



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 22, 2020 – 04:06 PM BST

PDB ID : 5D1P
Title : Archaeal ATP-dependent RNA ligase - form 2
Authors : Murakami, K.S.
Deposited on : 2015-08-04
Resolution : 2.20 Å(reported)

This is a Full wwPDB X-ray Structure Validation 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.13.1
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) : 2.13.1

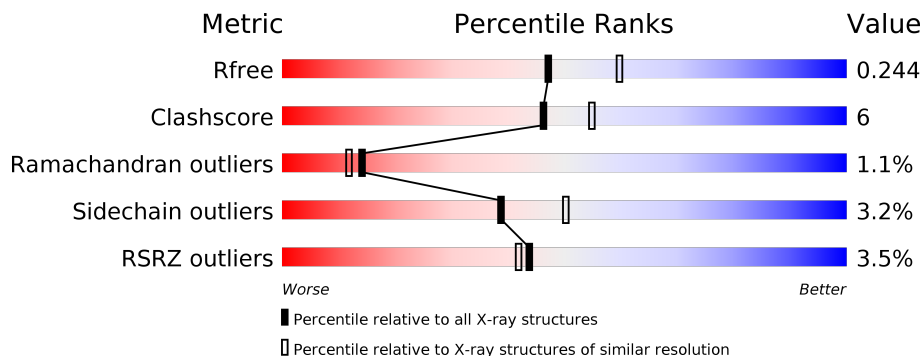
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.20 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	4898 (2.20-2.20)
Clashscore	141614	5594 (2.20-2.20)
Ramachandran outliers	138981	5503 (2.20-2.20)
Sidechain outliers	138945	5504 (2.20-2.20)
RSRZ outliers	127900	4800 (2.20-2.20)

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 on 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 $\leq 5\%$. 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	A	378	<p>5% 83% 14% ..</p>
1	B	378	<p>2% 85% 13% ..</p>

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 6470 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 ATP-dependent RNA ligase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	P	S			
1	A	375	Total 3017	C 1902	N 534	O 570	P 1	S 10	0	0	0
1	B	375	Total 3017	C 1902	N 534	O 570	P 1	S 10	0	0	0

- Molecule 2 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	O	S		
2	A	1	Total 5	O 4	S 1	0	0
2	A	1	Total 5	O 4	S 1	0	0
2	A	1	Total 5	O 4	S 1	0	0
2	B	1	Total 5	O 4	S 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	B	1	Total O S 5 4 1	0	0
2	B	1	Total O S 5 4 1	0	0

- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	B	1	Total Mg 1 1	0	0
3	A	1	Total Mg 1 1	0	0

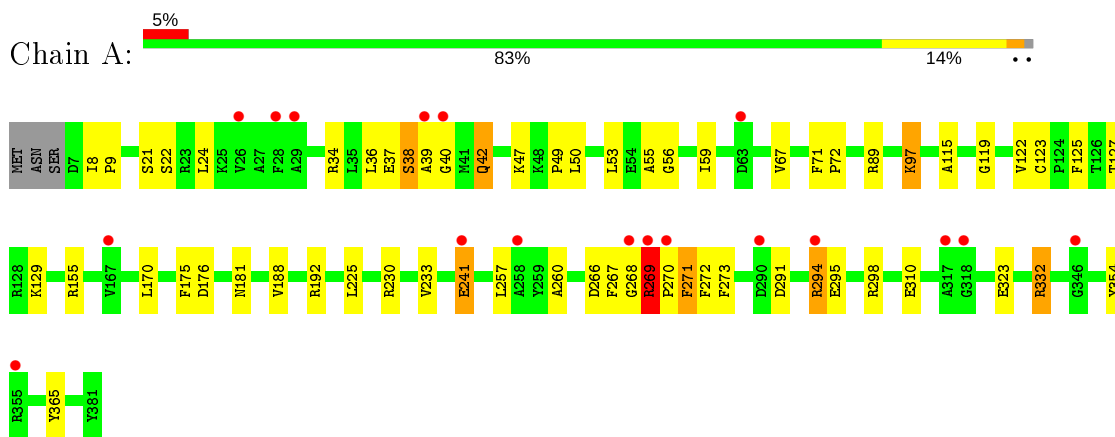
- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	193	Total O 193 193	0	0
4	B	211	Total O 211 211	0	0

