Full wwPDB X-ray Structure Validation Report ⓘ

Mar 18, 2024 – 11:06 AM JST

PDB ID	:	5XNC
Title	:	Crystal structure of the branched-chain polyamine synthase (BpsA) in complex with N4-aminopropylspermidine and 5-methylthioadenosine
Authors	:	Mizohata, E.; Tse, K.M.; Fujita, J.; Inoue, T.
Deposited on	:	2017-05-22
Resolution	:	1.84 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*
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.

The following versions of software and data (see references ⓘ) were used in the production of this report:

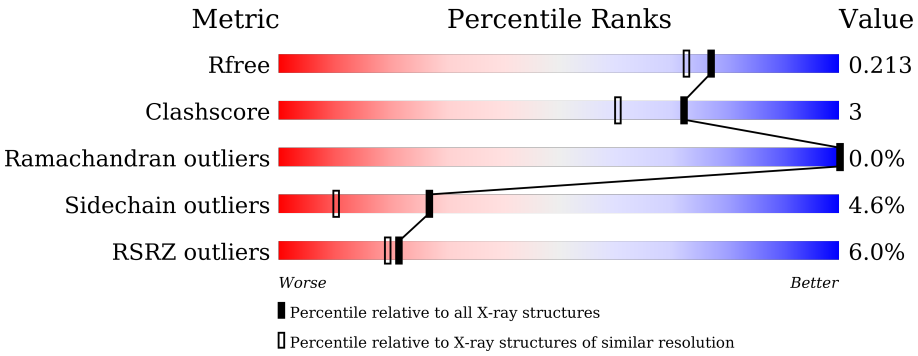
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (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 1.84 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	4003 (1.86-1.82)
Clashscore	141614	4233 (1.86-1.82)
Ramachandran outliers	138981	4185 (1.86-1.82)
Sidechain outliers	138945	4186 (1.86-1.82)
RSRZ outliers	127900	3957 (1.86-1.82)

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	371	3% 80% 13% • • 5%
1	B	371	3% 76% 16% • • 5%
1	C	371	2% 80% 13% • 5%
1	D	371	6% 81% 13% • 5%
1	E	371	9% 83% 10% • 5%
1	F	371	9% 80% 12% • • 5%

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Mol	Chain	Length	Quality of chain
1	G	371	

2 Entry composition (i)

There are 8 unique types of molecules in this entry. The entry contains 21380 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 N(4)-bis(aminopropyl)spermidine synthase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	353	Total	C	N	O	S	0	2	0
			2868	1831	477	553	7			
1	B	354	Total	C	N	O	S	0	0	0
			2860	1825	478	550	7			
1	C	353	Total	C	N	O	S	0	1	0
			2862	1827	477	551	7			
1	D	353	Total	C	N	O	S	0	1	0
			2857	1827	477	551	2			
1	E	353	Total	C	N	O	S	0	1	0
			2862	1827	477	551	7			
1	F	353	Total	C	N	O	S	0	0	0
			2856	1823	477	549	7			
1	G	353	Total	C	N	O	S	0	0	0
			2856	1823	477	549	7			

There are 140 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-19	MET	-	expression tag	UNP Q5JIZ3
A	-18	GLY	-	expression tag	UNP Q5JIZ3
A	-17	SER	-	expression tag	UNP Q5JIZ3
A	-16	SER	-	expression tag	UNP Q5JIZ3
A	-15	HIS	-	expression tag	UNP Q5JIZ3
A	-14	HIS	-	expression tag	UNP Q5JIZ3
A	-13	HIS	-	expression tag	UNP Q5JIZ3
A	-12	HIS	-	expression tag	UNP Q5JIZ3
A	-11	HIS	-	expression tag	UNP Q5JIZ3
A	-10	HIS	-	expression tag	UNP Q5JIZ3
A	-9	SER	-	expression tag	UNP Q5JIZ3
A	-8	SER	-	expression tag	UNP Q5JIZ3
A	-7	GLY	-	expression tag	UNP Q5JIZ3
A	-6	LEU	-	expression tag	UNP Q5JIZ3
A	-5	VAL	-	expression tag	UNP Q5JIZ3

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-4	PRO	-	expression tag	UNP Q5JIZ3
A	-3	ARG	-	expression tag	UNP Q5JIZ3
A	-2	GLY	-	expression tag	UNP Q5JIZ3
A	-1	SER	-	expression tag	UNP Q5JIZ3
A	0	HIS	-	expression tag	UNP Q5JIZ3
B	-19	MET	-	expression tag	UNP Q5JIZ3
B	-18	GLY	-	expression tag	UNP Q5JIZ3
B	-17	SER	-	expression tag	UNP Q5JIZ3
B	-16	SER	-	expression tag	UNP Q5JIZ3
B	-15	HIS	-	expression tag	UNP Q5JIZ3
B	-14	HIS	-	expression tag	UNP Q5JIZ3
B	-13	HIS	-	expression tag	UNP Q5JIZ3
B	-12	HIS	-	expression tag	UNP Q5JIZ3
B	-11	HIS	-	expression tag	UNP Q5JIZ3
B	-10	HIS	-	expression tag	UNP Q5JIZ3
B	-9	SER	-	expression tag	UNP Q5JIZ3
B	-8	SER	-	expression tag	UNP Q5JIZ3
B	-7	GLY	-	expression tag	UNP Q5JIZ3
B	-6	LEU	-	expression tag	UNP Q5JIZ3
B	-5	VAL	-	expression tag	UNP Q5JIZ3
B	-4	PRO	-	expression tag	UNP Q5JIZ3
B	-3	ARG	-	expression tag	UNP Q5JIZ3
B	-2	GLY	-	expression tag	UNP Q5JIZ3
B	-1	SER	-	expression tag	UNP Q5JIZ3
B	0	HIS	-	expression tag	UNP Q5JIZ3
C	-19	MET	-	expression tag	UNP Q5JIZ3
C	-18	GLY	-	expression tag	UNP Q5JIZ3
C	-17	SER	-	expression tag	UNP Q5JIZ3
C	-16	SER	-	expression tag	UNP Q5JIZ3
C	-15	HIS	-	expression tag	UNP Q5JIZ3
C	-14	HIS	-	expression tag	UNP Q5JIZ3
C	-13	HIS	-	expression tag	UNP Q5JIZ3
C	-12	HIS	-	expression tag	UNP Q5JIZ3
C	-11	HIS	-	expression tag	UNP Q5JIZ3
C	-10	HIS	-	expression tag	UNP Q5JIZ3
C	-9	SER	-	expression tag	UNP Q5JIZ3
C	-8	SER	-	expression tag	UNP Q5JIZ3
C	-7	GLY	-	expression tag	UNP Q5JIZ3
C	-6	LEU	-	expression tag	UNP Q5JIZ3
C	-5	VAL	-	expression tag	UNP Q5JIZ3
C	-4	PRO	-	expression tag	UNP Q5JIZ3
C	-3	ARG	-	expression tag	UNP Q5JIZ3

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-2	GLY	-	expression tag	UNP Q5JIZ3
C	-1	SER	-	expression tag	UNP Q5JIZ3
C	0	HIS	-	expression tag	UNP Q5JIZ3
D	-19	MET	-	expression tag	UNP Q5JIZ3
D	-18	GLY	-	expression tag	UNP Q5JIZ3
D	-17	SER	-	expression tag	UNP Q5JIZ3
D	-16	SER	-	expression tag	UNP Q5JIZ3
D	-15	HIS	-	expression tag	UNP Q5JIZ3
D	-14	HIS	-	expression tag	UNP Q5JIZ3
D	-13	HIS	-	expression tag	UNP Q5JIZ3
D	-12	HIS	-	expression tag	UNP Q5JIZ3
D	-11	HIS	-	expression tag	UNP Q5JIZ3
D	-10	HIS	-	expression tag	UNP Q5JIZ3
D	-9	SER	-	expression tag	UNP Q5JIZ3
D	-8	SER	-	expression tag	UNP Q5JIZ3
D	-7	GLY	-	expression tag	UNP Q5JIZ3
D	-6	LEU	-	expression tag	UNP Q5JIZ3
D	-5	VAL	-	expression tag	UNP Q5JIZ3
D	-4	PRO	-	expression tag	UNP Q5JIZ3
D	-3	ARG	-	expression tag	UNP Q5JIZ3
D	-2	GLY	-	expression tag	UNP Q5JIZ3
D	-1	SER	-	expression tag	UNP Q5JIZ3
D	0	HIS	-	expression tag	UNP Q5JIZ3
E	-19	MET	-	expression tag	UNP Q5JIZ3
E	-18	GLY	-	expression tag	UNP Q5JIZ3
E	-17	SER	-	expression tag	UNP Q5JIZ3
E	-16	SER	-	expression tag	UNP Q5JIZ3
E	-15	HIS	-	expression tag	UNP Q5JIZ3
E	-14	HIS	-	expression tag	UNP Q5JIZ3
E	-13	HIS	-	expression tag	UNP Q5JIZ3
E	-12	HIS	-	expression tag	UNP Q5JIZ3
E	-11	HIS	-	expression tag	UNP Q5JIZ3
E	-10	HIS	-	expression tag	UNP Q5JIZ3
E	-9	SER	-	expression tag	UNP Q5JIZ3
E	-8	SER	-	expression tag	UNP Q5JIZ3
E	-7	GLY	-	expression tag	UNP Q5JIZ3
E	-6	LEU	-	expression tag	UNP Q5JIZ3
E	-5	VAL	-	expression tag	UNP Q5JIZ3
E	-4	PRO	-	expression tag	UNP Q5JIZ3
E	-3	ARG	-	expression tag	UNP Q5JIZ3
E	-2	GLY	-	expression tag	UNP Q5JIZ3
E	-1	SER	-	expression tag	UNP Q5JIZ3

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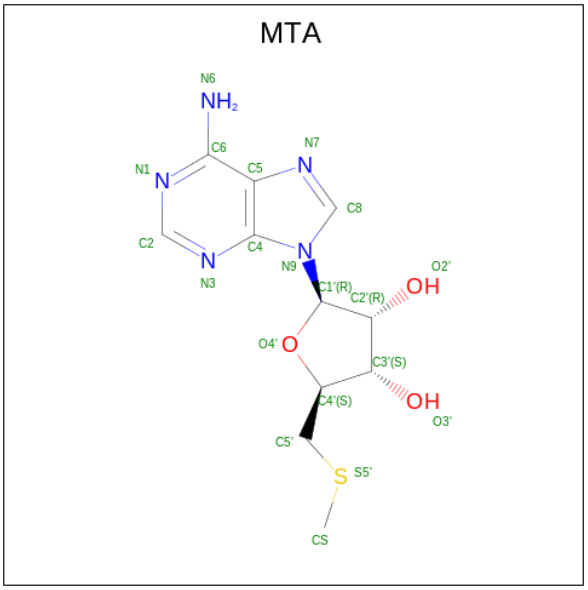
Chain	Residue	Modelled	Actual	Comment	Reference
E	0	HIS	-	expression tag	UNP Q5JIZ3
F	-19	MET	-	expression tag	UNP Q5JIZ3
F	-18	GLY	-	expression tag	UNP Q5JIZ3
F	-17	SER	-	expression tag	UNP Q5JIZ3
F	-16	SER	-	expression tag	UNP Q5JIZ3
F	-15	HIS	-	expression tag	UNP Q5JIZ3
F	-14	HIS	-	expression tag	UNP Q5JIZ3
F	-13	HIS	-	expression tag	UNP Q5JIZ3
F	-12	HIS	-	expression tag	UNP Q5JIZ3
F	-11	HIS	-	expression tag	UNP Q5JIZ3
F	-10	HIS	-	expression tag	UNP Q5JIZ3
F	-9	SER	-	expression tag	UNP Q5JIZ3
F	-8	SER	-	expression tag	UNP Q5JIZ3
F	-7	GLY	-	expression tag	UNP Q5JIZ3
F	-6	LEU	-	expression tag	UNP Q5JIZ3
F	-5	VAL	-	expression tag	UNP Q5JIZ3
F	-4	PRO	-	expression tag	UNP Q5JIZ3
F	-3	ARG	-	expression tag	UNP Q5JIZ3
F	-2	GLY	-	expression tag	UNP Q5JIZ3
F	-1	SER	-	expression tag	UNP Q5JIZ3
F	0	HIS	-	expression tag	UNP Q5JIZ3
G	-19	MET	-	expression tag	UNP Q5JIZ3
G	-18	GLY	-	expression tag	UNP Q5JIZ3
G	-17	SER	-	expression tag	UNP Q5JIZ3
G	-16	SER	-	expression tag	UNP Q5JIZ3
G	-15	HIS	-	expression tag	UNP Q5JIZ3
G	-14	HIS	-	expression tag	UNP Q5JIZ3
G	-13	HIS	-	expression tag	UNP Q5JIZ3
G	-12	HIS	-	expression tag	UNP Q5JIZ3
G	-11	HIS	-	expression tag	UNP Q5JIZ3
G	-10	HIS	-	expression tag	UNP Q5JIZ3
G	-9	SER	-	expression tag	UNP Q5JIZ3
G	-8	SER	-	expression tag	UNP Q5JIZ3
G	-7	GLY	-	expression tag	UNP Q5JIZ3
G	-6	LEU	-	expression tag	UNP Q5JIZ3
G	-5	VAL	-	expression tag	UNP Q5JIZ3
G	-4	PRO	-	expression tag	UNP Q5JIZ3
G	-3	ARG	-	expression tag	UNP Q5JIZ3
G	-2	GLY	-	expression tag	UNP Q5JIZ3
G	-1	SER	-	expression tag	UNP Q5JIZ3
G	0	HIS	-	expression tag	UNP Q5JIZ3

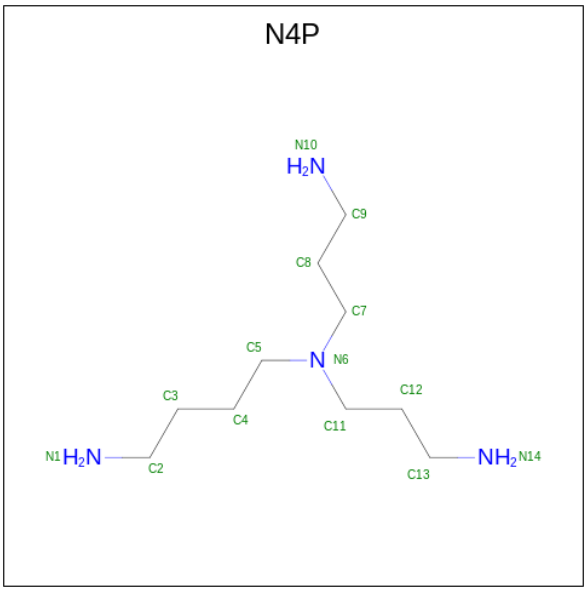
- Molecule 2 is 5'-DEOXY-5'-METHYLTHIOADENOSINE (three-letter code: MTA)

(formula: $C_{11}H_{15}N_5O_3S$).



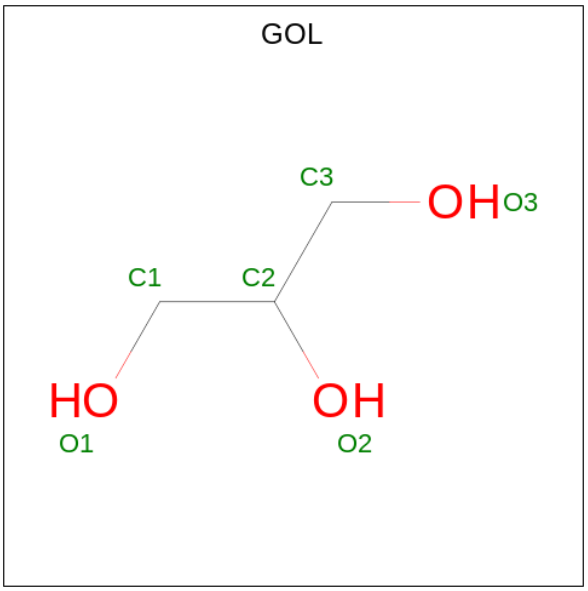
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	S	0	0
			20	11	5	3	1		
2	B	1	Total	C	N	O	S	0	0
			20	11	5	3	1		
2	C	1	Total	C	N	O	S	0	0
			20	11	5	3	1		
2	D	1	Total	C	N	O	S	0	0
			20	11	5	3	1		
2	E	1	Total	C	N	O	S	0	0
			20	11	5	3	1		
2	F	1	Total	C	N	O	S	0	0
			20	11	5	3	1		
2	G	1	Total	C	N	O	S	0	0
			20	11	5	3	1		

- Molecule 3 is N,N-bis(3-aminopropyl)butane-1,4-diamine (three-letter code: N4P) (formula: $C_{10}H_{26}N_4$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C N 14 10 4	0	0
3	B	1	Total C N 14 10 4	0	0
3	C	1	Total C N 14 10 4	0	0
3	D	1	Total C N 14 10 4	0	0
3	E	1	Total C N 14 10 4	0	0
3	F	1	Total C N 14 10 4	0	0
3	G	1	Total C N 14 10 4	0	0

- Molecule 4 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).

