

wwPDB X-ray Structure Validation Summary Report (i)

Aug 27, 2023 – 02:25 PM EDT

PDB ID	:	3H0G
Title	:	RNA Polymerase II from Schizosaccharomyces pombe
Authors	:	Spahr, H.; Calero, G.; Bushnell, D.A.; Kornberg, R.D.
Deposited on	:	2009-04-09
Resolution	:	3.65 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)	:	1.13
EDS	:	2.35
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
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 (i)

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

The reported resolution of this entry is 3.65 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	$\begin{array}{c} {\rm Whole \ archive} \\ (\#{\rm Entries}) \end{array}$	${f Similar\ resolution}\ (\#{ m Entries,\ resolution\ range}({ m \AA}))$
R _{free}	130704	1557 (3.82 - 3.50)
Clashscore	141614	1037 (3.80-3.52)
Ramachandran outliers	138981	1004 (3.80-3.52)
Sidechain outliers	138945	1002 (3.80-3.52)
RSRZ outliers	127900	1441 (3.82 - 3.50)

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			
			5%				
1	А	1752	19%	45%	18%	·	15%
			10%				
1	М	1752	19%	45%	17%	•	16%
			2%				
2	В	1210	25%	54%		14%	• 5%
			10%				
2	Ν	1210	25%	54%		14%	• 5%
3	С	297	30%	48%		10% •	11%



Mol	Chain	Length		Quality of	f chain	
3	О	297	% 3 0%	4	9%	9% • 11%
4	D	135	23%	51%		18% • •
4	Р	135	6% 21%	53%	-	18% • •
5	Е	210	^{2%} 34%		51%	12% ••
5	Q	210	^{2%} 33%		52%	12% ••
6	F	142	16%	35% 7	7%	42%
6	R	142	15%	35% 8	%	42%
7	G	172	21%	65	%	12% ••
7	\mathbf{S}	172	23% 22%	64	4%	13% ••
8	Н	125	3% 27%	50%	, D	20% ••
8	Т	125	13% 26%	50%		20% ••
9	Ι	113	11% 8%	49%	35%	% 6 % •
9	U	113	23% 12%	45%	34%	6 8% •
10	J	71	25%	45%		15% • 10%
10	V	71	27%	42%		17% • 10%
11	Κ	123	30%		57%	10% •
11	W	123	33%		54%	10% •
12	L	63	19%	41%	8% •	29%
12	Х	63	17%	41%	8% •	29%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
14	MG	А	2458	-	-	-	Х



2 Entry composition (i)

There are 14 unique types of molecules in this entry. The entry contains 62870 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 protein called DNA-directed RNA polymerase II subunit rpb1.

Mol	Chain	Residues		A	toms		ZeroOcc	AltConf	Trace	
1	А	1496	Total 11802	C 7415	N 2071	O 2246	S 70	0	0	0
1	М	1476	Total 11666	С 7334	N 2047	O 2216	S 69	0	0	0

• Molecule 2 is a protein called DNA-directed RNA polymerase II subunit RPB2.

Mol	Chain	Residues		Α	toms		ZeroOcc	AltConf	Trace	
2	В	1150	Total 9180	C 5772	N 1630	0 1716	S 62	0	0	0
2	Ν	1150	Total 9180	C 5772	N 1630	0 1716	S 62	0	0	0

• Molecule 3 is a protein called DNA-directed RNA polymerase II subunit RPB3.

Mol	Chain	Residues		At	oms		ZeroOcc	AltConf	Trace	
3	С	263	Total 2088	C 1315	N 355	O 406	S 12	0	0	0
3	0	263	Total 2088	C 1315	N 355	O 406	S 12	0	0	0

• Molecule 4 is a protein called DNA-directed RNA polymerase II subunit rpb4.

Mol	Chain	Residues		At	oms			ZeroOcc	AltConf	Trace
4	Л	130	Total	С	Ν	0	S	0	0	0
4	D	150	1036	649	176	205	6	0	0	U
4	D	130	Total	С	Ν	0	S	0	0	0
4	I	150	1036	649	176	205	6	0	0	0

• Molecule 5 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC1.



Mol	Chain	Residues		At	oms		ZeroOcc	AltConf	Trace	
5	F	207	Total	С	Ν	0	\mathbf{S}	0	0	0
0		207	1663	1050	301	306	6	0	0	0
5	0	207	Total	С	Ν	0	S	0	0	0
0	Q Q	207	1663	1050	301	306	6	0	U	U

• Molecule 6 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC2.

Mol	Chain	Residues		At	oms			ZeroOcc	AltConf	Trace
6	Б	83	Total	С	Ν	0	S	0	0	0
0	Г	00	656	416	112	125	3	0	0	0
6	D	02	Total	С	Ν	0	S	0	0	0
0	n	00	656	416	112	125	3			U

• Molecule 7 is a protein called DNA-directed RNA polymerase II subunit rpb7.

Mol	Chain	Residues		At	oms			ZeroOcc	AltConf	Trace
7	G	170	Total 1330	C 860	N 217	0 247	S 6	0	0	0
7	S	170	Total 1330	C 860	N 217	0 247	${f S}{f 6}$	0	0	0

• Molecule 8 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC3.

Mol	Chain	Residues		At	oms			ZeroOcc	AltConf	Trace
0	п	194	Total	С	Ν	0	S	0	0	0
0	11	124	996	631	167	195	3	0	0	0
0	т	194	Total	С	Ν	0	S	0	0	0
0	L	124	996	631	167	195	3	0	0	0

• Molecule 9 is a protein called DNA-directed RNA polymerase II subunit RPB9.

Mol	Chain	Residues		A	toms			ZeroOcc	AltConf	Trace
0	т	111	Total	С	Ν	0	\mathbf{S}	0	0	0
9	1		902	551	164	176	11	0	0	0
0	T	111	Total	С	Ν	0	S	0	0	0
9	U		902	551	164	176	11	0	0	0

• Molecule 10 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC5.

