



wwPDB X-ray Structure Validation Summary Report ⓘ

Jun 12, 2024 – 01:53 AM EDT

PDB ID : 1JZX
Title : Structural Basis for the Interaction of Antibiotics with the Peptidyl Transferase Center in Eubacteria
Authors : Schluenzen, F.; Zarivach, R.; Harms, J.; Bashan, A.; Tocilj, A.; Albrecht, R.; Yonath, A.; Franceschi, F.
Deposited on : 2001-09-17
Resolution : 3.10 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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 : 2022.3.0, CSD as543be (2022)
Xtrriage (Phenix) : **NOT EXECUTED**
EDS : **NOT EXECUTED**
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

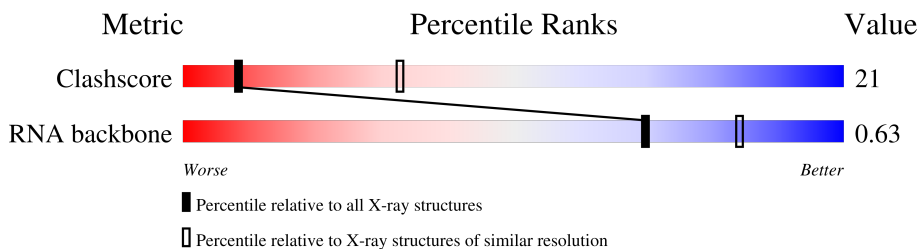
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.10 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	141614	1184 (3.10-3.10)
RNA backbone	3102	1116 (3.40-2.80)

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 $\leq 5\%$.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	2880	31% 48% 18% .
2	K	205	96% .
3	L	134	97% .
4	M	60	97% .

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 59946 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 RNA chain called 23S rRNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
1	A	2774	59532	26556	10982	19221	2773	0	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1526	U	Y	SEE REMARK 999	GB 15805042

- Molecule 2 is a protein called Ribosomal Protein L4.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf	Trace
			Total	C			
2	K	197	197	197	0	0	197

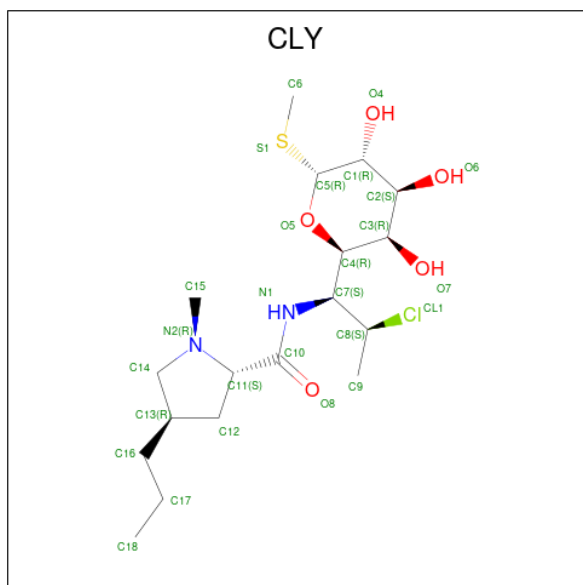
- Molecule 3 is a protein called Ribosomal Protein L22.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf	Trace
			Total	C			
3	L	130	130	130	0	0	130

- Molecule 4 is a protein called Ribosomal Protein L32.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf	Trace
			Total	C			
4	M	58	58	58	0	0	58

- Molecule 5 is CLINDAMYCIN (three-letter code: CLY) (formula: C₁₈H₃₃ClN₂O₅S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	C	Cl	N	O			S
5	A	1	27	18	1	2	5	1	0	0

