wwPDB EM Validation Summary Report ⓘ

Oct 13, 2025 – 01:02 PM EDT

PDB ID : 9O9U / pdb_00009o9u
EMDB ID : EMD-70263
Title : The Erlin1/2 complex
Authors : Gao, J.; Shao, S.
Deposited on : 2025-04-18
Resolution : 3.00 Å(reported)

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

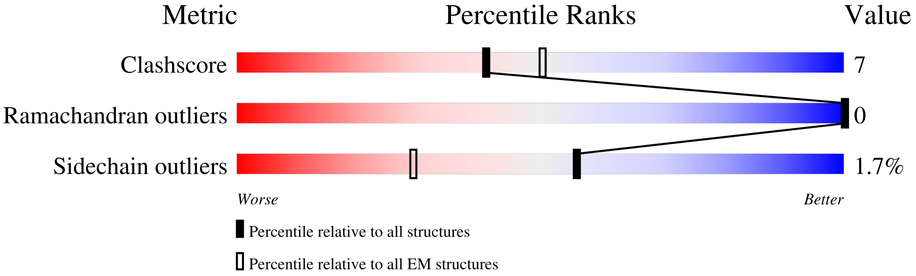
EMDB validation analysis : 0.0.1.dev129
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.46

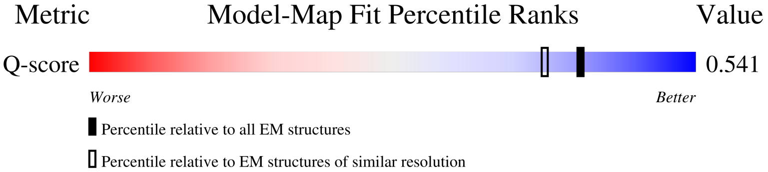
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.00 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)**	**EM structures (#Entries)**	**Similar EM resolution (#Entries, resolution range(Å))**
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	14081 (2.50 - 3.50)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the 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 EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	**Chain**	**Length**	**Quality of chain**
1	A	381	
1	B	381	
1	C	381	
1	D	381	

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Mol	Chain	Length	Quality of chain
1	E	381	61% 15% 24%
1	F	381	61% 15% 24%
1	G	381	63% 13% • 24%
1	H	381	65% 10% • 24%
1	I	381	60% 16% • 24%
1	J	381	66% 10% 24%
1	K	381	65% 11% 24%
1	L	381	66% 10% 24%
1	M	381	65% 10% • 24%
2	a	339	70% 16% 14%
2	b	339	72% 13% • 14%
2	c	339	70% 15% • 14%
2	d	339	70% 15% 14%
2	e	339	• 72% 14% 14%
2	f	339	75% 10% 14%
2	g	339	73% 13% 14%
2	h	339	72% 14% 14%
2	i	339	71% 15% 14%
2	j	339	75% 9% • 14%
2	k	339	72% 14% 14%
2	l	339	73% 12% 14%
2	m	339	70% 15% • 14%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 60697 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 Erlin-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	291	2337	1498	394	436	9	0	0
1	B	291	2337	1498	394	436	9	0	0
1	C	291	2337	1498	394	436	9	0	0
1	D	291	2337	1498	394	436	9	0	0
1	E	291	2337	1498	394	436	9	0	0
1	F	291	2337	1498	394	436	9	0	0
1	G	291	2337	1498	394	436	9	0	0
1	H	291	2337	1498	394	436	9	0	0
1	I	291	2337	1498	394	436	9	0	0
1	J	291	2337	1498	394	436	9	0	0
1	K	291	2337	1498	394	436	9	0	0
1	L	291	2337	1498	394	436	9	0	0
1	M	291	2337	1498	394	436	9	0	0

There are 455 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-32	MET	-	initiating methionine	UNP O75477
A	-31	SER	-	expression tag	UNP O75477
A	-30	ALA	-	expression tag	UNP O75477
A	-29	TRP	-	expression tag	UNP O75477

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-28	SER	-	expression tag	UNP O75477
A	-27	HIS	-	expression tag	UNP O75477
A	-26	PRO	-	expression tag	UNP O75477
A	-25	GLN	-	expression tag	UNP O75477
A	-24	PHE	-	expression tag	UNP O75477
A	-23	GLU	-	expression tag	UNP O75477
A	-22	LYS	-	expression tag	UNP O75477
A	-21	GLY	-	expression tag	UNP O75477
A	-20	GLY	-	expression tag	UNP O75477
A	-19	GLY	-	expression tag	UNP O75477
A	-18	SER	-	expression tag	UNP O75477
A	-17	GLY	-	expression tag	UNP O75477
A	-16	GLY	-	expression tag	UNP O75477
A	-15	GLY	-	expression tag	UNP O75477
A	-14	SER	-	expression tag	UNP O75477
A	-13	GLY	-	expression tag	UNP O75477
A	-12	GLY	-	expression tag	UNP O75477
A	-11	SER	-	expression tag	UNP O75477
A	-10	ALA	-	expression tag	UNP O75477
A	-9	TRP	-	expression tag	UNP O75477
A	-8	SER	-	expression tag	UNP O75477
A	-7	HIS	-	expression tag	UNP O75477
A	-6	PRO	-	expression tag	UNP O75477
A	-5	GLN	-	expression tag	UNP O75477
A	-4	PHE	-	expression tag	UNP O75477
A	-3	GLU	-	expression tag	UNP O75477
A	-2	LYS	-	expression tag	UNP O75477
A	-1	GLY	-	expression tag	UNP O75477
A	0	SER	-	expression tag	UNP O75477
A	1	GLY	-	expression tag	UNP O75477
A	2	SER	-	expression tag	UNP O75477
B	-32	MET	-	initiating methionine	UNP O75477
B	-31	SER	-	expression tag	UNP O75477
B	-30	ALA	-	expression tag	UNP O75477
B	-29	TRP	-	expression tag	UNP O75477
B	-28	SER	-	expression tag	UNP O75477
B	-27	HIS	-	expression tag	UNP O75477
B	-26	PRO	-	expression tag	UNP O75477
B	-25	GLN	-	expression tag	UNP O75477
B	-24	PHE	-	expression tag	UNP O75477
B	-23	GLU	-	expression tag	UNP O75477
B	-22	LYS	-	expression tag	UNP O75477

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-21	GLY	-	expression tag	UNP O75477
B	-20	GLY	-	expression tag	UNP O75477
B	-19	GLY	-	expression tag	UNP O75477
B	-18	SER	-	expression tag	UNP O75477
B	-17	GLY	-	expression tag	UNP O75477
B	-16	GLY	-	expression tag	UNP O75477
B	-15	GLY	-	expression tag	UNP O75477
B	-14	SER	-	expression tag	UNP O75477
B	-13	GLY	-	expression tag	UNP O75477
B	-12	GLY	-	expression tag	UNP O75477
B	-11	SER	-	expression tag	UNP O75477
B	-10	ALA	-	expression tag	UNP O75477
B	-9	TRP	-	expression tag	UNP O75477
B	-8	SER	-	expression tag	UNP O75477
B	-7	HIS	-	expression tag	UNP O75477
B	-6	PRO	-	expression tag	UNP O75477
B	-5	GLN	-	expression tag	UNP O75477
B	-4	PHE	-	expression tag	UNP O75477
B	-3	GLU	-	expression tag	UNP O75477
B	-2	LYS	-	expression tag	UNP O75477
B	-1	GLY	-	expression tag	UNP O75477
B	0	SER	-	expression tag	UNP O75477
B	1	GLY	-	expression tag	UNP O75477
B	2	SER	-	expression tag	UNP O75477
C	-32	MET	-	initiating methionine	UNP O75477
C	-31	SER	-	expression tag	UNP O75477
C	-30	ALA	-	expression tag	UNP O75477
C	-29	TRP	-	expression tag	UNP O75477
C	-28	SER	-	expression tag	UNP O75477
C	-27	HIS	-	expression tag	UNP O75477
C	-26	PRO	-	expression tag	UNP O75477
C	-25	GLN	-	expression tag	UNP O75477
C	-24	PHE	-	expression tag	UNP O75477
C	-23	GLU	-	expression tag	UNP O75477
C	-22	LYS	-	expression tag	UNP O75477
C	-21	GLY	-	expression tag	UNP O75477
C	-20	GLY	-	expression tag	UNP O75477
C	-19	GLY	-	expression tag	UNP O75477
C	-18	SER	-	expression tag	UNP O75477
C	-17	GLY	-	expression tag	UNP O75477
C	-16	GLY	-	expression tag	UNP O75477
C	-15	GLY	-	expression tag	UNP O75477

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-14	SER	-	expression tag	UNP O75477
C	-13	GLY	-	expression tag	UNP O75477
C	-12	GLY	-	expression tag	UNP O75477
C	-11	SER	-	expression tag	UNP O75477
C	-10	ALA	-	expression tag	UNP O75477
C	-9	TRP	-	expression tag	UNP O75477
C	-8	SER	-	expression tag	UNP O75477
C	-7	HIS	-	expression tag	UNP O75477
C	-6	PRO	-	expression tag	UNP O75477
C	-5	GLN	-	expression tag	UNP O75477
C	-4	PHE	-	expression tag	UNP O75477
C	-3	GLU	-	expression tag	UNP O75477
C	-2	LYS	-	expression tag	UNP O75477
C	-1	GLY	-	expression tag	UNP O75477
C	0	SER	-	expression tag	UNP O75477
C	1	GLY	-	expression tag	UNP O75477
C	2	SER	-	expression tag	UNP O75477
D	-32	MET	-	initiating methionine	UNP O75477
D	-31	SER	-	expression tag	UNP O75477
D	-30	ALA	-	expression tag	UNP O75477
D	-29	TRP	-	expression tag	UNP O75477
D	-28	SER	-	expression tag	UNP O75477
D	-27	HIS	-	expression tag	UNP O75477
D	-26	PRO	-	expression tag	UNP O75477
D	-25	GLN	-	expression tag	UNP O75477
D	-24	PHE	-	expression tag	UNP O75477
D	-23	GLU	-	expression tag	UNP O75477
D	-22	LYS	-	expression tag	UNP O75477
D	-21	GLY	-	expression tag	UNP O75477
D	-20	GLY	-	expression tag	UNP O75477
D	-19	GLY	-	expression tag	UNP O75477
D	-18	SER	-	expression tag	UNP O75477
D	-17	GLY	-	expression tag	UNP O75477
D	-16	GLY	-	expression tag	UNP O75477
D	-15	GLY	-	expression tag	UNP O75477
D	-14	SER	-	expression tag	UNP O75477
D	-13	GLY	-	expression tag	UNP O75477
D	-12	GLY	-	expression tag	UNP O75477
D	-11	SER	-	expression tag	UNP O75477
D	-10	ALA	-	expression tag	UNP O75477
D	-9	TRP	-	expression tag	UNP O75477
D	-8	SER	-	expression tag	UNP O75477

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-7	HIS	-	expression tag	UNP O75477
D	-6	PRO	-	expression tag	UNP O75477
D	-5	GLN	-	expression tag	UNP O75477
D	-4	PHE	-	expression tag	UNP O75477
D	-3	GLU	-	expression tag	UNP O75477
D	-2	LYS	-	expression tag	UNP O75477
D	-1	GLY	-	expression tag	UNP O75477
D	0	SER	-	expression tag	UNP O75477
D	1	GLY	-	expression tag	UNP O75477
D	2	SER	-	expression tag	UNP O75477
E	-32	MET	-	initiating methionine	UNP O75477
E	-31	SER	-	expression tag	UNP O75477
E	-30	ALA	-	expression tag	UNP O75477
E	-29	TRP	-	expression tag	UNP O75477
E	-28	SER	-	expression tag	UNP O75477
E	-27	HIS	-	expression tag	UNP O75477
E	-26	PRO	-	expression tag	UNP O75477
E	-25	GLN	-	expression tag	UNP O75477
E	-24	PHE	-	expression tag	UNP O75477
E	-23	GLU	-	expression tag	UNP O75477
E	-22	LYS	-	expression tag	UNP O75477
E	-21	GLY	-	expression tag	UNP O75477
E	-20	GLY	-	expression tag	UNP O75477
E	-19	GLY	-	expression tag	UNP O75477
E	-18	SER	-	expression tag	UNP O75477
E	-17	GLY	-	expression tag	UNP O75477
E	-16	GLY	-	expression tag	UNP O75477
E	-15	GLY	-	expression tag	UNP O75477
E	-14	SER	-	expression tag	UNP O75477
E	-13	GLY	-	expression tag	UNP O75477
E	-12	GLY	-	expression tag	UNP O75477
E	-11	SER	-	expression tag	UNP O75477
E	-10	ALA	-	expression tag	UNP O75477
E	-9	TRP	-	expression tag	UNP O75477
E	-8	SER	-	expression tag	UNP O75477
E	-7	HIS	-	expression tag	UNP O75477
E	-6	PRO	-	expression tag	UNP O75477
E	-5	GLN	-	expression tag	UNP O75477
E	-4	PHE	-	expression tag	UNP O75477
E	-3	GLU	-	expression tag	UNP O75477
E	-2	LYS	-	expression tag	UNP O75477
E	-1	GLY	-	expression tag	UNP O75477

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Chain	Residue	Modelled	Actual	Comment	Reference
E	0	SER	-	expression tag	UNP O75477
E	1	GLY	-	expression tag	UNP O75477
E	2	SER	-	expression tag	UNP O75477
F	-32	MET	-	initiating methionine	UNP O75477
F	-31	SER	-	expression tag	UNP O75477
F	-30	ALA	-	expression tag	UNP O75477
F	-29	TRP	-	expression tag	UNP O75477
F	-28	SER	-	expression tag	UNP O75477
F	-27	HIS	-	expression tag	UNP O75477
F	-26	PRO	-	expression tag	UNP O75477
F	-25	GLN	-	expression tag	UNP O75477
F	-24	PHE	-	expression tag	UNP O75477
F	-23	GLU	-	expression tag	UNP O75477
F	-22	LYS	-	expression tag	UNP O75477
F	-21	GLY	-	expression tag	UNP O75477
F	-20	GLY	-	expression tag	UNP O75477
F	-19	GLY	-	expression tag	UNP O75477
F	-18	SER	-	expression tag	UNP O75477
F	-17	GLY	-	expression tag	UNP O75477
F	-16	GLY	-	expression tag	UNP O75477
F	-15	GLY	-	expression tag	UNP O75477
F	-14	SER	-	expression tag	UNP O75477
F	-13	GLY	-	expression tag	UNP O75477
F	-12	GLY	-	expression tag	UNP O75477
F	-11	SER	-	expression tag	UNP O75477
F	-10	ALA	-	expression tag	UNP O75477
F	-9	TRP	-	expression tag	UNP O75477
F	-8	SER	-	expression tag	UNP O75477
F	-7	HIS	-	expression tag	UNP O75477
F	-6	PRO	-	expression tag	UNP O75477
F	-5	GLN	-	expression tag	UNP O75477
F	-4	PHE	-	expression tag	UNP O75477
F	-3	GLU	-	expression tag	UNP O75477
F	-2	LYS	-	expression tag	UNP O75477
F	-1	GLY	-	expression tag	UNP O75477
F	0	SER	-	expression tag	UNP O75477
F	1	GLY	-	expression tag	UNP O75477
F	2	SER	-	expression tag	UNP O75477
G	-32	MET	-	initiating methionine	UNP O75477
G	-31	SER	-	expression tag	UNP O75477
G	-30	ALA	-	expression tag	UNP O75477
G	-29	TRP	-	expression tag	UNP O75477

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Chain	Residue	Modelled	Actual	Comment	Reference
G	-28	SER	-	expression tag	UNP O75477
G	-27	HIS	-	expression tag	UNP O75477
G	-26	PRO	-	expression tag	UNP O75477
G	-25	GLN	-	expression tag	UNP O75477
G	-24	PHE	-	expression tag	UNP O75477
G	-23	GLU	-	expression tag	UNP O75477
G	-22	LYS	-	expression tag	UNP O75477
G	-21	GLY	-	expression tag	UNP O75477
G	-20	GLY	-	expression tag	UNP O75477
G	-19	GLY	-	expression tag	UNP O75477
G	-18	SER	-	expression tag	UNP O75477
G	-17	GLY	-	expression tag	UNP O75477
G	-16	GLY	-	expression tag	UNP O75477
G	-15	GLY	-	expression tag	UNP O75477
G	-14	SER	-	expression tag	UNP O75477
G	-13	GLY	-	expression tag	UNP O75477
G	-12	GLY	-	expression tag	UNP O75477
G	-11	SER	-	expression tag	UNP O75477
G	-10	ALA	-	expression tag	UNP O75477
G	-9	TRP	-	expression tag	UNP O75477
G	-8	SER	-	expression tag	UNP O75477
G	-7	HIS	-	expression tag	UNP O75477
G	-6	PRO	-	expression tag	UNP O75477
G	-5	GLN	-	expression tag	UNP O75477
G	-4	PHE	-	expression tag	UNP O75477
G	-3	GLU	-	expression tag	UNP O75477
G	-2	LYS	-	expression tag	UNP O75477
G	-1	GLY	-	expression tag	UNP O75477
G	0	SER	-	expression tag	UNP O75477
G	1	GLY	-	expression tag	UNP O75477
G	2	SER	-	expression tag	UNP O75477
H	-32	MET	-	initiating methionine	UNP O75477
H	-31	SER	-	expression tag	UNP O75477
H	-30	ALA	-	expression tag	UNP O75477
H	-29	TRP	-	expression tag	UNP O75477
H	-28	SER	-	expression tag	UNP O75477
H	-27	HIS	-	expression tag	UNP O75477
H	-26	PRO	-	expression tag	UNP O75477
H	-25	GLN	-	expression tag	UNP O75477
H	-24	PHE	-	expression tag	UNP O75477
H	-23	GLU	-	expression tag	UNP O75477
H	-22	LYS	-	expression tag	UNP O75477

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Chain	Residue	Modelled	Actual	Comment	Reference
H	-21	GLY	-	expression tag	UNP O75477
H	-20	GLY	-	expression tag	UNP O75477
H	-19	GLY	-	expression tag	UNP O75477
H	-18	SER	-	expression tag	UNP O75477
H	-17	GLY	-	expression tag	UNP O75477
H	-16	GLY	-	expression tag	UNP O75477
H	-15	GLY	-	expression tag	UNP O75477
H	-14	SER	-	expression tag	UNP O75477
H	-13	GLY	-	expression tag	UNP O75477
H	-12	GLY	-	expression tag	UNP O75477
H	-11	SER	-	expression tag	UNP O75477
H	-10	ALA	-	expression tag	UNP O75477
H	-9	TRP	-	expression tag	UNP O75477
H	-8	SER	-	expression tag	UNP O75477
H	-7	HIS	-	expression tag	UNP O75477
H	-6	PRO	-	expression tag	UNP O75477
H	-5	GLN	-	expression tag	UNP O75477
H	-4	PHE	-	expression tag	UNP O75477
H	-3	GLU	-	expression tag	UNP O75477
H	-2	LYS	-	expression tag	UNP O75477
H	-1	GLY	-	expression tag	UNP O75477
H	0	SER	-	expression tag	UNP O75477
H	1	GLY	-	expression tag	UNP O75477
H	2	SER	-	expression tag	UNP O75477
I	-32	MET	-	initiating methionine	UNP O75477
I	-31	SER	-	expression tag	UNP O75477
I	-30	ALA	-	expression tag	UNP O75477
I	-29	TRP	-	expression tag	UNP O75477
I	-28	SER	-	expression tag	UNP O75477
I	-27	HIS	-	expression tag	UNP O75477
I	-26	PRO	-	expression tag	UNP O75477
I	-25	GLN	-	expression tag	UNP O75477
I	-24	PHE	-	expression tag	UNP O75477
I	-23	GLU	-	expression tag	UNP O75477
I	-22	LYS	-	expression tag	UNP O75477
I	-21	GLY	-	expression tag	UNP O75477
I	-20	GLY	-	expression tag	UNP O75477
I	-19	GLY	-	expression tag	UNP O75477
I	-18	SER	-	expression tag	UNP O75477
I	-17	GLY	-	expression tag	UNP O75477
I	-16	GLY	-	expression tag	UNP O75477
I	-15	GLY	-	expression tag	UNP O75477

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Chain	Residue	Modelled	Actual	Comment	Reference
I	-14	SER	-	expression tag	UNP O75477
I	-13	GLY	-	expression tag	UNP O75477
I	-12	GLY	-	expression tag	UNP O75477
I	-11	SER	-	expression tag	UNP O75477
I	-10	ALA	-	expression tag	UNP O75477
I	-9	TRP	-	expression tag	UNP O75477
I	-8	SER	-	expression tag	UNP O75477
I	-7	HIS	-	expression tag	UNP O75477
I	-6	PRO	-	expression tag	UNP O75477
I	-5	GLN	-	expression tag	UNP O75477
I	-4	PHE	-	expression tag	UNP O75477
I	-3	GLU	-	expression tag	UNP O75477
I	-2	LYS	-	expression tag	UNP O75477
I	-1	GLY	-	expression tag	UNP O75477
I	0	SER	-	expression tag	UNP O75477
I	1	GLY	-	expression tag	UNP O75477
I	2	SER	-	expression tag	UNP O75477
J	-32	MET	-	initiating methionine	UNP O75477
J	-31	SER	-	expression tag	UNP O75477
J	-30	ALA	-	expression tag	UNP O75477
J	-29	TRP	-	expression tag	UNP O75477
J	-28	SER	-	expression tag	UNP O75477
J	-27	HIS	-	expression tag	UNP O75477
J	-26	PRO	-	expression tag	UNP O75477
J	-25	GLN	-	expression tag	UNP O75477
J	-24	PHE	-	expression tag	UNP O75477
J	-23	GLU	-	expression tag	UNP O75477
J	-22	LYS	-	expression tag	UNP O75477
J	-21	GLY	-	expression tag	UNP O75477
J	-20	GLY	-	expression tag	UNP O75477
J	-19	GLY	-	expression tag	UNP O75477
J	-18	SER	-	expression tag	UNP O75477
J	-17	GLY	-	expression tag	UNP O75477
J	-16	GLY	-	expression tag	UNP O75477
J	-15	GLY	-	expression tag	UNP O75477
J	-14	SER	-	expression tag	UNP O75477
J	-13	GLY	-	expression tag	UNP O75477
J	-12	GLY	-	expression tag	UNP O75477
J	-11	SER	-	expression tag	UNP O75477
J	-10	ALA	-	expression tag	UNP O75477
J	-9	TRP	-	expression tag	UNP O75477
J	-8	SER	-	expression tag	UNP O75477

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Chain	Residue	Modelled	Actual	Comment	Reference
J	-7	HIS	-	expression tag	UNP O75477
J	-6	PRO	-	expression tag	UNP O75477
J	-5	GLN	-	expression tag	UNP O75477
J	-4	PHE	-	expression tag	UNP O75477
J	-3	GLU	-	expression tag	UNP O75477
J	-2	LYS	-	expression tag	UNP O75477
J	-1	GLY	-	expression tag	UNP O75477
J	0	SER	-	expression tag	UNP O75477
J	1	GLY	-	expression tag	UNP O75477
J	2	SER	-	expression tag	UNP O75477
K	-32	MET	-	initiating methionine	UNP O75477
K	-31	SER	-	expression tag	UNP O75477
K	-30	ALA	-	expression tag	UNP O75477
K	-29	TRP	-	expression tag	UNP O75477
K	-28	SER	-	expression tag	UNP O75477
K	-27	HIS	-	expression tag	UNP O75477
K	-26	PRO	-	expression tag	UNP O75477
K	-25	GLN	-	expression tag	UNP O75477
K	-24	PHE	-	expression tag	UNP O75477
K	-23	GLU	-	expression tag	UNP O75477
K	-22	LYS	-	expression tag	UNP O75477
K	-21	GLY	-	expression tag	UNP O75477
K	-20	GLY	-	expression tag	UNP O75477
K	-19	GLY	-	expression tag	UNP O75477
K	-18	SER	-	expression tag	UNP O75477
K	-17	GLY	-	expression tag	UNP O75477
K	-16	GLY	-	expression tag	UNP O75477
K	-15	GLY	-	expression tag	UNP O75477
K	-14	SER	-	expression tag	UNP O75477
K	-13	GLY	-	expression tag	UNP O75477
K	-12	GLY	-	expression tag	UNP O75477
K	-11	SER	-	expression tag	UNP O75477
K	-10	ALA	-	expression tag	UNP O75477
K	-9	TRP	-	expression tag	UNP O75477
K	-8	SER	-	expression tag	UNP O75477
K	-7	HIS	-	expression tag	UNP O75477
K	-6	PRO	-	expression tag	UNP O75477
K	-5	GLN	-	expression tag	UNP O75477
K	-4	PHE	-	expression tag	UNP O75477
K	-3	GLU	-	expression tag	UNP O75477
K	-2	LYS	-	expression tag	UNP O75477
K	-1	GLY	-	expression tag	UNP O75477

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Chain	Residue	Modelled	Actual	Comment	Reference
K	0	SER	-	expression tag	UNP O75477
K	1	GLY	-	expression tag	UNP O75477
K	2	SER	-	expression tag	UNP O75477
L	-32	MET	-	initiating methionine	UNP O75477
L	-31	SER	-	expression tag	UNP O75477
L	-30	ALA	-	expression tag	UNP O75477
L	-29	TRP	-	expression tag	UNP O75477
L	-28	SER	-	expression tag	UNP O75477
L	-27	HIS	-	expression tag	UNP O75477
L	-26	PRO	-	expression tag	UNP O75477
L	-25	GLN	-	expression tag	UNP O75477
L	-24	PHE	-	expression tag	UNP O75477
L	-23	GLU	-	expression tag	UNP O75477
L	-22	LYS	-	expression tag	UNP O75477
L	-21	GLY	-	expression tag	UNP O75477
L	-20	GLY	-	expression tag	UNP O75477
L	-19	GLY	-	expression tag	UNP O75477
L	-18	SER	-	expression tag	UNP O75477
L	-17	GLY	-	expression tag	UNP O75477
L	-16	GLY	-	expression tag	UNP O75477
L	-15	GLY	-	expression tag	UNP O75477
L	-14	SER	-	expression tag	UNP O75477
L	-13	GLY	-	expression tag	UNP O75477
L	-12	GLY	-	expression tag	UNP O75477
L	-11	SER	-	expression tag	UNP O75477
L	-10	ALA	-	expression tag	UNP O75477
L	-9	TRP	-	expression tag	UNP O75477
L	-8	SER	-	expression tag	UNP O75477
L	-7	HIS	-	expression tag	UNP O75477
L	-6	PRO	-	expression tag	UNP O75477
L	-5	GLN	-	expression tag	UNP O75477
L	-4	PHE	-	expression tag	UNP O75477
L	-3	GLU	-	expression tag	UNP O75477
L	-2	LYS	-	expression tag	UNP O75477
L	-1	GLY	-	expression tag	UNP O75477
L	0	SER	-	expression tag	UNP O75477
L	1	GLY	-	expression tag	UNP O75477
L	2	SER	-	expression tag	UNP O75477
M	-32	MET	-	initiating methionine	UNP O75477
M	-31	SER	-	expression tag	UNP O75477
M	-30	ALA	-	expression tag	UNP O75477
M	-29	TRP	-	expression tag	UNP O75477