Mol	Chain	Residues		Atc	\mathbf{ms}			ZeroOcc	AltConf	Trace
10	J	64	Total 518	C 330	N 87	0 94	S 7	0	0	0



Continued from previous page...

Mol	Chain	Residues		Ato	\mathbf{ms}			ZeroOcc	AltConf	Trace
10	V	64	Total 518	C 330	N 87	0 94	S 7	0	0	0

• Molecule 11 is a protein called DNA-directed RNA polymerase II subunit RPB11.

Mol	Chain	Residues		At	oms			ZeroOcc	AltConf	Trace
11	K	110	Total	С	Ν	0	S	0	0	0
11	IX	115	955	608	159	182	6	0	0	0
11	117	110	Total	С	Ν	0	S	0	0	0
	vv	119	955	608	159	182	6			U

• Molecule 12 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC4.

Mol	Chain	Residues		Ato	oms			ZeroOcc	AltConf	Trace
19	т	45	Total	С	Ν	0	S	0	0	0
12		40	368	225	74	61	8	0	0	0
10	v	45	Total	С	Ν	0	S	0	0	0
	Λ	40	368	225	74	61	8	0	0	0

• Molecule 13 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
13	А	2	Total Zn 2 2	0	0
13	В	1	Total Zn 1 1	0	0
13	С	1	Total Zn 1 1	0	0
13	Ι	2	Total Zn 2 2	0	0
13	J	1	Total Zn 1 1	0	0
13	L	1	Total Zn 1 1	0	0
13	М	2	Total Zn 2 2	0	0
13	Ν	1	Total Zn 1 1	0	0
13	Ο	1	Total Zn 1 1	0	0
13	U	2	Total Zn 2 2	0	0



Continued from previous page...

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
13	V	1	Total Zn 1 1	0	0
13	Х	1	Total Zn 1 1	0	0

• Molecule 14 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
14	А	1	Total Mg 1 1	0	0
14	М	1	Total Mg 1 1	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 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: DNA-directed RNA polymerase II subunit rpb1



