



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 05:38 PM UTC

PDB ID : 2OA0 / pdb_00002oa0
Title : Crystal structure of Calcium ATPase with bound ADP and cyclopiazonic acid
Authors : Young, H.S.; Moncoq, K.A.
Deposited on : 2006-12-14
Resolution : 3.40 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

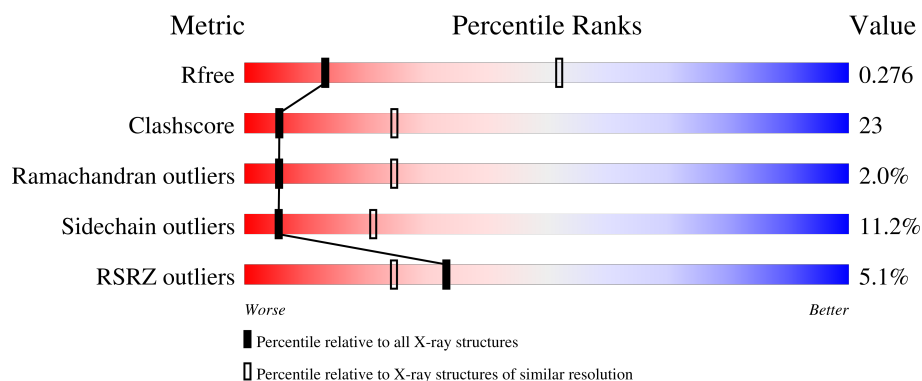
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.40 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	1001 (3.44-3.36)
Clashscore	190562	1022 (3.44-3.36)
Ramachandran outliers	187476	1012 (3.44-3.36)
Sidechain outliers	187428	1012 (3.44-3.36)
RSRZ outliers	180081	1001 (3.44-3.36)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	994	

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
3	CZA	A	1001	-	-	X	-

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 7615 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 Sarcoplasmic/endoplasmic reticulum calcium ATPase 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	980	Total	C	N	O	S	0	0	0
			7562	4806	1270	1430	56			

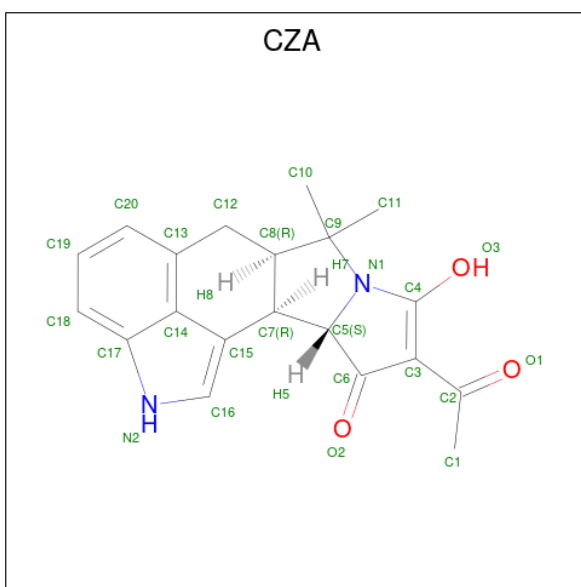
There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	994	GLY	-	variant	UNP P04191

- Molecule 2 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

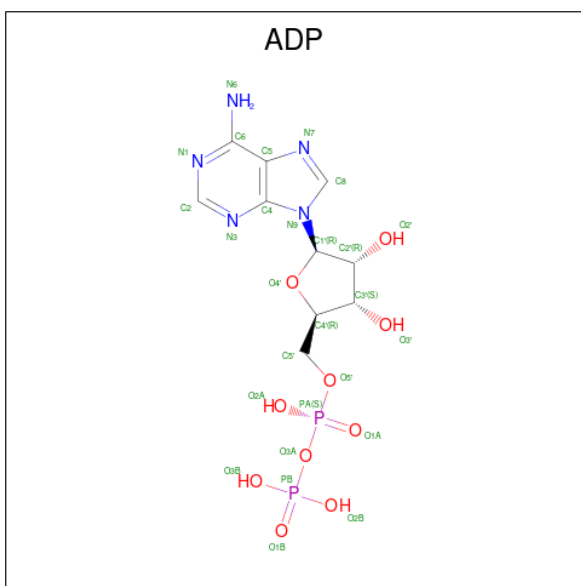
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	Mg	0	0
			1	1		

- Molecule 3 is (6AR,11AS,11BR)-10-ACETYL-9-HYDROXY-7,7-DIMETHYL-2,6,6A,7,11A,11B-HEXAHYDRO-11H-PYRROLO[1',2':2,3]ISOINDOLO[4,5,6-CD]INDOL-11-ONE (CCD ID: CZA) (formula: C₂₀H₂₀N₂O₃).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	N	O	0	0
			25	20	2	3		

- Molecule 4 is ADENOSINE-5'-DIPHOSPHATE (CCD ID: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).

