



Full wwPDB X-ray Structure Validation Report ⓘ

Apr 25, 2026 – 12:57 PM EDT

PDB ID : 5YK4 / pdb_00005yk4
Title : Mismatch Repair Protein
Authors : Nirwal, S.; Nair, D.T.
Deposited on : 2017-10-12
Resolution : 2.97 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

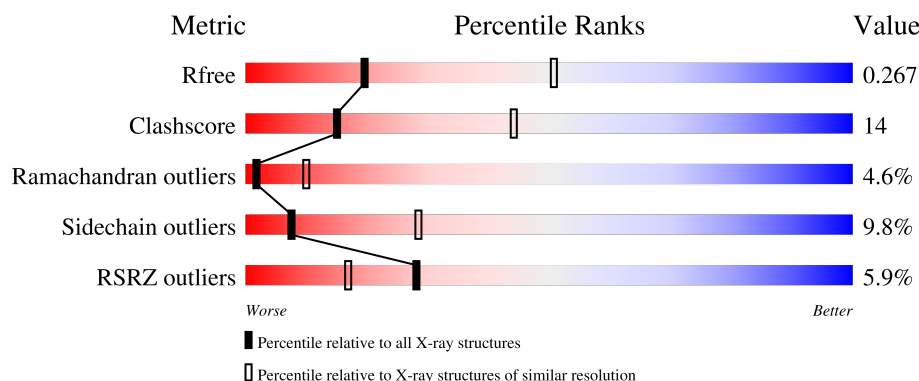
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.97 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	3580 (3.00-2.96)
Clashscore	190562	3904 (3.00-2.96)
Ramachandran outliers	187476	3761 (3.00-2.96)
Sidechain outliers	187428	3764 (3.00-2.96)
RSRZ outliers	180081	3579 (3.00-2.96)

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	819	 3% 69% 21% • 6%
1	B	819	 8% 57% 29% 7% • 6%

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 11983 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.

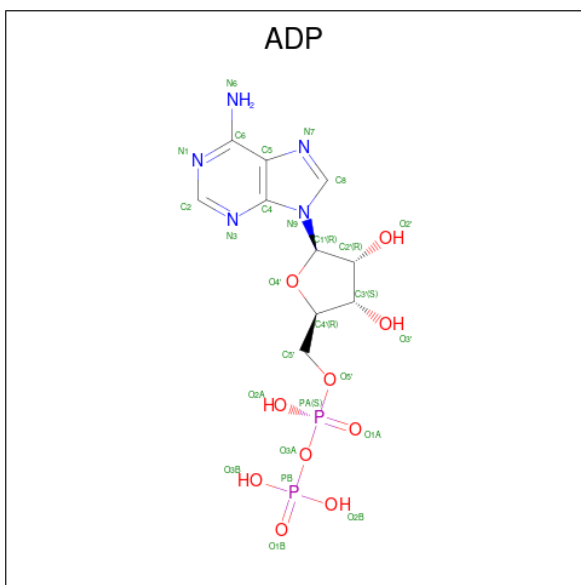
- Molecule 1 is a protein called DNA mismatch repair protein MutS.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	771	Total	C	N	O	S	0	0	0
			5906	3733	1046	1107	20			
1	B	767	Total	C	N	O	S	0	0	0
			5904	3735	1044	1106	19			

There are 10 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-4	GLY	-	expression tag	UNP Q5F5J4
A	-3	PRO	-	expression tag	UNP Q5F5J4
A	-2	LEU	-	expression tag	UNP Q5F5J4
A	-1	GLY	-	expression tag	UNP Q5F5J4
A	0	SER	-	expression tag	UNP Q5F5J4
B	-4	GLY	-	expression tag	UNP Q5F5J4
B	-3	PRO	-	expression tag	UNP Q5F5J4
B	-2	LEU	-	expression tag	UNP Q5F5J4
B	-1	GLY	-	expression tag	UNP Q5F5J4
B	0	SER	-	expression tag	UNP Q5F5J4

- Molecule 2 is ADENOSINE-5'-DIPHOSPHATE (CCD ID: ADP) (formula: C₁₀H₁₅N₅O₁₀P₂) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total 27	C 10	N 5	O 10	P 2	0	0
2	B	1	Total 27	C 10	N 5	O 10	P 2	0	0

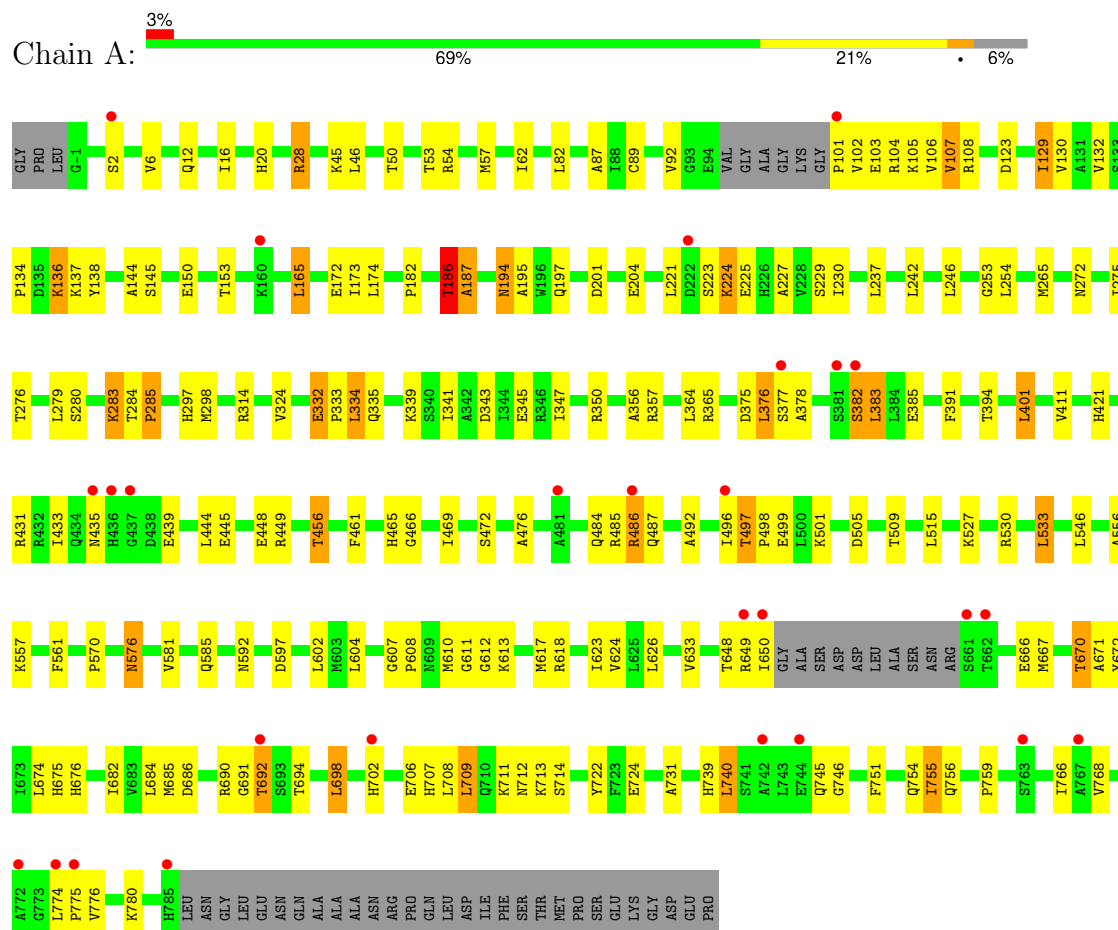
- Molecule 3 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	89	Total O 89 89	0	0
3	B	30	Total O 30 30	0	0

