



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 08:20 PM UTC

PDB ID : 7WH9 / pdb_00007wh9
Title : holo structure of emodin 1-OH O-methyltransferase complex with emodin and S-Adenosyl-L-homocysteine
Authors : Liang, Y.J.; Lu, X.F.; Qi, F.F.; Xue, Y.Y.
Deposited on : 2021-12-30
Resolution : 2.80 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

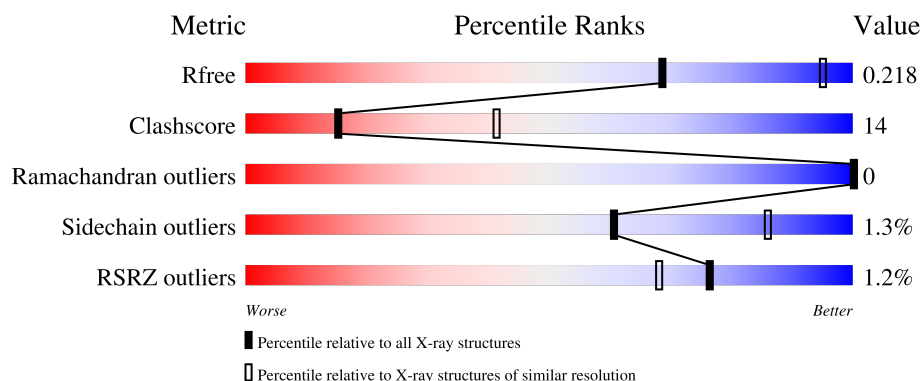
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 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	3866 (2.80-2.80)
Clashscore	190562	4276 (2.80-2.80)
Ramachandran outliers	187476	4196 (2.80-2.80)
Sidechain outliers	187428	4198 (2.80-2.80)
RSRZ outliers	180081	3869 (2.80-2.80)

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	506	
1	B	506	
1	C	506	

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 11256 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 O-methyltransferase gedA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	476	Total	C	N	O	S	0	0	0
			3708	2349	646	697	16			
1	B	473	Total	C	N	O	S	0	0	0
			3622	2301	620	685	16			
1	C	474	Total	C	N	O	S	0	0	0
			3662	2322	633	691	16			

There are 75 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-19	MET	-	initiating methionine	UNP Q0CCY5
A	-18	GLY	-	expression tag	UNP Q0CCY5
A	-17	SER	-	expression tag	UNP Q0CCY5
A	-16	SER	-	expression tag	UNP Q0CCY5
A	-15	HIS	-	expression tag	UNP Q0CCY5
A	-14	HIS	-	expression tag	UNP Q0CCY5
A	-13	HIS	-	expression tag	UNP Q0CCY5
A	-12	HIS	-	expression tag	UNP Q0CCY5
A	-11	HIS	-	expression tag	UNP Q0CCY5
A	-10	HIS	-	expression tag	UNP Q0CCY5
A	-9	SER	-	expression tag	UNP Q0CCY5
A	-8	SER	-	expression tag	UNP Q0CCY5
A	-7	GLY	-	expression tag	UNP Q0CCY5
A	-6	LEU	-	expression tag	UNP Q0CCY5
A	-5	VAL	-	expression tag	UNP Q0CCY5
A	-4	PRO	-	expression tag	UNP Q0CCY5
A	-3	ARG	-	expression tag	UNP Q0CCY5
A	-2	GLY	-	expression tag	UNP Q0CCY5
A	-1	SER	-	expression tag	UNP Q0CCY5
A	0	HIS	-	expression tag	UNP Q0CCY5
A	131	HIS	TYR	conflict	UNP Q0CCY5
A	236	PHE	TYR	conflict	UNP Q0CCY5
A	250	ALA	PRO	conflict	UNP Q0CCY5

Continued on next page...

Continued from previous page...

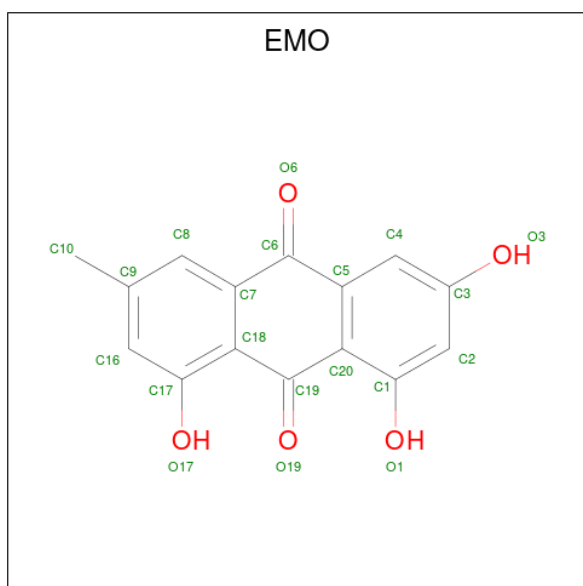
Chain	Residue	Modelled	Actual	Comment	Reference
A	290	GLY	ASP	conflict	UNP Q0CCY5
A	386	ARG	HIS	conflict	UNP Q0CCY5
B	-19	MET	-	initiating methionine	UNP Q0CCY5
B	-18	GLY	-	expression tag	UNP Q0CCY5
B	-17	SER	-	expression tag	UNP Q0CCY5
B	-16	SER	-	expression tag	UNP Q0CCY5
B	-15	HIS	-	expression tag	UNP Q0CCY5
B	-14	HIS	-	expression tag	UNP Q0CCY5
B	-13	HIS	-	expression tag	UNP Q0CCY5
B	-12	HIS	-	expression tag	UNP Q0CCY5
B	-11	HIS	-	expression tag	UNP Q0CCY5
B	-10	HIS	-	expression tag	UNP Q0CCY5
B	-9	SER	-	expression tag	UNP Q0CCY5
B	-8	SER	-	expression tag	UNP Q0CCY5
B	-7	GLY	-	expression tag	UNP Q0CCY5
B	-6	LEU	-	expression tag	UNP Q0CCY5
B	-5	VAL	-	expression tag	UNP Q0CCY5
B	-4	PRO	-	expression tag	UNP Q0CCY5
B	-3	ARG	-	expression tag	UNP Q0CCY5
B	-2	GLY	-	expression tag	UNP Q0CCY5
B	-1	SER	-	expression tag	UNP Q0CCY5
B	0	HIS	-	expression tag	UNP Q0CCY5
B	131	HIS	TYR	conflict	UNP Q0CCY5
B	236	PHE	TYR	conflict	UNP Q0CCY5
B	250	ALA	PRO	conflict	UNP Q0CCY5
B	290	GLY	ASP	conflict	UNP Q0CCY5
B	386	ARG	HIS	conflict	UNP Q0CCY5
C	-19	MET	-	initiating methionine	UNP Q0CCY5
C	-18	GLY	-	expression tag	UNP Q0CCY5
C	-17	SER	-	expression tag	UNP Q0CCY5
C	-16	SER	-	expression tag	UNP Q0CCY5
C	-15	HIS	-	expression tag	UNP Q0CCY5
C	-14	HIS	-	expression tag	UNP Q0CCY5
C	-13	HIS	-	expression tag	UNP Q0CCY5
C	-12	HIS	-	expression tag	UNP Q0CCY5
C	-11	HIS	-	expression tag	UNP Q0CCY5
C	-10	HIS	-	expression tag	UNP Q0CCY5
C	-9	SER	-	expression tag	UNP Q0CCY5
C	-8	SER	-	expression tag	UNP Q0CCY5
C	-7	GLY	-	expression tag	UNP Q0CCY5
C	-6	LEU	-	expression tag	UNP Q0CCY5
C	-5	VAL	-	expression tag	UNP Q0CCY5

Continued on next page...