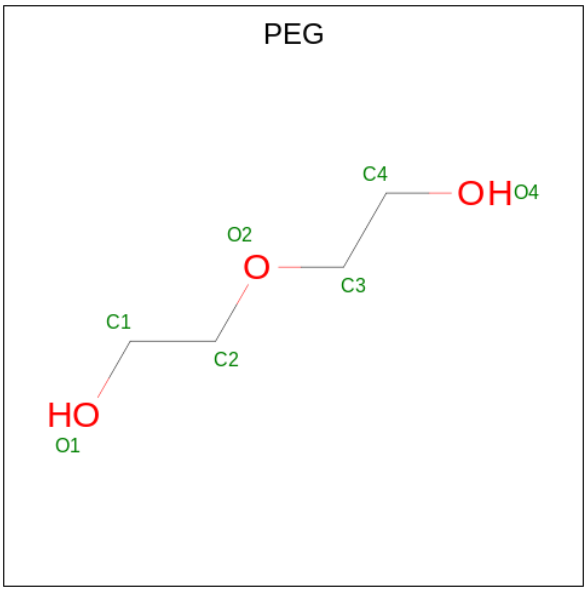


Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 6 3 3	0	0
4	A	1	Total C O 6 3 3	0	0
4	A	1	Total C O 6 3 3	0	0
4	B	1	Total C O 6 3 3	0	0
4	D	1	Total C O 6 3 3	0	0

- Molecule 5 is FE (III) ION (three-letter code: FE) (formula: Fe).

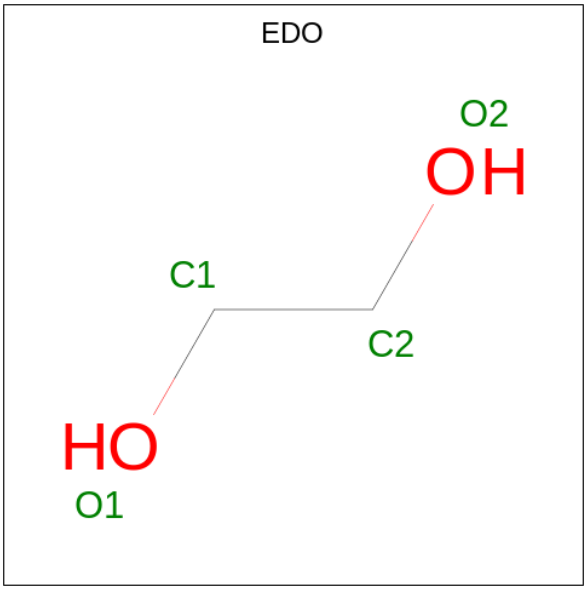
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total Fe 1 1	0	0
5	C	1	Total Fe 1 1	0	0
5	E	1	Total Fe 1 1	0	0
5	G	1	Total Fe 1 1	0	0

- Molecule 6 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	1	Total C O 7 4 3	0	0
6	E	1	Total C O 7 4 3	0	0

- Molecule 7 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	D	1	Total C O 4 2 2	0	0
7	D	1	Total C O 4 2 2	0	0

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	E	1	Total	C	O	0	0
			4	2	2		

- Molecule 8 is water.

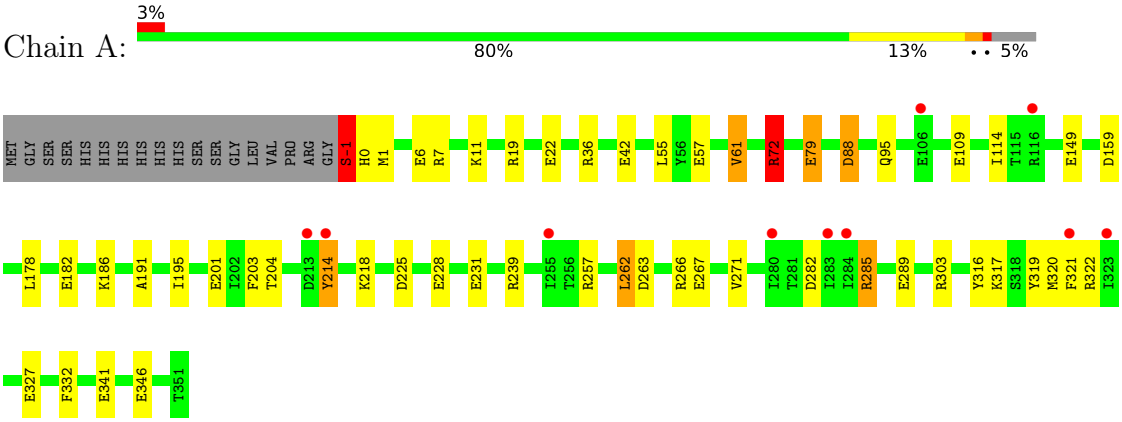
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	230	Total	O	0	0
			230	230		
8	B	233	Total	O	0	0
			233	233		
8	C	180	Total	O	0	0
			180	180		
8	D	198	Total	O	0	0
			198	198		
8	E	105	Total	O	0	0
			105	105		
8	F	68	Total	O	0	0
			68	68		
8	G	47	Total	O	0	0
			47	47		

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.

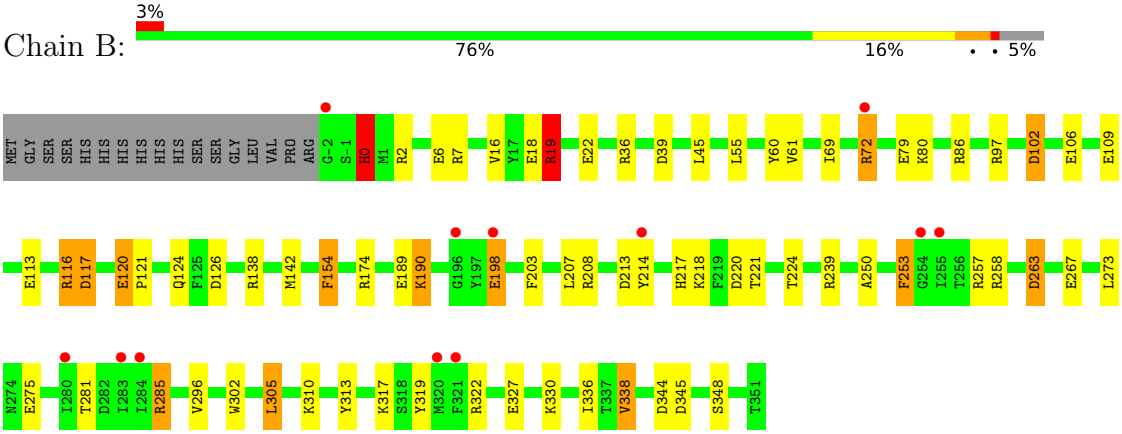
• Molecule 1: N(4)-bis(aminopropyl)spermidine synthase

Chain A:



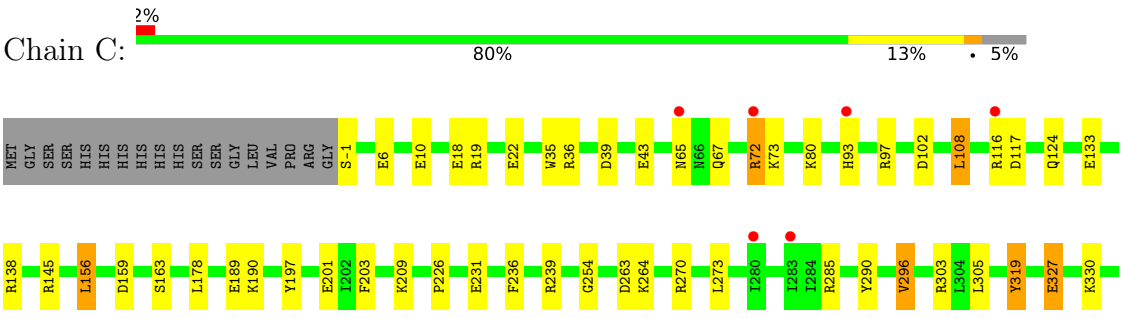
• Molecule 1: N(4)-bis(aminopropyl)spermidine synthase

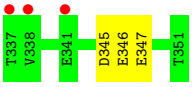
Chain B:



• Molecule 1: N(4)-bis(aminopropyl)spermidine synthase

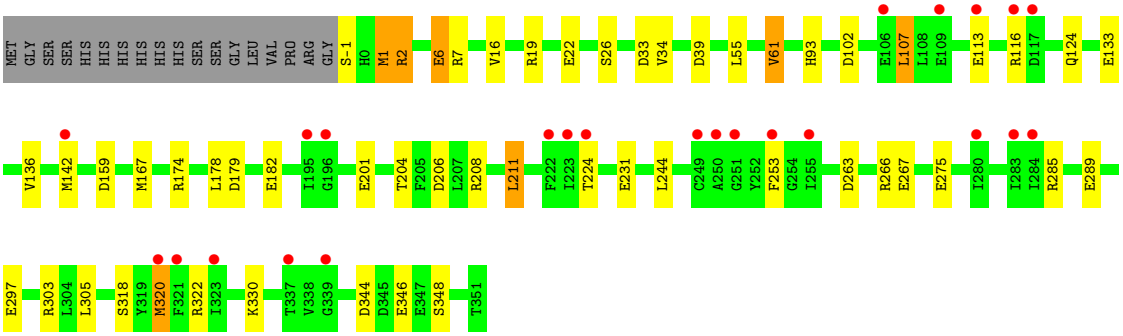
Chain C:





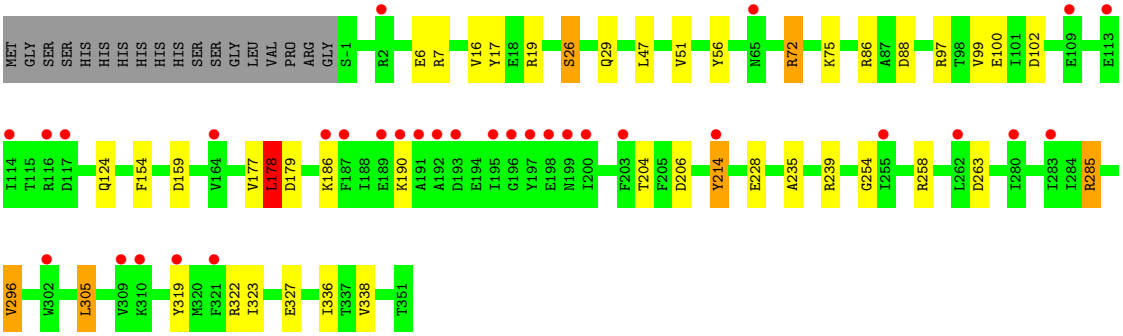
• Molecule 1: N(4)-bis(aminopropyl)spermidine synthase

Chain D:



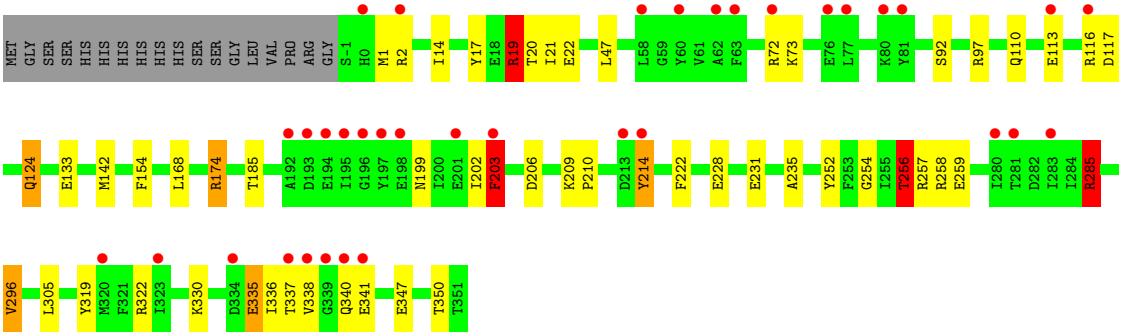
• Molecule 1: N(4)-bis(aminopropyl)spermidine synthase

Chain E:



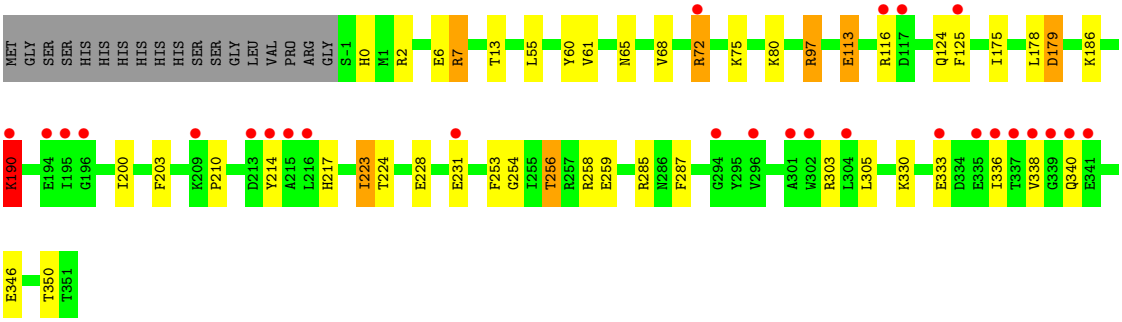
• Molecule 1: N(4)-bis(aminopropyl)spermidine synthase

Chain F:



• Molecule 1: N(4)-bis(aminopropyl)spermidine synthase

Chain G:


MET GLY SER SER HIS HIS HIS HIS HIS HIS SER SER GLY LEU VAL PRO ARG GLY S-1 H0 M1 R2 E6 R7 T13 L55 Y60 V61 N65 V68 R72 K75 K80 R97 E113 R116 D117 Q124 F125 I175 L178 D179 K186
K190 E194 I195 G196 I200 F203 K209 P210 D213 Y214 A215 L216 H217 I223 T224 E228 E231 F253 G254 I255 T256 R257 R258 E259 R285 N286 F287 G294 Y295 V296 A301 W302 R303 L304 L305 K330 E333 D334 E335 I336 T337 V338 G339 Q340 E341
E346 T350 T351

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	137.53Å 50.98Å 402.43Å 90.00° 93.69° 90.00°	Depositor
Resolution (Å)	43.53 – 1.84 43.53 – 1.84	Depositor EDS
% Data completeness (in resolution range)	99.8 (43.53-1.84) 99.8 (43.53-1.84)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.06	Depositor
$< I/\sigma(I) >$ [1]	2.64 (at 1.84Å)	Xtriage
Refinement program	REFMAC 5.8.0131	Depositor
R, R_{free}	0.161 , 0.207 0.169 , 0.213	Depositor DCC
R_{free} test set	12128 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å^2)	30.1	Xtriage
Anisotropy	0.246	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 53.7	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	0.97	EDS
Total number of atoms	21380	wwPDB-VP
Average B, all atoms (Å^2)	45.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.42% of the height of the origin peak. No significant pseudotranslation is detected.*

[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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: PEG, N4P, EDO, MTA, FE, GOL

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	1.56	25/2934 (0.9%)	1.42	31/3978 (0.8%)
1	B	1.56	23/2920 (0.8%)	1.46	37/3959 (0.9%)
1	C	1.38	14/2925 (0.5%)	1.29	30/3966 (0.8%)
1	D	1.44	20/2916 (0.7%)	1.23	27/3958 (0.7%)
1	E	1.13	4/2925 (0.1%)	1.12	23/3966 (0.6%)
1	F	1.03	2/2916 (0.1%)	1.03	11/3954 (0.3%)
1	G	0.94	2/2916 (0.1%)	1.00	7/3954 (0.2%)
All	All	1.31	90/20452 (0.4%)	1.23	166/27735 (0.6%)

