Full wwPDB X-ray Structure Validation Report (i)

Aug 18, 2025 – 06:21 PM EDT

PDB ID	:	9C5M / pdb_00009c5m
Title	:	Trypanosoma cruzi R19T/K20S/C64Y mutant beta-3-HBDH structure in complex with NADH and malonate (P1 space group)
Authors	:	Hashimoto, H.; Debler, E.W.
Deposited on	:	2024-06-06
Resolution	:	1.69 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 (i) 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 (i)) were used in the production of this report:

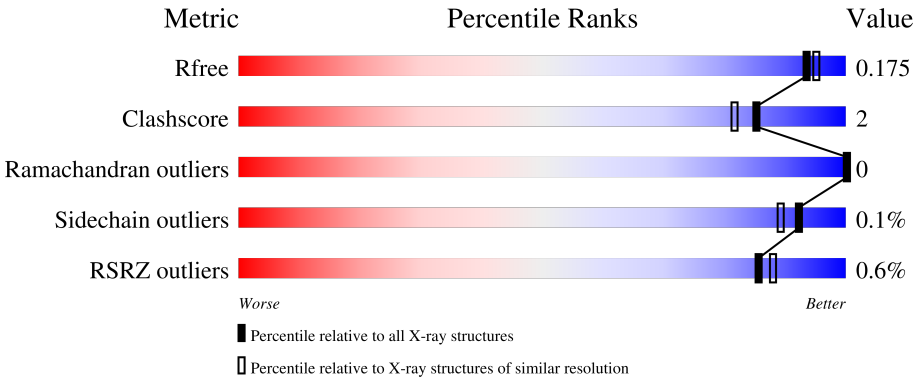
MolProbity	:	4-5-2 with Phenix2.0rc1
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.006 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

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 1.69 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}	164625	5161 (1.70-1.70)
Clashscore	180529	5671 (1.70-1.70)
Ramachandran outliers	177936	5594 (1.70-1.70)
Sidechain outliers	177891	5594 (1.70-1.70)
RSRZ outliers	164620	5159 (1.70-1.70)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=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	270	94%
1	B	270	95%
1	C	270	92% 6%
1	D	270	94%
1	E	270	94%

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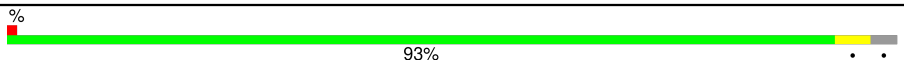
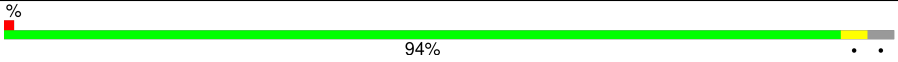
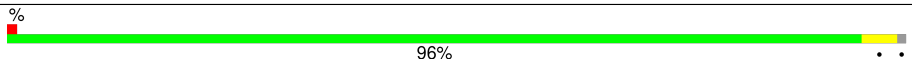
Mol	Chain	Length	Quality of chain
1	F	270	
1	G	270	
1	H	270	

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 34633 atoms, of which 16268 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 Hydroxybutyrate dehydrogenase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	262	Total	C	H	N	O	S	0	5	0
			3945	1235	1986	339	372	13			
1	B	265	Total	C	H	N	O	S	0	3	0
			3982	1244	2008	342	375	13			
1	C	263	Total	C	H	N	O	S	0	2	0
			3933	1232	1980	339	369	13			
1	D	261	Total	C	H	N	O	S	0	3	0
			3931	1230	1985	337	367	12			
1	E	262	Total	C	H	N	O	S	0	4	0
			3954	1237	1995	339	369	14			
1	F	263	Total	C	H	N	O	S	0	2	0
			3942	1233	1987	340	370	12			
1	G	262	Total	C	H	N	O	S	0	4	0
			3947	1235	1992	338	369	13			
1	H	268	Total	C	H	N	O	S	0	4	0
			4047	1264	2043	347	378	15			

There are 56 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-3	GLY	-	expression tag	UNP A0A2V2VPF1
A	-2	PRO	-	expression tag	UNP A0A2V2VPF1
A	-1	HIS	-	expression tag	UNP A0A2V2VPF1
A	0	MET	-	expression tag	UNP A0A2V2VPF1
A	19	THR	ARG	engineered mutation	UNP A0A2V2VPF1
A	20	SER	LYS	engineered mutation	UNP A0A2V2VPF1
A	64	TYR	CYS	engineered mutation	UNP A0A2V2VPF1
B	-3	GLY	-	expression tag	UNP A0A2V2VPF1
B	-2	PRO	-	expression tag	UNP A0A2V2VPF1
B	-1	HIS	-	expression tag	UNP A0A2V2VPF1
B	0	MET	-	expression tag	UNP A0A2V2VPF1
B	19	THR	ARG	engineered mutation	UNP A0A2V2VPF1
B	20	SER	LYS	engineered mutation	UNP A0A2V2VPF1

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Chain	Residue	Modelled	Actual	Comment	Reference
B	64	TYR	CYS	engineered mutation	UNP A0A2V2VPF1
C	-3	GLY	-	expression tag	UNP A0A2V2VPF1
C	-2	PRO	-	expression tag	UNP A0A2V2VPF1
C	-1	HIS	-	expression tag	UNP A0A2V2VPF1
C	0	MET	-	expression tag	UNP A0A2V2VPF1
C	19	THR	ARG	engineered mutation	UNP A0A2V2VPF1
C	20	SER	LYS	engineered mutation	UNP A0A2V2VPF1
C	64	TYR	CYS	engineered mutation	UNP A0A2V2VPF1
D	-3	GLY	-	expression tag	UNP A0A2V2VPF1
D	-2	PRO	-	expression tag	UNP A0A2V2VPF1
D	-1	HIS	-	expression tag	UNP A0A2V2VPF1
D	0	MET	-	expression tag	UNP A0A2V2VPF1
D	19	THR	ARG	engineered mutation	UNP A0A2V2VPF1
D	20	SER	LYS	engineered mutation	UNP A0A2V2VPF1
D	64	TYR	CYS	engineered mutation	UNP A0A2V2VPF1
E	-3	GLY	-	expression tag	UNP A0A2V2VPF1
E	-2	PRO	-	expression tag	UNP A0A2V2VPF1
E	-1	HIS	-	expression tag	UNP A0A2V2VPF1
E	0	MET	-	expression tag	UNP A0A2V2VPF1
E	19	THR	ARG	engineered mutation	UNP A0A2V2VPF1
E	20	SER	LYS	engineered mutation	UNP A0A2V2VPF1
E	64	TYR	CYS	engineered mutation	UNP A0A2V2VPF1
F	-3	GLY	-	expression tag	UNP A0A2V2VPF1
F	-2	PRO	-	expression tag	UNP A0A2V2VPF1
F	-1	HIS	-	expression tag	UNP A0A2V2VPF1
F	0	MET	-	expression tag	UNP A0A2V2VPF1
F	19	THR	ARG	engineered mutation	UNP A0A2V2VPF1
F	20	SER	LYS	engineered mutation	UNP A0A2V2VPF1
F	64	TYR	CYS	engineered mutation	UNP A0A2V2VPF1
G	-3	GLY	-	expression tag	UNP A0A2V2VPF1
G	-2	PRO	-	expression tag	UNP A0A2V2VPF1
G	-1	HIS	-	expression tag	UNP A0A2V2VPF1
G	0	MET	-	expression tag	UNP A0A2V2VPF1
G	19	THR	ARG	engineered mutation	UNP A0A2V2VPF1
G	20	SER	LYS	engineered mutation	UNP A0A2V2VPF1
G	64	TYR	CYS	engineered mutation	UNP A0A2V2VPF1
H	-3	GLY	-	expression tag	UNP A0A2V2VPF1
H	-2	PRO	-	expression tag	UNP A0A2V2VPF1
H	-1	HIS	-	expression tag	UNP A0A2V2VPF1
H	0	MET	-	expression tag	UNP A0A2V2VPF1
H	19	THR	ARG	engineered mutation	UNP A0A2V2VPF1
H	20	SER	LYS	engineered mutation	UNP A0A2V2VPF1

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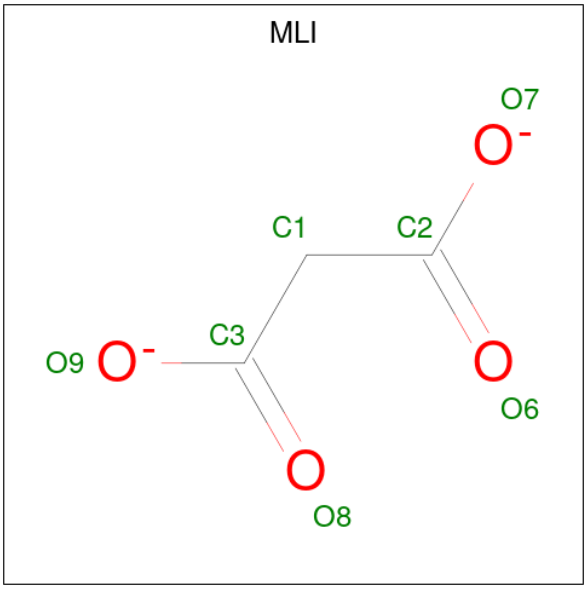
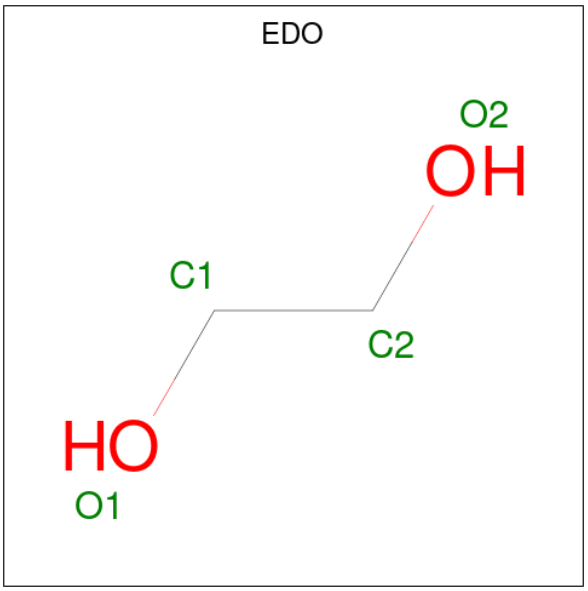
Chain	Residue	Modelled	Actual	Comment	Reference
H	64	TYR	CYS	engineered mutation	UNP A0A2V2VPF1

- Molecule 2 is MALONATE ION (CCD ID: MLI) (formula: $C_3H_2O_4$).



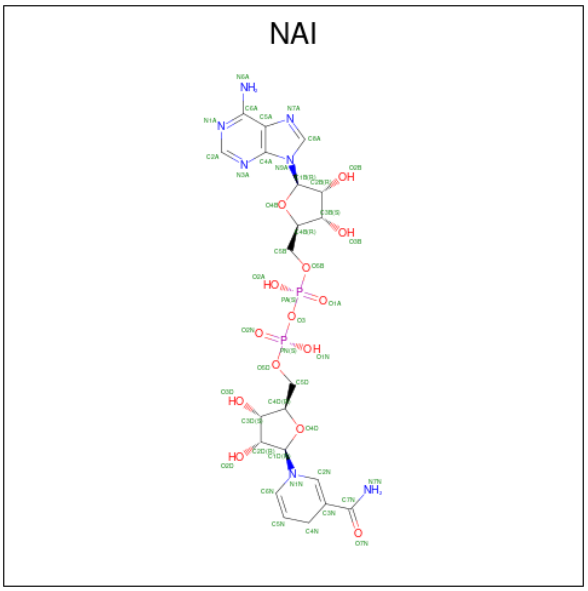
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C H O 9 3 2 4	0	0
2	B	1	Total C H O 9 3 2 4	0	0
2	C	1	Total C H O 9 3 2 4	0	0
2	D	1	Total C H O 9 3 2 4	0	0
2	E	1	Total C H O 9 3 2 4	0	0
2	F	1	Total C H O 9 3 2 4	0	0
2	G	1	Total C H O 9 3 2 4	0	0
2	H	1	Total C H O 9 3 2 4	0	0

- Molecule 3 is 1,2-ETHANEDIOL (CCD ID: EDO) (formula: $C_2H_6O_2$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	H	O	0	0
			10	2	6	2		
3	A	1	Total	C	H	O	0	0
			10	2	6	2		
3	A	1	Total	C	H	O	0	0
			10	2	6	2		
3	B	1	Total	C	H	O	0	0
			10	2	6	2		
3	C	1	Total	C	H	O	0	0
			10	2	6	2		
3	D	1	Total	C	H	O	0	0
			10	2	6	2		
3	E	1	Total	C	H	O	0	0
			10	2	6	2		
3	F	1	Total	C	H	O	0	0
			10	2	6	2		
3	G	1	Total	C	H	O	0	0
			10	2	6	2		
3	G	1	Total	C	H	O	0	0
			10	2	6	2		