Continued from previous page...

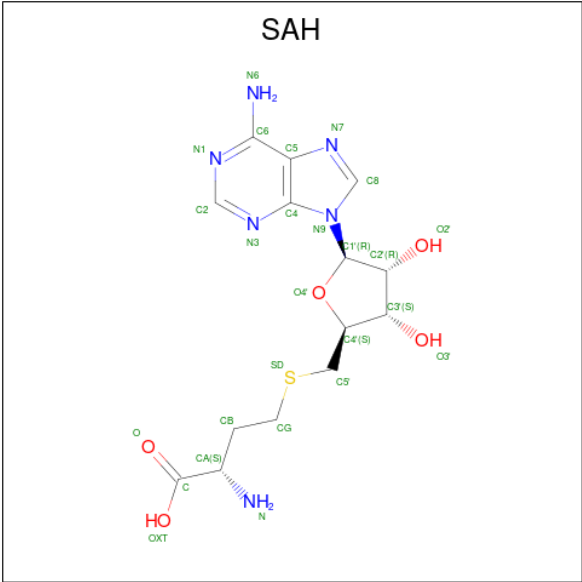
Chain	Residue	Modelled	Actual	Comment	Reference
C	-4	PRO	-	expression tag	UNP Q0CCY5
C	-3	ARG	-	expression tag	UNP Q0CCY5
C	-2	GLY	-	expression tag	UNP Q0CCY5
C	-1	SER	-	expression tag	UNP Q0CCY5
C	0	HIS	-	expression tag	UNP Q0CCY5
C	131	HIS	TYR	conflict	UNP Q0CCY5
C	236	PHE	TYR	conflict	UNP Q0CCY5
C	250	ALA	PRO	conflict	UNP Q0CCY5
C	290	GLY	ASP	conflict	UNP Q0CCY5
C	386	ARG	HIS	conflict	UNP Q0CCY5

- Molecule 2 is 3-METHYL-1,6,8-TRIHIDROXYANTHRAQUINONE (CCD ID: EMO) (formula: C₁₅H₁₀O₅) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			20	15	5		
2	B	1	Total	C	O	0	0
			20	15	5		
2	C	1	Total	C	O	0	0
			20	15	5		

- Molecule 3 is S-ADENOSYL-L-HOMOCYSTEINE (CCD ID: SAH) (formula: C₁₄H₂₀N₆O₅S) (labeled as "Ligand of Interest" by depositor).



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		

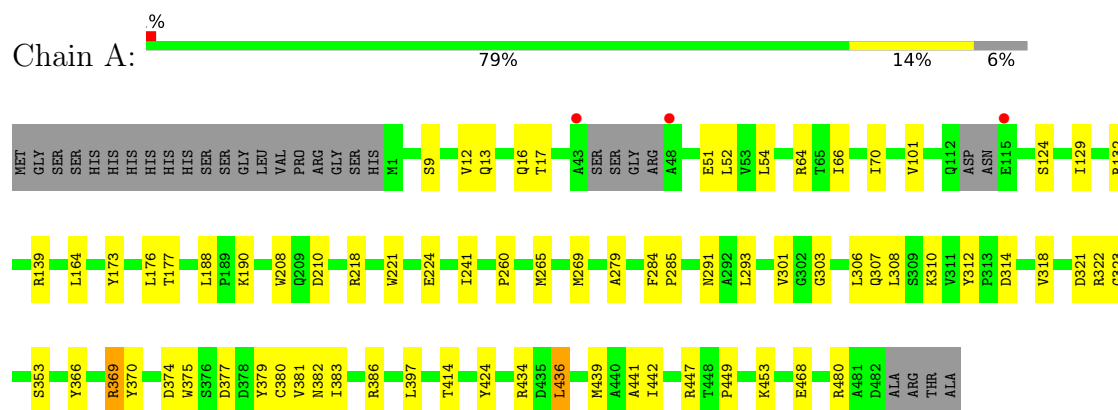
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	105	Total	O	0	0
			105	105		
4	B	12	Total	O	0	0
			12	12		
4	C	9	Total	O	0	0
			9	9		

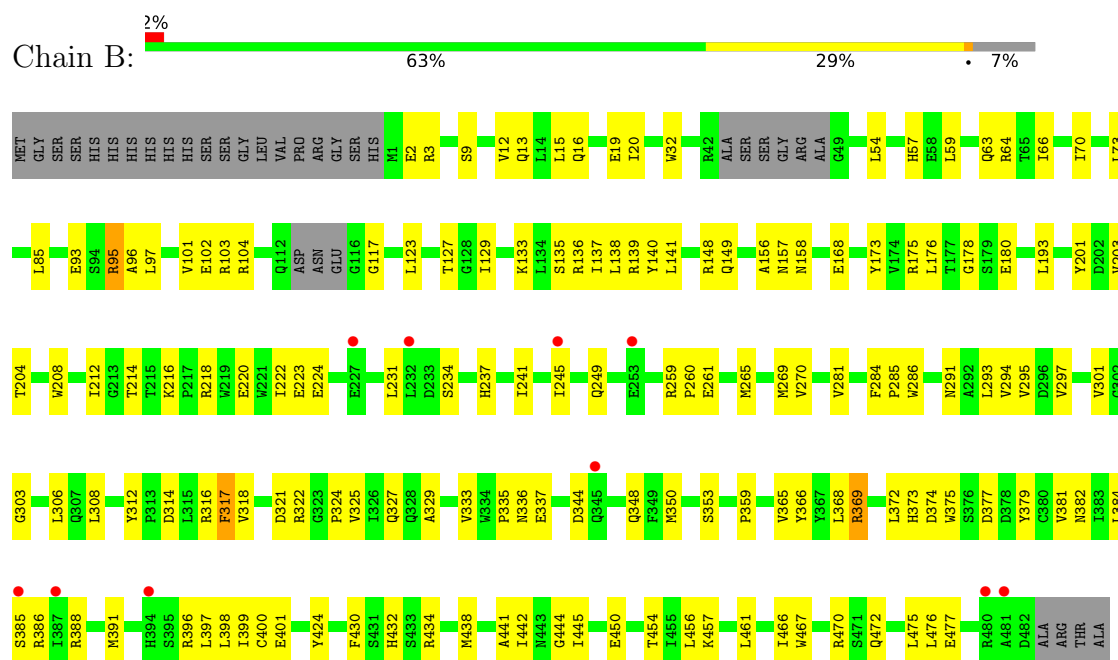
3 Residue-property plots

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 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: O-methyltransferase gedA

