Full wwPDB X-ray Structure Validation Report

Aug 6, 2025 – 10:11 AM EDT

PDB ID	:	9EGC / pdb_00009egc
Title	:	AclA from Tenacibaculum discolor in complex with the C8-N-acyl cyclolysine reaction product (C8-ACL)
Authors	:	Shirkey, J.D.; Jeffrey, P.D.; Linares-Otoya, L.; Khatri Chhetri, B.; Donia, M.S.; Hughson, F.M.
Deposited on	:	2024-11-21
Resolution	:	2.55 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:

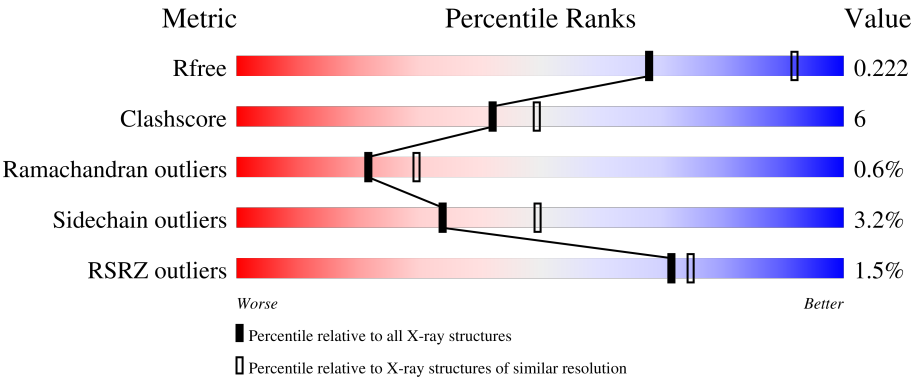
MolProbity	:	4-5-2 with Phenix2.0rc1
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.006 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	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 2.55 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	1004 (2.54-2.54)
Clashscore	180529	1055 (2.54-2.54)
Ramachandran outliers	177936	1048 (2.54-2.54)
Sidechain outliers	177891	1048 (2.54-2.54)
RSRZ outliers	164620	1004 (2.54-2.54)

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	264	77% 17% • 6%
1	B	264	2% 75% 20% 5%
1	C	264	81% 12% • 6%
1	D	264	2% 77% 17% • 5%

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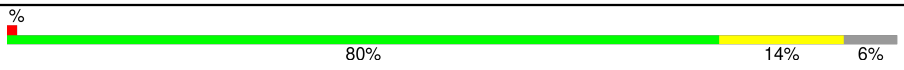
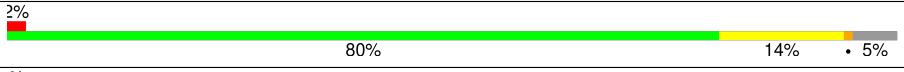
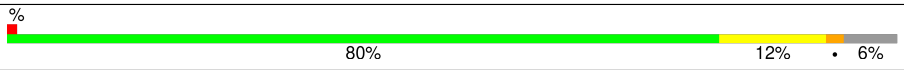
Mol	Chain	Length	Quality of chain
1	E	264	
1	F	264	
1	G	264	

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 14317 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 THIF-type NAD/FAD binding fold domain-containing protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	249	Total	C	N	O	S	0	0	0
			1994	1280	337	370	7			
1	B	250	Total	C	N	O	S	0	0	0
			2003	1285	338	372	8			
1	C	249	Total	C	N	O	S	0	0	0
			1995	1280	337	371	7			
1	D	250	Total	C	N	O	S	0	0	0
			2002	1285	338	371	8			
1	E	249	Total	C	N	O	S	0	0	0
			1995	1280	337	371	7			
1	F	250	Total	C	N	O	S	0	0	0
			2003	1285	338	372	8			
1	G	249	Total	C	N	O	S	0	0	0
			1995	1280	337	371	7			

There are 119 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-13	MET	-	initiating methionine	UNP A0A2G1BYE5
A	-12	GLY	-	expression tag	UNP A0A2G1BYE5
A	-11	SER	-	expression tag	UNP A0A2G1BYE5
A	-10	SER	-	expression tag	UNP A0A2G1BYE5
A	-9	HIS	-	expression tag	UNP A0A2G1BYE5
A	-8	HIS	-	expression tag	UNP A0A2G1BYE5
A	-7	HIS	-	expression tag	UNP A0A2G1BYE5
A	-6	HIS	-	expression tag	UNP A0A2G1BYE5
A	-5	HIS	-	expression tag	UNP A0A2G1BYE5
A	-4	HIS	-	expression tag	UNP A0A2G1BYE5
A	-3	SER	-	expression tag	UNP A0A2G1BYE5
A	-2	GLN	-	expression tag	UNP A0A2G1BYE5
A	-1	ASP	-	expression tag	UNP A0A2G1BYE5
A	0	PRO	-	expression tag	UNP A0A2G1BYE5
A	58	ASN	ASP	conflict	UNP A0A2G1BYE5

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Chain	Residue	Modelled	Actual	Comment	Reference
A	165	ALA	SER	conflict	UNP A0A2G1BYE5
A	166	LYS	ARG	conflict	UNP A0A2G1BYE5
B	-13	MET	-	initiating methionine	UNP A0A2G1BYE5
B	-12	GLY	-	expression tag	UNP A0A2G1BYE5
B	-11	SER	-	expression tag	UNP A0A2G1BYE5
B	-10	SER	-	expression tag	UNP A0A2G1BYE5
B	-9	HIS	-	expression tag	UNP A0A2G1BYE5
B	-8	HIS	-	expression tag	UNP A0A2G1BYE5
B	-7	HIS	-	expression tag	UNP A0A2G1BYE5
B	-6	HIS	-	expression tag	UNP A0A2G1BYE5
B	-5	HIS	-	expression tag	UNP A0A2G1BYE5
B	-4	HIS	-	expression tag	UNP A0A2G1BYE5
B	-3	SER	-	expression tag	UNP A0A2G1BYE5
B	-2	GLN	-	expression tag	UNP A0A2G1BYE5
B	-1	ASP	-	expression tag	UNP A0A2G1BYE5
B	0	PRO	-	expression tag	UNP A0A2G1BYE5
B	58	ASN	ASP	conflict	UNP A0A2G1BYE5
B	165	ALA	SER	conflict	UNP A0A2G1BYE5
B	166	LYS	ARG	conflict	UNP A0A2G1BYE5
C	-13	MET	-	initiating methionine	UNP A0A2G1BYE5
C	-12	GLY	-	expression tag	UNP A0A2G1BYE5
C	-11	SER	-	expression tag	UNP A0A2G1BYE5
C	-10	SER	-	expression tag	UNP A0A2G1BYE5
C	-9	HIS	-	expression tag	UNP A0A2G1BYE5
C	-8	HIS	-	expression tag	UNP A0A2G1BYE5
C	-7	HIS	-	expression tag	UNP A0A2G1BYE5
C	-6	HIS	-	expression tag	UNP A0A2G1BYE5
C	-5	HIS	-	expression tag	UNP A0A2G1BYE5
C	-4	HIS	-	expression tag	UNP A0A2G1BYE5
C	-3	SER	-	expression tag	UNP A0A2G1BYE5
C	-2	GLN	-	expression tag	UNP A0A2G1BYE5
C	-1	ASP	-	expression tag	UNP A0A2G1BYE5
C	0	PRO	-	expression tag	UNP A0A2G1BYE5
C	58	ASN	ASP	conflict	UNP A0A2G1BYE5
C	165	ALA	SER	conflict	UNP A0A2G1BYE5
C	166	LYS	ARG	conflict	UNP A0A2G1BYE5
D	-13	MET	-	initiating methionine	UNP A0A2G1BYE5
D	-12	GLY	-	expression tag	UNP A0A2G1BYE5
D	-11	SER	-	expression tag	UNP A0A2G1BYE5
D	-10	SER	-	expression tag	UNP A0A2G1BYE5
D	-9	HIS	-	expression tag	UNP A0A2G1BYE5
D	-8	HIS	-	expression tag	UNP A0A2G1BYE5

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-7	HIS	-	expression tag	UNP A0A2G1BYE5
D	-6	HIS	-	expression tag	UNP A0A2G1BYE5
D	-5	HIS	-	expression tag	UNP A0A2G1BYE5
D	-4	HIS	-	expression tag	UNP A0A2G1BYE5
D	-3	SER	-	expression tag	UNP A0A2G1BYE5
D	-2	GLN	-	expression tag	UNP A0A2G1BYE5
D	-1	ASP	-	expression tag	UNP A0A2G1BYE5
D	0	PRO	-	expression tag	UNP A0A2G1BYE5
D	58	ASN	ASP	conflict	UNP A0A2G1BYE5
D	165	ALA	SER	conflict	UNP A0A2G1BYE5
D	166	LYS	ARG	conflict	UNP A0A2G1BYE5
E	-13	MET	-	initiating methionine	UNP A0A2G1BYE5
E	-12	GLY	-	expression tag	UNP A0A2G1BYE5
E	-11	SER	-	expression tag	UNP A0A2G1BYE5
E	-10	SER	-	expression tag	UNP A0A2G1BYE5
E	-9	HIS	-	expression tag	UNP A0A2G1BYE5
E	-8	HIS	-	expression tag	UNP A0A2G1BYE5
E	-7	HIS	-	expression tag	UNP A0A2G1BYE5
E	-6	HIS	-	expression tag	UNP A0A2G1BYE5
E	-5	HIS	-	expression tag	UNP A0A2G1BYE5
E	-4	HIS	-	expression tag	UNP A0A2G1BYE5
E	-3	SER	-	expression tag	UNP A0A2G1BYE5
E	-2	GLN	-	expression tag	UNP A0A2G1BYE5
E	-1	ASP	-	expression tag	UNP A0A2G1BYE5
E	0	PRO	-	expression tag	UNP A0A2G1BYE5
E	58	ASN	ASP	conflict	UNP A0A2G1BYE5
E	165	ALA	SER	conflict	UNP A0A2G1BYE5
E	166	LYS	ARG	conflict	UNP A0A2G1BYE5
F	-13	MET	-	initiating methionine	UNP A0A2G1BYE5
F	-12	GLY	-	expression tag	UNP A0A2G1BYE5
F	-11	SER	-	expression tag	UNP A0A2G1BYE5
F	-10	SER	-	expression tag	UNP A0A2G1BYE5
F	-9	HIS	-	expression tag	UNP A0A2G1BYE5
F	-8	HIS	-	expression tag	UNP A0A2G1BYE5
F	-7	HIS	-	expression tag	UNP A0A2G1BYE5
F	-6	HIS	-	expression tag	UNP A0A2G1BYE5
F	-5	HIS	-	expression tag	UNP A0A2G1BYE5
F	-4	HIS	-	expression tag	UNP A0A2G1BYE5
F	-3	SER	-	expression tag	UNP A0A2G1BYE5
F	-2	GLN	-	expression tag	UNP A0A2G1BYE5
F	-1	ASP	-	expression tag	UNP A0A2G1BYE5
F	0	PRO	-	expression tag	UNP A0A2G1BYE5

