



wwPDB X-ray Structure Validation Summary Report ⓘ

Aug 20, 2023 – 11:13 AM EDT

PDB ID : 2O44
Title : Structure of 23S rRNA of the large ribosomal subunit from *Deinococcus radiodurans* in complex with the macrolide josamycin
Authors : Pyetan, E.; Daram, D.; Auerbach-Nevo, T.; Yonath, A.
Deposited on : 2006-12-03
Resolution : 3.30 Å (reported)

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

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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)
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) : 2.35

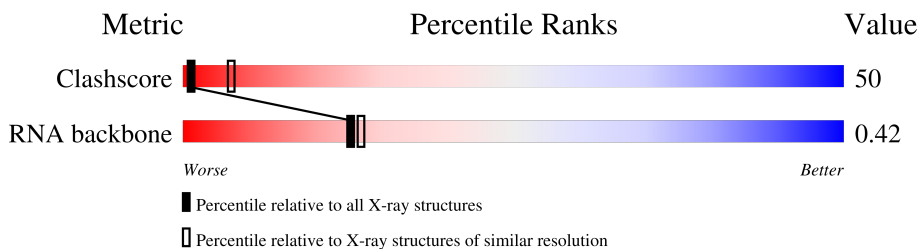
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.30 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	1205 (3.34-3.26)
RNA backbone	3102	1117 (3.70-2.90)

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 $\leq 5\%$.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	2880	

2 Entry composition [i](#)

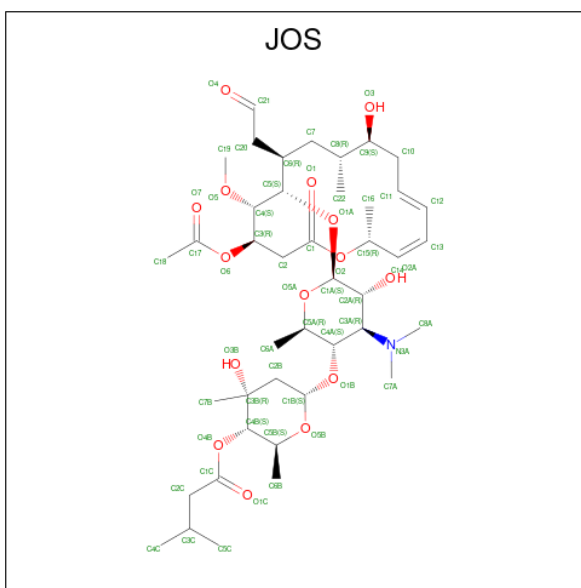
There are 2 unique types of molecules in this entry. The entry contains 59417 atoms, of which 0 are hydrogens and 0 are deuteriums.

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	2766	59359	26479	10949	19166	2765	0	0	0

- Molecule 2 is (2S,3S,4R,6S)-6-([(2R,3S,4R,5R,6S)-6-([(4R,5S,6S,7R,9R,10S,12E,14Z,16R)-4-(ACETYLOXY)-10-HYDROXY-5-METHOXY-9,16-DIMETHYL-2-OXO-7-(2-OXOETHYL)OXACYCLOHEXADEC-12,14-DIEN-6-YL]OXY)}-4-(DIMETHYLAMINO)-5-HYDROXY-2-METHYLTETRAHYDRO-2H-PYRAN-3-YL]OXY}-4-HYDROXY-2,4-DIMETHYLTETRAHYDRO-2H-PYRAN-3-YL 3-METHYLBUTANOATE (three-letter code: JOS) (formula: C₄₂H₆₉NO₁₅).



