Full wwPDB X-ray Structure Validation Report ⓘ

Nov 14, 2023 – 12:19 AM JST

PDB ID	:	5YK4
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:

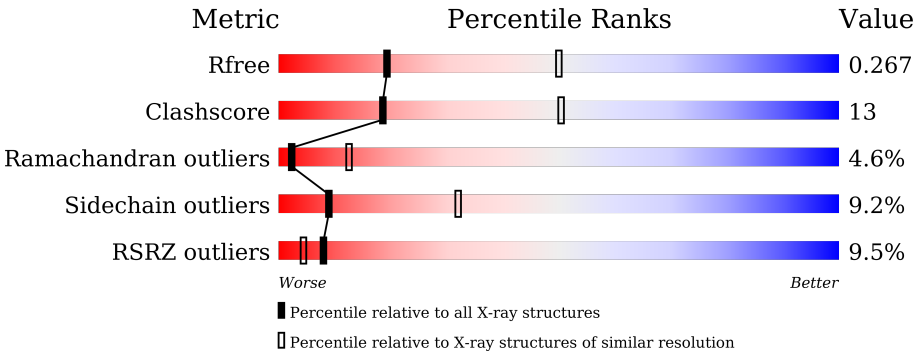
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

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}	130704	2754 (3.00-2.96)
Clashscore	141614	3103 (3.00-2.96)
Ramachandran outliers	138981	2993 (3.00-2.96)
Sidechain outliers	138945	2996 (3.00-2.96)
RSRZ outliers	127900	2644 (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 <=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	4% 70% 21% • 6%
1	B	819	14% 57% 29% 7% • 6%

2 Entry composition (i)

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.

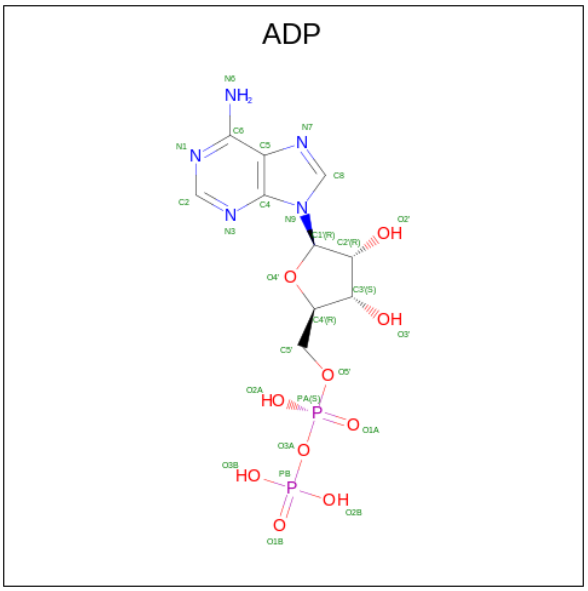
- Molecule 1 is a protein called DNA mismatch repair protein MutS.

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 (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$) (labeled as "Ligand of Interest" by depositor).



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

- Molecule 3 is water.

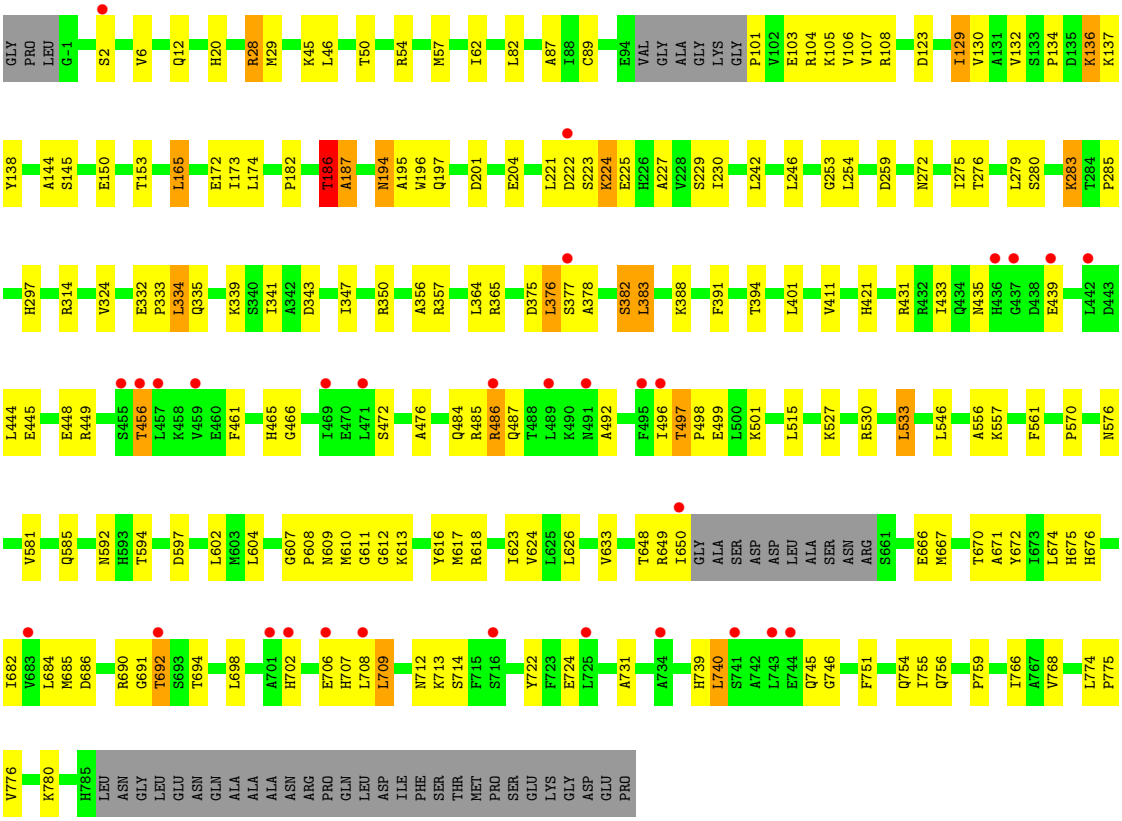
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	89	Total	O	0	0
			89	89		
3	B	30	Total	O	0	0
			30	30		

