WORLDWIDE wwPDB PROTEIN DATA BANK

wwPDB X-ray Structure Validation Summary Report (i)

Aug 28, 2023 – 05:50 AM EDT

PDB ID : 3LM8
Title : Crystal Structure of Thiamine pyrophosphokinase from Bacillus subtilis, Northeast Structural Genomics Consortium Target SR677
Authors : Kuzin, A.; Abashidze, M.; Seetharaman, J.; Mao, M.; Xiao, R.; Foote, E.L.; Ciccosanti, C.; Wang, H.; Everett, J.K.; Nair, R.; Acton, T.B.; Rost, B.; Montelione, G.T.; Hunt, J.F.; Tong, L.; Northeast Structural Genomics Consortium (NESG)
Deposited on : 2010-01-29
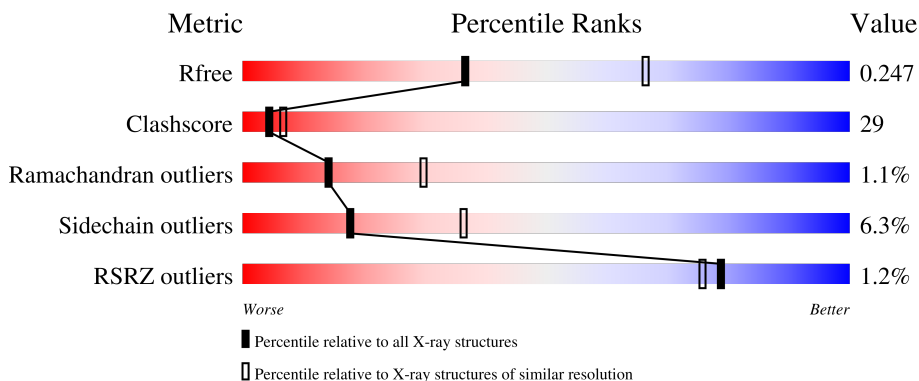Resolution : 2.60 Å(reported)

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.60 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	Percentile Ranks	Value
Rfree		0.247
Clashscore		29
Ramachandran outliers		1.1%
Sidechain outliers		6.3%
RSRZ outliers		1.2%

Worse   *Better*

▮ Percentile relative to all X-ray structures
▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R$_{free}$	130704	3163 (2.60-2.60)
Clashscore	141614	3518 (2.60-2.60)
Ramachandran outliers	138981	3455 (2.60-2.60)
Sidechain outliers	138945	3455 (2.60-2.60)
RSRZ outliers	127900	3104 (2.60-2.60)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	222	46% 47% • •
1	B	222	.% 48% 40% 8% •
1	C	222	2% 50% 42% • •

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Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)	
Validation Pipeline (wwPDB-VP)	:	2.35	

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Mol	Chain	Length	Quality of chain
1	D	222	

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 6941 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 Thiamine pyrophosphokinase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	214	Total	C	N	O	S	Se	0	0	0
			1701	1091	285	321	2	2			
1	B	214	Total	C	N	O	S	Se	0	0	0
			1701	1091	285	321	2	2			
1	C	213	Total	C	N	O	S	Se	0	0	0
			1692	1086	284	318	2	2			
1	D	212	Total	C	N	O	S	Se	0	0	0
			1683	1080	282	317	2	2			

There are 36 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	203	VAL	ALA	engineered mutation	UNP O34664
A	215	LEU	-	expression tag	UNP O34664
A	216	GLU	-	expression tag	UNP O34664
A	217	HIS	-	expression tag	UNP O34664
A	218	HIS	-	expression tag	UNP O34664
A	219	HIS	-	expression tag	UNP O34664
A	220	HIS	-	expression tag	UNP O34664
A	221	HIS	-	expression tag	UNP O34664
A	222	HIS	-	expression tag	UNP O34664
B	203	VAL	ALA	engineered mutation	UNP O34664
B	215	LEU	-	expression tag	UNP O34664
B	216	GLU	-	expression tag	UNP O34664
B	217	HIS	-	expression tag	UNP O34664
B	218	HIS	-	expression tag	UNP O34664
B	219	HIS	-	expression tag	UNP O34664
B	220	HIS	-	expression tag	UNP O34664
B	221	HIS	-	expression tag	UNP O34664
B	222	HIS	-	expression tag	UNP O34664
C	203	VAL	ALA	engineered mutation	UNP O34664
C	215	LEU	-	expression tag	UNP O34664
C	216	GLU	-	expression tag	UNP O34664

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Chain	Residue	Modelled	Actual	Comment	Reference
C	217	HIS	-	expression tag	UNP O34664
C	218	HIS	-	expression tag	UNP O34664
C	219	HIS	-	expression tag	UNP O34664
C	220	HIS	-	expression tag	UNP O34664
C	221	HIS	-	expression tag	UNP O34664
C	222	HIS	-	expression tag	UNP O34664
D	203	VAL	ALA	engineered mutation	UNP O34664
D	215	LEU	-	expression tag	UNP O34664
D	216	GLU	-	expression tag	UNP O34664
D	217	HIS	-	expression tag	UNP O34664
D	218	HIS	-	expression tag	UNP O34664
D	219	HIS	-	expression tag	UNP O34664
D	220	HIS	-	expression tag	UNP O34664
D	221	HIS	-	expression tag	UNP O34664
D	222	HIS	-	expression tag	UNP O34664

