



# Full wwPDB X-ray Structure Validation Report ⓘ

May 13, 2020 – 06:48 am BST

PDB ID : 4YPA  
Title : ASH1L SET domain Q2265A mutant in complex with S-adenosyl methionine (SAM)  
Authors : Rogawski, D.S.; Ndoj, J.; Cho, H.J.; Maillard, I.; Grembecka, J.; Cierpicki, T.  
Deposited on : 2015-03-12  
Resolution : 2.30 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

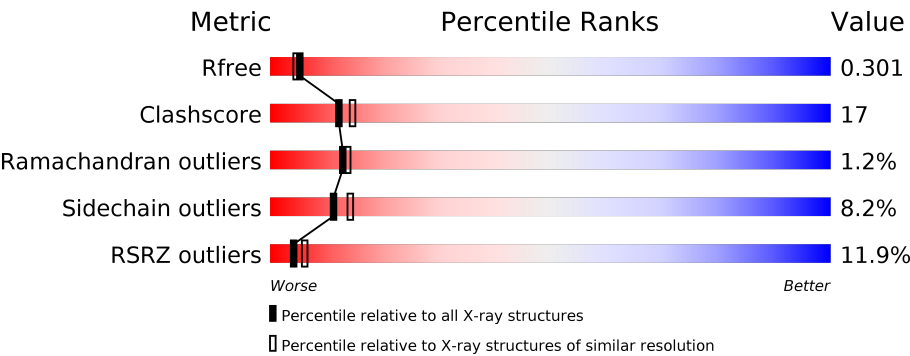
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.30 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	5042 (2.30-2.30)
Clashscore	141614	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (2.30-2.30)
RSRZ outliers	127900	4938 (2.30-2.30)

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	226	<div><div>10%</div><div><div></div><div></div><div></div><div></div></div><div>70%</div><div><div></div><div></div><div></div><div></div></div><div>19%</div><div><div></div><div></div><div></div><div></div></div><div>5%</div><div><div></div><div></div><div></div><div></div></div><div></div></div>
1	B	226	<div><div>14%</div><div><div></div><div></div><div></div><div></div></div><div>63%</div><div><div></div><div></div><div></div><div></div></div><div>25%</div><div><div></div><div></div><div></div><div></div></div><div></div><div><div></div><div></div><div></div><div></div></div><div>6%</div><div><div></div><div></div><div></div><div></div></div><div></div></div>
1	C	226	<div><div>9%</div><div><div></div><div></div><div></div><div></div></div><div>69%</div><div><div></div><div></div><div></div><div></div></div><div>23%</div><div><div></div><div></div><div></div><div></div></div><div></div><div><div></div><div></div><div></div><div></div></div><div></div><div><div></div><div></div><div></div><div></div></div><div></div></div>
1	D	226	<div><div>12%</div><div><div></div><div></div><div></div><div></div></div><div>65%</div><div><div></div><div></div><div></div><div></div></div><div>23%</div><div><div></div><div></div><div></div><div></div></div><div></div><div><div></div><div></div><div></div><div></div></div><div></div><div><div></div><div></div><div></div><div></div></div><div>7%</div><div><div></div><div></div><div></div><div></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
2	ZN	A	3001	-	-	X	-
2	ZN	D	2301	-	-	X	-

## 2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 7254 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 Histone-lysine N-methyltransferase ASH1L.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	218	Total	C	N	O	S	0	0	0
			1748	1083	312	330	23			
1	B	212	Total	C	N	O	S	0	0	0
			1716	1065	306	323	22			
1	C	217	Total	C	N	O	S	0	0	0
			1744	1081	311	329	23			
1	D	211	Total	C	N	O	S	0	0	0
			1712	1063	305	322	22			

There are 28 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	2063	GLY	-	expression tag	UNP Q9NR48
A	2064	ALA	-	expression tag	UNP Q9NR48
A	2065	MET	-	expression tag	UNP Q9NR48
A	2066	ALA	-	expression tag	UNP Q9NR48
A	2067	GLY	-	expression tag	UNP Q9NR48
A	2068	SER	-	expression tag	UNP Q9NR48
A	2265	ALA	GLN	engineered mutation	UNP Q9NR48
B	2063	GLY	-	expression tag	UNP Q9NR48
B	2064	ALA	-	expression tag	UNP Q9NR48
B	2065	MET	-	expression tag	UNP Q9NR48
B	2066	ALA	-	expression tag	UNP Q9NR48
B	2067	GLY	-	expression tag	UNP Q9NR48
B	2068	SER	-	expression tag	UNP Q9NR48
B	2265	ALA	GLN	engineered mutation	UNP Q9NR48
C	2063	GLY	-	expression tag	UNP Q9NR48
C	2064	ALA	-	expression tag	UNP Q9NR48
C	2065	MET	-	expression tag	UNP Q9NR48
C	2066	ALA	-	expression tag	UNP Q9NR48
C	2067	GLY	-	expression tag	UNP Q9NR48
C	2068	SER	-	expression tag	UNP Q9NR48
C	2265	ALA	GLN	engineered mutation	UNP Q9NR48

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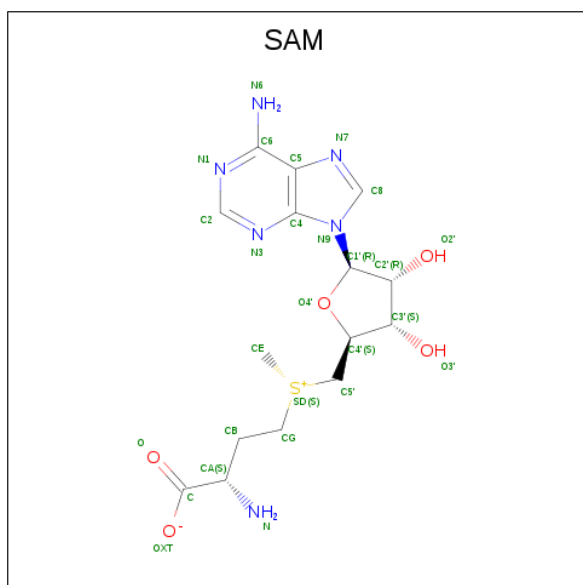
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Chain	Residue	Modelled	Actual	Comment	Reference
D	2063	GLY	-	expression tag	UNP Q9NR48
D	2064	ALA	-	expression tag	UNP Q9NR48
D	2065	MET	-	expression tag	UNP Q9NR48
D	2066	ALA	-	expression tag	UNP Q9NR48
D	2067	GLY	-	expression tag	UNP Q9NR48
D	2068	SER	-	expression tag	UNP Q9NR48
D	2265	ALA	GLN	engineered mutation	UNP Q9NR48

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	B	3	Total	Zn	0	0
			3	3		
2	A	3	Total	Zn	0	0
			3	3		
2	D	3	Total	Zn	0	0
			3	3		
2	C	3	Total	Zn	0	0
			3	3		

- Molecule 3 is S-ADENOSYLMETHIONINE (three-letter code: SAM) (formula: C<sub>15</sub>H<sub>22</sub>N<sub>6</sub>O<sub>5</sub>S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	S	0	0
			27	15	6	5	1		

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	B	1	Total	C	N	O	S	0	0
			27	15	6	5	1		
3	C	1	Total	C	N	O	S	0	0
			27	15	6	5	1		
3	D	1	Total	C	N	O	S	0	0
			27	15	6	5	1		

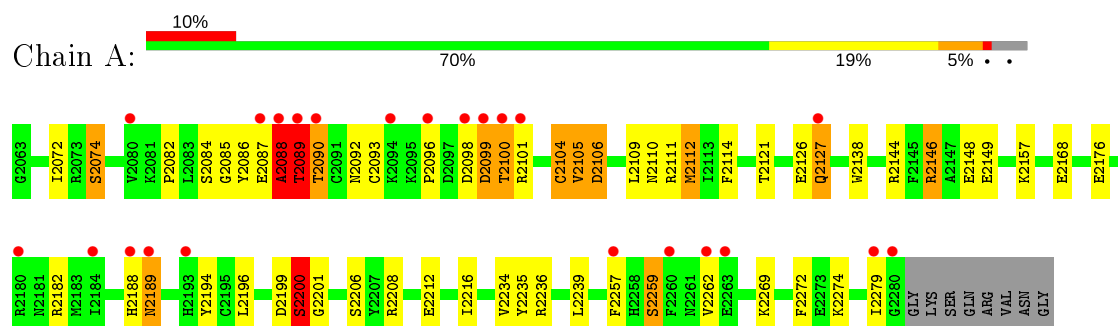
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	62	Total	O	0	0
			62	62		
4	B	55	Total	O	0	0
			55	55		
4	C	59	Total	O	0	0
			59	59		
4	D	38	Total	O	0	0
			38	38		

