



# Full wwPDB X-ray Structure Validation Report ⓘ

Mar 3, 2024 – 06:19 PM EST

PDB ID : 6DWD  
Title : SAMHD1 Bound to Clofarabine-TP in the Catalytic Pocket and Allosteric Pocket  
Authors : Knecht, K.M.; Buzovetsky, O.; Schneider, C.; Thomas, D.; Srikanth, V.; Kaderali, L.; Tofoleanu, F.; Reiss, K.; Ferreiros, N.; Geisslinger, G.; Batista, V.S.; Ji, X.; Cinatl, J.; Keppler, O.T.; Xiong, Y.  
Deposited on : 2018-06-26  
Resolution : 1.70 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.

The types of validation reports are described at

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

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The following versions of software and data (see [references](#) ①) were used in the production of this report:

MolProbity : 4.02b-467  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
Xtrriage (Phenix) : 1.13  
EDS : 2.36  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36

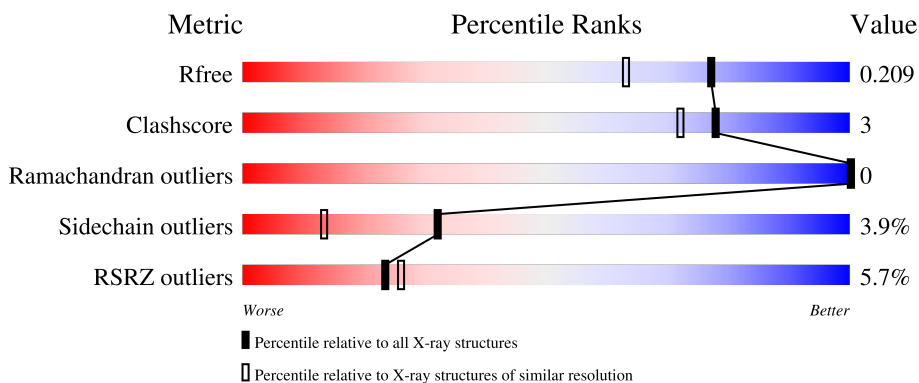
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.70 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	4298 (1.70-1.70)
Clashscore	141614	4695 (1.70-1.70)
Ramachandran outliers	138981	4610 (1.70-1.70)
Sidechain outliers	138945	4610 (1.70-1.70)
RSRZ outliers	127900	4222 (1.70-1.70)

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	550	 6% 75% 8% 15%
1	B	550	 6% 78% 8% 13%
1	C	550	 5% 80% 6% 13%
1	D	550	 3% 79% 8% 13%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard

residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
6	GLY	A	716	-	X	-	-
7	SIN	D	714	-	X	-	-

## 2 Entry composition i

There are 10 unique types of molecules in this entry. The entry contains 17162 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 Deoxynucleoside triphosphate triphosphohydrolase SAMHD1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	D	481	3939	2520	686	712	21	0	1	0
1	C	481	3941	2522	686	712	21	0	2	0
1	B	481	3933	2517	685	711	20	0	0	0
1	A	466	3810	2436	665	689	20	0	0	0

There are 152 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	77	MET	-	initiating methionine	UNP Q9Y3Z3
D	78	GLY	-	expression tag	UNP Q9Y3Z3
D	79	SER	-	expression tag	UNP Q9Y3Z3
D	80	SER	-	expression tag	UNP Q9Y3Z3
D	81	HIS	-	expression tag	UNP Q9Y3Z3
D	82	HIS	-	expression tag	UNP Q9Y3Z3
D	83	HIS	-	expression tag	UNP Q9Y3Z3
D	84	HIS	-	expression tag	UNP Q9Y3Z3
D	85	HIS	-	expression tag	UNP Q9Y3Z3
D	86	HIS	-	expression tag	UNP Q9Y3Z3
D	87	SER	-	expression tag	UNP Q9Y3Z3
D	88	SER	-	expression tag	UNP Q9Y3Z3
D	89	GLY	-	expression tag	UNP Q9Y3Z3
D	90	LEU	-	expression tag	UNP Q9Y3Z3
D	91	VAL	-	expression tag	UNP Q9Y3Z3
D	92	PRO	-	expression tag	UNP Q9Y3Z3
D	93	ARG	-	expression tag	UNP Q9Y3Z3
D	94	GLY	-	expression tag	UNP Q9Y3Z3
D	95	SER	-	expression tag	UNP Q9Y3Z3
D	96	HIS	-	expression tag	UNP Q9Y3Z3
D	97	MET	-	expression tag	UNP Q9Y3Z3

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Chain	Residue	Modelled	Actual	Comment	Reference
D	98	ALA	-	expression tag	UNP Q9Y3Z3
D	99	SER	-	expression tag	UNP Q9Y3Z3
D	100	MET	-	expression tag	UNP Q9Y3Z3
D	101	THR	-	expression tag	UNP Q9Y3Z3
D	102	GLY	-	expression tag	UNP Q9Y3Z3
D	103	GLY	-	expression tag	UNP Q9Y3Z3
D	104	GLN	-	expression tag	UNP Q9Y3Z3
D	105	GLN	-	expression tag	UNP Q9Y3Z3
D	106	MET	-	expression tag	UNP Q9Y3Z3
D	107	GLY	-	expression tag	UNP Q9Y3Z3
D	108	ARG	-	expression tag	UNP Q9Y3Z3
D	109	ASP	-	expression tag	UNP Q9Y3Z3
D	110	PRO	-	expression tag	UNP Q9Y3Z3
D	111	ASN	-	expression tag	UNP Q9Y3Z3
D	112	SER	-	expression tag	UNP Q9Y3Z3
D	206	ARG	HIS	engineered mutation	UNP Q9Y3Z3
D	207	ASN	ASP	engineered mutation	UNP Q9Y3Z3
C	77	MET	-	initiating methionine	UNP Q9Y3Z3
C	78	GLY	-	expression tag	UNP Q9Y3Z3
C	79	SER	-	expression tag	UNP Q9Y3Z3
C	80	SER	-	expression tag	UNP Q9Y3Z3
C	81	HIS	-	expression tag	UNP Q9Y3Z3
C	82	HIS	-	expression tag	UNP Q9Y3Z3
C	83	HIS	-	expression tag	UNP Q9Y3Z3
C	84	HIS	-	expression tag	UNP Q9Y3Z3
C	85	HIS	-	expression tag	UNP Q9Y3Z3
C	86	HIS	-	expression tag	UNP Q9Y3Z3
C	87	SER	-	expression tag	UNP Q9Y3Z3
C	88	SER	-	expression tag	UNP Q9Y3Z3
C	89	GLY	-	expression tag	UNP Q9Y3Z3
C	90	LEU	-	expression tag	UNP Q9Y3Z3
C	91	VAL	-	expression tag	UNP Q9Y3Z3
C	92	PRO	-	expression tag	UNP Q9Y3Z3
C	93	ARG	-	expression tag	UNP Q9Y3Z3
C	94	GLY	-	expression tag	UNP Q9Y3Z3
C	95	SER	-	expression tag	UNP Q9Y3Z3
C	96	HIS	-	expression tag	UNP Q9Y3Z3
C	97	MET	-	expression tag	UNP Q9Y3Z3
C	98	ALA	-	expression tag	UNP Q9Y3Z3
C	99	SER	-	expression tag	UNP Q9Y3Z3
C	100	MET	-	expression tag	UNP Q9Y3Z3
C	101	THR	-	expression tag	UNP Q9Y3Z3

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Chain	Residue	Modelled	Actual	Comment	Reference
C	102	GLY	-	expression tag	UNP Q9Y3Z3
C	103	GLY	-	expression tag	UNP Q9Y3Z3
C	104	GLN	-	expression tag	UNP Q9Y3Z3
C	105	GLN	-	expression tag	UNP Q9Y3Z3
C	106	MET	-	expression tag	UNP Q9Y3Z3
C	107	GLY	-	expression tag	UNP Q9Y3Z3
C	108	ARG	-	expression tag	UNP Q9Y3Z3
C	109	ASP	-	expression tag	UNP Q9Y3Z3
C	110	PRO	-	expression tag	UNP Q9Y3Z3
C	111	ASN	-	expression tag	UNP Q9Y3Z3
C	112	SER	-	expression tag	UNP Q9Y3Z3
C	206	ARG	HIS	engineered mutation	UNP Q9Y3Z3
C	207	ASN	ASP	engineered mutation	UNP Q9Y3Z3
B	77	MET	-	initiating methionine	UNP Q9Y3Z3
B	78	GLY	-	expression tag	UNP Q9Y3Z3
B	79	SER	-	expression tag	UNP Q9Y3Z3
B	80	SER	-	expression tag	UNP Q9Y3Z3
B	81	HIS	-	expression tag	UNP Q9Y3Z3
B	82	HIS	-	expression tag	UNP Q9Y3Z3
B	83	HIS	-	expression tag	UNP Q9Y3Z3
B	84	HIS	-	expression tag	UNP Q9Y3Z3
B	85	HIS	-	expression tag	UNP Q9Y3Z3
B	86	HIS	-	expression tag	UNP Q9Y3Z3
B	87	SER	-	expression tag	UNP Q9Y3Z3
B	88	SER	-	expression tag	UNP Q9Y3Z3
B	89	GLY	-	expression tag	UNP Q9Y3Z3
B	90	LEU	-	expression tag	UNP Q9Y3Z3
B	91	VAL	-	expression tag	UNP Q9Y3Z3
B	92	PRO	-	expression tag	UNP Q9Y3Z3
B	93	ARG	-	expression tag	UNP Q9Y3Z3
B	94	GLY	-	expression tag	UNP Q9Y3Z3
B	95	SER	-	expression tag	UNP Q9Y3Z3
B	96	HIS	-	expression tag	UNP Q9Y3Z3
B	97	MET	-	expression tag	UNP Q9Y3Z3
B	98	ALA	-	expression tag	UNP Q9Y3Z3
B	99	SER	-	expression tag	UNP Q9Y3Z3
B	100	MET	-	expression tag	UNP Q9Y3Z3
B	101	THR	-	expression tag	UNP Q9Y3Z3
B	102	GLY	-	expression tag	UNP Q9Y3Z3
B	103	GLY	-	expression tag	UNP Q9Y3Z3
B	104	GLN	-	expression tag	UNP Q9Y3Z3
B	105	GLN	-	expression tag	UNP Q9Y3Z3

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Chain	Residue	Modelled	Actual	Comment	Reference
B	106	MET	-	expression tag	UNP Q9Y3Z3
B	107	GLY	-	expression tag	UNP Q9Y3Z3
B	108	ARG	-	expression tag	UNP Q9Y3Z3
B	109	ASP	-	expression tag	UNP Q9Y3Z3
B	110	PRO	-	expression tag	UNP Q9Y3Z3
B	111	ASN	-	expression tag	UNP Q9Y3Z3
B	112	SER	-	expression tag	UNP Q9Y3Z3
B	206	ARG	HIS	engineered mutation	UNP Q9Y3Z3
B	207	ASN	ASP	engineered mutation	UNP Q9Y3Z3
A	77	MET	-	initiating methionine	UNP Q9Y3Z3
A	78	GLY	-	expression tag	UNP Q9Y3Z3
A	79	SER	-	expression tag	UNP Q9Y3Z3
A	80	SER	-	expression tag	UNP Q9Y3Z3
A	81	HIS	-	expression tag	UNP Q9Y3Z3
A	82	HIS	-	expression tag	UNP Q9Y3Z3
A	83	HIS	-	expression tag	UNP Q9Y3Z3
A	84	HIS	-	expression tag	UNP Q9Y3Z3
A	85	HIS	-	expression tag	UNP Q9Y3Z3
A	86	HIS	-	expression tag	UNP Q9Y3Z3
A	87	SER	-	expression tag	UNP Q9Y3Z3
A	88	SER	-	expression tag	UNP Q9Y3Z3
A	89	GLY	-	expression tag	UNP Q9Y3Z3
A	90	LEU	-	expression tag	UNP Q9Y3Z3
A	91	VAL	-	expression tag	UNP Q9Y3Z3
A	92	PRO	-	expression tag	UNP Q9Y3Z3
A	93	ARG	-	expression tag	UNP Q9Y3Z3
A	94	GLY	-	expression tag	UNP Q9Y3Z3
A	95	SER	-	expression tag	UNP Q9Y3Z3
A	96	HIS	-	expression tag	UNP Q9Y3Z3
A	97	MET	-	expression tag	UNP Q9Y3Z3
A	98	ALA	-	expression tag	UNP Q9Y3Z3
A	99	SER	-	expression tag	UNP Q9Y3Z3
A	100	MET	-	expression tag	UNP Q9Y3Z3
A	101	THR	-	expression tag	UNP Q9Y3Z3
A	102	GLY	-	expression tag	UNP Q9Y3Z3
A	103	GLY	-	expression tag	UNP Q9Y3Z3
A	104	GLN	-	expression tag	UNP Q9Y3Z3
A	105	GLN	-	expression tag	UNP Q9Y3Z3
A	106	MET	-	expression tag	UNP Q9Y3Z3
A	107	GLY	-	expression tag	UNP Q9Y3Z3
A	108	ARG	-	expression tag	UNP Q9Y3Z3
A	109	ASP	-	expression tag	UNP Q9Y3Z3

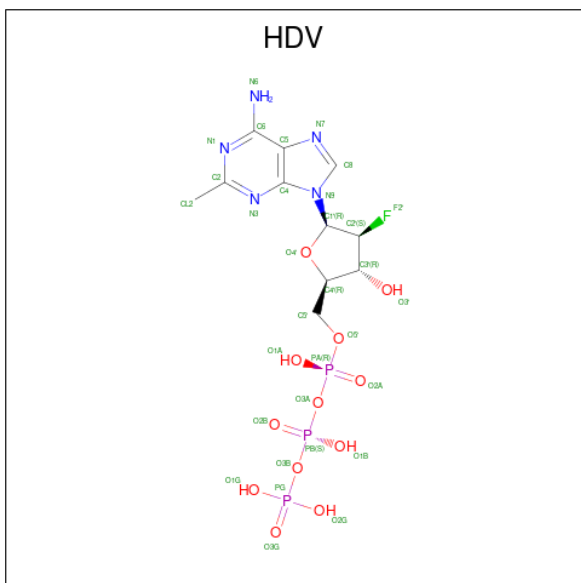
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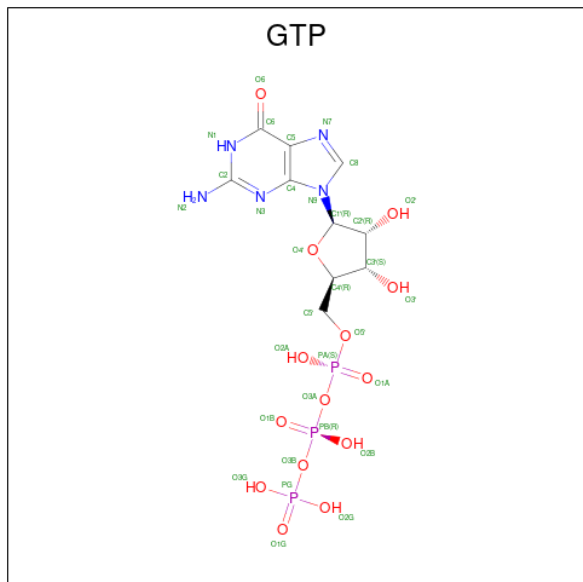
Chain	Residue	Modelled	Actual	Comment	Reference
A	110	PRO	-	expression tag	UNP Q9Y3Z3
A	111	ASN	-	expression tag	UNP Q9Y3Z3
A	112	SER	-	expression tag	UNP Q9Y3Z3
A	206	ARG	HIS	engineered mutation	UNP Q9Y3Z3
A	207	ASN	ASP	engineered mutation	UNP Q9Y3Z3

- Molecule 2 is 9-{2-deoxy-2-fluoro-5-O-[(R)-hydroxy{(S)-hydroxy(phosphonoxy)phosphoryl]oxy}phosphoryl]-beta-D-arabinofuranosyl}-2-methyl-9H-purin-6-amine (three-letter code: HDV) (formula: C<sub>11</sub>H<sub>17</sub>FN<sub>5</sub>O<sub>12</sub>P<sub>3</sub>).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
			Total	C	F	N	O			P
2	D	1	Total	C	F	N	O	P	0	0
			32	11	1	5	12	3		
2	D	1	Total	C	F	N	O	P	0	0
			32	11	1	5	12	3		
2	C	1	Total	C	F	N	O	P	0	0
			32	11	1	5	12	3		
2	C	1	Total	C	F	N	O	P	0	0
			32	11	1	5	12	3		
2	B	1	Total	C	F	N	O	P	0	0
			32	11	1	5	12	3		
2	B	1	Total	C	F	N	O	P	0	0
			32	11	1	5	12	3		
2	A	1	Total	C	F	N	O	P	0	0
			32	11	1	5	12	3		
2	A	1	Total	C	F	N	O	P	0	0
			32	11	1	5	12	3		

- Molecule 3 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula:  $C_{10}H_{16}N_5O_{14}P_3$ ).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
3	D	1	Total	C	N	O	P	0	0
			32	10	5	14	3		
3	D	1	Total	C	N	O	P	0	0
			32	10	5	14	3		
3	C	1	Total	C	N	O	P	0	0
			32	10	5	14	3		
3	B	1	Total	C	N	O	P	0	0
			32	10	5	14	3		