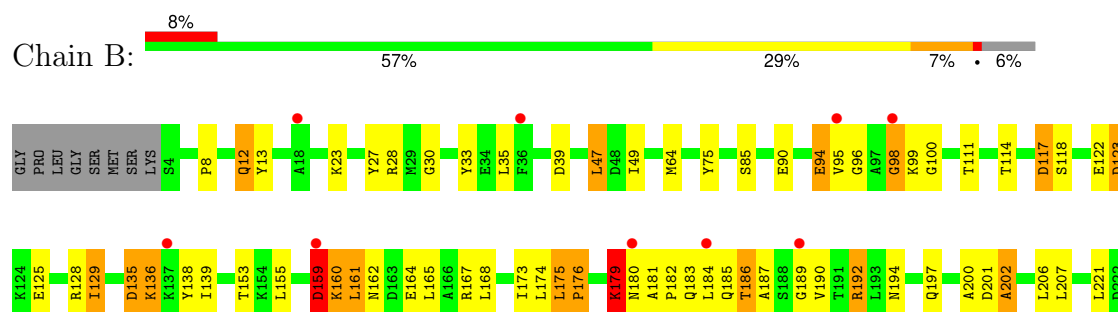
3 Residue-property plots

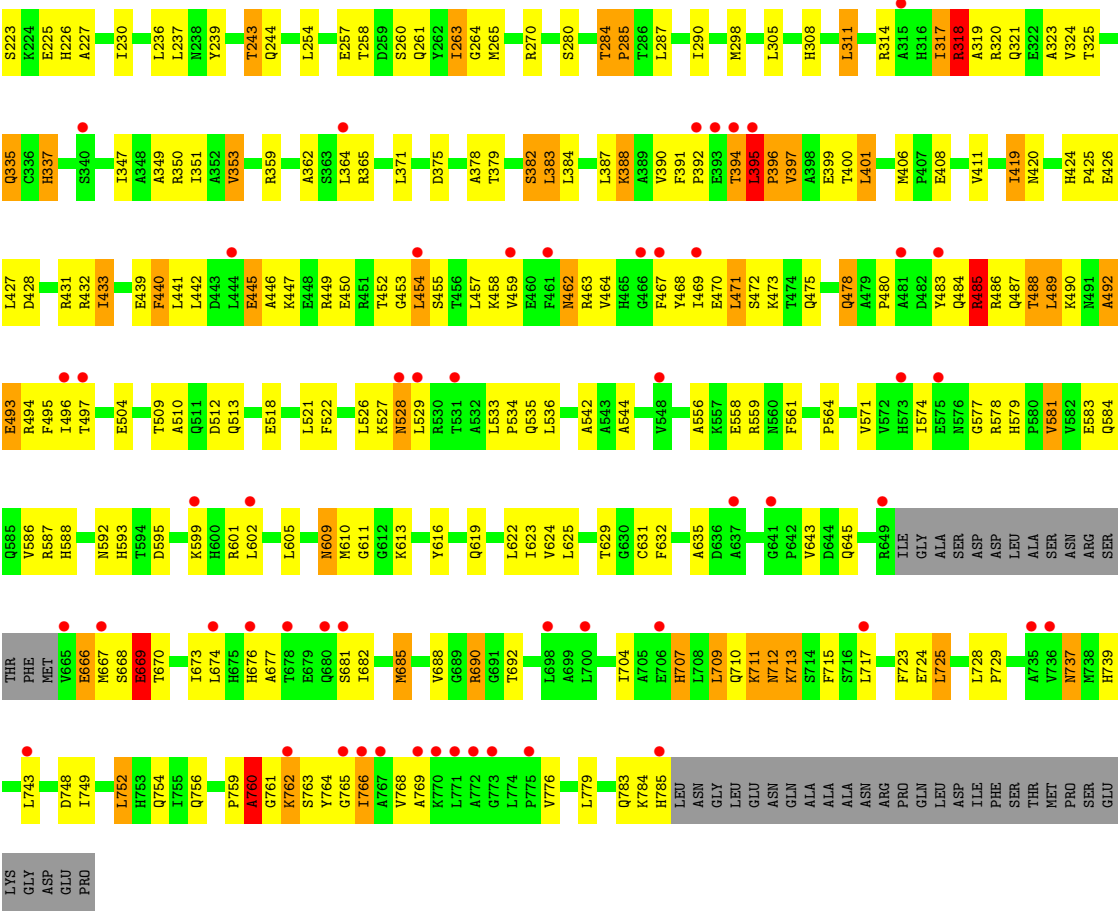
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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 mismatch repair protein MutS



• Molecule 1: DNA mismatch repair protein MutS





4 Data and refinement statistics

Property	Value	Source
Space group	P 2 ₁ 2 ₁ 2 ₁	Depositor
Cell constants a, b, c, α , β , γ	89.94Å 102.40Å 236.17Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 2.97 50.00 – 2.97	Depositor EDS
% Data completeness (in resolution range)	99.4 (50.00-2.97) 99.3 (50.00-2.97)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.40 (at 2.96Å)	Xtriage
Refinement program	REFMAC 5.7.0032	Depositor
R, R_{free}	0.246 , 0.269 0.246 , 0.267	Depositor DCC
R_{free} test set	2301 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å ²)	78.6	Xtriage
Anisotropy	0.445	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 72.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	11983	wwPDB-VP
Average B, all atoms (Å ²)	99.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.98% 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: ADP

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	0.46	0/6015	0.54	3/8154 (0.0%)
1	B	0.39	0/6014	0.56	4/8154 (0.0%)
All	All	0.43	0/12029	0.55	7/16308 (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	B	0	2

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	A	186	THR	CA-C-N	7.55	135.29	121.70
1	A	186	THR	C-N-CA	7.55	135.29	121.70
1	B	433	ILE	N-CA-C	-7.33	106.17	113.20
1	A	775	PRO	N-CA-CB	6.13	109.56	102.88
1	B	669	GLU	N-CA-C	-5.35	99.41	110.80
1	B	760	ALA	CA-C-N	5.29	131.22	121.70
1	B	760	ALA	C-N-CA	5.29	131.22	121.70

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	159	ASP	Peptide

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Mol	Chain	Res	Type	Group
1	B	669	GLU	Peptide

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	5906	0	5863	119	0
1	B	5904	0	5915	209	0
2	A	27	0	12	0	0
2	B	27	0	12	1	0
3	A	89	0	0	10	0
3	B	30	0	0	3	0
All	All	11983	0	11802	324	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 14.

