



# Full wwPDB X-ray Structure Validation Report ⓘ

Oct 5, 2021 – 10:13 AM EDT

PDB ID : 3GT8  
Title : Crystal structure of the inactive EGFR kinase domain in complex with AMP-PNP  
Authors : Jura, N.; Endres, N.F.; Engel, K.; Deindl, S.; Das, R.; Lamers, M.H.; Wemmer, D.E.; Zhang, X.; Kuriyan, J.  
Deposited on : 2009-03-27  
Resolution : 2.96 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](mailto: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.

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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 : 2.23.2  
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) : 2.23.2

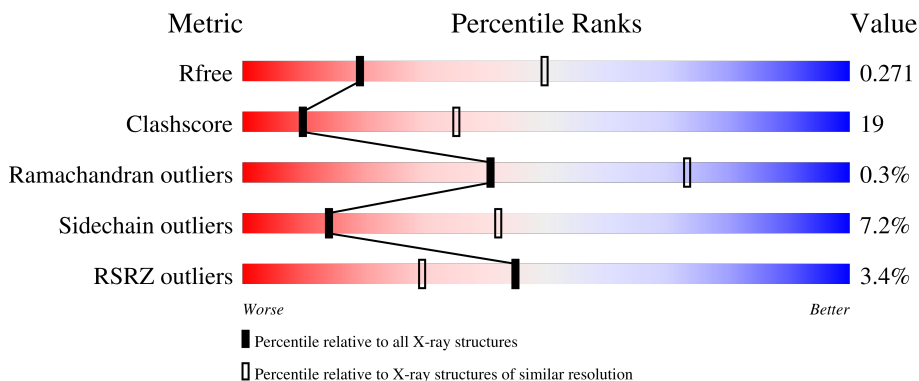
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.96 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	3104 (3.00-2.92)
Clashscore	141614	3462 (3.00-2.92)
Ramachandran outliers	138981	3340 (3.00-2.92)
Sidechain outliers	138945	3343 (3.00-2.92)
RSRZ outliers	127900	2986 (3.00-2.92)

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  $\geq 3$ , 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	330	 4% 51% 35% 5% 9%
1	B	330	 2% 59% 27% 12%
1	C	330	 2% 57% 29% 10%
1	D	330	 4% 55% 31% 11%
2	X	11	 91% 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:

<b>Mol</b>	<b>Type</b>	<b>Chain</b>	<b>Res</b>	<b>Chirality</b>	<b>Geometry</b>	<b>Clashes</b>	<b>Electron density</b>
3	ANP	A	2	-	-	X	-
3	ANP	D	4	-	-	X	-

## 2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 9760 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 Epidermal growth factor receptor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	B	292	2356	1514	401	423	18	0	0	0
1	A	300	2415	1547	410	440	18	0	0	0
1	C	296	2386	1534	406	428	18	0	0	0
1	D	295	2379	1527	404	430	18	0	0	0

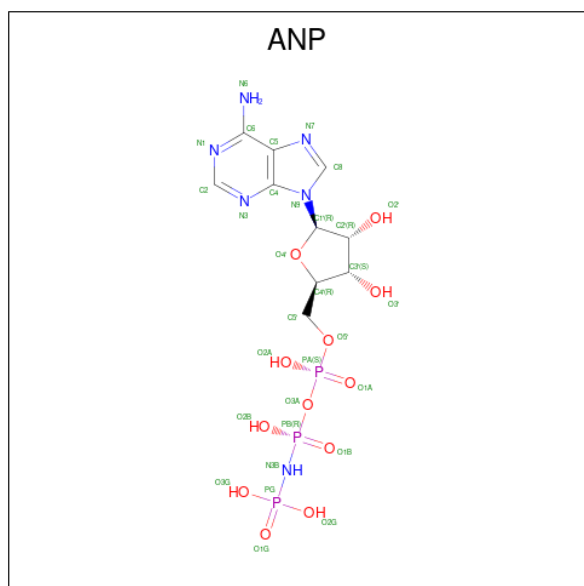
There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	669	GLY	-	expression tag	UNP P00533
B	670	ALA	-	expression tag	UNP P00533
B	671	MET	-	expression tag	UNP P00533
B	924	ARG	VAL	engineered mutation	UNP P00533
A	669	GLY	-	expression tag	UNP P00533
A	670	ALA	-	expression tag	UNP P00533
A	671	MET	-	expression tag	UNP P00533
A	924	ARG	VAL	engineered mutation	UNP P00533
C	669	GLY	-	expression tag	UNP P00533
C	670	ALA	-	expression tag	UNP P00533
C	671	MET	-	expression tag	UNP P00533
C	924	ARG	VAL	engineered mutation	UNP P00533
D	669	GLY	-	expression tag	UNP P00533
D	670	ALA	-	expression tag	UNP P00533
D	671	MET	-	expression tag	UNP P00533
D	924	ARG	VAL	engineered mutation	UNP P00533

- Molecule 2 is a protein called Unknown peptide.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
2	X	11	55	33	11	11	0	0	0

- Molecule 3 is PHOSPHOAMINOPHOSPHONIC ACID-ADENYLATE ESTER (three-letter code: ANP) (formula: C<sub>10</sub>H<sub>17</sub>N<sub>6</sub>O<sub>12</sub>P<sub>3</sub>).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
3	B	1	31	10	6	12	3	0	0
3	A	1	31	10	6	12	3	0	0
3	C	1	31	10	6	12	3	0	0
3	D	1	31	10	6	12	3	0	0

- Molecule 4 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Mg		
4	B	1	1	1	0	0
4	A	1	1	1	0	0
4	C	1	1	1	0	0
4	D	1	1	1	0	0

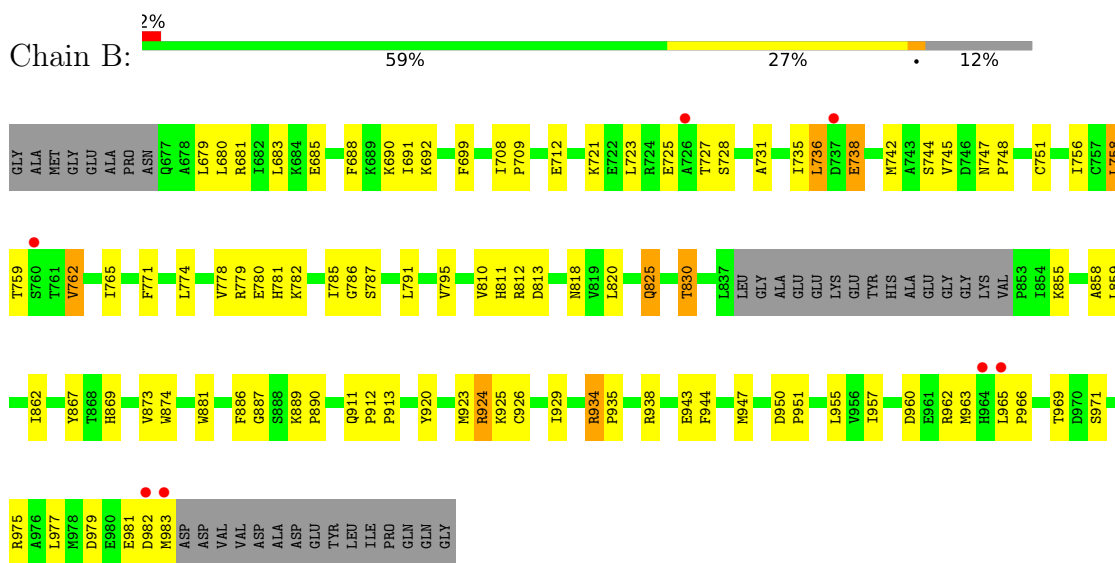
- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	B	19	Total O 19 19	0	0
5	A	11	Total O 11 11	0	0
5	C	7	Total O 7 7	0	0
5	D	4	Total O 4 4	0	0

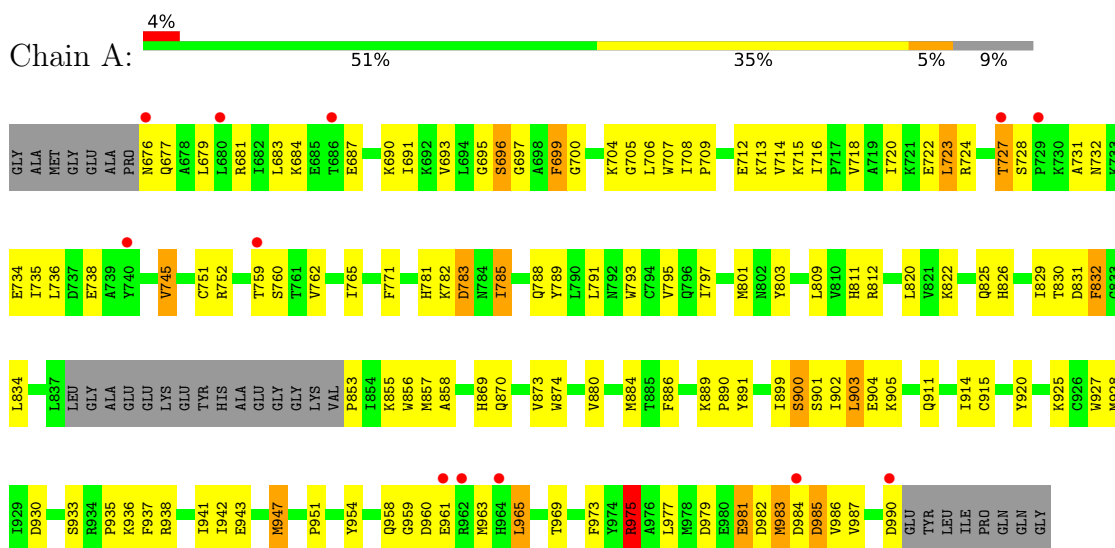
### 3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ( $RSRZ > 2$ ). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: Epidermal growth factor receptor