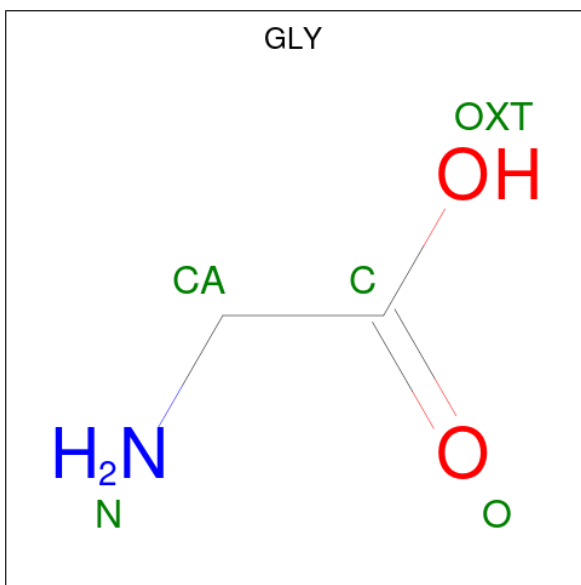
- Molecule 4 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	Mg		
4	D	2	Total	Mg	0	0
			2	2		
4	C	4	Total	Mg	0	0
			4	4		
4	B	1	Total	Mg	0	0
			1	1		
4	A	3	Total	Mg	0	0
			3	3		

- Molecule 5 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	D	6	Total Na 6 6	0	0
5	C	4	Total Na 4 4	0	0
5	B	4	Total Na 4 4	0	0
5	A	9	Total Na 9 9	0	0

- Molecule 6 is GLYCINE (three-letter code: GLY) (formula: C<sub>2</sub>H<sub>5</sub>NO<sub>2</sub>).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	D	1	Total C N O 5 2 1 2	0	0
6	C	1	Total C N O 5 2 1 2	0	0
6	C	1	Total C N O 5 2 1 2	0	0
6	B	1	Total C N O 5 2 1 2	0	0
6	A	1	Total C N O 5 2 1 2	0	0
6	A	1	Total C N O 5 2 1 2	0	0
6	A	1	Total C N O 5 2 1 2	0	0

- Molecule 7 is SUCCINIC ACID (three-letter code: SIN) (formula: C<sub>4</sub>H<sub>6</sub>O<sub>4</sub>).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	D	1	Total C O 8 4 4	0	0
7	B	1	Total C O 8 4 4	0	0

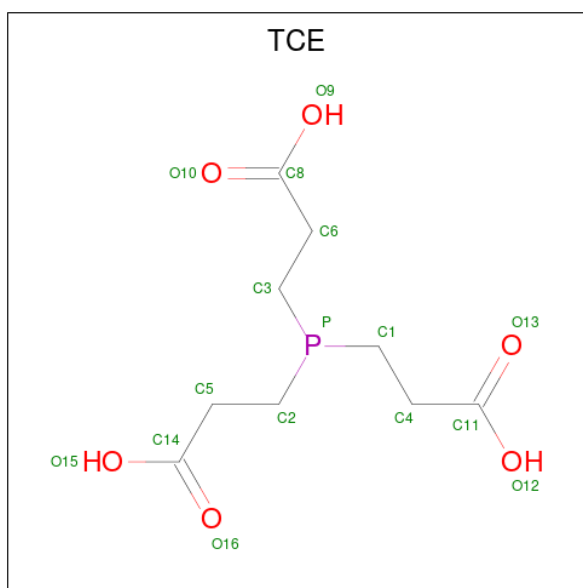
- Molecule 8 is PHOSPHATE ION (three-letter code: PO4) (formula:  $O_4P$ ).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	C	1	Total O P 5 4 1	0	0

- Molecule 9 is 3,3',3''-phosphanetriyltripropanoic acid (three-letter code: TCE) (formula:

C<sub>9</sub>H<sub>15</sub>O<sub>6</sub>P).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	O	P		
9	A	1	16	9	6	1	0	0

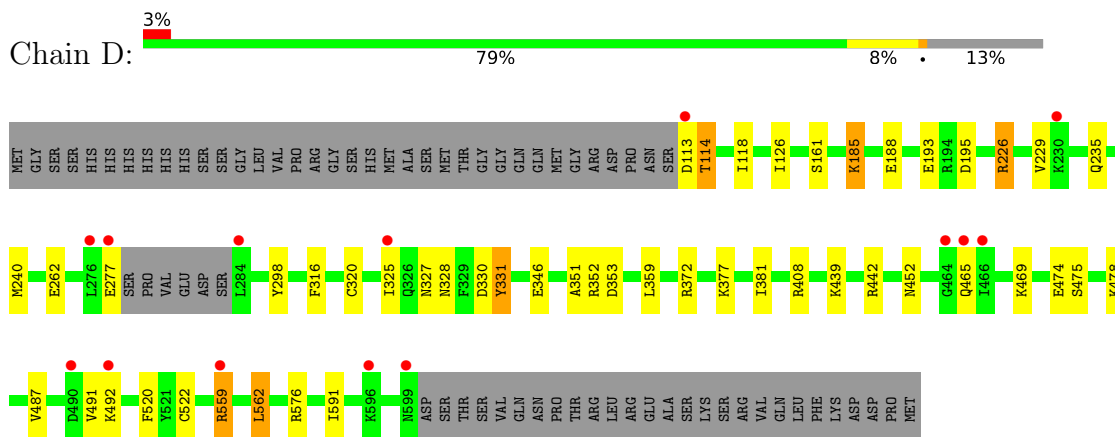
- Molecule 10 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	D	287	Total	O	0	0
			287	287		
10	C	252	Total	O	0	0
			252	252		
10	B	227	Total	O	0	0
			227	227		
10	A	284	Total	O	0	0
			284	284		

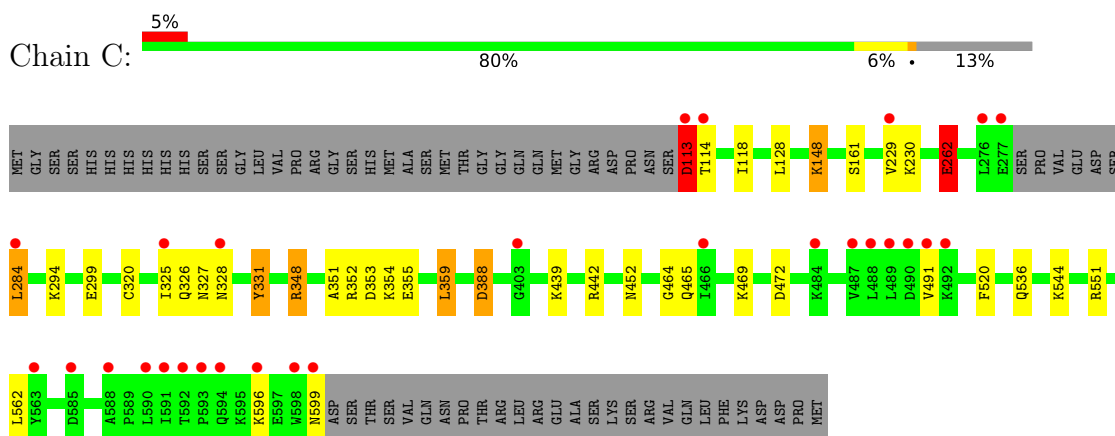
### 3 Residue-property plots [i](#)

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.

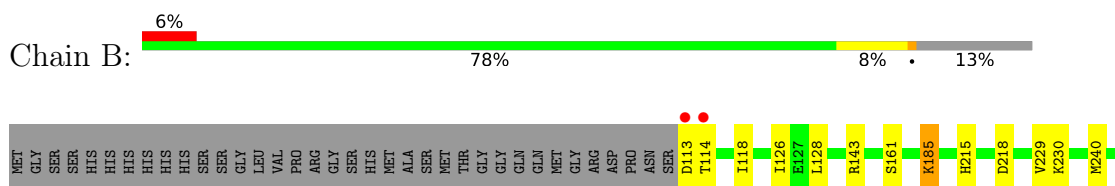
- Molecule 1: Deoxynucleoside triphosphate triphosphohydrolase SAMHD1

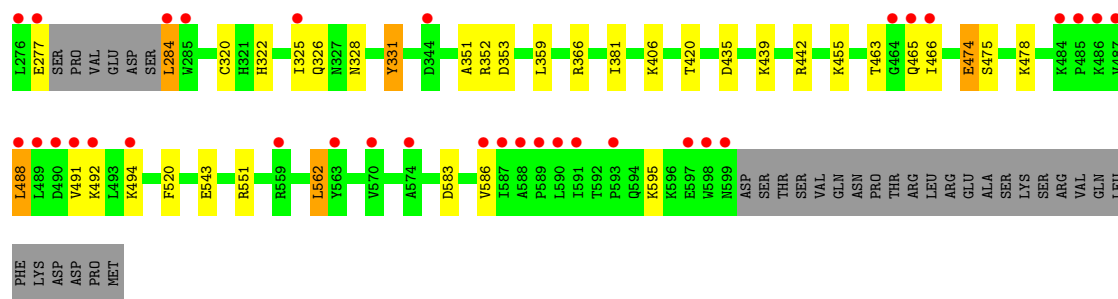


- Molecule 1: Deoxynucleoside triphosphate triphosphohydrolase SAMHD1

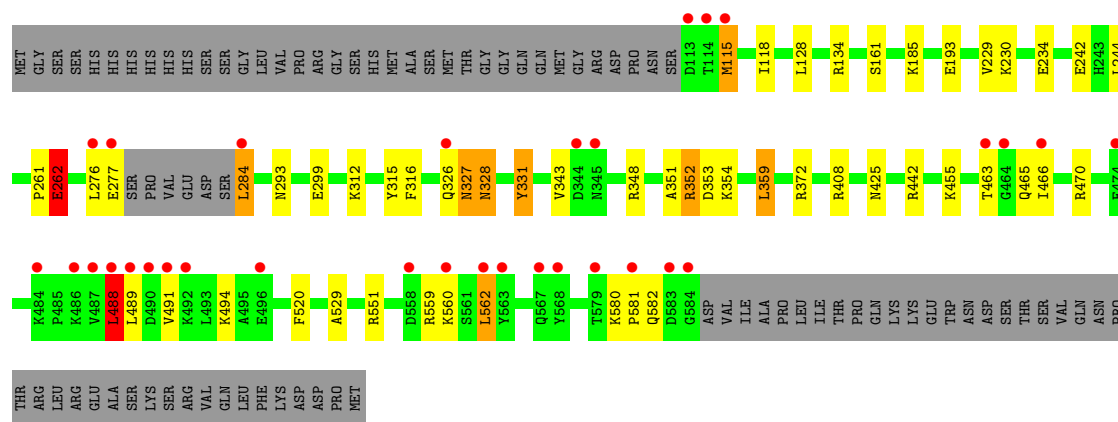
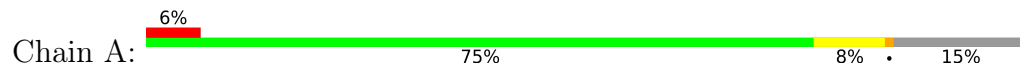


- Molecule 1: Deoxynucleoside triphosphate triphosphohydrolase SAMHD1





- Molecule 1: Deoxynucleoside triphosphate triphosphohydrolase SAMHD1



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	80.48Å 142.23Å 98.79Å 90.00° 114.10° 90.00°	Depositor
Resolution (Å)	50.00 – 1.70 48.19 – 1.70	Depositor EDS
% Data completeness (in resolution range)	94.0 (50.00-1.70) 94.0 (48.19-1.70)	Depositor EDS
$R_{merge}$	0.09	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.60 (at 1.70Å)	Xtrriage
Refinement program	REFMAC 5.8.0158	Depositor
R, $R_{free}$	0.176 , 0.202 0.185 , 0.209	Depositor DCC
$R_{free}$ test set	10589 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	19.4	Xtrriage
Anisotropy	0.050	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.33 , 41.4	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	0.021 for h,-k,-h-l	Xtrriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	17162	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	28.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.25% 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 i

### 5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: HDV, GTP, MG, NA, TCE, PO4, SIN

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	0.99	8/3898 (0.2%)	1.05	18/5258 (0.3%)
1	B	0.89	2/4025 (0.0%)	0.98	9/5433 (0.2%)
1	C	0.95	4/4039 (0.1%)	1.02	12/5452 (0.2%)
1	D	0.95	5/4031 (0.1%)	1.00	15/5441 (0.3%)
All	All	0.94	19/15993 (0.1%)	1.01	54/21584 (0.3%)

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	C	0	1

All (19) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	161	SER	CB-OG	12.94	1.59	1.42
1	C	388	ASP	CB-CG	-10.55	1.29	1.51
1	B	161	SER	CB-OG	8.31	1.53	1.42
1	C	113	ASP	CB-CG	7.16	1.66	1.51
1	D	226	ARG	CG-CD	-7.16	1.34	1.51
1	C	161	SER	CB-OG	6.63	1.50	1.42
1	A	328	ASN	CA-C	6.62	1.70	1.52
1	A	262	GLU	CG-CD	6.32	1.61	1.51
1	A	161	SER	CA-CB	6.18	1.62	1.52
1	C	262	GLU	CG-CD	5.80	1.60	1.51
1	D	161	SER	CB-OG	5.76	1.49	1.42
1	B	161	SER	CA-CB	5.56	1.61	1.52
1	A	262	GLU	CD-OE2	5.46	1.31	1.25
1	A	242	GLU	CG-CD	5.33	1.59	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	188	GLU	CD-OE2	5.30	1.31	1.25
1	D	262	GLU	CD-OE1	5.24	1.31	1.25
1	D	193	GLU	CG-CD	5.11	1.59	1.51
1	A	234	GLU	CD-OE1	5.06	1.31	1.25
1	A	299	GLU	CD-OE2	-5.00	1.20	1.25

All (54) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	328	ASN	N-CA-CB	-8.86	94.66	110.60
1	C	388	ASP	CB-CG-OD1	-8.75	110.43	118.30
1	D	442	ARG	NE-CZ-NH1	8.44	124.52	120.30
1	A	328	ASN	CB-CA-C	-8.35	93.70	110.40
1	A	353	ASP	CB-CG-OD1	8.20	125.68	118.30
1	C	442	ARG	NE-CZ-NH1	8.17	124.39	120.30
1	B	442	ARG	NE-CZ-NH1	8.16	124.38	120.30
1	C	348	ARG	NE-CZ-NH2	8.02	124.31	120.30
1	A	442	ARG	NE-CZ-NH1	7.80	124.20	120.30
1	B	488	LEU	CA-CB-CG	7.62	132.82	115.30
1	A	442	ARG	NE-CZ-NH2	-7.57	116.52	120.30
1	C	294	LYS	CD-CE-NZ	-7.55	94.34	111.70
1	C	353	ASP	CB-CG-OD1	7.43	124.99	118.30
1	B	353	ASP	CB-CG-OD1	7.38	124.94	118.30
1	B	435	ASP	CB-CG-OD2	-7.27	111.76	118.30
1	D	185	LYS	CD-CE-NZ	7.26	128.39	111.70
1	A	352	ARG	CG-CD-NE	-7.21	96.65	111.80
1	B	352	ARG	CG-CD-NE	-7.14	96.81	111.80
1	D	353	ASP	CB-CG-OD1	7.07	124.66	118.30
1	D	562	LEU	CA-CB-CG	7.07	131.55	115.30
1	A	551	ARG	NE-CZ-NH2	6.96	123.78	120.30
1	C	284	LEU	CA-CB-CG	6.75	130.81	115.30
1	A	327	ASN	C-N-CA	6.73	138.52	121.70
1	A	488	LEU	CB-CG-CD2	6.65	122.30	111.00
1	A	372	ARG	NE-CZ-NH1	-6.62	116.99	120.30
1	A	284	LEU	CA-CB-CG	6.60	130.47	115.30
1	D	352	ARG	CG-CD-NE	-6.58	97.98	111.80
1	B	366	ARG	NE-CZ-NH2	-6.51	117.05	120.30
1	D	226	ARG	CA-CB-CG	-6.50	99.10	113.40
1	D	576	ARG	NE-CZ-NH1	-6.25	117.17	120.30
1	D	576	ARG	NE-CZ-NH2	6.16	123.38	120.30
1	C	352	ARG	NE-CZ-NH2	-6.12	117.24	120.30
1	A	115	MET	CA-CB-CG	6.11	123.69	113.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	185	LYS	CD-CE-NZ	6.00	125.51	111.70
1	B	185	LYS	CD-CE-NZ	5.99	125.48	111.70
1	D	316	PHE	CB-CG-CD1	5.98	124.98	120.80
1	D	195	ASP	CB-CG-OD2	-5.97	112.93	118.30
1	C	472	ASP	CB-CG-OD1	5.86	123.57	118.30
1	B	284	LEU	CB-CG-CD1	5.71	120.71	111.00
1	D	316	PHE	CB-CG-CD2	-5.65	116.84	120.80
1	C	388	ASP	OD1-CG-OD2	5.64	134.02	123.30
1	C	348	ARG	CG-CD-NE	5.55	123.45	111.80
1	B	551	ARG	NE-CZ-NH1	-5.50	117.55	120.30
1	D	114	THR	N-CA-CB	5.40	120.56	110.30
1	C	148	LYS	CD-CE-NZ	5.34	123.99	111.70
1	A	359	LEU	CB-CG-CD1	5.29	119.99	111.00
1	A	489	LEU	CB-CG-CD1	5.24	119.90	111.00
1	C	359	LEU	CB-CG-CD1	5.20	119.84	111.00
1	D	226	ARG	NE-CZ-NH2	5.12	122.86	120.30
1	D	559	ARG	NE-CZ-NH2	5.08	122.84	120.30
1	D	330	ASP	CB-CG-OD1	5.03	122.83	118.30
1	A	316	PHE	CB-CG-CD1	5.01	124.31	120.80
1	A	348	ARG	CG-CD-NE	-5.01	101.27	111.80
1	A	408	ARG	NE-CZ-NH2	-5.00	117.80	120.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	464	GLY	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	3810	0	3793	30	0
1	B	3933	0	3921	23	0
1	C	3941	0	3932	27	0
1	D	3939	0	3925	23	0
2	A	64	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	64	0	0	3	0
2	C	64	0	0	1	0
2	D	64	0	0	1	0
3	B	32	0	12	0	0
3	C	32	0	12	0	0
3	D	64	0	24	0	0
4	A	3	0	0	0	0
4	B	1	0	0	0	0
4	C	4	0	0	0	0
4	D	2	0	0	0	0
5	A	9	0	0	0	0
5	B	4	0	0	0	0
5	C	4	0	0	0	0
5	D	6	0	0	0	0
6	A	15	0	6	0	0
6	B	5	0	2	1	0
6	C	10	0	4	0	0
6	D	5	0	2	0	0
7	B	8	0	4	0	0
7	D	8	0	4	2	0
8	C	5	0	0	0	0
9	A	16	0	12	2	0
10	A	284	0	0	5	0
10	B	227	0	0	6	0
10	C	252	0	0	7	0
10	D	287	0	0	10	0
All	All	17162	0	15653	92	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 3.