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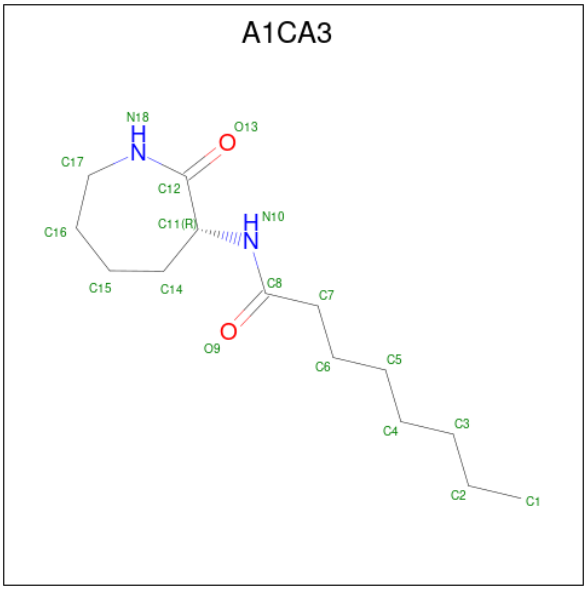
Chain	Residue	Modelled	Actual	Comment	Reference
F	58	ASN	ASP	conflict	UNP A0A2G1BYE5
F	165	ALA	SER	conflict	UNP A0A2G1BYE5
F	166	LYS	ARG	conflict	UNP A0A2G1BYE5
G	-13	MET	-	initiating methionine	UNP A0A2G1BYE5
G	-12	GLY	-	expression tag	UNP A0A2G1BYE5
G	-11	SER	-	expression tag	UNP A0A2G1BYE5
G	-10	SER	-	expression tag	UNP A0A2G1BYE5
G	-9	HIS	-	expression tag	UNP A0A2G1BYE5
G	-8	HIS	-	expression tag	UNP A0A2G1BYE5
G	-7	HIS	-	expression tag	UNP A0A2G1BYE5
G	-6	HIS	-	expression tag	UNP A0A2G1BYE5
G	-5	HIS	-	expression tag	UNP A0A2G1BYE5
G	-4	HIS	-	expression tag	UNP A0A2G1BYE5
G	-3	SER	-	expression tag	UNP A0A2G1BYE5
G	-2	GLN	-	expression tag	UNP A0A2G1BYE5
G	-1	ASP	-	expression tag	UNP A0A2G1BYE5
G	0	PRO	-	expression tag	UNP A0A2G1BYE5
G	58	ASN	ASP	conflict	UNP A0A2G1BYE5
G	165	ALA	SER	conflict	UNP A0A2G1BYE5
G	166	LYS	ARG	conflict	UNP A0A2G1BYE5

- Molecule 2 is N-[(3R)-2-oxoazepan-3-yl]octanamide (CCD ID: A1CA3) (formula: $C_{14}H_{26}N_2O_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
2	A	1	18	14	2	2	0	0

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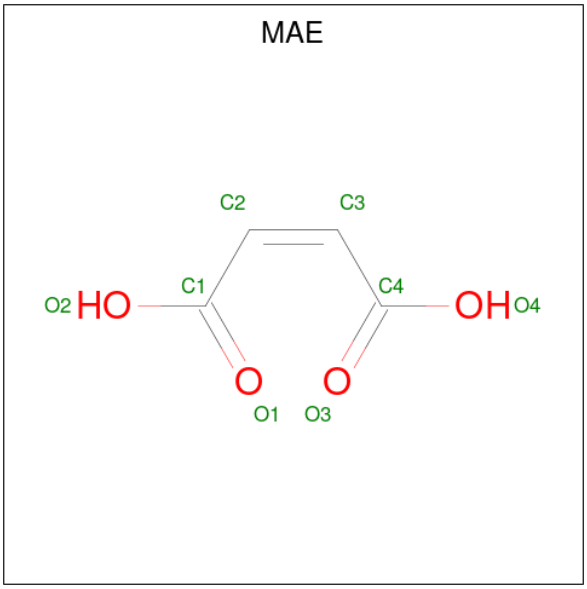
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	B	1	Total C N O 18 14 2 2	0	0
2	C	1	Total C N O 18 14 2 2	0	0
2	D	1	Total C N O 18 14 2 2	0	0
2	E	1	Total C N O 18 14 2 2	0	0
2	F	1	Total C N O 18 14 2 2	0	0
2	G	1	Total C N O 18 14 2 2	0	0

- Molecule 3 is MALEIC ACID (CCD ID: MAE) (formula: $C_4H_4O_4$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 8 4 4	0	0
3	B	1	Total C O 8 4 4	0	0
3	C	1	Total C O 8 4 4	0	0
3	D	1	Total C O 8 4 4	0	0
3	E	1	Total C O 8 4 4	0	0

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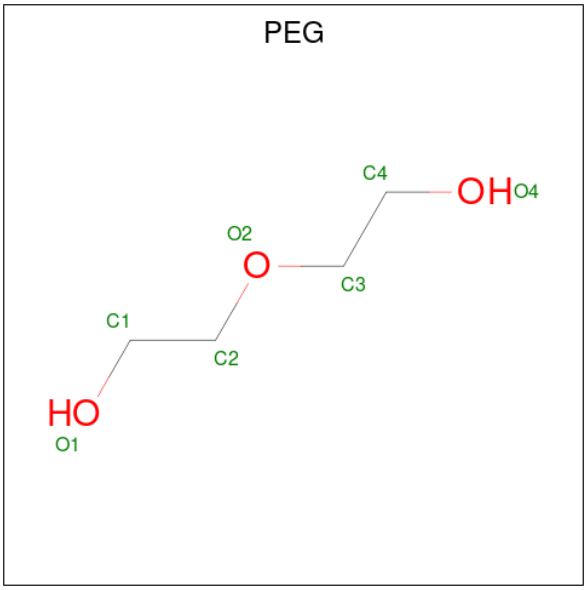
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	F	1	Total C O 8 4 4	0	0
3	G	1	Total C O 8 4 4	0	0

- Molecule 4 is DI(HYDROXYETHYL)ETHER (CCD ID: PEG) (formula: $C_4H_{10}O_3$).



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

- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	20	Total O 20 20	0	0
5	B	11	Total O 11 11	0	0

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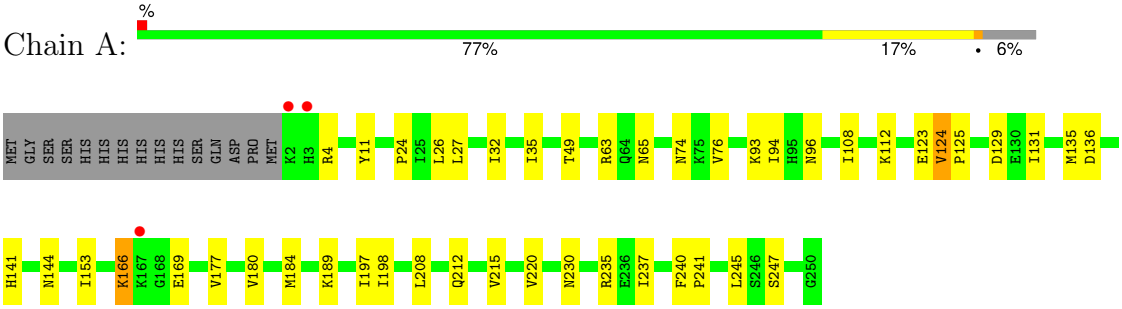
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	C	15	Total O 15 15	0	0
5	D	14	Total O 14 14	0	0
5	E	22	Total O 22 22	0	0
5	F	6	Total O 6 6	0	0
5	G	25	Total O 25 25	0	0

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.

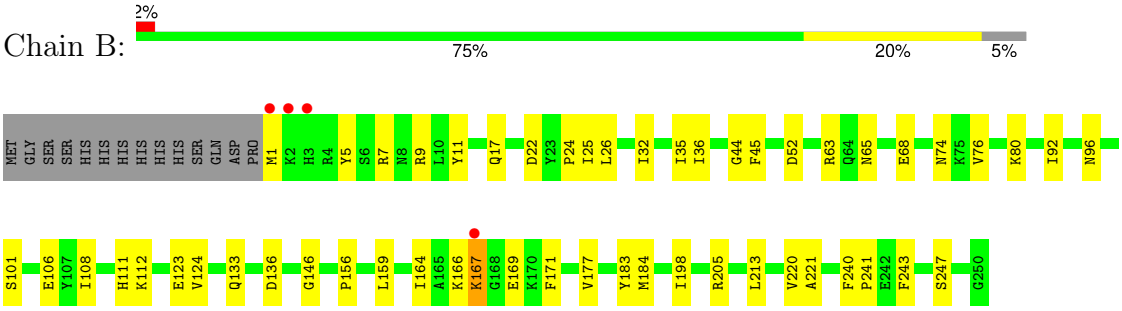
• Molecule 1: THIF-type NAD/FAD binding fold domain-containing protein

Chain A:



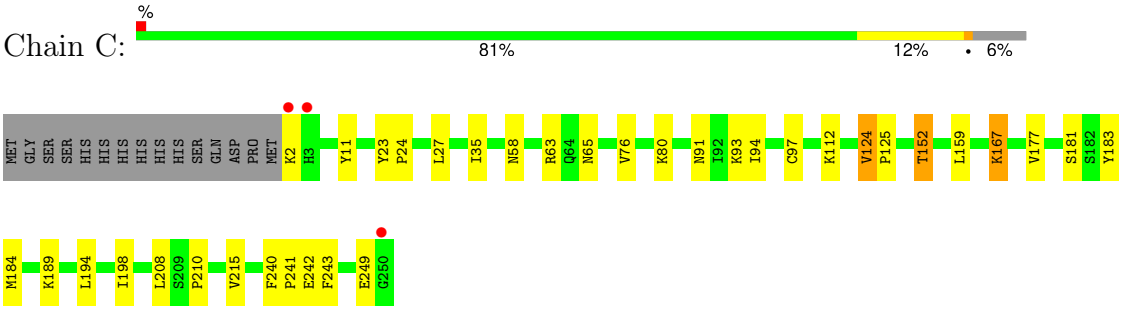
• Molecule 1: THIF-type NAD/FAD binding fold domain-containing protein

Chain B:



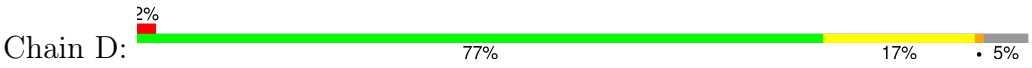
• Molecule 1: THIF-type NAD/FAD binding fold domain-containing protein

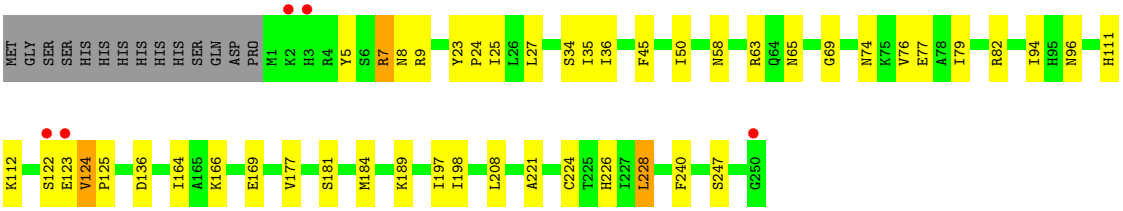
Chain C:



• Molecule 1: THIF-type NAD/FAD binding fold domain-containing protein

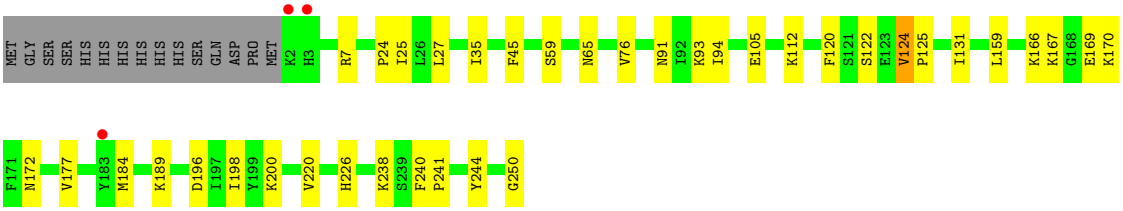
Chain D:





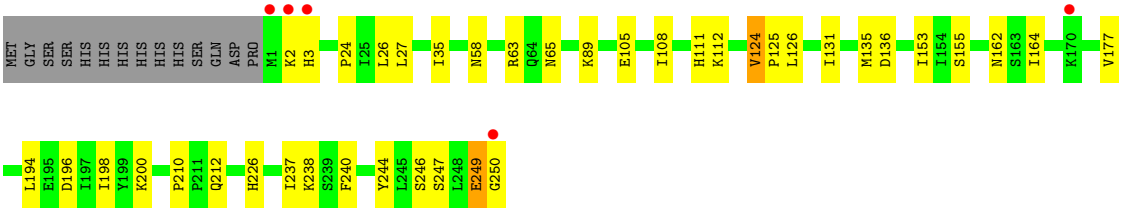
• Molecule 1: THIF-type NAD/FAD binding fold domain-containing protein

Chain E:



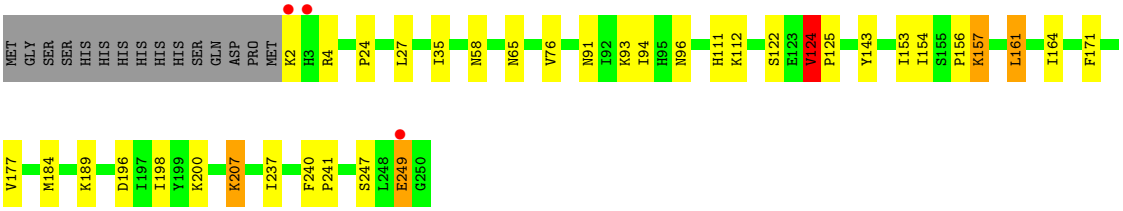
• Molecule 1: THIF-type NAD/FAD binding fold domain-containing protein

Chain F:



• Molecule 1: THIF-type NAD/FAD binding fold domain-containing protein

Chain G:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	204.37Å 84.36Å 164.53Å 90.00° 105.61° 90.00°	Depositor
Resolution (Å)	29.46 – 2.55 29.46 – 2.55	Depositor EDS
% Data completeness (in resolution range)	99.9 (29.46-2.55) 99.8 (29.46-2.55)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.46 (at 2.54Å)	Xtriage
Refinement program	PHENIX 1.17_3644	Depositor
R, R_{free}	0.179 , 0.222 0.180 , 0.222	Depositor DCC
R_{free} test set	4540 reflections (5.14%)	wwPDB-VP
Wilson B-factor (Å^2)	54.0	Xtriage
Anisotropy	0.212	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 67.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	14317	wwPDB-VP
Average B, all atoms (Å^2)	74.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.01% 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: MAE, A1CA3, PEG

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	0.33	0/2038	0.56	0/2754
1	B	0.31	0/2047	0.54	0/2764
1	C	0.31	0/2039	0.55	0/2754
1	D	0.27	0/2046	0.51	0/2764
1	E	0.31	0/2039	0.55	0/2754
1	F	0.28	0/2047	0.51	0/2764
1	G	0.34	0/2039	0.58	0/2754
All	All	0.31	0/14295	0.54	0/19308

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	1994	0	1997	34	0
1	B	2003	0	2009	32	0
1	C	1995	0	1997	22	0
1	D	2002	0	2009	30	0
1	E	1995	0	1997	22	0
1	F	2003	0	2009	24	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	G	1995	0	1997	23	0
2	A	18	0	0	0	0
2	B	18	0	0	1	0
2	C	18	0	0	1	0
2	D	18	0	0	1	0
2	E	18	0	0	0	0
2	F	18	0	0	0	0
2	G	18	0	0	2	0
3	A	8	0	2	1	0
3	B	8	0	2	1	0
3	C	8	0	2	1	0
3	D	8	0	2	1	0
3	E	8	0	2	0	0
3	F	8	0	2	0	0
3	G	8	0	2	1	0
4	A	21	0	30	3	0
4	B	7	0	10	3	0
4	E	7	0	10	0	0
5	A	20	0	0	0	0
5	B	11	0	0	0	0
5	C	15	0	0	3	0
5	D	14	0	0	0	0
5	E	22	0	0	3	0
5	F	6	0	0	0	0
5	G	25	0	0	0	0
All	All	14317	0	14079	175	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 6.