- Molecule 2 is 3-(4-AMINO-2-METHYL-PYRIMIDIN-5-YLMETHYL)-5-(2-HYDROXY-ET HYL)-4-METHYL-THIAZOL-3-IUM (three-letter code: VIB) (formula: $C_{12}H_{17}N_4OS$).
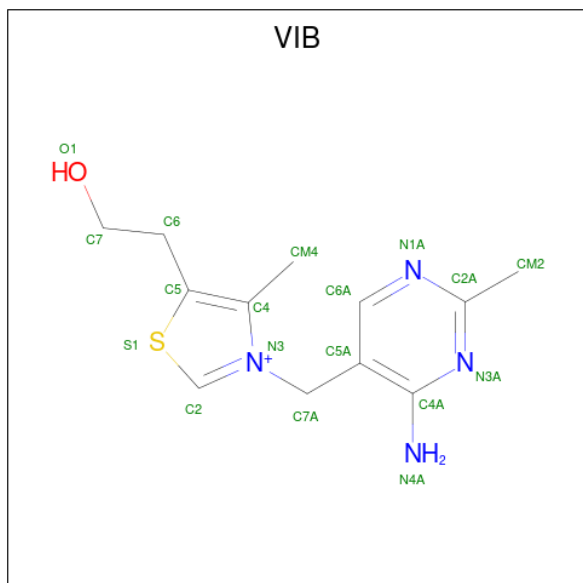
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	S	0	0
			18	12	4	1	1		
2	B	1	Total	C	N	O	S	0	0
			18	12	4	1	1		
2	C	1	Total	C	N	O	S	0	0
			18	12	4	1	1		

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	D	1	Total 18	C 12	N 4	O 1	S 1	0	0

- Molecule 3 is PHOSPHATE ION (three-letter code: PO4) (formula: O_4P).
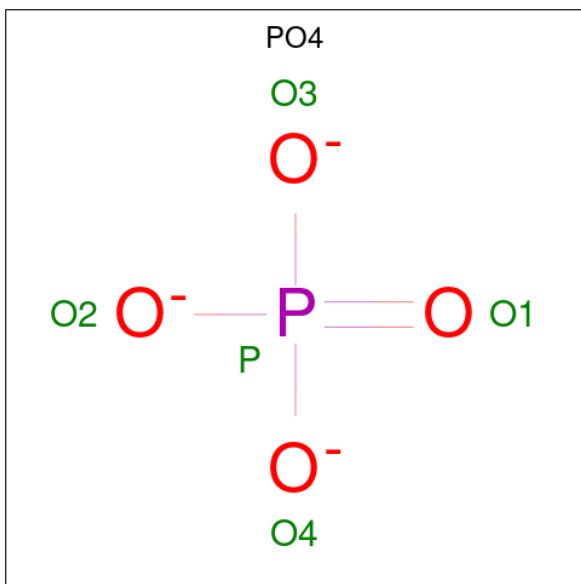
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total 5	O 4	P 1	0	0
3	B	1	Total 5	O 4	P 1	0	0
3	B	1	Total 5	O 4	P 1	0	0
3	C	1	Total 5	O 4	P 1	0	0

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

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

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	20	Total O 20 20		0	0
5	B	13	Total O 13 13		0	0
5	C	21	Total O 21 21		0	0
5	D	13	Total O 13 13		0	0

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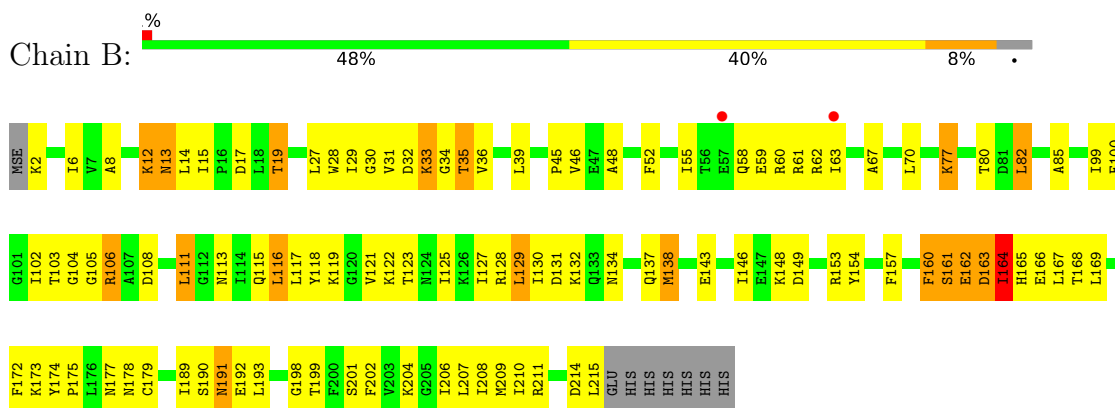
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density.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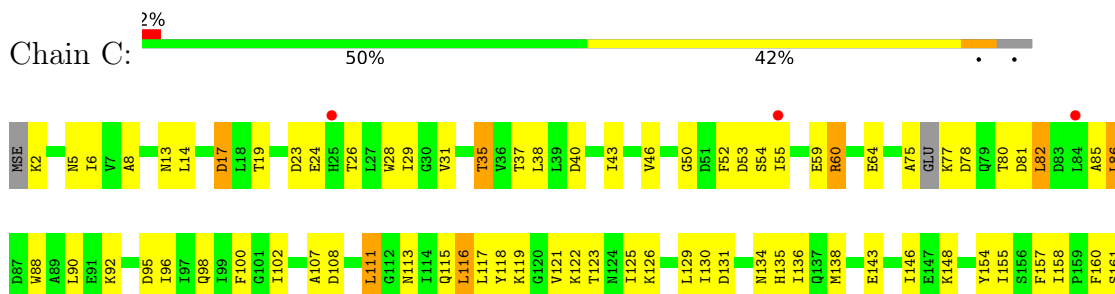
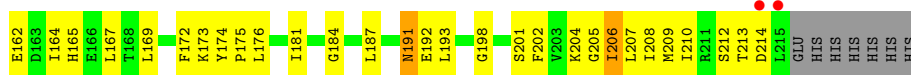• Molecule 1: Thiamine pyrophosphokinase

