

wwPDB X-ray Structure Validation Summary Report (i)

Jun 11, 2024 – 11:26 PM EDT

PDB ID	:	2D3O
Title	:	Structure of Ribosome Binding Domain of the Trigger Factor on the 50S ribo-
		somal subunit from D. radiodurans
Authors	:	Schluenzen, F.; Wilson, D.N.; Hansen, H.A.; Tian, P.; Harms, J.M.; McInnes,
		S.J.; Albrecht, R.; Buerger, J.; Wilbanks, S.M.; Fucini, P.
Deposited on	:	2005-09-30
Resolution	:	3.35 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 (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 (1)) were used in the production of this report:

MolProbity	:	4.02b-467
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
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 (i)

The following experimental techniques were used to determine the structure: $X\text{-}RAY \, DIFFRACTION$

The reported resolution of this entry is 3.35 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	Similar resolution
	$(\# { m Entries})$	$(\# { m Entries}, { m resolution} { m range}({ m \AA}))$
Clashscore	141614	1627 (3.42 - 3.30)
Ramachandran outliers	138981	1599(3.42-3.30)
Sidechain outliers	138945	1598 (3.42-3.30)
RNA backbone	3102	1023 (3.80-2.92)

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%

Note EDS was not executed.

Mol	Chain	Length		Quality of chain	
1	0	2880	17%	59%	18% • •
2	R	95	28%	52%	17% ••
3	S	115	41%	42%	13% •
4	W	67	30%	54%	13% ••
5	1	112	41%	39%	9% 11%



2D3O

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 63004 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 RIBOSOMAL RNA.

Mol	Chain	Residues		-	Atoms			ZeroOcc	AltConf	Trace
1	0	2802	Total 60132	C 26824	N 11089	O 19418	Р 2801	0	0	0

• Molecule 2 is a protein called 50S RIBOSOMAL PROTEIN L23.

Mol	Chain	Residues		At	oms			ZeroOcc	AltConf	Trace
2	R	93	Total 726	C 458	N 136	O 130	${S \over 2}$	0	0	0

• Molecule 3 is a protein called 50S RIBOSOMAL PROTEIN L24.

Mol	Chain	Residues		At	\mathbf{oms}			ZeroOcc	AltConf	Trace
3	S	110	Total 825	C 513	N 160	0 151	S 1	0	0	0

• Molecule 4 is a protein called 50S RIBOSOMAL PROTEIN L29.

Mol	Chain	Residues		Ate	oms			ZeroOcc	AltConf	Trace
4	W	66	Total 533	C 327	N 107	O 96	${ m S} { m 3}$	0	0	0

• Molecule 5 is a protein called Trigger Factor.

Mol	Chain	Residues		Ato	\mathbf{ms}		ZeroOcc	AltConf	Trace
5	1	100	Total 788	C 494	N 146	O 148	0	0	0



3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. 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.