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.

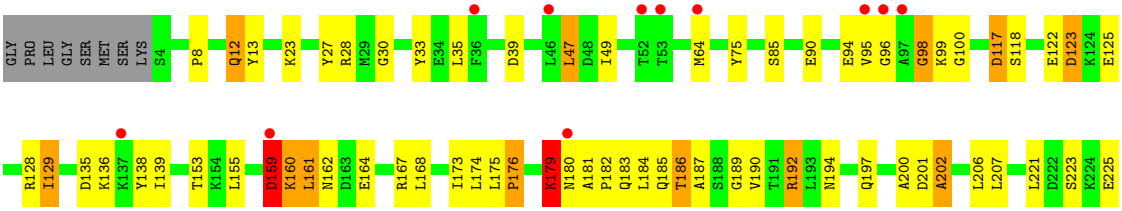
• Molecule 1: DNA mismatch repair protein MutS

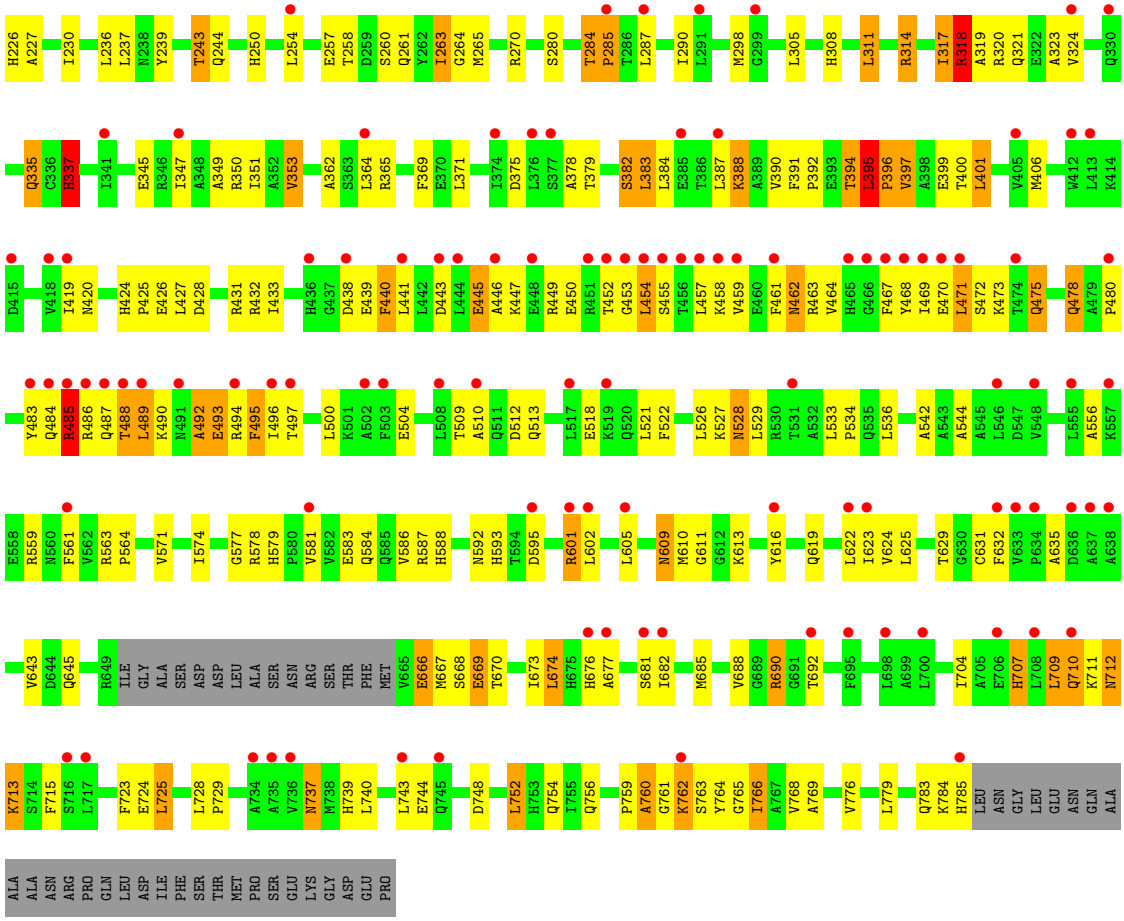
Chain A:



• Molecule 1: DNA mismatch repair protein MutS

Chain B:




H226 A227 I230 L236 L237 N238 Y239 T243 Q244 H250 L254 E257 T258 D259 S260 Q261 Y262 I263 G264 M265 R270 S280 T284 P285 T286 L287 I290 L291 M298 G299 L305 H308 L311 R314 I317 R318 A319 R320 Q321 E322 A323 V324 Q330
Q335 C336 H337 I341 E345 R346 I347 A348 A349 R350 I351 A352 V353 A362 S363 L364 R365 F369 E370 L371 I374 D375 L376 S377 A378 T379 S382 L383 L384 E385 T386 L387 K388 A389 V390 F391 P392 E393 T394 L396 P396 V397 A398 E399 T400 L401 V405 M406 W412 L413 K414
D415 V418 I419 N420 H424 P425 E426 L427 D428 R431 R432 I433 H436 G437 D438 E439 F440 L441 L442 D443 L444 E445 A446 K447 E448 R449 E450 R451 T452 G453 L454 S455 T456 L457 K458 V459 E460 F461 N462 R463 V464 H465 G466 F467 Y468 I469 E470 L471 S472 K473 T474 Q475 Q478 A479 P480
Y483 Q484 R485 R486 Q487 T488 L489 K490 N491 A492 E493 R494 F495 I496 T497 L500 K501 A502 F503 E504 L508 T509 A510 Q511 D512 Q513 L517 E518 K519 Q520 L521 F522 L526 K527 N528 L529 R530 T531 A532 L533 P534 Q535 L536 A542 A543 A544 A545 L546 D547 V548 L555 A556 K557
E558 R559 N560 F561 V562 R563 P564 V571 I574 G577 R578 H579 P580 V581 V582 E583 Q584 Q585 V586 R587 H588 N592 H593 T594 D595 R601 L602 L605 N609 M610 G611 G612 K613 Y616 Q619 L622 I623 V624 L625 T629 G630 C631 F632 V633 P634 A635 D636 A637 A638
V643 D644 Q645 R649 ILE GLY ALA SER ASP ASP LEU ALA SER ASN ARG SER THR PHE MET V665 E666 M667 S668 E669 T670 I673 L674 H675 H676 A677 S681 I682 M685 V688 G689 R690 G691 T692 F695 L698 A699 L700 I704 A705 E706 H707 L708 L709 Q710 K711 N712
K713 S714 F715 S716 L717 F723 E724 L725 L728 P729 A734 A735 V736 N737 M738 H739 L740 L743 E744 Q745 D748 L752 H753 Q754 I755 Q756 P759 A760 G761 K762 S763 Y764 G765 I766 A767 V768 A769 V776 L779 Q783 K784 H785 LEU ASN GLY LEU GLU ASN GLN ALA
ALA ALA ASN ARG PRO GLN LEU ASP ILE PHE SER THR MET PRO SER GLU LYS GLY ASP GLU PRO

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 2 21	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 58.65 – 2.97	Depositor EDS
% Data completeness (in resolution range)	99.4 (50.00-2.97) 99.4 (58.65-2.97)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [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 (5.05%)	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)	0.31 , 62.2	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	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.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ 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	0.37	0/6015	0.50	2/8154 (0.0%)
1	B	0.30	0/6014	0.51	1/8154 (0.0%)
All	All	0.34	0/12029	0.51	3/16308 (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 (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	674	LEU	CA-CB-CG	5.79	128.62	115.30
1	A	186	THR	C-N-CA	5.43	135.29	121.70
1	A	775	PRO	N-CA-CB	5.22	109.56	103.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	159	ASP	Peptide
1	B	669	GLU	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	A	5906	0	5863	115	0
1	B	5904	0	5915	201	0
2	A	27	0	12	0	0
2	B	27	0	12	1	0
3	A	89	0	0	9	0
3	B	30	0	0	3	0
All	All	11983	0	11802	312	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 13.