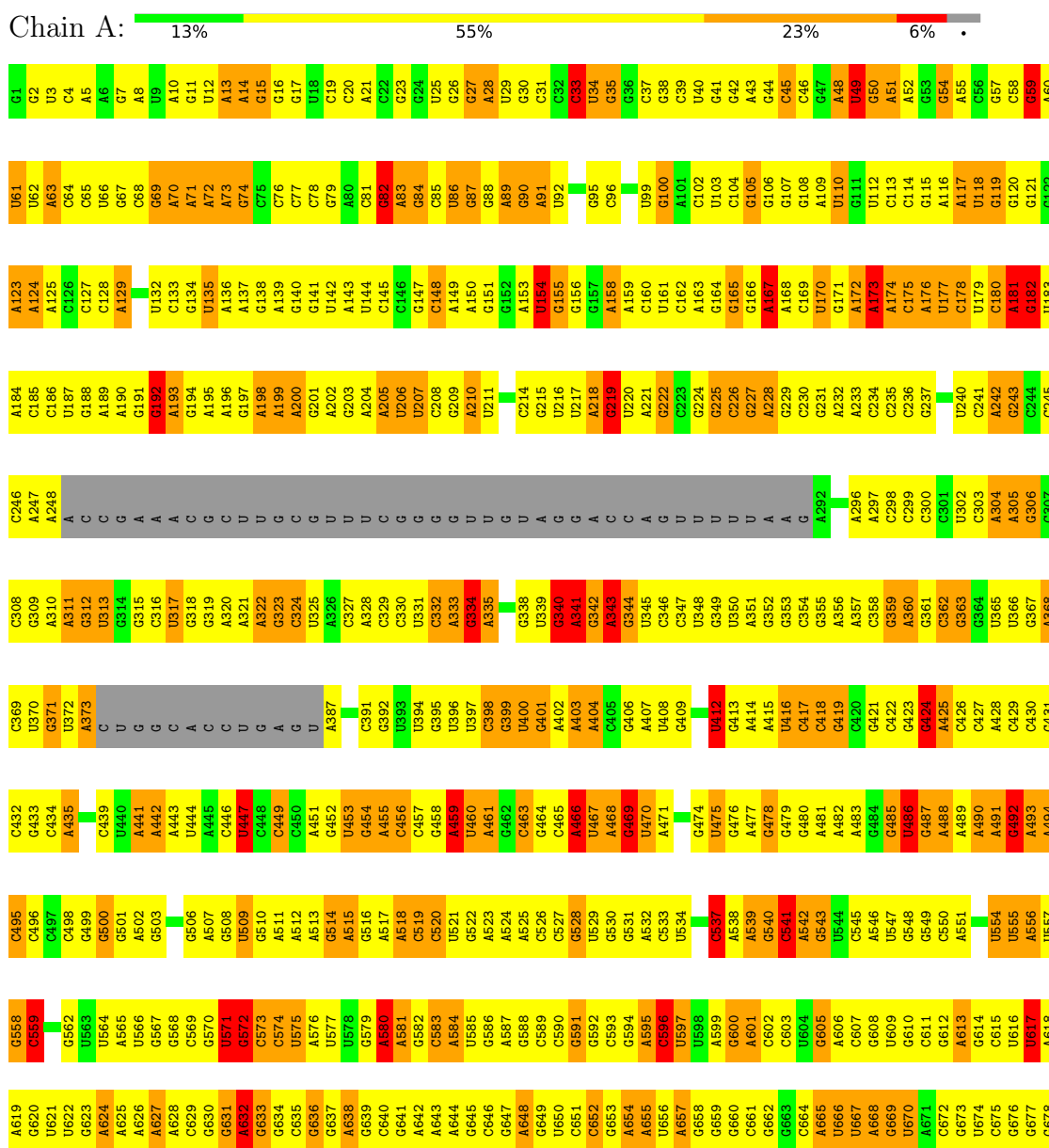
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
2	A	1	58	42	1	15	0	0