 \bullet Molecule 1: 23S RIBOSOMAL RNA



A689	A690	C692	A693	G694 G605	0696 0696	<mark>G697</mark>	A698	G039 C700	U701	A7 02	A703	G7 04 C7 05	67.05 A7.06	<u>1707</u>	G7 08	A7 09	C7 10	0/11 4719	G713	G7 14	U7 15	U716	G/ T/ A718	A719	A720	C721	C7 22	C/ 23 C7 24	C725	G726	U7 27	G7 28	6732	<mark>G733</mark>		G736	G738	G739	A740	G741	G742	C7 44	C7 45	G746	A747	A/ 48 C749	C750	G751
G752	0753 6754	G755	C756	U757	C759	U760	G761	A / 62 A 763	A764	C765	A766	<u>6767</u>	0770	C771	G772	G773	A774	6776 G776	A777	G778	0779	U780	6/81 1782	G783	U784	U785	U786	A/8/ G788	G789	A790	G791	U792 C793	A794	A795	A796	A797 708	C799	0800	A801	A 802	C803	G805	A806	A807	C808	USU9 11810	G811	G812
A813	G814 A015	No13 U816	<u>A817</u>	G818 G810	U820	A821	G822	1823 1824	C825	<mark>U826</mark>	C827	C828	C830 C830	G831	A832	A833	A834	0030	U837	<u>A838</u>	U839	U840	19341 1847	G843	G844	U845	A846	C84/ 4848	G849	C850	C851	U852 C853	G854	<mark>G855</mark>	<u>A856</u>	0857 0858	U859	U860	G861	A862	C863	AB65	U866	G867	U868	C870	U871	G872
U873	A874	40/ 3 A876	G877	C878	Ao/ 9 C880	U881	C882	A883 C884	A885	A886	G887	0000	0890 U890	A891	IJ	Ċ	5 0	5 0	, U	U	U	A A		A	IJ	U	n ::	0 4	: 0	U D	A911	A912	C914	C915		A918 1101 0	G920	A921	A922	A923		C927	G928	A929	A930	G932	G933	G934
C935	A936 6037	0338 0338	<mark>0339</mark>	G940 1104 1	0341 0942	U943	A944	6945 11946	C947	C948		6951 ADEO	6953	U954	G955	A956	G957	0000	0960	<mark>G961</mark>	C962		11969	A970	A971	C972	U973	0975 C975	C976	G977	U978	A979 C980	C981	<mark>C982</mark>	G983	A984 Core	4986 4986	G987	<mark>G988</mark>	G989	A990	166V	C993	A994	A995	0880	660 C998	A999
G1000	A1001	C1003	A1004	U1005	01006 A1007	G1008	C1009	41010 A1011	A1012	G1013	G1014	01015 61016	C1016 C1017	C1018	U1019	A1020	A1021	A1022	G1024	A1025	U1026	C1027	G1028	U1030	C1031	A1032	G1033	01034 G1035	G1036	U1037	U1038	A1039 A1040	G1041	G1042	A1043	01044	U1046	G1047		C1054	A1055	A1057	G1058	A1059	C1060	TODI	C1064	A1065
	G1069	U1071	U1072	G1073	U1076	U1077	A1078	61079 A1080	A1081	G1082	C1 083		C1087	A1088	C1089	C1090	C1091	111 093	C1094	A1095	A1096	A1097	41098	G1100	U1101	G1102	C1103	61104 111105	A1106	A1107	U1108	A1109	C1113	A1114	C1115	01116 C1117		C1120	G1121	A1122	G1123	G1125	A1126	C1127	G1128	A1129 111130	G1131	C1132
