



wwPDB X-ray Structure Validation Summary Report ⓘ

Jun 16, 2024 – 12:22 AM EDT

PDB ID : 1Y1W
Title : Complete RNA Polymerase II elongation complex
Authors : Cramer, P.; Kettenberger, H.; Armache, K.-J.
Deposited on : 2004-11-19
Resolution : 4.00 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
Xtriage (Phenix) : 1.20.1
EDS : 2.37.1
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) : 2.37.1

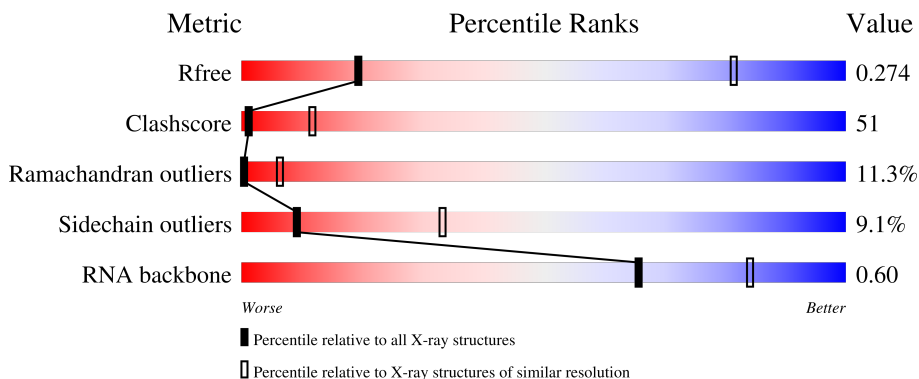
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 4.00 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.



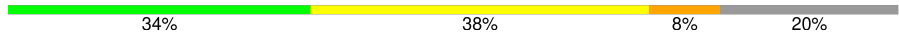
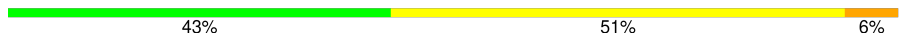
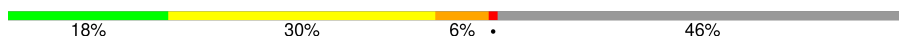


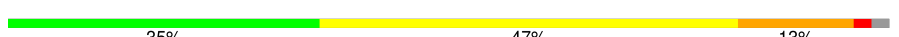
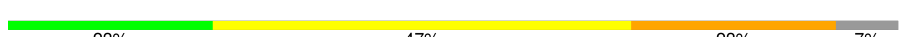
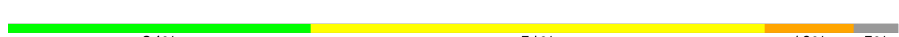

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1087 (4.30-3.70)
Clashscore	141614	1148 (4.30-3.70)
Ramachandran outliers	138981	1108 (4.30-3.70)
Sidechain outliers	138945	1099 (4.30-3.70)
RNA backbone	3102	1048 (5.00-3.00)

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 $\leq 5\%$.

Mol	Chain	Length	Quality of chain
1	T	19	32% (green), 68% (yellow)
2	N	7	14% (green), 71% (yellow), 14% (orange)
3	P	10	80% (yellow), 20% (red)
4	A	1733	25% (green), 45% (yellow), 10% (orange), 18% (grey)
5	B	1224	27% (green), 50% (yellow), 13% (orange), 9% (grey)
6	C	318	27% (green), 45% (yellow), 10% (orange), 16% (grey)

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Mol	Chain	Length	Quality of chain
7	D	221	
8	E	215	
9	F	155	
10	G	171	
11	H	146	
12	I	122	
13	J	70	
14	K	120	
15	L	70	

2 Entry composition [i](#)

There are 17 unique types of molecules in this entry. The entry contains 31802 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 DNA chain called 5'-D(P*AP*GP*TP*AP*CP*TP*TP*AP*CP*GP*CP*C P*TP*GP*GP*TP*CP*AP*T)-3'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
1	T	19	387	185	67	116	19	21	0	0

- Molecule 2 is a DNA chain called 5'-D(*AP*AP*GP*TP*AP*CP*T)-3'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
2	N	7	141	69	27	39	6	20	0	0

- Molecule 3 is a RNA chain called 5'-R(*AP*AP*GP*AP*CP*CP*AP*GP*GP*C)-3'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
3	P	10	214	97	44	64	9	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	A	1416	11140	7021	1946	2111	62	0	0	0