- Molecule 4 is 1,4-DIHYDRONICOTINAMIDE ADENINE DINUCLEOTIDE (CCD ID: NAI) (formula: $C_{21}H_{29}N_7O_{14}P_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
4	A	1	Total	C	H	N	O	P	0	0
			71	21	27	7	14	2		
4	B	1	Total	C	H	N	O	P	0	0
			71	21	27	7	14	2		
4	C	1	Total	C	H	N	O	P	0	0
			71	21	27	7	14	2		
4	D	1	Total	C	H	N	O	P	0	0
			71	21	27	7	14	2		
4	E	1	Total	C	H	N	O	P	0	0
			71	21	27	7	14	2		
4	F	1	Total	C	H	N	O	P	0	0
			71	21	27	7	14	2		
4	G	1	Total	C	H	N	O	P	0	0
			71	21	27	7	14	2		
4	H	1	Total	C	H	N	O	P	0	0
			71	21	27	7	14	2		

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	299	Total	O	0	0
			299	299		
5	B	270	Total	O	0	0
			270	270		
5	C	233	Total	O	0	0
			233	233		
5	D	247	Total	O	0	0
			247	247		

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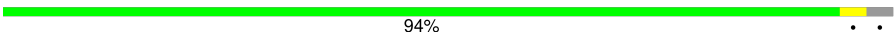
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	E	320	Total O 320 320	0	0
5	F	272	Total O 272 272	0	0
5	G	266	Total O 266 266	0	0
5	H	305	Total O 305 305	0	0

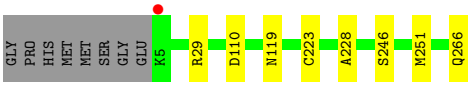
3 Residue-property plots (i)

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: Hydroxybutyrate dehydrogenase

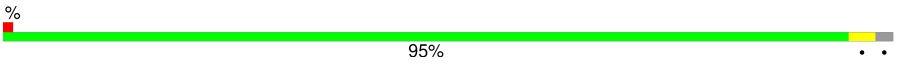
Chain A:





• Molecule 1: Hydroxybutyrate dehydrogenase

Chain B:

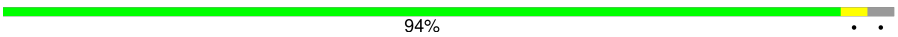


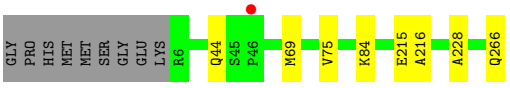
• Molecule 1: Hydroxybutyrate dehydrogenase

Chain C:

• Molecule 1: Hydroxybutyrate dehydrogenase

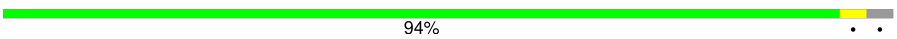
Chain D:

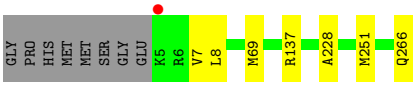




• Molecule 1: Hydroxybutyrate dehydrogenase

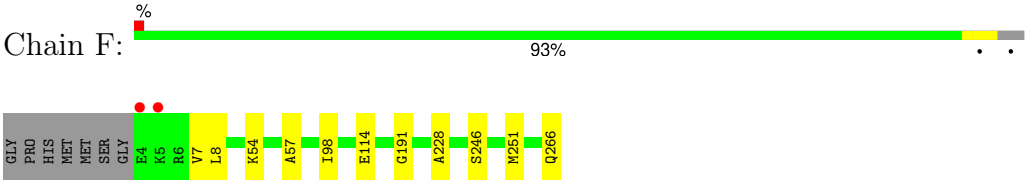
Chain E:





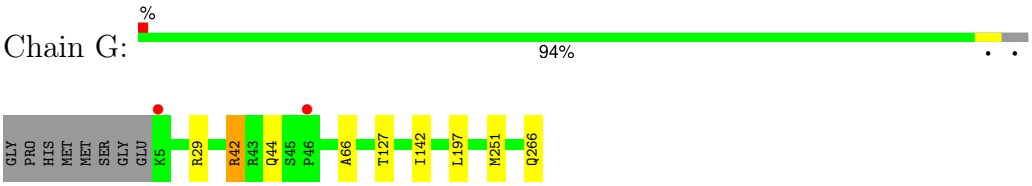
• Molecule 1: Hydroxybutyrate dehydrogenase

Chain F:



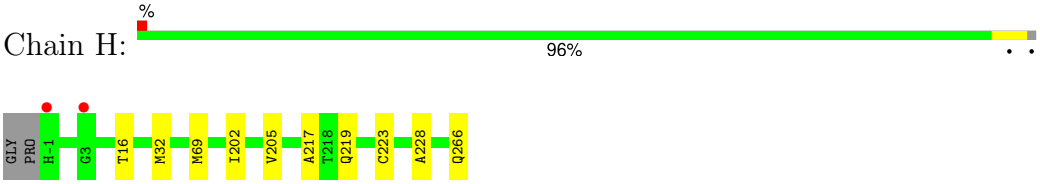
• Molecule 1: Hydroxybutyrate dehydrogenase

Chain G:



• Molecule 1: Hydroxybutyrate dehydrogenase

Chain H:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	71.82Å 73.03Å 124.17Å 74.18° 74.42° 67.35°	Depositor
Resolution (Å)	40.16 – 1.69 40.16 – 1.69	Depositor EDS
% Data completeness (in resolution range)	96.3 (40.16-1.69) 96.2 (40.16-1.69)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.54 (at 1.69Å)	Xtriage
Refinement program	PHENIX 1.20.1_4487	Depositor
R, R_{free}	0.148 , 0.175 0.149 , 0.175	Depositor DCC
R_{free} test set	1987 reflections (0.81%)	wwPDB-VP
Wilson B-factor (Å^2)	18.8	Xtriage
Anisotropy	0.339	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.39 , 50.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.047 for -k,-h,-l	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	34633	wwPDB-VP
Average B, all atoms (Å^2)	26.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.63% 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: MLI, NAI, EDO

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	0.25	0/2003	0.49	0/2716
1	B	0.24	0/2013	0.47	0/2726
1	C	0.24	0/1989	0.47	0/2697
1	D	0.25	0/1985	0.48	0/2692
1	E	0.25	0/2000	0.49	0/2710
1	F	0.24	0/1991	0.46	0/2699
1	G	0.25	0/1997	0.47	0/2708
1	H	0.26	0/2047	0.48	0/2771
All	All	0.25	0/16025	0.48	0/21719

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1959	1986	1982	8	0
1	B	1974	2008	2008	7	0
1	C	1953	1980	1980	10	0
1	D	1946	1985	1985	11	0
1	E	1959	1995	1993	7	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	1955	1987	1987	9	0
1	G	1955	1992	1992	6	0
1	H	2004	2043	2045	10	0
2	A	7	2	2	1	0
2	B	7	2	2	1	0
2	C	7	2	2	1	0
2	D	7	2	2	1	0
2	E	7	2	2	1	0
2	F	7	2	2	1	0
2	G	7	2	2	0	0
2	H	7	2	2	1	0
3	A	12	18	18	1	0
3	B	4	6	6	0	0
3	C	4	6	6	0	0
3	D	4	6	6	0	0
3	E	4	6	6	0	0
3	F	4	6	6	0	0
3	G	8	12	12	0	0
4	A	44	27	27	1	0
4	B	44	27	27	1	0
4	C	44	27	27	1	0
4	D	44	27	27	1	0
4	E	44	27	27	1	0
4	F	44	27	27	2	0
4	G	44	27	27	0	0
4	H	44	27	27	1	0
5	A	299	0	0	5	1
5	B	270	0	0	5	0
5	C	233	0	0	3	0
5	D	247	0	0	9	0
5	E	320	0	0	4	1
5	F	272	0	0	5	1
5	G	266	0	0	1	1
5	H	305	0	0	1	0
All	All	18365	16268	16264	69	2

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 2.

All (69) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:137:ARG:NH1	5:C:501:HOH:O	1.92	1.01
1:B:2:SER:N	5:B:501:HOH:O	2.06	0.87
1:D:215:GLU:OE1	5:D:502:HOH:O	1.96	0.84
1:A:246[B]:SER:OG	5:A:1201:HOH:O	1.94	0.84
1:D:215:GLU:OE2	5:D:501:HOH:O	1.95	0.83
1:B:6:ARG:NH2	5:B:503:HOH:O	2.11	0.82
1:F:246[B]:SER:OG	5:F:501:HOH:O	2.00	0.80
1:A:266:GLN:O	5:A:1202:HOH:O	2.04	0.75
1:F:266:GLN:O	5:F:502:HOH:O	2.05	0.75
1:E:266:GLN:O	5:E:501:HOH:O	2.04	0.75
2:E:401:MLI:C2	4:E:403:NAI:H4N	2.17	0.75
5:A:1202:HOH:O	1:C:266:GLN:O	2.05	0.73
1:D:44:GLN:NE2	5:D:503:HOH:O	2.22	0.72
2:D:401:MLI:C3	4:D:403:NAI:H4N	2.20	0.72
5:D:657:HOH:O	1:H:223:CYS:SG	2.47	0.72
5:F:502:HOH:O	1:H:266:GLN:O	2.07	0.71
1:B:266:GLN:O	5:B:502:HOH:O	2.09	0.71
1:C:246[B]:SER:OG	5:C:503:HOH:O	2.09	0.71
5:E:501:HOH:O	1:G:266:GLN:O	2.08	0.70
5:B:502:HOH:O	1:D:266:GLN:O	2.11	0.68
1:C:127:THR:HG23	1:C:142:ILE:HD13	1.75	0.68
2:F:401:MLI:C3	4:F:403:NAI:H4N	2.25	0.66
2:B:401:MLI:C3	4:B:403:NAI:H4N	2.28	0.63
2:C:401:MLI:C3	4:C:403:NAI:H4N	2.29	0.62
1:C:223:CYS:HB2	5:C:655:HOH:O	2.01	0.60
2:A:401:MLI:C2	4:A:405:NAI:H4N	2.32	0.59
5:D:501:HOH:O	1:H:219:GLN:HG2	2.05	0.57
1:H:205[A]:VAL:HG23	1:H:217:ALA:HB1	1.88	0.56
1:D:215:GLU:O	5:D:501:HOH:O	2.18	0.55
1:E:251:MET:HE1	1:F:228:ALA:HB3	1.91	0.53
1:D:215:GLU:C	5:D:501:HOH:O	2.53	0.52
1:D:84:LYS:HD2	1:D:84:LYS:O	2.09	0.52
5:D:501:HOH:O	1:H:219:GLN:CG	2.57	0.51
1:D:69:MET:HE1	1:D:75:VAL:HG13	1.92	0.51
1:E:69[A]:MET:HE2	5:E:516:HOH:O	2.11	0.50
1:C:251:MET:HE1	1:D:228:ALA:HB3	1.94	0.50
1:H:16:THR:HG21	1:H:69[A]:MET:HE2	1.93	0.50
1:A:251:MET:HE1	1:B:228:ALA:HB3	1.94	0.50
1:E:69[B]:MET:HA	1:E:69[B]:MET:HE2	1.94	0.50
1:B:70:LYS:NZ	1:B:114:GLU:OE2	2.45	0.49
1:E:228:ALA:HB3	1:F:251:MET:HE1	1.93	0.49
1:G:127:THR:HG23	1:G:142:ILE:HD13	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:7:VAL:HG13	1:E:8:LEU:HG	1.96	0.48
1:H:32:MET:SD	5:H:512:HOH:O	2.61	0.48
1:A:223:CYS:HB2	5:A:1403:HOH:O	2.13	0.48
1:A:110[B]:ASP:OD1	5:A:1203:HOH:O	2.20	0.47
1:C:32:MET:HE2	1:C:58:TYR:CE1	2.51	0.46
2:H:401:MLI:C3	4:H:402:NAI:H4N	2.46	0.45
1:F:7:VAL:HG13	1:F:8:LEU:HG	1.99	0.45
1:F:54:LYS:NZ	5:F:504:HOH:O	2.45	0.44
1:A:29:ARG:HA	1:A:29:ARG:HD2	1.88	0.44
1:G:44:GLN:HG2	1:G:66:ALA:HB2	1.99	0.44
1:B:246:SER:HB2	5:B:641:HOH:O	2.17	0.44
1:G:251:MET:HE1	1:H:228:ALA:HB3	1.98	0.44
1:G:42:ARG:HB2	5:G:526:HOH:O	2.19	0.43
1:A:119:ASN:HA	3:A:402:EDO:H12	2.00	0.43
1:D:216:ALA:HA	5:D:501:HOH:O	2.18	0.43
1:F:98:ILE:HD11	1:F:114:GLU:HG2	2.01	0.43
1:H:202:ILE:O	1:H:205[A]:VAL:HG22	2.19	0.42
1:F:57:ALA:HB2	5:F:504:HOH:O	2.19	0.42
1:C:25:GLY:O	1:C:29:ARG:HG2	2.20	0.42
1:G:197:LEU:C	1:G:197:LEU:HD23	2.44	0.42
1:C:69:MET:CE	1:C:75:VAL:HG22	2.50	0.41
1:C:112:TRP:CE3	1:C:159:ALA:HB2	2.55	0.41
1:E:137:ARG:NH1	5:E:506:HOH:O	2.54	0.41
1:H:69[B]:MET:HA	1:H:69[B]:MET:HE2	2.01	0.41
1:A:228:ALA:HB3	1:B:251:MET:HE1	2.03	0.41
1:D:84:LYS:HD2	1:D:84:LYS:C	2.46	0.41
1:F:191:GLY:O	4:F:403:NAI:H42N	2.21	0.41