E642	K643	G644 D645	E646	1647	C048 K649	G650	F651 F652	N653	G654	I655 D656	R657	V658	V659 Neeo	Y661	W662	L663 L664	H665	NGGG	G667 T668	F003 S669	1670	G671	1672 G673	D674	T675	1676 A677	D678	T681	M682	K683 F684	LUGS V685	T686	V689	K690 F691	T C OT	V696	0701		H705 M706	R707	L708 K709	P7 10 E7 11
P712	G713	M714 T715	L716	R717	F720	E721	A722 K723	V724	S725	R726 1727	L728	N729	Q730	R732	D733	A 730	E740	H741	S742	L/43 K744	D745	S746	N747 N748	V749	0	M/52	S757	K758 C759	S760	F761 1762	N763	I764	M767	S768 4769	C770	V771	6772 0773	Q774	1775 V776	E777	G778 K779	R780 I781
P782	F783	G784 F785	K786	Y787	к/88 T789	L790	P791 H792	F793	P794	K795	P800	E801	8802	G 804	F805	1806 Fe07	N808	<mark>3809</mark>	Y810	L011 R812	G813	L814	T815 P816	Q817	E818	F819 F820	F821	H822 4823	M824	A825	R827	E828		T833	1000 A834	V835	K836 T837	A838	E839 TRAD	6841	Y842 T843	1010 0844 R845
R846	L847	V848 K840	A850	M851	E852 D853	V854	M855 V856	R857	Y858	D859 C860	T861	V862	R863 N864	A865		D868 T 860	1870 I 870	<mark>Q871</mark>	F872	4873 Y874	G875	E876	D877 G878	L879	D880	A881 T882	L883	V884 F885	Y886	0,887 V 888	r 889	с <u>во</u> к	2	<mark>0898</mark>	K902	Y903	R904 1905	D906	L907 Mana	E909	Va16	1910 M917 E918
919	320	921	923 923	924 055	926	927	928 929		3 3	934	937 937	938	939	941	942	943 244	945	946	947 24 0	140 949	950	951 20	952 953	954	955 212	956 957	958	959 a60	961	962 063	964 103	965 966	967	968 369	970	71	972 973	974	975 376	977	978 279	980 981
SN	SS		N9 N	50 D		δΛ			Ë	E	Ğ	Lio	SA V	ğ	RS		3 <u>1</u>	5	K9		F. O	S,			AS	RS VG	PS		SA	SN		RG		SD N	ASA	L ¹		Fg	5H	i iii	AS	50 BX
T982	D983	1085	1986	S987	1989 1989	0661	L993		1996	1997 1997	K999	L1000	T1001	F1003	R1004	G1005 C1006	D1007	R1008	11009 T1010	R1011 R1011	D1012	V1013	N1016	A1017	T1018	L1019 L1020	F1021	Q1022 T1023	L1024	L1025	S1027	K1028	A1030	V1031 K1032	TOTU	Y1038	R1039 L1040	N1041	K1042 V1043	A1044	F1045 E1046	N1047 11048
M1049	G1050	E1051 V1052	V1032 E1053		81062	P1063	G1064 E1065	M1066	V1067	G1068	L1070	A1071	A1072	81074 S1074	11075	G1076 E1077	P1078	A1079	T1080	M1082	T1083	L1084	N1085 T1086	F1087	H1088	Y1089 A1090	G1091	V1092	<mark>S1094</mark>	K1095 M1096	V1097	T1098	G1100	V1101 P1102	R1103	L1104	K1105 E1106	I1107	L1108 M1109	V1110	A1111 K1112	N1113 11114 11114
K1115	T1116	P1117 S1118	L1119	T1120	11121 Y1122	L1123	M1124 P1125	W1126	I1127	A1128 A1129	N1130	M1131	D1132 11132	A1134	K1135	N1136 V1137	01138	T1139	Q1140	E1141	H1143	T1144	T1145 1.1146	S1147	T1148	V1149 T1150	S1151	A1152	E1154	I1155	Y1157	D1158	D1160	P1161 01162	D1163	T1164	V1165 I1166	E1167	E1168	K1170	D1171 F1179	F1172 V1173 E1174
175	176	177	179	180	181	183	184 185	186	187	88	190	191	192	194	195	1 <u>96</u>	198	199	500 •	202	203	204	205	209	210	211		215 216	217	218 210	220	221 221	223	707	228	229	530	2 <mark>36</mark>	237 232	239	240 •	242 • 243 •
A1:	F	F1		P1:	E11	E1	E1:	E1	IN		K1:	Q1:	S1.	T M	L1		1	E1:		R1	A1:	K1:	TW	K1:		TN 1		V12 A12	G 11	K1	A1	E11	F11	1	E E	TI		A1	D1: K1:	L1		C11 C11
R1244	I1245	I1246 B1247	D1248	D1249	D1250 R1251	K1252	A1253 E1254	D1255	D1256	D1257 M1258	M1259	I 1260	E1261 E1262	D1263	V1264	F1265		11269	6201M	L1274	E1275	S1276	11277 S1278	L1279	R1280	61281 V1282	P1283	N1284 T1285	T1286	R1287 V1288	V 1200 Y 1289	M1290 M1291	E1292	H1293 K1294	11295		I1299 E1300	D1301	G1302 T1303	F1304	E1305 R1306	A1307 D1308
E1309	W1310	V1311 11212	E1313	T1314	01316 G1316	11317	N1318 L1319	T1320	E1321	A1322 M1323	T1324	V1325	E1326 C1327	V1328	D1329	A1330 T1331	R1332	T1333	Y1334	00010	F1338	V1339	E1340 T1341	L1342		L1345 G1346	11347	E1348 41349	T1350	R1351	L1355	K1356 F1357	L1358	R1359 N1360	V1361	11362	E1363 F1364	D1365	G1366 81367	Y1368	V1369 N1370	Y1371 R1372
H1373	L1374	A1375 1 1 3 7 6	L1377	C1378		T1382	S1383 R1384	G1385	H1386	L1387 M1388	A1389	I1390	T1391 B1307	H1393	<mark>G1394</mark>	I 1395 N1206	R1397	A1398	E1399 T1400	11400 G1401	A1402	L1403	M1404 R1405	C1406	S1407	F1408 E1409	E1410	T1411 V1412	E1413	11414 11415	M1416	D1417 01418	A1419	A1420 S1421	G1422		D1425 D1426	C1427	K1428 C1429	11430	S1431 E1432	11434
M1435	L1436	G1437	417300 L1439	A1440	r 1441 M1442	G1443	T1444	I1449	Y1450	L1451 D1452	2011	M1455	MIZER	Y1459	S1460	L1461	T1463	A1464	V1465	P1460 T1467	L1468	A1469	G1470 S1471	G1472	M1473	G14/4 T1475	S1476	Q1477	P1479	E1480	A1482	G1483	P1485	Y1486	R1488	S1489	P1490 M1491	V1492	D1493	F1496	ע1497 מיז ץ	SER
ASP	ALA	ALA	PHE	SER	LEU	VAL	GLY	GLY	SER	GLU GLU	ARG	GLU	GLY	GLY	ASP	TYR	LEU	LEU	GLY	ALA ALA	SER	PRO	TYR LYS	GLY	VAL	GLN	PRO	GLY TVR	THR	SER	PHE	SER	ALA	MET	PRO	GLY	TYR GLY	LEU	THR	PRO	SER TYR	SER
SER	SER	PRO CI V	TYR	SER	SER	PRO	ALA TYR	MET	PRO	SER	PRO	SER	TYR	PRO	THR	SER	SER	TYR	SER	THR	SER	PRO	TYR	SER	PRO	THR	PRO	SER TVB	SER	PR.O THR	SER	PRO SER	TYR	SER AI A	THR	SER	PR0 SER	TYR	SER	THR	SER	SER



