



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 07:17 AM UTC

PDB ID : 2ZDQ / pdb_00002zdq
Title : Crystal structure of D-Alanine:D-Alanine Ligase with ATP and D-Alanine:D-Alanine from *Thermus thermophilus* HB8
Authors : Kitamuta, Y.; Yokoyama, S.; Kuramitsu, S.; RIKEN Structural Genomics/Proteomics Initiative (RSGI)
Deposited on : 2007-11-27
Resolution : 2.30 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 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	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

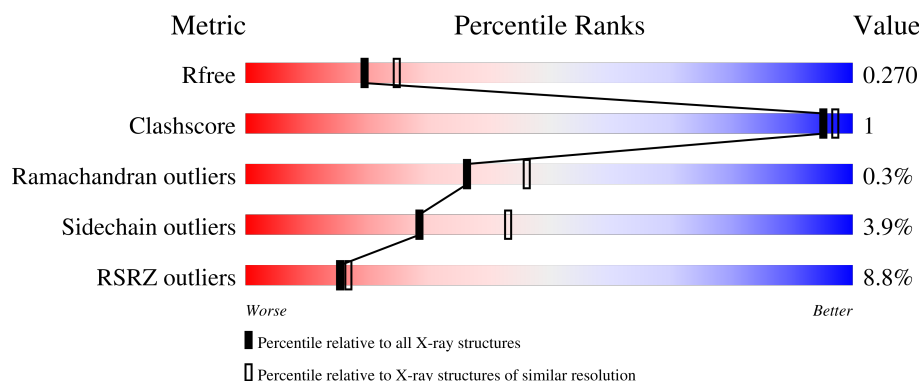
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 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}	180053	6319 (2.30-2.30)
Clashscore	190562	6919 (2.30-2.30)
Ramachandran outliers	187476	6854 (2.30-2.30)
Sidechain outliers	187428	6854 (2.30-2.30)
RSRZ outliers	180081	6325 (2.30-2.30)

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 $\leq 5\%$. 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	319	92% 8%
1	B	319	16% 92% 7%

2 Entry composition [i](#)

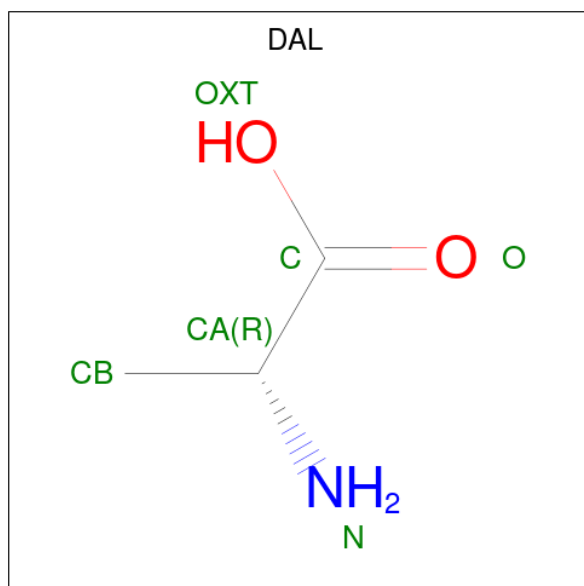
There are 4 unique types of molecules in this entry. The entry contains 5184 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 D-alanine–D-alanine ligase.

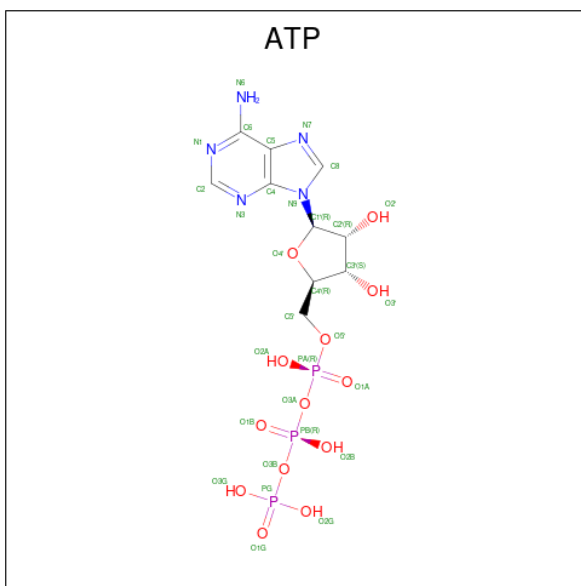
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	319	Total	C	N	O	S	0	0	0
			2453	1593	406	449	5			
1	B	319	Total	C	N	O	S	0	0	0
			2453	1593	406	449	5			

