B:305:THR:HG22	2.39	0.47
1:B:278:VAL:HG22	1:B:291:LEU:HD22	1.96	0.47
1:B:185:TYR:C	1:B:186:ILE:HD12	2.40	0.46
1:A:23:THR:OG1	1:A:91:ILE:HD11	2.15	0.46
1:A:77:ARG:HG2	1:A:77:ARG:O	2.16	0.46
1:B:191:THR:HG23	1:B:325:ASN:ND2	2.30	0.46
1:B:191:THR:HG23	1:B:325:ASN:HD21	1.79	0.46
1:B:290:THR:CG2	1:B:291:LEU:N	2.79	0.46
1:B:7:LEU:HD11	1:B:169:ILE:HG13	1.98	0.46
1:B:324:ASN:CB	1:B:326:ARG:HD2	2.37	0.46
1:B:239:LEU:HD21	1:B:261:ILE:HD11	1.98	0.46
1:A:211:GLU:O	1:A:212:ASP:CB	2.61	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:243:LYS:NZ	3:B:851:HOH:O	2.49	0.45
1:A:87:LEU:HD13	1:A:102:MET:HE3	1.98	0.45
1:B:78:TYR:C	1:B:81:GLY:H	2.24	0.45
1:A:44:SER:O	1:A:48:ARG:NH2	2.49	0.45
1:A:77:ARG:HG2	1:A:77:ARG:HH21	1.82	0.45
1:A:252:CYS:HB3	1:A:282:SER:O	2.15	0.45
1:B:77:ARG:HD2	1:B:77:ARG:N	2.26	0.45
1:A:189:ILE:HD11	1:A:197:GLN:HE21	1.82	0.45
1:A:16:TYR:CE2	1:A:29:LYS:HD3	2.52	0.45
1:B:69:HIS:CG	1:B:70:ASN:N	2.85	0.45
1:A:161:SER:O	1:A:162:GLU:C	2.59	0.44
1:A:176:PRO:HA	1:A:179:TYR:CE1	2.52	0.44
1:A:233:GLU:O	1:A:237:GLU:HB3	2.17	0.44
1:B:78:TYR:O	1:B:80:THR:HG22	2.18	0.44
1:B:5:VAL:HG13	1:B:169:ILE:HB	1.98	0.44
1:B:165:LEU:HD11	1:B:167:GLY:O	2.17	0.44
1:B:268:LYS:HE2	1:B:268:LYS:HB3	1.54	0.44
1:A:237:GLU:HG3	1:A:238:ALA:N	2.32	0.44
1:A:278:VAL:CG2	3:A:395:HOH:O	2.62	0.44
1:B:143:ILE:CD1	1:B:148:LEU:HD12	2.47	0.44
1:B:185:TYR:CD2	1:B:326:ARG:HG3	2.53	0.44
1:B:304:PRO:C	1:B:305:THR:HG23	2.42	0.44
1:A:43:SER:HB2	1:A:105:GLU:HB3	1.99	0.44
1:B:48:ARG:HG3	1:B:48:ARG:HH11	1.81	0.44
1:B:128:ILE:HG13	1:B:137:PRO:HD3	1.99	0.44
1:B:304:PRO:O	1:B:305:THR:CG2	2.66	0.44
1:A:159:ARG:HH11	1:A:159:ARG:CG	2.27	0.43
1:B:112:LEU:HA	1:B:113:PRO:HA	1.78	0.43
1:A:87:LEU:HB3	1:A:102:MET:CE	2.48	0.43
1:A:42:PRO:HG3	1:A:109:MET:CE	2.42	0.43
1:B:5:VAL:HG13	1:B:5:VAL:O	2.18	0.43
1:B:38:ASN:HD21	1:B:132:ILE:HB	1.83	0.43
1:B:244:ARG:HD3	1:B:288:LEU:HD23	1.99	0.43
1:A:87:LEU:HD13	1:A:102:MET:CE	2.49	0.43
1:A:223:SER:O	1:A:310:ALA:HB3	2.18	0.43
1:A:236:MET:HG3	1:A:248:TYR:CD2	2.53	0.43
