



# Full wwPDB X-ray Structure Validation Report ⓘ

Jun 14, 2020 – 09:04 pm BST

PDB ID : 3A74  
Title : Lysyl-tRNA synthetase from *Bacillus stearothermophilus* complexed with Di-adenosine Tetraphosphate (AP4A)  
Authors : Sakurama, H.; Takita, T.; Mikami, B.; Itoh, T.; Yasukawa, K.; Inouye, K.  
Deposited on : 2009-09-13  
Resolution : 1.80 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 : 2.11  
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) : 2.11

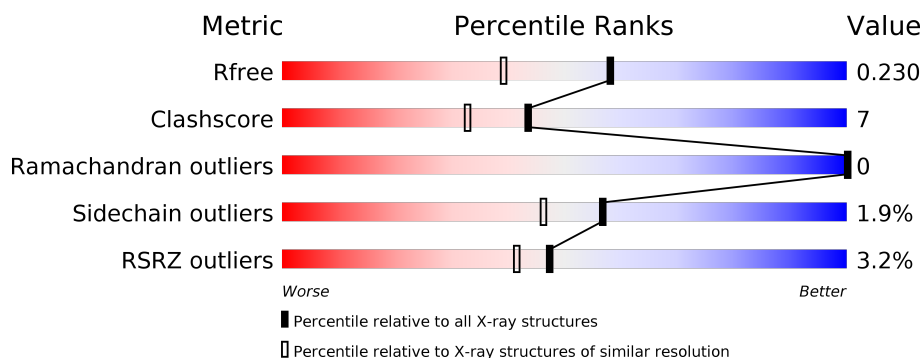
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 1.80 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	5950 (1.80-1.80)
Clashscore	141614	6793 (1.80-1.80)
Ramachandran outliers	138981	6697 (1.80-1.80)
Sidechain outliers	138945	6696 (1.80-1.80)
RSRZ outliers	127900	5850 (1.80-1.80)

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 on 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	493	<div> <div>3%</div> <div> <div></div> <div>84%</div> <div>13%</div> <div>..</div> </div> </div>
1	B	493	<div> <div>4%</div> <div> <div></div> <div>85%</div> <div>13%</div> <div>..</div> </div> </div>
1	C	493	<div> <div>3%</div> <div> <div></div> <div>83%</div> <div>14%</div> <div>..</div> </div> </div>
1	D	493	<div> <div>3%</div> <div> <div></div> <div>85%</div> <div>12%</div> <div>..</div> </div> </div>

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 crite-

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	MG	D	1300	-	-	-	X

## 2 Entry composition [i](#)

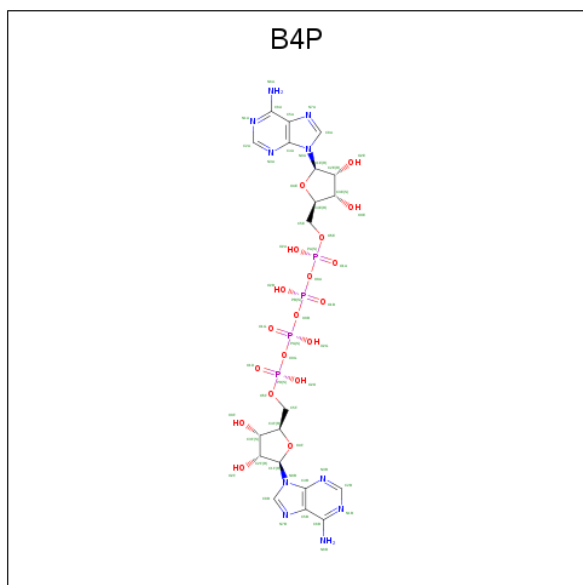
There are 5 unique types of molecules in this entry. The entry contains 16936 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Lysyl-tRNA synthetase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	484	Total	C	N	O	S	0	1	0
			3965	2514	691	742	18			
1	B	484	Total	C	N	O	S	0	1	0
			3965	2514	691	742	18			
1	C	484	Total	C	N	O	S	0	1	0
			3965	2514	691	742	18			
1	D	484	Total	C	N	O	S	0	1	0
			3965	2514	691	742	18			

- Molecule 2 is BIS(ADENOSINE)-5'-TETRAPHOSPHATE (three-letter code: B4P) (formula: C<sub>20</sub>H<sub>28</sub>N<sub>10</sub>O<sub>19</sub>P<sub>4</sub>).



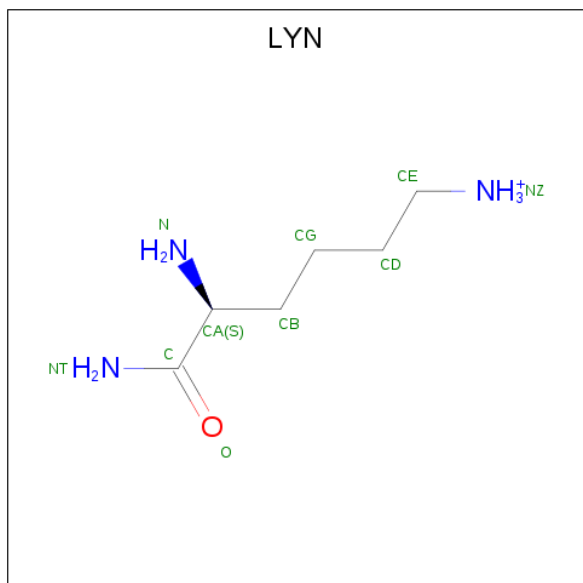
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	0	0
			53	20	10	19	4		
2	B	1	Total	C	N	O	P	0	0
			53	20	10	19	4		

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
2	C	1	Total	C	N	O	P	0	0
			53	20	10	19	4		
2	D	1	Total	C	N	O	P	0	0
			53	20	10	19	4		

- Molecule 3 is 2,6-DIAMINO-HEXANOIC ACID AMIDE (three-letter code: LYN) (formula:  $C_6H_{16}N_3O$ ).



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

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

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	B	3	Total	Mg	0	0
			3	3		
4	A	3	Total	Mg	0	0
			3	3		
4	D	3	Total	Mg	0	0
			3	3		

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	C	3	Total 3	Mg 3	0	0

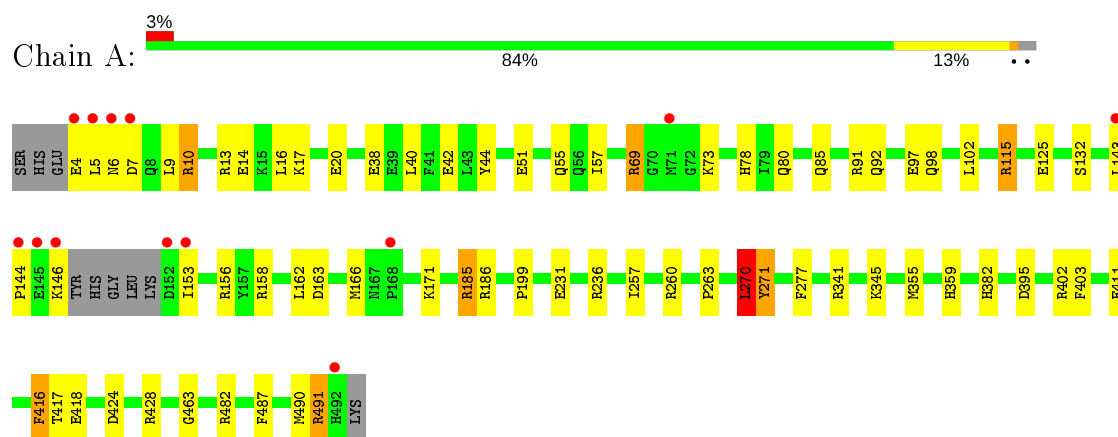
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	216	Total 216	O 216	0	0
5	B	195	Total 195	O 195	0	0
5	C	214	Total 214	O 214	0	0
5	D	187	Total 187	O 187	0	0

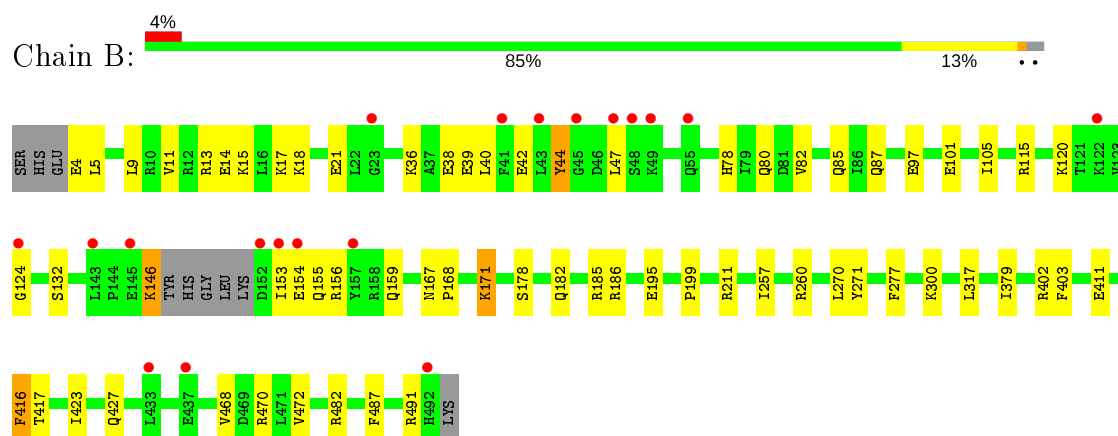
### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA 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.