G1133	C1134 C1135	G1138 G1136	A1137	A1138	A1139 A1140	U1141	G1142	A1143 11144	C1145	G1146	G1147	G1148	G1150 C1150	U1151	C1152	A1153	A1154	00115	A1158	<mark>U1159</mark>	C1160	U1161	A1162	C1164	G1165	A1166	A1167	G1168 C1169	U1170	A1171	U1172	G1173 C1174	A1175	U1176	U1177	C1178 A1170	A1180	C1181	U1182	C1183	G1184 C1185	00110	A1188	G1189	C1190	41191 A1192	G1193	U1194
U1195	G1196 111107	C1198	U1 199	G1200	U1202 U1202	A1203	G1204	G1205 G1206	G1207	A1208	G1209	C1210	01212 01212		A1215	G1216	01217	01210 C1210	G1220	C1221	G1222	G1223	A1224 C1225	A1226	A1227	G1228	C1229	C1230 A1231	U1232	A1233	C1234	C1235 C1236	G1237	A1238	A1239	G1240	41242 A1242	G1243	U1244	G1245	G1246	G1248	G1249	A1250	G1251 C1252	C1 252	G1254	A1255
C1256	U1257	41259 A1259	A1260	G1261	01 262 G1 263	C1264	G1265	00715	G1269	C1270	C1271	C1 02 1		A1278	G1279		G1284	A1 205	A1287	A1288	A1289	A1290	41.291	A1292 A1293	G1294	U1295	G1296	A1297 G1298	A1299	A1300	U1301	C1302	U1304	C1305	U1306	C1 300	C1310	C1311	G1312	U1313	A1314 A121E	G1316	G1317	A1318	7 0 0 F	G1324 111325	U1326	C1327
C1328	U1329	G1331	<mark>G1332</mark>	G1333	A1334 A1335	G1336	G1337	01339 111339	C1340	G1341	U1342	C1343	G1345	C1346	C1347	C1348	A1349	G1351	G1352	A1353	A1354	A1355	01350 11357	C1358	G1359		C1363	C1364 111365	A1366	A1367	<mark>G1368</mark>	G1369 111370	61371	A1372	G1373	61374 C1276		A1378	A1379	C1380	61381	C1383	G1384	C1385	A1386	C1389	G1390	A1391
U1392	G1393 C1304	41395 A1395	<mark>C1396</mark>	A1397	C1399	A1400	G1401	G1402 111403	C1404	A1405	A1406	G1407	01409 01409	U1410	C1411	C1412	01413	G1415	A1416	C1417	C1418	G1419	A1420	C1422	A1423	U1424	G1425	01426 G1427	G1428	A1429	G1430	41433	01434	G1435	G1436	A1437 C1/138	G1439	G1440	A1441	C1442	G1443	A1445	U1446	U1447	A1448	C1449 C1450	C1451	U1452
A1453	U1454	C1455 C1456	A1457	A1458 11450	01433 G1460	C1461	C1462	A1463 A1464	G1465	C1466	U1467	A1468	01469 G1470	G1471	C1472	U1473	A1474	014/5 G1476	C1477	U1478	G1479	G1480	01481 111482	G1483	G1484	U1485	A1486	C148/ G1488	C1489	U1490	C1491	A1492 A1493	G1494	G1495	G1496	C1497 C1408	A1499	U1500	C1501	G1502	G1503	U1505		G1508	A1509	A1510 A1511	A1512	U1513

