Full wwPDB X-ray Structure Validation Report ⓘ

Dec 2, 2025 – 03:08 am GMT

PDB ID	:	5EGS / pdb_00005egs
Title	:	Human PRMT6 with bound fragment-type inhibitor
Authors	:	Steuber, H.; Egner, U.; Kania, J.; Wu, H.; Brown, P.J.
Deposited on	:	2015-10-27
Resolution	:	2.15 Å(reported)

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

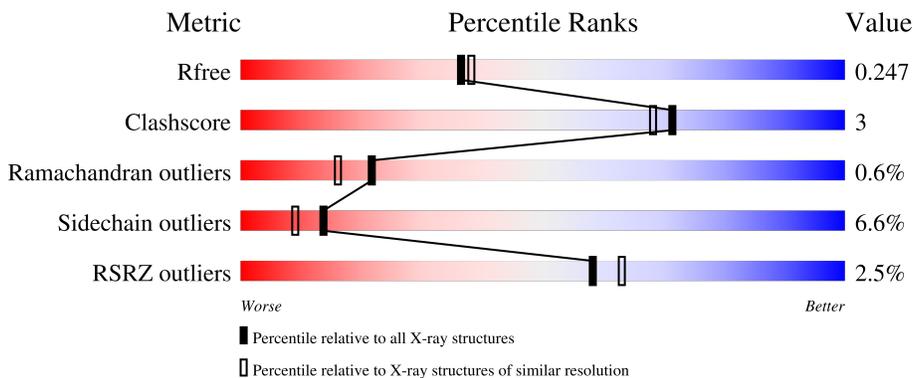|		
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.46

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 2.15 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	Percentile Ranks	Value
Rfree		0.247
Clashscore		3
Ramachandran outliers		0.6%
Sidechain outliers		6.6%
RSRZ outliers		2.5%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	1881 (2.16-2.16)
Clashscore	180529	2047 (2.16-2.16)
Ramachandran outliers	177936	2027 (2.16-2.16)
Sidechain outliers	177891	2026 (2.16-2.16)
RSRZ outliers	164620	1882 (2.16-2.16)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	376	2% 76% 11% · 11%
1	B	376	% 74% 14% · 10%
1	C	376	2% 76% 10% ·· 10%
1	D	376	3% 77% 10% ·· 11%

W O R L D W I D E
wwPDB
PROTEIN DATA BANK

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 11269 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 Protein arginine N-methyltransferase 6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	335	Total	C	N	O	S	0	0	0
			2645	1677	467	487	14			
1	B	338	Total	C	N	O	S	0	1	0
			2687	1700	476	497	14			
1	C	337	Total	C	N	O	S	0	2	0
			2681	1701	470	496	14			
1	D	334	Total	C	N	O	S	0	1	0
			2651	1680	468	489	14			

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	0	GLY	-	expression tag	UNP Q96LA8
A	194	VAL	ALA	conflict	UNP Q96LA8
B	0	GLY	-	expression tag	UNP Q96LA8
B	194	VAL	ALA	conflict	UNP Q96LA8
C	0	GLY	-	expression tag	UNP Q96LA8
C	194	VAL	ALA	conflict	UNP Q96LA8
D	0	GLY	-	expression tag	UNP Q96LA8
D	194	VAL	ALA	conflict	UNP Q96LA8

- Molecule 2 is S-ADENOSYL-L-HOMOCYSTEINE (CCD ID: SAH) (formula: $C_{14}H_{20}N_6O_5S$).

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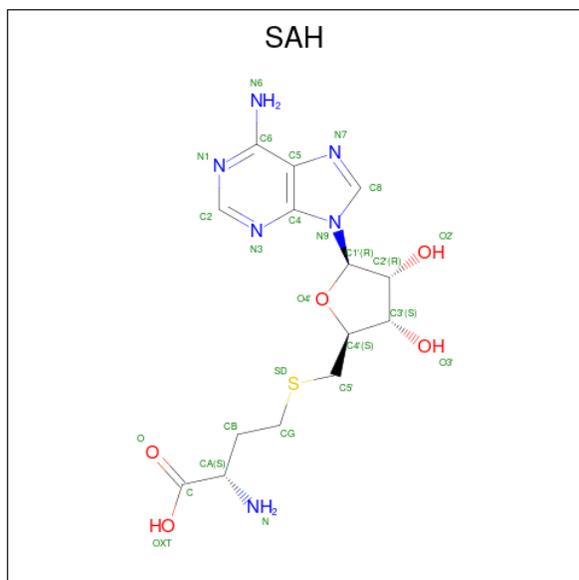
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	S	0	0
			26	14	6	5	1		
2	B	1	Total	C	N	O	S	0	0
			26	14	6	5	1		
2	C	1	Total	C	N	O	S	0	0
			26	14	6	5	1		
2	D	1	Total	C	N	O	S	0	0
			26	14	6	5	1		

- Molecule 3 is 2-[4-(phenylmethyl)piperidin-1-yl]ethanamine (CCD ID: 5NR) (formula: $C_{14}H_{22}N_2$).

5NR
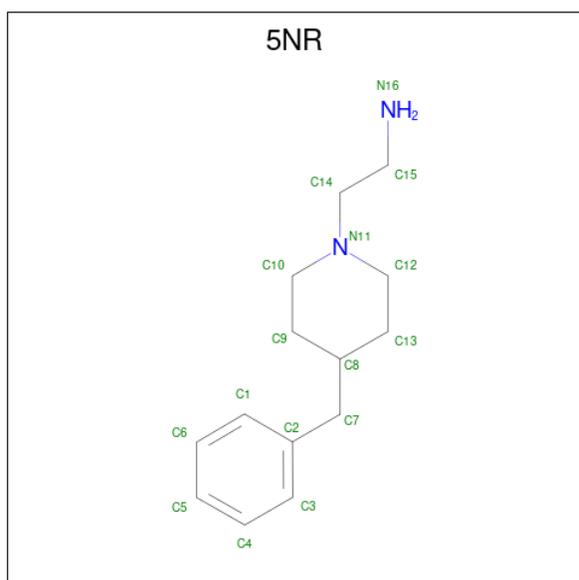
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total 16	C 14	N 2	0	0
3	A	1	Total 16	C 14	N 2	0	0
3	B	1	Total 16	C 14	N 2	0	0
3	C	1	Total 16	C 14	N 2	0	0
3	C	1	Total 16	C 14	N 2	0	0
3	D	1	Total 16	C 14	N 2	0	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	110	Total 110	O 110	0	0
4	B	119	Total 119	O 119	0	0
4	C	85	Total 85	O 85	0	0
4	D	91	Total 91	O 91	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: Protein arginine N-methyltransferase 6

