



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2026 – 09:21 AM UTC

PDB ID : 5CVU / pdb_00005cvu
Title : sinpyl alcohol bound monolignol 4-O-methyltransferase 5
Authors : Cai, Y.; Liu, C.-J.
Deposited on : 2015-07-27
Resolution : 1.80 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 Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

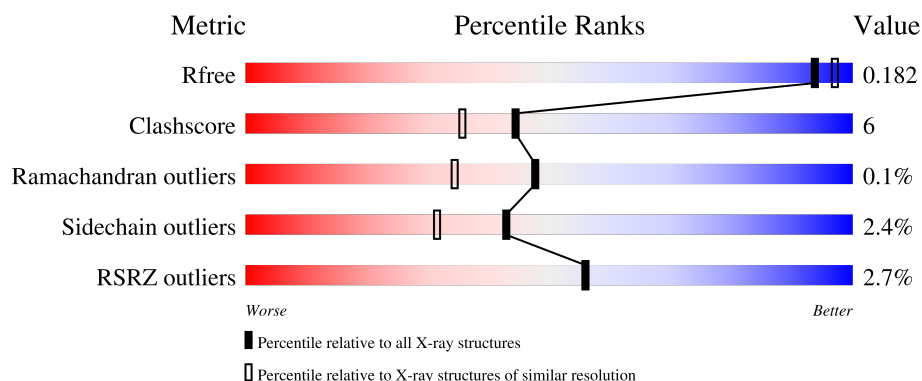
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

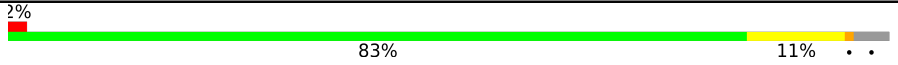
The reported resolution of this entry is 1.80 Å.

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}	180053	7662 (1.80-1.80)
Clashscore	190562	8479 (1.80-1.80)
Ramachandran outliers	187476	8391 (1.80-1.80)
Sidechain outliers	187428	8390 (1.80-1.80)
RSRZ outliers	180081	7663 (1.80-1.80)

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 $\leq 5\%$. 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	368	
1	B	368	
1	C	368	
1	D	368	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard

residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	55B	A	401	-	X	-	-
2	55B	B	401	-	X	-	-
2	55B	C	401	-	X	-	-
2	55B	D	401	-	X	-	-

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 11634 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.

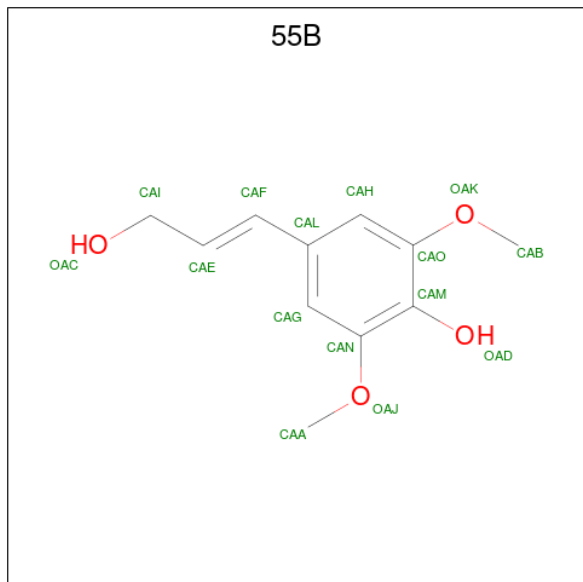
- Molecule 1 is a protein called (Iso)eugenol O-methyltransferase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	354	Total	C	N	O	S	0	0	0
			2714	1758	436	502	18			
1	B	360	Total	C	N	O	S	0	0	0
			2761	1790	443	510	18			
1	C	354	Total	C	N	O	S	0	0	0
			2714	1758	436	502	18			
1	D	361	Total	C	N	O	S	0	0	0
			2770	1795	444	513	18			

There are 20 discrepancies between the modelled and reference sequences:

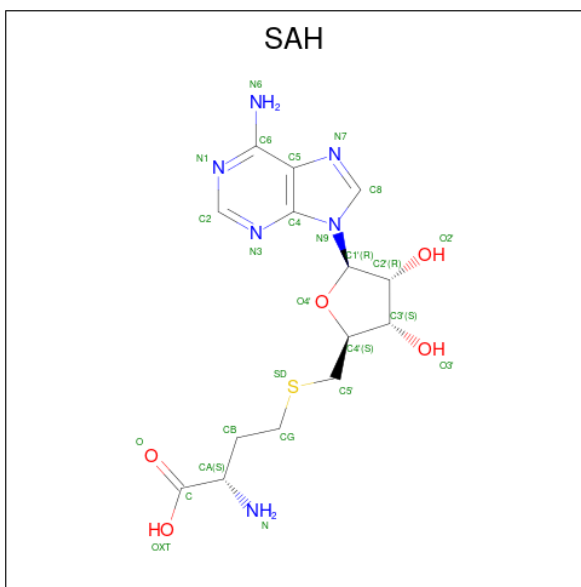
Chain	Residue	Modelled	Actual	Comment	Reference
A	133	LEU	THR	engineered mutation	UNP O04385
A	165	ILE	GLU	engineered mutation	UNP O04385
A	166	TRP	PHE	engineered mutation	UNP O04385
A	169	PHE	HIS	engineered mutation	UNP O04385
A	175	ILE	PHE	engineered mutation	UNP O04385
B	133	LEU	THR	engineered mutation	UNP O04385
B	165	ILE	GLU	engineered mutation	UNP O04385
B	166	TRP	PHE	engineered mutation	UNP O04385
B	169	PHE	HIS	engineered mutation	UNP O04385
B	175	ILE	PHE	engineered mutation	UNP O04385
C	133	LEU	THR	engineered mutation	UNP O04385
C	165	ILE	GLU	engineered mutation	UNP O04385
C	166	TRP	PHE	engineered mutation	UNP O04385
C	169	PHE	HIS	engineered mutation	UNP O04385
C	175	ILE	PHE	engineered mutation	UNP O04385
D	133	LEU	THR	engineered mutation	UNP O04385
D	165	ILE	GLU	engineered mutation	UNP O04385
D	166	TRP	PHE	engineered mutation	UNP O04385
D	169	PHE	HIS	engineered mutation	UNP O04385
D	175	ILE	PHE	engineered mutation	UNP O04385

- Molecule 2 is 4-[(1E)-3-hydroxyprop-1-en-1-yl]-2,6-dimethoxyphenol (CCD ID: 55B) (formula: C₁₁H₁₄O₄).



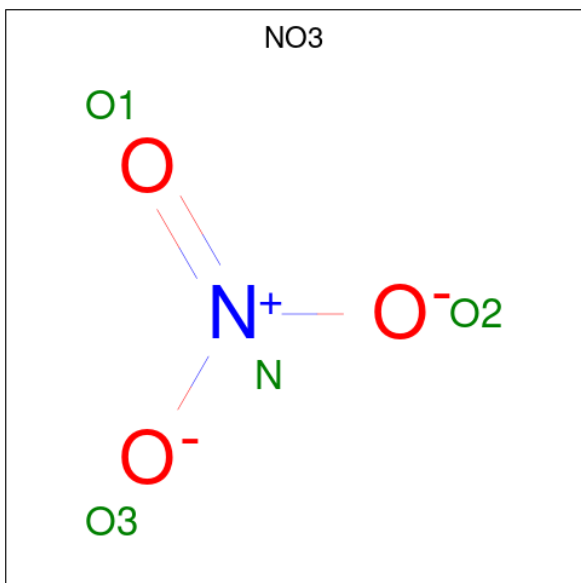
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			15	11	4		
2	B	1	Total	C	O	0	0
			15	11	4		
2	C	1	Total	C	O	0	0
			15	11	4		
2	D	1	Total	C	O	0	0
			15	11	4		

- Molecule 3 is S-ADENOSYL-L-HOMOCYSTEINE (CCD ID: SAH) (formula: C₁₄H₂₀N₆O₅S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	S	0	0
			26	14	6	5	1		
3	B	1	Total	C	N	O	S	0	0
			26	14	6	5	1		
3	C	1	Total	C	N	O	S	0	0
			26	14	6	5	1		
3	D	1	Total	C	N	O	S	0	0
			26	14	6	5	1		

- Molecule 4 is NITRATE ION (CCD ID: NO3) (formula: NO₃).