- Molecule 2 is D-ALANINE (CCD ID: DAL) (formula: $C_3H_7NO_2$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			5	3	1	1		
2	A	1	Total	C	N	O	0	0
			6	3	1	2		
2	B	1	Total	C	N	O	0	0
			5	3	1	1		
2	B	1	Total	C	N	O	0	0
			6	3	1	2		

- Molecule 3 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: $\text{C}_{10}\text{H}_{16}\text{N}_5\text{O}_{13}\text{P}_3$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total 31	C 10	N 5	O 13	P 3	0	0
3	B	1	Total 31	C 10	N 5	O 13	P 3	0	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	126	Total O 126 126	0	0
4	B	68	Total O 68 68	0	0

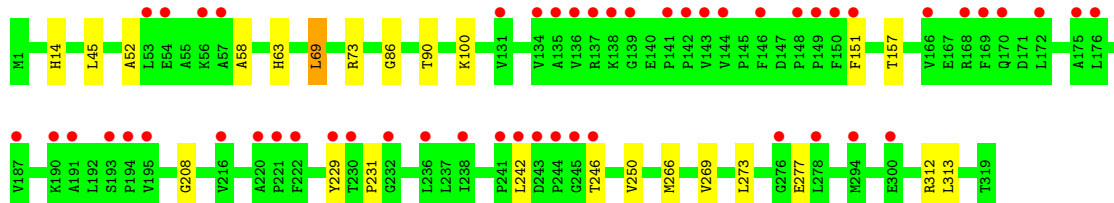
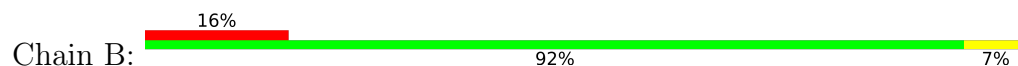
3 Residue-property plots [i](#)

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: D-alanine–D-alanine ligase



- Molecule 1: D-alanine–D-alanine ligase



4 Data and refinement statistics

Property	Value	Source
Space group	P 41 21 2	Depositor
Cell constants a, b, c, α , β , γ	95.05Å 95.05Å 192.01Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	48.00 – 2.30 48.00 – 2.30	Depositor EDS
% Data completeness (in resolution range)	94.9 (48.00-2.30) 95.0 (48.00-2.30)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	0.07	Depositor
$\langle I/\sigma(I) \rangle$ ¹	5.25 (at 2.29Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.231 , 0.266 0.240 , 0.270	Depositor DCC
R_{free} test set	4003 reflections (10.06%)	wwPDB-VP
Wilson B-factor (Å ²)	37.3	Xtriage
Anisotropy	0.502	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 33.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	5184	wwPDB-VP
Average B, all atoms (Å ²)	41.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.07% 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

5.1 Standard geometry

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

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	0.72	1/2518 (0.0%)	1.10	7/3434 (0.2%)
1	B	0.71	0/2518	1.11	5/3434 (0.1%)
All	All	0.72	1/5036 (0.0%)	1.10	12/6868 (0.2%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	238	ILE	CA-CB	8.69	1.60	1.54

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	63	HIS	N-CA-C	7.87	120.18	109.24
1	B	157	THR	N-CA-C	7.45	121.39	110.59
1	A	154	PRO	N-CA-C	-7.14	99.98	111.19
1	B	63	HIS	N-CA-C	7.00	118.97	109.24
1	A	157	THR	N-CA-C	6.49	118.90	110.53
1	B	229	TYR	N-CA-C	6.44	122.21	113.97
1	A	229	TYR	N-CA-C	6.03	121.38	113.30
1	A	238	ILE	CB-CA-C	5.93	116.15	110.16
1	A	88	ASP	N-CA-C	5.56	119.69	113.02
1	A	294	MET	N-CA-C	5.43	120.01	112.90
1	B	231	PRO	N-CA-C	5.42	119.71	111.15
1	B	208	GLY	N-CA-C	5.26	121.51	112.51

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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	2453	0	2470	6	0
1	B	2453	0	2470	7	0
2	A	11	0	11	0	0
2	B	11	0	10	0	0
3	A	31	0	12	0	0
3	B	31	0	12	0	0
4	A	126	0	0	0	0
4	B	68	0	0	0	0
All	All	5184	0	4985	12	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 1.