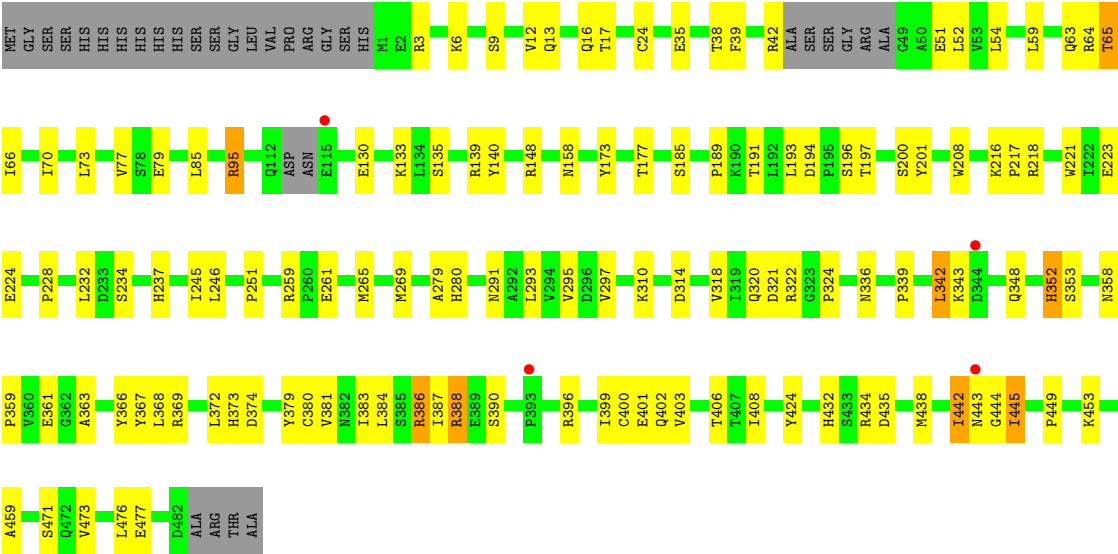


• Molecule 1: O-methyltransferase gedA



• Molecule 1: O-methyltransferase gedA





4 Data and refinement statistics

Property	Value	Source
Space group	P 31 2 1	Depositor
Cell constants a, b, c, α , β , γ	162.09Å 162.09Å 130.22Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	27.29 – 2.80 27.29 – 2.80	Depositor EDS
% Data completeness (in resolution range)	99.6 (27.29-2.80) 99.4 (27.29-2.80)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	5.11 (at 2.80Å)	Xtriage
Refinement program	PHENIX 1.10.1_2155	Depositor
R, R_{free}	0.175 , 0.217 0.179 , 0.218	Depositor DCC
R_{free} test set	1998 reflections (4.10%)	wwPDB-VP
Wilson B-factor (Å ²)	47.3	Xtriage
Anisotropy	0.207	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 51.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	0.018 for -h,-k,l	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	11256	wwPDB-VP
Average B, all atoms (Å ²)	61.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.48% 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: SAH, EMO

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	0.50	1/3788 (0.0%)	0.72	0/5146
1	B	0.51	0/3701	0.73	3/5040 (0.1%)
1	C	0.49	2/3741 (0.1%)	0.75	1/5089 (0.0%)
All	All	0.50	3/11230 (0.0%)	0.73	4/15275 (0.0%)

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	352	HIS	CE1-NE2	-6.60	1.25	1.32
1	C	352	HIS	CG-ND1	-5.11	1.32	1.38
1	A	139	ARG	C-O	-5.08	1.18	1.24

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	93	GLU	N-CA-C	-6.08	104.94	112.90
1	B	317	PHE	N-CA-C	5.58	118.31	109.50
1	B	457	LYS	CG-CD-CE	5.36	123.63	111.30
1	C	200	SER	N-CA-CB	5.36	117.88	110.17

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	3708	0	3686	61	0
1	B	3622	0	3551	134	0
1	C	3662	0	3610	132	0
2	A	20	0	10	5	0
2	B	20	0	10	4	0
2	C	20	0	10	3	0
3	A	26	0	19	6	0
3	B	26	0	19	5	0
3	C	26	0	19	4	0
4	A	105	0	0	2	0
4	B	12	0	0	0	0
4	C	9	0	0	0	0
All	All	11256	0	10934	300	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 14.

All (300) 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:388:ARG:HG2	1:C:388:ARG:HH11	1.22	1.03
1:A:218:ARG:HH12	1:A:265:MET:HE3	1.32	0.93
1:B:321:ASP:OD2	1:B:325:VAL:HG21	1.71	0.91
1:C:218:ARG:HH12	1:C:265:MET:HE3	1.36	0.90
1:B:321:ASP:OD1	3:B:602:SAH:H1'	1.73	0.88
1:B:350:MET:HE1	1:B:359:PRO:HB2	1.55	0.88
1:B:369:ARG:HB2	1:B:400:CYS:HB3	1.55	0.87
1:B:294:VAL:HG22	1:B:317:PHE:CD2	2.13	0.84
1:B:368:LEU:HB3	1:B:399:ILE:HG22	1.61	0.83
1:C:24:CYS:SG	1:C:65:THR:HG22	2.19	0.82
1:C:342:LEU:HD12	1:C:343:LYS:N	1.94	0.82
1:B:97:LEU:O	1:B:101:VAL:HG23	1.81	0.80
1:A:51:GLU:HG2	1:A:52:LEU:HD12	1.64	0.79
1:B:259:ARG:HG2	1:B:261:GLU:OE1	1.83	0.78
1:A:218:ARG:NH1	1:A:265:MET:HE3	1.98	0.78
1:B:281:VAL:HG13	1:B:308:LEU:CD2	2.14	0.77
1:A:436:LEU:HD22	1:A:439:MET:HE2	1.66	0.77
1:C:388:ARG:HG2	1:C:388:ARG:NH1	1.87	0.77
1:C:374:ASP:HA	1:C:442:ILE:HD12	1.66	0.76
1:B:95:ARG:HD3	1:C:185:SER:O	1.85	0.75
1:C:24:CYS:SG	1:C:65:THR:CG2	2.76	0.73
1:C:434:ARG:NH1	2:C:601:EMO:O3	2.22	0.73

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:281:VAL:HG12	1:B:281:VAL:O	1.91	0.71
1:C:388:ARG:NE	1:C:459:ALA:O	2.22	0.71
1:C:12:VAL:O	1:C:16:GLN:HG3	1.89	0.71
1:B:434:ARG:NH1	2:B:601:EMO:O3	2.23	0.70
1:B:294:VAL:HG22	1:B:317:PHE:HD2	1.56	0.70
1:B:259:ARG:HG3	1:B:260:PRO:HD2	1.74	0.70
1:B:321:ASP:OD2	1:B:325:VAL:CG2	2.39	0.69
1:B:281:VAL:HG13	1:B:308:LEU:HD23	1.71	0.69
1:C:388:ARG:HH11	1:C:388:ARG:CG	2.03	0.69
1:B:237:HIS:HD2	1:C:237:HIS:ND1	1.90	0.69
1:C:352:HIS:HE2	1:C:358:ASN:HA	1.57	0.69
1:C:373:HIS:CE1	1:C:438:MET:HE3	2.28	0.68
1:C:406:THR:HG22	1:C:408:ILE:H	1.59	0.68
1:C:342:LEU:HD12	1:C:343:LYS:H	1.58	0.68
1:B:231:LEU:HD11	1:B:259:ARG:HD3	1.77	0.67
1:C:471:SER:OG	1:C:473:VAL:HG12	1.94	0.67
1:B:388:ARG:HB3	1:B:461:LEU:HD21	1.76	0.67
1:C:218:ARG:NH1	1:C:265:MET:HE3	2.09	0.67
1:B:102:GLU:OE1	1:B:175:ARG:HD2	1.95	0.66
1:B:385:SER:HA	1:B:388:ARG:HG3	1.76	0.66
1:A:221:TRP:O	1:A:224:GLU:HG3	1.97	0.65
1:A:269:MET:HE2	3:A:602:SAH:SD	2.36	0.65
1:A:369:ARG:O	3:A:602:SAH:N	2.30	0.65
1:B:294:VAL:HG12	1:B:365:VAL:HB	1.79	0.64
1:A:13:GLN:O	1:A:17:THR:HG23	1.98	0.64
1:B:95:ARG:NH1	1:C:189:PRO:HG2	2.14	0.63
1:B:148:ARG:HD3	1:B:157:ASN:O	1.98	0.62
1:B:396:ARG:NE	1:B:477:GLU:OE2	2.28	0.62
1:C:269:MET:HE2	3:C:602:SAH:SD	2.39	0.62
1:A:12:VAL:O	1:A:16:GLN:HG3	2.00	0.61
1:C:13:GLN:O	1:C:17:THR:HG23	1.99	0.61
1:B:3:ARG:NH2	1:C:35:GLU:OE2	2.32	0.61
1:B:321:ASP:CG	1:B:322:ARG:H	2.09	0.61
1:A:436:LEU:HD22	1:A:439:MET:CE	2.31	0.61
1:C:320:GLN:HE22	1:C:358:ASN:ND2	1.99	0.61
1:C:396:ARG:NE	1:C:477:GLU:OE1	2.34	0.60
1:A:369:ARG:HH11	3:A:602:SAH:C	2.13	0.60
1:A:54:LEU:HD11	1:A:279:ALA:HA	1.82	0.60
1:B:382:ASN:HB3	1:B:386:ARG:NH2	2.16	0.60
1:A:377:ASP:OD2	1:A:447:ARG:NH1	2.35	0.60
1:B:223:GLU:OE1	1:B:322:ARG:NH1	2.35	0.60