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

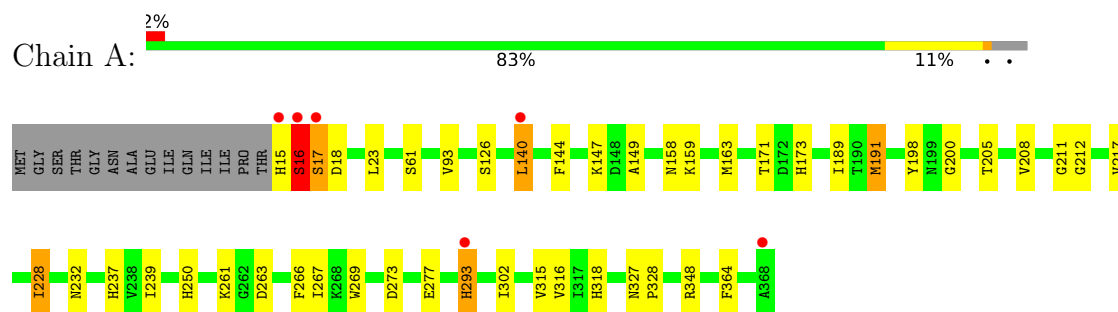
- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	142	Total O 142 142	0	0
5	B	103	Total O 103 103	0	0
5	C	128	Total O 128 128	0	0
5	D	102	Total O 102 102	0	0

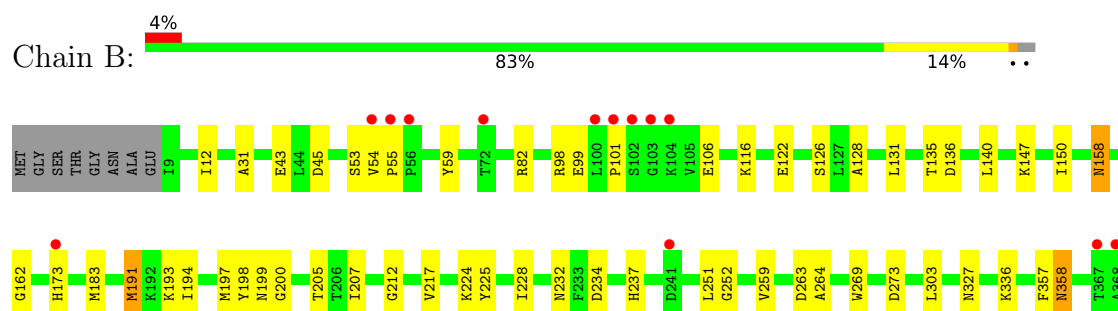
3 Residue-property plots [i](#)

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.

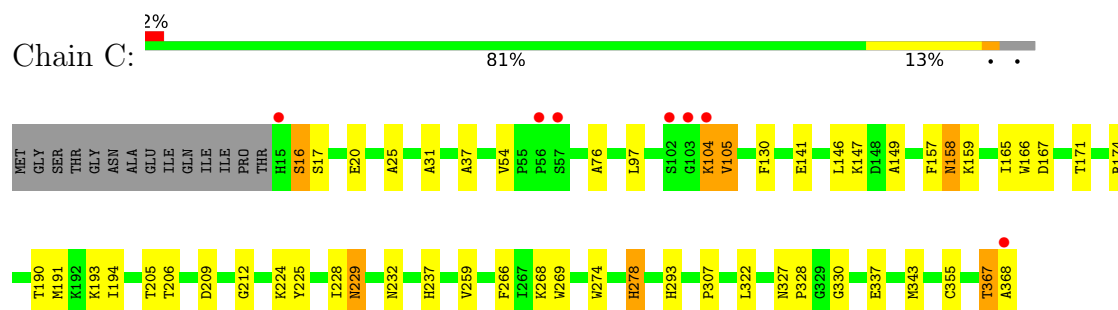
- Molecule 1: (Iso)eugenol O-methyltransferase



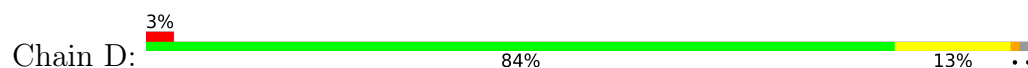
- Molecule 1: (Iso)eugenol O-methyltransferase

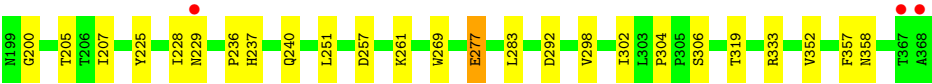
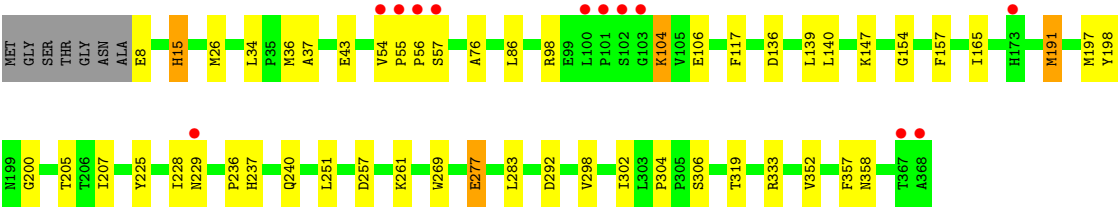


- Molecule 1: (Iso)eugenol O-methyltransferase



- Molecule 1: (Iso)eugenol O-methyltransferase





4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	66.54Å 151.63Å 68.39Å 90.00° 92.55° 90.00°	Depositor
Resolution (Å)	75.81 – 1.80 75.81 – 1.80	Depositor EDS
% Data completeness (in resolution range)	93.9 (75.81-1.80) 93.9 (75.81-1.80)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.11 (at 1.60Å)	Xtriage
Refinement program	REFMAC 5.8.0103	Depositor
R, R_{free}	0.168 , 0.168 (Not available) , 0.182	Depositor DCC
R_{free} test set	7904 reflections (4.47%)	wwPDB-VP
Wilson B-factor (Å ²)	15.1	Xtriage
Anisotropy	0.152	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 31.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.004 for l,k,-h 0.025 for h,-k,-l 0.019 for l,-k,h	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	11634	wwPDB-VP
Average B, all atoms (Å ²)	17.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.74% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: 55B, SAH, NO3

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# $ Z > 5$	RMSZ	# $ Z > 5$
1	A	1.48	12/2781 (0.4%)	1.40	13/3779 (0.3%)
1	B	1.42	10/2829 (0.4%)	1.35	10/3846 (0.3%)
1	C	1.43	12/2781 (0.4%)	1.37	8/3779 (0.2%)
1	D	1.44	15/2838 (0.5%)	1.38	8/3858 (0.2%)
All	All	1.44	49/11229 (0.4%)	1.37	39/15262 (0.3%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	C	0	1

All (49) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	126	SER	C-O	7.46	1.32	1.23
1	A	93	VAL	N-CA	7.19	1.53	1.46
1	D	36	MET	N-CA	6.84	1.54	1.46
1	A	328	PRO	C-O	6.57	1.29	1.24
1	D	257	ASP	N-CA	6.45	1.54	1.46
1	C	37	ALA	N-CA	6.31	1.54	1.46
1	C	141	GLU	CA-C	6.06	1.60	1.52
1	D	304	PRO	CA-C	6.06	1.57	1.52
1	B	150	ILE	CA-C	6.00	1.60	1.52
1	C	25	ALA	CA-C	5.82	1.60	1.52
1	B	162	GLY	N-CA	5.80	1.53	1.45
1	D	298	VAL	C-O	-5.73	1.18	1.24
1	C	146	LEU	N-CA	5.68	1.53	1.46
1	C	228	ILE	C-O	5.65	1.30	1.24

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	17	SER	C-O	5.62	1.30	1.24
1	A	173	HIS	CA-C	5.62	1.60	1.52
1	C	307	PRO	CA-C	5.61	1.58	1.52
1	A	171	THR	N-CA	5.56	1.53	1.45
1	D	117	PHE	N-CA	5.56	1.53	1.46
1	B	99	GLU	CA-C	5.52	1.60	1.52
1	D	136	ASP	N-CA	-5.46	1.39	1.46
1	D	37	ALA	N-CA	5.45	1.53	1.46
1	B	128	ALA	C-O	-5.44	1.19	1.24
1	D	140	LEU	CA-C	5.36	1.59	1.52
1	B	259	VAL	CA-CB	5.33	1.61	1.55
1	C	355	CYS	N-CA	5.33	1.52	1.46
1	D	352	VAL	N-CA	5.32	1.52	1.46
1	B	59	TYR	N-CA	5.32	1.52	1.46
1	A	61	SER	N-CA	5.30	1.53	1.45
1	D	43	GLU	N-CA	5.29	1.52	1.46
1	A	315	VAL	N-CA	5.28	1.52	1.46
1	D	86	LEU	C-O	5.27	1.30	1.24
1	A	327	ASN	CA-C	-5.26	1.46	1.52
1	D	333	ARG	CZ-NH1	5.22	1.40	1.32
1	B	303	LEU	CA-C	-5.22	1.47	1.53
1	D	34	LEU	CA-C	5.18	1.58	1.52
1	C	330	GLY	CA-C	5.17	1.56	1.52
1	C	76	ALA	CA-C	5.17	1.58	1.52
1	A	302	ILE	CA-CB	-5.11	1.48	1.54
1	A	163	MET	C-O	5.09	1.29	1.23
1	A	273	ASP	N-CA	5.06	1.52	1.46
1	D	302	ILE	N-CA	5.05	1.52	1.46
1	C	343	MET	N-CA	5.04	1.52	1.46
1	D	76	ALA	N-CA	5.04	1.51	1.46
1	B	31	ALA	C-O	5.04	1.30	1.24
1	A	277	GLU	N-CA	5.03	1.52	1.46
1	C	278	HIS	CA-C	-5.03	1.46	1.52
1	C	209	ASP	C-O	5.02	1.29	1.23
1	B	131	LEU	N-CA	-5.02	1.40	1.46

All (39) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	191	MET	CG-SD-CE	-7.80	83.75	100.90
1	A	16	SER	N-CA-C	-7.76	102.91	112.38
1	B	55	PRO	CA-C-N	-7.72	111.55	120.12