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Chain	Residue	Modelled	Actual	Comment	Reference
M	-28	SER	-	expression tag	UNP O75477
M	-27	HIS	-	expression tag	UNP O75477
M	-26	PRO	-	expression tag	UNP O75477
M	-25	GLN	-	expression tag	UNP O75477
M	-24	PHE	-	expression tag	UNP O75477
M	-23	GLU	-	expression tag	UNP O75477
M	-22	LYS	-	expression tag	UNP O75477
M	-21	GLY	-	expression tag	UNP O75477
M	-20	GLY	-	expression tag	UNP O75477
M	-19	GLY	-	expression tag	UNP O75477
M	-18	SER	-	expression tag	UNP O75477
M	-17	GLY	-	expression tag	UNP O75477
M	-16	GLY	-	expression tag	UNP O75477
M	-15	GLY	-	expression tag	UNP O75477
M	-14	SER	-	expression tag	UNP O75477
M	-13	GLY	-	expression tag	UNP O75477
M	-12	GLY	-	expression tag	UNP O75477
M	-11	SER	-	expression tag	UNP O75477
M	-10	ALA	-	expression tag	UNP O75477
M	-9	TRP	-	expression tag	UNP O75477
M	-8	SER	-	expression tag	UNP O75477
M	-7	HIS	-	expression tag	UNP O75477
M	-6	PRO	-	expression tag	UNP O75477
M	-5	GLN	-	expression tag	UNP O75477
M	-4	PHE	-	expression tag	UNP O75477
M	-3	GLU	-	expression tag	UNP O75477
M	-2	LYS	-	expression tag	UNP O75477
M	-1	GLY	-	expression tag	UNP O75477
M	0	SER	-	expression tag	UNP O75477
M	1	GLY	-	expression tag	UNP O75477
M	2	SER	-	expression tag	UNP O75477

- Molecule 2 is a protein called Erlin-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	a	290	2304	1476	377	439	12	0	0
2	b	290	2304	1476	377	439	12	0	0
2	c	290	2304	1476	377	439	12	0	0
2	d	290	2304	1476	377	439	12	0	0

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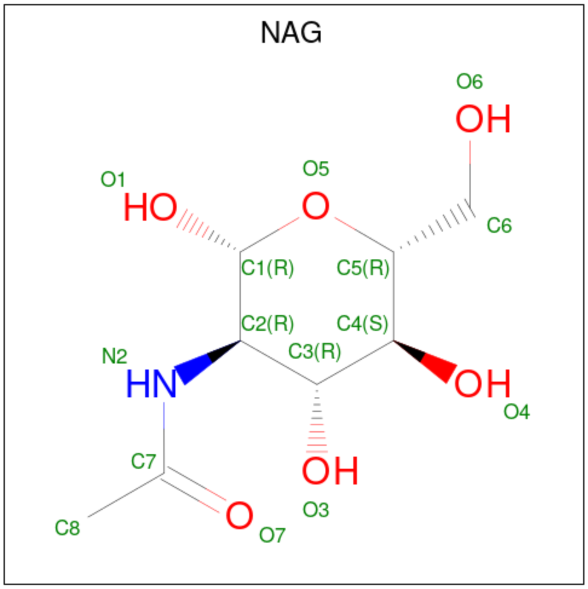
Mol	Chain	Residues	Atoms					AltConf	Trace
2	e	290	Total 2304	C 1476	N 377	O 439	S 12	0	0
2	f	290	Total 2304	C 1476	N 377	O 439	S 12	0	0
2	g	290	Total 2304	C 1476	N 377	O 439	S 12	0	0
2	h	290	Total 2304	C 1476	N 377	O 439	S 12	0	0
2	i	290	Total 2304	C 1476	N 377	O 439	S 12	0	0
2	j	290	Total 2304	C 1476	N 377	O 439	S 12	0	0
2	k	290	Total 2304	C 1476	N 377	O 439	S 12	0	0
2	l	290	Total 2304	C 1476	N 377	O 439	S 12	0	0
2	m	290	Total 2304	C 1476	N 377	O 439	S 12	0	0

- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				AltConf
3	A	1	Total 14	C 8	N 1	O 5	0
3	a	1	Total 14	C 8	N 1	O 5	0

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Mol	Chain	Residues	Atoms	AltConf
3	B	1	Total C N O 14 8 1 5	0
3	b	1	Total C N O 14 8 1 5	0
3	C	1	Total C N O 14 8 1 5	0
3	c	1	Total C N O 14 8 1 5	0
3	D	1	Total C N O 14 8 1 5	0
3	d	1	Total C N O 14 8 1 5	0
3	E	1	Total C N O 14 8 1 5	0
3	e	1	Total C N O 14 8 1 5	0
3	F	1	Total C N O 14 8 1 5	0
3	f	1	Total C N O 14 8 1 5	0
3	G	1	Total C N O 14 8 1 5	0
3	g	1	Total C N O 14 8 1 5	0
3	H	1	Total C N O 14 8 1 5	0
3	h	1	Total C N O 14 8 1 5	0
3	I	1	Total C N O 14 8 1 5	0
3	i	1	Total C N O 14 8 1 5	0
3	J	1	Total C N O 14 8 1 5	0
3	j	1	Total C N O 14 8 1 5	0
3	K	1	Total C N O 14 8 1 5	0
3	k	1	Total C N O 14 8 1 5	0
3	L	1	Total C N O 14 8 1 5	0

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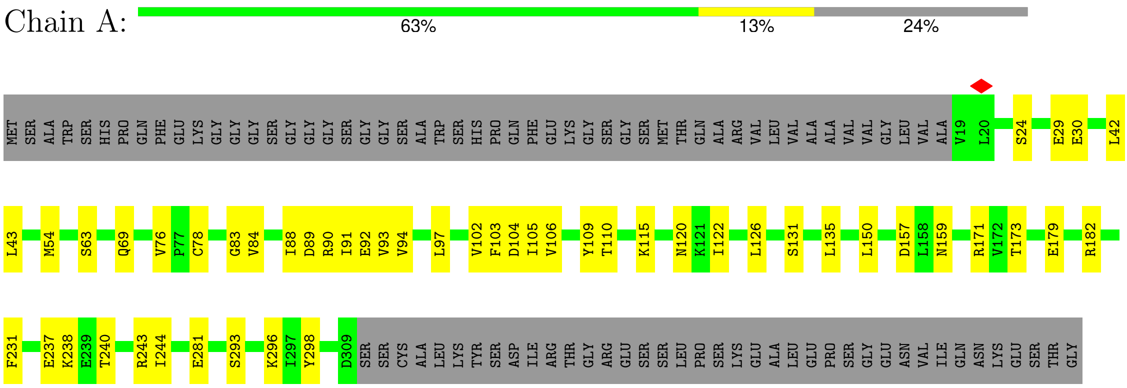
Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
3	l	1	14	8	1	5	0
3	M	1	14	8	1	5	0
3	m	1	14	8	1	5	0

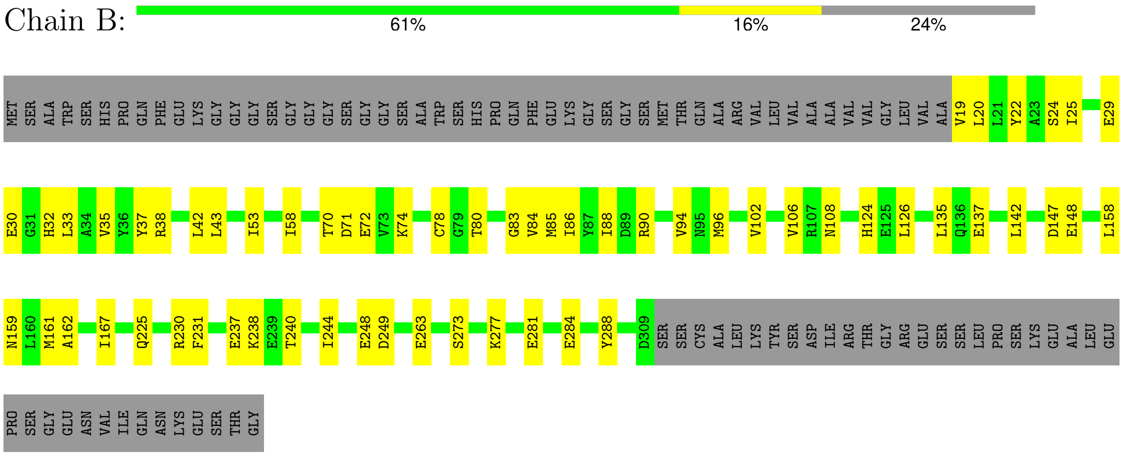
3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map 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 diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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.

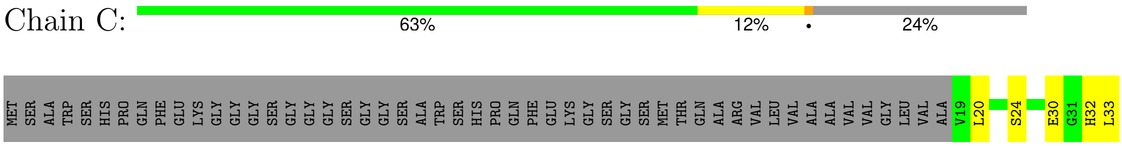
- Molecule 1: Erlin-1

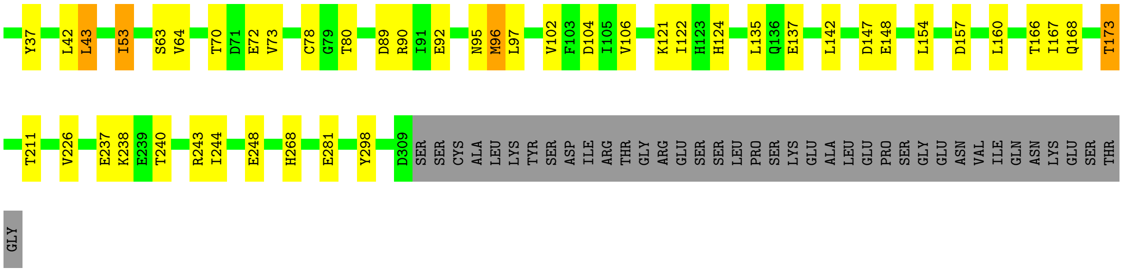


- Molecule 1: Erlin-1



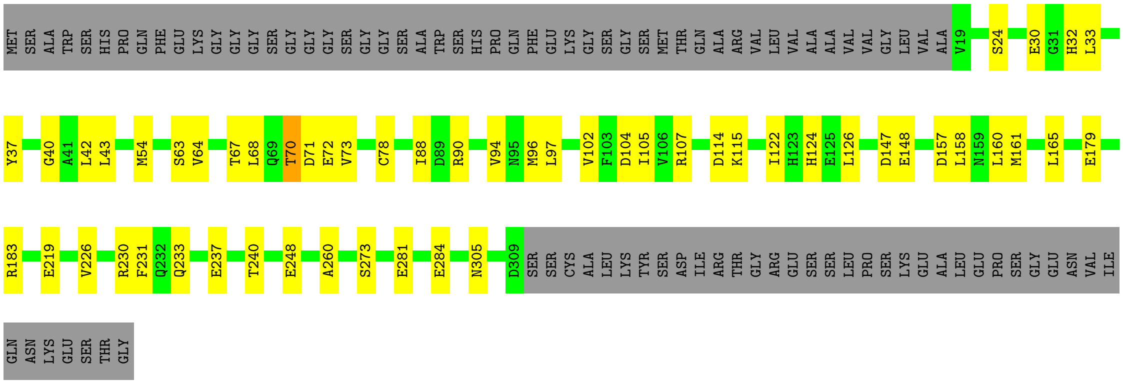
- Molecule 1: Erlin-1





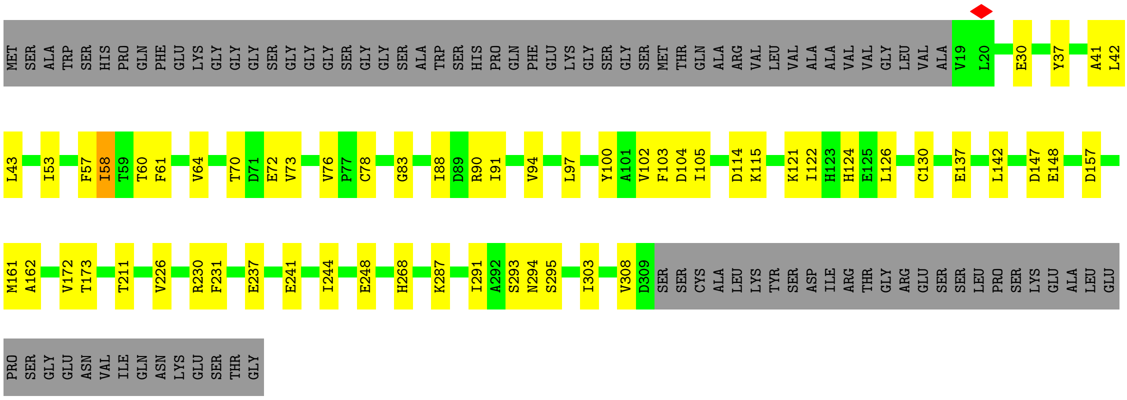
- Molecule 1: Erlin-1

Chain D:



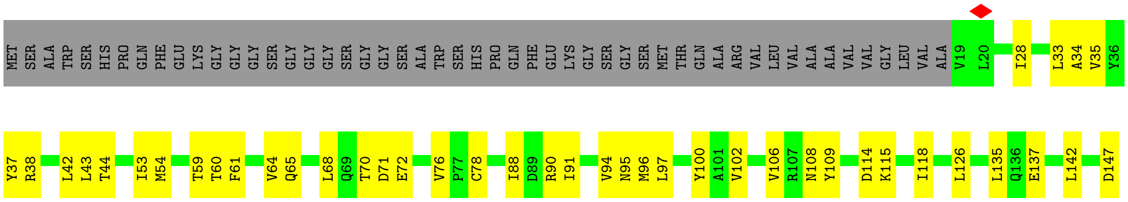
- Molecule 1: Erlin-1

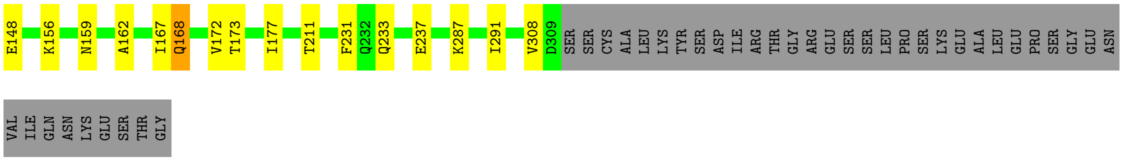
Chain E:



- Molecule 1: Erlin-1

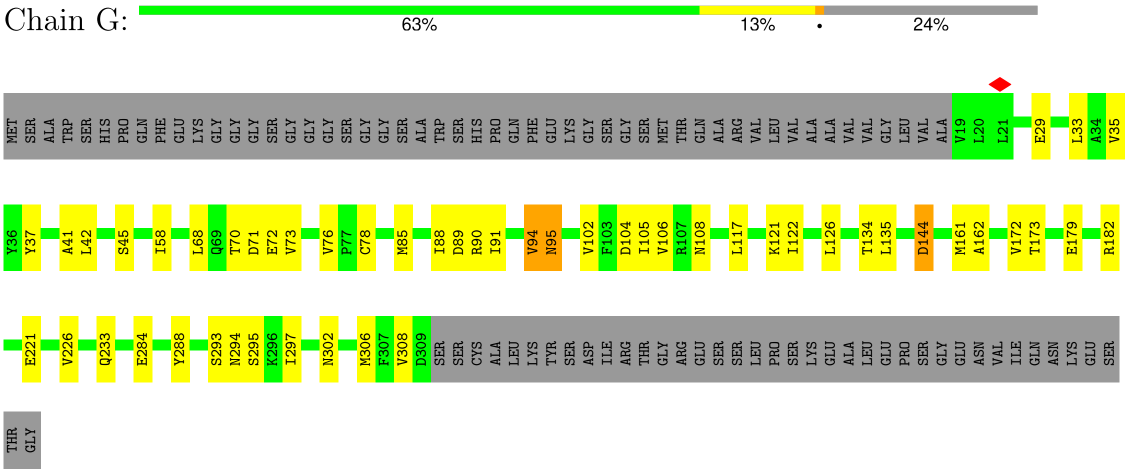
Chain F:





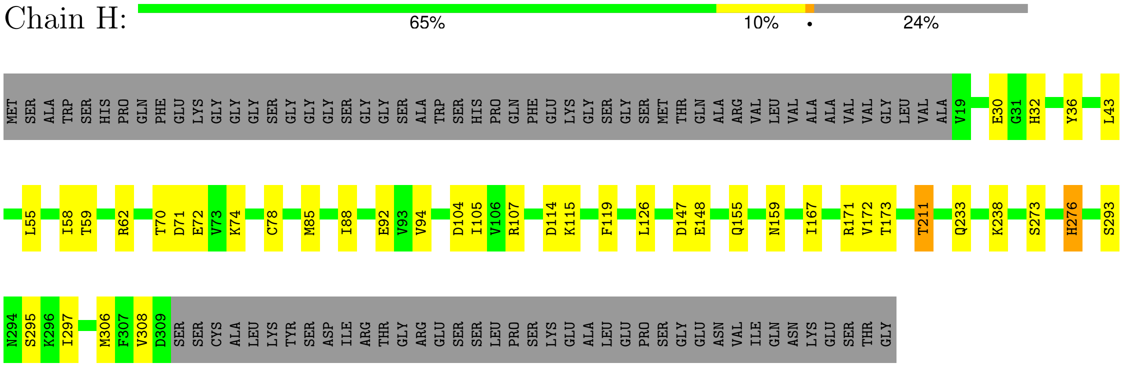
- Molecule 1: Erlin-1

Chain G:



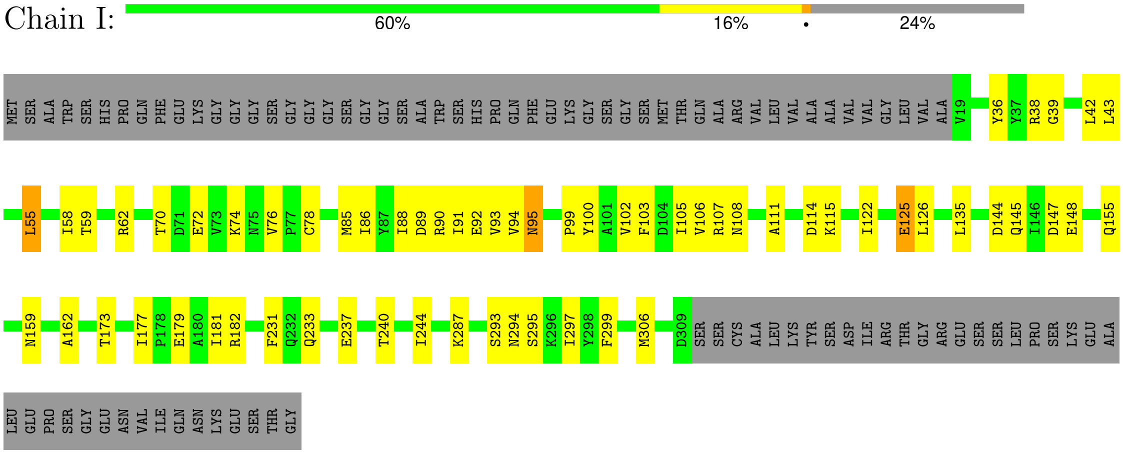
- Molecule 1: Erlin-1

Chain H:

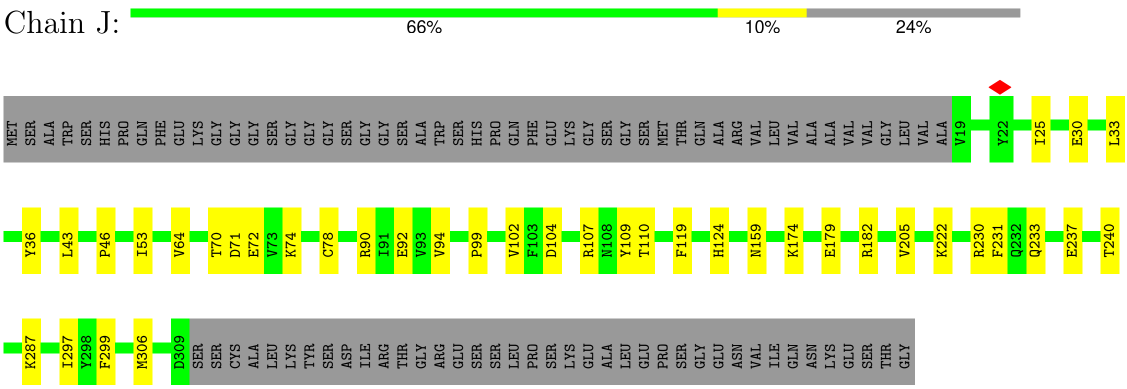


- Molecule 1: Erlin-1

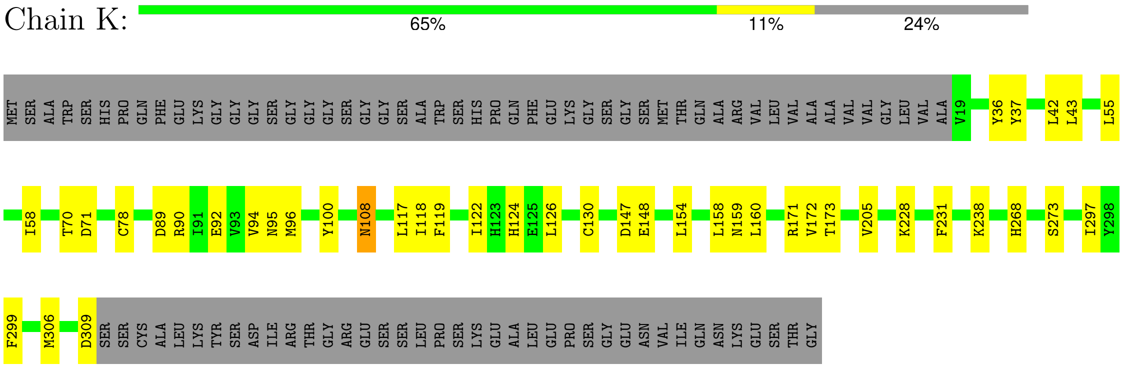
Chain I:



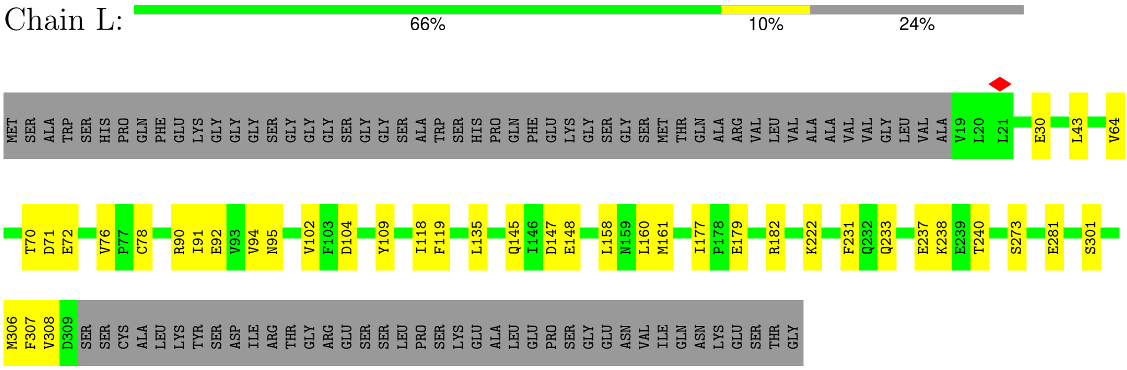
- Molecule 1: Erlin-1



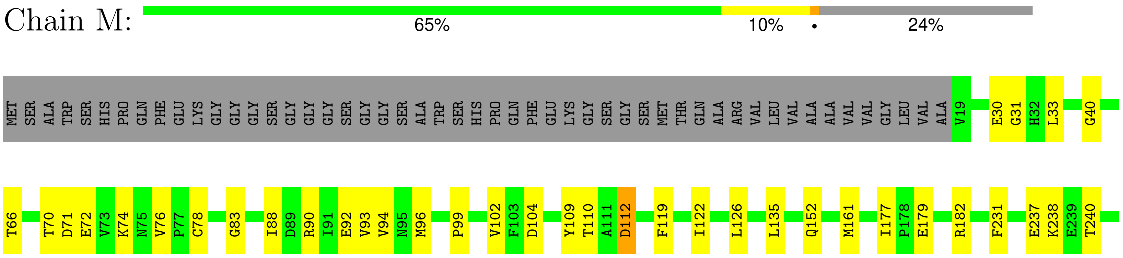
- Molecule 1: Erlin-1



- Molecule 1: Erlin-1

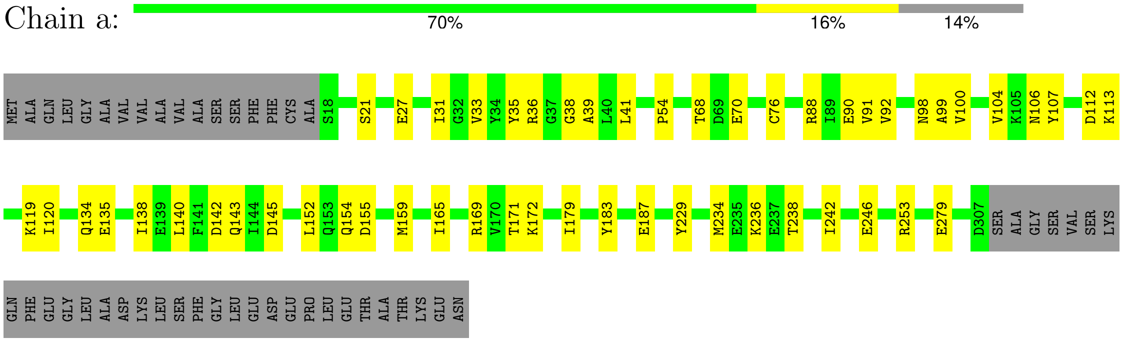


- Molecule 1: Erlin-1



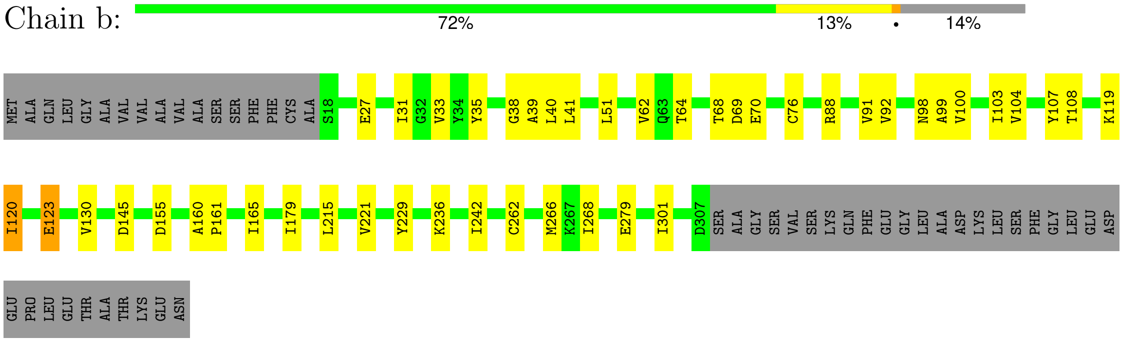
- Molecule 2: Erlin-2

Chain a:



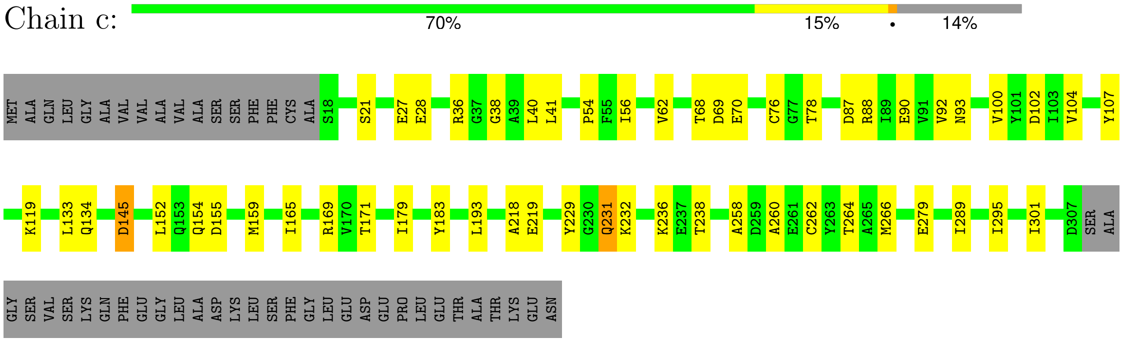
- Molecule 2: Erlin-2

Chain b:



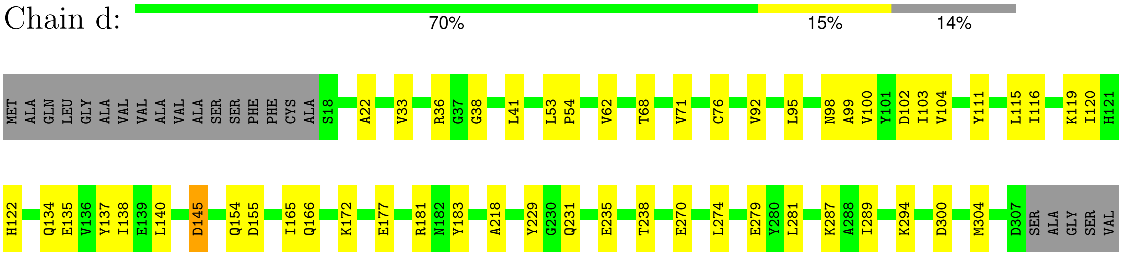
- Molecule 2: Erlin-2

Chain c:



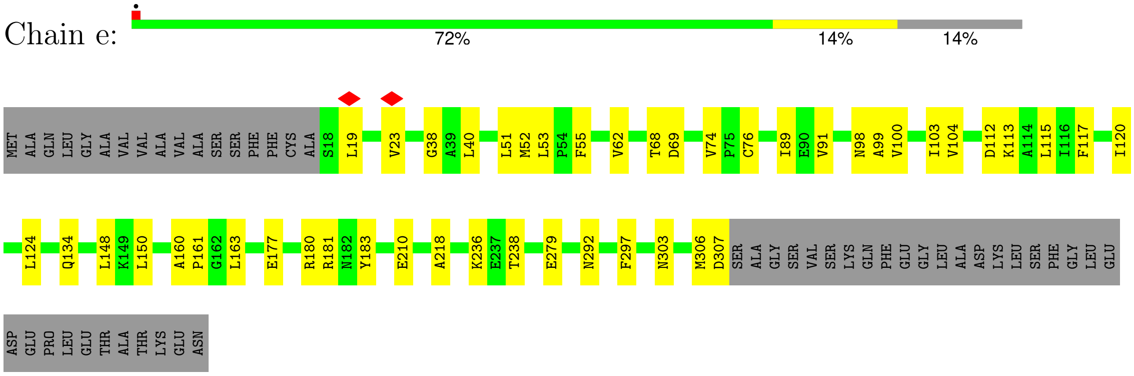
- Molecule 2: Erlin-2

Chain d:



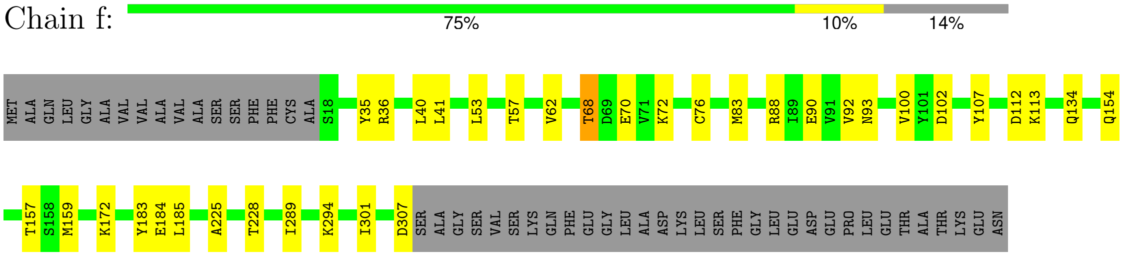
- Molecule 2: Erlin-2

Chain e:



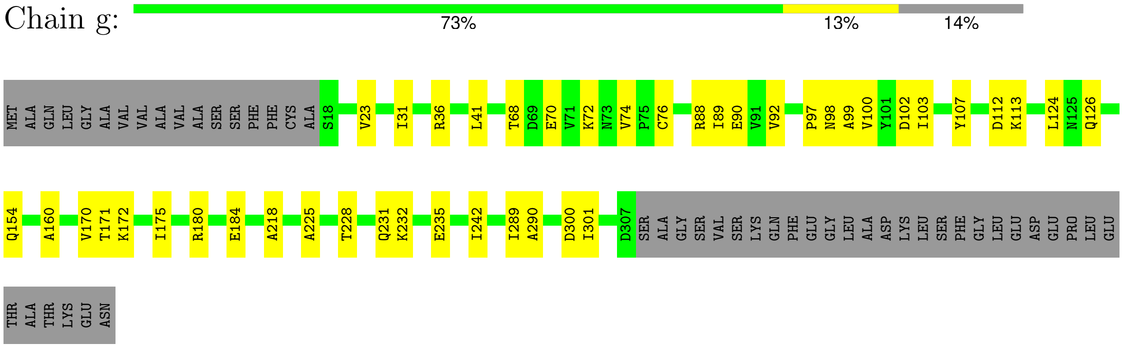
- Molecule 2: Erlin-2

Chain f:



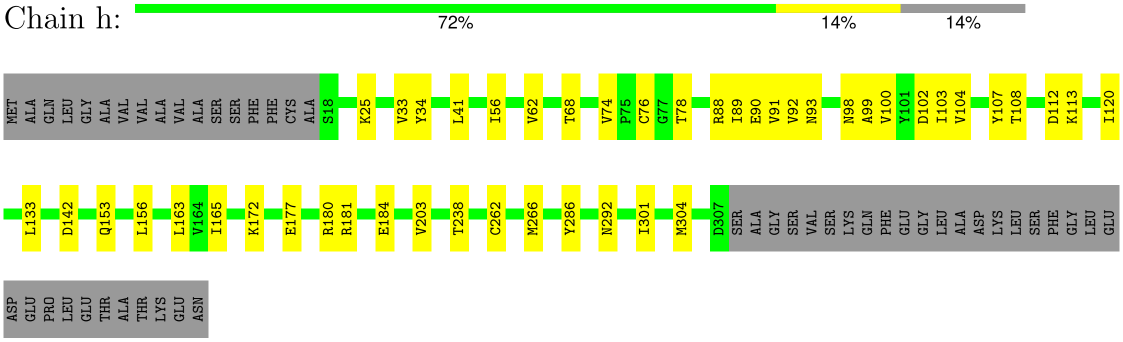
- Molecule 2: Erlin-2

Chain g:

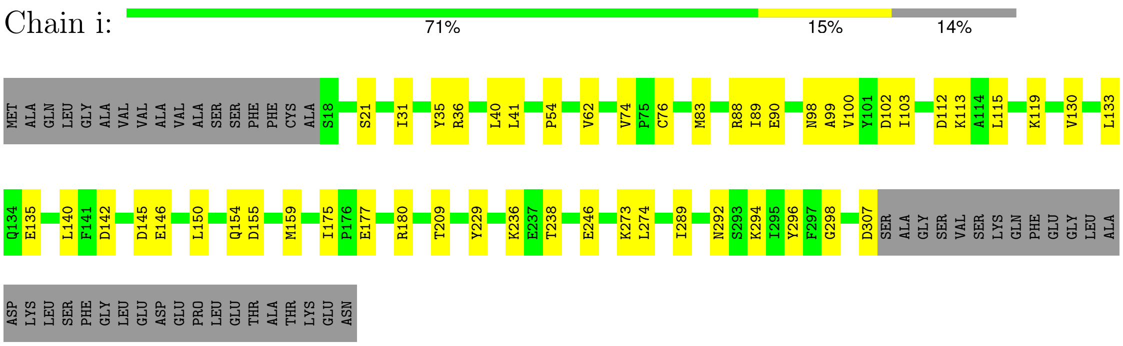


- Molecule 2: Erlin-2

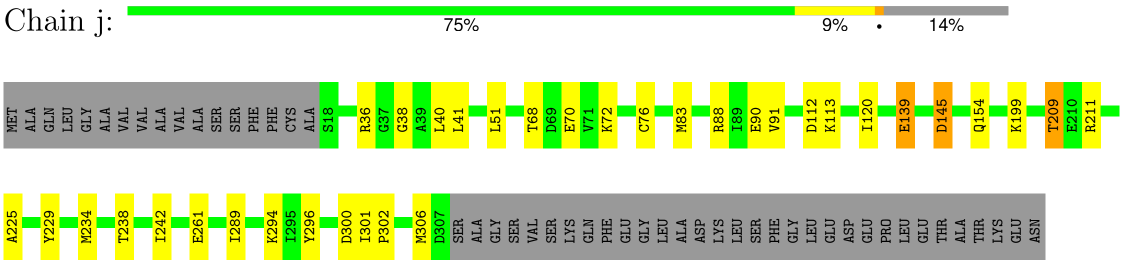
Chain h:



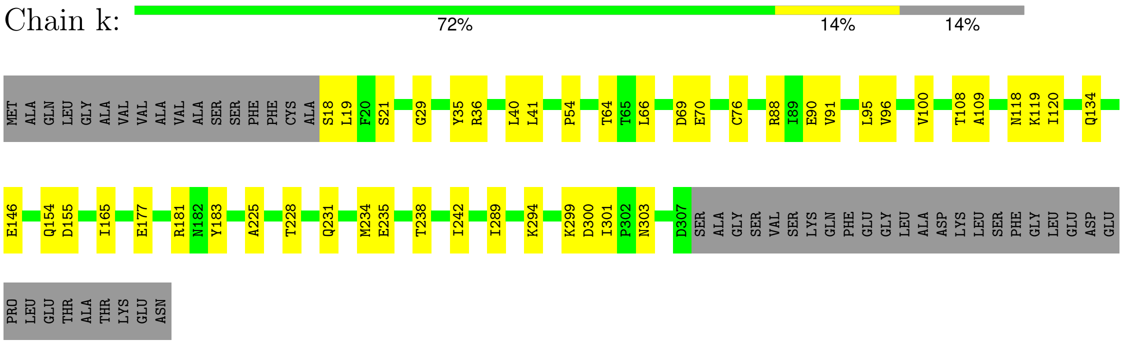
- Molecule 2: Erlin-2



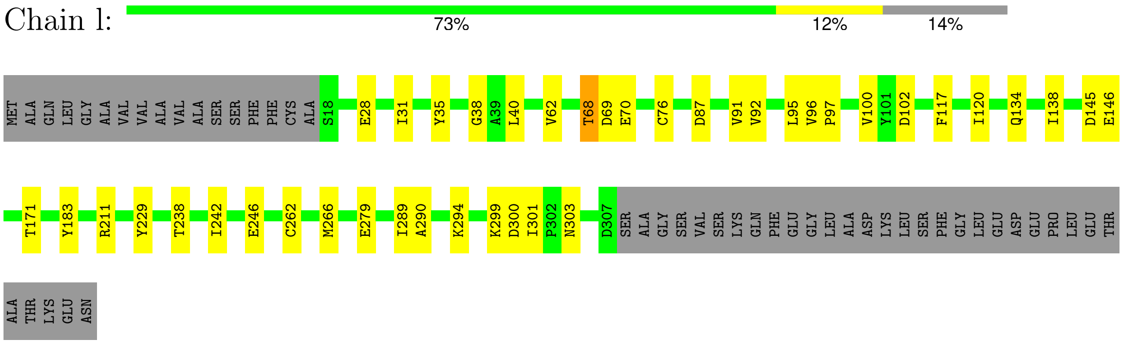
- Molecule 2: Erlin-2



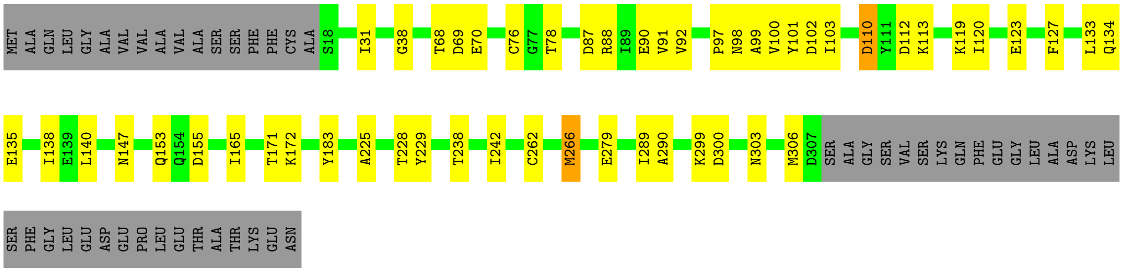
- Molecule 2: Erlin-2



- Molecule 2: Erlin-2



- Molecule 2: Erlin-2


MET
ALA
GLN
LEU
GLY
ALA
VAL
VAL
ALA
VAL
ALA
SER
SER
PHE
PHE
CYS
ALA
S18
I31
G38
T68
D69
E70
C76
G77
T78
D87
R88
I89
E90
V91
V92
P97
N98
A99
V100
Y101
D102
I103
D110
Y111
D112
K113
K119
I120
E123
F127
L133
Q134
E135
I138
E139
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N147
Q153
Q154
D155
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T171
K172
Y183
A225
T228
Y229
T238
I242
C262
M266
E279
I289
A290
K299
D300
N303
M306
D307
SER
ALA
GLY
SER
VAL
SER
LYS
GLN
PHE
GLU
GLY
LEU
ALA
ASP
LYS
LEU
SER
PHE
GLY
LEU
GLU
ASP
GLU
PRO
LEU
GLU
THR
ALA
THR
LYS
GLU
ASN

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	95469	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{Å}^2$)	52.32	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	2200	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	1.002	Depositor
Minimum map value	-0.639	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.036	Depositor
Recommended contour level	0.11	Depositor
Map size (Å)	424.96, 424.96, 424.96	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.83, 0.83, 0.83	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: NAG

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	0.13	0/2380	0.28	0/3212
1	B	0.13	0/2380	0.30	0/3212
1	C	0.13	0/2380	0.27	0/3212
1	D	0.14	0/2380	0.28	0/3212
1	E	0.14	0/2380	0.27	0/3212
1	F	0.14	0/2380	0.27	0/3212
1	G	0.13	0/2380	0.26	0/3212
1	H	0.13	0/2380	0.26	0/3212
1	I	0.14	0/2380	0.29	0/3212
1	J	0.13	0/2380	0.26	0/3212
1	K	0.14	0/2380	0.28	0/3212
1	L	0.13	0/2380	0.27	0/3212
1	M	0.13	0/2380	0.26	0/3212
2	a	0.13	0/2343	0.26	0/3160
2	b	0.13	0/2343	0.25	0/3160
2	c	0.13	0/2343	0.26	0/3160
2	d	0.13	0/2343	0.26	0/3160
2	e	0.13	0/2343	0.25	0/3160
2	f	0.13	0/2343	0.25	0/3160
2	g	0.13	0/2343	0.27	0/3160
2	h	0.13	0/2343	0.26	0/3160
2	i	0.13	0/2343	0.26	0/3160
2	j	0.13	0/2343	0.28	0/3160
2	k	0.13	0/2343	0.25	0/3160
2	l	0.13	0/2343	0.28	0/3160
2	m	0.13	0/2343	0.28	0/3160
All	All	0.13	0/61399	0.27	0/82836

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 (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2337	0	2379	37	0
1	B	2337	0	2379	49	0
1	C	2337	0	2379	37	0
1	D	2337	0	2379	39	0
1	E	2337	0	2379	43	0
1	F	2337	0	2379	40	0
1	G	2337	0	2379	34	0
1	H	2337	0	2379	31	0
1	I	2337	0	2379	45	0
1	J	2337	0	2379	34	0
1	K	2337	0	2379	35	0
1	L	2337	0	2379	31	0
1	M	2337	0	2379	31	0
2	a	2304	0	2343	38	0
2	b	2304	0	2343	37	0
2	c	2304	0	2343	49	0
2	d	2304	0	2343	37	0
2	e	2304	0	2343	31	0
2	f	2304	0	2343	23	0
2	g	2304	0	2343	30	0
2	h	2304	0	2343	36	0
2	i	2304	0	2343	37	0
2	j	2304	0	2343	28	0
2	k	2304	0	2343	32	0
2	l	2304	0	2343	35	0
2	m	2304	0	2343	40	0
3	A	14	0	13	4	0
3	B	14	0	13	4	0
3	C	14	0	13	3	0
3	D	14	0	13	4	0
3	E	14	0	13	5	0
3	F	14	0	13	2	0
3	G	14	0	13	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	H	14	0	13	2	0
3	I	14	0	13	4	0
3	J	14	0	13	2	0
3	K	14	0	13	0	0
3	L	14	0	13	2	0
3	M	14	0	13	2	0
3	a	14	0	13	2	0
3	b	14	0	13	2	0
3	c	14	0	13	2	0
3	d	14	0	13	2	0
3	e	14	0	13	1	0
3	f	14	0	13	2	0
3	g	14	0	13	2	0
3	h	14	0	13	2	0
3	i	14	0	13	4	0
3	j	14	0	13	0	0
3	k	14	0	13	0	0
3	l	14	0	13	3	0
3	m	14	0	13	3	0
All	All	60697	0	61724	821	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 7.

The worst 5 of 821 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)
2:c:301:ILE:HG21	2:d:289:ILE:HD13	1.49	0.91
1:L:118:ILE:HD11	1:L:158:LEU:HD11	1.55	0.89
2:b:145:ASP:OD2	1:C:124:HIS:NE2	2.07	0.86
2:j:88:ARG:NH2	2:j:90:GLU:OE2	2.08	0.86
2:h:301:ILE:HG21	2:i:289:ILE:HD13	1.59	0.84

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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	289/381 (76%)	281 (97%)	8 (3%)	0	100	100
1	B	289/381 (76%)	281 (97%)	8 (3%)	0	100	100
1	C	289/381 (76%)	282 (98%)	7 (2%)	0	100	100
1	D	289/381 (76%)	279 (96%)	10 (4%)	0	100	100
1	E	289/381 (76%)	282 (98%)	7 (2%)	0	100	100
1	F	289/381 (76%)	278 (96%)	11 (4%)	0	100	100
1	G	289/381 (76%)	283 (98%)	6 (2%)	0	100	100
1	H	289/381 (76%)	281 (97%)	8 (3%)	0	100	100
1	I	289/381 (76%)	281 (97%)	8 (3%)	0	100	100
1	J	289/381 (76%)	279 (96%)	10 (4%)	0	100	100
1	K	289/381 (76%)	284 (98%)	5 (2%)	0	100	100
1	L	289/381 (76%)	279 (96%)	10 (4%)	0	100	100
1	M	289/381 (76%)	282 (98%)	7 (2%)	0	100	100
2	a	288/339 (85%)	278 (96%)	10 (4%)	0	100	100
2	b	288/339 (85%)	280 (97%)	8 (3%)	0	100	100
2	c	288/339 (85%)	279 (97%)	9 (3%)	0	100	100
2	d	288/339 (85%)	278 (96%)	10 (4%)	0	100	100
2	e	288/339 (85%)	279 (97%)	9 (3%)	0	100	100
2	f	288/339 (85%)	281 (98%)	7 (2%)	0	100	100
2	g	288/339 (85%)	279 (97%)	9 (3%)	0	100	100
2	h	288/339 (85%)	280 (97%)	8 (3%)	0	100	100
2	i	288/339 (85%)	280 (97%)	8 (3%)	0	100	100
2	j	288/339 (85%)	276 (96%)	12 (4%)	0	100	100
2	k	288/339 (85%)	283 (98%)	5 (2%)	0	100	100
2	l	288/339 (85%)	283 (98%)	5 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	m	288/339 (85%)	277 (96%)	11 (4%)	0	100	100
All	All	7501/9360 (80%)	7285 (97%)	216 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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	251/319 (79%)	247 (98%)	4 (2%)	58	82
1	B	251/319 (79%)	248 (99%)	3 (1%)	67	86
1	C	251/319 (79%)	240 (96%)	11 (4%)	24	58
1	D	251/319 (79%)	246 (98%)	5 (2%)	50	78
1	E	251/319 (79%)	244 (97%)	7 (3%)	38	70
1	F	251/319 (79%)	245 (98%)	6 (2%)	44	74
1	G	251/319 (79%)	241 (96%)	10 (4%)	27	61
1	H	251/319 (79%)	246 (98%)	5 (2%)	50	78
1	I	251/319 (79%)	248 (99%)	3 (1%)	67	86
1	J	251/319 (79%)	249 (99%)	2 (1%)	79	90
1	K	251/319 (79%)	246 (98%)	5 (2%)	50	78
1	L	251/319 (79%)	249 (99%)	2 (1%)	79	90
1	M	251/319 (79%)	245 (98%)	6 (2%)	44	74
2	a	251/288 (87%)	247 (98%)	4 (2%)	58	82
2	b	251/288 (87%)	248 (99%)	3 (1%)	67	86
2	c	251/288 (87%)	247 (98%)	4 (2%)	58	82
2	d	251/288 (87%)	247 (98%)	4 (2%)	58	82
2	e	251/288 (87%)	247 (98%)	4 (2%)	58	82
2	f	251/288 (87%)	248 (99%)	3 (1%)	67	86
2	g	251/288 (87%)	247 (98%)	4 (2%)	58	82

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	h	251/288 (87%)	250 (100%)	1 (0%)	89	95
2	i	251/288 (87%)	247 (98%)	4 (2%)	58	82
2	j	251/288 (87%)	245 (98%)	6 (2%)	44	74
2	k	251/288 (87%)	250 (100%)	1 (0%)	89	95
2	l	251/288 (87%)	249 (99%)	2 (1%)	79	90
2	m	251/288 (87%)	247 (98%)	4 (2%)	58	82
All	All	6526/7891 (83%)	6413 (98%)	113 (2%)	56	81

5 of 113 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	f	307	ASP
2	m	110	ASP
2	g	232	LYS
2	m	76	CYS
1	L	78	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 55 such sidechains are listed below:

Mol	Chain	Res	Type
2	h	122	HIS
1	J	168	GLN
2	m	198	GLN
1	M	200	GLN
2	h	154	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

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	$\#\|Z\| > 2$
3	NAG	c	401	2	14,14,15	0.75	0	17,19,21	0.88	0
3	NAG	f	401	2	14,14,15	0.75	0	17,19,21	0.91	1 (5%)
3	NAG	D	401	1	14,14,15	0.73	0	17,19,21	0.84	0
3	NAG	G	401	1	14,14,15	0.73	0	17,19,21	0.88	0
3	NAG	I	401	1	14,14,15	0.74	0	17,19,21	1.02	0
3	NAG	C	401	1	14,14,15	0.75	0	17,19,21	1.05	1 (5%)
3	NAG	m	401	2	14,14,15	0.71	0	17,19,21	0.80	0
3	NAG	d	401	2	14,14,15	0.74	0	17,19,21	0.97	1 (5%)
3	NAG	E	401	1	14,14,15	0.75	0	17,19,21	0.84	0
3	NAG	k	401	2	14,14,15	0.73	0	17,19,21	0.82	0
3	NAG	L	401	1	14,14,15	0.74	0	17,19,21	0.86	0
3	NAG	A	401	1	14,14,15	0.73	0	17,19,21	0.85	0
3	NAG	i	401	2	14,14,15	0.70	0	17,19,21	1.08	1 (5%)
3	NAG	h	401	2	14,14,15	0.74	0	17,19,21	0.76	0
3	NAG	e	401	2	14,14,15	0.73	0	17,19,21	0.72	0
3	NAG	g	401	2	14,14,15	0.73	0	17,19,21	0.94	1 (5%)
3	NAG	F	401	1	14,14,15	0.74	0	17,19,21	1.11	1 (5%)
3	NAG	B	401	1	14,14,15	0.72	0	17,19,21	0.83	0
3	NAG	l	401	2	14,14,15	0.72	0	17,19,21	0.78	0
3	NAG	b	401	2	14,14,15	0.73	0	17,19,21	0.79	0
3	NAG	a	401	2	14,14,15	0.74	0	17,19,21	0.88	0
3	NAG	K	401	1	14,14,15	0.73	0	17,19,21	0.80	0
3	NAG	J	401	1	14,14,15	0.73	0	17,19,21	0.78	0
3	NAG	M	401	1	14,14,15	0.75	0	17,19,21	0.79	0
3	NAG	H	401	1	14,14,15	0.73	0	17,19,21	0.77	0
3	NAG	j	401	2	14,14,15	0.73	0	17,19,21	0.79	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
3	NAG	c	401	2	-	0/6/23/26	0/1/1/1
3	NAG	f	401	2	-	0/6/23/26	0/1/1/1
3	NAG	D	401	1	-	1/6/23/26	0/1/1/1
3	NAG	G	401	1	-	2/6/23/26	0/1/1/1
3	NAG	I	401	1	-	2/6/23/26	0/1/1/1
3	NAG	C	401	1	-	0/6/23/26	0/1/1/1
3	NAG	m	401	2	-	0/6/23/26	0/1/1/1
3	NAG	d	401	2	-	0/6/23/26	0/1/1/1
3	NAG	E	401	1	-	0/6/23/26	0/1/1/1
3	NAG	k	401	2	-	1/6/23/26	0/1/1/1
3	NAG	L	401	1	-	0/6/23/26	0/1/1/1
3	NAG	A	401	1	-	0/6/23/26	0/1/1/1
3	NAG	i	401	2	-	0/6/23/26	0/1/1/1
3	NAG	h	401	2	-	0/6/23/26	0/1/1/1
3	NAG	e	401	2	-	2/6/23/26	0/1/1/1
3	NAG	g	401	2	-	0/6/23/26	0/1/1/1
3	NAG	F	401	1	-	2/6/23/26	0/1/1/1
3	NAG	B	401	1	-	3/6/23/26	0/1/1/1
3	NAG	l	401	2	-	0/6/23/26	0/1/1/1
3	NAG	b	401	2	-	2/6/23/26	0/1/1/1
3	NAG	a	401	2	-	3/6/23/26	0/1/1/1
3	NAG	K	401	1	-	0/6/23/26	0/1/1/1
3	NAG	J	401	1	-	0/6/23/26	0/1/1/1
3	NAG	M	401	1	-	0/6/23/26	0/1/1/1
3	NAG	H	401	1	-	0/6/23/26	0/1/1/1
3	NAG	j	401	2	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

The worst 5 of 6 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	F	401	NAG	C2-N2-C7	2.76	126.60	122.90
3	i	401	NAG	O5-C1-C2	-2.59	107.29	111.29
3	C	401	NAG	C1-O5-C5	2.38	115.38	112.19
3	d	401	NAG	C1-O5-C5	2.23	115.17	112.19
3	g	401	NAG	C1-O5-C5	2.11	115.01	112.19

There are no chirality outliers.