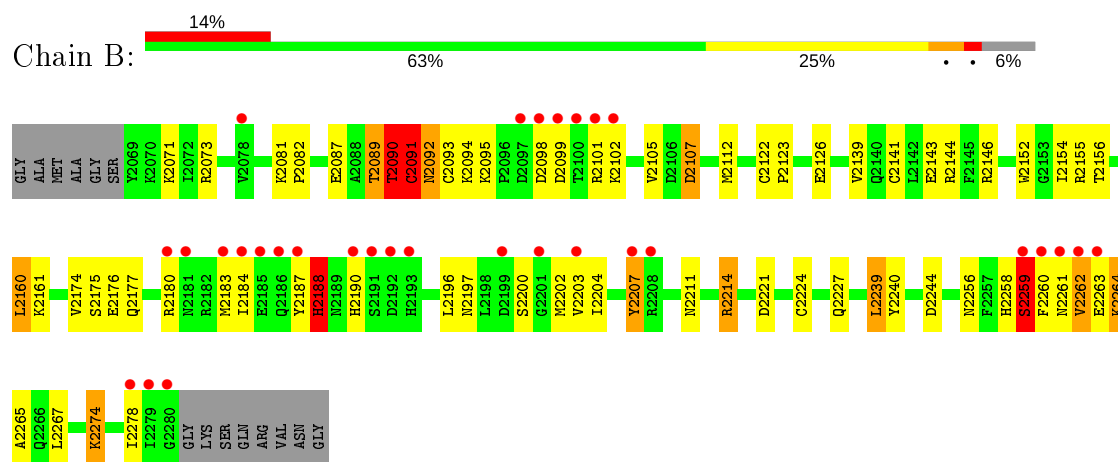
### 3 Residue-property plots [i](#)

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.

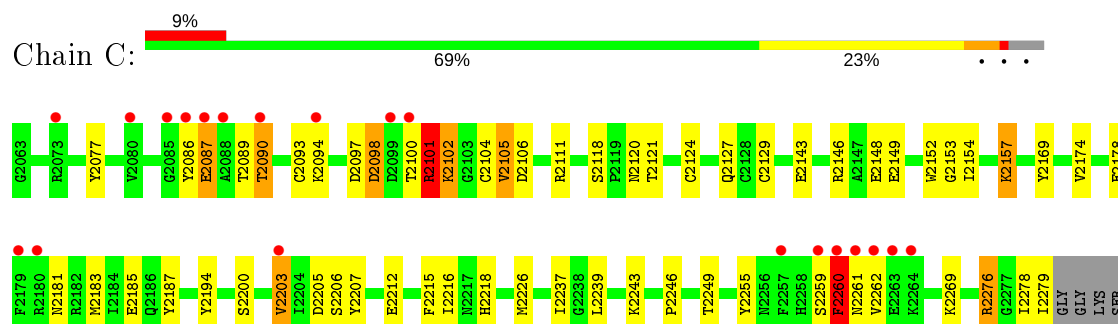
#### • Molecule 1: Histone-lysine N-methyltransferase ASH1L



#### • Molecule 1: Histone-lysine N-methyltransferase ASH1L

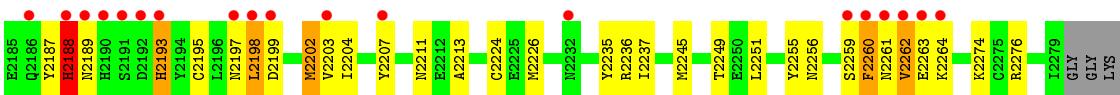
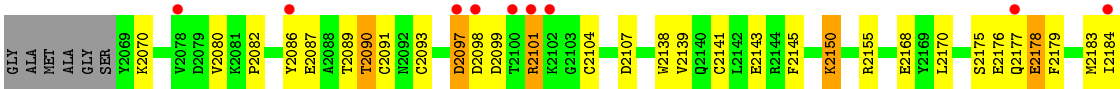


#### • Molecule 1: Histone-lysine N-methyltransferase ASH1L



GLN  
ARG  
VAL  
ASN  
GLY

● Molecule 1: Histone-lysine N-methyltransferase ASH1L



SER  
GLN  
ARG  
VAL  
ASN  
GLY



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	53.68Å 61.77Å 73.23Å 91.57° 93.83° 90.46°	Depositor
Resolution (Å)	73.04 – 2.30 47.82 – 2.30	Depositor EDS
% Data completeness (in resolution range)	95.7 (73.04-2.30) 95.7 (47.82-2.30)	Depositor EDS
$R_{merge}$	0.06	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.48 (at 2.29Å)	Xtriage
Refinement program	REFMAC 5.5.0109	Depositor
R, $R_{free}$	0.249 , 0.303 0.246 , 0.301	Depositor DCC
$R_{free}$ test set	2003 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	34.2	Xtriage
Anisotropy	0.019	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.36 , 44.9	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.136 for -h,k,-l	Xtriage
$F_o, F_c$ correlation	0.91	EDS
Total number of atoms	7254	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	38.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 10.94% 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: ZN, SAM

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	0.84	3/1785 (0.2%)	0.84	2/2400 (0.1%)
1	B	0.87	4/1753 (0.2%)	0.88	9/2358 (0.4%)
1	C	0.85	5/1781 (0.3%)	0.78	3/2395 (0.1%)
1	D	0.78	1/1749 (0.1%)	0.77	0/2353
All	All	0.84	13/7068 (0.2%)	0.82	14/9506 (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
1	B	0	1
All	All	0	2

All (13) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	2091	CYS	CB-SG	13.76	2.05	1.82
1	B	2092	ASN	C-N	8.84	1.54	1.34
1	B	2091	CYS	C-N	7.80	1.51	1.34
1	B	2107	ASP	C-N	7.17	1.50	1.34
1	A	2100	THR	CB-OG1	6.86	1.56	1.43
1	C	2098	ASP	CG-OD2	-6.74	1.09	1.25
1	A	2088	ALA	C-N	6.37	1.48	1.34
1	D	2176	GLU	CD-OE1	6.11	1.32	1.25
1	C	2101	ARG	CG-CD	5.65	1.66	1.51
1	C	2260	PHE	CE1-CZ	5.28	1.47	1.37
1	C	2077	TYR	CG-CD2	5.22	1.46	1.39
1	A	2104	CYS	CB-SG	5.18	1.91	1.82

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	2077	TYR	CE1-CZ	5.07	1.45	1.38

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	2091	CYS	CA-CB-SG	14.19	139.54	114.00
1	B	2093	CYS	C-N-CA	-7.78	102.26	121.70
1	B	2090	THR	CA-C-N	-6.76	102.33	117.20
1	A	2104	CYS	O-C-N	-6.75	111.90	122.70
1	C	2090	THR	CA-CB-CG2	-6.49	103.31	112.40
1	B	2093	CYS	CA-C-N	-6.12	103.74	117.20
1	B	2090	THR	O-C-N	6.06	132.39	122.70
1	B	2090	THR	C-N-CA	-6.01	106.67	121.70
1	B	2239	LEU	CA-CB-CG	5.70	128.41	115.30
1	B	2107	ASP	C-N-CA	-5.58	107.76	121.70
1	B	2093	CYS	O-C-N	5.55	131.58	122.70
1	A	2089	THR	CB-CA-C	-5.38	97.08	111.60
1	C	2090	THR	N-CA-CB	-5.29	100.25	110.30
1	C	2098	ASP	CB-CG-OD2	5.27	123.05	118.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	2088	ALA	Peptide
1	B	2259	SER	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	1748	0	1656	54	1
1	B	1716	0	1626	68	1
1	C	1744	0	1653	56	0
1	D	1712	0	1623	58	0
2	A	3	0	0	2	0
2	B	3	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	C	3	0	0	0	0
2	D	3	0	0	2	0
3	A	27	0	22	1	0
3	B	27	0	22	0	0
3	C	27	0	22	3	0
3	D	27	0	22	1	0
4	A	62	0	0	1	0
4	B	55	0	0	2	0
4	C	59	0	0	5	0
4	D	38	0	0	3	0
All	All	7254	0	6646	228	1

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 17.