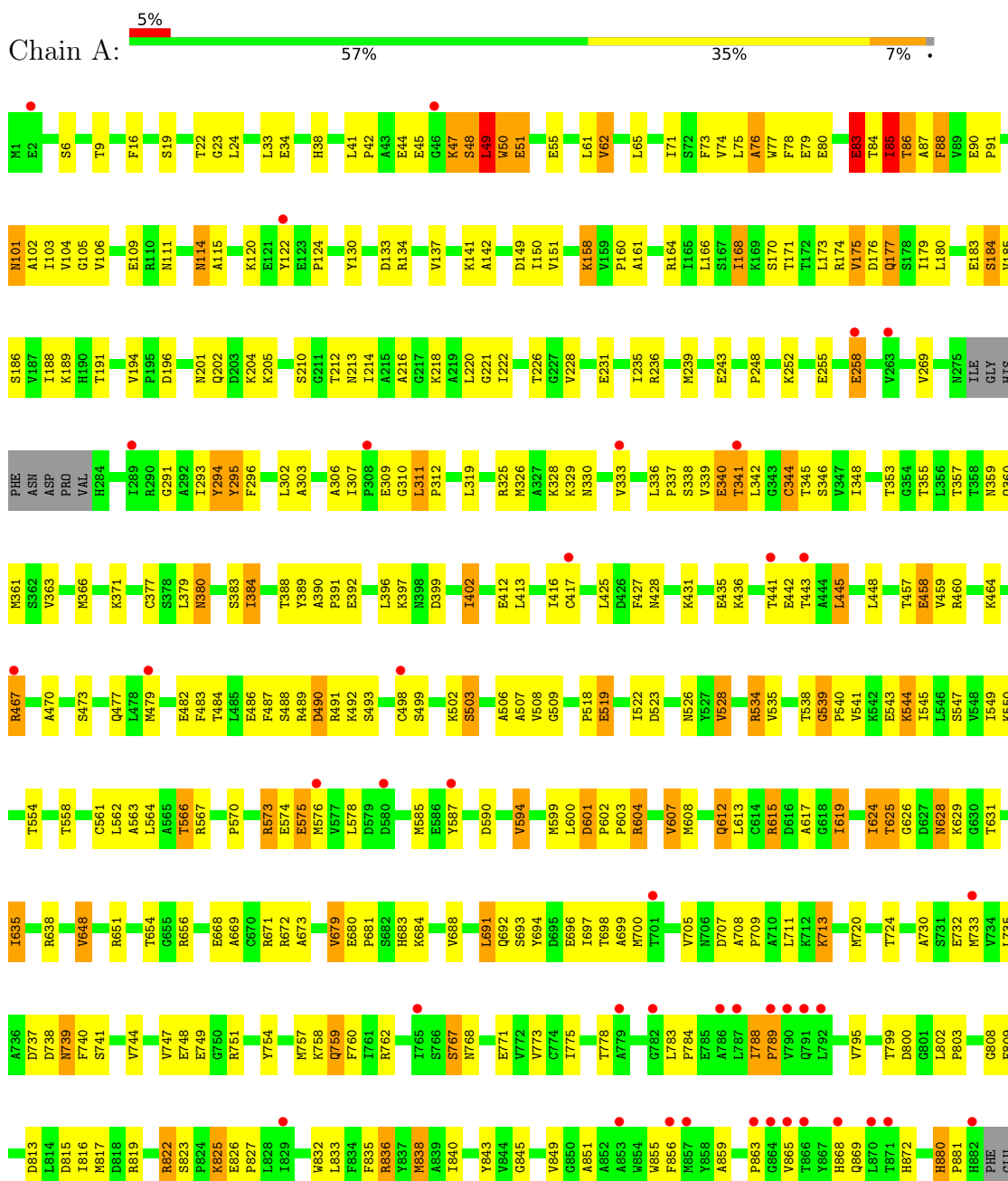


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total	C	N	O	P	0	0
			27	10	5	10	2		

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: Sarcoplasmic/endoplasmic reticulum calcium ATPase 1





4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	62.50Å 96.84Å 154.86Å 90.00° 94.83° 90.00°	Depositor
Resolution (Å)	30.00 – 3.40 30.00 – 3.40	Depositor EDS
% Data completeness (in resolution range)	99.5 (30.00-3.40) 99.3 (30.00-3.40)	Depositor EDS
R_{merge}	0.12	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.05 (at 3.39Å)	Xtriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.290 , 0.328 (Not available) , 0.276	Depositor DCC
R_{free} test set	1293 reflections (5.07%)	wwPDB-VP
Wilson B-factor (Å ²)	127.4	Xtriage
Anisotropy	0.048	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.24 , 38.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	7615	wwPDB-VP
Average B, all atoms (Å ²)	122.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.46% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CZA, ADP, MG

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	0/7697	0.89	15/10432 (0.1%)

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

There are no bond length outliers.

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	196	ASP	CA-C-N	7.04	126.74	119.56
1	A	196	ASP	C-N-CA	7.04	126.74	119.56
1	A	625	THR	N-CA-C	6.90	117.75	108.23
1	A	86	THR	N-CA-C	6.63	124.91	110.80
1	A	87	ALA	N-CA-C	6.61	124.87	110.80
1	A	601	ASP	CA-C-N	6.53	127.11	120.38
1	A	601	ASP	C-N-CA	6.53	127.11	120.38
1	A	607	VAL	N-CA-C	6.33	117.83	110.62
1	A	269	VAL	N-CA-C	-6.32	107.34	113.53
1	A	80	GLU	N-CA-C	5.59	122.72	110.80
1	A	539	GLY	CA-C-N	5.28	125.59	119.47
1	A	539	GLY	C-N-CA	5.28	125.59	119.47
1	A	499	SER	CA-C-N	5.07	125.08	120.21
1	A	499	SER	C-N-CA	5.07	125.08	120.21
1	A	83	GLU	N-CA-C	5.03	117.26	108.76

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	83	GLU	Peptide

5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	7562	0	7670	356	0
2	A	1	0	0	0	0
3	A	25	0	20	13	0
4	A	27	0	12	1	0
All	All	7615	0	7702	356	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 23.

All (356) 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:924:ARG:HH21	1:A:924:ARG:HB2	1.05	1.13
1:A:573:ARG:HH21	1:A:573:ARG:HG3	0.97	1.06
1:A:62:VAL:HG11	3:A:1001:CZA:H13	1.06	1.05
1:A:615:ARG:HG2	1:A:615:ARG:HH11	1.17	1.04
1:A:924:ARG:HB2	1:A:924:ARG:NH2	1.75	1.02
1:A:201:ASN:HD21	1:A:231:GLU:HG2	1.27	1.00
1:A:291:GLY:O	1:A:294:TYR:HD2	1.43	0.99
1:A:759:GLN:HA	1:A:759:GLN:NE2	1.72	0.98
1:A:62:VAL:HG11	3:A:1001:CZA:C1	1.96	0.96
1:A:575:GLU:HA	1:A:575:GLU:OE2	1.64	0.96
1:A:413:LEU:HD22	1:A:564:LEU:HD12	1.45	0.96
1:A:114:ASN:N	1:A:114:ASN:HD22	1.65	0.95
1:A:573:ARG:HH21	1:A:573:ARG:CG	1.80	0.94
1:A:573:ARG:HG3	1:A:573:ARG:NH2	1.78	0.93
1:A:114:ASN:HD22	1:A:114:ASN:H	1.17	0.92
1:A:47:LYS:HD3	1:A:47:LYS:C	1.96	0.88