5 of 20 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	k	401	NAG	C1-C2-N2-C7
3	j	401	NAG	C4-C5-C6-O6
3	a	401	NAG	C8-C7-N2-C2
3	a	401	NAG	O7-C7-N2-C2
3	B	401	NAG	C8-C7-N2-C2

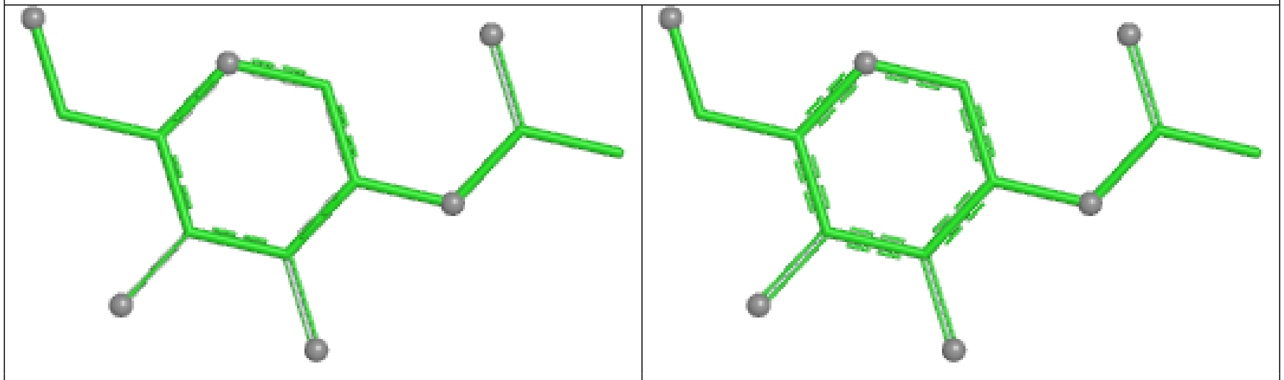
There are no ring outliers.

23 monomers are involved in 61 short contacts:

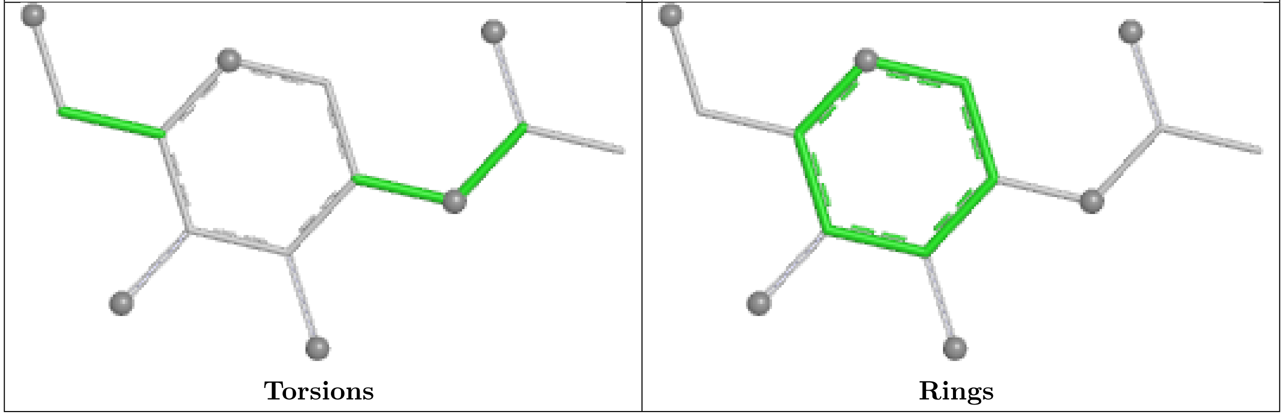
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	c	401	NAG	2	0
3	f	401	NAG	2	0
3	D	401	NAG	4	0
3	G	401	NAG	2	0
3	I	401	NAG	4	0
3	C	401	NAG	3	0
3	m	401	NAG	3	0
3	d	401	NAG	2	0
3	E	401	NAG	5	0
3	L	401	NAG	2	0
3	A	401	NAG	4	0
3	i	401	NAG	4	0
3	h	401	NAG	2	0
3	e	401	NAG	1	0
3	g	401	NAG	2	0
3	F	401	NAG	2	0
3	B	401	NAG	4	0
3	l	401	NAG	3	0
3	b	401	NAG	2	0
3	a	401	NAG	2	0
3	J	401	NAG	2	0
3	M	401	NAG	2	0
3	H	401	NAG	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 NAG c 401