All (228) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:2091:CYS:SG	2:B:2301:ZN:ZN	0.68	1.68
1:B:2091:CYS:SG	1:B:2091:CYS:CB	2.05	1.42
1:A:2089:THR:HG22	1:A:2089:THR:O	1.45	1.14
1:C:2101:ARG:HH11	1:C:2101:ARG:CG	1.60	1.13
1:D:2091:CYS:HB3	1:D:2093:CYS:H	1.12	1.11
1:B:2265:ALA:CB	1:B:2278:ILE:HD11	1.81	1.10
1:C:2089:THR:HG22	1:C:2090:THR:H	1.06	1.08
1:D:2091:CYS:SG	2:D:2301:ZN:ZN	1.39	1.08
1:A:2089:THR:HG21	1:A:2121:THR:OG1	1.52	1.07
1:B:2265:ALA:HB1	1:B:2278:ILE:CD1	1.82	1.07
1:A:2146:ARG:HG2	1:A:2146:ARG:HH11	1.22	1.02
1:C:2101:ARG:HH11	1:C:2101:ARG:HG3	0.88	1.02
1:B:2087:GLU:OE2	1:C:2120:ASN:ND2	1.95	1.00
1:B:2203:VAL:HG22	1:B:2260:PHE:CZ	1.97	1.00
1:A:2257:PHE:CE2	1:B:2152:TRP:CZ2	2.51	0.99
1:B:2203:VAL:HG22	1:B:2260:PHE:HZ	1.26	0.98
1:C:2105:VAL:HG12	1:C:2106:ASP:H	1.29	0.97
1:B:2265:ALA:HB1	1:B:2278:ILE:HD11	0.97	0.96
1:C:2101:ARG:NH1	1:C:2101:ARG:HG3	1.72	0.93
1:C:2089:THR:HG22	1:C:2090:THR:N	1.85	0.92
1:A:2093:CYS:SG	2:A:3001:ZN:ZN	1.60	0.90
1:D:2093:CYS:SG	2:D:2301:ZN:ZN	1.65	0.86
1:C:2101:ARG:NH1	1:C:2101:ARG:CG	2.29	0.86