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



G1541	G1542	G1543	G1544	G1545	G1546	G1547	G1548	G1549	G1550	G1551	G1552	G1553	G1554	G1555	G1556	G1557	G1558	G1559	G1560	G1561	G1562	G1563	G1564	G1565	G1566	G1567	G1568	G1569	G1570	G1571	G1572	G1573	G1574	G1575	G1576	G1577	G1578	G1579	G1580	G1581	G1582	G1583	G1584	G1585	G1586	G1587	G1588	G1589	G1590	G1591	G1592	G1593	G1594	G1595	G1596	G1597	G1598	G1599	G1600																																																									
C1418	C1419	C1420	C1421	C1422	C1423	C1424	C1425	C1426	C1427	C1428	C1429	C1430	C1431	C1432	C1433	C1434	C1435	C1436	C1437	C1438	C1439	C1440	C1441	C1442	C1443	C1444	C1445	C1446	C1447	C1448	C1449	C1450	C1451	C1452	C1453	C1454	C1455	C1456	C1457	C1458	C1459	C1460	C1461	C1462	C1463	C1464	C1465	C1466	C1467	C1468	C1469	C1470	C1471	C1472	C1473	C1474	C1475	C1476	C1477	C1478																																																								
G1479	G1480	G1481	G1482	G1483	G1484	G1485	G1486	G1487	G1488	G1489	G1490	G1491	G1492	G1493	G1494	G1495	G1496	G1497	G1498	G1499	G1500	G1501	G1502	G1503	G1504	G1505	G1506	G1507	G1508	G1509	G1510	G1511	G1512	G1513	G1514	G1515	G1516	G1517	G1518	G1519	G1520	G1521	G1522	G1523	G1524	G1525	G1526	G1527	G1528	G1529	G1530	G1531	G1532	G1533	G1534	G1535	G1536	G1537	G1538	G1539	G1540	G1541	G1542	G1543	G1544	G1545	G1546	G1547	G1548	G1549	G1550																																													
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A1292	A1293	G1294	G1295	G1296	G1297	G1298	G1299	A1300	G1301	G1302	G1303	G1304	G1305	G1306	G1307	G1308	G1309	G1310	G1311	G1312	G1313	G1314	G1315	G1316	G1317	G1318	G1319	G1320	G1321	G1322	G1323	G1324	G1325	G1326	G1327	G1328	G1329	G1330	G1331	G1332	G1333	G1334	G1335	G1336	G1337	G1338	G1339	G1340	G1341	G1342	G1343	G1344	G1345	G1346	G1347	G1348	G1349	G1350	G1351																																																									
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U1108	A1109	C1110	G1111	C1112	C1113	A1114	C1115	G1116	G1117	A1118	G1119	C1120	G1121	A1122	C1123	G1124	C1125	A1126	A1129	U1130	G1131	C1132	G1133	C1134	G1135	G1136	A1137	U1138	A1139	A1140	G1141	A1142	G1143	A1144	C1145	G1146	G1147	G1148	G1149	C1150	A1151	G1152	A1153	A1154	G1155	G1156	G1157	A1158	U1159	C1160	U1161	A1162	C1163	C1164	G1165	A1166	C1167	G1168																																																										
A884	G885	A886	G887	G888	G889	A890	G891	G892	A893	G894	G895	G896	A897	G898	G899	A900	G901	G902	A903	G904	A905	G906	A907	G908	G909	G910	A911	G912	G913	A914	G915	G916	A917	G918	A919	G920	A921	G922	A923	G924	U925	G926	G927	G928	G929	A930	G931	G932	G933	G934	A935	G936	G937	A938	G939	G940	A941	G942	A943	G944	A945	G946	G947	G948	G949	G950	G951	G952	A953	G954	G955	A956	G957	G958	G959	U960																																								
C741	G742	A743	G744	G745	G746	A747	A748	G749	G750	A751	G752	A753	G754	C755	G756	U757	G758	C759	G760	U761	G762	G763	A764	G765	A766	G767	G768	U769	G770	C771	G772	G773	A774	G775	G776	A777	G778	U779	U780	G781	U782	G783	U784	U785	U786	G787	G788	A789	G790	G791	U792	U793	U794	G795	G796	A797	U798	U799	U800	G801																																																								
A802	C803	C804	G805	A806	A807	C808	C809	U810	G811	G812	G813	A814	A815	U816	G817	G818	C819	G820	G821	U822	U823	U824	C825	A826	G827	C828	C829	U830	G831	A832	A833	U834	U835	G836	G837	A838	U839	U840	G841	A842	G843	G844	U845	U846	C847	A848	C849	C850	A851	U852	C853	U854	G855	G856	A857	U858	U859	U860	G861	A862																																																								
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G679	U680	A681	G682	C683	A684	U685	C686	G687	A688	G689	A690	C691	C692	A693	G694	A695	A696	C697	A698	U699	C700	U701	A702	G703	G704	A705	U706	G707	G708	A709	C710	G711	A712	G713	G714	U715	A716	G717	A718	A719	A720	C721	G722	C723	G724	C725	G726	U727	G728	A729	U730	A731	G732	G733	A734	G735	A736	C737	G738	U739	C740	A741																																																						