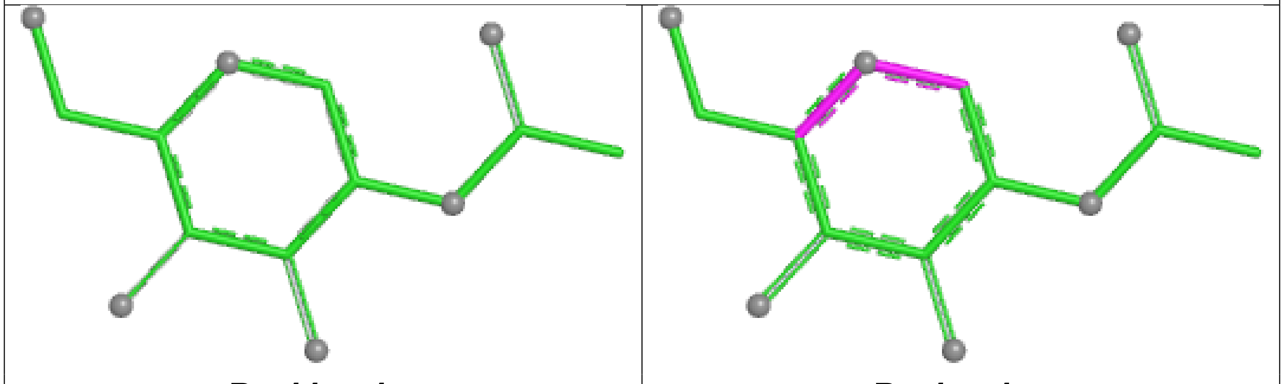


Bond lengths **Bond angles**

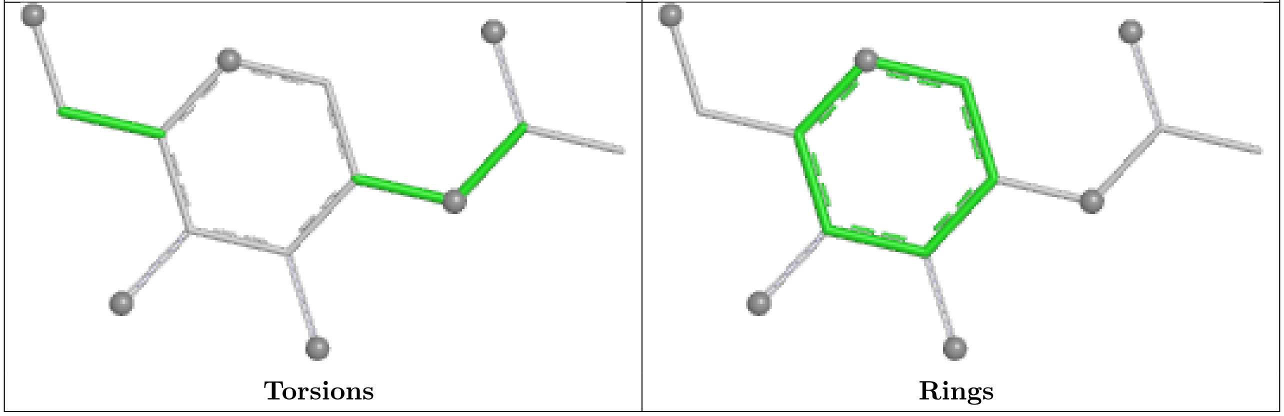


Torsions **Rings**

Ligand NAG f 401

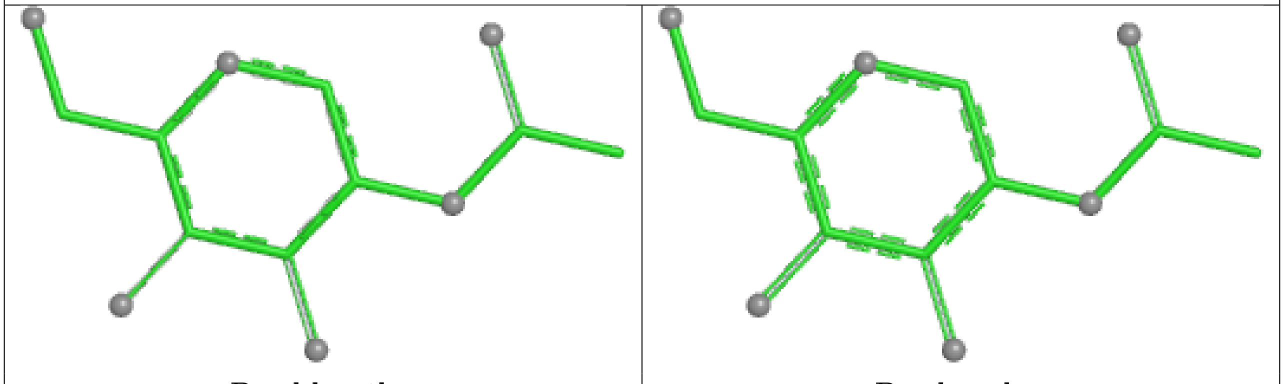


Bond lengths Bond angles

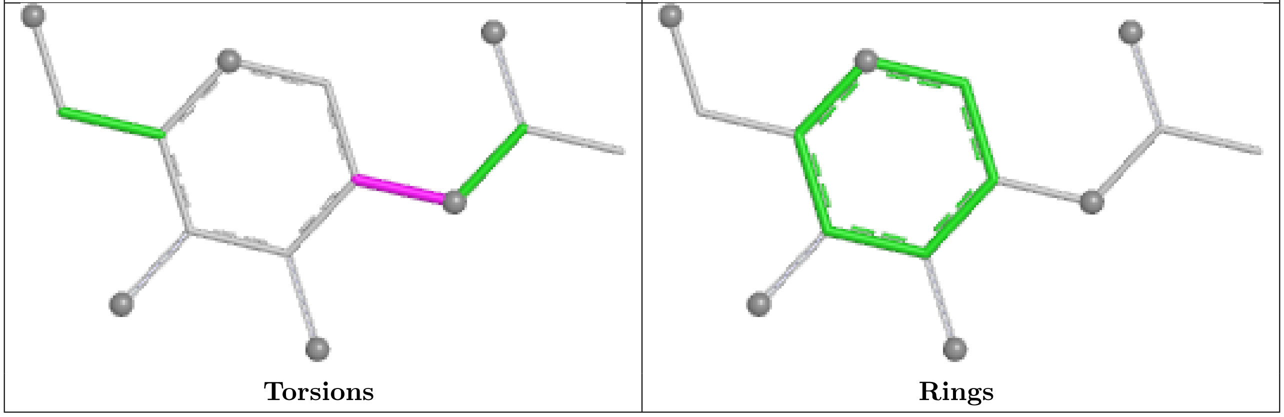


Torsions Rings

Ligand NAG D 401

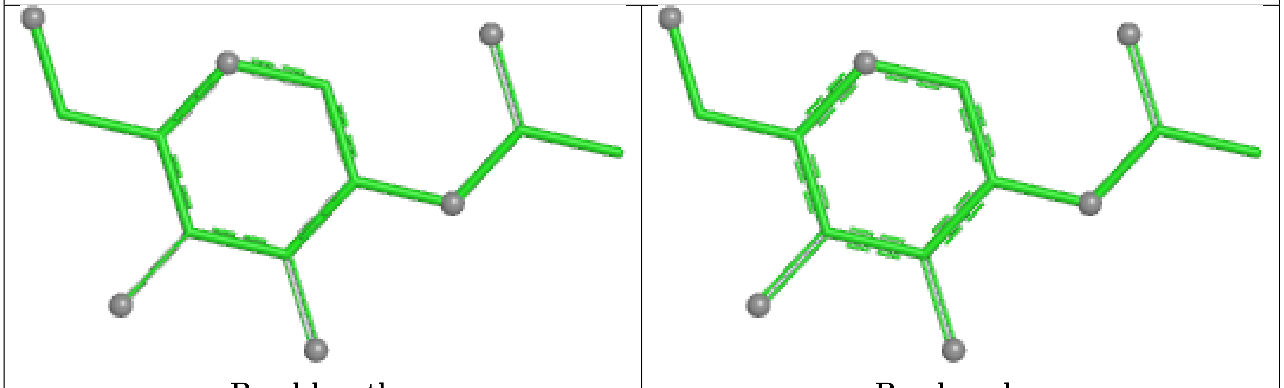


Bond lengths Bond angles

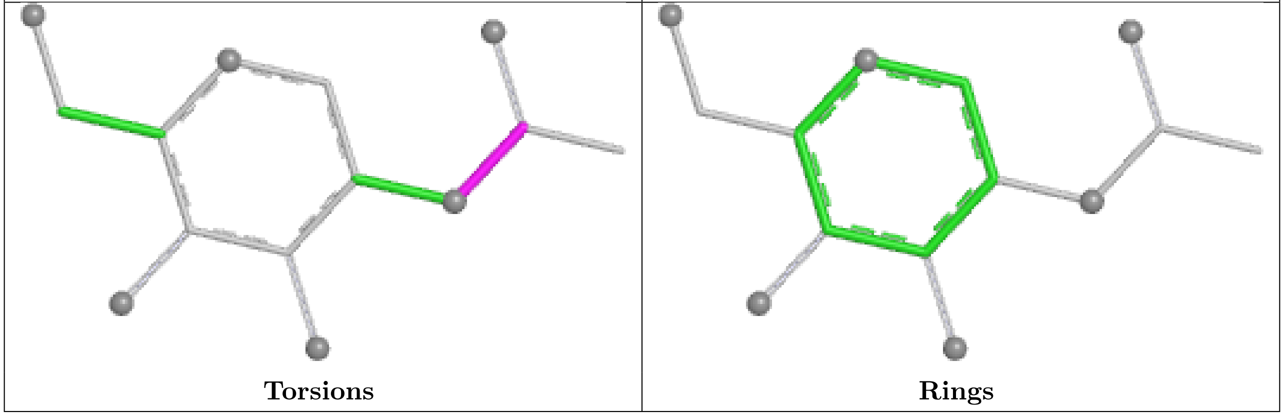


Torsions Rings

Ligand NAG G 401

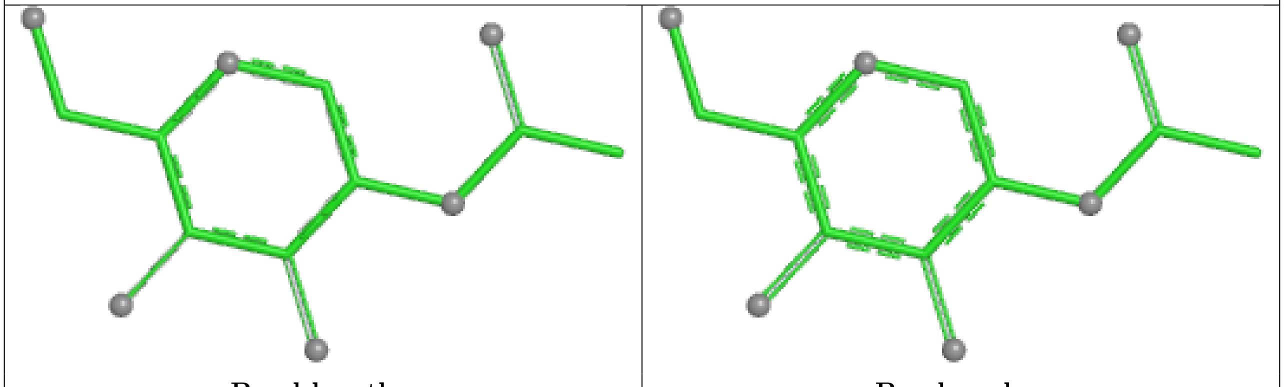


Bond lengths **Bond angles**

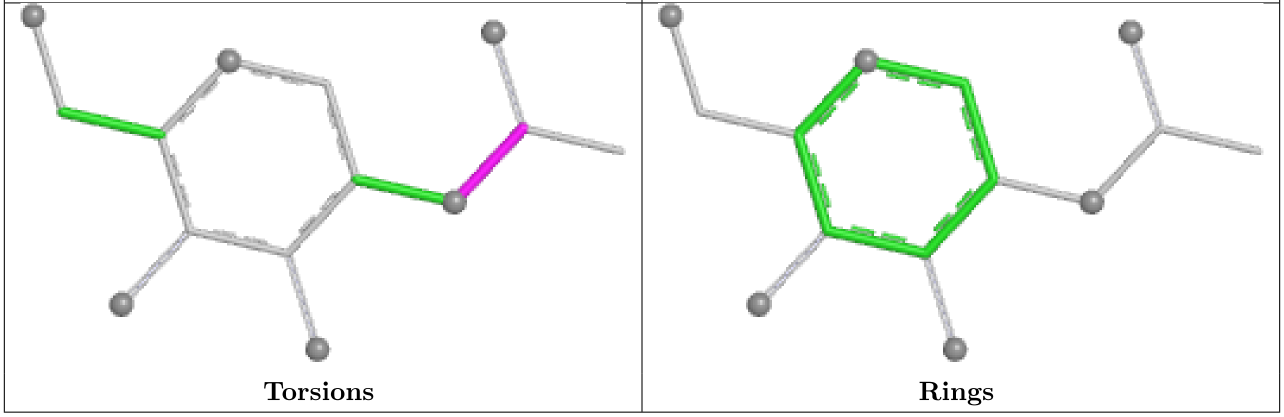


Torsions **Rings**

Ligand NAG I 401

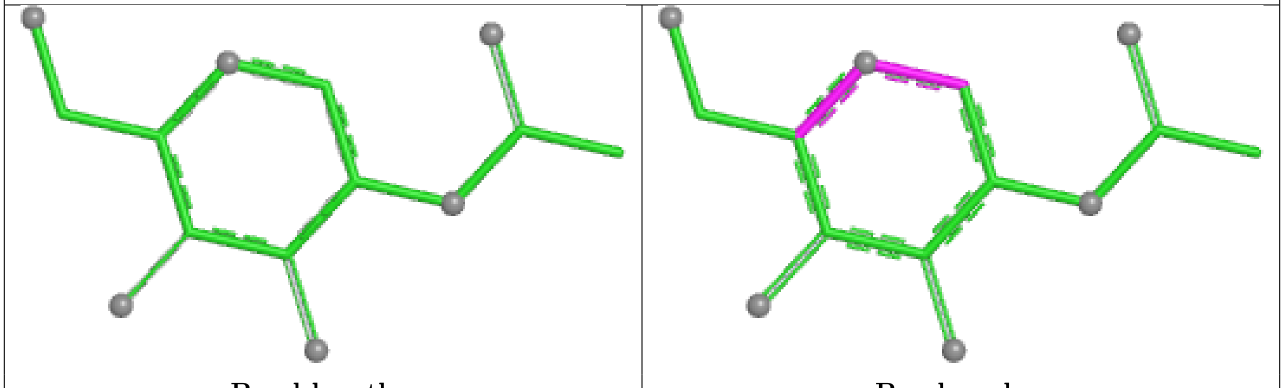


Bond lengths **Bond angles**



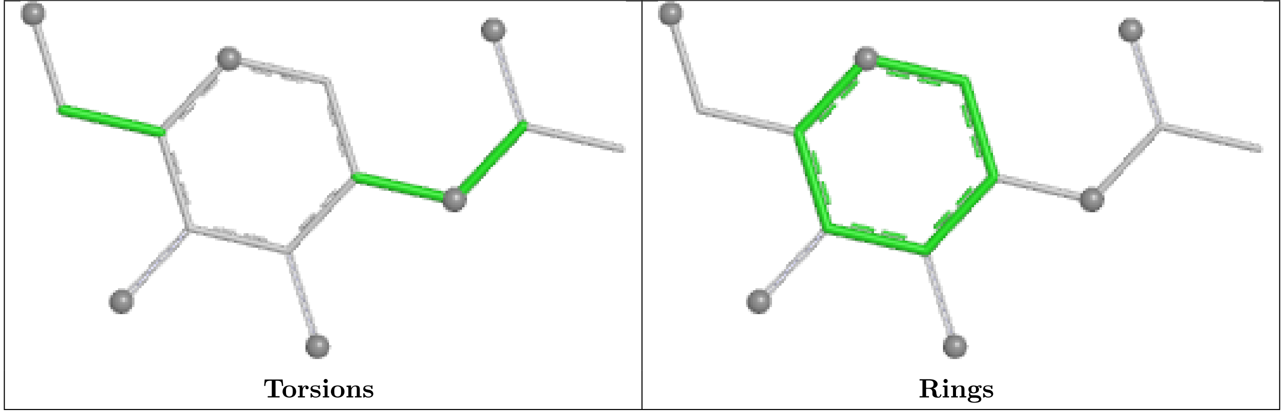
Torsions **Rings**

Ligand NAG C 401



Bond lengths

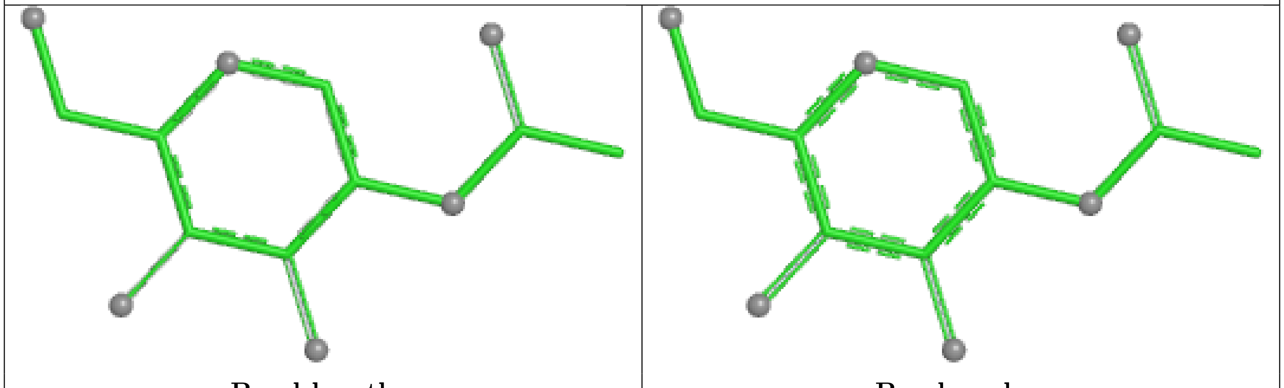
Bond angles



Torsions

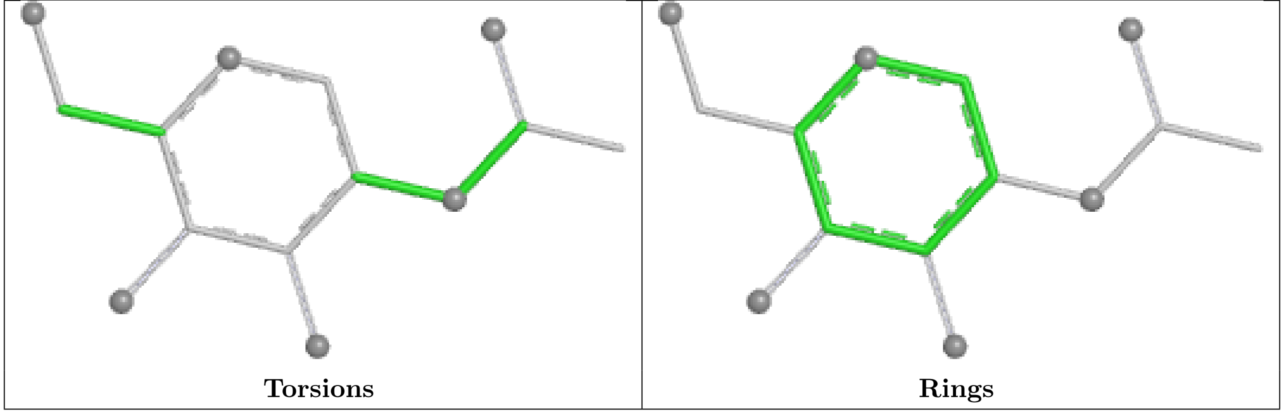
Rings

Ligand NAG m 401



Bond lengths

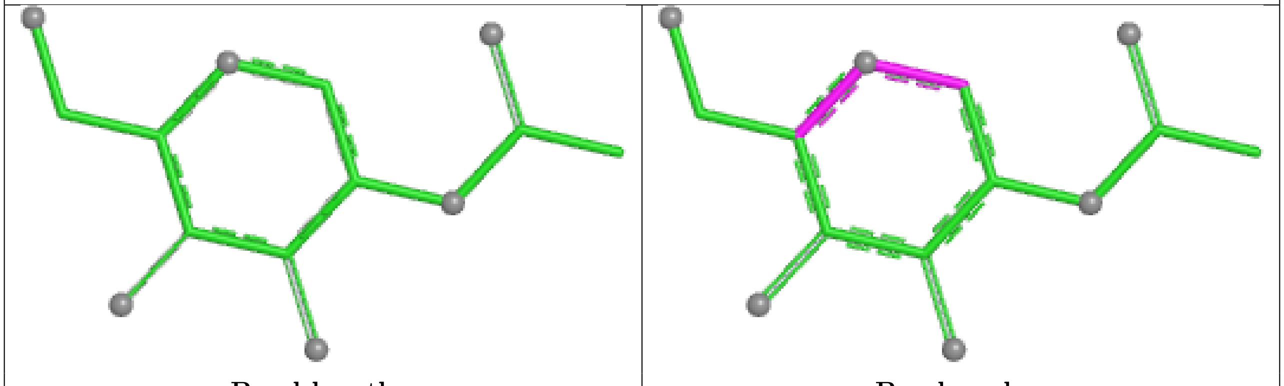
Bond angles



Torsions

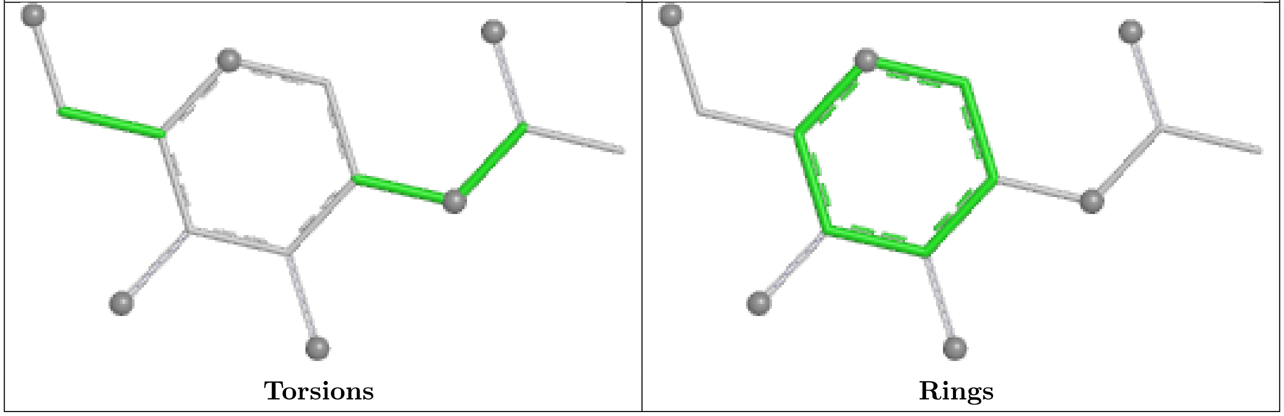
Rings

Ligand NAG d 401



Bond lengths

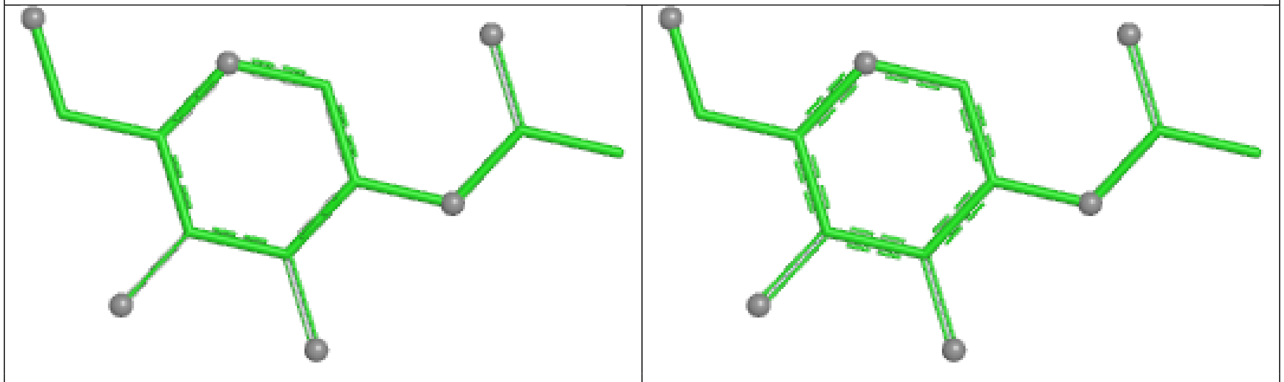
Bond angles



Torsions

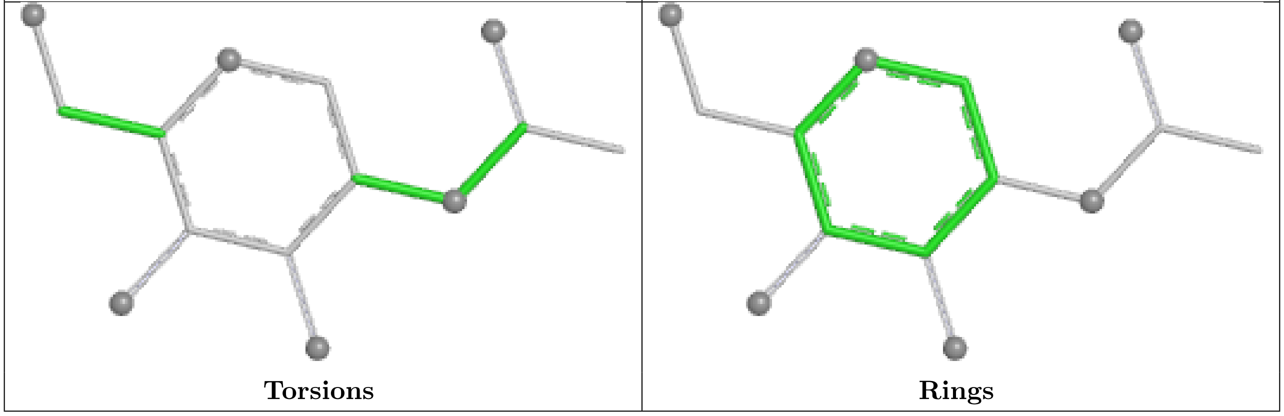
Rings

Ligand NAG E 401



Bond lengths

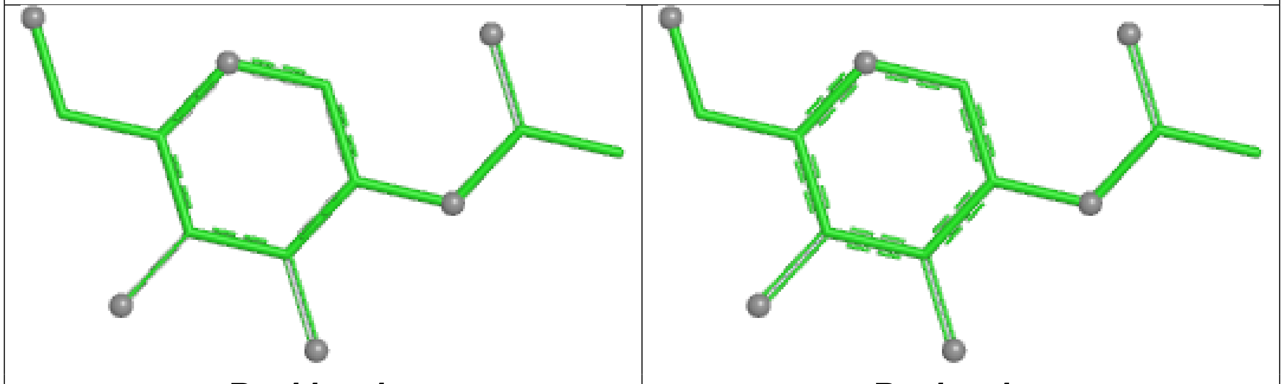
Bond angles



Torsions

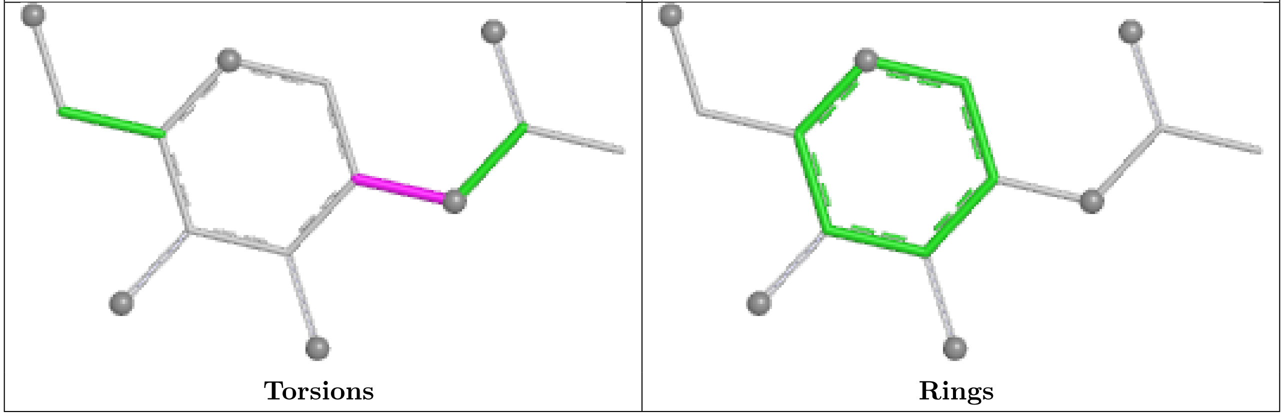
Rings

Ligand NAG k 401



Bond lengths

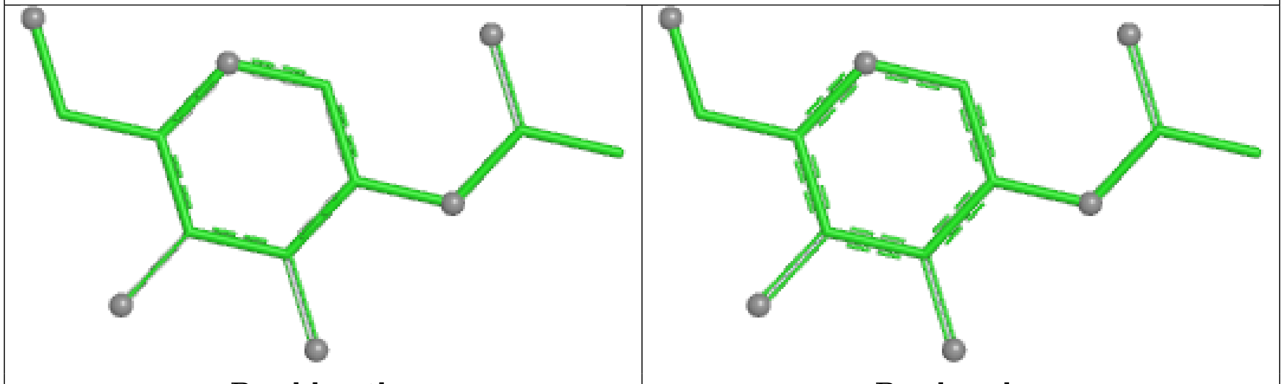
Bond angles



Torsions

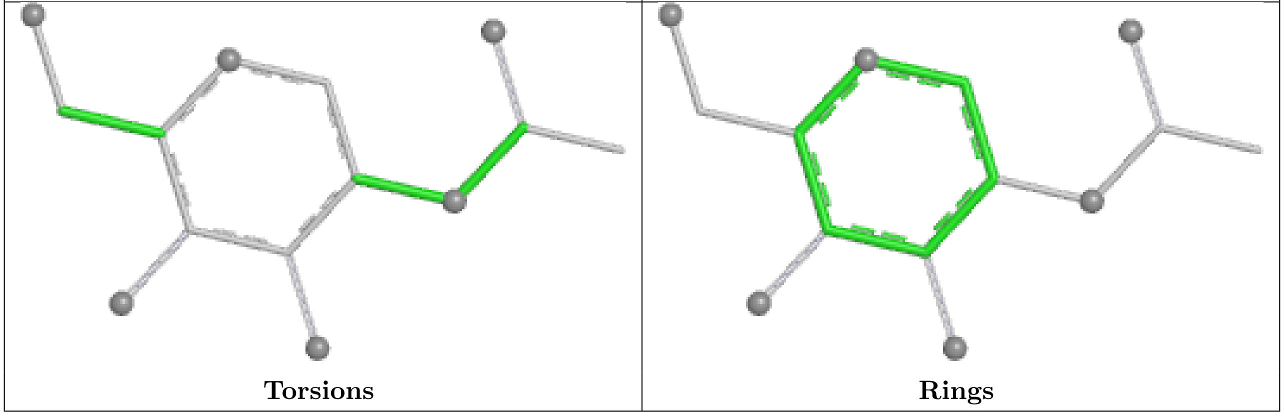
Rings

Ligand NAG L 401



Bond lengths

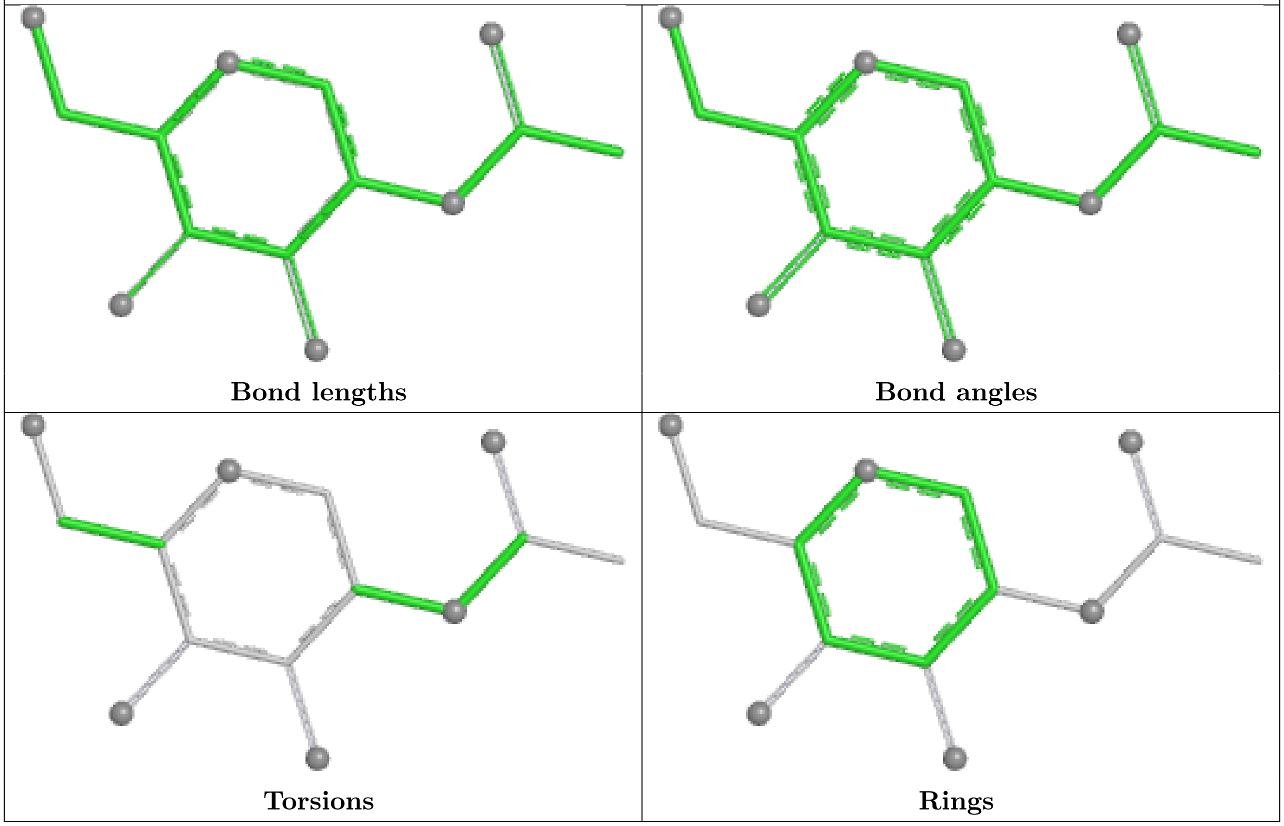
Bond angles



Torsions

Rings

Ligand NAG A 401



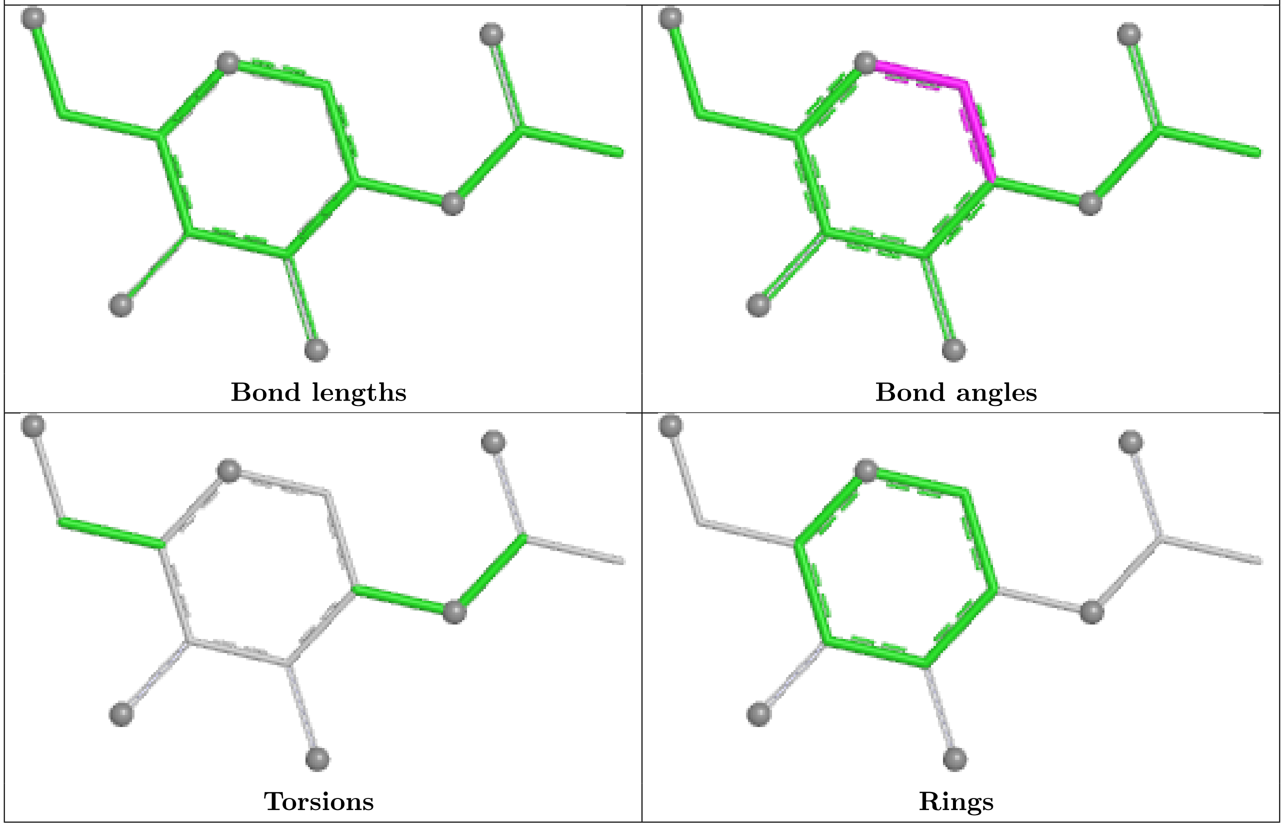
Bond lengths

Bond angles

Torsions

Rings

Ligand NAG i 401



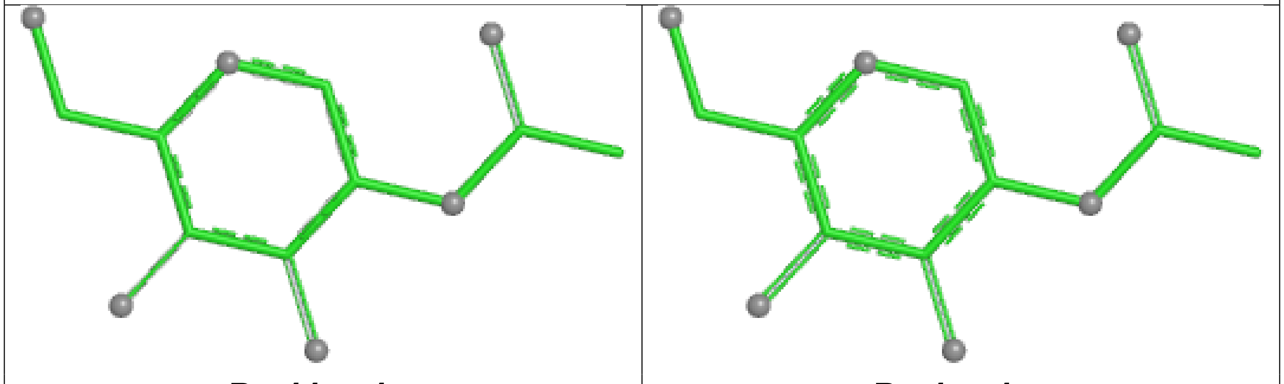
Bond lengths