- Molecule 5 is a protein called DNA-directed RNA polymerase II 140 kDa polypeptide.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
5	B	1112	8836	5594	1548	1639	55	0	0	0

- Molecule 6 is a protein called DNA-directed RNA polymerase II 45 kDa polypeptide.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
6	C	266	2095	1317	348	417	13	0	0	0

- Molecule 7 is a protein called DNA-directed RNA polymerase II 32 kDa polypeptide.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
7	D	177	1356	840	241	273	2	0	0	0

- Molecule 8 is a protein called DNA-directed RNA polymerases I, II, and III 27 kDa polypeptide.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
8	E	214	1752	1111	309	321	11	0	0	0

- Molecule 9 is a protein called DNA-directed RNA polymerases I, II, and III 23 kDa polypeptide.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
9	F	84	679	434	115	127	3	0	0	0

- Molecule 10 is a protein called DNA-directed RNA polymerase II 19 kDa polypeptide.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
10	G	171	1340	861	222	249	8	0	0	0

- Molecule 11 is a protein called DNA-directed RNA polymerases I, II, and III 14.5 kDa polypeptide.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
11	H	133	1068	673	180	211	4	0	0	0

- Molecule 12 is a protein called DNA-directed RNA polymerase II subunit 9.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
12	I	119	971	596	179	186	10	0	0	0

- Molecule 13 is a protein called DNA-directed RNA polymerases I/II/III subunit 10.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
13	J	65	532	339	93	94	6	0	0	0

- Molecule 14 is a protein called DNA-directed RNA polymerase II 13.6 kDa polypeptide.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
14	K	114	919	590	156	171	2	0	0	0

- Molecule 15 is a protein called DNA-directed RNA polymerases I, II, and III 7.7 kDa polypeptide.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
15	L	46	363	224	72	63	4	0	0	0

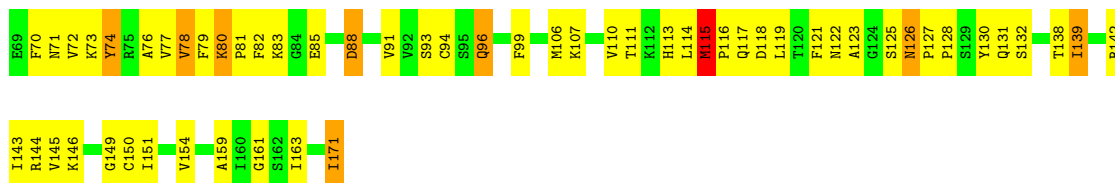
- Molecule 16 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
16	A	2	Total	Zn	0	0
			2	2		
16	B	1	Total	Zn	0	0
			1	1		
16	C	1	Total	Zn	0	0
			1	1		
16	I	2	Total	Zn	0	0
			2	2		
16	J	1	Total	Zn	0	0
			1	1		
16	L	1	Total	Zn	0	0
			1	1		

- Molecule 17 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

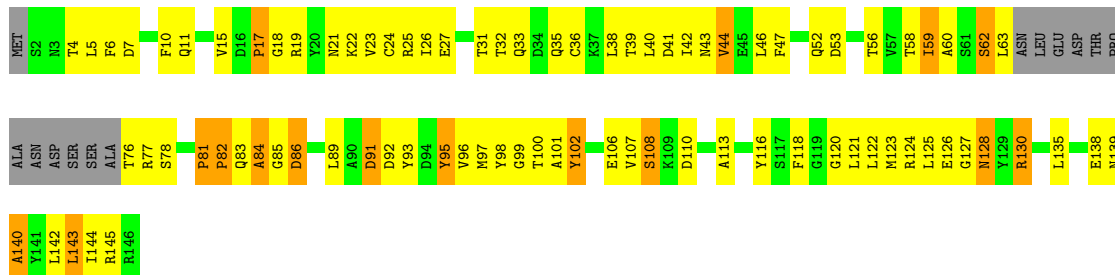
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
17	A	1	Total	Mg	0	0
			1	1		