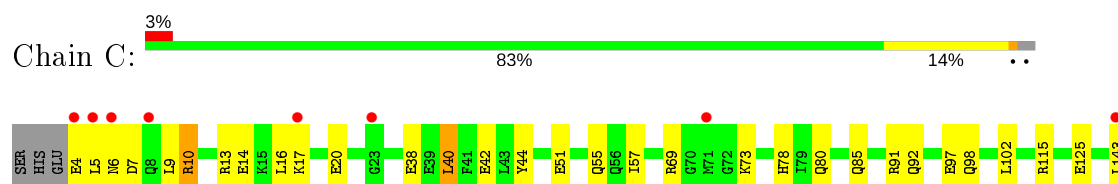
- Molecule 1: Lysyl-tRNA synthetase

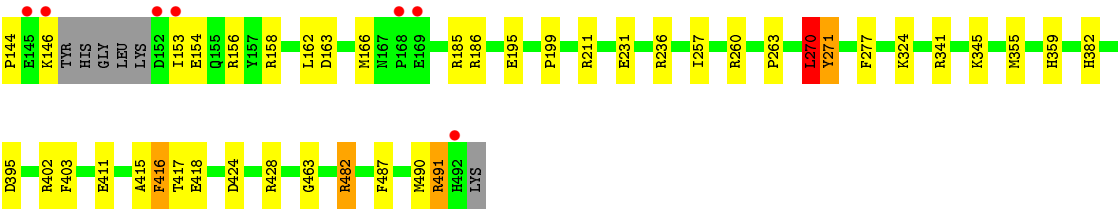


- Molecule 1: Lysyl-tRNA synthetase

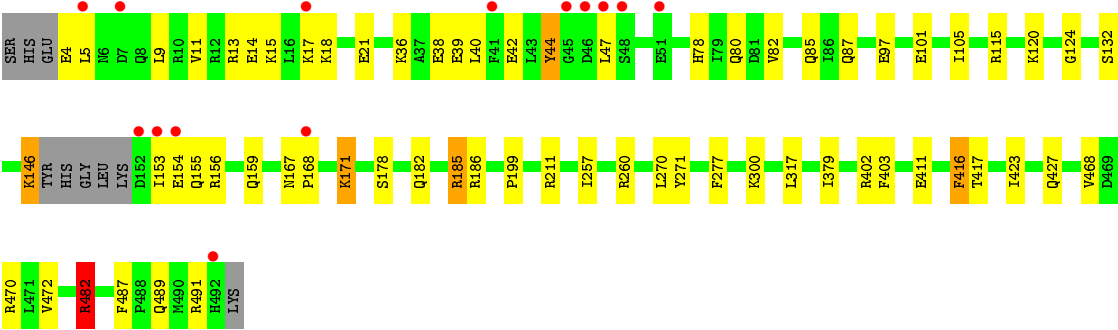
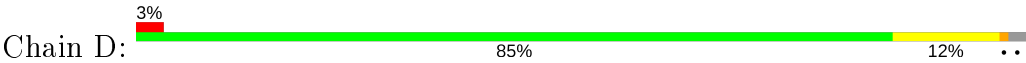


- Molecule 1: Lysyl-tRNA synthetase





● Molecule 1: Lysyl-tRNA synthetase





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	80.18Å 85.08Å 151.76Å 90.00° 90.01° 90.00°	Depositor
Resolution (Å)	14.96 – 1.80 35.27 – 1.70	Depositor EDS
% Data completeness (in resolution range)	97.4 (14.96-1.80) 98.0 (35.27-1.70)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.00	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.70 (at 1.70Å)	Xtriage
Refinement program	CNS	Depositor
R, $R_{free}$	0.207 , 0.228 0.208 , 0.230	Depositor DCC
$R_{free}$ test set	21886 reflections (9.97%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	16.2	Xtriage
Anisotropy	0.198	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.34 , 22.1	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.51$ , $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	0.487 for h,-k,-l	Xtriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	16936	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	18.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.69% of the height of the origin peak. No significant pseudotranslation is detected.*

<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, LYN, B4P

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	0.33	0/4044	1.06	29/5445 (0.5%)
1	B	0.31	0/4044	0.86	16/5445 (0.3%)
1	C	0.33	0/4044	1.00	29/5445 (0.5%)
1	D	0.32	0/4044	0.92	16/5445 (0.3%)
All	All	0.32	0/16176	0.96	90/21780 (0.4%)

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
1	C	0	1
1	D	0	1
All	All	0	4

There are no bond length outliers.

All (90) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	185	ARG	NE-CZ-NH2	-17.89	111.35	120.30
1	A	185	ARG	NE-CZ-NH1	-17.86	111.37	120.30
1	D	185	ARG	NE-CZ-NH1	16.97	128.79	120.30
1	A	185	ARG	NE-CZ-NH2	16.88	128.74	120.30
1	D	482	ARG	NE-CZ-NH1	-16.69	111.96	120.30
1	A	236	ARG	NE-CZ-NH2	-16.26	112.17	120.30
1	A	236	ARG	NE-CZ-NH1	15.92	128.26	120.30
1	A	491	ARG	NE-CZ-NH2	-15.46	112.57	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	482	ARG	NE-CZ-NH2	15.24	127.92	120.30
1	D	186	ARG	NE-CZ-NH2	-15.00	112.80	120.30
1	A	491	ARG	NE-CZ-NH1	14.98	127.79	120.30
1	A	69	ARG	NE-CZ-NH1	-14.64	112.98	120.30
1	A	69	ARG	NE-CZ-NH2	14.41	127.50	120.30
1	B	186	ARG	NE-CZ-NH1	-14.25	113.18	120.30
1	D	186	ARG	NE-CZ-NH1	14.24	127.42	120.30
1	D	211	ARG	NE-CZ-NH2	-14.21	113.19	120.30
1	B	211	ARG	NE-CZ-NH1	-14.08	113.26	120.30
1	A	115	ARG	NE-CZ-NH1	14.05	127.33	120.30
1	A	115	ARG	NE-CZ-NH2	-13.95	113.33	120.30
1	B	211	ARG	NE-CZ-NH2	13.93	127.27	120.30
1	C	115	ARG	NE-CZ-NH1	-13.84	113.38	120.30
1	B	482	ARG	NE-CZ-NH2	-13.75	113.43	120.30
1	C	186	ARG	NE-CZ-NH2	-13.72	113.44	120.30
1	B	186	ARG	NE-CZ-NH2	13.71	127.15	120.30
1	D	211	ARG	NE-CZ-NH1	13.57	127.08	120.30
1	C	491	ARG	NE-CZ-NH1	-13.41	113.59	120.30
1	B	13	ARG	NE-CZ-NH2	-13.37	113.61	120.30
1	A	10	ARG	NE-CZ-NH1	-13.34	113.63	120.30
1	C	115	ARG	NE-CZ-NH2	13.32	126.96	120.30
1	B	482	ARG	NE-CZ-NH1	13.30	126.95	120.30
1	C	69	ARG	NE-CZ-NH2	-13.27	113.67	120.30
1	C	91	ARG	NE-CZ-NH2	-13.25	113.68	120.30
1	B	13	ARG	NE-CZ-NH1	13.24	126.92	120.30
1	A	186	ARG	NE-CZ-NH1	-13.24	113.68	120.30
1	C	482	ARG	NE-CZ-NH1	13.17	126.89	120.30
1	D	13	ARG	NE-CZ-NH1	-13.12	113.74	120.30
1	C	185	ARG	NE-CZ-NH2	-13.08	113.76	120.30
1	C	186	ARG	NE-CZ-NH1	13.07	126.84	120.30
1	C	10	ARG	NE-CZ-NH2	-12.98	113.81	120.30
1	C	482	ARG	NE-CZ-NH2	-12.94	113.83	120.30
1	A	10	ARG	NE-CZ-NH2	12.90	126.75	120.30
1	C	236	ARG	NE-CZ-NH1	-12.88	113.86	120.30
1	D	13	ARG	NE-CZ-NH2	12.87	126.73	120.30
1	A	186	ARG	NE-CZ-NH2	12.81	126.71	120.30
1	C	91	ARG	NE-CZ-NH1	12.73	126.66	120.30
1	A	91	ARG	NE-CZ-NH1	-12.67	113.97	120.30
1	C	491	ARG	NE-CZ-NH2	12.59	126.59	120.30
1	C	10	ARG	NE-CZ-NH1	12.53	126.57	120.30
1	C	69	ARG	NE-CZ-NH1	12.47	126.53	120.30
1	B	185	ARG	NE-CZ-NH1	-12.32	114.14	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	91	ARG	NE-CZ-NH2	12.23	126.41	120.30
1	C	236	ARG	NE-CZ-NH2	12.20	126.40	120.30
1	C	185	ARG	NE-CZ-NH1	12.03	126.32	120.30
1	B	185	ARG	NE-CZ-NH2	11.65	126.12	120.30
1	A	482	ARG	NE-CZ-NH1	-11.25	114.68	120.30
1	A	482	ARG	NE-CZ-NH2	11.18	125.89	120.30
1	D	185	ARG	CD-NE-CZ	8.33	135.26	123.60
1	A	185	ARG	CD-NE-CZ	8.13	134.98	123.60
1	A	236	ARG	CD-NE-CZ	8.07	134.90	123.60
1	D	482	ARG	CD-NE-CZ	7.77	134.48	123.60
1	A	491	ARG	CD-NE-CZ	7.46	134.04	123.60
1	A	69	ARG	CD-NE-CZ	7.40	133.96	123.60
1	A	115	ARG	CD-NE-CZ	7.33	133.86	123.60
1	B	482	ARG	CD-NE-CZ	7.26	133.77	123.60
1	D	186	ARG	CD-NE-CZ	7.22	133.71	123.60
1	B	186	ARG	CD-NE-CZ	7.20	133.67	123.60
1	B	211	ARG	CD-NE-CZ	7.16	133.63	123.60
1	B	13	ARG	CD-NE-CZ	6.87	133.21	123.60
1	C	115	ARG	CD-NE-CZ	6.80	133.12	123.60
1	D	13	ARG	CD-NE-CZ	6.76	133.07	123.60
1	C	91	ARG	CD-NE-CZ	6.74	133.03	123.60
1	A	10	ARG	CD-NE-CZ	6.73	133.02	123.60
1	A	186	ARG	CD-NE-CZ	6.72	133.01	123.60
1	D	211	ARG	CD-NE-CZ	6.72	133.01	123.60
1	C	69	ARG	CD-NE-CZ	6.70	132.98	123.60
1	C	491	ARG	CD-NE-CZ	6.61	132.86	123.60
1	C	186	ARG	CD-NE-CZ	6.57	132.79	123.60
1	C	236	ARG	CD-NE-CZ	6.54	132.76	123.60
1	C	417	THR	N-CA-C	-6.44	93.61	111.00
1	A	417	THR	N-CA-C	-6.44	93.62	111.00
1	C	10	ARG	CD-NE-CZ	6.40	132.56	123.60
1	C	270	LEU	CA-CB-CG	6.30	129.78	115.30
1	A	91	ARG	CD-NE-CZ	6.27	132.38	123.60
1	C	185	ARG	CD-NE-CZ	6.21	132.29	123.60
1	A	270	LEU	CA-CB-CG	6.17	129.49	115.30
1	B	185	ARG	CD-NE-CZ	6.02	132.03	123.60
1	C	482	ARG	CD-NE-CZ	6.00	132.01	123.60
1	B	417	THR	N-CA-C	-5.86	95.17	111.00
1	D	417	THR	N-CA-C	-5.85	95.21	111.00
1	A	482	ARG	CD-NE-CZ	5.58	131.42	123.60