All (324) 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:B:441:LEU:O	1:B:445:GLU:HB3	1.52	1.09
1:A:332:GLU:HG2	1:A:333:PRO:HD3	1.50	0.93
1:B:395:LEU:HB2	1:B:396:PRO:HD2	1.49	0.92
1:B:180:ASN:HB3	1:B:181:ALA:HA	1.50	0.92
1:B:762:LYS:HG2	1:B:763:SER:HA	1.60	0.82
1:B:395:LEU:HD22	1:B:397:VAL:HG12	1.65	0.78
1:B:221:LEU:HD23	1:B:230:ILE:HG22	1.64	0.78
1:B:49:ILE:HD11	1:B:75:TYR:HE2	1.46	0.77
1:B:487:GLN:HB3	1:B:488:THR:HA	1.66	0.76
1:A:607:GLY:HA3	3:A:1004:HOH:O	1.86	0.75
1:B:162:ASN:HD21	1:B:186:THR:HG21	1.51	0.74
1:B:318:ARG:HA	1:B:321:GLN:HB2	1.69	0.74
1:B:395:LEU:HB2	1:B:396:PRO:CD	2.18	0.73
1:A:527:LYS:HE3	1:A:530:ARG:HH22	1.54	0.73
1:A:435:ASN:O	1:A:439:GLU:HB3	1.88	0.72
1:A:376:LEU:O	1:A:378:ALA:N	2.23	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:527:LYS:O	1:B:529:LEU:N	2.23	0.71
1:B:712:ASN:HB3	1:B:713:LYS:HE2	1.71	0.71
1:B:284:THR:HB	1:B:285:PRO:HD2	1.72	0.71
1:B:487:GLN:NE2	1:B:489:LEU:O	2.22	0.71
1:A:649:ARG:HH22	1:A:670:THR:HG23	1.55	0.71
1:A:6:VAL:HG12	1:A:57:MET:HG3	1.71	0.70
1:B:396:PRO:O	1:B:400:THR:OG1	2.10	0.69
1:A:28:ARG:O	1:A:104:ARG:NH2	2.24	0.69
1:B:760:ALA:HB1	1:B:761:GLY:HA3	1.73	0.69
1:B:378:ALA:HB1	1:B:388:LYS:HD2	1.74	0.69
1:B:762:LYS:H	1:B:762:LYS:HD3	1.57	0.68
1:A:674:LEU:O	1:A:712:ASN:ND2	2.26	0.68
1:A:365:ARG:HB2	1:A:401:LEU:HB3	1.76	0.68
1:A:649:ARG:NH2	1:A:666:GLU:O	2.27	0.68
1:B:561:PHE:HB3	1:B:632:PHE:HB2	1.76	0.67
1:B:321:GLN:HE21	1:B:564:PRO:HD2	1.59	0.67
1:B:122:GLU:HB2	1:B:125:GLU:HG3	1.75	0.67
1:B:265:MET:O	1:B:270:ARG:NH1	2.27	0.67
1:A:497:THR:OG1	1:A:499:GLU:OE2	2.13	0.67
1:B:762:LYS:CG	1:B:763:SER:HA	2.24	0.66
1:B:270:ARG:HE	1:B:308:HIS:HD2	1.44	0.66
1:B:467:PHE:HD2	1:B:504:GLU:HB3	1.61	0.66
1:B:457:LEU:HD21	1:B:469:ILE:HD11	1.77	0.65
1:B:167:ARG:NH2	1:B:257:GLU:OE1	2.29	0.65
1:B:395:LEU:H	1:B:395:LEU:HD13	1.61	0.65
1:B:446:ALA:HA	1:B:449:ARG:HB2	1.79	0.65
1:A:134:PRO:HG3	1:A:182:PRO:HD3	1.78	0.65
1:B:522:PHE:O	1:B:526:LEU:HB2	1.96	0.65
1:B:668:SER:OG	3:B:1001:HOH:O	2.15	0.64
1:B:468:TYR:OH	1:B:495:PHE:N	2.30	0.64
1:B:175:LEU:HD23	1:B:176:PRO:HD2	1.79	0.64
1:A:283:LYS:O	3:A:1001:HOH:O	2.15	0.64
1:A:498:PRO:HA	1:A:501:LYS:HB2	1.80	0.64
1:A:674:LEU:N	3:A:1003:HOH:O	2.31	0.64
1:B:431:ARG:O	1:B:433:ILE:N	2.28	0.64
1:B:485:ARG:NH1	1:B:496:ILE:O	2.31	0.63
1:B:577:GLY:N	1:B:592:ASN:O	2.31	0.63
1:A:712:ASN:O	1:A:714:SER:N	2.31	0.63
1:B:556:ALA:HA	1:B:561:PHE:HB2	1.80	0.62
1:A:106:VAL:O	1:A:108:ARG:N	2.28	0.62
1:B:155:LEU:HD21	1:B:226:HIS:HA	1.80	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:456:THR:O	1:A:456:THR:OG1	2.18	0.61
1:A:556:ALA:HA	1:A:561:PHE:HB2	1.80	0.61
1:B:396:PRO:HA	1:B:399:GLU:HB2	1.80	0.61
1:B:317:ILE:O	1:B:319:ALA:N	2.29	0.61
1:B:487:GLN:NE2	1:B:493:GLU:OE1	2.34	0.61
1:B:123:ASP:OD1	1:B:123:ASP:N	2.26	0.61
1:A:486:ARG:NH1	1:A:486:ARG:HB2	2.16	0.60
1:A:617:MET:HB3	1:A:684:LEU:HD23	1.82	0.60
1:B:164:GLU:OE1	1:B:167:ARG:NH1	2.34	0.60
1:B:439:GLU:O	1:B:441:LEU:N	2.34	0.60
1:B:765:GLY:H	1:B:766:ILE:HB	1.65	0.60
1:B:117:ASP:HA	1:B:350:ARG:HE	1.68	0.59
1:B:776:VAL:HA	1:B:779:LEU:HB3	1.84	0.59
1:B:28:ARG:NH1	1:B:30:GLY:O	2.36	0.59
1:B:270:ARG:NH2	1:B:308:HIS:O	2.36	0.58
1:B:510:ALA:HA	1:B:513:GLN:HE21	1.67	0.58
1:B:365:ARG:HB2	1:B:401:LEU:HB3	1.84	0.58
1:B:601:ARG:HH22	1:B:709:LEU:HA	1.68	0.58
1:B:244:GLN:HB3	1:B:353:VAL:HG23	1.85	0.58
1:B:475:GLN:HE22	1:B:478:GLN:HG3	1.69	0.58
1:B:362:ALA:HB1	1:B:365:ARG:HH21	1.70	0.57
1:B:763:SER:N	1:B:764:TYR:HA	2.19	0.57
1:B:574:ILE:HD11	1:B:635:ALA:HB2	1.88	0.56
1:A:298:MET:HE3	1:A:345:GLU:HB2	1.87	0.56
1:A:624:VAL:HG11	1:A:682:ILE:HD12	1.88	0.56
1:A:12:GLN:NE2	3:A:1006:HOH:O	2.30	0.56
1:B:33:TYR:OH	1:B:90:GLU:OE2	2.19	0.56
1:B:129:ILE:HD11	1:B:174:LEU:HG	1.88	0.56
1:B:427:LEU:O	1:B:431:ARG:HG3	2.05	0.55
1:B:528:ASN:O	3:B:1002:HOH:O	2.18	0.55
1:B:586:VAL:HG23	1:B:588:HIS:H	1.71	0.55
1:B:128:ARG:NH1	1:B:168:LEU:O	2.39	0.55
1:B:264:GLY:HA3	1:B:645:GLN:HG2	1.87	0.55
1:B:311:LEU:HD12	1:B:317:ILE:HG12	1.88	0.55
1:B:49:ILE:HD11	1:B:75:TYR:CE2	2.35	0.55
1:A:611:GLY:O	1:A:613:LYS:N	2.40	0.54
1:B:383:LEU:HD23	1:B:384:LEU:N	2.23	0.54
1:B:439:GLU:HG3	1:B:440:PHE:H	1.72	0.54
1:B:467:PHE:CD2	1:B:504:GLU:HB3	2.42	0.54
1:A:186:THR:HA	1:A:187:ALA:HB3	1.88	0.54
1:A:137:LYS:HG3	1:A:138:TYR:H	1.71	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:387:LEU:O	1:B:390:VAL:HG12	2.08	0.54
1:A:484:GLN:HB3	1:A:486:ARG:NH2	2.22	0.54
1:B:406:MET:HG2	1:B:420:ASN:HA	1.88	0.54
1:B:729:PRO:HG3	1:B:737:ASN:HB3	1.89	0.54
1:A:435:ASN:O	1:A:439:GLU:CB	2.56	0.54
1:A:472:SER:HA	1:A:492:ALA:HA	1.89	0.54
1:B:98:GLY:O	1:B:100:GLY:N	2.40	0.54
1:B:452:THR:OG1	1:B:478:GLN:HB3	2.08	0.54
1:B:609:ASN:C	1:B:611:GLY:H	2.15	0.54
1:B:579:HIS:CE1	1:B:581:VAL:HG22	2.43	0.53
1:B:419:ILE:HD13	1:B:518:GLU:HG3	1.90	0.53
1:A:272:ASN:O	1:A:618:ARG:NH1	2.37	0.53
1:B:765:GLY:N	1:B:766:ILE:HB	2.22	0.53
1:A:347:ILE:HD13	1:A:350:ARG:HH21	1.74	0.53
1:A:592:ASN:HD21	1:A:754:GLN:HA	1.73	0.53
1:B:493:GLU:OE1	1:B:493:GLU:HA	2.08	0.53
1:B:472:SER:OG	1:B:473:LYS:N	2.40	0.53
1:B:487:GLN:CB	1:B:488:THR:HA	2.39	0.53
1:A:265:MET:HE1	1:A:275:ILE:HD11	1.91	0.53
1:B:200:ALA:C	1:B:202:ALA:H	2.16	0.53
1:A:667:MET:O	1:A:671:ALA:HB2	2.09	0.53
1:A:224:LYS:HG2	1:A:225:GLU:H	1.74	0.52
1:B:454:LEU:HB3	1:B:455:SER:HB3	1.90	0.52
1:A:186:THR:HA	1:A:187:ALA:CB	2.39	0.52
1:A:89:CYS:SG	1:A:104:ARG:HG3	2.49	0.52
1:A:46:LEU:HD22	1:A:82:LEU:HD13	1.91	0.52
1:B:118:SER:OG	1:B:350:ARG:NH1	2.43	0.52
1:B:578:ARG:NE	1:B:583:GLU:OE2	2.40	0.52
1:A:103:GLU:OE2	1:A:105:LYS:NZ	2.39	0.51
1:A:221:LEU:HD23	1:A:230:ILE:HG12	1.93	0.51
1:B:390:VAL:O	1:B:392:PRO:HD3	2.11	0.51
1:B:613:LYS:HG2	2:B:901:ADP:O1B	2.11	0.51
1:B:117:ASP:OD1	1:B:117:ASP:N	2.44	0.51
1:A:486:ARG:NH2	1:A:496:ILE:HG13	2.26	0.51
1:A:690:ARG:HH11	1:B:690:ARG:HH11	1.57	0.51
1:B:226:HIS:O	1:B:230:ILE:HG23	2.10	0.51
1:B:609:ASN:O	1:B:611:GLY:N	2.43	0.50
1:B:471:LEU:HB3	1:B:493:GLU:O	2.12	0.50
1:A:496:ILE:HD13	1:A:501:LYS:HG2	1.94	0.50
1:A:445:GLU:O	1:A:449:ARG:HG2	2.12	0.50
1:B:347:ILE:HG21	1:B:364:LEU:HB2	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:765:GLY:HA2	1:B:766:ILE:O	2.12	0.50
1:B:760:ALA:HB1	1:B:761:GLY:CA	2.38	0.50
1:A:129:ILE:HD12	1:A:172:GLU:HB3	1.93	0.49
1:A:570:PRO:HD3	3:A:1014:HOH:O	2.11	0.49
1:B:643:VAL:HB	1:B:681:SER:HB2	1.93	0.49
1:B:605:LEU:HD13	1:B:613:LYS:HB2	1.94	0.49
1:B:468:TYR:CE1	1:B:496:ILE:HA	2.47	0.49
1:B:601:ARG:NH2	1:B:709:LEU:HA	2.27	0.49
1:B:318:ARG:NH1	1:B:318:ARG:HB3	2.27	0.49
1:A:314:ARG:NH1	3:A:1018:HOH:O	2.45	0.49
1:B:670:THR:HG23	1:B:685:MET:HE1	1.93	0.49
1:A:272:ASN:HA	1:A:279:LEU:HD21	1.94	0.49
1:A:465:HIS:CE1	1:A:487:GLN:HE21	2.31	0.49
1:A:776:VAL:O	1:A:780:LYS:N	2.46	0.49
1:B:783:GLN:O	1:B:785:HIS:N	2.45	0.49
1:A:391:PHE:O	1:A:394:THR:HG22	2.12	0.49
1:B:192:ARG:HH22	1:B:194:ASN:HA	1.78	0.49
1:B:35:LEU:HB3	1:B:39:ASP:HB3	1.96	0.48
1:B:207:LEU:HD23	1:B:237:LEU:HD22	1.93	0.48
1:B:670:THR:O	1:B:673:ILE:HB	2.14	0.48
1:A:137:LYS:HG3	1:A:138:TYR:N	2.27	0.48
1:A:671:ALA:O	1:A:675:HIS:NE2	2.46	0.48