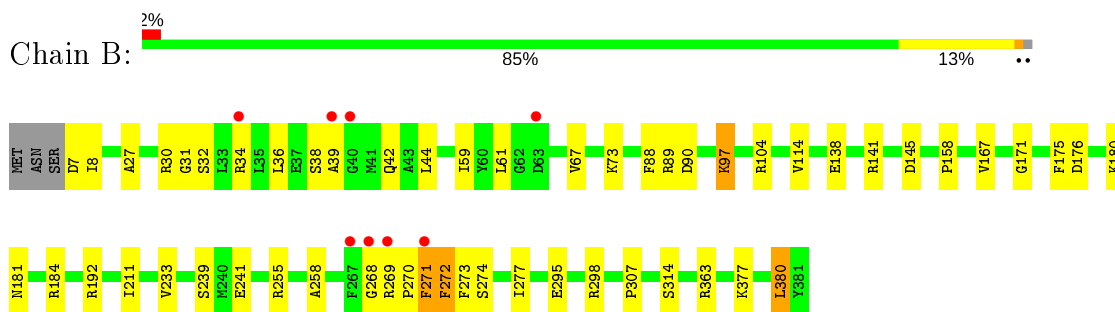
3 Residue-property plots [i](#)

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: ATP-dependent RNA ligase



- Molecule 1: ATP-dependent RNA ligase



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	50.50Å 115.30Å 91.57Å 90.00° 104.55° 90.00°	Depositor
Resolution (Å)	29.36 – 2.20 29.36 – 2.20	Depositor EDS
% Data completeness (in resolution range)	90.6 (29.36-2.20) 80.9 (29.36-2.20)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.45 (at 2.20Å)	Xtrriage
Refinement program	PHENIX 1.9_1692	Depositor
R, R_{free}	0.192 , 0.241 0.196 , 0.244	Depositor DCC
R_{free} test set	2003 reflections (4.29%)	wwPDB-VP
Wilson B-factor (Å ²)	30.4	Xtrriage
Anisotropy	0.370	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 43.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	0.036 for h,-k,-h-l	Xtrriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	6470	wwPDB-VP
Average B, all atoms (Å ²)	39.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.95% 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: APK, MG, SO4

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.42	0/3045	0.62	1/4112 (0.0%)
1	B	0.44	0/3045	0.61	0/4112
All	All	0.43	0/6090	0.62	1/8224 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	269	ARG	C-N-CD	8.35	145.93	128.40

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	A	3017	0	2976	44	0
1	B	3017	0	2976	35	0
2	A	15	0	0	1	0
2	B	15	0	0	2	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
4	A	193	0	0	2	1
4	B	211	0	0	7	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	6470	0	5952	76	1

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 6.