All (312) 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
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

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:6:VAL:HG12	1:A:57:MET:HG3	1.71	0.70
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: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:396:PRO:O	1:B:400:THR:OG1	2.10	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
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

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
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:A:497:THR:OG1	1:A:499:GLU:OE2	2.13	0.60
1:B:765:GLY:H	1:B:766:ILE:HB	1.65	0.60
1:B:298:MET:HE2	1:B:345:GLU:H	1.67	0.59
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: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
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

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
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: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:472:SER:OG	1:B:473:LYS:N	2.40	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:487:GLN:CB	1:B:488:THR:HA	2.39	0.53
1:A:667:MET:O	1:A:671:ALA:HB2	2.09	0.53
1:B:12:GLN:OE1	1:B:27:TYR:OH	2.21	0.52
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
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

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
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: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:378:ALA:O	1:A:388:LYS:NZ	2.38	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:609:ASN:C	1:B:611:GLY:H	2.15	0.48
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:B:47:LEU:HB2	1:B:49:ILE:HD13	1.95	0.48
1:B:200:ALA:C	1:B:202:ALA:H	2.16	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:666:GLU:O	1:B:668:SER:N	2.47	0.48
1:A:594:THR:HG1	1:A:616:TYR:HH	1.62	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
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: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:B:173:ILE:HB	1:B:190:VAL:HG22	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
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:A:334:LEU:HD11	1:A:546:LEU:HD21	1.98	0.46
1:B:323:ALA:HA	1:B:384:LEU:HD22	1.96	0.46
1:A:222:ASP:HB3	1:A:224:LYS:HZ2	1.80	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: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
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:694:THR:OG1	1:B:724:GLU:OE1	2.35	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

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
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:A:766:ILE:C	1:A:768:VAL:H	2.21	0.43
1:B:317:ILE:C	1:B:319:ALA:N	2.72	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: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:B:335:GLN:C	1:B:337:HIS:H	2.22	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: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: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:392:PRO:C	1:B:394:THR:H	2.22	0.42
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:165:LEU:HD12	1:A:165:LEU:HA	1.86	0.42
1:A:691:GLY:C	1:A:692:THR:HG1	2.22	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: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

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
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: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:578:ARG:HE	1:B:583:GLU:CD	2.22	0.41
1:B:175:LEU:HD12	1:B:190:VAL:HG11	2.03	0.41
1:B:225:GLU:C	1:B:227:ALA:H	2.23	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:616:TYR:O	1:B:619:GLN:HB3	2.20	0.41
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

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
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:763:SER:O	1:B:763:SER:OG	2.24	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%)	4 22
1	B	763/819 (93%)	631 (83%)	83 (11%)	49 (6%)	1 6
All	All	1528/1638 (93%)	1319 (86%)	138 (9%)	71 (5%)	2 12

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

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Mol	Chain	Res	Type
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
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

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Mol	Chain	Res	Type
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 (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	608/669 (91%)	572 (94%)	36 (6%)	19 52
1	B	615/669 (92%)	539 (88%)	76 (12%)	4 19
All	All	1223/1338 (91%)	1111 (91%)	112 (9%)	9 32

All (112) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	28	ARG
1	A	29	MET
1	A	50	THR
1	A	101	PRO
1	A	129	ILE
1	A	132	VAL
1	A	165	LEU
1	A	186	THR

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Mol	Chain	Res	Type
1	A	196	TRP
1	A	224	LYS
1	A	242	LEU
1	A	246	LEU
1	A	259	ASP
1	A	280	SER
1	A	283	LYS
1	A	324	VAL
1	A	334	LEU
1	A	341	ILE
1	A	375	ASP
1	A	383	LEU
1	A	456	THR
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	609	ASN
1	A	626	LEU
1	A	685	MET
1	A	708	LEU
1	A	709	LEU
1	A	724	GLU
1	A	740	LEU
1	A	745	GLN
1	B	12	GLN
1	B	47	LEU
1	B	64	MET
1	B	117	ASP
1	B	123	ASP
1	B	129	ILE
1	B	161	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	250	HIS

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Mol	Chain	Res	Type
1	B	263	ILE
1	B	280	SER
1	B	284	THR
1	B	305	LEU
1	B	311	LEU
1	B	314	ARG
1	B	317	ILE
1	B	318	ARG
1	B	335	GLN
1	B	337	HIS
1	B	353	VAL
1	B	369	PHE
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	438	ASP
1	B	443	ASP
1	B	445	GLU
1	B	454	LEU
1	B	459	VAL
1	B	461	PHE
1	B	470	GLU
1	B	471	LEU
1	B	475	GLN
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	495	PHE
1	B	497	THR
1	B	500	LEU
1	B	521	LEU
1	B	536	LEU
1	B	563	ARG
1	B	571	VAL