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:2089:THR:CG2	1:C:2090:THR:H	1.80	0.84
1:C:2086:TYR:HE1	1:D:2070:LYS:HE3	1.43	0.83
1:D:2089:THR:O	1:D:2090:THR:HB	1.81	0.81
1:C:2086:TYR:CE1	1:D:2070:LYS:HE3	2.15	0.80
1:B:2261:ASN:ND2	4:B:2401:HOH:O	2.13	0.80
1:B:2176:GLU:O	1:B:2180:ARG:HD2	1.81	0.79
1:C:2146:ARG:HG3	1:C:2146:ARG:HH11	1.47	0.79
1:A:2257:PHE:CE2	1:B:2152:TRP:HZ2	2.00	0.79
1:A:2098:ASP:HB2	1:A:2101:ARG:HG2	1.65	0.78
1:D:2256:ASN:HA	1:D:2259:SER:HB2	1.66	0.78
1:B:2190:HIS:HB3	1:B:2207:TYR:OH	1.84	0.77
1:A:2089:THR:CG2	1:A:2089:THR:O	2.21	0.77
1:B:2211:ASN:O	1:B:2214:ARG:HG3	1.85	0.77
1:A:2146:ARG:NH1	1:A:2146:ARG:HG2	1.99	0.76
1:D:2145:PHE:CD2	1:D:2155:ARG:HG2	2.21	0.76
1:D:2168:GLU:OE2	1:D:2236:ARG:HD2	1.86	0.75
1:B:2146:ARG:HD2	4:B:2443:HOH:O	1.86	0.74
1:A:2104:CYS:SG	2:A:3001:ZN:ZN	1.77	0.74
1:A:2082:PRO:HG2	1:A:2234:VAL:HG13	1.71	0.73
1:B:2221:ASP:CG	1:B:2274:LYS:HZ3	1.92	0.73
1:B:2203:VAL:CG2	1:B:2260:PHE:CZ	2.72	0.72
1:A:2096:PRO:HG2	1:A:2127:GLN:OE1	1.88	0.72
1:A:2090:THR:HA	4:A:3122:HOH:O	1.88	0.72
1:C:2098:ASP:OD2	1:C:2101:ARG:NH1	2.22	0.71
1:A:2088:ALA:C	1:A:2089:THR:OG1	2.28	0.71
1:D:2256:ASN:ND2	1:D:2276:ARG:HH11	1.88	0.70
1:C:2276:ARG:HG3	1:C:2276:ARG:HH11	1.56	0.70
1:C:2143:GLU:OE1	1:C:2157:LYS:HE2	1.91	0.70
1:A:2149:GLU:OE1	1:A:2269:LYS:HD2	1.91	0.70
1:D:2091:CYS:HB3	1:D:2093:CYS:N	1.98	0.69
1:D:2089:THR:O	1:D:2090:THR:CB	2.40	0.69
1:A:2105:VAL:HG12	1:A:2106:ASP:H	1.57	0.69
1:D:2203:VAL:CG2	1:D:2260:PHE:HE2	2.06	0.68
1:B:2221:ASP:CG	1:B:2274:LYS:NZ	2.46	0.68
1:D:2178:GLU:HG3	1:D:2178:GLU:O	1.93	0.68
1:A:2106:ASP:HA	1:A:2111:ARG:HD2	1.76	0.67
1:C:2097:ASP:OD1	4:C:2401:HOH:O	2.15	0.64
1:B:2196:LEU:HB3	1:B:2204:ILE:CG2	2.27	0.64
1:C:2146:ARG:NH1	1:C:2146:ARG:HG3	2.10	0.64
1:C:2098:ASP:HB2	1:C:2101:ARG:HG2	1.79	0.64
1:D:2203:VAL:HG22	1:D:2260:PHE:CE2	2.32	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:2094:LYS:NZ	4:C:2402:HOH:O	2.30	0.64
1:B:2090:THR:O	1:B:2091:CYS:O	2.17	0.63
1:B:2098:ASP:HB3	1:B:2101:ARG:HG3	1.79	0.63
1:A:2168:GLU:OE1	1:A:2236:ARG:HD2	1.98	0.63
1:C:2105:VAL:HG12	1:C:2106:ASP:N	2.08	0.62
1:C:2181:ASN:O	1:C:2185:GLU:HG2	2.00	0.61
1:D:2245:MET:HE1	1:D:2251:LEU:HD13	1.82	0.61
1:B:2089:THR:O	1:B:2090:THR:CB	2.49	0.60
1:D:2143:GLU:OE1	1:D:2155:ARG:NH1	2.34	0.60
1:C:2276:ARG:HG3	1:C:2276:ARG:NH1	2.14	0.60
1:D:2203:VAL:CG2	1:D:2260:PHE:CE2	2.84	0.60
1:D:2256:ASN:HD22	1:D:2276:ARG:NH1	2.00	0.60
1:D:2098:ASP:HB3	1:D:2101:ARG:HB2	1.83	0.59
1:B:2262:VAL:O	1:B:2264:LYS:N	2.34	0.59
1:A:2089:THR:HG21	1:A:2121:THR:HG1	1.66	0.59
1:B:2203:VAL:CG2	1:B:2260:PHE:HZ	2.05	0.59
1:A:2106:ASP:O	1:A:2112:MET:SD	2.60	0.59
1:C:2111:ARG:NH2	4:C:2404:HOH:O	2.35	0.58
1:D:2256:ASN:HD22	1:D:2276:ARG:HH11	1.51	0.58
1:A:2082:PRO:HG2	1:A:2234:VAL:CG1	2.33	0.58
1:C:2146:ARG:HD3	4:C:2433:HOH:O	2.03	0.58
1:D:2198:LEU:HD23	1:D:2204:ILE:HG13	1.85	0.58
1:A:2188:HIS:CE1	1:A:2189:ASN:OD1	2.56	0.57
1:B:2098:ASP:HB3	1:B:2101:ARG:CG	2.35	0.57
1:D:2203:VAL:CG1	1:D:2260:PHE:HE2	2.18	0.56
1:A:2072:ILE:HG21	1:A:2074:SER:O	2.05	0.56
1:C:2104:CYS:O	1:C:2111:ARG:NH1	2.39	0.56
1:D:2199:ASP:HB2	4:D:2406:HOH:O	2.05	0.56
1:A:2089:THR:CG2	1:A:2121:THR:OG1	2.41	0.56
1:A:2182:ARG:CZ	1:A:2208:ARG:HH21	2.19	0.56
1:A:2257:PHE:HE2	1:B:2152:TRP:CZ2	2.18	0.56
1:D:2256:ASN:ND2	1:D:2276:ARG:NH1	2.54	0.56
1:B:2203:VAL:HG13	1:B:2260:PHE:CE2	2.41	0.56
1:B:2196:LEU:HB3	1:B:2204:ILE:HG22	1.87	0.55
1:A:2072:ILE:CG2	1:A:2074:SER:O	2.55	0.55
1:B:2102:LYS:HB3	1:B:2105:VAL:HG21	1.87	0.55
1:C:2174:VAL:HG13	1:C:2178:GLU:HB3	1.89	0.55
1:D:2203:VAL:HG22	1:D:2260:PHE:HE2	1.70	0.55
1:B:2262:VAL:O	1:B:2262:VAL:CG1	2.56	0.54
1:B:2200:SER:OG	1:B:2202:MET:HE2	2.07	0.54
1:D:2245:MET:HE3	1:D:2249:THR:HG21	1.89	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:2102:LYS:HG3	1:C:2129:CYS:HB3	1.90	0.54
1:B:2090:THR:HG22	1:B:2091:CYS:O	2.08	0.54
1:B:2090:THR:C	1:B:2091:CYS:O	2.45	0.53
1:B:2200:SER:OG	1:B:2202:MET:CE	2.56	0.53
1:D:2080:VAL:HG22	1:D:2202:MET:SD	2.49	0.53
1:A:2105:VAL:HG12	1:A:2106:ASP:OD1	2.09	0.53
1:A:2176:GLU:N	1:A:2201:GLY:O	2.41	0.53
1:A:2087:GLU:O	1:A:2088:ALA:C	2.47	0.53
1:A:2093:CYS:SG	1:A:2104:CYS:HA	2.49	0.52
1:B:2227:GLN:HB2	1:B:2240:TYR:CE2	2.44	0.52
1:D:2183:MET:HA	1:D:2187:TYR:HB2	1.91	0.52
1:C:2146:ARG:CG	1:C:2146:ARG:NH1	2.72	0.52
1:C:2262:VAL:HB	4:C:2438:HOH:O	2.09	0.52
1:D:2150:LYS:NZ	4:D:2401:HOH:O	2.32	0.52
1:B:2262:VAL:O	1:B:2262:VAL:HG12	2.10	0.51
1:A:2272:PHE:CE2	1:A:2274:LYS:HB2	2.46	0.51
1:A:2088:ALA:C	1:A:2089:THR:HG1	2.13	0.51
1:A:2144:ARG:HD3	1:A:2212:GLU:OE1	2.10	0.51
1:C:2194:TYR:HB3	1:C:2206:SER:OG	2.10	0.51
1:D:2245:MET:CE	1:D:2251:LEU:HD13	2.40	0.51
1:B:2211:ASN:O	1:B:2214:ARG:CG	2.56	0.51
1:B:2089:THR:O	1:B:2090:THR:HB	2.10	0.50
1:D:2082:PRO:HB2	1:D:2235:TYR:HB2	1.94	0.50
1:B:2156:THR:HG21	1:B:2160:LEU:CD2	2.42	0.50
1:A:2257:PHE:CZ	1:B:2152:TRP:NE1	2.79	0.49
1:B:2094:LYS:O	1:B:2095:LYS:C	2.51	0.49
1:B:2224:CYS:HB3	1:B:2239:LEU:CD1	2.42	0.49
1:C:2216:ILE:HD13	1:C:2239:LEU:HD22	1.94	0.49
1:B:2190:HIS:CB	1:B:2207:TYR:OH	2.58	0.48
1:D:2193:HIS:HB3	4:D:2438:HOH:O	2.13	0.48
1:A:2257:PHE:CD2	1:B:2152:TRP:HZ2	2.32	0.48
1:A:2085:GLY:C	1:A:2086:TYR:HD2	2.16	0.47
1:D:2245:MET:HE3	1:D:2249:THR:CG2	2.44	0.47
1:D:2261:ASN:CG	1:D:2262:VAL:N	2.68	0.47
1:D:2261:ASN:OD1	1:D:2262:VAL:N	2.42	0.47
1:B:2224:CYS:HB3	1:B:2239:LEU:HD13	1.96	0.47
1:C:2276:ARG:HH11	1:C:2276:ARG:CG	2.23	0.47
1:B:2090:THR:O	1:B:2091:CYS:C	2.51	0.47
1:C:2203:VAL:HG21	1:C:2260:PHE:HD2	1.80	0.47
1:D:2086:TYR:CE2	1:D:2089:THR:HG22	2.50	0.47
1:D:2091:CYS:SG	1:D:2104:CYS:SG	3.13	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:2211:ASN:HB3	1:D:2213:ALA:H	1.78	0.47
1:A:2072:ILE:HG22	1:A:2074:SER:H	1.80	0.47
1:C:2143:GLU:OE1	1:C:2157:LYS:CE	2.61	0.46
1:B:2175:SER:C	1:B:2177:GLN:H	2.18	0.46
1:C:2183:MET:HA	1:C:2187:TYR:HB2	1.95	0.46
3:C:2304:SAM:H8	3:C:2304:SAM:H5'2	1.97	0.46
1:B:2262:VAL:O	1:B:2264:LYS:O	2.33	0.46
1:C:2153:GLY:HA2	1:C:2215:PHE:O	2.16	0.46
1:A:2106:ASP:N	1:A:2106:ASP:OD1	2.39	0.46
1:C:2279:ILE:HD11	3:C:2304:SAM:C6	2.45	0.46
1:A:2194:TYR:HB3	1:A:2206:SER:OG	2.15	0.45
1:C:2098:ASP:HB2	1:C:2101:ARG:CG	2.46	0.45
1:D:2175:SER:C	1:D:2177:GLN:H	2.19	0.45
1:B:2098:ASP:O	1:B:2101:ARG:HB2	2.16	0.45
1:C:2124:CYS:O	1:C:2127:GLN:HB2	2.16	0.45
1:C:2226:MET:HE3	1:C:2237:ILE:CG2	2.46	0.45
1:D:2090:THR:HG22	1:D:2091:CYS:O	2.16	0.45
1:D:2226:MET:HE2	1:D:2237:ILE:CG2	2.47	0.45
1:C:2087:GLU:O	1:C:2089:THR:OG1	2.32	0.45
1:C:2205:ASP:OD2	1:C:2207:TYR:HD2	2.00	0.45
1:B:2156:THR:HG21	1:B:2160:LEU:HD22	1.99	0.45
1:C:2118:SER:HB3	1:C:2121:THR:HG22	1.98	0.44
1:D:2170:LEU:HD12	1:D:2211:ASN:OD1	2.17	0.44
1:A:2279:ILE:HD11	3:A:3004:SAM:C6	2.47	0.44
1:C:2154:ILE:CD1	1:C:2212:GLU:O	2.65	0.44
1:D:2203:VAL:HG13	1:D:2260:PHE:CE2	2.53	0.44
1:B:2143:GLU:OE1	1:B:2155:ARG:NH2	2.40	0.44
1:C:2169:TYR:HB2	1:C:2226:MET:HE2	1.98	0.44
1:A:2199:ASP:OD1	1:A:2200:SER:OG	2.36	0.44
1:B:2144:ARG:HA	1:B:2154:ILE:HD13	2.00	0.44
1:B:2174:VAL:HG12	1:B:2175:SER:O	2.18	0.44
1:D:2226:MET:HE2	1:D:2237:ILE:HG21	2.00	0.44
1:D:2203:VAL:CG1	1:D:2260:PHE:CE2	3.00	0.43
1:D:2086:TYR:CD1	1:D:2087:GLU:O	2.71	0.43
1:A:2084:SER:HB2	1:A:2235:TYR:CZ	2.54	0.43
1:A:2089:THR:HA	1:A:2110:ASN:HD21	1.83	0.43
1:D:2183:MET:SD	1:D:2187:TYR:HB2	2.59	0.43
1:B:2256:ASN:HA	1:B:2259:SER:HB2	1.99	0.43
1:C:2152:TRP:O	3:C:2304:SAM:N	2.51	0.43
1:B:2102:LYS:CB	1:B:2105:VAL:HG21	2.48	0.43
1:B:2082:PRO:HA	1:B:2202:MET:HE1	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:2139:VAL:HG13	1:D:2141:CYS:SG	2.58	0.43
1:A:2138:TRP:CD1	1:A:2138:TRP:N	2.87	0.43
1:B:2197:ASN:HB2	1:B:2258:HIS:O	2.19	0.43
1:C:2105:VAL:CG1	1:C:2106:ASP:H	2.14	0.42
1:A:2105:VAL:HG12	1:A:2106:ASP:N	2.31	0.42
1:B:2107:ASP:OD1	1:B:2107:ASP:N	2.41	0.42
1:B:2139:VAL:HG13	1:B:2141:CYS:SG	2.59	0.42
1:C:2260:PHE:CD1	1:C:2261:ASN:O	2.72	0.42
1:A:2092:ASN:H	1:A:2109:LEU:HD12	1.85	0.42
1:D:2139:VAL:CG1	1:D:2141:CYS:SG	3.07	0.42
1:A:2182:ARG:NH2	1:A:2208:ARG:HH21	2.17	0.42
1:C:2093:CYS:SG	1:C:2104:CYS:HA	2.59	0.42
1:C:2148:GLU:O	1:C:2149:GLU:HB2	2.20	0.42
1:C:2246:PRO:HD2	1:C:2249:THR:HG21	2.02	0.42
1:D:2245:MET:HE1	1:D:2251:LEU:CD1	2.46	0.42
1:B:2196:LEU:CB	1:B:2204:ILE:CG2	2.97	0.42
1:C:2216:ILE:CD1	1:C:2239:LEU:HD22	2.49	0.42
1:D:2188:HIS:N	1:D:2188:HIS:CD2	2.87	0.42
1:D:2150:LYS:O	3:D:2304:SAM:N	2.53	0.42
1:D:2097:ASP:OD1	1:D:2097:ASP:N	2.53	0.41
1:D:2255:TYR:O	1:D:2259:SER:N	2.53	0.41
1:A:2148:GLU:O	1:A:2149:GLU:HB2	2.21	0.41
1:B:2203:VAL:HG13	1:B:2260:PHE:HE2	1.85	0.41
1:B:2161:LYS:HG3	1:B:2244:ASP:OD1	2.21	0.41
1:C:2218:HIS:HB2	1:C:2255:TYR:CG	2.55	0.41
1:A:2189:ASN:OD1	1:A:2189:ASN:N	2.53	0.41
1:C:2098:ASP:C	1:C:2100:THR:N	2.73	0.41
1:D:2224:CYS:SG	1:D:2251:LEU:HD12	2.61	0.41
1:B:2122:CYS:HA	1:B:2123:PRO:HD3	1.93	0.41
1:B:2176:GLU:OE1	1:B:2180:ARG:NH2	2.53	0.41
1:A:2196:LEU:HA	1:A:2259:SER:HA	2.02	0.41
1:C:2226:MET:HE3	1:C:2237:ILE:HG22	2.01	0.41
1:D:2179:PHE:CZ	1:D:2195:CYS:SG	3.07	0.41
1:A:2088:ALA:O	1:A:2089:THR:CB	2.69	0.41
1:C:2243:LYS:HE2	1:C:2243:LYS:HB3	1.88	0.41
1:A:2216:ILE:HD13	1:A:2239:LEU:HD22	2.02	0.40
1:B:2187:TYR:O	1:B:2188:HIS:C	2.59	0.40
1:D:2138:TRP:CD1	1:D:2138:TRP:N	2.89	0.40
1:A:2114:PHE:CD1	1:B:2071:LYS:HE3	2.57	0.40
1:B:2175:SER:C	1:B:2177:GLN:N	2.75	0.40
1:B:2224:CYS:CB	1:B:2239:LEU:HD11	2.52	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2157:LYS:NZ	1:B:2112:MET:SD[1_565]	1.71	0.49