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G2484	G2423	C2368	U2298	G2285	U2172	U2051	G1985	G1857	C1795	C1731	G1668	G1602
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	U2428	G2363	C2303	U2177	U2177	C2056	U1990	C1862	A1800	G1736	A1673	A1607
	A2429	U2364	G2304	A2118	A2119	U2057	C1991	U1863	A1801	G1737	C1674	U1608
		C2365	C2305	A2119	U1998	U2058	G1992	U1864	A1802	U1738	C1675	G1609
A2432	A2366	U2366	A2306	C2120	U1999	U2059	G1993	C1865	G1803	U1739	U1676	A1610
C2433	A2307	C2367	C2243	U2180	U1998	A2060	U1994	C1866	G1803	G1740	C1677	A1611
G2434	A2308	G2368	C2244	C2121	U1999	U2061	U1994	C1867	A1807	G1741	G1678	U1611
C2435	G2309	U2369	A2245	G2122	A1996	U2062	G1996	A1868	A1808	G1742	U1679	
U2436	G2310	A2247	A2246	C2124	A1997	A2063	U1997	A1869	G1809	C1743	U1680	C1614
G2437	U2311	A2248	U2248	C2125	U1998	U2064	A1988	A1870	A1810	G1744	A1681	U1618
A2438	A2312	U2249	A2249	U	U1999	U2067	G1998	U1871	A1811	G1745	A1682	U1618
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C2446	G2320	U2258	C2135	U	U1998	U2075	U1946	A1884	U1819	A1753	U1690	C1627
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	U2324	C2264	U2138	C	U1998	U2079	U2011	U1888	C1824	C1758	A1695	C1633
	A2325	A2265	G2139	A	U1998	A2080	A2012	C1888	C1825	C1759	A1696	A1634
	A2326	G2266	G2140	A	U1998	U2081	A2013	G1889	C1826	U1766	C1702	G1641
	U2327	A2267	A	A	U1998	U2082	A2014	A1890	U1826	G1767		G1642
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	C2329	G2269	A2204	C	U1998	C2084	A2016	C1892	C1828	G1763	A1699	U1644
	G2330	U2270	C2205	C	U1998	U2085	G2017	A1893	C1829	A1764	C1701	G1638
	A2331	C2271	G2206	C	U1998	U2086	G2018	U1894	C1830	C1765	A1707	C1640
	C2332	A2272	G2207	A	U1998	U2087	C2019	A1895	C1831	U1766	U1709	G1641
	A2333	C2273	U2208	A	U1998	U2088	G2020	A1896	C1832	G1767	C1702	G1642
	C2334	C2274	G2209	G	U1998	C2089	G2021	C1897	U1833			G1644
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	G2336	C2276	U2211	U	U1998	C2091	A1962	A1899	C1835	A1771	A1706	U1645
	A2337	A2277	U2212	G	U1998	U2092	G1963	U1900	C1836	C1772	A1707	U1646
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	G2341	C2281	G2218	U	U1998	G2096	G1969	G1904	A1840	A1776	G1712	U1651
	C2342	G2282	U2219	A	U1998	A2097	G1970	G1905	G1841	A1777	G1713	U1652
	C2343	G2283	A2220	A	U1998	G	C1971	U1906	G1842	U1778	A1714	C1653
	A2344	U2284	G2221	C	U1998	G	A2037	C1907	U1843	C1779	A1715	A1654
	G2345	U2285	U2222	G	U1998	A	C2038	C1908	U1844	U1779	G1716	C1655
	C2346	G2286	U2223	A	U1998	A	G2039	U1909	C1844	C1781	G1715	C1656
	U2347	A2287	U2224	U	U1998	A	A2040	A1910	A1845	C1782	A1717	U1656
	A2348	G2288	G2225	C	U1998	A	A2041	A1911	A1846			A1657
	G2349	A2289	U2226	G	U1998	G2103	G1976	G1912	G1847	G1721	A1658	A1658
	G2350	A2290	C2227	U	U1998	G2104	U1976	G1912	U1848	C1786	G1659	G1659
	G2351	U2291	U2228	C	U1998	A2043	C1977	G1913	G1849	U1787	U1722	U1660
	A2352	C2292	G2229	A	U1998	U2105	G2044	U1914	C1850	C1788	C1724	G1661
	G2353	G2293	G2230	G	U1998	G2106	A2045	A1915	A1851	U1789	C1725	G1662
	U2354	U2294	G2231	A	U1998	G2107	A1980	G1916	C1852	G1790	C1726	C1663
	C2355	G2295	A2167	G	U1998	A2108	A1981	G1917	C1853	C1791	C1727	G1664
	G2356	U2296	A2168	A	U1998	A2109	C2047	G1918	A1854	C1792	A1728	C1665
	A2356	U2296	C2170	C	U1998	G2110	C2048	A1919	G1855	A1793	C1729	G1666