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:353:SER:HA	3:B:602:SAH:N1	2.17	0.59
1:C:444:GLY:O	1:C:445:ILE:HG12	2.03	0.59
1:B:12:VAL:O	1:B:16:GLN:HG3	2.01	0.59
1:C:216:LYS:O	1:C:217:PRO:C	2.44	0.59
1:B:15:LEU:O	1:B:19:GLU:OE1	2.21	0.59
1:C:54:LEU:HD11	1:C:279:ALA:HA	1.83	0.58
1:C:3:ARG:NH2	1:C:79:GLU:OE1	2.22	0.58
1:C:363:ALA:HB3	1:C:366:TYR:CE2	2.38	0.58
1:C:269:MET:HE1	2:C:601:EMO:C2	2.33	0.58
1:A:269:MET:HE1	2:A:601:EMO:C2	2.33	0.58
1:A:369:ARG:HD3	1:A:370:TYR:CD2	2.39	0.58
1:C:228:PRO:HG3	1:C:251:PRO:HG3	1.85	0.58
1:A:190:LYS:NZ	1:A:210:ASP:OD2	2.37	0.58
1:B:135:SER:O	1:B:139:ARG:HG3	2.03	0.57
1:C:444:GLY:C	1:C:445:ILE:HG12	2.29	0.57
1:B:294:VAL:HG22	1:B:317:PHE:CE2	2.40	0.57
1:B:208:TRP:HB2	1:B:441:ALA:HA	1.85	0.57
1:B:57:HIS:CD2	1:B:470:ARG:HD3	2.40	0.56
1:C:402:GLN:HE21	1:C:434:ARG:HH21	1.53	0.56
1:B:382:ASN:HB3	1:B:386:ARG:HH21	1.69	0.56
1:B:293:LEU:HA	1:B:316:ARG:O	2.06	0.56
1:A:369:ARG:HD2	3:A:602:SAH:OXT	2.06	0.55
1:C:374:ASP:CA	1:C:442:ILE:HD12	2.36	0.55
1:B:138:LEU:HD23	1:B:141:LEU:HD12	1.88	0.55
1:B:220:GLU:HG2	1:B:322:ARG:NH2	2.21	0.55
1:C:381:VAL:HG23	1:C:459:ALA:HB2	1.87	0.55
1:B:96:ALA:HB1	1:B:137:ILE:HG23	1.87	0.55
1:B:180:GLU:OE1	1:B:218:ARG:NH1	2.40	0.55
1:B:297:VAL:HG13	1:B:368:LEU:HD13	1.87	0.55
1:B:399:ILE:HG13	1:B:476:LEU:HB2	1.89	0.55
1:C:234:SER:OG	1:C:259:ARG:NH1	2.27	0.55
1:A:301:VAL:HG22	4:A:737:HOH:O	2.07	0.54
1:B:281:VAL:O	1:B:281:VAL:CG1	2.55	0.54
1:B:372:LEU:HD11	1:B:384:LEU:HD21	1.89	0.54
1:B:377:ASP:O	1:B:381:VAL:HG23	2.07	0.54
1:C:59:LEU:O	1:C:63:GLN:HG3	2.07	0.54
1:B:269:MET:HE1	2:B:601:EMO:C2	2.36	0.54
1:B:70:ILE:HD12	1:C:70:ILE:HD12	1.90	0.53
1:C:66:ILE:O	1:C:70:ILE:HG12	2.08	0.53
1:B:444:GLY:C	1:B:445:ILE:HG13	2.32	0.53
1:A:188:LEU:HD21	1:A:439:MET:HE3	1.90	0.53