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:328:LYS:HE2	1:A:328:LYS:HA	1.55	0.88
1:A:615:ARG:HG2	1:A:615:ARG:NH1	1.77	0.87
1:A:631:THR:O	1:A:635:ILE:HG12	1.74	0.87
1:A:502:LYS:HG3	1:A:503:SER:H	1.40	0.87
1:A:558:THR:HB	1:A:635:ILE:HD13	1.59	0.85
1:A:615:ARG:HH11	1:A:615:ARG:CG	1.90	0.84
1:A:291:GLY:O	1:A:294:TYR:CD2	2.31	0.83
1:A:759:GLN:HA	1:A:759:GLN:HE21	1.41	0.81
1:A:836:ARG:HH21	1:A:836:ARG:HB2	1.45	0.81
1:A:90:GLU:HG2	1:A:91:PRO:HD3	1.63	0.80
1:A:311:LEU:HB3	1:A:312:PRO:CD	2.11	0.79
1:A:744:VAL:O	1:A:747:VAL:HG12	1.83	0.78
1:A:62:VAL:CG1	3:A:1001:CZA:H13	2.02	0.78
1:A:201:ASN:ND2	1:A:231:GLU:HG2	1.98	0.76
1:A:491:ARG:HB2	1:A:585:MET:HG3	1.65	0.76
1:A:916:LEU:HD21	1:A:930:ASN:HB2	1.68	0.76
1:A:795:VAL:HA	1:A:799:THR:HB	1.66	0.75
1:A:567:ARG:HD3	1:A:570:PRO:HA	1.69	0.74
1:A:312:PRO:HG3	3:A:1001:CZA:H112	1.67	0.74
1:A:114:ASN:H	1:A:114:ASN:ND2	1.85	0.73
1:A:416:ILE:HD11	1:A:566:THR:HG22	1.70	0.73
1:A:836:ARG:HH21	1:A:836:ARG:CB	2.01	0.72
1:A:978:ILE:O	1:A:982:GLU:HG2	1.89	0.72
1:A:902:SER:HA	1:A:944:HIS:HE1	1.54	0.72
1:A:47:LYS:O	1:A:48:SER:HB3	1.88	0.71
1:A:518:PRO:HB3	1:A:549:ILE:HD13	1.72	0.71
1:A:75:LEU:HD22	1:A:293:ILE:HG23	1.70	0.71
1:A:550:LYS:O	1:A:554:THR:HG22	1.90	0.71
1:A:489:ARG:NH1	1:A:489:ARG:HG3	2.04	0.71
1:A:235:ILE:HG23	1:A:709:PRO:HG3	1.73	0.70
1:A:507:ALA:C	1:A:509:GLY:H	1.98	0.70
1:A:692:GLN:C	1:A:694:TYR:H	1.99	0.70
1:A:413:LEU:CD2	1:A:564:LEU:HD12	2.21	0.70
1:A:201:ASN:HD21	1:A:231:GLU:CG	2.05	0.69
1:A:47:LYS:HD3	1:A:48:SER:N	2.07	0.69
1:A:357:THR:HG22	1:A:603:PRO:HA	1.74	0.69
1:A:389:TYR:HB3	1:A:425:LEU:HD21	1.75	0.69
1:A:574:GLU:O	1:A:574:GLU:HG2	1.91	0.69
1:A:175:VAL:HG12	1:A:212:THR:CG2	2.23	0.69
1:A:102:ALA:HA	3:A:1001:CZA:O1	1.92	0.69
1:A:720:MET:HE3	1:A:738:ASP:HB3	1.74	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:73:PHE:CE2	1:A:91:PRO:HB2	2.29	0.68
1:A:248:PRO:HD2	1:A:340:GLU:OE2	1.93	0.68
1:A:42:PRO:HG2	1:A:236:ARG:CZ	2.23	0.67
1:A:823:SER:OG	1:A:825:LYS:HG3	1.94	0.67
1:A:783:LEU:HB3	1:A:784:PRO:CD	2.25	0.67
1:A:669:ALA:O	1:A:673:ALA:HB2	1.96	0.66
1:A:902:SER:HA	1:A:944:HIS:CE1	2.31	0.65
1:A:880:HIS:N	1:A:881:PRO:HD2	2.11	0.65
1:A:102:ALA:HB2	3:A:1001:CZA:H11	1.78	0.65
1:A:180:LEU:HA	1:A:705:VAL:HG22	1.79	0.65
1:A:397:LYS:HB3	1:A:402:ILE:HG21	1.79	0.64
1:A:183:GLU:O	1:A:185:VAL:N	2.30	0.64
1:A:539:GLY:O	1:A:543:GLU:HG2	1.97	0.64
1:A:950:VAL:O	1:A:954:PRO:HD2	1.96	0.64
1:A:489:ARG:HG3	1:A:489:ARG:HH11	1.63	0.63
1:A:62:VAL:HG22	3:A:1001:CZA:H7	1.81	0.63
1:A:624:ILE:HD12	1:A:684:LYS:HE2	1.80	0.63
1:A:161:ALA:CA	1:A:210:SER:HB2	2.29	0.62
1:A:604:ARG:O	1:A:607:VAL:HG22	1.99	0.62
1:A:47:LYS:C	1:A:47:LYS:CD	2.69	0.62
1:A:390:ALA:C	1:A:392:GLU:H	2.08	0.62
1:A:759:GLN:NE2	1:A:759:GLN:CA	2.58	0.62
1:A:255:GLU:HA	1:A:258:GLU:CG	2.30	0.61
1:A:985:LYS:O	1:A:989:ARG:HB2	2.01	0.61
1:A:688:VAL:HG11	1:A:713:LYS:HB3	1.83	0.61
1:A:856:PHE:HZ	1:A:891:PHE:HA	1.65	0.61
1:A:33:LEU:HD11	1:A:38:HIS:CE1	2.36	0.61
1:A:975:LEU:N	1:A:976:PRO:HD2	2.15	0.61
1:A:344:CYS:SG	1:A:822:ARG:NH1	2.75	0.60
1:A:326:MET:HE3	1:A:333:VAL:HG21	1.84	0.60
1:A:380:ASN:HD21	1:A:397:LYS:HE3	1.67	0.60
1:A:49:LEU:HD12	1:A:50:TRP:CE3	2.38	0.59
1:A:255:GLU:HA	1:A:258:GLU:HG2	1.85	0.59
1:A:179:ILE:HG13	1:A:180:LEU:H	1.67	0.59
1:A:161:ALA:HA	1:A:210:SER:HB2	1.84	0.58
1:A:692:GLN:C	1:A:694:TYR:N	2.60	0.58
1:A:759:GLN:HE21	1:A:759:GLN:CA	2.16	0.58
1:A:175:VAL:HG12	1:A:212:THR:HG22	1.86	0.58
1:A:366:MET:CE	1:A:448:LEU:HD11	2.33	0.58
1:A:735:LEU:HD13	1:A:739:ASN:O	2.03	0.58
1:A:952:PRO:O	1:A:956:ILE:HG13	2.04	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:880:HIS:H	1:A:881:PRO:HD2	1.66	0.58
1:A:174:ARG:HB2	1:A:216:ALA:HB3	1.86	0.58
1:A:924:ARG:HH21	1:A:924:ARG:CB	1.97	0.58
1:A:762:ARG:HH11	1:A:833:LEU:HD21	1.69	0.57
1:A:843:TYR:OH	1:A:976:PRO:HG2	2.03	0.57
1:A:22:THR:OG1	1:A:23:GLY:N	2.36	0.57
1:A:311:LEU:HB3	1:A:312:PRO:HD3	1.86	0.57
1:A:788:ILE:HB	1:A:789:PRO:HD2	1.87	0.57
1:A:483:PHE:CE2	1:A:578:LEU:HD21	2.39	0.57
1:A:303:ALA:O	1:A:307:ILE:HG12	2.05	0.56
1:A:201:ASN:HA	1:A:204:LYS:HD2	1.87	0.56
1:A:248:PRO:HB2	1:A:822:ARG:HH22	1.71	0.56
1:A:417:CYS:SG	1:A:445:LEU:HG	2.45	0.56
1:A:757:MET:HA	1:A:760:PHE:CE2	2.40	0.56
1:A:974:SER:C	1:A:976:PRO:HD2	2.30	0.56
1:A:502:LYS:HG3	1:A:503:SER:N	2.17	0.56
1:A:24:LEU:HD12	1:A:149:ASP:HB3	1.88	0.55
1:A:76:ALA:HB3	1:A:88:PHE:CZ	2.42	0.55
1:A:326:MET:CE	1:A:333:VAL:HG21	2.37	0.55
1:A:479:MET:HE3	1:A:498:CYS:HB3	1.88	0.55
1:A:539:GLY:N	1:A:540:PRO:HD2	2.21	0.55
1:A:71:ILE:O	1:A:75:LEU:HG	2.06	0.55
1:A:561:CYS:C	1:A:562:LEU:HD12	2.31	0.55
1:A:739:ASN:HD22	1:A:741:SER:H	1.53	0.55
1:A:921:SER:HB2	1:A:989:ARG:HH22	1.72	0.55
1:A:49:LEU:HD12	1:A:50:TRP:HE3	1.72	0.55
1:A:73:PHE:HE2	1:A:91:PRO:HB2	1.72	0.55
1:A:346:SER:OG	1:A:696:GLU:HG2	2.07	0.55
1:A:487:PHE:HA	1:A:493:SER:O	2.07	0.55
1:A:355:THR:HG22	1:A:740:PHE:HB2	1.88	0.54
1:A:534:ARG:HG2	1:A:535:VAL:N	2.21	0.54
1:A:325:ARG:HD2	1:A:749:GLU:OE2	2.08	0.54