All (12) 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:14:HIS:HE1	1:A:58:ALA:H	1.42	0.66
1:B:14:HIS:HE1	1:B:58:ALA:H	1.43	0.62
1:A:14:HIS:CE1	1:A:58:ALA:H	2.20	0.58
1:A:107:VAL:HG21	1:B:90:THR:HG22	1.88	0.54
1:A:5:LEU:HD11	1:A:80:LEU:HD22	1.91	0.51
1:B:14:HIS:CE1	1:B:58:ALA:H	2.27	0.51
1:B:266:MET:HB3	1:B:313:LEU:HD21	1.96	0.47
1:B:246:THR:O	1:B:250:VAL:HG23	2.18	0.44
1:B:45:LEU:HD11	1:B:69:LEU:HD22	2.02	0.42
1:A:266:MET:HB3	1:A:313:LEU:HD21	2.02	0.41
1:B:52:ALA:HB1	1:B:58:ALA:HB2	2.03	0.41
1:A:256:LYS:O	1:A:260:VAL:HG23	2.21	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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	317/319 (99%)	308 (97%)	8 (2%)	1 (0%)	36	46
1	B	317/319 (99%)	306 (96%)	10 (3%)	1 (0%)	36	46
All	All	634/638 (99%)	614 (97%)	18 (3%)	2 (0%)	36	46

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	86	GLY
1	B	86	GLY

5.3.2 Protein sidechains

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	256/256 (100%)	245 (96%)	11 (4%)	26	39
1	B	256/256 (100%)	247 (96%)	9 (4%)	32	48
All	All	512/512 (100%)	492 (96%)	20 (4%)	28	43

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

Mol	Chain	Res	Type
1	A	54	GLU
1	A	81	LEU
1	A	157	THR
1	A	168	ARG

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Mol	Chain	Res	Type
1	A	172	LEU
1	A	219	GLU
1	A	238	ILE
1	A	242	LEU
1	A	247	GLN
1	A	248	GLU
1	A	298	LEU
1	B	69	LEU
1	B	73	ARG
1	B	100	LYS
1	B	151	PHE
1	B	242	LEU
1	B	269	VAL
1	B	273	LEU
1	B	277	GLU
1	B	312	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	14	HIS
1	A	247	GLN
1	A	284	ASN
1	B	14	HIS
1	B	39	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry

6 ligands 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
2	DAL	B	404	2	5,5,5	1.85	2 (40%)	6,6,6	1.12	0
3	ATP	A	1501	-	32,33,33	1.41	5 (15%)	48,52,52	2.34	17 (35%)
3	ATP	B	1502	-	32,33,33	1.25	6 (18%)	48,52,52	2.32	18 (37%)
2	DAL	A	402	2	5,5,5	1.80	2 (40%)	6,6,6	1.07	0
2	DAL	A	401	2	3,4,5	2.23	1 (33%)	2,4,6	1.01	0
2	DAL	B	403	2	3,4,5	2.23	1 (33%)	2,4,6	1.00	0

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
2	DAL	B	404	2	-	2/4/4/4	-
3	ATP	A	1501	-	-	0/22/38/38	0/3/3/3
3	ATP	B	1502	-	-	3/22/38/38	0/3/3/3
2	DAL	A	402	2	-	0/4/4/4	-
2	DAL	A	401	2	-	0/1/2/4	-
2	DAL	B	403	2	-	0/1/2/4	-

All (17) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	1501	ATP	PB-O3A	4.76	1.64	1.59
2	A	401	DAL	O-C	3.84	1.34	1.20
2	B	403	DAL	O-C	3.83	1.34	1.20
3	B	1502	ATP	PB-O3A	3.42	1.63	1.59
3	A	1501	ATP	O4'-C1'	2.88	1.48	1.42
2	A	402	DAL	CA-C	-2.76	1.51	1.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	404	DAL	CA-C	-2.75	1.51	1.54
2	B	404	DAL	OXT-C	-2.71	1.22	1.30
2	A	402	DAL	OXT-C	-2.70	1.22	1.30
3	A	1501	ATP	PG-O2G	2.53	1.64	1.54
3	B	1502	ATP	C5-N7	-2.48	1.34	1.39
3	B	1502	ATP	PG-O2G	2.38	1.63	1.54
3	A	1501	ATP	C5-N7	-2.37	1.34	1.39
3	B	1502	ATP	O4'-C1'	2.31	1.47	1.42
3	B	1502	ATP	C5-C4	2.15	1.42	1.39
3	B	1502	ATP	PA-O2A	2.11	1.65	1.55
3	A	1501	ATP	C5-C4	2.10	1.42	1.39