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:284:PHE:CD1	1:B:285:PRO:HD2	2.43	0.53
1:B:284:PHE:HD2	1:B:286:TRP:CE2	2.26	0.53
1:B:281:VAL:O	1:B:312:TYR:OH	2.21	0.53
1:B:208:TRP:CZ2	1:B:212:ILE:HG13	2.44	0.53
1:C:366:TYR:CD1	1:C:387:ILE:HG23	2.44	0.52
1:C:352:HIS:NE2	1:C:359:PRO:HD3	2.24	0.52
1:C:361:GLU:HG2	1:C:390:SER:OG	2.09	0.52
1:A:303:GLY:O	1:A:307:GLN:HG3	2.10	0.52
1:A:218:ARG:HH22	1:A:265:MET:HE3	1.75	0.52
1:A:321:ASP:OD2	3:A:602:SAH:H1'	2.10	0.52
1:B:102:GLU:OE1	1:B:175:ARG:CD	2.58	0.52
1:B:467:TRP:HB2	1:B:475:LEU:HB2	1.92	0.52
1:C:9:SER:O	1:C:13:GLN:HG2	2.09	0.52
1:B:214:THR:OG1	1:B:216:LYS:HG2	2.11	0.52
1:C:321:ASP:OD2	3:C:602:SAH:H1'	2.10	0.52
1:C:383:ILE:O	1:C:387:ILE:HD12	2.09	0.52
1:B:95:ARG:HD2	1:C:185:SER:OG	2.10	0.51
1:C:24:CYS:SG	1:C:65:THR:HG21	2.49	0.51
1:C:221:TRP:O	1:C:224:GLU:HG3	2.10	0.51
1:C:318:VAL:HA	1:C:348:GLN:O	2.11	0.51
1:B:32:TRP:CE2	1:C:6:LYS:HG3	2.46	0.51
1:B:265:MET:HE3	1:B:269:MET:SD	2.51	0.51
1:B:366:TYR:O	1:B:397:LEU:HD12	2.10	0.51
1:C:396:ARG:CZ	1:C:477:GLU:OE1	2.58	0.51
1:C:402:GLN:NE2	1:C:434:ARG:HE	2.09	0.51
1:C:401:GLU:C	1:C:473:VAL:HG23	2.35	0.51
1:C:135:SER:O	1:C:139:ARG:HG3	2.11	0.51
1:B:133:LYS:HE2	1:C:201:TYR:CE2	2.46	0.51
1:B:308:LEU:HD22	1:B:312:TYR:CE1	2.46	0.51
1:B:375:TRP:HB3	1:B:379:TYR:HB2	1.92	0.51
1:A:64:ARG:HG2	1:A:424:TYR:CD2	2.45	0.50
1:B:208:TRP:CZ2	1:B:218:ARG:HB2	2.46	0.50
1:C:396:ARG:NH2	1:C:477:GLU:OE1	2.44	0.50
1:A:291:ASN:HA	1:A:314:ASP:O	2.12	0.50
1:B:269:MET:HE2	3:B:602:SAH:SD	2.51	0.50
1:C:223:GLU:OE1	1:C:322:ARG:NH1	2.44	0.50
1:B:344:ASP:O	1:B:344:ASP:OD2	2.30	0.50
1:B:450:GLU:O	1:B:454:THR:HG23	2.11	0.50
1:A:375:TRP:HB3	1:A:379:TYR:HB2	1.94	0.50
1:B:224:GLU:OE1	1:B:259:ARG:NH2	2.45	0.49
1:C:245:ILE:HG23	1:C:246:LEU:HG	1.94	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:9:SER:O	1:A:13:GLN:HG3	2.12	0.49
1:B:350:MET:CE	1:B:359:PRO:HB2	2.35	0.49
1:B:140:TYR:CG	1:C:432:HIS:HB3	2.48	0.49
1:C:291:ASN:HA	1:C:314:ASP:O	2.12	0.49
1:B:237:HIS:CD2	1:C:237:HIS:HA	2.47	0.49
1:B:249:GLN:OE1	1:B:260:PRO:HD3	2.12	0.49
1:B:295:VAL:HG13	1:B:318:VAL:HG13	1.93	0.49
1:A:218:ARG:CZ	1:A:265:MET:HE3	2.42	0.48
1:C:218:ARG:HH22	1:C:265:MET:HE3	1.78	0.48
1:C:352:HIS:CD2	1:C:359:PRO:HD3	2.48	0.48
1:C:379:TYR:O	1:C:383:ILE:HG13	2.13	0.48
1:A:434:ARG:HD2	2:A:601:EMO:C3	2.42	0.48
1:A:208:TRP:HB2	1:A:441:ALA:HA	1.94	0.48
1:A:218:ARG:NH2	1:A:265:MET:HE3	2.29	0.48
1:C:232:LEU:HD11	1:C:245:ILE:HD13	1.96	0.48
1:B:270:VAL:HG22	1:B:303:GLY:HA3	1.96	0.48
1:C:280:HIS:NE2	1:C:473:VAL:HG13	2.28	0.48
1:A:173:TYR:O	1:A:177:THR:HG23	2.14	0.47
1:C:380:CYS:O	1:C:384:LEU:HD12	2.14	0.47
1:B:136:ARG:NH1	1:C:435:ASP:OD1	2.47	0.47
1:B:301:VAL:CG1	1:B:333:VAL:HG11	2.43	0.47
1:C:194:ASP:HB3	1:C:197:THR:OG1	2.13	0.47
1:B:95:ARG:HH12	1:C:189:PRO:HG2	1.77	0.47
1:C:269:MET:HE1	2:C:601:EMO:H2	1.96	0.47
1:C:373:HIS:N	1:C:401:GLU:OE2	2.46	0.47
1:A:124:SER:OG	1:A:129:ILE:O	2.30	0.47
1:A:382:ASN:O	1:A:386:ARG:HG2	2.15	0.47
1:B:59:LEU:O	1:B:63:GLN:HG3	2.13	0.47
1:B:286:TRP:CE2	1:B:308:LEU:HD11	2.49	0.47
1:B:432:HIS:HB3	1:C:140:TYR:CG	2.49	0.47
1:A:132:ARG:NH1	4:A:715:HOH:O	2.48	0.47
1:C:3:ARG:HH21	1:C:79:GLU:CD	2.18	0.47
1:B:16:GLN:O	1:B:20:ILE:HG13	2.15	0.47
1:B:291:ASN:HA	1:B:314:ASP:HB3	1.96	0.47
1:A:218:ARG:HH12	1:A:265:MET:CE	2.16	0.47
1:B:95:ARG:NH2	1:B:178:GLY:O	2.46	0.47
1:C:402:GLN:HE21	1:C:434:ARG:NH2	2.12	0.47
1:A:293:LEU:HD11	1:A:318:VAL:HG23	1.97	0.47
1:B:32:TRP:CD2	1:C:6:LYS:HG3	2.50	0.47
1:C:223:GLU:OE2	1:C:324:PRO:HG2	2.15	0.47
1:B:123:LEU:HA	1:B:123:LEU:HD12	1.79	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:297:VAL:O	1:C:368:LEU:HD12	2.15	0.46
1:B:95:ARG:NH1	1:C:189:PRO:CG	2.78	0.46
1:C:372:LEU:HD11	1:C:384:LEU:HD21	1.97	0.46
1:A:449:PRO:O	1:A:453:LYS:HG3	2.16	0.46
1:B:306:LEU:HD13	1:B:337:GLU:HG2	1.96	0.46
1:B:308:LEU:HD23	1:B:308:LEU:HA	1.56	0.46
1:B:223:GLU:CD	1:B:322:ARG:NH1	2.74	0.46
1:B:438:MET:HE1	2:B:601:EMO:C19	2.46	0.46
1:A:374:ASP:HA	1:A:442:ILE:HD12	1.98	0.46
1:A:379:TYR:O	1:A:383:ILE:HG13	2.16	0.46
1:B:85:LEU:HD22	1:C:173:TYR:CD2	2.51	0.46
1:B:103:ARG:HG3	1:B:129:ILE:HD11	1.97	0.46
1:C:321:ASP:OD1	1:C:322:ARG:N	2.34	0.46
1:B:66:ILE:O	1:B:70:ILE:HG12	2.16	0.46
1:B:201:TYR:OH	1:C:130:GLU:OE1	2.27	0.46