Chain A:

• Molecule 1: Thiamine pyrophosphokinase

Chain B:

• Molecule 1: Thiamine pyrophosphokinase

Chain C:

E162 D163 I164 H165 E166 L167 T168 L169 F172 K173 Y174 P175 L176 I181 G184 L187 N191 E192 L193 G198 S201 F202 V203 K204 G205 I206 L207 I208 M209 I210 R211 S212 T213 D214 L215 GLU HIS HIS HIS HIS HIS HIS

• Molecule 1: Thiamine pyrophosphokinase

Chain D:

%

50%　　　　　　　43%　　　　　　　5%

MSE K2 T3 I4 N5 I6 V7 A8 P11 L14 I15 T26 I29 G30 V31 D32 K33 G34 T35 V36 T37 L38 L39 D40 A41 V46 E47 F52 I55 T56 E57 Q58 E59 R60 R61 R62 I63 E64 A67 L70 A75 GLU LYS D78 Q79 T80 D81 L82 L86

L90 E91 K92 Q93 P94 D95 I96 I97 Q98 I99 I102 T103 R106 A107 D108 Q115 L116 L117 Y118 K119 G120 V121 K122 R128 D131 K132 Q133 N134 H135 I136 Q137 M138 P141 G142 E143 Y144 E147 E150 N151 K152 R153 Y154 I155 S156 F157 I158 P159 F160 S161 H165

T168 L169 F172 K173 Y174 T182 L183 G184 S185 I189 S190 N191 E192 S196 F200 S201 F202 V203 K204 G205 I206 L207 I208 M209 I210 R211 S212 T213 D214 L215 GLU HIS HIS HIS HIS HIS HIS

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	48.94Å 62.15Å 84.16Å 82.89° 82.02° 87.61°	Depositor
Resolution (Å)	20.00 – 2.60 41.38 – 2.56	Depositor EDS
% Data completeness (in resolution range)	82.4 (20.00-2.60) 91.9 (41.38-2.56)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.08 (at 2.54Å)	Xtriage
Refinement program	CNS 1.2, REFMAC	Depositor
R, R_{free}	0.213 , 0.253 0.218 , 0.247	Depositor DCC
R_{free} test set	2734 reflections (4.72%)	wwPDB-VP
Wilson B-factor (Å^2)	36.1	Xtriage
Anisotropy	0.162	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 53.2	EDS
L-test for twinning[2]	$< |L| > = 0.49, < L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	6941	wwPDB-VP
Average B, all atoms (Å^2)	39.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.69% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ 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: PO4, VIB, MG

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$|Z|$ >5	RMSZ	#$|Z|$ >5
1	A	0.37	0/1734	0.64	0/2346
1	B	0.96	20/1734 (1.2%)	0.76	1/2346 (0.0%)
1	C	0.38	0/1724	0.65	0/2331
1	D	0.37	0/1715	0.63	0/2320
All	All	0.58	20/6907 (0.3%)	0.67	1/9343 (0.0%)

The worst 5 of 20 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	163	ASP	C-O	-12.21	1.00	1.23
1	B	166	GLU	C-O	-10.88	1.02	1.23
1	B	167	LEU	C-O	-8.98	1.06	1.23
1	B	164	ILE	C-O	-7.97	1.08	1.23
1	B	166	GLU	CD-OE1	-7.91	1.17	1.25

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	163	ASP	CB-CG-OD2	9.20	126.58	118.30

There are no chirality outliers.

There are no planarity outliers.

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	1701	0	1708	107	0
1	B	1701	0	1708	99	0
1	C	1692	0	1701	107	0
1	D	1683	0	1688	99	0
2	A	18	0	17	2	0
2	B	18	0	17	3	0
2	C	18	0	17	2	0
2	D	18	0	17	1	0
3	A	5	0	0	0	0
3	B	10	0	0	0	0
3	C	5	0	0	0	0
4	A	2	0	0	0	0
4	B	3	0	0	0	0
5	A	20	0	0	0	0
5	B	13	0	0	0	0
5	C	21	0	0	0	0
5	D	13	0	0	0	0
All	All	6941	0	6873	397	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 29.