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

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:F:503:HOH:O	5:G:679:HOH:O[1_545]	2.13	0.07
5:A:1486:HOH:O	5:E:779:HOH:O[1_654]	2.18	0.02

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	265/270 (98%)	261 (98%)	4 (2%)	0	100	100
1	B	266/270 (98%)	260 (98%)	6 (2%)	0	100	100
1	C	263/270 (97%)	259 (98%)	4 (2%)	0	100	100
1	D	262/270 (97%)	258 (98%)	4 (2%)	0	100	100
1	E	264/270 (98%)	260 (98%)	4 (2%)	0	100	100
1	F	263/270 (97%)	259 (98%)	4 (2%)	0	100	100
1	G	264/270 (98%)	260 (98%)	4 (2%)	0	100	100
1	H	270/270 (100%)	266 (98%)	4 (2%)	0	100	100
All	All	2117/2160 (98%)	2083 (98%)	34 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	203/206 (98%)	203 (100%)	0	100	100
1	B	205/206 (100%)	205 (100%)	0	100	100
1	C	201/206 (98%)	201 (100%)	0	100	100
1	D	202/206 (98%)	202 (100%)	0	100	100
1	E	203/206 (98%)	203 (100%)	0	100	100
1	F	202/206 (98%)	202 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	G	203/206 (98%)	201 (99%)	2 (1%)	73 64
1	H	209/206 (102%)	209 (100%)	0	100 100
All	All	1628/1648 (99%)	1626 (100%)	2 (0%)	92 89

All (2) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	G	29	ARG
1	G	42	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	94	ASN
1	B	94	ASN
1	C	94	ASN
1	D	94	ASN
1	F	94	ASN
1	G	94	ASN
1	H	94	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

26 ligands are modelled in this entry.

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	$\#\|Z\| > 2$
4	NAI	G	404	-	43,48,48	1.33	4 (9%)	50,73,73	0.75	1 (2%)
4	NAI	C	403	-	43,48,48	1.44	7 (16%)	50,73,73	1.25	4 (8%)
3	EDO	C	402	-	3,3,3	0.43	0	2,2,2	0.40	0
3	EDO	F	402	-	3,3,3	0.54	0	2,2,2	0.18	0
2	MLI	A	401	-	6,6,6	1.58	1 (16%)	7,7,7	1.48	1 (14%)
3	EDO	A	403	-	3,3,3	0.68	0	2,2,2	0.08	0
2	MLI	D	401	-	6,6,6	1.55	1 (16%)	7,7,7	1.30	1 (14%)
3	EDO	B	402	-	3,3,3	0.43	0	2,2,2	0.39	0
2	MLI	F	401	-	6,6,6	1.47	1 (16%)	7,7,7	1.42	2 (28%)
3	EDO	A	404	-	3,3,3	0.64	0	2,2,2	0.01	0
2	MLI	H	401	-	6,6,6	1.63	1 (16%)	7,7,7	1.24	1 (14%)
4	NAI	H	402	-	43,48,48	1.42	8 (18%)	50,73,73	1.23	4 (8%)
3	EDO	G	403	-	3,3,3	0.43	0	2,2,2	0.41	0
2	MLI	B	401	-	6,6,6	1.50	1 (16%)	7,7,7	1.47	1 (14%)
2	MLI	C	401	-	6,6,6	1.64	1 (16%)	7,7,7	1.05	0
2	MLI	G	401	-	6,6,6	1.76	1 (16%)	7,7,7	1.00	0
4	NAI	A	405	-	43,48,48	1.63	9 (20%)	50,73,73	1.29	5 (10%)
3	EDO	G	402	-	3,3,3	0.46	0	2,2,2	0.21	0
4	NAI	B	403	-	43,48,48	1.56	11 (25%)	50,73,73	1.25	6 (12%)
4	NAI	E	403	-	43,48,48	1.57	9 (20%)	50,73,73	1.29	6 (12%)
3	EDO	E	402	-	3,3,3	0.53	0	2,2,2	0.22	0
3	EDO	A	402	-	3,3,3	0.43	0	2,2,2	0.50	0
4	NAI	D	403	-	43,48,48	1.48	9 (20%)	50,73,73	1.29	6 (12%)
3	EDO	D	402	-	3,3,3	0.43	0	2,2,2	0.43	0
2	MLI	E	401	-	6,6,6	1.57	1 (16%)	7,7,7	1.36	1 (14%)
4	NAI	F	403	-	43,48,48	1.60	10 (23%)	50,73,73	1.36	7 (14%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAI	G	404	-	-	6/25/72/72	0/5/5/5
4	NAI	C	403	-	-	5/25/72/72	0/5/5/5
3	EDO	C	402	-	-	0/1/1/1	-
3	EDO	F	402	-	-	1/1/1/1	-
2	MLI	A	401	-	-	0/4/4/4	-
3	EDO	A	403	-	-	1/1/1/1	-
2	MLI	D	401	-	-	0/4/4/4	-
3	EDO	B	402	-	-	1/1/1/1	-
2	MLI	F	401	-	-	0/4/4/4	-
3	EDO	A	404	-	-	1/1/1/1	-
2	MLI	H	401	-	-	0/4/4/4	-
4	NAI	H	402	-	-	6/25/72/72	0/5/5/5
3	EDO	G	403	-	-	0/1/1/1	-
2	MLI	B	401	-	-	0/4/4/4	-
2	MLI	C	401	-	-	0/4/4/4	-
2	MLI	G	401	-	-	0/4/4/4	-
4	NAI	A	405	-	-	4/25/72/72	0/5/5/5
3	EDO	G	402	-	-	1/1/1/1	-
4	NAI	B	403	-	-	6/25/72/72	0/5/5/5
4	NAI	E	403	-	-	7/25/72/72	0/5/5/5
3	EDO	E	402	-	-	1/1/1/1	-
3	EDO	A	402	-	-	0/1/1/1	-
4	NAI	D	403	-	-	5/25/72/72	0/5/5/5
3	EDO	D	402	-	-	0/1/1/1	-
2	MLI	E	401	-	-	0/4/4/4	-
4	NAI	F	403	-	-	5/25/72/72	0/5/5/5

All (75) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	G	404	NAI	C4N-C3N	-6.13	1.38	1.50
4	A	405	NAI	O7N-C7N	-4.24	1.14	1.24
4	E	403	NAI	PA-O1A	-4.02	1.36	1.50
4	H	402	NAI	PA-O2A	-3.79	1.37	1.55
4	A	405	NAI	PN-O1N	-3.70	1.38	1.55
4	E	403	NAI	PN-O1N	-3.55	1.38	1.55
4	A	405	NAI	PA-O2A	-3.29	1.40	1.55
4	B	403	NAI	O7N-C7N	-3.29	1.16	1.24
4	D	403	NAI	PA-O2A	-3.20	1.40	1.55
4	F	403	NAI	PA-O1A	-3.18	1.39	1.50
4	D	403	NAI	PN-O1N	-3.16	1.40	1.55

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	C	403	NAI	PN-O1N	-2.97	1.41	1.55
4	C	403	NAI	PN-O2N	-2.95	1.40	1.50
4	F	403	NAI	O7N-C7N	-2.95	1.17	1.24
4	A	405	NAI	PA-O1A	-2.91	1.40	1.50
4	G	404	NAI	C8A-N7A	-2.90	1.29	1.34
2	G	401	MLI	C1-C3	2.85	1.55	1.51
4	B	403	NAI	O4B-C4B	-2.85	1.38	1.45
4	D	403	NAI	O7N-C7N	-2.84	1.17	1.24
4	A	405	NAI	PN-O3	-2.81	1.56	1.59
4	B	403	NAI	PA-O1A	-2.80	1.41	1.50
4	C	403	NAI	PA-O2A	-2.78	1.42	1.55
4	B	403	NAI	PN-O3	-2.78	1.56	1.59
4	F	403	NAI	C6N-N1N	-2.74	1.30	1.37
4	B	403	NAI	C4A-N3A	-2.72	1.32	1.35
4	B	403	NAI	O4D-C4D	-2.69	1.39	1.45
4	B	403	NAI	PA-O2A	-2.69	1.42	1.55
4	F	403	NAI	PA-O2A	-2.68	1.42	1.55
4	E	403	NAI	PA-O2A	-2.66	1.43	1.55
2	H	401	MLI	C1-C3	2.66	1.55	1.51
4	F	403	NAI	PN-O1N	-2.66	1.43	1.55
4	D	403	NAI	C4A-N3A	-2.65	1.32	1.35
4	A	405	NAI	C4A-N3A	-2.65	1.32	1.35
4	A	405	NAI	C6N-N1N	-2.62	1.30	1.37
2	C	401	MLI	C1-C3	2.58	1.55	1.51
2	D	401	MLI	C1-C3	2.55	1.55	1.51
4	E	403	NAI	C4A-N3A	-2.55	1.32	1.35
4	F	403	NAI	PN-O3	-2.54	1.56	1.59
4	H	402	NAI	PN-O1N	-2.54	1.43	1.55
4	H	402	NAI	C4A-N3A	-2.52	1.32	1.35
4	F	403	NAI	C4A-N3A	-2.51	1.32	1.35
4	C	403	NAI	O7N-C7N	-2.51	1.18	1.24
4	C	403	NAI	O4B-C4B	-2.47	1.39	1.45
4	H	402	NAI	PA-O1A	-2.43	1.42	1.50
4	F	403	NAI	PN-O2N	-2.41	1.42	1.50
4	C	403	NAI	C6N-N1N	-2.40	1.31	1.37
4	B	403	NAI	C6N-N1N	-2.39	1.31	1.37
2	A	401	MLI	C1-C3	2.37	1.54	1.51
4	D	403	NAI	PA-O1A	-2.36	1.42	1.50
2	E	401	MLI	C1-C3	2.35	1.54	1.51
4	D	403	NAI	C5A-N7A	-2.34	1.31	1.39
4	D	403	NAI	PN-O2N	-2.34	1.42	1.50
4	A	405	NAI	O4D-C4D	-2.34	1.39	1.45

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	405	NAI	C5A-N7A	-2.32	1.31	1.39
4	H	402	NAI	PN-O2N	-2.29	1.42	1.50
4	F	403	NAI	C5A-N7A	-2.29	1.31	1.39
2	F	401	MLI	C1-C3	2.25	1.54	1.51
2	B	401	MLI	C1-C3	2.22	1.54	1.51
4	H	402	NAI	C5A-N7A	-2.22	1.31	1.39
4	E	403	NAI	O7N-C7N	-2.19	1.19	1.24
4	D	403	NAI	C6N-N1N	-2.19	1.31	1.37
4	H	402	NAI	C4N-C5N	-2.18	1.43	1.49
4	C	403	NAI	C4N-C5N	-2.15	1.43	1.49
4	E	403	NAI	PN-O3	-2.14	1.57	1.59
4	G	404	NAI	C1B-N9A	-2.14	1.44	1.49
4	F	403	NAI	O4B-C4B	-2.13	1.40	1.45
4	E	403	NAI	C6N-N1N	-2.12	1.32	1.37
4	E	403	NAI	C4N-C5N	-2.10	1.43	1.49
4	E	403	NAI	C5A-N7A	-2.09	1.32	1.39
4	B	403	NAI	PN-O1N	-2.08	1.45	1.55
4	H	402	NAI	C6N-N1N	-2.06	1.32	1.37
4	D	403	NAI	PN-O3	-2.06	1.57	1.59
4	B	403	NAI	C5A-N7A	-2.02	1.32	1.39
4	B	403	NAI	O5B-C5B	-2.01	1.37	1.44
4	G	404	NAI	PA-O2A	-2.01	1.46	1.55