All (92) 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:328[B]:ASN:HD22	1:A:328:ASN:ND2	1.36	1.20
1:C:452:ASN:HB3	10:C:1023:HOH:O	1.49	1.12
2:D:703:HDV:CL2	10:D:830:HOH:O	2.02	1.07
2:B:701:HDV:CL2	10:B:842:HOH:O	2.03	1.03
1:C:465:GLN:HE22	1:C:544:LYS:HE2	1.20	1.01
1:C:328[B]:ASN:HD22	1:A:328:ASN:HD21	1.00	0.90
10:D:1040:HOH:O	1:B:328:ASN:HB2	1.71	0.90

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:328[B]:ASN:ND2	1:A:328:ASN:ND2	2.21	0.88
1:C:328[B]:ASN:ND2	1:A:328:ASN:HD21	1.74	0.85
1:C:465:GLN:NE2	1:C:544:LYS:HE2	1.92	0.82
2:C:704:HDV:CL2	10:C:814:HOH:O	2.29	0.80
1:C:113:ASP:HB2	10:C:912:HOH:O	1.88	0.73
1:D:522[A]:CYS:SG	1:B:586:VAL:HG21	2.30	0.72
6:B:709:GLY:HA3	10:B:862:HOH:O	1.93	0.67
1:B:218:ASP:OD2	10:B:801:HOH:O	2.13	0.66
1:A:354:LYS:NZ	10:A:803:HOH:O	2.31	0.64
1:D:298:TYR:O	10:D:801:HOH:O	2.15	0.64
9:A:718:TCE:H6A	10:A:1011:HOH:O	1.99	0.63
1:C:326:GLN:HG2	1:A:326:GLN:HG2	1.82	0.62
1:D:185:LYS:HE2	10:D:1046:HOH:O	1.99	0.62
1:D:408:ARG:HD2	10:D:1012:HOH:O	1.98	0.61
1:C:452:ASN:CB	10:C:1023:HOH:O	2.25	0.61
1:B:463:THR:O	1:B:466:ILE:HD12	2.00	0.61
1:D:452:ASN:ND2	7:D:714:SIN:H31	2.16	0.60
1:D:452:ASN:HD21	7:D:714:SIN:H31	1.66	0.60
1:C:262:GLU:H	1:C:262:GLU:CD	2.04	0.59
1:A:262:GLU:H	1:A:262:GLU:CD	2.07	0.58
1:A:463:THR:O	1:A:466:ILE:HD12	2.03	0.58
1:C:326:GLN:CG	1:A:326:GLN:CG	2.84	0.55
1:C:328[B]:ASN:HD22	1:A:328:ASN:HD22	1.42	0.54
1:B:215:HIS:HE2	2:B:702:HDV:PA	2.31	0.53
1:C:326:GLN:HG2	1:A:326:GLN:CG	2.38	0.53
1:B:583:ASP:OD2	10:B:802:HOH:O	2.17	0.52
1:C:326:GLN:CG	1:A:326:GLN:HG2	2.40	0.52
1:D:235:GLN:HG2	10:D:1076:HOH:O	2.10	0.52
1:D:346:GLU:HA	10:D:803:HOH:O	2.09	0.52
1:A:455:LYS:HB2	1:A:562:LEU:HD11	1.91	0.51
1:D:328:ASN:HB2	1:B:328:ASN:HB3	1.93	0.50
1:A:293:ASN:ND2	9:A:718:TCE:O16	2.41	0.50
1:D:474:GLU:O	1:D:478:LYS:CE	2.60	0.49
1:B:215:HIS:NE2	2:B:702:HDV:O2A	2.45	0.48
1:B:455:LYS:HB2	1:B:562:LEU:HD11	1.94	0.48
1:C:113:ASP:CB	10:C:912:HOH:O	2.56	0.48
1:C:354:LYS:HG3	1:C:355:GLU:OE2	2.14	0.47
1:D:226:ARG:HD2	10:D:886:HOH:O	2.13	0.47
1:B:474:GLU:O	1:B:478:LYS:CE	2.63	0.46
1:C:351:ALA:O	1:C:520:PHE:HA	2.15	0.46
1:A:134:ARG:HD2	10:A:1069:HOH:O	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:351:ALA:O	1:A:520:PHE:HA	2.15	0.46
1:B:351:ALA:O	1:B:520:PHE:HA	2.15	0.46
1:A:261:PRO:HD2	10:A:912:HOH:O	2.15	0.46
1:C:327:ASN:O	1:A:326:GLN:HG2	2.16	0.46
1:D:118:ILE:HG23	1:D:126:ILE:HG12	1.99	0.45
1:B:143:ARG:HD2	1:B:420:THR:HA	1.97	0.45
1:B:475:SER:HA	1:B:478:LYS:HE2	1.99	0.45
1:A:470:ARG:HH11	1:A:470:ARG:HG3	1.81	0.45
1:D:351:ALA:O	1:D:520:PHE:HA	2.16	0.45
1:C:299:GLU:OE2	1:C:348:ARG:HD2	2.17	0.45
1:B:322:HIS:HE1	10:B:956:HOH:O	1.99	0.45
1:B:381:ILE:HD12	1:B:381:ILE:HA	1.90	0.44
1:C:118:ILE:HD12	1:C:128:LEU:HD11	1.99	0.44
1:B:118:ILE:HD12	1:B:128:LEU:HD11	2.00	0.44
1:D:381:ILE:HD12	1:D:381:ILE:HA	1.89	0.44
1:D:475:SER:HA	1:D:478:LYS:HE2	2.00	0.44
1:B:331:TYR:CD1	1:B:331:TYR:C	2.92	0.43
1:A:262:GLU:CG	10:A:979:HOH:O	2.67	0.43
1:A:352:ARG:CZ	1:A:354:LYS:HD2	2.48	0.43
1:D:487:VAL:HG23	1:D:591:ILE:HD11	2.01	0.43
1:C:320:CYS:HB3	1:C:325:ILE:O	2.19	0.43
1:D:240:MET:HB2	1:D:240:MET:HE2	1.94	0.42
1:C:551:ARG:NH1	10:C:823:HOH:O	2.53	0.42
1:D:331:TYR:CD1	1:D:331:TYR:C	2.93	0.42
1:C:331:TYR:CD1	1:C:331:TYR:C	2.92	0.42
1:B:126:ILE:HD13	1:B:126:ILE:HG21	1.85	0.42
1:A:331:TYR:CD1	1:A:331:TYR:C	2.93	0.42
1:B:320:CYS:HB3	1:B:325:ILE:O	2.20	0.42
1:D:327:ASN:O	1:B:326:GLN:HG2	2.20	0.41
1:D:320:CYS:HB3	1:D:325:ILE:O	2.20	0.41
1:D:372:ARG:NH2	10:D:822:HOH:O	2.53	0.41
1:C:148:LYS:NZ	10:C:816:HOH:O	2.50	0.41
1:C:326:GLN:HG2	1:A:327:ASN:O	2.19	0.41
1:A:118:ILE:HD12	1:A:128:LEU:HD11	2.02	0.41
1:A:312:LYS:HA	1:A:315:TYR:CE2	2.56	0.41
1:B:185:LYS:HE2	10:B:999:HOH:O	2.21	0.41
1:D:185:LYS:CE	10:D:1046:HOH:O	2.62	0.41
1:C:536:GLN:HE21	1:A:582:GLN:HG2	1.86	0.41
1:B:240:MET:HB2	1:B:240:MET:HE2	1.95	0.40
1:A:488:LEU:O	1:A:488:LEU:HD23	2.21	0.40
1:A:580:LYS:HD2	1:A:581:PRO:HD2	2.02	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:328:ASN:ND2	1:B:326:GLN:O	2.52	0.40
1:A:244:LEU:HD23	1:A:244:LEU:C	2.42	0.40
1:A:343:VAL:HG22	1:A:529:ALA:CB	2.52	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	462/550 (84%)	452 (98%)	10 (2%)	0	100	100
1	B	477/550 (87%)	469 (98%)	8 (2%)	0	100	100
1	C	479/550 (87%)	473 (99%)	6 (1%)	0	100	100
1	D	478/550 (87%)	470 (98%)	8 (2%)	0	100	100
All	All	1896/2200 (86%)	1864 (98%)	32 (2%)	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	413/488 (85%)	395 (96%)	18 (4%)	28	11
1	B	427/488 (88%)	408 (96%)	19 (4%)	28	11

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	C	429/488 (88%)	414 (96%)	15 (4%)	36	17
1	D	428/488 (88%)	414 (97%)	14 (3%)	38	19
All	All	1697/1952 (87%)	1631 (96%)	66 (4%)	32	13

All (66) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	113	ASP
1	D	114	THR
1	D	229	VAL
1	D	277	GLU
1	D	331	TYR
1	D	359	LEU
1	D	377	LYS
1	D	439	LYS
1	D	465	GLN
1	D	469	LYS
1	D	491	VAL
1	D	492	LYS
1	D	559	ARG
1	D	562	LEU
1	C	113	ASP
1	C	114	THR
1	C	229	VAL
1	C	230	LYS
1	C	262	GLU
1	C	284	LEU
1	C	331	TYR
1	C	359	LEU
1	C	388	ASP
1	C	439	LYS
1	C	469	LYS
1	C	491	VAL
1	C	562	LEU
1	C	596	LYS
1	C	599	ASN
1	B	113	ASP
1	B	114	THR
1	B	229	VAL
1	B	230	LYS
1	B	277	GLU

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Mol	Chain	Res	Type
1	B	284	LEU
1	B	331	TYR
1	B	359	LEU
1	B	406	LYS
1	B	439	LYS
1	B	465	GLN
1	B	474	GLU
1	B	488	LEU
1	B	491	VAL
1	B	492	LYS
1	B	494	LYS
1	B	543	GLU
1	B	562	LEU
1	B	595	LYS
1	A	115	MET
1	A	193	GLU
1	A	229	VAL
1	A	230	LYS
1	A	262	GLU
1	A	276	LEU
1	A	277	GLU
1	A	284	LEU
1	A	331	TYR
1	A	359	LEU
1	A	425	ASN
1	A	465	GLN
1	A	488	LEU
1	A	491	VAL
1	A	494	LYS
1	A	559	ARG
1	A	560	LYS
1	A	562	LEU

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

Mol	Chain	Res	Type
1	D	190	GLN
1	D	465	GLN
1	D	535	ASN
1	C	233	HIS
1	C	322	HIS
1	C	326	GLN

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Mol	Chain	Res	Type
1	C	364	HIS
1	C	465	GLN
1	C	535	ASN
1	B	233	HIS
1	B	465	GLN
1	B	535	ASN
1	A	233	HIS
1	A	326	GLN
1	A	328	ASN
1	A	345	ASN
1	A	364	HIS
1	A	577	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 monosaccharides in this entry.

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

Of 56 ligands modelled in this entry, 33 are monoatomic - leaving 23 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	HDV	B	701	4	27,34,34	2.12	10 (37%)	34,54,54	1.85	7 (20%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
6	GLY	D	713	-	4,4,4	1.13	1 (25%)	3,4,4	1.46	0
2	HDV	A	702	4	27,34,34	1.82	9 (33%)	34,54,54	1.92	7 (20%)
6	GLY	C	713	-	4,4,4	0.99	0	3,4,4	1.25	0
6	GLY	A	715	-	4,4,4	1.10	0	3,4,4	0.63	0
3	GTP	D	704	4	26,34,34	1.05	1 (3%)	32,54,54	1.14	2 (6%)
7	SIN	B	710	-	7,7,7	1.37	0	8,8,8	1.37	1 (12%)
2	HDV	C	701	4	27,34,34	2.21	6 (22%)	34,54,54	2.36	11 (32%)
3	GTP	C	702	4	26,34,34	1.38	4 (15%)	32,54,54	1.45	5 (15%)
7	SIN	D	714	5	7,7,7	1.20	0	8,8,8	2.80	3 (37%)
6	GLY	A	716	-	4,4,4	1.24	1 (25%)	3,4,4	2.29	1 (33%)
3	GTP	D	702	4	26,34,34	1.30	5 (19%)	32,54,54	1.45	5 (15%)
2	HDV	C	704	4	27,34,34	2.01	7 (25%)	34,54,54	1.55	8 (23%)
2	HDV	B	702	4	27,34,34	1.88	6 (22%)	34,54,54	2.33	8 (23%)
6	GLY	C	712	-	4,4,4	1.19	0	3,4,4	1.73	1 (33%)
2	HDV	A	704	4	27,34,34	1.94	9 (33%)	34,54,54	2.43	17 (50%)
6	GLY	B	709	-	4,4,4	0.68	0	3,4,4	1.94	1 (33%)
2	HDV	D	703	4	27,34,34	2.50	8 (29%)	34,54,54	1.92	8 (23%)
8	PO4	C	714	-	4,4,4	0.90	0	6,6,6	1.12	0
9	TCE	A	718	-	12,15,15	1.37	1 (8%)	12,18,18	3.37	5 (41%)
2	HDV	D	701	4	27,34,34	1.97	7 (25%)	34,54,54	2.74	14 (41%)
6	GLY	A	717	-	4,4,4	0.92	0	3,4,4	1.44	0
3	GTP	B	703	4	26,34,34	1.22	3 (11%)	32,54,54	1.43	4 (12%)

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	HDV	B	701	4	-	5/18/38/38	0/3/3/3
6	GLY	D	713	-	-	2/2/2/2	-
2	HDV	A	702	4	-	1/18/38/38	0/3/3/3
6	GLY	C	713	-	-	0/2/2/2	-
6	GLY	A	715	-	-	0/2/2/2	-
3	GTP	D	704	4	-	2/18/38/38	0/3/3/3
7	SIN	B	710	-	-	3/5/5/5	-
2	HDV	C	701	4	-	4/18/38/38	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	GTP	C	702	4	-	5/18/38/38	0/3/3/3
7	SIN	D	714	5	-	5/5/5/5	-
6	GLY	A	716	-	-	2/2/2/2	-
3	GTP	D	702	4	-	2/18/38/38	0/3/3/3
2	HDV	C	704	4	-	3/18/38/38	0/3/3/3
2	HDV	B	702	4	-	4/18/38/38	0/3/3/3
6	GLY	C	712	-	-	2/2/2/2	-
2	HDV	A	704	4	-	4/18/38/38	0/3/3/3
6	GLY	B	709	-	-	0/2/2/2	-
2	HDV	D	703	4	-	1/18/38/38	0/3/3/3
9	TCE	A	718	-	-	9/15/15/15	-
2	HDV	D	701	4	-	3/18/38/38	0/3/3/3
6	GLY	A	717	-	-	2/2/2/2	-
3	GTP	B	703	4	-	5/18/38/38	0/3/3/3