1:A:672:ARG:HB2	1:A:672:ARG:CZ	2.37	0.54
1:A:856:PHE:CZ	1:A:891:PHE:HA	2.42	0.54
1:A:925:MET:HA	1:A:925:MET:HE3	1.89	0.54
1:A:338:SER:HA	1:A:341:THR:CG2	2.37	0.54
1:A:762:ARG:NH1	1:A:833:LEU:HD21	2.22	0.54
1:A:918:GLU:HG2	1:A:919:ASN:HD22	1.72	0.54
1:A:175:VAL:HG12	1:A:212:THR:HG21	1.89	0.54
1:A:83:GLU:HB3	1:A:85:ILE:HG13	1.89	0.54
1:A:575:GLU:OE2	1:A:575:GLU:CA	2.46	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:175:VAL:HG21	1:A:189:LYS:HE3	1.90	0.53
1:A:294:TYR:CG	1:A:295:TYR:N	2.75	0.53
1:A:168:ILE:CG2	1:A:173:LEU:HB2	2.39	0.53
1:A:507:ALA:C	1:A:509:GLY:N	2.67	0.53
1:A:880:HIS:N	1:A:881:PRO:CD	2.73	0.52
1:A:986:PHE:HD1	1:A:989:ARG:CZ	2.22	0.52
1:A:73:PHE:CD2	1:A:91:PRO:HB2	2.44	0.52
1:A:916:LEU:HD21	1:A:930:ASN:CB	2.37	0.52
1:A:6:SER:HA	1:A:194:VAL:O	2.08	0.52
1:A:124:PRO:HB3	1:A:158:LYS:HD2	1.90	0.52
1:A:311:LEU:HB3	1:A:312:PRO:HD2	1.90	0.52
1:A:319:LEU:HG	1:A:339:VAL:HG21	1.92	0.52
1:A:671:ARG:HD2	1:A:694:TYR:CE1	2.44	0.52
1:A:836:ARG:CB	1:A:836:ARG:NH2	2.72	0.52
1:A:130:TYR:CZ	1:A:137:VAL:HB	2.44	0.52
1:A:648:VAL:HA	1:A:651:ARG:HG3	1.92	0.52
1:A:312:PRO:CG	3:A:1001:CZA:H112	2.38	0.51
1:A:795:VAL:HA	1:A:799:THR:CB	2.38	0.51
1:A:235:ILE:O	1:A:239:MET:HG3	2.11	0.51
1:A:65:LEU:HD12	3:A:1001:CZA:C10	2.41	0.51
1:A:507:ALA:O	1:A:509:GLY:N	2.42	0.51
1:A:214:ILE:HG22	1:A:216:ALA:O	2.11	0.51
1:A:528:VAL:HG21	1:A:541:VAL:HG11	1.91	0.51
1:A:558:THR:HB	1:A:635:ILE:CD1	2.38	0.51
1:A:832:TRP:CD1	1:A:836:ARG:HH22	2.28	0.51
1:A:758:LYS:HG2	1:A:762:ARG:CZ	2.41	0.51
1:A:808:GLY:C	1:A:809:PHE:HD2	2.19	0.51
1:A:757:MET:HG2	1:A:760:PHE:CE2	2.46	0.51
1:A:576:MET:HE3	1:A:587:TYR:HB3	1.93	0.51
1:A:865:VAL:HB	1:A:868:HIS:HB2	1.91	0.51
1:A:895:GLU:N	1:A:896:PRO:HD2	2.25	0.51
1:A:800:ASP:C	1:A:803:PRO:HD2	2.36	0.50
1:A:836:ARG:O	1:A:840:ILE:HG12	2.11	0.50
1:A:170:SER:OG	1:A:218:LYS:N	2.42	0.50
1:A:361:MET:HA	1:A:600:LEU:O	2.12	0.50
1:A:47:LYS:O	1:A:48:SER:CB	2.57	0.50
1:A:783:LEU:HB3	1:A:784:PRO:HD2	1.93	0.50
1:A:855:TRP:HA	1:A:859:ALA:HB2	1.93	0.50
1:A:708:ALA:N	1:A:709:PRO:CD	2.74	0.50
1:A:345:THR:HB	1:A:747:VAL:CG2	2.41	0.50
1:A:928:TRP:HA	1:A:934:LEU:HD11	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:179:ILE:HG13	1:A:180:LEU:N	2.27	0.49
1:A:799:THR:HG21	1:A:905:VAL:HG22	1.93	0.49
1:A:688:VAL:HG23	1:A:700:MET:CE	2.42	0.49
1:A:357:THR:HG22	1:A:603:PRO:CA	2.42	0.49
1:A:913:LEU:HD22	1:A:927:PRO:HB3	1.94	0.49
1:A:868:HIS:O	1:A:869:GLN:C	2.56	0.49
1:A:905:VAL:O	1:A:909:MET:HG2	2.13	0.49
1:A:975:LEU:C	1:A:975:LEU:HD23	2.38	0.49
1:A:757:MET:HG2	1:A:760:PHE:HE2	1.78	0.48
1:A:899:MET:O	1:A:903:VAL:HG23	2.14	0.48
1:A:16:PHE:CD2	1:A:222:ILE:HD11	2.48	0.48
1:A:377:CYS:SG	1:A:541:VAL:HA	2.53	0.48
1:A:428:ASN:HB2	1:A:435:GLU:HG2	1.95	0.48
1:A:562:LEU:HD13	1:A:599:MET:HE3	1.95	0.48
1:A:563:ALA:O	1:A:564:LEU:HD23	2.13	0.48
1:A:161:ALA:C	1:A:210:SER:HB2	2.38	0.48
1:A:164:ARG:NH2	1:A:191:THR:O	2.45	0.48
1:A:491:ARG:CB	1:A:585:MET:HG3	2.40	0.48
1:A:65:LEU:HD11	1:A:307:ILE:HG21	1.96	0.48
1:A:467:ARG:HA	1:A:470:ALA:HB2	1.94	0.48
1:A:310:GLY:O	1:A:311:LEU:C	2.57	0.47
1:A:84:THR:HG23	1:A:84:THR:O	2.14	0.47
1:A:856:PHE:HE1	1:A:896:PRO:HG3	1.79	0.47
1:A:922:LEU:HD22	1:A:927:PRO:HG3	1.97	0.47
1:A:319:LEU:HG	1:A:339:VAL:CG2	2.44	0.47
1:A:950:VAL:HG12	1:A:952:PRO:HD2	1.96	0.47
1:A:427:PHE:CD2	1:A:464:LYS:HB3	2.49	0.47
1:A:457:THR:O	1:A:459:VAL:HG13	2.14	0.47
1:A:488:SER:C	1:A:490:ASP:N	2.71	0.47
1:A:518:PRO:O	1:A:522:ILE:HG13	2.15	0.47
1:A:775:ILE:HA	1:A:778:THR:HG22	1.96	0.47
1:A:921:SER:HB3	1:A:924:ARG:NH2	2.29	0.47
1:A:19:SER:HB3	1:A:22:THR:OG1	2.15	0.47
1:A:767:SER:O	1:A:771:GLU:HG3	2.14	0.47
1:A:294:TYR:C	1:A:296:PHE:H	2.23	0.47
1:A:114:ASN:N	1:A:114:ASN:ND2	2.36	0.47
1:A:489:ARG:O	1:A:492:LYS:HD2	2.15	0.47
1:A:672:ARG:NH1	1:A:672:ARG:CB	2.78	0.47
1:A:809:PHE:HD2	1:A:809:PHE:N	2.13	0.47
1:A:679:VAL:HG22	1:A:683:HIS:CG	2.51	0.46
1:A:175:VAL:HG12	1:A:176:ASP:H	1.81	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:294:TYR:O	1:A:296:PHE:N	2.48	0.46
1:A:175:VAL:CG1	1:A:212:THR:HG21	2.46	0.46
1:A:921:SER:HB3	1:A:924:ARG:HH22	1.81	0.46
1:A:545:ILE:O	1:A:549:ILE:HG13	2.16	0.46
1:A:720:MET:HE3	1:A:738:ASP:CB	2.45	0.46
1:A:105:GLY:C	1:A:109:GLU:HB2	2.40	0.46
1:A:41:LEU:HD23	1:A:236:ARG:HG3	1.98	0.46
1:A:177:GLN:H	1:A:177:GLN:HG2	1.65	0.46
1:A:338:SER:O	1:A:342:LEU:HB2	2.16	0.46
1:A:526:ASN:HD22	1:A:590:ASP:HA	1.80	0.46
1:A:383:SER:C	1:A:384:ILE:HD13	2.40	0.46
1:A:809:PHE:N	1:A:809:PHE:CD2	2.83	0.46
1:A:78:PHE:CG	1:A:79:GLU:N	2.83	0.46
1:A:679:VAL:HG22	1:A:683:HIS:ND1	2.30	0.46
1:A:101:ASN:OD1	3:A:1001:CZA:H111	2.16	0.46
1:A:345:THR:HA	1:A:697:ILE:HG22	1.97	0.46
1:A:436:LYS:HB2	1:A:443:THR:HG21	1.98	0.45
1:A:835:PHE:CD2	1:A:838:MET:HE3	2.51	0.45
1:A:688:VAL:HG23	1:A:700:MET:HE3	1.99	0.45
1:A:248:PRO:CB	1:A:822:ARG:HH12	2.29	0.45
1:A:969:MET:HA	1:A:969:MET:HE3	1.98	0.45
1:A:42:PRO:O	1:A:120:LYS:NZ	2.49	0.45
1:A:115:ALA:HB2	1:A:730:ALA:HA	1.98	0.45
