Full wwPDB X-ray Structure Validation Report ⓘ

Nov 1, 2023 – 01:55 AM EDT

PDB ID	:	3LQQ
Title	:	Structure of the CED-4 Apoptosome
Authors	:	Qi, S.; Pang, Y.; Shi, Y.; Yan, N.; Liu, Q.
Deposited on	:	2010-02-09
Resolution	:	3.53 Å(reported)

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 ⓘ

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 3.53 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	Percentile Ranks	Value
Rfree		0.302
Clashscore		39
Ramachandran outliers		5.7%
Sidechain outliers		18.6%
RSRZ outliers		1.8%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
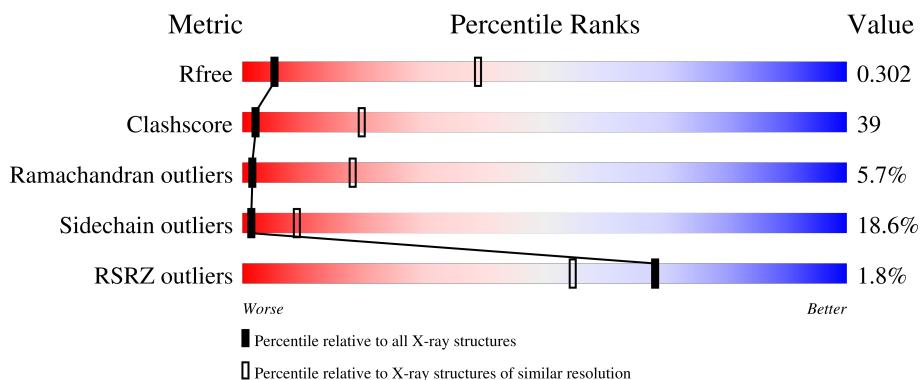
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1028 (3.60-3.48)
Clashscore	141614	1109 (3.60-3.48)
Ramachandran outliers	138981	1073 (3.60-3.48)
Sidechain outliers	138945	1074 (3.60-3.48)
RSRZ outliers	127900	1079 (3.62-3.46)

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	549	% 37% 42% 12% · 8%
1	B	549	2% 36% 41% 13% · 9%
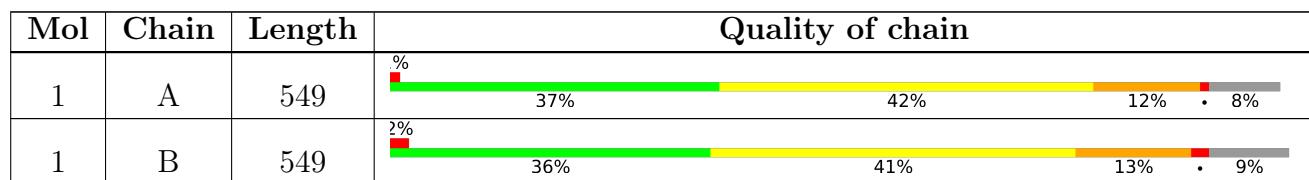
The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	MG	A	601	-	-	-	X

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 8124 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 Cell death protein 4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	503	Total	C	N	O	S	0	0	0
			4039	2575	676	759	29			
1	B	501	Total	C	N	O	S	0	0	0
			4021	2565	673	754	29			

- Molecule 2 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

- Molecule 3 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).
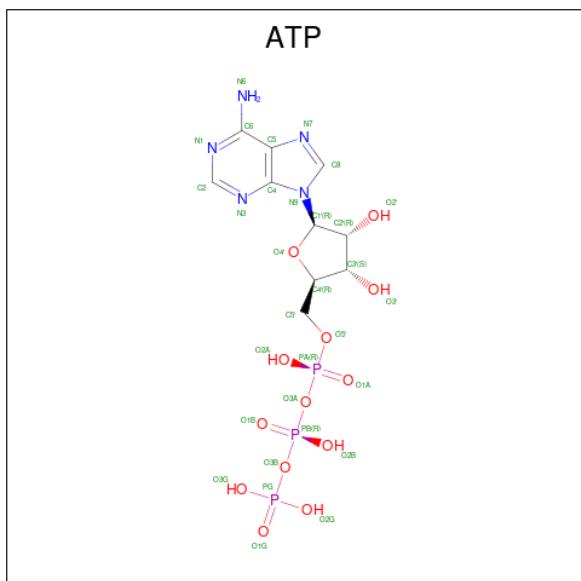
| Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			31	10	5	13	3		
3	B	1	Total	C	N	O	P	0	0
			31	10	5	13	3		

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: Cell death protein 4

Chain A:

• Molecule 1: Cell death protein 4

Chain B:
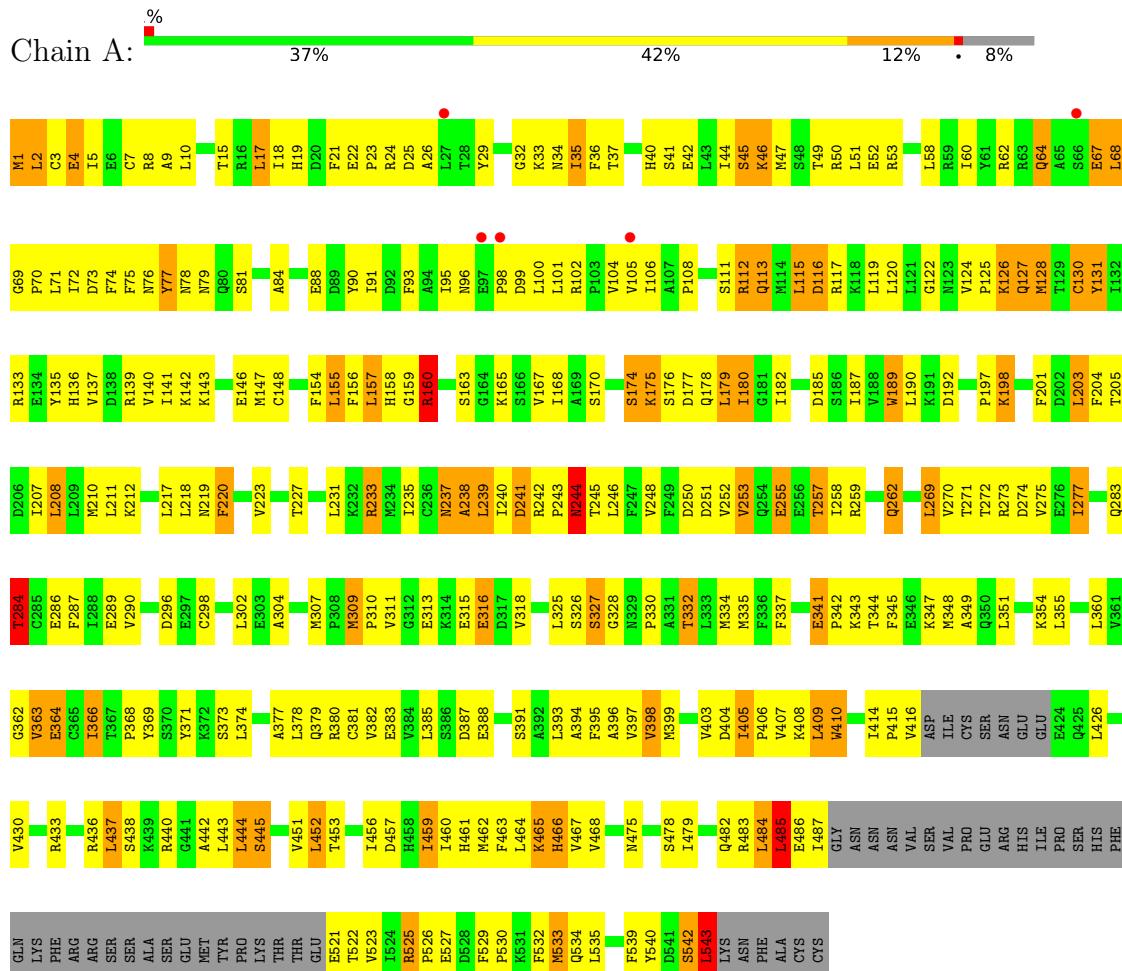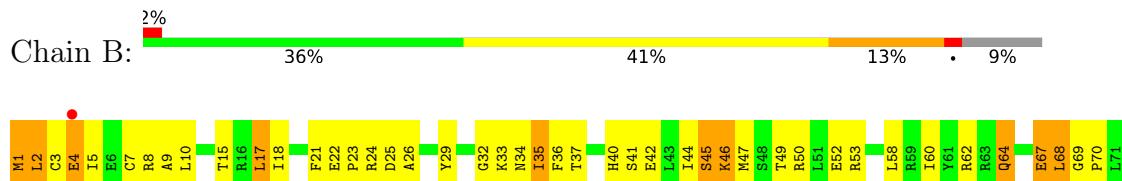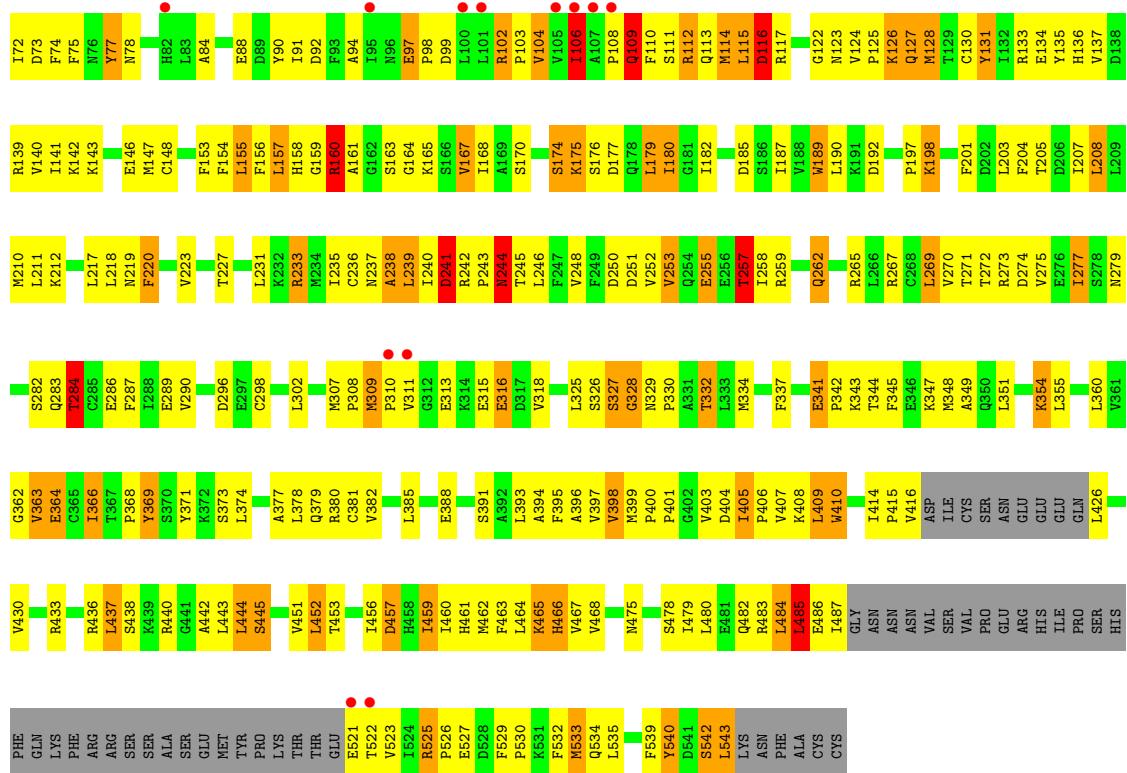
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	I 4 2 2	Depositor
Cell constants a, b, c, α, β, γ	181.64Å 181.64Å 203.19Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	28.66 – 3.53 28.66 – 3.53	Depositor EDS
% Data completeness (in resolution range)	98.7 (28.66-3.53) 98.8 (28.66-3.53)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	0.09	Depositor
$< I/\sigma(I) >$ [1]	2.54 (at 3.55Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.5_2)	Depositor
R, R_{free}	0.275 , 0.311 0.261 , 0.302	Depositor DCC
R_{free} test set	1031 reflections (4.94%)	wwPDB-VP
Wilson B-factor (Å^2)	112.9	Xtriage
Anisotropy	0.540	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.27 , 89.1	EDS
L-test for twinning[2]	$< |L| > = 0.49, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	8124	wwPDB-VP
Average B, all atoms (Å^2)	151.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.89% of the height of the origin peak. No significant pseudotranslation is detected.*

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[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: MG, ATP

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	0.48	0/4113	0.67	2/5558 (0.0%)
1	B	0.47	0/4095	0.67	1/5534 (0.0%)
All	All	0.47	0/8208	0.67	3/11092 (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	A	0	1
1	B	0	1
All	All	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	409	LEU	CA-CB-CG	5.59	128.16	115.30
1	A	409	LEU	CA-CB-CG	5.44	127.82	115.30
1	A	543	LEU	CA-CB-CG	5.16	127.16	115.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	485	LEU	Peptide
1	B	485	LEU	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	4039	0	4066	328	0
1	B	4021	0	4052	321	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
3	A	31	0	12	6	0
3	B	31	0	12	5	0
All	All	8124	0	8142	642	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 39.