All (35) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	1501	ATP	C5-C4-N3	-5.47	119.18	126.72
3	B	1502	ATP	C5-C4-N3	-5.43	119.24	126.72
3	A	1501	ATP	N3-C4-N9	4.80	135.33	127.17
3	A	1501	ATP	N3-C2-N1	-4.78	121.35	128.58
3	B	1502	ATP	O2A-PA-O3A	4.73	120.07	107.27
3	A	1501	ATP	O2A-PA-O3A	4.73	120.06	107.27
3	B	1502	ATP	O2B-PB-O3B	4.62	119.77	107.27
3	A	1501	ATP	O2B-PB-O3B	4.60	119.72	107.27
3	B	1502	ATP	N3-C4-N9	4.60	134.98	127.17
3	B	1502	ATP	N3-C2-N1	-4.58	121.64	128.58
3	B	1502	ATP	O3A-PB-O1B	-3.96	98.78	110.70
3	A	1501	ATP	C2-N3-C4	3.79	121.08	111.83
3	A	1501	ATP	O2B-PB-O3A	-3.78	97.05	107.27
3	B	1502	ATP	C5-N7-C8	3.77	109.37	103.45
3	B	1502	ATP	C2-N3-C4	3.75	120.99	111.83
3	A	1501	ATP	O3A-PB-O1B	-3.75	99.43	110.70
3	A	1501	ATP	C5-N7-C8	3.64	109.17	103.45
3	B	1502	ATP	O2B-PB-O3A	-3.56	97.65	107.27
3	A	1501	ATP	O3B-PB-O1B	3.14	120.14	110.70
3	B	1502	ATP	O3G-PG-O2G	3.08	119.36	107.80
3	A	1501	ATP	O3A-PA-O1A	3.07	119.95	110.70
3	A	1501	ATP	O3G-PG-O2G	3.06	119.28	107.80
3	B	1502	ATP	O3B-PB-O1B	3.04	119.86	110.70
3	B	1502	ATP	C4-C5-N7	-3.02	107.13	110.58
3	B	1502	ATP	O3A-PA-O1A	2.93	119.51	110.70
3	A	1501	ATP	C4-C5-N7	-2.83	107.34	110.58
3	A	1501	ATP	O5'-PA-O1A	-2.72	98.14	108.94

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	1502	ATP	O5'-PA-O1A	-2.37	99.53	108.94
3	B	1502	ATP	O3G-PG-O1G	2.29	119.77	110.83
3	B	1502	ATP	O2A-PA-O5'	-2.24	97.43	107.57
3	A	1501	ATP	O3B-PG-O1G	-2.21	99.41	111.04
3	B	1502	ATP	O3B-PG-O1G	-2.20	99.49	111.04
3	A	1501	ATP	O3G-PG-O1G	2.18	119.33	110.83
3	A	1501	ATP	PA-O5'-C5'	-2.10	109.34	121.35
3	B	1502	ATP	O3G-PG-O3B	-2.07	97.69	104.64

There are no chirality outliers.