Hand and a second and a second

PRO THR SER PRO SER TYR SER PRO PRO PRO SER SER

• Molecule 1: DNA-directed RNA polymerase II subunit rpb1







G713	M7 14	1715 1716	R717		F720 F721	A7 22	K723	V/24 S725	R726	1727	L728 N720	0730	A731	R732	D/ 33	A7 39	E740	5742	L743	K744 D745	S746	N747	N7 48 V7 49		M752	K758	G759 8760	F761	I762 N763	I764	S7 65	47.67 M7.67	S768 4769	C770	V771	0773	Q774	92.7V	E777	<u>61.18</u> Κ779	R780	11 01 P782
F783	G784	4.7 85	R788	T789	L790 P701	F / 31 H792	F793	P795 K795		P800	E801	2002 R803	G804	F805	1806 E807	N808	S809	1010 L811	R812	G813 1814	T815	P816	ц817 F818	F819	F820 E221	H822	A823 M824	A825	G826 B827	E828	G829	F030	T833 4834	V835	K836 T837	1001 A838	E839 TeAO	1040 G841	Y842 1942	1843 0844	R845 B946	1847 L847
V848	K849	A850 M851	E852	D853	V854 M855	V856	R857	1858 D859	G860	T861	V862 bog2	1003 N864	<u>A865</u>	M866	4867 D868	1869	1870 0674	40/1 F872	A873	Y874	E876	D877	6878 1.879	D880	A881 Teen	1002 L883	V884 F885	7886	0887 V888	F889		0600	0898	K902	Y903	1905	D906	M908	E909	Y916	M917	616N
S920	I921	E922	D924	S925	S926 V077	0328 0928	D929	E933	E934		0937 1020	V939	A940	D941	E943	L944	L945	C340 K947	F948	1949 FOEA	P961	K952	G953 D964	A955	R956 11057	P958	L959 Dorn	V961	N962 V963	0964 0964	R965 T066	1961	<mark>д968</mark> М969	A970	L971 D072	1973 1973	F974 1075	L976 L976	E977	K979	K980	T982
D983	L984	L985 P986	S987	D988	1989 Toon	0001	L993	1.996	1997	A998	K999	T1001	I1002	F1003	G1005 G1005	<mark>S1006</mark>	D1007	11009 II	T1010	R1011	V1013		N1016	T1018	L1019 11030	F1021	Q1022 11023	L1024	L1025 B1026	S1027	K1028	A1030	V1031 K1032		Y1038	L1040	N1041	V1043	A1044	E1046	W1047	049 M1049
G1050	E1051	V1052 E1053		V1061	S1062 P1063	61064	E1065	M1066 V1067	G1068	T1069	L1070	A1072	Q1073	S1074	G1076 G1076	E1077	P1078	T1080	Q1081	M1082	L1003	N1085	T1086 F1087	H1088	Y1089	G1091	V1092 S1093	S1094	K1095	V1097	T1098	G1100	V1101 P1102	R1103	L1104 K1105	E1106	11107 11108	N1109	V1110	A1111 K1112	N1113	K1115 K1115
T1116	P1117	S1118 11119	T1120	11121	Y1122	M1124	P1125	11126	A1128	A1129	N1130 M1121	D1132	L1133		V1137	<mark>Q1138</mark>	T1139 01110	41140 11141	E1142	H1143 T1144	T1145	L1146	S1147 T1148	V1149	T1150 31151	A1152	T1153	11155	H1156	D1158	P1159 P1160	P1161	Q1162	T1164	V1165	E1167	E1168	K1170	D1171	F11/2 V1173	E1174	F1176
F1177	A1178	011179 01180	01181	E1 182	E1183 V1184	E1185	E1 186	N1187 L1188	Y1189	K1190	11191 51107	P1193	11194		R1197	L1198	E1199	D1201	R1202	A1203	M1205	L1206	01207	K1209	L1210	M1212	<mark>и1 21 Б</mark>	A1216	61217 81218	11219	A1220	51222 S1222	F1223 F1223	R1225	01226	F1228	T1229	00211	D1234	A1236	01237	L1239
240	241	242	244	245	246	248	249	251 251	252	.253	254 •	256	257	258 256	260	.261	262	264	.265	266	269	270	271 579	273	274	276	.277 278	279	.280 281	282	283	285	286	288	289	291	292	294	295	299	300	302
03	04		07 81	11		11 D1	12 D1		15 K1	16 A1			20 D1	21 21	23 23	24 E1	25 E1	27 U	28 F1		31	32 E1	33 34	35 M	36 27		39 II 10 St	41 L1	42 R1	45 V1	46 P1	±/ N1 48 I1	19 TI FI	51 V1	Y FM	86 M	57 E3	69 K1	60 61	61 62 11	63 E1	04 05 05
T13	F13		A13	D13	E13	V13	L13	E13 113	D13	G13	113 N12	L13	T13.	EI3	M13	T13	V13	G13.	V13:	D13	T13	R13	T13	S13	N13	F13	V13.	113	L13	L13	G13	E13	A13. T13	R13	1	K13	E13	R13	N13	1130 II	E13	D13
G1366	S1367	Y1368 V1369	N1370	Y1371	R1372 H1373	L1374	A1375	L13/6 L1377	C1378	D1379		11302 S1383	R1384	G1385	H1380 L1387	M1388	A1389	T1391	R1392	H1393	I 1395	N1396	R1397 41398	E1399	T1400	A1402	L1403 M1404	R1405	C1406 S1407	F1408	E1409	T1411	V1412 F1413	I1414	L1415	A1419	A1420	G1422	140E	D1420	C1427	61429
I1430	S1431	E1432 N1433	I1434	M1435	L1436	01438	L1439	A1440 P1441	M1442	G1443	T1444	G 1440	I1449	Y1450	L1451 D1452	Q1453	D1454	M1450 L1456	M1457	N1458 V1/150	SER	LEU	GLY THR	ALA	VAL	THR	LEU	GLY	SER	MET	GLY	SER	GLN	PRO	GLU	ALA	GLY	PRO	TYR	ARG	SER	ги М1491
V1492		G1495 F1496	V1497	G1498	S1499	D1501	A1502	A1503 A1504	F1505	S1506	P1507	VAL	GLN	GLY	SER	GLU	GLY	GLU	GLY	PHE	ASP	TYR	GLY	LEU	GLY	ALA	SER	TYR	LYS	VAL	GLN	PRO	GLY TVR	THR	SER	PHE	SER	ALA	MET	PRO	GLY	GLY
LEU	THR	DRU	SER	TYR	SER	SER	SER	GLY	TYR	SER	THR	PRO	ALA	TYR	PRO	SER	SER	SER	TYR	SER	THR	SER	PRO	TYR	SER	THR	SER	SER	TYR	PRO	THR	PRO	SER	SER	PRO THR	SER	PRO CED	TYR	SER	THR	SER	SER