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	271	TYR	Sidechain
1	B	271	TYR	Sidechain
1	C	271	TYR	Sidechain
1	D	271	TYR	Sidechain

## 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	3965	0	3926	55	0
1	B	3965	0	3926	52	0
1	C	3965	0	3926	58	0
1	D	3965	0	3926	52	0
2	A	53	0	24	1	0
2	B	53	0	24	2	0
2	C	53	0	24	2	0
2	D	53	0	24	1	0
3	A	10	0	16	0	0
3	B	10	0	16	0	0
3	C	10	0	16	0	0
3	D	10	0	16	0	0
4	A	3	0	0	0	0
4	B	3	0	0	0	0
4	C	3	0	0	0	0
4	D	3	0	0	0	0
5	A	216	0	0	3	0
5	B	195	0	0	1	0
5	C	214	0	0	5	0
5	D	187	0	0	0	0
All	All	16936	0	15864	215	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 7.

All (215) 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:D:44:TYR:HB3	1:D:47:LEU:HD22	1.55	0.86
1:B:44:TYR:HB3	1:B:47:LEU:HD22	1.56	0.85
1:B:257:ILE:HD11	1:B:491:ARG:HH21	1.43	0.83
1:A:143:LEU:HD12	1:A:143:LEU:H	1.43	0.83
1:D:257:ILE:HD11	1:D:491:ARG:HH21	1.44	0.83
1:C:143:LEU:HD12	1:C:143:LEU:H	1.44	0.83
1:D:411[B]:GLU:CD	1:D:411[B]:GLU:H	1.86	0.79
1:A:6:ASN:H	1:A:9:LEU:HD12	1.51	0.76
1:C:6:ASN:H	1:C:9:LEU:HD12	1.52	0.75
1:B:155:GLN:NE2	1:B:159:GLN:HE21	1.86	0.72
1:D:155:GLN:NE2	1:D:159:GLN:HE21	1.87	0.72
1:A:153:ILE:HG23	1:A:156:ARG:HH22	1.55	0.70
1:C:153:ILE:HG23	1:C:156:ARG:HH22	1.55	0.70
1:D:482:ARG:NH1	1:D:489:GLN:O	2.21	0.70
1:D:155:GLN:HE21	1:D:159:GLN:HE21	1.38	0.70
1:B:155:GLN:HE21	1:B:159:GLN:HE21	1.38	0.69
1:A:10:ARG:O	1:A:14:GLU:HG3	1.93	0.69
1:C:10:ARG:O	1:C:14:GLU:HG3	1.93	0.69
1:A:78:HIS:HE1	1:A:125:GLU:OE1	1.79	0.66
1:C:78:HIS:HE1	1:C:125:GLU:OE1	1.79	0.66
1:D:4:GLU:HG2	1:D:5:LEU:H	1.59	0.66
1:B:4:GLU:HG2	1:B:5:LEU:H	1.59	0.66
1:C:144:PRO:HG2	1:C:162:LEU:HD13	1.77	0.66
1:A:144:PRO:HG2	1:A:162:LEU:HD13	1.77	0.65
1:A:5:LEU:C	1:A:7:ASP:H	1.99	0.65
1:C:5:LEU:C	1:C:7:ASP:H	1.99	0.65
1:C:158:ARG:HD2	1:C:490:MET:HE2	1.78	0.65
1:A:158:ARG:HD2	1:A:490:MET:HE2	1.79	0.64
1:B:257:ILE:CD1	1:B:491:ARG:HE	2.11	0.63
1:D:257:ILE:CD1	1:D:491:ARG:HE	2.11	0.63
1:B:153:ILE:HD11	5:B:1108:HOH:O	1.99	0.63
1:D:78:HIS:CE1	1:D:87:GLN:HB2	2.34	0.63
1:A:153:ILE:HG23	1:A:156:ARG:NH2	2.14	0.63
1:C:153:ILE:HG23	1:C:156:ARG:NH2	2.13	0.63
1:D:11:VAL:O	1:D:14:GLU:HG2	1.99	0.62
1:B:78:HIS:CE1	1:B:87:GLN:HB2	2.34	0.62
1:A:411[B]:GLU:CD	1:A:411[B]:GLU:H	2.02	0.62
1:B:11:VAL:O	1:B:14:GLU:HG2	2.00	0.62
1:D:36:LYS:HB2	1:D:39:GLU:HG3	1.82	0.62
1:A:143:LEU:HD12	1:A:143:LEU:N	2.14	0.61
1:A:16:LEU:O	1:A:20:GLU:HG3	1.99	0.61
1:C:482:ARG:HD3	5:C:785:HOH:O	2.01	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:38:GLU:O	1:D:42:GLU:HG3	2.00	0.61
1:B:36:LYS:HB2	1:B:39:GLU:HG3	1.83	0.61
1:C:16:LEU:O	1:C:20:GLU:HG3	2.00	0.61
1:B:423:ILE:O	1:B:427:GLN:HG3	2.01	0.61
1:C:143:LEU:N	1:C:143:LEU:HD12	2.15	0.61
1:B:38:GLU:O	1:B:42:GLU:HG3	2.01	0.61
1:D:82:VAL:O	1:D:171:LYS:HE2	2.02	0.60
1:B:257:ILE:HD11	1:B:491:ARG:NH2	2.14	0.60
1:D:257:ILE:HD11	1:D:491:ARG:NH2	2.15	0.60
1:D:423:ILE:O	1:D:427:GLN:HG3	2.01	0.60
1:B:82:VAL:O	1:B:171:LYS:HE2	2.02	0.59
1:D:146:LYS:HE3	1:D:146:LYS:C	2.23	0.59
1:B:146:LYS:HE3	1:B:146:LYS:C	2.23	0.59
1:B:168:PRO:O	1:B:171:LYS:HG2	2.03	0.58
1:D:168:PRO:O	1:D:171:LYS:HG2	2.03	0.58
1:B:120:LYS:HB3	1:B:124:GLY:HA2	1.85	0.58
1:D:120:LYS:HB3	1:D:124:GLY:HA2	1.85	0.57
1:D:257:ILE:HD11	1:D:491:ARG:HE	1.68	0.57
1:B:18:LYS:HE3	1:B:105:ILE:HD11	1.87	0.56
1:B:257:ILE:HD11	1:B:491:ARG:HE	1.68	0.56
1:D:18:LYS:HE3	1:D:105:ILE:HD11	1.88	0.56
1:A:38:GLU:O	1:A:42:GLU:HG3	2.06	0.56
1:C:5:LEU:HD13	1:C:6:ASN:OD1	2.06	0.56
1:C:98:GLN:O	1:C:102:LEU:HD13	2.05	0.56
1:A:5:LEU:HD13	1:A:6:ASN:OD1	2.06	0.56
1:A:98:GLN:O	1:A:102:LEU:HD13	2.05	0.56
1:C:38:GLU:O	1:C:42:GLU:HG3	2.06	0.55
1:A:73:LYS:HG2	5:A:1297:HOH:O	2.05	0.55
1:A:80:GLN:HB2	1:A:85:GLN:HG2	1.89	0.55
1:C:80:GLN:HB2	1:C:85:GLN:HG2	1.90	0.54
1:C:411[B]:GLU:CD	1:C:411[B]:GLU:H	2.08	0.54
1:C:17:LYS:NZ	1:C:17:LYS:HB3	2.23	0.53
1:A:143:LEU:CD1	1:A:143:LEU:H	2.17	0.53
1:A:17:LYS:NZ	1:A:17:LYS:HB3	2.23	0.53
1:C:143:LEU:H	1:C:143:LEU:CD1	2.17	0.53
2:B:494:B4P:H3E	2:B:494:B4P:O3A	2.09	0.53
1:C:44:TYR:CE2	1:C:57:ILE:HD13	2.43	0.53
1:D:44:TYR:HA	1:D:47:LEU:HD13	1.90	0.53
1:B:17:LYS:O	1:B:21:GLU:HG3	2.09	0.52
1:D:178:SER:O	1:D:182:GLN:HG3	2.10	0.52
1:D:17:LYS:O	1:D:21:GLU:HG3	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:44:TYR:CE2	1:A:57:ILE:HD13	2.44	0.52
1:C:257:ILE:HG22	1:C:263:PRO:HD3	1.91	0.52
1:A:156:ARG:HG3	1:A:163:ASP:CG	2.31	0.52
1:B:178:SER:O	1:B:182:GLN:HG3	2.10	0.52
1:B:44:TYR:HA	1:B:47:LEU:HD13	1.91	0.52
1:C:156:ARG:HG3	1:C:163:ASP:CG	2.30	0.52
1:A:6:ASN:H	1:A:9:LEU:CD1	2.22	0.52
1:A:6:ASN:HA	1:A:9:LEU:HB2	1.91	0.52
1:B:171:LYS:HZ2	1:B:171:LYS:HB2	1.75	0.52
1:C:6:ASN:HA	1:C:9:LEU:HB2	1.91	0.52
1:A:257:ILE:HG22	1:A:263:PRO:HD3	1.92	0.51
1:D:171:LYS:HZ2	1:D:171:LYS:HB2	1.75	0.51
1:C:146:LYS:HB2	1:C:166:MET:HE2	1.93	0.51
1:A:146:LYS:HB2	1:A:166:MET:HE2	1.93	0.51
1:C:6:ASN:H	1:C:9:LEU:CD1	2.23	0.51
1:A:6:ASN:N	1:A:9:LEU:HD12	2.22	0.51
1:D:146:LYS:HE3	1:D:146:LYS:CA	2.41	0.51
1:B:146:LYS:HE3	1:B:146:LYS:CA	2.41	0.51
1:A:6:ASN:CA	1:A:9:LEU:HB2	2.42	0.50
1:B:15:LYS:HA	1:B:18:LYS:HE3	1.93	0.50