All (76) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:269:ARG:HG2	1:A:270:PRO:HD3	1.46	0.95
1:A:270:PRO:HB3	1:A:273:PHE:H	1.43	0.84
1:A:270:PRO:HA	1:A:272:PHE:H	1.49	0.77
1:B:270:PRO:HA	1:B:271:PHE:C	2.07	0.73
1:B:88:PHE:O	4:B:601:HOH:O	2.08	0.71
1:A:49:PRO:HD3	1:A:55:ALA:HB2	1.72	0.71
1:B:158:PRO:O	1:B:363:ARG:NH2	2.24	0.70
1:A:270:PRO:HA	1:A:272:PHE:N	2.08	0.69
1:B:269:ARG:HB2	1:B:270:PRO:HD3	1.74	0.69
1:B:268:GLY:HA3	1:B:269:ARG:C	2.13	0.68
1:B:42:GLN:HG3	1:B:61:LEU:HD12	1.77	0.67
1:B:295:GLU:OE2	1:B:298:ARG:NH1	2.29	0.65
1:A:115:ALA:H	1:A:127:THR:HG22	1.61	0.65
1:A:42:GLN:HE21	1:A:42:GLN:HA	1.62	0.64
1:B:27:ALA:O	1:B:31:GLY:N	2.31	0.63
1:B:255:ARG:NH1	2:B:503:SO4:O3	2.29	0.62
1:A:269:ARG:HG2	1:A:270:PRO:CD	2.26	0.62
1:A:295:GLU:OE1	1:A:298:ARG:NH1	2.29	0.61
1:B:138:GLU:OE2	1:B:141:ARG:NH1	2.35	0.59
1:A:269:ARG:CD	1:B:270:PRO:HG2	2.34	0.57
1:A:272:PHE:HB3	1:B:272:PHE:HE1	1.70	0.57
1:B:104:ARG:HD3	4:B:656:HOH:O	2.05	0.56
1:A:269:ARG:CG	1:A:270:PRO:HD3	2.30	0.55
1:A:269:ARG:HD3	1:B:270:PRO:HG2	1.90	0.54
1:A:291:ASP:CG	1:A:294:ARG:HH21	2.10	0.54
1:B:8:ILE:HD13	1:B:44:LEU:HD21	1.91	0.53
1:B:274:SER:O	1:B:277:ILE:HG22	2.08	0.52
1:B:184:ARG:HD2	4:B:602:HOH:O	2.09	0.52
1:A:291:ASP:O	1:A:295:GLU:HG2	2.12	0.50
1:A:59:ILE:HG12	1:A:67:VAL:HG22	1.93	0.50
1:A:332:ARG:HB2	1:A:354:TYR:CE2	2.46	0.50
1:B:97:APK:H2'	1:B:175:PHE:CZ	2.47	0.49
1:A:270:PRO:HB3	1:A:273:PHE:N	2.22	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:310:GLU:OE1	4:A:601:HOH:O	2.19	0.48
1:B:184:ARG:NH1	4:B:602:HOH:O	2.17	0.48
1:A:269:ARG:O	1:A:271:PHE:HB3	2.13	0.48
1:B:145:ASP:HA	1:B:180:LYS:HD2	1.96	0.48
1:B:59:ILE:HG12	1:B:67:VAL:HG22	1.94	0.48
1:B:192:ARG:HD2	4:B:689:HOH:O	2.13	0.47
1:A:50:LEU:O	1:A:53:LEU:HB2	2.15	0.47
1:A:38:SER:O	1:A:40:GLY:N	2.49	0.46
1:B:258:ALA:HA	1:B:307:PRO:HG2	1.98	0.45
1:A:125:PHE:O	1:A:129:LYS:HG2	2.16	0.45
1:B:73:LYS:HE2	4:B:792:HOH:O	2.17	0.45
1:A:123:CYS:O	1:A:127:THR:HG23	2.18	0.44
1:B:167:VAL:HB	1:B:171:GLY:HA3	1.98	0.44
1:B:34:ARG:NH1	1:B:42:GLN:HB2	2.31	0.44
1:A:188:VAL:O	1:A:192:ARG:HG3	2.17	0.44
1:A:225:LEU:HD22	1:A:230:ARG:HB2	1.99	0.44
1:A:266:ASP:OD1	1:A:365:TYR:HB3	2.18	0.44
1:A:129:LYS:HE2	1:A:170:LEU:HD23	2.00	0.44
1:A:67:VAL:HB	1:A:181:ASN:HA	2.00	0.44
1:A:257:LEU:HD23	1:A:257:LEU:HA	1.83	0.44
1:B:89:ARG:O	1:B:90:ASP:HB2	2.19	0.43
1:A:8:ILE:HA	1:A:9:PRO:HD3	1.88	0.43
2:B:501:SO4:O1	4:B:603:HOH:O	2.19	0.43
1:B:67:VAL:HB	1:B:181:ASN:HA	2.00	0.43
1:B:239:SER:OG	1:B:241:GLU:HG3	2.19	0.43
1:A:37:GLU:O	1:A:38:SER:HB3	2.19	0.42
1:A:115:ALA:HB3	1:A:127:THR:HG22	2.01	0.42
1:A:97:APK:H5'1	2:A:502:SO4:O3	2.19	0.42
1:A:260:ALA:HB1	1:A:272:PHE:CE2	2.54	0.42
1:A:71:PHE:HA	1:A:72:PRO:HD3	1.92	0.42
1:B:270:PRO:HB3	1:B:273:PHE:H	1.85	0.42
1:A:155:ARG:NH2	4:A:631:HOH:O	2.51	0.42
1:A:97:APK:H2'	1:A:175:PHE:CZ	2.56	0.41
1:B:377:LYS:HB3	1:B:377:LYS:HE2	1.75	0.41
1:A:21:SER:HA	1:A:24:LEU:HD12	2.03	0.41
1:A:270:PRO:HG2	1:B:269:ARG:HB2	2.03	0.41
1:A:56:GLY:HA2	1:A:119:GLY:O	2.21	0.41
1:A:267:PHE:O	1:A:269:ARG:N	2.51	0.41
1:B:34:ARG:HA	1:B:34:ARG:HD3	1.88	0.41
1:B:380:LEU:HD12	1:B:380:LEU:HA	1.85	0.41
1:A:89:ARG:NH2	1:A:241:GLU:HB3	2.36	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:122:VAL:HG13	1:A:127:THR:HG21	2.02	0.40
1:B:38:SER:N	1:B:39:ALA:HA	2.35	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:744:HOH:O	4:A:765:HOH:O[1_455]	2.13	0.07