1:C:218:ARG:HH22	1:C:265:MET:CE	2.29	0.46
1:C:293:LEU:HD23	1:C:363:ALA:HB2	1.96	0.45
1:C:173:TYR:O	1:C:177:THR:HG23	2.16	0.45
1:C:339:PRO:O	1:C:342:LEU:CD1	2.64	0.45
1:B:318:VAL:HA	1:B:348:GLN:O	2.17	0.45
1:A:66:ILE:O	1:A:70:ILE:HG12	2.17	0.45
1:C:38:THR:O	1:C:42:ARG:HG2	2.17	0.45
1:C:449:PRO:O	1:C:453:LYS:HG3	2.17	0.45
1:A:54:LEU:HD23	1:A:54:LEU:HA	1.78	0.44
1:B:400:CYS:O	1:B:401:GLU:HG2	2.17	0.44
1:C:388:ARG:NH1	1:C:388:ARG:CG	2.65	0.44
1:C:295:VAL:HG22	1:C:318:VAL:HG22	1.99	0.44
1:B:324:PRO:HA	1:B:327:GLN:HB3	2.00	0.44
1:C:403:VAL:HG21	1:C:476:LEU:HD21	2.00	0.44
1:B:369:ARG:HG2	3:B:602:SAH:OXT	2.18	0.44
1:C:399:ILE:HB	1:C:476:LEU:HB2	2.00	0.44
1:A:369:ARG:HD3	1:A:370:TYR:CE2	2.52	0.44
1:B:368:LEU:O	1:B:399:ILE:HA	2.17	0.44
1:C:372:LEU:HD23	1:C:372:LEU:HA	1.85	0.44
1:C:148:ARG:HG3	1:C:158:ASN:HB3	1.98	0.44
1:A:176:LEU:HD11	2:A:601:EMO:C8	2.48	0.44
1:B:2:GLU:HB3	1:C:52:LEU:HD22	1.99	0.44
1:B:173:TYR:CD1	1:C:85:LEU:HD22	2.53	0.44
1:B:222:ILE:HG13	1:B:223:GLU:HG3	2.00	0.44
1:B:284:PHE:CZ	1:B:398:LEU:HD11	2.53	0.44
1:C:95:ARG:HD2	1:C:95:ARG:HA	1.48	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:194:ASP:OD1	1:C:196:SER:OG	2.27	0.44
1:C:208:TRP:CE2	1:C:218:ARG:HG3	2.52	0.44
1:B:3:ARG:NH1	1:C:35:GLU:OE2	2.48	0.43
1:C:336:ASN:O	1:C:336:ASN:ND2	2.50	0.43
1:A:353:SER:HA	3:A:602:SAH:N1	2.33	0.43
1:C:39:PHE:CE1	1:C:51:GLU:HB2	2.53	0.43
1:A:366:TYR:O	1:A:397:LEU:HD12	2.18	0.43
1:B:261:GLU:OE1	1:B:261:GLU:N	2.44	0.43
1:B:329:ALA:HA	1:B:333:VAL:HB	1.99	0.43
1:B:388:ARG:HA	1:B:391:MET:SD	2.58	0.43
1:A:434:ARG:NH1	2:A:601:EMO:O3	2.40	0.43
1:B:321:ASP:OD1	3:B:602:SAH:N3	2.51	0.43
1:C:269:MET:HE3	1:C:269:MET:HB3	1.83	0.43
1:B:95:ARG:HH11	1:C:189:PRO:CD	2.31	0.43
1:C:352:HIS:CD2	1:C:359:PRO:CD	3.01	0.43
1:C:353:SER:HA	3:C:602:SAH:N1	2.34	0.43
1:C:400:CYS:O	1:C:401:GLU:HG2	2.18	0.43
1:C:259:ARG:HB3	1:C:261:GLU:OE1	2.19	0.43
1:B:64:ARG:HG2	1:B:424:TYR:CD2	2.54	0.43
1:C:386:ARG:HA	1:C:386:ARG:HD3	1.48	0.43
1:B:9:SER:O	1:B:13:GLN:HG3	2.18	0.43
1:B:466:ILE:HG12	1:B:476:LEU:HD23	2.01	0.42
1:A:218:ARG:HD2	2:A:601:EMO:H16	2.01	0.42
1:C:73:LEU:O	1:C:77:VAL:HG22	2.19	0.42
1:A:284:PHE:CD1	1:A:285:PRO:HD2	2.55	0.42
1:B:321:ASP:CG	1:B:322:ARG:N	2.77	0.42
1:A:101:VAL:HG22	1:A:164:LEU:HD13	2.01	0.42
1:B:176:LEU:HD11	2:B:601:EMO:C8	2.50	0.42
1:B:234:SER:HB2	1:B:259:ARG:HH12	1.84	0.42
1:A:480:ARG:HE	1:A:480:ARG:HB3	1.54	0.42
1:B:148:ARG:HG2	1:B:158:ASN:HB3	2.00	0.42
1:B:237:HIS:CD2	1:C:237:HIS:ND1	2.80	0.42
1:C:191:THR:HG23	1:C:197:THR:HB	2.01	0.42
1:A:241:ILE:HG13	1:A:260:PRO:HB2	2.02	0.42
1:C:369:ARG:HH21	3:C:602:SAH:C	2.32	0.41
1:B:193:LEU:HB3	1:C:246:LEU:HD11	2.00	0.41
1:B:373:HIS:CD2	1:B:374:ASP:OD2	2.73	0.41
1:C:73:LEU:C	1:C:73:LEU:HD23	2.45	0.41
1:A:176:LEU:HD13	1:A:265:MET:CE	2.50	0.41
1:A:306:LEU:O	1:A:310:LYS:HG3	2.20	0.41
1:B:103:ARG:HD3	1:B:127:THR:O	2.20	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:388:ARG:C	1:C:390:SER:H	2.29	0.41
1:B:73:LEU:CD2	1:C:70:ILE:HD11	2.50	0.41
1:C:367:TYR:CE1	1:C:369:ARG:HB2	2.54	0.41
1:B:456:LEU:HD23	1:B:456:LEU:HA	1.89	0.41
1:B:430:PHE:HB3	1:B:472:GLN:HE22	1.86	0.41
1:C:297:VAL:HB	1:C:368:LEU:HD13	2.02	0.41
1:C:352:HIS:ND1	1:C:353:SER:N	2.68	0.41
1:A:176:LEU:HD13	1:A:265:MET:HE2	2.02	0.41
1:B:374:ASP:HA	1:B:442:ILE:HD12	2.02	0.41
1:A:308:LEU:HD22	1:A:312:TYR:CD2	2.56	0.41
1:A:374:ASP:CA	1:A:442:ILE:HD12	2.51	0.41
1:A:380:CYS:SG	1:A:447:ARG:NH2	2.94	0.41
1:B:117:GLY:HA2	1:B:156:ALA:HB2	2.02	0.41
1:B:149:GLN:HG2	1:C:408:ILE:HD13	2.03	0.41
1:B:335:PRO:HB2	1:B:336:ASN:OD1	2.21	0.41
1:C:293:LEU:HD11	1:C:318:VAL:HG13	2.03	0.41
1:B:245:ILE:HG21	1:C:194:ASP:HA	2.02	0.41
1:B:388:ARG:CB	1:B:461:LEU:HD21	2.49	0.41
1:C:339:PRO:O	1:C:342:LEU:HG	2.20	0.41
1:C:369:ARG:HG3	1:C:400:CYS:SG	2.61	0.41
1:B:103:ARG:HD2	1:C:193:LEU:CD2	2.51	0.40
1:B:301:VAL:HG11	1:B:333:VAL:HG11	2.02	0.40
1:C:64:ARG:HG2	1:C:424:TYR:CD1	2.57	0.40
1:A:291:ASN:OD1	1:A:291:ASN:N	2.53	0.40
1:B:104:ARG:NH1	1:B:168:GLU:OE2	2.47	0.40
1:B:203:VAL:HG13	1:B:204:THR:HG23	2.03	0.40
1:A:414:THR:HG23	1:A:468:GLU:OE1	2.21	0.40
1:A:377:ASP:O	1:A:381:VAL:HG23	2.21	0.40
1:A:322:ARG:O	1:A:323:GLY:C	2.62	0.40
1:C:130:GLU:OE1	1:C:133:LYS:HG3	2.21	0.40
1:C:135:SER:OG	1:C:139:ARG:NH1	2.54	0.40
1:C:293:LEU:HD23	1:C:363:ALA:CB	2.51	0.40