All (78) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	703	HDV	O4'-C1'	9.41	1.54	1.41
2	C	704	HDV	O4'-C1'	6.58	1.50	1.41
2	B	701	HDV	O4'-C1'	6.28	1.49	1.41
2	C	701	HDV	C2'-C3'	-5.75	1.44	1.52
2	D	701	HDV	O4'-C1'	5.33	1.48	1.41
2	C	701	HDV	C2'-C1'	-5.14	1.46	1.53
2	B	702	HDV	O4'-C1'	4.64	1.47	1.41
2	C	701	HDV	O4'-C1'	4.54	1.47	1.41
2	A	702	HDV	O4'-C1'	4.51	1.47	1.41
2	B	702	HDV	C2'-C3'	-4.41	1.46	1.52
2	D	703	HDV	C6-N1	-4.00	1.26	1.33
2	D	701	HDV	C2'-C1'	-4.00	1.47	1.53
2	A	704	HDV	C6-N6	3.77	1.47	1.34
3	B	703	GTP	C6-N1	-3.75	1.32	1.37
2	B	702	HDV	C2'-C1'	-3.72	1.48	1.53
2	D	701	HDV	C2'-C3'	-3.72	1.47	1.52
3	C	702	GTP	C6-N1	-3.60	1.32	1.37
2	A	704	HDV	C2'-C3'	-3.56	1.47	1.52
2	A	704	HDV	C2'-C1'	-3.44	1.48	1.53
2	A	704	HDV	O4'-C1'	3.39	1.45	1.41
2	B	701	HDV	PG-O1G	-3.35	1.41	1.54
2	B	701	HDV	C4-N3	-3.33	1.30	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	701	HDV	C6-N6	3.25	1.45	1.34
3	C	702	GTP	C2'-C1'	-3.24	1.48	1.53
3	D	702	GTP	O4'-C1'	3.11	1.45	1.41
2	A	702	HDV	C6-N1	-3.02	1.28	1.33
2	B	701	HDV	C2'-C1'	-3.01	1.49	1.53
2	B	702	HDV	C6-N6	2.99	1.45	1.34
2	C	701	HDV	PG-O1G	-2.94	1.43	1.54
2	D	701	HDV	C6-N6	2.82	1.44	1.34
2	A	704	HDV	PA-O1A	-2.80	1.42	1.55
2	A	702	HDV	C4-N3	-2.80	1.31	1.35
2	C	704	HDV	PG-O1G	-2.80	1.44	1.54
2	A	702	HDV	PG-O2G	-2.79	1.44	1.54
2	B	702	HDV	PG-O2G	-2.74	1.44	1.54
2	C	704	HDV	C6-N1	-2.74	1.28	1.33
2	C	704	HDV	PG-O3G	-2.73	1.41	1.50
2	D	701	HDV	PA-O1A	-2.69	1.42	1.55
2	D	703	HDV	PB-O1B	-2.65	1.42	1.55
2	A	702	HDV	C2'-C1'	-2.62	1.49	1.53
3	C	702	GTP	O4'-C1'	2.52	1.44	1.41
2	B	701	HDV	PG-O2G	-2.50	1.45	1.54
3	D	704	GTP	O4'-C1'	2.50	1.44	1.41
2	B	701	HDV	C6-N1	-2.50	1.29	1.33
2	D	701	HDV	C2-N1	2.49	1.38	1.34
2	C	701	HDV	CL2-C2	2.49	1.56	1.49
2	D	703	HDV	C4-N3	-2.45	1.31	1.35
2	A	704	HDV	F2'-C2'	2.45	1.45	1.40
2	D	703	HDV	PG-O2G	-2.44	1.45	1.54
2	D	703	HDV	C3'-C4'	-2.42	1.46	1.53
2	B	701	HDV	C2'-C3'	-2.42	1.49	1.52
6	A	716	GLY	OXT-C	-2.41	1.22	1.30
2	A	704	HDV	CL2-C2	2.35	1.56	1.49
2	D	703	HDV	C6-N6	2.30	1.42	1.34
2	B	701	HDV	PA-O1A	-2.28	1.44	1.55
2	A	704	HDV	C2-N3	2.26	1.38	1.34
2	B	701	HDV	C6-N6	2.21	1.42	1.34
2	A	704	HDV	PG-O1G	-2.21	1.46	1.54
3	D	702	GTP	PG-O2G	-2.18	1.46	1.54
2	B	702	HDV	PG-O1G	-2.18	1.46	1.54
3	D	702	GTP	PA-O5'	2.16	1.68	1.59
6	D	713	GLY	OXT-C	-2.15	1.23	1.30
2	A	702	HDV	C6-N6	2.14	1.41	1.34
2	A	702	HDV	PA-O2A	-2.13	1.43	1.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	702	GTP	C2'-C1'	-2.11	1.50	1.53
2	C	704	HDV	O3'-C3'	2.10	1.47	1.43
2	C	704	HDV	O4'-C4'	2.10	1.49	1.45
3	B	703	GTP	O4'-C4'	-2.10	1.40	1.45
2	A	702	HDV	PB-O1B	-2.10	1.45	1.55
9	A	718	TCE	P-C3	2.10	1.87	1.84
2	D	701	HDV	C4-N3	-2.08	1.32	1.35
3	C	702	GTP	PA-O2A	-2.06	1.45	1.55
2	D	703	HDV	O4'-C4'	2.06	1.49	1.45
3	B	703	GTP	C2-N1	-2.05	1.32	1.37
2	B	701	HDV	PB-O1B	-2.05	1.45	1.55
3	D	702	GTP	PB-O2B	-2.02	1.45	1.55
2	C	704	HDV	PB-O2B	-2.01	1.43	1.50
2	A	702	HDV	F2'-C2'	2.01	1.44	1.40

All (108) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	702	HDV	C2-N3-C4	7.71	121.79	115.52
2	D	701	HDV	CL2-C2-N1	6.52	127.34	117.15
9	A	718	TCE	C1-P-C3	6.44	121.47	100.95
2	A	702	HDV	C5-C6-N1	-6.36	116.84	121.01
7	D	714	SIN	C2-C3-C4	6.26	127.06	113.60
9	A	718	TCE	C1-P-C2	6.23	120.81	100.95
2	D	701	HDV	C5-C6-N1	-5.95	117.10	121.01
2	B	701	HDV	C5-C6-N1	-5.74	117.24	121.01
2	D	701	HDV	C2-N3-C4	5.71	120.16	115.52
9	A	718	TCE	C3-P-C2	5.26	117.72	100.95
2	C	701	HDV	C2-N3-C4	5.13	119.69	115.52
2	A	704	HDV	CL2-C2-N1	4.87	124.75	117.15
2	D	703	HDV	C5-C6-N1	-4.80	117.86	121.01
2	D	701	HDV	C2-N1-C6	4.59	125.24	118.08
2	C	701	HDV	C5-C6-N1	-4.52	118.04	121.01
2	A	702	HDV	C2'-C3'-C4'	4.49	108.20	102.40
2	B	702	HDV	N3-C2-N1	-4.42	117.66	125.73
2	C	701	HDV	C2-N1-C6	4.30	124.79	118.08
2	A	704	HDV	PB-O3A-PA	-4.21	118.39	132.83
2	A	704	HDV	C2-N1-C6	4.19	124.61	118.08
2	C	704	HDV	C3'-C2'-C1'	4.14	108.15	103.13
2	D	701	HDV	N3-C2-N1	-4.04	118.36	125.73
2	A	704	HDV	O1A-PA-O5'	4.02	126.42	107.75
2	A	704	HDV	C1'-N9-C4	-4.02	119.58	126.64

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	701	HDV	PB-O3A-PA	-4.01	119.06	132.83
2	D	701	HDV	N6-C6-N1	3.97	127.86	117.07
2	C	701	HDV	CL2-C2-N1	3.95	123.32	117.15
2	B	702	HDV	C1'-N9-C4	-3.94	119.72	126.64
2	A	704	HDV	C5-C6-N1	-3.91	118.44	121.01
2	D	703	HDV	C3'-C2'-C1'	3.88	107.83	103.13
2	C	701	HDV	N3-C2-N1	-3.86	118.68	125.73
2	D	703	HDV	C2-N3-C4	-3.86	112.39	115.52
2	C	701	HDV	C1'-N9-C4	-3.86	119.87	126.64
2	B	702	HDV	PB-O3A-PA	-3.85	119.62	132.83
2	C	701	HDV	C3'-C2'-C1'	3.84	107.79	103.13
2	B	702	HDV	CL2-C2-N1	3.83	123.14	117.15
3	B	703	GTP	O3G-PG-O3B	3.76	117.25	104.64
7	D	714	SIN	O2-C1-O1	-3.75	113.96	123.30
2	B	701	HDV	O1G-PG-O2G	3.58	121.32	107.64
2	A	704	HDV	C5-C6-N6	-3.52	115.00	120.35
2	D	701	HDV	C5-C6-N6	-3.51	115.01	120.35
2	D	703	HDV	O4'-C1'-C2'	-3.51	102.18	105.79
2	C	701	HDV	N6-C6-N1	3.50	126.59	117.07
2	A	704	HDV	N6-C6-N1	3.48	126.52	117.07
6	A	716	GLY	OXT-C-O	-3.44	114.73	123.30
2	B	701	HDV	C1'-N9-C4	-3.37	120.73	126.64
2	B	701	HDV	C3'-C2'-C1'	3.36	107.20	103.13
2	B	701	HDV	C2'-C3'-C4'	3.34	106.72	102.40
2	C	701	HDV	C5-C6-N6	-3.32	115.31	120.35
2	B	702	HDV	C2-N1-C6	3.30	123.23	118.08
2	A	704	HDV	N3-C2-N1	-3.27	119.76	125.73
2	C	704	HDV	C2'-C3'-C4'	3.19	106.53	102.40
2	D	701	HDV	O1A-PA-O5'	3.19	122.55	107.75
2	D	703	HDV	C2'-C3'-C4'	3.18	106.51	102.40
2	A	704	HDV	F2'-C2'-C1'	3.17	115.68	109.08
2	D	703	HDV	C1'-N9-C4	-3.15	121.11	126.64
2	A	702	HDV	C1'-N9-C4	-3.14	121.13	126.64
2	B	701	HDV	C4-C5-N7	-3.08	106.19	109.40
3	D	704	GTP	C3'-C2'-C1'	3.06	105.59	100.98
3	D	702	GTP	N2-C2-N3	-3.04	113.83	119.74
3	D	702	GTP	O3G-PG-O2G	2.99	119.07	107.64
3	D	702	GTP	O6-C6-N1	2.98	124.17	120.65
3	D	702	GTP	C3'-C2'-C1'	2.97	105.45	100.98
2	C	701	HDV	F2'-C2'-C1'	2.96	115.24	109.08
9	A	718	TCE	O9-C8-C6	2.91	123.38	114.03
2	D	703	HDV	C4-C5-N7	-2.88	106.40	109.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	702	GTP	O3G-PG-O3B	2.88	114.28	104.64
2	A	702	HDV	O4'-C1'-C2'	-2.82	102.89	105.79
3	C	702	GTP	O6-C6-N1	2.80	123.95	120.65
2	C	704	HDV	C5-C6-N1	-2.78	119.18	121.01
2	D	701	HDV	C1'-N9-C4	-2.77	121.77	126.64
2	C	704	HDV	O4'-C1'-C2'	-2.77	102.94	105.79
2	B	702	HDV	O2G-PG-O3B	2.76	113.88	104.64
3	C	702	GTP	O6-C6-C5	-2.73	119.03	124.37
2	D	701	HDV	C2'-C3'-C4'	2.70	105.89	102.40
2	A	702	HDV	CL2-C2-N1	-2.67	112.98	117.15
6	B	709	GLY	OXT-C-CA	2.66	124.05	113.45
2	A	702	HDV	C2-N3-C4	-2.56	113.44	115.52
7	B	710	SIN	O4-C4-O3	-2.53	116.99	123.30
2	D	701	HDV	F2'-C2'-C3'	-2.44	104.12	109.22
2	D	701	HDV	C4-C5-N7	-2.43	106.86	109.40
3	C	702	GTP	PA-O3A-PB	-2.38	124.67	132.83
3	B	703	GTP	C8-N7-C5	2.37	107.51	102.99
3	D	704	GTP	O3G-PG-O2G	2.36	116.67	107.64
2	A	704	HDV	C2-N3-C4	2.35	117.43	115.52
7	D	714	SIN	O2-C1-C2	2.32	121.47	114.03
9	A	718	TCE	O15-C14-C5	2.31	121.45	114.03
2	A	704	HDV	C3'-C2'-C1'	2.31	105.92	103.13
3	B	703	GTP	PA-O3A-PB	-2.25	125.12	132.83
2	C	704	HDV	C1'-N9-C4	-2.24	122.70	126.64
2	A	704	HDV	PA-O5'-C5'	-2.23	108.61	121.68
2	B	702	HDV	C5-C6-N6	-2.22	116.98	120.35
3	B	703	GTP	O4'-C4'-C3'	-2.22	100.72	105.11
2	C	704	HDV	C4-C5-N7	-2.21	107.09	109.40
6	C	712	GLY	OXT-C-CA	2.18	122.13	113.45
2	C	704	HDV	O3'-C3'-C4'	-2.16	104.79	111.05
3	C	702	GTP	O2G-PG-O1G	2.15	119.10	110.68
2	A	702	HDV	N3-C2-N1	2.15	129.65	125.73
2	A	704	HDV	O1A-PA-O2A	-2.14	101.64	112.24
3	D	702	GTP	C8-N7-C5	2.14	107.07	102.99
2	C	704	HDV	O1B-PB-O2B	2.14	122.81	112.24
2	D	703	HDV	O1G-PG-O3G	2.13	119.04	110.68
2	B	701	HDV	N6-C6-N1	2.11	122.80	117.07
2	A	704	HDV	C4-C5-N7	-2.08	107.23	109.40
2	C	701	HDV	O4'-C1'-C2'	-2.06	103.67	105.79
2	A	704	HDV	O4'-C1'-C2'	-2.05	103.68	105.79
2	A	704	HDV	O5'-PA-O2A	-2.03	101.13	109.07
2	D	701	HDV	C3'-C2'-C1'	2.01	105.56	103.13



There are no chirality outliers.

All (64) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	D	701	HDV	C3'-C4'-C5'-O5'
2	C	701	HDV	C3'-C4'-C5'-O5'
2	B	701	HDV	PB-O3B-PG-O1G
2	B	702	HDV	C3'-C4'-C5'-O5'
2	A	704	HDV	C3'-C4'-C5'-O5'
3	D	704	GTP	PB-O3B-PG-O3G
6	D	713	GLY	O-C-CA-N
6	D	713	GLY	OXT-C-CA-N
6	C	712	GLY	O-C-CA-N
6	A	716	GLY	O-C-CA-N
6	A	716	GLY	OXT-C-CA-N
6	A	717	GLY	O-C-CA-N
9	A	718	TCE	P-C2-C5-C14
9	A	718	TCE	C5-C2-P-C1
9	A	718	TCE	C6-C3-P-C2
9	A	718	TCE	C4-C1-P-C3
7	B	710	SIN	C1-C2-C3-C4
2	D	701	HDV	O4'-C4'-C5'-O5'
2	C	701	HDV	O4'-C4'-C5'-O5'
2	B	702	HDV	O4'-C4'-C5'-O5'
2	A	704	HDV	O4'-C4'-C5'-O5'
6	C	712	GLY	OXT-C-CA-N
6	A	717	GLY	OXT-C-CA-N
7	D	714	SIN	C1-C2-C3-C4
9	A	718	TCE	C3-C6-C8-O9
3	C	702	GTP	PB-O3B-PG-O1G
9	A	718	TCE	C3-C6-C8-O10
2	B	702	HDV	C4'-C5'-O5'-PA
3	C	702	GTP	C4'-C5'-O5'-PA
9	A	718	TCE	P-C3-C6-C8
2	B	701	HDV	PB-O3A-PA-O1A
2	B	701	HDV	PG-O3B-PB-O2B
2	A	702	HDV	PG-O3B-PB-O2B
3	C	702	GTP	PG-O3B-PB-O2B
3	B	703	GTP	PG-O3B-PB-O2B
9	A	718	TCE	O13-C11-C4-C1
2	D	701	HDV	C4'-C5'-O5'-PA
2	A	704	HDV	C4'-C5'-O5'-PA
2	A	704	HDV	C5'-O5'-PA-O1A
2	C	701	HDV	C4'-C5'-O5'-PA

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Mol	Chain	Res	Type	Atoms
3	B	703	GTP	C4'-C5'-O5'-PA
3	B	703	GTP	PB-O3B-PG-O1G
3	D	704	GTP	C4'-C5'-O5'-PA
3	B	703	GTP	PB-O3A-PA-O2A
3	D	702	GTP	C4'-C5'-O5'-PA
9	A	718	TCE	O12-C11-C4-C1
7	B	710	SIN	O1-C1-C2-C3
7	B	710	SIN	O2-C1-C2-C3
2	D	703	HDV	PG-O3B-PB-O2B
2	C	704	HDV	PA-O3A-PB-O2B
2	C	701	HDV	PB-O3A-PA-O5'
7	D	714	SIN	O2-C1-C2-C3
7	D	714	SIN	C2-C3-C4-O4
7	D	714	SIN	C2-C3-C4-O3
7	D	714	SIN	O1-C1-C2-C3
2	C	704	HDV	PA-O3A-PB-O1B
2	C	704	HDV	PG-O3B-PB-O1B
2	B	701	HDV	PB-O3A-PA-O2A
2	B	701	HDV	PG-O3B-PB-O1B
3	D	702	GTP	PB-O3A-PA-O2A
3	C	702	GTP	PG-O3B-PB-O1B
3	C	702	GTP	PB-O3A-PA-O2A
3	B	703	GTP	PG-O3B-PB-O1B
2	B	702	HDV	C5'-O5'-PA-O2A