All (642) 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:160:ARG:HG3	1:A:160:ARG:HH11	1.10	1.12
1:B:160:ARG:HG3	1:B:160:ARG:HH11	1.03	1.11
1:A:93:PHE:HE1	1:A:100:LEU:HD23	1.24	1.01
1:A:41:SER:O	1:A:45:SER:HB3	1.61	1.00
1:B:41:SER:O	1:B:45:SER:HB3	1.62	0.98
1:A:8:ARG:HG2	1:A:8:ARG:HH11	1.33	0.92
1:B:443:LEU:HD23	1:B:460:ILE:HD11	1.49	0.92
1:B:8:ARG:HH11	1:B:8:ARG:HG2	1.35	0.91
1:B:160:ARG:HG3	1:B:160:ARG:NH1	1.83	0.90
1:A:158:HIS:CE1	1:A:289:GLU:HB2	2.07	0.89
1:A:93:PHE:CE1	1:A:100:LEU:HD23	2.07	0.89
1:B:102:ARG:HG3	1:B:103:PRO:HD2	1.55	0.89
1:B:115:LEU:HD23	1:B:116:ASP:H	1.35	0.89
1:A:47:MET:HB2	1:A:53:ARG:HG3	1.55	0.89
1:A:443:LEU:HD23	1:A:460:ILE:HD11	1.53	0.89
1:B:212:LYS:HE2	1:B:212:LYS:HA	1.53	0.87
1:A:158:HIS:HE1	1:A:289:GLU:HB2	1.38	0.87
1:A:7:CYS:SG	1:A:62:ARG:HD3	2.14	0.87
1:A:212:LYS:HA	1:A:212:LYS:HE2	1.54	0.87
1:B:47:MET:HB2	1:B:53:ARG:HG3	1.56	0.85
1:B:135:TYR:O	1:B:139:ARG:HG3	1.74	0.85