C1514 U1515 A1516 C1517 C1518 G1519 G1519 G1520 C1531 A1532 61533 61533 61535 61535 01535 01535 01535 61545 61542 61542 61542 61542 61545 61545 61545 61545 61545 (1584) 41585 41585 41586 41587 41588 61599 11591 11594 41595 41595 41595 71598 41595 71598 41597 71598 71598 71598 71598 A1603 A1604 A1605 C1606 C1606 A1607 A1608 A1610 A1610 1613 1614 1615 1601 1625 1626



U1578 G1579

C1580 C1581

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C1648		01651 G1652	C1653	A1654	C1655 U1656	A1657	A1658	G1659 C1660	C1661	G1662	C1663	G1664	C1665		G1670	A1671	A1672	C1673 C1674	-	A1681	A1682	G1683	G1684 A1685	A1000	C1687		U1690	G1692 C1692	A1693	A1694	01695 71696	U1697	C1698	A1699	C1701		G1704 111705	A1706	A1707	C1708	01/09 U1710	C1711	G1712	G1/13 A1714	A1715	G1716 A1717
A1718	G1719	G1721 G1721	G1722	U1723	C1725 C1725	C1726	C1727	A1 / 28	G1730	C1731	U1732		G1735	G1737	<mark>U1738</mark>	G1739	G1740	61741 61740	C1743	G1744	C1745	A1746	61/4/ 117/0	01749 G1749	A1750	A1751	01752	61754 G1754	G1755	C1756	C1758	A1759	G1760	61761 C1762	G1763	A1764	C1 /65 111 766	G1767	<mark>U1768</mark>	U1769	01//0 A1771	C1772	C1773	A1775 A1775	A1776	A1777 U1778
C1779	A1780	C1/81 A1782	G1783	C1784	A1785 C1786	U1787	C1788	01/89 61700	C1791	C1792	A1793	A1794	C1795	A1800	C1801	A1802	G1803	01804 01805	G1806	A1807	C1808	G1809	01810	M1011 U1812	A1813	G1814	G1815	01816 U1817	G1818	U1819	61820 A1824	C1822	G1823	C1824	01826	G1827	C1828 C1829	C1830	G1831	G1832	01833 G1834	C1835	C1836	G1836 G1838	A1839	A1840 G1841
G1842	U1843	C1844 A1845		G1850	A1851 G1852	C1853	G1854	(11855 111856	01850 G1857	C1858	A1859	A1860	G1861	01863 U1863	G1864	C1865	G1866	A1867 A1868	A1869	U1870	G1871	A1872	A18/3	T-IOTD	U1881	G1882	A1883	A1884 C1885	G1886	G1887	C1888 C1880	G1890	C1891	C1892	01900	A1901	A1902 C1903	G1904	G1905	U1906	C1908	U1909	A1910	A1911 G1912	G1913	U1914 A1915
G1916	C1917	61918 A1919	A1920	A1921	01922 01923	C1924	C1925	01926 111 027	G1928	U1929	C1930	G1931	G1932	U1934	A1935	A1936	G1937	01938 111939	C1940	C1941	G1942	A1943	C1944	U1946	G1947	C1948	A1949	G1951	A1952	A1953	A1954 C1955	G1956	C1957	G1958 111 05 0	A1960	A1961	C1962 C1963	A1964	U1965	C1966	01967 G1968	G1969	G1970	C19/1 G1972	C1973	U1974 G1975
U1976	C1977	01978 C1979	A1980	A1981	C1982 G1983		G1986	61987 A1088	C1989		G1993	U1994	G1995	A1990 A1997	A1998	U1999	U2000	62001 42002	A2003	U2004	U2005	G2006	62007	U2009	G2010	U2011	A2012	A2013 A2014	G2015	A2016	02017 62018	C2019	G2020	62021 C2022	C2023	U2024	A2025 C2026	C2027	C2028	G2029	02030 A2031	G2032	C2033	G2035	G2036	A2037 C2038
G2039	A2040	A2041 A2042	A2043	G2044	A2045 C2046	C2047	C2048	C2049	U2051	G2052	G2053	A2054	G2055	U2057	U2058	U2059	A2060	UZ061	A2063	U2064	A2065	G2066	02067	U2069	G2070	G2071	C2072	A20/3 U2074	U2075	G2076	620778	A2079	U2080	U2081	G 2083	G2084	62085 112086	U2087		C2094	02096 U2096	A2097	G2098	G2099 A2100		U2105 G2106