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 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	470/506 (93%)	452 (96%)	18 (4%)	0	100	100
1	B	467/506 (92%)	446 (96%)	21 (4%)	0	100	100
1	C	468/506 (92%)	449 (96%)	19 (4%)	0	100	100
All	All	1405/1518 (93%)	1347 (96%)	58 (4%)	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 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	398/424 (94%)	396 (100%)	2 (0%)	81	93
1	B	383/424 (90%)	379 (99%)	4 (1%)	68	88
1	C	390/424 (92%)	381 (98%)	9 (2%)	44	78
All	All	1171/1272 (92%)	1156 (99%)	15 (1%)	61	86

All (15) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	369	ARG
1	A	436	LEU
1	B	54	LEU
1	B	95	ARG
1	B	241	ILE
1	B	369	ARG
1	C	65	THR
1	C	95	ARG
1	C	310	LYS
1	C	342	LEU
1	C	386	ARG

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	C	388	ARG
1	C	442	ILE
1	C	443	ASN
1	C	445	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	63	GLN
1	A	249	GLN
1	A	336	ASN
1	A	394	HIS
1	B	167	ASN
1	B	237	HIS
1	B	280	HIS
1	B	328	GLN
1	B	402	GLN
1	B	432	HIS
1	C	57	HIS
1	C	63	GLN
1	C	320	GLN
1	C	336	ASN
1	C	402	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

6 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	SAH	C	602	-	27,28,28	1.28	2 (7%)	36,40,40	0.98	1 (2%)
2	EMO	A	601	-	22,22,22	1.82	8 (36%)	34,34,34	0.93	1 (2%)
3	SAH	A	602	-	27,28,28	1.28	2 (7%)	36,40,40	0.99	1 (2%)
2	EMO	B	601	-	22,22,22	1.81	8 (36%)	34,34,34	0.92	1 (2%)
3	SAH	B	602	-	27,28,28	1.28	2 (7%)	36,40,40	0.98	1 (2%)
2	EMO	C	601	-	22,22,22	1.81	8 (36%)	34,34,34	0.92	1 (2%)

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	SAH	C	602	-	-	4/15/31/31	0/3/3/3
2	EMO	A	601	-	-	-	0/3/3/3
3	SAH	A	602	-	-	2/15/31/31	0/3/3/3
2	EMO	B	601	-	-	-	0/3/3/3
3	SAH	B	602	-	-	3/15/31/31	0/3/3/3
2	EMO	C	601	-	-	-	0/3/3/3

All (30) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	601	EMO	C7-C6	3.44	1.55	1.48
2	A	601	EMO	C5-C6	3.43	1.55	1.48
2	C	601	EMO	C5-C6	3.43	1.55	1.48
2	B	601	EMO	C5-C6	3.42	1.55	1.48
2	B	601	EMO	C7-C6	3.41	1.55	1.48
2	C	601	EMO	C7-C6	3.41	1.55	1.48
2	A	601	EMO	C18-C19	3.13	1.55	1.47
2	C	601	EMO	C18-C19	3.12	1.55	1.47
2	A	601	EMO	C20-C19	3.10	1.55	1.47
2	B	601	EMO	C18-C19	3.09	1.55	1.47

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	601	EMO	C20-C19	3.05	1.55	1.47
2	B	601	EMO	C20-C19	3.03	1.54	1.47
3	C	602	SAH	C8-N9	3.00	1.42	1.37
3	B	602	SAH	C8-N9	2.99	1.42	1.37
3	A	602	SAH	C8-N9	2.97	1.42	1.37
2	A	601	EMO	O6-C6	-2.24	1.18	1.22
2	C	601	EMO	O6-C6	-2.22	1.18	1.22
2	B	601	EMO	O6-C6	-2.21	1.18	1.22
2	A	601	EMO	O19-C19	-2.17	1.18	1.22
2	C	601	EMO	O19-C19	-2.17	1.18	1.22
2	B	601	EMO	O19-C19	-2.14	1.19	1.22
3	A	602	SAH	C5-C4	2.10	1.42	1.39
2	C	601	EMO	O17-C17	2.08	1.40	1.36
3	B	602	SAH	C5-C4	2.07	1.42	1.39
2	B	601	EMO	O1-C1	2.07	1.40	1.36
2	A	601	EMO	O1-C1	2.05	1.40	1.36
2	C	601	EMO	O1-C1	2.05	1.40	1.36
2	A	601	EMO	O17-C17	2.05	1.40	1.36
3	C	602	SAH	C5-C4	2.04	1.42	1.39
2	B	601	EMO	O17-C17	2.04	1.40	1.36

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	601	EMO	C10-C9-C16	-2.23	117.91	120.92
2	C	601	EMO	C10-C9-C16	-2.23	117.91	120.92
2	B	601	EMO	C10-C9-C16	-2.21	117.92	120.92
3	A	602	SAH	C5'-C4'-C3'	-2.08	109.85	115.06
3	B	602	SAH	C5'-C4'-C3'	-2.06	109.90	115.06
3	C	602	SAH	C5'-C4'-C3'	-2.06	109.91	115.06

There are no chirality outliers.

All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	602	SAH	N-CA-CB-CG
3	A	602	SAH	C-CA-CB-CG
3	B	602	SAH	N-CA-CB-CG
3	B	602	SAH	C-CA-CB-CG
3	C	602	SAH	C-CA-CB-CG
3	C	602	SAH	N-CA-CB-CG
3	C	602	SAH	OXT-C-CA-N

Continued on next page...

Continued from previous page...