• Molecule 1: Protein arginine N-methyltransferase 6

• Molecule 1: Protein arginine N-methyltransferase 6

P314 D336 L344 E365 M373 E374 D375

• Molecule 1: Protein arginine N-methyltransferase 6

Chain D:

3%

77%　　　　　10%　　11%

GLY MET SER GLN PRO LYS LYS ARG LYS LEU GLU SER GLY GLY GLY GLU GLY GLY GLU GLY THR GLU GLU ASP GLY ALA GLU GLU ALA ALA LEU GLU ARG PRO ARG R38 T39 K40 R41 E42 R43 D44 Q45 E49 V56 R66 R71 L72 L75 W78

K84 G92 I95 R106 A120 R121 E122 F126 P139 Q148 E155 E164 R174 L184 L185 Q199 W203 Q210 Q213 G232 R249 R260 A261 Q265 V271 R276 S282 G298 G299 GLU SER GLU LYS P304 P314

H317 L322 V331 D336 R347 D348 N349 P350 R351 R358 E366 K367 T368 D375

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	77.16Å 135.62Å 83.09Å 90.00° 98.91° 90.00°	Depositor
Resolution (Å)	41.26 – 2.15 41.26 – 2.15	Depositor EDS
% Data completeness (in resolution range)	99.2 (41.26-2.15) 99.2 (41.26-2.15)	Depositor EDS
R_{merge}	0.14	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.59 (at 2.16Å)	Xtriage
Refinement program	REFMAC 5.8.0124	Depositor
R, R_{free}	0.201 , 0.246 0.207 , 0.247	Depositor DCC
R_{free} test set	2101 reflections (2.32%)	wwPDB-VP
Wilson B-factor (Å^2)	26.9	Xtriage
Anisotropy	0.352	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 37.7	EDS
L-test for twinning[2]	$< |L| > = 0.47, < L^2 > = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	11269	wwPDB-VP
Average B, all atoms (Å^2)	31.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.44% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5   Model quality ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: SAH, 5NR

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	1.40	6/2704 (0.2%)	1.28	9/3662 (0.2%)
1	B	1.46	18/2750 (0.7%)	1.31	7/3723 (0.2%)
1	C	1.36	11/2749 (0.4%)	1.28	18/3725 (0.5%)
1	D	1.36	9/2713 (0.3%)	1.29	9/3674 (0.2%)
All	All	1.40	44/10916 (0.4%)	1.29	43/14784 (0.3%)

All (44) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	137	PRO	C-O	-7.85	1.15	1.23
1	B	172	HIS	N-CA	7.03	1.54	1.46
1	B	253	PHE	C-O	-6.87	1.15	1.24
1	B	163	HIS	C-O	6.77	1.31	1.23
1	C	56	VAL	C-O	-6.75	1.16	1.24
1	B	368	THR	CB-CG2	-6.70	1.30	1.52
1	B	238	VAL	C-O	-6.51	1.17	1.24
1	D	56	VAL	C-O	-6.35	1.16	1.24
1	A	108	VAL	C-O	-6.25	1.17	1.24
1	A	73	GLY	N-CA	6.25	1.53	1.45
1	D	45	GLN	CA-C	6.19	1.60	1.52
1	D	232	GLY	C-O	-6.17	1.16	1.23
1	B	270	GLY	CA-C	6.17	1.56	1.52
1	B	335	THR	C-O	-6.12	1.16	1.24
1	C	123	VAL	CA-C	6.10	1.60	1.52
1	D	317	HIS	CA-C	5.98	1.61	1.52
1	B	366	GLU	C-O	-5.98	1.16	1.23
1	A	349	ASN	N-CA	-5.95	1.41	1.46
1	B	232	GLY	C-O	-5.79	1.17	1.23
1	B	152	ILE	N-CA	5.78	1.52	1.46
1	C	71	ARG	C-O	-5.72	1.17	1.24
1	D	66	ARG	C-O	-5.69	1.17	1.24

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	352	ARG	CA-C	5.67	1.59	1.52
1	B	204	ARG	C-O	-5.59	1.17	1.24
1	C	344	LEU	CA-C	5.58	1.57	1.52
1	D	314	PRO	CA-C	5.48	1.59	1.52
1	B	344	LEU	CA-C	5.43	1.57	1.52
1	C	209	SER	C-O	-5.38	1.17	1.24
1	C	162	LEU	C-O	-5.35	1.17	1.24
1	A	135	VAL	N-CA	-5.31	1.40	1.46
1	D	185	LEU	CA-C	-5.30	1.48	1.52
1	A	359	TYR	CA-C	5.29	1.58	1.52
1	B	289	ALA	C-O	5.29	1.30	1.23
1	C	54	VAL	C-O	-5.26	1.17	1.24
1	C	73	GLY	C-O	5.20	1.30	1.23
1	D	139	PRO	C-O	5.18	1.29	1.23
1	C	193	ILE	C-O	-5.17	1.18	1.23
1	D	322	LEU	CA-C	5.16	1.59	1.52
1	C	307	LEU	C-O	-5.15	1.17	1.24
1	C	314	PRO	CA-C	5.13	1.58	1.52
1	B	44	ASP	C-O	5.09	1.29	1.24
1	B	56	VAL	N-CA	-5.09	1.39	1.46
1	A	322	LEU	C-O	5.06	1.30	1.24
1	B	293	GLN	C-O	-5.05	1.17	1.23

All (43) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	56	VAL	CB-CA-C	-8.93	99.89	112.22
1	C	301	SER	N-CA-C	-7.70	94.40	110.80
1	A	54	VAL	N-CA-C	6.86	117.62	110.62
1	C	262	GLY	N-CA-C	-6.86	106.32	114.48
1	B	300	GLU	N-CA-C	-6.76	103.98	111.82
1	B	95	ILE	N-CA-C	6.56	118.10	110.62
1	D	210	GLN	N-CA-C	6.54	120.86	113.01
1	A	46	LEU	N-CA-C	6.45	118.31	111.28
1	D	260	ARG	NE-CZ-NH2	6.41	124.97	119.20
1	A	260	ARG	NE-CZ-NH2	6.25	124.82	119.20
1	C	41	ARG	NE-CZ-NH2	6.21	124.79	119.20
1	B	329	VAL	CB-CA-C	-6.05	101.61	110.62
1	D	298	GLY	N-CA-C	5.98	122.34	112.89
1	B	194	VAL	CA-C-N	-5.90	113.89	119.85
1	B	194	VAL	C-N-CA	-5.90	113.89	119.85
1	C	194	VAL	CA-C-N	-5.89	114.20	120.03