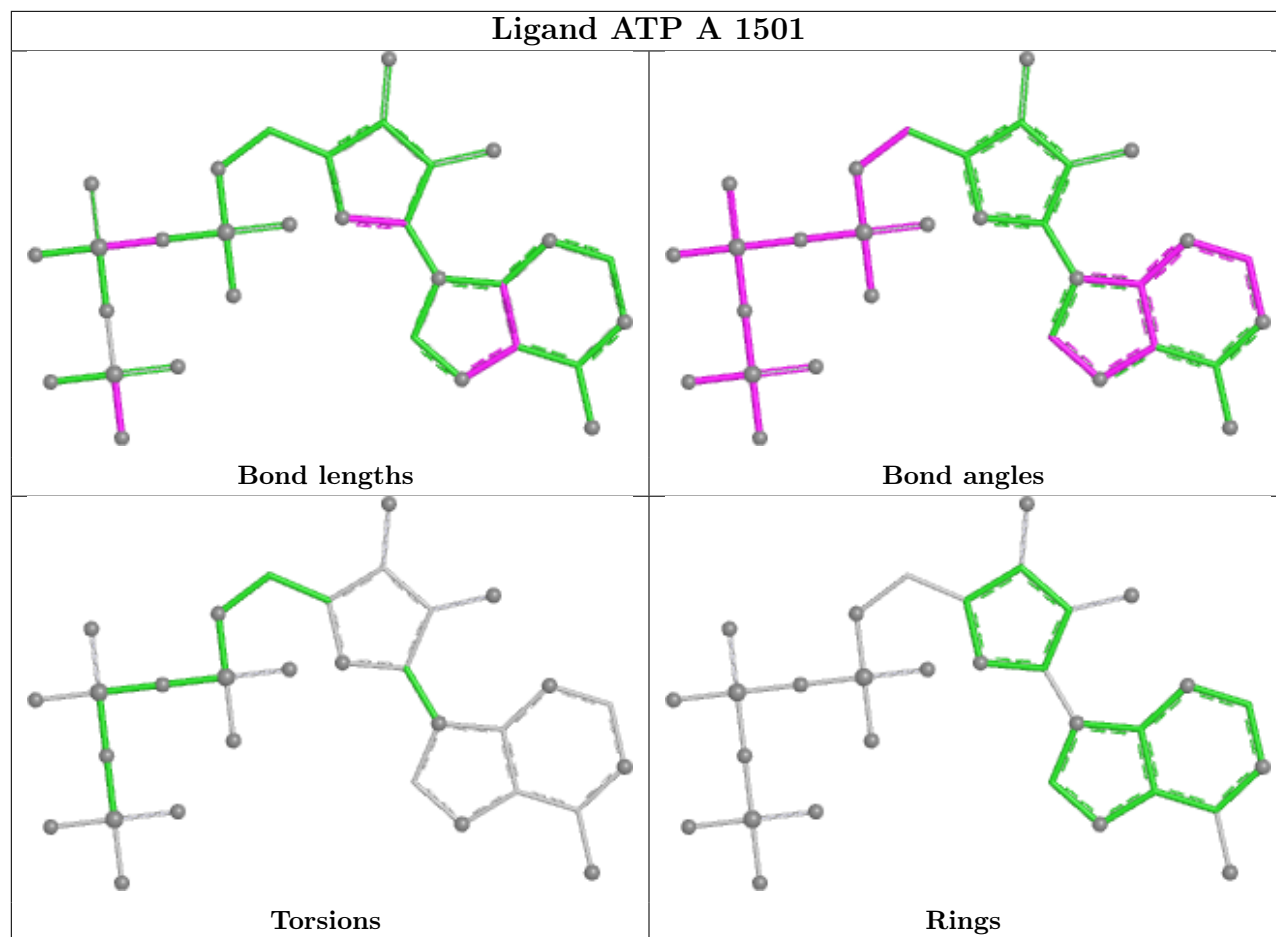
All (5) torsion outliers are listed below:

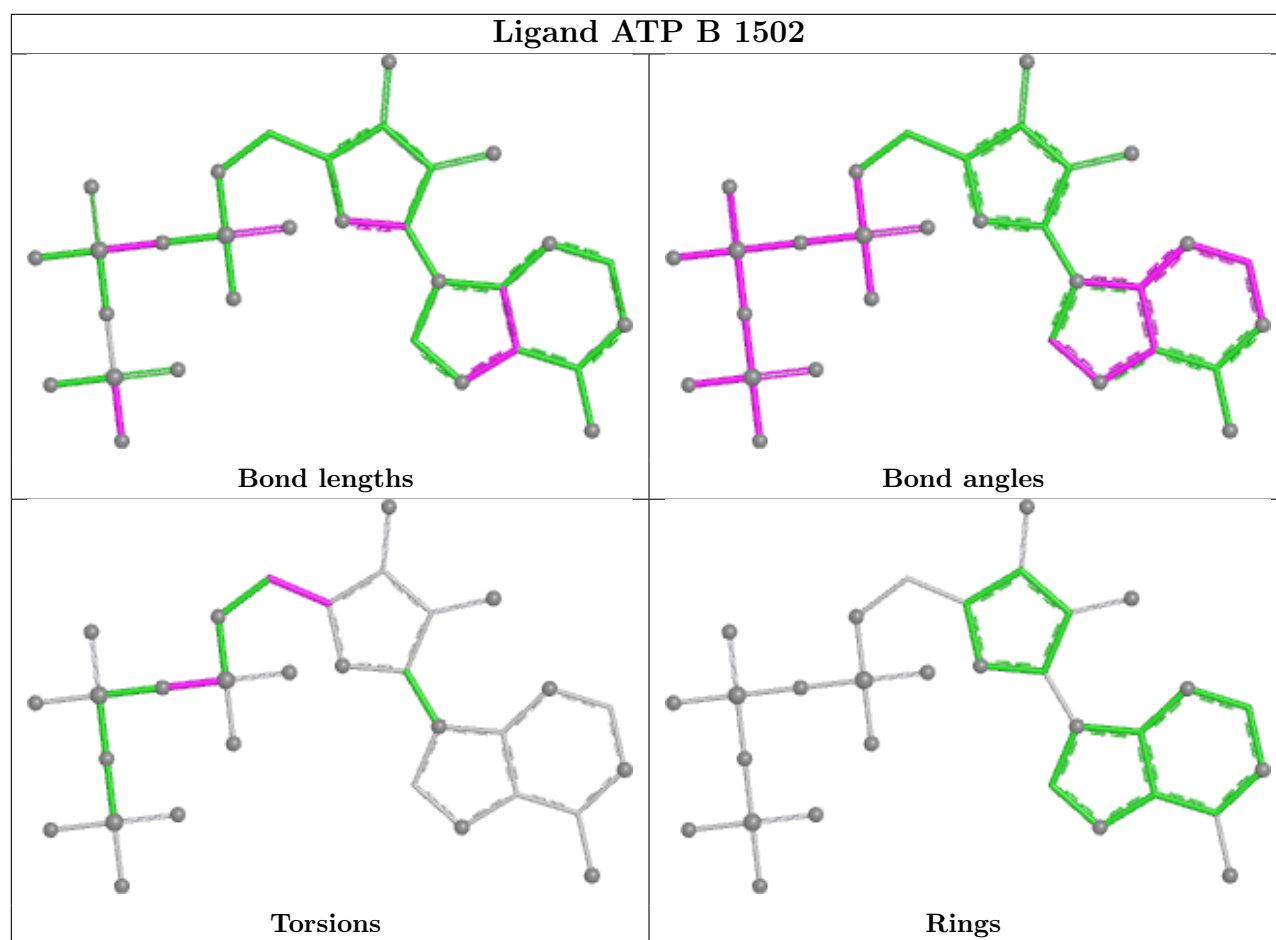
Mol	Chain	Res	Type	Atoms
3	B	1502	ATP	O4'-C4'-C5'-O5'
3	B	1502	ATP	C3'-C4'-C5'-O5'
2	B	404	DAL	O-C-CA-CB
2	B	404	DAL	OXT-C-CA-CB
3	B	1502	ATP	PB-O3A-PA-O1A

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.





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	319/319 (100%)	0.20	4 (1%) 75 76	20, 33, 51, 75	0
1	B	319/319 (100%)	0.92	52 (16%) 4 5	24, 45, 78, 88	0
All	All	638/638 (100%)	0.56	56 (8%) 15 17	20, 38, 69, 88	0

All (56) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	244	PRO	4.8
1	B	169	PHE	4.3
1	B	148	PRO	3.8
1	B	246	THR	3.7
1	B	242	LEU	3.6
1	B	141	PRO	3.4
1	B	244	PRO	3.3
1	B	166	VAL	3.1
1	B	144	VAL	2.9
1	B	276	GLY	2.9
1	B	146	PHE	2.9
1	B	175	ALA	2.9
1	B	143	VAL	2.9
1	A	245	GLY	2.8
1	B	193	SER	2.8
1	B	172	LEU	2.8
1	A	54	GLU	2.8
1	B	139	GLY	2.7
1	B	142	PRO	2.7
1	B	243	ASP	2.6
1	B	168	ARG	2.6
1	B	194	PRO	2.6
1	B	170	GLN	2.6
1	B	56	LYS	2.6