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	
1	A	372/378 (98%)	355 (95%)	12 (3%)	5 (1%)	12	9
1	B	372/378 (98%)	359 (96%)	10 (3%)	3 (1%)	19	19
All	All	744/756 (98%)	714 (96%)	22 (3%)	8 (1%)	14	12

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	39	ALA
1	A	269	ARG
1	A	271	PHE
1	B	271	PHE
1	B	272	PHE
1	B	32	SER
1	A	38	SER
1	A	268	GLY

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	
1	A	316/319 (99%)	305 (96%)	11 (4%)	36	46
1	B	316/319 (99%)	307 (97%)	9 (3%)	43	56
All	All	632/638 (99%)	612 (97%)	20 (3%)	39	50

All (20) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	22	SER
1	A	34	ARG
1	A	36	LEU
1	A	42	GLN
1	A	47	LYS
1	A	176	ASP
1	A	233	VAL
1	A	241	GLU
1	A	294	ARG
1	A	323	GLU
1	A	332	ARG
1	B	7	ASP
1	B	30	ARG
1	B	36	LEU
1	B	114	VAL
1	B	176	ASP
1	B	211	ILE
1	B	233	VAL
1	B	314	SER
1	B	380	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	42	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](#)

2 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
1	APK	A	97	1,3	29,33,33	6.28	7 (24%)	28,47,47	2.83	5 (17%)
1	APK	B	97	1,3	29,33,33	6.35	7 (24%)	28,47,47	2.06	7 (25%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	APK	A	97	1,3	-	5/15/37/37	0/3/3/3
1	APK	B	97	1,3	-	6/15/37/37	0/3/3/3

All (14) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	97	APK	P-NZ	33.14	1.97	1.61
1	A	97	APK	P-NZ	32.94	1.97	1.61
1	B	97	APK	C5-C4	3.97	1.51	1.40
1	B	97	APK	P-O1P	3.24	1.51	1.46
1	A	97	APK	P-O1P	3.20	1.51	1.46
1	B	97	APK	C2-N3	2.96	1.36	1.32
1	A	97	APK	C5-C4	2.93	1.48	1.40
1	A	97	APK	P-O2P	2.81	1.64	1.56
1	A	97	APK	C2-N3	2.63	1.36	1.32
1	A	97	APK	P-O5'	2.43	1.67	1.57

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	97	APK	C6-C5	2.28	1.51	1.43
1	B	97	APK	CE-NZ	2.27	1.52	1.46
1	A	97	APK	C6-C5	2.26	1.51	1.43
1	B	97	APK	P-O2P	2.25	1.62	1.56

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	97	APK	P-NZ-CE	-12.74	106.44	124.67
1	B	97	APK	P-NZ-CE	-6.14	115.89	124.67
1	A	97	APK	C3'-C2'-C1'	4.32	107.48	100.98
1	B	97	APK	C3'-C2'-C1'	4.18	107.27	100.98
1	B	97	APK	C4-C5-N7	-3.79	105.45	109.40
1	A	97	APK	N3-C2-N1	-3.72	122.86	128.68
1	B	97	APK	N3-C2-N1	-3.43	123.31	128.68
1	A	97	APK	C4-C5-N7	-3.04	106.23	109.40
1	A	97	APK	P-O5'-C5'	2.72	130.57	120.47
1	B	97	APK	P-O5'-C5'	2.47	129.65	120.47
1	B	97	APK	O5'-P-O1P	-2.43	104.91	114.24
1	B	97	APK	C5-C6-N6	2.42	124.03	120.35

There are no chirality outliers.