1:C:6:ASN:CA	1:C:9:LEU:HB2	2.42	0.50
1:A:270:LEU:C	1:A:270:LEU:HD12	2.32	0.50
1:D:15:LYS:HA	1:D:18:LYS:HE3	1.94	0.50
1:C:263:PRO:HB2	5:C:847:HOH:O	2.12	0.50
1:C:270:LEU:C	1:C:270:LEU:HD12	2.32	0.50
1:A:158:ARG:HD2	1:A:490:MET:CE	2.40	0.50
1:C:158:ARG:HD2	1:C:490:MET:CE	2.40	0.50
1:C:6:ASN:N	1:C:9:LEU:HD12	2.23	0.50
1:C:6:ASN:O	1:C:10:ARG:HB2	2.12	0.50
1:A:263:PRO:HB2	5:A:882:HOH:O	2.12	0.50
1:B:411[B]:GLU:CD	1:B:411[B]:GLU:H	2.15	0.50
1:C:402:ARG:HG3	1:C:416:PHE:HD1	1.78	0.49
1:B:153:ILE:HG23	1:B:154:GLU:N	2.26	0.49
1:A:402:ARG:HG3	1:A:416:PHE:HD1	1.78	0.49
1:B:153:ILE:HG23	1:B:154:GLU:H	1.78	0.49
1:B:5:LEU:HD13	1:B:5:LEU:C	2.33	0.49
1:C:73:LYS:HD2	1:C:92:GLN:HE22	1.78	0.48
1:A:73:LYS:HD2	1:A:92:GLN:HE22	1.78	0.48
1:D:153:ILE:HG23	1:D:154:GLU:H	1.78	0.48
1:D:153:ILE:HG23	1:D:154:GLU:N	2.27	0.48
2:D:494:B4P:O3A	2:D:494:B4P:H3E	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:5:LEU:HD13	1:D:5:LEU:C	2.33	0.48
1:A:6:ASN:O	1:A:10:ARG:HB2	2.14	0.48
1:D:402:ARG:HG3	1:D:416:PHE:HD1	1.79	0.48
1:C:418:GLU:OE1	1:C:463:GLY:HA3	2.14	0.48
2:C:494:B4P:O3G	2:C:494:B4P:H3F	2.15	0.47
1:C:5:LEU:C	1:C:7:ASP:N	2.67	0.47
1:A:5:LEU:O	1:A:6:ASN:HB2	2.14	0.47
1:C:231:GLU:HG3	1:C:271:TYR:OH	2.13	0.47
1:A:418:GLU:OE1	1:A:463:GLY:HA3	2.14	0.47
1:C:5:LEU:O	1:C:6:ASN:HB2	2.14	0.47
1:A:5:LEU:C	1:A:7:ASP:N	2.67	0.47
1:C:73:LYS:HD2	1:C:92:GLN:NE2	2.29	0.47
1:A:73:LYS:HD2	1:A:92:GLN:NE2	2.30	0.47
1:A:13:ARG:O	1:A:16:LEU:HB3	2.15	0.46
1:A:231:GLU:HG3	1:A:271:TYR:OH	2.14	0.46
1:B:402:ARG:HG3	1:B:416:PHE:HD1	1.80	0.46
1:D:411[B]:GLU:N	1:D:411[B]:GLU:CD	2.64	0.46
1:A:185:ARG:NH1	1:B:195:GLU:OE1	2.46	0.46
1:C:13:ARG:O	1:C:16:LEU:HB3	2.16	0.46
1:C:424:ASP:O	1:C:428:ARG:HG2	2.16	0.46
1:C:51:GLU:O	1:C:55:GLN:HG3	2.16	0.46
1:C:195:GLU:OE1	1:D:185:ARG:NH2	2.49	0.45
1:C:260:ARG:HH11	1:C:260:ARG:HG2	1.80	0.45
1:A:171:LYS:NZ	5:A:1262:HOH:O	2.33	0.45
1:A:260:ARG:HG2	1:A:260:ARG:HH11	1.81	0.45
1:A:424:ASP:O	1:A:428:ARG:HG2	2.16	0.45
1:A:491:ARG:NH2	1:C:55:GLN:O	2.45	0.45
1:A:51:GLU:O	1:A:55:GLN:HG3	2.17	0.45
1:B:171:LYS:HB2	1:B:171:LYS:NZ	2.31	0.45
1:C:38:GLU:OE2	1:C:38:GLU:HA	2.17	0.45
1:C:487:PHE:HB2	1:D:199:PRO:CG	2.47	0.45
1:D:80:GLN:HB2	1:D:85:GLN:HG2	1.98	0.45
1:A:38:GLU:HA	1:A:38:GLU:OE2	2.17	0.45
1:D:171:LYS:NZ	1:D:171:LYS:HB2	2.32	0.45
1:A:487:PHE:HB2	1:B:199:PRO:CG	2.47	0.44
1:B:80:GLN:HB2	1:B:85:GLN:HG2	1.99	0.44
1:B:403:PHE:C	1:B:403:PHE:CD1	2.90	0.44
1:C:491:ARG:HG3	5:C:1227:HOH:O	2.18	0.44
1:A:382:HIS:HB2	1:A:402:ARG:HD3	1.99	0.44
1:D:270:LEU:HD23	1:D:270:LEU:C	2.38	0.44
1:D:403:PHE:C	1:D:403:PHE:CD1	2.91	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:411[B]:GLU:HG2	1:B:470:ARG:NH2	2.33	0.43
2:C:494:B4P:O5E	2:C:494:B4P:H2E	2.18	0.43
1:D:153:ILE:HA	1:D:156:ARG:HE	1.84	0.43
1:B:468:VAL:O	1:B:472:VAL:HG23	2.19	0.43
1:B:15:LYS:HA	1:B:18:LYS:CE	2.49	0.43
1:B:153:ILE:HA	1:B:156:ARG:HE	1.84	0.43
1:A:185:ARG:HH12	1:B:195:GLU:CD	2.21	0.43
1:C:211:ARG:NH1	5:C:685:HOH:O	2.51	0.43
1:C:382:HIS:HB2	1:C:402:ARG:HD3	2.00	0.43
1:D:468:VAL:O	1:D:472:VAL:HG23	2.19	0.43
1:B:270:LEU:C	1:B:270:LEU:HD23	2.39	0.43
1:B:47:LEU:C	1:B:120:LYS:HZ2	2.21	0.43
1:D:15:LYS:HA	1:D:18:LYS:CE	2.49	0.43
1:D:146:LYS:HE3	1:D:146:LYS:HA	2.00	0.42
1:B:167:ASN:HA	1:B:168:PRO:HD2	1.89	0.42
1:C:154:GLU:OE2	1:C:482:ARG:NH2	2.52	0.42
1:D:167:ASN:HA	1:D:168:PRO:HD2	1.89	0.42
1:A:4:GLU:HG2	1:A:5:LEU:N	2.34	0.42
1:B:146:LYS:HE3	1:B:146:LYS:HA	2.01	0.42
2:B:494:B4P:O5F	2:B:494:B4P:H2F	2.19	0.42
1:B:4:GLU:HG2	1:B:5:LEU:N	2.29	0.42
1:C:4:GLU:HG2	1:C:5:LEU:N	2.34	0.42
1:D:257:ILE:HD11	1:D:491:ARG:NE	2.33	0.42
1:B:257:ILE:HD11	1:B:491:ARG:NE	2.33	0.42
1:C:199:PRO:CG	1:D:487:PHE:HB2	2.50	0.42
1:D:4:GLU:HG2	1:D:5:LEU:N	2.29	0.42
1:C:355:MET:HB3	1:C:359:HIS:HB2	2.01	0.42
1:A:199:PRO:CG	1:B:487:PHE:HB2	2.50	0.42
1:C:341:ARG:O	1:C:345:LYS:HG3	2.20	0.42
1:B:317:LEU:O	1:B:379:ILE:HA	2.19	0.41
1:D:101:GLU:OE2	1:D:101:GLU:HA	2.21	0.41
1:D:317:LEU:O	1:D:379:ILE:HA	2.20	0.41
1:A:341:ARG:O	1:A:345:LYS:HG3	2.21	0.41
1:B:257:ILE:HD13	1:B:491:ARG:HE	1.85	0.41
1:B:101:GLU:HA	1:B:101:GLU:OE2	2.21	0.41
1:D:257:ILE:HD13	1:D:491:ARG:HE	1.86	0.41
1:D:47:LEU:C	1:D:120:LYS:HZ2	2.23	0.41
2:A:494:B4P:H3F	2:A:494:B4P:O3G	2.21	0.41
1:C:324:LYS:HE3	5:C:1045:HOH:O	2.20	0.41
1:C:403:PHE:CD1	1:C:403:PHE:C	2.94	0.41
1:C:415:ALA:HB1	1:C:463:GLY:O	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:5:LEU:O	1:B:9:LEU:HG	2.21	0.40
1:D:411[B]:GLU:HG2	1:D:470:ARG:NH2	2.36	0.40
1:A:355:MET:HB3	1:A:359:HIS:HB2	2.02	0.40
1:A:403:PHE:CD1	1:A:403:PHE:C	2.94	0.40
1:A:115:ARG:HB2	1:A:132:SER:HB3	2.03	0.40
1:C:40:LEU:HA	1:C:40:LEU:HD12	1.93	0.40
1:D:115:ARG:HB2	1:D:132:SER:HB3	2.02	0.40
1:D:5:LEU:O	1:D:9:LEU:HG	2.21	0.40
1:B:115:ARG:HB2	1:B:132:SER:HB3	2.02	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	481/493 (98%)	466 (97%)	15 (3%)	0	100	100
1	B	481/493 (98%)	468 (97%)	13 (3%)	0	100	100
1	C	481/493 (98%)	466 (97%)	15 (3%)	0	100	100
1	D	481/493 (98%)	468 (97%)	13 (3%)	0	100	100
All	All	1924/1972 (98%)	1868 (97%)	56 (3%)	0	100	100