The worst 5 of 397 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:77:LYS:H	1:B:77:LYS:HD3	1.08	1.18
1:A:113:ASN:HA	1:A:116:LEU:HD23	1.40	1.03
1:A:46:VAL:HG23	1:A:47:GLU:HG2	1.47	0.95
1:A:6:ILE:HG12	1:A:29:ILE:HD11	1.48	0.94
1:C:160:PHE:HB3	1:C:206:ILE:HD13	1.53	0.91

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	212/222 (96%)	199 (94%)	12 (6%)	1 (0%)	29	52
1	B	212/222 (96%)	193 (91%)	15 (7%)	4 (2%)	8	15
1	C	209/222 (94%)	190 (91%)	18 (9%)	1 (0%)	29	52
1	D	208/222 (94%)	193 (93%)	12 (6%)	3 (1%)	11	22
All	All	841/888 (95%)	775 (92%)	57 (7%)	9 (1%)	14	30

5 of 9 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	105	GLY
1	B	132	LYS
1	A	77	LYS
1	B	160	PHE
1	D	92	LYS

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	187/192 (97%)	177 (95%)	10 (5%)	22	45
1	B	187/192 (97%)	170 (91%)	17 (9%)	9	18
1	C	186/192 (97%)	176 (95%)	10 (5%)	22	44
1	D	185/192 (96%)	175 (95%)	10 (5%)	22	44
All	All	745/768 (97%)	698 (94%)	47 (6%)	18	36

5 of 47 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	35	THR
1	C	191	ASN
1	C	60	ARG

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Mol	Chain	Res	Type
1	C	111	LEU
1	D	32	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 35 such sidechains are listed below:

Mol	Chain	Res	Type
1	D	74	GLN
1	D	115	GLN
1	D	137	GLN
1	B	98	GLN
1	B	79	GLN

5.3.3   RNA (i)

There are no RNA molecules in this entry.

5.4   Non-standard residues in protein, DNA, RNA chains (i)

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

5.5   Carbohydrates (i)

There are no monosaccharides in this entry.

5.6   Ligand geometry (i)

Of 13 ligands modelled in this entry, 5 are monoatomic - leaving 8 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$|Z|>2$	Counts	RMSZ	#$|Z|>2$
2	VIB	C	223	-	16,19,19	2.35	3 (18%)	20,26,26	2.10	9 (45%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
3	PO4	C	224	-	4,4,4	1.59	0	6,6,6	0.42	0
2	VIB	B	223	-	16,19,19	2.33	3 (18%)	20,26,26	2.03	8 (40%)
2	VIB	D	223	-	16,19,19	2.44	2 (12%)	20,26,26	1.94	6 (30%)
3	PO4	B	225	-	4,4,4	1.60	0	6,6,6	0.43	0
2	VIB	A	223	-	16,19,19	2.34	3 (18%)	20,26,26	2.02	7 (35%)
3	PO4	A	224	-	4,4,4	1.57	0	6,6,6	0.44	0
3	PO4	B	224	-	4,4,4	1.61	0	6,6,6	0.44	0

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	VIB	D	223	-	-	4/6/7/7	0/2/2/2
2	VIB	C	223	-	-	0/6/7/7	0/2/2/2
2	VIB	A	223	-	-	2/6/7/7	0/2/2/2
2	VIB	B	223	-	-	1/6/7/7	0/2/2/2

The worst 5 of 11 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	223	VIB	C4-N3	-6.69	1.33	1.39
2	A	223	VIB	C4-N3	-6.57	1.34	1.39
2	C	223	VIB	C4-N3	-6.56	1.34	1.39
2	D	223	VIB	C4-N3	-6.42	1.34	1.39
2	D	223	VIB	C6-C5	6.33	1.53	1.50

The worst 5 of 30 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	223	VIB	C5-C4-N3	4.17	115.91	107.57
2	A	223	VIB	C5-C4-N3	3.96	115.50	107.57
2	C	223	VIB	C5-C4-N3	3.91	115.39	107.57
2	B	223	VIB	C5-C4-N3	3.84	115.25	107.57
2	C	223	VIB	C6-C5-C4	3.30	130.08	127.43

There are no chirality outliers.
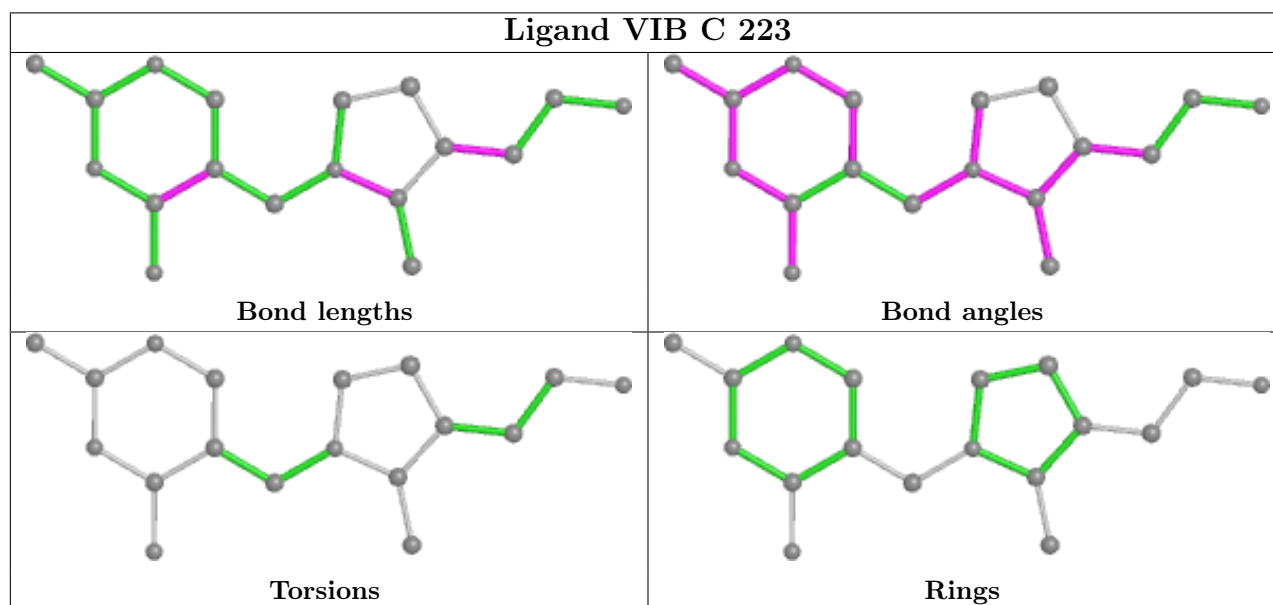
5 of 7 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	D	223	VIB	C4-C5-C6-C7
2	D	223	VIB	C4A-C5A-C7A-N3
2	D	223	VIB	C6A-C5A-C7A-N3
2	A	223	VIB	C5A-C7A-N3-C2
2	A	223	VIB	C5A-C7A-N3-C4