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:327:SER:HB2	1:B:459:ILE:HG13	1.56	0.85
1:B:158:HIS:CE1	1:B:289:GLU:HB2	2.12	0.85
1:B:7:CYS:SG	1:B:62:ARG:HD3	2.16	0.84
1:A:135:TYR:O	1:A:139:ARG:HG3	1.78	0.84
1:A:75:PHE:HB2	1:A:84:ALA:HB2	1.60	0.83
1:A:341:GLU:HB2	1:A:342:PRO:HD3	1.60	0.83
1:B:158:HIS:HE1	1:B:289:GLU:HB2	1.41	0.83
1:A:44:ILE:O	1:A:53:ARG:HG2	1.80	0.81
1:A:366:ILE:HD12	1:A:366:ILE:H	1.45	0.81
1:A:44:ILE:HD11	1:A:60:ILE:HD12	1.62	0.81
1:B:341:GLU:HB2	1:B:342:PRO:HD3	1.61	0.81
1:B:75:PHE:HB2	1:B:84:ALA:HB2	1.60	0.81
1:A:115:LEU:HD21	1:A:180:ILE:HB	1.64	0.81
1:B:197:PRO:HD2	1:B:198:LYS:HE2	1.60	0.80
1:A:197:PRO:HD2	1:A:198:LYS:HE2	1.62	0.80
1:B:366:ILE:HD12	1:B:366:ILE:H	1.46	0.80
1:A:327:SER:HB2	1:A:459:ILE:HG13	1.62	0.79
1:A:456:ILE:HG13	1:A:460:ILE:CG2	2.13	0.79
1:A:160:ARG:NH1	1:A:442:ALA:O	2.14	0.78
1:B:108:PRO:O	1:B:109:GLN:HB2	1.83	0.78
1:A:160:ARG:HG3	1:A:160:ARG:NH1	1.89	0.78
1:B:542:SER:C	1:B:543:LEU:HD22	2.05	0.77
1:B:397:VAL:HG21	1:B:468:VAL:HG21	1.66	0.76
1:B:233:ARG:HG3	1:B:233:ARG:HH11	1.50	0.76
1:B:342:PRO:O	1:B:343:LYS:HB3	1.85	0.76
1:B:44:ILE:HD11	1:B:60:ILE:HD12	1.68	0.76
1:B:160:ARG:NH1	1:B:442:ALA:O	2.17	0.76
1:A:342:PRO:O	1:A:343:LYS:HB3	1.85	0.76
1:B:115:LEU:CD2	1:B:116:ASP:H	1.98	0.75
1:A:452:LEU:HD23	1:A:452:LEU:H	1.50	0.75
1:B:44:ILE:O	1:B:53:ARG:HG2	1.86	0.75
1:B:368:PRO:HB2	3:B:602:ATP:O3'	1.88	0.74
1:B:415:PRO:O	1:B:416:VAL:HG23	1.86	0.74
1:B:114:MET:SD	1:B:177:ASP:HA	2.28	0.74
1:A:415:PRO:O	1:A:416:VAL:HG23	1.88	0.73
1:A:406:PRO:HA	1:A:453:THR:HG22	1.70	0.73
1:A:90:TYR:HE1	1:A:106:ILE:HD11	1.51	0.73
1:B:484:LEU:HD11	1:B:533:MET:HG2	1.70	0.73
1:B:452:LEU:HD23	1:B:452:LEU:H	1.53	0.73
1:B:40:HIS:ND1	1:B:60:ILE:HD13	2.04	0.72
1:A:395:PHE:O	1:A:398:VAL:HG22	1.89	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:135:TYR:CE1	1:A:139:ARG:HD2	2.24	0.72
1:A:364:GLU:HB2	1:A:373:SER:HB3	1.70	0.72
1:A:397:VAL:HG21	1:A:468:VAL:HG21	1.71	0.71
1:A:529:PHE:N	1:A:530:PRO:HD3	2.05	0.71
1:B:135:TYR:CE1	1:B:139:ARG:HD2	2.25	0.71
1:A:159:GLY:N	1:A:165:LYS:HD3	2.04	0.71
1:B:437:LEU:HD12	1:B:444:LEU:HD22	1.72	0.71
1:B:529:PHE:N	1:B:530:PRO:HD3	2.04	0.71
1:A:190:LEU:HD12	1:A:207:ILE:HG13	1.72	0.71
1:A:534:GLN:HE21	1:A:534:GLN:HA	1.56	0.71
1:B:190:LEU:HD12	1:B:207:ILE:HG13	1.73	0.71
1:B:364:GLU:HB2	1:B:373:SER:HB3	1.73	0.71
1:B:456:ILE:HG13	1:B:460:ILE:CG2	2.20	0.71
1:B:406:PRO:HA	1:B:453:THR:HG22	1.72	0.71
1:B:341:GLU:CB	1:B:342:PRO:HD3	2.21	0.70
1:B:443:LEU:CD2	1:B:460:ILE:HD11	2.21	0.70
1:B:102:ARG:HG3	1:B:103:PRO:CD	2.21	0.70
1:B:64:GLN:HA	1:B:64:GLN:HE21	1.56	0.70
1:B:257:THR:HG22	1:B:258:ILE:HD12	1.73	0.70
1:A:368:PRO:HD3	1:B:279:ASN:O	1.90	0.70
1:A:341:GLU:CB	1:A:342:PRO:HD3	2.22	0.70
1:A:542:SER:C	1:A:543:LEU:HD22	2.12	0.70
1:B:212:LYS:HE3	1:B:238:ALA:HB1	1.74	0.69
1:A:64:GLN:HA	1:A:64:GLN:HE21	1.58	0.69
1:A:484:LEU:HD11	1:A:533:MET:HG2	1.72	0.69
1:A:37:THR:OG1	1:A:40:HIS:HD2	1.75	0.69
1:A:136:HIS:O	1:A:140:VAL:HG23	1.93	0.69
1:A:233:ARG:HG3	1:A:233:ARG:HH11	1.58	0.69
1:B:4:GLU:O	1:B:8:ARG:HB2	1.93	0.69
1:B:326:SER:O	1:B:328:GLY:N	2.25	0.69
1:B:327:SER:HB2	1:B:459:ILE:CG1	2.23	0.69
1:B:136:HIS:O	1:B:140:VAL:HG23	1.93	0.69
1:A:137:VAL:O	1:A:141:ILE:HG13	1.92	0.69
1:B:534:GLN:HE21	1:B:534:GLN:HA	1.58	0.69
1:A:40:HIS:ND1	1:A:60:ILE:HD13	2.07	0.68
1:A:326:SER:O	1:A:328:GLY:N	2.26	0.68
1:B:115:LEU:HD23	1:B:116:ASP:N	2.07	0.68
1:A:302:LEU:HD23	1:A:337:PHE:CE1	2.29	0.68
1:B:159:GLY:N	1:B:165:LYS:HD3	2.09	0.68
1:A:212:LYS:HE3	1:A:238:ALA:HB1	1.76	0.68
1:B:143:LYS:O	1:B:147:MET:HG3	1.93	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:96:ASN:O	1:A:98:PRO:HD3	1.94	0.67
1:B:405:ILE:HG12	1:B:410:TRP:CZ3	2.29	0.67
1:B:542:SER:O	1:B:543:LEU:HD22	1.94	0.67
1:B:394:ALA:O	1:B:397:VAL:HG23	1.94	0.67
1:B:302:LEU:HD23	1:B:337:PHE:CE1	2.29	0.67
1:A:456:ILE:HG13	1:A:460:ILE:HG23	1.77	0.67
1:B:395:PHE:O	1:B:398:VAL:HG22	1.94	0.66
1:A:283:GLN:HG2	1:A:284:THR:H	1.58	0.66
1:B:111:SER:O	1:B:115:LEU:HB3	1.96	0.66
1:A:143:LYS:O	1:A:147:MET:HG3	1.96	0.66
1:B:529:PHE:HB3	1:B:532:PHE:CE1	2.30	0.66
1:B:479:ILE:HG23	1:B:483:ARG:NH2	2.11	0.66
1:A:115:LEU:CD2	1:A:180:ILE:HB	2.26	0.66
1:A:479:ILE:HG23	1:A:483:ARG:NH2	2.11	0.66
1:A:257:THR:HG22	1:A:258:ILE:HD12	1.78	0.66
1:B:42:GLU:O	1:B:46:LYS:HG3	1.95	0.66
1:A:393:LEU:HD23	1:A:464:LEU:HD11	1.78	0.65
1:A:529:PHE:HB3	1:A:532:PHE:CE1	2.31	0.65
1:A:347:LYS:O	1:A:347:LYS:HD3	1.96	0.65
1:A:211:LEU:HD11	1:A:239:LEU:HD23	1.79	0.65
1:A:72:ILE:HG21	1:A:88:GLU:HG3	1.79	0.65
1:A:394:ALA:O	1:A:397:VAL:HG23	1.97	0.65
1:B:37:THR:OG1	1:B:40:HIS:HD2	1.79	0.64
1:A:4:GLU:O	1:A:8:ARG:HB2	1.97	0.64
1:B:110:PHE:HA	1:B:113:GLN:HB2	1.79	0.64
1:B:72:ILE:HG21	1:B:88:GLU:HG3	1.78	0.64
1:A:443:LEU:CD2	1:A:460:ILE:HD11	2.27	0.64
1:A:534:GLN:HA	1:A:534:GLN:NE2	2.13	0.64
1:B:240:ILE:HG13	1:B:241:ASP:N	2.13	0.64
1:B:128:MET:HG3	1:B:167:VAL:HG22	1.80	0.64
1:A:112:ARG:NH1	1:A:115:LEU:HD12	2.12	0.64
1:A:313:GLU:O	1:A:316:GLU:HG3	1.97	0.63
1:B:334:MET:HE1	1:B:337:PHE:HD2	1.63	0.63
1:A:437:LEU:HD12	1:A:444:LEU:HD22	1.79	0.63
1:B:313:GLU:O	1:B:316:GLU:HG3	1.98	0.63
1:A:141:ILE:HG23	1:A:179:LEU:CD2	2.29	0.63
1:A:160:ARG:HH11	1:A:160:ARG:CG	1.99	0.63
1:B:77:TYR:C	1:B:77:TYR:CD1	2.71	0.63
1:A:37:THR:OG1	1:A:40:HIS:CD2	2.51	0.63
1:A:160:ARG:HB3	1:A:163:SER:HB3	1.79	0.63
1:A:315:GLU:HA	1:A:318:VAL:HG23	1.80	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:347:LYS:O	1:B:347:LYS:HD3	1.97	0.63
1:B:475:ASN:O	1:B:479:ILE:HG13	1.99	0.63
1:B:128:MET:HG3	1:B:167:VAL:CG2	2.28	0.63
1:B:10:LEU:HD22	1:B:58:LEU:HD21	1.80	0.62
1:B:456:ILE:HG13	1:B:460:ILE:HG23	1.80	0.62
1:B:393:LEU:HD23	1:B:464:LEU:HD11	1.80	0.62
1:A:405:ILE:HG12	1:A:410:TRP:CZ3	2.34	0.62
1:A:475:ASN:O	1:A:479:ILE:HG13	1.98	0.62
1:B:133:ARG:O	1:B:137:VAL:HG23	2.00	0.62
1:B:47:MET:HB2	1:B:53:ARG:CG	2.29	0.62
1:A:437:LEU:HB3	1:A:444:LEU:HD22	1.82	0.62
1:B:233:ARG:HH11	1:B:233:ARG:CG	2.12	0.62
1:A:334:MET:HE1	1:A:337:PHE:HD2	1.65	0.62
1:B:137:VAL:O	1:B:141:ILE:HG13	1.99	0.62
1:B:141:ILE:HG23	1:B:179:LEU:CD2	2.30	0.62
1:B:17:LEU:HD23	1:B:21:PHE:CD1	2.35	0.62
1:A:42:GLU:O	1:A:46:LYS:HG3	2.00	0.61
1:B:283:GLN:HG2	1:B:284:THR:H	1.63	0.61
1:A:77:TYR:CD1	1:A:77:TYR:C	2.73	0.61
1:A:122:GLY:HA3	1:A:187:ILE:HG23	1.82	0.61
1:A:128:MET:HG3	1:A:167:VAL:HG22	1.81	0.61
1:A:327:SER:O	1:A:459:ILE:HD11	2.00	0.61
1:B:10:LEU:HD13	1:B:58:LEU:CD2	2.30	0.61
1:B:248:VAL:HG22	1:B:269:LEU:HB3	1.82	0.61
1:B:253:VAL:HG11	1:B:380:ARG:HD3	1.83	0.61
1:B:534:GLN:HA	1:B:534:GLN:NE2	2.14	0.61
1:B:122:GLY:HA3	1:B:187:ILE:HG23	1.81	0.61
1:A:128:MET:HG3	1:A:167:VAL:CG2	2.31	0.61
1:A:309:MET:HG3	1:A:310:PRO:HD2	1.81	0.61
1:B:464:LEU:O	1:B:468:VAL:HG22	2.01	0.61
1:A:190:LEU:CD1	1:A:207:ILE:HG13	2.30	0.61
1:B:114:MET:HG3	1:B:180:ILE:O	2.00	0.61
1:B:257:THR:HG22	1:B:258:ILE:N	2.15	0.60
1:B:327:SER:O	1:B:459:ILE:HD11	2.01	0.60
1:A:133:ARG:O	1:A:137:VAL:HG23	2.01	0.60
1:A:189:TRP:CE3	1:A:248:VAL:HG11	2.35	0.60
1:A:532:PHE:C	1:A:534:GLN:H	2.04	0.60
1:B:315:GLU:HA	1:B:318:VAL:HG23	1.84	0.60
1:A:17:LEU:HD23	1:A:21:PHE:CD1	2.37	0.60
1:A:388:GLU:HB3	1:A:433:ARG:HH21	1.66	0.60
1:A:327:SER:HB2	1:A:459:ILE:CG1	2.29	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:252:VAL:CG2	1:B:257:THR:HG21	2.31	0.60
1:B:437:LEU:HB3	1:B:444:LEU:HD22	1.84	0.60
1:B:479:ILE:HG23	1:B:483:ARG:HH22	1.67	0.60
1:B:37:THR:OG1	1:B:40:HIS:CD2	2.54	0.60
1:B:211:LEU:HD11	1:B:239:LEU:HD23	1.82	0.60
1:A:10:LEU:HD22	1:A:58:LEU:HD21	1.84	0.59
1:A:407:VAL:HG23	1:A:452:LEU:O	2.02	0.59
1:A:50:ARG:HA	1:A:53:ARG:HE	1.68	0.59
1:A:136:HIS:HB3	1:A:168:ILE:HD13	1.83	0.59
1:B:50:ARG:HA	1:B:53:ARG:HE	1.68	0.59
1:B:136:HIS:HB3	1:B:168:ILE:HD13	1.84	0.59
1:B:309:MET:HG3	1:B:310:PRO:HD2	1.84	0.59
1:B:532:PHE:C	1:B:534:GLN:H	2.04	0.59
1:A:8:ARG:HH11	1:A:8:ARG:CG	2.11	0.59
1:B:262:GLN:HE21	1:B:283:GLN:HB2	1.68	0.59
1:A:10:LEU:HD13	1:A:58:LEU:CD2	2.33	0.58
1:A:68:LEU:HD13	1:A:68:LEU:O	2.04	0.58
1:B:115:LEU:O	1:B:116:ASP:C	2.42	0.58
1:A:25:ASP:HB3	1:A:78:ASN:HD21	1.69	0.58
1:A:368:PRO:HB2	3:A:602:ATP:O3'	2.03	0.58
1:A:478:SER:O	1:A:482:GLN:HG2	2.04	0.58
1:A:521:GLU:C	1:A:523:VAL:H	2.07	0.58
1:B:182:ILE:HD12	1:B:182:ILE:N	2.19	0.58
1:B:310:PRO:HA	1:B:345:PHE:CZ	2.39	0.58
1:B:521:GLU:C	1:B:523:VAL:H	2.08	0.58
1:A:479:ILE:HG23	1:A:483:ARG:HH22	1.68	0.57
1:A:542:SER:O	1:A:543:LEU:HD22	2.05	0.57
1:A:310:PRO:HA	1:A:345:PHE:CZ	2.40	0.57
1:B:189:TRP:CE3	1:B:248:VAL:HG11	2.39	0.57
1:B:23:PRO:HG2	1:B:53:ARG:C	2.24	0.57
1:B:160:ARG:HH11	1:B:160:ARG:CG	1.93	0.57
1:A:527:GLU:HA	1:A:530:PRO:HG3	1.86	0.57
1:B:8:ARG:HG2	1:B:8:ARG:NH1	2.11	0.57
3:A:602:ATP:O1B	3:A:602:ATP:O2G	2.21	0.57
1:B:190:LEU:CD1	1:B:207:ILE:HG13	2.33	0.57
1:B:240:ILE:HG13	1:B:241:ASP:OD1	2.04	0.57
1:B:388:GLU:HB3	1:B:433:ARG:HH21	1.68	0.57
1:B:478:SER:O	1:B:482:GLN:HG2	2.05	0.57
1:A:257:THR:HG22	1:A:258:ILE:N	2.18	0.57
1:A:343:LYS:O	1:A:343:LYS:HG2	2.04	0.57
1:B:18:ILE:O	1:B:50:ARG:NH2	2.37	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:68:LEU:HD13	1:B:68:LEU:O	2.05	0.57