## 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	216/226 (96%)	200 (93%)	12 (6%)	4 (2%)	8	7
1	B	210/226 (93%)	191 (91%)	16 (8%)	3 (1%)	11	11
1	C	215/226 (95%)	195 (91%)	19 (9%)	1 (0%)	29	35
1	D	209/226 (92%)	190 (91%)	17 (8%)	2 (1%)	15	17
All	All	850/904 (94%)	776 (91%)	64 (8%)	10 (1%)	13	14

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	2089	THR
1	B	2188	HIS
1	D	2090	THR
1	D	2188	HIS
1	A	2105	VAL
1	B	2090	THR
1	C	2105	VAL
1	A	2099	ASP
1	A	2200	SER
1	B	2091	CYS

### 5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	191/197 (97%)	178 (93%)	13 (7%)	16	21
1	B	189/197 (96%)	170 (90%)	19 (10%)	7	9
1	C	191/197 (97%)	180 (94%)	11 (6%)	20	27
1	D	189/197 (96%)	170 (90%)	19 (10%)	7	9
All	All	760/788 (96%)	698 (92%)	62 (8%)	11	14

All (62) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2074	SER
1	A	2090	THR
1	A	2099	ASP
1	A	2100	THR
1	A	2106	ASP
1	A	2112	MET
1	A	2126	GLU
1	A	2127	GLN
1	A	2146	ARG
1	A	2189	ASN
1	A	2200	SER
1	A	2259	SER
1	A	2262	VAL
1	B	2073	ARG
1	B	2081	LYS
1	B	2089	THR
1	B	2091	CYS
1	B	2092	ASN
1	B	2099	ASP
1	B	2126	GLU
1	B	2160	LEU
1	B	2183	MET
1	B	2184	ILE
1	B	2188	HIS

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Mol	Chain	Res	Type
1	B	2207	TYR
1	B	2214	ARG
1	B	2259	SER
1	B	2262	VAL
1	B	2263	GLU
1	B	2264	LYS
1	B	2267	LEU
1	B	2274	LYS
1	C	2087	GLU
1	C	2101	ARG
1	C	2102	LYS
1	C	2157	LYS
1	C	2200	SER
1	C	2203	VAL
1	C	2259	SER
1	C	2260	PHE
1	C	2269	LYS
1	C	2276	ARG
1	C	2278	ILE
1	D	2097	ASP
1	D	2099	ASP
1	D	2101	ARG
1	D	2107	ASP
1	D	2150	LYS
1	D	2178	GLU
1	D	2184	ILE
1	D	2188	HIS
1	D	2189	ASN
1	D	2193	HIS
1	D	2197	ASN
1	D	2198	LEU
1	D	2202	MET
1	D	2207	TYR
1	D	2260	PHE
1	D	2262	VAL
1	D	2263	GLU
1	D	2264	LYS
1	D	2274	LYS

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	2188	HIS
1	B	2188	HIS
1	B	2190	HIS
1	D	2127	GLN
1	D	2197	ASN
1	D	2256	ASN