There are no ring outliers.

4 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	223	VIB	2	0
2	B	223	VIB	3	0
2	D	223	VIB	1	0
2	A	223	VIB	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 then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand VIB C 223

Bond lengths

Bond angles

Torsions

Rings

Ligand VIB B 223

Bond lengths

Bond angles

Torsions

Rings

Ligand VIB D 223

Bond lengths

Bond angles

Torsions

Rings

Ligand VIB A 223

Bond lengths

Bond angles

Torsions

Rings
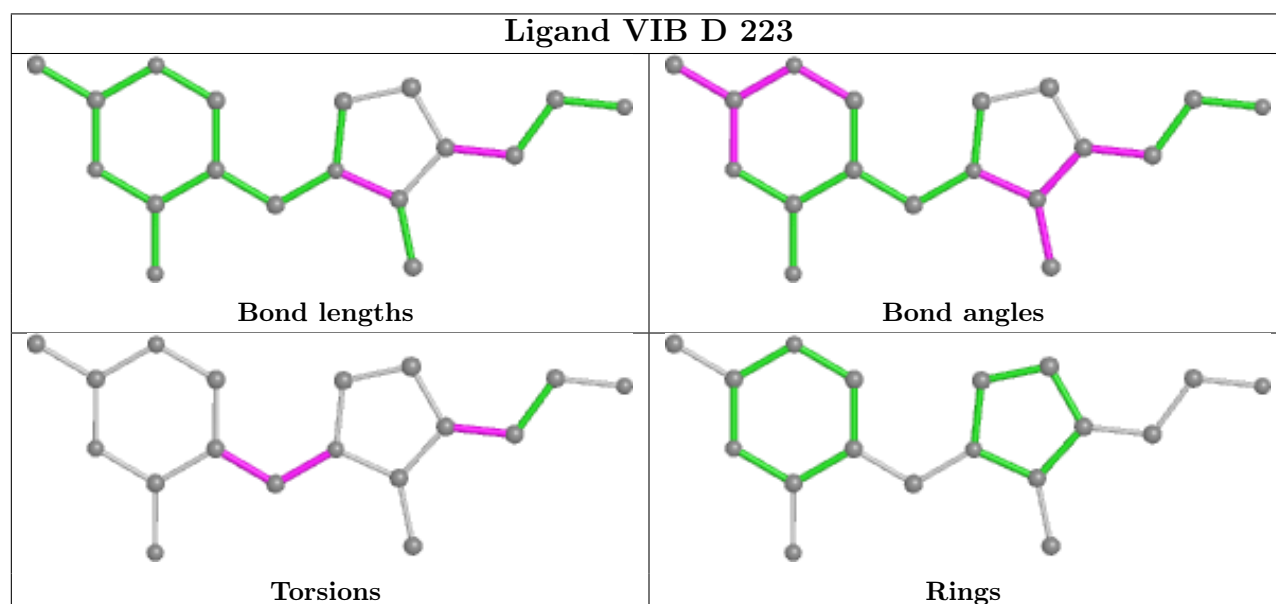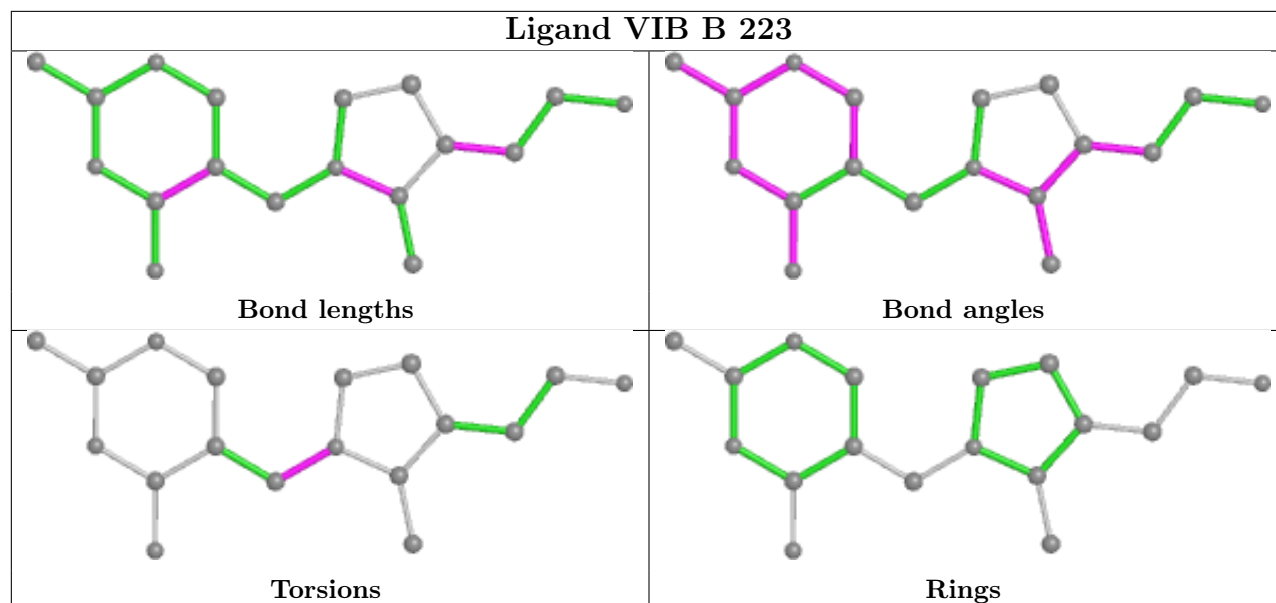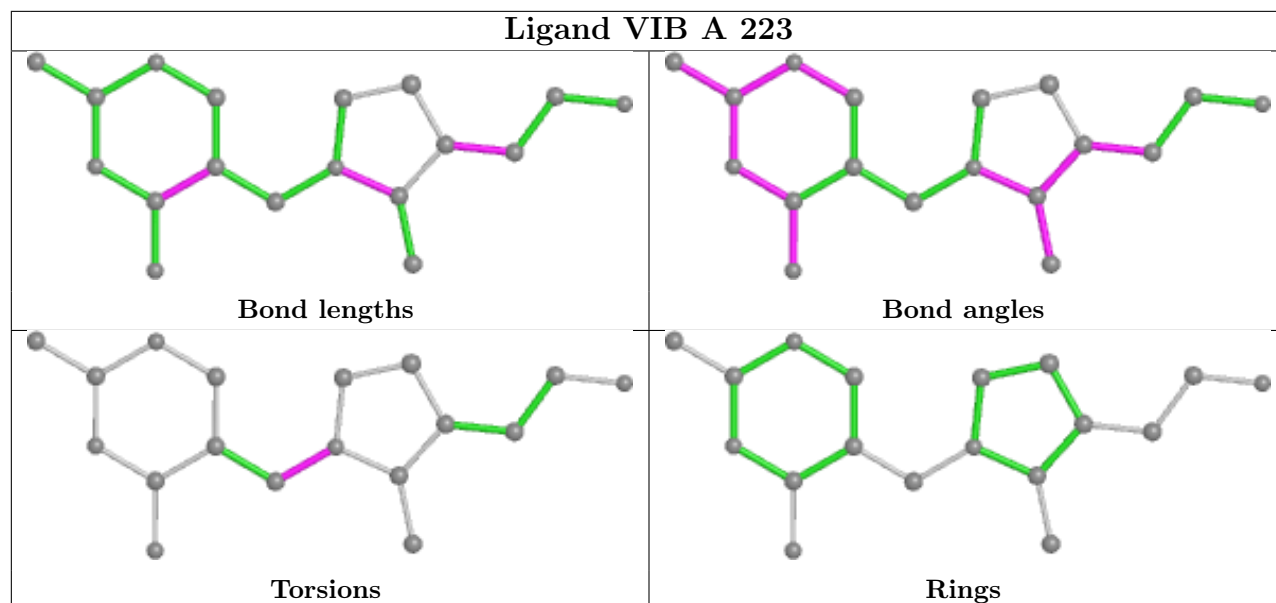
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å²)	Q<0.9
1	A	212/222 (95%)	0.04	1 (0%)	91	89	16, 34, 64, 95	0
1	B	212/222 (95%)	-0.00	2 (0%)	84	82	16, 36, 63, 74	0
1	C	211/222 (95%)	0.16	5 (2%)	59	53	16, 35, 66, 98	0
1	D	210/222 (94%)	0.12	2 (0%)	82	80	16, 36, 72, 100	0
All	All	845/888 (95%)	0.08	10 (1%)	79	76	16, 35, 65, 100	0

The worst 5 of 10 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	52	PHE	3.0
1	C	214	ASP	3.0
1	B	63	ILE	2.8
1	A	77	LYS	2.8
1	C	84	LEU	2.5