Bond angles

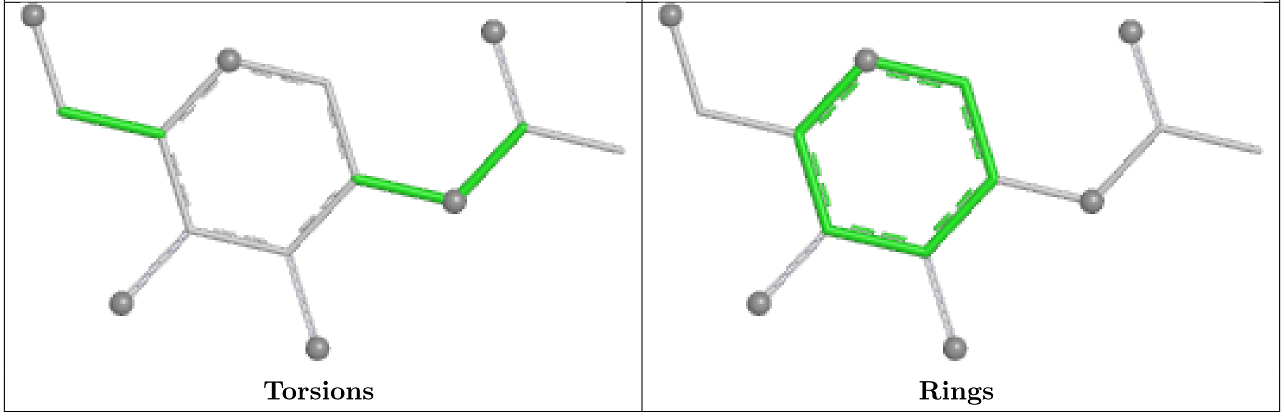
Torsions

Rings

Ligand NAG h 401

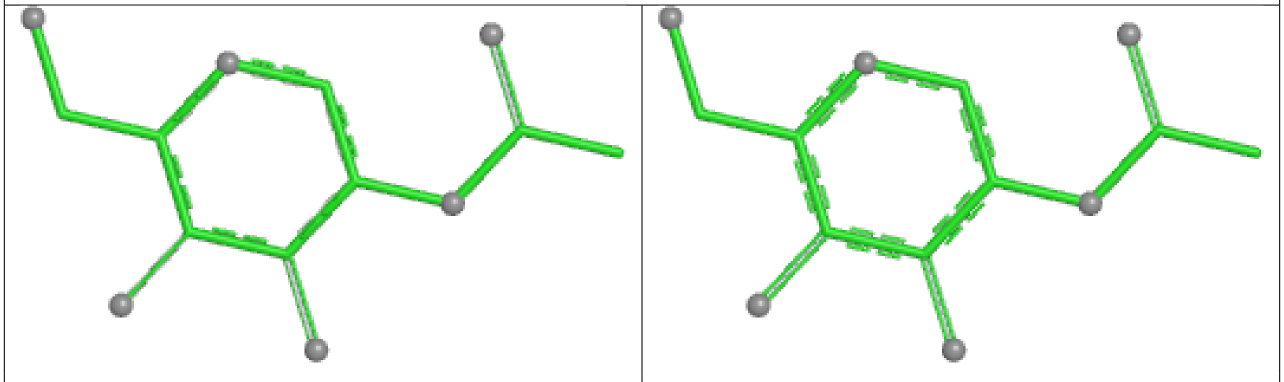


Bond lengths Bond angles

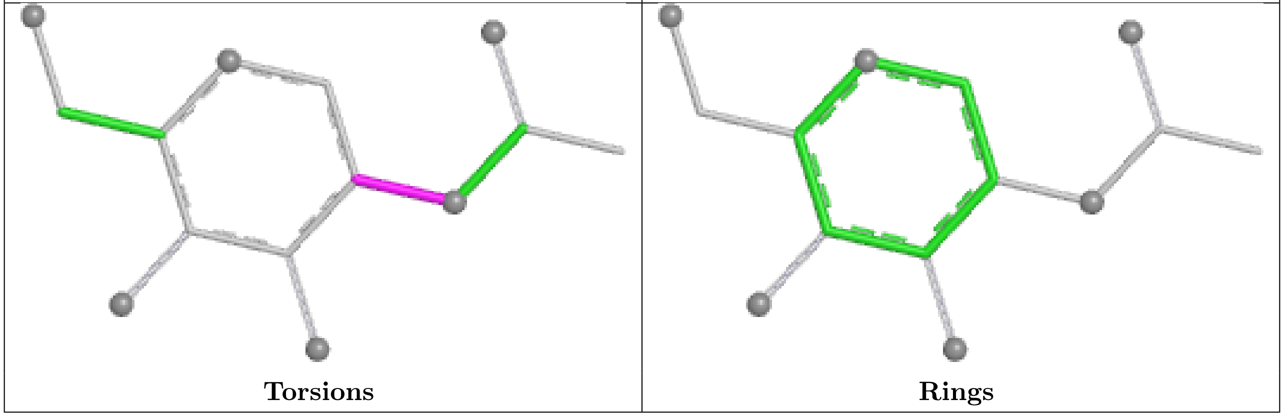


Torsions Rings

Ligand NAG e 401

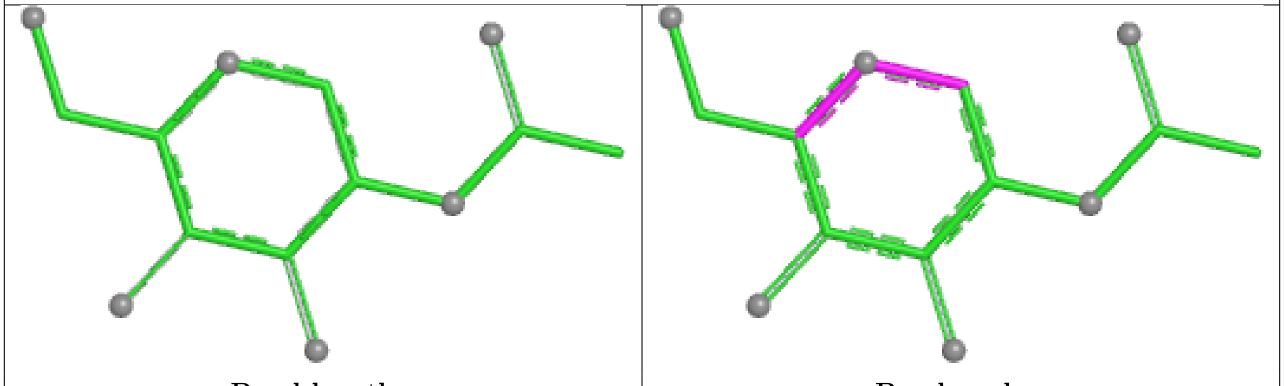


Bond lengths Bond angles

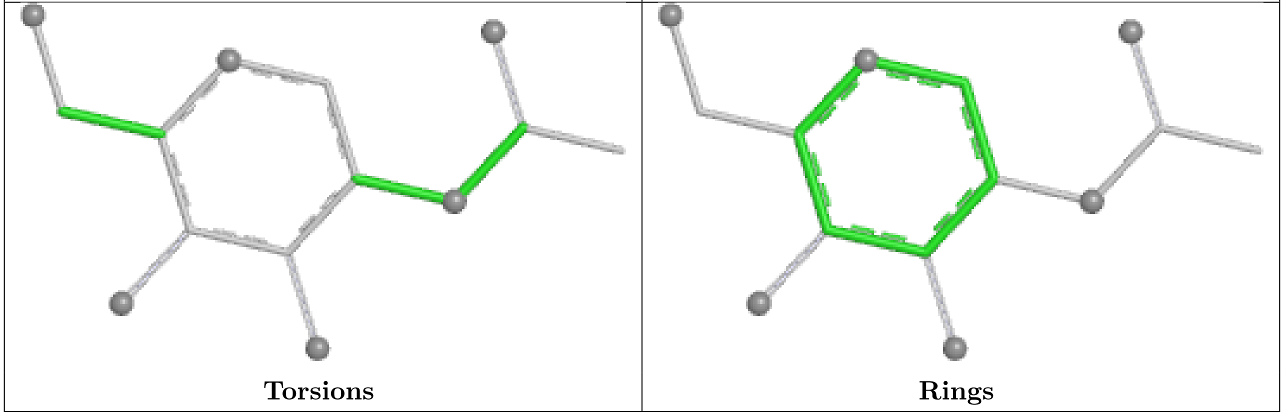


Torsions Rings

Ligand NAG g 401

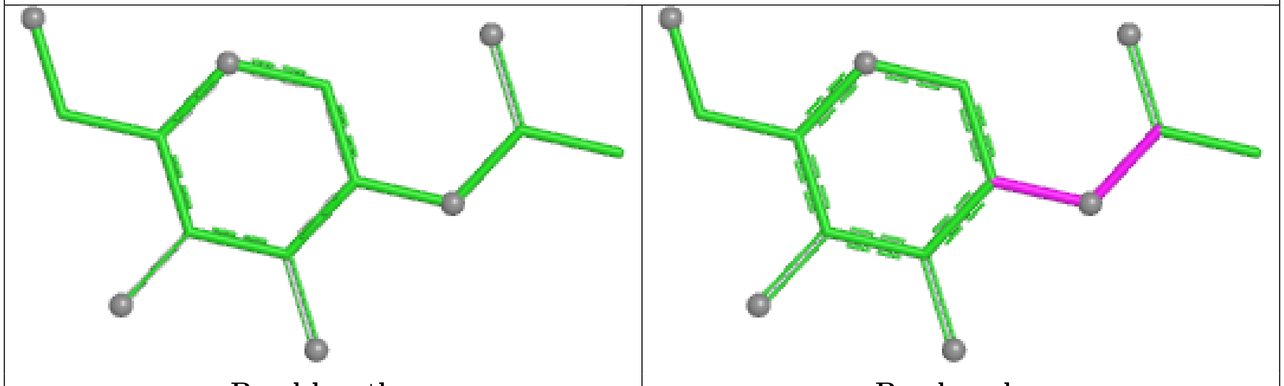


Bond lengths Bond angles

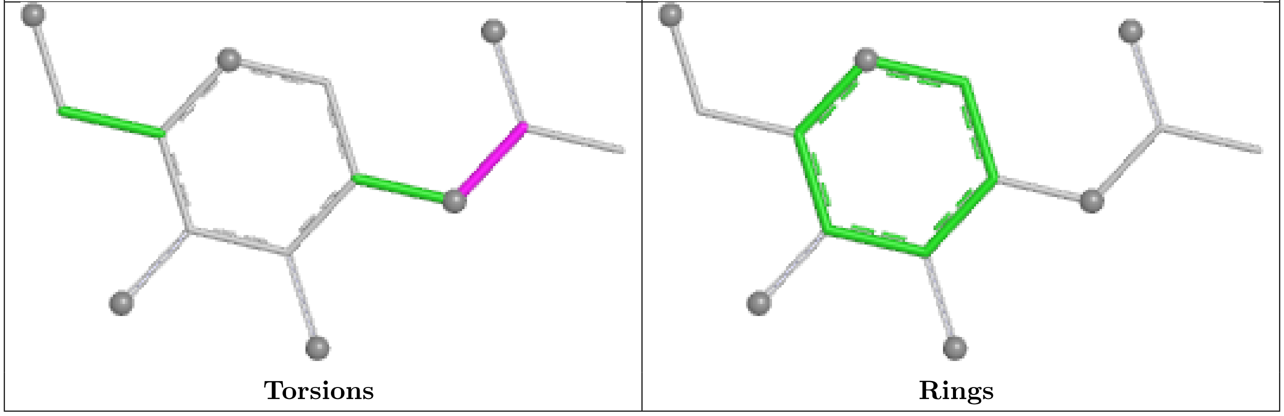


Torsions Rings

Ligand NAG F 401

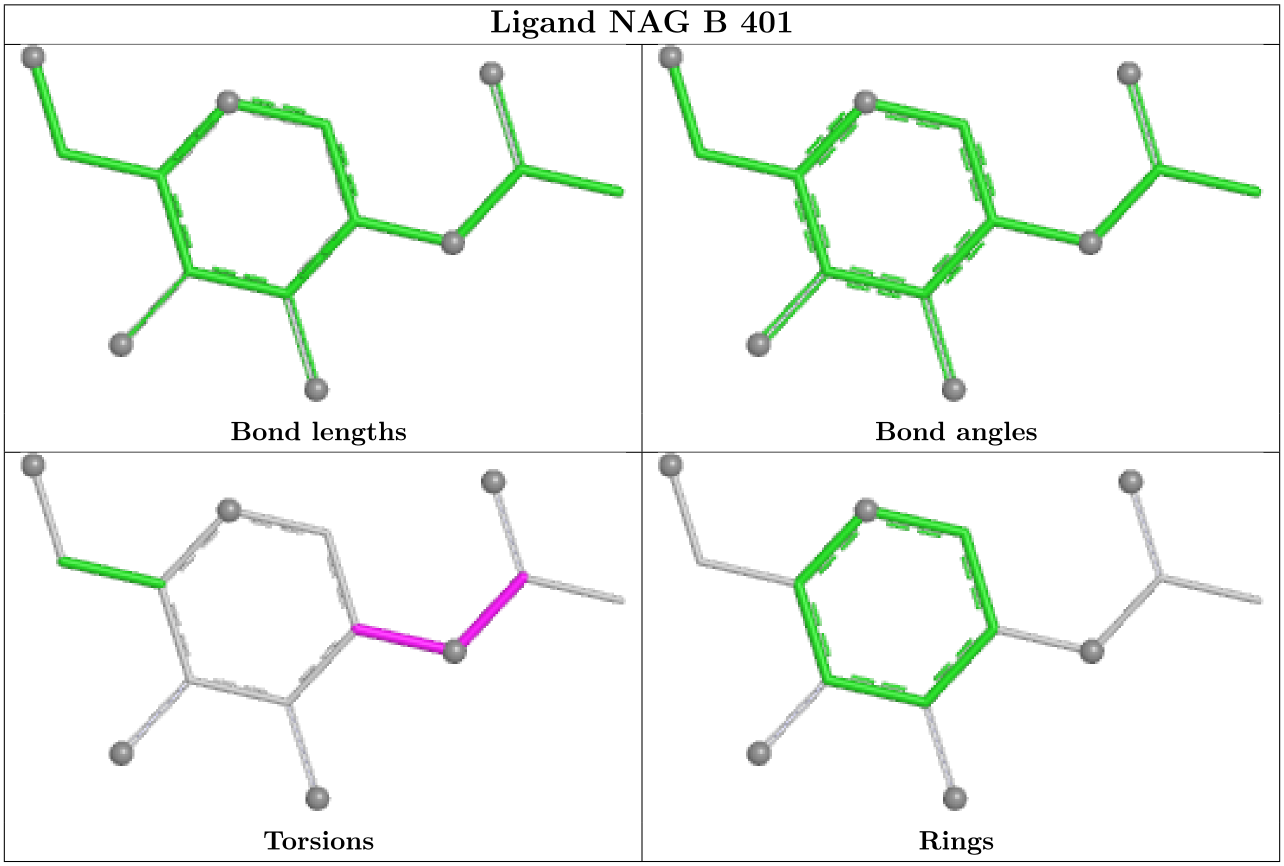


Bond lengths Bond angles



Torsions Rings

Ligand NAG B 401



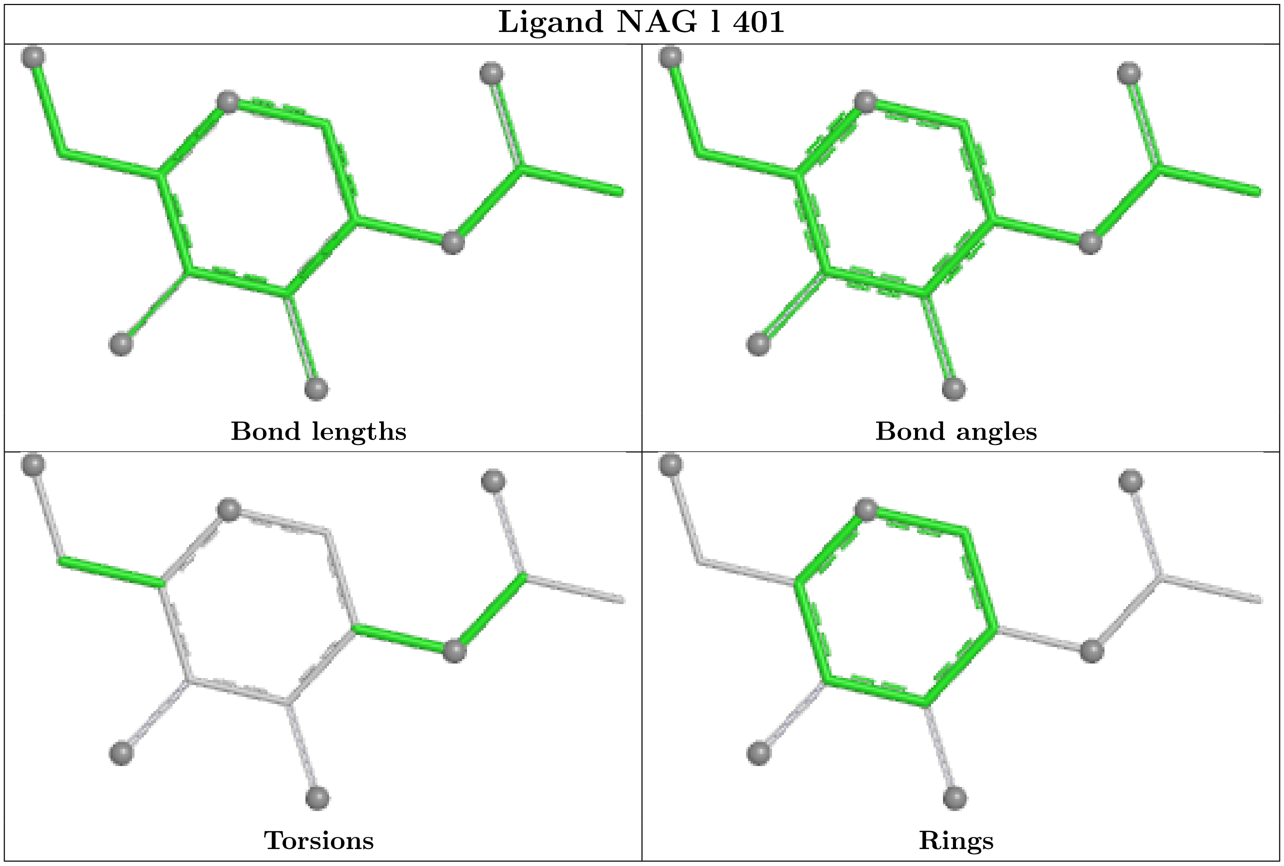
Bond lengths

Bond angles

Torsions

Rings

Ligand NAG l 401



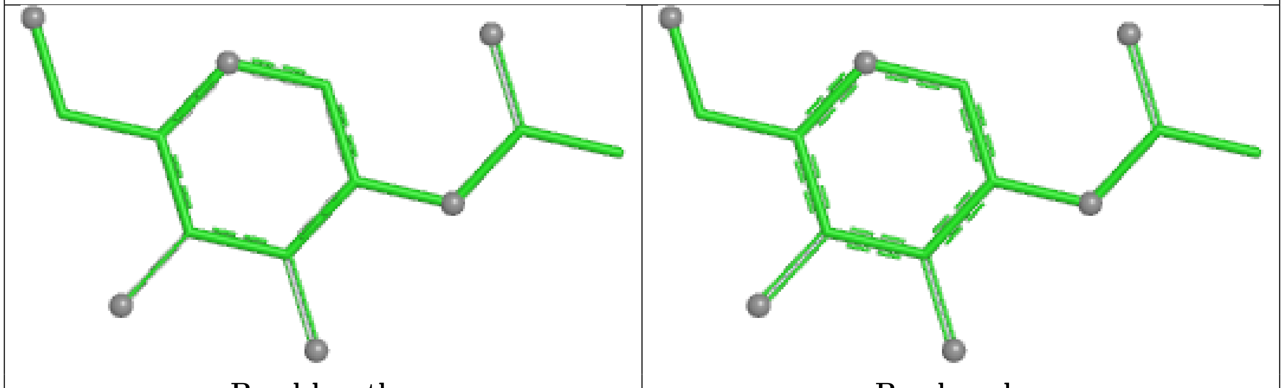
Bond lengths

Bond angles

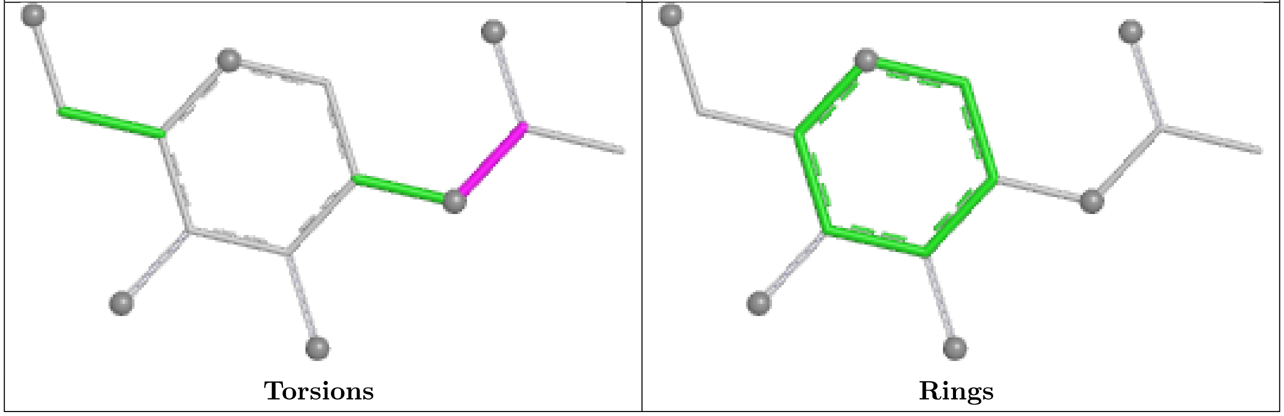
Torsions

Rings

Ligand NAG b 401

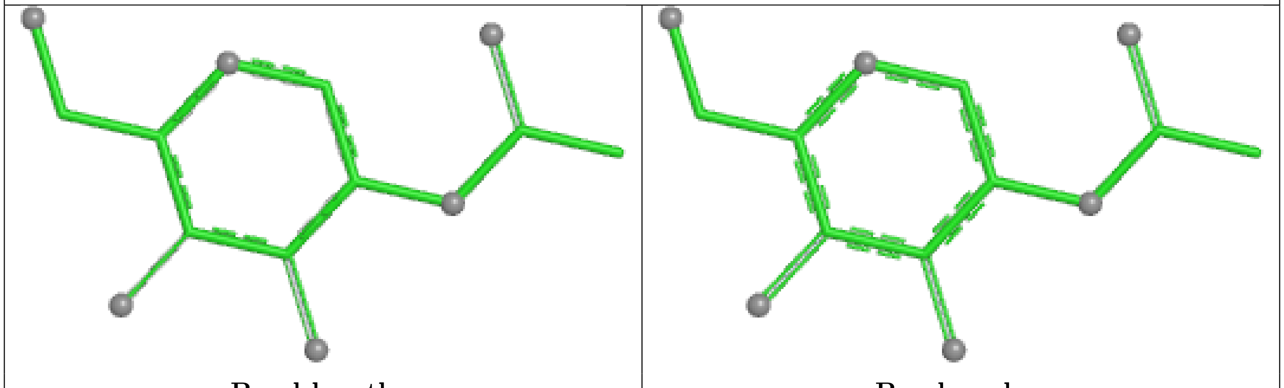


Bond lengths Bond angles

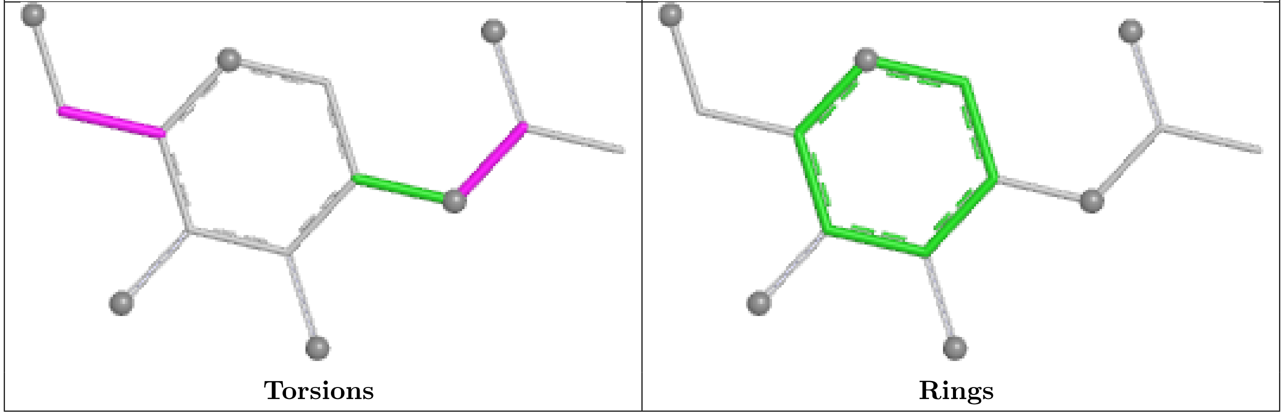


Torsions Rings

Ligand NAG a 401

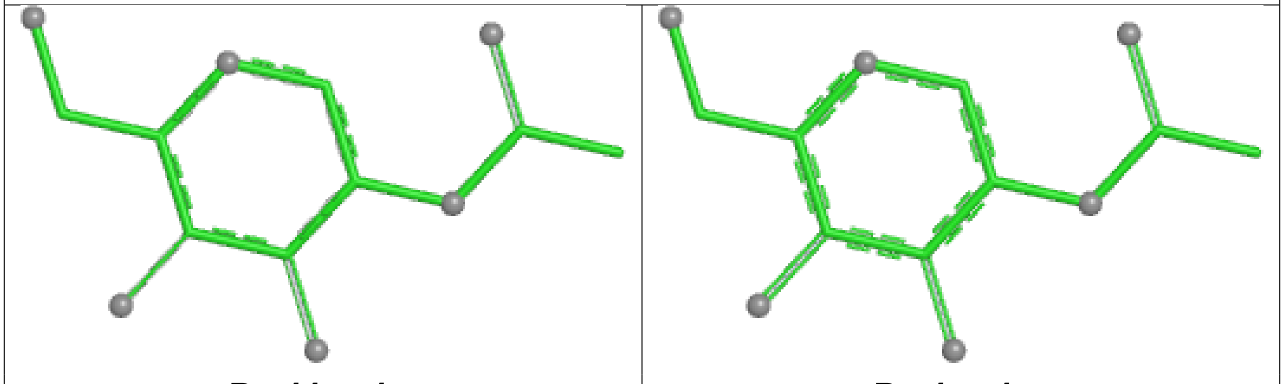


Bond lengths Bond angles



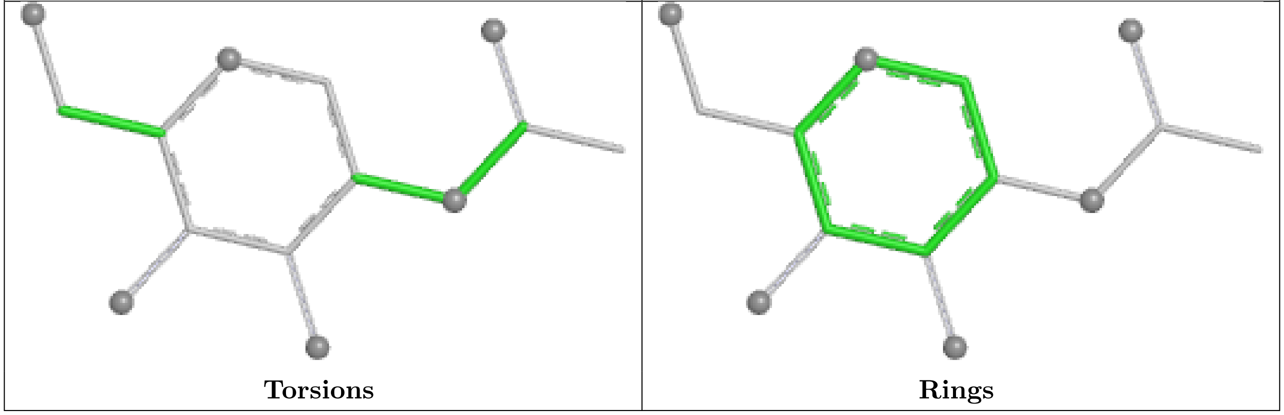
Torsions Rings

Ligand NAG K 401



Bond lengths

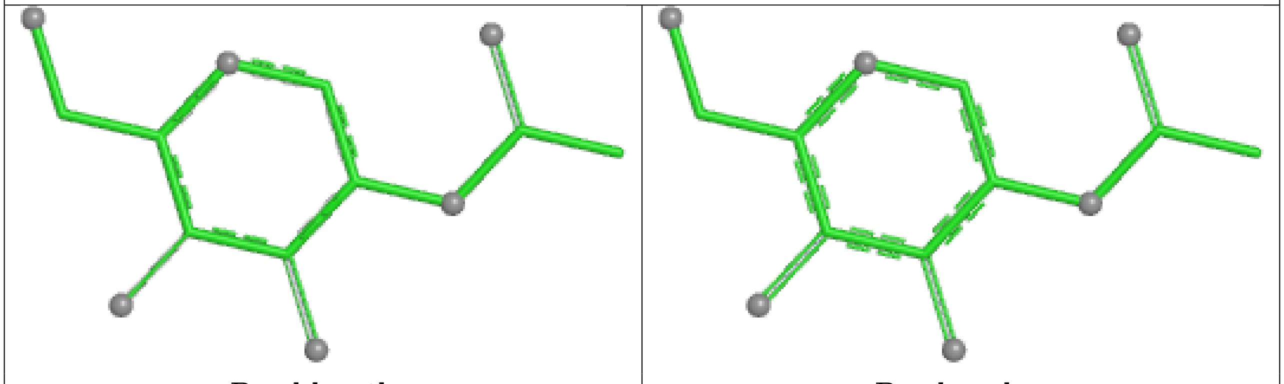
Bond angles



Torsions

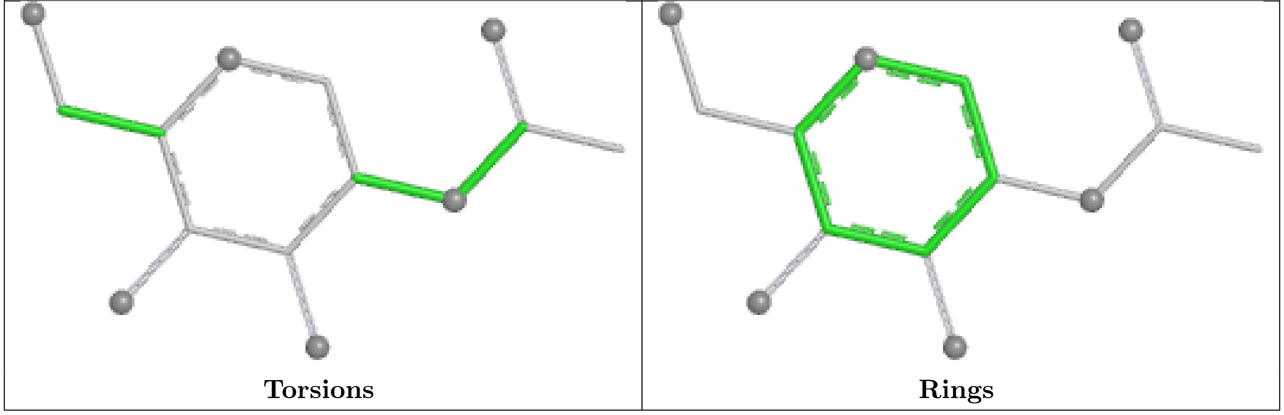
Rings

Ligand NAG J 401



Bond lengths

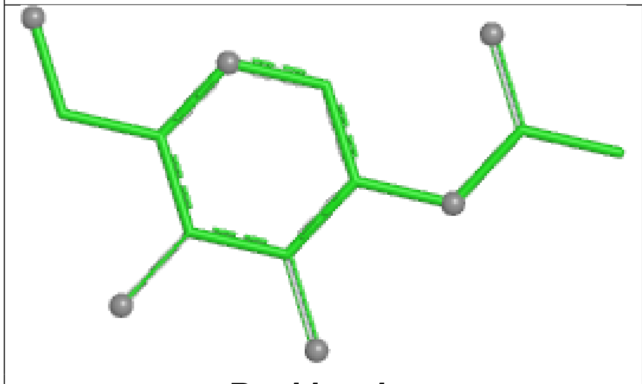
Bond angles



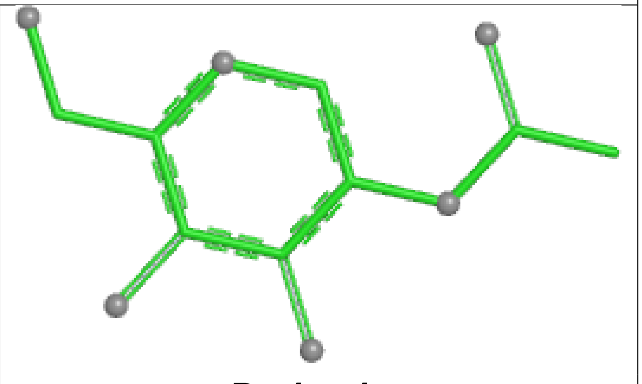
Torsions

Rings

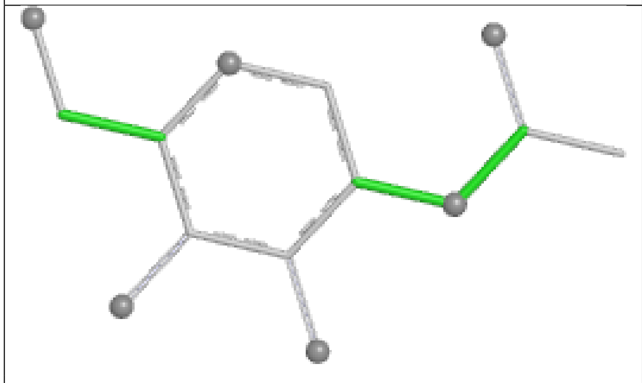
Ligand NAG M 401



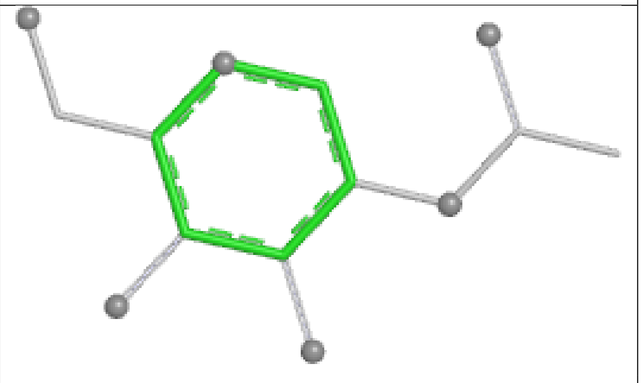
Bond lengths



Bond angles

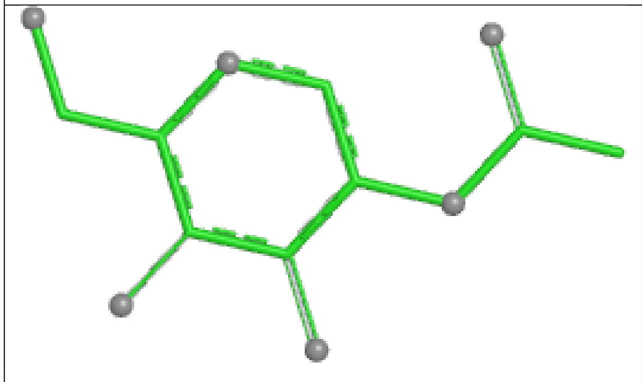


Torsions

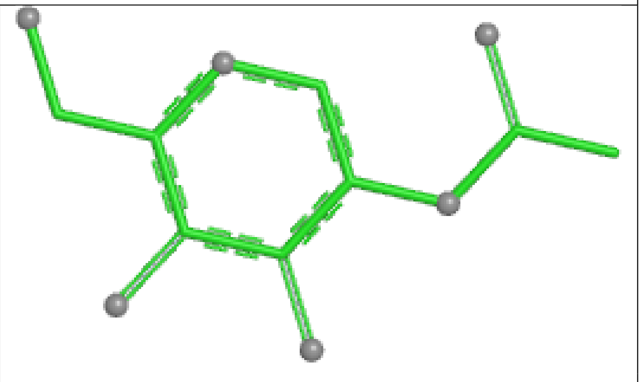


Rings

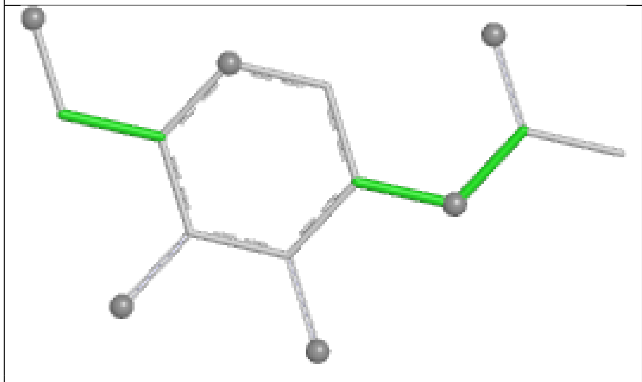
Ligand NAG H 401



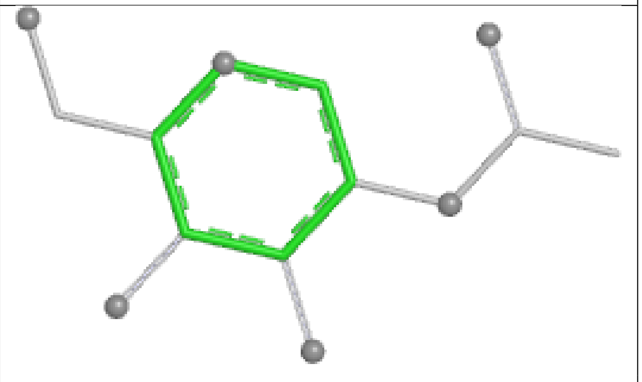