K1300	E1301	F1302	E1303	W1304	F1305	L1306	E1307	L1308	D1309	G1310	L1311	W1312	L1313	S1314	E1315	L1316	W1317	T1318	F1319	V1320	D1323	L1324	L1325	R1326	I1327	V1328	L1329	L1330	L1331	F1332	I1333	D1334	L1335	M1336	E1337	V1338	L1339	G1340	E1341	E1342	A1343	G1344	R1345	V1346	L1347	Y1348	K1350	E1351	V1352	V1353	V1354	V1355	V1356	V1357	V1358	V1359	Y1362	V1363																																																																															
L1224	L1226	I1227	W1228	D1231	L1236	I1237	R1238	L1239	C1240	R1241	V1242	V1243	ARG	PRO	LYS	GLU	SER	LEU	ASP	GLU	ALA	GLU	GLN	THR	GLU	A1254	E1255	E1256	L1260	K1261	E1264	N1265	L1266	M1267	L1268	I1271	R1274	G1275	D1206	L1207	T1208	M1209	G1210	Q1211	V1212	G1213	E1214	R1215	I1216	V1291	P1292	S1293	P1294	L1295	Y1298	V1299																																																																																	
T1161	V1162	I1163	P1164	E1165	D1166	E1167	E1168	I1169	L1170	Q1171	L1172	H1173	L1176	LEU	ASP	GLU	GLU	ALA	GLU	GLN	SER	PHE	ASP	Q1187	Q1188	S1189	P1190	W1191	L1192	L1193	R1194	L1195	E1196	L1197	D1198	R1199	M1202	K1205	D1206	L1207	L1208	M1209	G1210	Q1211	V1212	G1213	E1214	R1215	I1216	K1217	Q1218	T1219	F1220	K1221	M1222	D1223																																																																																	
K1092	K1093	V1094	T1095	G1096	L1097	V1098	P1099	R1100	L1101	K1102	L1105	N1106	V1107	N1110	M1111	K1112	T1113	P1114	S1115	L1116	T1117	V1118	Y1119	L1120	P1122	Q1130	L1133	I1134	E1139	H1140	T1141	L1142	L1143	K1144	T1147	I1148	A1149	S1150	E1151	I1152	V1153	Y1154	Q1155	L1156	P1157	P1158	M1159	S1160																																																																																									
R961	R962	R963	R964	Q965	N966	A967	Q968	Q969	R970	R971	H972	I973	S979	D980	L981	T982	I983	K984	I985	E1050	L1051	Q1052	F1053	L1054	A1041	M1044	V1045	N1048	I1049	E1050	S1051	T1052	H1053	D992	L993	Q994	E995	N996	L997	L998	G1061	M1062	V1063	V1064	G1065	V1066	E1067	A1068	Q1070	S1071	I1072	G1073	D1013	P1075	A1076	ASN	THR	PHE	HIS	PHE	ALA	PHE	GLY	VAL	ALA	SER																																																																							
R887	E888	S889	D890	A891	T892	A893	R894	R895	R896	R897	R898	V899	D900	R901	E902	L903	L904	D905	H906	T907	L908	R909	P910	S911	L912	L913	E914	R919	L920	E921	K922	Y852	D923	N853	N854	R855	L856	R857	D930	N858	S859	L860	G861	N862	R863	L864	O865	R866	L867	R868	E869	E870	D871	G872	M873	D874	A875	R881	R882	R883	D884	R885	R886	R887	R888	R889	R890	R891	R892	R893	R894	R895	R896	R897	R898	R899	R900	R901	R902	R903	R904	R905	R906	R907	R908	R909	R910	R911	R912	R913	R914	R915	R916	R917	R918	R919	R920	R921	R922	R923	R924	R925	R926	R927	R928	R929	R930	R931	R932	R933	R934	R935	R936	R937	R938	R939	R940	R941	R942	R943	R944	R945	R946	R947	R948	R949	R950	R951	R952	R953	R954	R955	R956	R957	R958	R959	R960
E822	G823	L824	R825	D826	T827	A828	R829	R830	T831	A832	R833	T834	G835	R836	R837	Q838	R839	R840	L841	R842	R843	A844	L845	E846	D847	L848	M849	N850	R851	R852	K853	Y854	D855	N856	R857	R858	R859	R860	R861	N862	L863	L864	O865	R866	L867	R868	E869	E870	D871	G872	M873	D874	A875	R881	R882	R883	D884	R885	R886	R887	R888	R889	R890	R891	R892	R893	R894	R895	R896	R897	R898	R899	R900	R901	R902	R903	R904	R905	R906	R907	R908	R909	R910	R911	R912	R913	R914	R915	R916	R917	R918	R919	R920	R921	R922	R923	R924	R925	R926	R927	R928	R929	R930	R931	R932	R933	R934	R935	R936	R937	R938	R939	R940	R941	R942	R943	R944	R945	R946	R947	R948	R949	R950	R951	R952	R953	R954	R955	R956	R957	R958	R959	R960				
E684	E685	K686	K687	V690	L691	D692	G693	V694	V695	T696	K697	E698	V699	A699	N700	L701	T709	L710	E712	S713	F714	E715	L645	F646	G647	N648	H649	I649	K650	G651	V652	V653	E654	H655	M656	N657	N658	N659	N660	G661	F662	S663	T664	G665	L666	D667	D668	L669	T670	A671	D672	V673	G674	K675	L676	T677	M678	M679	T680	E681	G682	F683	S684	T685	V686	F687	E688	R689	R690	R691	R692	R693	R694	R695	R696	R697	R698	R699	R700	R701	R702	R703	R704	R705	R706	R707	R708	R709	R710	R711	R712	R713	R714	R715	R716	R717	R718	R719	R720	R721	R722	R723	R724	R725	R726	R727	R728	R729	R730	R731	R732	R733	R734	R735	R736	R737	R738	R739	R740	R741	R742	R743	R744	R745	R746	R747	R748	R749	R750	R751	R752	R753	R754	R755			
L424	Q425	L426	Q427	V428	G429	W430	K431	V432	E433	R434	H435	D438	N439	D440	P441	V442	L443	N444	P507	P508	N445	Q447	V511	V512	S513	P514	Q515	K516	N517	K518	M519	M456	A457	H458	R459	V460	K461	V462	I463	P464	Y465	S466	T467	F468	R469	L470	N471	G410	L472	S473	V474	L475	S476	P477	R416	Y417	N478	V446	L547	M548	R420	F482	A421	G422																																																																									
F347	S348	A349	R350	T351	V352	I353	S354	G355	D356	P357	N358	V364	G365	V366	S369	K372	Y376	T381	P382	Y383	N384	I385	K386	R387	L388	V392	P396	H399	P400	G401	A402	K403	Y404	V405	L406	R407	D408	S409	G410	L472	D411	R412	I413	D414	L415	S476	P477	R416	Y417	N478	V446	L547	M548	R420	F482	A421	G422																																																																																