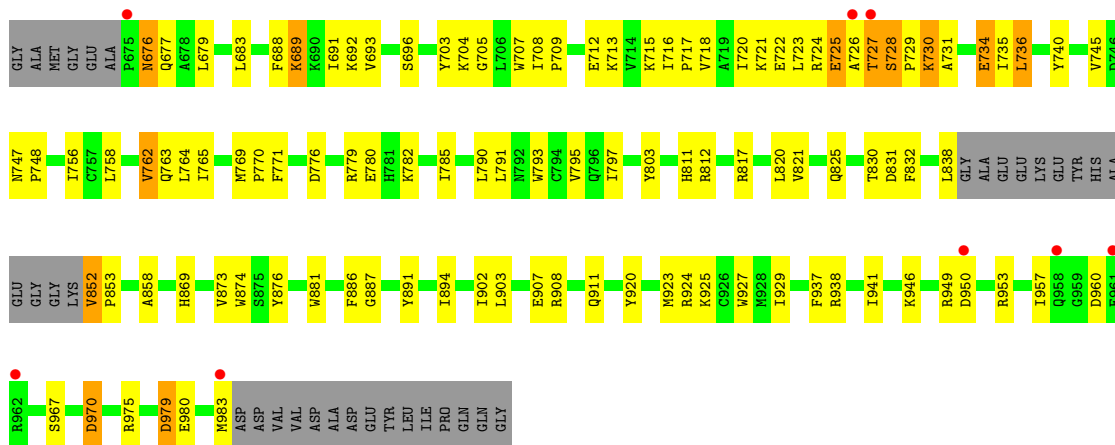


- Molecule 1: Epidermal growth factor receptor

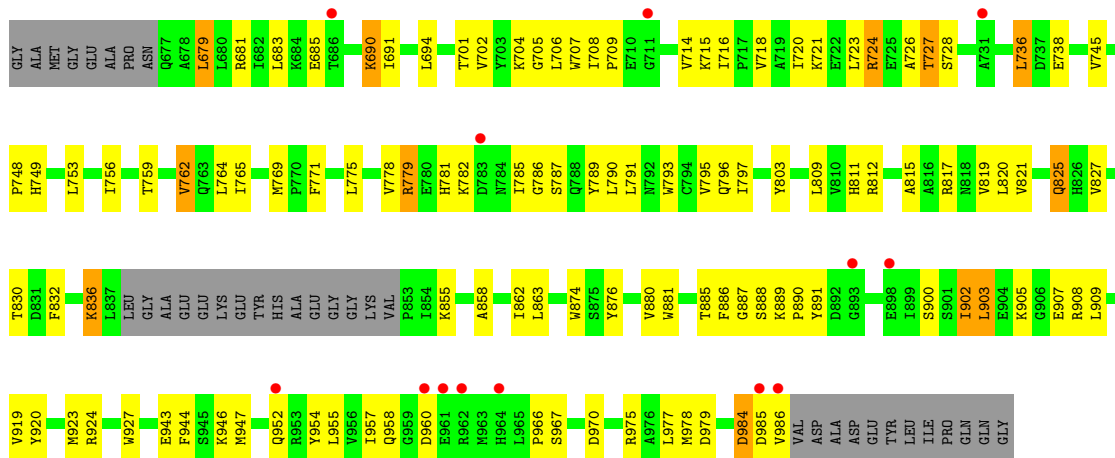


- Molecule 1: Epidermal growth factor receptor

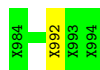




• Molecule 1: Epidermal growth factor receptor



• Molecule 2: Unknown peptide





## 4 Data and refinement statistics i

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	61.76Å 72.41Å 143.38Å 90.00° 101.74° 90.00°	Depositor
Resolution (Å)	46.79 – 2.96 46.79 – 2.96	Depositor EDS
% Data completeness (in resolution range)	93.0 (46.79-2.96) 93.1 (46.79-2.96)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.06 (at 2.96Å)	Xtrriage
Refinement program	PHENIX (phenix.refine)	Depositor
R, $R_{free}$	0.216 , 0.275 0.213 , 0.271	Depositor DCC
$R_{free}$ test set	1172 reflections (4.80%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	49.6	Xtrriage
Anisotropy	0.253	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.33 , 50.4	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	0.024 for h,-k,-h-l	Xtrriage
$F_o, F_c$ correlation	0.92	EDS
Total number of atoms	9760	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	56.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 29.35 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.5743e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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: MG, ANP

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	0.42	0/2467	0.50	0/3337
1	B	0.24	0/2408	0.42	0/3255
1	C	0.39	0/2439	0.48	0/3299
1	D	0.36	0/2431	0.45	0/3287
All	All	0.36	0/9745	0.46	0/13178

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	C	0	1
All	All	0	2

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	975	ARG	Sidechain
1	C	728	SER	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	2415	0	2450	115	0
1	B	2356	0	2405	77	0
1	C	2386	0	2438	76	0
1	D	2379	0	2422	105	0
2	X	55	0	13	1	0
3	A	31	0	13	11	0
3	B	31	0	13	1	0
3	C	31	0	13	4	0
3	D	31	0	13	10	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0
4	D	1	0	0	0	0
5	A	11	0	0	2	0
5	B	19	0	0	1	0
5	C	7	0	0	1	0
5	D	4	0	0	1	0
All	All	9760	0	9780	373	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 19.

All (373) 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:C:727:THR:HG22	1:C:728:SER:OG	1.38	1.20
3:A:2:ANP:H3'	5:A:35:HOH:O	1.46	1.15
1:D:691:ILE:HD11	1:D:706:LEU:HG	1.30	1.10
1:B:712:GLU:HG2	1:C:771:PHE:HE2	1.38	0.88
3:D:4:ANP:O1A	5:D:38:HOH:O	1.93	0.85
1:C:723:LEU:HD12	1:C:762:VAL:CG2	2.06	0.85
1:D:817:ARG:HD2	3:D:4:ANP:HNB1	1.40	0.85
1:A:699:PHE:C	1:A:724:ARG:HG3	1.98	0.84
1:A:751:CYS:SG	1:A:830:THR:HG22	2.19	0.82
1:A:820:LEU:CD1	1:A:830:THR:HG21	2.10	0.81