1:A:212:THR:HG22	1:A:213:ASN:N	2.31	0.45
1:A:600:LEU:HG	1:A:601:ASP:N	2.31	0.45
1:A:329:LYS:O	1:A:330:ASN:HB2	2.17	0.45
1:A:489:ARG:HH11	1:A:489:ARG:CG	2.25	0.45
1:A:917:SER:OG	1:A:920:GLN:HB2	2.17	0.45
1:A:502:LYS:CG	1:A:503:SER:H	2.19	0.44
1:A:33:LEU:O	1:A:33:LEU:HD23	2.17	0.44
1:A:183:GLU:O	1:A:184:SER:C	2.61	0.44
1:A:428:ASN:HB2	1:A:435:GLU:CG	2.47	0.44
1:A:518:PRO:HA	1:A:563:ALA:HB2	1.99	0.44
1:A:519:GLU:OE1	1:A:519:GLU:HA	2.18	0.44
1:A:851:ALA:HB2	1:A:973:ILE:HG21	1.99	0.44
1:A:309:GLU:HA	3:A:1001:CZA:H113	1.98	0.44
1:A:388:THR:HG23	1:A:390:ALA:H	1.83	0.44
1:A:869:GLN:HB3	1:A:872:HIS:HB2	1.98	0.44
1:A:175:VAL:CG1	1:A:212:THR:CG2	2.95	0.44
1:A:390:ALA:C	1:A:392:GLU:N	2.73	0.44
1:A:255:GLU:HA	1:A:258:GLU:HG3	1.97	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:366:MET:HE1	1:A:448:LEU:HD11	1.98	0.44
1:A:612:GLN:HA	1:A:615:ARG:HD2	1.99	0.44
1:A:625:THR:OG1	1:A:626:GLY:N	2.50	0.44
1:A:880:HIS:ND1	1:A:881:PRO:HD3	2.33	0.44
1:A:161:ALA:HB1	1:A:226:THR:HG22	2.00	0.44
1:A:602:PRO:HA	1:A:603:PRO:HD3	1.88	0.44
1:A:71:ILE:HA	1:A:74:VAL:HG12	1.99	0.44
1:A:612:GLN:O	1:A:615:ARG:HB2	2.18	0.44
1:A:707:ASP:O	1:A:711:LEU:HG	2.18	0.43
1:A:492:LYS:NZ	4:A:1002:ADP:H2	2.16	0.43
1:A:953:LEU:HB2	1:A:954:PRO:CD	2.47	0.43
1:A:987:ILE:C	1:A:989:ARG:N	2.72	0.43
1:A:412:GLU:OE1	1:A:594:VAL:HG21	2.18	0.43
1:A:336:LEU:HB2	1:A:337:PRO:HD3	2.00	0.43
1:A:672:ARG:HB2	1:A:672:ARG:NH1	2.32	0.43
1:A:783:LEU:CB	1:A:784:PRO:CD	2.95	0.43
1:A:833:LEU:HD12	1:A:836:ARG:HG2	2.00	0.43
1:A:988:ALA:HA	1:A:992:LEU:HB2	2.01	0.43
1:A:65:LEU:HD12	3:A:1001:CZA:H103	2.00	0.43
1:A:692:GLN:O	1:A:694:TYR:N	2.51	0.43
1:A:24:LEU:HG	1:A:149:ASP:HA	2.01	0.43
1:A:51:GLU:O	1:A:55:GLU:HG3	2.19	0.43
1:A:357:THR:HB	1:A:602:PRO:O	2.19	0.43
1:A:104:VAL:O	1:A:104:VAL:CG1	2.66	0.43
1:A:388:THR:HG23	1:A:390:ALA:HB3	2.01	0.43
1:A:361:MET:HE2	1:A:361:MET:HB2	1.74	0.42
1:A:754:TYR:CD2	1:A:754:TYR:C	2.96	0.42
1:A:380:ASN:HD21	1:A:397:LYS:CE	2.32	0.42
1:A:617:ALA:HB2	1:A:817:MET:HE3	2.01	0.42
1:A:822:ARG:O	1:A:822:ARG:HD3	2.19	0.42
1:A:109:GLU:O	1:A:111:ASN:ND2	2.52	0.42
1:A:629:LYS:HB2	1:A:654:THR:CG2	2.49	0.42
1:A:573:ARG:CG	1:A:573:ARG:NH2	2.49	0.42
1:A:442:GLU:O	1:A:445:LEU:HB2	2.20	0.42
1:A:458:GLU:OE2	1:A:460:ARG:HG2	2.20	0.42
1:A:85:ILE:HD12	1:A:85:ILE:H	1.84	0.42
1:A:122:TYR:CE1	1:A:179:ILE:HG22	2.54	0.42
1:A:558:THR:CB	1:A:635:ILE:HD13	2.37	0.42
1:A:379:LEU:HG	1:A:544:LYS:HD3	2.01	0.42
1:A:672:ARG:HH11	1:A:672:ARG:HB3	1.84	0.42
1:A:506:ALA:O	1:A:507:ALA:HB2	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:312:PRO:HG3	3:A:1001:CZA:C11	2.43	0.42
1:A:333:VAL:HG22	1:A:733:MET:HG3	2.02	0.42
1:A:348:ILE:HG12	1:A:699:ALA:HB3	2.02	0.42
1:A:416:ILE:HD11	1:A:566:THR:CG2	2.46	0.42
1:A:826:GLU:HA	1:A:827:PRO:HD3	1.81	0.42
1:A:105:GLY:HA2	1:A:109:GLU:HG3	2.02	0.41
1:A:357:THR:HA	1:A:603:PRO:HA	2.02	0.41
1:A:601:ASP:HA	1:A:602:PRO:HD2	1.85	0.41
1:A:802:LEU:N	1:A:803:PRO:CD	2.83	0.41
1:A:987:ILE:C	1:A:989:ARG:H	2.27	0.41
1:A:137:VAL:HG22	1:A:137:VAL:O	2.19	0.41
1:A:835:PHE:HD2	1:A:838:MET:HE3	1.86	0.41
1:A:88:PHE:HD2	1:A:88:PHE:HA	1.69	0.41
1:A:124:PRO:HG3	1:A:160:PRO:HA	2.02	0.41
1:A:337:PRO:C	1:A:339:VAL:N	2.78	0.41
1:A:491:ARG:HG3	1:A:493:SER:OG	2.20	0.41
1:A:680:GLU:HG3	1:A:681:PRO:HD2	2.01	0.41
1:A:141:LYS:O	1:A:142:ALA:C	2.63	0.41
1:A:168:ILE:HG21	1:A:173:LEU:HB2	2.02	0.41
1:A:773:VAL:HG12	1:A:845:GLY:HA3	2.02	0.41
1:A:604:ARG:HG3	1:A:604:ARG:HH11	1.84	0.41
1:A:619:ILE:HD13	1:A:619:ILE:C	2.45	0.41
1:A:656:ARG:HA	1:A:656:ARG:HD2	1.91	0.41
1:A:748:GLU:O	1:A:751:ARG:HB2	2.20	0.41
1:A:800:ASP:OD1	1:A:908:GLU:HG3	2.20	0.41
1:A:825:LYS:HB2	1:A:825:LYS:HE2	1.86	0.41
1:A:926:PRO:O	1:A:929:VAL:HG23	2.21	0.41
1:A:832:TRP:CD1	1:A:988:ALA:HB2	2.55	0.41
1:A:924:ARG:NH2	1:A:989:ARG:HH12	2.19	0.41
1:A:926:PRO:HA	1:A:927:PRO:HD3	1.86	0.41
1:A:76:ALA:HB1	1:A:77:TRP:CE3	2.56	0.41
1:A:252:LYS:HA	1:A:255:GLU:HG2	2.03	0.41
1:A:488:SER:C	1:A:490:ASP:H	2.29	0.41
1:A:628:ASN:O	1:A:629:LYS:C	2.64	0.41
1:A:813:ASP:HB3	1:A:815:ASP:OD1	2.20	0.41
1:A:306:ALA:HA	1:A:768:ASN:HB3	2.03	0.41
1:A:488:SER:O	1:A:490:ASP:N	2.54	0.41
1:A:133:ASP:O	1:A:134:ARG:HD3	2.21	0.41
1:A:907:ILE:HG23	1:A:977:VAL:HG11	2.03	0.40
1:A:166:LEU:HG	1:A:221:GLY:HA2	2.03	0.40
1:A:175:VAL:O	1:A:186:SER:HB2	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:671:ARG:HD2	1:A:694:TYR:CZ	2.57	0.40
1:A:737:ASP:O	1:A:738:ASP:HB2	2.21	0.40
1:A:85:ILE:HD12	1:A:85:ILE:N	2.36	0.40
1:A:363:VAL:HG12	1:A:384:ILE:HG13	2.04	0.40
1:A:470:ALA:O	1:A:473:SER:HB2	2.21	0.40
1:A:473:SER:O	1:A:477:GLN:HG2	2.21	0.40
1:A:691:LEU:HD23	1:A:698:THR:HG21	2.03	0.40
1:A:150:ILE:CG2	1:A:220:LEU:HD11	2.51	0.40
1:A:294:TYR:C	1:A:296:PHE:N	2.79	0.40
1:A:518:PRO:O	1:A:519:GLU:C	2.65	0.40
1:A:607:VAL:O	1:A:608:MET:C	2.64	0.40
1:A:651:ARG:HG3	1:A:651:ARG:HH21	1.87	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	974/994 (98%)	856 (88%)	99 (10%)	19 (2%)	6	25