There are no Ramachandran outliers to report.

### 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	426/433 (98%)	419 (98%)	7 (2%)	62	54
1	B	426/433 (98%)	417 (98%)	9 (2%)	53	42
1	C	426/433 (98%)	420 (99%)	6 (1%)	67	59
1	D	426/433 (98%)	416 (98%)	10 (2%)	50	37
All	All	1704/1732 (98%)	1672 (98%)	32 (2%)	57	46

All (32) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	40	LEU
1	A	69	ARG
1	A	97	GLU
1	A	270	LEU
1	A	277	PHE
1	A	395	ASP
1	A	416	PHE
1	B	40	LEU
1	B	44	TYR
1	B	97	GLU
1	B	146	LYS
1	B	171	LYS
1	B	260	ARG
1	B	277	PHE
1	B	300	LYS
1	B	416	PHE
1	C	40	LEU
1	C	97	GLU
1	C	270	LEU
1	C	277	PHE
1	C	395	ASP
1	C	416	PHE
1	D	40	LEU
1	D	44	TYR
1	D	97	GLU
1	D	146	LYS
1	D	171	LYS
1	D	260	ARG
1	D	277	PHE
1	D	300	LYS
1	D	416	PHE
1	D	482	ARG

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

Mol	Chain	Res	Type
1	A	55	GLN
1	A	56	GLN
1	A	78	HIS
1	A	92	GLN
1	A	216	HIS
1	A	218	ASN
1	A	233	HIS
1	B	78	HIS
1	B	155	GLN
1	B	233	HIS
1	B	302	GLN
1	C	55	GLN
1	C	56	GLN
1	C	78	HIS
1	C	92	GLN
1	C	218	ASN
1	C	233	HIS
1	D	78	HIS
1	D	155	GLN
1	D	233	HIS
1	D	302	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 carbohydrates in this entry.

### 5.6 Ligand geometry [i](#)

Of 20 ligands modelled in this entry, 12 are monoatomic - leaving 8 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
2	B4P	B	494	4	46,58,58	0.87	2 (4%)	49,91,91	1.38	5 (10%)
2	B4P	D	494	4	46,58,58	0.87	2 (4%)	49,91,91	1.38	5 (10%)
3	LYN	A	495	-	9,9,9	0.28	0	9,10,10	0.54	0
3	LYN	B	495	-	9,9,9	0.28	0	9,10,10	0.53	0
3	LYN	C	495	-	9,9,9	0.28	0	9,10,10	0.58	0
3	LYN	D	495	-	9,9,9	0.28	0	9,10,10	0.52	0
2	B4P	A	494	4	46,58,58	0.88	2 (4%)	49,91,91	1.35	6 (12%)
2	B4P	C	494	4	46,58,58	0.88	2 (4%)	49,91,91	1.36	7 (14%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	B4P	B	494	4	-	3/30/70/70	0/6/6/6
2	B4P	D	494	4	-	4/30/70/70	0/6/6/6
3	LYN	A	495	-	-	0/9/9/9	-
3	LYN	B	495	-	-	0/9/9/9	-
3	LYN	C	495	-	-	0/9/9/9	-
3	LYN	D	495	-	-	0/9/9/9	-
2	B4P	A	494	4	-	3/30/70/70	0/6/6/6
2	B4P	C	494	4	-	3/30/70/70	0/6/6/6

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	494	B4P	O4E-C1E	2.44	1.44	1.41
2	D	494	B4P	O4E-C1E	2.44	1.44	1.41
2	A	494	B4P	O4F-C1F	2.42	1.44	1.41
2	C	494	B4P	O4E-C1E	2.41	1.44	1.41
2	C	494	B4P	O4F-C1F	2.40	1.44	1.41
2	A	494	B4P	O4E-C1E	2.39	1.44	1.41

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	494	B4P	O4F-C1F	2.29	1.44	1.41
2	D	494	B4P	O4F-C1F	2.27	1.44	1.41

All (23) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	494	B4P	N3B-C2B-N1B	-4.51	121.63	128.68
2	B	494	B4P	N3A-C2A-N1A	-4.50	121.64	128.68
2	D	494	B4P	N3A-C2A-N1A	-4.50	121.64	128.68
2	C	494	B4P	N3B-C2B-N1B	-4.49	121.67	128.68
2	C	494	B4P	N3A-C2A-N1A	-4.47	121.69	128.68
2	A	494	B4P	N3A-C2A-N1A	-4.46	121.71	128.68
2	B	494	B4P	N3B-C2B-N1B	-4.45	121.72	128.68
2	D	494	B4P	N3B-C2B-N1B	-4.40	121.80	128.68
2	C	494	B4P	PG-O3B-PB	-2.73	123.44	132.83
2	B	494	B4P	PG-O3B-PB	-2.64	123.76	132.83
2	A	494	B4P	PG-O3B-PB	-2.61	123.88	132.83
2	D	494	B4P	PG-O3B-PB	-2.58	123.98	132.83
2	D	494	B4P	PB-O3A-PA	-2.42	124.53	132.83
2	B	494	B4P	PB-O3A-PA	-2.38	124.66	132.83
2	C	494	B4P	PB-O3A-PA	-2.34	124.80	132.83
2	A	494	B4P	PD-O3G-PG	-2.29	124.97	132.83
2	A	494	B4P	PB-O3A-PA	-2.28	124.99	132.83
2	C	494	B4P	PD-O3G-PG	-2.28	125.01	132.83
2	D	494	B4P	PD-O3G-PG	-2.23	125.16	132.83
2	B	494	B4P	PD-O3G-PG	-2.15	125.46	132.83
2	C	494	B4P	C4B-C5B-N7B	-2.06	107.26	109.40
2	A	494	B4P	C4B-C5B-N7B	-2.05	107.26	109.40
2	C	494	B4P	C2F-C3F-C4F	-2.04	98.68	102.64

There are no chirality outliers.

