

wwPDB X-ray Structure Validation Summary Report (i)

Jun 11, 2024 – 09:00 PM EDT

PDB ID	:	6N60
Title	:	Escherichia coli RNA polymerase sigma70-holoenzyme bound to upstream fork
		promoter DNA and Microcin J25 (MccJ25)
Authors	:	Braffman, N.; Hauver, J.; Campbell, E.A.; Darst, S.A.
Deposited on	:	2018-11-23
Resolution	:	3.68 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
	·	4.020-401
Xtriage (Phenix)	:	1.13
EDS	:	2.36.2
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)	:	2.36.2

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 3.68 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))
D	120704	
R_{free}	130704	1013 (3.84-3.52)
Clashscore	141614	1070 (3.84 - 3.52)
Ramachandran outliers	138981	1036 (3.84-3.52)
Sidechain outliers	138945	1033 (3.84-3.52)
RSRZ outliers	127900	1471 (3.86-3.50)

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						
1	А	239	67%		28%	••			
1	В	239	51%	35%	5%	9%			
2	С	1342	2% 61%	3	3%	5%•			
3	D	1409	3% 54%	29%	5%	12%			
4	Е	91	53%	29%	5%	13%			

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Mol	Chain	Length	Quality of chain						
5	F	612	2% 	14% •	48%		_		
6	М	21	29%	57%		10%	5%		
7	Ν	29	52%		48%				
8	Т	24	54%		42%		•		



2 Entry composition (i)

There are 10 unique types of molecules in this entry. The entry contains 27705 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.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	Δ	221	Total	С	Ν	Ο	S	0	Ο	0
1	Л	231	1759	1094	312	347	6	0	0	0
1	Р	218	Total	С	Ν	0	S	0	0	0
	I D	218	1638	1023	284	325	6		0	0

• Molecule 1 is a protein called DNA-directed RNA polymerase subunit alpha.

Chain	Residue	Modelled	Actual	Comment	Reference
А	235	GLU	-	expression tag	UNP P0A7Z4
А	236	VAL	-	expression tag	UNP P0A7Z4
А	237	LEU	-	expression tag	UNP P0A7Z4
А	238	PHE	-	expression tag	UNP P0A7Z4
А	239	GLN	-	expression tag	UNP P0A7Z4
В	235	GLU	-	expression tag	UNP P0A7Z4
В	236	VAL	-	expression tag	UNP P0A7Z4
В	237	LEU	-	expression tag	UNP P0A7Z4
В	238	PHE	-	expression tag	UNP P0A7Z4
В	239	GLN	-	expression tag	UNP P0A7Z4

There are 10 discrepancies between the modelled and reference sequences:

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

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace	
2	С	1335	Total 10470	C 6569	N 1822	O 2036	S 43	0	0	0

• Molecule 3 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace	
3	D	1236	Total 9578	C 6015	N 1711	O 1806	S 46	0	0	0

There are 3 discrepancies between the modelled and reference sequences:



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Chain	Residue	Modelled	Actual	Comment	Reference
D	1	VAL	-	expression tag	UNP P0A8T7
D	1408	LEU	-	expression tag	UNP P0A8T7
D	1409	GLU	-	expression tag	UNP P0A8T7

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	Е	79	Total 627	C 382	N 118	O 126	S 1	0	0	0

• Molecule 5 is a protein called RNA polymerase sigma factor RpoD.

Mol	Chain	Residues		At	oms		ZeroOcc	AltConf	Trace	
5	F	318	Total 2399	C 1499	N 442	O 446	S 12	0	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	149	ASN	ASP	conflict	UNP Q0P6L9
F	?	-	LEU	deletion	UNP Q0P6L9

• Molecule 6 is a protein called Microcin J25.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
6	М	21	Total 144	$\begin{array}{c} \mathrm{C} \\ 95 \end{array}$	N 23	O 26	0	0	0

• Molecule 7 is a DNA chain called non-template strand DNA.

Mol	Chain	Residues		\mathbf{A}	toms		ZeroOcc	AltConf	Trace	
7	N	29	Total 595	C 284	N 106	0 176	Р 29	0	0	0

• Molecule 8 is a DNA chain called template strand DNA.