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	194	VAL	C-N-CA	-5.89	114.20	120.03
1	C	143	VAL	N-CA-C	5.86	117.14	109.58
1	A	55	SER	N-CA-C	5.78	117.58	111.28
1	D	45	GLN	CB-CA-C	5.69	120.52	110.85
1	A	304	PRO	N-CA-C	5.66	119.97	111.14
1	A	64	ARG	NE-CZ-NH2	5.66	124.29	119.20
1	B	210	GLN	N-CA-C	5.64	119.42	112.54
1	A	122	GLU	N-CA-C	-5.55	105.13	111.07
1	D	39	THR	N-CA-C	-5.53	103.08	110.55
1	C	280	TYR	N-CA-C	5.50	117.35	111.36
1	D	43	ARG	N-CA-CB	5.48	118.66	110.22
1	C	242	SER	CA-C-N	5.43	126.12	120.03
1	C	242	SER	C-N-CA	5.43	126.12	120.03
1	D	351	ARG	NE-CZ-NH1	-5.35	116.15	121.50
1	C	302	GLU	N-CA-C	-5.24	99.65	110.80
1	C	373	MET	CA-C-N	5.22	131.51	121.54
1	C	373	MET	C-N-CA	5.22	131.51	121.54
1	C	300	GLU	CA-C-N	5.22	131.51	121.54
1	C	300	GLU	C-N-CA	5.22	131.51	121.54
1	A	247	LEU	N-CA-C	5.21	119.74	113.17
1	C	199	GLN	N-CA-C	5.20	116.95	111.28
1	B	303	LYS	N-CA-C	5.19	116.43	109.83
1	C	263	LEU	N-CA-C	5.14	116.88	111.28
1	C	68	ASP	N-CA-C	5.11	117.58	111.71
1	A	95	ILE	N-CA-C	5.06	115.78	110.62
1	C	95	ILE	N-CA-C	5.04	115.66	110.36
1	D	71	ARG	CB-CG-CD	-5.02	99.75	111.30

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	2645	0	2603	20	0
1	B	2687	0	2649	15	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	C	2681	0	2635	19	0
1	D	2651	0	2612	18	0
2	A	26	0	19	0	0
2	B	26	0	19	0	0
2	C	26	0	19	0	0
2	D	26	0	19	0	0
3	A	32	0	44	4	0
3	B	16	0	22	0	0
3	C	32	0	44	1	0
3	D	16	0	22	1	0
4	A	110	0	0	0	0
4	B	119	0	0	1	0
4	C	85	0	0	3	0
4	D	91	0	0	1	0
All	All	11269	0	10707	69	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 3.

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

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:40:LYS:NZ	4:C:501:HOH:O	1.99	0.93
1:B:122:GLU:OE1	1:B:125:ARG:NH1	2.08	0.86
1:A:39:THR:O	1:A:40:LYS:HB2	1.78	0.82
1:C:260:ARG:HG3	1:C:260:ARG:HH21	1.45	0.82
1:D:39:THR:HG23	1:D:42:GLU:H	1.49	0.78
1:D:351:ARG:NH1	4:D:501:HOH:O	2.08	0.77
1:D:39:THR:HG22	1:D:42:GLU:CD	2.12	0.74
1:A:39:THR:HG21	1:A:42:GLU:OE1	1.88	0.73
1:A:40:LYS:HD3	1:A:40:LYS:C	2.12	0.73
1:B:219:MET:HE1	1:C:95:ILE:HD12	1.72	0.72
1:A:114:SER:HB3	1:A:116:ILE:HG22	1.71	0.71
1:D:39:THR:HG22	1:D:42:GLU:OE1	1.91	0.70
1:A:83:GLY:O	1:A:106:ARG:NH1	2.28	0.66
1:B:114:SER:HB3	1:B:116:ILE:HG22	1.77	0.66
1:C:299:GLY:O	1:C:300:GLU:HB2	1.97	0.64
1:C:213:GLN:HG2	1:D:72:LEU:HD11	1.78	0.64
1:A:267:LEU:HD23	3:A:403:5NR:H9	1.80	0.63
1:B:298:GLY:O	4:B:501:HOH:O	2.15	0.63
1:B:211:VAL:HG11	1:B:219:MET:HE3	1.81	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:219:MET:CE	1:C:95:ILE:HD12	2.30	0.62
1:A:267:LEU:HB3	3:A:403:5NR:H8	1.80	0.61
1:B:76:ARG:O	1:B:299:GLY:HA3	2.00	0.61
1:C:39:THR:HG23	1:C:42:GLU:OE2	2.01	0.60
1:A:340:GLU:OE2	1:A:358:ARG:NH2	2.35	0.59
1:A:265:GLN:O	1:A:266:GLU:C	2.46	0.57
1:D:39:THR:CG2	1:D:42:GLU:CG	2.83	0.57
1:A:40:LYS:HD3	1:A:40:LYS:O	2.05	0.57
1:C:260:ARG:HG3	1:C:260:ARG:NH2	2.16	0.57
1:A:98:ILE:O	1:A:102:GLN:HG3	2.05	0.56
1:D:174:ARG:HD2	1:D:184:LEU:HD11	1.88	0.55
1:C:71:ARG:O	1:C:75:LEU:HG	2.09	0.53
1:C:260:ARG:HH21	1:C:260:ARG:CG	2.15	0.52
1:A:219:MET:HE1	1:D:95:ILE:HB	1.92	0.51
1:B:199:GLN:HG3	1:B:244:GLU:HG3	1.93	0.51
1:B:64:ARG:NH2	1:C:214:HIS:CD2	2.79	0.50
1:D:39:THR:CG2	1:D:42:GLU:HG3	2.43	0.49
1:B:302:GLU:OE2	1:B:303:LYS:N	2.47	0.48
1:A:40:LYS:C	1:A:40:LYS:CD	2.86	0.48
1:D:39:THR:HG22	1:D:42:GLU:CG	2.44	0.47
1:C:199:GLN:HG3	4:C:504:HOH:O	2.14	0.47
1:A:305:LEU:C	1:A:305:LEU:HD23	2.40	0.47
1:A:203:TRP:CZ2	1:B:314:PRO:HD3	2.51	0.46
1:C:263:LEU:HG	1:C:267:LEU:HD22	1.97	0.46
1:B:39:THR:CG2	1:B:40:LYS:N	2.78	0.45
1:B:208:TRP:HB3	1:B:219:MET:O	2.16	0.45
1:D:45:GLN:NE2	1:D:49[A]:GLU:OE2	2.50	0.44
1:A:231:MET:HB3	1:A:325:LEU:O	2.17	0.44
1:D:38:ARG:N	1:D:38:ARG:HH11	2.15	0.44
1:C:236:ILE:O	1:C:374:GLU:HB2	2.19	0.43
1:D:39:THR:CG2	1:D:42:GLU:CD	2.88	0.43
1:D:349:ASN:HA	1:D:350:PRO:HD2	1.91	0.43
1:C:260:ARG:NH2	1:C:260:ARG:CG	2.73	0.43
1:D:92:GLY:O	1:D:120:ALA:HB2	2.19	0.43
1:A:303:LYS:CB	1:A:304:PRO:CD	2.97	0.42
1:B:174[B]:ARG:HH22	1:B:264:GLU:CD	2.26	0.42
1:D:358:ARG:NH2	1:D:366:GLU:OE2	2.48	0.42
1:C:305:LEU:C	1:C:305:LEU:HD23	2.45	0.42
3:C:403:5NR:H13	3:C:403:5NR:H22	1.84	0.42
1:C:43:ARG:NE	4:C:503:HOH:O	2.38	0.42
1:C:256:LEU:HD12	1:C:256:LEU:N	2.35	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:403:5NR:H13	3:A:403:5NR:H22	1.85	0.41
1:A:64:ARG:O	1:A:68:ASP:HB2	2.21	0.41
1:B:325:LEU:HD22	1:B:359:TYR:CZ	2.55	0.41
1:C:39:THR:N	1:C:42:GLU:OE2	2.54	0.41
1:A:92:GLY:O	1:A:120:ALA:HB2	2.21	0.41
3:A:402:5NR:C3	3:A:402:5NR:H10	2.48	0.40
1:D:155:GLU:CD	3:D:402:5NR:H22	2.30	0.40
1:A:303:LYS:HB3	1:A:304:PRO:HD3	2.03	0.40
1:D:282:SER:HA	1:D:331:VAL:O	2.20	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	331/376 (88%)	320 (97%)	9 (3%)	2 (1%)	22	16
1	B	337/376 (90%)	329 (98%)	8 (2%)	0	100	100
1	C	337/376 (90%)	321 (95%)	12 (4%)	4 (1%)	11	6
1	D	331/376 (88%)	319 (96%)	10 (3%)	2 (1%)	22	16
All	All	1336/1504 (89%)	1289 (96%)	39 (3%)	8 (1%)	22	16