### 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 16 ligands modelled in this entry, 12 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	SAM	D	2304	-	21,29,29	1.30	2 (9%)	18,42,42	1.48	1 (5%)
3	SAM	B	2304	-	21,29,29	1.24	2 (9%)	18,42,42	1.78	3 (16%)
3	SAM	A	3004	-	21,29,29	1.23	2 (9%)	18,42,42	1.71	1 (5%)
3	SAM	C	2304	-	21,29,29	0.95	1 (4%)	18,42,42	1.87	1 (5%)

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	SAM	D	2304	-	-	4/8/33/33	0/3/3/3
3	SAM	B	2304	-	-	2/8/33/33	0/3/3/3
3	SAM	A	3004	-	-	2/8/33/33	0/3/3/3
3	SAM	C	2304	-	-	2/8/33/33	0/3/3/3

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	2304	SAM	C2-N3	4.08	1.38	1.32
3	D	2304	SAM	C2-N3	3.89	1.38	1.32
3	A	3004	SAM	C2-N3	3.63	1.38	1.32
3	D	2304	SAM	C2-N1	3.08	1.39	1.33
3	B	2304	SAM	C2-N1	2.54	1.38	1.33
3	C	2304	SAM	C2-N3	2.53	1.36	1.32
3	A	3004	SAM	C2-N1	2.37	1.38	1.33

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	2304	SAM	N3-C2-N1	-7.18	117.46	128.68
3	A	3004	SAM	N3-C2-N1	-6.23	118.94	128.68
3	B	2304	SAM	N3-C2-N1	-5.41	120.23	128.68
3	D	2304	SAM	N3-C2-N1	-5.05	120.79	128.68
3	B	2304	SAM	C5'-SD-CG	-3.05	95.63	103.40
3	B	2304	SAM	C3'-C2'-C1'	2.47	104.70	100.98

There are no chirality outliers.

All (10) torsion outliers are listed below:

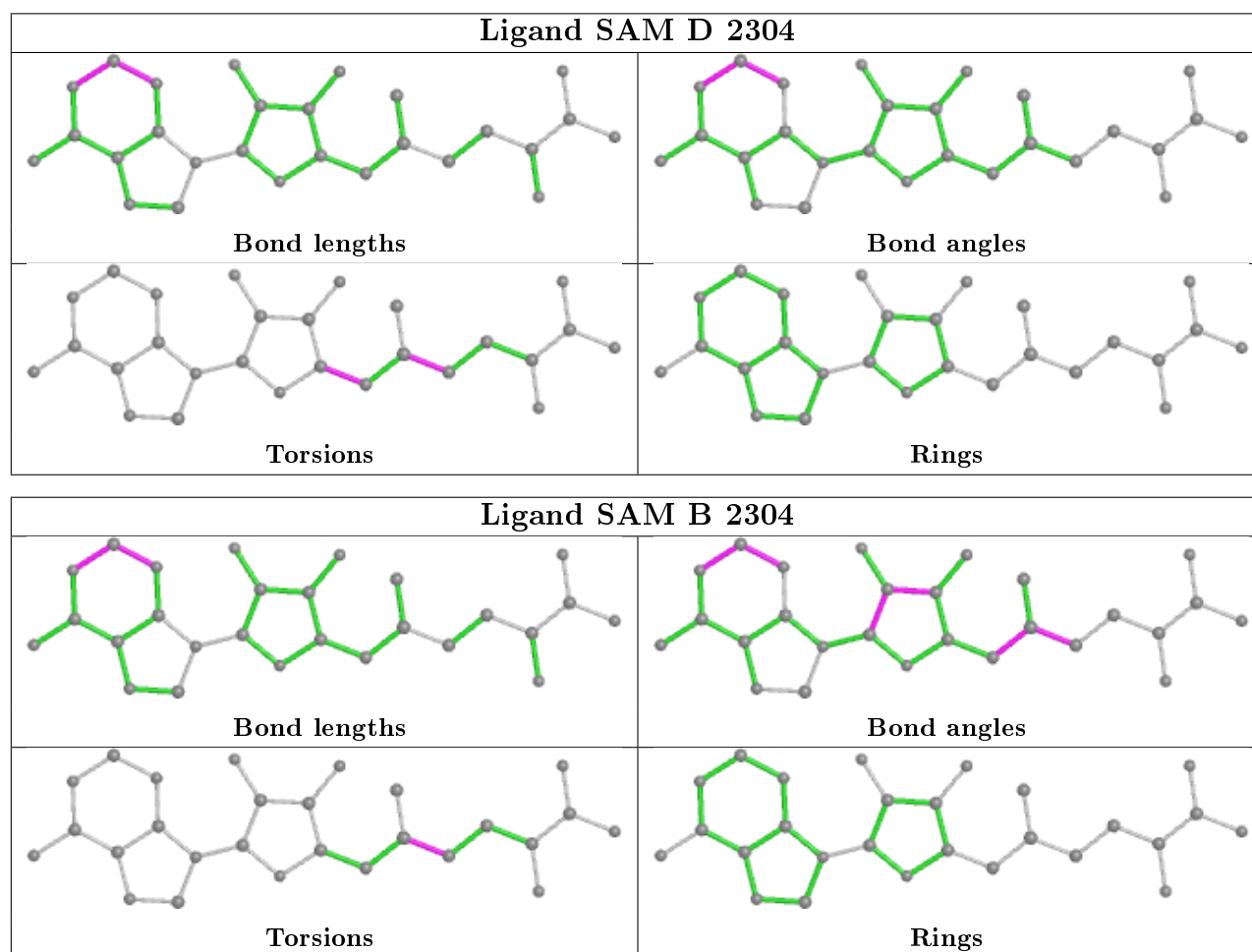
Mol	Chain	Res	Type	Atoms
3	A	3004	SAM	CB-CG-SD-CE
3	A	3004	SAM	CB-CG-SD-C5'
3	B	2304	SAM	CB-CG-SD-CE
3	B	2304	SAM	CB-CG-SD-C5'
3	D	2304	SAM	CB-CG-SD-CE
3	D	2304	SAM	CB-CG-SD-C5'
3	D	2304	SAM	C3'-C4'-C5'-SD
3	C	2304	SAM	CB-CG-SD-C5'
3	C	2304	SAM	CB-CG-SD-CE
3	D	2304	SAM	O4'-C4'-C5'-SD