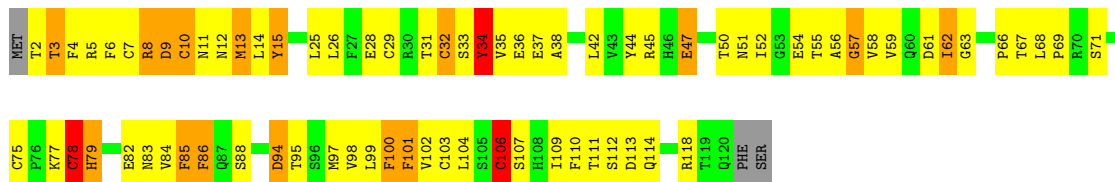
- Molecule 11: DNA-directed RNA polymerases I, II, and III 14.5 kDa polypeptide

Chain H: 33% 47% 11% 9%



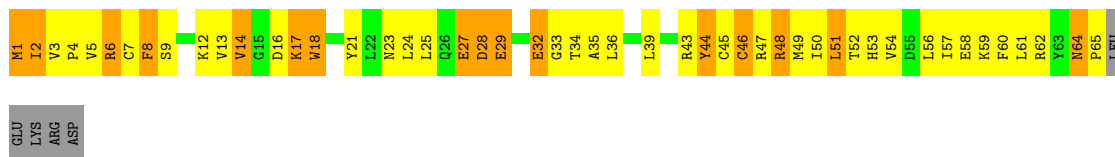
- Molecule 12: DNA-directed RNA polymerase II subunit 9

Chain I: 35% 47% 13% ..