SER STAR

• Molecule 2: DNA-directed RNA polymerase II subunit RPB2









• Molecule 2: DNA-directed RNA polymerase II subunit RPB2





T326	T327	V329	T330	R331 E332	K333	R334 1 236	L335 R336	Y337	A338	D340	I341	L342	4343 K344	E345	L346	P348	H349	I350	1351 T352	M353	E354	G355 F356		R359	u Joan	F 302 F363	L364	4366 Y366	M367	I 368	M371	L372	L376	E377	R379	E380	P381	D383	R384	U385 H386	F387	K389	N390
R391	1.394	A395	G396	P397 1.398	L399	A400	L402	F403	R404	L406	F407	R408	R412	D413	V414	K416	Y417	M418	4419 K420	C421	V422	E423 T424	1425 N425	R426	E427	N429	L430	1431 L432	A433	V434	S436	N437 1438	1439 I439	T440 M444	G442	L443	CA AG	L447	A448 #440	1449 G450	N451 M452	G453	D454
Q455	K456 R457	S458	M459	V460 N461	R462	V463	0404 V465	S466	0467 11468	v400 L469	N470	R471	T473	F474	A475 care	T477	L478	S479	H480 1.481	R482	R483	T484 N485	T486	P487	1488 7460	R490	D491	6492 K493	L494	A495 • KAG6	P497	R498	4499 L500	H501 NEOD	T503	H504	W505	M507	V508	P510	A511 E612	T513	P514
-	Q517 A518		L521	V522 K523	N524	L525 SEDE	0700	S529	Y530	8532	V533	G534	S537	A538	P539	1541	-	L544	T 549	ESSO	T551	L552 F553	D554	Y555	N556		S560	N562	A563	T564 VEGE	V566	F567 VECO	v 3000 N569	G570 VE71	V5/1 VI572	L573	G574	H576	R577	P579	A580 HE81	L582	
T585	L586 R587	S588	L589	R590 R591	R592	L593	1595		I601	R603	D604	I605	E607	K608	E609 1610	R611	L612	F613	1614 D615	A616	G617	R618 T619	CC20	R621	P622	L023 F624	1625 1000	V626 D627	N628	N629 D630	N631	S632	CC01	E637	C639	I640	R641 Vean	E643	H644	1040 Q646	0647	D651	
R654	Y655 D656	I 657	D658	P659 E660	Q661	R662 T663	C 003	W665	T666	L668	V669	S670	50/1 G672	L673	I674 Eeze	Y676	L677	D678	A6/9 F680	E681	E682	VERE	M686	1687	A688 M680	8690 S690		L694 E695	A 696	S697	0699	M700	4702	G703 V704	E705	V706	K707	E709	L710	P712	A713	R715	V716
K717	P718	P720	N721	P722 H793	V724	H725	M727	T728	H729	C/30 E731	1732	H733	r / 34 A735	M736	1737	G739	1740	L741	T744	1745	P746	F747 D748	D749	H750	N751 0750	8753	P754	N756	T757	Y758 0750	S760	2263	K764	1257M		L771	T772 N773	Y774	Q775	R777	M778	T780	M781
A782	N783 1784	.785	r786	17.89	22 <u>06</u> 22	707	4793	r7 94	r795	5797	47.98	37 99	801	K802	<u> 1803</u>	806	2807	4808 800	1809	V811	4812 1	1813 1814	4815 A815	I816		0010 1819	5820 0	1822 1822	V823	1824 5805	0826	5827	1020 1829	1830 1021	1832	4833	3834 roac	000	1838 1838	1840	3841 3847	1843	844
345	846 847		820	351 857		854 PEF	356 •	357		361 361	362	363 •	865 365	366	367 260	• •	370	871	872 873	874	375	876 877	878	379		385	386	888 888	389	890 101	892 892	893 807	395 395	396	668	006	901	903	904	900	• 200		SP
S.			Y D					22 • M	23	25 E	26 E	27 20	20 20	30 Pt	31 V	38 38	30 30	40 T		43 • M	44 • K	45 • H	47 Te	48 Y	49 FO				55 At		Ē	60 81	82 ×	63 63	07 02	99 91	67 IS	80 80 80 80 80 80 80 80 80 80 80 80 80 8	T O	72 P:	73 7/		76 A3
IH L.			31 GL	32 GLI 33 ARC	THI	35 26	37 H92	38 A93	39 K9	10 D9	92 V93	33 297	94 15 19	96 L90	R9	000 NB:	001 D90	002	003 V94	005 V94	006 T9	007 T94	60 000	010 E94	011 G94	013 K9	014 F90	016 V9: 16 K9!	017 V9	R9(22	23 T90	25 I 19(026 P96	126 128 196	029	030 D90	032 F96	033 A91	035 R9')36 H9;	00. 038	39 KA
C97	T97	865	M98	198 198 198	R98	H98 H08	D98 D98	86W	P98		66V	000 000	66I	66A	COL	133 110	110	NIO	P10 014	A10	I10	P10	R10	M10	TIO		H10		E10	010	K10	V10	A10	L10	610	F10	E10	D10	A10	P10	F10	D10	DTA
T1040	A1043	V1044	S1045	K1046 1.1047	L1048	R1049	H1051		01054 61054	R1056	G1057	F1058	V1060	M1061	Y1062	G1064	H1065	T1066	G1067 R1068	K1069	L1076	V1071	01073 01073	V1074	F1075	G1077	P1078	110/5 Y1080	Y1081	01082 P1082	• L1084	K1085 111086	L1087	V1086	D1090	K1091	11092 11092	A1094	R1095	R1097	G1098	q1101	TIUZ
L1103	T1104 R1105	Q1106	P1107	V1108 E1109	G1110	R1111 81112	B1112 R1113	D1114	G1115 G1116	L1117	R1118		M1122	E1123	R1124 D1126	C1126	Q1127	11128 11128	S1129 H1130	G1131	C1132	S1133 S1134	V1135	L1136	R1137 E1136	E1130 R1139	L1140	r1141 D1142	C1143	S1144	A1146	Y1147	V1149	I1150 W1154	C1152	D1153	11154 C1155	G1156 G1156	L1157	A1159	11160 11161	S1162	Y1163
K1164	V1168	E1169	C1170	R1171 S1179		N1175 D1176	T1177	R1178	F1179	01180 01181	V1182	Y1183	L1 104 P1 185	Y1186	A1187	K1189	L1190	L1191	F1192 01193	E1194	L1195	M1196 S1197	M1198	N1199	11200	P1202	R1203	F1205	T1206	K1207 M1208	H1209	K1210											