G2107	G2108	A2109 G2110	C2111	C2112	C2115	G2116	A2117	C0103	C2124	C2125	U2126	U2127	U2128	67170	G2133	U2134		G2140 A7141	G2142	G2143	C2144	A2145	A2146	62148	G2149	U2150	G2151	A2152 A2153	A2154	U2155	A2156	A2165	G2166	C2120	U2171	U2172	G2173 G2174	A2175	U2176	U2177	02178 C2179	U2180	A2181	A2182 C2183	C2184	U2185 G2186
A2187	A2188	A2189 A2190	A2191	U2192	C2193 A2194	C2195	U2196	1219/ 17108	C2199	G2200	G2201	G2202	G2203	C2205	C2206		G2209	C2210 112211	U2212	G2213	G2214	C2215	62216	G2218	U2219	A2220	G2221	U2222 U2223	U2224	G2225	A2226	U2228	G2229	G2230	G2232	C2233	G2234 G2235	U2236	C2237	G2238	C2239 C2240	U2241	C2242	A2245	A2246	A2247
U2251	A2252	A2253 C2254	G2255	G2256	A2257 G2258	<mark>G2269</mark>	C2260	G2261	C2263	C2264	A2265	A2266	A2267	G2269	U2270	C2271	A2272	C2273 C2274	U2275	C2276	A2277	A2278	00000V	C2281	-	U2284	U2285	G2287 G2287	A2288	A2289	A2290	C2292	G2293	U2294 C2295	U2296	G2297	02298 42299	G2300	A2301	G2302	A2306	A2307	A2308	G2310 G2310	U2311	A2312 G2313
A2314	A2315	G 2319	G2320	C2321	U2322 U2323	G2324	A2325	02326 112327	G2328	C2329	<mark>G2330</mark>	A2331	G2332 A 7222	C2334	<mark>U2335</mark>	G2336	A2337	C2338 4 7 3 3 9	C2340		C2343	G2344	A2345	62347 C2347	A2348	G2349		A2352 G2353	G2354	A2355	A2356 A2356	C2358	U2359	C2360	G2362	G2363	C2364 112365	U2366	A2367	G2368	02369 G2370	A2371	A2372	C2373 C2374	G2375	G2376 U2377
G2378	G2379	U 2380 A 2381	C2382	C2383	G2384 U2385	G2386	U2387	G7380	A2390	A2391	G2392	G2393	G2394	C2396	A2397	U2398	C2399	G2400 A 2401	U2402	C2403	A2404	A2405	C2406	G2408	A2409	U2410	A2411	A2412 A2413	A2414	G2415	U2416 112417	A2418	C2419	C2420	C2422	G2423	G2425	G2426	A2427	U2428	A2429 A2430	C2431	A2432	G2433 G2434	C2435	U2436 G2437
A2438	U2439	C2440 112441	C2442	C2443	C2445 C2445	C2446	G2447	A2448	42450 A2450	G2451		C2454	A2455	U2458	C2459	G2460		G2464 C2465	G2466	A2467	G2468	G2469	02470 112474	U2472	G2473	G2474	C2475	A2476 C2477	C2478	U2479	C2480	A2482	U2483	G2484	C2486	G2487	G2488 C2489	U2490	C2491	G2492	02493 C2494	G2495	C2496	A2497 U2498	C2499	C2500 U2501
G2502	G2503	G2504 G2505	C2506	U2507	G2508 A2509	A2510	G2511	A2512 A7513	G2514	G2515	U2516	C2517	C2518	A2520	A2521	G2522	G2523	62524 112525	U2526	G2527	G2528	G2529	02530	G2532	U2533	U2534	C2535	G2537 C2537	C2538	C2539	A2540 117541	U2542	A2543	A2544 A7545	G2546	C2547	G2548 G2549	C2550	A2551	C2552	G2554	<mark>G2555</mark>	A2556	G2558	U2559	G2560 G2561
	U2564	UZ565 A2566	G2567	A2568	A2569 C2570	G2571	U2572	CO576	A2577	G2578	A2579	C2580	A2581	U2583	U2584	C2585	G2586	112587 112588	C2589	U2590	C2591	U2592	A2593 117604	02595	C2596	G2597	C2598	02599 A2600	C2601	G2602	G2603 C2604	C2605		A2608	G2610	A2611	G2612 A2613	A2614	U2615	U2616	G2617 A2618	G2619	G2620	G2621 G2622	A2623	G2624 U2625