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

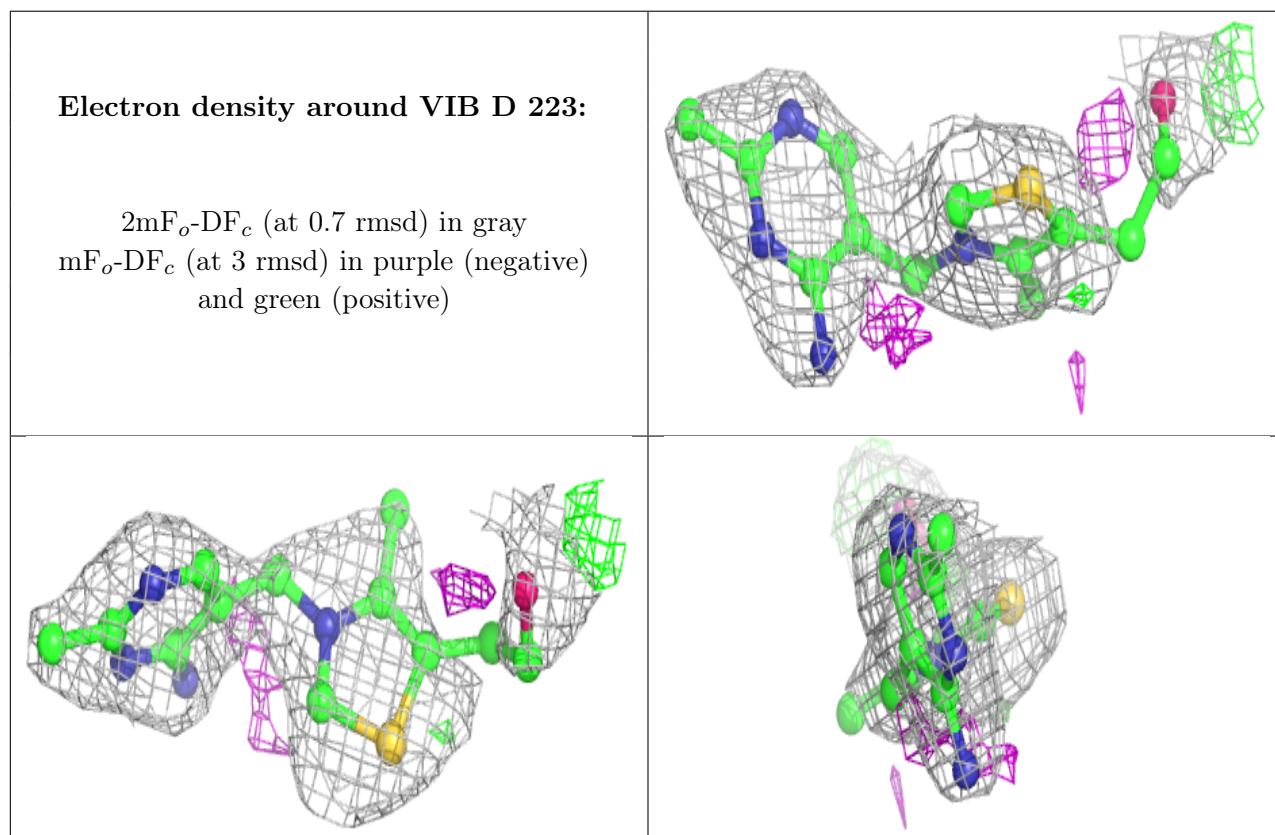There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	MG	B	226	1/1	0.79	0.26	46,46,46,46	0
4	MG	B	228	1/1	0.79	0.25	40,40,40,40	0
4	MG	A	226	1/1	0.81	0.27	43,43,43,43	0
3	PO4	A	224	5/5	0.88	0.19	63,68,86,89	0
3	PO4	B	225	5/5	0.89	0.26	81,82,85,87	0
2	VIB	D	223	18/18	0.90	0.28	12,36,52,58	0
2	VIB	B	223	18/18	0.91	0.22	18,37,78,81	0