1:B:45:LYS:HD2	1:B:45:LYS:H	1.79	0.43
1:B:47:SER:C	1:B:49:LEU:N	2.77	0.42
1:A:190:LYS:HG3	1:A:191:THR:O	2.19	0.42
1:B:42:PRO:HB2	1:B:58:LEU:HD23	2.01	0.42
1:B:67:TYR:HE2	1:B:88:SER:HB3	1.84	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:10:TYR:CG	1:A:118:GLU:HG3	2.54	0.42
1:A:208:LEU:CD1	1:A:209:LEU:HG	2.47	0.42
1:A:193:VAL:HG12	1:A:195:GLN:HB2	2.01	0.42
1:A:264:HIS:CD2	1:A:269:GLU:OE1	2.72	0.42
1:B:134:ARG:C	1:B:134:ARG:HD2	2.45	0.42
1:A:246:PHE:O	1:A:247:ASP:HB3	2.19	0.42
1:B:119:PHE:HE2	2:B:805:3LG:H13A	1.84	0.42
1:B:76:LEU:HD11	1:B:132:ILE:CG1	2.49	0.42
1:B:189:ILE:HD11	1:B:197:GLN:N	2.34	0.42
1:A:321:ASP:HB3	1:A:326:ARG:HD2	2.02	0.41
1:A:127:PHE:HB2	1:A:192:GLY:HA2	2.01	0.41
1:A:159:ARG:N	1:A:159:ARG:HD2	2.36	0.41
1:B:76:LEU:O	1:B:83:VAL:HG12	2.21	0.41
1:B:79:SER:O	1:B:80:THR:HB	2.21	0.41
1:B:215:LEU:HB2	1:B:305:THR:CG2	2.40	0.41
1:B:47:SER:C	1:B:49:LEU:H	2.26	0.41
1:B:191:THR:HG22	1:B:192:GLY:N	2.35	0.41
1:B:236:MET:HG3	1:B:248:TYR:CD2	2.56	0.41
1:A:152:VAL:HG12	1:A:321:ASP:HA	2.03	0.41
1:B:51:THR:C	1:B:53:CYS:H	2.29	0.41
1:B:72:THR:O	1:B:86:PHE:HA	2.20	0.41
1:B:236:MET:HG3	1:B:248:TYR:CE2	2.55	0.41
1:B:264:HIS:N	1:B:264:HIS:HD2	2.16	0.41
1:B:51:THR:HA	1:B:54:VAL:HG23	2.03	0.41
1:B:202:SER:HG	1:B:264:HIS:CE1	2.38	0.41
1:B:225:ILE:HD13	1:B:263:PHE:CZ	2.55	0.41
1:A:20:GLY:O	1:A:92:ILE:HA	2.21	0.41
1:B:38:ASN:OD1	1:B:132:ILE:HD13	2.21	0.41
1:B:75:THR:O	1:B:76:LEU:HD13	2.21	0.41
1:B:210:CYS:SG	1:B:210:CYS:O	2.79	0.41
1:A:186:ILE:HD12	1:A:186:ILE:N	2.36	0.41
1:B:38:ASN:HD21	1:B:132:ILE:N	2.19	0.41
1:B:109:MET:HA	1:B:110:PRO:HD3	1.92	0.41
1:A:109:MET:HE3	1:A:109:MET:HB2	1.98	0.40
1:B:199:LYS:NZ	1:B:267:GLY:H	2.18	0.40
1:B:76:LEU:HD11	1:B:132:ILE:HG12	2.04	0.40
1:A:268:LYS:HB3	1:A:270:TYR:CE1	2.57	0.40
1:B:106:VAL:HG11	1:B:109:MET:CG	2.51	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	325/333 (98%)	314 (97%)	11 (3%)	0	100	100
1	B	325/333 (98%)	309 (95%)	13 (4%)	3 (1%)	14	10
All	All	650/666 (98%)	623 (96%)	24 (4%)	3 (0%)	24	22