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:699:PHE:O	1:A:724:ARG:HG3	1.81	0.80
1:A:696:SER:H	3:A:2:ANP:H5'1	1.45	0.79
1:A:697:GLY:HA2	3:A:2:ANP:O1A	1.82	0.79
1:D:985:ASP:HB2	1:D:986:VAL:HA	1.64	0.78
1:B:709:PRO:HB2	1:B:712:GLU:HB2	1.64	0.78
1:D:724:ARG:HE	1:D:726:ALA:HA	1.47	0.78
1:C:769:MET:O	3:C:3:ANP:H2	1.83	0.78
1:C:683:LEU:HD12	1:C:765:ILE:HG13	1.67	0.77
1:B:925:LYS:HG2	1:B:935:PRO:HD3	1.69	0.74
1:D:745:VAL:HG23	1:D:803:TYR:HE2	1.52	0.74
1:D:706:LEU:HD13	1:D:715:LYS:HB3	1.69	0.74
1:D:683:LEU:HD12	1:D:765:ILE:HG13	1.70	0.73
1:A:684:LYS:HB2	1:A:687:GLU:HG3	1.69	0.73
1:A:782:LYS:HG2	1:A:886:PHE:HB3	1.71	0.72
1:C:946:LYS:HA	1:C:949:ARG:HH11	1.54	0.72
1:A:723:LEU:N	1:A:723:LEU:CD2	2.53	0.71
1:D:902:ILE:HD12	1:D:907:GLU:HB2	1.72	0.70
1:A:811:HIS:O	1:A:812:ARG:HB2	1.91	0.70
1:D:690:LYS:H	1:D:690:LYS:HD2	1.57	0.69
1:A:706:LEU:HD13	1:A:715:LYS:HB3	1.75	0.69
1:B:683:LEU:HD12	1:B:765:ILE:HG13	1.74	0.68
1:C:723:LEU:HD12	1:C:762:VAL:HG22	1.74	0.68
1:A:820:LEU:HD12	1:A:830:THR:HG21	1.74	0.68
1:C:811:HIS:O	1:C:812:ARG:HB2	1.93	0.68
1:B:813:ASP:O	1:B:818:ASN:ND2	2.26	0.67
1:B:786:GLY:HA3	1:B:963:MET:HG2	1.75	0.67
1:A:820:LEU:HG	1:A:830:THR:HG21	1.76	0.67
1:A:723:LEU:HB2	1:A:762:VAL:HG13	1.77	0.67
1:B:924:ARG:CG	1:B:924:ARG:HH11	2.07	0.67
1:C:727:THR:CG2	1:C:728:SER:OG	2.30	0.67
1:A:695:GLY:CA	3:A:2:ANP:H4'	2.25	0.66
1:A:696:SER:N	3:A:2:ANP:H5'1	2.10	0.66
1:A:914:ILE:HG13	1:A:915:CYS:N	2.09	0.66
1:D:946:LYS:HE2	1:D:954:TYR:OH	1.95	0.66
1:D:985:ASP:CB	1:D:986:VAL:HA	2.22	0.66
1:C:705:GLY:HA3	1:C:720:ILE:CD1	2.26	0.66
1:D:779:ARG:NH1	1:D:887:GLY:O	2.29	0.65
1:A:820:LEU:CG	1:A:830:THR:HG21	2.27	0.65
1:A:901:SER:O	1:A:905:LYS:HG2	1.96	0.65
1:C:785:ILE:HB	1:C:886:PHE:HE1	1.60	0.64
1:B:685:GLU:HA	1:B:688:PHE:CE1	2.32	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:985:ASP:OD1	1:A:985:ASP:N	2.31	0.64
1:D:789:TYR:CE2	1:D:966:PRO:HG3	2.32	0.64
1:B:811:HIS:O	1:B:812:ARG:HB2	1.98	0.63
1:A:981:GLU:O	1:A:984:ASP:HB2	1.98	0.63
1:C:688:PHE:O	1:C:689:LYS:HD2	1.98	0.63
1:C:747:ASN:ND2	1:C:748:PRO:HD2	2.13	0.63
1:D:791:LEU:O	1:D:795:VAL:HG23	1.99	0.63
1:B:977:LEU:HD21	1:C:718:VAL:HG12	1.80	0.63
3:A:2:ANP:C3'	5:A:35:HOH:O	2.20	0.63
1:B:782:LYS:HG2	1:B:886:PHE:HB3	1.81	0.63
1:B:712:GLU:HG2	1:C:771:PHE:CE2	2.29	0.63
1:A:699:PHE:O	1:A:724:ARG:CG	2.47	0.62
1:B:751:CYS:SG	1:B:830:THR:HG23	2.39	0.62
1:A:900:SER:O	1:A:904:GLU:HG3	1.98	0.62
1:D:815:ALA:CB	1:D:817:ARG:NH1	2.62	0.62
1:A:732:ASN:O	1:A:736:LEU:HB2	1.99	0.62
1:B:758:LEU:HD22	1:B:758:LEU:H	1.64	0.62
1:B:679:LEU:HD13	1:B:744:SER:HA	1.81	0.62
1:B:786:GLY:CA	1:B:963:MET:HG2	2.29	0.62
1:A:975:ARG:NH1	1:A:984:ASP:OD2	2.33	0.61
1:C:967:SER:OG	1:C:970:ASP:HB2	2.00	0.61
1:C:707:TRP:O	1:C:709:PRO:HD3	2.01	0.61
1:A:975:ARG:HA	1:A:979:ASP:O	2.01	0.61
1:B:938:ARG:NH2	5:B:55:HOH:O	2.34	0.61
1:A:695:GLY:HA2	3:A:2:ANP:H4'	1.82	0.60
1:D:809:LEU:HD13	1:D:832:PHE:CZ	2.36	0.60
1:B:721:LYS:NZ	3:B:1:ANP:O2A	2.34	0.60
1:D:769:MET:HB2	3:D:4:ANP:N1	2.16	0.60
1:B:859:LEU:HD22	1:B:929:ILE:HD12	1.84	0.60
1:D:694:LEU:HD21	1:D:704:LYS:HB2	1.84	0.60
1:A:943:GLU:O	1:A:947:MET:HG3	2.02	0.59
1:A:884:MET:HG3	1:A:915:CYS:SG	2.42	0.59
1:C:957:ILE:HB	1:C:960:ASP:HB2	1.84	0.59
1:B:742:MET:O	1:B:745:VAL:HG22	2.02	0.59
1:A:981:GLU:O	1:A:981:GLU:CG	2.50	0.58
1:A:873:VAL:HG11	1:A:935:PRO:O	2.03	0.58
1:A:788:GLN:HG2	1:A:965:LEU:HD13	1.85	0.58
1:A:982:ASP:HB2	1:A:983:MET:HA	1.84	0.58
1:A:695:GLY:HA3	3:A:2:ANP:C4'	2.34	0.58
1:A:789:TYR:CE2	1:A:965:LEU:HD12	2.38	0.58
1:B:924:ARG:HH11	1:B:924:ARG:HG3	1.67	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:679:LEU:HG	2:X:992:UNK:CB	2.33	0.57
1:C:908:ARG:HH22	1:C:929:ILE:HG13	1.68	0.57
1:C:723:LEU:HD12	1:C:762:VAL:HG21	1.86	0.57
1:C:727:THR:HG22	1:C:728:SER:HG	1.64	0.57
1:C:708:ILE:HG13	1:C:715:LYS:HG2	1.85	0.57
1:D:782:LYS:HA	1:D:886:PHE:CD1	2.40	0.56
1:A:723:LEU:HD23	1:A:723:LEU:H	1.70	0.56
1:B:731:ALA:O	1:B:735:ILE:HG13	2.05	0.56
1:A:925:LYS:O	1:A:928:MET:HG3	2.05	0.56
1:A:745:VAL:O	1:A:752:ARG:HG3	2.06	0.56
1:A:681:ARG:HG2	1:A:683:LEU:HD22	1.88	0.56
1:C:791:LEU:O	1:C:795:VAL:HG23	2.04	0.56
1:A:676:ASN:OD1	1:A:679:LEU:HD11	2.05	0.55
1:A:781:HIS:O	1:A:785:ILE:HG12	2.06	0.55
1:D:769:MET:O	3:D:4:ANP:H2	2.06	0.55
1:B:957:ILE:O	1:B:960:ASP:HB2	2.06	0.55
1:A:723:LEU:N	1:A:723:LEU:HD22	2.19	0.55
1:A:911:GLN:HB2	1:A:920:TYR:CD2	2.42	0.55
1:D:723:LEU:HB2	1:D:762:VAL:HG13	1.87	0.55
1:A:938:ARG:NH1	1:A:942:ILE:HD11	2.21	0.55
1:D:985:ASP:H	1:D:986:VAL:HB	1.71	0.55
1:D:769:MET:HG3	1:D:820:LEU:HD13	1.89	0.55
1:B:926:CYS:O	1:B:934:ARG:HD3	2.07	0.55
1:A:759:THR:HG22	1:A:760:SER:H	1.72	0.55
1:A:695:GLY:HA3	3:A:2:ANP:H4'	1.88	0.54
1:A:771:PHE:CZ	1:D:714:VAL:HG21	2.42	0.54
1:C:869:HIS:O	1:C:873:VAL:HG23	2.07	0.54
1:D:727:THR:HG23	1:D:728:SER:N	2.22	0.54
1:C:975:ARG:HA	1:C:979:ASP:HB2	1.90	0.54
1:A:699:PHE:C	1:A:724:ARG:CG	2.75	0.54
1:B:825:GLN:HG3	1:B:983:MET:HE1	1.90	0.54
1:B:950:ASP:N	1:B:951:PRO:HD3	2.22	0.54
1:A:705:GLY:HA3	1:A:720:ILE:CD1	2.38	0.54
1:D:779:ARG:HD3	1:D:887:GLY:HA3	1.88	0.54
1:D:797:ILE:HD13	1:D:819:VAL:HG21	1.90	0.54
1:C:785:ILE:HG21	1:C:790:LEU:HG	1.91	0.54
1:D:817:ARG:CD	3:D:4:ANP:HNB1	2.18	0.54
1:B:825:GLN:NE2	1:B:966:PRO:HB3	2.22	0.53
1:D:753:LEU:HD11	1:D:764:LEU:HD22	1.90	0.53
1:A:723:LEU:N	1:A:723:LEU:HD23	2.24	0.53
1:C:730:LYS:HG2	1:C:734:GLU:HB3	1.89	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:874:TRP:CE3	1:C:927:TRP:HA	2.43	0.53
1:D:781:HIS:O	1:D:785:ILE:HG13	2.09	0.53
1:B:683:LEU:CD1	1:B:765:ILE:HG13	2.39	0.53
1:A:699:PHE:CA	1:A:724:ARG:HG3	2.37	0.53
1:A:712:GLU:HG2	1:D:771:PHE:HE2	1.74	0.53
1:A:830:THR:O	1:A:831:ASP:HB2	2.07	0.53
1:C:946:LYS:HA	1:C:949:ARG:HD3	1.89	0.53
1:D:902:ILE:CD1	1:D:907:GLU:HB2	2.39	0.53
1:D:967:SER:HB2	1:D:970:ASP:HB2	1.92	0.52
1:D:908:ARG:HB3	1:D:927:TRP:CE3	2.45	0.52
1:C:722:GLU:HG3	1:C:763:GLN:HG2	1.91	0.52
1:B:727:THR:HG21	1:B:735:ILE:CD1	2.40	0.52
1:B:858:ALA:O	1:B:862:ILE:HG13	2.09	0.52
1:A:707:TRP:O	1:A:709:PRO:HD3	2.09	0.52
1:D:778:VAL:HA	1:D:785:ILE:HD11	1.91	0.52
3:D:4:ANP:O1G	3:D:4:ANP:O3A	2.27	0.52
1:C:748:PRO:HB3	1:C:983:MET:HB2	1.91	0.52
1:C:688:PHE:C	1:C:689:LYS:HD2	2.29	0.52
1:D:708:ILE:HG23	1:D:708:ILE:O	2.08	0.52
1:D:753:LEU:HD11	1:D:764:LEU:HB3	1.91	0.52
1:D:885:THR:HB	1:D:888:SER:HB2	1.92	0.51
1:B:869:HIS:O	1:B:873:VAL:HG23	2.10	0.51
1:B:925:LYS:O	1:B:934:ARG:HB3	2.10	0.51
1:D:985:ASP:H	1:D:986:VAL:CB	2.23	0.51
1:B:787:SER:HB3	1:B:951:PRO:HB3	1.93	0.51
1:A:983:MET:O	1:A:984:ASP:C	2.49	0.51
1:B:791:LEU:O	1:B:795:VAL:HG23	2.09	0.51
1:A:720:ILE:HD12	1:A:720:ILE:H	1.75	0.51
1:A:697:GLY:HA3	1:A:700:GLY:O	2.11	0.50
1:C:745:VAL:HG13	1:C:803:TYR:HE2	1.77	0.50
1:C:756:ILE:HG13	1:C:764:LEU:HD23	1.92	0.50
1:D:920:TYR:CZ	1:D:924:ARG:HD3	2.46	0.50
1:A:853:PRO:HD2	1:A:857:MET:HE3	1.94	0.50
1:C:677:GLN:HG3	1:C:740:TYR:CE2	2.47	0.50
1:C:911:GLN:HA	1:C:920:TYR:CE1	2.47	0.50
1:D:855:LYS:HD3	1:D:890:PRO:O	2.12	0.50
1:D:745:VAL:HG23	1:D:803:TYR:CE2	2.41	0.50
1:A:691:ILE:HB	1:A:704:LYS:O	2.11	0.50
1:B:727:THR:HG23	1:B:731:ALA:HB3	1.94	0.49
1:C:779:ARG:HG2	1:C:887:GLY:HA3	1.92	0.49
1:C:782:LYS:HA	1:C:886:PHE:CD1	2.47	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:938:ARG:HH11	1:A:942:ILE:HD11	1.77	0.49
1:D:749:HIS:CD2	1:D:796:GLN:HB3	2.47	0.49
1:A:677:GLN:H	1:A:677:GLN:CD	2.16	0.49
1:D:685:GLU:OE2	1:D:759:THR:HG21	2.12	0.49
1:D:943:GLU:O	1:D:947:MET:HG3	2.13	0.49
1:B:975:ARG:HG2	1:B:983:MET:SD	2.53	0.49
1:A:822:LYS:CB	1:A:826:HIS:HD2	2.25	0.49
3:A:2:ANP:O1G	3:A:2:ANP:O2B	2.30	0.49
1:D:702:VAL:HG22	1:D:721:LYS:HE2	1.95	0.49
1:B:924:ARG:CG	1:B:924:ARG:NH1	2.69	0.48
1:D:778:VAL:O	1:D:779:ARG:C	2.49	0.48
1:A:820:LEU:HG	1:A:830:THR:CG2	2.43	0.48
1:B:758:LEU:HD22	1:B:758:LEU:N	2.27	0.48
1:C:705:GLY:HA3	1:C:720:ILE:HD11	1.95	0.48
1:D:858:ALA:HA	1:D:874:TRP:CD2	2.49	0.48
1:C:693:VAL:HG22	1:C:703:TYR:CD2	2.48	0.48
1:C:950:ASP:OD2	1:C:953:ARG:HD3	2.14	0.48
1:D:748:PRO:HG2	1:D:984:ASP:OD2	2.13	0.48
1:C:817:ARG:O	5:C:41:HOH:O	2.20	0.48
1:C:902:ILE:HG13	1:C:903:LEU:N	2.27	0.48
3:C:3:ANP:O1G	3:C:3:ANP:O1B	2.30	0.48