1:A:23:PRO:HG2	1:A:53:ARG:C	2.24	0.57
1:A:233:ARG:HH11	1:A:233:ARG:CG	2.17	0.57
1:A:248:VAL:HG22	1:A:269:LEU:HB3	1.86	0.57
1:A:47:MET:HB2	1:A:53:ARG:CG	2.30	0.56
1:A:93:PHE:HD1	1:A:100:LEU:HB3	1.70	0.56
1:A:212:LYS:HA	1:A:212:LYS:CE	2.30	0.56
1:B:112:ARG:HA	1:B:116:ASP:HB2	1.86	0.56
1:B:407:VAL:HG23	1:B:452:LEU:O	2.05	0.56
1:B:527:GLU:HA	1:B:530:PRO:HG3	1.88	0.56
1:A:253:VAL:HG11	1:A:380:ARG:HD3	1.86	0.56
1:A:19:HIS:O	1:B:1:MET:HG3	2.05	0.56
1:B:160:ARG:HB3	1:B:163:SER:HB3	1.88	0.56
1:A:252:VAL:CG2	1:A:257:THR:HG21	2.35	0.56
1:A:464:LEU:O	1:A:468:VAL:HG22	2.06	0.56
1:A:8:ARG:HG2	1:A:8:ARG:NH1	2.10	0.56
1:B:49:THR:HG22	1:B:50:ARG:N	2.20	0.56
1:B:385:LEU:CD1	1:B:393:LEU:HD12	2.36	0.56
1:A:207:ILE:O	1:A:210:MET:N	2.38	0.55
1:B:25:ASP:HB3	1:B:78:ASN:HD21	1.70	0.55
1:A:98:PRO:O	1:A:99:ASP:HB2	2.06	0.55
1:B:465:LYS:HD3	1:B:466:HIS:HE1	1.69	0.55
1:A:165:LYS:NZ	3:A:602:ATP:O1G	2.40	0.55
1:A:527:GLU:C	1:A:530:PRO:HD3	2.27	0.55
1:A:157:LEU:HD11	1:A:168:ILE:CG2	2.37	0.55
1:A:240:ILE:HG13	1:A:241:ASP:N	2.21	0.55
1:B:141:ILE:HD12	1:B:175:LYS:NZ	2.21	0.55
1:B:192:ASP:HB3	1:B:251:ASP:O	2.07	0.55
1:A:23:PRO:HG2	1:A:53:ARG:HB3	1.89	0.55
1:A:18:ILE:O	1:A:50:ARG:NH2	2.38	0.54
1:A:182:ILE:N	1:A:182:ILE:HD12	2.22	0.54
1:B:443:LEU:HA	1:B:460:ILE:HG12	1.89	0.54
1:A:4:GLU:OE2	1:A:244:ASN:ND2	2.41	0.54
1:A:120:LEU:HD21	1:B:236:CYS:HB2	1.89	0.54
1:A:385:LEU:CD1	1:A:393:LEU:HD12	2.37	0.54
1:B:29:TYR:CZ	1:B:33:LYS:HD2	2.43	0.54
1:B:207:ILE:O	1:B:210:MET:N	2.41	0.54
1:B:109:GLN:C	1:B:111:SER:H	2.11	0.54
1:B:164:GLY:HA2	3:B:602:ATP:O1A	2.06	0.54
1:A:19:HIS:HD2	1:B:1:MET:SD	2.31	0.54
1:A:354:LYS:HD3	1:A:362:GLY:O	2.07	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:77:TYR:HD1	1:A:77:TYR:O	1.91	0.54
1:A:101:LEU:HD12	1:A:105:VAL:HB	1.90	0.54
1:A:403:VAL:HG12	1:A:405:ILE:HG22	1.89	0.54
1:B:165:LYS:HG3	3:B:602:ATP:O2B	2.07	0.54
1:A:141:ILE:HD12	1:A:175:LYS:NZ	2.23	0.54
1:A:177:ASP:O	1:A:182:ILE:HD13	2.08	0.54
1:B:77:TYR:HD1	1:B:77:TYR:O	1.90	0.53
1:A:159:GLY:H	1:A:165:LYS:HD3	1.71	0.53
1:B:484:LEU:CD1	1:B:533:MET:HG2	2.38	0.53
1:A:240:ILE:HG13	1:A:241:ASP:OD1	2.08	0.53
1:B:465:LYS:HD3	1:B:466:HIS:CE1	2.44	0.53
1:A:105:VAL:HG12	1:A:105:VAL:O	2.08	0.53
1:A:9:ALA:HB2	1:A:90:TYR:CE2	2.44	0.53
1:B:26:ALA:HA	1:B:74:PHE:CE1	2.44	0.53
1:B:159:GLY:H	1:B:165:LYS:HD3	1.73	0.53
1:B:9:ALA:HB2	1:B:90:TYR:CE2	2.44	0.53
1:B:252:VAL:HG21	1:B:257:THR:HG21	1.91	0.53
1:B:262:GLN:NE2	1:B:283:GLN:HB2	2.23	0.53
1:B:354:LYS:HD3	1:B:362:GLY:O	2.09	0.53
1:A:332:THR:HG23	1:A:374:LEU:HB2	1.89	0.53
1:B:332:THR:HG23	1:B:374:LEU:HB2	1.90	0.53
1:B:527:GLU:C	1:B:530:PRO:HD3	2.29	0.53
1:A:106:ILE:CG2	1:A:182:ILE:HA	2.39	0.52
1:A:465:LYS:HD3	1:A:466:HIS:HE1	1.73	0.52
1:B:10:LEU:HD13	1:B:58:LEU:HD22	1.90	0.52
1:B:177:ASP:O	1:B:182:ILE:HD13	2.10	0.52
1:B:187:ILE:HD13	1:B:246:LEU:HB3	1.91	0.52
1:B:155:LEU:HB3	1:B:269:LEU:HD23	1.92	0.52
1:B:157:LEU:HD11	1:B:168:ILE:CG2	2.40	0.52
1:B:231:LEU:O	1:B:235:ILE:HG13	2.10	0.52
1:A:157:LEU:HD11	1:A:168:ILE:HG22	1.92	0.52
1:B:252:VAL:HG11	1:B:258:ILE:CD1	2.40	0.52
1:B:405:ILE:HG12	1:B:410:TRP:CE3	2.45	0.52
1:A:269:LEU:HD22	1:A:270:VAL:H	1.75	0.52
1:A:142:LYS:HE2	1:A:146:GLU:OE2	2.10	0.52
1:A:274:ASP:C	1:A:274:ASP:OD1	2.48	0.52
1:B:363:VAL:HG13	1:B:363:VAL:O	2.09	0.52
1:A:106:ILE:HG21	1:A:182:ILE:HA	1.92	0.51
1:A:444:LEU:O	1:A:445:SER:HB2	2.10	0.51
1:A:529:PHE:N	1:A:530:PRO:CD	2.73	0.51
1:A:128:MET:HE1	1:B:282:SER:HB2	1.91	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:395:PHE:C	1:B:397:VAL:H	2.14	0.51
1:B:438:SER:O	1:B:442:ALA:HA	2.09	0.51
1:A:126:LYS:O	1:A:127:GLN:O	2.29	0.51
1:A:141:ILE:HG23	1:A:179:LEU:HD22	1.93	0.51
1:B:23:PRO:HG2	1:B:53:ARG:HB3	1.93	0.51
1:B:403:VAL:HG12	1:B:405:ILE:HG22	1.92	0.51
1:B:529:PHE:N	1:B:530:PRO:CD	2.72	0.51
1:B:318:VAL:CG1	1:B:349:ALA:HB2	2.40	0.51
1:A:21:PHE:CD2	1:A:75:PHE:HE2	2.27	0.51
1:A:192:ASP:HB3	1:A:251:ASP:O	2.11	0.51
1:A:283:GLN:HG2	1:A:284:THR:N	2.25	0.51
1:B:21:PHE:CD2	1:B:75:PHE:HE2	2.29	0.51
1:A:219:ASN:O	1:A:220:PHE:C	2.47	0.51
1:A:318:VAL:HG13	1:A:349:ALA:HB2	1.93	0.51
1:A:156:PHE:HB2	1:A:287:PHE:CD2	2.46	0.51
1:A:438:SER:O	1:A:442:ALA:HA	2.11	0.51
1:A:443:LEU:HA	1:A:460:ILE:HG12	1.93	0.51
1:B:106:ILE:HG23	1:B:106:ILE:O	2.11	0.51
1:B:318:VAL:HG13	1:B:349:ALA:HB2	1.93	0.51
1:B:142:LYS:HE2	1:B:146:GLU:OE2	2.10	0.51
1:B:534:GLN:HE21	1:B:534:GLN:CA	2.19	0.51
1:A:112:ARG:HH11	1:A:115:LEU:HD12	1.75	0.50
1:A:310:PRO:HA	1:A:345:PHE:HZ	1.76	0.50
1:B:219:ASN:O	1:B:220:PHE:C	2.48	0.50
1:B:343:LYS:O	1:B:343:LYS:HG2	2.09	0.50
1:A:252:VAL:HG21	1:A:257:THR:HG21	1.93	0.50
1:B:32:GLY:C	1:B:34:ASN:H	2.15	0.50
1:A:255:GLU:HB3	1:A:277:ILE:HG22	1.93	0.50
1:A:326:SER:O	1:A:327:SER:C	2.49	0.50
1:B:141:ILE:HG23	1:B:179:LEU:HD22	1.93	0.50
1:A:8:ARG:CG	1:A:8:ARG:NH1	2.74	0.50
1:A:302:LEU:HD23	1:A:337:PHE:HE1	1.77	0.50
1:A:534:GLN:HE21	1:A:534:GLN:CA	2.18	0.50
1:B:326:SER:O	1:B:327:SER:C	2.50	0.50
1:A:187:ILE:HD13	1:A:246:LEU:HB3	1.93	0.50
1:A:250:ASP:HA	1:A:271:THR:OG1	2.11	0.50
1:A:484:LEU:CD1	1:A:533:MET:HG2	2.41	0.50
1:B:378:LEU:O	1:B:379:GLN:C	2.50	0.50
1:B:77:TYR:CD1	1:B:77:TYR:O	2.64	0.50
1:A:26:ALA:HA	1:A:74:PHE:CE1	2.47	0.50
1:B:165:LYS:HG2	1:B:290:VAL:HG21	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:24:ARG:NH2	1:A:53:ARG:HH11	2.09	0.49
1:A:318:VAL:CG1	1:A:349:ALA:HB2	2.42	0.49
1:A:463:PHE:O	1:A:467:VAL:HB	2.12	0.49
1:B:388:GLU:O	1:B:391:SER:HB3	2.11	0.49
1:B:204:PHE:HA	1:B:207:ILE:HD12	1.94	0.49
1:A:1:MET:CE	1:A:240:ILE:HB	2.42	0.49
1:A:58:LEU:O	1:A:62:ARG:HG3	2.13	0.49
1:A:405:ILE:HG12	1:A:410:TRP:CE3	2.48	0.49
1:A:465:LYS:HD3	1:A:466:HIS:CE1	2.48	0.49
1:B:201:PHE:C	1:B:201:PHE:CD2	2.86	0.49
1:B:310:PRO:HA	1:B:345:PHE:HZ	1.76	0.49
1:A:262:GLN:NE2	1:A:283:GLN:HB2	2.28	0.49
1:B:37:THR:H	1:B:40:HIS:HB2	1.78	0.49
1:B:302:LEU:HB3	1:B:307:MET:HB3	1.94	0.49
1:A:1:MET:HE3	1:A:240:ILE:HB	1.93	0.49
1:A:262:GLN:HE21	1:A:283:GLN:HB2	1.78	0.49
1:A:155:LEU:HB3	1:A:269:LEU:HD23	1.94	0.49
1:A:378:LEU:O	1:A:379:GLN:C	2.52	0.49
1:A:521:GLU:O	1:A:523:VAL:N	2.44	0.49
1:A:10:LEU:HD13	1:A:58:LEU:HD22	1.94	0.48
1:A:231:LEU:O	1:A:235:ILE:HG13	2.12	0.48
1:B:35:ILE:CG2	1:B:35:ILE:O	2.60	0.48
1:B:37:THR:O	1:B:40:HIS:HB2	2.13	0.48
1:A:141:ILE:HG23	1:A:179:LEU:HD21	1.94	0.48
1:A:237:ASN:C	1:A:239:LEU:H	2.17	0.48
1:A:347:LYS:NZ	1:A:351:LEU:HD21	2.28	0.48
1:A:395:PHE:C	1:A:397:VAL:H	2.16	0.48
1:A:175:LYS:HZ2	1:A:175:LYS:HB3	1.78	0.48
3:A:602:ATP:N3	3:A:602:ATP:H2'	2.28	0.48
1:A:21:PHE:CD2	1:A:75:PHE:CE2	3.02	0.48
1:A:128:MET:CE	1:B:282:SER:HB2	2.42	0.48
1:B:444:LEU:O	1:B:445:SER:HB2	2.13	0.48
1:B:466:HIS:ND1	1:B:466:HIS:N	2.61	0.48
1:A:37:THR:H	1:A:40:HIS:HB2	1.78	0.48
1:A:76:ASN:HA	1:A:81:SER:OG	2.14	0.48
1:A:170:SER:O	1:A:174:SER:HB2	2.13	0.48
1:B:49:THR:HG22	1:B:50:ARG:H	1.76	0.48
1:B:141:ILE:HD12	1:B:175:LYS:HZ2	1.77	0.48
1:A:131:TYR:CD1	1:A:131:TYR:C	2.87	0.48
1:A:252:VAL:HG11	1:A:258:ILE:CD1	2.44	0.48
1:B:347:LYS:O	1:B:351:LEU:HG	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:77:TYR:CD1	1:A:77:TYR:O	2.67	0.48
1:B:141:ILE:HG23	1:B:179:LEU:HD21	1.96	0.48
1:B:157:LEU:HD11	1:B:168:ILE:HG22	1.95	0.48
1:B:252:VAL:HG22	1:B:257:THR:HG21	1.94	0.48
1:B:395:PHE:C	1:B:397:VAL:N	2.67	0.48
1:A:29:TYR:CZ	1:A:33:LYS:HD2	2.48	0.48
1:A:32:GLY:C	1:A:34:ASN:H	2.16	0.48
1:A:347:LYS:O	1:A:351:LEU:HG	2.14	0.48
1:B:88:GLU:O	1:B:91:ILE:HG22	2.14	0.48
1:B:165:LYS:N	3:B:602:ATP:O2B	2.45	0.48
1:B:24:ARG:NH2	1:B:53:ARG:HH11	2.11	0.47
1:A:393:LEU:CD2	1:A:464:LEU:HD11	2.44	0.47
1:B:243:PRO:O	1:B:244:ASN:C	2.52	0.47
1:B:283:GLN:HG2	1:B:284:THR:N	2.29	0.47
1:A:302:LEU:HB3	1:A:307:MET:HB3	1.95	0.47
1:B:540:TYR:O	1:B:543:LEU:HD23	2.14	0.47
1:B:58:LEU:O	1:B:62:ARG:HG3	2.14	0.47
1:B:131:TYR:C	1:B:131:TYR:CD1	2.88	0.47
1:B:237:ASN:C	1:B:239:LEU:H	2.18	0.47
1:A:4:GLU:HG3	1:A:5:ILE:N	2.29	0.47
1:B:22:GLU:OE2	1:B:24:ARG:HG3	2.14	0.47
1:A:49:THR:HG22	1:A:50:ARG:N	2.29	0.47
1:A:88:GLU:O	1:A:91:ILE:HG22	2.15	0.47
1:A:165:LYS:HG2	1:A:290:VAL:HG21	1.97	0.47
1:B:109:GLN:C	1:B:111:SER:N	2.67	0.47
1:B:161:ALA:O	1:B:374:LEU:HD21	2.15	0.47
1:B:35:ILE:HG22	1:B:36:PHE:HD2	1.80	0.47
1:A:22:GLU:HG3	1:A:24:ARG:H	1.80	0.47
1:A:330:PRO:HB3	3:A:602:ATP:C8	2.50	0.47
1:B:242:ARG:HB3	1:B:245:THR:OG1	2.15	0.47
1:B:327:SER:N	1:B:459:ILE:HG12	2.29	0.47
1:B:521:GLU:O	1:B:523:VAL:N	2.46	0.47
1:A:205:THR:HA	1:A:231:LEU:HD11	1.96	0.47
1:B:240:ILE:CG1	1:B:241:ASP:N	2.78	0.47
1:A:466:HIS:ND1	1:A:466:HIS:N	2.62	0.46
1:B:163:SER:C	1:B:330:PRO:HG2	2.36	0.46
1:B:212:LYS:HE3	1:B:238:ALA:CB	2.44	0.46
1:A:102:ARG:HA	1:A:106:ILE:HB	1.96	0.46
1:A:190:LEU:HD12	1:A:207:ILE:CG1	2.43	0.46
1:A:204:PHE:HA	1:A:207:ILE:HD12	1.96	0.46
1:A:255:GLU:CB	1:A:277:ILE:HG22	2.45	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:211:LEU:CD1	1:B:239:LEU:HD23	2.45	0.46
1:B:250:ASP:HA	1:B:271:THR:OG1	2.14	0.46
1:B:463:PHE:O	1:B:467:VAL:HB	2.16	0.46
1:A:67:GLU:HG2	1:A:69:GLY:H	1.79	0.46
1:A:158:HIS:O	1:A:158:HIS:ND1	2.47	0.46
1:A:240:ILE:C	1:A:242:ARG:H	2.19	0.46