All (175) 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:A:96:ASN:HD22	1:G:96:ASN:HD22	1.22	0.84
1:A:96:ASN:ND2	1:G:96:ASN:HD22	1.77	0.82
1:A:184:MET:HE1	1:A:189:LYS:NZ	1.94	0.82
1:C:167:LYS:HE2	1:C:167:LYS:H	1.43	0.81
1:C:97:CYS:SG	5:C:415:HOH:O	2.39	0.79
1:E:177:VAL:HG12	1:E:198:ILE:HD11	1.67	0.77
1:C:152:THR:HG23	1:C:243:PHE:HB3	1.71	0.71
1:A:131:ILE:HG22	1:A:135:MET:HE2	1.71	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:74:ASN:OD1	1:D:96:ASN:ND2	2.24	0.70
1:A:177:VAL:HG12	1:A:198:ILE:HD11	1.71	0.70
1:D:177:VAL:HG12	1:D:198:ILE:HD11	1.73	0.70
1:A:184:MET:HE1	1:A:189:LYS:HZ2	1.57	0.69
1:F:177:VAL:HG12	1:F:198:ILE:HD11	1.75	0.68
1:B:177:VAL:HG12	1:B:198:ILE:HD11	1.75	0.68
1:A:153:ILE:HD13	1:A:237:ILE:HD12	1.75	0.67
1:D:166:LYS:HD2	1:D:169:GLU:OE2	1.94	0.66
1:C:159:LEU:HD13	1:C:241:PRO:HD3	1.78	0.65
1:F:105:GLU:HG3	1:F:135:MET:HE1	1.79	0.65
1:G:154:ILE:HD11	1:G:161:LEU:HD13	1.79	0.65
1:C:152:THR:HG21	1:C:240:PHE:HD1	1.62	0.64
1:E:24:PRO:HD2	1:E:112:LYS:HG3	1.80	0.64
1:E:167:LYS:NZ	5:E:401:HOH:O	2.30	0.64
1:B:166:LYS:HD2	1:B:169:GLU:OE2	1.99	0.63
2:C:301:A1CA3:O13	3:C:302:MAE:H3	1.99	0.63
1:D:24:PRO:HD2	1:D:112:LYS:HG3	1.81	0.62
1:B:24:PRO:HD2	1:B:112:LYS:HG3	1.82	0.62
1:C:2:LYS:NZ	1:D:58:ASN:OD1	2.28	0.61
1:F:35:ILE:HD13	1:F:65:ASN:HB2	1.83	0.61
1:G:24:PRO:HD2	1:G:112:LYS:HG3	1.82	0.60
1:G:177:VAL:HG12	1:G:198:ILE:HD11	1.82	0.60
1:E:7:ARG:NH1	1:F:210:PRO:O	2.34	0.60
2:G:301:A1CA3:O13	3:G:302:MAE:H3	2.01	0.60
1:F:24:PRO:HD2	1:F:112:LYS:HG3	1.83	0.59
1:E:166:LYS:HD2	1:E:169:GLU:OE2	2.02	0.59
1:D:164:ILE:HG12	1:D:240:PHE:HZ	1.69	0.58
1:B:167:LYS:HD3	1:B:167:LYS:H	1.69	0.57
1:D:24:PRO:HB2	1:D:111:HIS:HA	1.85	0.57
1:E:59:SER:HB3	1:F:3:HIS:CE1	2.39	0.57
1:B:184:MET:HE1	4:B:303:PEG:H12	1.86	0.57
1:C:177:VAL:HG12	1:C:198:ILE:HD11	1.87	0.56
1:B:35:ILE:HD13	1:B:65:ASN:HB2	1.87	0.56
1:A:184:MET:HE1	1:A:189:LYS:HZ1	1.68	0.56
1:G:35:ILE:HD13	1:G:65:ASN:HB2	1.86	0.56
1:D:123:GLU:C	1:D:125:PRO:HD2	2.30	0.55
1:E:184:MET:HE3	1:E:189:LYS:HG3	1.87	0.55
1:A:230:ASN:HD21	4:A:304:PEG:H22	1.71	0.55
1:D:35:ILE:HD13	1:D:65:ASN:HB2	1.89	0.55
1:D:74:ASN:HD22	1:D:77:GLU:HG3	1.71	0.55
1:B:184:MET:HE3	1:B:243:PHE:CZ	2.42	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:210:PRO:O	1:D:7:ARG:NH1	2.40	0.54
1:A:230:ASN:OD1	4:A:304:PEG:H42	2.07	0.54
1:B:159:LEU:HD13	1:B:241:PRO:HD3	1.90	0.54
1:E:35:ILE:HD13	1:E:65:ASN:HB2	1.90	0.53
1:F:124:VAL:N	1:F:125:PRO:HD3	2.23	0.53
1:A:180:VAL:O	1:A:184:MET:HG2	2.07	0.53
1:B:52:ASP:HB3	1:B:76:VAL:HG13	1.90	0.53
1:G:124:VAL:N	1:G:125:PRO:HD3	2.24	0.53
1:E:159:LEU:HD13	1:E:241:PRO:HD3	1.90	0.53
1:B:32:ILE:HD11	1:B:220:VAL:HG11	1.89	0.52
2:B:301:A1CA3:O13	3:B:302:MAE:H3	2.09	0.52
1:B:1:MET:HG2	1:B:17:GLN:HG2	1.92	0.52
1:G:91:ASN:OD1	1:G:93:LYS:HE2	2.10	0.51
1:A:74:ASN:ND2	1:G:96:ASN:O	2.43	0.51
1:G:240:PHE:CD1	1:G:241:PRO:HA	2.46	0.51
1:D:124:VAL:N	1:D:125:PRO:HD2	2.25	0.51
1:F:164:ILE:HG12	1:F:240:PHE:HZ	1.76	0.50
1:B:74:ASN:OD1	1:B:96:ASN:ND2	2.45	0.50
1:A:184:MET:HE2	1:A:245:LEU:HD23	1.94	0.50
1:C:11:TYR:CZ	1:D:197:ILE:HG12	2.47	0.50
1:A:124:VAL:N	1:A:125:PRO:HD3	2.26	0.49
1:C:35:ILE:HD13	1:C:65:ASN:HB2	1.94	0.49
5:C:404:HOH:O	1:D:226:HIS:HD2	1.94	0.49
2:D:301:A1CA3:O13	3:D:302:MAE:H3	2.12	0.49
1:E:120:PHE:O	1:E:170:LYS:NZ	2.43	0.49
1:B:133:GLN:HG2	1:B:156:PRO:HA	1.93	0.49
1:B:183:TYR:HE1	4:B:303:PEG:H42	1.78	0.49
1:F:131:ILE:HG23	1:F:135:MET:HE3	1.95	0.48
1:D:74:ASN:ND2	1:D:77:GLU:HG3	2.28	0.48
1:B:25:ILE:HD11	1:B:45:PHE:CD1	2.49	0.48
1:F:153:ILE:HD13	1:F:237:ILE:HD12	1.96	0.48
1:G:164:ILE:HG22	1:G:171:PHE:HE1	1.78	0.48
1:C:24:PRO:HD2	1:C:112:LYS:HG3	1.96	0.47
1:E:124:VAL:N	1:E:125:PRO:HD3	2.30	0.47
1:G:2:LYS:HD3	1:G:4:ARG:NH1	2.29	0.47
1:E:25:ILE:HD11	1:E:45:PHE:CD1	2.49	0.47
1:G:153:ILE:HD13	1:G:237:ILE:HD12	1.97	0.47
1:E:105:GLU:HB2	1:E:131:ILE:HD13	1.97	0.47
1:A:63:ARG:CD	1:A:212:GLN:HB2	2.45	0.47
3:A:302:MAE:O4	1:B:7:ARG:NH2	2.36	0.47
1:D:184:MET:HE3	1:D:189:LYS:HB2	1.95	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:184:MET:HA	1:B:184:MET:HE2	1.97	0.46
1:C:80:LYS:HB2	1:C:94:ILE:HG21	1.97	0.46
1:B:36:ILE:HG12	1:B:221:ALA:HA	1.97	0.46
1:C:208:LEU:HB2	1:D:9:ARG:NH2	2.30	0.46
1:A:235:ARG:HD3	4:A:304:PEG:H21	1.97	0.46
1:G:196:ASP:OD2	1:G:200:LYS:HE3	2.15	0.46
1:B:184:MET:HE3	1:B:243:PHE:HZ	1.80	0.46
1:A:76:VAL:HB	1:A:94:ILE:HB	1.97	0.46
1:C:184:MET:HE3	1:C:189:LYS:HB2	1.98	0.46
1:D:74:ASN:HB2	1:D:77:GLU:HG2	1.98	0.46
1:A:4:ARG:NH2	1:B:68:GLU:OE1	2.49	0.46
1:F:24:PRO:HB2	1:F:111:HIS:HA	1.98	0.45
1:B:166:LYS:HB2	1:B:169:GLU:HG2	1.98	0.45
1:B:80:LYS:NZ	1:B:92:ILE:O	2.43	0.45
1:D:76:VAL:HB	1:D:94:ILE:HB	1.99	0.45
1:A:32:ILE:HD11	1:A:220:VAL:HG11	1.98	0.44
1:C:124:VAL:N	1:C:125:PRO:HD3	2.32	0.44
1:D:69:GLY:O	1:G:207:LYS:HE2	2.17	0.44
1:F:126:LEU:HD13	1:F:162:ASN:HD21	1.80	0.44
1:D:124:VAL:N	1:D:125:PRO:CD	2.80	0.44
1:E:76:VAL:HB	1:E:94:ILE:HB	1.98	0.44
1:E:91:ASN:ND2	1:E:93:LYS:HE2	2.32	0.44
1:F:26:LEU:HD22	1:F:108:ILE:HA	1.98	0.44
1:B:24:PRO:HB2	1:B:111:HIS:HA	1.98	0.44
1:G:184:MET:HE3	1:G:189:LYS:HB2	1.99	0.44
1:A:63:ARG:HD2	1:A:212:GLN:HB2	2.00	0.43
1:D:74:ASN:HB2	1:D:77:GLU:CG	2.48	0.43
1:E:120:PHE:CG	1:E:172:ASN:HA	2.53	0.43
1:A:26:LEU:HD22	1:A:108:ILE:HA	2.00	0.43
1:A:96:ASN:ND2	1:G:96:ASN:ND2	2.57	0.43
1:A:35:ILE:HD13	1:A:65:ASN:HB2	1.99	0.43
1:G:124:VAL:O	1:G:124:VAL:HG13	2.19	0.43
1:A:129:ASP:OD2	1:A:141:HIS:NE2	2.42	0.43
1:B:26:LEU:HD22	1:B:108:ILE:HA	2.00	0.43
1:F:126:LEU:HD13	1:F:162:ASN:ND2	2.34	0.43
1:G:24:PRO:HB2	1:G:111:HIS:HA	2.01	0.43
1:A:49:THR:HA	1:A:93:LYS:O	2.18	0.43
1:B:184:MET:CE	4:B:303:PEG:H12	2.49	0.43
1:A:24:PRO:HD2	1:A:112:LYS:HG3	1.99	0.43
1:D:224:CYS:O	1:D:228:LEU:HD22	2.18	0.43
1:E:238:LYS:HE2	1:E:244:TYR:CE1	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:5:TYR:CZ	1:B:44:GLY:HA2	2.54	0.43
1:E:196:ASP:OD2	1:E:200:LYS:HE2	2.18	0.43
1:F:177:VAL:HG13	1:F:194:LEU:HD11	2.00	0.43
1:D:25:ILE:HD11	1:D:45:PHE:CD1	2.54	0.42
1:F:196:ASP:OD2	1:F:200:LYS:HE2	2.19	0.42
5:E:407:HOH:O	1:F:226:HIS:HD2	2.01	0.42
1:E:240:PHE:CG	1:E:241:PRO:HA	2.55	0.42
1:C:167:LYS:H	1:C:167:LYS:CE	2.23	0.42
1:D:5:TYR:O	1:D:8:ASN:HB2	2.19	0.42
1:E:250:GLY:O	1:F:246:SER:HA	2.19	0.42
1:A:11:TYR:CZ	1:B:146:GLY:HA3	2.55	0.42
1:A:166:LYS:HG2	1:A:169:GLU:HG2	2.02	0.42
1:B:164:ILE:HG13	1:B:171:PHE:CE1	2.55	0.42
1:C:23:TYR:HA	1:C:24:PRO:HD3	1.93	0.42
1:E:226:HIS:HE1	5:E:419:HOH:O	2.02	0.42
1:F:249:GLU:HB2	1:F:250:GLY:H	1.49	0.42
1:A:240:PHE:CD1	1:A:241:PRO:HA	2.55	0.41
1:A:240:PHE:CG	1:A:241:PRO:HA	2.55	0.41
1:C:152:THR:HG22	1:C:242:GLU:O	2.20	0.41
1:C:177:VAL:HG13	1:C:194:LEU:HD11	2.02	0.41
1:G:157:LYS:HE2	1:G:157:LYS:HB2	1.89	0.41
1:C:76:VAL:HB	1:C:94:ILE:HB	2.02	0.41
1:D:36:ILE:HG12	1:D:221:ALA:HA	2.02	0.41
1:D:50:ILE:HG22	1:D:76:VAL:HG12	2.02	0.41
1:A:144:ASN:CG	1:A:212:GLN:HB3	2.46	0.41
1:A:32:ILE:HD13	1:A:32:ILE:HG21	1.85	0.41
1:A:197:ILE:HG12	1:B:11:TYR:CZ	2.56	0.41
1:A:208:LEU:HB2	1:B:9:ARG:NH2	2.35	0.41
1:D:23:TYR:HA	1:D:24:PRO:HD3	1.93	0.41
1:F:63:ARG:HD2	1:F:212:GLN:HB2	2.02	0.41
1:F:238:LYS:HE2	1:F:244:TYR:CE1	2.55	0.41
1:G:76:VAL:HB	1:G:94:ILE:HB	2.03	0.41
1:B:136:ASP:HA	1:B:156:PRO:HB3	2.03	0.40
1:C:91:ASN:OD1	1:C:93:LYS:HE2	2.21	0.40
1:D:34:SER:HB2	1:D:79:ILE:HD13	2.02	0.40
1:E:240:PHE:CD1	1:E:241:PRO:HA	2.56	0.40
1:B:240:PHE:CG	1:B:241:PRO:HA	2.56	0.40
1:F:124:VAL:N	1:F:125:PRO:CD	2.85	0.40
1:D:74:ASN:ND2	1:D:74:ASN:H	2.19	0.40
1:F:2:LYS:HE3	1:F:89:LYS:NZ	2.37	0.40
1:F:26:LEU:HB2	1:F:111:HIS:CG	2.56	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:156:PRO:HB2	1:G:157:LYS:HD3	2.04	0.40
1:C:249:GLU:OE2	5:C:401:HOH:O	2.22	0.40
1:G:143:TYR:HA	2:G:301:A1CA3:O9	2.22	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	247/264 (94%)	239 (97%)	7 (3%)	1 (0%)	30	40
1	B	248/264 (94%)	239 (96%)	7 (3%)	2 (1%)	16	23
1	C	247/264 (94%)	237 (96%)	8 (3%)	2 (1%)	16	23
1	D	248/264 (94%)	239 (96%)	8 (3%)	1 (0%)	30	40
1	E	247/264 (94%)	239 (97%)	7 (3%)	1 (0%)	30	40
1	F	248/264 (94%)	240 (97%)	7 (3%)	1 (0%)	30	40
1	G	247/264 (94%)	237 (96%)	8 (3%)	2 (1%)	16	23
All	All	1732/1848 (94%)	1670 (96%)	52 (3%)	10 (1%)	22	29

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	63	ARG
1	C	63	ARG
1	D	63	ARG
1	G	249	GLU
1	E	124	VAL
1	B	124	VAL
1	F	124	VAL
1	A	124	VAL

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Mol	Chain	Res	Type
1	G	124	VAL
1	C	124	VAL

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	221/235 (94%)	215 (97%)	6 (3%)	40	57
1	B	222/235 (94%)	214 (96%)	8 (4%)	30	44
1	C	221/235 (94%)	214 (97%)	7 (3%)	34	49
1	D	222/235 (94%)	212 (96%)	10 (4%)	23	34
1	E	221/235 (94%)	218 (99%)	3 (1%)	62	77
1	F	222/235 (94%)	216 (97%)	6 (3%)	40	57
1	G	221/235 (94%)	212 (96%)	9 (4%)	26	38
All	All	1550/1645 (94%)	1501 (97%)	49 (3%)	34	49

All (49) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	27	LEU
1	A	123	GLU
1	A	136	ASP
1	A	166	LYS
1	A	215	VAL
1	A	247	SER
1	B	22	ASP
1	B	101	SER
1	B	106	GLU
1	B	123	GLU
1	B	167	LYS
1	B	205	ARG
1	B	213	LEU
1	B	247	SER
1	C	27	LEU

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Mol	Chain	Res	Type
1	C	58	ASN
1	C	152	THR
1	C	167	LYS
1	C	181	SER
1	C	183	TYR
1	C	215	VAL
1	D	7	ARG
1	D	27	LEU
1	D	82	ARG
1	D	122	SER
1	D	124	VAL
1	D	136	ASP
1	D	181	SER
1	D	208	LEU
1	D	228	LEU
1	D	247	SER
1	E	27	LEU
1	E	122	SER
1	E	220	VAL
1	F	27	LEU
1	F	58	ASN
1	F	136	ASP
1	F	155	SER
1	F	247	SER
1	F	249	GLU
1	G	27	LEU
1	G	58	ASN
1	G	122	SER
1	G	124	VAL
1	G	157	LYS
1	G	161	LEU
1	G	207	LYS
1	G	247	SER
1	G	249	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	96	ASN
1	A	230	ASN
1	B	96	ASN
1	C	95	HIS

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Mol	Chain	Res	Type
1	C	96	ASN
1	C	203	ASN
1	D	74	ASN
1	D	96	ASN
1	E	91	ASN
1	E	203	ASN
1	F	3	HIS
1	F	162	ASN
1	G	74	ASN

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 oligosaccharides in this entry.