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	55	PRO	C-N-CA	-7.72	111.55	120.12
1	D	154	GLY	O-C-N	7.25	128.90	122.88
1	C	54	VAL	N-CA-CB	6.99	117.93	110.17
1	A	208	VAL	O-C-N	6.36	129.94	123.20
1	A	328	PRO	O-C-N	6.24	127.16	122.73
1	C	228	ILE	CA-C-N	-6.14	114.25	122.72
1	C	228	ILE	C-N-CA	-6.14	114.25	122.72
1	A	228	ILE	CG1-CB-CG2	-6.11	92.38	110.70
1	A	316	VAL	N-CA-C	5.96	116.74	110.72
1	A	261	LYS	CD-CE-NZ	-5.93	92.91	111.90
1	C	16	SER	N-CA-C	-5.91	106.02	113.18
1	A	327	ASN	CA-C-N	-5.91	113.11	120.79
1	A	327	ASN	C-N-CA	-5.91	113.11	120.79
1	D	225	TYR	CA-C-N	-5.84	113.80	119.87
1	D	225	TYR	C-N-CA	-5.84	113.80	119.87
1	D	292	ASP	N-CA-C	5.71	118.25	111.33
1	B	82	ARG	CA-CB-CG	-5.62	102.86	114.10
1	D	319	THR	N-CA-C	-5.60	105.26	111.36
1	C	31	ALA	N-CA-C	5.51	118.81	111.75
1	A	267	ILE	N-CA-CB	5.41	119.03	112.10
1	B	358	ASN	CB-CA-C	-5.41	102.27	110.06
1	D	228	ILE	N-CA-C	5.39	116.53	109.21
1	B	54	VAL	CA-C-N	-5.27	114.95	120.38
1	B	54	VAL	C-N-CA	-5.27	114.95	120.38
1	A	293	HIS	N-CA-CB	-5.26	102.88	110.56
1	C	259	VAL	N-CA-C	5.24	113.66	107.84
1	C	229	ASN	N-CA-CB	5.23	118.96	110.43
1	A	211	GLY	N-CA-C	-5.22	105.88	114.76
1	C	174	ARG	N-CA-C	-5.20	105.51	111.07
1	A	318	HIS	CB-CA-C	-5.19	102.17	110.79
1	B	183	MET	CG-SD-CE	-5.17	89.51	100.90
1	D	147	LYS	N-CA-C	-5.16	105.66	111.28
1	A	364	PHE	N-CA-C	-5.11	99.47	108.20
1	D	147	LYS	CD-CE-NZ	-5.10	95.58	111.90
1	B	12	ILE	N-CA-C	-5.06	104.28	108.63
1	B	53	SER	CB-CA-C	-5.05	102.18	110.72

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	367	THR	Peptide

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	2714	0	2726	35	0
1	B	2761	0	2781	34	0
1	C	2714	0	2726	41	0
1	D	2770	0	2787	29	0
2	A	15	0	14	3	0
2	B	15	0	14	4	0
2	C	15	0	14	4	0
2	D	15	0	14	5	0
3	A	26	0	19	0	0
3	B	26	0	19	0	0
3	C	26	0	19	1	0
3	D	26	0	19	0	0
4	A	12	0	0	0	0
4	B	4	0	0	0	0
4	C	12	0	0	0	0
4	D	8	0	0	0	0
5	A	142	0	0	1	0
5	B	103	0	0	2	0
5	C	128	0	0	2	0
5	D	102	0	0	4	0
All	All	11634	0	11152	133	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 (133) 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:191:MET:HE3	1:A:217:VAL:CG1	1.60	1.31
1:B:191:MET:HE2	1:B:194:ILE:HD12	1.30	1.10
1:A:191:MET:HE3	1:A:217:VAL:HG13	1.29	1.10
1:A:191:MET:HE3	1:A:217:VAL:HG11	1.33	1.09
1:C:193:LYS:HZ1	1:D:15:HIS:CD2	1.74	1.05
1:B:191:MET:CE	1:B:194:ILE:HD12	1.90	1.01
1:A:191:MET:HE2	1:A:266:PHE:CZ	1.95	0.99