1:D:679:LEU:H	1:D:679:LEU:HD12	1.79	0.48
1:D:790:LEU:HA	1:D:793:TRP:CE3	2.49	0.48
1:A:785:ILE:HD12	1:A:793:TRP:HH2	1.77	0.48
1:C:881:TRP:CD1	1:C:923:MET:HE1	2.49	0.48
1:D:881:TRP:HB2	1:D:923:MET:HE1	1.96	0.48
1:D:786:GLY:HA2	1:D:957:ILE:CD1	2.44	0.47
3:D:4:ANP:PB	3:D:4:ANP:H5'2	2.54	0.47
1:B:971:SER:O	1:B:975:ARG:HG3	2.14	0.47
1:A:880:VAL:O	1:A:884:MET:HG2	2.14	0.47
1:B:725:GLU:O	1:B:725:GLU:HG3	2.14	0.47
1:D:708:ILE:HD12	1:D:714:VAL:O	2.13	0.47
3:C:3:ANP:O1B	3:C:3:ANP:O2A	2.33	0.47
1:D:817:ARG:HH11	1:D:817:ARG:HG2	1.79	0.47
1:A:699:PHE:HA	1:A:724:ARG:HG3	1.97	0.47
1:C:793:TRP:O	1:C:797:ILE:HG13	2.15	0.47
1:C:881:TRP:HD1	1:C:923:MET:HE1	1.79	0.47
1:D:876:TYR:O	1:D:880:VAL:HG23	2.14	0.47
1:D:881:TRP:CG	1:D:909:LEU:HD13	2.50	0.47
1:A:981:GLU:O	1:A:981:GLU:HG2	2.14	0.47
1:A:982:ASP:HA	1:A:983:MET:C	2.35	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:759:THR:HG22	1:A:760:SER:N	2.30	0.47
1:D:858:ALA:O	1:D:862:ILE:HG13	2.15	0.47
1:B:943:GLU:O	1:B:947:MET:HG3	2.15	0.46
1:B:736:LEU:HD11	1:B:758:LEU:HD21	1.96	0.46
1:D:707:TRP:O	1:D:709:PRO:HD3	2.15	0.46
1:D:825:GLN:OE1	1:D:966:PRO:HB3	2.14	0.46
1:D:952:GLN:NE2	1:D:960:ASP:OD2	2.49	0.46
1:D:705:GLY:HA3	1:D:720:ILE:CD1	2.45	0.46
1:D:787:SER:HA	1:D:955:LEU:HD23	1.98	0.46
1:A:937:PHE:O	1:A:941:ILE:HG13	2.16	0.46
1:D:683:LEU:CD1	1:D:765:ILE:HG13	2.44	0.46
1:B:795:VAL:HG22	1:B:944:PHE:HB3	1.97	0.46
1:C:873:VAL:O	1:C:876:TYR:HB3	2.16	0.46
1:D:811:HIS:O	1:D:812:ARG:HB2	2.14	0.46
1:B:975:ARG:CZ	1:B:983:MET:HB2	2.46	0.46
1:D:702:VAL:HG11	3:D:4:ANP:C8	2.46	0.46
1:B:925:LYS:HE3	1:B:935:PRO:HG3	1.98	0.46
1:A:727:THR:OG1	1:A:760:SER:O	2.23	0.46
1:C:771:PHE:HB2	1:C:821:VAL:O	2.15	0.46
1:D:726:ALA:O	1:D:727:THR:HG22	2.16	0.46
1:D:902:ILE:HG13	1:D:903:LEU:N	2.31	0.46
1:C:907:GLU:O	1:C:908:ARG:HD2	2.16	0.45
1:D:809:LEU:HD13	1:D:832:PHE:HZ	1.81	0.45
1:B:781:HIS:O	1:B:785:ILE:HG13	2.16	0.45
1:D:874:TRP:CE3	1:D:927:TRP:HA	2.51	0.45
1:B:699:PHE:HE1	1:B:813:ASP:OD2	2.00	0.45
1:B:779:ARG:HG2	1:B:887:GLY:HA3	1.98	0.45
1:C:728:SER:HA	1:C:729:PRO:HD3	1.63	0.45
1:B:780:GLU:O	1:B:781:HIS:CD2	2.69	0.45
1:A:723:LEU:HD23	1:A:762:VAL:O	2.17	0.45
1:C:726:ALA:HA	1:C:727:THR:HA	1.60	0.45
1:C:736:LEU:HD11	1:C:758:LEU:HD21	1.98	0.45
1:B:979:ASP:OD1	1:B:981:GLU:HB2	2.16	0.45
1:A:707:TRP:CZ3	1:A:709:PRO:HG3	2.52	0.45
1:A:958:GLN:OE1	1:A:958:GLN:HA	2.17	0.45
1:A:783:ASP:OD1	1:A:783:ASP:N	2.50	0.45
1:B:680:LEU:HD21	1:B:756:ILE:HG21	1.99	0.45
1:D:881:TRP:CD2	1:D:909:LEU:HD13	2.52	0.45
1:B:820:LEU:HG	1:B:830:THR:OG1	2.17	0.45
1:A:960:ASP:H	1:A:963:MET:CE	2.30	0.44
1:B:747:ASN:ND2	1:B:748:PRO:HD2	2.33	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:696:SER:HB2	1:A:697:GLY:H	1.62	0.44
1:C:938:ARG:HA	1:C:941:ILE:HD12	1.99	0.44
1:A:809:LEU:HB3	1:A:832:PHE:HE1	1.81	0.44
1:A:973:PHE:CD1	1:D:681:ARG:HD2	2.53	0.44
1:A:977:LEU:HD21	1:D:718:VAL:HG12	1.99	0.44
1:C:691:ILE:HD11	1:C:704:LYS:HE2	1.98	0.44
1:C:891:TYR:HB3	1:C:894:ILE:HD12	1.98	0.44
1:A:884:MET:CG	1:A:915:CYS:SG	3.04	0.44
1:C:676:ASN:HB3	1:C:679:LEU:HD12	1.99	0.44
1:D:726:ALA:O	1:D:728:SER:N	2.50	0.44
3:A:2:ANP:O1A	3:A:2:ANP:O2B	2.34	0.44
1:D:724:ARG:HG2	1:D:726:ALA:H	1.82	0.44
3:D:4:ANP:O1G	3:D:4:ANP:PA	2.75	0.44
1:A:782:LYS:HE2	1:A:886:PHE:O	2.17	0.44
1:A:870:GLN:HE22	1:A:936:LYS:HG2	1.81	0.44
1:A:889:LYS:HA	1:A:890:PRO:HD3	1.86	0.44
1:B:771:PHE:HE2	1:C:712:GLU:HG2	1.83	0.44
1:A:788:GLN:NE2	1:A:951:PRO:HG2	2.32	0.44
1:D:756:ILE:HG13	1:D:764:LEU:HD23	2.00	0.44
1:C:946:LYS:CA	1:C:949:ARG:HH11	2.26	0.44
1:B:858:ALA:HA	1:B:874:TRP:CD2	2.52	0.43
1:C:716:ILE:HA	1:C:717:PRO:HD3	1.82	0.43
1:D:957:ILE:HG13	1:D:960:ASP:HB2	1.99	0.43
1:D:919:VAL:HG22	1:D:947:MET:SD	2.58	0.43
1:A:745:VAL:HG23	1:A:803:TYR:HE2	1.83	0.43
1:A:791:LEU:O	1:A:795:VAL:HG23	2.19	0.43
1:D:863:LEU:HD21	1:D:900:SER:HB2	2.00	0.43
1:B:708:ILE:N	1:B:708:ILE:HD12	2.34	0.43
1:A:745:VAL:HG23	1:A:803:TYR:CE2	2.54	0.43
1:C:721:LYS:HZ2	1:C:831:ASP:CG	2.20	0.43
1:D:701:THR:HG22	1:D:702:VAL:N	2.33	0.43
1:D:705:GLY:O	1:D:718:VAL:HG22	2.17	0.43
1:D:736:LEU:HD12	1:D:736:LEU:HA	1.76	0.43
1:B:791:LEU:HG	1:B:955:LEU:HD12	2.01	0.43
1:A:708:ILE:HD13	1:A:715:LYS:HA	2.00	0.43
1:C:708:ILE:CG1	1:C:715:LYS:HG2	2.48	0.43
1:D:795:VAL:HG22	1:D:944:PHE:HB3	2.01	0.43
1:C:707:TRP:CZ3	1:C:716:ILE:HD12	2.54	0.43
1:D:707:TRP:CE3	1:D:716:ILE:HD12	2.53	0.43
1:A:829:ILE:HD13	1:A:829:ILE:HG21	1.72	0.43
1:C:937:PHE:O	1:C:941:ILE:HG13	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:738:GLU:OE1	1:D:836:LYS:HE3	2.19	0.43
1:D:789:TYR:HE2	1:D:966:PRO:HG3	1.81	0.43
1:B:889:LYS:HA	1:B:890:PRO:HD3	1.80	0.43
1:B:977:LEU:HD21	1:C:718:VAL:CG1	2.47	0.43
1:D:967:SER:HB2	1:D:970:ASP:CB	2.49	0.43
1:A:793:TRP:O	1:A:797:ILE:HG13	2.19	0.43
1:A:858:ALA:HA	1:A:874:TRP:CD2	2.54	0.43
1:B:723:LEU:HD12	1:B:762:VAL:CG1	2.49	0.42
1:D:775:LEU:O	1:D:779:ARG:HG2	2.19	0.42
1:D:947:MET:HG2	1:D:954:TYR:CD2	2.54	0.42
1:A:977:LEU:HD21	1:D:718:VAL:CG1	2.48	0.42
1:D:785:ILE:HD12	1:D:886:PHE:CE1	2.54	0.42
1:A:870:GLN:HA	1:A:873:VAL:HG23	2.02	0.42
1:C:852:VAL:HA	1:C:853:PRO:HD3	1.76	0.42
1:B:982:ASP:O	1:B:983:MET:C	2.58	0.42
1:C:731:ALA:O	1:C:735:ILE:HG13	2.20	0.42
1:C:769:MET:HA	1:C:770:PRO:HD3	1.81	0.42
1:D:797:ILE:CD1	1:D:819:VAL:HG21	2.49	0.42
1:D:821:VAL:HG22	1:D:827:VAL:HG12	2.01	0.42
1:B:965:LEU:HA	1:B:966:PRO:HD3	1.88	0.42
1:A:822:LYS:HB3	1:A:826:HIS:HD2	1.85	0.42
1:A:728:SER:HB3	1:A:731:ALA:HB2	2.02	0.42
1:A:731:ALA:O	1:A:735:ILE:HG13	2.18	0.42
1:C:769:MET:O	3:C:3:ANP:C2	2.63	0.42
1:B:727:THR:CG2	1:B:731:ALA:HB3	2.50	0.42
1:A:691:ILE:HD11	1:A:706:LEU:CD1	2.50	0.42
1:A:869:HIS:O	1:A:873:VAL:HG23	2.20	0.42
1:D:708:ILE:O	1:D:708:ILE:CG2	2.68	0.42
1:B:774:LEU:O	1:B:778:VAL:HG22	2.20	0.42
1:B:825:GLN:HE21	1:B:966:PRO:HB3	1.82	0.42
1:B:727:THR:HG22	1:B:728:SER:N	2.35	0.41
1:B:881:TRP:HD1	1:B:923:MET:HE1	1.85	0.41
1:B:911:GLN:HG3	1:B:920:TYR:CG	2.55	0.41
1:A:723:LEU:HG	1:A:762:VAL:HG13	2.02	0.41
1:C:769:MET:HG3	1:C:820:LEU:HD13	2.02	0.41
1:C:979:ASP:O	1:C:980:GLU:HB2	2.20	0.41
1:D:727:THR:CG2	1:D:728:SER:N	2.83	0.41
1:D:796:GLN:OE1	1:D:827:VAL:HG22	2.19	0.41
1:A:899:ILE:HG22	1:A:903:LEU:HD22	2.02	0.41
1:B:681:ARG:HH21	1:B:683:LEU:CD2	2.33	0.41
1:A:716:ILE:O	1:A:718:VAL:HG13	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:727:THR:HG21	1:B:735:ILE:HD12	2.02	0.41
1:A:801:MET:HB3	1:A:937:PHE:CE1	2.55	0.41
1:D:724:ARG:HG2	1:D:726:ALA:N	2.35	0.41
1:A:947:MET:HA	1:A:954:TYR:CE1	2.55	0.41
1:C:691:ILE:O	1:C:692:LYS:HB2	2.19	0.41
1:A:759:THR:CG2	1:A:760:SER:H	2.31	0.41
1:A:984:ASP:O	1:A:985:ASP:C	2.59	0.41
1:C:776:ASP:O	1:C:780:GLU:HG3	2.20	0.41
1:D:881:TRP:CE2	1:D:885:THR:HG21	2.55	0.41
1:A:930:ASP:OD2	1:A:933:SER:HB2	2.20	0.41
1:D:769:MET:N	3:D:4:ANP:N1	2.65	0.41
1:D:881:TRP:CD1	1:D:923:MET:HE1	2.56	0.41
1:B:738:GLU:O	1:B:742:MET:HG3	2.21	0.41
1:B:855:LYS:HD3	1:B:890:PRO:O	2.20	0.41
1:A:700:GLY:CA	1:A:722:GLU:O	2.69	0.41
1:A:856:TRP:CZ2	1:A:890:PRO:HG2	2.55	0.41
1:A:977:LEU:HD12	1:A:977:LEU:HA	1.89	0.41
1:C:725:GLU:H	1:C:725:GLU:HG2	1.34	0.41
1:D:811:HIS:O	1:D:812:ARG:CB	2.69	0.41
1:D:891:TYR:CZ	1:D:909:LEU:HG	2.56	0.41
1:A:959:GLY:C	1:A:961:GLU:H	2.23	0.41
1:D:905:LYS:HE2	1:D:905:LYS:HA	2.02	0.41
1:A:785:ILE:HD12	1:A:793:TRP:CH2	2.55	0.40
1:B:691:ILE:HG22	1:B:692:LYS:N	2.35	0.40
1:B:912:PRO:HA	1:B:913:PRO:HD3	1.93	0.40
1:A:855:LYS:HD3	1:A:891:TYR:HB2	2.02	0.40
1:D:975:ARG:HD2	1:D:979:ASP:HB3	2.03	0.40
1:D:793:TRP:O	1:D:797:ILE:HG13	2.21	0.40
1:B:812:ARG:HE	1:B:867:TYR:HB2	1.86	0.40
1:A:707:TRP:CH2	1:A:709:PRO:HG3	2.57	0.40
1:C:677:GLN:HG3	1:C:740:TYR:CZ	2.56	0.40
1:C:925:LYS:HE3	1:C:925:LYS:HB2	1.90	0.40
1:B:681:ARG:HH21	1:B:683:LEU:HD23	1.86	0.40
1:A:874:TRP:CE3	1:A:927:TRP:HA	2.57	0.40
1:C:858:ALA:HA	1:C:874:TRP:CD2	2.56	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	296/330 (90%)	270 (91%)	25 (8%)	1 (0%)	41	73
1	B	288/330 (87%)	267 (93%)	21 (7%)	0	100	100
1	C	292/330 (88%)	272 (93%)	19 (6%)	1 (0%)	41	73
1	D	291/330 (88%)	271 (93%)	19 (6%)	1 (0%)	41	73
All	All	1167/1320 (88%)	1080 (92%)	84 (7%)	3 (0%)	41	73