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	80	THR
1	B	79	SER
1	B	245	LEU

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	279/284 (98%)	263 (94%)	16 (6%)	18	17
1	B	279/284 (98%)	265 (95%)	14 (5%)	22	22
All	All	558/568 (98%)	528 (95%)	30 (5%)	20	18

All (30) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	9	ASN
1	A	27	THR
1	A	48	ARG

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	84	SER
1	A	113	PRO
1	A	118	GLU
1	A	149	LYS
1	A	171	LEU
1	A	211	GLU
1	A	217	LEU
1	A	237	GLU
1	A	245	LEU
1	A	250	VAL
1	A	264	HIS
1	A	326	ARG
1	A	331	LEU
1	B	9	ASN
1	B	40	TRP
1	B	74	LEU
1	B	77	ARG
1	B	97	ILE
1	B	115	MET
1	B	198	MET
1	B	208	LEU
1	B	217	LEU
1	B	230	SER
1	B	239	LEU
1	B	264	HIS
1	B	272	LEU
1	B	288	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (18) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	9	ASN
1	A	26	GLN
1	A	101	GLN
1	A	130	GLN
1	A	141	ASN
1	A	158	ASN
1	A	168	GLN
1	A	178	HIS
1	A	182	ASN
1	A	184	HIS
1	A	197	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	264	HIS
1	A	280	GLN
1	A	294	HIS
1	B	9	ASN
1	B	26	GLN
1	B	101	GLN
1	B	280	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

1 ligand is 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	3LG	B	805	-	46,46,46	1.92	14 (30%)	57,62,62	1.78	13 (22%)

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	3LG	B	805	-	-	8/24/38/38	0/5/5/5

All (14) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	805	3LG	O3-C18	4.18	1.35	1.22
2	B	805	3LG	O4-C18	-3.53	1.19	1.30
2	B	805	3LG	C20-N3	3.35	1.54	1.48
2	B	805	3LG	C21-C20	3.21	1.55	1.52
2	B	805	3LG	C24-C20	3.12	1.59	1.52
2	B	805	3LG	C14-C15	3.00	1.44	1.38
2	B	805	3LG	O1-C2	2.89	1.41	1.37
2	B	805	3LG	C17-N1	2.82	1.49	1.46
2	B	805	3LG	C28-C29	2.62	1.43	1.38
2	B	805	3LG	C10-C9	2.42	1.44	1.41
2	B	805	3LG	C14-C13	2.41	1.42	1.38
2	B	805	3LG	C25-C26	2.19	1.43	1.39
2	B	805	3LG	C28-C27	2.18	1.42	1.38
2	B	805	3LG	C7-C8	2.10	1.42	1.38

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	805	3LG	C22-N2-C21	5.50	119.33	112.32
2	B	805	3LG	C18-C17-N1	4.83	120.19	112.24
2	B	805	3LG	C21-C20-C24	-3.98	104.84	112.98
2	B	805	3LG	C17-N1-C12	-3.51	122.13	125.93
2	B	805	3LG	C13-C9-N1	3.24	136.04	131.50
2	B	805	3LG	C13-C9-C10	-3.24	117.78	121.78
2	B	805	3LG	O4-C18-C17	3.07	125.49	113.38
2	B	805	3LG	O3-C18-C17	-2.76	110.86	122.38
2	B	805	3LG	C26-N3-C23	-2.41	115.62	119.18
2	B	805	3LG	O1-C2-C3	2.41	119.55	115.96
2	B	805	3LG	O1-C2-C5	-2.40	120.25	124.30
2	B	805	3LG	C17-N1-C9	2.35	128.62	126.32
2	B	805	3LG	O2-C4-C3	2.34	117.14	109.92

There are no chirality outliers.

All (8) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	805	3LG	C30-C29-O7-C31

Continued on next page...

Continued from previous page...