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:193:LYS:NZ	1:D:15:HIS:CD2	2.39	0.91
1:D:98:ARG:CD	1:D:106:GLU:OE1	2.19	0.90
1:C:130:PHE:CE2	1:D:26:MET:HE1	2.08	0.89
1:B:98:ARG:HD2	1:B:106:GLU:OE1	1.74	0.88
1:A:140:LEU:C	1:A:140:LEU:HD23	2.01	0.85
1:A:140:LEU:HD23	1:A:140:LEU:O	1.78	0.84
1:D:98:ARG:HD3	1:D:106:GLU:OE1	1.79	0.82
1:A:191:MET:CE	1:A:217:VAL:HG11	2.09	0.81
1:B:191:MET:CE	1:B:194:ILE:CD1	2.59	0.81
1:D:98:ARG:HD2	1:D:106:GLU:OE1	1.80	0.79
1:A:191:MET:CE	1:A:217:VAL:CG1	2.54	0.79
1:C:191:MET:HE3	1:C:268:LYS:HD2	1.65	0.78
1:C:104:LYS:HD3	1:C:104:LYS:H	1.50	0.76
1:A:293:HIS:H	1:A:293:HIS:CD2	2.00	0.76
1:C:191:MET:CE	1:C:194:ILE:HD12	2.19	0.73
1:A:191:MET:CE	1:A:266:PHE:CZ	2.72	0.73
1:B:357:PHE:O	1:B:358:ASN:HB2	1.88	0.73
1:B:191:MET:HE1	1:B:194:ILE:CD1	2.20	0.72
1:A:191:MET:CE	1:A:217:VAL:HG13	2.17	0.70
1:A:140:LEU:C	1:A:140:LEU:CD2	2.65	0.69
1:C:190:THR:HG22	1:C:191:MET:HE2	1.74	0.69
1:B:191:MET:HG3	1:B:217:VAL:HG22	1.74	0.68
1:B:136:ASP:O	1:B:140:LEU:HD13	1.94	0.68
1:B:191:MET:HE1	1:B:194:ILE:HD13	1.77	0.66
1:C:269:TRP:CH2	2:C:401:55B:H1	2.30	0.66
1:C:193:LYS:NZ	1:D:15:HIS:HD2	1.91	0.65
1:D:277:GLU:HG2	5:D:503:HOH:O	1.96	0.64
1:C:328:PRO:HD2	5:C:569:HOH:O	1.99	0.62
1:C:104:LYS:HD3	1:C:104:LYS:N	2.13	0.62
1:B:98:ARG:CD	1:B:106:GLU:OE1	2.46	0.62
1:D:191:MET:HA	1:D:191:MET:HE2	1.83	0.60
1:A:15:HIS:HB3	1:A:17:SER:HB3	1.83	0.60
1:B:357:PHE:O	1:B:358:ASN:CB	2.49	0.60
1:A:191:MET:HE2	1:A:266:PHE:CE2	2.38	0.58
1:B:191:MET:HE2	1:B:191:MET:HA	1.86	0.57
1:A:147:LYS:HD3	1:B:43:GLU:HB3	1.87	0.57
1:A:140:LEU:HD21	1:A:144:PHE:CE2	2.39	0.56
1:A:15:HIS:CG	1:A:16:SER:H	2.24	0.56
1:D:55:PRO:O	1:D:56:PRO:C	2.49	0.56
1:C:167:ASP:O	1:C:171:THR:HG23	2.06	0.56
1:D:55:PRO:HB2	1:D:56:PRO:HD2	1.88	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:16:SER:O	1:C:20:GLU:HG2	2.06	0.55
1:A:140:LEU:CD2	1:A:144:PHE:CE2	2.90	0.55
1:D:269:TRP:CZ2	2:D:401:55B:H1	2.42	0.55
1:A:140:LEU:HD21	1:A:144:PHE:CZ	2.43	0.54
1:D:55:PRO:HG2	1:D:57:SER:HB2	1.90	0.54
1:C:17:SER:HA	1:C:20:GLU:OE1	2.08	0.54
1:A:15:HIS:CG	1:A:16:SER:N	2.76	0.53
1:A:237:HIS:HE1	5:A:600:HOH:O	1.91	0.53
1:C:237:HIS:HE1	5:C:601:HOH:O	1.91	0.53
1:A:191:MET:HG3	1:A:217:VAL:HG22	1.90	0.53
1:A:269:TRP:CZ2	2:A:401:55B:H6	2.43	0.53
1:B:212:GLY:HA3	1:B:232:ASN:ND2	2.24	0.52
1:B:205:THR:HB	1:B:263:ASP:OD2	2.08	0.52
1:C:17:SER:HA	1:C:20:GLU:HG2	1.91	0.52
1:B:212:GLY:HA3	1:B:232:ASN:HD21	1.75	0.52
1:B:198:TYR:CZ	1:B:200:GLY:HA3	2.46	0.51
1:B:269:TRP:CZ2	2:B:401:55B:H6	2.46	0.51
1:C:205:THR:HG22	1:C:206:THR:HG23	1.93	0.51
1:C:212:GLY:HA3	1:C:232:ASN:ND2	2.26	0.51
1:B:193:LYS:HG2	1:B:197:MET:HE2	1.92	0.51
1:C:17:SER:HA	1:C:20:GLU:CG	2.41	0.50
1:B:225:TYR:O	1:B:228:ILE:HG22	2.11	0.50
1:B:269:TRP:CH2	2:B:401:55B:H6	2.47	0.50
1:D:357:PHE:O	1:D:358:ASN:HB2	2.10	0.49
1:C:191:MET:SD	1:C:194:ILE:HD12	2.53	0.49
1:C:191:MET:HE1	1:C:194:ILE:HD12	1.92	0.48
1:C:269:TRP:CZ2	2:C:401:55B:H1	2.49	0.48
1:C:191:MET:HE1	1:C:194:ILE:CD1	2.44	0.48
2:D:401:55B:H4	2:D:401:55B:H12	1.44	0.48
1:A:239:ILE:HG23	1:A:250:HIS:HB3	1.96	0.47
1:C:293:HIS:HD2	1:C:367:THR:OG1	1.97	0.47
1:A:205:THR:HB	1:A:263:ASP:OD2	2.14	0.47
2:B:401:55B:H8	2:B:401:55B:H9	1.45	0.47
1:D:269:TRP:CH2	2:D:401:55B:H1	2.50	0.47
1:B:327:ASN:HD21	2:B:401:55B:H1	1.80	0.46
1:D:237:HIS:HD2	5:D:597:HOH:O	1.99	0.46
1:D:198:TYR:CZ	1:D:200:GLY:HA3	2.50	0.46
1:D:157:PHE:CE1	1:D:165:ILE:HA	2.51	0.46
1:D:237:HIS:HE1	5:D:593:HOH:O	1.99	0.46
1:C:149:ALA:HA	1:C:159:LYS:HE3	1.98	0.46
1:C:191:MET:HE3	1:C:268:LYS:CD	2.42	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:18:ASP:CG	1:B:116:LYS:HE2	2.41	0.45
2:D:401:55B:H7	2:D:401:55B:H9	1.69	0.45
1:B:199:ASN:HD22	1:B:199:ASN:N	2.15	0.44
1:B:140:LEU:N	1:B:140:LEU:CD1	2.80	0.44
1:B:224:LYS:HD3	1:B:225:TYR:CE2	2.52	0.44
1:C:274:TRP:HB3	1:C:278:HIS:HB2	1.99	0.44
2:A:401:55B:H9	2:A:401:55B:H8	1.50	0.44
1:C:322:LEU:HD13	2:C:401:55B:OAC	2.17	0.44
1:C:327:ASN:HD21	2:C:401:55B:H6	1.82	0.44
1:B:237:HIS:HD2	5:B:585:HOH:O	2.01	0.43
1:B:234:ASP:O	1:B:252:GLY:HA2	2.18	0.43
1:D:191:MET:HA	1:D:191:MET:CE	2.48	0.43
1:C:157:PHE:CE1	1:C:165:ILE:HA	2.53	0.43
1:B:273:ASP:O	1:B:327:ASN:HB3	2.18	0.43
2:D:401:55B:H4	2:D:401:55B:H3	1.38	0.43
1:C:337:GLU:OE2	1:D:104:LYS:HE2	2.19	0.43
1:C:158:ASN:H	1:C:158:ASN:HD22	1.67	0.43
1:C:158:ASN:HD22	1:C:158:ASN:N	2.16	0.43
1:D:236:PRO:O	1:D:240:GLN:HG3	2.19	0.43
1:A:149:ALA:HA	1:A:159:LYS:HE3	2.00	0.43
1:D:237:HIS:CD2	5:D:597:HOH:O	2.71	0.43
1:A:15:HIS:HB3	1:A:17:SER:CB	2.47	0.42
1:A:23:LEU:HD21	1:B:358:ASN:HB2	2.01	0.42
1:B:158:ASN:HD22	1:B:158:ASN:N	2.16	0.42
1:C:193:LYS:HZ2	1:D:15:HIS:CD2	2.31	0.42
1:A:191:MET:HE2	1:A:266:PHE:HZ	1.72	0.42
1:A:228:ILE:HD13	1:A:228:ILE:HG21	1.71	0.42
1:B:207:ILE:HD12	1:B:264:ALA:O	2.19	0.42
1:C:166:TRP:CE2	3:C:402:SAH:H8	2.56	0.41
1:D:98:ARG:HD2	1:D:106:GLU:CD	2.44	0.41
1:A:126:SER:HA	1:A:189:ILE:HD11	2.03	0.41
1:A:212:GLY:HA3	1:A:232:ASN:ND2	2.35	0.41
1:B:135:THR:HA	1:B:140:LEU:HD11	2.02	0.41
1:C:97:LEU:HB3	1:C:105:VAL:CG1	2.50	0.41
1:C:97:LEU:HD11	1:D:306:SER:HB3	2.03	0.41
1:C:130:PHE:CD2	1:D:26:MET:HE1	2.55	0.41
1:C:367:THR:HB	1:C:368:ALA:OXT	2.20	0.41
1:C:224:LYS:HD3	1:C:225:TYR:CE2	2.56	0.41
1:A:269:TRP:CH2	2:A:401:55B:H6	2.56	0.41
1:B:173:HIS:CD2	5:B:543:HOH:O	2.74	0.41
1:A:198:TYR:CZ	1:A:200:GLY:HA3	2.56	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:266:PHE:CE2	1:C:268:LYS:HB2	2.56	0.40
1:D:139:LEU:HD23	1:D:139:LEU:HA	1.93	0.40
1:D:283:LEU:HD23	1:D:283:LEU:HA	1.91	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	352/368 (96%)	349 (99%)	3 (1%)	0	100	100
1	B	358/368 (97%)	353 (99%)	4 (1%)	1 (0%)	36	25
1	C	352/368 (96%)	347 (99%)	5 (1%)	0	100	100
1	D	359/368 (98%)	352 (98%)	7 (2%)	0	100	100
All	All	1421/1472 (96%)	1401 (99%)	19 (1%)	1 (0%)	48	34

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	101	PRO

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	291/302 (96%)	286 (98%)	5 (2%)	53	45
1	B	297/302 (98%)	291 (98%)	6 (2%)	48	38
1	C	291/302 (96%)	286 (98%)	5 (2%)	53	45
1	D	298/302 (99%)	286 (96%)	12 (4%)	28	15
All	All	1177/1208 (97%)	1149 (98%)	28 (2%)	43	31

All (28) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	16	SER
1	A	140	LEU
1	A	158	ASN
1	A	191	MET
1	A	348	ARG
1	B	45	ASP
1	B	122	GLU
1	B	147	LYS
1	B	158	ASN
1	B	251	LEU
1	B	336	LYS
1	C	104	LYS
1	C	105	VAL
1	C	147	LYS
1	C	158	ASN
1	C	229	ASN
1	D	8	GLU
1	D	15	HIS
1	D	54	VAL
1	D	104	LYS
1	D	191	MET
1	D	197	MET
1	D	205	THR
1	D	207	ILE
1	D	229	ASN
1	D	251	LEU
1	D	261	LYS
1	D	277	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (26) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	27	GLN
1	A	158	ASN
1	A	180	ASN
1	A	237	HIS
1	A	293	HIS
1	B	27	GLN
1	B	158	ASN
1	B	173	HIS
1	B	176	ASN
1	B	180	ASN
1	B	199	ASN
1	B	229	ASN
1	B	237	HIS
1	B	327	ASN
1	B	339	GLN
1	C	158	ASN
1	C	232	ASN
1	C	237	HIS
1	C	293	HIS
1	D	10	GLN
1	D	15	HIS
1	D	176	ASN
1	D	180	ASN
1	D	229	ASN
1	D	232	ASN
1	D	237	HIS

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

17 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	NO3	C	405	-	1,3,3	0.59	0	0,3,3	-	-
2	55B	C	401	-	15,15,15	2.98	7 (46%)	19,19,19	4.41	13 (68%)
4	NO3	A	404	-	1,3,3	0.11	0	0,3,3	-	-
4	NO3	B	403	-	1,3,3	0.89	0	0,3,3	-	-
4	NO3	D	403	-	1,3,3	0.21	0	0,3,3	-	-
4	NO3	D	404	-	1,3,3	0.60	0	0,3,3	-	-
3	SAH	B	402	-	27,28,28	1.16	3 (11%)	36,40,40	2.14	12 (33%)
2	55B	D	401	-	15,15,15	2.70	6 (40%)	19,19,19	4.45	12 (63%)
2	55B	B	401	-	15,15,15	2.96	7 (46%)	19,19,19	3.74	9 (47%)
3	SAH	C	402	-	27,28,28	1.55	4 (14%)	36,40,40	2.53	10 (27%)
4	NO3	A	403	-	1,3,3	0.04	0	0,3,3	-	-
3	SAH	D	402	-	27,28,28	1.83	6 (22%)	36,40,40	2.27	12 (33%)
2	55B	A	401	-	15,15,15	2.90	6 (40%)	19,19,19	4.41	14 (73%)
4	NO3	A	405	-	1,3,3	0.41	0	0,3,3	-	-
4	NO3	C	403	-	1,3,3	0.42	0	0,3,3	-	-
4	NO3	C	404	-	1,3,3	0.28	0	0,3,3	-	-
3	SAH	A	402	-	27,28,28	1.59	7 (25%)	36,40,40	2.06	11 (30%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	55B	C	401	-	-	3/8/8/8	0/1/1/1
3	SAH	B	402	-	-	0/15/31/31	0/3/3/3
2	55B	D	401	-	-	2/8/8/8	0/1/1/1
2	55B	B	401	-	-	3/8/8/8	0/1/1/1
3	SAH	C	402	-	-	1/15/31/31	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	SAH	D	402	-	-	0/15/31/31	0/3/3/3
2	55B	A	401	-	-	4/8/8/8	0/1/1/1
3	SAH	A	402	-	-	0/15/31/31	0/3/3/3