4	MG	B	227	1/1	0.92	0.16	40,40,40,40	0
2	VIB	A	223	18/18	0.93	0.20	14,32,72,72	0
4	MG	A	225	1/1	0.93	0.32	52,52,52,52	0
3	PO4	B	224	5/5	0.93	0.22	70,72,75,79	0
2	VIB	C	223	18/18	0.94	0.18	5,28,53,57	0
3	PO4	C	224	5/5	0.95	0.13	63,68,73,80	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.
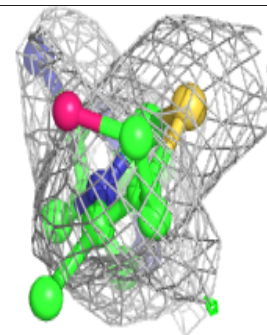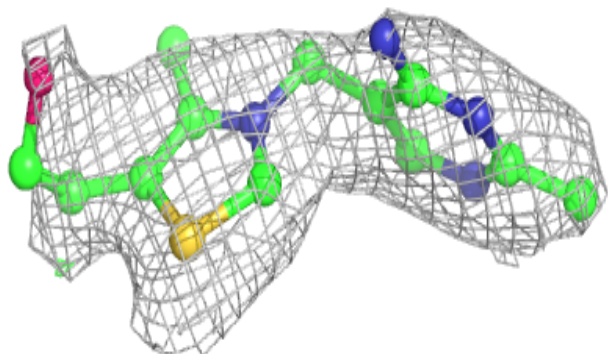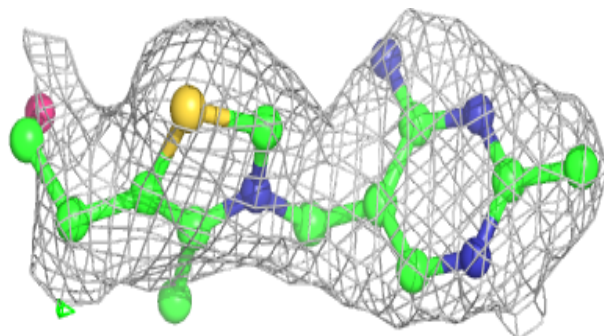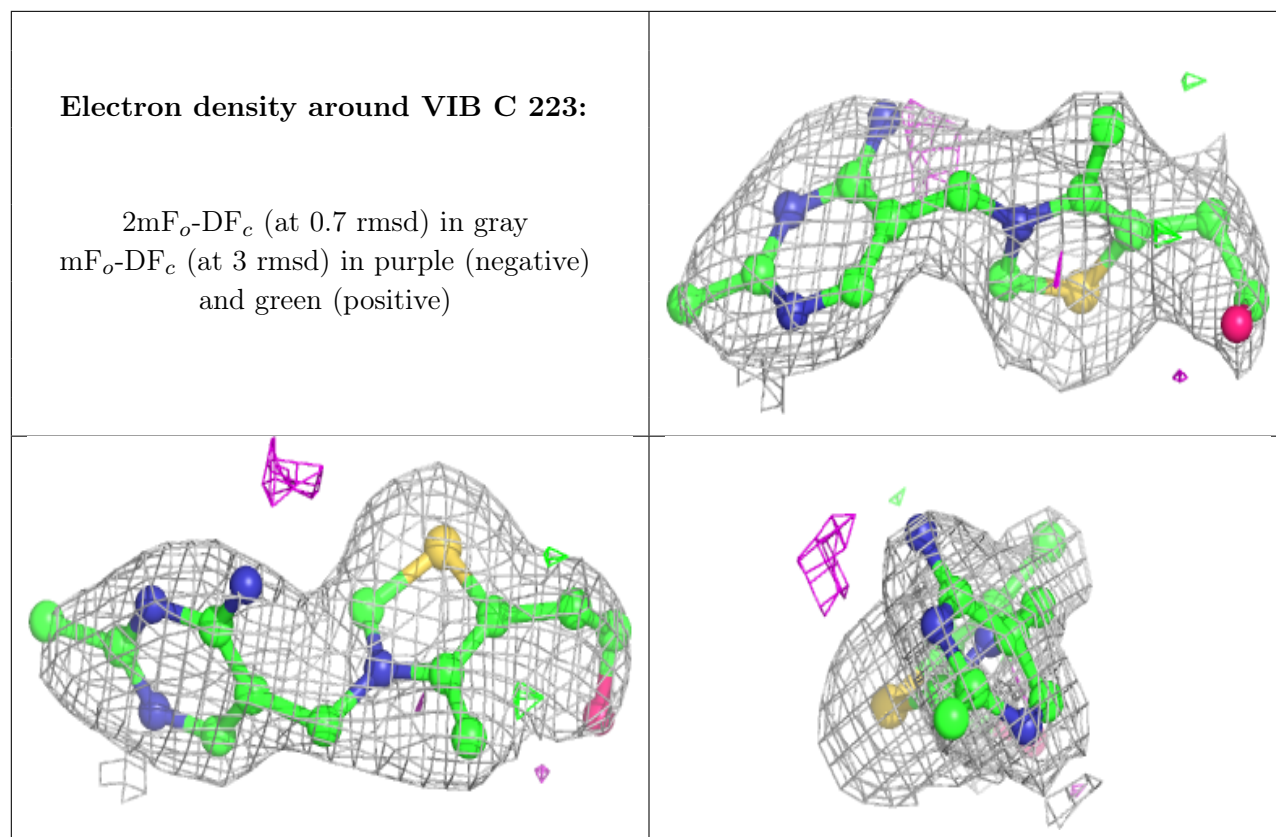