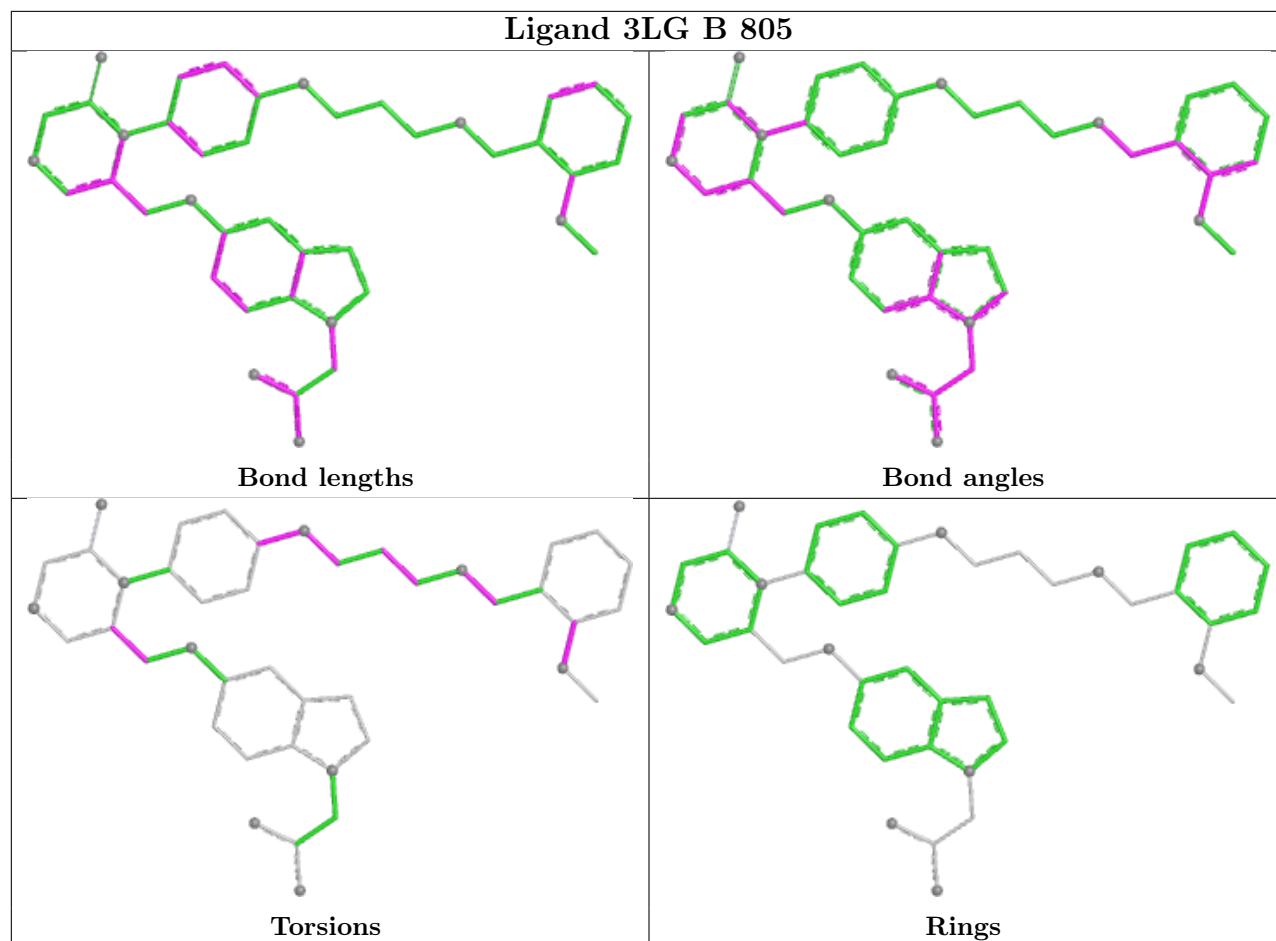
Mol	Chain	Res	Type	Atoms
2	B	805	3LG	C28-C29-O7-C31
2	B	805	3LG	C5-C2-O1-C1
2	B	805	3LG	C3-C2-O1-C1
2	B	805	3LG	N3-C20-C24-O6
2	B	805	3LG	C31-C32-C33-O2
2	B	805	3LG	C32-C31-O7-C29
2	B	805	3LG	C3-C4-O2-C33

There are no ring outliers.

1 monomer is involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	805	3LG	3	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 than 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.



5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [\(i\)](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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, 95th 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	329/333 (98%)	-0.91	0 100 100	21, 34, 52, 73	0
1	B	329/333 (98%)	-0.79	0 100 100	22, 41, 62, 74	0
All	All	658/666 (98%)	-0.85	0 100 100	21, 37, 60, 74	0

There are no RSRZ outliers to report.