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	2
All	All	0	3

All (90) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	341	GLU	CD-OE2	11.79	1.38	1.25
1	B	285	ARG	CD-NE	-11.33	1.27	1.46
1	D	201	GLU	CD-OE1	11.33	1.38	1.25
1	D	1	MET	CB-CG	10.51	1.84	1.51
1	D	267	GLU	CD-OE2	10.40	1.37	1.25
1	A	285	ARG	CD-NE	-10.34	1.28	1.46
1	A	346	GLU	CD-OE1	10.18	1.36	1.25
1	B	19	ARG	CG-CD	-9.63	1.27	1.51
1	D	267	GLU	CG-CD	9.39	1.66	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	57	GLU	CD-OE2	9.33	1.35	1.25
1	D	297	GLU	CD-OE1	-9.29	1.15	1.25
1	B	198	GLU	CG-CD	8.90	1.65	1.51
1	B	19	ARG	CZ-NH1	8.48	1.44	1.33
1	D	320	MET	CB-CG	8.19	1.77	1.51
1	E	285	ARG	CD-NE	-7.98	1.32	1.46
1	F	133	GLU	CD-OE1	7.72	1.34	1.25
1	D	289	GLU	CD-OE2	-7.71	1.17	1.25
1	B	60	TYR	CB-CG	-7.61	1.40	1.51
1	D	1	MET	CA-CB	7.58	1.70	1.53
1	C	327	GLU	CD-OE2	7.55	1.33	1.25
1	C	231	GLU	CD-OE2	7.48	1.33	1.25
1	D	346	GLU	CD-OE1	7.45	1.33	1.25
1	B	120	GLU	CG-CD	7.37	1.63	1.51
1	A	346	GLU	CD-OE2	7.24	1.33	1.25
1	C	43	GLU	CD-OE2	7.03	1.33	1.25
1	B	327	GLU	CD-OE2	7.02	1.33	1.25
1	C	270	ARG	CZ-NH2	-6.81	1.24	1.33
1	B	121	PRO	N-CA	-6.78	1.35	1.47
1	D	285	ARG	CD-NE	-6.68	1.35	1.46
1	B	348	SER	CB-OG	-6.64	1.33	1.42
1	C	201	GLU	CG-CD	6.63	1.61	1.51
1	A	6	GLU	CG-CD	6.57	1.61	1.51
1	D	133	GLU	CD-OE1	6.56	1.32	1.25
1	B	267	GLU	CG-CD	6.53	1.61	1.51
1	A	289	GLU	CD-OE1	-6.50	1.18	1.25
1	A	321	PHE	CG-CD2	-6.38	1.29	1.38
1	A	-1	SER	N-CA	6.30	1.58	1.46
1	E	17	TYR	CB-CG	6.24	1.61	1.51
1	B	117	ASP	CB-CG	6.17	1.64	1.51
1	B	253	PHE	CG-CD1	-6.09	1.29	1.38
1	D	16	VAL	CB-CG1	-6.02	1.40	1.52
1	B	302	TRP	CE3-CZ3	6.01	1.48	1.38
1	C	18	GLU	CG-CD	5.92	1.60	1.51
1	A	228	GLU	CD-OE1	-5.90	1.19	1.25
1	D	201	GLU	CD-OE2	5.89	1.32	1.25
1	B	220	ASP	CB-CG	5.75	1.63	1.51
1	A	271	VAL	C-O	5.72	1.34	1.23
1	C	163	SER	CB-OG	5.71	1.49	1.42
1	B	18	GLU	CG-CD	5.70	1.60	1.51
1	G	6	GLU	CD-OE1	5.70	1.31	1.25
1	A	79	GLU	CD-OE2	5.69	1.31	1.25

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	19	ARG	CB-CG	5.67	1.67	1.52
1	A	346	GLU	CG-CD	5.65	1.60	1.51
1	C	133	GLU	CD-OE2	5.61	1.31	1.25
1	A	289	GLU	CD-OE2	-5.57	1.19	1.25
1	D	6	GLU	CD-OE2	5.57	1.31	1.25
1	A	149	GLU	CD-OE1	5.55	1.31	1.25
1	C	201	GLU	CD-OE1	5.54	1.31	1.25
1	C	285	ARG	CD-NE	-5.53	1.37	1.46
1	B	203	PHE	CG-CD2	5.51	1.47	1.38
1	B	313	TYR	CE2-CZ	5.49	1.45	1.38
1	G	6	GLU	CG-CD	5.48	1.60	1.51
1	B	154	PHE	CG-CD2	5.43	1.46	1.38
1	C	22	GLU	CG-CD	5.42	1.60	1.51
1	D	22	GLU	CG-CD	5.41	1.60	1.51
1	C	35	TRP	CZ3-CH2	5.41	1.48	1.40
1	D	318	SER	CA-CB	5.39	1.61	1.52
1	E	6	GLU	CG-CD	5.39	1.60	1.51
1	D	275	GLU	CG-CD	5.37	1.60	1.51
1	B	60	TYR	CD2-CE2	-5.33	1.31	1.39
1	C	319	TYR	CZ-OH	5.29	1.46	1.37
1	B	345	ASP	CB-CG	5.28	1.62	1.51
1	A	285	ARG	CZ-NH2	-5.27	1.26	1.33
1	A	316	TYR	CG-CD2	-5.27	1.32	1.39
1	A	231	GLU	CD-OE1	5.24	1.31	1.25
1	B	22	GLU	CB-CG	-5.24	1.42	1.52
1	C	197	TYR	CG-CD1	-5.24	1.32	1.39
1	D	26	SER	CB-OG	-5.17	1.35	1.42
1	A	201	GLU	CD-OE1	5.16	1.31	1.25
1	A	332	PHE	CE1-CZ	5.14	1.47	1.37
1	E	26	SER	CB-OG	-5.14	1.35	1.42
1	A	320	MET	CG-SD	-5.11	1.67	1.81
1	F	17	TYR	CE1-CZ	5.10	1.45	1.38
1	A	19	ARG	CZ-NH1	5.09	1.39	1.33
1	B	6	GLU	CD-OE1	5.08	1.31	1.25
1	D	22	GLU	CB-CG	-5.08	1.42	1.52
1	D	289	GLU	CD-OE1	-5.06	1.20	1.25
1	A	42	GLU	CD-OE1	5.04	1.31	1.25
1	A	22	GLU	CG-CD	5.03	1.59	1.51
1	A	327	GLU	CD-OE1	-5.01	1.20	1.25

All (166) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	285	ARG	NE-CZ-NH2	-19.87	110.36	120.30
1	A	285	ARG	NE-CZ-NH2	-19.55	110.52	120.30
1	B	285	ARG	NE-CZ-NH1	17.25	128.92	120.30
1	A	285	ARG	NE-CZ-NH1	14.16	127.38	120.30
1	B	19	ARG	NE-CZ-NH2	-11.93	114.34	120.30
1	B	39	ASP	CB-CG-OD2	-10.73	108.64	118.30
1	C	156	LEU	CB-CG-CD1	10.60	129.01	111.00
1	B	344	ASP	CB-CG-OD2	10.45	127.71	118.30
1	G	303	ARG	NE-CZ-NH1	-10.42	115.09	120.30
1	A	7	ARG	NE-CZ-NH2	-9.85	115.38	120.30
1	C	19	ARG	NE-CZ-NH2	-9.14	115.73	120.30
1	A	282	ASP	CB-CG-OD2	9.01	126.40	118.30
1	A	72	ARG	NE-CZ-NH2	-8.67	115.97	120.30
1	E	285	ARG	NE-CZ-NH2	-8.59	116.00	120.30
1	A	72	ARG	NE-CZ-NH1	8.50	124.55	120.30
1	A	1	MET	CG-SD-CE	8.38	113.62	100.20
1	D	19	ARG	NE-CZ-NH1	-8.36	116.12	120.30
1	D	174	ARG	NE-CZ-NH1	8.30	124.45	120.30
1	G	97	ARG	NE-CZ-NH1	8.26	124.43	120.30
1	A	317	LYS	CD-CE-NZ	-8.21	92.83	111.70
1	E	239	ARG	NE-CZ-NH1	8.03	124.32	120.30
1	E	19	ARG	NE-CZ-NH2	-8.01	116.30	120.30
1	C	138	ARG	NE-CZ-NH1	8.00	124.30	120.30
1	A	303	ARG	NE-CZ-NH1	-7.94	116.33	120.30
1	B	126	ASP	CB-CG-OD2	-7.93	111.16	118.30
1	A	341	GLU	CG-CD-OE1	-7.86	102.59	118.30
1	C	285	ARG	NE-CZ-NH2	-7.83	116.38	120.30
1	D	303	ARG	NE-CZ-NH1	7.73	124.16	120.30
1	C	39	ASP	CB-CG-OD1	7.67	125.21	118.30
1	A	341	GLU	OE1-CD-OE2	7.61	132.43	123.30
1	C	19	ARG	NE-CZ-NH1	7.57	124.08	120.30
1	C	263	ASP	CB-CG-OD1	7.56	125.10	118.30
1	A	19	ARG	NE-CZ-NH2	-7.47	116.56	120.30
1	B	239	ARG	NE-CZ-NH2	-7.46	116.57	120.30
1	G	303	ARG	NE-CZ-NH2	7.42	124.01	120.30
1	D	211	LEU	CB-CG-CD1	7.42	123.61	111.00
1	A	257	ARG	NE-CZ-NH2	-7.41	116.60	120.30
1	F	203	PHE	CB-CA-C	-7.40	95.60	110.40
1	A	239	ARG	NE-CZ-NH2	-7.38	116.61	120.30
1	B	39	ASP	CB-CG-OD1	7.27	124.85	118.30
1	F	322	ARG	NE-CZ-NH1	-7.20	116.70	120.30
1	A	239	ARG	NE-CZ-NH1	7.19	123.90	120.30
1	A	159	ASP	CB-CG-OD1	7.18	124.76	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	296	VAL	CB-CA-C	-7.17	97.77	111.40
1	C	36	ARG	NE-CZ-NH2	-7.13	116.74	120.30
1	C	263	ASP	CB-CG-OD2	-7.11	111.90	118.30
1	B	198	GLU	OE1-CD-OE2	-7.08	114.81	123.30
1	D	208	ARG	NE-CZ-NH2	7.05	123.83	120.30
1	E	7	ARG	NE-CZ-NH2	-7.03	116.78	120.30
1	F	296	VAL	CB-CA-C	-7.01	98.08	111.40
1	G	97	ARG	NE-CZ-NH2	-7.01	116.80	120.30
1	A	303	ARG	NE-CZ-NH2	6.99	123.80	120.30
1	D	39	ASP	CB-CG-OD2	-6.98	112.02	118.30
1	E	206	ASP	CB-CG-OD1	6.93	124.53	118.30
1	E	239	ARG	NE-CZ-NH2	-6.92	116.84	120.30
1	A	61	VAL	CG1-CB-CG2	6.88	121.91	110.90
1	A	322	ARG	NE-CZ-NH2	6.78	123.69	120.30
1	B	72	ARG	NE-CZ-NH2	6.74	123.67	120.30
1	D	322	ARG	NE-CZ-NH1	-6.73	116.93	120.30
1	B	322	ARG	NE-CZ-NH2	6.70	123.65	120.30
1	F	19	ARG	CG-CD-NE	6.67	125.81	111.80
1	B	257	ARG	NE-CZ-NH1	6.66	123.63	120.30
1	D	303	ARG	NE-CZ-NH2	-6.63	116.98	120.30
1	C	159	ASP	CB-CG-OD2	-6.63	112.33	118.30
1	B	36	ARG	NE-CZ-NH1	6.61	123.61	120.30
1	B	7	ARG	NE-CZ-NH1	-6.59	117.00	120.30
1	E	88	ASP	CB-CG-OD1	6.58	124.22	118.30
1	A	262	LEU	CB-CG-CD1	-6.56	99.85	111.00
1	E	19	ARG	NE-CZ-NH1	6.56	123.58	120.30
1	B	239	ARG	NE-CZ-NH1	6.50	123.55	120.30
1	B	19	ARG	NE-CZ-NH1	6.41	123.51	120.30
1	E	178	LEU	CA-CB-CG	6.40	130.01	115.30
1	B	263	ASP	CB-CG-OD2	-6.39	112.55	118.30
1	C	72	ARG	NE-CZ-NH2	-6.37	117.12	120.30
1	E	228	GLU	OE1-CD-OE2	6.34	130.91	123.30
1	B	19	ARG	CA-CB-CG	-6.26	99.62	113.40
1	D	1	MET	N-CA-CB	6.24	121.83	110.60
1	B	317	LYS	CD-CE-NZ	-6.23	97.37	111.70
1	G	7	ARG	NE-CZ-NH2	-6.23	117.19	120.30
1	C	108	LEU	CB-CG-CD2	6.22	121.58	111.00
1	D	320	MET	N-CA-CB	6.22	121.80	110.60
1	D	263	ASP	CB-CG-OD1	6.21	123.89	118.30
1	F	206	ASP	CB-CG-OD1	6.21	123.88	118.30
1	D	206	ASP	CB-CG-OD1	6.20	123.88	118.30
1	C	145	ARG	NE-CZ-NH1	6.18	123.39	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	36	ARG	NE-CZ-NH1	6.17	123.39	120.30
1	D	2	ARG	NE-CZ-NH1	6.13	123.37	120.30
1	E	7	ARG	NE-CZ-NH1	6.12	123.36	120.30
1	F	285	ARG	NE-CZ-NH2	-6.11	117.24	120.30
1	C	72	ARG	NE-CZ-NH1	6.11	123.35	120.30
1	E	258	ARG	NE-CZ-NH1	6.08	123.34	120.30
1	E	263	ASP	CB-CG-OD1	6.08	123.77	118.30
1	B	208	ARG	NE-CZ-NH1	6.07	123.33	120.30
1	A	159	ASP	CB-CG-OD2	-6.05	112.85	118.30
1	D	285	ARG	NE-CZ-NH1	6.05	123.33	120.30
1	C	303	ARG	NE-CZ-NH1	6.04	123.32	120.30
1	D	322	ARG	NE-CZ-NH2	6.03	123.32	120.30
1	C	159	ASP	CB-CG-OD1	6.03	123.73	118.30
1	D	244	LEU	CB-CG-CD2	5.97	121.16	111.00
1	B	305	LEU	CB-CG-CD1	5.97	121.15	111.00
1	B	207	LEU	CB-CG-CD2	5.97	121.15	111.00
1	E	177	VAL	CB-CA-C	-5.95	100.10	111.40
1	C	345	ASP	CB-CG-OD1	5.94	123.65	118.30
1	B	86	ARG	NE-CZ-NH1	-5.94	117.33	120.30
1	C	39	ASP	CB-CG-OD2	-5.88	113.01	118.30
1	E	228	GLU	CA-CB-CG	-5.86	100.52	113.40
1	E	159	ASP	CB-CG-OD2	-5.84	113.04	118.30
1	C	201	GLU	OE1-CD-OE2	5.82	130.29	123.30
1	A	61	VAL	CA-CB-CG2	5.81	119.61	110.90
1	D	285	ARG	NE-CZ-NH2	-5.79	117.41	120.30
1	A	88	ASP	CB-CG-OD2	-5.78	113.10	118.30
1	C	117	ASP	CB-CG-OD1	5.73	123.46	118.30
1	A	322	ARG	NE-CZ-NH1	-5.73	117.44	120.30
1	E	16	VAL	CB-CA-C	-5.63	100.70	111.40
1	A	11	LYS	CD-CE-NZ	5.59	124.56	111.70
1	D	201	GLU	OE1-CD-OE2	5.58	130.00	123.30
1	D	33	ASP	CB-CG-OD1	5.58	123.32	118.30
1	C	36	ARG	NE-CZ-NH1	5.56	123.08	120.30
1	B	281	THR	CA-CB-CG2	-5.55	104.63	112.40
1	E	296	VAL	CB-CA-C	-5.55	100.86	111.40
1	B	106	GLU	OE1-CD-OE2	5.52	129.92	123.30
1	A	285	ARG	CB-CG-CD	-5.50	97.31	111.60
1	D	174	ARG	NE-CZ-NH2	-5.49	117.56	120.30
1	C	327	GLU	OE1-CD-OE2	5.48	129.88	123.30
1	F	257	ARG	NE-CZ-NH1	5.46	123.03	120.30
1	C	290	TYR	CD1-CE1-CZ	5.45	124.70	119.80
1	B	258	ARG	NE-CZ-NH1	5.41	123.00	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	F	97	ARG	NE-CZ-NH1	-5.40	117.60	120.30
1	C	97	ARG	NE-CZ-NH1	5.40	123.00	120.30
1	D	159	ASP	CB-CG-OD2	-5.39	113.45	118.30
1	E	263	ASP	CB-CG-OD2	-5.39	113.45	118.30
1	F	174	ARG	NE-CZ-NH1	5.38	122.99	120.30
1	C	73	LYS	CD-CE-NZ	-5.37	99.35	111.70
1	B	36	ARG	NE-CZ-NH2	-5.37	117.62	120.30
1	C	273	LEU	CB-CG-CD2	5.35	120.09	111.00
1	E	322	ARG	NE-CZ-NH2	5.33	122.97	120.30
1	A	257	ARG	NE-CZ-NH1	5.33	122.97	120.30
1	G	190	LYS	CA-CB-CG	5.33	125.12	113.40
1	B	97	ARG	NE-CZ-NH2	-5.32	117.64	120.30
1	B	16	VAL	CB-CA-C	-5.31	101.31	111.40
1	A	263	ASP	CB-CG-OD2	5.30	123.07	118.30
1	E	159	ASP	CB-CG-OD1	5.29	123.06	118.30
1	D	179	ASP	CB-CG-OD2	-5.27	113.56	118.30
1	B	2	ARG	NE-CZ-NH1	5.26	122.93	120.30
1	E	305	LEU	CB-CG-CD1	5.24	119.92	111.00
1	C	239	ARG	NE-CZ-NH2	-5.24	117.68	120.30
1	D	179	ASP	CB-CG-OD1	5.23	123.01	118.30
1	D	344	ASP	CB-CG-OD1	5.21	122.98	118.30
1	D	266	ARG	NE-CZ-NH1	5.20	122.90	120.30
1	B	174	ARG	NE-CZ-NH2	5.17	122.88	120.30
1	B	0	HIS	CB-CA-C	-5.15	100.11	110.40
1	D	61	VAL	CA-CB-CG2	5.14	118.61	110.90
1	B	257	ARG	NE-CZ-NH2	-5.13	117.74	120.30
1	G	285	ARG	NE-CZ-NH1	5.10	122.85	120.30
1	B	16	VAL	CA-CB-CG1	5.10	118.55	110.90
1	F	257	ARG	NE-CZ-NH2	-5.10	117.75	120.30
1	A	225	ASP	CB-CG-OD2	5.09	122.88	118.30
1	C	285	ARG	NE-CZ-NH1	5.08	122.84	120.30
1	B	102	ASP	CB-CG-OD1	5.07	122.86	118.30
1	B	273	LEU	CD1-CG-CD2	-5.07	95.29	110.50
1	A	266	ARG	NE-CZ-NH1	5.07	122.83	120.30
1	B	218	LYS	CA-CB-CG	-5.06	102.27	113.40
1	F	256	THR	N-CA-CB	-5.04	100.72	110.30
1	D	7	ARG	NE-CZ-NH2	5.04	122.82	120.30
1	E	97	ARG	NE-CZ-NH1	5.02	122.81	120.30
1	C	296	VAL	CA-CB-CG2	5.01	118.42	110.90