Electron density around VIB D 223:

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 VIB B 223:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
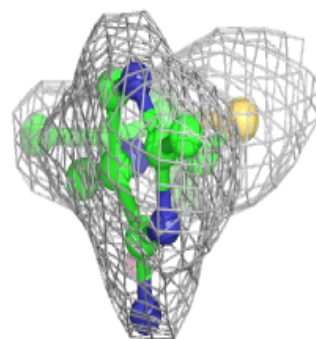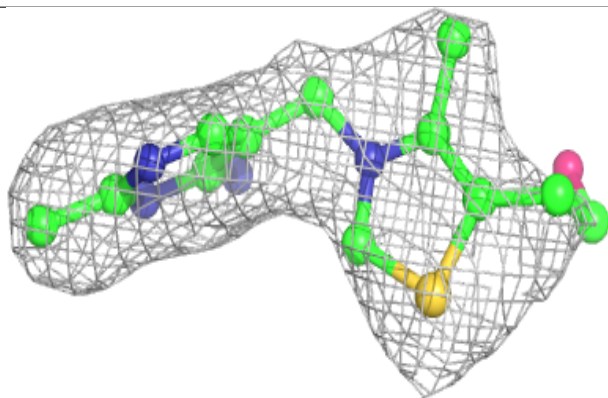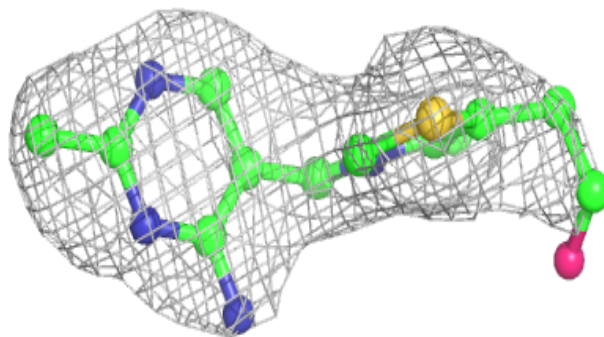
Electron density around VIB A 223:

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

Electron density around VIB C 223:

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

6.5 Other polymers ⓘ

There are no such residues in this entry.