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	40	LYS
1	C	260	ARG
1	C	300	GLU
1	C	301	SER
1	D	261	ALA
1	C	164	GLU

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Mol	Chain	Res	Type
1	D	164	GLU
1	A	374	GLU

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 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	279/310 (90%)	264 (95%)	15 (5%)	18	15
1	B	285/310 (92%)	265 (93%)	20 (7%)	12	8
1	C	284/310 (92%)	266 (94%)	18 (6%)	15	10
1	D	281/310 (91%)	260 (92%)	21 (8%)	11	6
All	All	1129/1240 (91%)	1055 (93%)	74 (7%)	14	9

All (74) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	39	THR
1	A	40	LYS
1	A	45	GLN
1	A	46	LEU
1	A	72	LEU
1	A	107	ARG
1	A	122	GLU
1	A	125	ARG
1	A	213	GLN
1	A	249	ARG
1	A	258	LEU
1	A	264	GLU
1	A	267	LEU
1	A	303	LYS
1	A	368	THR
1	B	38	ARG
1	B	45	GLN
1	B	46	LEU
1	B	72	LEU

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Mol	Chain	Res	Type
1	B	122	GLU
1	B	144	GLU
1	B	155	GLU
1	B	168	SER
1	B	194	VAL
1	B	210	GLN
1	B	212	LYS
1	B	278	SER
1	B	300	GLU
1	B	301	SER
1	B	302	GLU
1	B	305	LEU
1	B	347	ARG
1	B	358	ARG
1	B	367	LYS
1	B	368	THR
1	C	39	THR
1	C	41	ARG
1	C	45	GLN
1	C	64	ARG
1	C	72	LEU
1	C	130	GLU
1	C	174	ARG
1	C	199	GLN
1	C	202	GLU
1	C	210	GLN
1	C	213	GLN
1	C	249	ARG
1	C	260	ARG
1	C	267	LEU
1	C	300	GLU
1	C	301	SER
1	C	336	ASP
1	C	365	GLU
1	D	38	ARG
1	D	39	THR
1	D	41	ARG
1	D	43	ARG
1	D	45	GLN
1	D	56	VAL
1	D	75	LEU
1	D	95	ILE

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Mol	Chain	Res	Type
1	D	122	GLU
1	D	126	PHE
1	D	148	GLN
1	D	155	GLU
1	D	199	GLN
1	D	213	GLN
1	D	249	ARG
1	D	271	VAL
1	D	276	ARG
1	D	322	LEU
1	D	336	ASP
1	D	358	ARG
1	D	368	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	210	GLN
1	B	45	GLN
1	B	210	GLN
1	C	148	GLN
1	C	214	HIS
1	C	330	GLN
1	C	364	GLN
1	D	45	GLN
1	D	213	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 (i)

10 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	5NR	A	402	-	17,17,17	0.62	0	21,21,21	1.33	3 (14%)
3	5NR	B	402	-	17,17,17	0.72	0	21,21,21	1.17	1 (4%)
3	5NR	C	402	-	17,17,17	0.75	0	21,21,21	1.08	2 (9%)
3	5NR	A	403	-	17,17,17	0.93	0	21,21,21	1.20	3 (14%)
2	SAH	D	401	-	24,28,28	1.24	2 (8%)	25,40,40	1.76	6 (24%)
2	SAH	A	401	-	24,28,28	1.07	1 (4%)	25,40,40	1.41	4 (16%)
3	5NR	C	403	-	17,17,17	0.75	0	21,21,21	1.12	1 (4%)
2	SAH	B	401	-	24,28,28	1.01	1 (4%)	25,40,40	1.67	6 (24%)
2	SAH	C	401	-	24,28,28	1.06	3 (12%)	25,40,40	1.73	5 (20%)
3	5NR	D	402	-	17,17,17	0.88	0	21,21,21	0.59	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	5NR	A	402	-	-	0/7/17/17	0/2/2/2
3	5NR	B	402	-	-	0/7/17/17	0/2/2/2
3	5NR	C	402	-	-	0/7/17/17	0/2/2/2
3	5NR	A	403	-	-	2/7/17/17	0/2/2/2
2	SAH	D	401	-	-	0/11/31/31	0/3/3/3
2	SAH	A	401	-	-	0/11/31/31	0/3/3/3
3	5NR	C	403	-	-	0/7/17/17	0/2/2/2
2	SAH	B	401	-	-	0/11/31/31	0/3/3/3
2	SAH	C	401	-	-	0/11/31/31	0/3/3/3
3	5NR	D	402	-	-	0/7/17/17	0/2/2/2