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	-1	SER	Peptide
1	B	0	HIS	Sidechain
1	B	19	ARG	Sidechain

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	2868	0	2837	17	0
1	B	2860	0	2828	17	0
1	C	2862	0	2831	12	0
1	D	2857	0	2808	22	0
1	E	2862	0	2831	12	0
1	F	2856	0	2825	31	0
1	G	2856	0	2825	27	0
2	A	20	0	15	0	0
2	B	20	0	15	0	0
2	C	20	0	15	0	0
2	D	20	0	15	0	0
2	E	20	0	15	0	0
2	F	20	0	15	0	0
2	G	20	0	15	1	0
3	A	14	0	0	0	0
3	B	14	0	0	0	0
3	C	14	0	0	0	0
3	D	14	0	0	0	0
3	E	14	0	0	0	0
3	F	14	0	0	1	0
3	G	14	0	0	2	0
4	A	18	0	24	1	0
4	B	6	0	8	0	0
4	D	6	0	8	0	0
5	A	1	0	0	0	0
5	C	1	0	0	0	0
5	E	1	0	0	0	0
5	G	1	0	0	0	0
6	A	7	0	10	0	0
6	E	7	0	10	0	0
7	D	8	0	12	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	E	4	0	6	0	0
8	A	230	0	0	2	0
8	B	233	0	0	5	0
8	C	180	0	0	4	0
8	D	198	0	0	3	0
8	E	105	0	0	1	0
8	F	68	0	0	1	0
8	G	47	0	0	1	0
All	All	21380	0	19968	135	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 (135) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:320:MET:CB	1:D:320:MET:CG	1.77	1.58
1:D:1:MET:CB	1:D:1:MET:CG	1.85	1.55
1:D:142:MET:CE	1:D:142:MET:CG	1.86	1.53
1:D:1:MET:CG	1:D:1:MET:CE	1.86	1.53
1:F:209:LYS:NZ	1:F:335:GLU:OE2	1.68	1.27
1:D:320:MET:CG	1:D:320:MET:CE	2.19	1.20
1:F:228:GLU:OE1	1:F:256:THR:HG22	1.81	0.81
1:F:185:THR:HG23	1:F:202:ILE:HG22	1.68	0.75
1:F:113:GLU:OE1	1:F:116:ARG:NH1	2.20	0.75
1:D:113:GLU:OE1	1:D:116:ARG:NH1	2.21	0.74
1:B:217:HIS:CE1	8:B:615:HOH:O	2.41	0.72
1:B:275:GLU:OE1	8:B:501:HOH:O	2.06	0.72
1:G:113:GLU:OE1	1:G:116:ARG:NH2	2.24	0.71
1:B:117:ASP:HB3	8:B:697:HOH:O	1.90	0.70
1:B:213:ASP:HB2	8:B:654:HOH:O	1.90	0.70
1:A:72:ARG:HH11	1:A:72:ARG:HG3	1.57	0.69
1:E:72:ARG:HB3	1:E:72:ARG:HH11	1.58	0.68
1:B:336:ILE:HG22	1:B:338:VAL:HG22	1.76	0.66
1:G:186:LYS:O	1:G:190:LYS:HD2	1.98	0.64
4:A:404:GOL:H11	1:B:19:ARG:HG3	1.81	0.63
1:G:13:THR:OG1	1:G:346:GLU:OE1	2.15	0.63
1:F:209:LYS:CE	1:F:335:GLU:OE2	2.46	0.63
1:G:72:ARG:CZ	1:G:72:ARG:HB3	2.25	0.62
1:B:113:GLU:OE2	1:B:116:ARG:NH1	2.33	0.62
1:A:214:TYR:O	1:A:218:LYS:HE2	2.01	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:72:ARG:HG3	1:A:72:ARG:NH1	2.15	0.60
1:G:228:GLU:OE2	1:G:256:THR:HG22	2.02	0.59
1:F:256:THR:HG23	1:F:259:GLU:H	1.68	0.58
1:F:285:ARG:HG3	1:F:319:TYR:CZ	2.38	0.58
1:G:256:THR:CG2	1:G:259:GLU:H	2.17	0.58
1:A:191:ALA:O	1:A:195:ILE:HG12	2.03	0.58
1:A:72:ARG:HH11	1:A:72:ARG:CG	2.16	0.58
1:D:167:MET:CE	1:D:167:MET:CG	2.82	0.58
1:B:55:LEU:HB3	1:B:61:VAL:HG13	1.86	0.57
1:D:320:MET:CG	1:D:320:MET:CA	2.76	0.57
1:E:72:ARG:HB3	1:E:72:ARG:NH1	2.18	0.57
1:G:224:THR:O	1:G:253:PHE:HA	2.05	0.57
1:C:209:LYS:NZ	8:C:505:HOH:O	2.37	0.56
1:D:348:SER:HB3	8:D:580:HOH:O	2.07	0.55
1:C:346[B]:GLU:OE1	8:C:501:HOH:O	2.18	0.55
1:F:256:THR:CG2	1:F:259:GLU:H	2.19	0.55
1:G:178:LEU:O	1:G:179:ASP:HB2	2.06	0.55
1:C:346[A]:GLU:HG3	8:C:530:HOH:O	2.06	0.54
1:G:55:LEU:HB3	1:G:61:VAL:HG13	1.90	0.54
1:E:285:ARG:HG3	1:E:319:TYR:CZ	2.43	0.54
1:D:182:GLU:HG2	1:D:204:THR:HG21	1.90	0.54
1:G:178:LEU:C	1:G:178:LEU:HD12	2.28	0.54
1:G:254:GLY:O	3:G:402:N4P:N14	2.42	0.53
1:E:124:GLN:NE2	8:E:503:HOH:O	2.40	0.53
1:F:256:THR:HG23	1:F:258:ARG:H	1.74	0.52
1:G:256:THR:HG23	1:G:259:GLU:H	1.73	0.52
1:A:214:TYR:C	1:A:214:TYR:CD1	2.84	0.52
1:D:124:GLN:HG2	8:D:636:HOH:O	2.10	0.52
1:F:256:THR:HG23	1:F:258:ARG:N	2.25	0.51
1:D:142:MET:CE	1:D:142:MET:CB	2.83	0.51
1:F:210:PRO:HD3	1:F:335:GLU:HG2	1.92	0.51
1:A:285:ARG:HA	1:A:319:TYR:CD2	2.47	0.50
1:F:20:THR:HG21	1:F:47:LEU:HD21	1.94	0.50
1:E:179:ASP:O	1:E:204:THR:HA	2.12	0.50
1:C:10:GLU:OE1	1:E:56:TYR:OH	2.27	0.49
1:F:1:MET:CE	1:F:21:ILE:HG13	2.43	0.48
1:F:338:VAL:HB	1:F:341:GLU:HB2	1.94	0.48
1:D:-1:SER:HA	8:D:627:HOH:O	2.13	0.48
1:F:110:GLN:HE21	1:F:168:LEU:HD22	1.79	0.48
1:F:117:ASP:N	1:F:117:ASP:OD1	2.44	0.48
1:B:45:LEU:C	1:B:45:LEU:HD23	2.34	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:285:ARG:HG3	1:A:319:TYR:CZ	2.49	0.48
1:G:340:GLN:NE2	1:G:340:GLN:HA	2.29	0.48
1:D:1:MET:CG	1:D:1:MET:CA	2.89	0.47
1:A:182:GLU:HG2	1:A:204:THR:HG21	1.96	0.47
1:D:55:LEU:HB3	1:D:61:VAL:HG13	1.96	0.47
1:F:124:GLN:HB3	8:F:532:HOH:O	2.13	0.47
1:F:203:PHE:CE1	1:F:214:TYR:HE2	2.33	0.47
1:G:210:PRO:HB3	1:G:333:GLU:O	2.14	0.47
1:F:142:MET:HG2	1:F:252:TYR:CZ	2.50	0.47
1:F:235:ALA:HB2	1:F:336:ILE:CD1	2.44	0.47
1:G:0:HIS:HB3	1:G:60:TYR:OH	2.15	0.47
1:G:259:GLU:OE1	1:G:350:THR:OG1	2.31	0.47
1:G:340:GLN:HA	1:G:340:GLN:HE21	1.79	0.47
1:A:214:TYR:HE1	8:A:613:HOH:O	1.97	0.46
1:B:190:LYS:HE2	1:B:190:LYS:HB3	1.72	0.46
1:D:231:GLU:HA	1:D:231:GLU:OE1	2.15	0.46
1:C:264:LYS:HE3	1:C:347:GLU:OE1	2.16	0.46
1:A:88:ASP:OD2	8:A:501:HOH:O	2.21	0.45
1:A:72:ARG:NH1	1:A:72:ARG:CG	2.77	0.45
1:C:124:GLN:HG2	8:C:621:HOH:O	2.16	0.45
1:B:124:GLN:NE2	8:B:502:HOH:O	2.22	0.45
1:D:107:LEU:HD13	1:D:136:VAL:HG22	1.98	0.45
1:G:175:ILE:O	1:G:200:ILE:HA	2.17	0.45
1:E:100:GLU:OE1	1:F:92:SER:N	2.40	0.45
1:F:228:GLU:OE1	1:F:256:THR:CG2	2.60	0.45
1:F:1:MET:HE1	1:F:21:ILE:HG13	1.98	0.45
1:D:2:ARG:O	1:D:6:GLU:HG2	2.17	0.44
1:A:55:LEU:HB3	1:A:61:VAL:HG13	1.99	0.44
1:F:254:GLY:HA2	1:F:319:TYR:O	2.17	0.44
1:A:178:LEU:C	1:A:178:LEU:HD12	2.38	0.44
1:G:97:ARG:HD3	1:G:287:PHE:O	2.17	0.44
1:E:214:TYR:CD2	1:E:214:TYR:N	2.78	0.44
1:A:178:LEU:HA	1:A:203:PHE:O	2.18	0.44
1:C:93:HIS:CG	1:D:93:HIS:CD2	3.06	0.44
1:G:223:ILE:HG13	1:G:224:THR:N	2.33	0.43
1:E:235:ALA:HB2	1:E:336:ILE:HD12	2.01	0.43
1:G:2:ARG:NH2	8:G:502:HOH:O	2.48	0.43
1:C:346[A]:GLU:HG2	1:C:347:GLU:HG3	2.00	0.43
1:F:14:ILE:HG12	1:F:347:GLU:HG2	2.00	0.43
1:B:285:ARG:HA	1:B:319:TYR:CD2	2.54	0.43
1:F:350:THR:OG1	3:F:402:N4P:N1	2.52	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:224:THR:O	1:B:253:PHE:HA	2.19	0.42
1:G:178:LEU:HA	1:G:203:PHE:O	2.18	0.42
1:D:178:LEU:C	1:D:178:LEU:HD12	2.39	0.42
1:D:224:THR:O	1:D:253:PHE:HA	2.19	0.42
1:G:228:GLU:OE1	3:G:402:N4P:N14	2.52	0.42
1:D:34:VAL:HG21	1:D:305:LEU:HD22	2.01	0.42
1:G:256:THR:HG23	1:G:258:ARG:N	2.35	0.42
1:C:72:ARG:HE	1:C:72:ARG:HB3	1.28	0.42
1:F:142:MET:HG2	1:F:252:TYR:CE1	2.55	0.42
1:A:114:ILE:CD1	1:A:195:ILE:HD11	2.50	0.41
1:F:285:ARG:HG3	1:F:319:TYR:OH	2.19	0.41
1:F:285:ARG:HA	1:F:319:TYR:CD2	2.55	0.41
1:B:138:ARG:O	1:B:142:MET:HG3	2.19	0.41
1:E:47:LEU:O	1:E:51:VAL:HG23	2.20	0.41
1:F:154:PHE:O	1:F:222:PHE:HA	2.19	0.41
1:G:0:HIS:H	1:G:0:HIS:CD2	2.38	0.41
1:G:125:PHE:O	2:G:401:MTA:H8	2.20	0.41
1:B:296:VAL:HG11	1:B:310:LYS:HD2	2.03	0.41
1:C:254:GLY:HA2	1:C:319:TYR:O	2.21	0.41
1:C:178:LEU:HA	1:C:203:PHE:O	2.20	0.41
1:E:254:GLY:HA2	1:E:319:TYR:O	2.21	0.41
1:A:262:LEU:HA	1:A:262:LEU:HD23	1.84	0.40
1:B:0:HIS:CE1	1:B:80:LYS:HE2	2.56	0.40
1:B:221:THR:HA	1:B:250:ALA:O	2.21	0.40
1:E:178:LEU:C	1:E:178:LEU:HD23	2.41	0.40
1:F:19:ARG:HA	1:F:19:ARG:HD3	1.98	0.40
1:C:226:PRO:HB3	1:C:236:PHE:CB	2.52	0.40
1:G:0:HIS:CD2	1:G:0:HIS:N	2.90	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	353/371 (95%)	343 (97%)	10 (3%)	0	100	100
1	B	352/371 (95%)	343 (97%)	9 (3%)	0	100	100
1	C	352/371 (95%)	343 (97%)	9 (3%)	0	100	100
1	D	352/371 (95%)	340 (97%)	12 (3%)	0	100	100
1	E	352/371 (95%)	341 (97%)	11 (3%)	0	100	100
1	F	351/371 (95%)	336 (96%)	15 (4%)	0	100	100
1	G	351/371 (95%)	339 (97%)	11 (3%)	1 (0%)	41	27
All	All	2463/2597 (95%)	2385 (97%)	77 (3%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	G	179	ASP