1:B:183:GLN:O	1:B:185:GLN:N	2.47	0.48
1:A:690:ARG:NH1	1:B:690:ARG:HH11	2.12	0.48
1:A:766:ILE:C	1:A:768:VAL:H	2.21	0.48
1:B:47:LEU:HB2	1:B:49:ILE:HD13	1.95	0.48
1:B:317:ILE:C	1:B:319:ALA:N	2.72	0.48
1:B:384:LEU:H	1:B:384:LEU:HD23	1.79	0.48
1:A:89:CYS:HA	1:A:105:LYS:O	2.14	0.48
1:B:258:THR:H	1:B:261:GLN:HE21	1.61	0.48
1:B:468:TYR:CG	1:B:469:ILE:N	2.82	0.48
1:B:764:TYR:CB	1:B:765:GLY:HA3	2.44	0.48
1:A:123:ASP:HB3	1:A:297:HIS:CD2	2.48	0.48
1:A:707:HIS:N	3:A:1019:HOH:O	2.47	0.48
1:B:335:GLN:C	1:B:337:HIS:H	2.22	0.48
1:B:666:GLU:O	1:B:668:SER:N	2.47	0.48
1:A:505:ASP:O	1:A:509:THR:OG1	2.23	0.47
1:B:270:ARG:HE	1:B:308:HIS:CD2	2.28	0.47
1:B:173:ILE:HD13	1:B:187:ALA:HB1	1.96	0.47
1:B:579:HIS:HE1	1:B:581:VAL:HG22	1.80	0.47
1:B:263:ILE:HD11	1:B:643:VAL:HG22	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:320:ARG:O	1:B:324:VAL:HG12	2.15	0.47
1:B:390:VAL:HG11	1:B:542:ALA:CB	2.45	0.47
1:B:670:THR:HG21	1:B:704:ILE:HD13	1.97	0.47
1:B:287:LEU:HD22	1:B:622:LEU:HD22	1.96	0.47
1:B:392:PRO:C	1:B:394:THR:H	2.22	0.47
1:A:706:GLU:OE2	1:B:776:VAL:HG11	2.14	0.47
1:B:601:ARG:HH22	1:B:710:GLN:H	1.62	0.47
1:A:608:PRO:O	1:A:613:LYS:NZ	2.48	0.47
1:A:691:GLY:C	1:A:692:THR:HG1	2.22	0.47
1:B:173:ILE:HB	1:B:190:VAL:HG22	1.97	0.47
1:B:485:ARG:HH11	1:B:496:ILE:HG13	1.80	0.47
1:B:529:LEU:HA	3:B:1002:HOH:O	2.15	0.47
1:A:472:SER:O	1:A:476:ALA:N	2.47	0.47
1:A:54:ARG:O	1:A:62:ILE:HB	2.14	0.46
1:B:487:GLN:HB3	1:B:488:THR:CA	2.41	0.46
1:A:130:VAL:O	1:A:173:ILE:HA	2.15	0.46
1:A:486:ARG:NH1	1:A:496:ILE:HG23	2.30	0.46
1:B:382:SER:OG	1:B:383:LEU:N	2.47	0.46
1:B:578:ARG:HE	1:B:583:GLU:CD	2.22	0.46
1:A:334:LEU:HD11	1:A:546:LEU:HD21	1.98	0.46
1:B:225:GLU:C	1:B:227:ALA:H	2.23	0.46
1:B:323:ALA:HA	1:B:384:LEU:HD22	1.96	0.46
1:A:106:VAL:C	1:A:108:ARG:H	2.22	0.46
1:A:650:ILE:HA	1:A:686:ASP:HB3	1.97	0.46
1:B:180:ASN:HB3	1:B:181:ALA:CA	2.36	0.46
1:A:444:LEU:O	1:A:448:GLU:HG2	2.16	0.46
1:A:602:LEU:HD13	1:A:709:LEU:HG	1.97	0.46
1:B:766:ILE:HG13	1:B:769:ALA:CB	2.46	0.46
1:B:317:ILE:C	1:B:319:ALA:H	2.22	0.46
1:B:138:TYR:HB2	1:B:155:LEU:HD12	1.98	0.45
1:B:206:LEU:HG	1:B:237:LEU:HD23	1.97	0.45
1:B:450:GLU:OE2	1:B:454:LEU:HA	2.16	0.45
1:B:139:ILE:HD11	1:B:161:LEU:HB2	1.99	0.45
1:A:87:ALA:HB1	1:A:106:VAL:HG13	1.99	0.45
1:B:298:MET:HG3	1:B:544:ALA:HB2	1.98	0.45
1:B:23:LYS:HB2	1:B:85:SER:HB2	1.97	0.45
1:A:275:ILE:HG22	1:A:276:THR:HG23	1.99	0.45
1:A:461:PHE:HA	1:A:466:GLY:O	2.16	0.45
1:B:752:LEU:HD23	1:B:754:GLN:HE22	1.81	0.45
1:B:153:THR:HG21	1:B:221:LEU:HD21	1.98	0.45
1:A:153:THR:OG1	1:A:229:SER:HB2	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:321:GLN:O	1:B:325:THR:OG1	2.27	0.44
1:B:192:ARG:NH2	1:B:194:ASN:HA	2.31	0.44
1:B:424:HIS:CE1	1:B:426:GLU:HB3	2.53	0.44
1:A:356:ALA:N	3:A:1010:HOH:O	2.31	0.44
1:A:382:SER:OG	1:A:383:LEU:N	2.50	0.44
1:A:576:ASN:HA	1:A:592:ASN:C	2.43	0.44
1:B:94:GLU:O	1:B:96:GLY:N	2.51	0.44
1:A:201:ASP:OD1	1:A:201:ASP:N	2.49	0.44
1:B:431:ARG:HE	1:B:431:ARG:HB2	1.46	0.44
1:B:559:ARG:HH12	1:B:587:ARG:HH12	1.65	0.44
1:B:762:LYS:HD3	1:B:762:LYS:N	2.29	0.44
1:A:335:GLN:O	1:A:339:LYS:HB2	2.18	0.44
1:B:239:TYR:O	1:B:243:THR:OG1	2.31	0.44
1:B:311:LEU:H	1:B:311:LEU:HG	1.53	0.44
1:A:648:THR:HB	1:A:650:ILE:HD12	2.00	0.44
1:B:223:SER:O	1:B:227:ALA:HB2	2.18	0.44
1:B:349:ALA:O	1:B:353:VAL:HG12	2.18	0.44
1:B:728:LEU:N	1:B:729:PRO:HD2	2.32	0.44
1:B:458:LYS:HD2	1:B:458:LYS:HA	1.81	0.43
1:B:752:LEU:HB3	1:B:754:GLN:OE1	2.18	0.43
1:A:144:ALA:HA	1:A:150:GLU:O	2.18	0.43
1:B:450:GLU:OE2	1:B:453:GLY:HA2	2.18	0.43
1:A:123:ASP:HB3	1:A:297:HIS:CG	2.53	0.43
1:B:12:GLN:OE1	1:B:27:TYR:OH	2.21	0.43
1:B:509:THR:HA	1:B:512:ASP:HB2	2.01	0.43
1:A:204:GLU:OE1	1:A:223:SER:OG	2.36	0.43
1:A:702:HIS:O	1:A:706:GLU:HG2	2.19	0.43
1:A:57:MET:HB2	1:A:62:ILE:HD11	2.00	0.43
1:A:465:HIS:CE1	1:A:487:GLN:HB2	2.54	0.43
1:B:587:ARG:HA	1:B:587:ARG:HD3	1.81	0.43
1:A:284:THR:O	1:A:285:PRO:C	2.62	0.43
1:A:581:VAL:HG12	1:A:585:GLN:HE22	1.83	0.43
1:A:698:LEU:HD23	1:A:722:TYR:HB3	2.00	0.43
1:B:284:THR:O	1:B:285:PRO:C	2.61	0.43
1:B:359:ARG:HH12	1:B:408:GLU:CD	2.26	0.43
1:B:428:ASP:OD1	1:B:431:ARG:NH1	2.52	0.43
1:A:223:SER:O	1:A:227:ALA:HB2	2.19	0.42
1:B:494:ARG:HA	1:B:494:ARG:HD3	1.91	0.42
1:B:323:ALA:HB2	1:B:383:LEU:HD22	2.01	0.42
1:B:347:ILE:O	1:B:351:ILE:HG12	2.19	0.42
1:B:111:THR:HG1	1:B:114:THR:HG1	1.62	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:468:TYR:HE1	1:B:496:ILE:HA	1.83	0.42
1:B:473:LYS:HD2	1:B:492:ALA:HB2	2.02	0.42
1:B:8:PRO:O	1:B:12:GLN:HG3	2.19	0.42
1:B:159:ASP:O	1:B:160:LYS:HB3	2.18	0.42
1:B:601:ARG:H	1:B:601:ARG:HG2	1.59	0.42
1:A:666:GLU:O	1:A:670:THR:OG1	2.32	0.42
1:A:671:ALA:C	3:A:1003:HOH:O	2.63	0.42
1:A:165:LEU:HD12	1:A:165:LEU:HA	1.86	0.42
1:B:624:VAL:HG11	1:B:682:ILE:HD13	2.01	0.42
1:A:357:ARG:HH12	1:A:411:VAL:HG13	1.85	0.42
1:B:12:GLN:OE1	1:B:13:TYR:N	2.53	0.42
1:B:179:LYS:HD2	1:B:180:ASN:O	2.20	0.42
1:B:450:GLU:C	1:B:452:THR:H	2.26	0.42
1:A:20:HIS:HE2	1:A:106:VAL:HG21	1.85	0.42
1:A:145:SER:HB3	1:A:150:GLU:HB3	2.02	0.42
1:A:343:ASP:O	1:A:347:ILE:HG12	2.19	0.42
1:A:486:ARG:HB2	1:A:486:ARG:HH11	1.82	0.42
1:B:447:LYS:HB3	1:B:447:LYS:HE2	1.85	0.42
1:B:462:ASN:OD1	1:B:463:ARG:N	2.53	0.42
1:A:347:ILE:HG21	1:A:364:LEU:HB2	2.01	0.41
1:A:694:THR:OG1	1:B:724:GLU:OE1	2.35	0.41
1:A:706:GLU:HB3	3:A:1016:HOH:O	2.20	0.41
1:B:270:ARG:NE	1:B:308:HIS:HD2	2.14	0.41
1:B:335:GLN:HE21	1:B:335:GLN:HB3	1.55	0.41
1:B:739:HIS:CE1	1:B:756:GLN:HB2	2.55	0.41
1:A:581:VAL:HG12	1:A:585:GLN:NE2	2.35	0.41
1:A:610:MET:HB2	1:A:751:PHE:CE2	2.55	0.41
1:B:290:ILE:HG12	1:B:581:VAL:HG12	2.02	0.41
1:B:533:LEU:HD12	1:B:533:LEU:HA	1.85	0.41
1:B:175:LEU:HD12	1:B:190:VAL:HG11	2.03	0.41
1:A:613:LYS:HG2	1:A:740:LEU:HD13	2.02	0.41
1:A:755:ILE:H	1:A:755:ILE:HG13	1.50	0.41
1:B:707:HIS:HA	1:B:711:LYS:HB3	2.02	0.41
1:A:486:ARG:HB3	1:A:487:GLN:H	1.66	0.41
1:B:254:LEU:HA	1:B:254:LEU:HD12	1.85	0.41
1:A:136:LYS:HD2	1:A:136:LYS:HA	1.86	0.41
1:B:424:HIS:HA	1:B:425:PRO:HD3	1.95	0.41
1:B:602:LEU:HD13	1:B:709:LEU:HD23	2.02	0.41
1:B:135:ASP:CG	1:B:136:LYS:H	2.28	0.41
1:B:298:MET:HE2	1:B:298:MET:HB3	1.96	0.41
1:B:616:TYR:O	1:B:619:GLN:HB3	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:625:LEU:O	1:B:629:THR:HG23	2.21	0.41
1:B:723:PHE:O	1:B:725:LEU:N	2.47	0.41
1:A:421:HIS:CD2	1:A:431:ARG:HH11	2.39	0.41
1:A:623:ILE:HG23	1:A:633:VAL:HB	2.02	0.41
1:A:672:TYR:O	1:A:676:HIS:HB2	2.22	0.40
1:B:559:ARG:HB3	1:B:561:PHE:CE1	2.56	0.40
1:B:670:THR:HA	1:B:673:ILE:HD13	2.03	0.40
1:B:766:ILE:HG13	1:B:769:ALA:HB3	2.03	0.40
1:B:284:THR:CB	1:B:285:PRO:HD2	2.47	0.40
1:A:739:HIS:CE1	1:A:756:GLN:HB2	2.55	0.40
1:B:314:ARG:HA	1:B:318:ARG:NH2	2.36	0.40
1:B:433:ILE:HD13	1:B:510:ALA:HB1	2.04	0.40
1:B:533:LEU:HB3	1:B:534:PRO:HD3	2.03	0.40
1:B:574:ILE:HD12	1:B:623:ILE:HG21	2.03	0.40
1:A:123:ASP:HB3	1:A:297:HIS:CE1	2.57	0.40
1:A:129:ILE:HD11	1:A:174:LEU:HG	2.02	0.40
1:A:194:ASN:HB3	1:A:197:GLN:HE21	1.86	0.40
1:B:631:CYS:SG	1:B:632:PHE:N	2.95	0.40
1:A:45:LYS:HE3	1:A:45:LYS:HB3	1.95	0.40
1:A:533:LEU:HD12	1:A:533:LEU:HA	1.88	0.40
1:B:681:SER:C	1:B:682:ILE:HD12	2.46	0.40