All (46) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	401	55B	CAF-CAE	7.29	1.53	1.31
2	D	401	55B	CAF-CAE	7.19	1.53	1.31
2	B	401	55B	CAF-CAE	6.71	1.52	1.31
2	A	401	55B	OAD-CAM	6.21	1.51	1.36
2	A	401	55B	CAF-CAE	6.17	1.50	1.31
2	C	401	55B	OAD-CAM	6.15	1.50	1.36
2	B	401	55B	OAD-CAM	4.87	1.48	1.36
3	D	402	SAH	C5-C4	4.54	1.47	1.39
2	D	401	55B	OAD-CAM	4.43	1.47	1.36
3	D	402	SAH	C8-N7	3.93	1.39	1.31
2	A	401	55B	CAO-CAM	3.85	1.45	1.40
3	C	402	SAH	C8-N7	3.82	1.39	1.31
3	C	402	SAH	C5-C4	3.82	1.45	1.39
3	A	402	SAH	C5-C6	3.74	1.51	1.41
2	D	401	55B	CAO-CAM	3.68	1.45	1.40
2	B	401	55B	OAJ-CAA	3.56	1.52	1.42
3	D	402	SAH	C2-N3	3.54	1.40	1.33
2	B	401	55B	CAN-CAM	3.52	1.45	1.40
2	A	401	55B	CAL-CAF	-3.46	1.37	1.47
2	B	401	55B	CAO-CAM	3.44	1.45	1.40
3	A	402	SAH	C2-N3	3.24	1.39	1.33
2	B	401	55B	CAL-CAF	-3.14	1.38	1.47
2	D	401	55B	CAL-CAF	-3.13	1.38	1.47
2	C	401	55B	CAO-CAM	3.08	1.44	1.40
2	A	401	55B	CAH-CAO	2.86	1.43	1.38
3	B	402	SAH	C8-N7	2.83	1.37	1.31
3	C	402	SAH	C2-N3	2.81	1.38	1.33
2	C	401	55B	CAN-CAM	2.78	1.44	1.40
3	A	402	SAH	O4'-C1'	2.66	1.48	1.42
2	B	401	55B	CAH-CAO	2.64	1.43	1.38
3	D	402	SAH	C5-N7	-2.60	1.34	1.39
3	C	402	SAH	C5-N7	-2.55	1.34	1.39
3	A	402	SAH	C8-N7	2.53	1.36	1.31
2	C	401	55B	CAL-CAF	-2.50	1.40	1.47
2	C	401	55B	OAJ-CAA	2.46	1.49	1.42

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	402	SAH	C5-C4	2.44	1.43	1.39
2	A	401	55B	CAN-CAM	2.39	1.43	1.40
3	D	402	SAH	C5-C6	2.33	1.47	1.41
2	D	401	55B	CAN-CAM	2.21	1.43	1.40
3	A	402	SAH	O-C	2.15	1.28	1.22
3	D	402	SAH	OXT-C	-2.09	1.24	1.30
3	B	402	SAH	C5-C6	2.07	1.46	1.41
3	A	402	SAH	OXT-C	-2.06	1.24	1.30
3	A	402	SAH	O2'-C2'	2.03	1.48	1.43
2	D	401	55B	CAH-CAO	2.02	1.42	1.38
2	C	401	55B	CAG-CAN	2.01	1.42	1.38

All (93) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	401	55B	CAB-OAK-CAO	-10.43	102.21	117.51
2	D	401	55B	CAA-OAJ-CAN	-9.68	103.32	117.51
2	A	401	55B	CAB-OAK-CAO	-8.29	105.35	117.51
2	D	401	55B	CAL-CAF-CAE	-8.13	107.07	126.99
2	D	401	55B	OAJ-CAN-CAM	8.12	123.03	114.53
2	C	401	55B	OAJ-CAN-CAM	7.46	122.33	114.53
2	C	401	55B	CAL-CAF-CAE	-7.27	109.18	126.99
2	A	401	55B	OAJ-CAN-CAM	7.08	121.93	114.53
2	C	401	55B	CAB-OAK-CAO	-6.56	107.88	117.51
3	B	402	SAH	C5-C4-N3	-6.41	117.89	126.72
3	D	402	SAH	N3-C2-N1	-6.32	119.02	128.58
2	C	401	55B	CAA-OAJ-CAN	-6.15	108.50	117.51
3	C	402	SAH	N3-C2-N1	-6.02	119.47	128.58
2	C	401	55B	OAK-CAO-CAM	5.99	120.80	114.53
2	A	401	55B	OAJ-CAN-CAG	-5.97	113.79	124.08
2	A	401	55B	CAA-OAJ-CAN	-5.91	108.85	117.51
3	C	402	SAH	C5-C4-N3	-5.77	118.77	126.72
2	A	401	55B	CAI-CAE-CAF	-5.61	111.73	124.56
3	C	402	SAH	N3-C4-N9	5.59	136.67	127.17
2	A	401	55B	OAK-CAO-CAM	5.55	120.34	114.53
2	C	401	55B	OAJ-CAN-CAG	-5.36	114.85	124.08
2	C	401	55B	OAK-CAO-CAH	-5.32	114.92	124.08
3	C	402	SAH	C4-N9-C8	5.32	111.32	105.74
2	C	401	55B	CAO-CAM-CAN	-5.29	111.79	118.79
3	C	402	SAH	N9-C8-N7	-5.27	106.46	113.94
2	D	401	55B	OAJ-CAN-CAG	-5.26	115.02	124.08
2	B	401	55B	CAI-CAE-CAF	-5.21	112.66	124.56

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	401	55B	CAO-CAM-CAN	-5.17	111.95	118.79
2	B	401	55B	CAL-CAF-CAE	-5.15	114.37	126.99
2	A	401	55B	CAL-CAF-CAE	-5.12	114.44	126.99
2	B	401	55B	OAK-CAO-CAM	5.11	119.87	114.53
3	D	402	SAH	C2-N1-C6	4.96	126.88	118.73
2	D	401	55B	OAK-CAO-CAM	4.84	119.60	114.53
2	B	401	55B	OAJ-CAN-CAM	4.82	119.57	114.53
2	A	401	55B	OAK-CAO-CAH	-4.72	115.96	124.08
3	D	402	SAH	O4'-C4'-C5'	-4.55	97.11	108.83
3	C	402	SAH	C2-N3-C4	4.42	122.62	111.83
3	A	402	SAH	N3-C2-N1	-4.41	121.91	128.58
2	D	401	55B	OAK-CAO-CAH	-4.38	116.53	124.08
2	D	401	55B	CAB-OAK-CAO	-4.31	111.18	117.51
3	A	402	SAH	O4'-C1'-C2'	-4.23	97.56	106.62
2	C	401	55B	CAI-CAE-CAF	-4.20	114.95	124.56
3	A	402	SAH	N6-C6-N1	4.03	127.36	118.38
3	B	402	SAH	N3-C4-N9	3.95	133.89	127.17
2	D	401	55B	CAO-CAM-CAN	-3.93	113.59	118.79
2	C	401	55B	CAH-CAO-CAM	3.89	124.28	120.59
2	A	401	55B	CAG-CAN-CAM	3.88	124.27	120.59
3	D	402	SAH	N3-C4-N9	3.86	133.73	127.17
2	B	401	55B	OAK-CAO-CAH	-3.60	117.87	124.08
2	B	401	55B	OAJ-CAN-CAG	-3.58	117.91	124.08
2	D	401	55B	CAH-CAO-CAM	3.44	123.86	120.59
3	D	402	SAH	C4-N9-C8	3.38	109.29	105.74
3	D	402	SAH	C5-C4-N3	-3.35	122.10	126.72
3	B	402	SAH	CB-CG-SD	-3.35	105.97	113.45
3	C	402	SAH	C5-N7-C8	3.34	108.70	103.45
3	A	402	SAH	C4-N9-C1'	-3.32	118.87	126.63
3	B	402	SAH	C4-C5-N7	-3.29	106.82	110.58
2	B	401	55B	CAO-CAM-CAN	-3.27	114.47	118.79
3	D	402	SAH	N6-C6-N1	3.20	125.50	118.38
2	A	401	55B	CAH-CAO-CAM	3.17	123.60	120.59
3	D	402	SAH	C4'-O4'-C1'	-3.16	102.48	109.47
3	A	402	SAH	N3-C4-N9	3.11	132.46	127.17
3	B	402	SAH	N6-C6-N1	3.07	125.22	118.38
2	D	401	55B	CAI-CAE-CAF	-3.03	117.64	124.56
3	D	402	SAH	C2-N3-C4	2.99	119.14	111.83
3	B	402	SAH	N9-C8-N7	-2.99	109.69	113.94
3	A	402	SAH	C2-N3-C4	2.95	119.03	111.83
3	B	402	SAH	O4'-C1'-C2'	-2.89	100.44	106.62
3	C	402	SAH	O4'-C1'-C2'	-2.87	100.46	106.62