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	313/326 (96%)	303 (97%)	10 (3%)	39	21
1	B	311/326 (95%)	294 (94%)	17 (6%)	21	7
1	C	312/326 (96%)	297 (95%)	15 (5%)	25	9
1	D	307/326 (94%)	303 (99%)	4 (1%)	69	58
1	E	312/326 (96%)	295 (95%)	17 (5%)	22	7
1	F	311/326 (95%)	292 (94%)	19 (6%)	18	5
1	G	311/326 (95%)	293 (94%)	18 (6%)	20	6
All	All	2177/2282 (95%)	2077 (95%)	100 (5%)	27	10

All (100) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	-1	SER

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Mol	Chain	Res	Type
1	A	0	HIS
1	A	72	ARG
1	A	79	GLU
1	A	95	GLN
1	A	109	GLU
1	A	186	LYS
1	A	214	TYR
1	A	267[A]	GLU
1	A	267[B]	GLU
1	B	19	ARG
1	B	69	ILE
1	B	72	ARG
1	B	79	GLU
1	B	102	ASP
1	B	109	GLU
1	B	116	ARG
1	B	120	GLU
1	B	154	PHE
1	B	189	GLU
1	B	190	LYS
1	B	198	GLU
1	B	214	TYR
1	B	263	ASP
1	B	305	LEU
1	B	330	LYS
1	B	338	VAL
1	C	-1	SER
1	C	6	GLU
1	C	65	ASN
1	C	67	GLN
1	C	80	LYS
1	C	102	ASP
1	C	108	LEU
1	C	116	ARG
1	C	156	LEU
1	C	189	GLU
1	C	190	LYS
1	C	296	VAL
1	C	305	LEU
1	C	327	GLU
1	C	330	LYS
1	D	102	ASP

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Mol	Chain	Res	Type
1	D	107	LEU
1	D	211	LEU
1	D	330	LYS
1	E	26	SER
1	E	29	GLN
1	E	72	ARG
1	E	75	LYS
1	E	86	ARG
1	E	99	VAL
1	E	102	ASP
1	E	154	PHE
1	E	178	LEU
1	E	186	LYS
1	E	190	LYS
1	E	214	TYR
1	E	296	VAL
1	E	305	LEU
1	E	323	ILE
1	E	327	GLU
1	E	338	VAL
1	F	2	ARG
1	F	19	ARG
1	F	22	GLU
1	F	72	ARG
1	F	73	LYS
1	F	124	GLN
1	F	174	ARG
1	F	199	ASN
1	F	203	PHE
1	F	214	TYR
1	F	231	GLU
1	F	256	THR
1	F	285	ARG
1	F	296	VAL
1	F	305	LEU
1	F	330	LYS
1	F	335	GLU
1	F	337	THR
1	F	340	GLN
1	G	7	ARG
1	G	65	ASN
1	G	68	VAL

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Mol	Chain	Res	Type
1	G	72	ARG
1	G	75	LYS
1	G	80	LYS
1	G	113	GLU
1	G	124	GLN
1	G	190	LYS
1	G	214	TYR
1	G	217	HIS
1	G	223	ILE
1	G	231	GLU
1	G	256	THR
1	G	305	LEU
1	G	330	LYS
1	G	336	ILE
1	G	338	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (29) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	93	HIS
1	A	150	ASN
1	B	0	HIS
1	B	65	ASN
1	B	66	ASN
1	B	93	HIS
1	B	340	GLN
1	C	67	GLN
1	C	124	GLN
1	C	150	ASN
1	C	340	GLN
1	D	29	GLN
1	D	93	HIS
1	D	124	GLN
1	D	292	ASN
1	D	340	GLN
1	E	93	HIS
1	E	124	GLN
1	E	292	ASN
1	F	0	HIS
1	F	65	ASN
1	F	93	HIS
1	F	110	GLN

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Mol	Chain	Res	Type
1	F	199	ASN
1	F	292	ASN
1	G	0	HIS
1	G	124	GLN
1	G	274	ASN
1	G	340	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

Of 28 ligands modelled in this entry, 4 are monoatomic - leaving 24 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	N4P	C	402	-	13,13,13	1.14	2 (15%)	13,13,13	1.10	1 (7%)
4	GOL	A	403	-	5,5,5	0.42	0	5,5,5	0.51	0
2	MTA	G	401	-	19,22,22	1.51	4 (21%)	19,32,32	1.97	5 (26%)
7	EDO	D	405	-	3,3,3	0.84	0	2,2,2	0.11	0
2	MTA	B	401	-	19,22,22	1.10	2 (10%)	19,32,32	2.12	7 (36%)
2	MTA	F	401	-	19,22,22	1.82	6 (31%)	19,32,32	1.80	5 (26%)
4	GOL	A	404	-	5,5,5	0.22	0	5,5,5	0.88	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
6	PEG	E	405	-	6,6,6	0.67	0	5,5,5	0.26	0
2	MTA	D	401	-	19,22,22	1.57	3 (15%)	19,32,32	1.76	3 (15%)
3	N4P	F	402	-	13,13,13	0.83	0	13,13,13	1.32	2 (15%)
3	N4P	B	402	-	13,13,13	0.67	0	13,13,13	1.42	2 (15%)
3	N4P	G	402	-	13,13,13	0.66	0	13,13,13	1.17	1 (7%)
3	N4P	D	402	-	13,13,13	1.34	2 (15%)	13,13,13	1.29	3 (23%)
3	N4P	A	402	-	13,13,13	0.89	1 (7%)	13,13,13	1.42	2 (15%)
7	EDO	E	404	-	3,3,3	0.50	0	2,2,2	0.38	0
6	PEG	A	407	-	6,6,6	0.75	0	5,5,5	1.40	1 (20%)
2	MTA	C	401	-	19,22,22	1.49	3 (15%)	19,32,32	1.84	5 (26%)
7	EDO	D	404	-	3,3,3	0.75	0	2,2,2	0.48	0
3	N4P	E	402	-	13,13,13	1.05	1 (7%)	13,13,13	1.02	0
4	GOL	B	403	-	5,5,5	0.90	0	5,5,5	0.96	0
2	MTA	A	401	-	19,22,22	1.78	3 (15%)	19,32,32	1.62	4 (21%)
4	GOL	D	403	-	5,5,5	0.18	0	5,5,5	0.47	0
4	GOL	A	405	-	5,5,5	0.89	0	5,5,5	1.25	0
2	MTA	E	401	-	19,22,22	1.20	1 (5%)	19,32,32	1.60	4 (21%)

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	N4P	C	402	-	-	2/13/13/13	-
4	GOL	A	403	-	-	2/4/4/4	-
2	MTA	G	401	-	-	0/3/23/23	0/3/3/3
7	EDO	D	405	-	-	0/1/1/1	-
2	MTA	B	401	-	-	0/3/23/23	0/3/3/3
2	MTA	F	401	-	-	0/3/23/23	0/3/3/3
4	GOL	A	404	-	-	2/4/4/4	-
6	PEG	E	405	-	-	2/4/4/4	-
2	MTA	D	401	-	-	0/3/23/23	0/3/3/3
3	N4P	F	402	-	-	4/13/13/13	-
3	N4P	B	402	-	-	2/13/13/13	-
3	N4P	G	402	-	-	5/13/13/13	-
3	N4P	D	402	-	-	4/13/13/13	-
3	N4P	A	402	-	-	3/13/13/13	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
7	EDO	E	404	-	-	1/1/1/1	-
6	PEG	A	407	-	-	2/4/4/4	-
2	MTA	C	401	-	-	0/3/23/23	0/3/3/3
7	EDO	D	404	-	-	0/1/1/1	-
3	N4P	E	402	-	-	3/13/13/13	-
4	GOL	B	403	-	-	2/4/4/4	-
2	MTA	A	401	-	-	0/3/23/23	0/3/3/3
4	GOL	D	403	-	-	2/4/4/4	-
4	GOL	A	405	-	-	2/4/4/4	-
2	MTA	E	401	-	-	0/3/23/23	0/3/3/3

All (28) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	401	MTA	C5'-S5'	-5.07	1.73	1.80
2	F	401	MTA	O4'-C1'	4.77	1.47	1.41
2	G	401	MTA	C5'-S5'	-3.69	1.75	1.80
2	D	401	MTA	O4'-C1'	3.63	1.46	1.41
2	A	401	MTA	O4'-C1'	3.57	1.46	1.41
2	C	401	MTA	O4'-C1'	3.49	1.46	1.41
2	D	401	MTA	C2'-C1'	-3.20	1.48	1.53
3	D	402	N4P	C11-N6	3.16	1.54	1.47
2	F	401	MTA	C2'-C1'	-3.08	1.49	1.53
2	G	401	MTA	C2-N3	2.89	1.36	1.32
3	C	402	N4P	C11-N6	2.82	1.53	1.47
3	D	402	N4P	C7-N6	2.78	1.53	1.47
3	E	402	N4P	C5-N6	2.77	1.53	1.47
2	A	401	MTA	C2-N3	2.75	1.36	1.32
2	F	401	MTA	C4-N3	-2.68	1.32	1.35
2	F	401	MTA	C2-N3	2.60	1.36	1.32
2	F	401	MTA	C5-C4	2.52	1.47	1.40
2	C	401	MTA	C5'-S5'	2.50	1.84	1.80
2	G	401	MTA	O4'-C1'	2.38	1.44	1.41
3	C	402	N4P	C12-C13	2.37	1.62	1.51
2	B	401	MTA	O4'-C1'	2.36	1.44	1.41
2	G	401	MTA	C5-C4	2.35	1.47	1.40
3	A	402	N4P	C11-N6	2.30	1.52	1.47
2	F	401	MTA	C3'-C4'	2.26	1.58	1.53
2	E	401	MTA	O4'-C1'	2.24	1.44	1.41
2	B	401	MTA	C5'-S5'	-2.20	1.77	1.80
2	D	401	MTA	C4-N3	2.15	1.38	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	401	MTA	C5-C4	2.15	1.46	1.40

All (45) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	401	MTA	O4'-C1'-C2'	-6.04	98.10	106.93
2	G	401	MTA	N3-C2-N1	-4.87	121.07	128.68
2	C	401	MTA	N3-C2-N1	-4.69	121.34	128.68
2	D	401	MTA	N3-C2-N1	-4.36	121.86	128.68
2	F	401	MTA	N3-C2-N1	-4.07	122.32	128.68
2	A	401	MTA	C1'-N9-C4	-3.84	119.89	126.64
2	D	401	MTA	C1'-N9-C4	-3.80	119.97	126.64
3	A	402	N4P	C7-N6-C5	3.67	120.16	111.44
2	G	401	MTA	O4'-C4'-C5'	3.56	118.01	108.83
2	F	401	MTA	C1'-N9-C4	-3.51	120.47	126.64
2	G	401	MTA	C4-C5-N7	-3.22	106.05	109.40
2	B	401	MTA	C3'-C2'-C1'	3.11	105.66	100.98
2	E	401	MTA	N3-C2-N1	-3.10	123.84	128.68
3	F	402	N4P	C8-C7-N6	3.08	121.60	113.84
3	C	402	N4P	C7-N6-C5	3.01	118.59	111.44
3	B	402	N4P	C11-N6-C7	-2.99	104.34	111.44
2	B	401	MTA	N6-C6-N1	2.89	124.57	118.57
3	B	402	N4P	C8-C7-N6	2.88	121.10	113.84
2	F	401	MTA	N6-C6-N1	2.81	124.40	118.57
2	B	401	MTA	N3-C2-N1	-2.73	124.41	128.68
2	D	401	MTA	CS-S5'-C5'	-2.69	96.35	101.30
2	E	401	MTA	C1'-N9-C4	-2.69	121.92	126.64
2	A	401	MTA	CS-S5'-C5'	2.69	106.24	101.30
2	E	401	MTA	O2'-C2'-C3'	2.66	120.42	111.82
2	C	401	MTA	C2-N1-C6	2.56	123.13	118.75
3	D	402	N4P	C12-C11-N6	-2.52	107.49	113.84
2	E	401	MTA	O4'-C4'-C5'	2.50	115.28	108.83
2	F	401	MTA	O4'-C4'-C5'	2.50	115.26	108.83
3	D	402	N4P	C11-N6-C7	-2.48	105.55	111.44
3	F	402	N4P	C7-C8-C9	2.41	123.13	113.85
2	C	401	MTA	C1'-N9-C4	-2.39	122.44	126.64
2	G	401	MTA	C2-N1-C6	2.39	122.84	118.75
2	C	401	MTA	N6-C6-N1	2.34	123.43	118.57
6	A	407	PEG	O2-C3-C4	2.31	120.24	110.07
2	C	401	MTA	O3'-C3'-C2'	2.28	119.20	111.82
2	A	401	MTA	N6-C6-N1	2.20	123.14	118.57
3	G	402	N4P	C11-N6-C7	-2.19	106.22	111.44

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	401	MTA	C2-N1-C6	2.16	122.45	118.75
2	F	401	MTA	C2-N1-C6	2.13	122.39	118.75
2	B	401	MTA	C1'-N9-C4	-2.12	122.92	126.64
3	D	402	N4P	C7-N6-C5	2.10	116.42	111.44
2	A	401	MTA	O4'-C1'-C2'	-2.08	103.88	106.93
2	B	401	MTA	CS-S5'-C5'	-2.04	97.56	101.30
3	A	402	N4P	C11-C12-C13	-2.02	106.09	113.85
2	G	401	MTA	O4'-C4'-C3'	2.00	109.08	105.11

There are no chirality outliers.

All (38) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	403	GOL	C1-C2-C3-O3
4	A	404	GOL	C1-C2-C3-O3
4	A	405	GOL	O1-C1-C2-C3
3	F	402	N4P	C8-C7-N6-C11
3	C	402	N4P	N6-C7-C8-C9
4	A	403	GOL	O2-C2-C3-O3
6	A	407	PEG	O1-C1-C2-O2
3	G	402	N4P	N6-C7-C8-C9
3	C	402	N4P	C4-C5-N6-C7
6	E	405	PEG	O1-C1-C2-O2
4	B	403	GOL	C1-C2-C3-O3
4	A	405	GOL	O1-C1-C2-O2
7	E	404	EDO	O1-C1-C2-O2
3	D	402	N4P	N6-C7-C8-C9
3	A	402	N4P	C11-C12-C13-N14
3	B	402	N4P	N6-C7-C8-C9
3	G	402	N4P	C3-C4-C5-N6
3	E	402	N4P	N6-C7-C8-C9
4	A	404	GOL	O2-C2-C3-O3
3	F	402	N4P	C12-C11-N6-C5
3	A	402	N4P	N6-C7-C8-C9
3	F	402	N4P	C8-C7-N6-C5
3	F	402	N4P	C4-C5-N6-C7
6	A	407	PEG	O2-C3-C4-O4
3	D	402	N4P	C11-C12-C13-N14
3	G	402	N4P	C11-C12-C13-N14
3	G	402	N4P	C2-C3-C4-C5
6	E	405	PEG	C1-C2-O2-C3
4	D	403	GOL	O2-C2-C3-O3

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Mol	Chain	Res	Type	Atoms
3	A	402	N4P	C4-C5-N6-C7
3	B	402	N4P	C8-C7-N6-C5
3	G	402	N4P	N1-C2-C3-C4
3	D	402	N4P	C4-C5-N6-C7
4	D	403	GOL	C1-C2-C3-O3
3	D	402	N4P	C8-C7-N6-C5
3	E	402	N4P	C11-C12-C13-N14
4	B	403	GOL	O2-C2-C3-O3
3	E	402	N4P	C8-C7-N6-C5

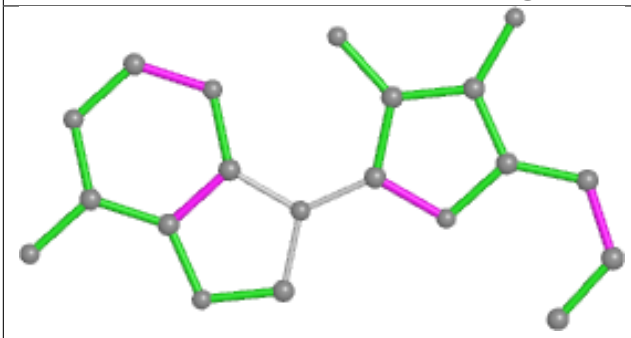
There are no ring outliers.