5.6 Ligand geometry

19 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	PEG	A	305	-	6,6,6	0.49	0	5,5,5	0.51	0
2	A1CA3	C	301	-	18,18,18	0.17	0	19,21,21	1.06	2 (10%)
4	PEG	A	303	-	6,6,6	0.56	0	5,5,5	0.56	0
3	MAE	F	302	-	7,7,7	1.25	1 (14%)	8,8,8	1.29	1 (12%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	PEG	B	303	-	6,6,6	0.54	0	5,5,5	0.33	0
2	A1CA3	F	301	-	18,18,18	0.14	0	19,21,21	0.79	1 (5%)
3	MAE	A	302	-	7,7,7	1.19	0	8,8,8	1.26	0
2	A1CA3	A	301	-	18,18,18	0.21	0	19,21,21	0.92	1 (5%)
3	MAE	E	302	-	7,7,7	1.23	1 (14%)	8,8,8	1.32	0
3	MAE	D	302	-	7,7,7	1.19	0	8,8,8	1.30	1 (12%)
2	A1CA3	B	301	-	18,18,18	0.20	0	19,21,21	0.99	1 (5%)
3	MAE	C	302	-	7,7,7	1.25	1 (14%)	8,8,8	1.24	1 (12%)
4	PEG	E	303	-	6,6,6	0.50	0	5,5,5	0.41	0
2	A1CA3	D	301	-	18,18,18	0.18	0	19,21,21	0.94	1 (5%)
2	A1CA3	E	301	-	18,18,18	0.21	0	19,21,21	1.02	2 (10%)
2	A1CA3	G	301	-	18,18,18	0.23	0	19,21,21	1.12	2 (10%)
3	MAE	B	302	-	7,7,7	1.28	1 (14%)	8,8,8	1.34	1 (12%)
3	MAE	G	302	-	7,7,7	1.24	1 (14%)	8,8,8	1.31	1 (12%)
4	PEG	A	304	-	6,6,6	0.49	0	5,5,5	0.45	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	PEG	A	305	-	-	3/4/4/4	-
2	A1CA3	C	301	-	-	7/11/23/23	1/1/1/1
4	PEG	A	303	-	-	3/4/4/4	-
3	MAE	F	302	-	-	4/5/5/5	-
4	PEG	B	303	-	-	2/4/4/4	-
2	A1CA3	F	301	-	-	7/11/23/23	1/1/1/1
3	MAE	A	302	-	-	4/5/5/5	-
2	A1CA3	A	301	-	-	7/11/23/23	1/1/1/1
3	MAE	E	302	-	-	4/5/5/5	-
3	MAE	D	302	-	-	4/5/5/5	-
2	A1CA3	B	301	-	-	7/11/23/23	1/1/1/1
3	MAE	C	302	-	-	4/5/5/5	-
4	PEG	E	303	-	-	2/4/4/4	-
2	A1CA3	D	301	-	-	7/11/23/23	1/1/1/1
2	A1CA3	E	301	-	-	7/11/23/23	1/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	A1CA3	G	301	-	-	7/11/23/23	1/1/1/1
3	MAE	B	302	-	-	4/5/5/5	-
3	MAE	G	302	-	-	4/5/5/5	-
4	PEG	A	304	-	-	2/4/4/4	-

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	302	MAE	O2-C1	-2.40	1.24	1.30
3	E	302	MAE	O2-C1	-2.25	1.24	1.30
3	F	302	MAE	O2-C1	-2.25	1.24	1.30
3	G	302	MAE	O4-C4	-2.15	1.24	1.30
3	C	302	MAE	O2-C1	-2.09	1.25	1.30

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	B	302	MAE	C3-C2-C1	-2.57	114.00	127.05
3	F	302	MAE	C3-C2-C1	-2.53	114.19	127.05
2	G	301	A1CA3	O13-C12-C11	-2.50	118.86	121.24
3	G	302	MAE	C3-C2-C1	-2.47	114.47	127.05
2	G	301	A1CA3	C12-C11-N10	2.44	114.55	108.73
2	E	301	A1CA3	O13-C12-C11	-2.38	118.98	121.24
2	B	301	A1CA3	O13-C12-C11	-2.36	119.00	121.24
2	C	301	A1CA3	O13-C12-C11	-2.26	119.09	121.24
2	F	301	A1CA3	O13-C12-C11	-2.12	119.22	121.24
3	C	302	MAE	C3-C2-C1	-2.11	116.30	127.05
2	C	301	A1CA3	C17-N18-C12	2.10	131.14	126.98
3	D	302	MAE	O2-C1-O1	-2.09	118.44	122.70
2	A	301	A1CA3	O13-C12-C11	-2.08	119.26	121.24
2	E	301	A1CA3	C12-C11-N10	2.07	113.68	108.73
2	D	301	A1CA3	O13-C12-C11	-2.01	119.33	121.24

There are no chirality outliers.

All (89) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	F	301	A1CA3	C12-C11-N10-C8
3	G	302	MAE	O1-C1-C2-C3
3	A	302	MAE	O1-C1-C2-C3

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Mol	Chain	Res	Type	Atoms
3	G	302	MAE	O2-C1-C2-C3
3	A	302	MAE	O2-C1-C2-C3
3	B	302	MAE	O2-C1-C2-C3
3	D	302	MAE	O2-C1-C2-C3
3	E	302	MAE	O2-C1-C2-C3
3	D	302	MAE	O1-C1-C2-C3
3	E	302	MAE	O1-C1-C2-C3
3	F	302	MAE	O2-C1-C2-C3
2	E	301	A1CA3	C6-C7-C8-N10
2	F	301	A1CA3	C6-C7-C8-N10
2	G	301	A1CA3	C6-C7-C8-N10
3	B	302	MAE	O1-C1-C2-C3
3	C	302	MAE	O1-C1-C2-C3
3	C	302	MAE	O2-C1-C2-C3
2	E	301	A1CA3	C6-C7-C8-O9
2	F	301	A1CA3	C6-C7-C8-O9
2	C	301	A1CA3	C6-C7-C8-N10
2	D	301	A1CA3	C6-C7-C8-N10
3	F	302	MAE	O1-C1-C2-C3
4	B	303	PEG	O1-C1-C2-O2
2	A	301	A1CA3	C6-C7-C8-N10
2	B	301	A1CA3	C6-C7-C8-N10
2	C	301	A1CA3	C6-C7-C8-O9
2	D	301	A1CA3	C6-C7-C8-O9
2	A	301	A1CA3	C6-C7-C8-O9
2	G	301	A1CA3	C6-C7-C8-O9
4	A	303	PEG	O2-C3-C4-O4
4	A	305	PEG	O1-C1-C2-O2
2	B	301	A1CA3	C6-C7-C8-O9
4	A	304	PEG	O1-C1-C2-O2
4	B	303	PEG	O2-C3-C4-O4
4	A	303	PEG	O1-C1-C2-O2
4	E	303	PEG	O1-C1-C2-O2
4	E	303	PEG	O2-C3-C4-O4
3	G	302	MAE	C2-C3-C4-O3
3	G	302	MAE	C2-C3-C4-O4
2	A	301	A1CA3	C5-C6-C7-C8
2	G	301	A1CA3	C5-C6-C7-C8
3	A	302	MAE	C2-C3-C4-O4
3	B	302	MAE	C2-C3-C4-O4
3	E	302	MAE	C2-C3-C4-O4
3	A	302	MAE	C2-C3-C4-O3

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Mol	Chain	Res	Type	Atoms
2	D	301	A1CA3	C4-C5-C6-C7
2	B	301	A1CA3	C4-C5-C6-C7
3	B	302	MAE	C2-C3-C4-O3
3	D	302	MAE	C2-C3-C4-O3
3	E	302	MAE	C2-C3-C4-O3
3	D	302	MAE	C2-C3-C4-O4
2	C	301	A1CA3	C4-C5-C6-C7
3	C	302	MAE	C2-C3-C4-O3
2	E	301	A1CA3	C5-C6-C7-C8
2	A	301	A1CA3	C12-C11-N10-C8
2	B	301	A1CA3	C12-C11-N10-C8
2	C	301	A1CA3	C12-C11-N10-C8
2	D	301	A1CA3	C12-C11-N10-C8
2	E	301	A1CA3	C12-C11-N10-C8
2	G	301	A1CA3	C12-C11-N10-C8
4	A	304	PEG	C4-C3-O2-C2
2	F	301	A1CA3	C4-C5-C6-C7
2	E	301	A1CA3	C4-C5-C6-C7
3	C	302	MAE	C2-C3-C4-O4
3	F	302	MAE	C2-C3-C4-O3
2	G	301	A1CA3	C4-C5-C6-C7
2	A	301	A1CA3	C14-C11-N10-C8
2	D	301	A1CA3	C5-C6-C7-C8
2	C	301	A1CA3	C3-C4-C5-C6
2	A	301	A1CA3	C4-C5-C6-C7
2	B	301	A1CA3	C3-C4-C5-C6
2	D	301	A1CA3	C3-C4-C5-C6
4	A	305	PEG	O2-C3-C4-O4
3	F	302	MAE	C2-C3-C4-O4
2	F	301	A1CA3	C3-C4-C5-C6
2	A	301	A1CA3	C3-C4-C5-C6
2	B	301	A1CA3	C5-C6-C7-C8
2	E	301	A1CA3	C3-C4-C5-C6
2	G	301	A1CA3	C3-C4-C5-C6
2	C	301	A1CA3	C5-C6-C7-C8
2	F	301	A1CA3	C5-C6-C7-C8
2	B	301	A1CA3	C14-C11-N10-C8
2	C	301	A1CA3	C14-C11-N10-C8
2	D	301	A1CA3	C14-C11-N10-C8
2	E	301	A1CA3	C14-C11-N10-C8
2	F	301	A1CA3	C14-C11-N10-C8
2	G	301	A1CA3	C14-C11-N10-C8

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Mol	Chain	Res	Type	Atoms
4	A	303	PEG	C1-C2-O2-C3
4	A	305	PEG	C4-C3-O2-C2

All (7) ring outliers are listed below:

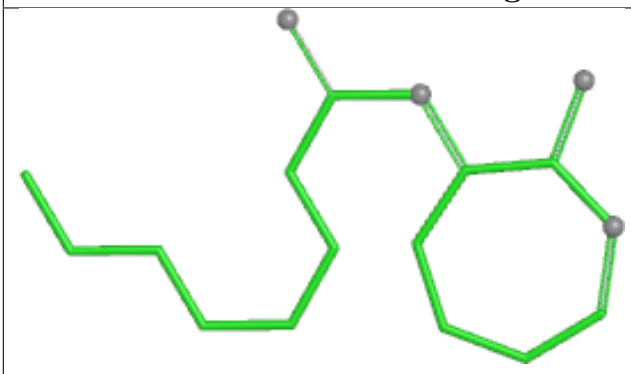
Mol	Chain	Res	Type	Atoms
2	G	301	A1CA3	C11-C12-C14-C15-C16-C17-N18
2	D	301	A1CA3	C11-C12-C14-C15-C16-C17-N18
2	C	301	A1CA3	C11-C12-C14-C15-C16-C17-N18
2	B	301	A1CA3	C11-C12-C14-C15-C16-C17-N18
2	E	301	A1CA3	C11-C12-C14-C15-C16-C17-N18
2	A	301	A1CA3	C11-C12-C14-C15-C16-C17-N18
2	F	301	A1CA3	C11-C12-C14-C15-C16-C17-N18

11 monomers are involved in 12 short contacts:

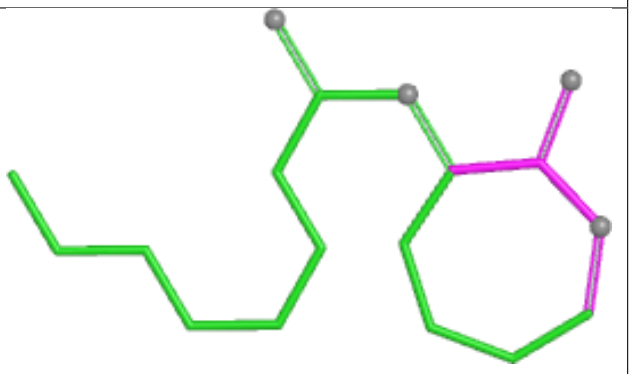
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	301	A1CA3	1	0
4	B	303	PEG	3	0
3	A	302	MAE	1	0
3	D	302	MAE	1	0
2	B	301	A1CA3	1	0
3	C	302	MAE	1	0
2	D	301	A1CA3	1	0
2	G	301	A1CA3	2	0
3	B	302	MAE	1	0
3	G	302	MAE	1	0
4	A	304	PEG	3	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less 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 A1CA3 C 301