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	402	SAH	C5-C4-N3	-2.86	122.77	126.72
3	A	402	SAH	C5-C6-N6	-2.86	116.20	123.29
3	A	402	SAH	C1'-N9-C8	2.75	133.20	127.09
3	D	402	SAH	CB-CG-SD	-2.71	107.40	113.45
3	B	402	SAH	C5-N7-C8	2.65	107.62	103.45
3	B	402	SAH	C2-N3-C4	2.58	118.13	111.83
3	C	402	SAH	C2-N1-C6	2.56	122.93	118.73
2	A	401	55B	OAC-CAI-CAE	-2.55	105.54	112.15
2	D	401	55B	OAD-CAM-CAO	2.49	124.57	119.21
2	C	401	55B	OAD-CAM-CAO	2.47	124.52	119.21
3	B	402	SAH	C6-C5-C4	2.46	120.54	117.18
3	A	402	SAH	C2-N1-C6	2.45	122.75	118.73
3	A	402	SAH	O4'-C4'-C5'	-2.41	102.62	108.83
2	C	401	55B	CAG-CAN-CAM	2.34	122.81	120.59
3	B	402	SAH	C5-C6-N6	-2.34	117.50	123.29
2	A	401	55B	OAD-CAM-CAO	2.28	124.10	119.21
2	A	401	55B	OAD-CAM-CAN	2.19	123.91	119.21
3	D	402	SAH	C5-C6-N6	-2.16	117.94	123.29
2	C	401	55B	OAD-CAM-CAN	2.08	123.69	119.21
3	D	402	SAH	O3'-C3'-C4'	-2.06	105.15	111.08
2	D	401	55B	CAG-CAL-CAF	-2.05	114.48	120.61
3	B	402	SAH	C5-C4-N9	2.04	108.03	105.81
2	B	401	55B	CAG-CAN-CAM	2.03	122.52	120.59
3	C	402	SAH	C4-N9-C1'	-2.02	121.90	126.63

There are no chirality outliers.

All (13) torsion outliers are listed below:

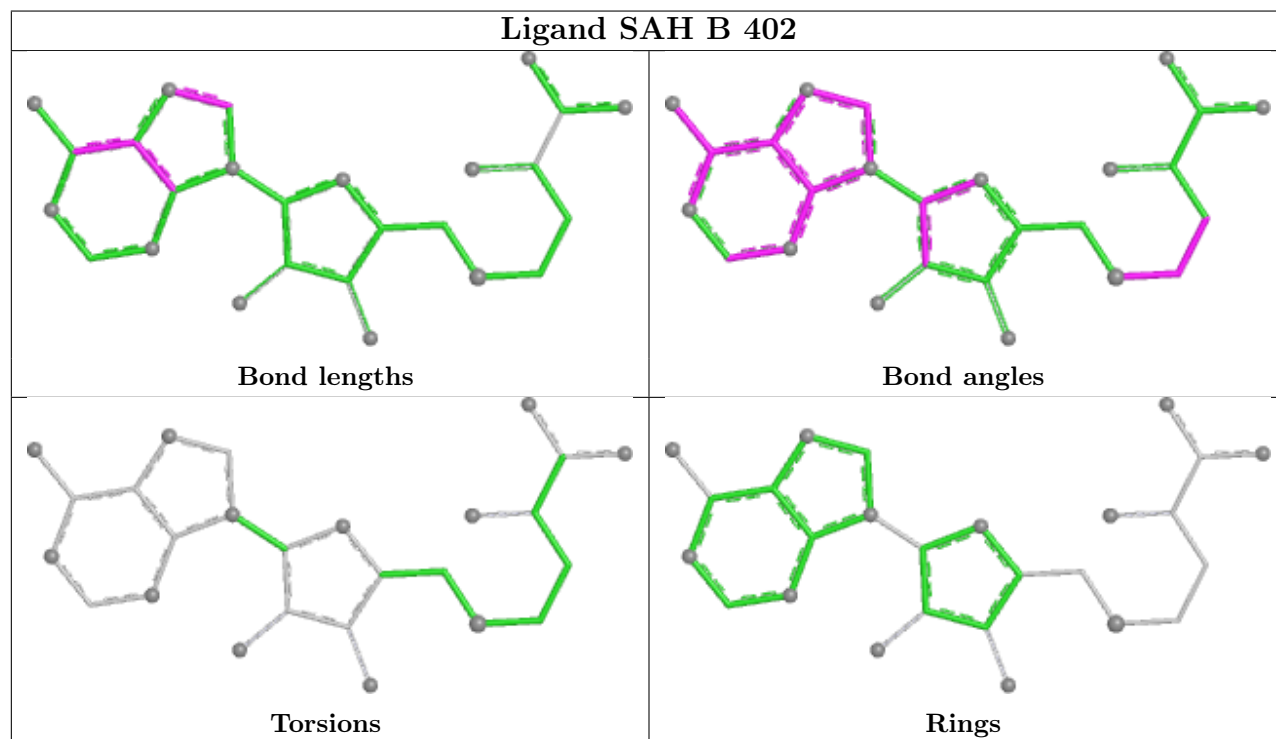
Mol	Chain	Res	Type	Atoms
2	C	401	55B	CAF-CAE-CAI-OAC
2	A	401	55B	CAE-CAF-CAL-CAG
2	A	401	55B	CAE-CAF-CAL-CAH
2	B	401	55B	CAE-CAF-CAL-CAG
2	B	401	55B	CAE-CAF-CAL-CAH
2	D	401	55B	CAM-CAN-OAJ-CAA
2	C	401	55B	CAE-CAF-CAL-CAH
2	C	401	55B	CAE-CAF-CAL-CAG
2	A	401	55B	CAM-CAO-OAK-CAB
2	D	401	55B	CAG-CAN-OAJ-CAA
2	B	401	55B	CAM-CAO-OAK-CAB
2	A	401	55B	CAM-CAN-OAJ-CAA
3	C	402	SAH	OXT-C-CA-N

There are no ring outliers.

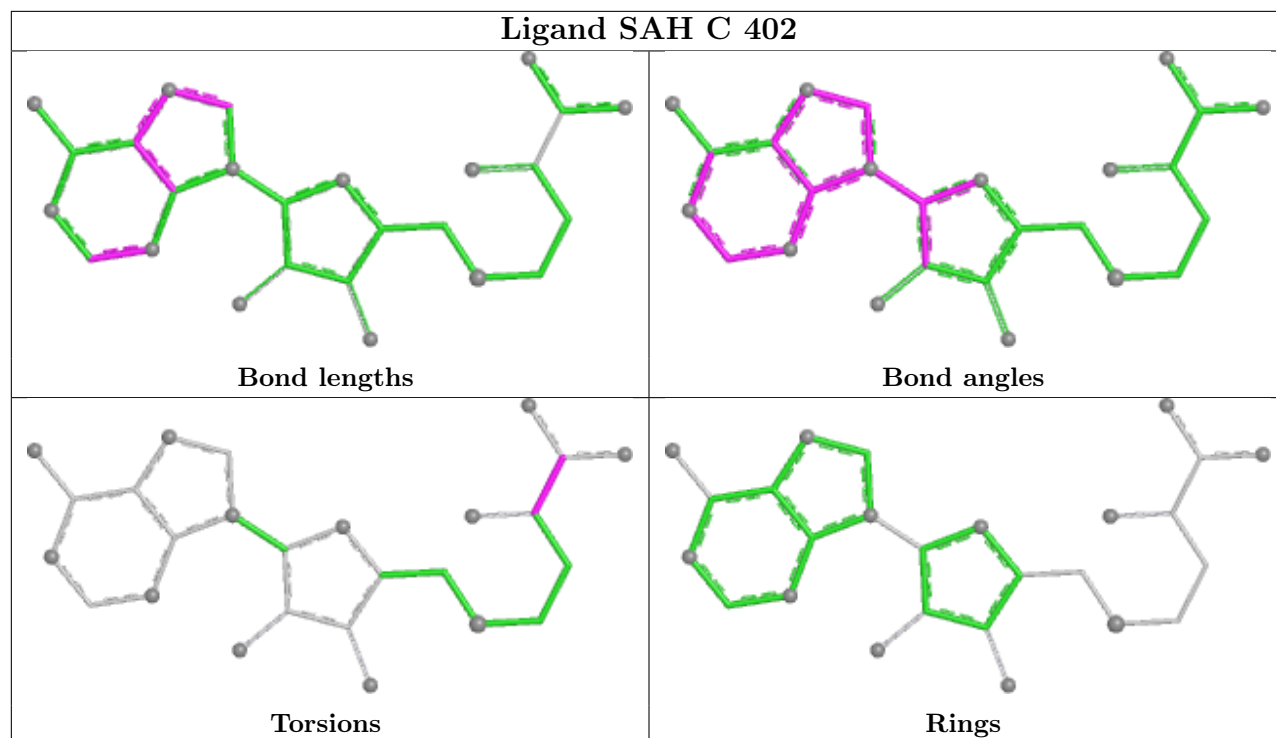
5 monomers are involved in 17 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	401	55B	4	0
2	D	401	55B	5	0
2	B	401	55B	4	0
3	C	402	SAH	1	0
2	A	401	55B	3	0