• Molecule 3: DNA-directed RNA polymerase II subunit RPB3



L127 L128 L129 L130 L130 R131 K132 F133 F133 D135

• Molecule 4: DNA-directed RNA polymerase II subunit rpb4



• Molecule 6: DNA-directed RNA polymerases I, II, and III subunit RPABC2

Chain F: 16% 35% 7% 42%









GLN LYS ASN LEU

• Molecule 10: DNA-directed RNA polymerases I, II, and III subunit RPABC5 Chain V: 27% 10% 42% 17% E27 D28 D28 N29 T30 E31 E31 C32 E33 E33 E33 E33 C32 C32 K37 K37 K37 C45 R46 R47 M48 149 L50 T51 330 40 140 743 743 LEU LYS ASN LEU • Molecule 11: DNA-directed RNA polymerase II subunit RPB11 Chain K: 30% 57% 10% 6 • Molecule 11: DNA-directed RNA polymerase II subunit RPB11 Chain W: 33% 54% 10% 194 194 195 196 MET GLU SER • Molecule 12: DNA-directed RNA polymerases I, II, and III subunit RPABC4 Chain L: 19% 41% 8% 29% R63 • Molecule 12: DNA-directed RNA polymerases I, II, and III subunit RPABC4 17% Chain X: 19% 29% 41% 8% MET HIS PRO PRO FIR GLY GLY GLY THR GLY THR ALA ALA PRO PRO PRO PRO PRO PRO T19 T19 T10 T21



R63



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants	163.03Å 202.68Å 391.26Å	Depositor
a, b, c, α , β , γ	90.00° 90.00° 90.00°	Depositor
Bosolution (Å)	48.70 - 3.65	Depositor
	48.69 - 3.65	EDS
% Data completeness	92.8 (48.70-3.65)	Depositor
(in resolution range)	96.2(48.69-3.65)	EDS
R_{merge}	0.09	Depositor
R_{sym}	0.09	Depositor
$< I/\sigma(I) > 1$	$1.66 (at 3.67 \text{\AA})$	Xtriage
Refinement program	PHENIX	Depositor
R R.	0.297 , 0.321	Depositor
II, II, <i>free</i>	0.292 , 0.296	DCC
R_{free} test set	6932 reflections $(4.99%)$	wwPDB-VP
Wilson B-factor $(Å^2)$	125.6	Xtriage
Anisotropy	0.296	Xtriage
Bulk solvent $k_{sol}(e/Å^3)$, $B_{sol}(Å^2)$	0.26, 139.6	EDS
L-test for $twinning^2$	$ < L >=0.39, < L^2>=0.22$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.88	EDS
Total number of atoms	62870	wwPDB-VP
Average B, all atoms $(Å^2)$	203.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: The largest off-origin peak in the Patterson function is 1.85% of the height of the origin peak. No significant pseudotranslation is detected.

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.



¹Intensities estimated from amplitudes.

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: ZN, MG

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).

Mal	Chain	Bond	lengths	B	ond angles
WIOI	Unam	RMSZ	# Z > 5	RMSZ	# Z > 5
1	А	0.41	0/12026	0.57	1/16260~(0.0%)
1	М	0.42	0/11887	0.56	1/16069~(0.0%)
2	В	0.44	0/9360	0.60	5/12643~(0.0%)
2	Ν	0.43	0/9360	0.59	5/12643~(0.0%)
3	С	0.44	0/2135	0.60	0/2904
3	0	0.44	0/2135	0.59	0/2904
4	D	0.24	0/1049	0.38	0/1412
4	Р	0.24	0/1049	0.38	0/1412
5	Е	0.38	0/1695	0.60	0/2287
5	Q	0.39	0/1695	0.60	0/2287
6	F	0.50	0/666	0.67	0/901
6	R	0.50	0/666	0.67	0/901
7	G	0.26	0/1361	0.57	3/1847~(0.2%)
7	S	0.26	0/1361	0.57	3/1847~(0.2%)
8	Н	0.42	0/1010	0.65	0/1363
8	Т	0.42	0/1010	0.65	0/1363
9	Ι	0.22	0/921	0.37	0/1246
9	U	0.24	0/921	0.37	0/1246
10	J	0.57	0/526	0.77	0/709
10	V	0.57	0/526	0.76	0/709
11	Κ	0.47	0/972	0.61	0/1317
11	W	0.47	0/972	0.61	0/1317
12	L	0.36	0/371	0.57	0/491
12	Х	0.37	0/371	0.57	0/491
All	All	0.41	0/64045	0.58	18/86569~(0.0%)

There are no bond length outliers.

The worst 5 of 18 bond angle outliers are listed below:



Conti	Continued from previous page											
Mol	Chain	Res	Type	Atoms	Z	$Observed(^{o})$	$Ideal(^{o})$					
Mol	Chain	Res	Type	Atoms	Z	$Observed(^{o})$	$Ideal(^{o})$					
2	В	992	ALA	N-CA-C	-5.71	95.59	111.00					
2	N	992	ALA	N-CA-C	-5.69	95.65	111.00					
7	G	167	ASP	CB-CG-OD2	5.38	123.14	118.30					
7	S	167	ASP	CB-CG-OD2	5.35	123.12	118.30					
2	Ν	711	ASP	CB-CG-OD2	5.30	123.07	118.30					

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	А	11802	0	11784	3283	0
1	М	11666	0	11647	3212	0
2	В	9180	0	9163	1630	0
2	Ν	9180	0	9164	1653	0
3	С	2088	0	2045	267	0
3	0	2088	0	2045	269	0
4	D	1036	0	1025	349	0
4	Р	1036	0	1025	318	0
5	Ε	1663	0	1684	205	0
5	Q	1663	0	1684	209	0
6	F	656	0	679	75	0
6	R	656	0	679	82	0
7	G	1330	0	1329	424	0
7	S	1330	0	1329	425	0
8	Н	996	0	1006	168	0
8	Т	996	0	1006	178	0
9	Ι	902	0	840	282	0
9	U	902	0	839	268	0
10	J	518	0	529	90	0
10	V	518	0	529	90	0
11	Κ	955	0	968	120	0
11	W	955	0	968	113	0



Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
12	L	368	0	380	38	0
12	Х	368	0	380	38	0
13	А	2	0	0	0	0
13	В	1	0	0	0	0
13	С	1	0	0	0	0
13	Ι	2	0	0	0	0
13	J	1	0	0	0	0
13	L	1	0	0	0	0
13	М	2	0	0	0	0
13	N	1	0	0	0	0
13	0	1	0	0	0	0
13	U	2	0	0	0	0
13	V	1	0	0	0	0
13	Х	1	0	0	0	0
14	A	1	0	0	0	0
14	М	1	0	0	0	0
All	All	62870	0	62727	12749	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 102.