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	727	THR
1	A	785	ILE
1	C	676	ASN

### 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	268/288 (93%)	239 (89%)	29 (11%)	6	23
1	B	261/288 (91%)	248 (95%)	13 (5%)	24	57
1	C	265/288 (92%)	247 (93%)	18 (7%)	16	45
1	D	264/288 (92%)	248 (94%)	16 (6%)	18	49
All	All	1058/1152 (92%)	982 (93%)	76 (7%)	14	42

All (76) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	690	LYS
1	B	736	LEU
1	B	738	GLU
1	B	758	LEU
1	B	759	THR
1	B	762	VAL
1	B	810	VAL
1	B	825	GLN
1	B	830	THR
1	B	924	ARG
1	B	934	ARG
1	B	962	ARG
1	B	969	THR
1	A	690	LYS
1	A	693	VAL
1	A	696	SER
1	A	699	PHE
1	A	713	LYS
1	A	714	VAL
1	A	723	LEU
1	A	727	THR
1	A	734	GLU
1	A	738	GLU
1	A	745	VAL
1	A	765	ILE
1	A	783	ASP
1	A	825	GLN
1	A	832	PHE
1	A	834	LEU
1	A	900	SER
1	A	902	ILE
1	A	903	LEU
1	A	947	MET
1	A	965	LEU
1	A	969	THR
1	A	975	ARG
1	A	981	GLU
1	A	983	MET
1	A	985	ASP
1	A	986	VAL
1	A	987	VAL
1	A	990	ASP
1	C	689	LYS

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Mol	Chain	Res	Type
1	C	696	SER
1	C	713	LYS
1	C	724	ARG
1	C	725	GLU
1	C	727	THR
1	C	730	LYS
1	C	734	GLU
1	C	736	LEU
1	C	762	VAL
1	C	825	GLN
1	C	830	THR
1	C	832	PHE
1	C	838	LEU
1	C	852	VAL
1	C	924	ARG
1	C	970	ASP
1	C	979	ASP
1	D	679	LEU
1	D	690	LYS
1	D	724	ARG
1	D	736	LEU
1	D	762	VAL
1	D	779	ARG
1	D	825	GLN
1	D	830	THR
1	D	836	LYS
1	D	889	LYS
1	D	902	ILE
1	D	903	LEU
1	D	958	GLN
1	D	977	LEU
1	D	978	MET
1	D	984	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	747	ASN
1	B	788	GLN
1	B	792	ASN
1	B	825	GLN
1	B	964	HIS

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Mol	Chain	Res	Type
1	A	788	GLN
1	A	826	HIS
1	C	792	ASN
1	C	870	GLN
1	D	677	GLN
1	D	749	HIS
1	D	781	HIS
1	D	784	ASN
1	D	952	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](#)

Of 8 ligands modelled in this entry, 4 are monoatomic - leaving 4 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	ANP	A	2	4	29,33,33	1.14	4 (13%)	31,52,52	1.36	3 (9%)
3	ANP	B	1	-	29,33,33	1.14	4 (13%)	31,52,52	1.36	2 (6%)
3	ANP	D	4	4	29,33,33	1.14	4 (13%)	31,52,52	1.36	3 (9%)
3	ANP	C	3	4	29,33,33	1.14	4 (13%)	31,52,52	1.36	2 (6%)



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	ANP	A	2	4	-	9/14/38/38	0/3/3/3
3	ANP	B	1	-	-	6/14/38/38	0/3/3/3
3	ANP	D	4	4	-	9/14/38/38	0/3/3/3
3	ANP	C	3	4	-	7/14/38/38	0/3/3/3

All (16) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	2	ANP	O4'-C1'	2.12	1.44	1.41
3	C	3	ANP	O4'-C1'	2.11	1.44	1.41
3	D	4	ANP	PB-O2B	2.10	1.62	1.56
3	B	1	ANP	PG-O3G	2.10	1.62	1.56
3	A	2	ANP	PB-O2B	2.10	1.62	1.56
3	D	4	ANP	O4'-C1'	2.10	1.44	1.41
3	C	3	ANP	PG-O2G	2.08	1.62	1.56
3	C	3	ANP	PB-O2B	2.08	1.62	1.56
3	B	1	ANP	PG-O2G	2.08	1.62	1.56
3	B	1	ANP	PB-O2B	2.08	1.62	1.56
3	D	4	ANP	PG-O2G	2.08	1.62	1.56
3	C	3	ANP	PG-O3G	2.07	1.62	1.56
3	A	2	ANP	PG-O3G	2.06	1.62	1.56
3	A	2	ANP	PG-O2G	2.06	1.62	1.56
3	B	1	ANP	O4'-C1'	2.06	1.44	1.41
3	D	4	ANP	PG-O3G	2.05	1.62	1.56

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	3	ANP	N3-C2-N1	-4.45	121.72	128.68
3	A	2	ANP	N3-C2-N1	-4.42	121.77	128.68
3	B	1	ANP	N3-C2-N1	-4.42	121.78	128.68
3	D	4	ANP	N3-C2-N1	-4.41	121.79	128.68
3	D	4	ANP	PA-O3A-PB	-3.59	119.98	132.62
3	B	1	ANP	PA-O3A-PB	-3.58	120.00	132.62
3	C	3	ANP	PA-O3A-PB	-3.58	120.00	132.62
3	A	2	ANP	PA-O3A-PB	-3.58	120.02	132.62
3	A	2	ANP	O4'-C1'-C2'	-2.06	103.92	106.93
3	D	4	ANP	O4'-C1'-C2'	-2.02	103.97	106.93

There are no chirality outliers.