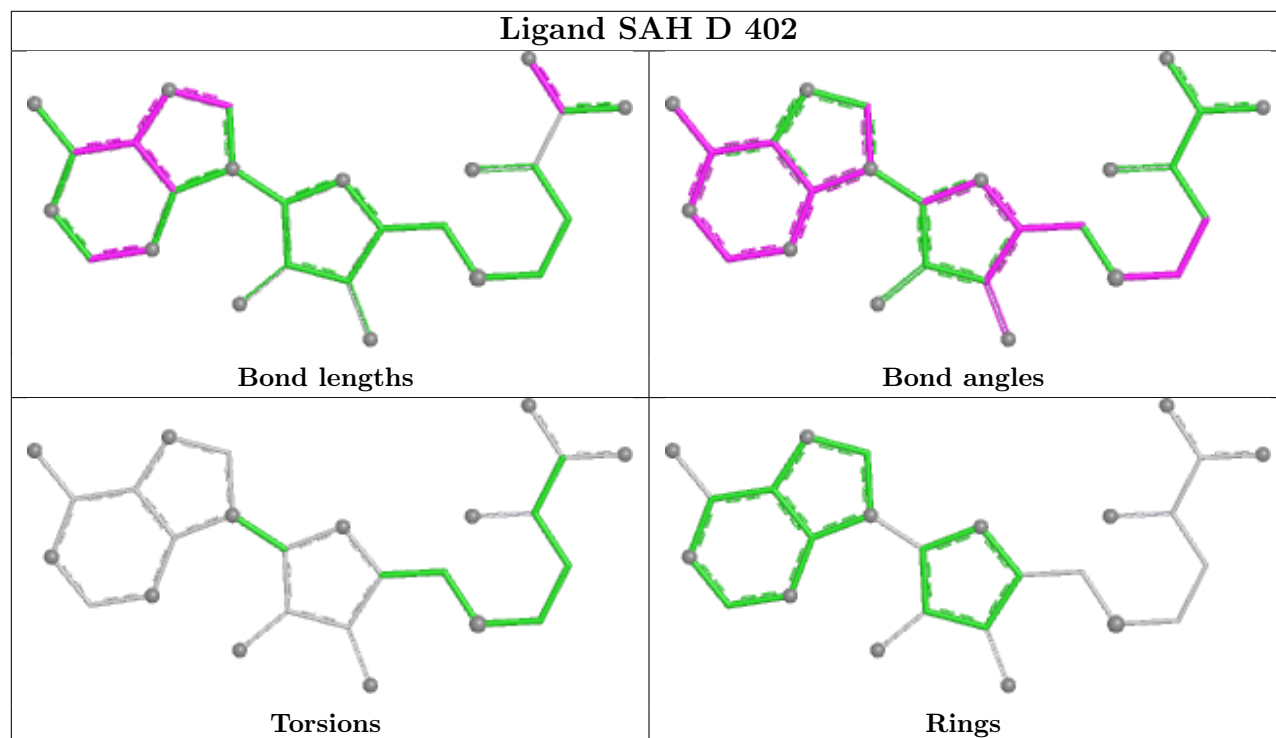
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

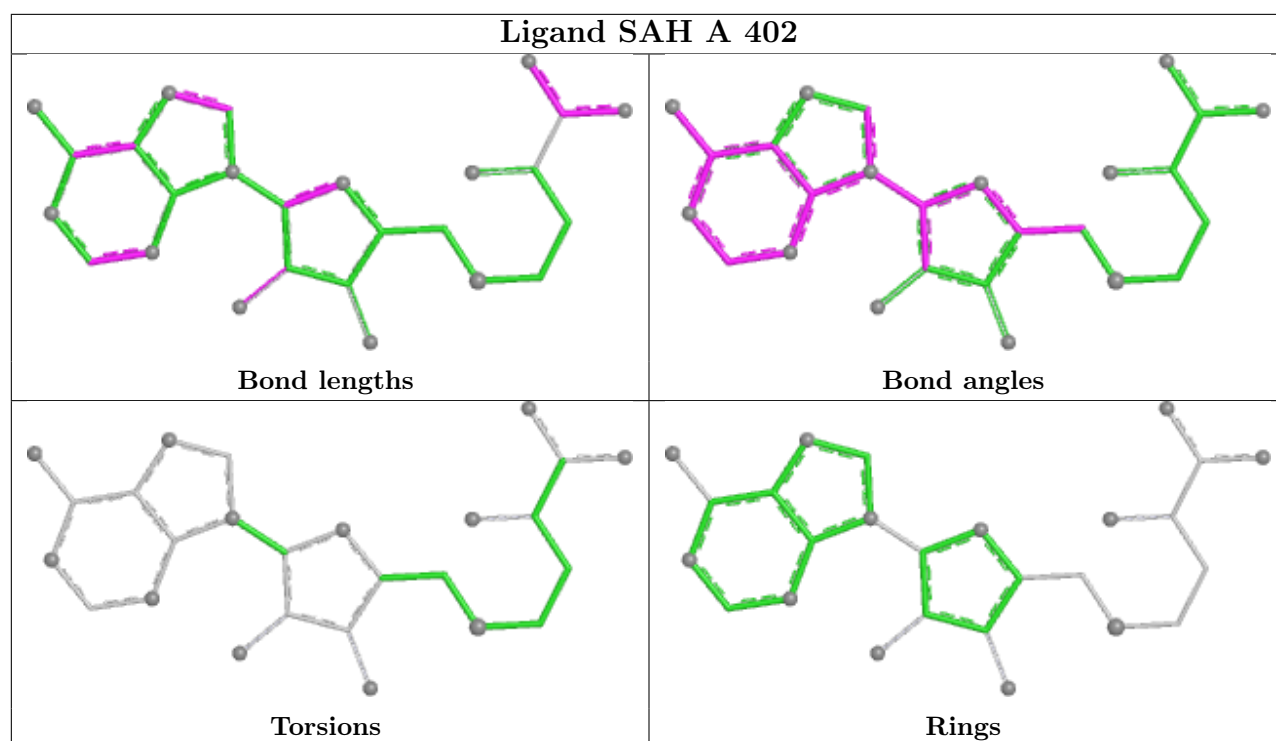


Ligand SAH C 402



Ligand SAH D 402





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	354/368 (96%)	-0.43	6 (1%) 69 69	5, 12, 26, 70	0
1	B	360/368 (97%)	-0.14	13 (3%) 46 46	6, 16, 36, 69	0
1	C	354/368 (96%)	-0.26	7 (1%) 65 65	6, 14, 32, 67	0
1	D	361/368 (98%)	-0.03	12 (3%) 49 49	7, 18, 37, 69	0
All	All	1429/1472 (97%)	-0.21	38 (2%) 56 56	5, 15, 34, 70	0

All (38) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	100	LEU	5.2
1	B	54	VAL	5.2
1	D	55	PRO	5.1
1	C	56	PRO	4.7
1	C	368	ALA	4.7
1	D	56	PRO	4.5
1	B	103	GLY	4.4
1	D	368	ALA	4.3
1	A	15	HIS	4.3
1	B	101	PRO	4.1
1	C	15	HIS	3.8
1	D	57	SER	3.6
1	D	101	PRO	3.4
1	D	103	GLY	3.3
1	D	100	LEU	3.3
1	B	56	PRO	3.3
1	B	368	ALA	3.3
1	C	103	GLY	3.2
1	D	367	THR	3.2
1	A	16	SER	3.2
1	C	57	SER	3.2

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Mol	Chain	Res	Type	RSRZ
1	C	104	LYS	3.1
1	A	368	ALA	3.1
1	D	54	VAL	3.1
1	B	367	THR	2.8
1	B	241	ASP	2.8
1	B	104	LYS	2.6
1	B	55	PRO	2.6
1	A	293	HIS	2.6
1	D	173	HIS	2.5
1	A	140	LEU	2.4
1	D	229	ASN	2.4
1	B	102	SER	2.4
1	C	102	SER	2.3
1	A	17	SER	2.2
1	B	173	HIS	2.1
1	B	72	THR	2.0
1	D	102	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, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