4 monomers are involved in 5 short contacts:

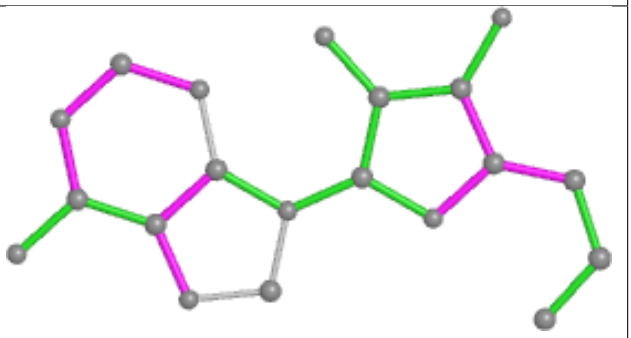
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	G	401	MTA	1	0
4	A	404	GOL	1	0
3	F	402	N4P	1	0
3	G	402	N4P	2	0

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.

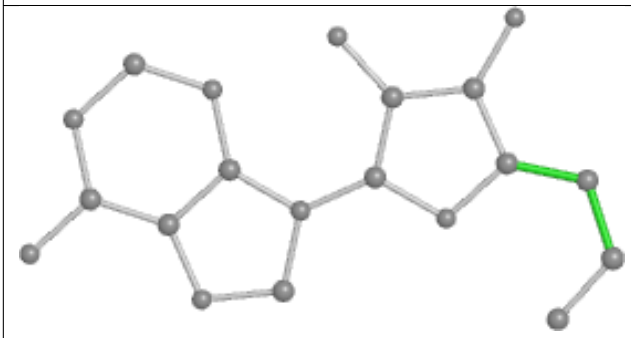
Ligand MTA G 401



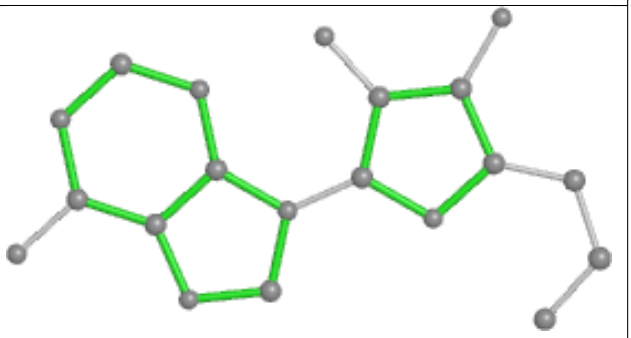
Bond lengths



Bond angles

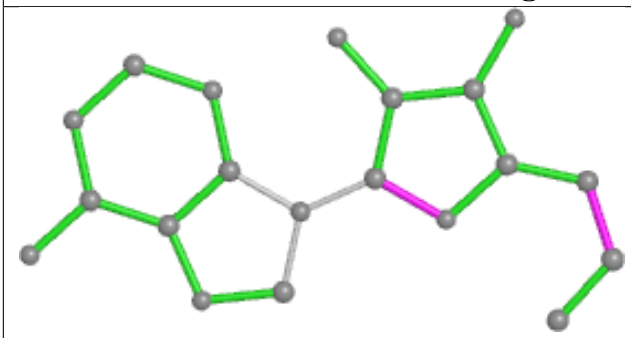


Torsions

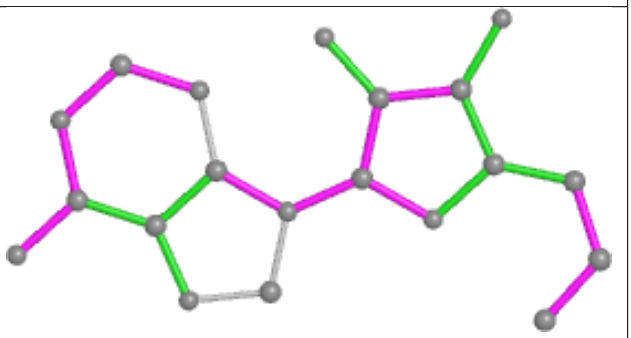


Rings

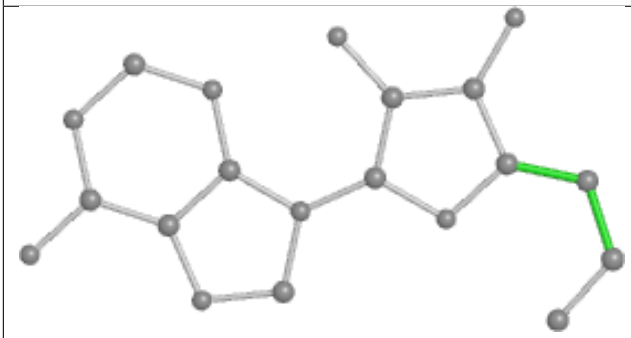
Ligand MTA B 401



Bond lengths



Bond angles



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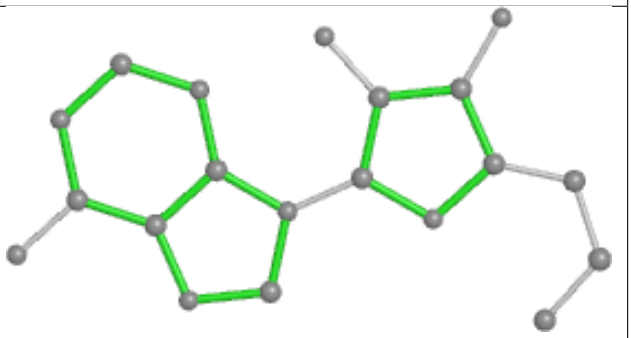
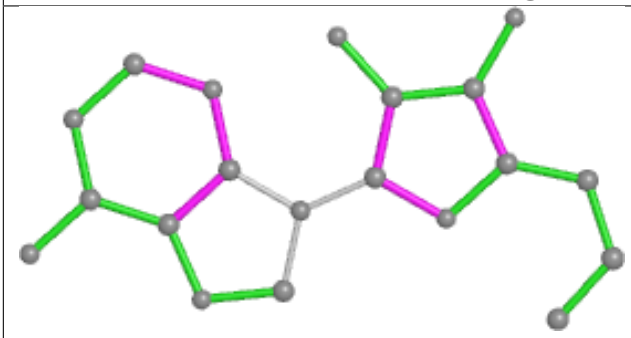
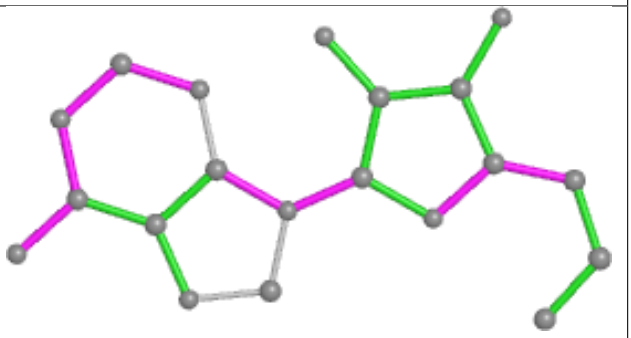


Rings

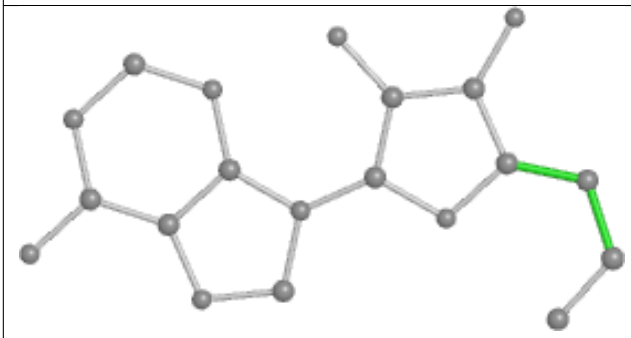
Ligand MTA F 401



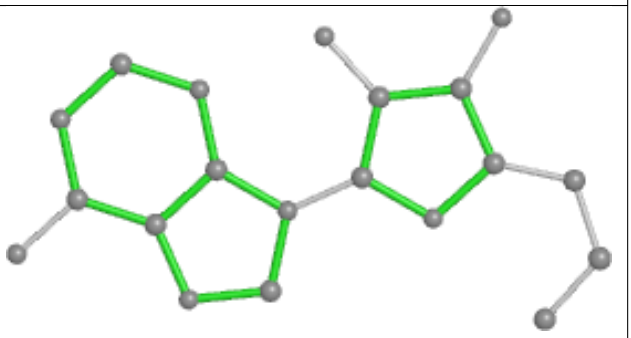
Bond lengths



Bond angles

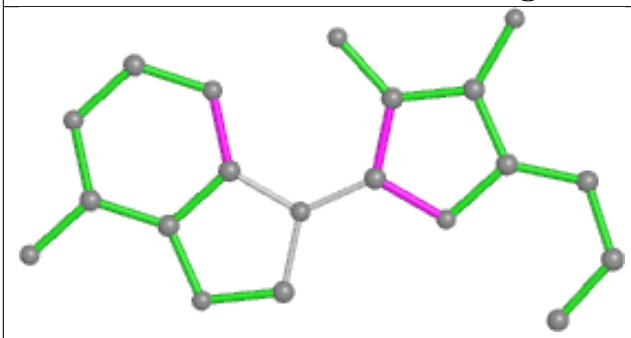


Torsions

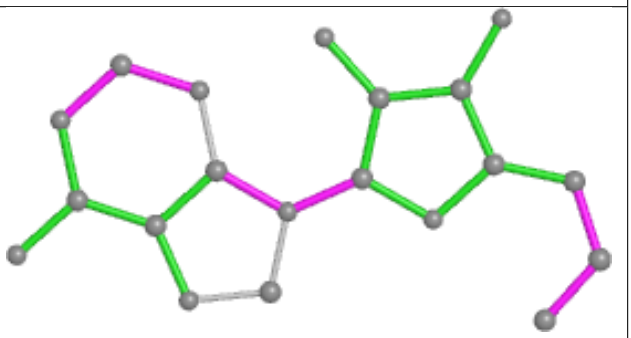


Rings

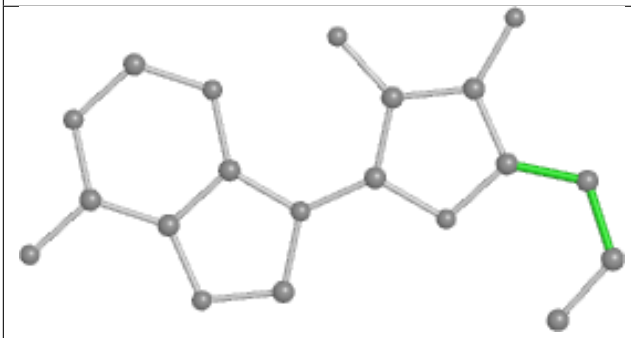
Ligand MTA D 401



Bond lengths



Bond angles



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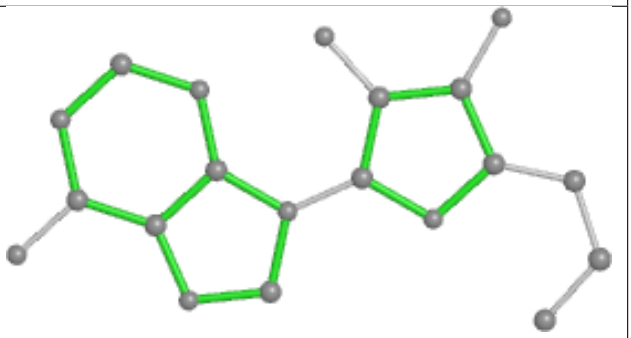
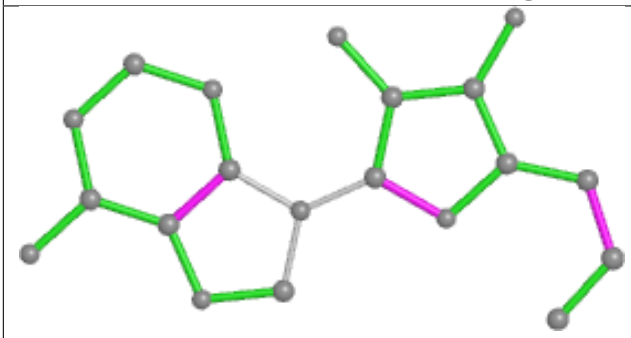
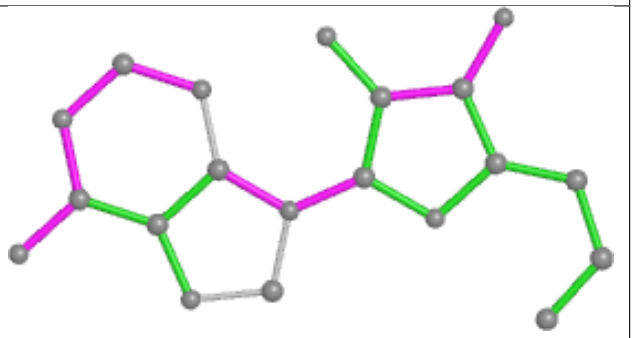