- Molecule 6 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

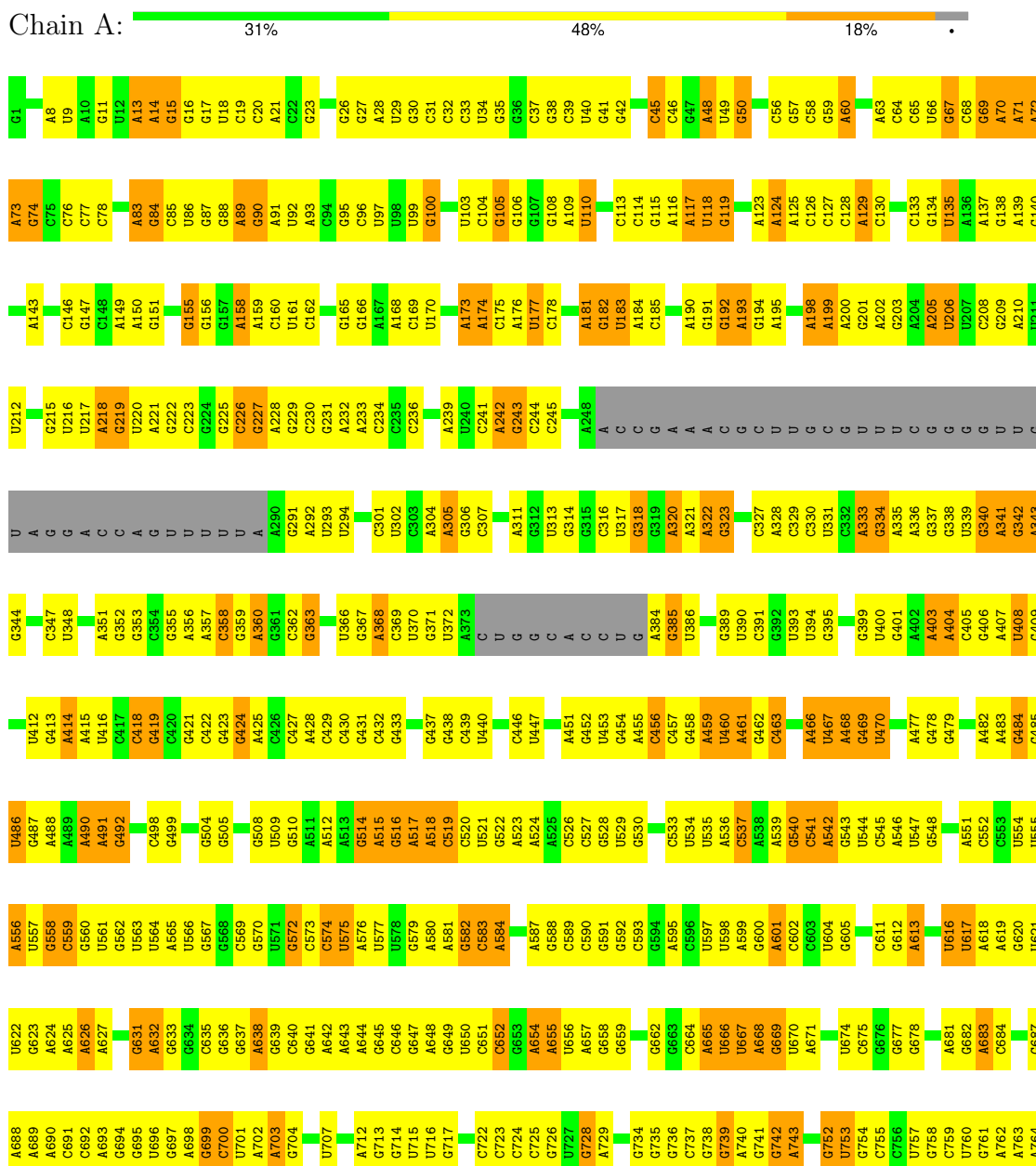
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Mg		
6	A	2	2	2	0	0

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. 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. 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.

Note EDS was not executed.