All (13) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	494	B4P	C4E-C5E-O5E-PA
2	D	494	B4P	C4E-C5E-O5E-PA
2	D	494	B4P	PG-O3G-PD-O2D
2	A	494	B4P	PG-O3G-PD-O1D
2	A	494	B4P	C4F-C5F-O5F-PD
2	B	494	B4P	PG-O3G-PD-O2D
2	C	494	B4P	C4F-C5F-O5F-PD
2	D	494	B4P	PG-O3G-PD-O1D

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Mol	Chain	Res	Type	Atoms
2	C	494	B4P	PG-O3G-PD-O1D
2	B	494	B4P	C5E-O5E-PA-O1A
2	D	494	B4P	C5E-O5E-PA-O1A
2	A	494	B4P	C5F-O5F-PD-O1D
2	C	494	B4P	C5F-O5F-PD-O1D

There are no ring outliers.

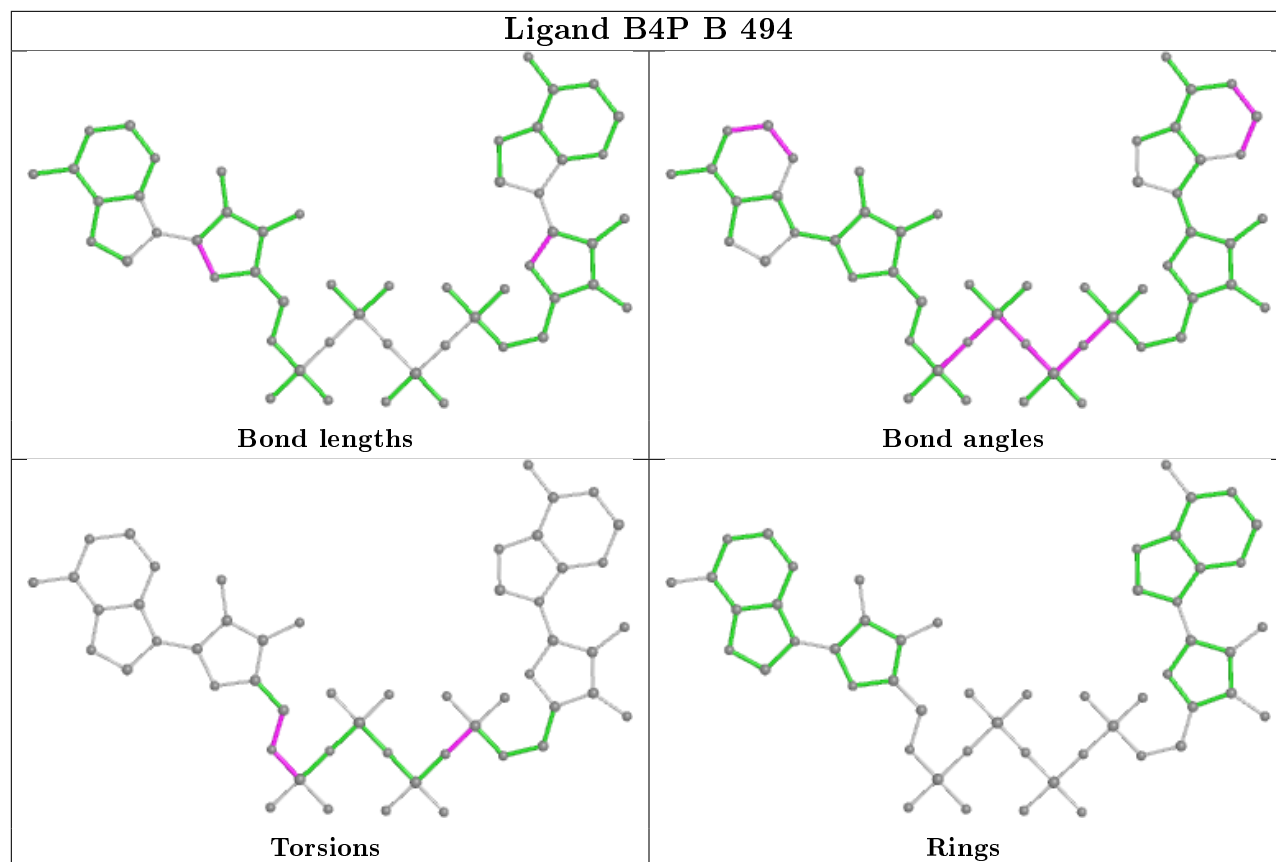
4 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	494	B4P	2	0
2	D	494	B4P	1	0
2	A	494	B4P	1	0
2	C	494	B4P	2	0

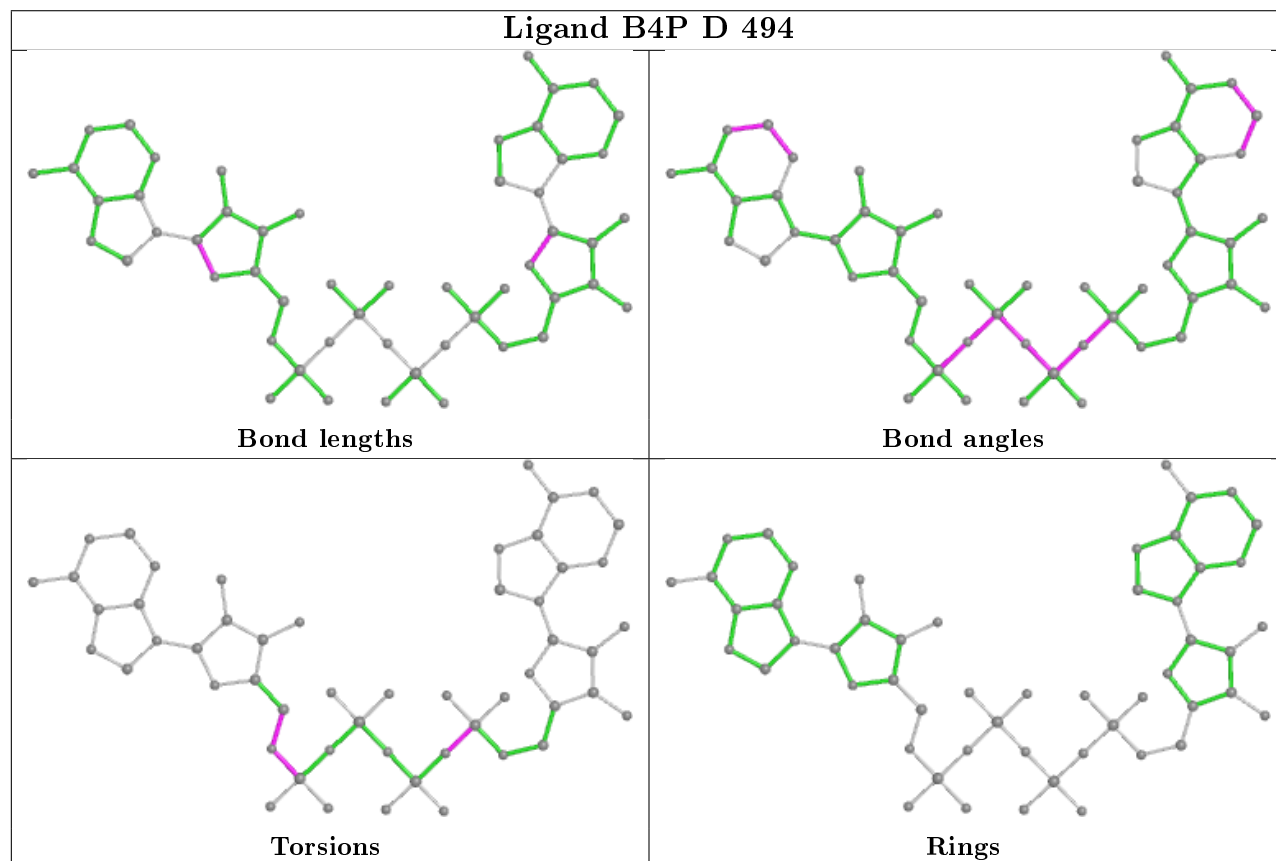
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. 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.