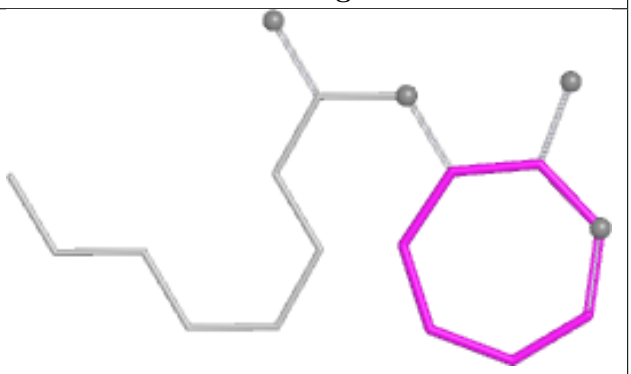


Bond lengths



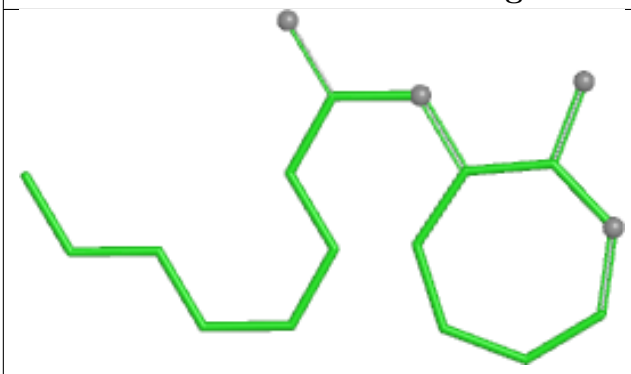
Bond angles

Torsions

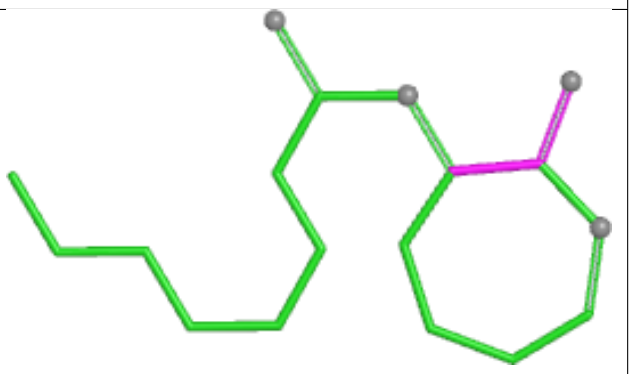


Rings

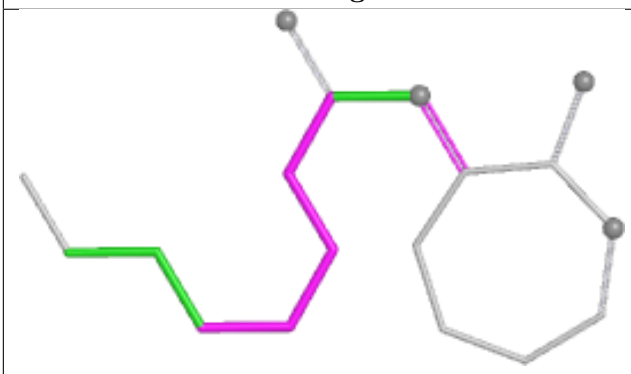
Ligand A1CA3 F 301



Bond lengths



Bond angles



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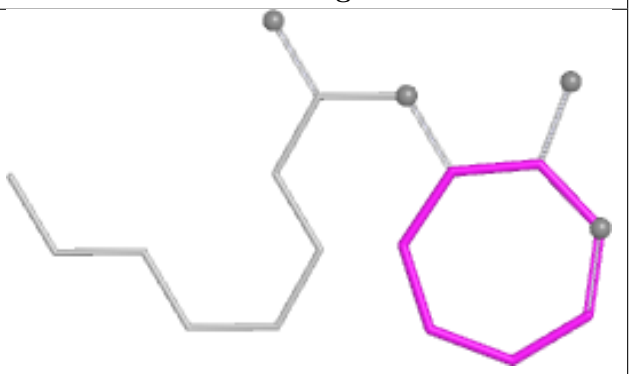
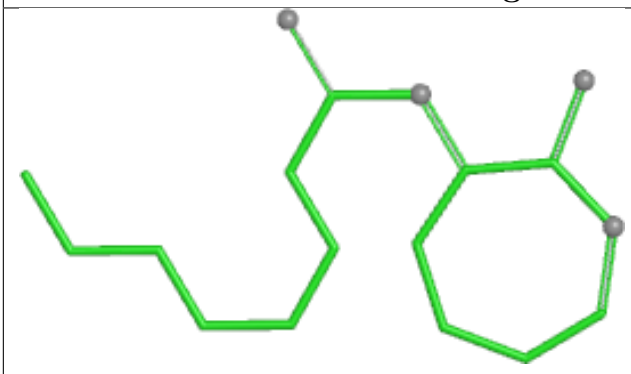
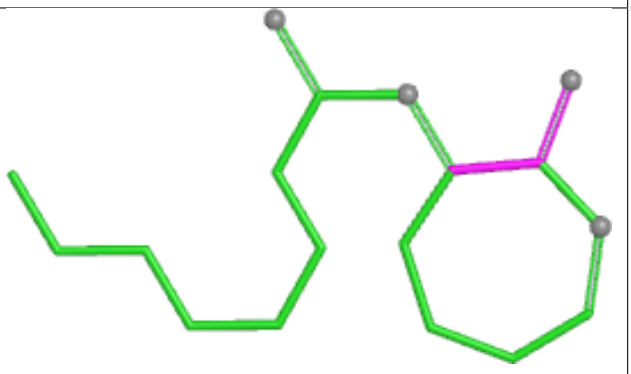