All (31) torsion outliers are listed below:

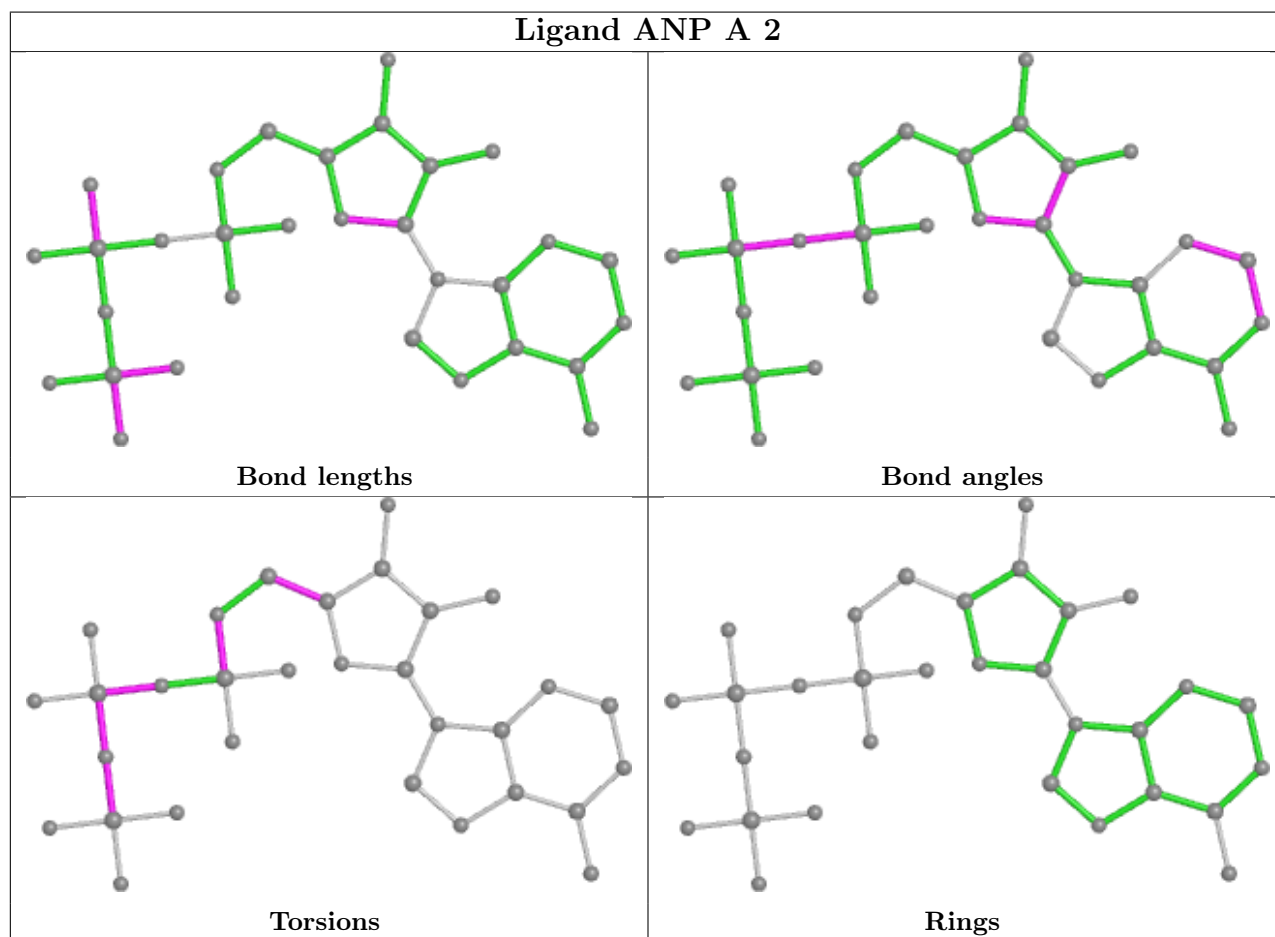
Mol	Chain	Res	Type	Atoms
3	B	1	ANP	PA-O3A-PB-O1B
3	B	1	ANP	PA-O3A-PB-O2B
3	B	1	ANP	C5'-O5'-PA-O1A
3	A	2	ANP	PB-N3B-PG-O1G
3	A	2	ANP	PG-N3B-PB-O1B
3	A	2	ANP	PA-O3A-PB-O1B
3	A	2	ANP	PA-O3A-PB-O2B
3	A	2	ANP	C5'-O5'-PA-O3A
3	A	2	ANP	O4'-C4'-C5'-O5'
3	A	2	ANP	C3'-C4'-C5'-O5'
3	C	3	ANP	PA-O3A-PB-O1B
3	C	3	ANP	PA-O3A-PB-O2B
3	C	3	ANP	C5'-O5'-PA-O3A
3	C	3	ANP	O4'-C4'-C5'-O5'
3	D	4	ANP	PG-N3B-PB-O1B
3	D	4	ANP	PA-O3A-PB-O1B
3	D	4	ANP	PA-O3A-PB-O2B
3	D	4	ANP	C5'-O5'-PA-O1A
3	D	4	ANP	C5'-O5'-PA-O2A
3	D	4	ANP	C5'-O5'-PA-O3A
3	D	4	ANP	O4'-C4'-C5'-O5'
3	C	3	ANP	C3'-C4'-C5'-O5'
3	D	4	ANP	C3'-C4'-C5'-O5'
3	B	1	ANP	PB-O3A-PA-O5'
3	B	1	ANP	C5'-O5'-PA-O2A
3	A	2	ANP	C5'-O5'-PA-O1A
3	A	2	ANP	C5'-O5'-PA-O2A
3	C	3	ANP	C5'-O5'-PA-O2A
3	D	4	ANP	PB-O3A-PA-O1A
3	B	1	ANP	C5'-O5'-PA-O3A
3	C	3	ANP	C5'-O5'-PA-O1A

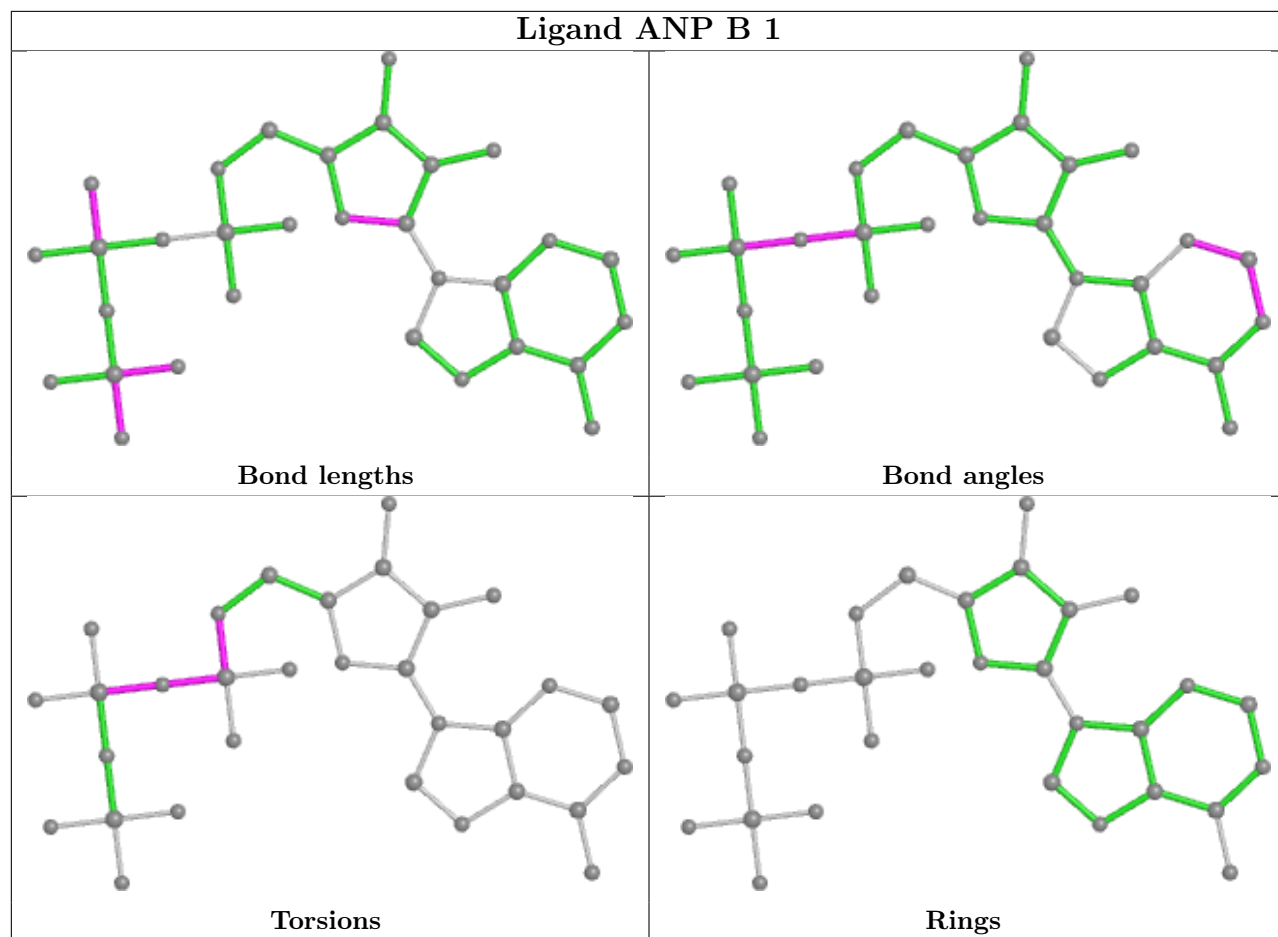
There are no ring outliers.