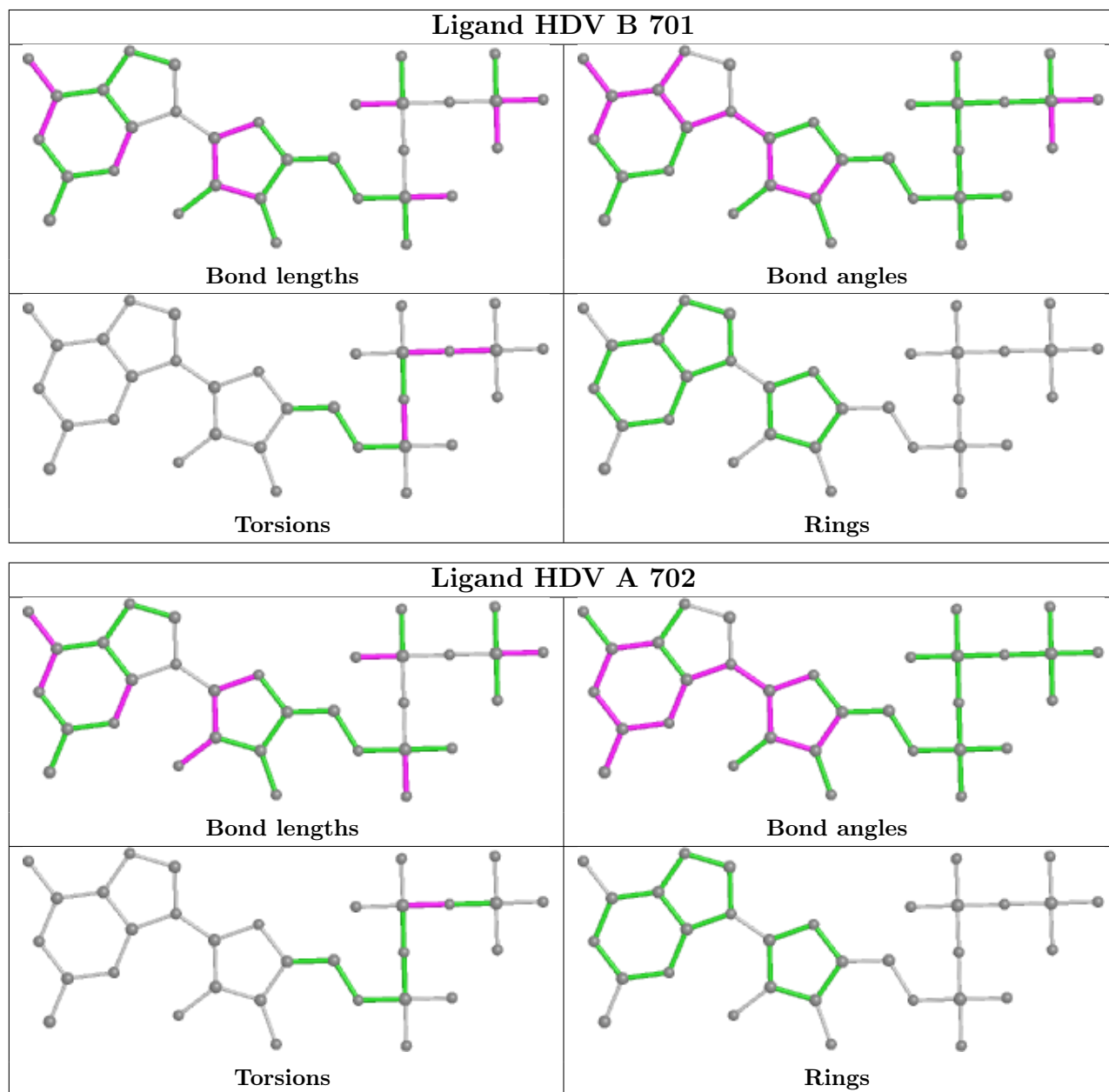
There are no ring outliers.

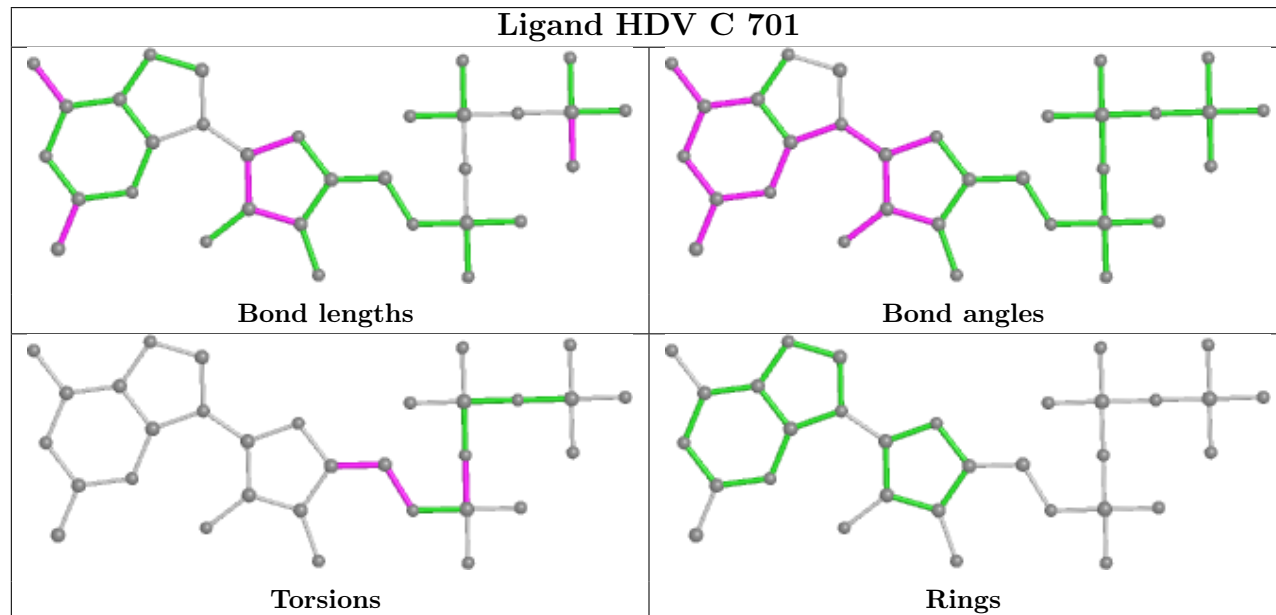
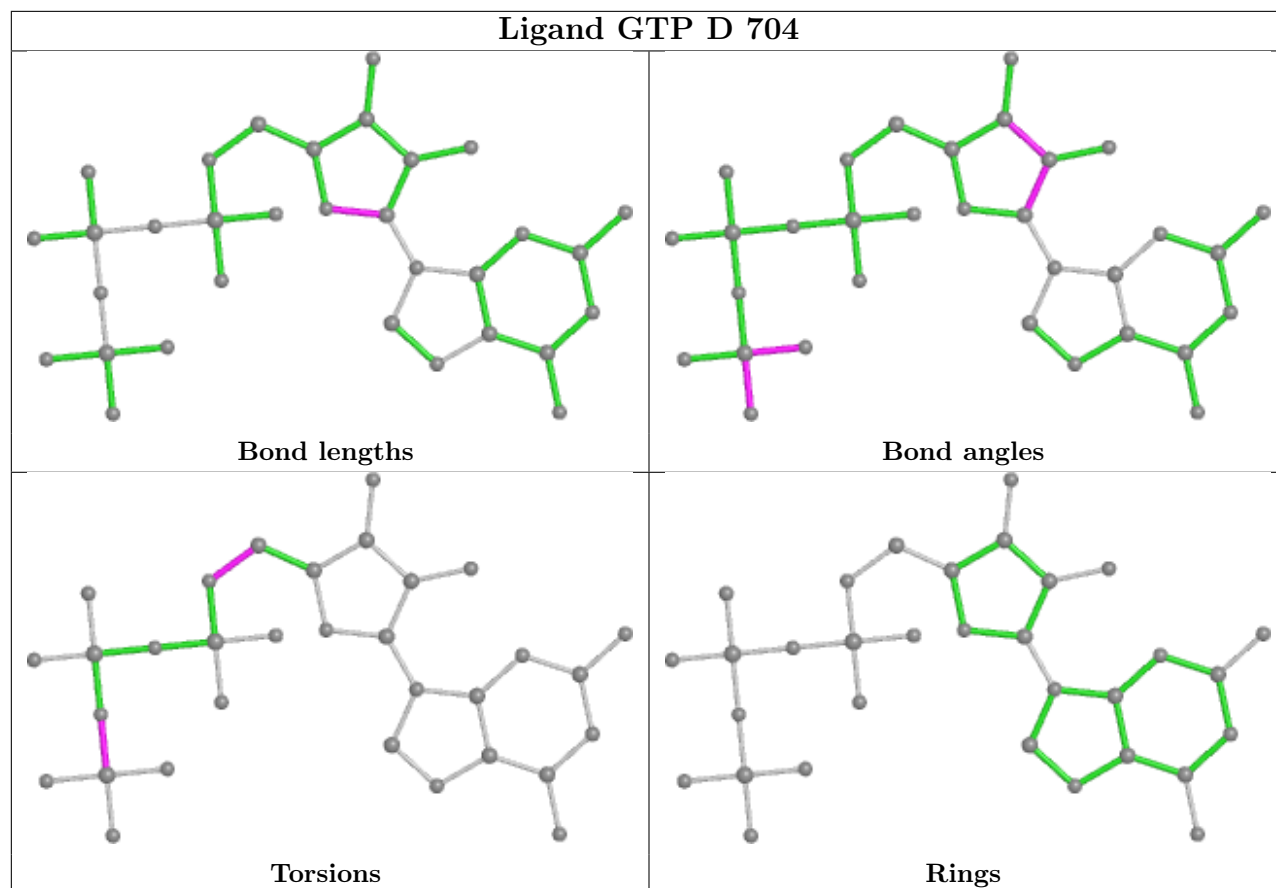
7 monomers are involved in 10 short contacts:

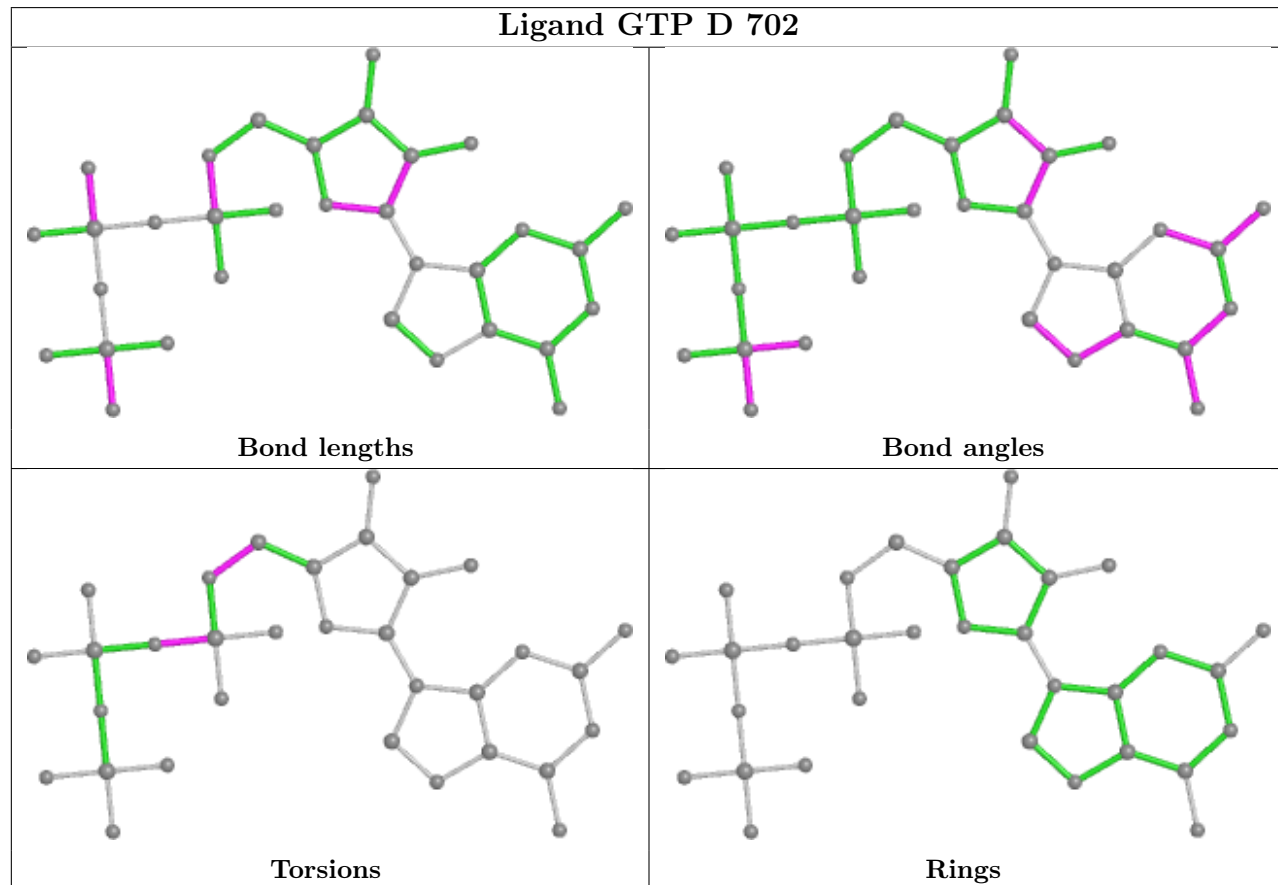
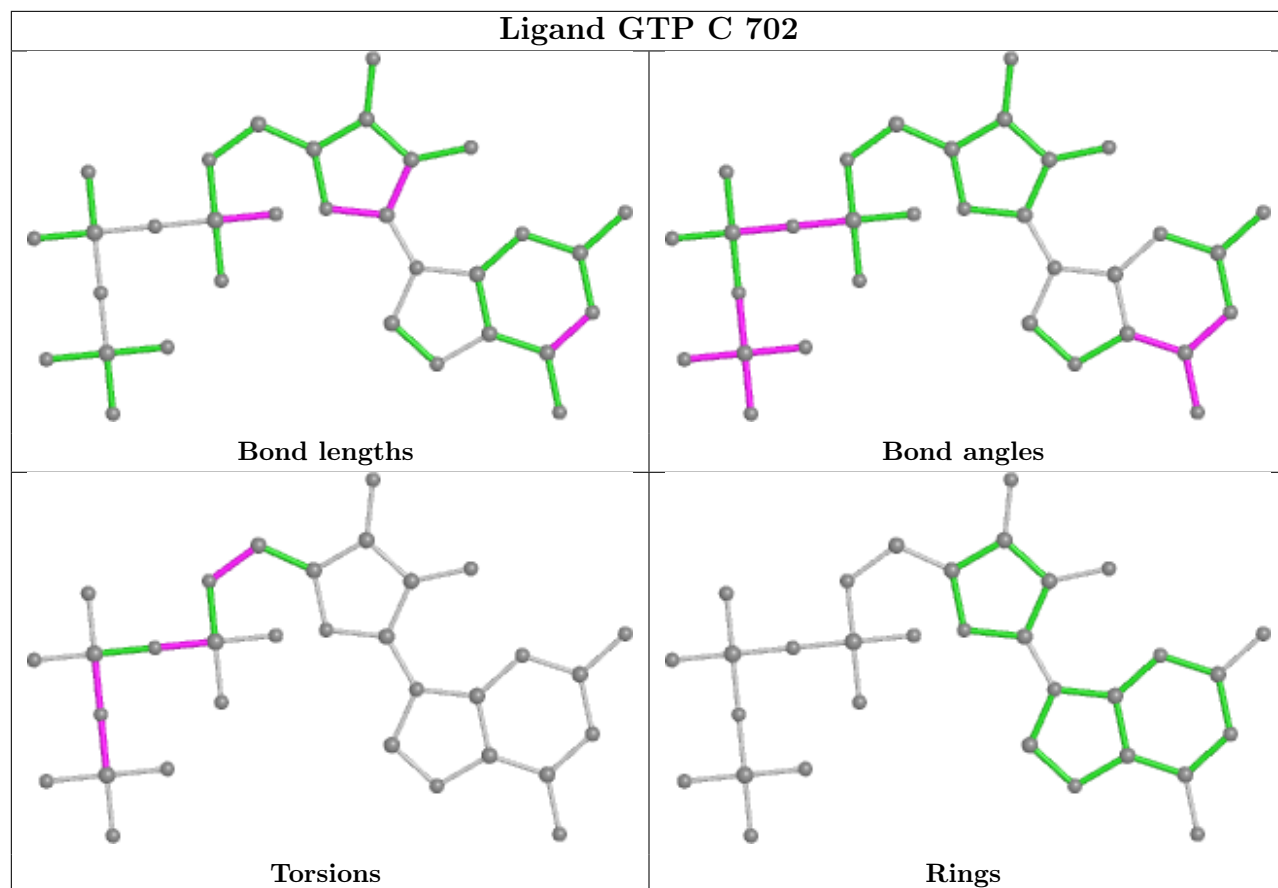
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	701	HDV	1	0
7	D	714	SIN	2	0
2	C	704	HDV	1	0
2	B	702	HDV	2	0
6	B	709	GLY	1	0
2	D	703	HDV	1	0
9	A	718	TCE	2	0