1:B:126:LYS:O	1:B:127:GLN:O	2.34	0.46
1:A:165:LYS:HG3	3:A:602:ATP:O2B	2.15	0.46
1:A:252:VAL:HG12	1:A:277:ILE:HD13	1.98	0.46
1:A:363:VAL:O	1:A:363:VAL:HG13	2.15	0.46
1:B:329:ASN:HA	1:B:330:PRO:HD2	1.71	0.46
1:B:8:ARG:NH1	1:B:8:ARG:CG	2.75	0.46
1:B:233:ARG:CG	1:B:233:ARG:NH1	2.75	0.46
1:A:124:VAL:HA	1:A:125:PRO:HD3	1.68	0.46
1:A:116:ASP:OD1	1:A:116:ASP:N	2.49	0.46
1:A:201:PHE:CD2	1:A:201:PHE:C	2.89	0.46
1:B:4:GLU:HG3	1:B:5:ILE:N	2.30	0.46
1:B:156:PHE:HB2	1:B:287:PHE:CD2	2.51	0.46
1:B:158:HIS:O	1:B:158:HIS:ND1	2.48	0.46
1:A:237:ASN:O	1:A:239:LEU:N	2.49	0.46
1:B:21:PHE:CD2	1:B:75:PHE:CE2	3.03	0.46
1:B:72:ILE:C	1:B:74:PHE:H	2.18	0.46
1:B:240:ILE:C	1:B:242:ARG:H	2.19	0.46
1:A:395:PHE:C	1:A:397:VAL:N	2.70	0.45
1:A:532:PHE:C	1:A:534:GLN:N	2.70	0.45
1:B:484:LEU:HD21	1:B:533:MET:CG	2.46	0.45
1:A:436:ARG:O	1:A:440:ARG:HG3	2.15	0.45
1:B:255:GLU:O	1:B:259:ARG:HG3	2.17	0.45
1:B:395:PHE:O	1:B:397:VAL:N	2.49	0.45
1:A:298:CYS:O	1:A:302:LEU:HD12	2.16	0.45
1:A:71:LEU:HD13	1:A:71:LEU:O	2.16	0.45
1:A:275:VAL:HG12	1:A:275:VAL:O	2.16	0.45
1:A:452:LEU:H	1:A:452:LEU:CD2	2.23	0.45
1:B:92:ASP:C	1:B:94:ALA:H	2.20	0.45
1:B:205:THR:HA	1:B:231:LEU:HD11	1.97	0.45
1:B:255:GLU:HB3	1:B:277:ILE:HG22	1.98	0.45
1:B:444:LEU:HD12	1:B:444:LEU:HA	1.75	0.45
1:A:460:ILE:HD12	1:A:460:ILE:HA	1.80	0.45
1:B:124:VAL:HA	1:B:125:PRO:HD3	1.72	0.45
1:B:154:PHE:HE1	1:B:262:GLN:HG3	1.82	0.45
1:B:407:VAL:HG21	1:B:452:LEU:HD12	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:23:PRO:HG2	1:A:53:ARG:CB	2.46	0.45
1:A:79:ASN:HD22	1:B:36:PHE:N	2.14	0.45
1:A:2:LEU:O	1:A:3:CYS:HB3	2.15	0.45
1:A:37:THR:O	1:A:40:HIS:HB2	2.17	0.45
1:A:244:ASN:N	1:A:244:ASN:HD22	2.15	0.45
1:A:341:GLU:CB	1:A:342:PRO:CD	2.93	0.45
1:A:371:TYR:CD1	1:A:377:ALA:HB2	2.52	0.45
1:A:22:GLU:OE2	1:A:24:ARG:HG3	2.16	0.45
1:A:248:VAL:HG22	1:A:269:LEU:HD12	1.99	0.45
1:B:9:ALA:HB2	1:B:90:TYR:CD2	2.52	0.45
1:A:72:ILE:HG21	1:A:88:GLU:CG	2.47	0.45
1:A:535:LEU:O	1:A:535:LEU:HD23	2.17	0.45
1:B:167:VAL:HG12	1:B:168:ILE:N	2.32	0.45
1:B:248:VAL:HG22	1:B:269:LEU:HD12	1.98	0.45
1:B:255:GLU:CB	1:B:277:ILE:HG22	2.46	0.45
1:B:341:GLU:CB	1:B:342:PRO:CD	2.93	0.45
1:B:532:PHE:C	1:B:534:GLN:N	2.70	0.45
1:A:9:ALA:HB2	1:A:90:TYR:CD2	2.51	0.44
1:A:72:ILE:C	1:A:74:PHE:H	2.21	0.44
1:A:540:TYR:O	1:A:543:LEU:HD23	2.18	0.44
1:B:274:ASP:OD1	1:B:274:ASP:C	2.55	0.44
1:B:452:LEU:H	1:B:452:LEU:CD2	2.26	0.44
1:B:436:ARG:O	1:B:440:ARG:HG3	2.16	0.44
1:A:211:LEU:CD1	1:A:239:LEU:HD23	2.45	0.44
1:B:2:LEU:O	1:B:3:CYS:HB3	2.17	0.44
1:B:460:ILE:HD12	1:B:460:ILE:HA	1.82	0.44
1:A:233:ARG:CG	1:A:233:ARG:NH1	2.80	0.44
1:A:274:ASP:O	1:A:277:ILE:HG12	2.18	0.44
1:A:79:ASN:ND2	1:B:35:ILE:N	2.66	0.44
1:A:135:TYR:CZ	1:A:139:ARG:HD2	2.52	0.44
1:B:170:SER:O	1:B:174:SER:HB2	2.18	0.44
1:B:374:LEU:HD13	1:B:378:LEU:HG	1.99	0.44
1:B:542:SER:C	1:B:543:LEU:CD2	2.82	0.44
1:A:273:ARG:NH2	1:A:380:ARG:HH21	2.16	0.44
1:A:374:LEU:HD13	1:A:378:LEU:HG	1.99	0.44
1:B:135:TYR:CZ	1:B:139:ARG:HD2	2.52	0.44
1:B:244:ASN:N	1:B:244:ASN:HD22	2.16	0.44
1:B:307:MET:HA	1:B:308:PRO:HD3	1.82	0.44
1:B:461:HIS:C	1:B:463:PHE:N	2.71	0.44
1:A:120:LEU:HD13	1:B:265:ARG:HB2	2.00	0.44
1:B:35:ILE:O	1:B:36:PHE:HD2	2.01	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:347:LYS:NZ	1:B:351:LEU:HD21	2.33	0.44
1:A:35:ILE:HG22	1:A:36:PHE:HD2	1.83	0.43
1:A:67:GLU:HG2	1:A:68:LEU:N	2.33	0.43
1:A:163:SER:C	1:A:330:PRO:HG2	2.37	0.43
1:A:302:LEU:CD2	1:A:337:PHE:HE1	2.31	0.43
1:B:240:ILE:CG1	1:B:241:ASP:OD1	2.64	0.43
1:A:366:ILE:H	1:A:366:ILE:CD1	2.20	0.43
1:A:154:PHE:HE1	1:A:262:GLN:HG3	1.83	0.43
1:A:527:GLU:OE1	1:A:527:GLU:N	2.51	0.43
1:B:29:TYR:OH	1:B:33:LYS:HD2	2.18	0.43
1:B:97:GLU:HA	1:B:98:PRO:HD3	1.73	0.43
1:A:175:LYS:NZ	1:A:175:LYS:HB3	2.33	0.43
1:A:243:PRO:O	1:A:244:ASN:C	2.56	0.43
1:B:269:LEU:HD22	1:B:270:VAL:H	1.82	0.43
1:B:298:CYS:O	1:B:302:LEU:HD12	2.18	0.43
1:B:325:LEU:HD23	1:B:325:LEU:HA	1.74	0.43
1:B:393:LEU:CD2	1:B:464:LEU:HD11	2.47	0.43
1:B:462:MET:HB2	1:B:462:MET:HE3	1.50	0.43
1:A:252:VAL:HG22	1:A:257:THR:HG21	1.99	0.43
1:B:182:ILE:N	1:B:182:ILE:CD1	2.81	0.43
1:A:165:LYS:HE3	1:A:272:THR:O	2.19	0.43
1:A:242:ARG:HB3	1:A:245:THR:OG1	2.18	0.43
1:A:459:ILE:HG13	1:A:459:ILE:H	1.41	0.43
1:A:462:MET:HB2	1:A:462:MET:HE3	1.48	0.43
1:A:525:ARG:HH11	1:A:535:LEU:HD13	1.83	0.43
1:B:527:GLU:N	1:B:527:GLU:OE1	2.52	0.43
1:A:325:LEU:C	1:A:327:SER:H	2.22	0.43
1:B:175:LYS:NZ	1:B:175:LYS:HB3	2.34	0.43
1:B:401:PRO:HA	1:B:456:ILE:O	2.19	0.43
1:B:426:LEU:HD23	1:B:426:LEU:HA	1.77	0.43
1:A:24:ARG:NH2	1:A:53:ARG:NH1	2.67	0.43
1:B:128:MET:HG3	1:B:167:VAL:HG21	2.00	0.43
1:B:153:PHE:CE2	1:B:267:ARG:HB3	2.54	0.43
1:B:371:TYR:CD1	1:B:377:ALA:HB2	2.54	0.43
1:A:163:SER:O	1:A:330:PRO:HG2	2.18	0.43
1:A:487:ILE:O	1:A:487:ILE:HG22	2.19	0.43
1:B:123:ASN:HD22	1:B:123:ASN:HA	1.65	0.43
3:B:602:ATP:H8	3:B:602:ATP:H2'	1.58	0.43
1:A:255:GLU:O	1:A:259:ARG:HG3	2.19	0.42
1:B:302:LEU:CD2	1:B:337:PHE:HE1	2.31	0.42
1:A:325:LEU:HD23	1:A:325:LEU:HA	1.76	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:21:PHE:CG	1:B:22:GLU:N	2.87	0.42
1:B:526:PRO:HG2	1:B:529:PHE:CD1	2.53	0.42
1:A:212:LYS:HE3	1:A:238:ALA:CB	2.46	0.42
1:A:426:LEU:HD23	1:A:426:LEU:HA	1.75	0.42
1:B:190:LEU:HD23	1:B:190:LEU:HA	1.73	0.42
1:B:485:LEU:HD12	1:B:486:GLU:N	2.34	0.42
1:B:399:MET:HB3	1:B:400:PRO:CD	2.49	0.42
1:A:385:LEU:HD11	1:A:393:LEU:HD12	2.02	0.42
1:B:275:VAL:O	1:B:275:VAL:HG12	2.19	0.42
1:B:310:PRO:HB3	1:B:316:GLU:HA	2.00	0.42
1:B:543:LEU:CD2	1:B:543:LEU:N	2.82	0.42
1:A:467:VAL:HG12	1:A:468:VAL:N	2.35	0.42
1:B:35:ILE:HG22	1:B:36:PHE:CD2	2.54	0.42
1:B:302:LEU:CD2	1:B:337:PHE:CE1	3.01	0.42
1:A:310:PRO:HB3	1:A:316:GLU:HA	2.02	0.42
1:A:388:GLU:O	1:A:391:SER:HB3	2.19	0.42
1:A:452:LEU:HD23	1:A:452:LEU:N	2.28	0.42
1:B:163:SER:O	1:B:330:PRO:HG2	2.19	0.42
1:A:269:LEU:HD22	1:A:270:VAL:N	2.34	0.42
1:A:456:ILE:CG1	1:A:460:ILE:CG2	2.92	0.42
1:B:385:LEU:HD23	1:B:385:LEU:HA	1.83	0.42
1:A:525:ARG:HA	1:A:526:PRO:HD3	1.70	0.42
1:B:414:ILE:HG21	1:B:430:VAL:HG13	2.01	0.42
1:A:100:LEU:HG	1:A:104:VAL:HG21	2.02	0.41
1:A:178:GLN:O	1:A:182:ILE:HB	2.19	0.41
1:A:207:ILE:HG22	1:A:208:LEU:N	2.35	0.41
1:A:347:LYS:CE	1:A:351:LEU:HD21	2.50	0.41
1:B:343:LYS:HB3	1:B:343:LYS:HE3	1.84	0.41
1:B:525:ARG:HH11	1:B:535:LEU:HD13	1.84	0.41
1:A:484:LEU:HD21	1:A:533:MET:CG	2.49	0.41
1:B:67:GLU:HG2	1:B:68:LEU:N	2.36	0.41
1:B:72:ILE:HG23	1:B:84:ALA:HB1	2.03	0.41
1:B:187:ILE:CD1	1:B:246:LEU:HB3	2.50	0.41
1:A:130:CYS:O	1:A:304:ALA:HB1	2.20	0.41
1:B:22:GLU:HA	1:B:23:PRO:HD3	1.92	0.41
1:B:165:LYS:HE3	1:B:272:THR:O	2.19	0.41
1:A:115:LEU:HD23	1:A:115:LEU:HA	1.53	0.41
1:A:128:MET:HG3	1:A:167:VAL:HG21	2.03	0.41
1:B:67:GLU:HG2	1:B:69:GLY:H	1.85	0.41
1:B:484:LEU:HD21	1:B:533:MET:HG3	2.03	0.41
1:B:525:ARG:HA	1:B:526:PRO:HD3	1.71	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:35:ILE:O	1:A:35:ILE:CG2	2.68	0.41
1:A:141:ILE:HD12	1:A:175:LYS:HZ2	1.85	0.41
1:A:388:GLU:H	1:A:388:GLU:HG3	1.60	0.41
1:A:395:PHE:O	1:A:397:VAL:N	2.54	0.41
1:B:72:ILE:HG21	1:B:88:GLU:CG	2.46	0.41
1:B:212:LYS:HA	1:B:212:LYS:CE	2.29	0.41
1:B:487:ILE:O	1:B:487:ILE:HG22	2.19	0.41
1:A:72:ILE:HG23	1:A:84:ALA:HB1	2.02	0.41
1:A:111:SER:C	1:A:113:GLN:H	2.24	0.41
1:B:273:ARG:NH2	1:B:380:ARG:HH21	2.19	0.41
1:B:457:ASP:OD2	1:B:457:ASP:N	2.54	0.41
1:A:407:VAL:HG21	1:A:452:LEU:HD12	2.02	0.41
1:B:334:MET:O	1:B:334:MET:HE3	2.21	0.41
1:B:366:ILE:H	1:B:366:ILE:CD1	2.20	0.41
1:A:67:GLU:HG2	1:A:69:GLY:N	2.36	0.41
1:A:119:LEU:CB	1:B:265:ARG:HH12	2.34	0.41
1:A:379:GLN:O	1:A:383:GLU:HG3	2.20	0.41
1:A:414:ILE:HG21	1:A:430:VAL:HG13	2.01	0.41
1:B:24:ARG:NH2	1:B:53:ARG:NH1	2.69	0.41
1:B:35:ILE:O	1:B:36:PHE:CD2	2.73	0.41
1:B:258:ILE:HD12	1:B:258:ILE:N	2.36	0.41
1:A:136:HIS:HB3	1:A:168:ILE:CD1	2.51	0.41
1:A:240:ILE:CG1	1:A:241:ASP:OD1	2.68	0.41
1:B:369:TYR:C	1:B:371:TYR:H	2.23	0.41
1:A:7:CYS:HB3	1:A:243:PRO:HG3	2.03	0.41
1:A:461:HIS:C	1:A:463:PHE:N	2.74	0.41
1:B:23:PRO:HG2	1:B:53:ARG:CB	2.51	0.41
1:A:187:ILE:CD1	1:A:246:LEU:HB3	2.51	0.40
1:A:526:PRO:HG2	1:A:529:PHE:CD1	2.57	0.40
1:B:207:ILE:HG22	1:B:208:LEU:N	2.36	0.40
1:A:24:ARG:CZ	1:A:53:ARG:HH11	2.33	0.40
1:A:203:LEU:HD23	1:A:203:LEU:HA	1.90	0.40
1:A:335:MET:CE	1:A:373:SER:HA	2.52	0.40
1:A:485:LEU:HD12	1:A:486:GLU:N	2.35	0.40
1:A:155:LEU:HD23	1:A:155:LEU:HA	1.78	0.40
1:A:244:ASN:HD22	1:A:244:ASN:H	1.68	0.40
1:A:385:LEU:HD23	1:A:385:LEU:HA	1.85	0.40
1:B:22:GLU:OE1	1:B:50:ARG:HD2	2.21	0.40
1:B:187:ILE:HD12	1:B:246:LEU:O	2.21	0.40
1:B:374:LEU:CD1	1:B:378:LEU:CD1	2.99	0.40
1:A:46:LYS:HG3	1:A:46:LYS:H	1.75	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:64:GLN:HE21	1:A:64:GLN:CA	2.32	0.40
1:A:397:VAL:O	1:A:399:MET:N	2.52	0.40
1:A:405:ILE:HA	1:A:406:PRO:HD3	1.82	0.40
1:B:24:ARG:CZ	1:B:53:ARG:HH11	2.35	0.40
1:B:437:LEU:HD12	1:B:444:LEU:CD2	2.48	0.40
1:A:198:LYS:N	1:A:198:LYS:HD3	2.37	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	497/549 (90%)	399 (80%)	73 (15%)	25 (5%)	2	21
1	B	495/549 (90%)	388 (78%)	75 (15%)	32 (6%)	1	16
All	All	992/1098 (90%)	787 (79%)	148 (15%)	57 (6%)	1	18