The worst 5 of 12749 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:M:1161:PRO:HG2	1:M:1190:LYS:CG	1.29	1.62
1:A:1161:PRO:HG2	1:A:1190:LYS:CG	1.29	1.58
1:M:1161:PRO:CG	1:M:1190:LYS:HG2	1.33	1.57
1:M:1091:GLY:HA3	1:M:1092:VAL:CG1	1.35	1.56
1:M:267:ASP:CB	1:M:268:LEU:HB2	1.35	1.54

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.



Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percenti		\mathbf{ntil}	es
1	А	1494/1752~(85%)	939~(63%)	280 (19%)	275~(18%)		0	1	
1	М	1472/1752~(84%)	932~(63%)	281 (19%)	259~(18%)		0	2	
2	В	1142/1210 (94%)	735 (64%)	245 (22%)	162 (14%)		0	3	
2	Ν	1142/1210 (94%)	738 (65%)	243 (21%)	161 (14%)		0	3	
3	С	261/297~(88%)	178 (68%)	56~(22%)	27 (10%)		0	7	
3	Ο	261/297~(88%)	178 (68%)	56 (22%)	27 (10%)		0	7	
4	D	128/135~(95%)	86 (67%)	20 (16%)	22 (17%)		0	2	
4	Р	128/135~(95%)	86 (67%)	20 (16%)	22 (17%)		0	2	
5	Е	205/210~(98%)	137 (67%)	43 (21%)	25 (12%)		0	5	
5	Q	205/210~(98%)	137 (67%)	43 (21%)	25 (12%)		0	5	
6	F	81/142~(57%)	58 (72%)	15 (18%)	8 (10%)		0	8	
6	R	81/142~(57%)	57 (70%)	16 (20%)	8 (10%)		0	8	
7	G	168/172~(98%)	128 (76%)	24 (14%)	16 (10%)		0	8	
7	S	168/172~(98%)	128 (76%)	24 (14%)	16 (10%)		0	8	
8	Н	122/125~(98%)	73~(60%)	27~(22%)	22 (18%)		0	1	
8	Т	122/125~(98%)	73~(60%)	27~(22%)	22~(18%)		0	1	
9	Ι	109/113~(96%)	46 (42%)	27~(25%)	36~(33%)		0	0	
9	U	109/113~(96%)	45 (41%)	25~(23%)	39~(36%)		0	0	
10	J	62/71~(87%)	41 (66%)	15 (24%)	6 (10%)		0	8	
10	V	62/71~(87%)	41 (66%)	15 (24%)	6 (10%)		0	8	
11	Κ	117/123~(95%)	80 (68%)	24 (20%)	13 (11%)		0	5	
11	W	117/123~(95%)	80 (68%)	24 (20%)	13 (11%)		0	5	
12	L	43/63~(68%)	23 (54%)	12 (28%)	8 (19%)		0	1	
12	Х	43/63~(68%)	23 (54%)	12 (28%)	8 (19%)		0	1	
All	All	7842/8826 (89%)	5042 (64%)	1574 (20%)	1226 (16%)		0	3	

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

5 of 1226 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	А	10	SER
1	А	12	PRO
1	А	37	ILE



Continued from previous page...

Mol	Chain	Res	Type
1	А	42	THR
1	А	50	PRO

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent side chain 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	Perc	entiles
1	А	1301/1536~(85%)	1113~(86%)	188 (14%)	3	18
1	М	1286/1536~(84%)	1097~(85%)	189~(15%)	3	18
2	В	1012/1064~(95%)	914 (90%)	98~(10%)	8	33
2	Ν	1012/1064~(95%)	914 (90%)	98 (10%)	8	33
3	\mathbf{C}	236/267~(88%)	220~(93%)	16~(7%)	16	47
3	О	236/267~(88%)	220~(93%)	16~(7%)	16	47
4	D	111/115~(96%)	94 (85%)	17~(15%)	2	17
4	Р	111/115~(96%)	94 (85%)	17~(15%)	2	17
5	Ε	182/184~(99%)	169~(93%)	13~(7%)	14	45
5	Q	182/184~(99%)	169~(93%)	13~(7%)	14	45
6	F	71/121~(59%)	64 (90%)	7~(10%)	8	32
6	R	71/121~(59%)	64 (90%)	7~(10%)	8	32
7	G	146/148~(99%)	139~(95%)	7~(5%)	25	56
7	S	146/148~(99%)	139~(95%)	7~(5%)	25	56
8	Н	113/114~(99%)	99~(88%)	14 (12%)	4	23
8	Т	113/114~(99%)	99~(88%)	14~(12%)	4	23
9	Ι	103/105~(98%)	80 (78%)	23~(22%)	1	6
9	U	103/105~(98%)	80 (78%)	23~(22%)	1	6
10	J	59/66~(89%)	46 (78%)	13 (22%)	1	6
10	V	59/66~(89%)	46 (78%)	13 (22%)	1	6
11	Κ	109/113~(96%)	104~(95%)	5 (5%)	27	57
11	W	109/113~(96%)	103 (94%)	$\overline{6\ (6\%)}$	21	53



Mol	Chain	Analysed	Rotameric	Outliers	Perc	entiles
12	L	39/53~(74%)	34 (87%)	5~(13%)	4	22
12	Х	39/53~(74%)	34 (87%)	5(13%)	4	22
All	All	6949/7772~(89%)	6135 (88%)	814 (12%)	5	26

5 of 814 residues with a non-rotameric sidechain are listed below:

Mol	Chain	\mathbf{Res}	Type
1	М	326	ARG
1	М	1278	SER
10	V	46	ARG
1	М	430	ILE
1	М	322	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 225 such sidechains are listed below:

Mol	Chain	\mathbf{Res}	Type
1	М	82	HIS
11	W	39	HIS
1	М	898	GLN
10	V	52	HIS
5	Q	19	HIS

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 monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 18 ligands modelled in this entry, 18 are monoatomic - leaving 0 for Mogul analysis.