All (19) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	48	SER
1	A	85	ILE
1	A	184	SER
1	A	295	TYR
1	A	508	VAL
1	A	76	ALA
1	A	482	GLU
1	A	503	SER
1	A	648	VAL

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Mol	Chain	Res	Type
1	A	693	SER
1	A	311	LEU
1	A	916	LEU
1	A	49	LEU
1	A	86	THR
1	A	294	TYR
1	A	391	PRO
1	A	863	PRO
1	A	789	PRO
1	A	106	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	828/840 (99%)	735 (89%)	93 (11%)	6 21

All (93) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	9	THR
1	A	34	GLU
1	A	44	GLU
1	A	45	GLU
1	A	47	LYS
1	A	49	LEU
1	A	50	TRP
1	A	51	GLU
1	A	61	LEU
1	A	62	VAL
1	A	85	ILE
1	A	88	PHE
1	A	101	ASN
1	A	103	ILE
1	A	114	ASN
1	A	151	VAL

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Mol	Chain	Res	Type
1	A	158	LYS
1	A	168	ILE
1	A	171	THR
1	A	175	VAL
1	A	177	GLN
1	A	188	ILE
1	A	202	GLN
1	A	205	LYS
1	A	228	VAL
1	A	243	GLU
1	A	258	GLU
1	A	302	LEU
1	A	340	GLU
1	A	341	THR
1	A	344	CYS
1	A	353	THR
1	A	359	ASN
1	A	360	GLN
1	A	371	LYS
1	A	380	ASN
1	A	384	ILE
1	A	396	LEU
1	A	399	ASP
1	A	402	ILE
1	A	431	LYS
1	A	441	THR
1	A	445	LEU
1	A	458	GLU
1	A	467	ARG
1	A	484	THR
1	A	486	GLU
1	A	490	ASP
1	A	519	GLU
1	A	523	ASP
1	A	528	VAL
1	A	534	ARG
1	A	538	THR
1	A	544	LYS
1	A	547	SER
1	A	566	THR
1	A	573	ARG
1	A	575	GLU

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Mol	Chain	Res	Type
1	A	594	VAL
1	A	604	ARG
1	A	612	GLN
1	A	613	LEU
1	A	615	ARG
1	A	619	ILE
1	A	624	ILE
1	A	628	ASN
1	A	635	ILE
1	A	638	ARG
1	A	668	GLU
1	A	679	VAL
1	A	691	LEU
1	A	713	LYS
1	A	724	THR
1	A	732	GLU
1	A	739	ASN
1	A	759	GLN
1	A	767	SER
1	A	788	ILE
1	A	816	ILE
1	A	819	ARG
1	A	822	ARG
1	A	825	LYS
1	A	836	ARG
1	A	838	MET
1	A	849	VAL
1	A	880	HIS
1	A	923	MET
1	A	924	ARG
1	A	925	MET
1	A	958	LYS
1	A	960	LYS
1	A	981	ASP
1	A	991	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (21) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	111	ASN
1	A	114	ASN
1	A	138	GLN

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Mol	Chain	Res	Type
1	A	190	HIS
1	A	201	ASN
1	A	202	GLN
1	A	213	ASN
1	A	275	ASN
1	A	359	ASN
1	A	380	ASN
1	A	398	ASN
1	A	456	ASN
1	A	472	ASN
1	A	526	ASN
1	A	628	ASN
1	A	739	ASN
1	A	759	GLN
1	A	914	ASN
1	A	919	ASN
1	A	930	ASN
1	A	944	HIS