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	401	SAH	C2-N3	3.13	1.37	1.32
2	C	401	SAH	C2-N3	3.03	1.37	1.32
2	D	401	SAH	C2'-C1'	-2.59	1.49	1.53
2	A	401	SAH	C5-C4	2.34	1.47	1.40
2	B	401	SAH	OXT-C	-2.22	1.23	1.30
2	C	401	SAH	C5-C4	2.04	1.46	1.40
2	C	401	SAH	C5-N7	-2.01	1.32	1.39

All (31) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	C	401	SAH	N3-C2-N1	-4.96	120.93	128.68
2	D	401	SAH	N3-C2-N1	-4.73	121.28	128.68
2	B	401	SAH	N3-C2-N1	-4.24	122.06	128.68
2	C	401	SAH	O4'-C1'-C2'	-3.51	101.79	106.93
2	A	401	SAH	N3-C2-N1	-3.48	123.24	128.68
2	C	401	SAH	OXT-C-O	-3.46	116.24	124.09
3	B	402	5NR	C14-C15-N16	-3.21	102.16	112.69
2	B	401	SAH	OXT-C-O	-3.19	116.86	124.09
2	D	401	SAH	OXT-C-CA	2.85	123.10	113.38
3	A	402	5NR	C2-C7-C8	-2.83	109.20	114.50
2	C	401	SAH	OXT-C-CA	2.61	122.28	113.38
2	D	401	SAH	C1'-N9-C4	-2.59	122.09	126.64
3	A	403	5NR	C5-C6-C1	-2.55	116.30	120.19
3	A	402	5NR	C10-C9-C8	2.53	118.40	111.99
2	A	401	SAH	C4-C5-N7	-2.52	106.77	109.40
3	A	403	5NR	C14-N11-C10	-2.48	104.90	111.23
2	D	401	SAH	OXT-C-O	-2.48	118.47	124.09
2	B	401	SAH	C5-C6-N6	-2.41	116.69	120.35
3	A	402	5NR	C9-C8-C7	-2.39	106.30	111.88
2	B	401	SAH	C2'-C3'-C4'	2.37	107.24	102.64
3	C	403	5NR	C5-C6-C1	-2.30	116.69	120.19
2	B	401	SAH	N6-C6-N1	2.29	123.33	118.57
2	D	401	SAH	C2-N1-C6	2.21	122.54	118.75
2	A	401	SAH	O4'-C1'-C2'	-2.19	103.73	106.93
3	A	403	5NR	C9-C10-N11	2.07	114.33	111.11
2	A	401	SAH	OXT-C-O	-2.06	119.42	124.09
2	C	401	SAH	N6-C6-N1	2.05	122.83	118.57
2	D	401	SAH	N6-C6-N1	2.03	122.80	118.57
2	B	401	SAH	OXT-C-CA	2.03	120.31	113.38
3	C	402	5NR	C13-C8-C7	-2.02	107.14	111.88
3	C	402	5NR	C1-C2-C3	2.02	121.34	118.17

There are no chirality outliers.
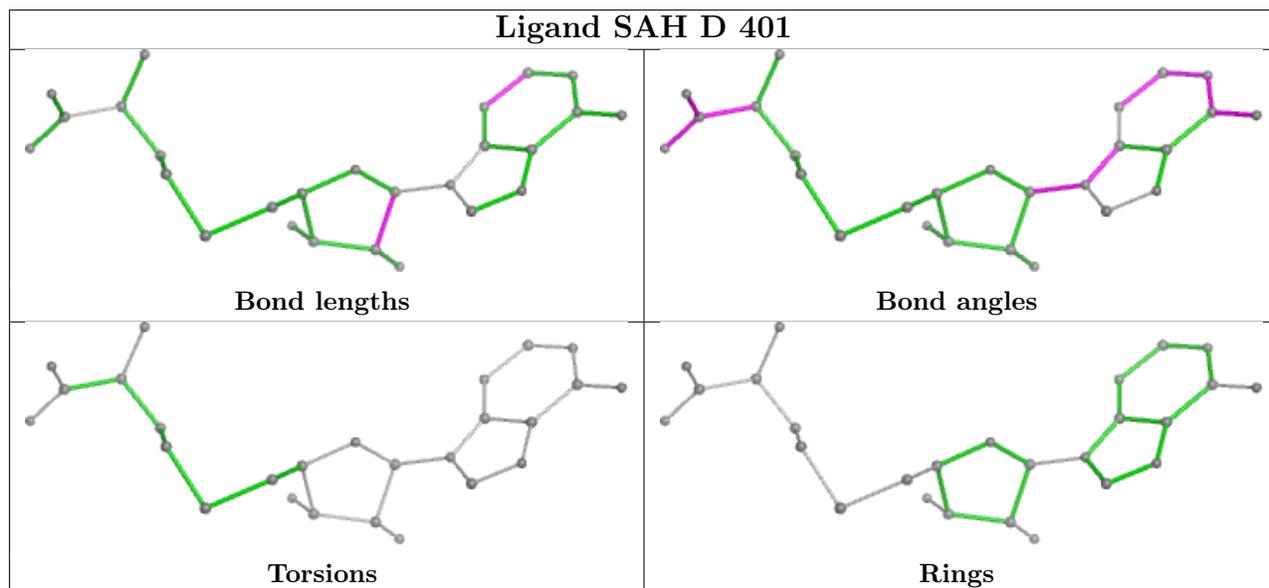
All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	403	5NR	C15-C14-N11-C12
3	A	403	5NR	C15-C14-N11-C10

There are no ring outliers.