All (57) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	127	GLN
1	A	327	SER
1	A	341	GLU
1	A	398	VAL
1	A	445	SER
1	B	109	GLN
1	B	115	LEU
1	B	116	ASP
1	B	127	GLN
1	B	327	SER
1	B	341	GLU
1	B	398	VAL

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Mol	Chain	Res	Type
1	B	445	SER
1	A	112	ARG
1	A	208	LEU
1	A	238	ALA
1	A	244	ASN
1	A	396	ALA
1	A	465	LYS
1	A	522	THR
1	B	208	LEU
1	B	244	ASN
1	B	284	THR
1	B	396	ALA
1	B	465	LYS
1	B	522	THR
1	A	2	LEU
1	A	73	ASP
1	A	160	ARG
1	A	284	THR
1	A	485	LEU
1	B	2	LEU
1	B	73	ASP
1	B	104	VAL
1	B	160	ARG
1	B	176	SER
1	B	238	ALA
1	A	176	SER
1	B	241	ASP
1	B	354	LYS
1	B	484	LEU
1	B	485	LEU
1	A	237	ASN
1	A	257	THR
1	A	311	VAL
1	A	484	LEU
1	B	35	ILE
1	B	134	GLU
1	B	257	THR
1	B	311	VAL
1	B	328	GLY
1	B	102	ARG
1	B	106	ILE
1	A	35	ILE