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Mol	Chain	Res	Type
1	B	584	GLN
1	B	593	HIS
1	B	595	ASP
1	B	601	ARG
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	710	GLN
1	B	713	LYS
1	B	737	ASN
1	B	740	LEU
1	B	743	LEU
1	B	744	GLU
1	B	748	ASP
1	B	752	LEU
1	B	762	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (32) such sidechains are listed below:

Mol	Chain	Res	Type
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	487	GLN
1	A	511	GLN
1	A	592	ASN
1	A	732	HIS
1	A	753	HIS
1	B	20	HIS
1	B	162	ASN
1	B	197	GLN
1	B	250	HIS
1	B	261	GLN

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Mol	Chain	Res	Type
1	B	308	HIS
1	B	330	GLN
1	B	335	GLN
1	B	478	GLN
1	B	513	GLN
1	B	520	GLN
1	B	573	HIS
1	B	576	ASN
1	B	585	GLN
1	B	645	GLN
1	B	707	HIS
1	B	721	HIS
1	B	737	ASN
1	B	745	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)

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	B	901	-	24,29,29	1.08	1 (4%)	29,45,45	1.51	4 (13%)
2	ADP	A	901	-	24,29,29	1.03	2 (8%)	29,45,45	1.44	4 (13%)

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	B	901	-	-	3/12/32/32	0/3/3/3
2	ADP	A	901	-	-	3/12/32/32	0/3/3/3

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	901	ADP	C5-C4	2.73	1.48	1.40
2	A	901	ADP	C5-C4	2.73	1.48	1.40
2	A	901	ADP	C2-N3	2.09	1.35	1.32

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	901	ADP	PA-O3A-PB	-4.06	118.89	132.83
2	A	901	ADP	PA-O3A-PB	-3.75	119.97	132.83
2	B	901	ADP	C3'-C2'-C1'	3.43	106.15	100.98
2	B	901	ADP	N3-C2-N1	-3.28	123.55	128.68
2	A	901	ADP	N3-C2-N1	-2.88	124.18	128.68
2	A	901	ADP	C3'-C2'-C1'	2.82	105.22	100.98
2	A	901	ADP	C4-C5-N7	-2.55	106.74	109.40
2	B	901	ADP	C4-C5-N7	-2.28	107.03	109.40

There are no chirality outliers.

All (6) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
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
2	A	901	ADP	C5'-O5'-PA-O2A

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Mol	Chain	Res	Type	Atoms
2	B	901	ADP	C5'-O5'-PA-O1A

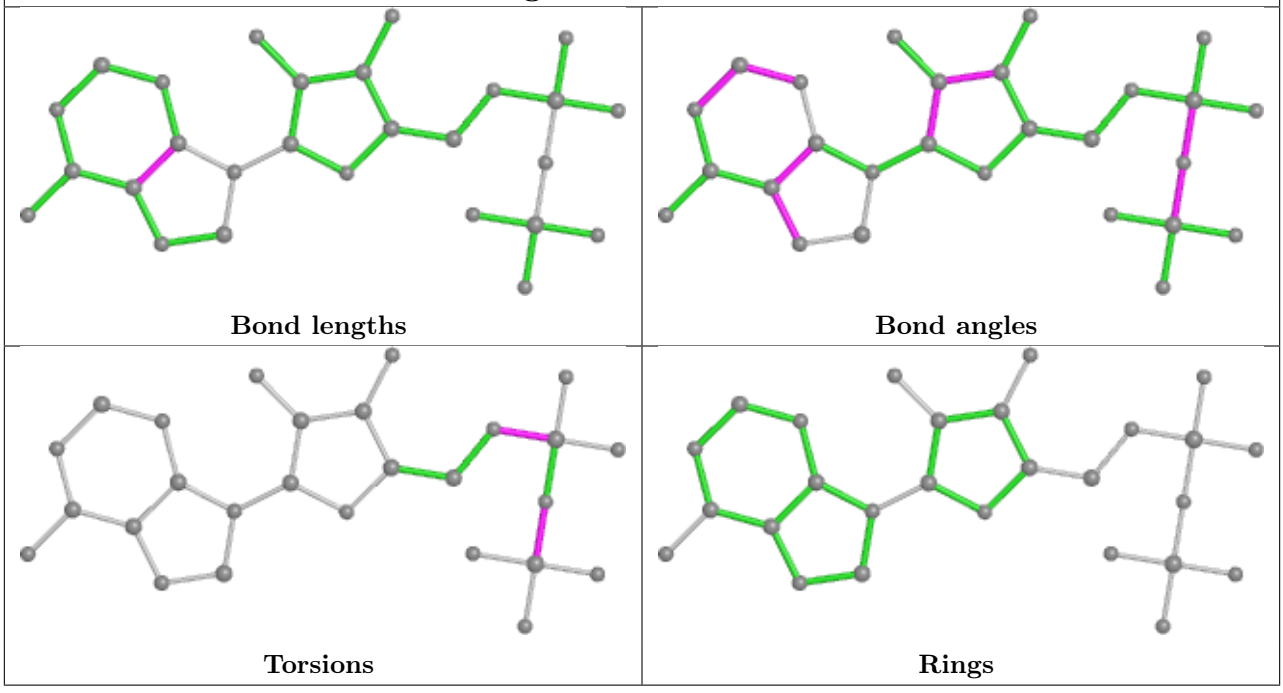
There are no ring outliers.