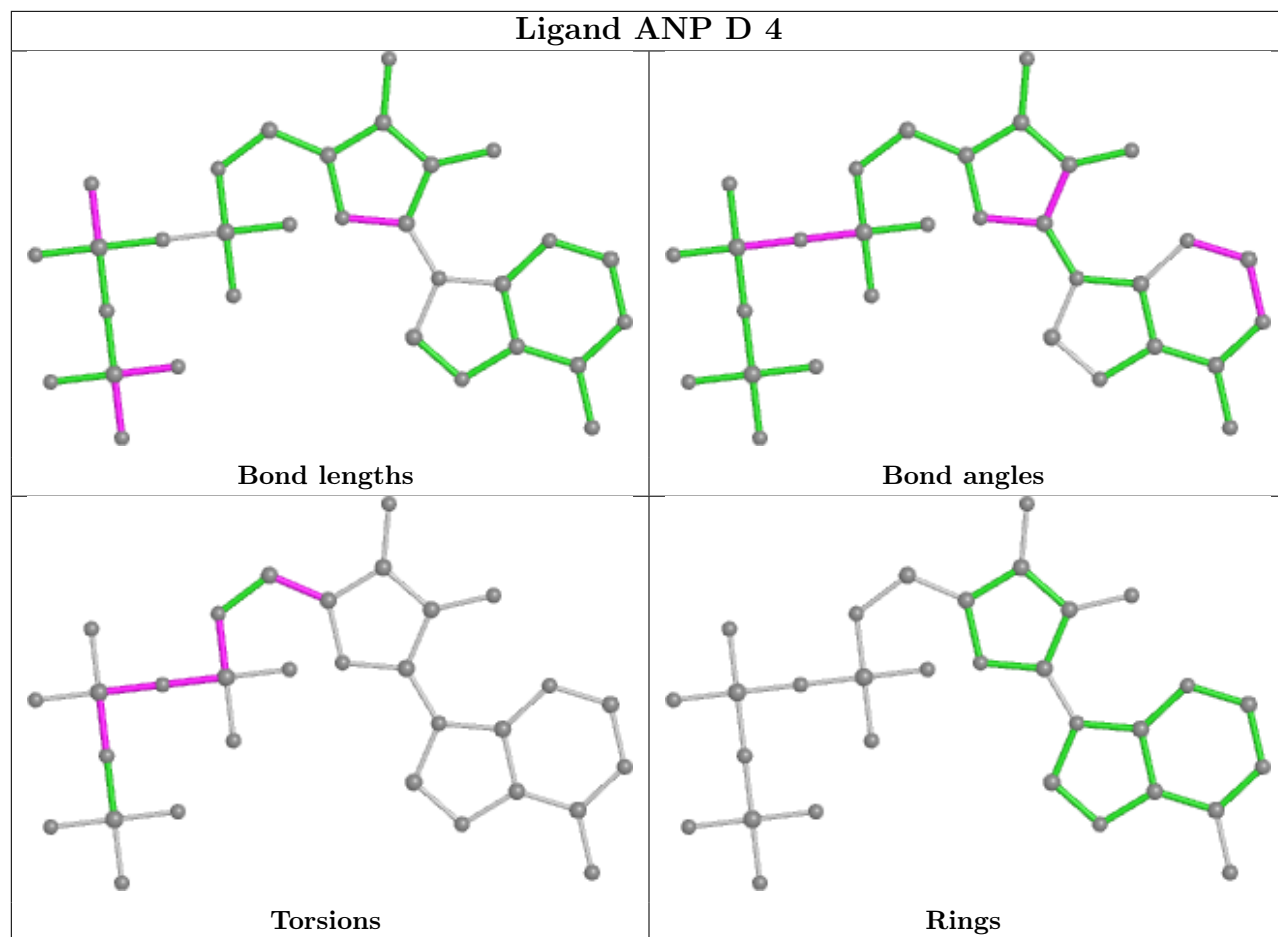
4 monomers are involved in 26 short contacts:

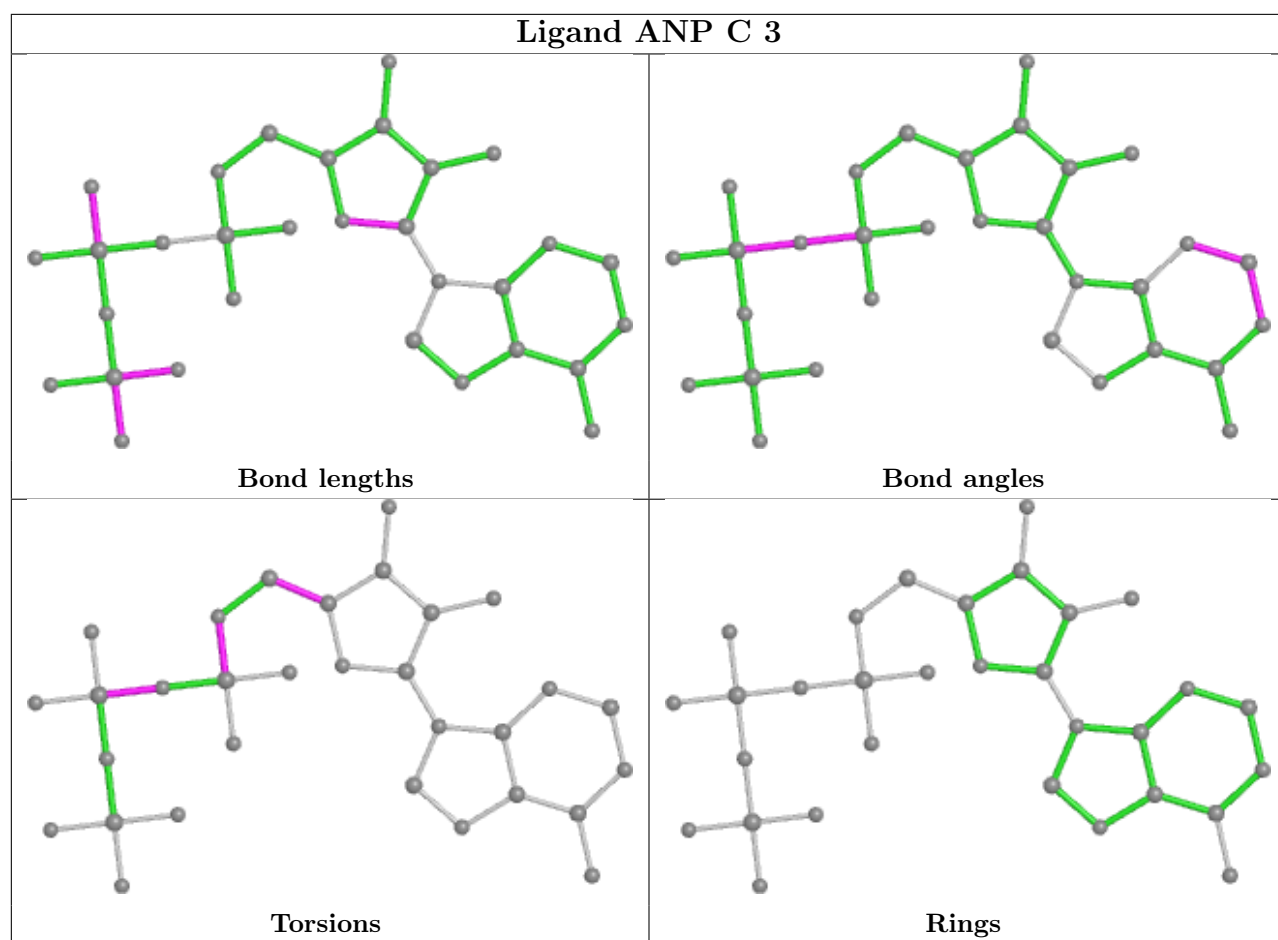
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	2	ANP	11	0
3	B	1	ANP	1	0
3	D	4	ANP	10	0
3	C	3	ANP	4	0

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









## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	300/330 (90%)	0.09	12 (4%) 38 25	26, 54, 111, 129	0
1	B	292/330 (88%)	-0.05	7 (2%) 59 42	21, 49, 84, 114	0
1	C	296/330 (89%)	-0.00	8 (2%) 54 38	19, 50, 88, 127	0
1	D	295/330 (89%)	0.07	13 (4%) 34 21	28, 58, 102, 144	0
2	X	0/11	-	-	-	-
All	All	1183/1331 (88%)	0.03	40 (3%) 45 29	19, 53, 99, 144	0

All (40) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	676	ASN	5.6
1	A	759	THR	5.4
1	C	727	THR	5.0
1	D	986	VAL	4.5
1	A	727	THR	4.3
1	C	726	ALA	3.4
1	D	893	GLY	3.3
1	A	964	HIS	3.3
1	B	965	LEU	3.3
1	C	675	PRO	3.1
1	A	680	LEU	3.1
1	D	960	ASP	3.0
1	D	731	ALA	3.0
1	B	760	SER	2.9
1	B	983	MET	2.7
1	C	961	GLU	2.7
1	A	962	ARG	2.6
1	D	711	GLY	2.4
1	A	740	TYR	2.4
1	B	964	HIS	2.4

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Mol	Chain	Res	Type	RSRZ
1	C	950	ASP	2.4
1	A	729	PRO	2.3
1	A	961	GLU	2.3
1	D	964	HIS	2.3
1	D	686	THR	2.3
1	D	962	ARG	2.3
1	D	985	ASP	2.3
1	B	982	ASP	2.3
1	C	958	GLN	2.2
1	D	961	GLU	2.2
1	C	983	MET	2.2
1	D	898	GLU	2.2
1	A	984	ASP	2.1
1	C	962	ARG	2.1
1	B	737	ASP	2.1
1	A	990	ASP	2.1
1	D	783	ASP	2.1
1	B	726	ALA	2.0
1	A	686	THR	2.0
1	D	952	GLN	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<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
4	MG	A	12	1/1	0.83	0.20	77,77,77,77	0
3	ANP	D	4	31/31	0.92	0.16	25,57,79,129	0
4	MG	B	11	1/1	0.92	0.18	35,35,35,35	0