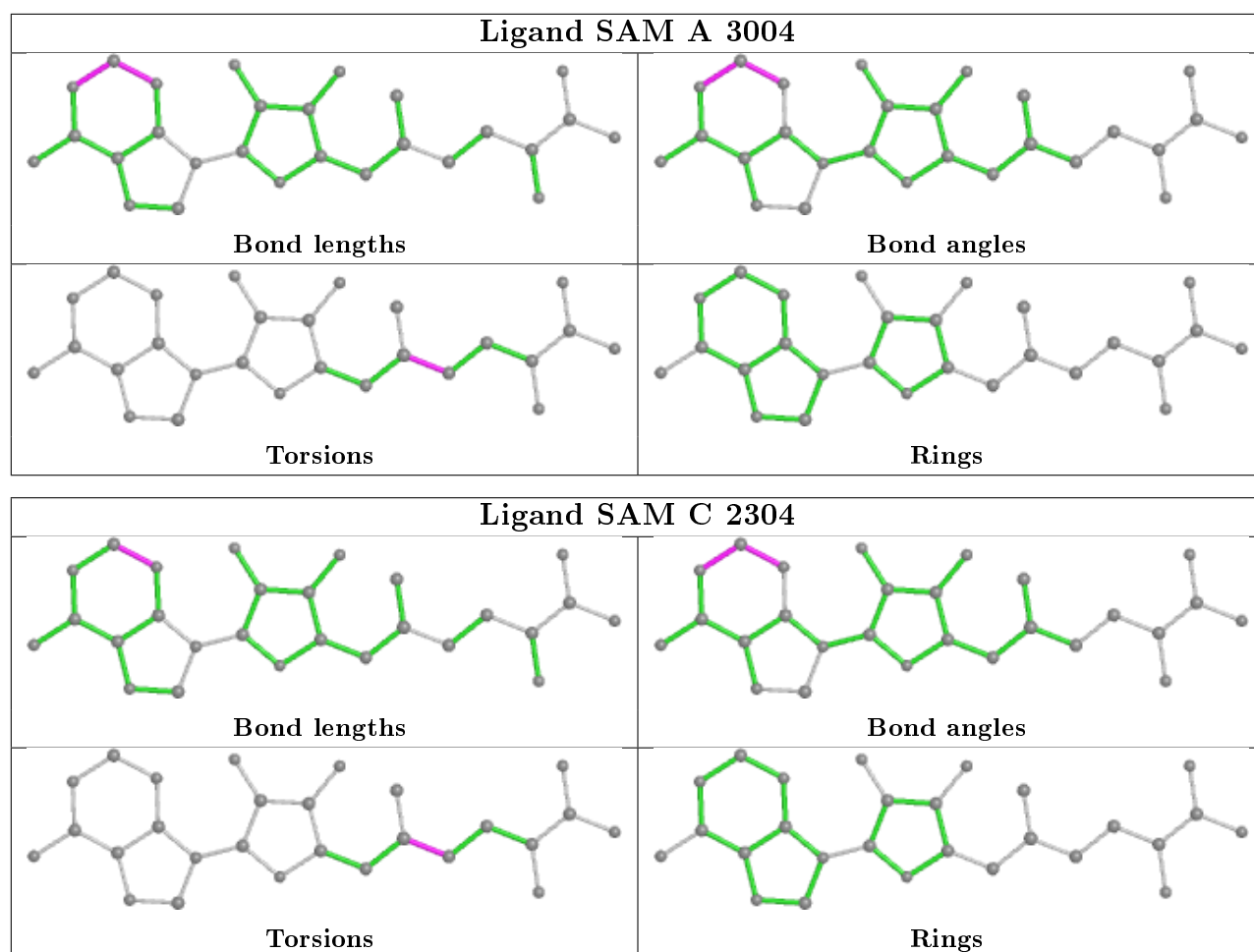
There are no ring outliers.

3 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	D	2304	SAM	1	0
3	A	3004	SAM	1	0
3	C	2304	SAM	3	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	218/226 (96%)	0.49	23 (10%) 6 8	16, 33, 63, 74	0
1	B	212/226 (93%)	0.73	31 (14%) 2 3	16, 36, 74, 78	0
1	C	217/226 (96%)	0.51	20 (9%) 9 12	15, 32, 61, 70	0
1	D	211/226 (93%)	0.76	28 (13%) 3 4	16, 35, 73, 79	0
All	All	858/904 (94%)	0.62	102 (11%) 4 6	15, 35, 68, 79	0

All (102) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	2260	PHE	10.4
1	D	2260	PHE	9.7
1	A	2260	PHE	9.3
1	C	2260	PHE	8.5
1	C	2088	ALA	6.5
1	B	2191	SER	6.4
1	A	2280	GLY	6.3
1	D	2262	VAL	6.2
1	B	2097	ASP	5.9
1	B	2100	THR	5.8
1	B	2262	VAL	5.6
1	D	2101	ARG	5.5
1	C	2264	LYS	5.4
1	D	2086	TYR	4.9
1	C	2262	VAL	4.9
1	D	2189	ASN	4.8
1	B	2193	HIS	4.5
1	D	2198	LEU	4.3
1	D	2097	ASP	4.2
1	D	2078	VAL	4.1
1	D	2177	GLN	4.1

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Mol	Chain	Res	Type	RSRZ
1	D	2259	SER	4.0
1	B	2190	HIS	3.9
1	B	2185	GLU	3.6
1	D	2100	THR	3.6
1	D	2193	HIS	3.6
1	C	2259	SER	3.5
1	D	2264	LYS	3.4
1	C	2099	ASP	3.4
1	A	2101	ARG	3.3
1	A	2262	VAL	3.3
1	B	2078	VAL	3.3
1	D	2191	SER	3.3
1	B	2259	SER	3.3
1	C	2094	LYS	3.2
1	B	2186	GLN	3.2
1	D	2190	HIS	3.2
1	D	2261	ASN	3.2
1	B	2203	VAL	3.1
1	A	2094	LYS	3.1
1	A	2257	PHE	3.1
1	C	2257	PHE	3.1
1	B	2261	ASN	3.0
1	B	2187	TYR	3.0
1	B	2201	GLY	3.0
1	B	2279	ILE	3.0
1	A	2089	THR	3.0
1	C	2100	THR	2.9
1	B	2199	ASP	2.9
1	C	2080	VAL	2.9
1	D	2102	LYS	2.9
1	B	2098	ASP	2.9
1	B	2278	ILE	2.8
1	A	2088	ALA	2.8
1	B	2184	ILE	2.8
1	B	2101	ARG	2.7
1	D	2203	VAL	2.7
1	D	2186	GLN	2.7
1	B	2263	GLU	2.7
1	B	2280	GLY	2.6
1	A	2189	ASN	2.6
1	A	2090	THR	2.6
1	C	2087	GLU	2.6

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Mol	Chain	Res	Type	RSRZ
1	A	2188	HIS	2.6
1	B	2099	ASP	2.6
1	A	2100	THR	2.6
1	B	2180	ARG	2.6
1	B	2183	MET	2.6
1	C	2073	ARG	2.6
1	D	2199	ASP	2.5
1	A	2096	PRO	2.5
1	D	2098	ASP	2.5
1	C	2180	ARG	2.5
1	A	2080	VAL	2.5
1	D	2184	ILE	2.5
1	A	2087	GLU	2.4
1	B	2181	ASN	2.4
1	A	2127	GLN	2.4
1	C	2085	GLY	2.4
1	D	2263	GLU	2.4
1	B	2192	ASP	2.4
1	C	2263	GLU	2.4
1	A	2184	ILE	2.3
1	D	2188	HIS	2.3
1	C	2261	ASN	2.3
1	D	2197	ASN	2.3
1	D	2207	TYR	2.3
1	A	2099	ASP	2.3
1	A	2263	GLU	2.3
1	A	2279	ILE	2.2
1	A	2193	HIS	2.2
1	C	2086	TYR	2.2
1	A	2098	ASP	2.2
1	B	2208	ARG	2.2
1	D	2192	ASP	2.2
1	A	2180	ARG	2.1
1	D	2232	ASN	2.1
1	C	2203	VAL	2.1
1	C	2179	PHE	2.1
1	C	2090	THR	2.1
1	B	2102	LYS	2.0
1	B	2207	TYR	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 carbohydrates in this entry.