A2858	A2796	U2736	G2674	A2613	G2548
U2859	G2797	A2737	U2675	A2614	G2549
C2860	A2798	A2738	G2679	U2615	C2550
A2861	C2799	G2739	U2680	G2616	A2551
G2862	C2800	C2740	A2681	A2617	C2552
U2863	A2801	G2741	C2682	G2618	G2553
C2864	C2802	G2742	C2683	G2619	C2554
G2865	C2803	A2743	A2684	G2620	G2555
A2866	G2804	G2744	C2685	G2621	A2556
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G2868	G2806	G2746	C2687	C2623	C2558
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	A2809	A2749	A2690	U2626	G2561
	A2810	G2750	C2691	G2627	G2562
	G2811	C2751	A2692	C2628	U2563
	A2812	G2752	U2693	U2629	U2564
	G2813	C2753	U2694	C2630	C2565
	C2814	G2754	C2695	C2631	A2566
	C2815	A2755	C2696	U2632	G2567
	C2816	A2756	G2697	A2633	A2568
	A2817	G2757	U2698	G2634	A2569
	G2818	A2758	G2699	U2635	C2570
	G2819	U2759	U2700	A2636	G2571
	C2820	G2760	A2701	C2637	U2572
	G2821	A2761	G2702	G2638	C2573
	U2822	G2762	C2703	A2639	G2574
	C2824	U2764	U2704	G2640	U2575
	A2825	C2765	U2706	A2641	G2576
	C2826	U2766	G2707	G2642	A2577
	G2827	C2767	U2708	G2643	G2578
	C2828	G2768	C2709	A2644	
	A2829	C2769	C2710	C2645	A2581
	U2830	A2770	G2711	G2646	G2582
	A2831	C2771	G2712	G2647	U2583
	G2832	U2772	A2713	U2648	U2584
	C2833	G2773	A2714	A2649	C2585
	A2834	U2774	C2715	G2650	G2586
	A2835	U	G2716	U2651	G2587
	U2836	U	A2717	G2652	U2588
	G2837	A	G2718	A2653	C2589
	U2838		U2719	A2654	U2590
	G2839		A2720	C2655	C2591
	U2840		G2721	G2656	U2592
	C2842		C2722	A2658	A2593
	A2843		G2723	C2659	U2594
	G2844		G2724	C2660	C2596
	C2845		C2725	G2661	G2597
	G2846		U2726	C2662	C2598
	G2847		G2727		U2599
	A2848		A2728	G2665	A2600
	C2849		A2729	U2666	A2601
			A2730	C2667	
	U2853		G2731	U2668	G2606
	G2854		C2732	C2669	C2607
	C2855		A2733	C2670	A2608
	U2856		U2734	C2671	G2609
	C2857		C2735	U2672	G2610
				G2673	