All (46) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	F	403	NAI	N3A-C2A-N1A	-4.62	122.40	128.67
4	D	403	NAI	N3A-C2A-N1A	-4.38	122.73	128.67
4	A	405	NAI	N3A-C2A-N1A	-4.09	123.13	128.67
4	H	402	NAI	N3A-C2A-N1A	-4.08	123.14	128.67
4	E	403	NAI	N3A-C2A-N1A	-4.02	123.21	128.67
4	B	403	NAI	C4A-C5A-N7A	-3.91	105.20	109.34
4	C	403	NAI	C4A-C5A-N7A	-3.22	105.94	109.34
4	C	403	NAI	N3A-C2A-N1A	-3.20	124.34	128.67
4	F	403	NAI	C1D-N1N-C6N	-3.10	114.21	120.77
4	B	403	NAI	N3A-C2A-N1A	-3.09	124.48	128.67
4	C	403	NAI	C1B-N9A-C4A	-2.89	121.56	126.64
4	E	403	NAI	N6A-C6A-N1A	2.84	124.41	118.33
4	A	405	NAI	C4A-C5A-N7A	-2.83	106.35	109.34
4	H	402	NAI	N6A-C6A-N1A	2.80	124.32	118.33
4	D	403	NAI	C6N-N1N-C2N	2.80	122.31	119.32
4	G	404	NAI	C5A-C6A-N6A	2.67	124.38	120.31

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	B	403	NAI	O4B-C1B-N9A	2.65	112.26	108.75
4	E	403	NAI	O4D-C1D-N1N	2.63	113.10	108.08
4	D	403	NAI	C1D-N1N-C6N	-2.63	115.21	120.77
4	E	403	NAI	O4B-C1B-N9A	2.58	112.17	108.75
4	F	403	NAI	O2A-PA-O3	-2.54	100.41	107.27
4	B	403	NAI	O1N-PN-O3	2.47	113.96	107.27
4	F	403	NAI	C4A-C5A-N7A	-2.47	106.73	109.34
2	B	401	MLI	O6-C2-C1	-2.46	115.10	122.11
4	C	403	NAI	C1D-N1N-C6N	-2.43	115.63	120.77
2	A	401	MLI	O6-C2-C1	-2.40	115.28	122.11
4	B	403	NAI	C1B-N9A-C4A	-2.38	122.47	126.64
4	F	403	NAI	C6N-N1N-C2N	2.37	121.86	119.32
4	A	405	NAI	C1D-N1N-C6N	-2.36	115.78	120.77
4	B	403	NAI	C1D-N1N-C6N	-2.36	115.78	120.77
4	A	405	NAI	O4B-C1B-N9A	2.35	111.87	108.75
2	E	401	MLI	O6-C2-C1	-2.27	115.65	122.11
4	H	402	NAI	C1D-N1N-C6N	-2.24	116.03	120.77
4	D	403	NAI	O1N-PN-O3	2.18	113.17	107.27
2	F	401	MLI	O6-C2-C1	-2.15	115.99	122.11
4	D	403	NAI	O4D-C1D-N1N	2.14	112.17	108.08
4	H	402	NAI	O4B-C1B-N9A	2.14	111.58	108.75
4	D	403	NAI	N6A-C6A-N1A	2.13	122.89	118.33
4	E	403	NAI	C1D-N1N-C6N	-2.09	116.35	120.77
2	H	401	MLI	O8-C3-C1	-2.08	116.20	122.11
4	F	403	NAI	O2A-PA-O1A	2.06	122.05	112.44
2	F	401	MLI	O8-C3-C1	-2.05	116.28	122.11
4	E	403	NAI	O2A-PA-O1A	2.03	121.90	112.44
4	F	403	NAI	O4D-C1D-N1N	2.03	111.95	108.08
4	A	405	NAI	O2A-PA-O1A	2.02	121.84	112.44
2	D	401	MLI	O6-C2-C1	-2.01	116.37	122.11

There are no chirality outliers.

All (50) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	405	NAI	C5D-O5D-PN-O3
4	A	405	NAI	C5D-O5D-PN-O1N
4	A	405	NAI	C5D-O5D-PN-O2N
4	B	403	NAI	C5D-O5D-PN-O3
4	B	403	NAI	C5D-O5D-PN-O1N
4	B	403	NAI	C5D-O5D-PN-O2N
4	C	403	NAI	C5D-O5D-PN-O3

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Mol	Chain	Res	Type	Atoms
4	C	403	NAI	C5D-O5D-PN-O1N
4	C	403	NAI	C5D-O5D-PN-O2N
4	D	403	NAI	C5D-O5D-PN-O3
4	D	403	NAI	C5D-O5D-PN-O1N
4	E	403	NAI	C5D-O5D-PN-O3
4	E	403	NAI	C5D-O5D-PN-O1N
4	F	403	NAI	C5D-O5D-PN-O3
4	F	403	NAI	C5D-O5D-PN-O1N
4	F	403	NAI	C5D-O5D-PN-O2N
4	G	404	NAI	C5D-O5D-PN-O3
4	G	404	NAI	C5D-O5D-PN-O2N
4	H	402	NAI	C5D-O5D-PN-O3
4	H	402	NAI	C5D-O5D-PN-O2N
3	A	403	EDO	O1-C1-C2-O2
3	A	404	EDO	O1-C1-C2-O2
3	F	402	EDO	O1-C1-C2-O2
3	E	402	EDO	O1-C1-C2-O2
3	G	402	EDO	O1-C1-C2-O2
4	E	403	NAI	O4D-C1D-N1N-C6N
4	G	404	NAI	O4D-C1D-N1N-C6N
4	A	405	NAI	O4D-C1D-N1N-C6N
4	B	403	NAI	O4D-C1D-N1N-C6N
4	C	403	NAI	O4D-C1D-N1N-C6N
4	D	403	NAI	O4D-C1D-N1N-C6N
4	F	403	NAI	O4D-C1D-N1N-C6N
4	D	403	NAI	C5D-O5D-PN-O2N
4	E	403	NAI	C5D-O5D-PN-O2N
4	G	404	NAI	C5D-O5D-PN-O1N
4	H	402	NAI	C5D-O5D-PN-O1N
4	F	403	NAI	PA-O3-PN-O1N
4	H	402	NAI	PA-O3-PN-O2N
4	H	402	NAI	O4D-C1D-N1N-C6N
4	C	403	NAI	PA-O3-PN-O1N
4	E	403	NAI	PA-O3-PN-O1N
3	B	402	EDO	O1-C1-C2-O2
4	B	403	NAI	PA-O3-PN-O2N
4	D	403	NAI	PA-O3-PN-O1N
4	E	403	NAI	PA-O3-PN-O2N
4	E	403	NAI	O4B-C4B-C5B-O5B
4	G	404	NAI	O4B-C4B-C5B-O5B
4	H	402	NAI	O4B-C4B-C5B-O5B
4	B	403	NAI	PA-O3-PN-O1N

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Mol	Chain	Res	Type	Atoms
4	G	404	NAI	PA-O3-PN-O1N

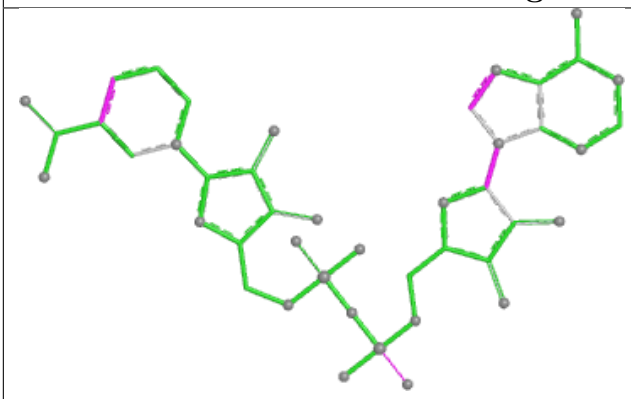
There are no ring outliers.

15 monomers are involved in 9 short contacts:

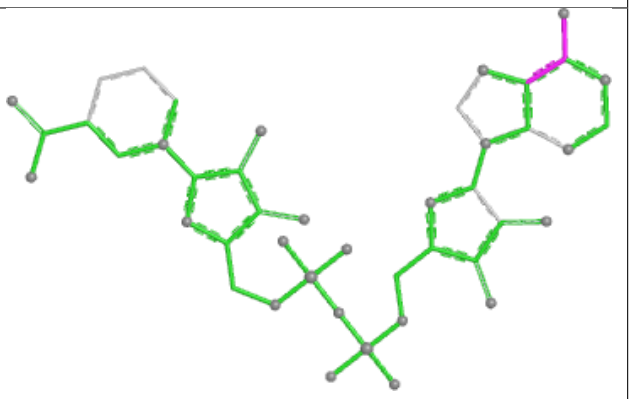
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	C	403	NAI	1	0
2	A	401	MLI	1	0
2	D	401	MLI	1	0
2	F	401	MLI	1	0
2	H	401	MLI	1	0
4	H	402	NAI	1	0
2	B	401	MLI	1	0
2	C	401	MLI	1	0
4	A	405	NAI	1	0
4	B	403	NAI	1	0
4	E	403	NAI	1	0
3	A	402	EDO	1	0
4	D	403	NAI	1	0
2	E	401	MLI	1	0
4	F	403	NAI	2	0

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.