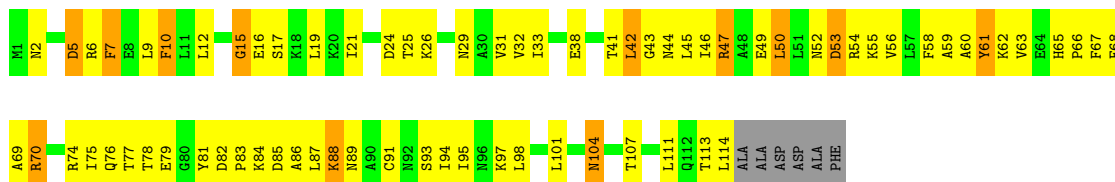
- Molecule 13: DNA-directed RNA polymerases I/II/III subunit 10

Chain J: 23% 47% 23% 7%

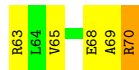
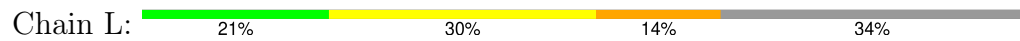


- Molecule 14: DNA-directed RNA polymerase II 13.6 kDa polypeptide

Chain K: 34% 51% 10% 5%



- Molecule 15: DNA-directed RNA polymerases I, II, and III 7.7 kDa polypeptide



4 Data and refinement statistics i

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	221.37Å 392.50Å 283.18Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 4.00 48.83 – 3.78	Depositor EDS
% Data completeness (in resolution range)	(Not available) (50.00-4.00) 94.4 (48.83-3.78)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	0.00 (at 3.77Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.253 , 0.276 0.260 , 0.274	Depositor DCC
R_{free} test set	2439 reflections (2.00%)	wwPDB-VP
Wilson B-factor (Å ²)	77.4	Xtriage
Anisotropy	0.284	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.18 , -11.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.28$, $\langle L^2 \rangle = 0.12$	Xtriage
Estimated twinning fraction	0.207 for 1/2*h-1/2*k,-3/2*h-1/2*k,-l 0.206 for 1/2*h+1/2*k,3/2*h-1/2*k,-l	Xtriage
F_o, F_c correlation	0.83	EDS
Total number of atoms	31802	wwPDB-VP
Average B, all atoms (Å ²)	89.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.51% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: MG, ZN

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	T	1.15	1/432 (0.2%)	1.03	1/664 (0.2%)
2	N	1.74	1/158 (0.6%)	0.91	1/242 (0.4%)
3	P	1.17	2/240 (0.8%)	1.06	3/373 (0.8%)
4	A	0.50	0/11339	0.75	5/15334 (0.0%)
5	B	0.51	1/9008 (0.0%)	0.74	5/12146 (0.0%)
6	C	0.56	0/2133	0.76	0/2891
7	D	0.46	0/1365	0.71	0/1837
8	E	0.45	0/1788	0.64	0/2406
9	F	0.56	0/691	0.80	0/933
10	G	0.55	0/1368	0.76	0/1844
11	H	0.40	0/1086	0.65	0/1470
12	I	0.49	1/989 (0.1%)	0.72	0/1331
13	J	0.52	0/541	0.80	0/727
14	K	0.52	0/937	0.70	0/1265
15	L	0.47	0/365	0.74	0/485
All	All	0.54	6/32440 (0.0%)	0.75	15/43948 (0.0%)

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
5	B	0	1
6	C	0	1
All	All	0	2

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

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	T	10	DA	O3'-P	-9.11	1.50	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	N	6	DC	O3'-P	7.11	1.69	1.61
12	I	78	CYS	CB-SG	-6.30	1.71	1.82
3	P	3	G	P-OP1	-6.03	1.38	1.49
5	B	503	GLY	CA-C	6.02	1.61	1.51

The worst 5 of 15 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	T	10	DA	OP1-P-O3'	7.38	121.44	105.20
3	P	3	G	O5'-P-OP1	-7.04	99.36	105.70
3	P	2	A	C2'-C3'-O3'	6.95	124.82	113.70
2	N	6	DC	P-O3'-C3'	6.32	127.28	119.70
5	B	1185	CYS	N-CA-C	-6.23	94.17	111.00

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
5	B	503	GLY	Mainchain
6	C	82	TYR	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	T	387	0	216	24	0
2	N	141	0	81	8	0
3	P	214	0	111	13	0
4	A	11140	0	11217	1300	0
5	B	8836	0	8871	1003	0
6	C	2095	0	2051	255	0
7	D	1356	0	1319	117	0
8	E	1752	0	1776	148	0
9	F	679	0	701	86	0
10	G	1340	0	1357	157	0
11	H	1068	0	1040	110	0
12	I	971	0	930	105	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
13	J	532	0	542	94	0
14	K	919	0	929	93	0
15	L	363	0	387	45	0
16	A	2	0	0	0	0
16	B	1	0	0	0	0
16	C	1	0	0	0	0
16	I	2	0	0	0	0
16	J	1	0	0	0	0
16	L	1	0	0	0	0
17	A	1	0	0	0	0
All	All	31802	0	31528	3238	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 51.