There are no bond length outliers. There are no bond angle outliers. There are no chirality outliers. There are no torsion outliers. There are no ring outliers. No monomer is involved in short contacts.

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, 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	$\langle RSRZ \rangle$	#RSRZ>2	$\mathbf{OWAB}(\mathrm{\AA}^2)$	Q < 0.9
1	А	1496/1752~(85%)	0.16	84 (5%) 24 16	51,150,385,628	0
1	М	1476/1752~(84%)	0.53	174 (11%) 4 3	83, 199, 449, 672	0
2	В	1150/1210~(95%)	0.05	27 (2%) 60 46	69, 142, 314, 580	0
2	Ν	1150/1210~(95%)	0.55	118 (10%) 6 4	85, 222, 419, 618	0
3	С	263/297~(88%)	-0.18	0 100 100	80, 126, 252, 477	0
3	Ο	263/297~(88%)	0.08	2 (0%) 86 77	125, 190, 350, 511	0
4	D	130/135~(96%)	0.32	5 (3%) 40 28	128, 240, 360, 596	0
4	Р	130/135~(96%)	0.55	8 (6%) 20 13	152, 287, 414, 545	0
5	Ε	207/210~(98%)	-0.15	5 (2%) 59 45	70, 164, 293, 516	0
5	Q	207/210~(98%)	-0.05	4 (1%) 66 53	119, 181, 373, 501	0
6	F	83/142~(58%)	-0.49	0 100 100	70, 97, 170, 232	0
6	R	83/142~(58%)	-0.35	1 (1%) 79 68	111, 126, 200, 335	0
7	G	170/172~(98%)	0.35	9 (5%) 26 18	92, 199, 323, 514	0
7	S	170/172~(98%)	1.07	39 (22%) 0 0	122, 240, 388, 494	0
8	Н	124/125~(99%)	0.14	4 (3%) 47 34	82, 138, 298, 408	0
8	Т	124/125~(99%)	0.60	16 (12%) 3 3	115, 197, 344, 429	0
9	Ι	111/113 (98%)	0.50	12 (10%) 5 4	98, 239, 367, 549	0
9	U	111/113 (98%)	1.63	26 (23%) 0 0	151, 330, 482, 585	0
10	J	64/71~(90%)	-0.20	0 100 100	85, 108, 220, 304	0
10	V	64/71~(90%)	0.04	0 100 100	137, 203, 326, 373	0
11	K	119/123~(96%)	-0.34	0 100 100	60, 126, 221, 319	0
11	W	119/123~(96%)	0.15	3 (2%) 57 43	76, 168, 295, 470	0
12	L	45/63~(71%)	-0.02	1 (2%) 62 48	93, 177, 299, 481	0
12	Х	$4\overline{5/63}~(71\%)$	1.00	11 (24%) 0 0	153, 277, 425, 580	0



Mol	Chain	Analysed	< RSRZ >	#RSRZ>2	$\mathbf{OWAB}(\mathbf{\AA}^2)$	Q<0.9
All	All	7904/8826~(89%)	0.29	549 (6%) 16 11	51, 181, 397, 672	0

The worst 5 of 549 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
9	U	41	SER	21.8
9	U	40	THR	16.2
9	U	39	ALA	14.8
11	W	119	GLU	14.5
1	А	107	CYS	12.1

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 monosaccharides 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, 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
14	MG	М	2458	1/1	0.27	0.39	197,197,197,197	0
14	MG	А	2458	1/1	0.54	1.81	109,109,109,109	0
13	ZN	М	2456	1/1	0.63	0.26	432,432,432,432	0
13	ZN	А	2456	1/1	0.68	0.06	245,245,245,245	0
13	ZN	0	1269	1/1	0.70	0.11	189,189,189,189	0
13	ZN	Ν	2225	1/1	0.80	0.22	180,180,180,180	0
13	ZN	U	1122	1/1	0.80	0.06	240,240,240,240	0
13	ZN	М	2457	1/1	0.83	0.14	172,172,172,172	0
13	ZN	Х	1071	1/1	0.83	0.05	195,195,195,195	0
13	ZN	Ι	1122	1/1	0.83	0.10	126,126,126,126	0
13	ZN	Ι	1121	1/1	0.83	0.06	160,160,160,160	0
13	ZN	L	1071	1/1	0.87	0.09	123,123,123,123	0
13	ZN	U	1121	1/1	0.90	0.06	284,284,284,284	0



Mol	Type	Chain	Res	Atoms	RSCC	RSR	$B-factors(Å^2)$	Q<0.9
13	ZN	С	1269	1/1	0.91	0.07	122,122,122,122	0
13	ZN	В	2225	1/1	0.94	0.17	149,149,149,149	0
13	ZN	А	2457	1/1	0.94	0.20	122,122,122,122	0
13	ZN	V	1066	1/1	0.96	0.20	$155,\!155,\!155,\!155$	0
13	ZN	J	1066	1/1	0.97	0.22	87,87,87,87	0

Continued from previous page...

6.5 Other polymers (i)

There are no such residues in this entry.