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	172.80Å 411.48Å 697.62Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	8.00 – 3.30	Depositor
% Data completeness (in resolution range)	(Not available) (8.00-3.30)	Depositor
R_{merge}	0.18	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	CNS	Depositor
R, R_{free}	0.282 , 0.331	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	59417	wwPDB-VP
Average B, all atoms (Å ²)	83.0	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: JOS

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	0.67	4/66467 (0.0%)	0.85	130/103673 (0.1%)

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	1	200

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1711	C	N1-C2	6.95	1.47	1.40
1	A	528	G	C5-C6	-6.20	1.36	1.42
1	A	2566	A	C5-C6	-5.34	1.36	1.41
1	A	475	U	N1-C2	-5.10	1.33	1.38

The worst 5 of 130 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	2044	G	N9-C1'-C2'	11.61	129.09	114.00
1	A	2237	C	N1-C1'-C2'	9.82	126.77	114.00
1	A	2045	A	N9-C1'-C2'	9.68	126.58	114.00
1	A	219	G	N9-C1'-C2'	9.26	126.04	114.00
1	A	841	G	N9-C1'-C2'	9.26	126.04	114.00

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
1	A	541	C	C1'

5 of 200 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	154	U	Sidechain
1	A	49	U	Sidechain
1	A	54	G	Sidechain
1	A	59	G	Sidechain
1	A	86	U	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	59359	0	29916	4363	0
2	A	58	0	68	7	0
All	All	59417	0	29984	4365	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 50.

The worst 5 of 4365 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:1435:G:C2	1:A:1436:G:H1'	1.70	1.25
1:A:2094:C:N4	1:A:2162:C:H42	1.40	1.19
1:A:793:G:H21	1:A:796:A:N6	1.41	1.17
1:A:1463:A:H1'	1:A:1543:G:N2	1.59	1.17
1:A:2498:U:H4'	1:A:2499:C:OP1	1.40	1.14

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

There are no protein molecules in this entry.

5.3.2 Protein sidechains [i](#)

There are no protein molecules in this entry.

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	2757/2880 (95%)	718 (26%)	224 (8%)

5 of 718 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	13	A
1	A	14	A
1	A	23	G
1	A	28	A
1	A	33	C

5 of 224 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	1333	G
1	A	2823	G
1	A	1710	U
1	A	2760	G
1	A	2521	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

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	JOS	A	2881	-	60,60,60	2.64	17 (28%)	71,85,85	1.86	21 (29%)

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	JOS	A	2881	-	-	20/65/104/104	0/2/3/3

The worst 5 of 17 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	2881	JOS	C2A-C3A	10.07	1.70	1.53
2	A	2881	JOS	C10-C11	-6.25	1.30	1.50
2	A	2881	JOS	O4B-C4B	6.13	1.56	1.45
2	A	2881	JOS	C8-C9	5.30	1.61	1.53
2	A	2881	JOS	C4A-C5A	5.05	1.61	1.52

The worst 5 of 21 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	2881	JOS	O6-C17-C18	4.74	119.80	111.09
2	A	2881	JOS	O1B-C4A-C5A	4.17	117.65	106.79
2	A	2881	JOS	O2-C1-C2	3.97	118.76	111.46
2	A	2881	JOS	O3-C9-C10	-3.83	100.87	109.08
2	A	2881	JOS	C10-C11-C12	-3.70	120.64	125.41

There are no chirality outliers.