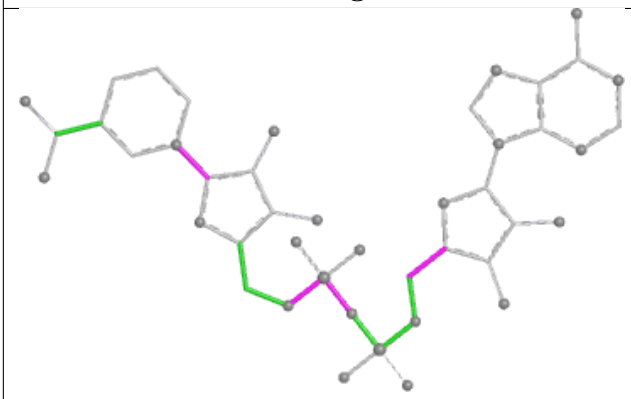
Ligand NAI G 404



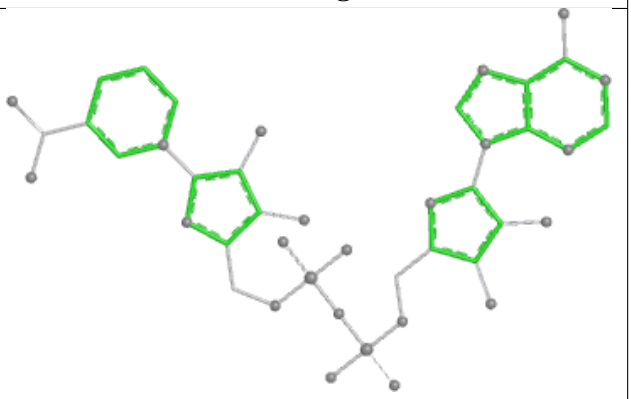
Bond lengths



Bond angles

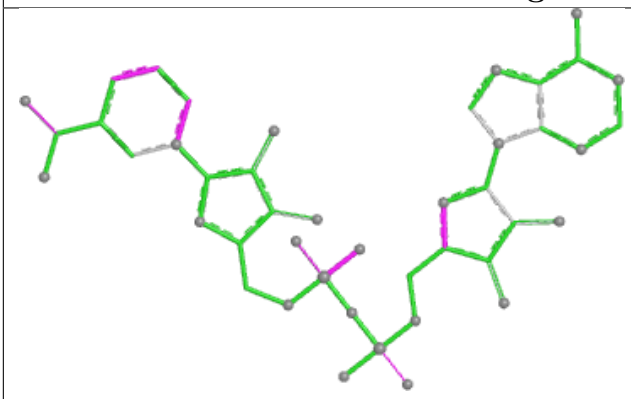


Torsions

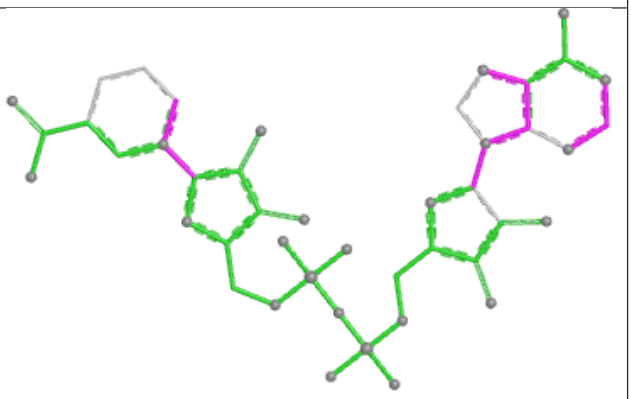


Rings

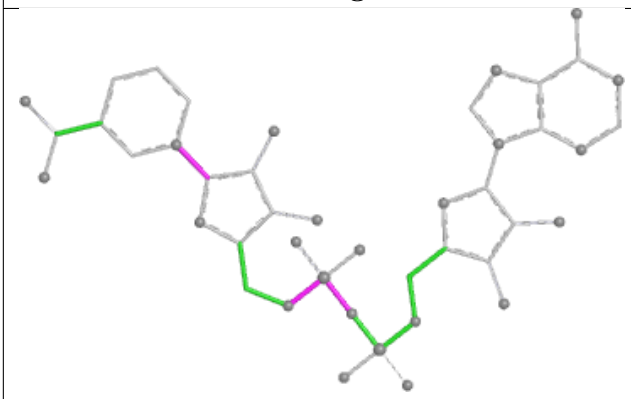
Ligand NAI C 403



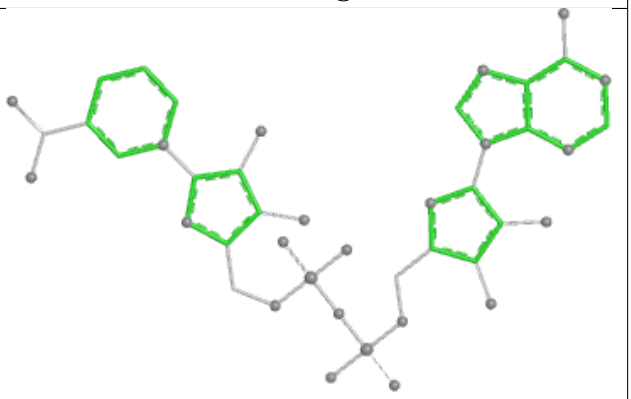
Bond lengths



Bond angles

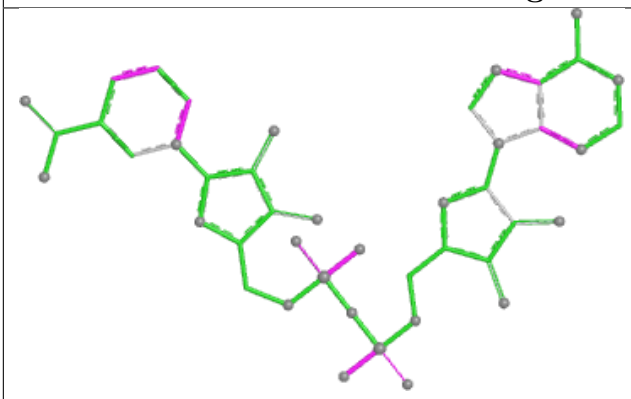


Torsions

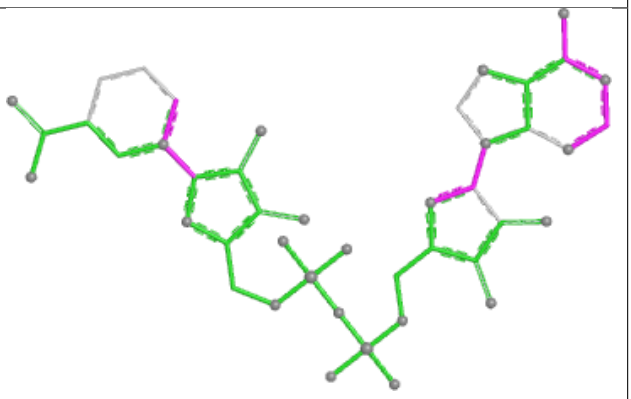


Rings

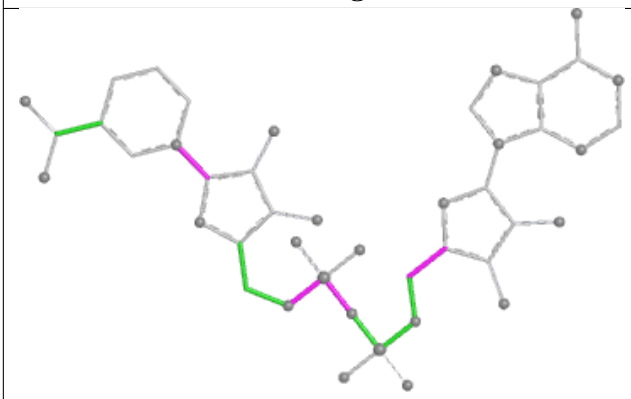
Ligand NAI H 402



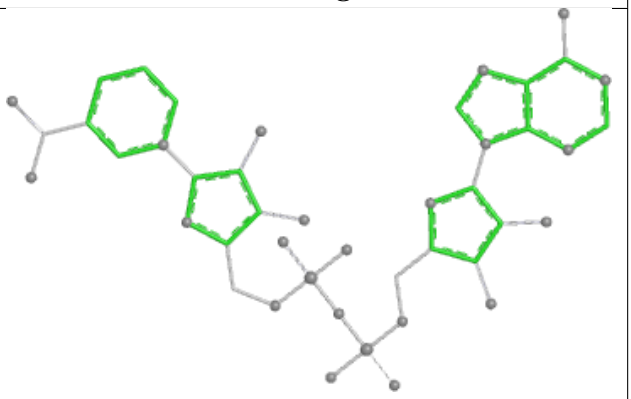
Bond lengths



Bond angles

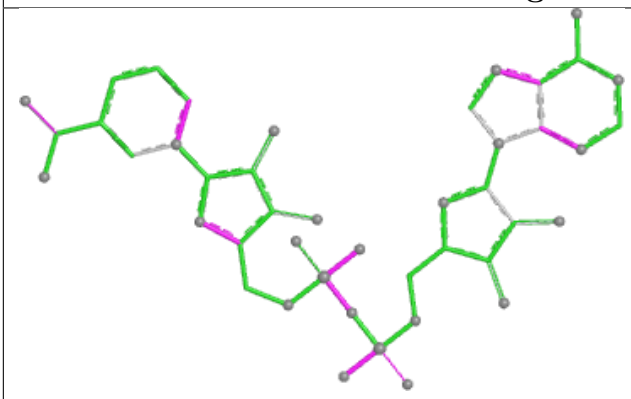


Torsions

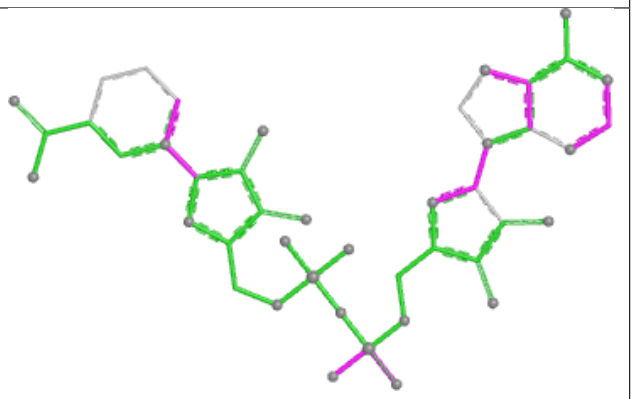


Rings

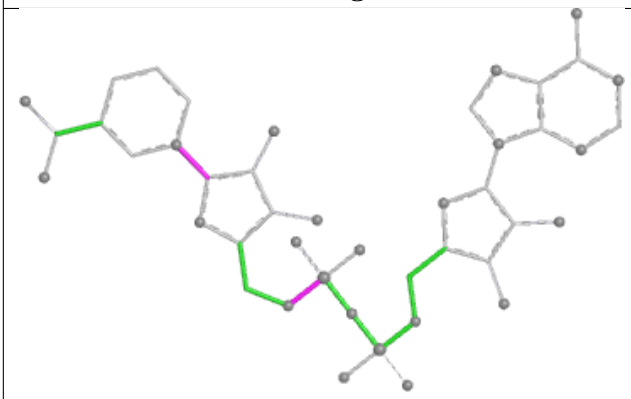
Ligand NAI A 405



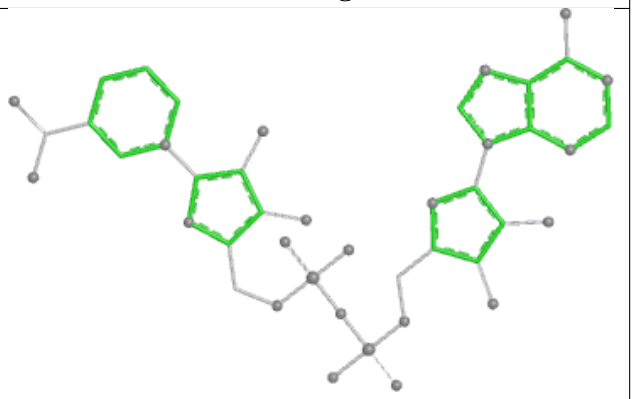
Bond lengths



Bond angles

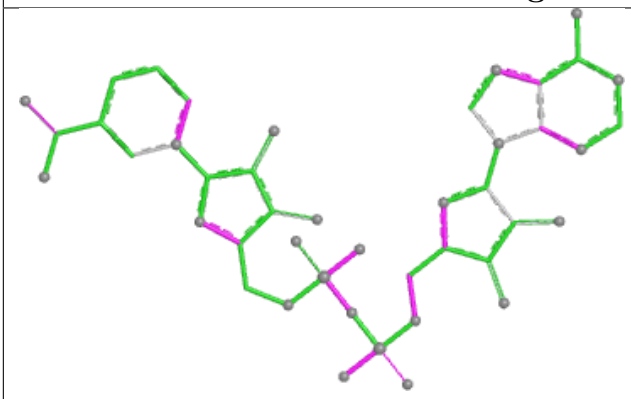


Torsions

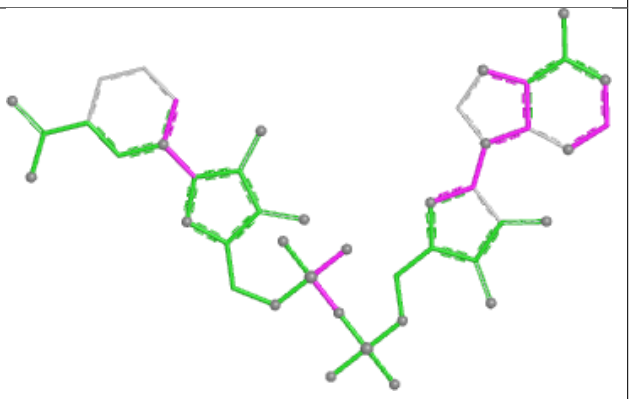


Rings

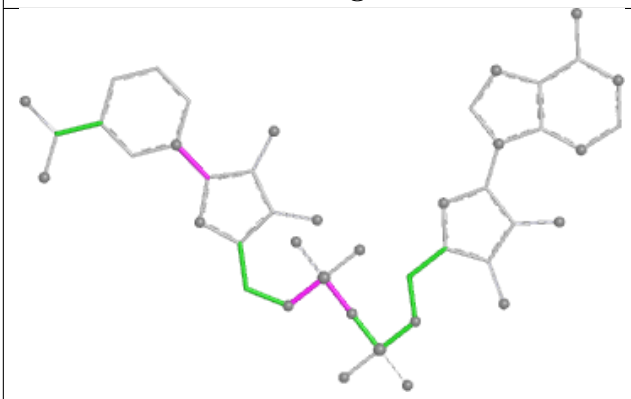
Ligand NAI B 403



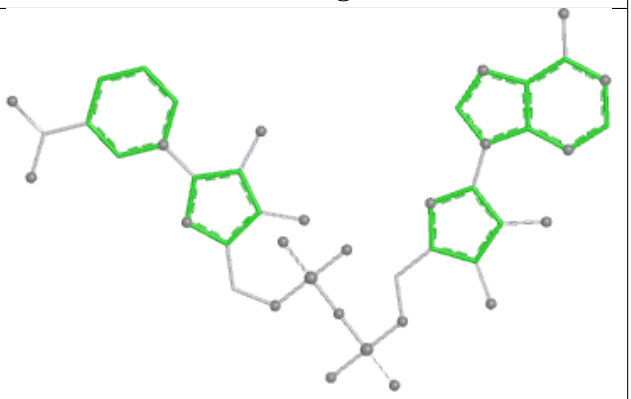
Bond lengths



Bond angles

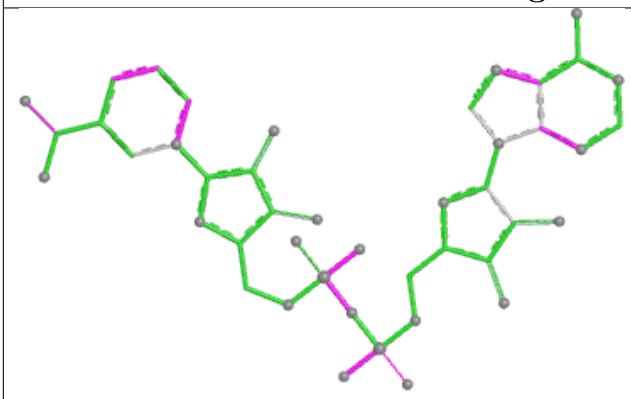


Torsions

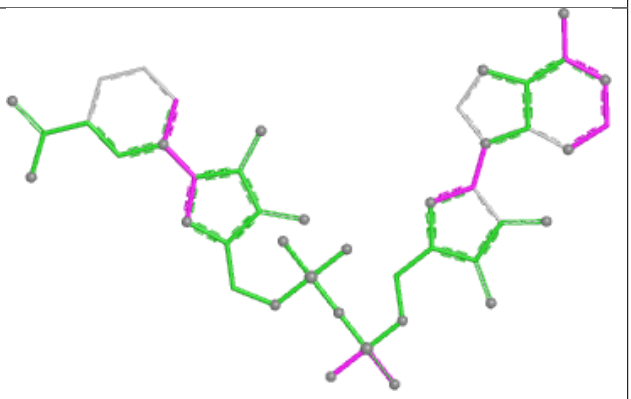


Rings

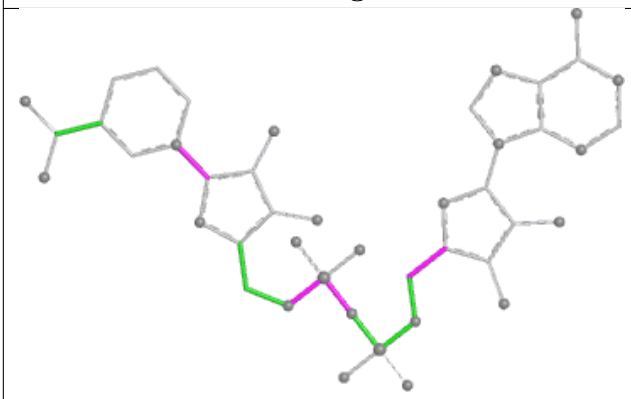
Ligand NAI E 403



Bond lengths



Bond angles



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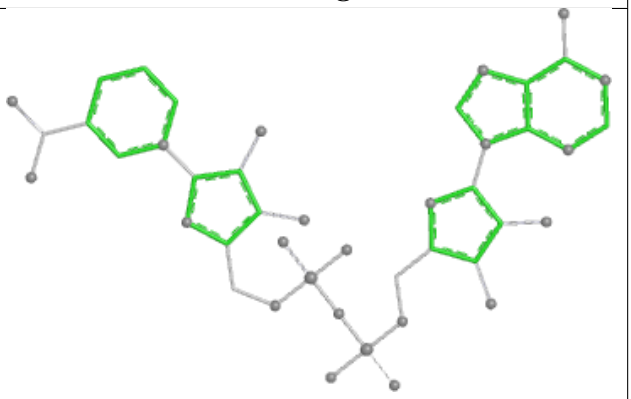