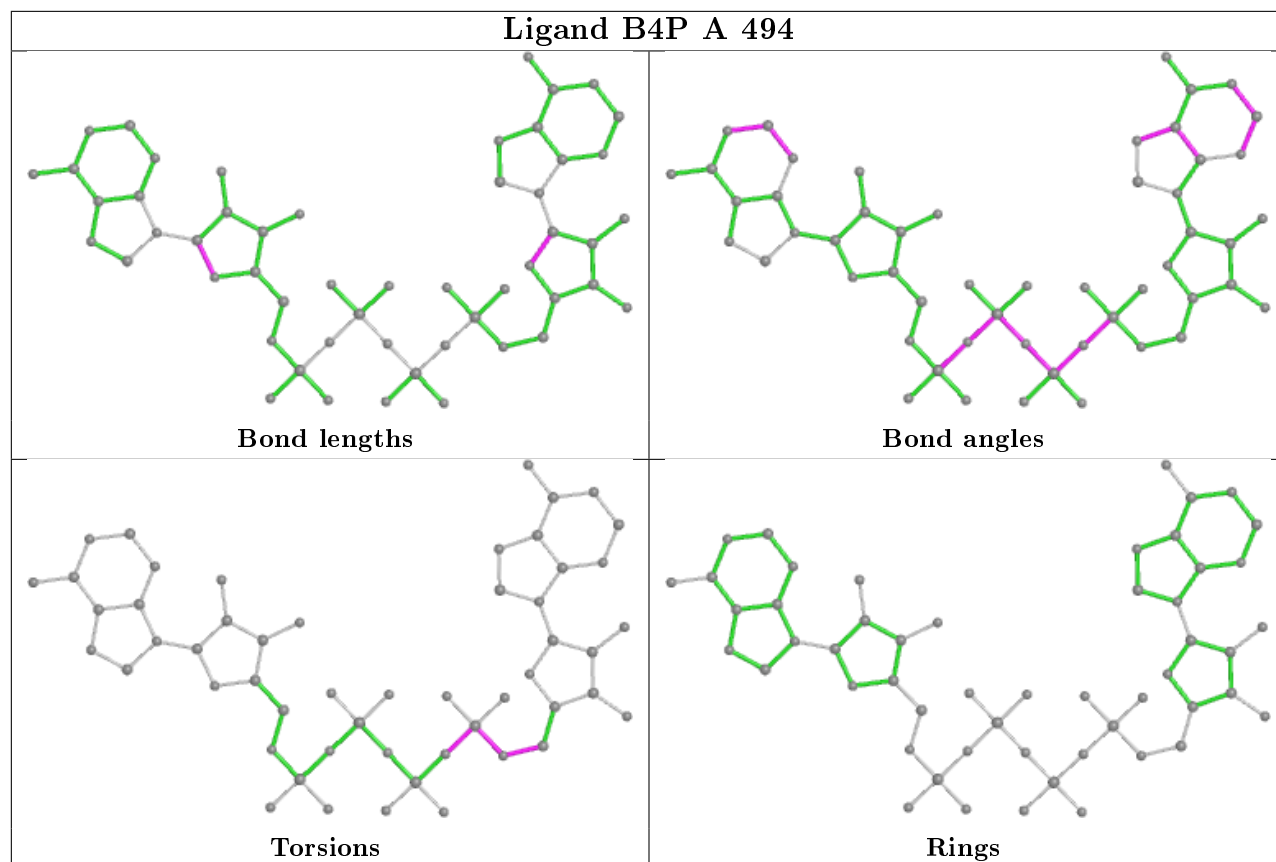
## Ligand B4P B 494



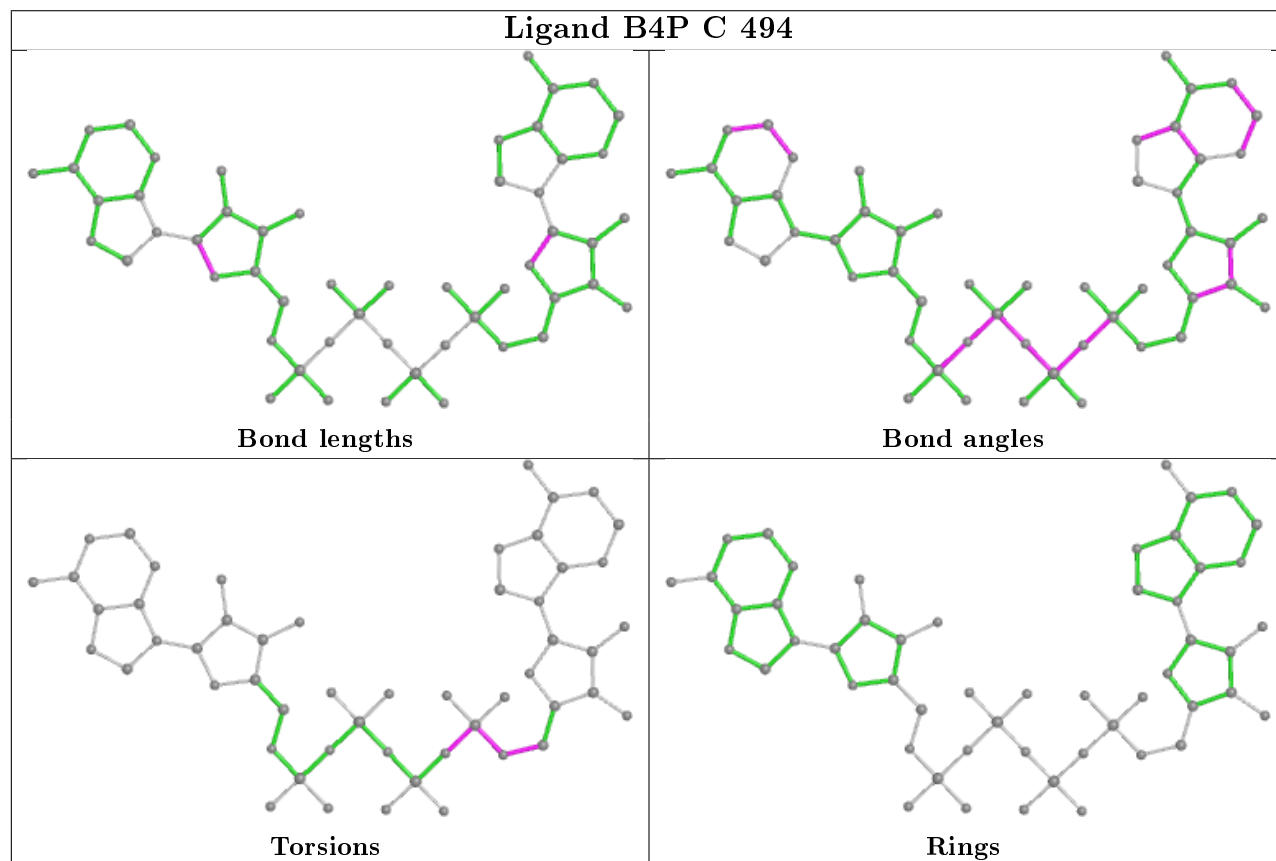
## Ligand B4P D 494



## Ligand B4P A 494



## Ligand B4P C 494



## 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, 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	484/493 (98%)	-0.22	13 (2%) 54 49	8, 15, 34, 50	0
1	B	484/493 (98%)	-0.14	19 (3%) 39 33	8, 16, 40, 44	0
1	C	484/493 (98%)	-0.19	15 (3%) 49 43	8, 16, 33, 50	0
1	D	484/493 (98%)	-0.14	14 (2%) 51 46	8, 16, 40, 44	0
All	All	1936/1972 (98%)	-0.17	61 (3%) 47 41	8, 16, 37, 50	0

All (61) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	6	ASN	9.6
1	C	5	LEU	9.3
1	A	5	LEU	9.2
1	A	6	ASN	9.1
1	A	4	GLU	7.1
1	A	153	ILE	6.5
1	C	153	ILE	5.4
1	D	492	HIS	5.0
1	B	153	ILE	4.9
1	C	492	HIS	4.8
1	D	47	LEU	4.6
1	C	168	PRO	4.5
1	C	145	GLU	4.2
1	B	47	LEU	4.2
1	A	492	HIS	4.2
1	C	146	LYS	3.9
1	A	145	GLU	3.8
1	C	4	GLU	3.7
1	D	5	LEU	3.6
1	D	48	SER	3.6
1	A	7	ASP	3.5

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Mol	Chain	Res	Type	RSRZ
1	B	145	GLU	3.5
1	A	168	PRO	3.5
1	B	492	HIS	3.4
1	A	143	LEU	3.3
1	B	43	LEU	3.1
1	A	71	MET	3.1
1	B	152	ASP	3.0
1	D	45	GLY	2.9
1	B	48	SER	2.9
1	B	49	LYS	2.8
1	D	168	PRO	2.8
1	C	17	LYS	2.7
1	A	152	ASP	2.7
1	C	143	LEU	2.7
1	C	23	GLY	2.6
1	B	45	GLY	2.4
1	B	157	TYR	2.4
1	D	7	ASP	2.4
1	D	46	ASP	2.4
1	A	146	LYS	2.4
1	C	169	GLU	2.4
1	B	124	GLY	2.4
1	B	433	LEU	2.4
1	D	17	LYS	2.3
1	A	144	PRO	2.3
1	D	41	PHE	2.3
1	D	153	ILE	2.2
1	C	152	ASP	2.2
1	D	154	GLU	2.2
1	B	41	PHE	2.2
1	D	152	ASP	2.2
1	B	122	LYS	2.2
1	B	23	GLY	2.2
1	B	55	GLN	2.2
1	B	154	GLU	2.1
1	B	437	GLU	2.1
1	D	51	GLU	2.1
1	C	71	MET	2.1
1	B	143	LEU	2.1
1	C	8	GLN	2.0

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

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

## 6.3 Carbohydrates ⓘ

There are no carbohydrates in this entry.