Rings

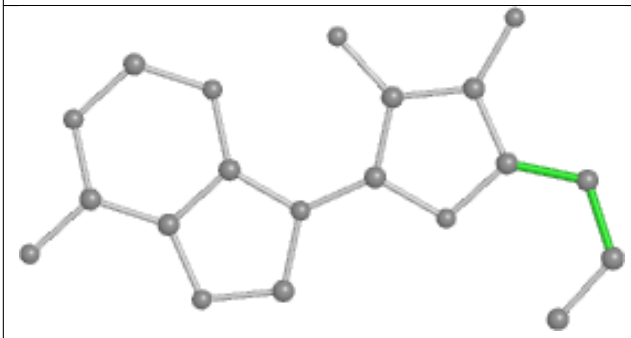
Ligand MTA C 401



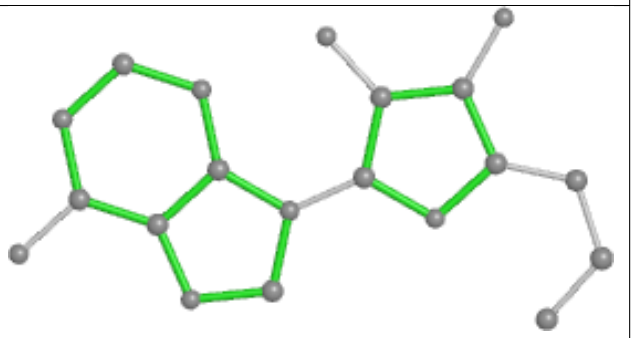
Bond lengths



Bond angles

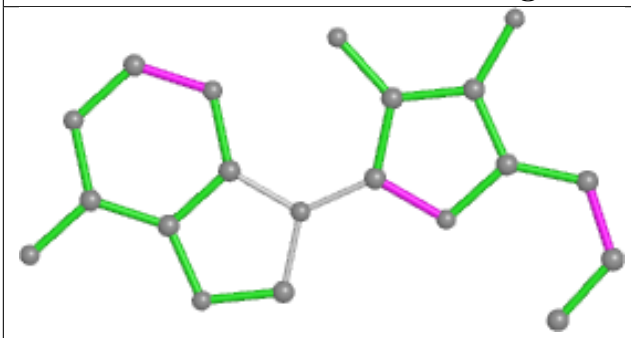


Torsions

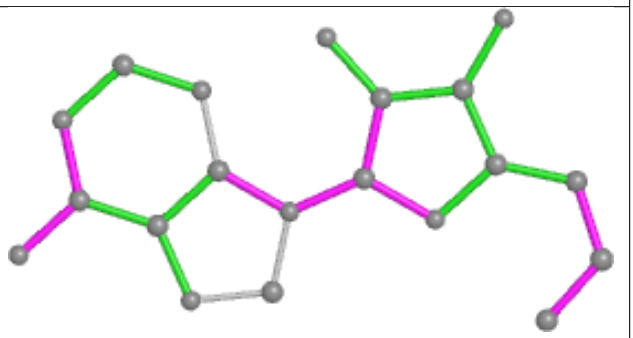


Rings

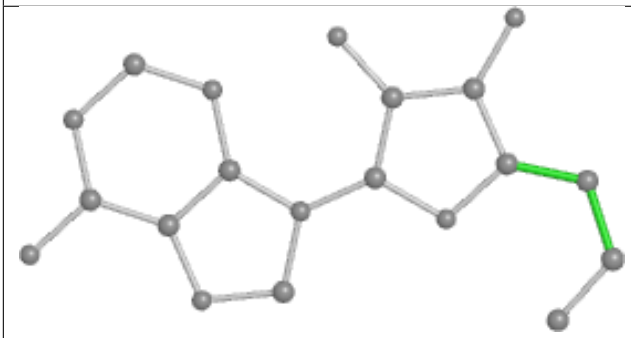
Ligand MTA A 401



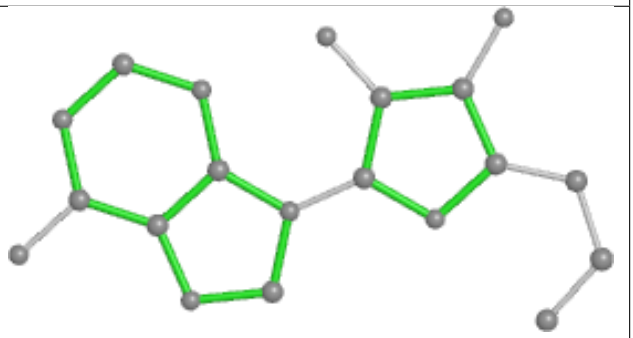
Bond lengths



Bond angles

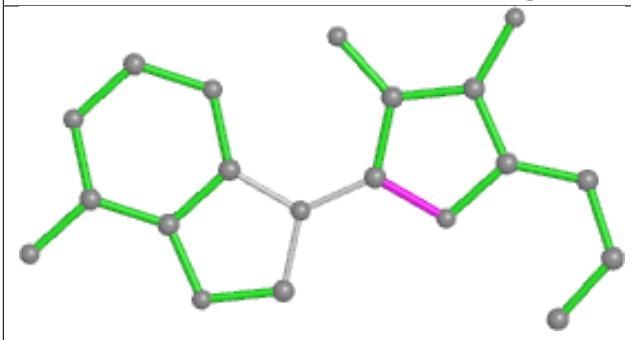


Torsions

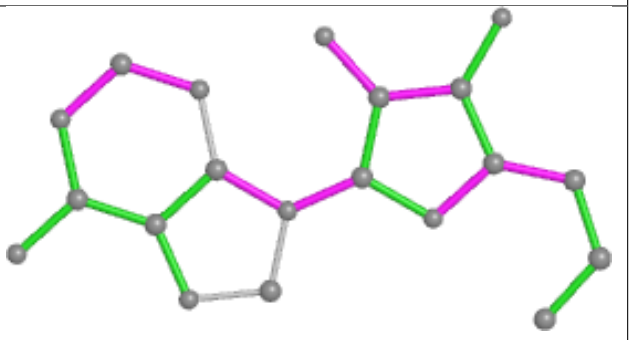


Rings

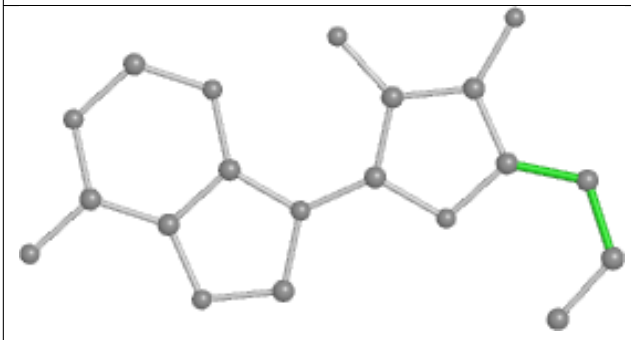
Ligand MTA E 401



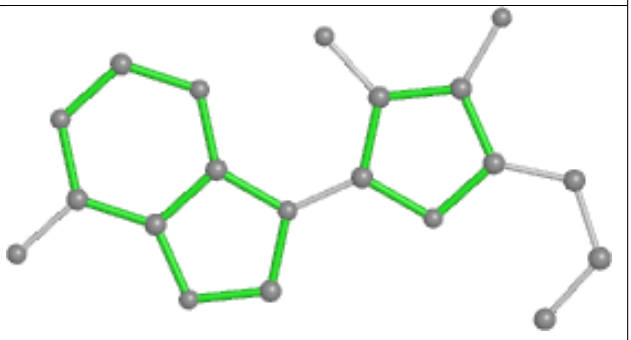
Bond lengths



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, 95^{th} 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^2)	Q<0.9
1	A	353/371 (95%)	-0.08	10 (2%)	53	51	19, 30, 51, 87	0
1	B	354/371 (95%)	-0.11	12 (3%)	45	41	19, 31, 54, 100	0
1	C	353/371 (95%)	-0.14	9 (2%)	57	55	25, 38, 62, 78	1 (0%)
1	D	353/371 (95%)	0.06	24 (6%)	17	15	25, 36, 60, 79	0
1	E	353/371 (95%)	0.31	32 (9%)	9	8	31, 47, 75, 99	1 (0%)
1	F	353/371 (95%)	0.44	35 (9%)	7	6	32, 55, 86, 105	0
1	G	353/371 (95%)	0.33	27 (7%)	13	12	42, 58, 90, 129	3 (0%)
All	All	2472/2597 (95%)	0.11	149 (6%)	21	19	19, 42, 75, 129	5 (0%)

All (149) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	G	214	TYR	6.5
1	F	214	TYR	6.3
1	G	338	VAL	6.0
1	E	195	ILE	5.8
1	G	339	GLY	5.1
1	A	214	TYR	5.0
1	B	214	TYR	5.0
1	F	340	GLN	4.9
1	F	196	GLY	4.8
1	D	320	MET	4.6
1	E	116	ARG	4.4
1	E	214	TYR	4.4
1	F	195	ILE	4.3
1	F	338	VAL	4.3
1	B	283	ILE	4.2
1	E	186	LYS	4.1
1	F	283	ILE	3.9

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Mol	Chain	Res	Type	RSRZ
1	F	72	ARG	3.9
1	F	339	GLY	3.9
1	D	283	ILE	3.9
1	B	198	GLU	3.7
1	E	113	GLU	3.7
1	E	203	PHE	3.7
1	E	283	ILE	3.7
1	F	113	GLU	3.6
1	G	195	ILE	3.6
1	F	63	PHE	3.6
1	G	336	ILE	3.6
1	D	116	ARG	3.6
1	C	283	ILE	3.6
1	E	193	ASP	3.5
1	E	117	ASP	3.4
1	G	340	GLN	3.4
1	G	216	LEU	3.4
1	G	335	GLU	3.3
1	F	192	ALA	3.3
1	F	203	PHE	3.3
1	A	283	ILE	3.3
1	B	255	ILE	3.3
1	F	197	TYR	3.3
1	G	215	ALA	3.2
1	E	196	GLY	3.2
1	D	280	ILE	3.2
1	D	249	CYS	3.2
1	E	187	PHE	3.2
1	F	193	ASP	3.1
1	B	284	ILE	3.1
1	F	337	THR	3.1
1	F	0	HIS	3.1
1	F	81	TYR	3.0
1	E	65	ASN	3.0
1	E	114	ILE	2.9
1	G	337	THR	2.9
1	F	80	LYS	2.9
1	E	191	ALA	2.9
1	F	77	LEU	2.9
1	A	284	ILE	2.9
1	A	116	ARG	2.9
1	F	116	ARG	2.9

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Mol	Chain	Res	Type	RSRZ
1	F	60	TYR	2.8
1	E	255	ILE	2.8
1	C	93	HIS	2.8
1	F	76	GLU	2.8
1	E	309	VAL	2.8
1	G	190	LYS	2.8
1	A	280	ILE	2.8
1	E	200	ILE	2.8
1	G	296	VAL	2.7
1	A	321	PHE	2.7
1	D	339	GLY	2.7
1	F	213	ASP	2.7
1	G	301	ALA	2.7
1	F	341	GLU	2.7
1	B	321	PHE	2.7
1	A	255	ILE	2.7
1	C	65	ASN	2.7
1	D	253	PHE	2.7
1	G	125	PHE	2.7
1	D	113	GLU	2.6
1	F	323	ILE	2.6
1	E	198	GLU	2.6
1	G	116	ARG	2.6
1	F	280	ILE	2.6
1	G	196	GLY	2.6
1	C	280	ILE	2.6
1	D	195	ILE	2.6
1	G	302	TRP	2.6
1	D	337	THR	2.5
1	F	2	ARG	2.4
1	F	198	GLU	2.4
1	E	199	ASN	2.4
1	D	323	ILE	2.4
1	E	321	PHE	2.4
1	A	323	ILE	2.4
1	E	310	LYS	2.4
1	D	223	ILE	2.4
1	A	213	ASP	2.4
1	B	320	MET	2.4
1	E	192	ALA	2.4
1	B	196	GLY	2.4
1	D	222	PHE	2.3

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Mol	Chain	Res	Type	RSRZ
1	F	194	GLU	2.3
1	D	142	MET	2.3
1	F	281	THR	2.3
1	G	333	GLU	2.3
1	C	337	THR	2.3
1	B	280	ILE	2.3
1	G	294	GLY	2.3
1	G	72	ARG	2.3
1	D	109	GLU	2.3
1	G	117	ASP	2.3
1	C	341	GLU	2.3
1	F	62	ALA	2.2
1	B	254	GLY	2.2
1	D	196	GLY	2.2
1	F	320	MET	2.2
1	D	250	ALA	2.2
1	G	213	ASP	2.2
1	G	304	LEU	2.2
1	E	262	LEU	2.2
1	D	106	GLU	2.2
1	D	321	PHE	2.2
1	B	-2	GLY	2.2
1	C	338	VAL	2.2
1	E	280	ILE	2.2
1	C	72	ARG	2.2
1	C	116	ARG	2.2
1	E	189	GLU	2.1
1	E	190	LYS	2.1
1	F	58	LEU	2.1
1	F	201	GLU	2.1
1	G	194	GLU	2.1
1	G	341	GLU	2.1
1	E	2	ARG	2.1
1	E	319	TYR	2.1
1	E	164	VAL	2.1
1	A	106	GLU	2.1
1	B	72	ARG	2.1
1	G	209	LYS	2.1
1	D	117	ASP	2.1
1	F	334	ASP	2.1
1	E	197	TYR	2.1
1	D	224	THR	2.1

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Mol	Chain	Res	Type	RSRZ
1	D	255	ILE	2.1
1	E	109	GLU	2.0
1	G	231	GLU	2.0
1	D	251	GLY	2.0
1	E	302	TRP	2.0
1	D	284	ILE	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^{th} 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
6	PEG	E	405	7/7	0.59	0.16	63,64,67,68	0
6	PEG	A	407	7/7	0.85	0.17	52,56,66,72	0
7	EDO	E	404	4/4	0.85	0.18	69,69,72,73	0
7	EDO	D	405	4/4	0.86	0.08	56,57,60,61	0
4	GOL	A	405	6/6	0.87	0.22	34,53,65,65	0
3	N4P	F	402	14/14	0.89	0.17	24,27,34,35	0
4	GOL	B	403	6/6	0.89	0.11	36,48,56,56	0
4	GOL	A	403	6/6	0.91	0.14	53,57,62,62	0
4	GOL	A	404	6/6	0.92	0.10	42,60,63,64	0
2	MTA	F	401	20/20	0.92	0.14	26,28,30,31	0
2	MTA	G	401	20/20	0.92	0.22	35,37,40,41	0
4	GOL	D	403	6/6	0.92	0.19	49,57,64,70	0
7	EDO	D	404	4/4	0.93	0.21	44,54,55,59	0
3	N4P	G	402	14/14	0.93	0.13	32,39,41,41	0
3	N4P	C	402	14/14	0.93	0.10	13,16,18,18	0
2	MTA	C	401	20/20	0.94	0.14	12,13,15,17	0
2	MTA	D	401	20/20	0.94	0.11	13,14,16,17	0

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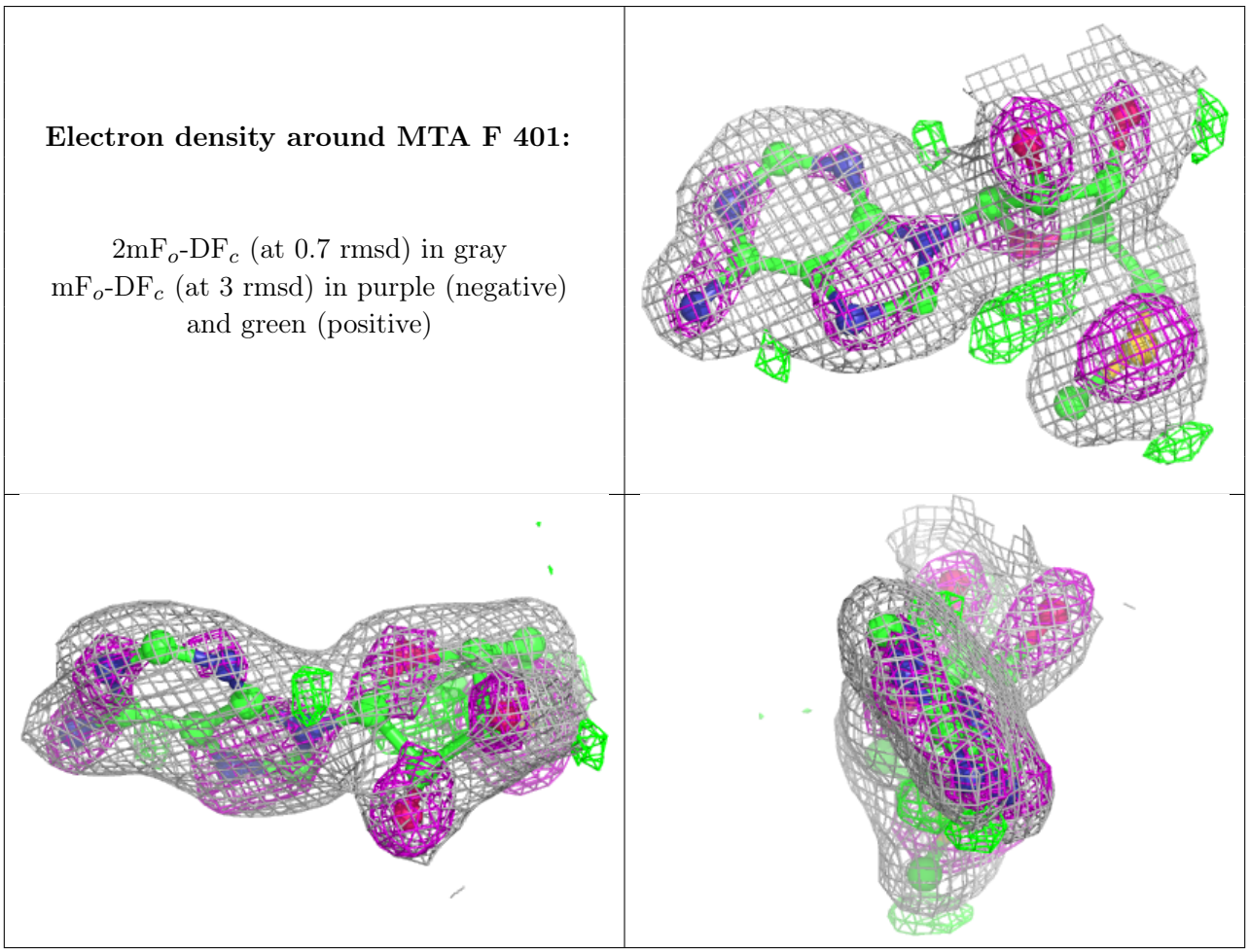
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	MTA	E	401	20/20	0.94	0.10	21,24,26,26	0
3	N4P	B	402	14/14	0.95	0.10	10,12,13,15	0
2	MTA	B	401	20/20	0.95	0.10	11,13,14,14	0
3	N4P	A	402	14/14	0.96	0.08	11,13,13,14	0
3	N4P	D	402	14/14	0.96	0.09	14,16,18,18	0
3	N4P	E	402	14/14	0.96	0.08	24,25,28,28	0
2	MTA	A	401	20/20	0.97	0.10	11,12,15,15	0
5	FE	E	403	1/1	0.98	0.03	50,50,50,50	1
5	FE	C	403	1/1	0.98	0.04	43,43,43,43	1
5	FE	G	403	1/1	0.99	0.04	46,46,46,46	1
5	FE	A	406	1/1	0.99	0.03	30,30,30,30	1

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.