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Mol	Chain	Res	Type
1	A	70	PRO
1	B	70	PRO
1	A	108	PRO

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	458/501 (91%)	376 (82%)	82 (18%)	2	10
1	B	456/501 (91%)	368 (81%)	88 (19%)	1	8
All	All	914/1002 (91%)	744 (81%)	170 (19%)	1	9

All (170) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1	MET
1	A	4	GLU
1	A	15	THR
1	A	17	LEU
1	A	45	SER
1	A	46	LYS
1	A	51	LEU
1	A	52	GLU
1	A	64	GLN
1	A	67	GLU
1	A	68	LEU
1	A	77	TYR
1	A	95	ILE
1	A	113	GLN
1	A	115	LEU
1	A	116	ASP
1	A	117	ARG
1	A	126	LYS
1	A	128	MET
1	A	130	CYS

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Mol	Chain	Res	Type
1	A	131	TYR
1	A	148	CYS
1	A	155	LEU
1	A	157	LEU
1	A	160	ARG
1	A	174	SER
1	A	175	LYS
1	A	179	LEU
1	A	180	ILE
1	A	185	ASP
1	A	189	TRP
1	A	198	LYS
1	A	203	LEU
1	A	217	LEU
1	A	218	LEU
1	A	220	PHE
1	A	223	VAL
1	A	227	THR
1	A	233	ARG
1	A	239	LEU
1	A	241	ASP
1	A	244	ASN
1	A	253	VAL
1	A	255	GLU
1	A	262	GLN
1	A	269	LEU
1	A	277	ILE
1	A	284	THR
1	A	286	GLU
1	A	296	ASP
1	A	309	MET
1	A	316	GLU
1	A	332	THR
1	A	344	THR
1	A	348	MET
1	A	355	LEU
1	A	360	LEU
1	A	363	VAL
1	A	364	GLU
1	A	366	ILE
1	A	369	TYR
1	A	381	CYS

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Mol	Chain	Res	Type
1	A	382	VAL
1	A	387	ASP
1	A	404	ASP
1	A	405	ILE
1	A	408	LYS
1	A	409	LEU
1	A	410	TRP
1	A	437	LEU
1	A	444	LEU
1	A	451	VAL
1	A	452	LEU
1	A	457	ASP
1	A	459	ILE
1	A	466	HIS
1	A	485	LEU
1	A	525	ARG
1	A	533	MET
1	A	539	PHE
1	A	542	SER
1	A	543	LEU
1	B	1	MET
1	B	4	GLU
1	B	15	THR
1	B	17	LEU
1	B	45	SER
1	B	46	LYS
1	B	52	GLU
1	B	64	GLN
1	B	67	GLU
1	B	68	LEU
1	B	77	TYR
1	B	97	GLU
1	B	99	ASP
1	B	104	VAL
1	B	106	ILE
1	B	109	GLN
1	B	112	ARG
1	B	114	MET
1	B	116	ASP
1	B	117	ARG
1	B	126	LYS
1	B	128	MET

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Mol	Chain	Res	Type
1	B	130	CYS
1	B	131	TYR
1	B	148	CYS
1	B	155	LEU
1	B	157	LEU
1	B	160	ARG
1	B	167	VAL
1	B	174	SER
1	B	175	LYS
1	B	179	LEU
1	B	180	ILE
1	B	185	ASP
1	B	189	TRP
1	B	198	LYS
1	B	203	LEU
1	B	217	LEU
1	B	218	LEU
1	B	220	PHE
1	B	223	VAL
1	B	227	THR
1	B	233	ARG
1	B	239	LEU
1	B	241	ASP
1	B	244	ASN
1	B	253	VAL
1	B	255	GLU
1	B	257	THR
1	B	262	GLN
1	B	269	LEU
1	B	277	ILE
1	B	284	THR
1	B	286	GLU
1	B	296	ASP
1	B	309	MET
1	B	316	GLU
1	B	332	THR
1	B	344	THR
1	B	348	MET
1	B	355	LEU
1	B	360	LEU
1	B	363	VAL
1	B	364	GLU

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Mol	Chain	Res	Type
1	B	366	ILE
1	B	369	TYR
1	B	381	CYS
1	B	382	VAL
1	B	404	ASP
1	B	405	ILE
1	B	408	LYS
1	B	409	LEU
1	B	410	TRP
1	B	437	LEU
1	B	444	LEU
1	B	451	VAL
1	B	452	LEU
1	B	457	ASP
1	B	459	ILE
1	B	466	HIS
1	B	480	LEU
1	B	485	LEU
1	B	525	ARG
1	B	533	MET
1	B	539	PHE
1	B	540	TYR
1	B	542	SER
1	B	543	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (18) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	19	HIS
1	A	34	ASN
1	A	40	HIS
1	A	79	ASN
1	A	123	ASN
1	A	219	ASN
1	A	244	ASN
1	A	471	GLN
1	A	534	GLN
1	B	34	ASN
1	B	40	HIS
1	B	78	ASN
1	B	123	ASN
1	B	136	HIS

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Mol	Chain	Res	Type
1	B	219	ASN
1	B	244	ASN
1	B	471	GLN
1	B	534	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 monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 4 ligands modelled in this entry, 2 are monoatomic - leaving 2 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
3	ATP	A	602	2	26,33,33	1.11	2 (7%)	31,52,52	1.91	10 (32%)
3	ATP	B	602	2	26,33,33	1.07	2 (7%)	31,52,52	1.87	11 (35%)

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
3	ATP	A	602	2	-	5/18/38/38	0/3/3/3
3	ATP	B	602	2	-	9/18/38/38	0/3/3/3

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	602	ATP	C5-C4	2.97	1.48	1.40
3	A	602	ATP	O4'-C1'	2.87	1.45	1.41
3	B	602	ATP	C5-C4	2.86	1.48	1.40
3	B	602	ATP	C2-N3	2.07	1.35	1.32

All (21) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	602	ATP	PB-O3B-PG	-5.44	114.16	132.83
3	B	602	ATP	PA-O3A-PB	-4.00	119.10	132.83
3	A	602	ATP	C3'-C2'-C1'	3.70	106.55	100.98
3	B	602	ATP	N6-C6-N1	3.53	125.91	118.57
3	A	602	ATP	PA-O3A-PB	-3.25	121.68	132.83
3	B	602	ATP	N3-C2-N1	-3.10	123.83	128.68
3	B	602	ATP	PB-O3B-PG	-2.91	122.85	132.83
3	A	602	ATP	O3G-PG-O2G	2.68	117.89	107.64
3	B	602	ATP	C2'-C3'-C4'	-2.63	97.53	102.64
3	A	602	ATP	N3-C2-N1	-2.58	124.65	128.68
3	B	602	ATP	O5'-C5'-C4'	-2.48	100.46	108.99
3	A	602	ATP	O2B-PB-O1B	2.44	124.31	112.24
3	B	602	ATP	O3G-PG-O3B	-2.39	96.63	104.64
3	A	602	ATP	O3G-PG-O3B	-2.34	96.80	104.64
3	B	602	ATP	C5-C6-N6	-2.27	116.91	120.35
3	B	602	ATP	O2B-PB-O1B	2.18	123.01	112.24
3	B	602	ATP	C2-N1-C6	2.13	122.40	118.75
3	A	602	ATP	C4-C5-N7	-2.10	107.21	109.40
3	A	602	ATP	O2'-C2'-C3'	-2.04	105.21	111.82
3	B	602	ATP	O2A-PA-O1A	2.03	122.30	112.24
3	A	602	ATP	O5'-C5'-C4'	-2.03	102.02	108.99

There are no chirality outliers.

All (14) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	602	ATP	C5'-O5'-PA-O3A
3	A	602	ATP	O4'-C4'-C5'-O5'

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Mol	Chain	Res	Type	Atoms
3	A	602	ATP	C3'-C4'-C5'-O5'
3	B	602	ATP	C5'-O5'-PA-O1A
3	B	602	ATP	C3'-C4'-C5'-O5'
3	B	602	ATP	PB-O3B-PG-O1G
3	B	602	ATP	PB-O3B-PG-O2G
3	A	602	ATP	C5'-O5'-PA-O1A
3	B	602	ATP	O4'-C4'-C5'-O5'
3	A	602	ATP	PA-O3A-PB-O1B
3	B	602	ATP	PA-O3A-PB-O1B
3	B	602	ATP	PB-O3B-PG-O3G
3	B	602	ATP	C5'-O5'-PA-O3A
3	B	602	ATP	PA-O3A-PB-O2B

There are no ring outliers.

2 monomers are involved in 11 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	602	ATP	6	0
3	B	602	ATP	5	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 ATP A 602

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP B 602

Bond lengths

Bond angles

Torsions

Rings
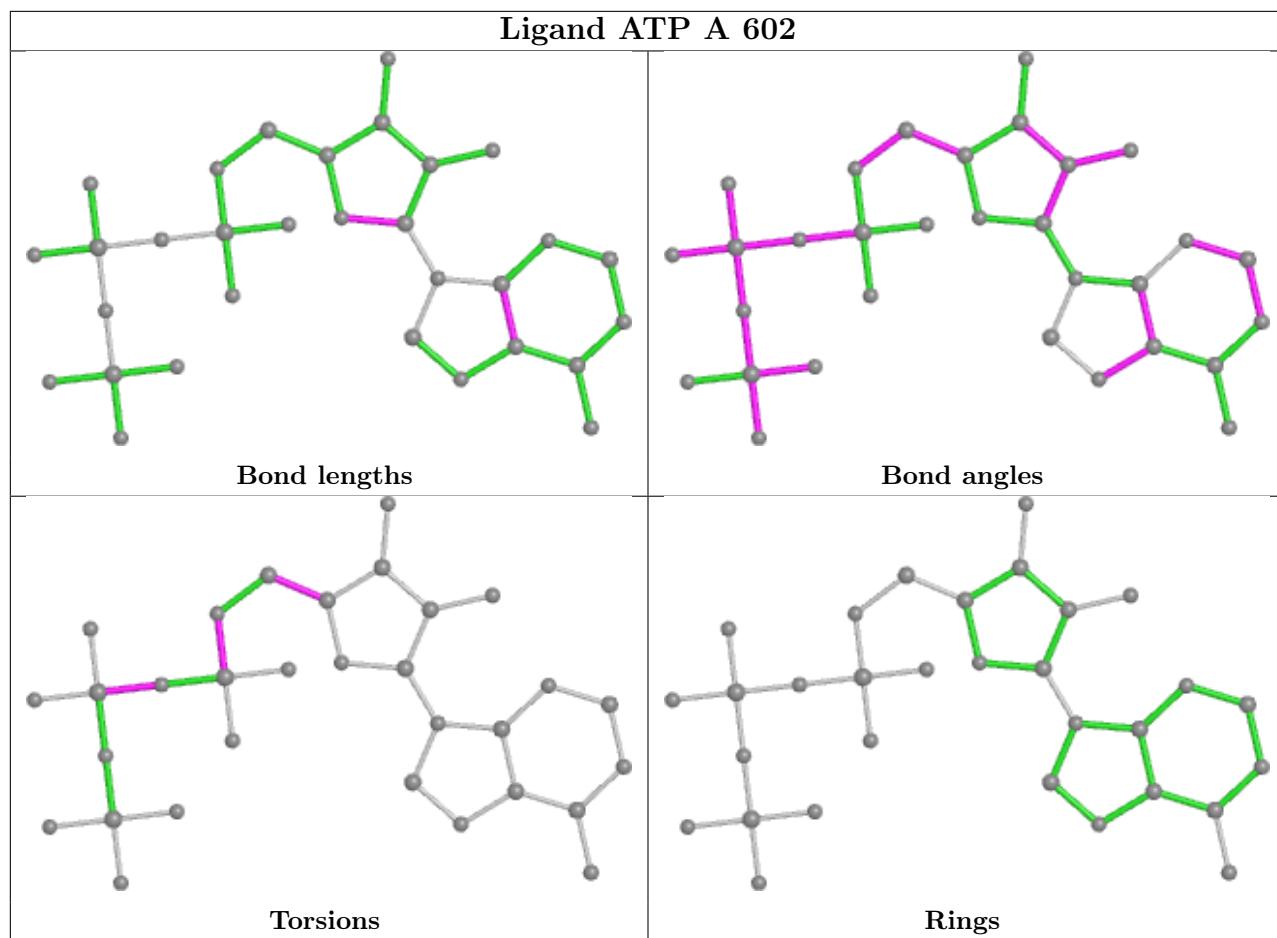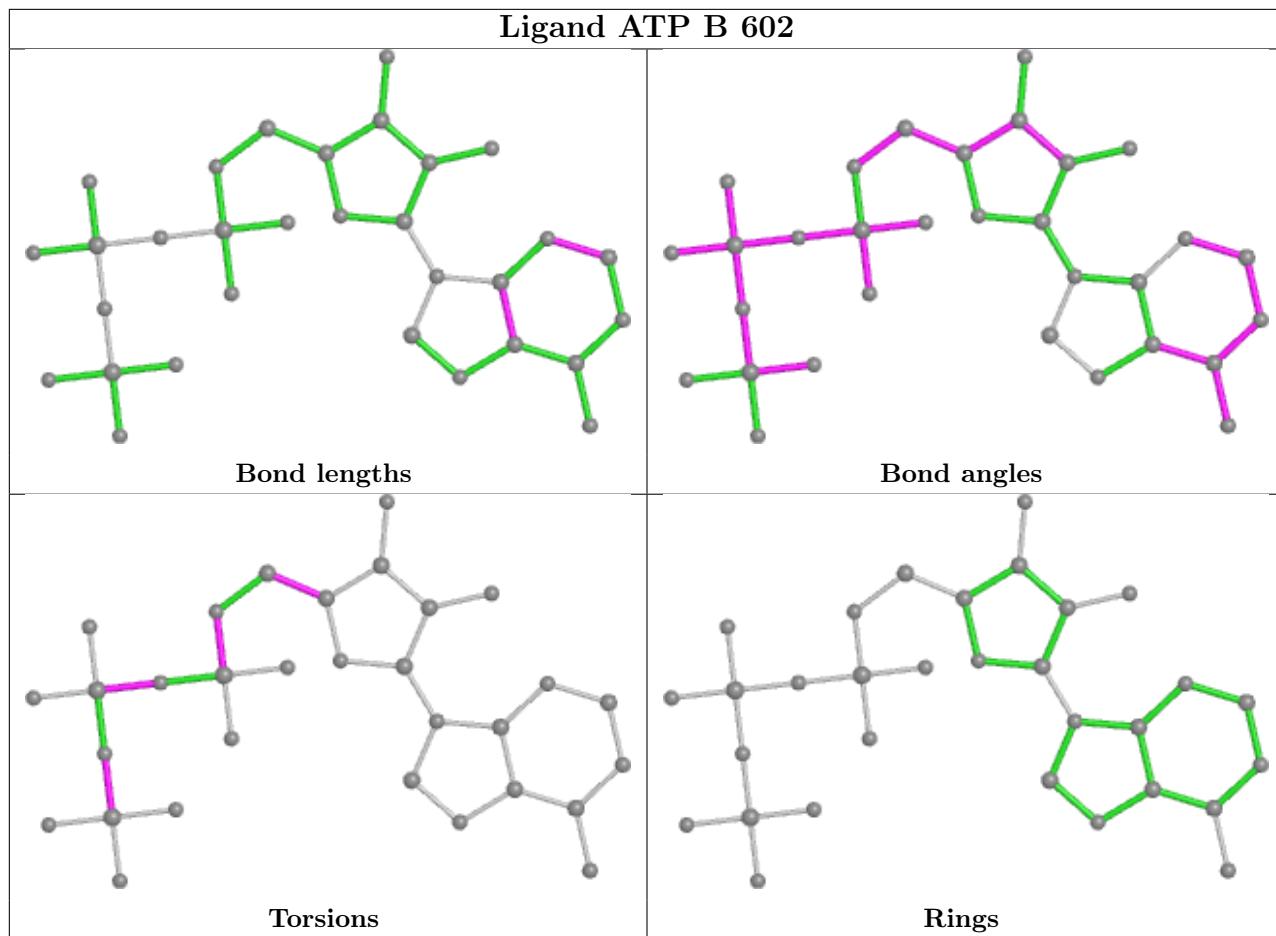
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