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	
1	A	765/819 (93%)	688 (90%)	55 (7%)	22 (3%)	3	18
1	B	763/819 (93%)	631 (83%)	83 (11%)	49 (6%)	1	5
All	All	1528/1638 (93%)	1319 (86%)	138 (9%)	71 (5%)	2	10

All (71) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	187	ALA
1	A	285	PRO
1	A	377	SER
1	A	713	LYS
1	A	774	LEU
1	B	285	PRO
1	B	395	LEU
1	B	432	ARG
1	B	484	GLN
1	B	528	ASN
1	B	667	MET
1	B	669	GLU
1	B	674	LEU
1	B	768	VAL
1	B	784	LYS
1	A	2	SER
1	A	107	VAL
1	A	136	LYS
1	A	195	ALA
1	A	253	GLY
1	A	376	LEU
1	A	576	ASN
1	A	612	GLY
1	B	99	LYS
1	B	136	LYS
1	B	160	LYS
1	B	182	PRO
1	B	184	LEU
1	B	201	ASP
1	B	318	ARG
1	B	394	THR
1	B	609	ASN
1	B	610	MET
1	B	692	THR
1	A	194	ASN
1	A	254	LEU
1	A	731	ALA
1	A	759	PRO
1	B	95	VAL
1	B	159	ASP
1	B	179	LYS
1	B	189	GLY