Bond lengths



Bond angles

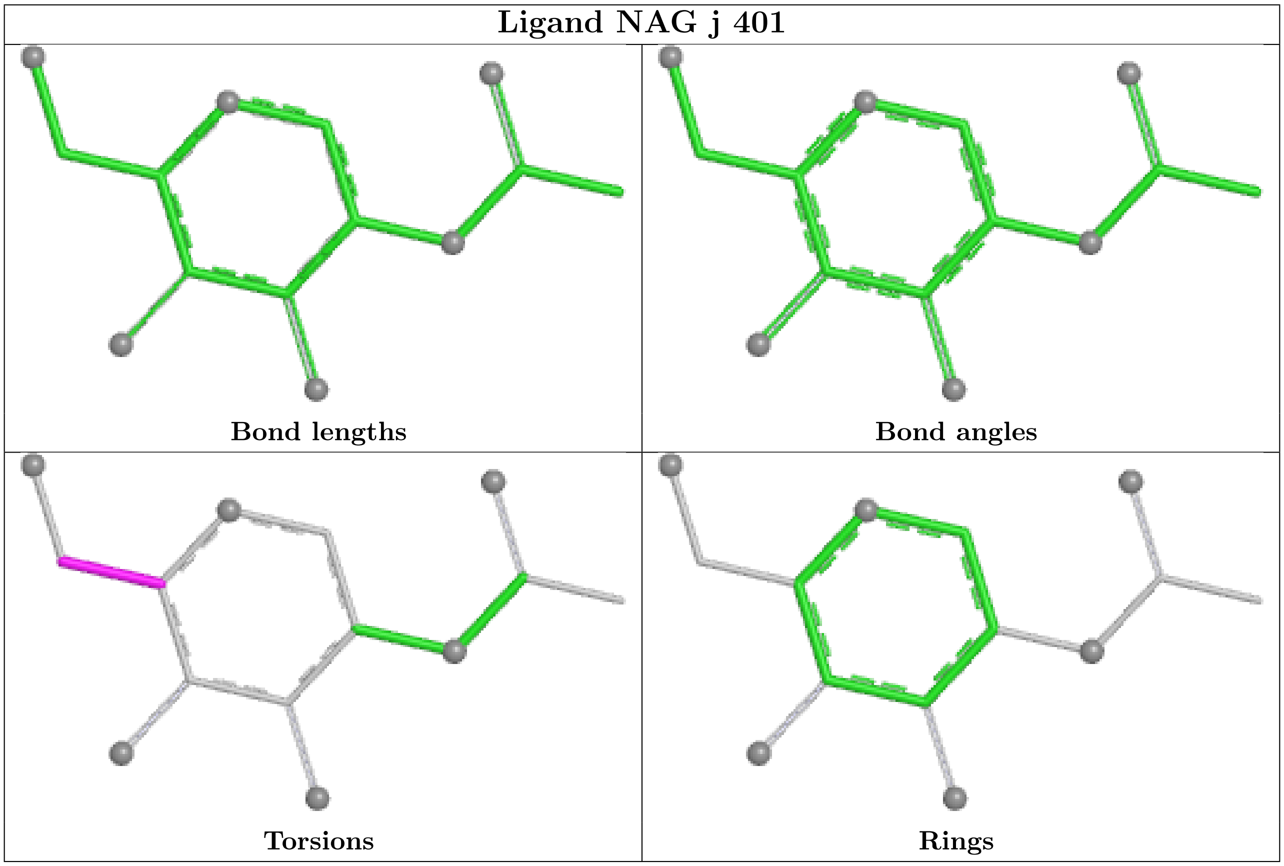


Torsions



Rings

Ligand NAG j 401



Bond lengths

Bond angles

Torsions

Rings

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.

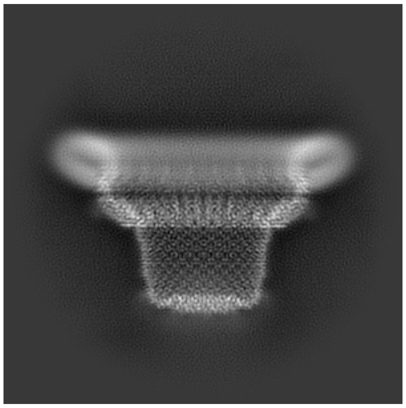
6 Map visualisation

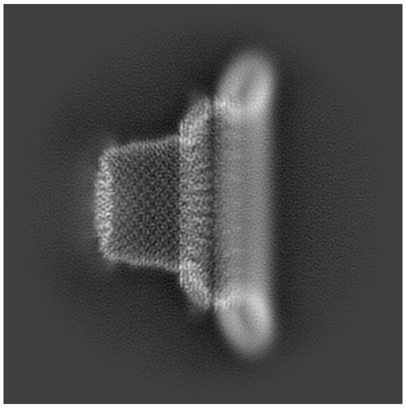
This section contains visualisations of the EMDB entry EMD-70263. These allow visual inspection of the internal detail of the map and identification of artifacts.

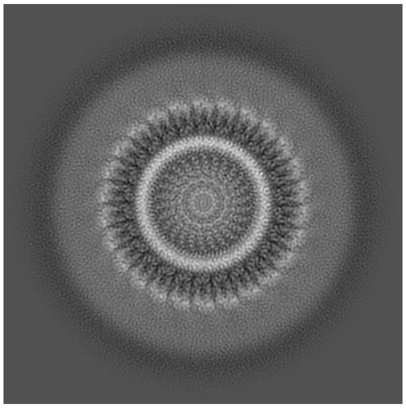
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

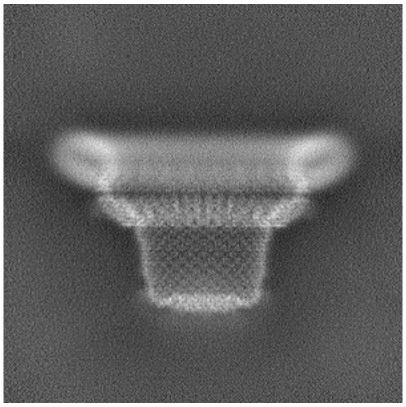
6.1.1 Primary map

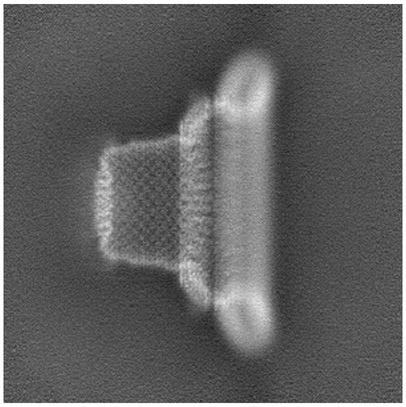

X

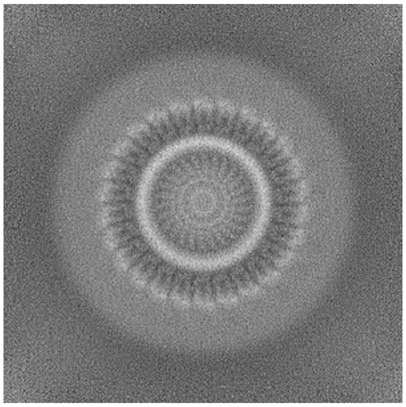

Y


Z

6.1.2 Raw map


X

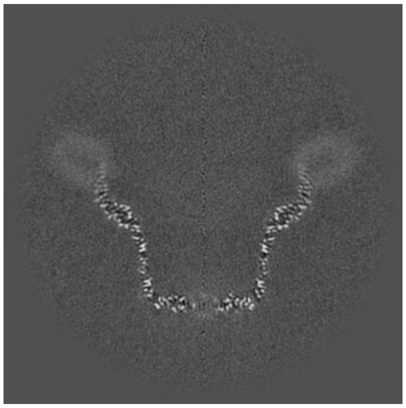

Y


Z

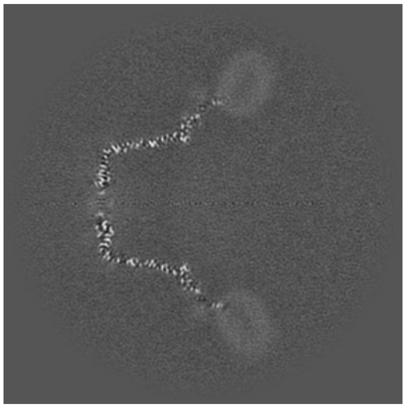
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ

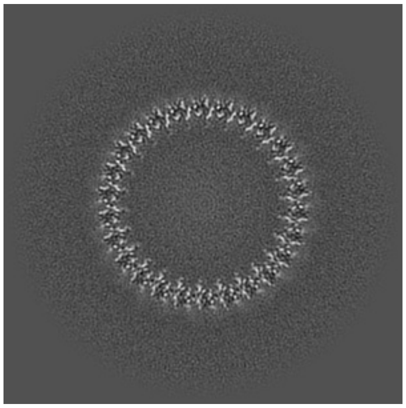
6.2.1 Primary map



X Index: 256

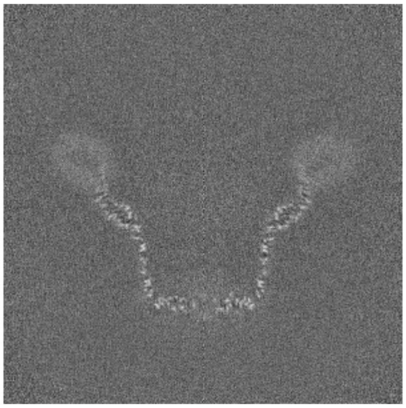


Y Index: 256

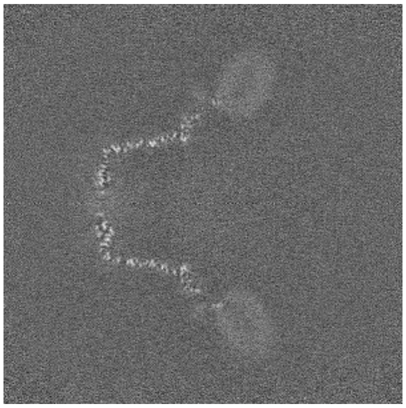


Z Index: 256

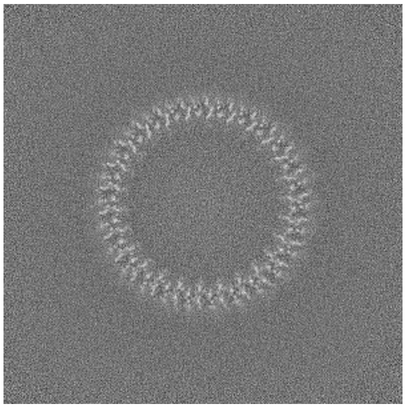
6.2.2 Raw map



X Index: 256



Y Index: 256

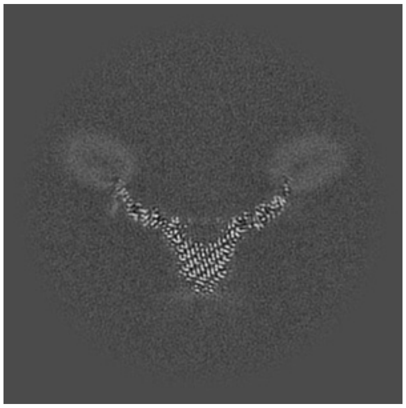


Z Index: 256

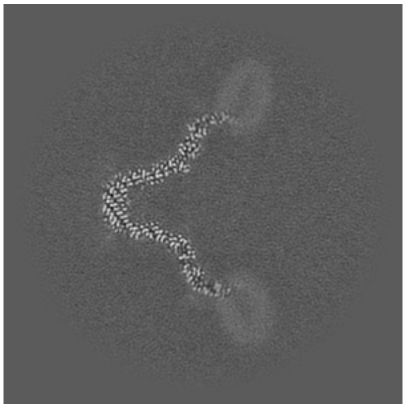
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices

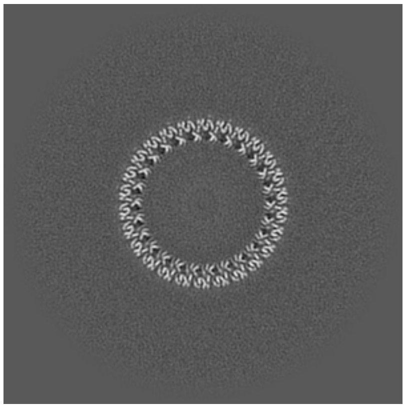
6.3.1 Primary map



X Index: 331

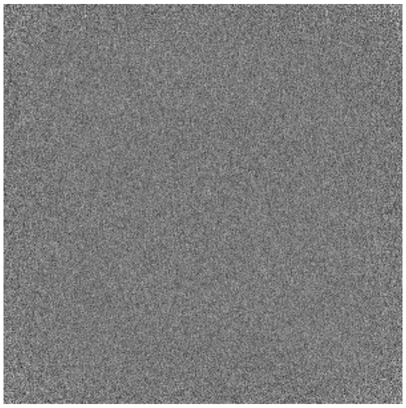


Y Index: 325

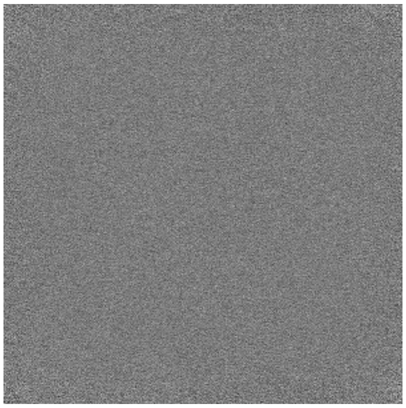


Z Index: 228

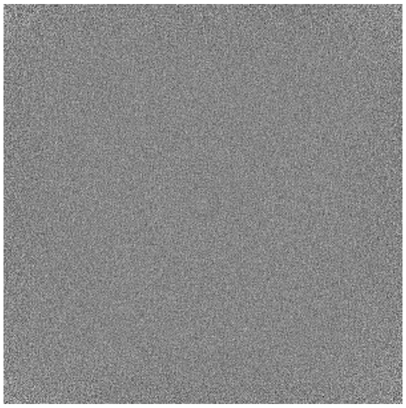
6.3.2 Raw map



X Index: 0



Y Index: 0

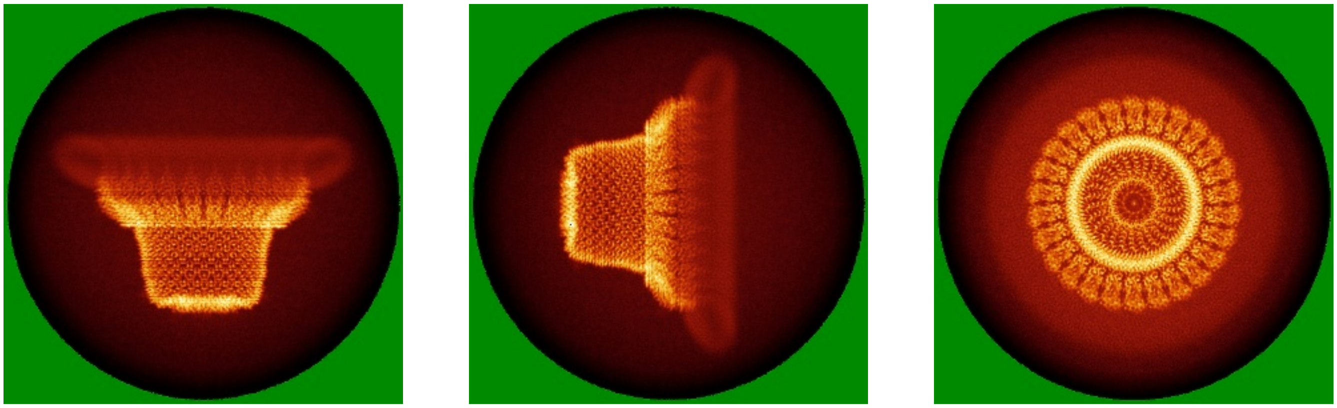


Z Index: 0

The images above show the largest variance slices of the map in three orthogonal directions.