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

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

6.3 Carbohydrates [i](#)

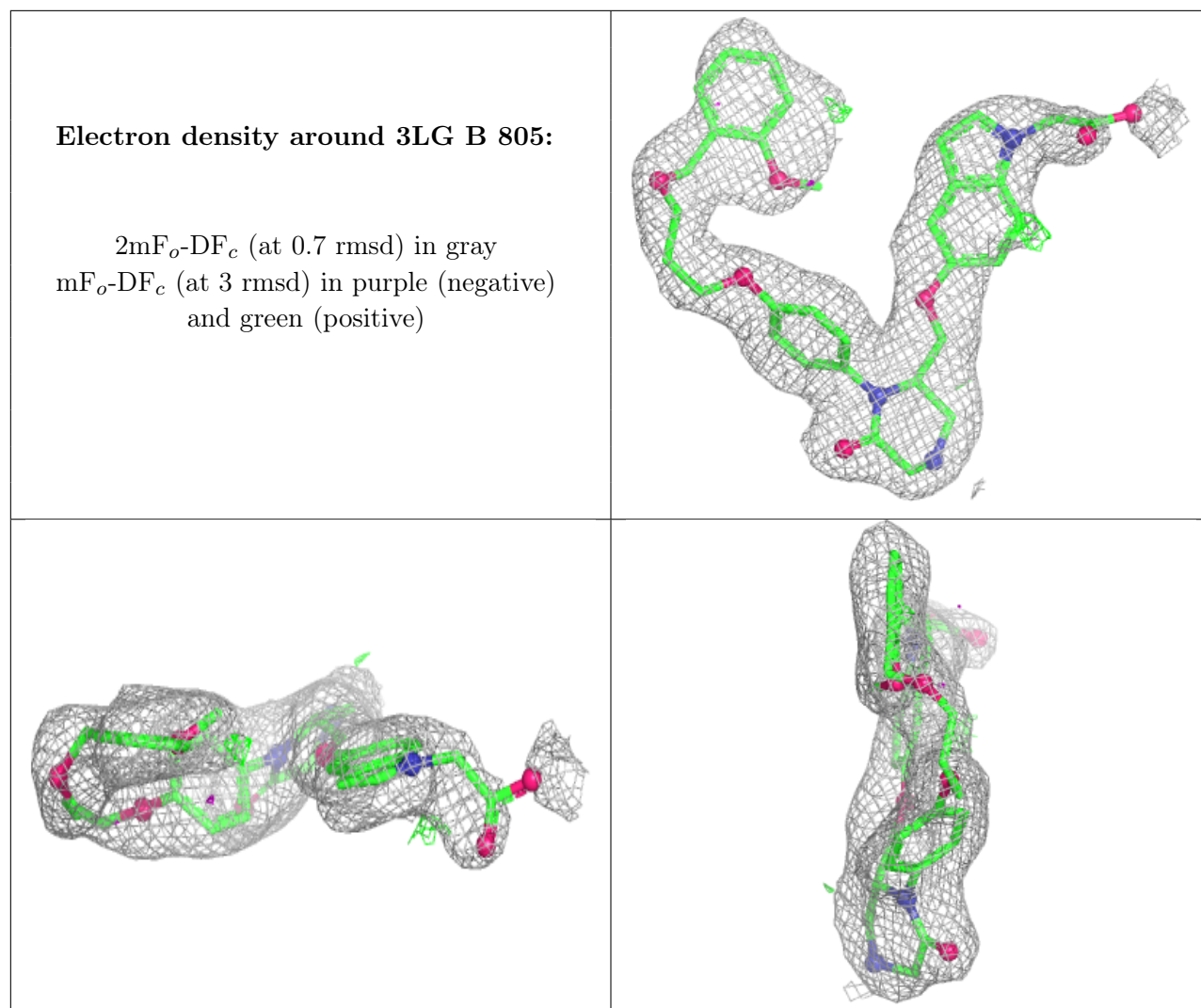
There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th 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	3LG	B	805	42/42	0.99	0.06	36,49,56,57	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.



6.5 Other polymers [i](#)

There are no such residues in this entry.