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Mol	Chain	Res	Type	RSRZ
1	B	131	VAL	2.6
1	B	221	PRO	2.6
1	B	149	PRO	2.5
1	B	150	PHE	2.5
1	B	191	ALA	2.5
1	B	216	VAL	2.5
1	B	278	LEU	2.5
1	B	137	ARG	2.4
1	B	57	ALA	2.4
1	B	300	GLU	2.4
1	B	151	PHE	2.3
1	B	238	ILE	2.3
1	B	138	LYS	2.3
1	A	236	LEU	2.2
1	B	195	VAL	2.3
1	B	54	GLU	2.2
1	B	53	LEU	2.2
1	B	176	LEU	2.2
1	B	220	ALA	2.2
1	B	236	LEU	2.2
1	B	222	PHE	2.2
1	B	135	ALA	2.2
1	B	134	VAL	2.1
1	B	232	GLY	2.1
1	B	294	MET	2.1
1	B	245	GLY	2.1
1	B	136	VAL	2.1
1	B	230	THR	2.1
1	B	229	TYR	2.0
1	B	187	VAL	2.0
1	B	241	PRO	2.0
1	B	190	LYS	2.0

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](#)

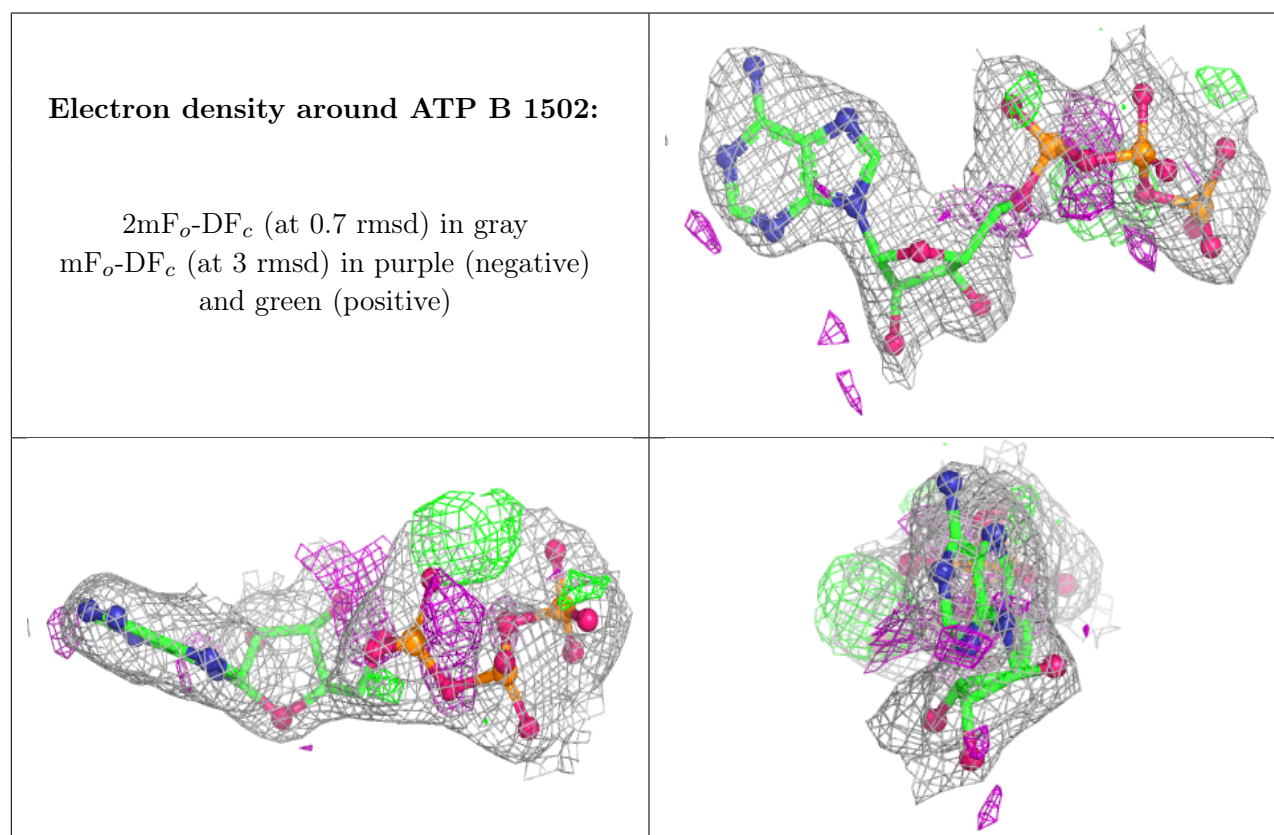
There are no oligosaccharides in this entry.