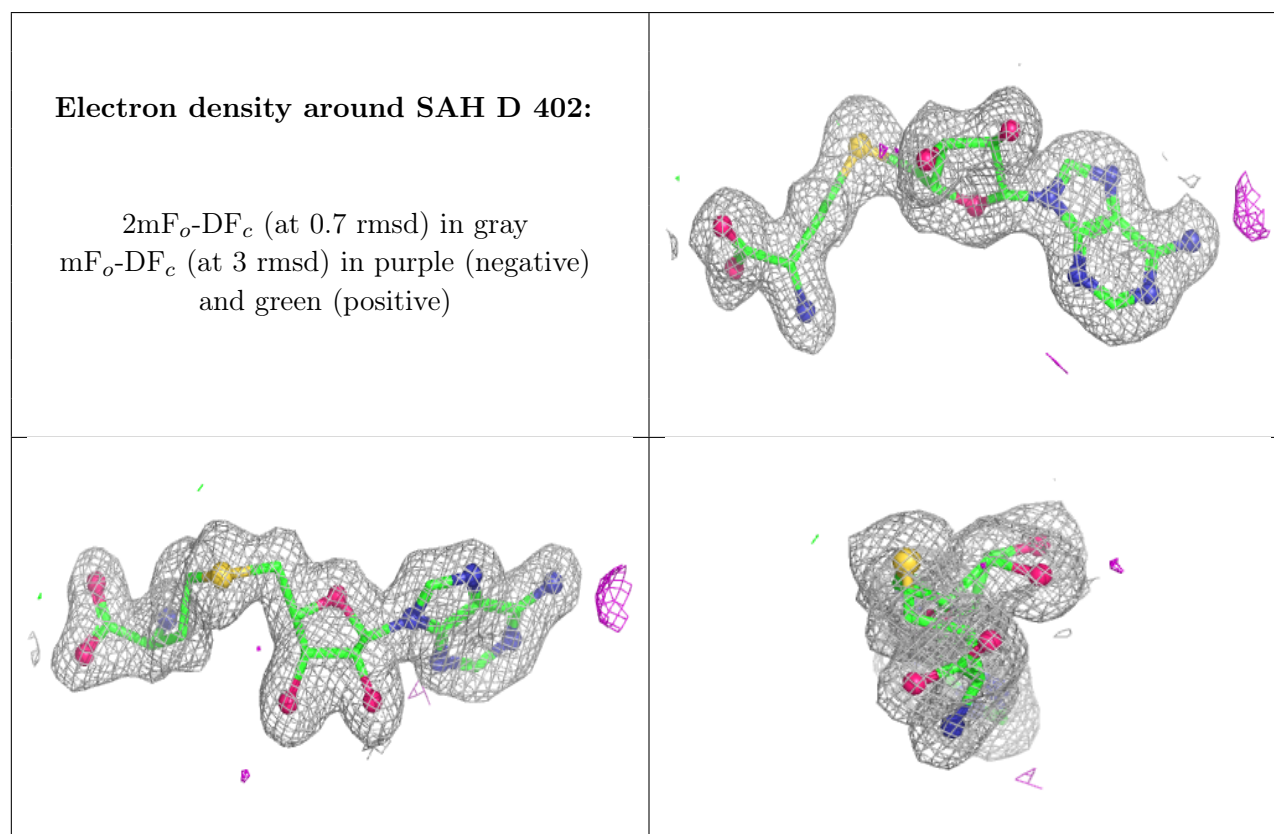
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
2	55B	A	401	15/15	0.83	0.15	19,39,45,47	0
2	55B	D	401	15/15	0.83	0.16	25,43,50,51	0
4	NO3	D	404	4/4	0.85	0.15	27,36,37,38	0
4	NO3	B	403	4/4	0.86	0.17	41,42,45,48	0
2	55B	C	401	15/15	0.86	0.15	19,34,48,60	0
2	55B	B	401	15/15	0.87	0.15	18,33,72,80	0

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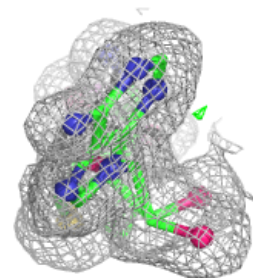
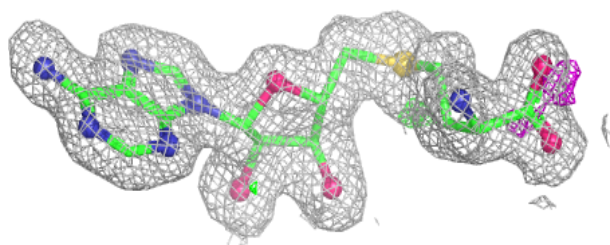
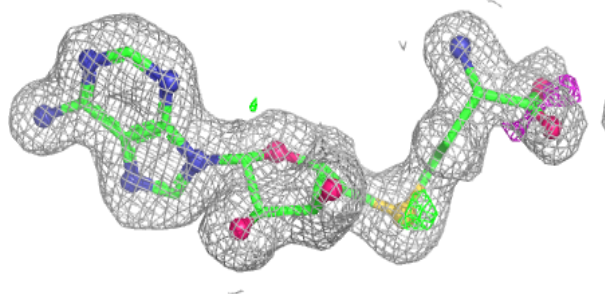
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
4	NO3	C	405	4/4	0.90	0.14	33,33,34,35	0
4	NO3	A	403	4/4	0.90	0.12	29,29,30,30	0
4	NO3	C	403	4/4	0.91	0.15	31,33,36,44	0
4	NO3	A	404	4/4	0.93	0.16	24,24,28,31	0
4	NO3	C	404	4/4	0.93	0.13	29,31,32,36	0
4	NO3	D	403	4/4	0.94	0.12	22,24,26,28	0
4	NO3	A	405	4/4	0.95	0.12	21,32,36,39	0
3	SAH	D	402	26/26	0.96	0.06	13,16,19,19	0
3	SAH	A	402	26/26	0.97	0.05	7,8,12,14	0
3	SAH	B	402	26/26	0.97	0.05	11,13,17,17	0
3	SAH	C	402	26/26	0.98	0.05	9,12,14,15	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.

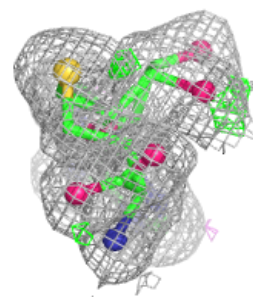
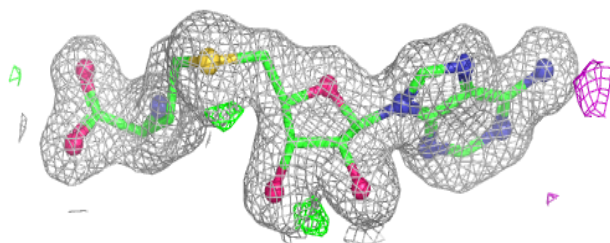
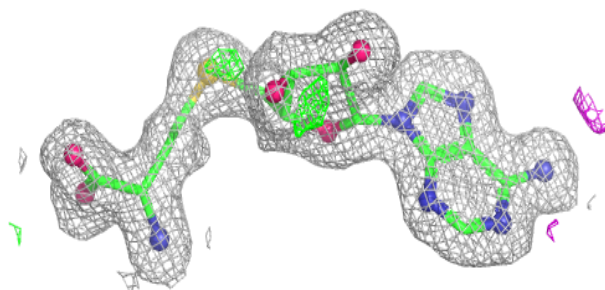


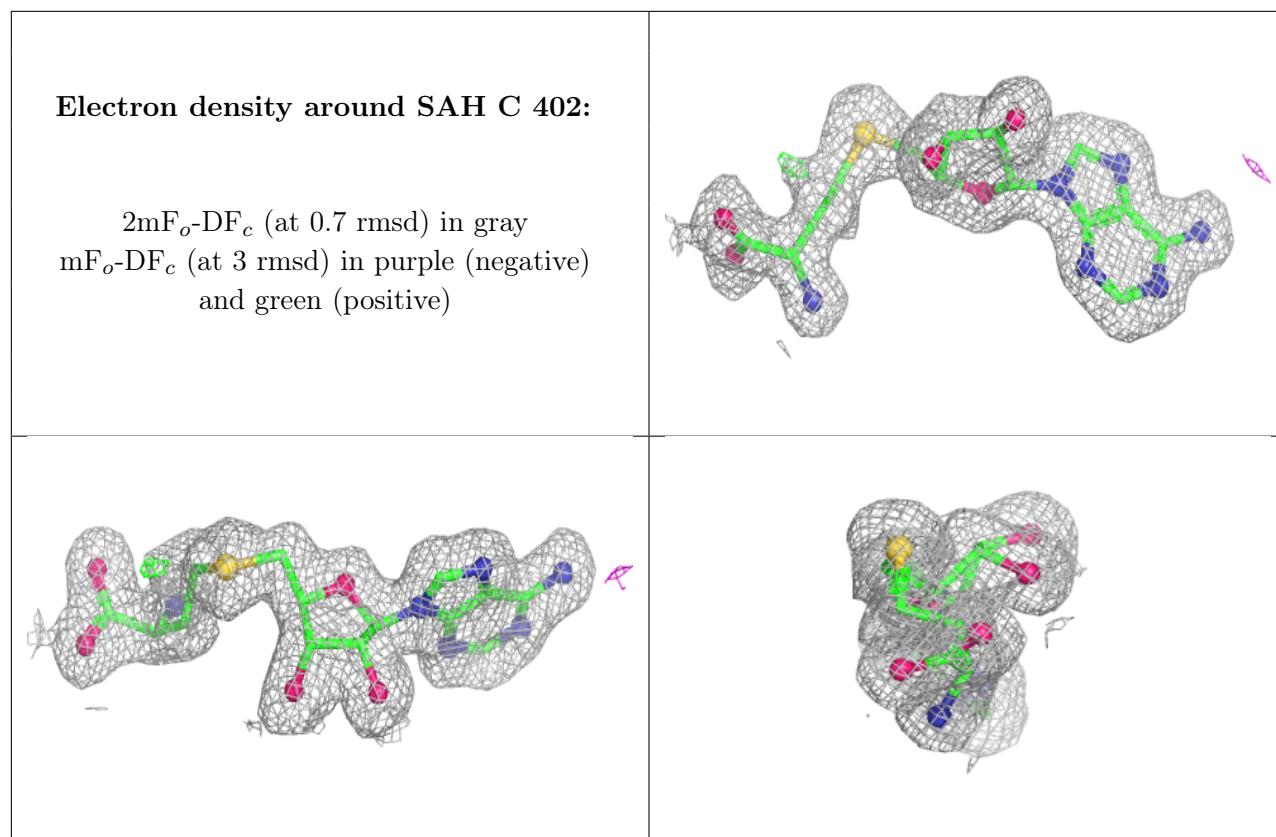
Electron density around SAH A 402:

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

**Electron density around SAH B 402:**

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





6.5 Other polymers [i](#)

There are no such residues in this entry.