## 6.4 Ligands ⓘ

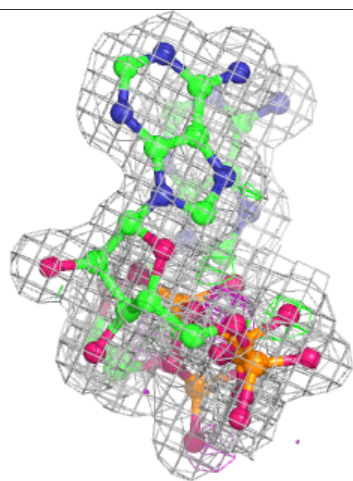
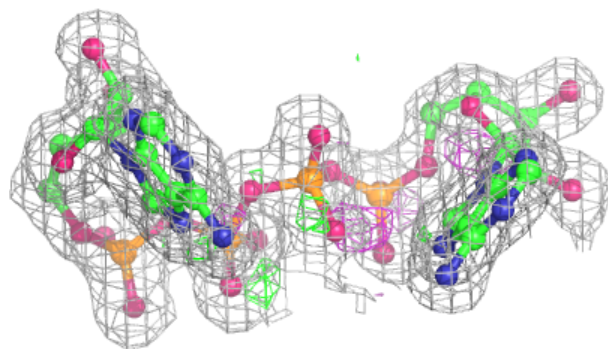
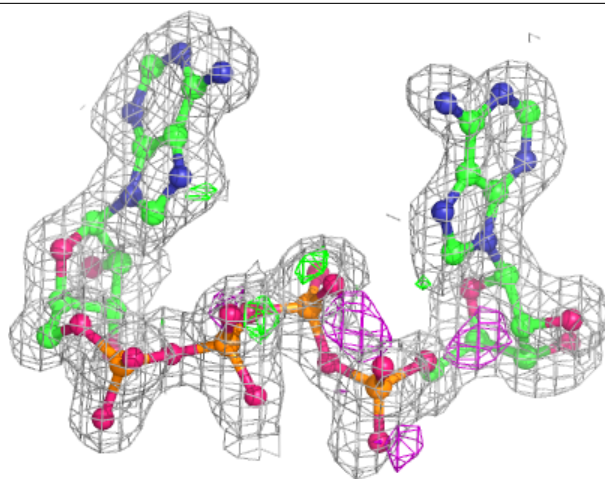
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
4	MG	D	1300	1/1	0.65	0.80	66,66,66,66	0
4	MG	C	1202	1/1	0.66	0.18	51,51,51,51	0
4	MG	A	1002	1/1	0.90	0.11	39,39,39,39	0
4	MG	D	1302	1/1	0.93	0.07	33,33,33,33	0
3	LYN	B	495	10/10	0.93	0.11	10,11,12,14	0
2	B4P	A	494	53/53	0.94	0.11	11,17,26,27	0
2	B4P	D	494	53/53	0.95	0.09	10,16,26,29	0
4	MG	B	1102	1/1	0.95	0.07	31,31,31,31	0
2	B4P	C	494	53/53	0.95	0.10	11,17,26,26	0
2	B4P	B	494	53/53	0.95	0.10	10,16,26,28	0
3	LYN	A	495	10/10	0.96	0.08	7,10,11,14	0
3	LYN	D	495	10/10	0.96	0.08	8,10,12,13	0
3	LYN	C	495	10/10	0.97	0.07	7,10,11,14	0
4	MG	C	1200	1/1	0.98	0.06	23,23,23,23	0
4	MG	A	1001	1/1	0.99	0.04	16,16,16,16	0
4	MG	D	1301	1/1	0.99	0.04	12,12,12,12	0
4	MG	A	1000	1/1	0.99	0.06	21,21,21,21	0
4	MG	B	1101	1/1	0.99	0.07	12,12,12,12	0
4	MG	C	1201	1/1	1.00	0.03	14,14,14,14	0
4	MG	B	1100	1/1	1.00	0.07	22,22,22,22	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.

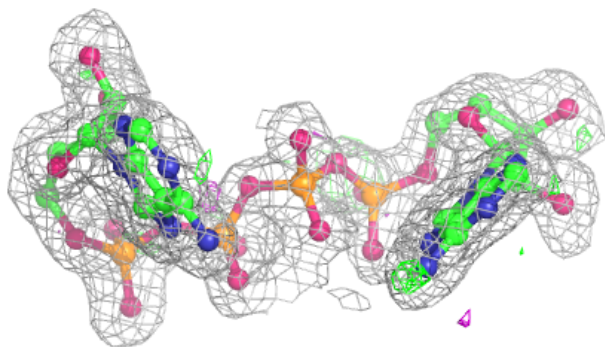
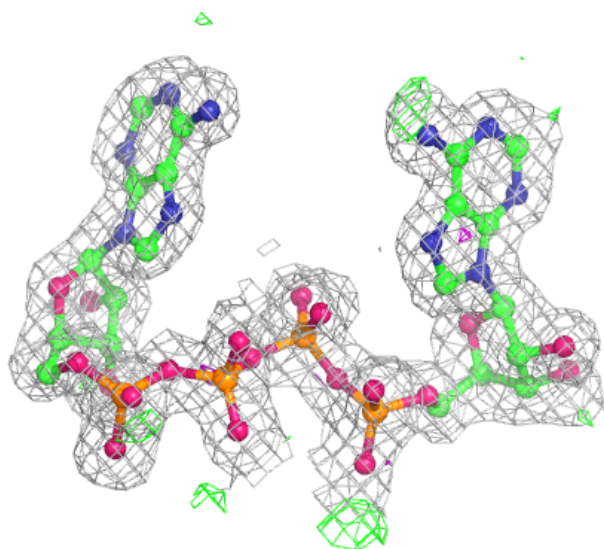
**Electron density around B4P A 494:**

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



**Electron density around B4P D 494:**

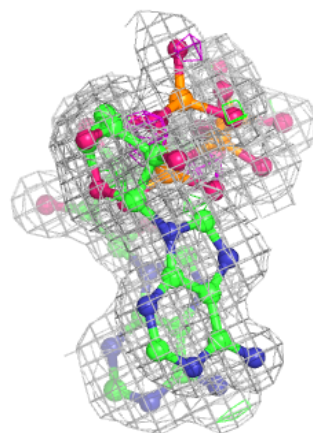
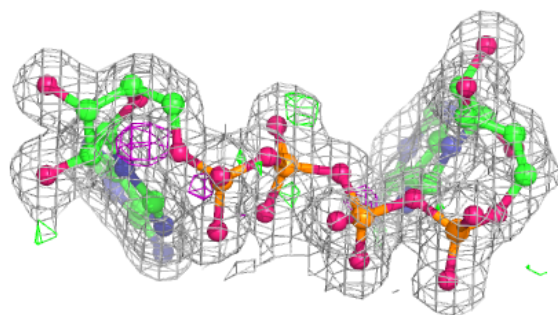
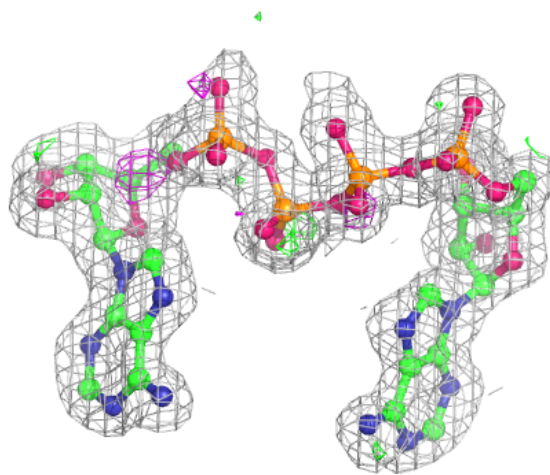
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)





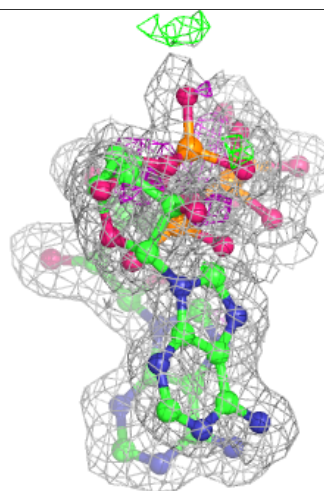
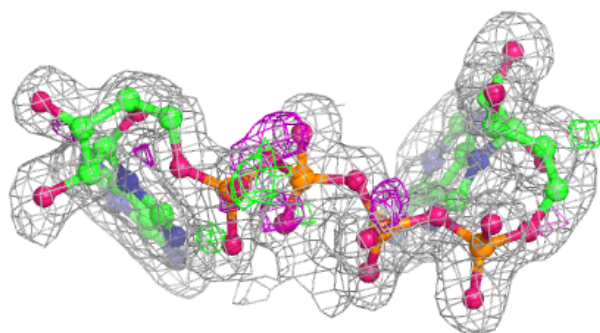
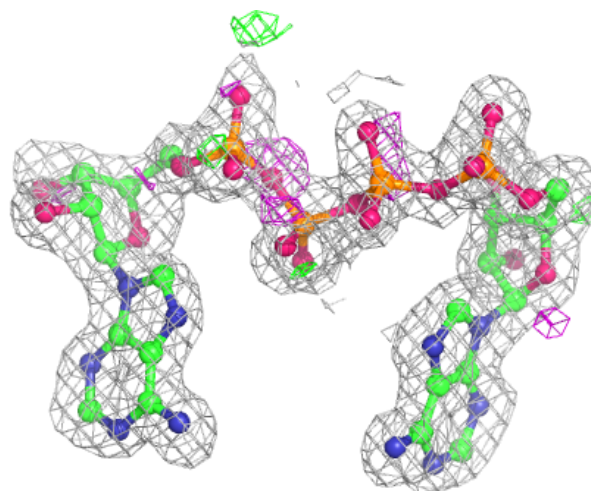
**Electron density around B4P C 494:**

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



**Electron density around B4P B 494:**

$2mF_o-DF_c$  (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.