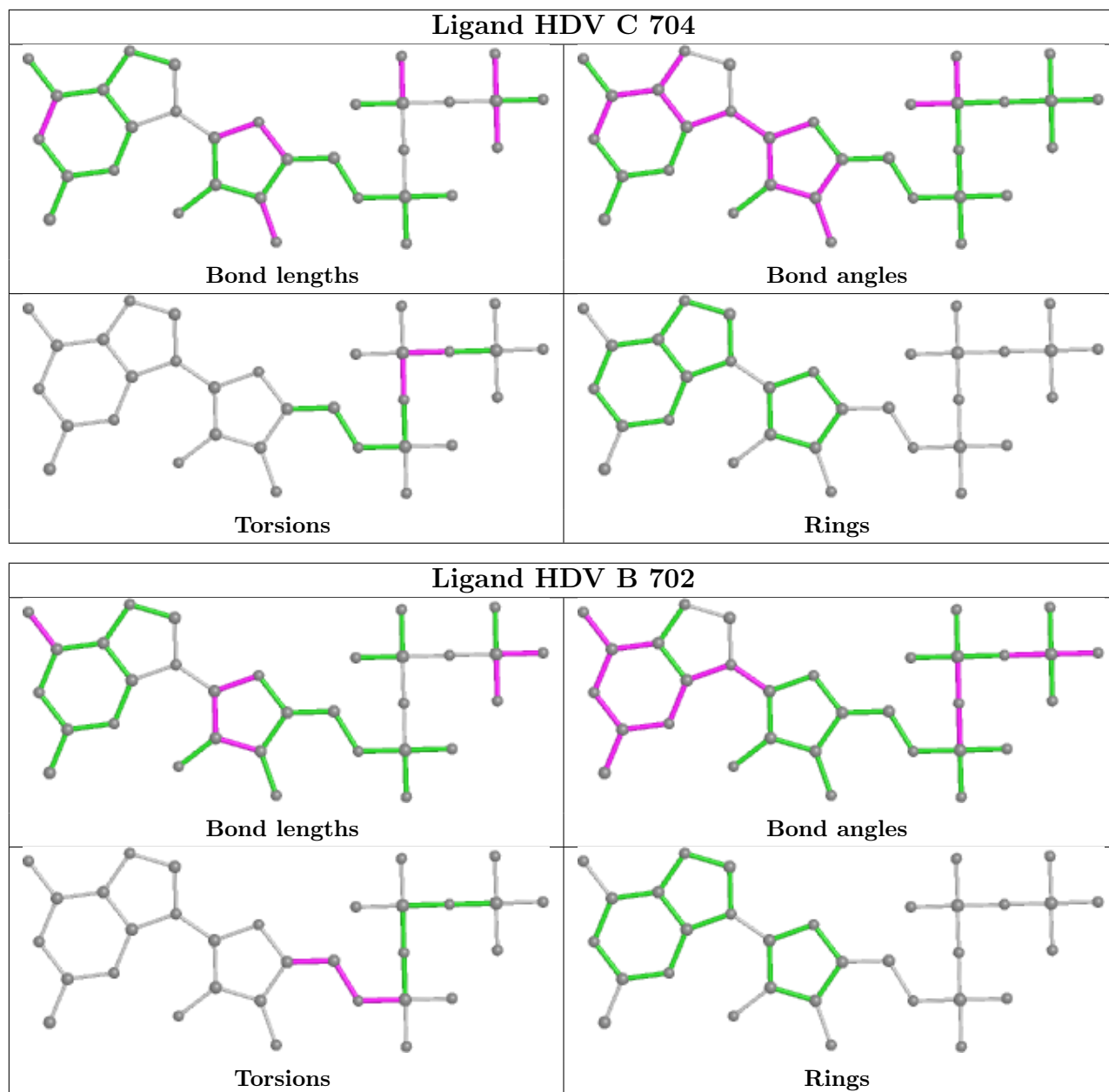
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

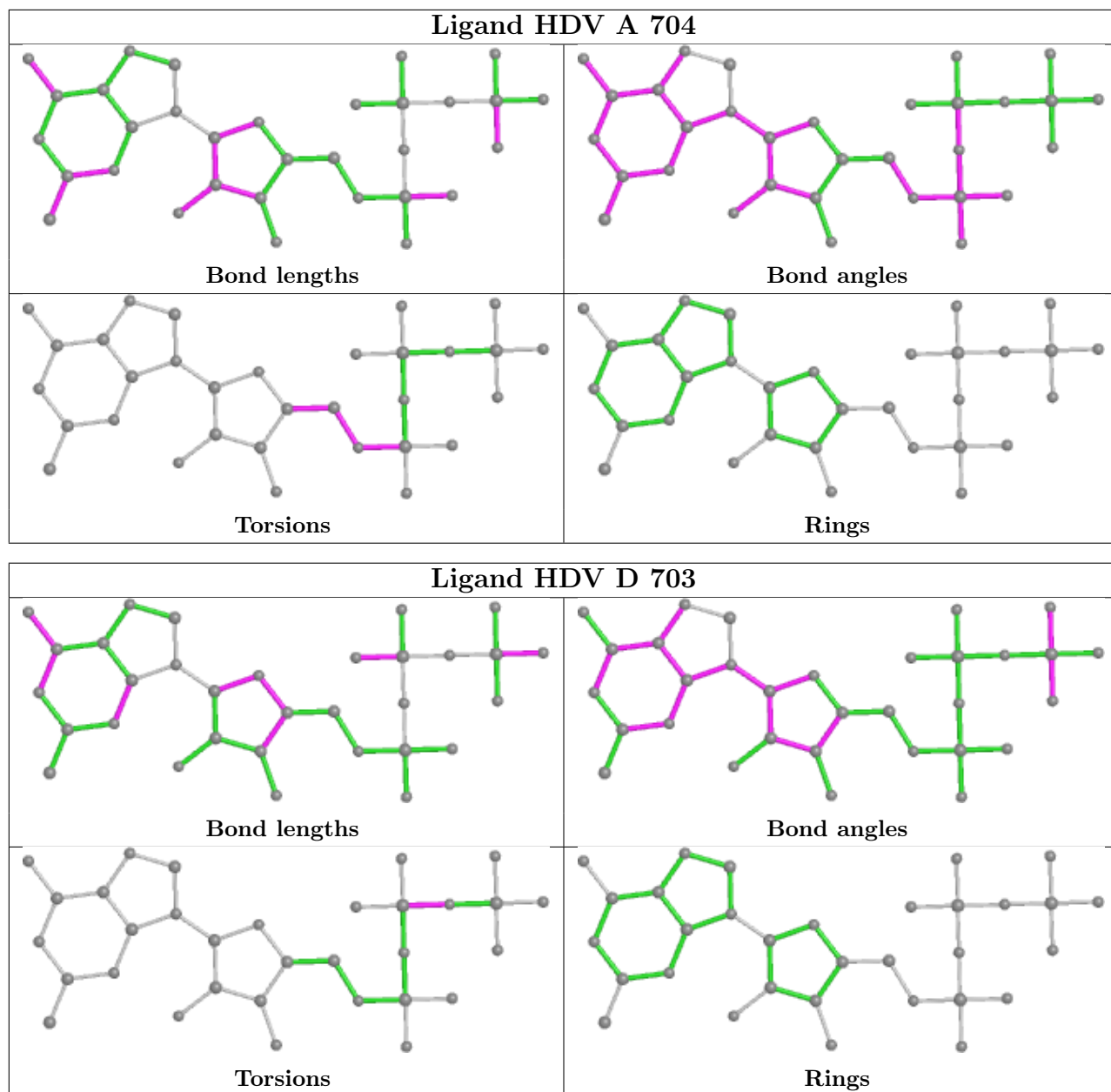
Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD 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.

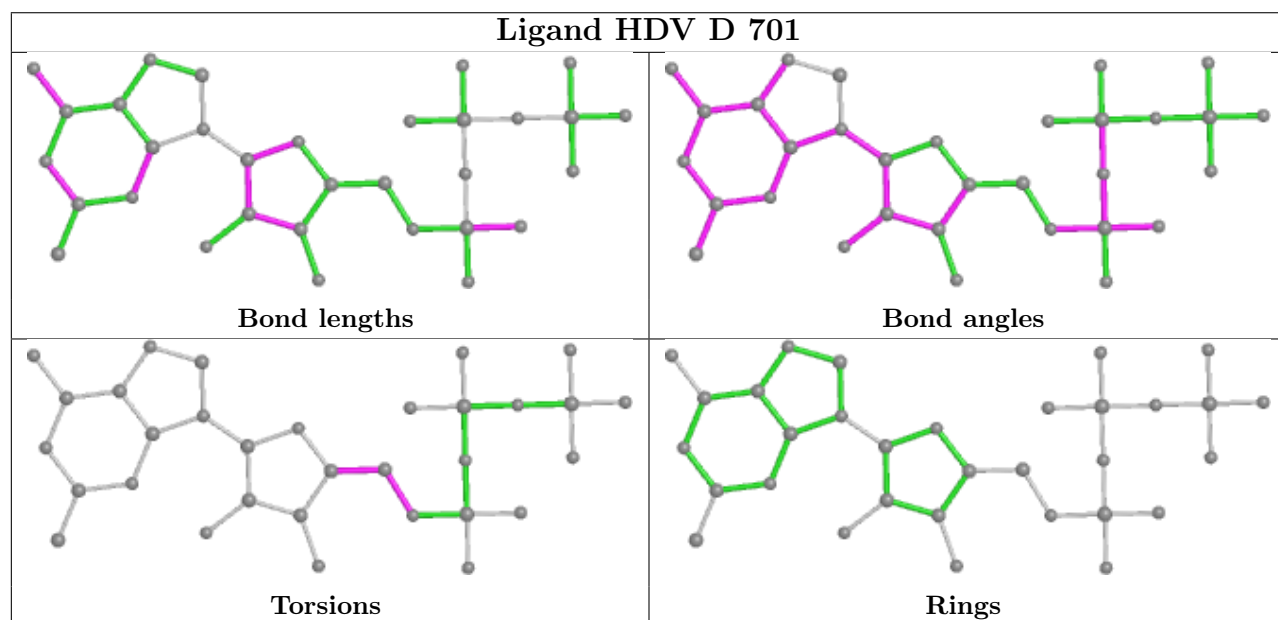
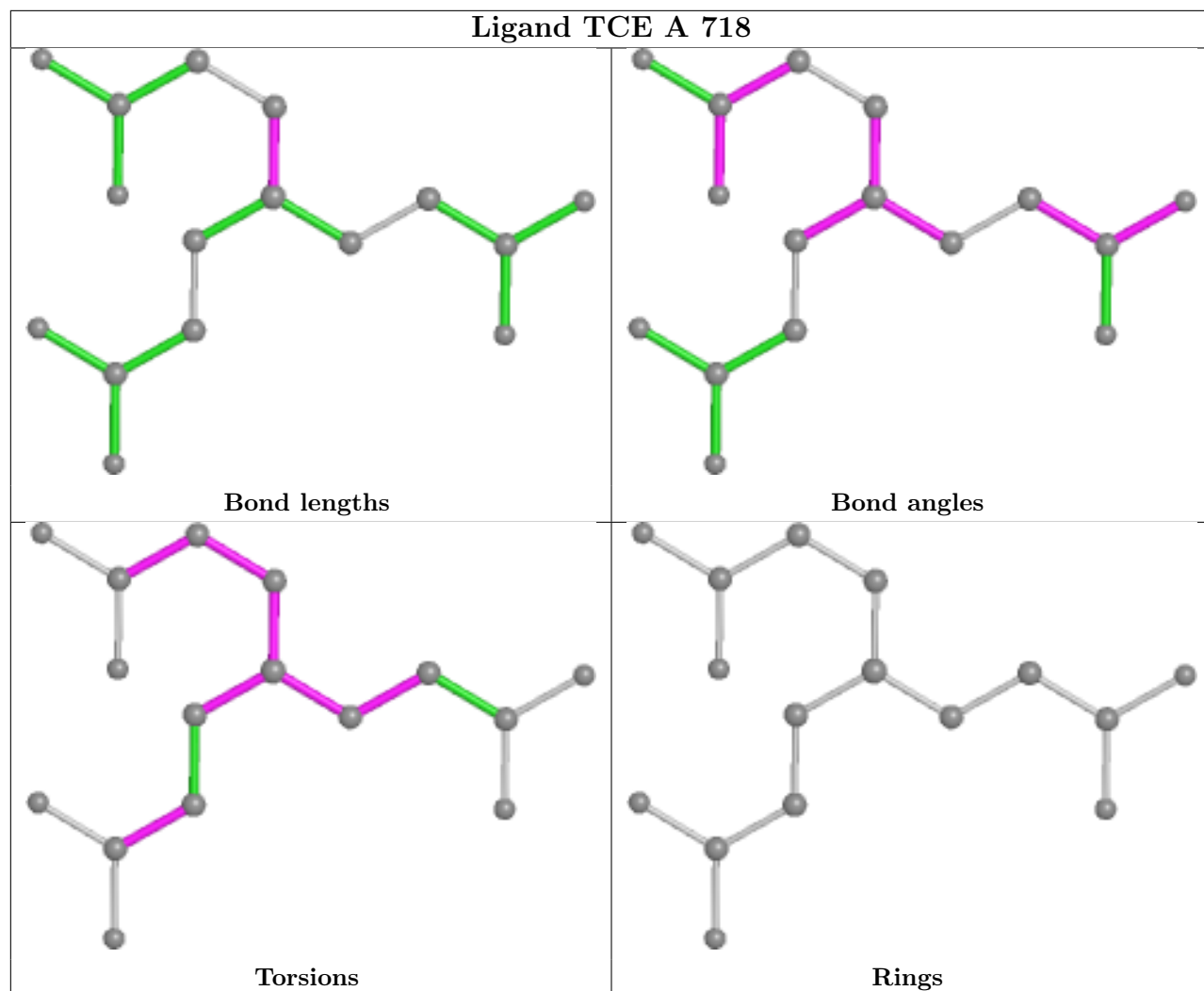




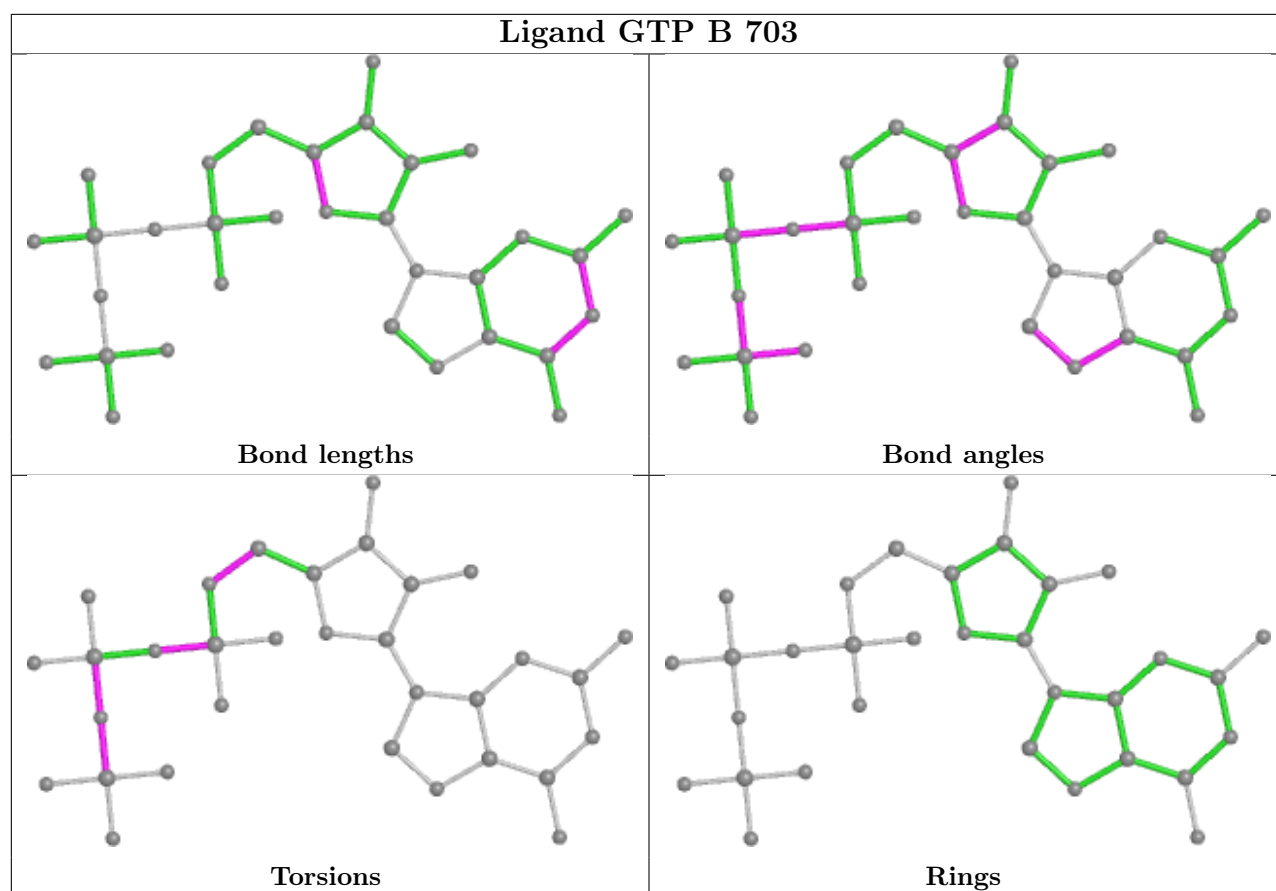












## 5.7 Other polymers [i](#)

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	466/550 (84%)	0.17	32 (6%) 16 19	10, 23, 62, 133	0
1	B	481/550 (87%)	0.22	35 (7%) 15 17	12, 27, 61, 98	0
1	C	481/550 (87%)	0.11	28 (5%) 23 25	12, 25, 62, 91	0
1	D	481/550 (87%)	-0.07	14 (2%) 51 56	9, 22, 52, 110	0
All	All	1909/2200 (86%)	0.11	109 (5%) 23 26	9, 24, 61, 133	0