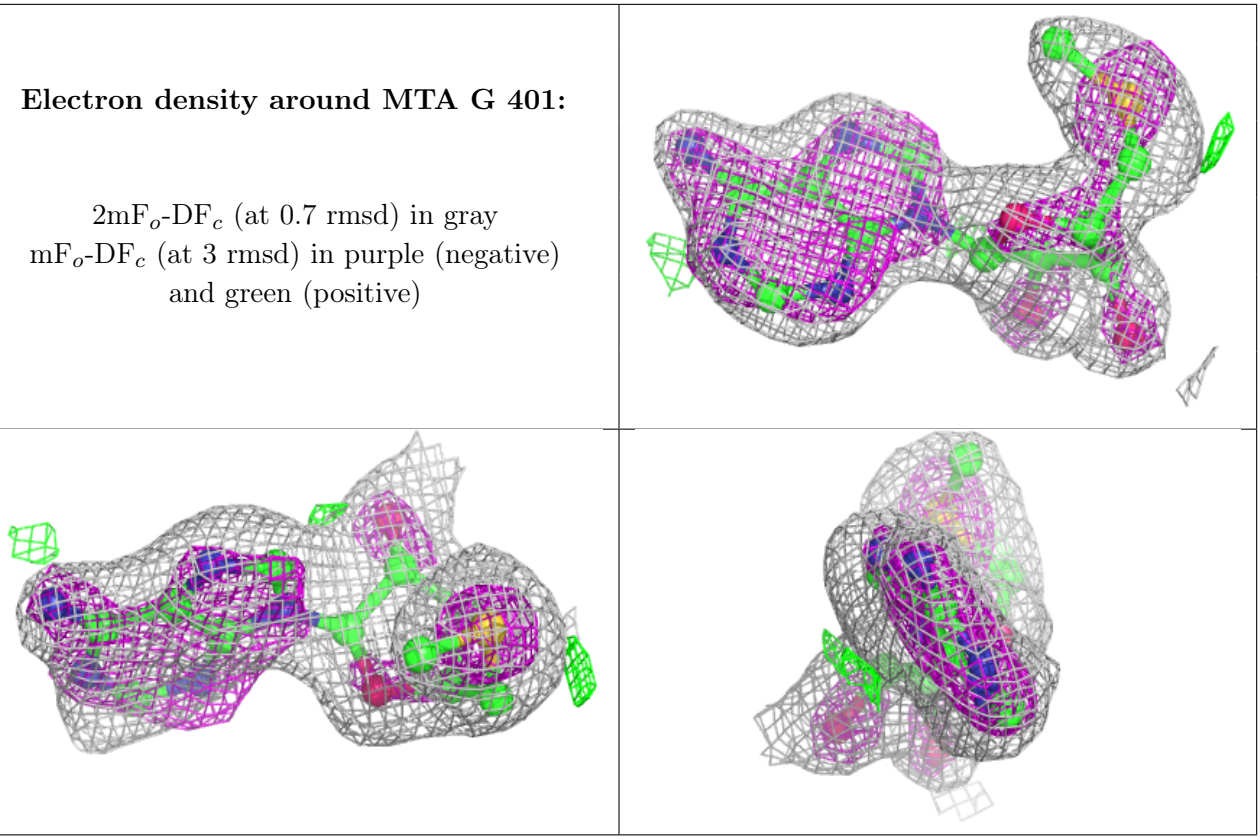
Electron density around MTA F 401:

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



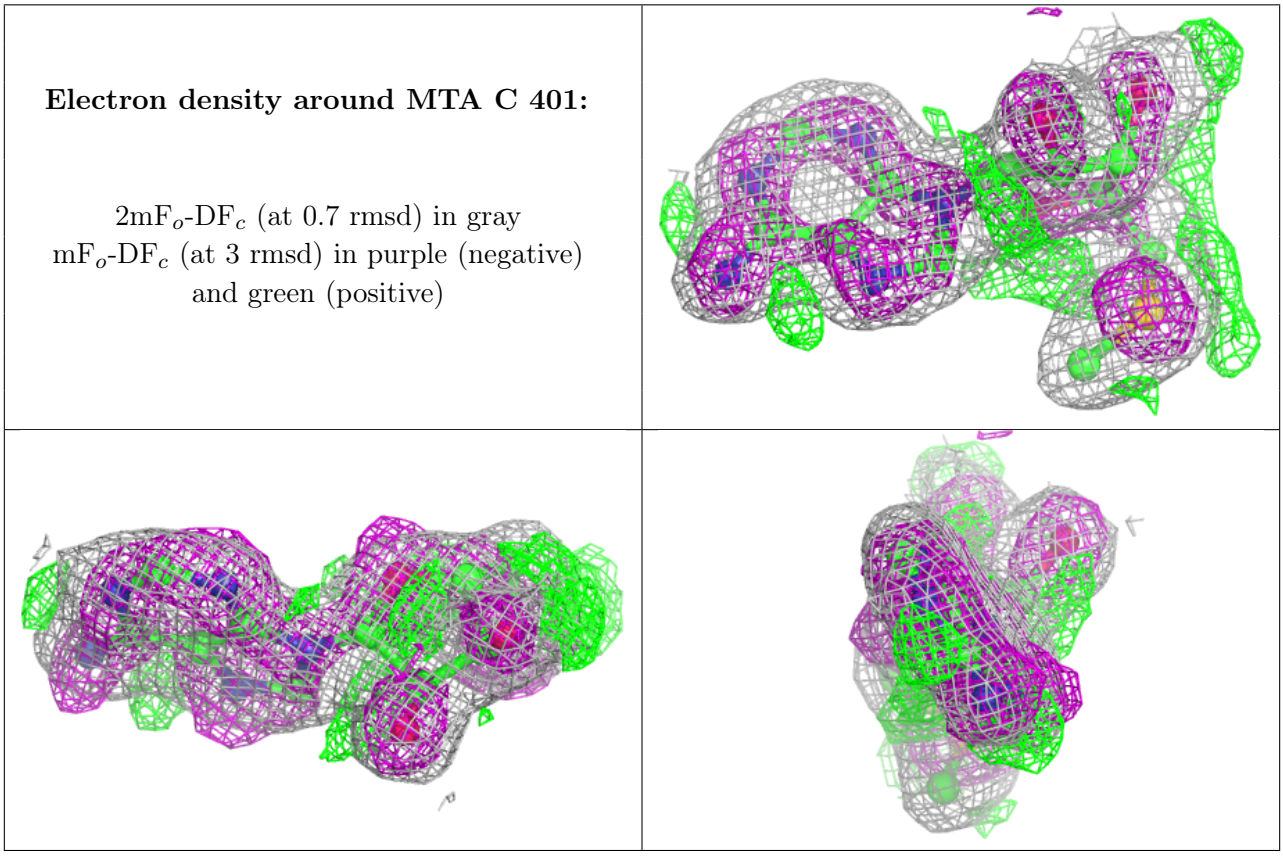
Electron density around MTA G 401:

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



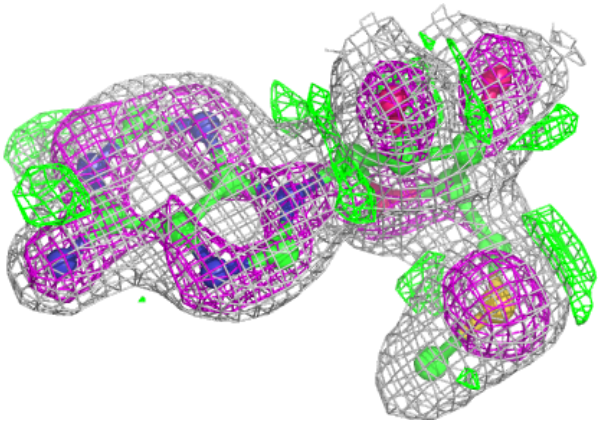
Electron density around MTA C 401:

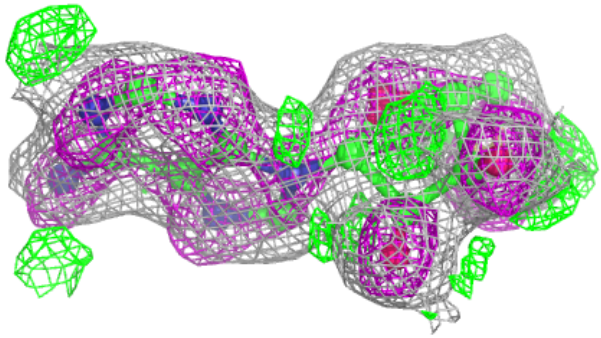
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

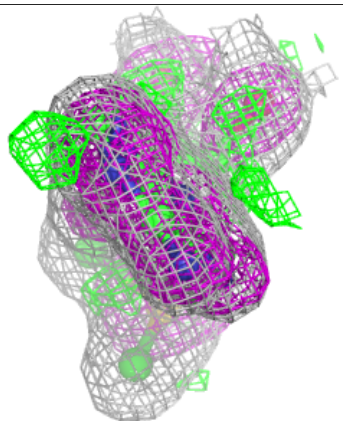


Electron density around MTA D 401:

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

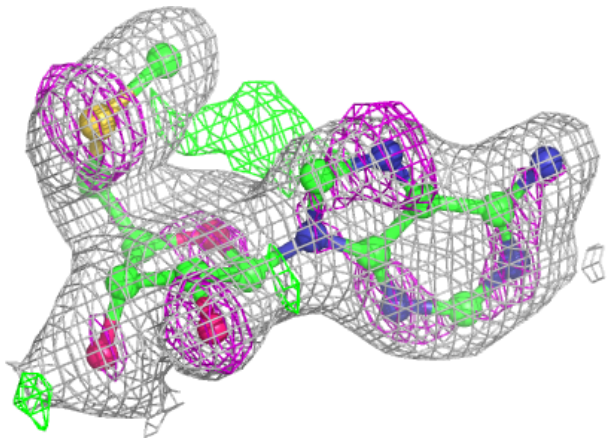


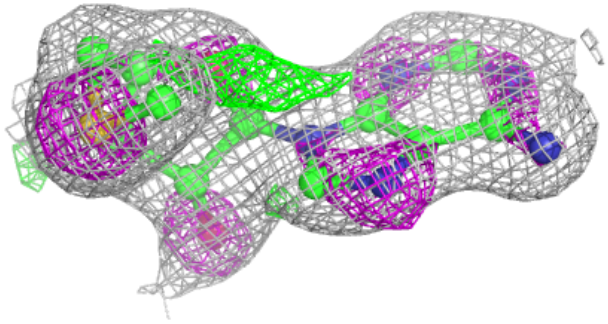


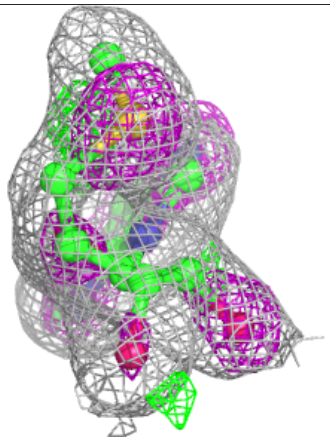


Electron density around MTA E 401:

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

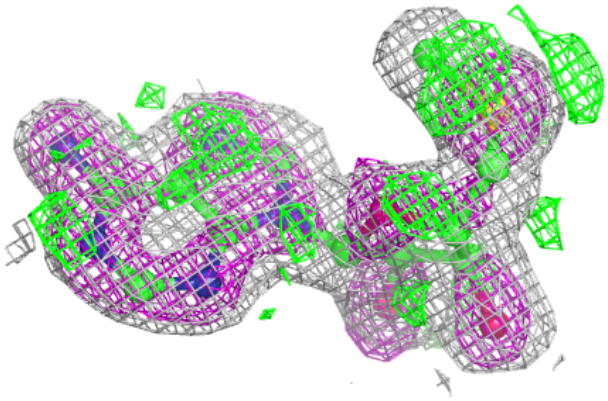


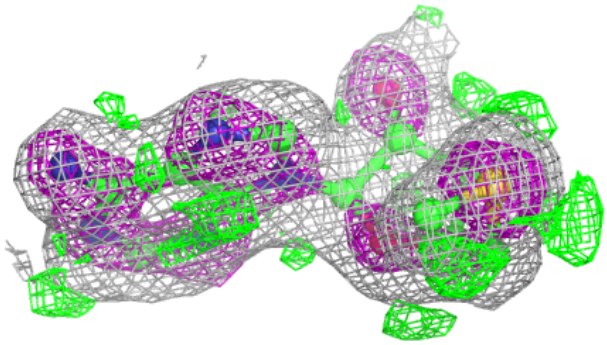


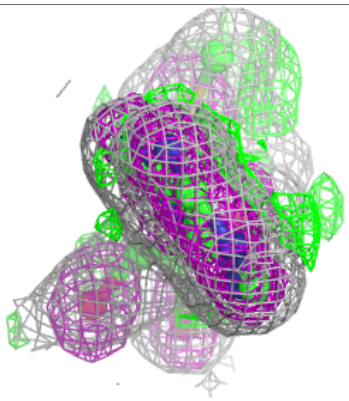


Electron density around MTA B 401:

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

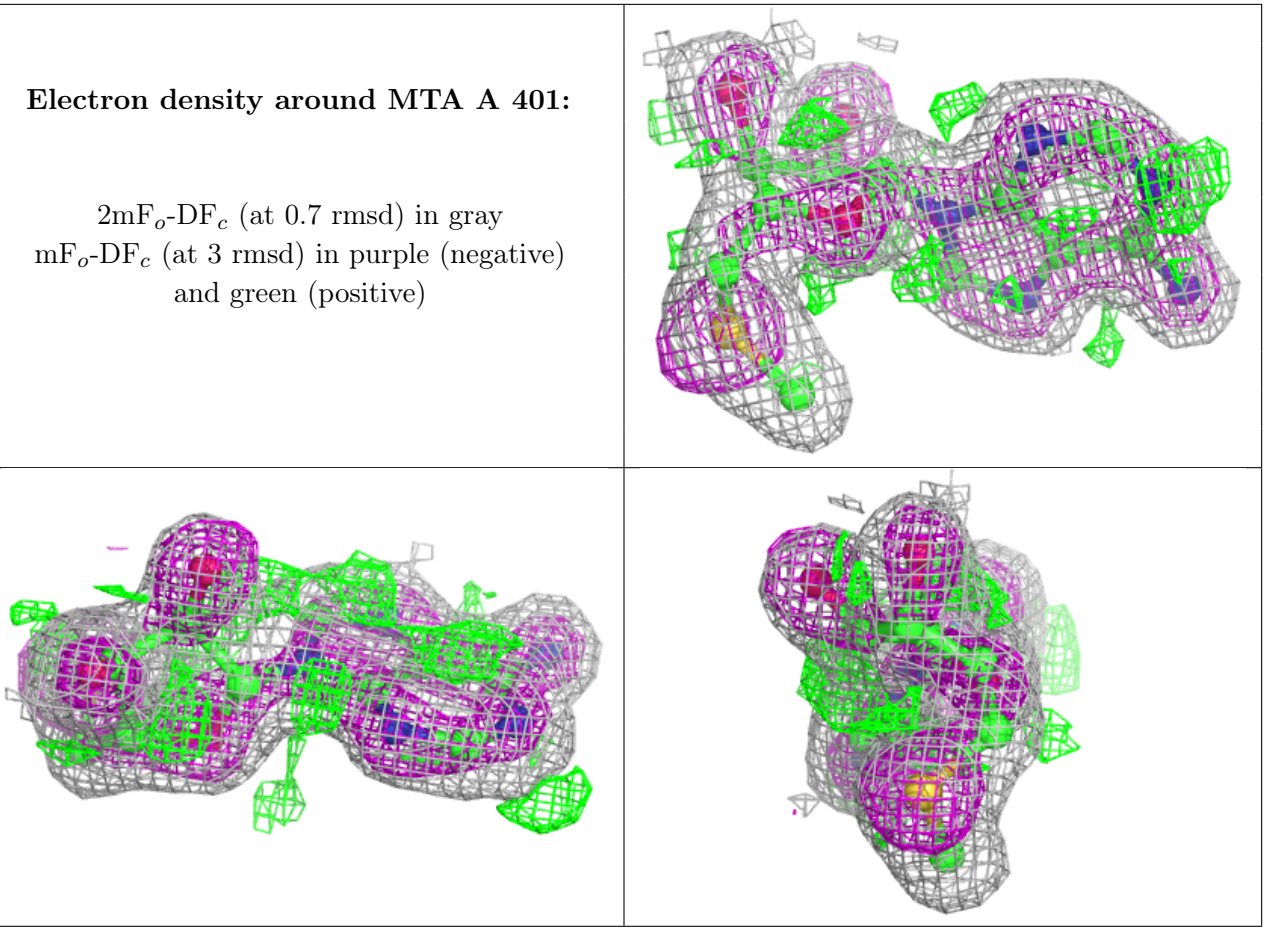






Electron density around MTA A 401:

$2mF_o$-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.