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Mol	Chain	Res	Type
1	B	337	HIS
1	B	375	ASP
1	B	382	SER
1	B	396	PRO
1	B	440	PHE
1	B	492	ALA
1	B	677	ALA
1	B	712	ASN
1	B	725	LEU
1	A	382	SER
1	A	433	ILE
1	A	692	THR
1	B	98	GLY
1	B	135	ASP
1	B	202	ALA
1	B	379	THR
1	B	483	TYR
1	B	485	ARG
1	B	715	PHE
1	B	176	PRO
1	B	260	SER
1	B	760	ALA
1	B	766	ILE
1	A	485	ARG
1	B	462	ASN
1	B	480	PRO
1	B	759	PRO
1	A	746	GLY
1	B	464	VAL

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	608/669 (91%)	562 (92%)	46 (8%)	12	39
1	B	615/669 (92%)	541 (88%)	74 (12%)	5	20

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	1223/1338 (91%)	1103 (90%)	120 (10%)	7 28

All (120) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	16	ILE
1	A	28	ARG
1	A	50	THR
1	A	53	THR
1	A	92	VAL
1	A	101	PRO
1	A	102	VAL
1	A	107	VAL
1	A	129	ILE
1	A	132	VAL
1	A	165	LEU
1	A	186	THR
1	A	224	LYS
1	A	237	LEU
1	A	242	LEU
1	A	246	LEU
1	A	280	SER
1	A	283	LYS
1	A	324	VAL
1	A	332	GLU
1	A	334	LEU
1	A	341	ILE
1	A	375	ASP
1	A	383	LEU
1	A	385	GLU
1	A	401	LEU
1	A	456	THR
1	A	469	ILE
1	A	486	ARG
1	A	497	THR
1	A	515	LEU
1	A	533	LEU
1	A	557	LYS
1	A	597	ASP
1	A	604	LEU
1	A	626	LEU
1	A	670	THR

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Mol	Chain	Res	Type
1	A	685	MET
1	A	698	LEU
1	A	708	LEU
1	A	709	LEU
1	A	711	LYS
1	A	724	GLU
1	A	740	LEU
1	A	745	GLN
1	A	755	ILE
1	B	12	GLN
1	B	47	LEU
1	B	64	MET
1	B	94	GLU
1	B	117	ASP
1	B	123	ASP
1	B	129	ILE
1	B	161	LEU
1	B	165	LEU
1	B	175	LEU
1	B	179	LYS
1	B	186	THR
1	B	192	ARG
1	B	197	GLN
1	B	236	LEU
1	B	243	THR
1	B	263	ILE
1	B	280	SER
1	B	284	THR
1	B	305	LEU
1	B	311	LEU
1	B	317	ILE
1	B	318	ARG
1	B	335	GLN
1	B	353	VAL
1	B	371	LEU
1	B	383	LEU
1	B	388	LYS
1	B	391	PHE
1	B	395	LEU
1	B	397	VAL
1	B	401	LEU
1	B	411	VAL

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Mol	Chain	Res	Type
1	B	419	ILE
1	B	442	LEU
1	B	445	GLU
1	B	454	LEU
1	B	459	VAL
1	B	470	GLU
1	B	471	LEU
1	B	478	GLN
1	B	485	ARG
1	B	486	ARG
1	B	488	THR
1	B	489	LEU
1	B	490	LYS
1	B	493	GLU
1	B	497	THR
1	B	521	LEU
1	B	535	GLN
1	B	536	LEU
1	B	558	GLU
1	B	571	VAL
1	B	581	VAL
1	B	584	GLN
1	B	593	HIS
1	B	595	ASP
1	B	599	LYS
1	B	666	GLU
1	B	676	HIS
1	B	685	MET
1	B	688	VAL
1	B	690	ARG
1	B	707	HIS
1	B	709	LEU
1	B	711	LYS
1	B	713	LYS
1	B	717	LEU
1	B	737	ASN
1	B	743	LEU
1	B	748	ASP
1	B	749	ILE
1	B	752	LEU
1	B	762	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (42)

such sidechains are listed below:

Mol	Chain	Res	Type
1	A	180	ASN
1	A	194	ASN
1	A	197	GLN
1	A	249	GLN
1	A	272	ASN
1	A	321	GLN
1	A	355	ASN
1	A	421	HIS
1	A	436	HIS
1	A	465	HIS
1	A	484	GLN
1	A	487	GLN
1	A	511	GLN
1	A	592	ASN
1	A	619	GLN
1	A	732	HIS
1	A	753	HIS
1	B	20	HIS
1	B	70	HIS
1	B	91	GLN
1	B	162	ASN
1	B	250	HIS
1	B	261	GLN
1	B	308	HIS
1	B	330	GLN
1	B	335	GLN
1	B	355	ASN
1	B	420	ASN
1	B	475	GLN
1	B	478	GLN
1	B	513	GLN
1	B	520	GLN
1	B	535	GLN
1	B	573	HIS
1	B	576	ASN
1	B	585	GLN
1	B	619	GLN
1	B	645	GLN
1	B	707	HIS
1	B	710	GLN
1	B	721	HIS
1	B	745	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 ⓘ

2 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	ADP	A	901	-	28,29,29	1.51	5 (17%)	43,45,45	1.81	9 (20%)
2	ADP	B	901	-	28,29,29	1.51	4 (14%)	43,45,45	1.77	9 (20%)

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	ADP	A	901	-	-	3/16/32/32	0/3/3/3
2	ADP	B	901	-	-	2/16/32/32	0/3/3/3

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	901	ADP	C5-C4	5.09	1.48	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	901	ADP	C5-C4	5.08	1.48	1.39
2	B	901	ADP	C8-N7	2.89	1.37	1.31
2	A	901	ADP	C8-N7	2.73	1.36	1.31
2	B	901	ADP	C5-C6	2.68	1.48	1.41
2	A	901	ADP	PA-O3A	2.66	1.62	1.59
2	A	901	ADP	C5-N7	-2.53	1.34	1.39
2	A	901	ADP	C5-C6	2.40	1.47	1.41
2	B	901	ADP	C5-N7	-2.39	1.34	1.39

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	901	ADP	C5-C4-N3	-5.70	118.87	126.72
2	A	901	ADP	C5-C4-N3	-5.54	119.09	126.72
2	B	901	ADP	N3-C4-N9	4.46	134.75	127.17
2	A	901	ADP	N3-C4-N9	4.37	134.59	127.17
2	B	901	ADP	C2-N3-C4	3.69	120.84	111.83
2	A	901	ADP	C2-N3-C4	3.41	120.15	111.83
2	A	901	ADP	C4-C5-N7	-3.36	106.74	110.58
2	B	901	ADP	N3-C2-N1	-3.33	123.55	128.58
2	B	901	ADP	C4-C5-N7	-3.11	107.03	110.58
2	A	901	ADP	N3-C2-N1	-2.91	124.18	128.58
2	A	901	ADP	C5-N7-C8	2.63	107.58	103.45
2	B	901	ADP	C3'-C2'-C1'	2.48	106.15	101.46
2	A	901	ADP	C4-N9-C8	2.40	108.25	105.74
2	B	901	ADP	C4-N9-C8	2.39	108.25	105.74
2	B	901	ADP	C5-N7-C8	2.20	106.90	103.45
2	A	901	ADP	C2'-C1'-N9	-2.09	108.12	113.30
2	B	901	ADP	C6-C5-N7	2.06	136.06	132.09
2	A	901	ADP	C2'-C3'-C4'	2.03	106.53	102.61

There are no chirality outliers.