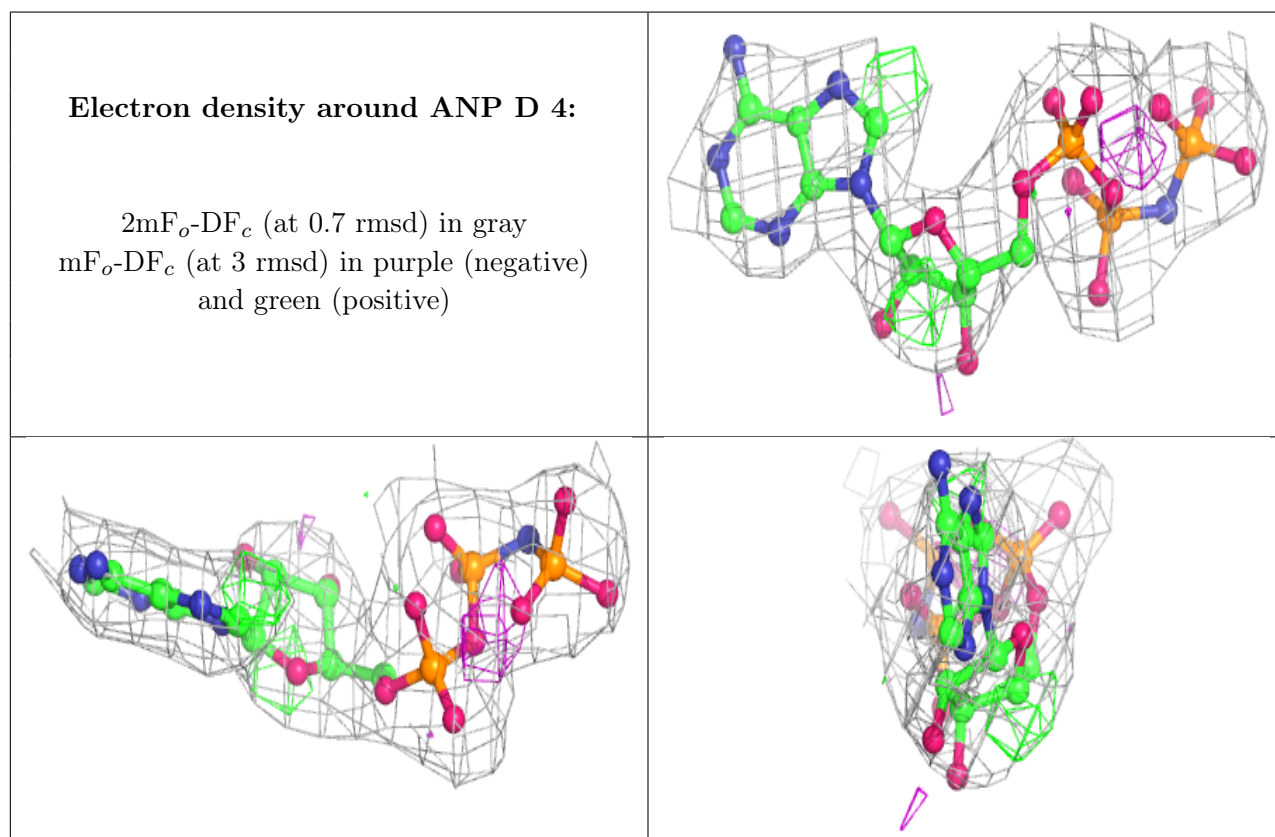
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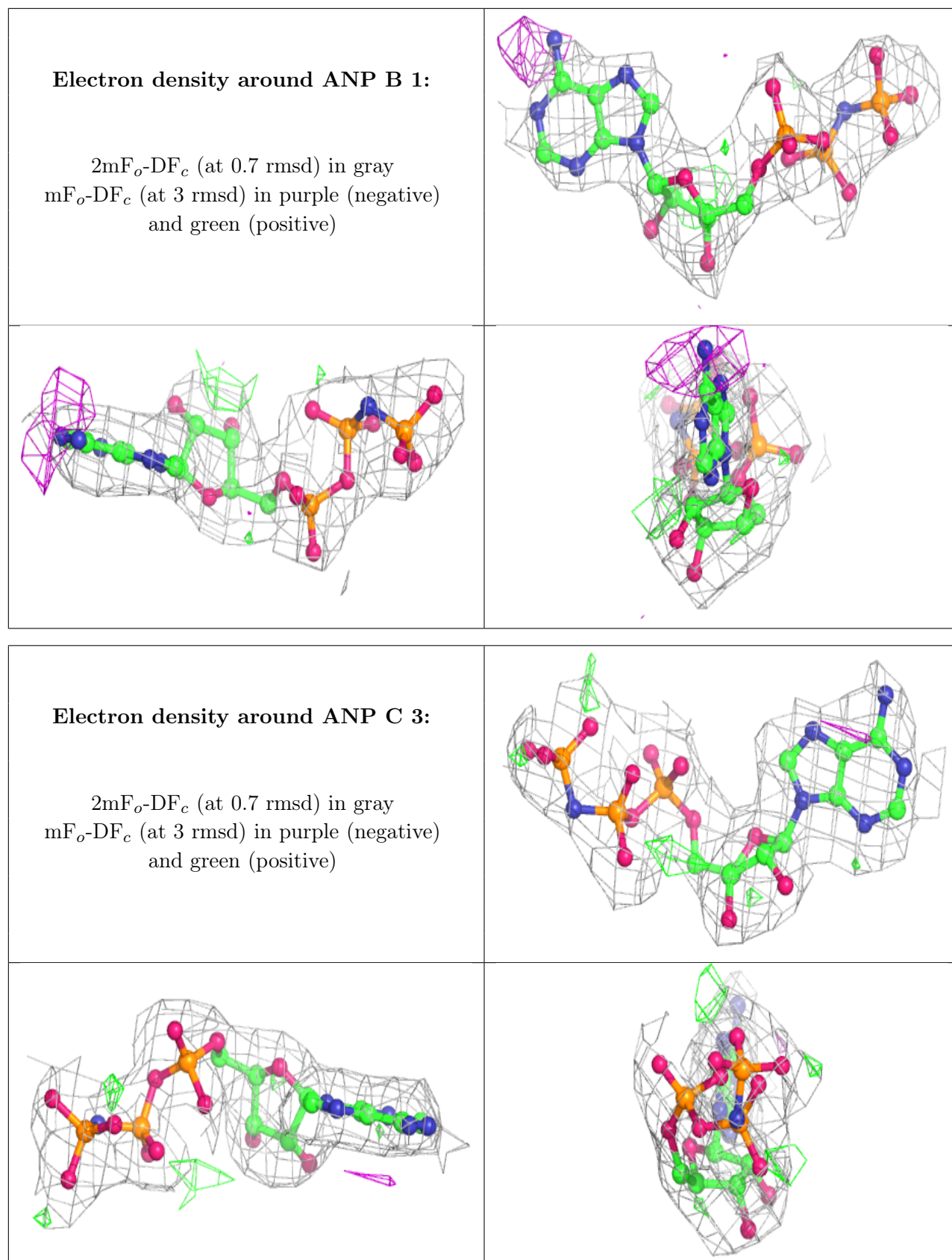


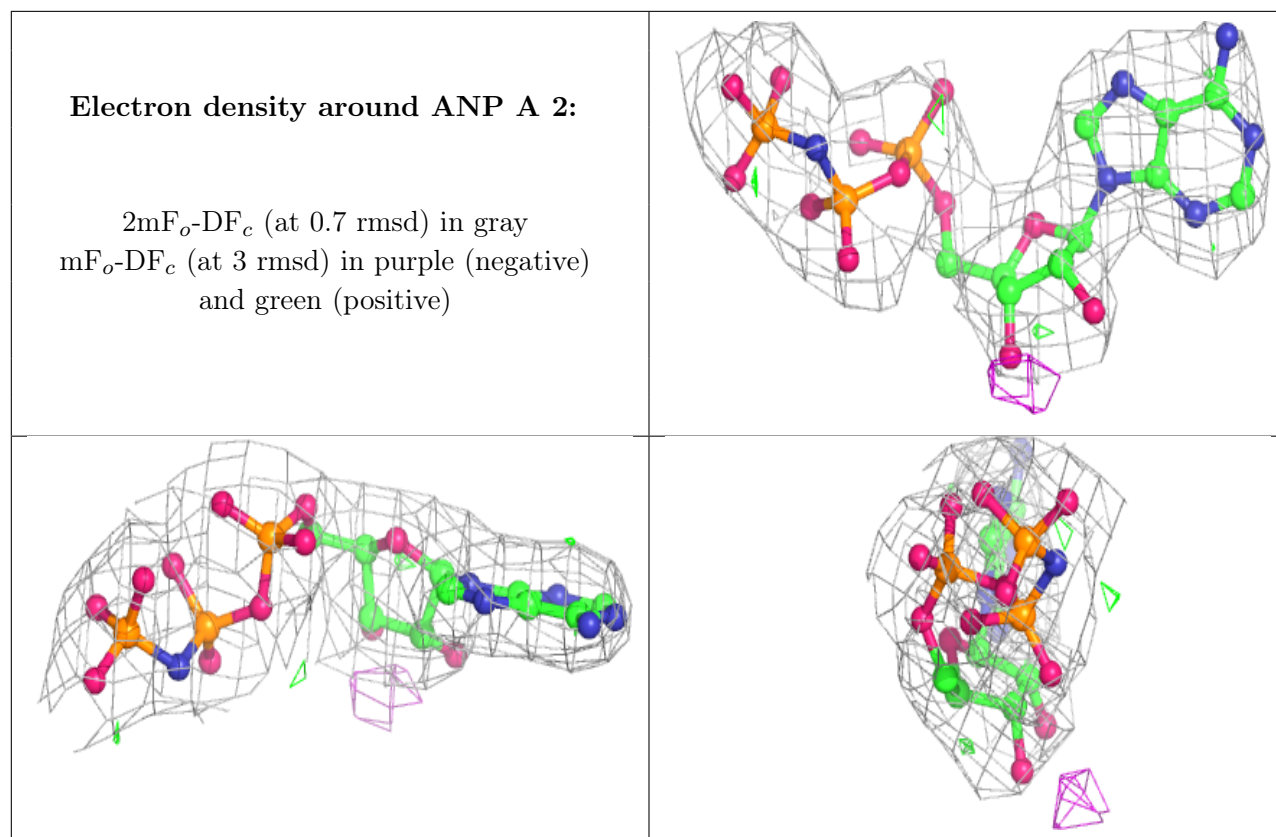
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
3	ANP	B	1	31/31	0.92	0.18	11,48,68,88	0
4	MG	D	14	1/1	0.92	0.07	44,44,44,44	0
3	ANP	C	3	31/31	0.94	0.17	35,45,61,76	0
3	ANP	A	2	31/31	0.95	0.15	19,51,76,173	0
4	MG	C	13	1/1	0.96	0.09	47,47,47,47	0

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







## 6.5 Other polymers [i](#)

There are no such residues in this entry.