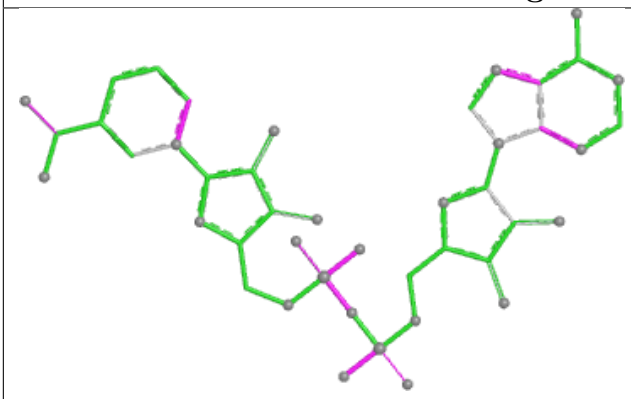
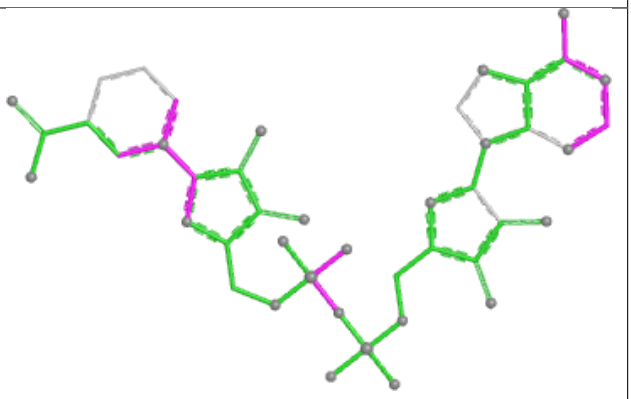


Rings

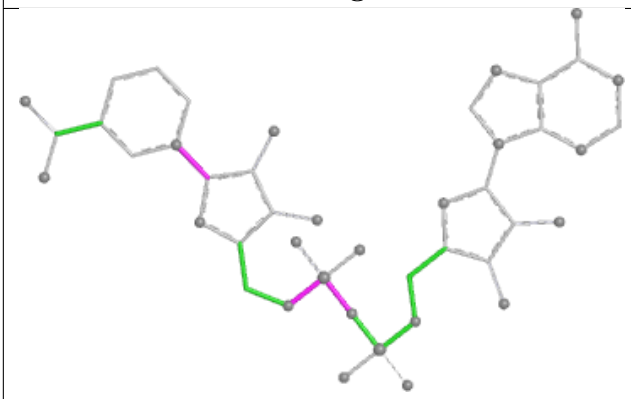
Ligand NAI D 403



Bond lengths



Bond angles



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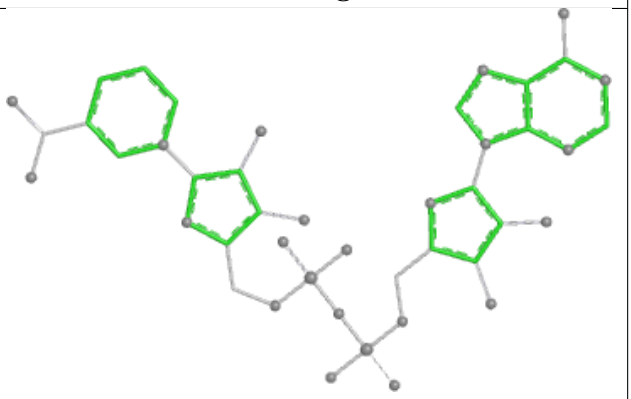
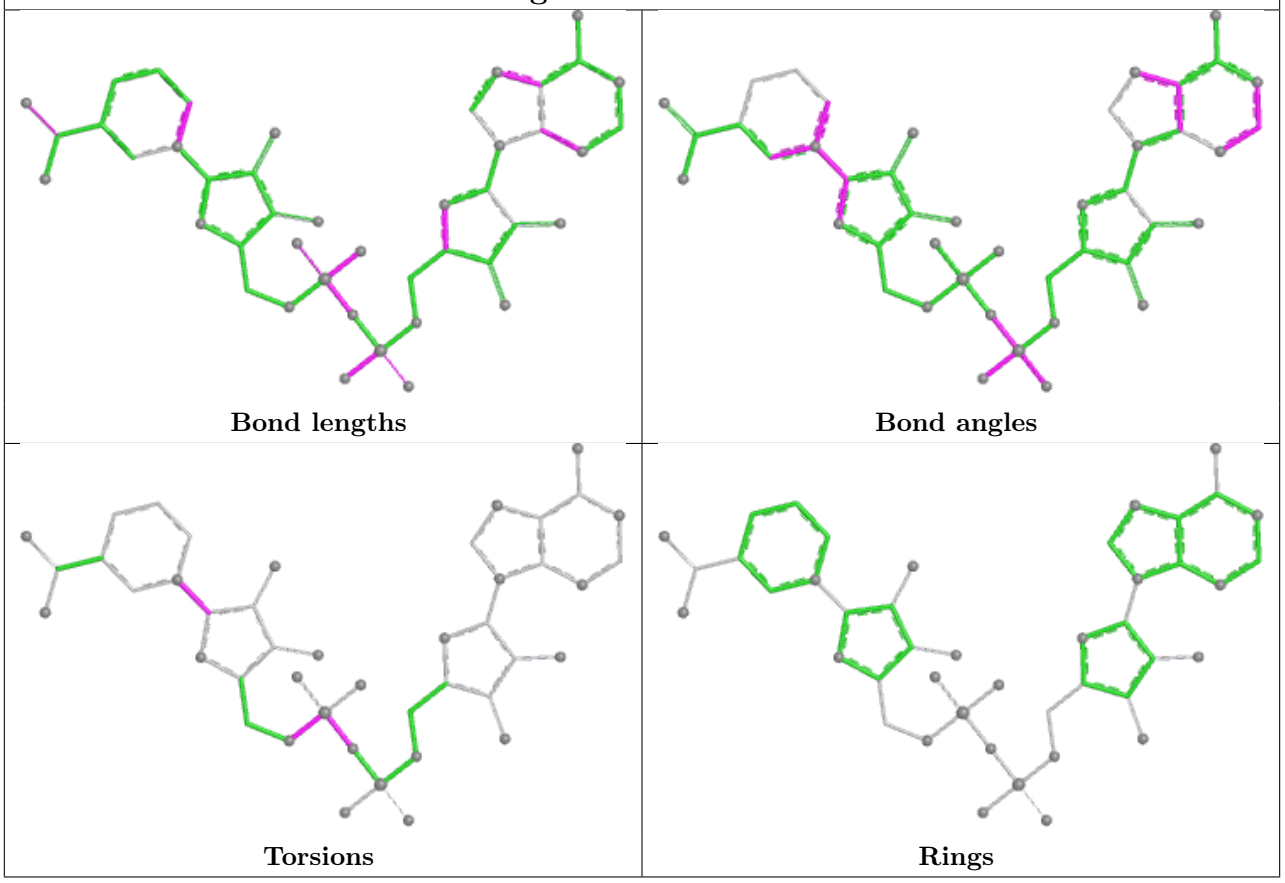


Rings

Ligand NAI F 403



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{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	262/270 (97%)	-0.73	1 (0%)	89	90	10, 21, 36, 74	4 (1%)
1	B	265/270 (98%)	-0.59	2 (0%)	82	85	14, 24, 51, 92	3 (1%)
1	C	263/270 (97%)	-0.52	1 (0%)	89	90	11, 23, 57, 83	2 (0%)
1	D	261/270 (96%)	-0.57	1 (0%)	89	90	12, 24, 47, 72	3 (1%)
1	E	262/270 (97%)	-0.79	1 (0%)	89	90	11, 20, 34, 51	4 (1%)
1	F	263/270 (97%)	-0.63	2 (0%)	82	85	13, 23, 48, 109	2 (0%)
1	G	262/270 (97%)	-0.57	2 (0%)	82	85	12, 23, 53, 83	4 (1%)
1	H	268/270 (99%)	-0.63	2 (0%)	84	86	11, 22, 42, 103	4 (1%)
All	All	2106/2160 (97%)	-0.63	12 (0%)	85	88	10, 22, 48, 109	26 (1%)

All (12) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	4	GLU	3.6
1	H	-1	HIS	3.6
1	G	5	LYS	3.2
1	G	46	PRO	3.2
1	C	4	GLU	3.1
1	D	46	PRO	2.6
1	A	5	LYS	2.5
1	H	3	GLY	2.5
1	E	5	LYS	2.3
1	B	2	SER	2.3
1	F	5	LYS	2.1
1	B	3	GLY	2.1

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 oligosaccharides in this entry.