All (5) torsion outliers are listed below:

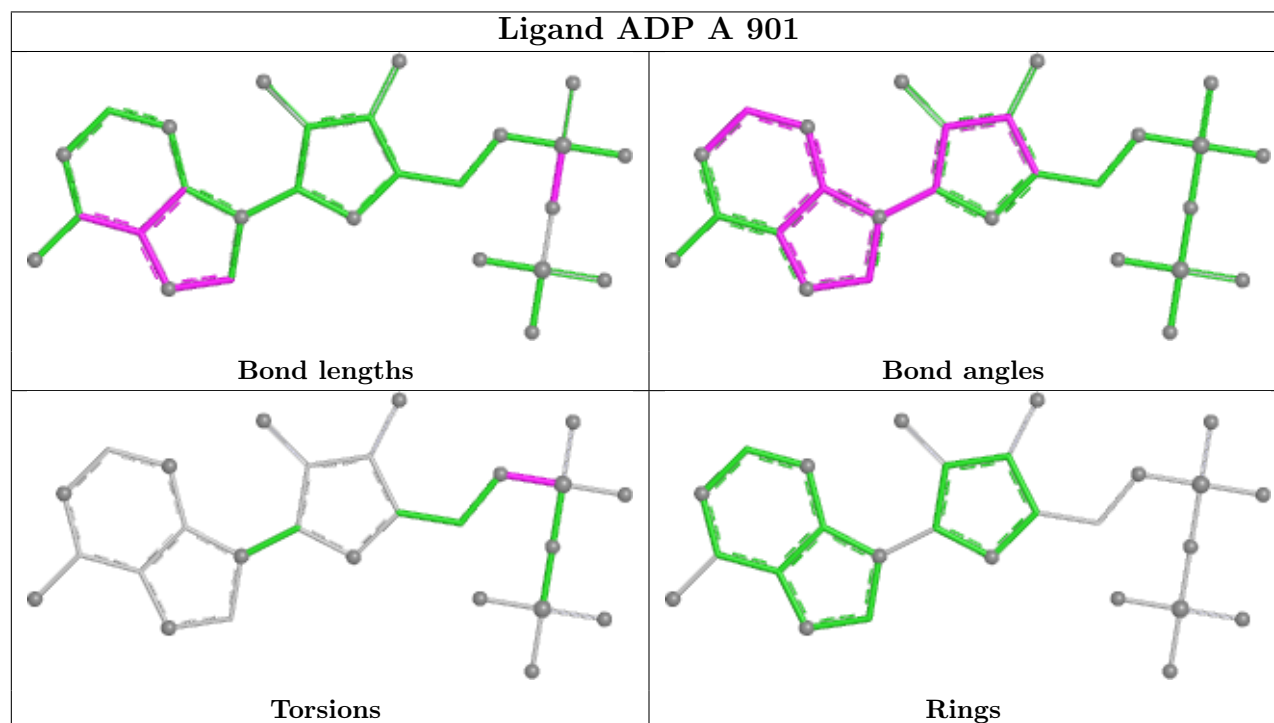
Mol	Chain	Res	Type	Atoms
2	A	901	ADP	C5'-O5'-PA-O2A
2	A	901	ADP	C5'-O5'-PA-O3A
2	B	901	ADP	C5'-O5'-PA-O3A
2	B	901	ADP	PA-O3A-PB-O1B
2	A	901	ADP	C5'-O5'-PA-O1A

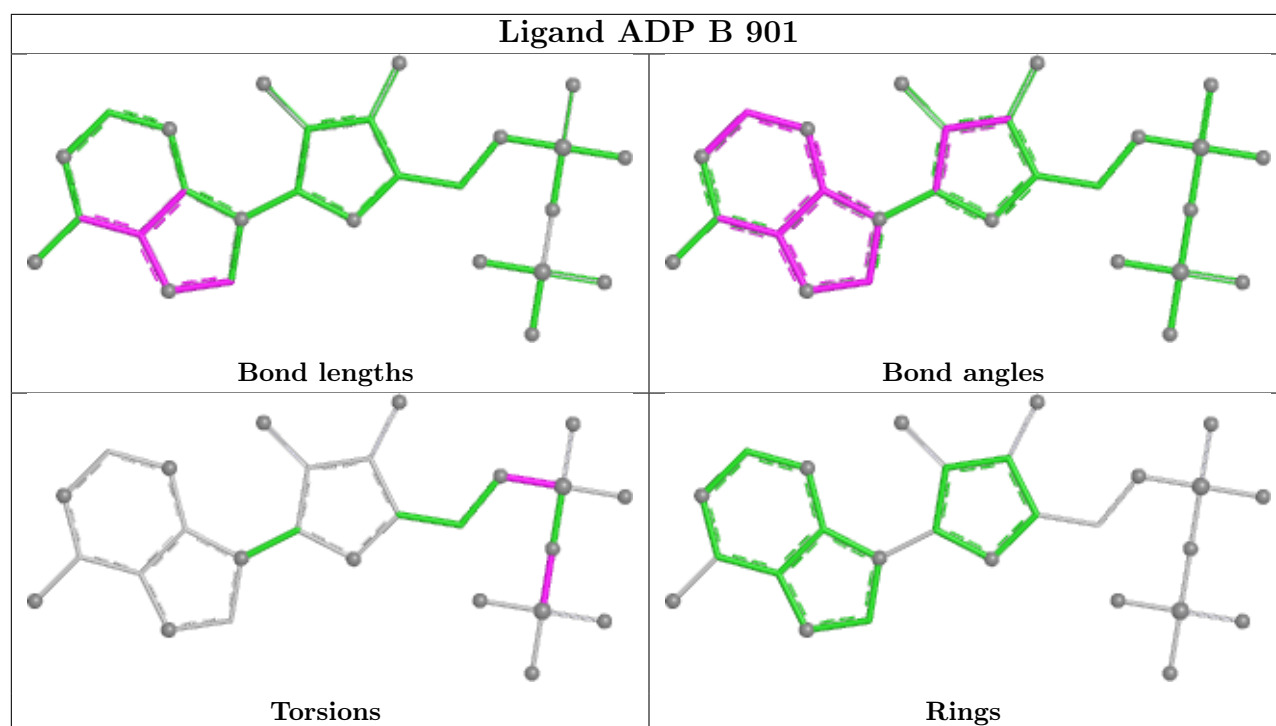
There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	901	ADP	1	0

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	771/819 (94%)	0.18	27 (3%) 47 30	42, 74, 132, 184	0
1	B	767/819 (93%)	0.67	63 (8%) 17 11	60, 113, 191, 254	0
All	All	1538/1638 (93%)	0.42	90 (5%) 28 17	42, 93, 169, 254	0

All (90) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	681	SER	7.5
1	B	785	HIS	4.2
1	B	766	ILE	4.0
1	B	680	GLN	4.0
1	B	674	LEU	3.9
1	A	785	HIS	3.7
1	B	736	VAL	3.6
1	A	382	SER	3.5
1	A	2	SER	3.5
1	B	469	ILE	3.4
1	B	392	PRO	3.3
1	A	775	PRO	3.2
1	A	481	ALA	3.1
1	B	771	LEU	3.1
1	B	531	THR	3.1
1	B	461	PHE	3.0
1	A	702	HIS	3.0
1	B	770	LYS	3.0
1	B	602	LEU	3.0
1	B	459	VAL	3.0
1	B	159	ASP	2.9
1	B	706	GLU	2.9
1	B	769	ALA	2.9
1	A	662	THR	2.9