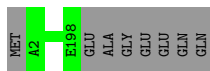
- Molecule 1: 23S rRNA



A1753	G1683	U1611	U1539	U1403	A1474	U1403	G1285	G1189	G1118	G1047	U974	G	A833	C765
G1754	G1684	U1612	C1540	C1494	U1475	C1494	G1286	C1190	U1119	U1048	C975	C	A838	A766
A1685	G1685	C1613	A1405	A1405	G1476	A1405	A1267	G1191	C1120	C1049	C976	U	U839	A767
C1757	U1547	G1617	U1548	U1409	G1480	U1409	U1268	A1192	G1121	C1055	G977	U	U839	U768
C1758	U1549	U1618	C1549	C1411	U1482	C1411	G1269	G1193	A1123	A1054	U978	A	G841	G773
U1690	C1550	A1619	U1551	C1412	G1484	C1412	C1271	U1194	G1123	A1055	A979	C909	G842	A774
G1763	C1552	C1623	C1552	C1415	U1485	C1415	G1272	U1195	A1124	A1056	C980	C910	A844	U775
A1693	G1553	A1624	A1486	A1416	U1486	A1416	C1274	C1198	G1127	A1059	C982	A912	G844	G776
A1694	C1487	C1487	C1487	C1417	U1487	C1417	A1275	U1199	G1128	A1060	A984	A913	G850	A777
U1697	C1488	C1488	G1488	G1417	U1488	G1417	U1276	G1200	A1129	A1061	G985	A918	C851	G778
C1698	C1489	C1489	C1489	A1420	U1489	A1420	A1277	G1201	U1130	G	G	U919	C852	U784
A1699	U1490	U1421	C1547	U1421	U1490	U1421	A1278	U1202	A1134	A1065	A994	A922	C853	U785
A1770	C1558	C1558	C1348	C1348	U1280	C1348	G1279	A1203	C1134	A1066	A995	A922	G854	U786
A1771	C1559	C1559	A1424	A1281	U1280	A1424	A1281	G1204	C1135	A1067	A996	A923	G854	G786
C1703	A1560	G1494	G1425	G1494	A1494	G1425	A1282	G1205	A1136	A1068	C997	C924	G856	G788
G1704	A1561	G1495	G1426	U1426	G1495	G1426	C1283	G1209	A1137	G1069	C998	U925	A857	G789
A1774	G1582	G1496	G1427	G1427	G1496	G1427	C1284	G1210	A1138	G1070	A999	C926	G858	A790
A1707	C1497	C1497	G1428	G1428	G1497	G1428	G1284	C1210	A1139	U1071	G1000	C927	G859	G791
C1708	U1583	U1583	A1429	A1429	U1498	A1429	A1285	G1211	A1140	U1072	A1001	G928	U860	A794
A1776	U1584	U1584	G1430	G1430	A1499	G1430	A1286	U1212	U1141	G1073	C1002	A930	G861	A795
A1777	U1500	U1500	U1431	U1431	U1500	U1431	A1287	U1213	G1142	G1074	C1003	A929	G862	A796
U1778	G1571	G1571	G1432	G1432	U1501	G1432	A1288	C1214	A1143	C1075	A1004	G931	C863	A797
A1782	G1502	A1433	A1433	A1433	G1502	A1433	A1289	A1215	U1144	U1075	U1005	G932	C864	A798
G1713	G1503	U1434	U1434	U1434	G1503	U1434	A1290	G1216	C1145	U1079	C1006	G933	A865	G798
A1714	G1504	G1435	G1435	G1435	U1504	G1435	A1291	U1217	G1146	A1080	A1007	G934	U866	C799
A1715	G1505	G1436	G1436	G1436	U1505	G1436	A1292	U1218	U1081	A1081	G1008	G937	G867	U800
A1717	C1506	A1437	U1437	U1437	U1506	A1437	A1293	C1219	G1149	A1082	A1012	C937	U868	A801
G1722	U1507	G1438	G1438	G1438	U1507	G1438	G1288	G1220	C1150	G1083	G1013	A938	U869	A802
C1723	A1509	U1439	U1439	U1439	U1508	U1439	A1289	G1221	U1151	A1084	G1014	C939	C870	C803
A1793	A1510	A1441	A1441	A1441	A1510	A1441	A1300	G1222	C1152	G1085	G1014	C940	U871	C804
A1794	A1511	A1442	A1442	A1442	U1511	A1442	A1301	G1223	A1153	C1086	U1015	U941	U872	G805
C1725	A1512	G1443	G1443	G1443	U1512	G1443	C1302	A1224	G1154	C1087	C1016	U942	U873	A806
G1726	U1513	C1444	C1444	C1444	U1513	C1444	A1371	A1226	G1155	C1088	A1019	A944	A874	A807
A1727	C1514	A1445	A1445	A1445	U1514	A1445	U1306	A1227	C1160	C1089	A1020	G945	U876	C808
C1728	U1515	U1446	U1446	U1446	U1515	U1446	U1307	U1227	U1161	U1091	A1021	G945	U877	U810
G1730	G1519	U1447	U1447	U1447	U1519	U1447	C1308	A1233	A1162	U1092	A1022	C948	C878	G811
U1733	U1520	G1450	G1450	G1450	G1520	G1450	C1309	C1234	C1163	U1093	U1023	G949	A879	G812
C1734	C1521	C1451	C1451	C1451	U1521	C1451	C1311	G1240	G1164	A1096	G1024	G950	C880	A813
G1735	C1522	U1452	U1452	U1452	U1522	U1452	U1312	G1241	C1165	A1097	A1028	A952	A866	G814
C1736	A1523	A1453	A1453	A1453	C1523	A1453	U1313	U1244	G1166	G1098	C1029	G953	U816	A815
A1807	C1524	C1456	C1456	C1456	U1524	C1456	A1314	G1245	G1168	A1099	U1030	U954	G867	A817
C1808	A1525	U1457	U1457	U1457	C1525	U1457	A1315	G1245	C1169	U1101	A1032	G955	G868	G818
G1809	U1526	A1458	A1458	A1458	U1526	A1458	C1316	G1249	U1170	G1102	A1032	A956	C889	C819
A1811	C1528	U1459	U1459	U1459	U1528	U1459	C1319	G1250	U1171	C1103	G1033	G957	U890	U820
U1812	U1530	G1460	G1460	G1460	C1529	G1460	A1321	G1251	G1173	G1104	G1035	C959	A891	A821
A1813	U1530	U1465	U1465	U1465	U1530	U1465	G1322	C1252	G1174	U1036	G1036	U960	G892	G822
G1742	C1531	G1466	G1466	G1466	U1531	G1466	U1323	C1253	A1175	A1106	G1037	G	G	U823
C1743	A1532	U1467	U1467	U1467	U1532	U1467	G1324	G1258	U1176	A1107	U1038	A964	G	U824
U1744	G1533	U1468	U1468	U1468	C1533	U1468	U1325	G1259	U1108	U1108	A1039	C	C	C825
G1745	C1534	U1469	U1469	U1469	U1534	U1469	U1326	A1260	A1109	A1099	A1040	C	C	U826
A1746	G1535	G1470	G1470	G1470	U1535	G1470	C1327	G1261	G1110	U1099	G1041	U968	U	C827
C1747	U1536	U1473	U1473	U1473	C1536	U1473	U1328	G1262	C1111	C1111	U1044	A970	A	G829
A1748	U1537	U1474	U1474	U1474	U1537	U1474	C1329	G1263	U1112	U1099	G1045	C	C	C830
G1749	U1538	U1475	U1475	U1475	U1538	U1475	G1400	G1264	C1113	U1113	U1046	A971	A	G831
A1751	A1538	A1682	A1682	A1682	U1538	A1682	G1402	G1402	U1188	U1188	U1046	U973	A	A832