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	503/549 (91%)	-0.24	5 (0%)	82	71	92, 139, 207, 267	0
1	B	501/549 (91%)	-0.22	13 (2%)	56	42	92, 140, 214, 339	0
All	All	1004/1098 (91%)	-0.23	18 (1%)	68	54	92, 140, 211, 339	0

All (18) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	100	LEU	4.9
1	B	105	VAL	4.2
1	B	521	GLU	3.9
1	B	95	ILE	2.8
1	B	107	ALA	2.8
1	B	108	PRO	2.8
1	A	98	PRO	2.7
1	A	97	GLU	2.6
1	B	106	ILE	2.5
1	B	101	LEU	2.4
1	B	522	THR	2.2
1	A	105	VAL	2.2
1	A	66	SER	2.2
1	B	82	HIS	2.2
1	A	27	LEU	2.1
1	B	310	PRO	2.0
1	B	311	VAL	2.0
1	B	4	GLU	2.0

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

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

WORLDWIDE wwPDB PROTEIN DATA BANK

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	MG	A	601	1/1	0.74	1.97	313,313,313,313	0
3	ATP	A	602	31/31	0.91	0.34	92,118,143,313	0
3	ATP	B	602	31/31	0.92	0.28	105,118,136,278	0
2	MG	B	601	1/1	0.95	0.46	80,80,80,80	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 ATP A 602:

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

Electron density around ATP B 602:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative) and green (positive)
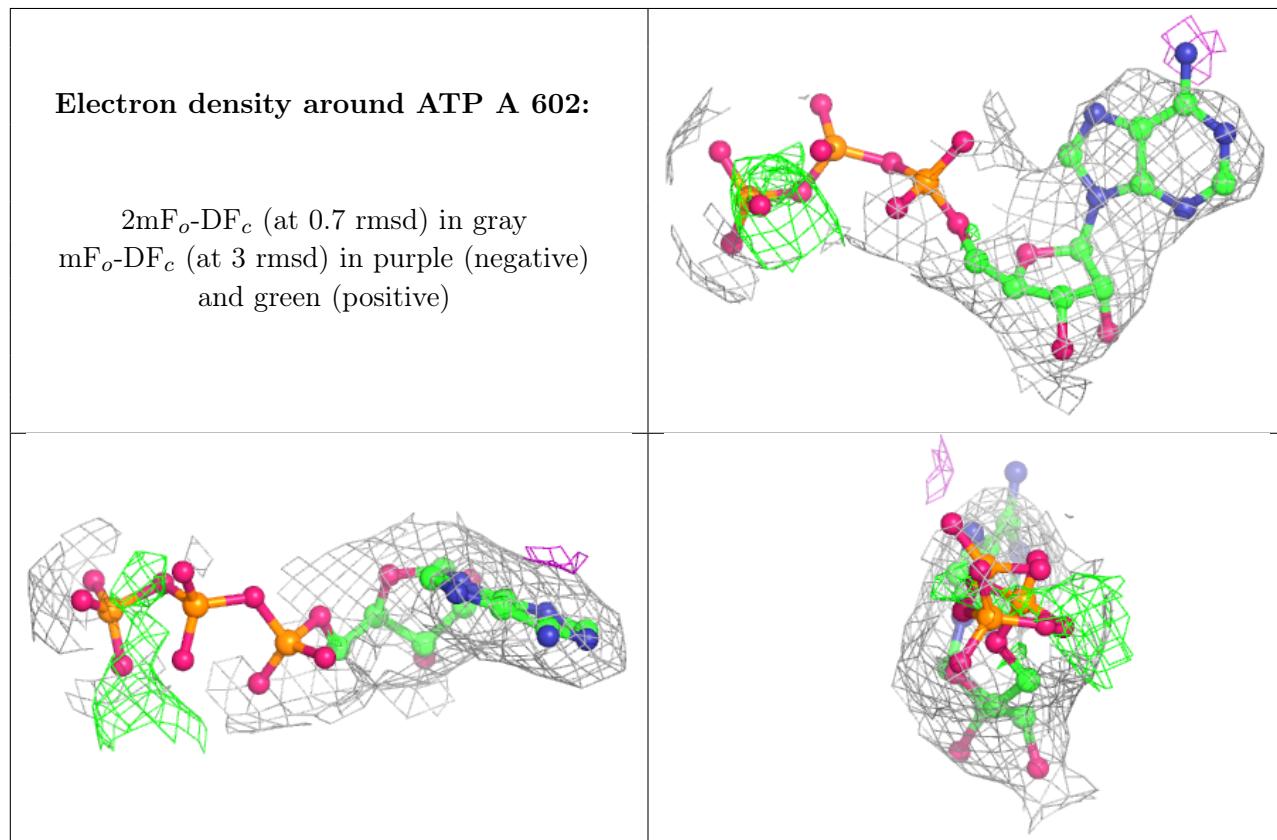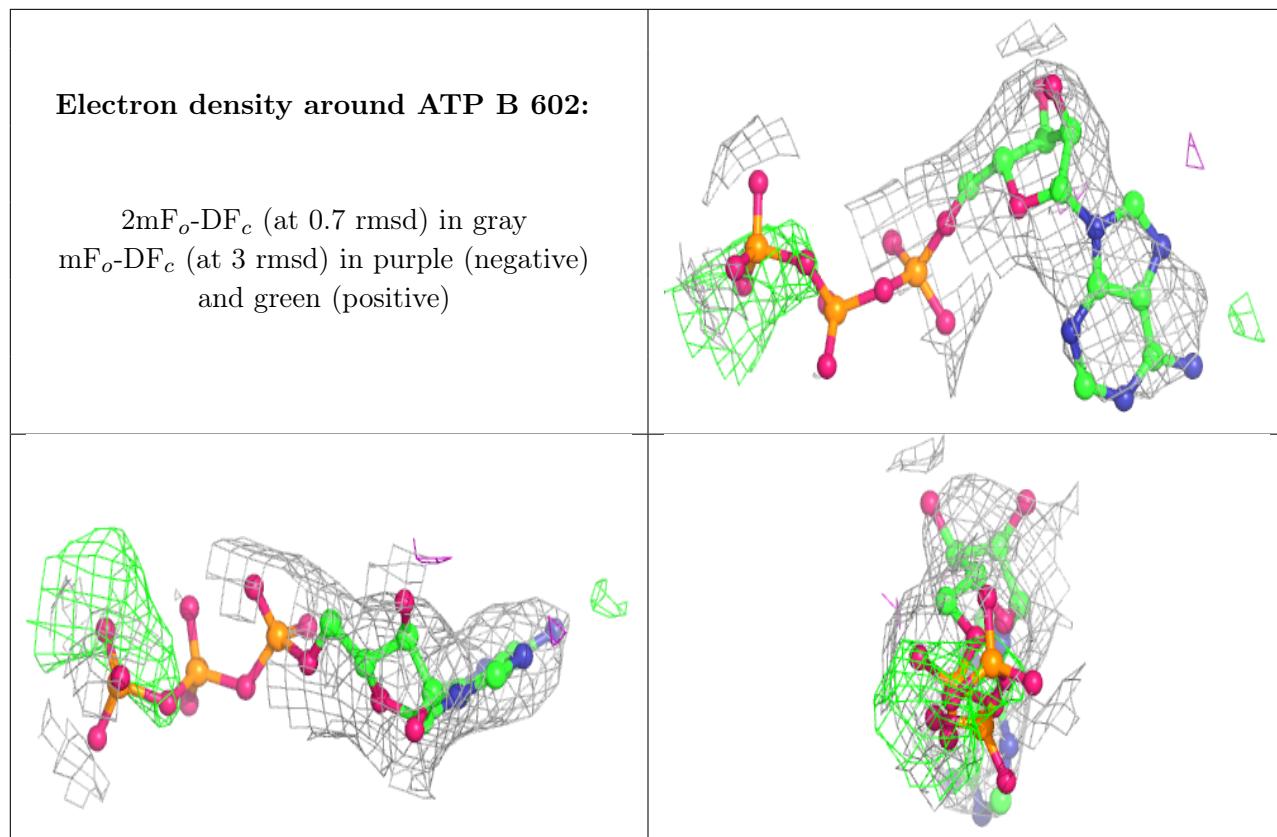
6.5 Other polymers (i)

There are no such residues in this entry.