The worst 5 of 3238 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)
7:D:40:HIS:HB3	10:G:73:LYS:NZ	1.61	1.14
14:K:47:ARG:HB3	14:K:47:ARG:HH11	1.00	1.14
4:A:53:LEU:HD23	4:A:54:ASN:H	1.08	1.12
4:A:76:GLU:HG3	4:A:76:GLU:O	1.53	1.08
4:A:53:LEU:HD23	4:A:54:ASN:N	1.70	1.07

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
4	A	1406/1733 (81%)	936 (67%)	311 (22%)	159 (11%)	0 6
5	B	1096/1224 (90%)	740 (68%)	215 (20%)	141 (13%)	0 4

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
6	C	264/318 (83%)	166 (63%)	64 (24%)	34 (13%)	0	4
7	D	173/221 (78%)	118 (68%)	38 (22%)	17 (10%)	0	10
8	E	212/215 (99%)	154 (73%)	44 (21%)	14 (7%)	1	17
9	F	82/155 (53%)	63 (77%)	16 (20%)	3 (4%)	3	28
10	G	169/171 (99%)	133 (79%)	24 (14%)	12 (7%)	1	16
11	H	129/146 (88%)	85 (66%)	28 (22%)	16 (12%)	0	5
12	I	117/122 (96%)	79 (68%)	27 (23%)	11 (9%)	0	11
13	J	63/70 (90%)	34 (54%)	15 (24%)	14 (22%)	0	1
14	K	112/120 (93%)	87 (78%)	17 (15%)	8 (7%)	1	16
15	L	44/70 (63%)	17 (39%)	18 (41%)	9 (20%)	0	2
All	All	3867/4565 (85%)	2612 (68%)	817 (21%)	438 (11%)	0	6

5 of 438 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	A	5	GLN
4	A	48	ALA
4	A	54	ASN
4	A	55	ASP
4	A	57	ARG

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
4	A	1239/1520 (82%)	1125 (91%)	114 (9%)	9	32
5	B	964/1061 (91%)	873 (91%)	91 (9%)	8	31
6	C	234/274 (85%)	213 (91%)	21 (9%)	9	34
7	D	140/200 (70%)	124 (89%)	16 (11%)	5	25
8	E	196/197 (100%)	188 (96%)	8 (4%)	30	57
9	F	74/137 (54%)	65 (88%)	9 (12%)	5	23

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
10	G	152/152 (100%)	139 (91%)	13 (9%)	10	37
11	H	117/128 (91%)	109 (93%)	8 (7%)	16	44
12	I	113/116 (97%)	98 (87%)	15 (13%)	4	21
13	J	60/65 (92%)	55 (92%)	5 (8%)	11	38
14	K	99/102 (97%)	90 (91%)	9 (9%)	9	33
15	L	40/57 (70%)	37 (92%)	3 (8%)	13	41
All	All	3428/4009 (86%)	3116 (91%)	312 (9%)	9	33

5 of 312 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
7	D	139	LYS
12	I	34	TYR
7	D	187	THR
10	G	13	LEU
14	K	5	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 84 such sidechains are listed below:

Mol	Chain	Res	Type
6	C	24	ASN
8	E	147	HIS
6	C	91	HIS
7	D	137	ASN
10	G	122	ASN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
3	P	9/10 (90%)	1 (11%)	1 (11%)

All (1) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
3	P	3	G

All (1) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
3	P	2	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 9 ligands modelled in this entry, 9 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

6.1 Protein, DNA and RNA chains

Unable to reproduce the depositors R factor - this section is therefore empty.

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

Unable to reproduce the depositors R factor - this section is therefore empty.

6.3 Carbohydrates

Unable to reproduce the depositors R factor - this section is therefore empty.

6.4 Ligands

Unable to reproduce the depositors R factor - this section is therefore empty.

6.5 Other polymers

Unable to reproduce the depositors R factor - this section is therefore empty.