4 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	402	5NR	1	0
3	A	403	5NR	3	0
3	C	403	5NR	1	0
3	D	402	5NR	1	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 SAH D 401

Bond lengths

Bond angles

Torsions

Rings

Ligand SAH A 401

Bond lengths

Bond angles

Torsions

Rings

Ligand SAH B 401

Bond lengths

Bond angles

Torsions

Rings

Ligand SAH C 401

Bond lengths

Bond angles

Torsions

Rings
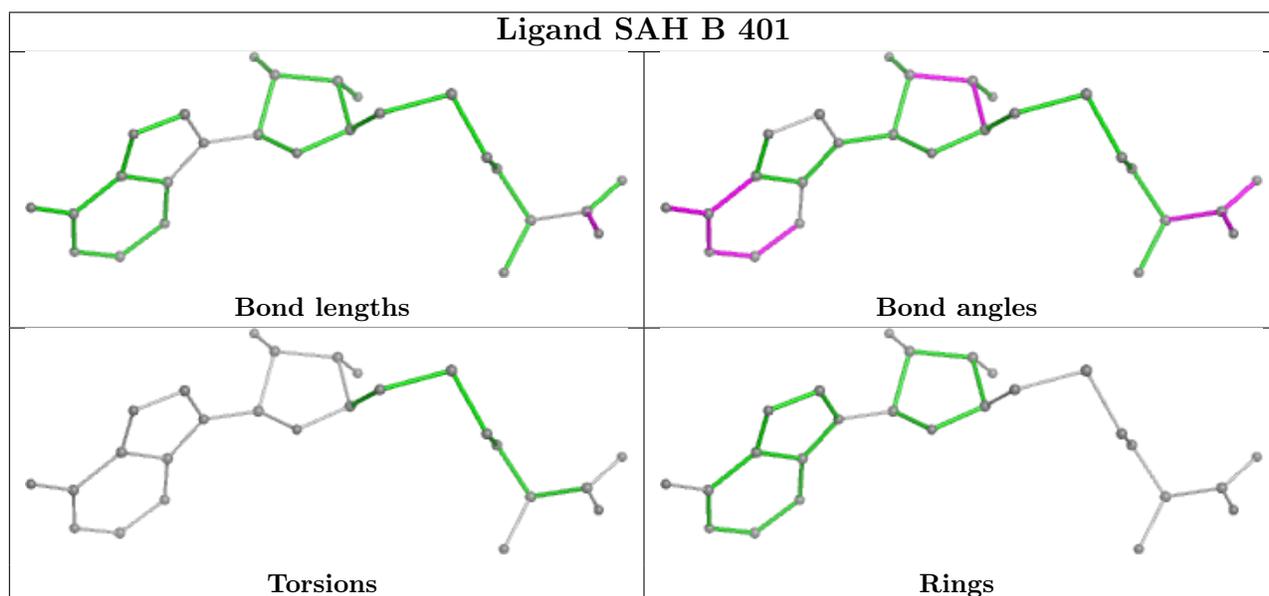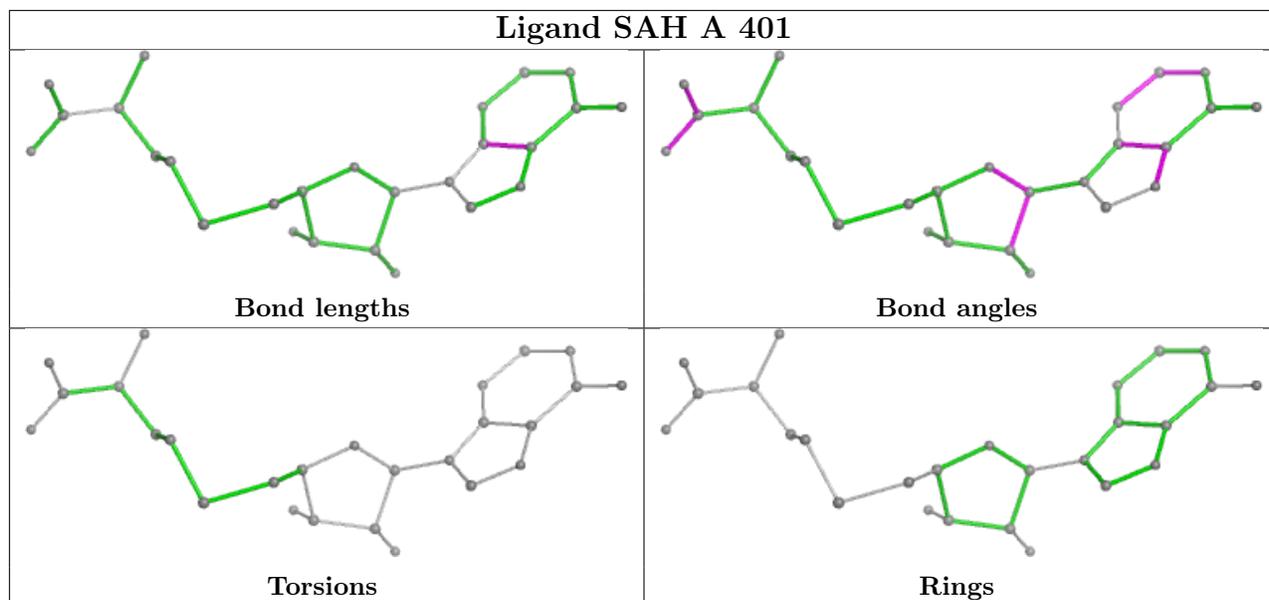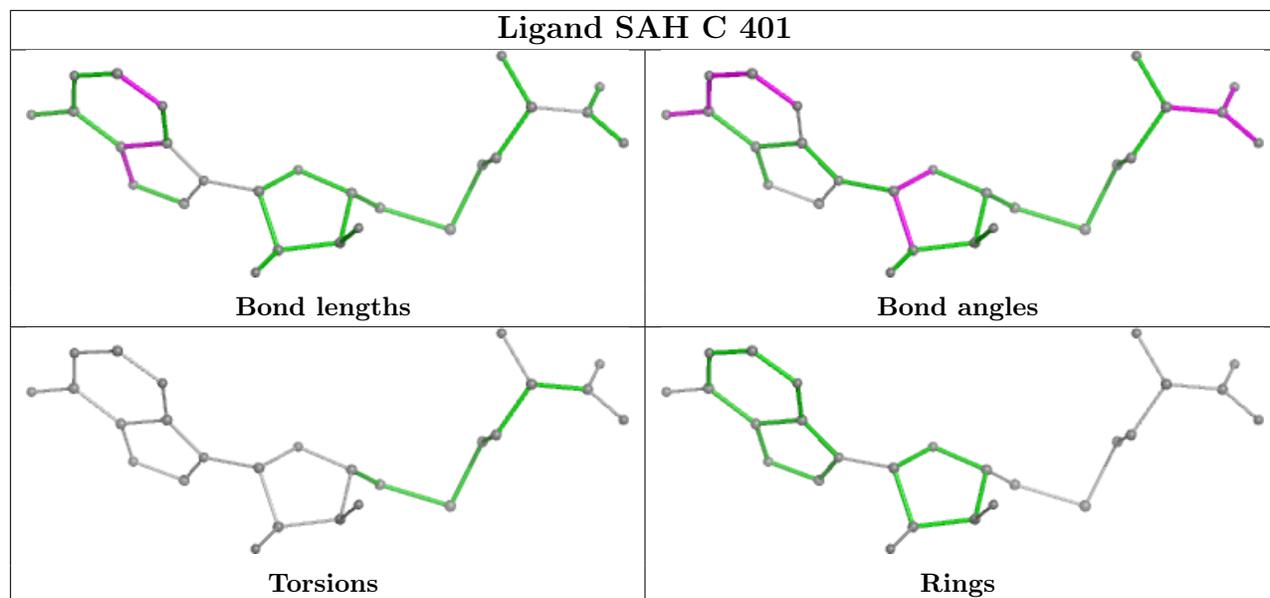
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	335/376 (89%)	-0.07	9 (2%)	56	61	16, 31, 50, 68	5 (1%)
1	B	338/376 (89%)	-0.25	4 (1%)	76	79	14, 26, 46, 72	2 (0%)
1	C	337/376 (89%)	-0.06	9 (2%)	56	61	14, 29, 54, 87	8 (2%)
1	D	334/376 (88%)	0.06	11 (3%)	49	55	19, 32, 53, 67	6 (1%)
All	All	1344/1504 (89%)	-0.08	33 (2%)	58	63	14, 29, 51, 87	21 (1%)