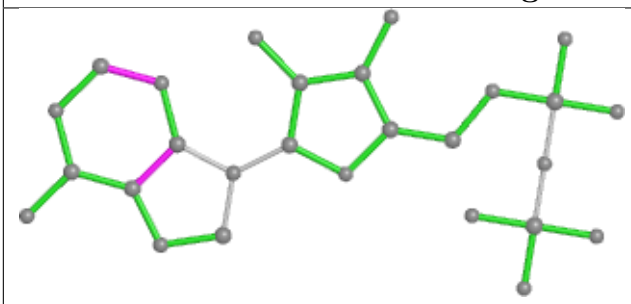
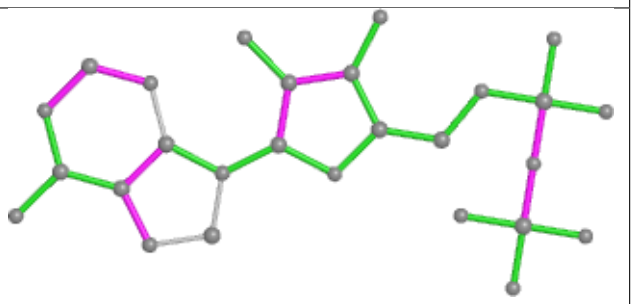
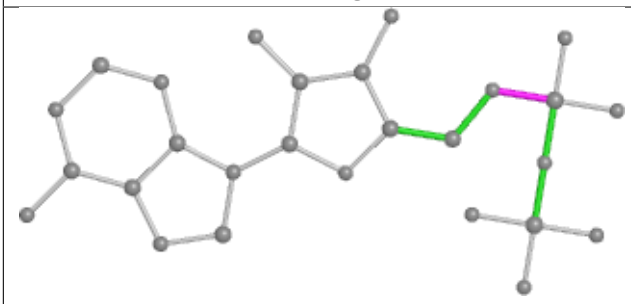
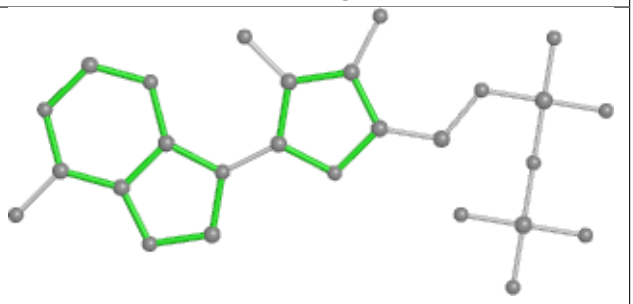
1 monomer is involved in 1 short contact:

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 then 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.

Ligand ADP B 901



Ligand ADP A 901	
 Bond lengths	 Bond angles
 Torsions	 Rings

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, 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	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
1	A	771/819 (94%)	0.45	31 (4%) 38 23	42, 74, 132, 184	0
1	B	767/819 (93%)	0.94	115 (14%) 2 1	60, 113, 191, 254	0
All	All	1538/1638 (93%)	0.69	146 (9%) 8 4	42, 93, 169, 254	0

All (146) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	452	THR	11.5
1	B	681	SER	8.2
1	B	531	THR	7.8
1	B	459	VAL	7.7
1	B	470	GLU	7.0
1	B	454	LEU	6.9
1	B	457	LEU	6.9
1	B	677	ALA	6.6
1	B	456	THR	6.5
1	B	676	HIS	6.2
1	B	96	GLY	6.0
1	B	633	VAL	5.5
1	B	602	LEU	5.4
1	B	443	ASP	5.2
1	B	137	LYS	5.1
1	B	453	GLY	4.9
1	A	436	HIS	4.8
1	B	710	GLN	4.7
1	B	471	LEU	4.7
1	B	444	LEU	4.6
1	B	467	PHE	4.5
1	B	743	LEU	4.4
1	A	456	THR	4.4
1	B	461	PHE	4.4