Mol	Chain	Residues		At	\mathbf{oms}			ZeroOcc	AltConf	Trace
8	Т	24	Total 492	C 233	N 94	0 141	Р 24	0	0	0

• Molecule 9 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
9	D	1	Total Mg 1 1	0	0

• Molecule 10 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
10	D	2	Total Zn 2 2	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 subunit alpha





• Molecule 2: DNA-directed RNA polymerase subunit beta







VAL LYS	ASP LEU	LEU LYS	PHE LEU LYS	ALA GLN	THR LYS	GLU GLU	F17	A19	P27	R31	832 W33	K40	P41 E42	717	N4.0 Y46	R47 T48	F49 K50	R53	D54 G55	L56 T57	C SH		100	т/ т	K74	K79	184	T93	197 197
R98 R99	E100 R101	E106	P110	H113 1114	W115 F116 F117	K118 K118 S119	L120	5122 8122 8123	1124	L127	R133	E136	R137	Y140	F141 E142	S143 Y144	V145	1147	L154		1159	T161	E162 E163	41 04 Y165 ●	L166 D167	D174	E175 F176	01 // A178	081M
E183	D1 <mark>93</mark> L194	E197	C198 E199	L201 R202	E203 E204 1 005		N209 N209	E211 E211	K213 K213	K215	K216 L217	T218 K219	R220	K222 K222	L224	F227	V228 0229	N232	K233 P234	E235			V 244 L245 D046	P.240	L249 R250	P251 L252	L255	D'256	1202 263 D264
L265 N266	D267 L268	Y269 R270	N274	R278	L282 L283	1204	1290 1290	N292	E295	0	L299 Q300	E301	D304	R312	1316	T317	N320 K321	R322 P323	L324 K325	US EM	K334		F 338 R339	L343	R346	V347 D348	Y349	H352	1350 V357
Y360 L361	R362 L363	H364 Q365	C366 G367 L368	A373	P379	Y382	1394	V401	L412	E414	V415 I416	R417 E418	CCV 1		A426 A426	P427	H4 <mark>30</mark> R431	L432	E438	1442	<mark>0448</mark>	A459	D462	0403 D464	Q465	V468	T473 L474	E415 A476	4477 L478
A482	T4 <mark>87</mark> N488	N489 1490	L491	G496 E497	P498 1499 TEOO		D505	V507	L510	T514	C517	V518	L527	P530	E532	A533 E534	R535 L536	S539	H545	VEED	R551	T553	F555 Y555	A559	N560	L563	T567 S568	K570	R576
A577	M581	K585	N593 0594 A 505	L596 L597	K598 K599	I601	K603	C608	R610		G613 L614	K615 P616	T617	F620	A633	I641	V645	1646 P647	E648 K649	K650 H651	A667	E658	V661	A002 E663	1664 Q665	E666	A675 G676	E677 R678 V670	10/9 N680 K681
V682	I685	• 069N	M697	D699 N700	L701 Q702 T703	E704	I707 NI708	R709	Q712	<mark>q716</mark>	F719	N720 S721	1722	R731	8733	A734 A735	<mark>ц736</mark> 1737	R738 0739	L740 A741	G742 M7/13	R744 C745	L746		1/0 4	P758 1759	T760 A761	N762 F763	K/64	L// 0 Q771 Y772
F773 1774	R780	L783	T786	5793	T797 R798	V801 1803		000 0806 1 807	V808	7810	E811 D812	D813 C814	G815 T816	1010 H817 F010	D101	R842	A845 E846	D847 V848	L849 K850	A 85.4	1 867	V858	T862	H865	E866 Q867	N875	K881	V 882	vooo V886 S887
C888 D889	6893	<mark>V894</mark> C895		G900 R901	D902 L903	R905	1907 1908	1909 1909	K911 K911	E913	A914	V917	<mark>գ921</mark>	E925	1920	T931	F935 H936	1937 GLY	GLY ALA	ALA	ARG	ALA	GLU GLU	5949 S949	1950 Q951	1958	K959	<mark>V963</mark>	K972
<u>م</u>	<u></u> 0	20 21	22 82 22	2	33	6	004 05	90	00		019 020	0 <mark>23</mark>	7 100		1 (2)	~ 5	1 ~	N. 10							(1) (2)		et o u		
SER I97 SER	LEU R97 VAL N97	VAL T98 LEU E98	ASP L98 SER K98 ALA L98	GLU E98	THR ALA E99	GLY Y999	ASP A10 ASP A10	ARG G10	ALA E10	TAS MTO	ILE N10 VAL W10	ASP ALA H10	GLN THR	ASN PRO	ASF VAL VAL ILE	LEU THR ILE GLU	PRO VAL GLY SER	THR GLY ASP PHF	MET VAL	ALA PHE	TYR ASP DHF MFT		GLY GLY GLY GLY	ALA THR	ILE ILE VAL THR	GLN ARG	GLU THR ASP ASP	GLY GLU VAL LEU	ILE GLY SER LEU
								32	α c	40 0	<u>44</u>	45 46	47 18		0		60 61 61	62 63	64 65	66				2 <mark>7</mark>	18	20 80	<mark>11</mark>	80 00 00 00 00 00 00 00 00 00 00 00 00 0	01 01
SER	ASP THR	- LEU ALA	ARG ILE PRO	CLU CLU	GLY GLY	THR	ASP	T113	L110	R114	L11	F114 E114	A114		27 7 7	E116 T116	S116 G116	T116 V116	S116 F116	G116 V116	E116	K117	K117 K117	R11	T117	P117 V118	D118	P118	P119
K1192 W1193	R1194 Q1195	L1196 N1197	V1198 F1199 F1200	G1201 E1202	R1203 V1204 E1205	E1 209 R1 206	V1209	S1211 S1211		61215 A1216	P1217 H1218	D1219 11220	L1221 B1222	L1223	G1225	V1226	V1229 T1230	R1 231 Y1 232	11233	E1236 V1237	01238 01238 01239	V1240	R1241 R1242	V1246	K1247 I1248	N1249 D1250	K1251 H1252	V1255	11 200 V1257 R1258
L1261	R1262 K1263	A1264 T1265	N1268 A1269	G1270 S1271	F1274	E1276	E1278		F1 281 Y1 282	R1284	V1285 K1286	N1289	R1290 E1291	L1292 L1292	E1293 A1294	N1295 G1296	K1297 V1298	R1304	D1305	T1310	S1313 11314	A1315 T1316	11316 E1317 64246	21210	A1323 S1324	F1325 Q1326	E1327 T1328	11329 R1330	V1331 L1332 T1333
															P	v o W ROT			BANK	3									