Rings

Ligand A1CA3 A 301

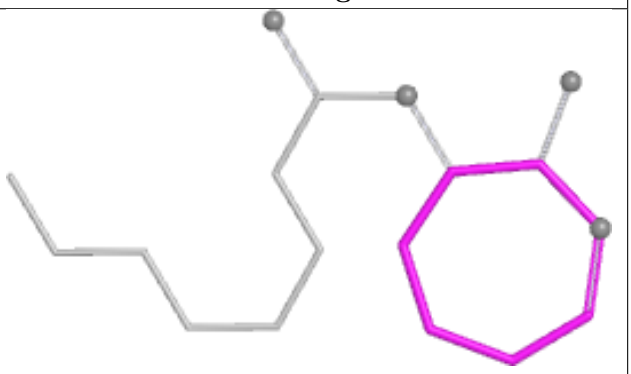


Bond lengths



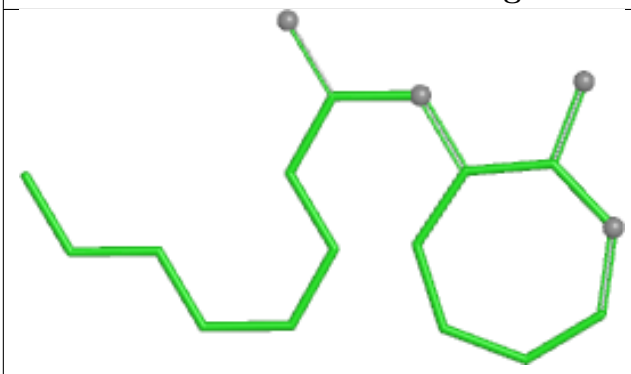
Bond angles

Torsions

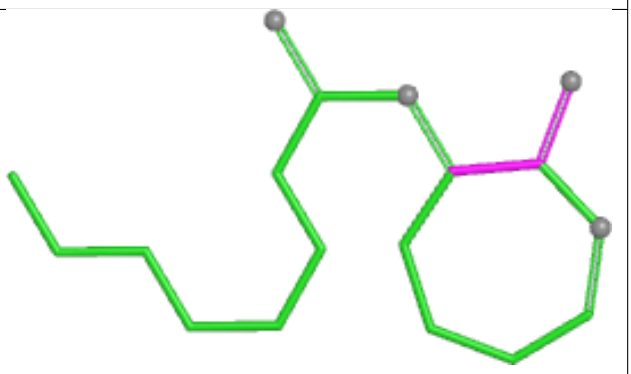


Rings

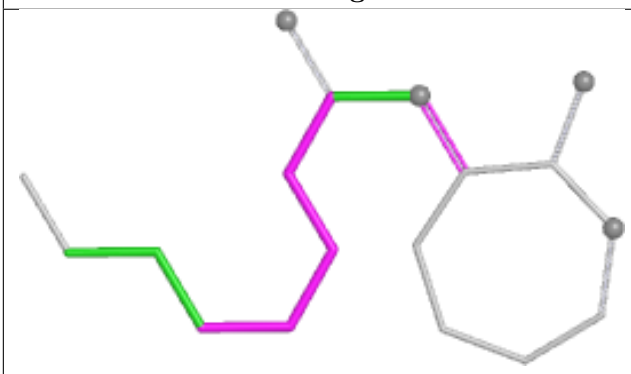
Ligand A1CA3 B 301



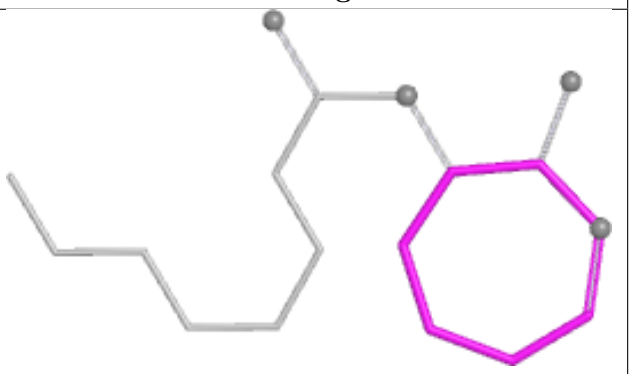
Bond lengths



Bond angles

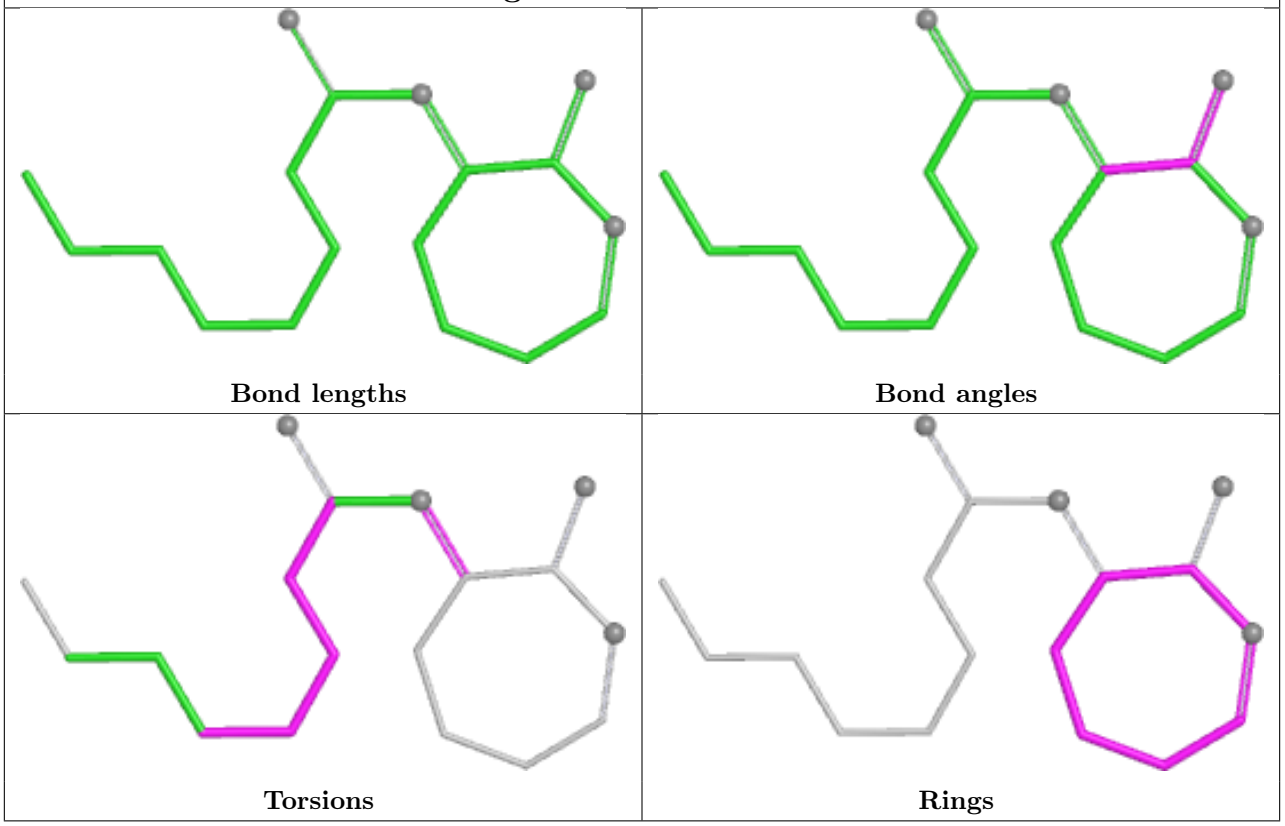


Torsions

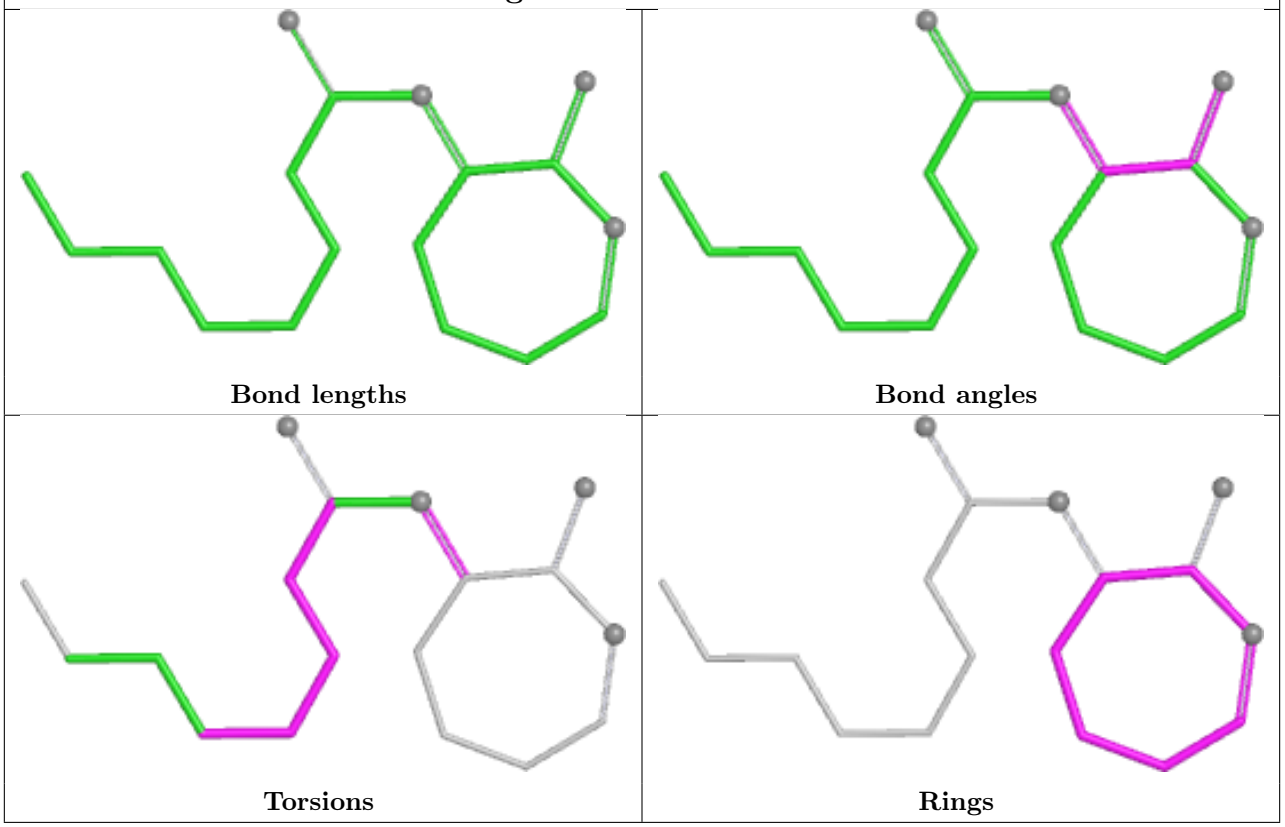


Rings

Ligand A1CA3 D 301



Ligand A1CA3 E 301



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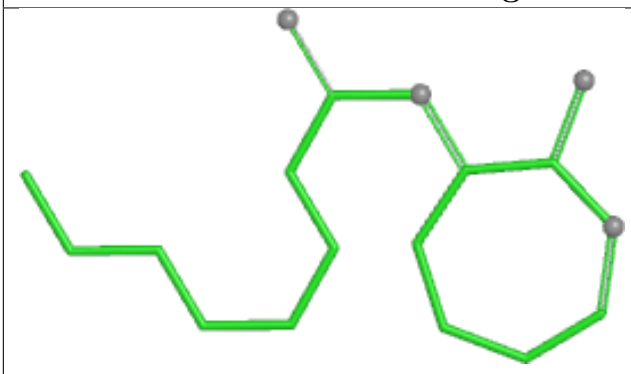
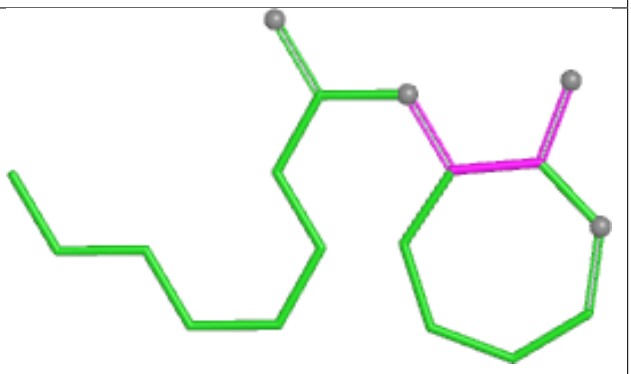
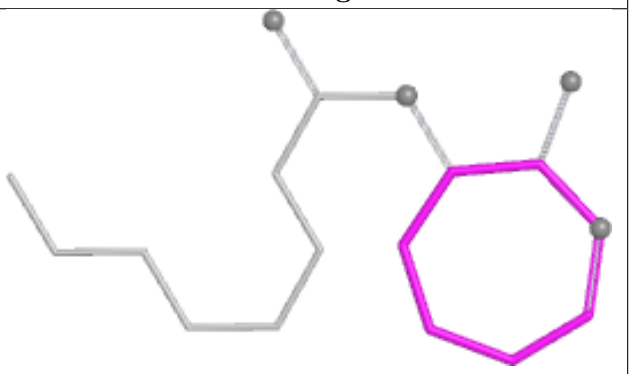


Bond lengths



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	249/264 (94%)	-0.35	3 (1%)	76	78	41, 68, 105, 144	0
1	B	250/264 (94%)	-0.33	4 (1%)	70	74	42, 68, 108, 164	0
1	C	249/264 (94%)	-0.35	3 (1%)	76	78	41, 68, 104, 155	0
1	D	250/264 (94%)	-0.28	5 (2%)	64	69	47, 74, 113, 164	0
1	E	249/264 (94%)	-0.30	3 (1%)	76	78	44, 71, 107, 158	0
1	F	250/264 (94%)	-0.10	5 (2%)	64	69	55, 89, 128, 165	0
1	G	249/264 (94%)	-0.50	3 (1%)	76	78	43, 60, 93, 132	0
All	All	1746/1848 (94%)	-0.31	26 (1%)	71	75	41, 70, 114, 165	0

All (26) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	2	LYS	4.8
1	A	2	LYS	4.3
1	G	2	LYS	3.8
1	C	3	HIS	3.8
1	C	2	LYS	3.6
1	D	250	GLY	3.6
1	B	2	LYS	3.5
1	E	2	LYS	3.4
1	G	3	HIS	3.3
1	G	249	GLU	3.0
1	C	250	GLY	3.0
1	F	3	HIS	3.0
1	A	3	HIS	2.9
1	E	183	TYR	2.8
1	D	2	LYS	2.8
1	F	250	GLY	2.4
1	A	167	LYS	2.3

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Mol	Chain	Res	Type	RSRZ
1	E	3	HIS	2.2
1	B	3	HIS	2.2
1	F	1	MET	2.1
1	B	1	MET	2.1
1	D	123	GLU	2.1
1	B	167	LYS	2.1
1	D	3	HIS	2.0
1	F	170	LYS	2.0
1	D	122	SER	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 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	MAE	D	302	8/8	0.62	0.21	92,107,124,128	0
3	MAE	B	302	8/8	0.68	0.21	90,95,108,111	0
3	MAE	E	302	8/8	0.68	0.19	94,105,119,121	0
3	MAE	F	302	8/8	0.70	0.18	95,99,114,116	0
3	MAE	C	302	8/8	0.74	0.19	87,97,102,103	0
3	MAE	G	302	8/8	0.77	0.17	85,86,95,98	0
3	MAE	A	302	8/8	0.78	0.14	73,80,91,97	0
4	PEG	A	304	7/7	0.80	0.18	69,72,81,83	0
4	PEG	A	305	7/7	0.86	0.21	59,68,78,79	0
4	PEG	B	303	7/7	0.86	0.16	62,67,78,80	0
4	PEG	A	303	7/7	0.88	0.15	67,68,76,78	0
2	A1CA3	F	301	18/18	0.93	0.12	52,68,78,82	0
2	A1CA3	A	301	18/18	0.94	0.11	46,52,65,67	0
2	A1CA3	B	301	18/18	0.94	0.11	47,55,61,78	0