6.4 Ligands (i)

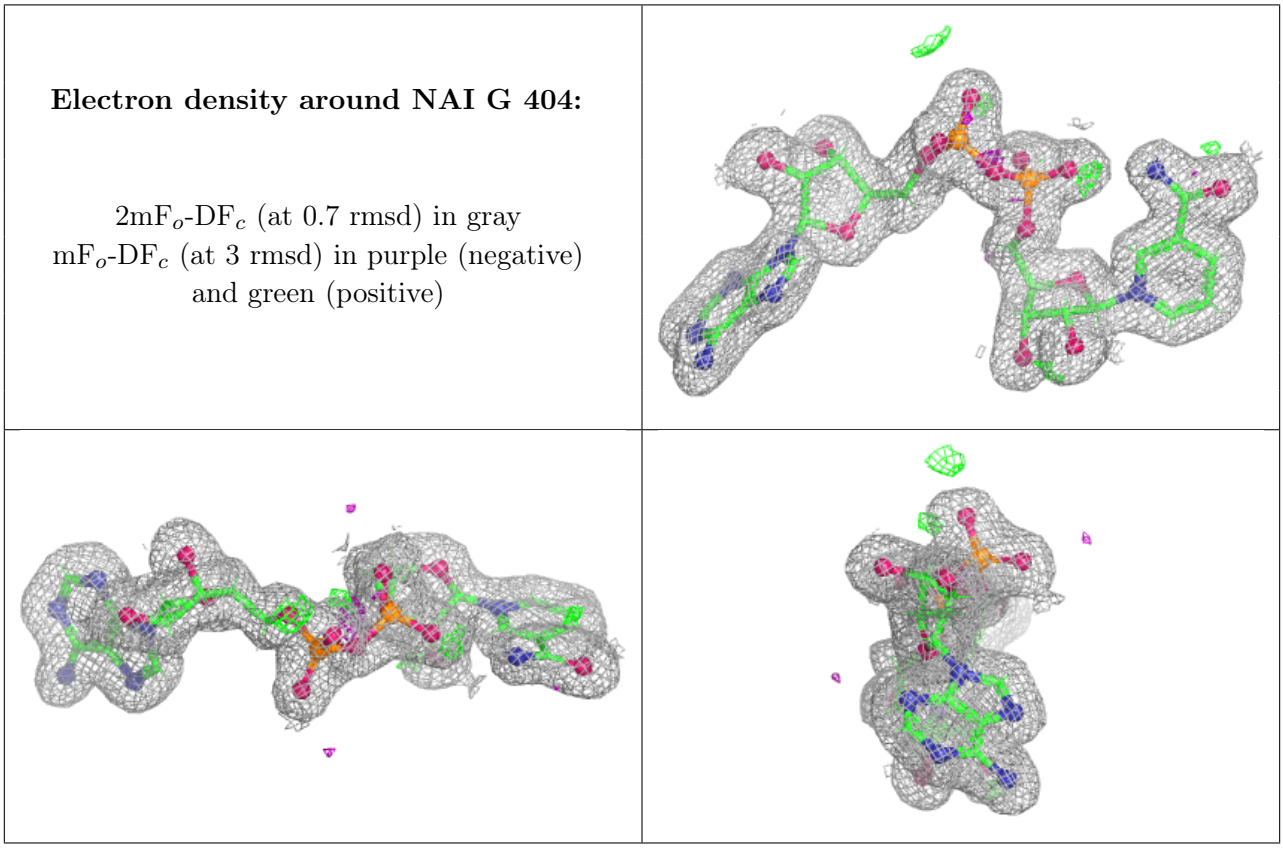
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' 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
3	EDO	B	402	4/4	0.83	0.14	43,53,70,70	0
3	EDO	A	403	4/4	0.87	0.12	17,22,44,53	0
3	EDO	F	402	4/4	0.87	0.15	27,33,40,48	0
3	EDO	E	402	4/4	0.89	0.13	25,30,42,50	0
3	EDO	G	402	4/4	0.89	0.09	46,55,56,67	0
3	EDO	A	402	4/4	0.90	0.13	24,28,34,41	0
3	EDO	D	402	4/4	0.92	0.16	25,35,44,53	0
3	EDO	A	404	4/4	0.94	0.09	14,21,44,52	0
2	MLI	G	401	7/7	0.94	0.08	23,25,30,35	0
3	EDO	G	403	4/4	0.94	0.12	28,34,36,42	0
3	EDO	C	402	4/4	0.95	0.10	26,36,38,43	0
2	MLI	B	401	7/7	0.95	0.07	21,24,28,31	0
2	MLI	F	401	7/7	0.96	0.08	21,25,28,32	0
2	MLI	C	401	7/7	0.96	0.07	22,28,33,39	0
2	MLI	E	401	7/7	0.96	0.07	23,25,29,29	0
2	MLI	D	401	7/7	0.97	0.05	21,22,26,29	0
2	MLI	A	401	7/7	0.97	0.06	19,22,27,31	0
4	NAI	G	404	44/44	0.97	0.05	16,22,29,30	0
4	NAI	A	405	44/44	0.98	0.04	13,19,26,27	0
4	NAI	B	403	44/44	0.98	0.05	14,23,34,41	0
4	NAI	C	403	44/44	0.98	0.04	16,22,31,39	0
4	NAI	D	403	44/44	0.98	0.04	15,21,29,35	0
4	NAI	E	403	44/44	0.98	0.04	14,18,24,26	0
4	NAI	F	403	44/44	0.98	0.04	14,21,31,37	0
2	MLI	H	401	7/7	0.98	0.05	20,21,28,29	0
4	NAI	H	402	44/44	0.98	0.04	13,18,24,26	0

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

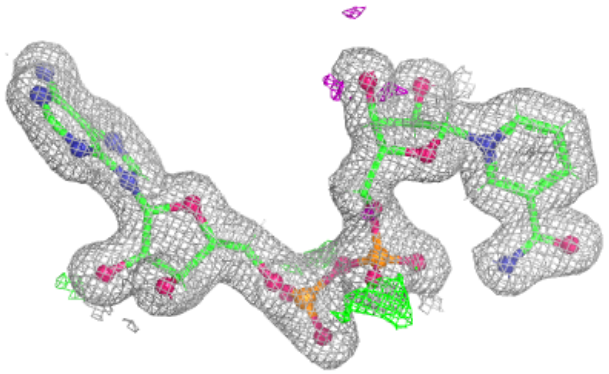
Electron density around NAI G 404:

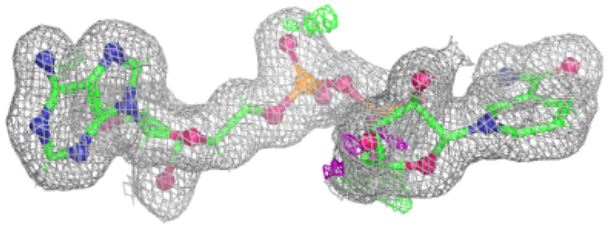
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

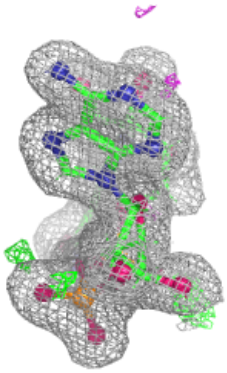


Electron density around NAI A 405:

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

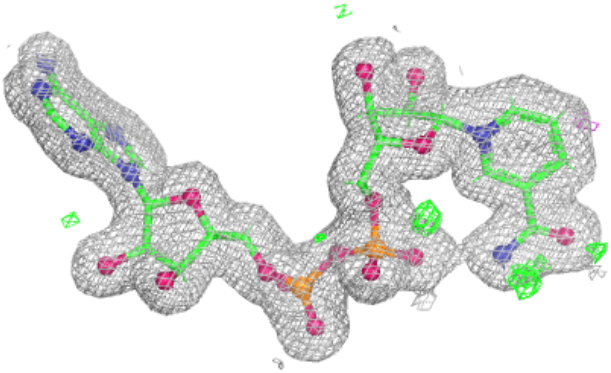


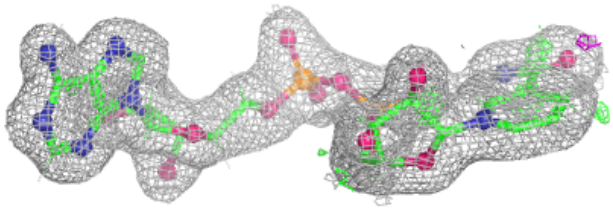


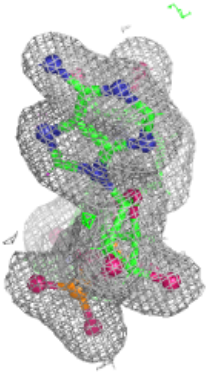


Electron density around NAI B 403:

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

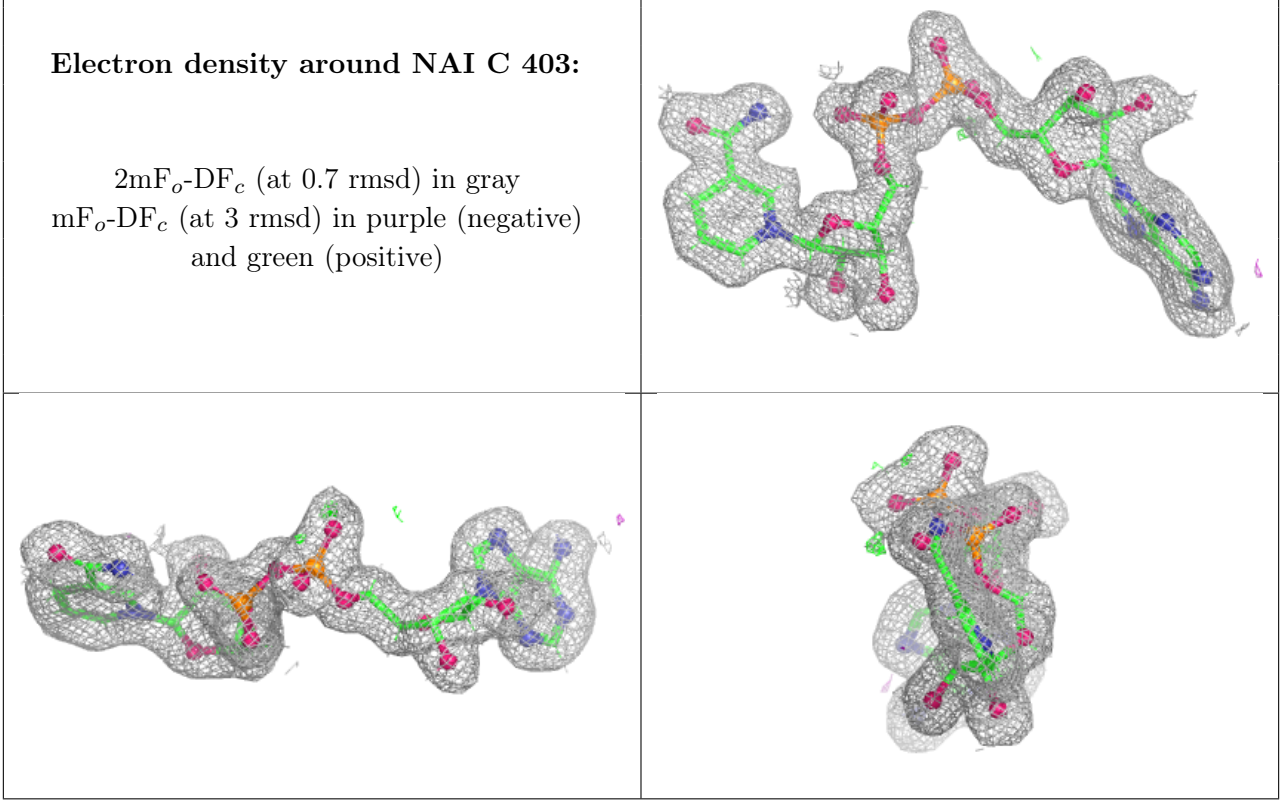






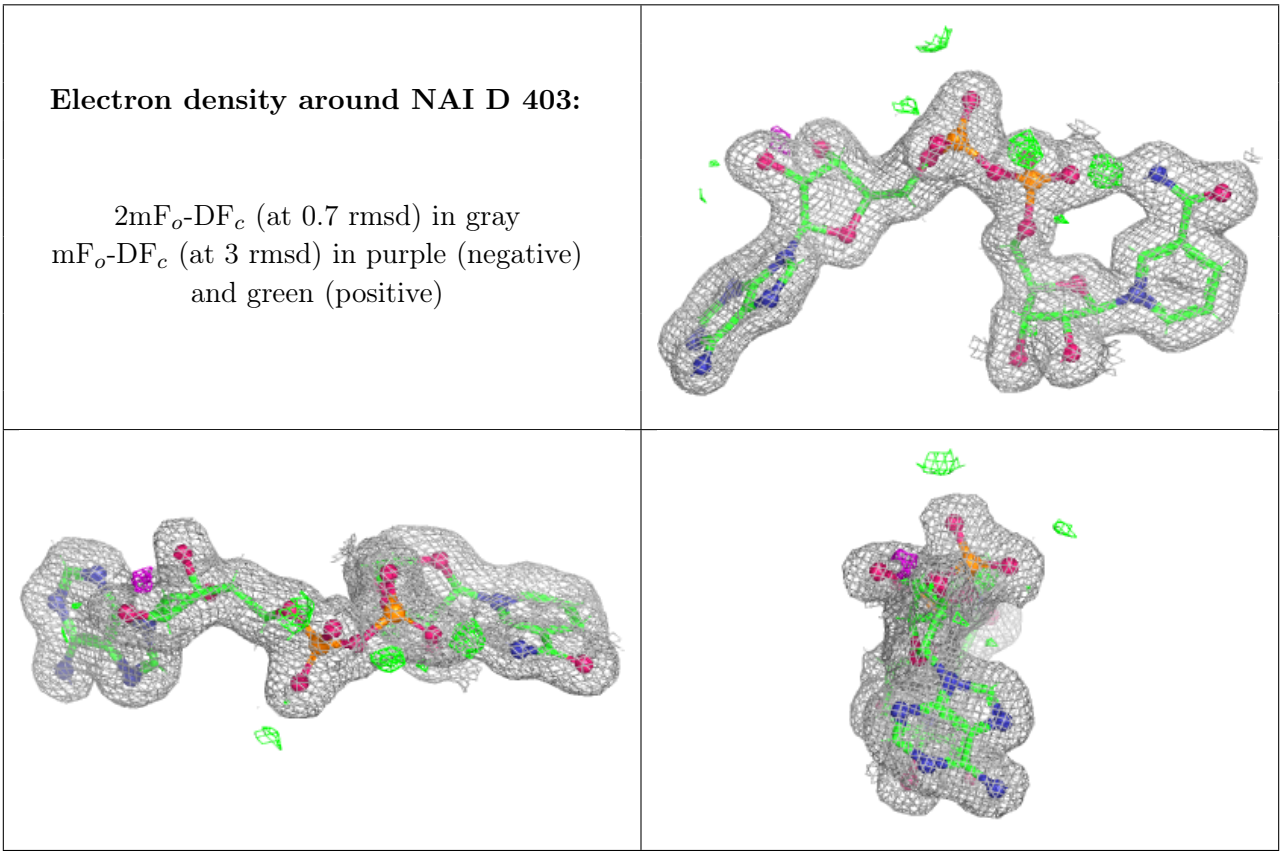
Electron density around NAI C 403:

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



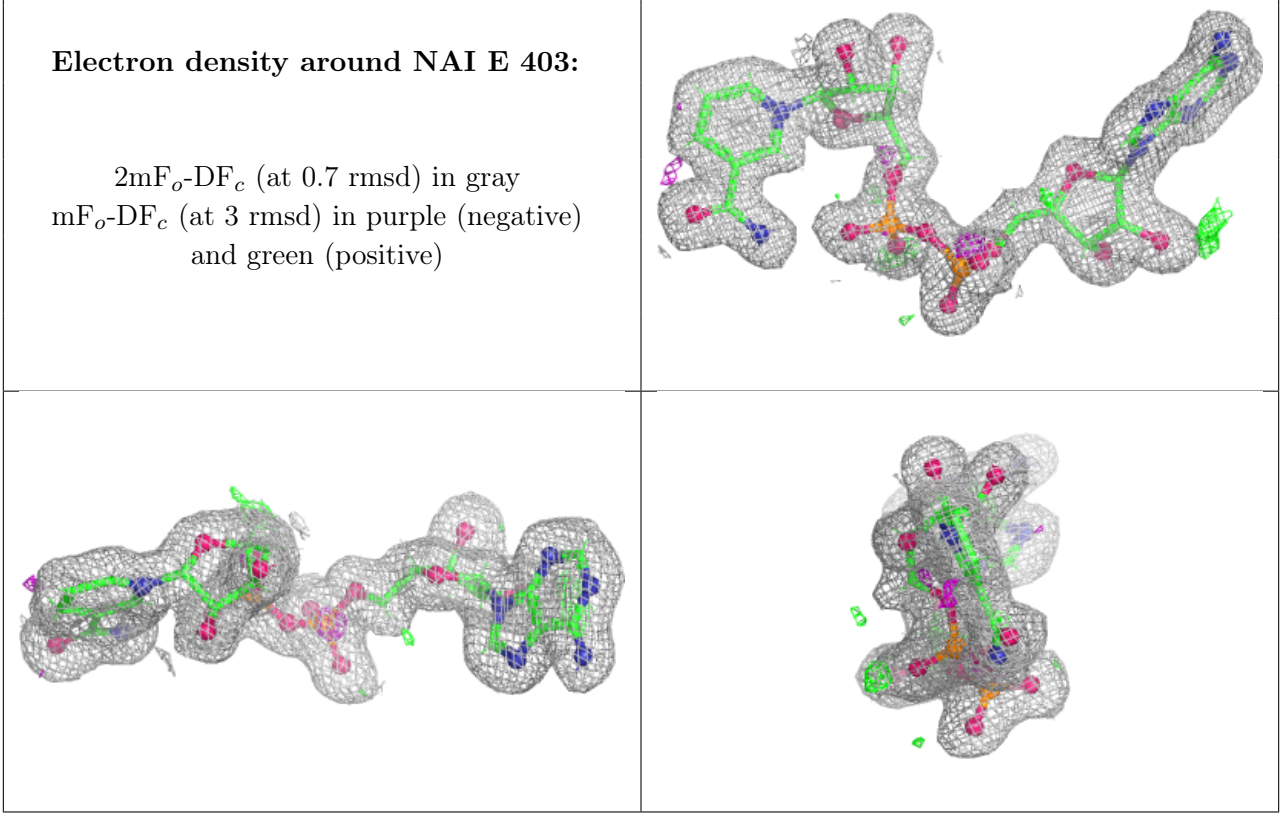
Electron density around NAI D 403:

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



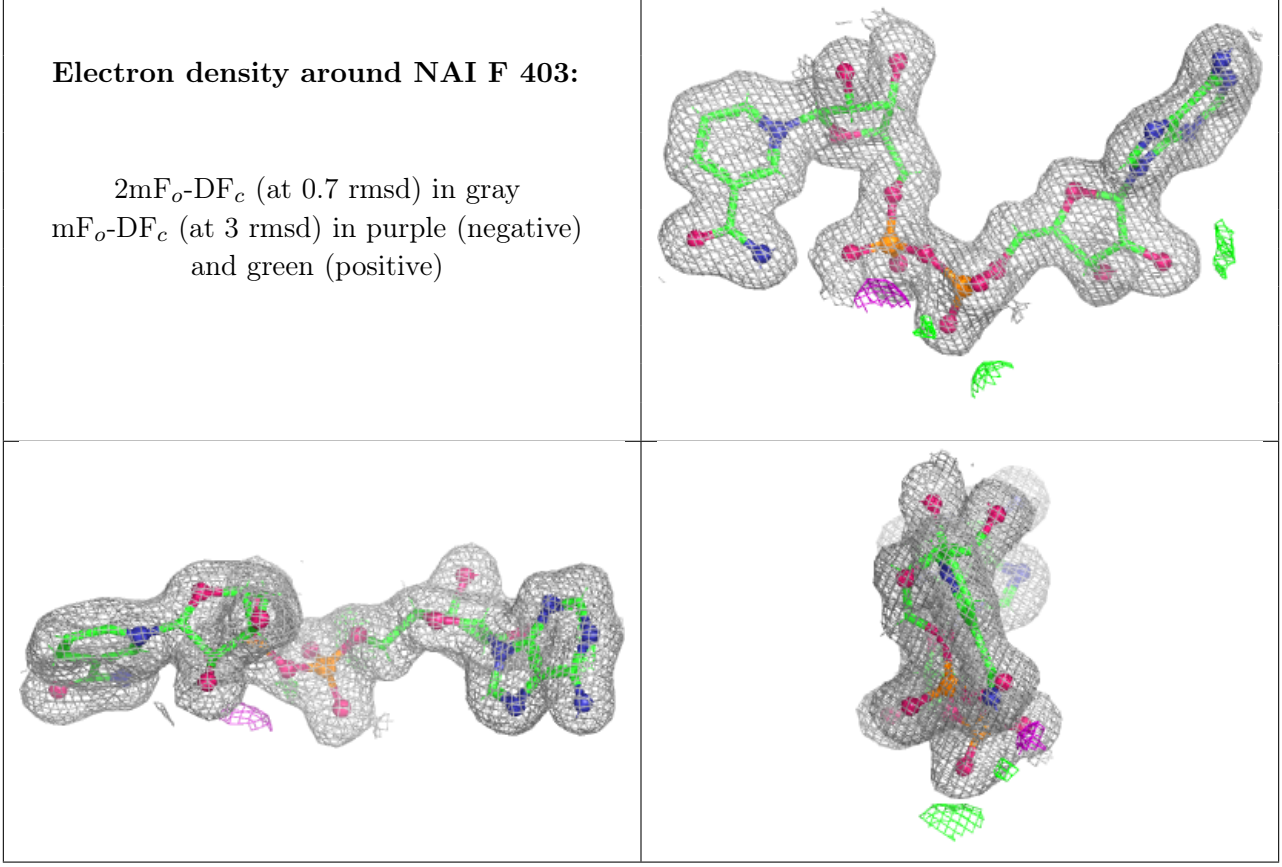
Electron density around NAI E 403:

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



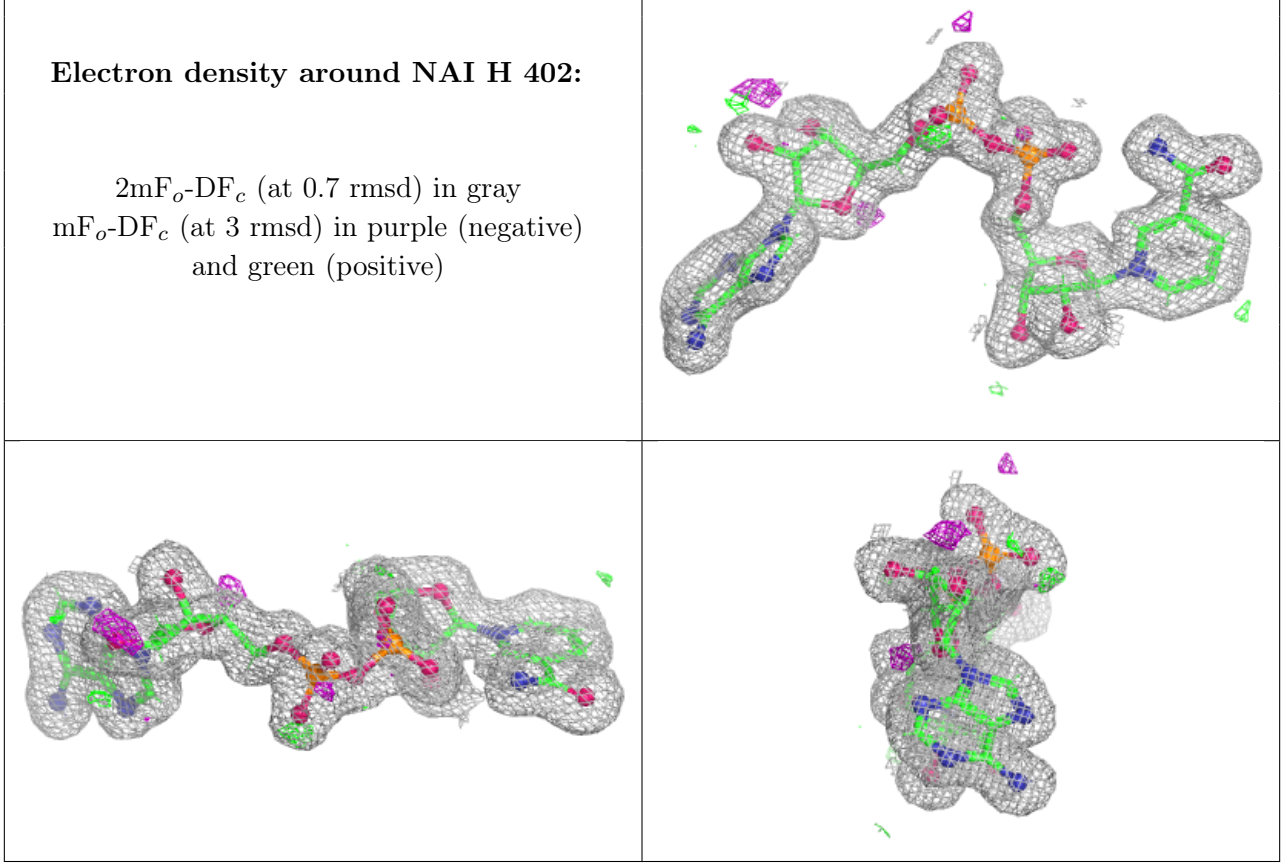
Electron density around NAI F 403:

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



Electron density around NAI H 402:

$2mF_o$-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.