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Mol	Chain	Res	Type	RSRZ
1	B	678	THR	2.9
1	B	641	GLY	2.9
1	B	444	LEU	2.8
1	A	436	HIS	2.7
1	A	101	PRO	2.7
1	B	315	ALA	2.7
1	B	773	GLY	2.7
1	B	184	LEU	2.7
1	B	667	MET	2.6
1	B	743	LEU	2.6
1	A	744	GLU	2.6
1	B	496	ILE	2.6
1	B	767	ALA	2.6
1	A	649	ARG	2.5
1	A	650	ILE	2.5
1	B	497	THR	2.5
1	B	573	HIS	2.5
1	A	377	SER	2.5
1	B	599	LYS	2.5
1	B	180	ASN	2.5
1	B	18	ALA	2.4
1	B	700	LEU	2.4
1	B	529	LEU	2.4
1	A	486	ARG	2.4
1	B	467	PHE	2.4
1	B	735	ALA	2.4
1	B	772	ALA	2.4
1	B	481	ALA	2.4
1	A	763	SER	2.4
1	A	496	ILE	2.4
1	B	637	ALA	2.3
1	B	762	LYS	2.3
1	B	775	PRO	2.3
1	A	435	ASN	2.3
1	B	393	GLU	2.3
1	B	36	PHE	2.3
1	B	137	LYS	2.3
1	B	394	THR	2.2
1	B	364	LEU	2.2
1	B	717	LEU	2.2
1	B	395	LEU	2.2
1	B	665	VAL	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	692	THR	2.2
1	A	661	SER	2.2
1	B	649	ARG	2.1
1	A	437	GLY	2.1
1	B	575	GLU	2.1
1	B	676	HIS	2.1
1	B	528	ASN	2.1
1	B	95	VAL	2.1
1	A	742	ALA	2.1
1	A	767	ALA	2.1
1	A	772	ALA	2.1
1	B	340	SER	2.1
1	A	381	SER	2.1
1	A	774	LEU	2.1
1	B	698	LEU	2.1
1	B	483	TYR	2.1
1	B	548	VAL	2.0
1	B	466	GLY	2.0
1	B	765	GLY	2.0
1	B	454	LEU	2.0
1	B	98	GLY	2.0
1	B	189	GLY	2.0
1	A	222	ASP	2.0
1	A	160	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](#)

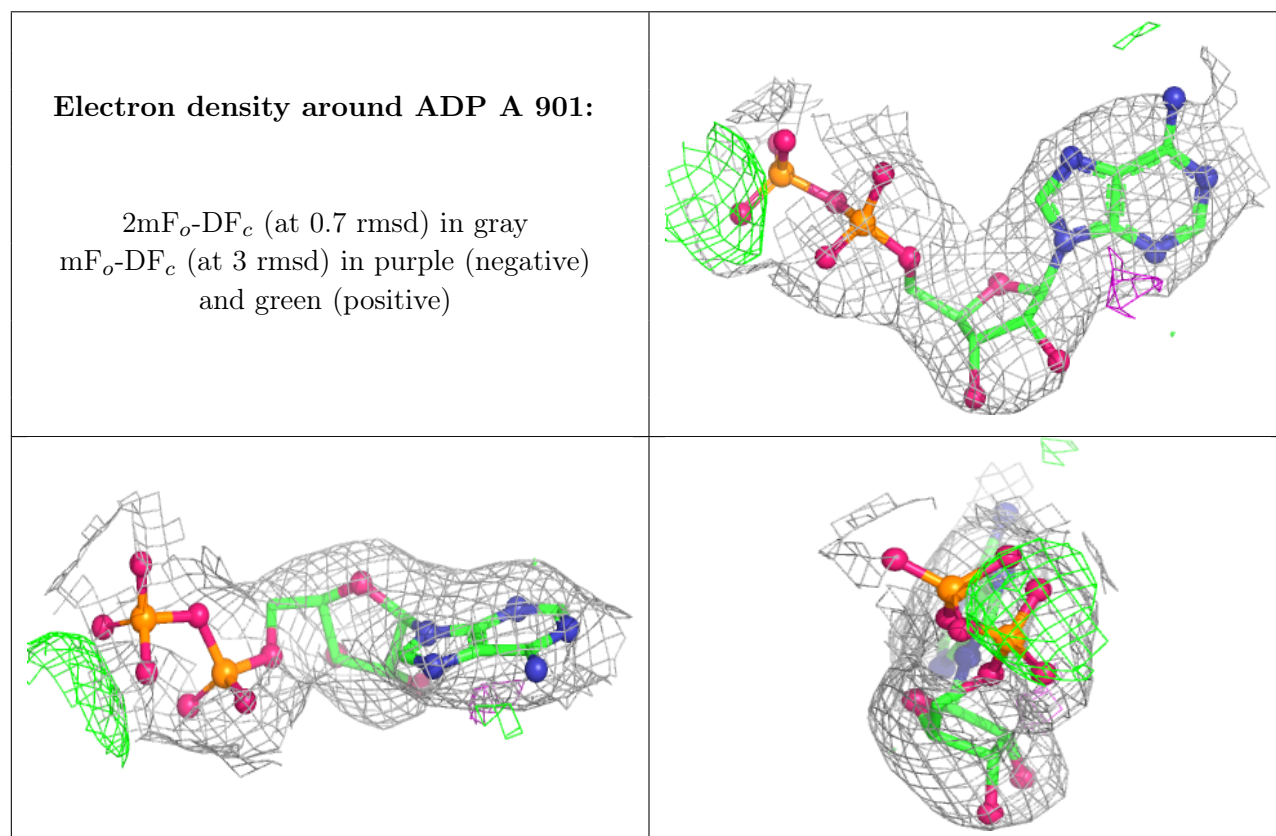
There are no oligosaccharides in this entry.

6.4 Ligands [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.

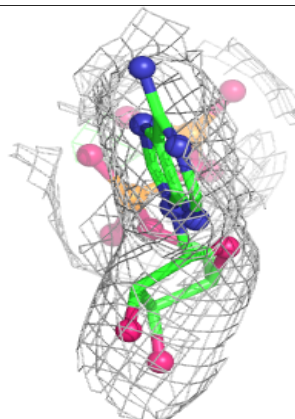
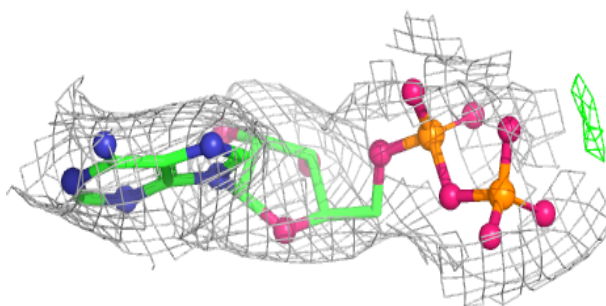
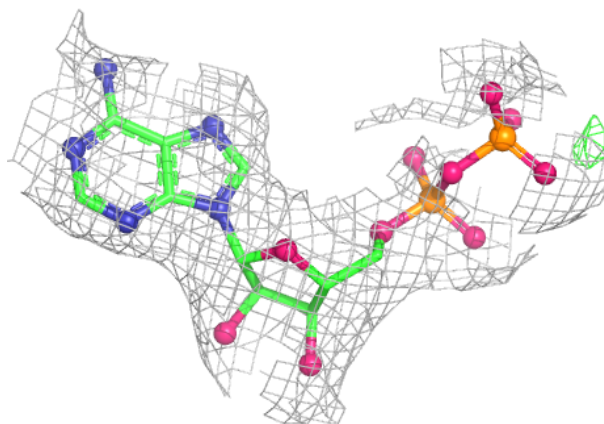
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
2	ADP	A	901	27/27	0.93	0.08	59,64,70,73	0
2	ADP	B	901	27/27	0.95	0.07	79,88,102,106	0

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.



Electron density around ADP B 901:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



6.5 Other polymers [i](#)

There are no such residues in this entry.