• Molecule 7: non-template strand DNA



48%

Chain N:



• Molecule 8: template strand DNA

52%

Chain T:	54%	42%	•
A1 C10 C10 C10 C10 C112 C12 C12 C24 C24 C24			



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 41 21 2	Depositor
Cell constants	172.91Å 172.91Å 387.26Å	Depositor
a, b, c, α , β , γ	90.00° 90.00° 90.00°	Depositor
Bosolution (Å)	49.55 - 3.68	Depositor
Resolution (A)	49.55 - 3.68	EDS
% Data completeness	98.3(49.55-3.68)	Depositor
(in resolution range)	98.3(49.55-3.68)	EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) > 1$	$1.10 (at 3.67 \text{\AA})$	Xtriage
Refinement program	PHENIX (1.13_2998: ???)	Depositor
P. P.	0.263 , 0.306	Depositor
n, n_{free}	0.274 , 0.316	DCC
R_{free} test set	1945 reflections (3.07%)	wwPDB-VP
Wilson B-factor $(Å^2)$	175.9	Xtriage
Anisotropy	0.031	Xtriage
Bulk solvent $k_{sol}(e/A^3), B_{sol}(A^2)$	0.26, 119.0	EDS
L-test for $twinning^2$	$ < L >=0.42, < L^2>=0.25$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	27705	wwPDB-VP
Average B, all atoms $(Å^2)$	182.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: The largest off-origin peak in the Patterson function is 1.63% 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: 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).

Mal	Chain	Bo	nd lengths	Bo	ond angles
MIOI	Unam	RMSZ	# Z > 5	RMSZ	# Z > 5
1	А	0.25	0/1780	0.47	0/2415
1	В	0.25	0/1655	0.50	0/2247
2	С	0.26	0/10634	0.47	1/14353~(0.0%)
3	D	0.25	0/9724	0.47	1/13134 (0.0%)
4	Е	0.23	0/629	0.40	0/847
5	F	0.25	0/2428	0.50	2/3280~(0.1%)
6	М	0.36	0/149	0.76	0/202
7	N	0.65	1/666~(0.2%)	0.96	1/1026~(0.1%)
8	Т	0.64	1/552~(0.2%)	0.86	0/849
All	All	0.28	2/28217~(0.0%)	0.51	5/38353~(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
1	В	0	1
2	С	0	5
3	D	0	3
5	F	0	1
6	М	0	1
All	All	0	11

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	Ν	12	DG	C1'-N9	-6.56	1.38	1.47
8	Т	13	DC	C1'-N1	5.59	1.56	1.49

All (5) bond angle outliers are listed below:



Mol	Chain	Res	Type	Atoms	Z	$Observed(^{o})$	$Ideal(^{o})$
5	F	483	LEU	CA-CB-CG	6.04	129.20	115.30
5	F	583	THR	C-N-CA	5.44	135.30	121.70
3	D	224	LEU	CA-CB-CG	5.40	127.72	115.30
2	С	517	GLN	N-CA-C	5.20	125.04	111.00
7	Ν	11	DT	N3-C4-O4	5.11	122.96	119.90

There are no chirality outliers.