All (109) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	488	LEU	16.8
1	C	487	VAL	9.8
1	C	488	LEU	9.5
1	A	489	LEU	8.9
1	A	490	ASP	7.9
1	B	488	LEU	7.3
1	D	113	ASP	6.5
1	A	491	VAL	6.4
1	C	277	GLU	6.4
1	C	276	LEU	6.3
1	A	113	ASP	6.0
1	C	114	THR	5.9
1	A	486	LYS	5.4
1	D	465	GLN	5.4
1	B	590	LEU	5.4
1	D	464	GLY	5.3
1	B	591	ILE	5.3
1	B	113	ASP	5.0
1	A	584	GLY	5.0
1	A	583	ASP	4.9
1	A	487	VAL	4.9

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	B	276	LEU	4.8
1	C	490	ASP	4.8
1	A	492	LYS	4.6
1	A	466	ILE	4.5
1	D	284	LEU	4.4
1	C	596	LYS	4.3
1	B	486	LYS	4.3
1	D	277	GLU	4.3
1	B	284	LEU	4.3
1	A	563	TYR	4.2
1	B	490	ASP	4.2
1	A	115	MET	4.2
1	C	489	LEU	4.1
1	C	113	ASP	4.1
1	A	560	LYS	4.0
1	A	114	THR	4.0
1	B	491	VAL	4.0
1	C	590	LEU	3.9
1	B	484	LYS	3.9
1	B	114	THR	3.9
1	D	599	ASN	3.9
1	C	284	LEU	3.9
1	C	594	GLN	3.8
1	B	587	ILE	3.7
1	C	491	VAL	3.7
1	A	463	THR	3.6
1	A	284	LEU	3.6
1	C	492	LYS	3.6
1	A	344	ASP	3.5
1	D	276	LEU	3.5
1	B	277	GLU	3.5
1	B	599	ASN	3.4
1	B	487	VAL	3.4
1	B	588	ALA	3.4
1	A	568	TYR	3.3
1	D	466	ILE	3.3
1	C	403	GLY	3.3
1	A	484	LYS	3.3
1	B	325	ILE	3.2
1	C	591	ILE	3.2
1	B	464	GLY	3.1
1	D	596	LYS	3.1

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	B	597	GLU	3.1
1	C	599	ASN	3.0
1	A	562	LEU	3.0
1	B	489	LEU	2.9
1	B	589	PRO	2.9
1	B	285	TRP	2.9
1	C	466	ILE	2.8
1	A	276	LEU	2.8
1	C	328[A]	ASN	2.8
1	B	492	LYS	2.8
1	A	345	ASN	2.7
1	A	579	THR	2.7
1	B	344	ASP	2.6
1	A	581	PRO	2.6
1	B	574	ALA	2.6
1	B	465	GLN	2.6
1	C	484	LYS	2.6
1	A	474	GLU	2.6
1	C	593	PRO	2.6
1	A	558	ASP	2.5
1	B	494	LYS	2.5
1	B	559	ARG	2.4
1	B	593	PRO	2.4
1	D	230	LYS	2.4
1	B	570	VAL	2.4
1	A	464	GLY	2.4
1	C	229	VAL	2.3
1	B	563	TYR	2.3
1	D	325	ILE	2.3
1	A	326	GLN	2.3
1	B	466	ILE	2.3
1	C	588	ALA	2.2
1	C	325	ILE	2.2
1	D	492	LYS	2.2
1	B	586	VAL	2.2
1	B	598	TRP	2.2
1	C	592	THR	2.2
1	D	559	ARG	2.2
1	A	496	GLU	2.2
1	D	490	ASP	2.1
1	C	563	TYR	2.1
1	C	598	TRP	2.1

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Mol	Chain	Res	Type	RSRZ
1	B	485	PRO	2.0
1	C	585	ASP	2.0
1	A	567	GLN	2.0
1	A	277	GLU	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
6	GLY	C	713	5/5	0.45	0.22	50,53,61,66	0
6	GLY	A	715	5/5	0.66	0.24	37,40,52,62	0
6	GLY	D	713	5/5	0.69	0.17	47,48,52,52	0
9	TCE	A	718	16/16	0.70	0.26	50,64,95,97	0
6	GLY	C	712	5/5	0.74	0.18	40,42,48,58	0
6	GLY	A	716	5/5	0.75	0.19	47,51,62,64	0
7	SIN	B	710	8/8	0.76	0.18	43,48,54,56	0
5	NA	A	714	1/1	0.76	0.12	55,55,55,55	0
5	NA	C	710	1/1	0.83	0.17	48,48,48,48	0
5	NA	A	711	1/1	0.85	0.15	54,54,54,54	0
5	NA	D	712	1/1	0.85	0.15	49,49,49,49	0
5	NA	B	706	1/1	0.85	0.15	46,46,46,46	0
4	MG	C	707	1/1	0.86	0.12	49,49,49,49	0
5	NA	A	709	1/1	0.87	0.14	49,49,49,49	0
5	NA	D	709	1/1	0.87	0.29	48,48,48,48	0
7	SIN	D	714	8/8	0.88	0.18	44,48,55,59	0
5	NA	D	708	1/1	0.88	0.13	48,48,48,48	0
6	GLY	B	709	5/5	0.88	0.14	29,31,38,39	0
5	NA	A	712	1/1	0.89	0.10	48,48,48,48	0

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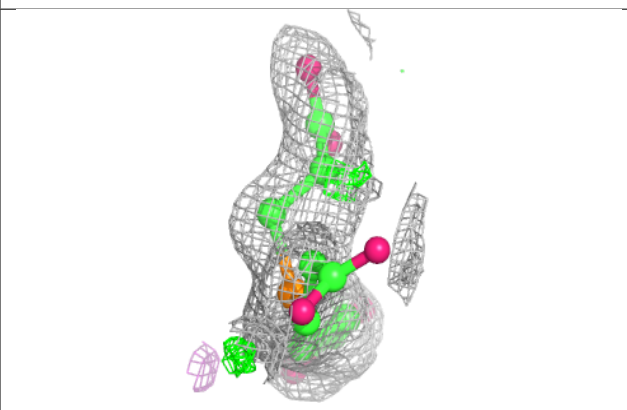
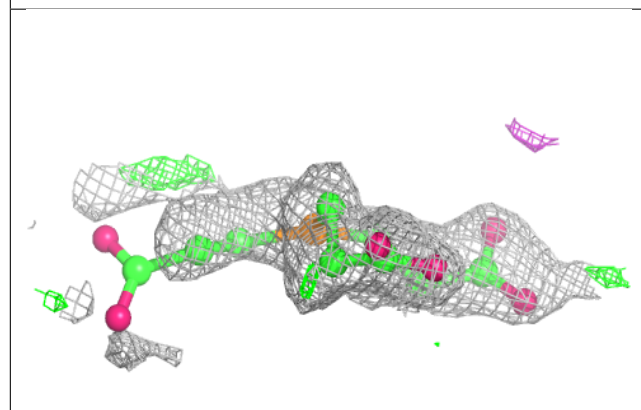
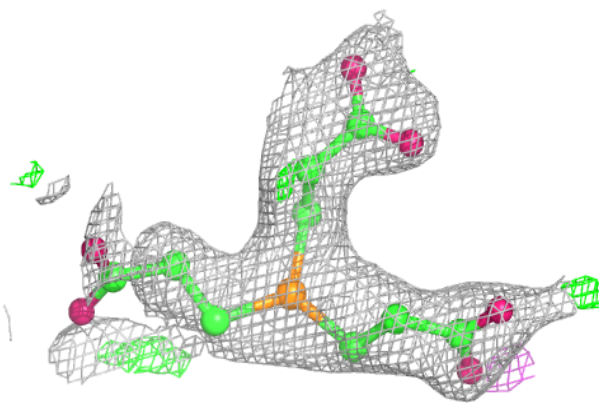
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
5	NA	A	713	1/1	0.89	0.18	47,47,47,47	0
5	NA	A	707	1/1	0.90	0.09	39,39,39,39	0
5	NA	A	708	1/1	0.90	0.13	40,40,40,40	0
5	NA	D	711	1/1	0.91	0.10	47,47,47,47	0
5	NA	B	708	1/1	0.91	0.09	53,53,53,53	0
5	NA	A	710	1/1	0.92	0.27	49,49,49,49	0
6	GLY	A	717	5/5	0.93	0.19	33,33,41,45	0
5	NA	C	711	1/1	0.93	0.19	47,47,47,47	0
5	NA	D	707	1/1	0.93	0.23	52,52,52,52	0
8	PO4	C	714	5/5	0.93	0.16	61,64,68,73	0
5	NA	B	707	1/1	0.93	0.12	42,42,42,42	0
4	MG	D	706	1/1	0.94	0.11	45,45,45,45	0
5	NA	A	706	1/1	0.94	0.16	34,34,34,34	0
5	NA	C	709	1/1	0.94	0.06	34,34,34,34	0
5	NA	B	705	1/1	0.95	0.23	44,44,44,44	0
5	NA	C	708	1/1	0.95	0.13	38,38,38,38	0
5	NA	D	710	1/1	0.95	0.17	50,50,50,50	0
2	HDV	B	702	32/32	0.97	0.07	15,25,32,36	0
4	MG	A	705	1/1	0.98	0.04	18,18,18,18	0
2	HDV	A	704	32/32	0.98	0.06	11,20,27,30	0
2	HDV	C	701	32/32	0.98	0.07	14,22,29,32	0
2	HDV	D	701	32/32	0.98	0.07	11,18,26,29	0
4	MG	A	701	1/1	0.98	0.05	15,15,15,15	0
2	HDV	D	703	32/32	0.99	0.08	11,15,20,26	0
4	MG	B	704	1/1	0.99	0.06	24,24,24,24	0
2	HDV	A	702	32/32	0.99	0.06	13,16,19,25	0
4	MG	A	703	1/1	0.99	0.05	18,18,18,18	0
2	HDV	C	704	32/32	0.99	0.06	9,12,16,21	0
3	GTP	D	702	32/32	0.99	0.07	10,12,19,22	0
3	GTP	D	704	32/32	0.99	0.06	9,11,14,16	0
3	GTP	C	702	32/32	0.99	0.05	13,16,23,25	0
3	GTP	B	703	32/32	0.99	0.05	12,13,23,24	0
4	MG	D	705	1/1	0.99	0.03	17,17,17,17	0
2	HDV	B	701	32/32	0.99	0.07	10,14,18,26	0
4	MG	C	703	1/1	0.99	0.06	16,16,16,16	0
4	MG	C	706	1/1	0.99	0.02	22,22,22,22	0
4	MG	C	705	1/1	1.00	0.04	12,12,12,12	0

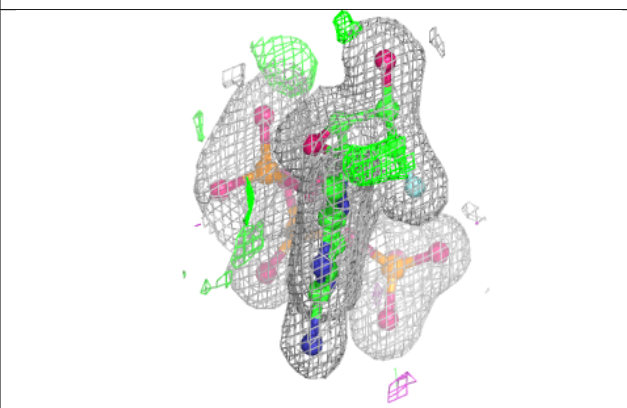
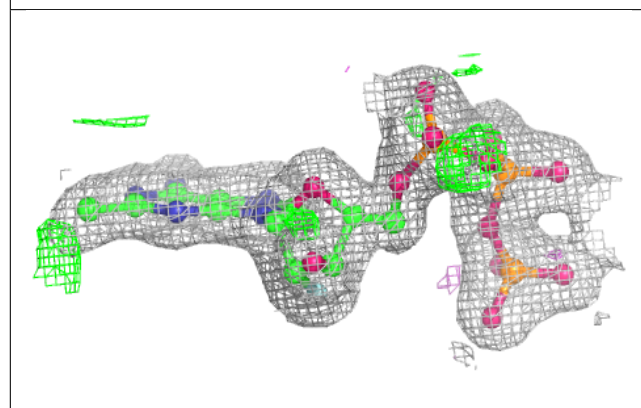
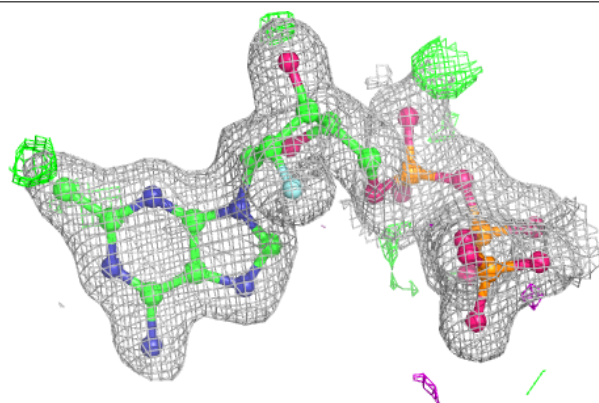
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

**Electron density around TCE A 718:**

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

**Electron density around HDV B 702:**

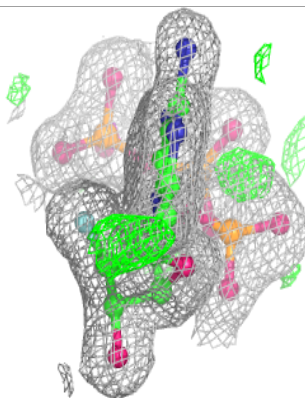
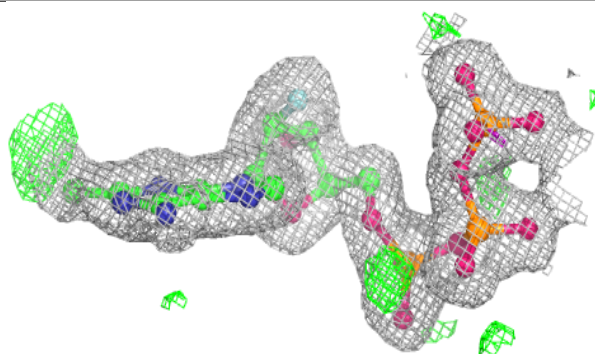
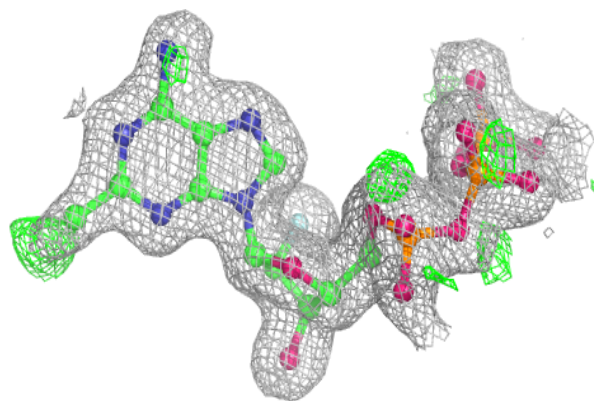
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



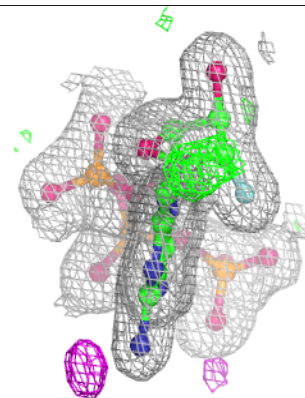
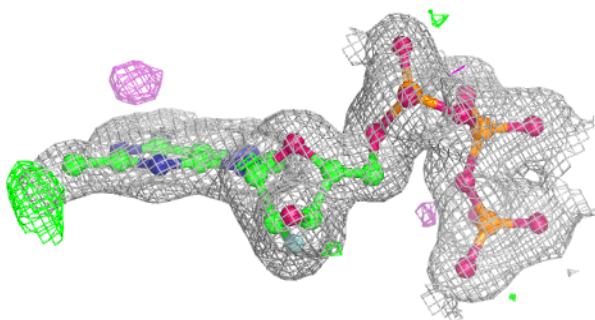
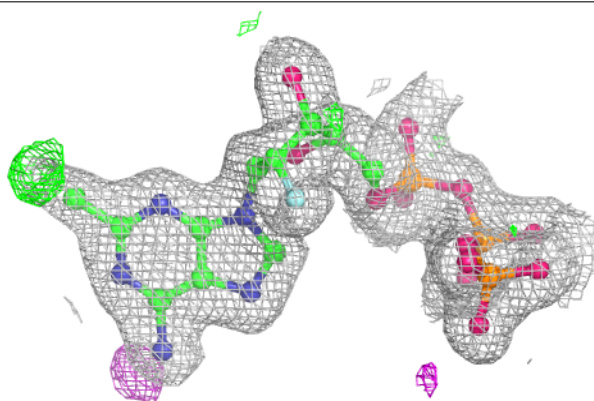