All (33) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	39	THR	4.8
1	C	261	ALA	4.6
1	D	84	LYS	4.2
1	D	299	GLY	4.1
1	D	106	ARG	3.9
1	C	39	THR	3.7
1	D	265	GLN	3.7
1	C	301	SER	3.5
1	B	38	ARG	3.4
1	C	132	ARG	3.1
1	A	203	TRP	3.0
1	C	61	ILE	2.9
1	A	78	TRP	2.8
1	A	200	MET	2.8
1	B	301	SER	2.8
1	D	203	TRP	2.7
1	C	106	ARG	2.6
1	C	302	GLU	2.5
1	A	302	GLU	2.4
1	B	39	THR	2.3
1	D	304	PRO	2.3

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W O R L D W I D E
wwPDB
PROTEIN DATA BANK

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Mol	Chain	Res	Type	RSRZ
1	A	303	LYS	2.2
1	A	375	ASP	2.2
1	A	261	ALA	2.2
1	D	375	ASP	2.2
1	B	302	GLU	2.1
1	D	38	ARG	2.1
1	C	203[A]	TRP	2.1
1	C	300	GLU	2.1
1	A	76	ARG	2.1
1	D	347	ARG	2.1
1	D	78	TRP	2.0
1	D	75	LEU	2.0