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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 3 ligands modelled in this entry, 1 is 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	CZA	A	1001	-	28,29,29	2.25	6 (21%)	29,48,48	4.40	10 (34%)
4	ADP	A	1002	2	28,29,29	1.40	4 (14%)	43,45,45	1.97	8 (18%)

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	CZA	A	1001	-	-	4/4/52/52	0/5/5/5
4	ADP	A	1002	2	-	1/16/32/32	0/3/3/3

All (10) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	1001	CZA	O3-C4	5.80	1.48	1.31
3	A	1001	CZA	C4-N1	-4.97	1.34	1.39
3	A	1001	CZA	C14-C15	-4.42	1.36	1.43
3	A	1001	CZA	C3-C4	4.35	1.48	1.40
3	A	1001	CZA	O2-C6	4.26	1.29	1.22
4	A	1002	ADP	C5-C4	4.21	1.46	1.39
4	A	1002	ADP	C5-N7	-2.80	1.34	1.39
4	A	1002	ADP	C5-C6	2.59	1.48	1.41
3	A	1001	CZA	C7-C15	-2.54	1.48	1.51
4	A	1002	ADP	C8-N7	2.12	1.35	1.31

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	1001	CZA	C6-C5-N1	-15.01	92.52	103.20
3	A	1001	CZA	C5-N1-C4	11.46	122.57	111.71
3	A	1001	CZA	C14-C15-C16	8.69	112.51	106.31
3	A	1001	CZA	C15-C16-N2	-8.41	103.49	110.31
4	A	1002	ADP	C5-C4-N3	-6.76	117.40	126.72
4	A	1002	ADP	N3-C4-N9	5.27	136.14	127.17
4	A	1002	ADP	C4-C5-N7	-3.91	106.11	110.58
4	A	1002	ADP	C2-N3-C4	3.77	121.05	111.83
3	A	1001	CZA	O2-C6-C3	-3.35	120.59	128.42

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	1002	ADP	C5-N7-C8	3.17	108.43	103.45
3	A	1001	CZA	C13-C14-C15	2.64	130.98	127.29
4	A	1002	ADP	N3-C2-N1	-2.57	124.69	128.58
4	A	1002	ADP	C4-N9-C8	2.52	108.38	105.74
4	A	1002	ADP	N9-C8-N7	-2.34	110.62	113.94
3	A	1001	CZA	C17-N2-C16	2.23	111.06	109.08
3	A	1001	CZA	C18-C17-N2	2.22	134.29	130.74
3	A	1001	CZA	C7-C5-C6	2.21	125.47	117.84
3	A	1001	CZA	C17-C14-C15	-2.10	105.21	107.59

There are no chirality outliers.

All (5) torsion outliers are listed below:

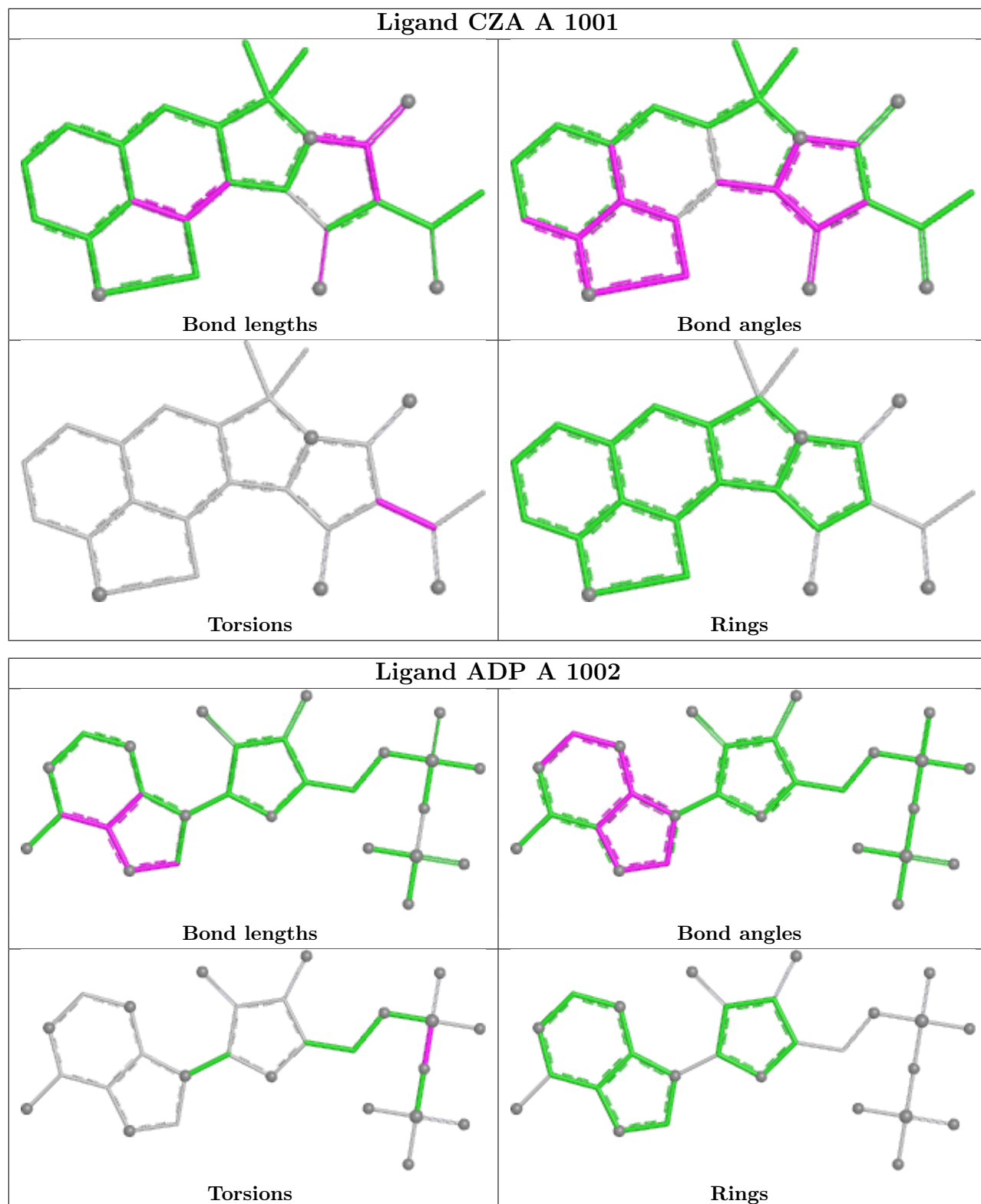
Mol	Chain	Res	Type	Atoms
3	A	1001	CZA	C1-C2-C3-C6
3	A	1001	CZA	O1-C2-C3-C4
3	A	1001	CZA	C1-C2-C3-C4
4	A	1002	ADP	PB-O3A-PA-O5'
3	A	1001	CZA	O1-C2-C3-C6

There are no ring outliers.