## 6.4 Ligands [i](#)

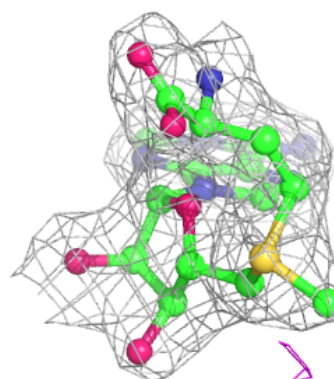
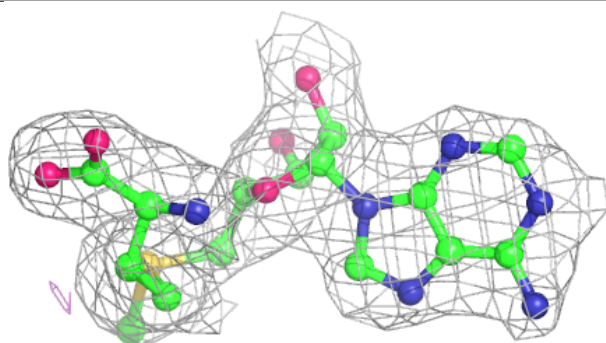
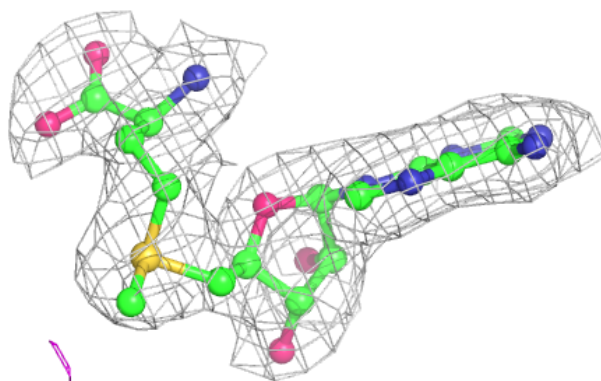
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
2	ZN	B	2302	1/1	0.94	0.13	40,40,40,40	0
3	SAM	B	2304	27/27	0.95	0.13	21,27,31,34	0
3	SAM	A	3004	27/27	0.95	0.13	16,24,27,32	0
3	SAM	C	2304	27/27	0.95	0.14	17,23,26,28	0
3	SAM	D	2304	27/27	0.96	0.11	19,26,29,31	0
2	ZN	B	2301	1/1	0.96	0.06	38,38,38,38	0
2	ZN	A	3001	1/1	0.97	0.07	39,39,39,39	0
2	ZN	A	3002	1/1	0.97	0.11	46,46,46,46	0
2	ZN	D	2302	1/1	0.98	0.10	35,35,35,35	0
2	ZN	A	3003	1/1	0.99	0.11	29,29,29,29	0
2	ZN	C	2302	1/1	0.99	0.12	25,25,25,25	0
2	ZN	C	2301	1/1	0.99	0.11	30,30,30,30	0
2	ZN	D	2301	1/1	0.99	0.04	38,38,38,38	0
2	ZN	C	2303	1/1	0.99	0.07	27,27,27,27	0
2	ZN	B	2303	1/1	0.99	0.08	28,28,28,28	0
2	ZN	D	2303	1/1	1.00	0.10	26,26,26,26	0

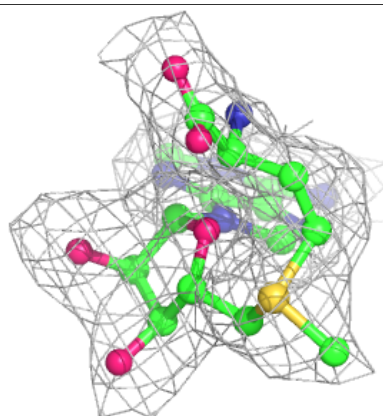
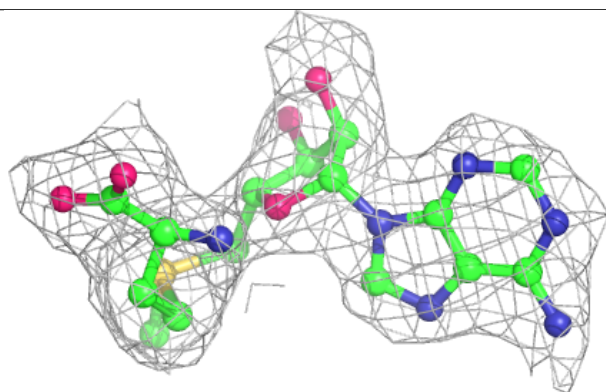
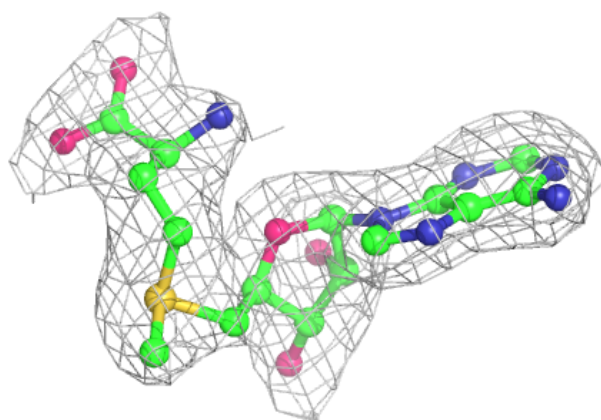
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

**Electron density around SAM B 2304:**

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

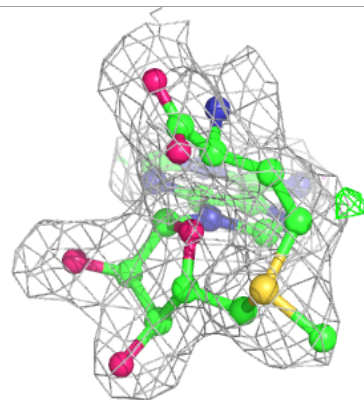
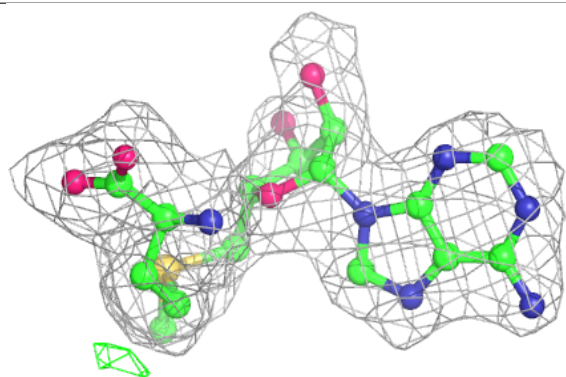
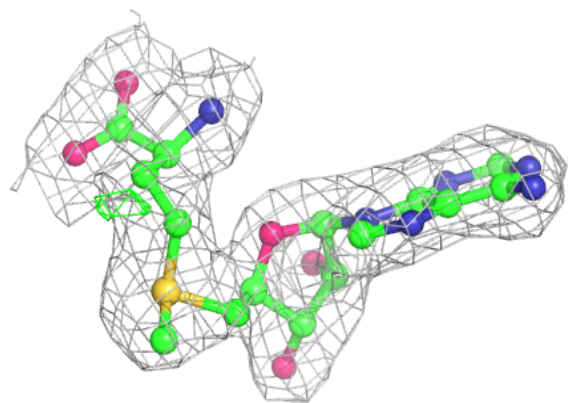
**Electron density around SAM A 3004:**

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

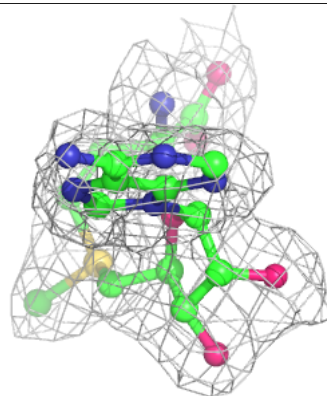
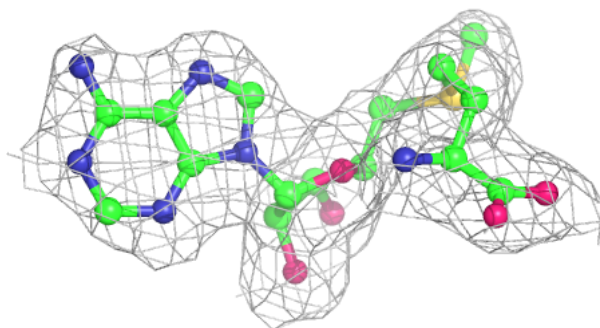
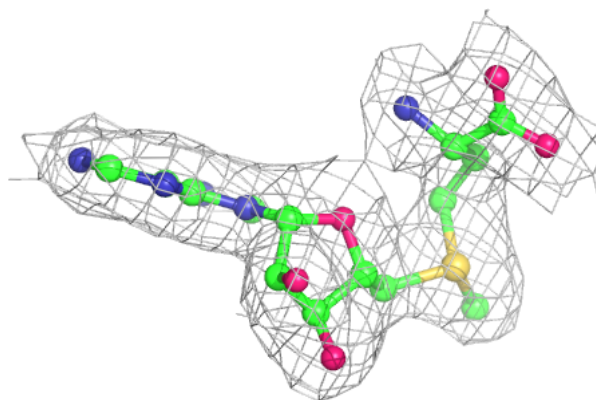


**Electron density around SAM C 2304:**

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

**Electron density around SAM D 2304:**

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



## 6.5 Other polymers

There are no such residues in this entry.