5 of 20 torsion outliers are listed below:

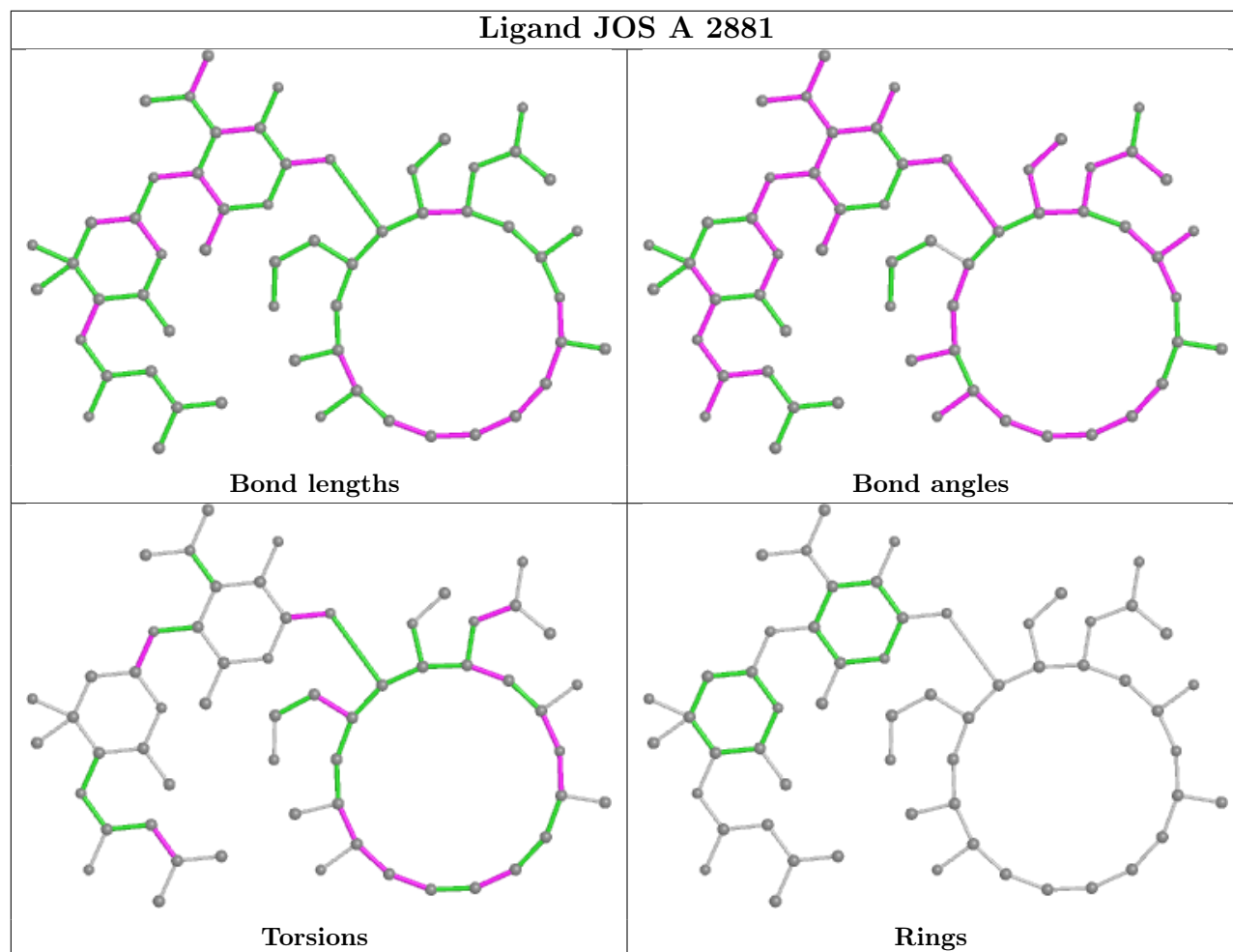
Mol	Chain	Res	Type	Atoms
2	A	2881	JOS	C11-C10-C9-C8
2	A	2881	JOS	C11-C10-C9-O3
2	A	2881	JOS	C11-C12-C13-C14
2	A	2881	JOS	C1-C2-C3-C4
2	A	2881	JOS	C18-C17-O6-C3

There are no ring outliers.

1 monomer is involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	2881	JOS	7	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

6.1 Protein, DNA and RNA chains

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

6.4 Ligands

EDS was not executed - this section is therefore empty.

6.5 Other polymers

EDS was not executed - this section is therefore empty.