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Mol	Chain	Res	Type	RSRZ
1	A	692	THR	4.3
1	B	36	PHE	4.2
1	B	632	PHE	4.2
1	B	637	ALA	4.1
1	B	480	PRO	4.1
1	B	455	SER	4.0
1	B	485	ARG	4.0
1	B	438	ASP	3.9
1	B	555	LEU	3.9
1	B	448	GLU	3.9
1	A	469	ILE	3.9
1	B	377	SER	3.9
1	B	469	ILE	3.8
1	A	491	ASN	3.8
1	B	706	GLU	3.8
1	B	436	HIS	3.7
1	B	484	GLN	3.6
1	B	488	THR	3.5
1	B	762	LYS	3.3
1	A	744	GLU	3.3
1	B	341	ILE	3.2
1	B	601	ARG	3.2
1	B	468	TYR	3.2
1	B	735	ALA	3.2
1	B	605	LEU	3.2
1	B	180	ASN	3.2
1	B	548	VAL	3.1
1	B	474	THR	3.1
1	B	717	LEU	3.1
1	B	502	ALA	3.1
1	A	455	SER	3.1
1	B	466	GLY	3.1
1	B	483	TYR	3.1
1	B	95	VAL	3.0
1	B	347	ILE	3.0
1	B	736	VAL	3.0
1	B	745	GLN	3.0
1	B	708	LEU	3.0
1	A	471	LEU	2.9
1	B	497	THR	2.9
1	B	546	LEU	2.9
1	B	254	LEU	2.8

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Mol	Chain	Res	Type	RSRZ
1	A	2	SER	2.8
1	B	364	LEU	2.8
1	B	716	SER	2.7
1	B	489	LEU	2.7
1	B	491	ASN	2.7
1	B	698	LEU	2.7
1	B	496	ILE	2.7
1	A	457	LEU	2.6
1	B	324	VAL	2.6
1	A	495	PHE	2.6
1	A	459	VAL	2.6
1	B	638	ALA	2.6
1	B	561	PHE	2.5
1	B	415	ASP	2.5
1	B	616	TYR	2.5
1	B	486	ARG	2.5
1	B	636	ASP	2.5
1	A	496	ILE	2.5
1	B	419	ILE	2.5
1	B	376	LEU	2.5
1	A	222	ASP	2.4
1	B	692	THR	2.4
1	B	53	THR	2.4
1	B	465	HIS	2.4
1	A	437	GLY	2.4
1	B	734	ALA	2.4
1	A	725	LEU	2.4
1	B	458	LYS	2.3
1	B	695	PHE	2.3
1	B	634	PRO	2.3
1	B	97	ALA	2.3
1	B	595	ASP	2.3
1	A	489	LEU	2.3
1	B	46	LEU	2.3
1	B	581	VAL	2.3
1	A	701	ALA	2.3
1	A	442	LEU	2.3
1	B	700	LEU	2.3
1	B	451	ARG	2.3
1	B	374	ILE	2.3
1	B	52	THR	2.3
1	A	743	LEU	2.3

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Mol	Chain	Res	Type	RSRZ
1	A	486	ARG	2.3
1	B	291	LEU	2.3
1	B	387	LEU	2.3
1	B	557	LYS	2.3
1	B	517	LEU	2.3
1	B	446	ALA	2.2
1	A	650	ILE	2.2
1	B	494	ARG	2.2
1	A	377	SER	2.2
1	B	330	GLN	2.2
1	B	413	LEU	2.2
1	B	64	MET	2.2
1	B	285	PRO	2.2
1	B	623	ILE	2.2
1	B	487	GLN	2.2
1	B	441	LEU	2.1
1	B	299	GLY	2.1
1	B	622	LEU	2.1
1	B	785	HIS	2.1
1	B	519	LYS	2.1
1	B	682	ILE	2.1
1	B	412	TRP	2.1
1	A	706	GLU	2.1
1	A	734	ALA	2.1
1	A	702	HIS	2.1
1	B	287	LEU	2.1
1	B	159	ASP	2.1
1	B	510	ALA	2.1
1	B	503	PHE	2.1
1	B	508	LEU	2.0
1	A	683	VAL	2.0
1	A	439	GLU	2.0
1	B	418	VAL	2.0
1	A	708	LEU	2.0
1	A	716	SER	2.0
1	B	385	GLU	2.0
1	B	405	VAL	2.0
1	A	741	SER	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 monosaccharides in this entry.

6.4 Ligands (i)

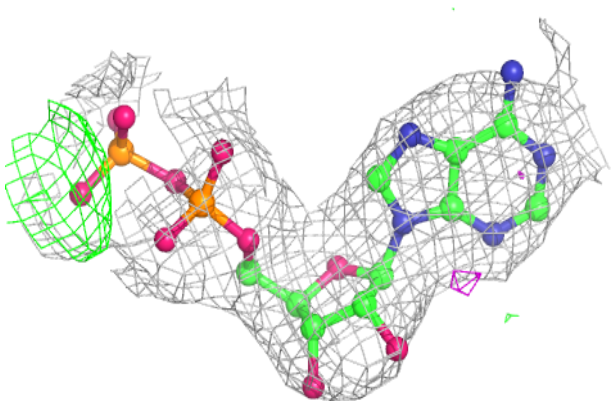
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