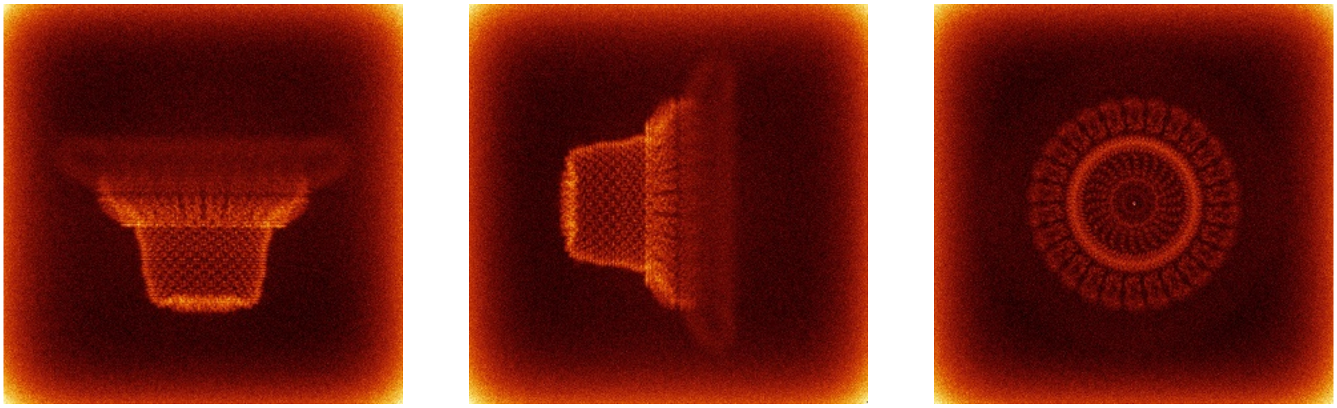
6.4 Orthogonal standard-deviation projections (False-color)

6.4.1 Primary map



X Y Z

6.4.2 Raw map



X Y Z

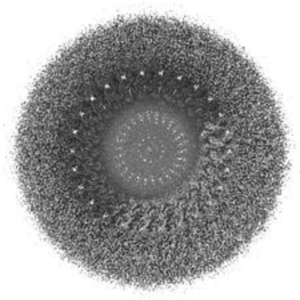
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views

6.5.1 Primary map

X

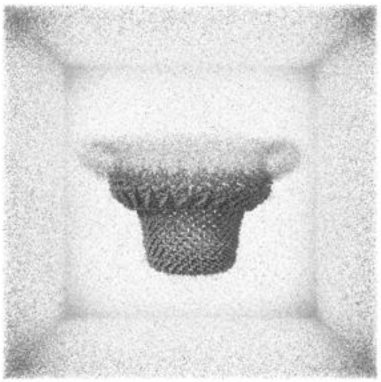
Y



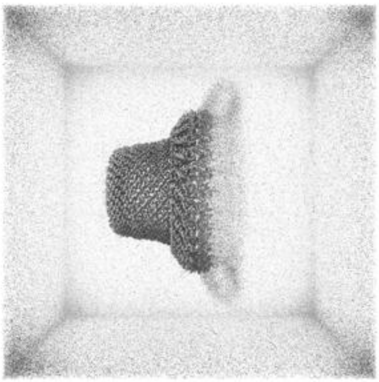
Z

The images above show the 3D surface view of the map at the recommended contour level 0.11. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

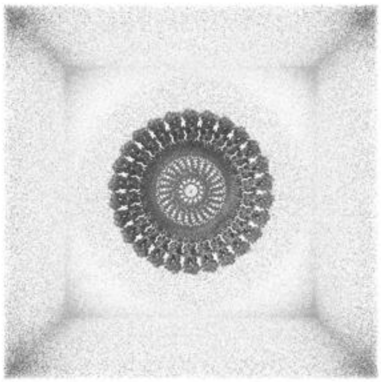
6.5.2 Raw map



X



Y



Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

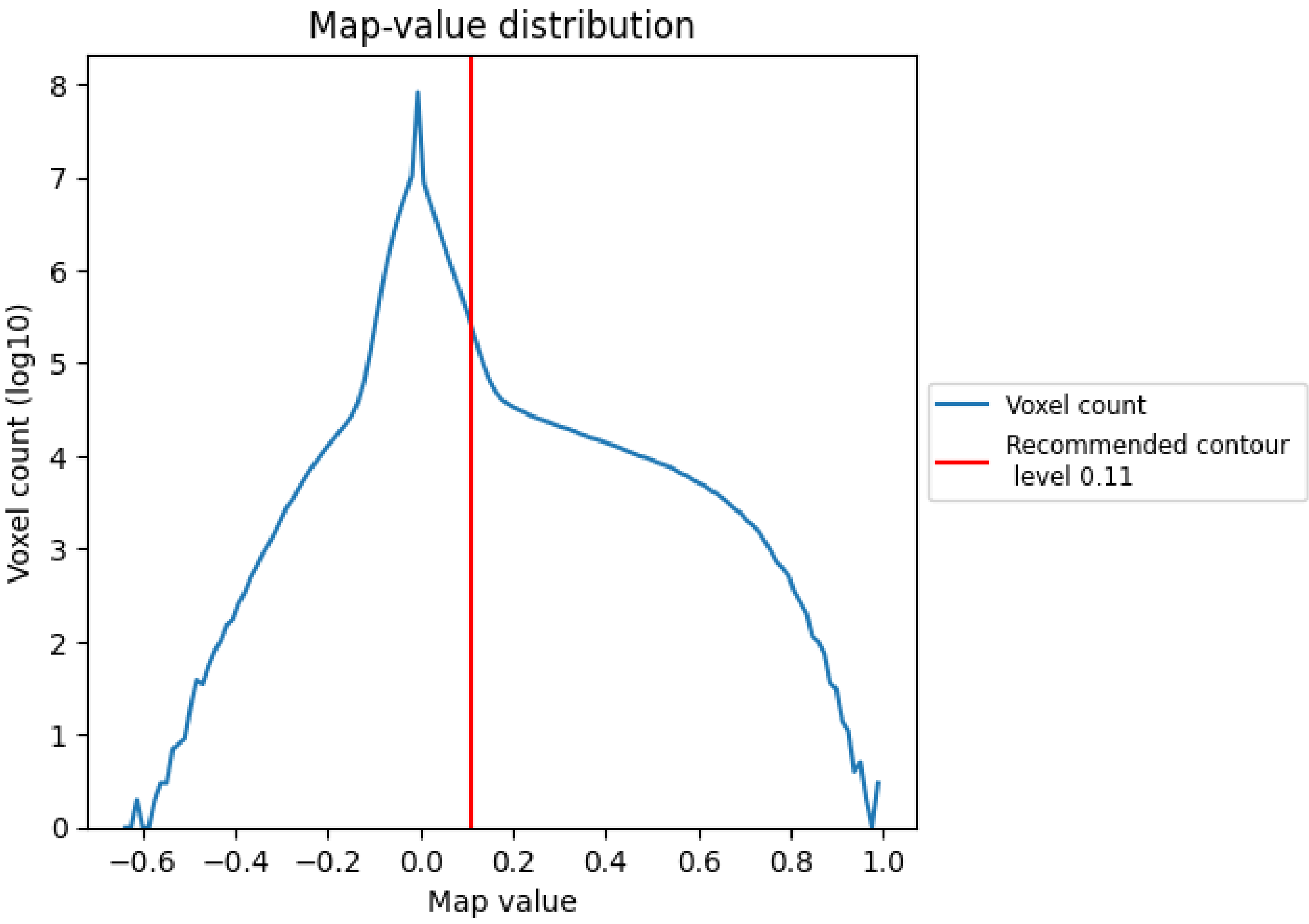
6.6 Mask visualisation

This section was not generated. No masks/segmentation were deposited.

7 Map analysis ⓘ

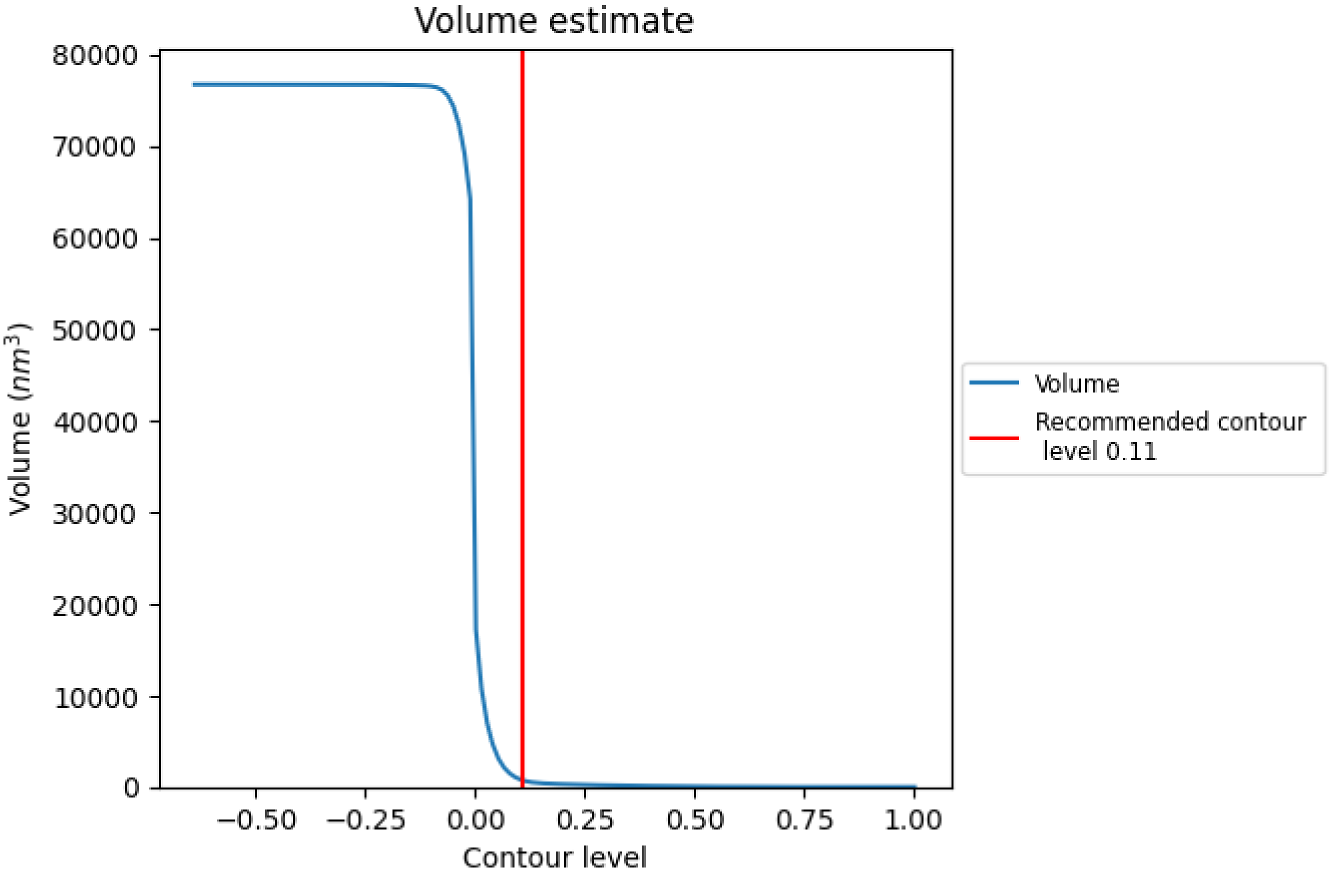
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution ⓘ



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

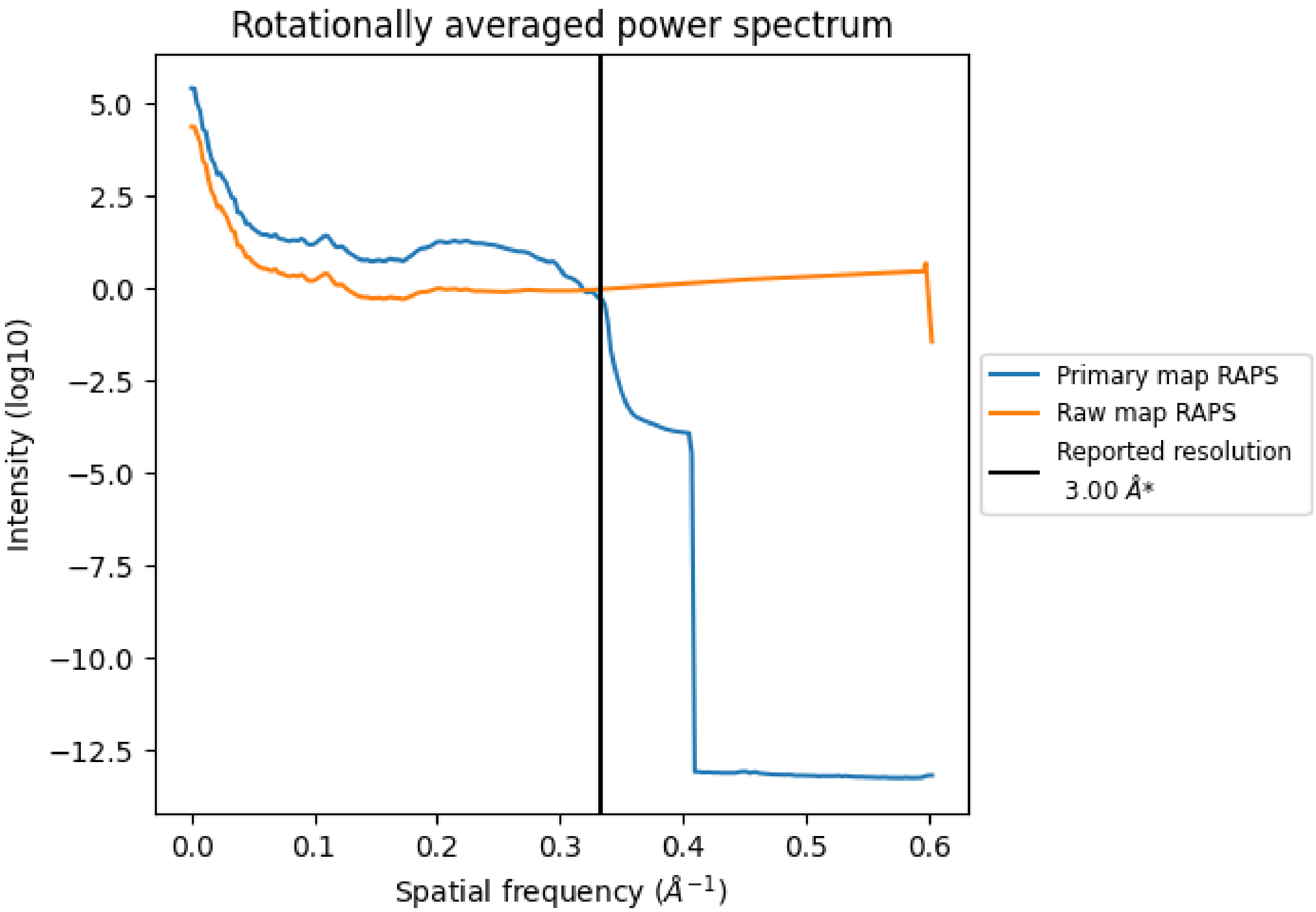
7.2 Volume estimate ⓘ



The volume at the recommended contour level is 714 nm^3; this corresponds to an approximate mass of 645 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ

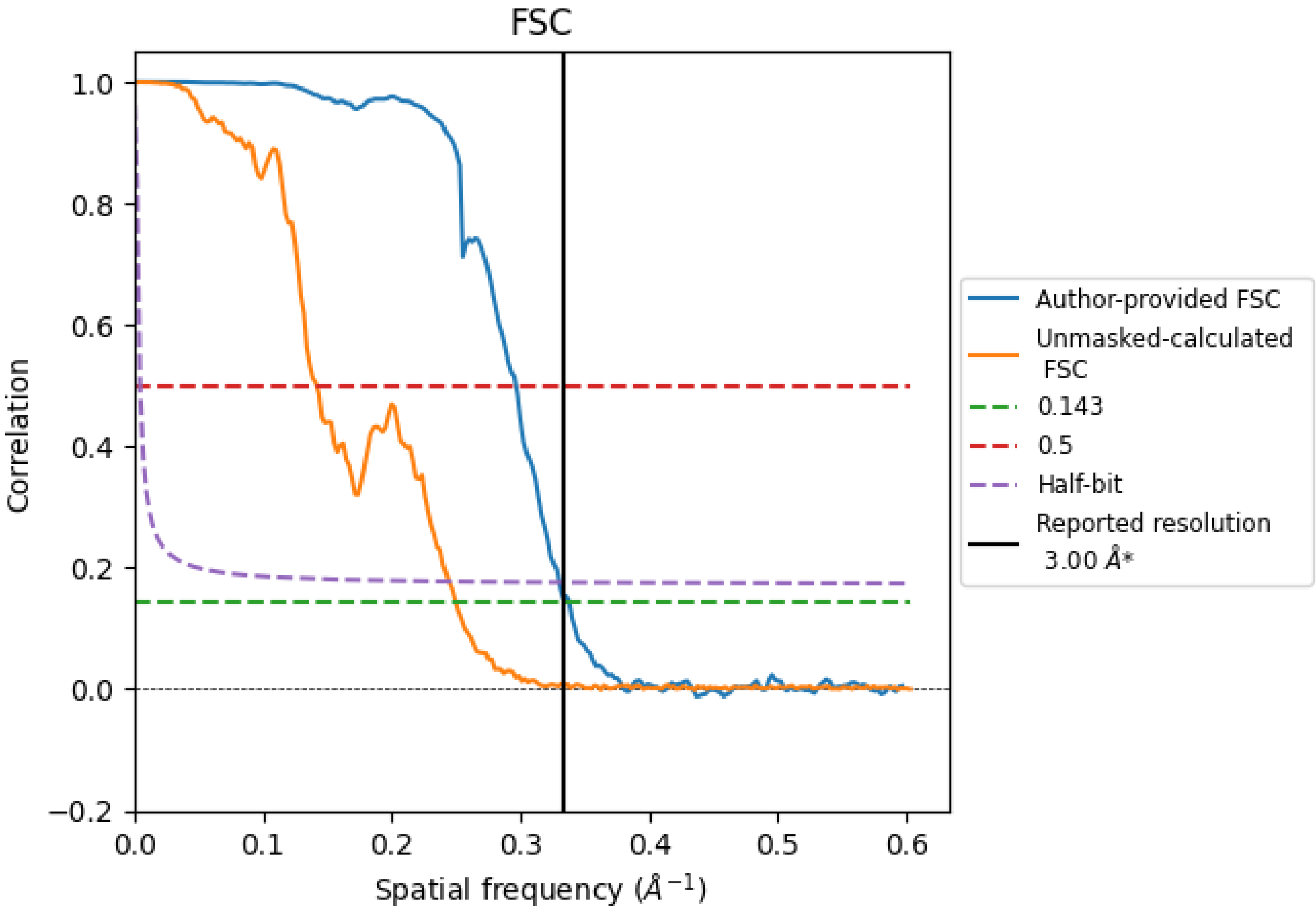


*Reported resolution corresponds to spatial frequency of 0.333 Å^{-1}

8 Fourier-Shell correlation ⓘ

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC ⓘ



*Reported resolution corresponds to spatial frequency of 0.333 $Å^{-1}$

8.2 Resolution estimates ⓘ

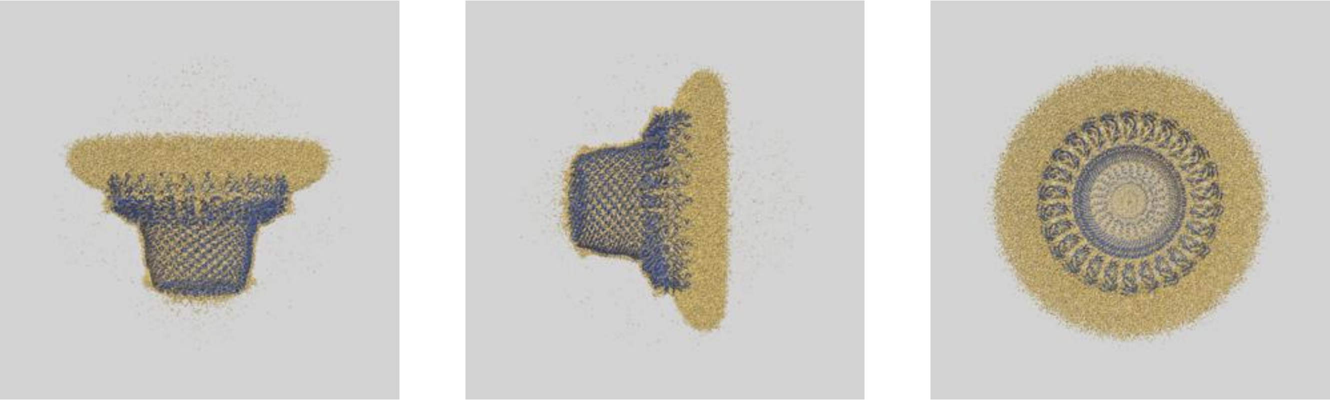
Resolution estimate (Å)	**Estimation criterion (FSC cut-off)**		
	0.143	0.5	Half-bit
Reported by author	3.00	-	-
Author-provided FSC curve	2.96	3.37	3.03
Unmasked-calculated*	4.00	7.05	4.09

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.00 differs from the reported value 3.0 by more than 10 %

9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-70263 and PDB model 9O9U. Per-residue inclusion information can be found in section 3 on page 19.

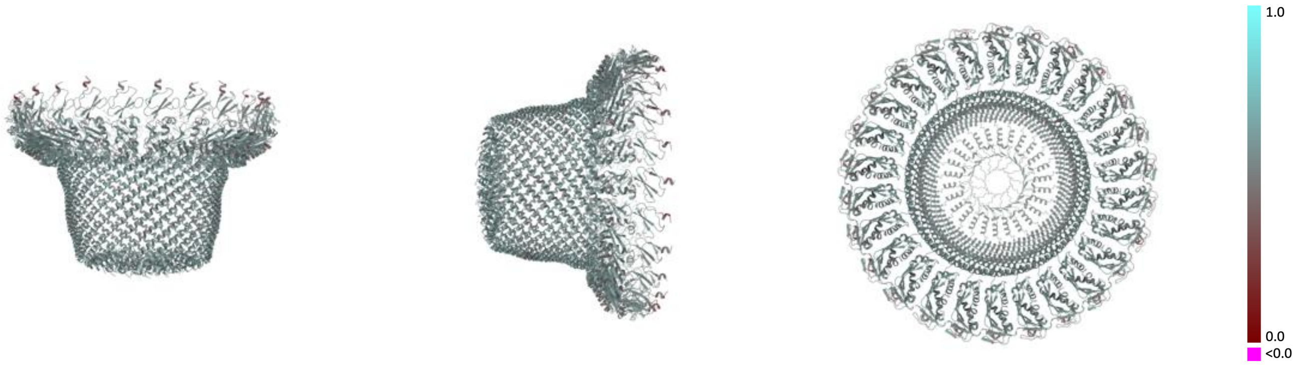
9.1 Map-model overlay



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.11 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

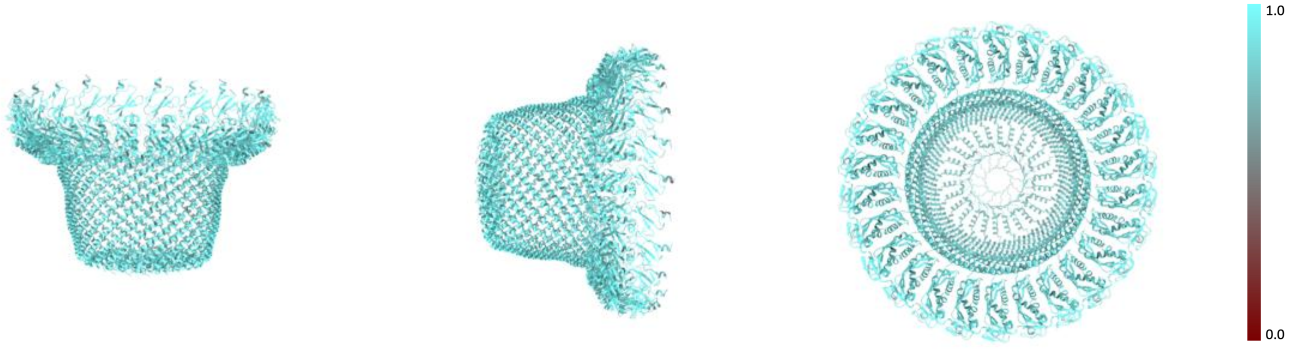
9.2 Q-score mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

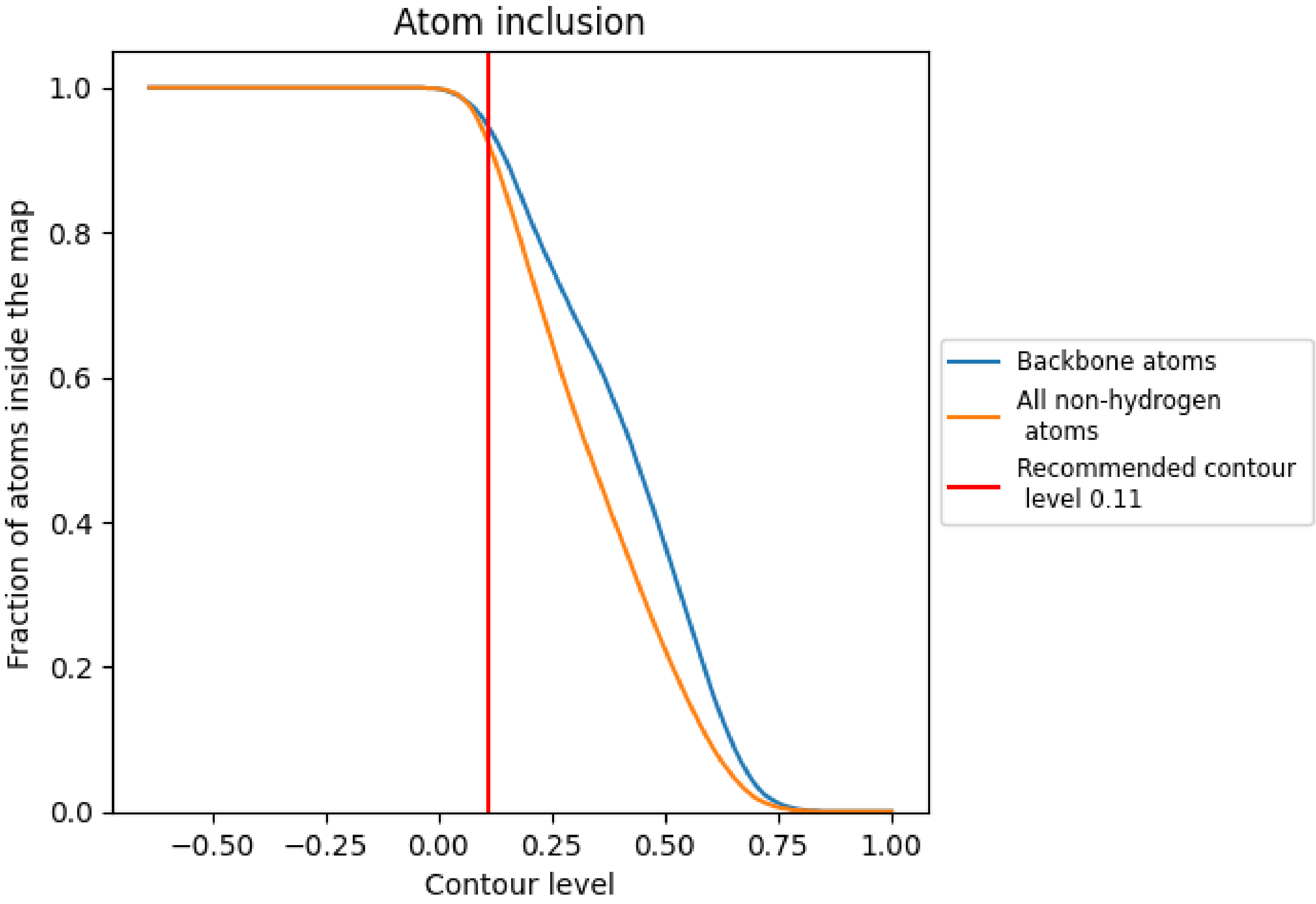
9.3 Atom inclusion mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.11).

9.4 Atom inclusion ⓘ



At the recommended contour level, 95% of all backbone atoms, 92% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.11) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	▬ 0.9240	▬ 0.5410
A	▬ 0.9230	▬ 0.5430
B	▬ 0.9150	▬ 0.5390
C	▬ 0.9200	▬ 0.5410
D	▬ 0.9300	▬ 0.5390
E	▬ 0.9210	▬ 0.5410
F	▬ 0.9140	▬ 0.5380
G	▬ 0.9110	▬ 0.5350
H	▬ 0.9170	▬ 0.5340
I	▬ 0.9230	▬ 0.5380
J	▬ 0.9180	▬ 0.5330
K	▬ 0.9190	▬ 0.5390
L	▬ 0.9200	▬ 0.5410
M	▬ 0.9290	▬ 0.5420
a	▬ 0.9280	▬ 0.5460
b	▬ 0.9260	▬ 0.5460
c	▬ 0.9320	▬ 0.5450
d	▬ 0.9310	▬ 0.5440
e	▬ 0.9270	▬ 0.5410
f	▬ 0.9270	▬ 0.5420
g	▬ 0.9240	▬ 0.5380
h	▬ 0.9330	▬ 0.5430
i	▬ 0.9270	▬ 0.5440
j	▬ 0.9310	▬ 0.5470
k	▬ 0.9350	▬ 0.5440
l	▬ 0.9290	▬ 0.5440
m	▬ 0.9280	▬ 0.5440