- Molecule 2: Ribosomal Protein L4

Chain K:  96%



- Molecule 3: Ribosomal Protein L22

Chain L:  97%



- Molecule 4: Ribosomal Protein L32

Chain M:  97%



4 Data and refinement statistics

Xtrriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	I 2 2 2	Depositor
Cell constants a, b, c, α , β , γ	170.30Å 410.10Å 697.20Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	35.00 – 3.10	Depositor
% Data completeness (in resolution range)	(Not available) (35.00-3.10)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	CNS, REFMAC	Depositor
R, R_{free}	0.268 , 0.303	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	59946	wwPDB-VP
Average B, all atoms (Å ²)	59.0	wwPDB-VP

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: MG, CLY

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.23	0/66661	0.66	2/103976 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	777	A	C2'-C3'-O3'	5.46	122.43	113.70
1	A	1746	A	C2'-C3'-O3'	5.25	122.09	113.70

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	59532	0	30004	1876	0
2	K	197	0	0	0	0
3	L	130	0	0	0	0
4	M	58	0	0	0	0
5	A	27	0	32	2	0
6	A	2	0	0	0	0
All	All	59946	0	30036	1876	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 21.

The worst 5 of 1876 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:1747:G:H4'	1:A:1749:G:H1'	1.29	1.14
1:A:2668:U:H4'	1:A:2669:C:H5'	1.32	1.12
1:A:940:G:H3'	1:A:941:U:H5''	1.34	1.09
1:A:367:G:H2'	1:A:368:A:H5''	1.34	1.08
1:A:1199:U:H3'	1:A:1200:G:H5''	1.35	1.07

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

There are no protein backbone outliers to report in this entry.

5.3.2 Protein sidechains [i](#)

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

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	2765/2880 (96%)	556 (20%)	144 (5%)

5 of 556 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	13	A
1	A	14	A
1	A	15	G
1	A	23	G
1	A	45	C

5 of 144 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	2312	A
1	A	2854	G
1	A	2426	G
1	A	2592	U
1	A	929	A

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 3 ligands modelled in this entry, 2 are monoatomic - leaving 1 for Mogul analysis.

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
5	CLY	A	2881	-	26,28,28	1.79	6 (23%)	31,40,40	1.22	3 (9%)

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
5	CLY	A	2881	-	-	4/21/53/53	0/2/2/2

The worst 5 of 6 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	2881	CLY	C7-N1	4.74	1.53	1.45
5	A	2881	CLY	C12-C11	-3.27	1.48	1.53
5	A	2881	CLY	C10-N1	2.97	1.40	1.34
5	A	2881	CLY	C4-C7	2.85	1.56	1.53
5	A	2881	CLY	O5-C4	2.28	1.47	1.44

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	2881	CLY	C11-C10-N1	-3.02	109.89	116.52
5	A	2881	CLY	O8-C10-N1	2.75	127.89	122.96
5	A	2881	CLY	C12-C11-C10	2.45	116.05	111.36

There are no chirality outliers.