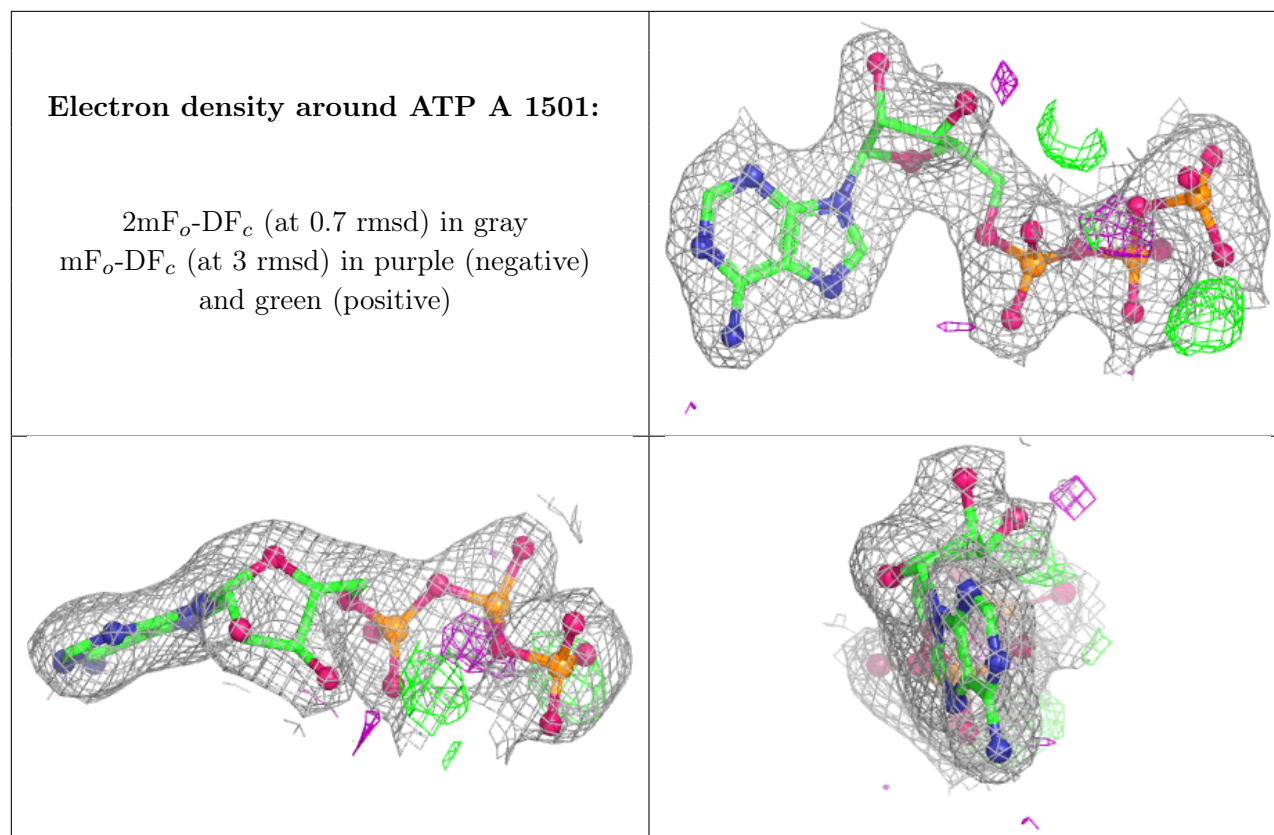
6.4 Ligands ⓘ

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($\text{\AA}^2$)	Q<0.9
2	DAL	A	402	6/6	0.85	0.15	28,32,33,37	0
3	ATP	B	1502	31/31	0.89	0.12	39,50,52,52	0
2	DAL	A	401	5/6	0.91	0.10	25,25,27,28	0
2	DAL	B	403	5/6	0.92	0.12	40,40,42,43	0
2	DAL	B	404	6/6	0.94	0.11	43,44,44,45	0
3	ATP	A	1501	31/31	0.97	0.06	21,26,29,33	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.





6.5 Other polymers ⓘ

There are no such residues in this entry.