4 Data and refinement statistics (i)

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

Property	Value	Source	
Space group	I 2 2 2	Depositor	
Cell constants	169.50Å 410.50Å 695.20Å	Depositor	
a, b, c, α , β , γ	90.00° 90.00° 90.00°	Depositor	
Resolution (Å)	29.84 - 3.35	Depositor	
% Data completeness	(Not. available) (29.84-3.35)	Depositor	
(in resolution range)	(100 available) (25.01 5.55)	Depositor	
R_{merge}	(Not available)	Depositor	
R _{sym}	(Not available)	Depositor	
Refinement program	CNS 1.1	Depositor	
R, R_{free}	0.299 , 0.322	Depositor	
Estimated twinning fraction	No twinning to report.	Xtriage	
Total number of atoms	63004	wwPDB-VP	
Average B, all atoms $(Å^2)$	54.0	wwPDB-VP	



5 Model quality (i)

5.1 Standard geometry (i)

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		Bo	nd lengths	Bond angles		
	RMSZ	# Z > 5	RMSZ	# Z > 5		
1	0	0.67	3/67338~(0.0%)	0.82	72/105044~(0.1%)	
2	R	0.48	0/737	0.80	0/988	
3	S	0.42	0/835	0.73	1/1121~(0.1%)	
4	W	0.44	0/537	0.58	0/714	
5	1	0.48	0/802	0.68	0/1084	
All	All	0.66	3/70249~(0.0%)	0.82	$73/108951 \ (0.1\%)$	

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	0	0	169
2	R	0	1
All	All	0	170

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Ζ	Observed(Å)	Ideal(Å)
1	0	2776	U	C1'-N1	6.38	1.58	1.48
1	0	2775	U	C1'-N1	6.21	1.58	1.48
1	0	567	G	C5-C6	-5.13	1.37	1.42

The worst 5 of 73 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	$Observed(^{o})$	$Ideal(^{o})$
1	0	2034	A	N9-C1'-C2'	10.22	127.28	114.00
1	0	1342	U	N1-C1'-C2'	9.78	126.71	114.00
1	0	1467	U	N1-C1'-C2'	8.63	125.23	114.00
1	0	2775	U	C2-N1-C1'	-8.26	107.78	117.70
1	0	1631	С	N1-C1'-C2'	8.21	124.68	114.00



There are no chirality outliers.

Mol	Chain	\mathbf{Res}	Type	Group
1	0	118	U	Sidechain
1	0	14	А	Sidechain
1	0	25	U	Sidechain
1	0	43	А	Sidechain
1	0	71	A	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	0	60132	0	30298	3519	0
2	R	726	0	753	126	0
3	S	825	0	881	117	0
4	W	533	0	558	81	0
5	1	788	0	784	74	0
All	All	63004	0	33274	3848	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 40.

The worst 5 of 3848 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)
2:R:69:ILE:CG2	2:R:70:GLY:H	1.26	1.38
1:0:1325:U:H1'	1:0:1619:A:N1	1.50	1.25
2:R:69:ILE:HG22	2:R:70:GLY:N	1.30	1.19
3:S:92:THR:HB	3:S:95:ARG:HH22	1.05	1.18
1:0:67:G:H21	1:0:72:A:H2'	1.09	1.16

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
2	R	91/95~(96%)	70~(77%)	16 (18%)	5~(6%)	2 13
3	S	108/115~(94%)	79~(73%)	24 (22%)	5 (5%)	2 16
4	W	64/67~(96%)	54 (84%)	8 (12%)	2(3%)	4 25
5	1	98/112~(88%)	81 (83%)	13 (13%)	4 (4%)	3 19
All	All	361/389~(93%)	284 (79%)	61 (17%)	16 (4%)	2 18

5 of 16 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	S	42	ARG
3	S	65	PRO
4	W	2	LYS
5	1	49	PRO
2	R	69	ILE

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	meric Outliers		Percentiles		
2	R	75/76~(99%)	61 (81%)	14 (19%)		1	6	
3	S	91/96~(95%)	77~(85%)	14 (15%)		2	12	
4	W	54/55~(98%)	43 (80%)	11 (20%)		1	4	
5	1	83/93~(89%)	72 (87%)	11 (13%)		4	16	
All	All	303/320~(95%)	253 (84%)	50 (16%)		2	10	



2D3O

5 of 50 residues with a non-rotameric sidechain are listed below:

Mol	Chain	\mathbf{Res}	Type
4	W	1	MET
4	W	44	ARG
5	1	109	GLU
4	W	5	GLU
4	W	21	ARG

Sometimes side chains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 11 such side chains are listed below:

Mol	Chain	\mathbf{Res}	Type
5	1	24	ASN
5	1	55	ASN
5	1	100	GLN
5	1	97	GLN
3	S	64	ASN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	0	2798/2880~(97%)	580~(20%)	88~(3%)

5 of 580 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	0	14	А
1	0	25	U
1	0	33	С
1	0	35	G
1	0	45	С

5 of 88 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	0	1777	А
1	0	2237	С
1	0	1811	А
1	0	2016	А
1	0	2409	А



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)

There are no ligands in this entry.

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.