All (4) torsion outliers are listed below:

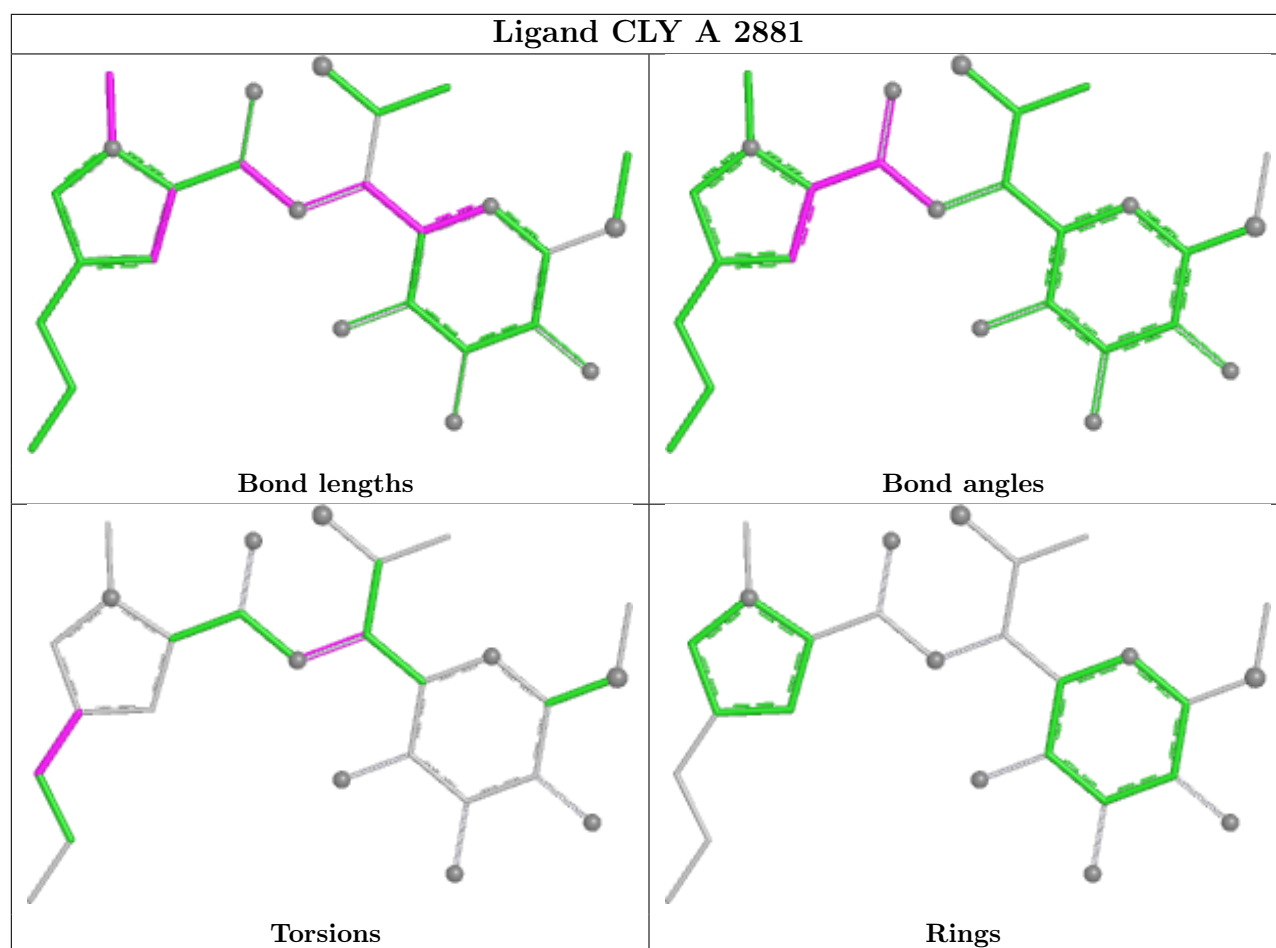
Mol	Chain	Res	Type	Atoms
5	A	2881	CLY	C8-C7-N1-C10
5	A	2881	CLY	C12-C13-C16-C17
5	A	2881	CLY	C14-C13-C16-C17
5	A	2881	CLY	C4-C7-N1-C10

There are no ring outliers.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	2881	CLY	2	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](#)

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates [i](#)

EDS was not executed - this section is therefore empty.

6.4 Ligands [i](#)

EDS was not executed - this section is therefore empty.

6.5 Other polymers [i](#)

EDS was not executed - this section is therefore empty.