All (11) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	97	APK	C5'-O5'-P-O1P
1	A	97	APK	C4'-C5'-O5'-P
1	B	97	APK	C4'-C5'-O5'-P
1	B	97	APK	C3'-C4'-C5'-O5'
1	B	97	APK	O4'-C4'-C5'-O5'
1	B	97	APK	CE-NZ-P-O5'
1	A	97	APK	CE-NZ-P-O1P
1	B	97	APK	CE-NZ-P-O1P
1	B	97	APK	CE-CD-CG-CB
1	A	97	APK	C5'-O5'-P-O2P
1	A	97	APK	CE-NZ-P-O5'

There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	97	APK	2	0
1	B	97	APK	1	0

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 8 ligands modelled in this entry, 2 are monoatomic - leaving 6 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	SO4	A	501	-	4,4,4	0.20	0	6,6,6	0.15	0
2	SO4	B	501	-	4,4,4	0.15	0	6,6,6	0.33	0
2	SO4	B	502	-	4,4,4	0.16	0	6,6,6	0.35	0
2	SO4	B	503	-	4,4,4	0.17	0	6,6,6	0.17	0
2	SO4	A	503	-	4,4,4	0.15	0	6,6,6	0.18	0
2	SO4	A	502	-	4,4,4	0.12	0	6,6,6	0.21	0

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.

3 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	501	SO4	1	0
2	B	503	SO4	1	0
2	A	502	SO4	1	0

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

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, 95th 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	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	374/378 (98%)	0.25	18 (4%) 30 29	26, 39, 59, 88	0
1	B	374/378 (98%)	0.13	8 (2%) 63 61	24, 37, 54, 80	0
All	All	748/756 (98%)	0.19	26 (3%) 44 42	24, 38, 57, 88	0

All (26) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	268	GLY	12.7
1	A	39	ALA	11.3
1	A	268	GLY	8.7
1	B	39	ALA	8.3
1	B	40	GLY	8.0
1	A	40	GLY	5.1
1	B	267	PHE	4.2
1	A	167	VAL	3.6
1	A	269	ARG	3.4
1	B	34	ARG	3.4
1	A	26	VAL	3.2
1	A	29	ALA	3.2
1	B	271	PHE	3.0
1	A	63	ASP	2.9
1	A	28	PHE	2.8
1	A	346	GLY	2.8
1	A	270	PRO	2.8
1	A	317	ALA	2.5
1	A	290	ASP	2.4
1	B	63	ASP	2.4
1	B	269	ARG	2.4
1	A	241	GLU	2.3
1	A	318	GLY	2.3
1	A	355	ARG	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	258	ALA	2.2
1	A	294	ARG	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [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, 95th 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
1	APK	A	97	31/31	0.91	0.13	28,39,49,56	0
1	APK	B	97	31/31	0.94	0.11	21,35,42,52	0

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, 95th 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
3	MG	A	504	1/1	0.87	0.08	45,45,45,45	0
3	MG	B	504	1/1	0.90	0.08	37,37,37,37	0
2	SO4	B	503	5/5	0.96	0.19	49,54,60,64	0
2	SO4	A	503	5/5	0.97	0.15	53,54,57,61	0
2	SO4	A	502	5/5	0.97	0.11	41,47,47,58	0
2	SO4	A	501	5/5	0.97	0.08	38,41,50,53	0
2	SO4	B	501	5/5	0.99	0.06	32,36,44,46	0
2	SO4	B	502	5/5	0.99	0.09	36,37,42,46	0

6.5 Other polymers [i](#)

There are no such residues in this entry.