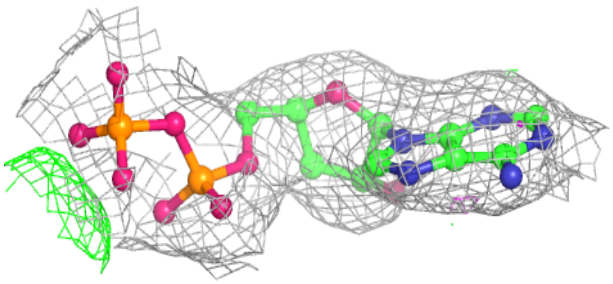
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	ADP	A	901	27/27	0.93	0.25	59,64,70,73	0
2	ADP	B	901	27/27	0.93	0.20	79,88,102,106	0

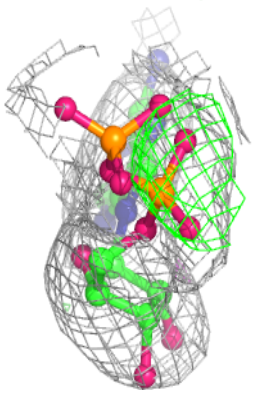
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around ADP A 901:

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

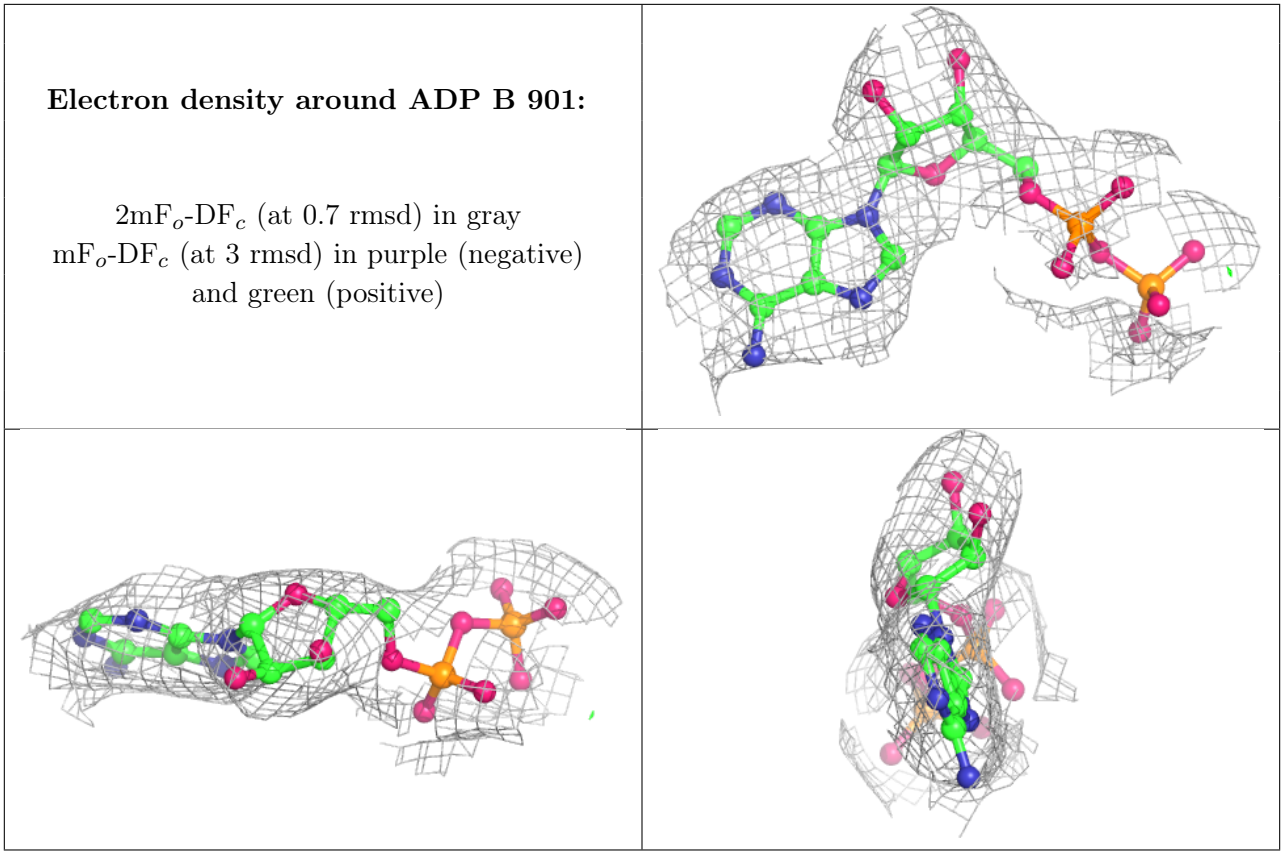






Electron density around ADP B 901:

$2mF_o$-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.