2 monomers are involved in 14 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	1001	CZA	13	0
4	A	1002	ADP	1	0

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



5.7 Other polymers ⓘ

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	980/994 (98%)	0.35	50 (5%) 33 25	66, 112, 175, 204	0

All (50) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	865	VAL	5.8
1	A	333	VAL	5.5
1	A	782	GLY	4.9
1	A	498	CYS	4.7
1	A	733	MET	4.3
1	A	863	PRO	4.1
1	A	341	THR	3.9
1	A	871	THR	3.6
1	A	790	VAL	3.6
1	A	263	VAL	3.5
1	A	864	GLY	3.3
1	A	789	PRO	3.3
1	A	957	PHE	3.2
1	A	2	GLU	3.1
1	A	587	TYR	3.1
1	A	866	THR	3.1
1	A	868	HIS	3.0
1	A	987	ILE	3.0
1	A	791	GLN	2.9
1	A	786	ALA	2.9
1	A	857	MET	2.8
1	A	122	TYR	2.8
1	A	870	LEU	2.8
1	A	580	ASP	2.7
1	A	308	PRO	2.7
1	A	986	PHE	2.7
1	A	46	GLY	2.7

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Mol	Chain	Res	Type	RSRZ
1	A	829	ILE	2.7
1	A	934	LEU	2.6
1	A	479	MET	2.6
1	A	792	LEU	2.6
1	A	882	HIS	2.5
1	A	576	MET	2.5
1	A	765	ILE	2.4
1	A	779	ALA	2.4
1	A	441	THR	2.4
1	A	890	ILE	2.4
1	A	956	ILE	2.4
1	A	701	THR	2.4
1	A	289	ILE	2.3
1	A	787	LEU	2.3
1	A	443	THR	2.3
1	A	904	LEU	2.2
1	A	417	CYS	2.2
1	A	927	PRO	2.2
1	A	258	GLU	2.1
1	A	853	ALA	2.1
1	A	856	PHE	2.1
1	A	891	PHE	2.1
1	A	467	ARG	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

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

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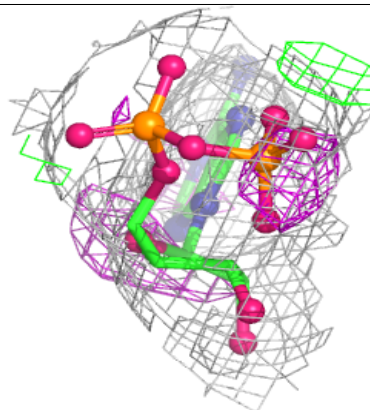
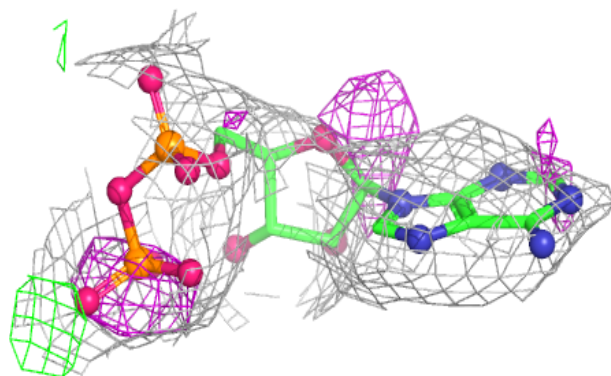
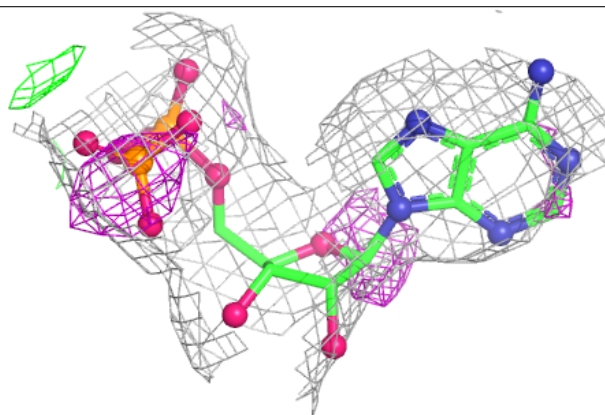
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
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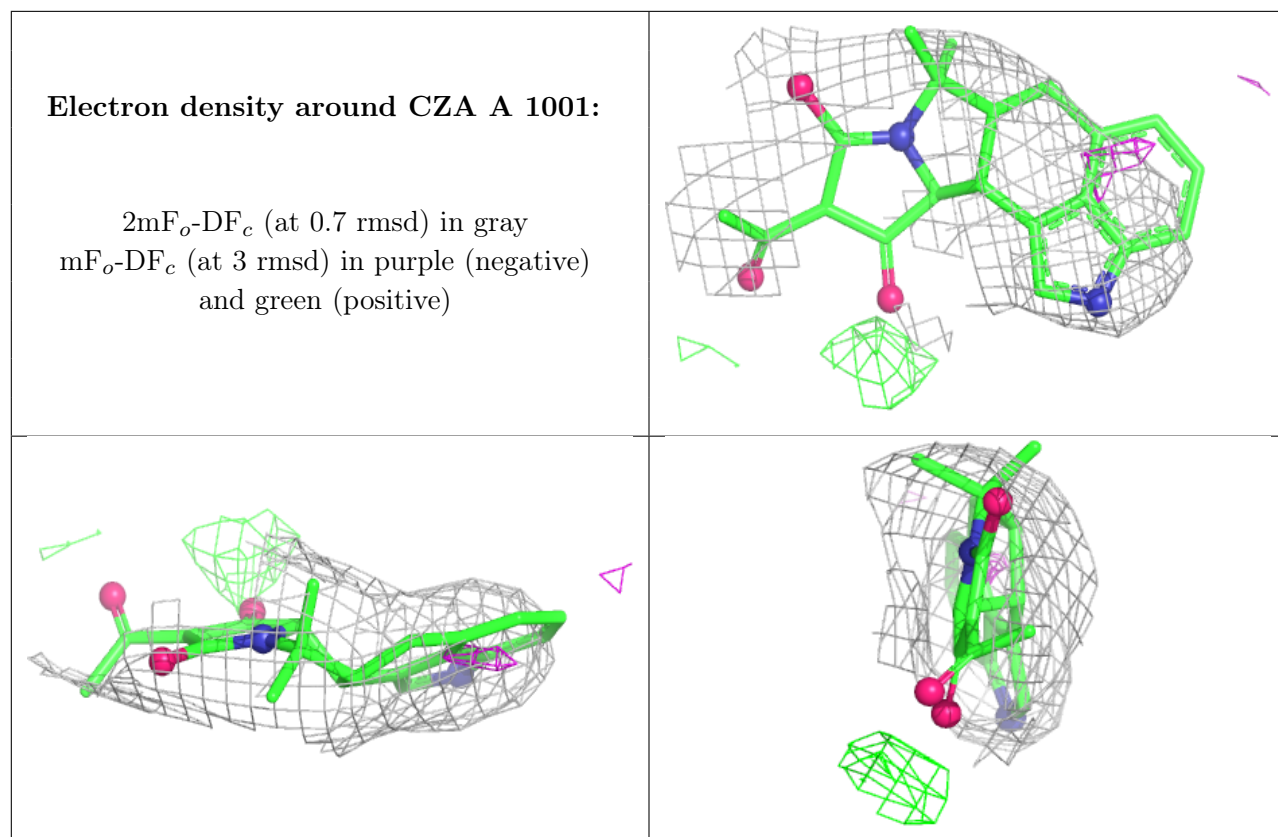
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
4	ADP	A	1002	27/27	0.79	0.13	91,98,117,118	0
3	CZA	A	1001	25/25	0.80	0.13	110,110,113,115	0
2	MG	A	995	1/1	0.89	0.30	68,68,68,68	0

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 1002:

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.