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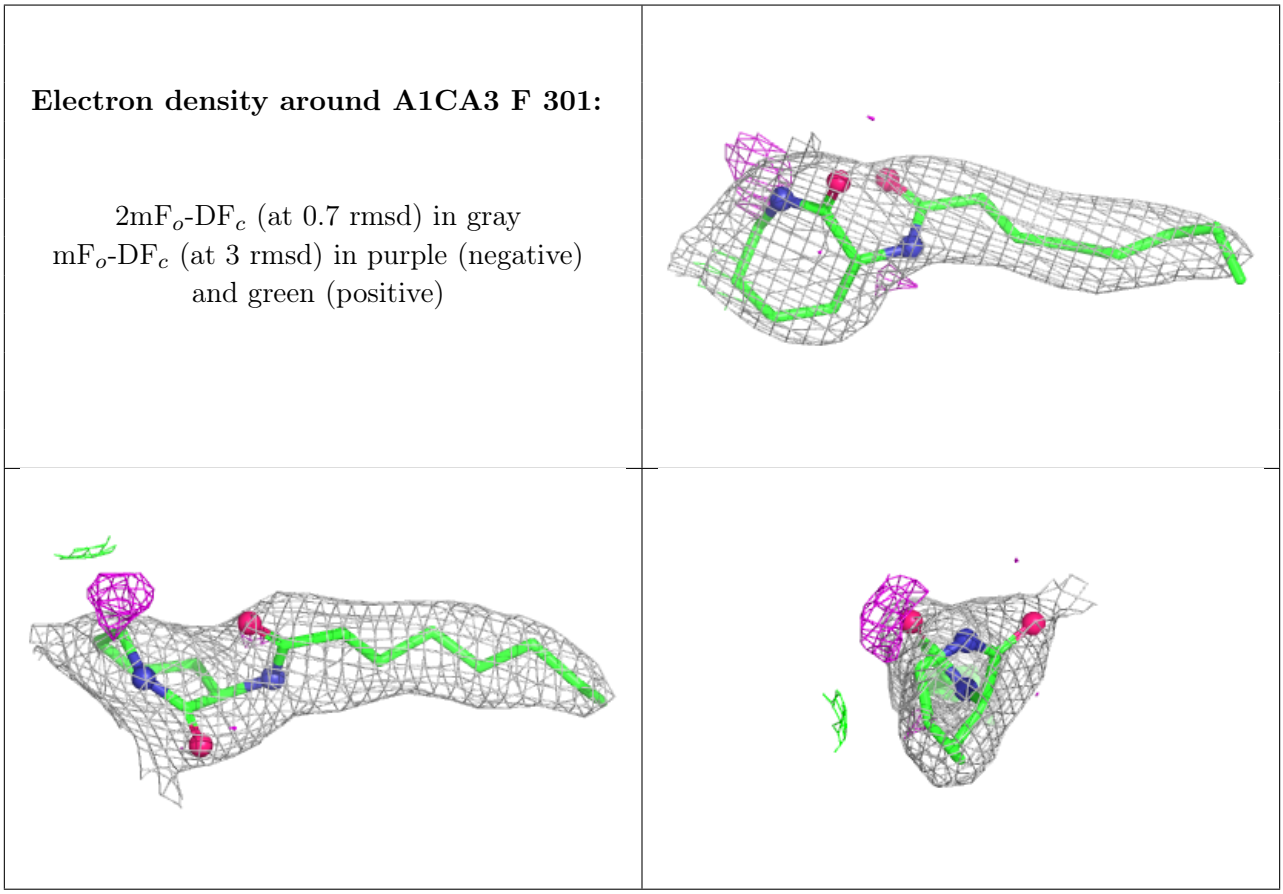
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	A1CA3	D	301	18/18	0.94	0.12	45,60,73,75	0
4	PEG	E	303	7/7	0.94	0.11	71,81,84,84	0
2	A1CA3	E	301	18/18	0.95	0.12	48,61,75,78	0
2	A1CA3	G	301	18/18	0.95	0.10	40,54,65,66	0
2	A1CA3	C	301	18/18	0.96	0.10	47,52,67,81	0

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.

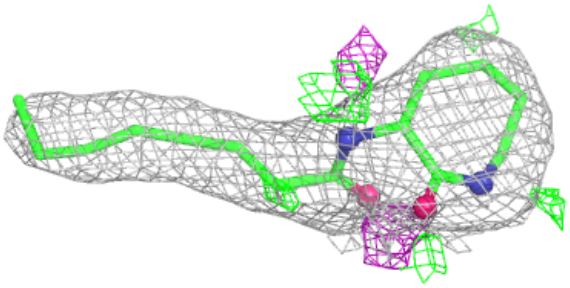
Electron density around A1CA3 F 301:

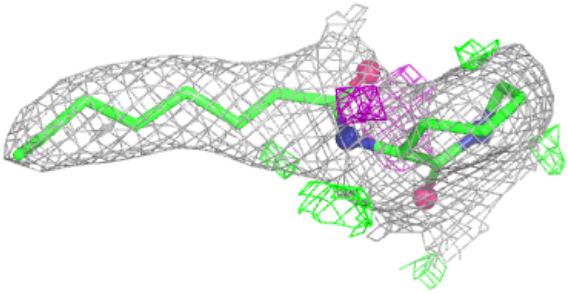
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

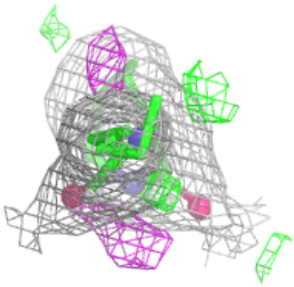


Electron density around A1CA3 A 301:

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

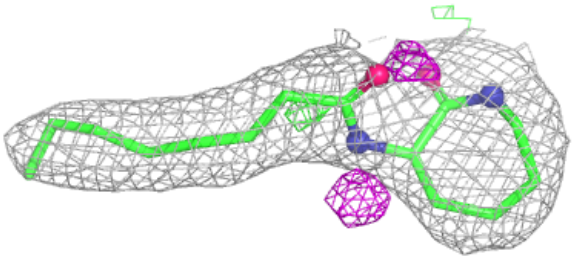


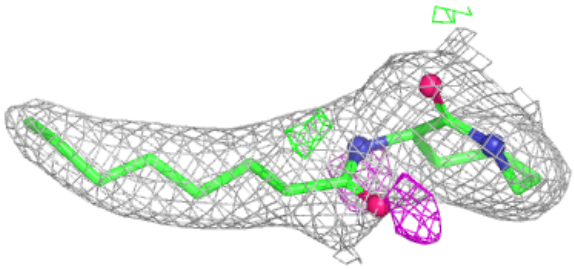


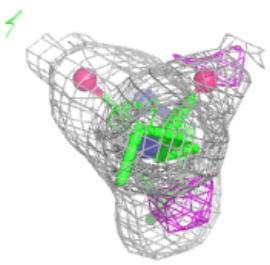


Electron density around A1CA3 B 301:

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

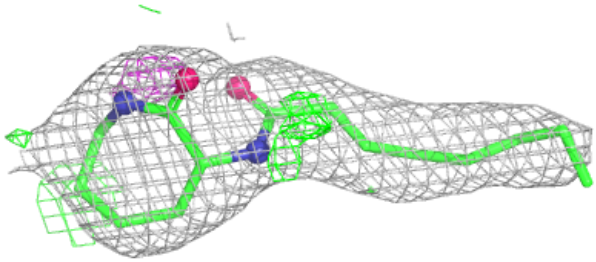


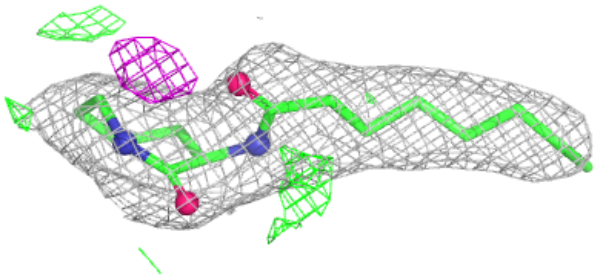


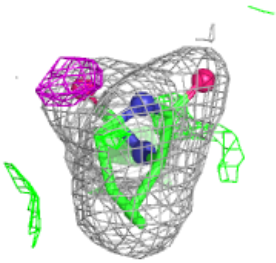


Electron density around A1CA3 D 301:

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

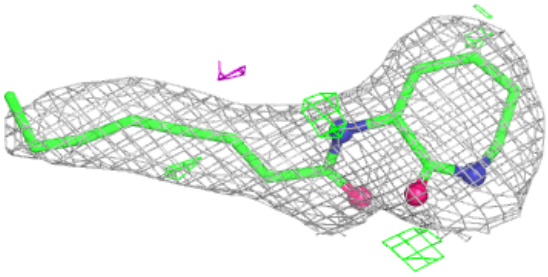


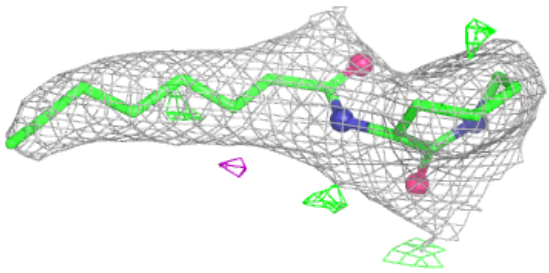


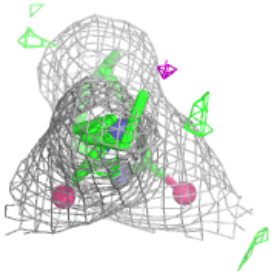


Electron density around A1CA3 E 301:

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

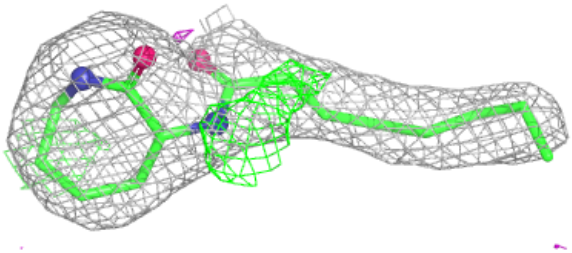


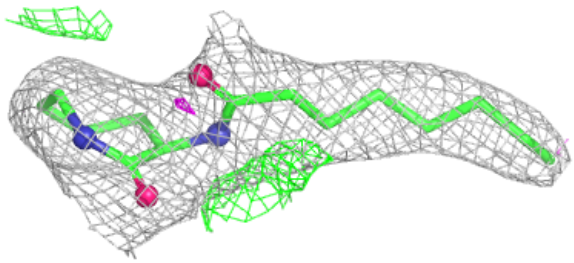


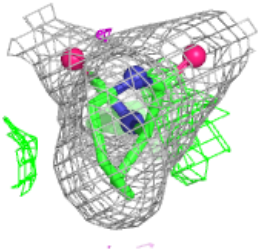


Electron density around A1CA3 G 301:

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

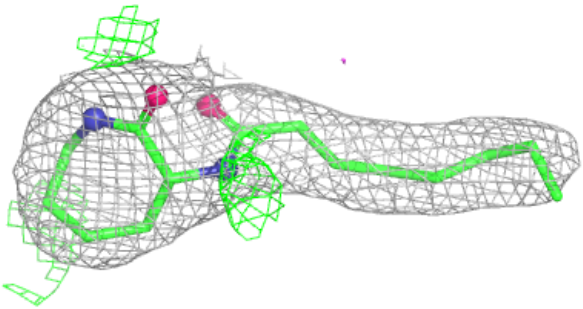


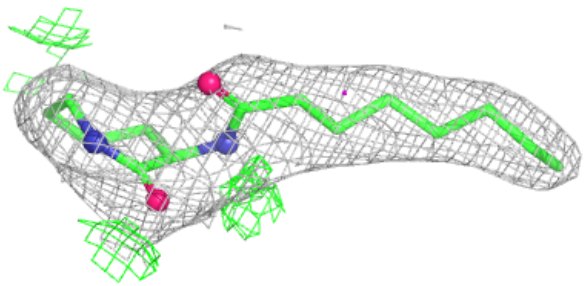


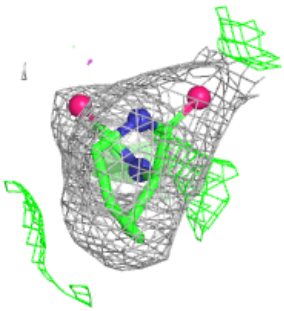


Electron density around A1CA3 C 301:

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







6.5 Other polymers (i)

There are no such residues in this entry.