**Electron density around HDV A 704:**

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

**Electron density around HDV C 701:**

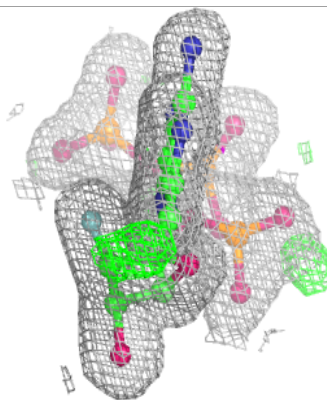
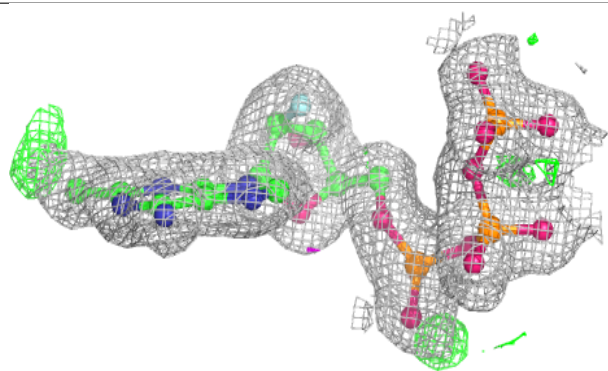
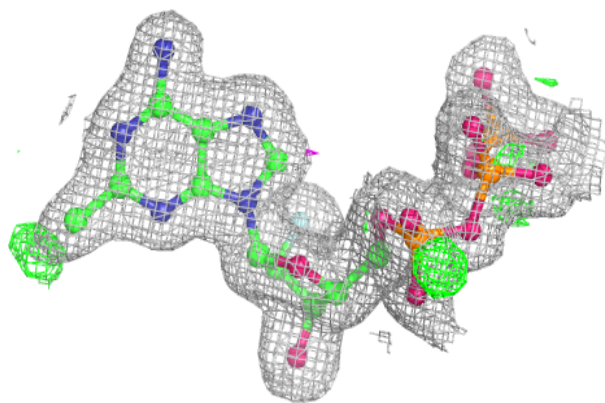
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



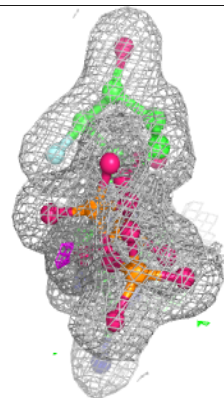
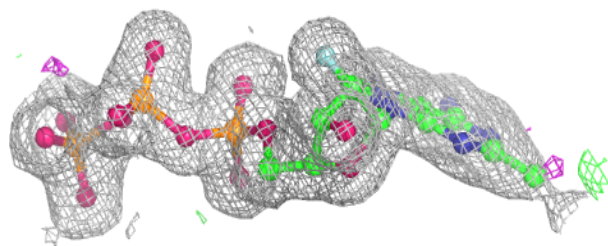
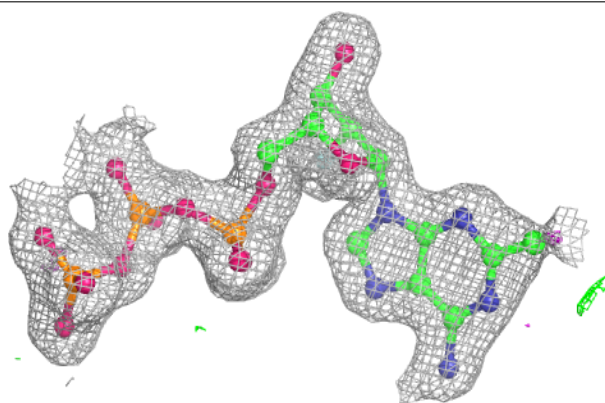


**Electron density around HDV D 701:**

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

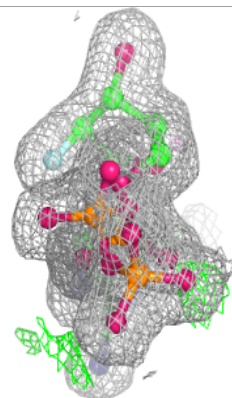
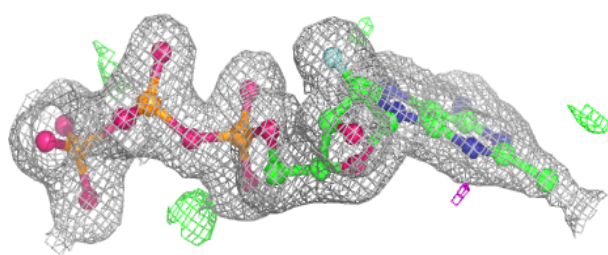
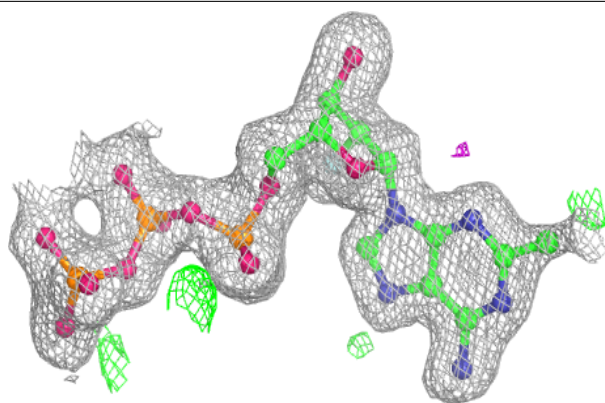
**Electron density around HDV D 703:**

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

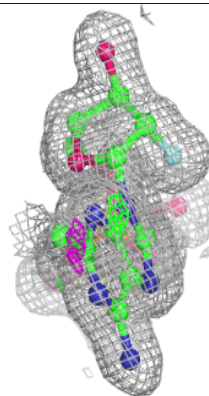
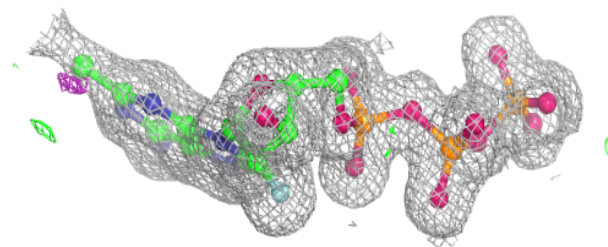
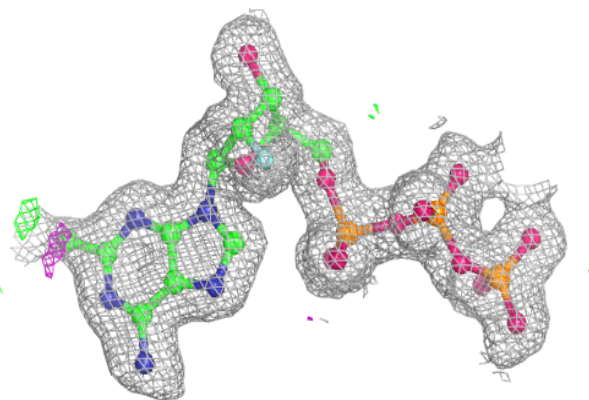


**Electron density around HDV A 702:**

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

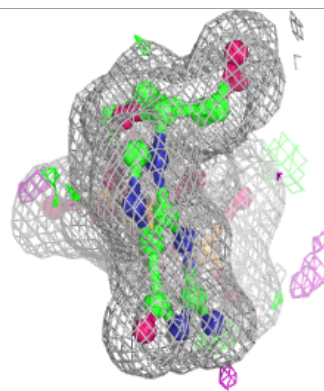
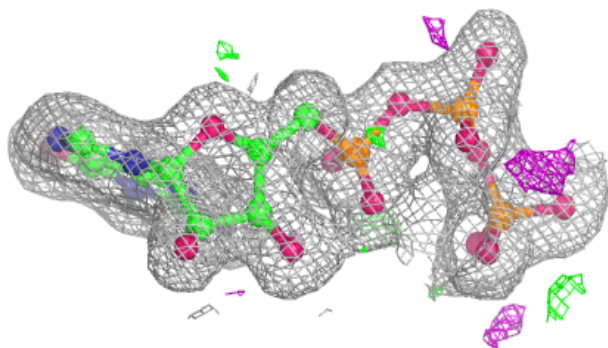
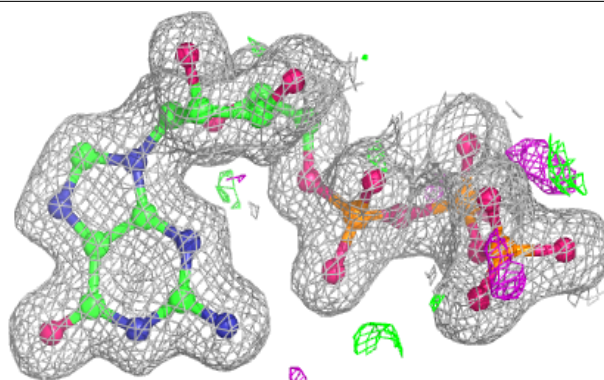
**Electron density around HDV C 704:**

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

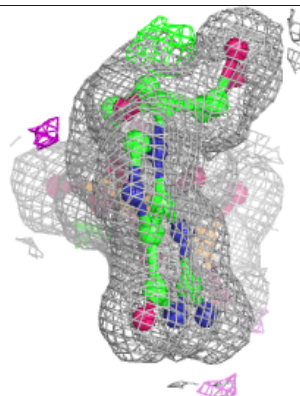
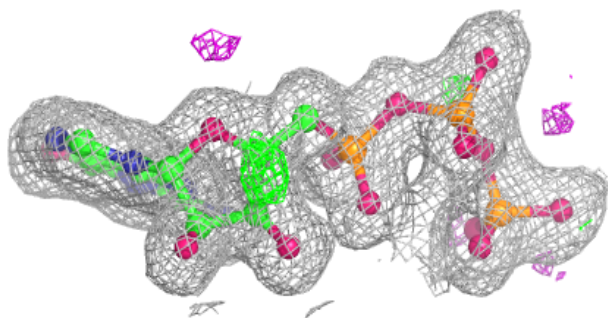
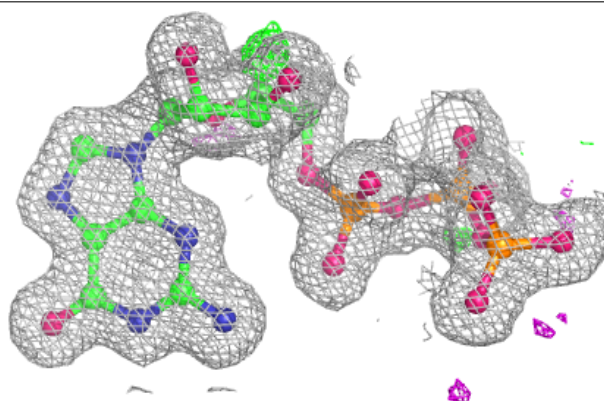


**Electron density around GTP D 702:**

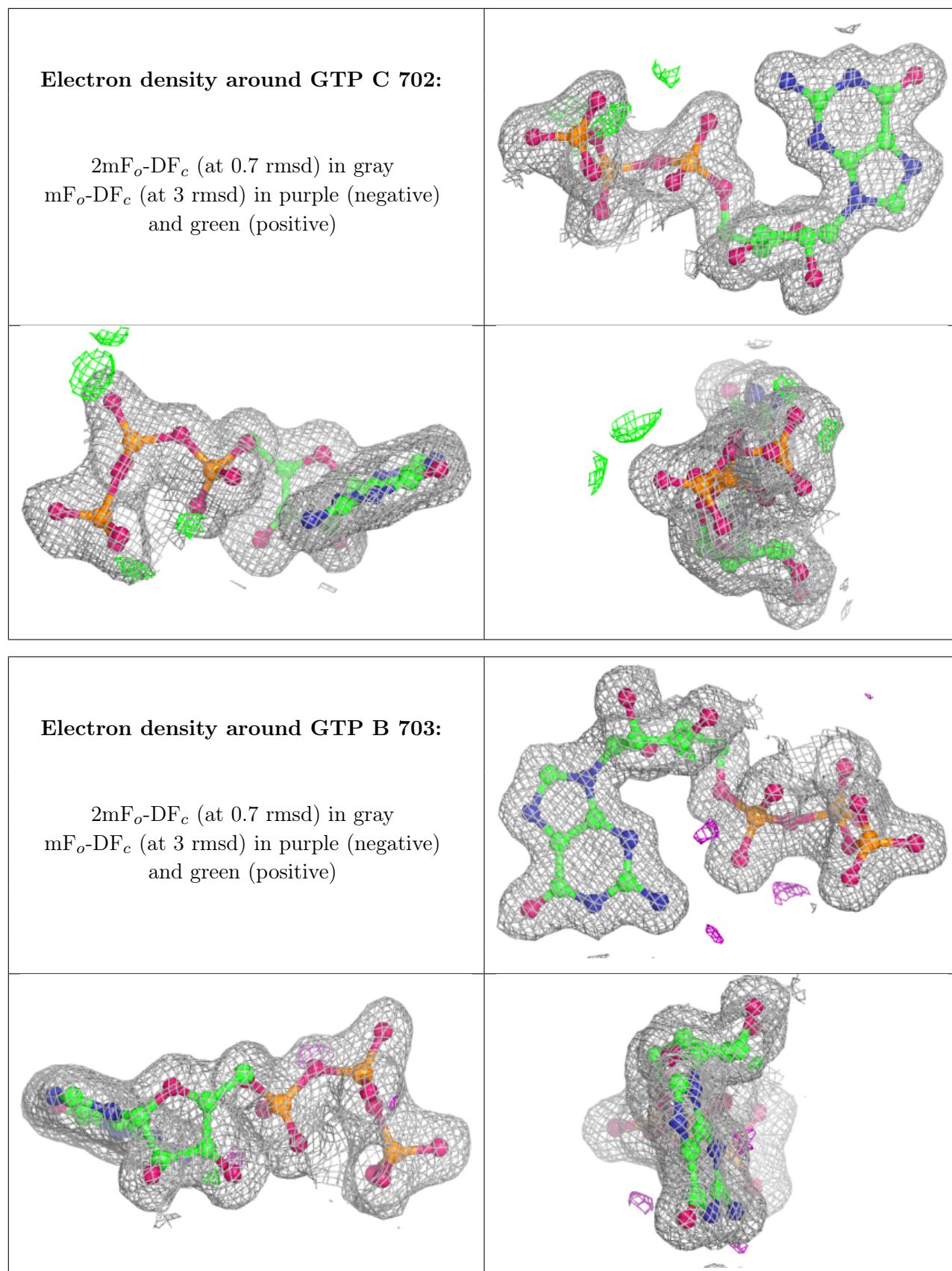
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)

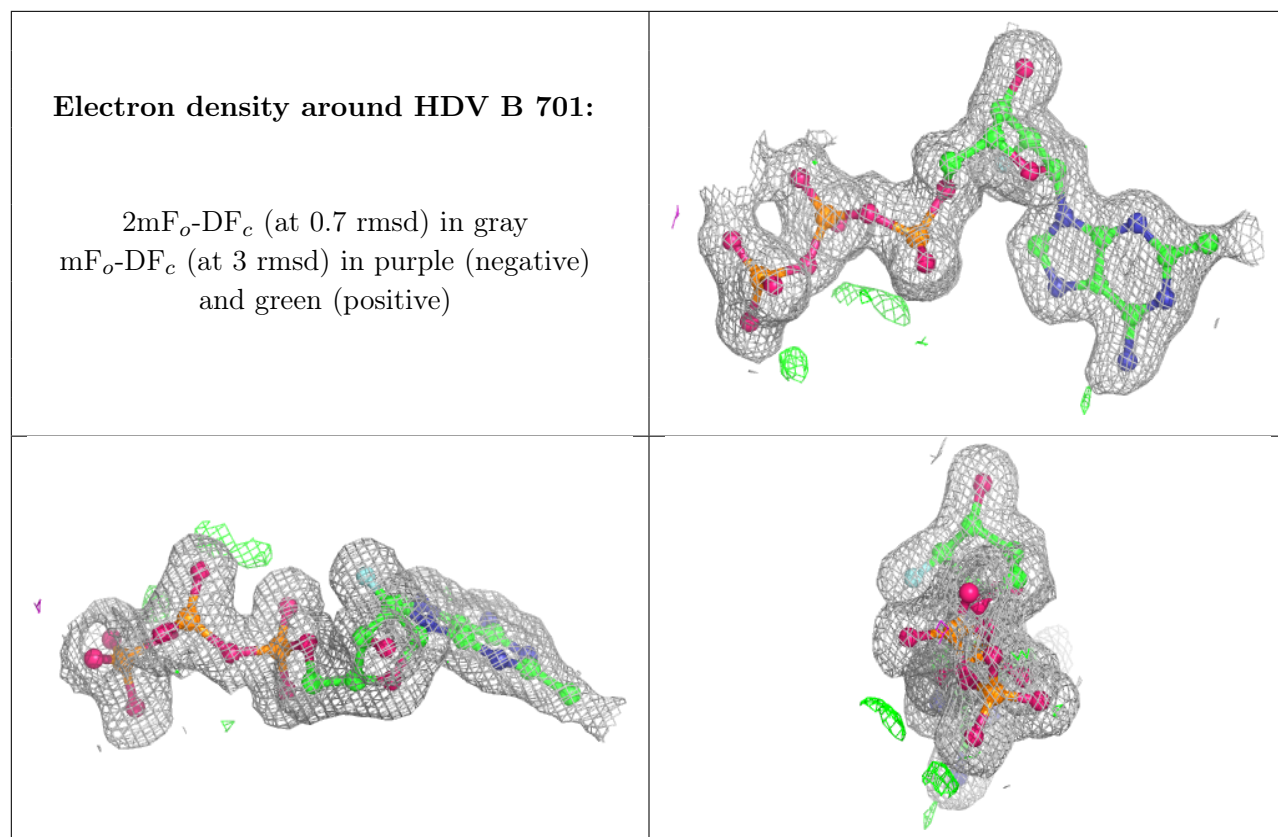
**Electron density around GTP D 704:**

$2mF_o-DF_c$  (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.