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

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

6.3 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

6.4 Ligands ⓘ

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(Å^2)	Q<0.9
3	5NR	C	403	16/16	0.85	0.14	32,41,51,51	0
3	5NR	A	403	16/16	0.91	0.10	25,33,37,37	0
3	5NR	B	402	16/16	0.93	0.08	16,19,25,26	0
3	5NR	C	402	16/16	0.94	0.09	19,22,34,35	0
3	5NR	A	402	16/16	0.95	0.07	15,20,27,28	0
3	5NR	D	402	16/16	0.95	0.07	16,18,24,24	0
2	SAH	D	401	26/26	0.96	0.07	21,25,27,29	0
2	SAH	B	401	26/26	0.97	0.06	15,19,21,23	0
2	SAH	C	401	26/26	0.97	0.06	18,20,23,24	0
2	SAH	A	401	26/26	0.97	0.06	18,22,23,24	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.
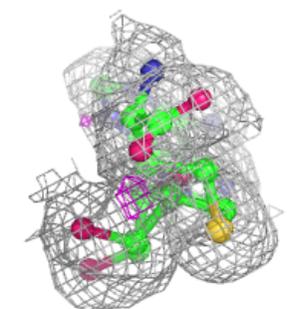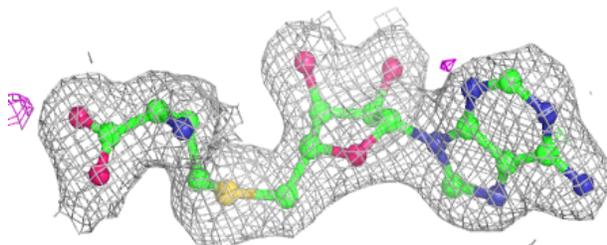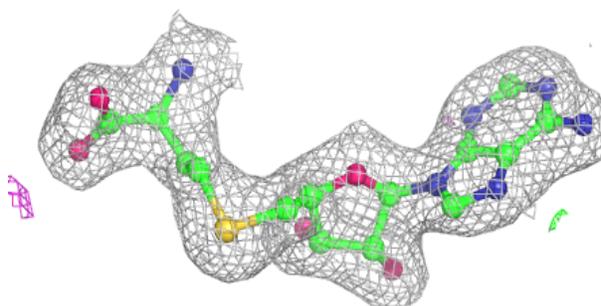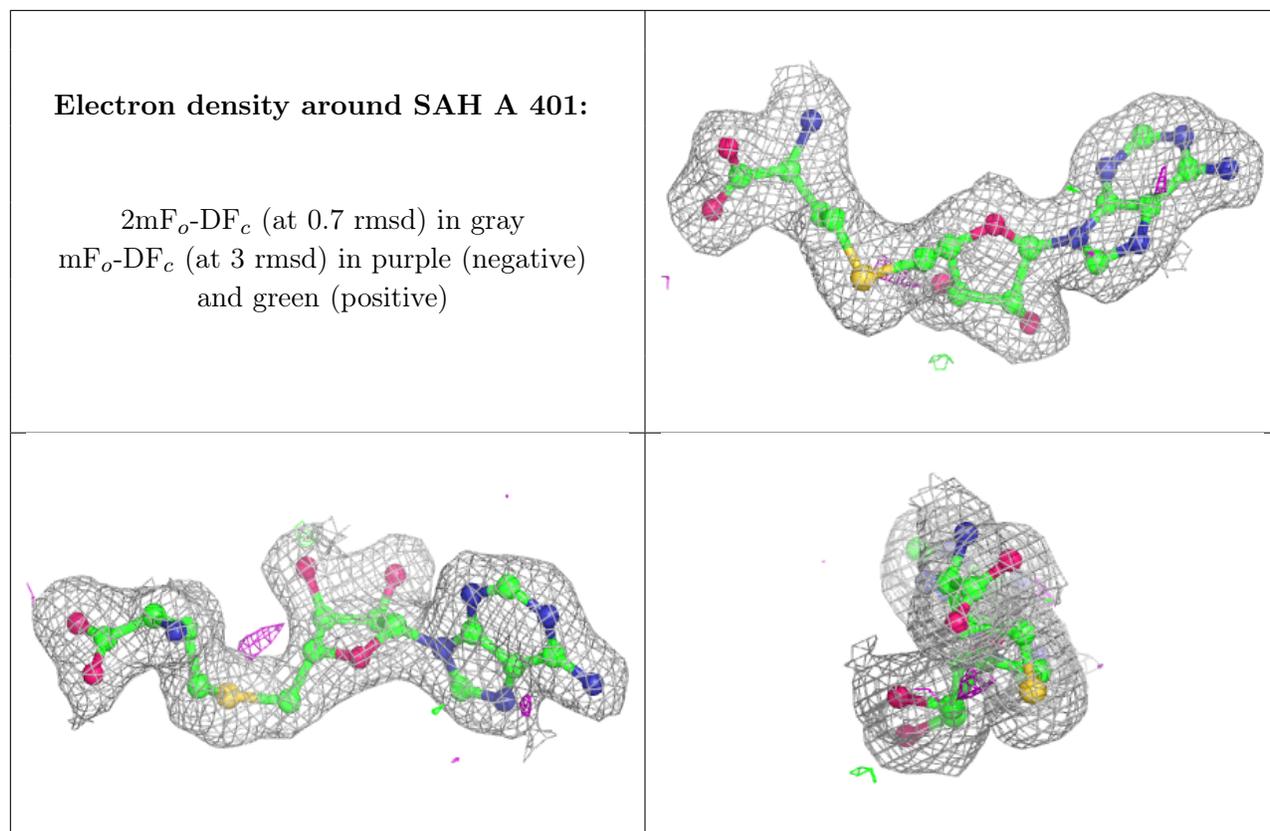
Electron density around SAH D 401:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
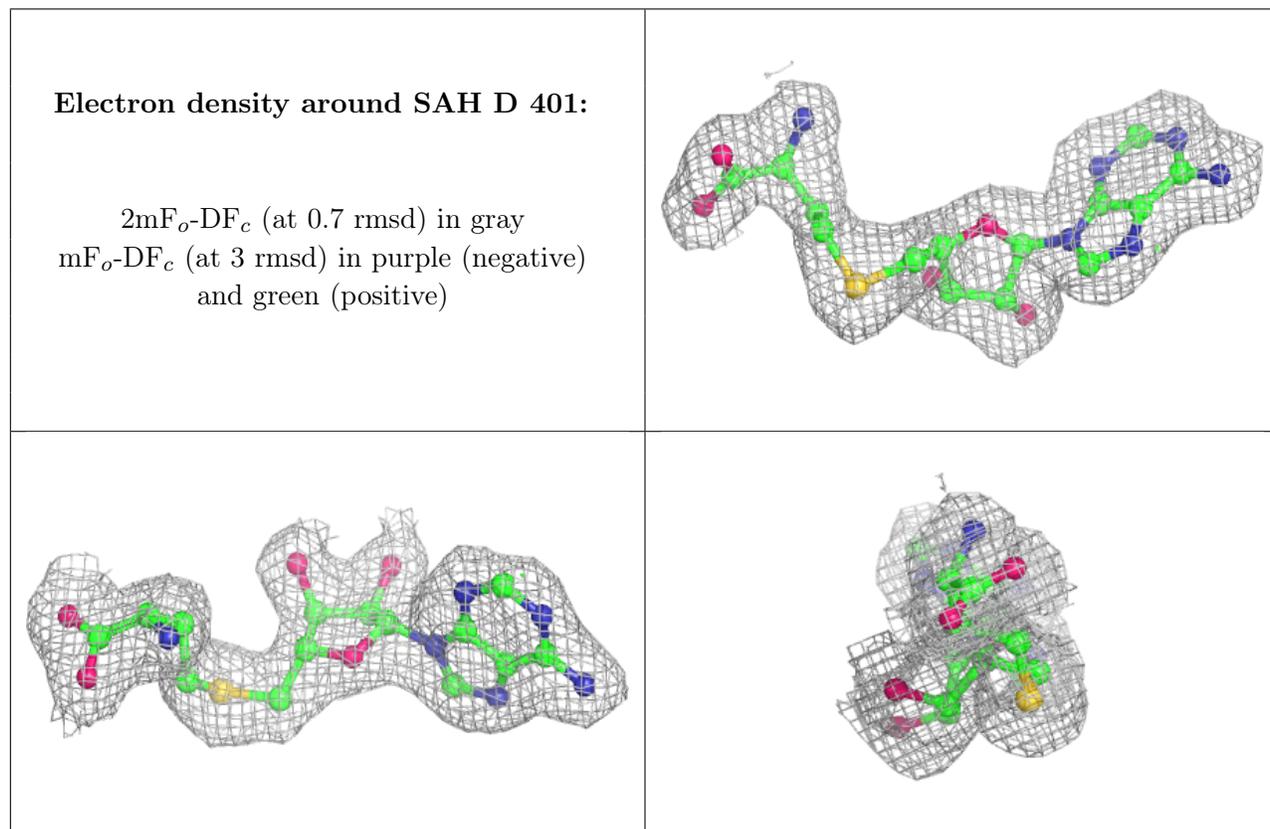
Electron density around SAH B 401:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
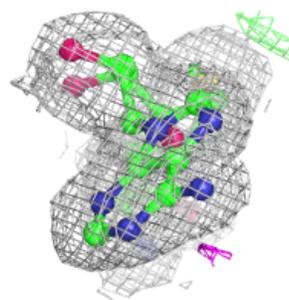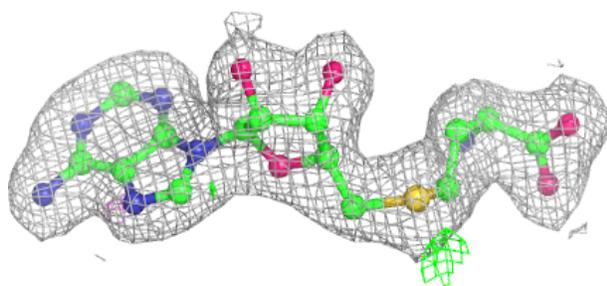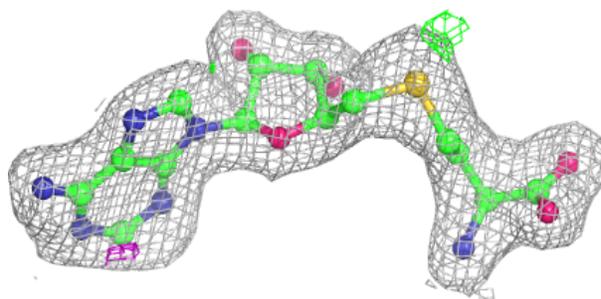
Electron density around SAH C 401:

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

Electron density around SAH A 401:

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

6.5 Other polymers ⓘ

There are no such residues in this entry.