5 of 11 planarity outliers are listed below:

Mol	Chain	\mathbf{Res}	Type	Group
1	В	14	VAL	Peptide
2	С	197	ARG	Peptide
2	С	198	ILE	Peptide
2	С	939	VAL	Peptide
2	С	941	LYS	Peptide

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	1759	0	1759	46	0
1	В	1638	0	1629	71	0
2	С	10470	0	10445	333	0
3	D	9578	0	9710	335	0
4	Е	627	0	634	21	0
5	F	2399	0	2324	69	0
6	М	144	0	131	15	0
7	N	595	0	329	14	0
8	Т	492	0	269	9	0
9	D	1	0	0	0	0
10	D	2	0	0	0	0
All	All	27705	0	27230	822	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 15.

The worst 5 of 822 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)
3:D:1006:GLY:N	3:D:1009:GLU:OE2	1.92	1.01
5:F:414:LYS:HB2	5:F:434:TRP:HE1	1.30	0.94
3:D:208:THR:O	3:D:214:ARG:NH1	2.01	0.92
5:F:600:HIS:HE2	5:F:602:SER:HG	1.04	0.92
1:B:76:GLU:OE2	1:B:132:HIS:ND1	2.05	0.88

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	Perce	entiles
1	А	229/239~(96%)	204 (89%)	23 (10%)	2(1%)	17	54
1	В	212/239~(89%)	189 (89%)	23 (11%)	0	100	100
2	С	1329/1342~(99%)	1243 (94%)	77 (6%)	9 (1%)	22	59
3	D	1230/1409~(87%)	1166 (95%)	62~(5%)	2(0%)	47	78
4	Ε	77/91~(85%)	73~(95%)	3(4%)	1 (1%)	12	47
5	F	312/612~(51%)	293 (94%)	18 (6%)	1 (0%)	41	74
6	М	19/21~(90%)	13 (68%)	4 (21%)	2 (10%)	0	7
All	All	3408/3953~(86%)	3181 (93%)	210 (6%)	17 (0%)	29	66

5 of 17 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	С	199	ASP
2	С	200	ARG
2	С	1151	LEU
1	А	177	TYR
2	С	340	ASP



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 side chain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Per	centiles
1	А	190/206~(92%)	178~(94%)	12~(6%)	18	8 49
1	В	176/206~(85%)	154 (88%)	22 (12%)	4	23
2	С	1138/1157~(98%)	1001 (88%)	137~(12%)	5	25
3	D	1022/1170~(87%)	901 (88%)	121 (12%)	5	26
4	Ε	67/75~(89%)	59~(88%)	8 (12%)	5	25
5	F	232/539~(43%)	205~(88%)	27~(12%)	5	27
6	М	13/14 (93%)	9(69%)	4 (31%)	() 2
All	All	2838/3367~(84%)	2507 (88%)	331 (12%)	5	26

 $5~{\rm of}~331$ residues with a non-rotameric side chain are listed below:

Mol	Chain	\mathbf{Res}	Type
3	D	720	ASN
3	D	1326	GLN
3	D	780	ARG
3	D	1010	GLN
5	F	99	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 47 such sidechains are listed below:

Mol	Chain	Res	Type
3	D	232	ASN
3	D	702	GLN
3	D	365	GLN
3	D	495	ASN
3	D	736	GLN

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 3 ligands modelled in this entry, 3 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	231/239~(96%)	0.35	25 (10%) 5 4	138, 193, 227, 277	0
1	В	218/239~(91%)	-0.13	4 (1%) 68 56	133, 191, 230, 261	0
2	С	1335/1342~(99%)	-0.11	32 (2%) 59 45	93, 170, 229, 271	0
3	D	1236/1409~(87%)	0.02	46 (3%) 41 29	99, 176, 247, 304	0
4	Е	79/91~(86%)	0.27	7(8%) 9 6	144, 183, 238, 268	0
5	F	318/612~(51%)	0.00	10 (3%) 49 35	128, 190, 250, 265	0
6	М	21/21~(100%)	0.18	2(9%) 8 5	151, 194, 226, 256	0
7	Ν	29/29~(100%)	-0.82	0 100 100	139, 222, 253, 255	0
8	Т	24/24~(100%)	-0.81	0 100 100	125, 223, 249, 259	0
All	All	3491/4006~(87%)	-0.02	126 (3%) 42 31	93, 179, 240, 304	0

The worst 5 of 126 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
5	F	476	ARG	10.1
2	С	243	PRO	9.6
1	А	89	ALA	9.3
1	А	90	VAL	7.5
2	С	230	PHE	6.5

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	$B-factors(A^2)$	Q<0.9
9	MG	D	1501	1/1	0.95	0.25	83,83,83,83	0
10	ZN	D	1503	1/1	0.96	0.21	185,185,185,185	0
10	ZN	D	1502	1/1	0.98	0.12	162,162,162,162	0

6.5 Other polymers (i)

There are no such residues in this entry.