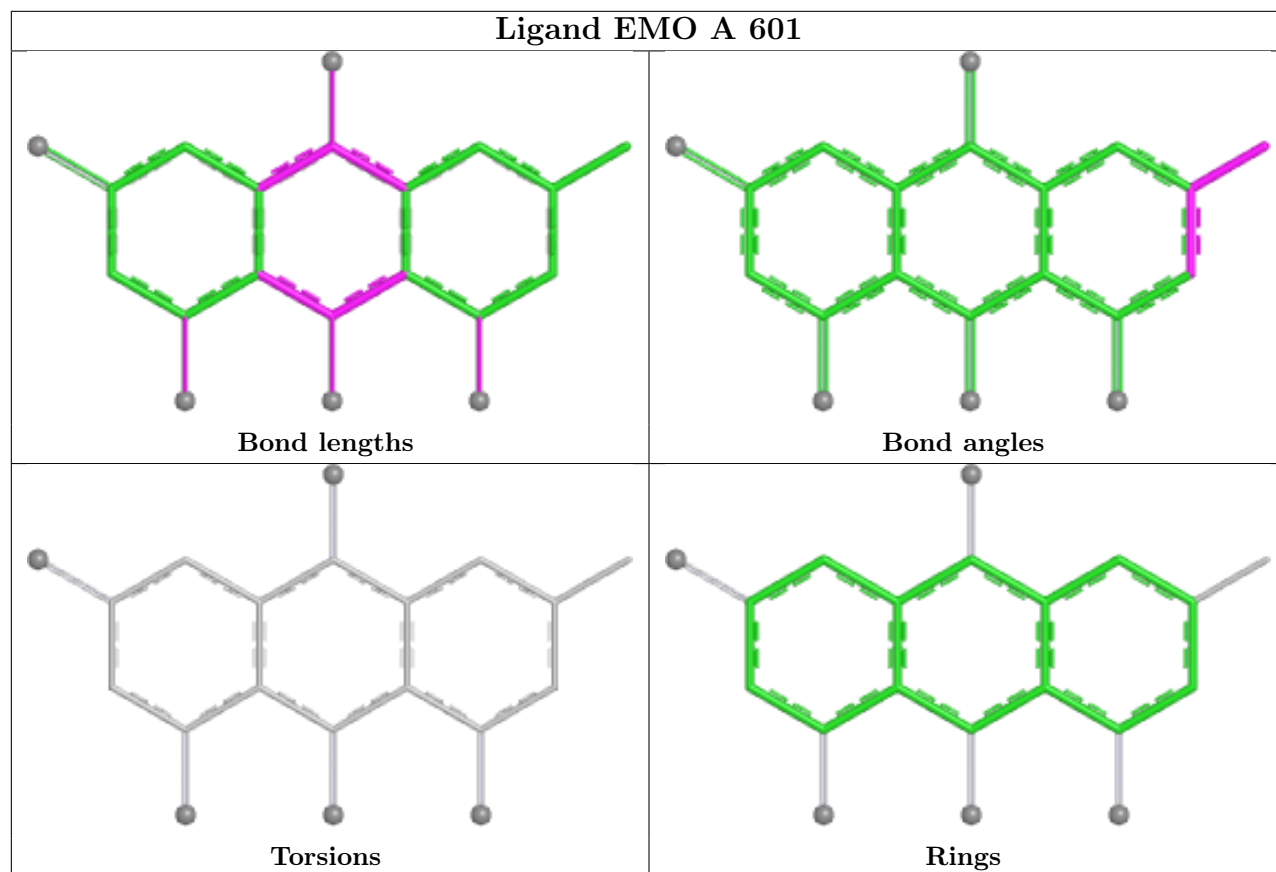
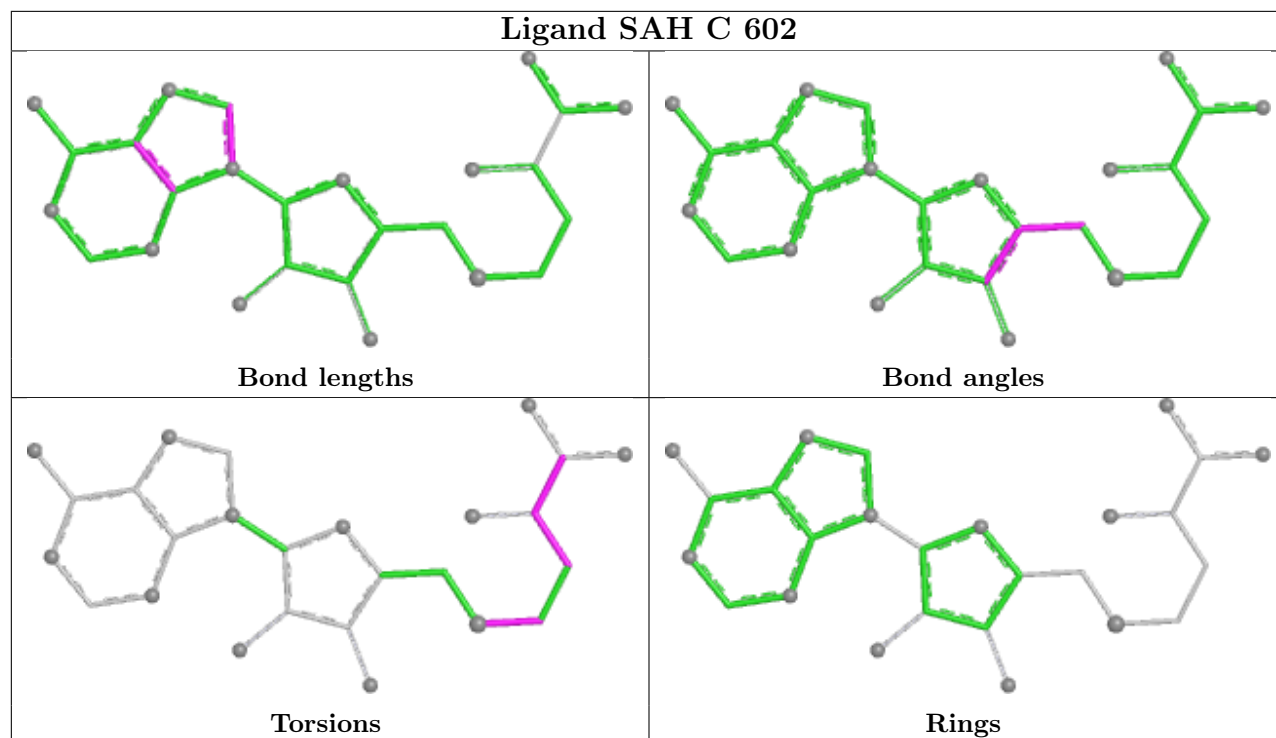
Mol	Chain	Res	Type	Atoms
3	B	602	SAH	CB-CG-SD-C5'
3	C	602	SAH	CB-CG-SD-C5'

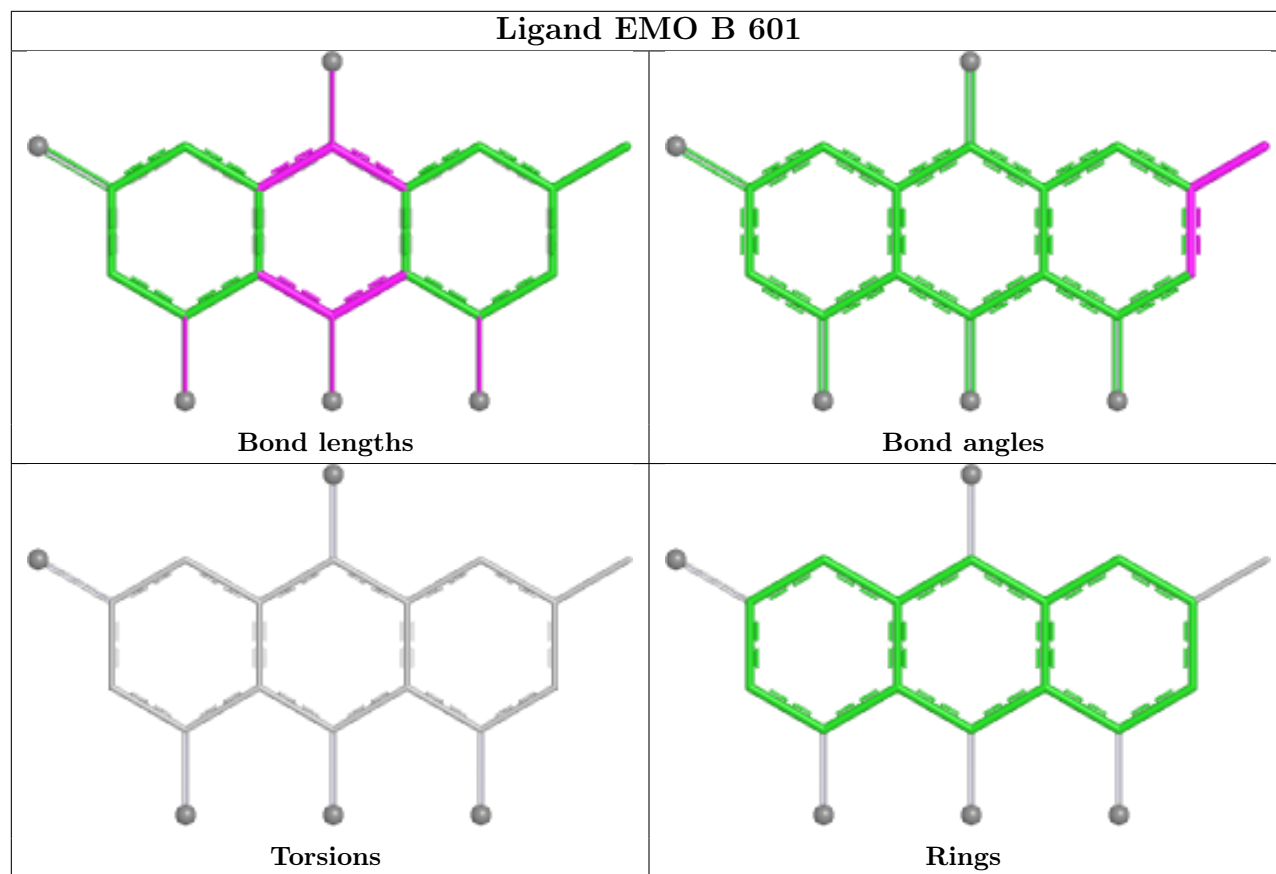
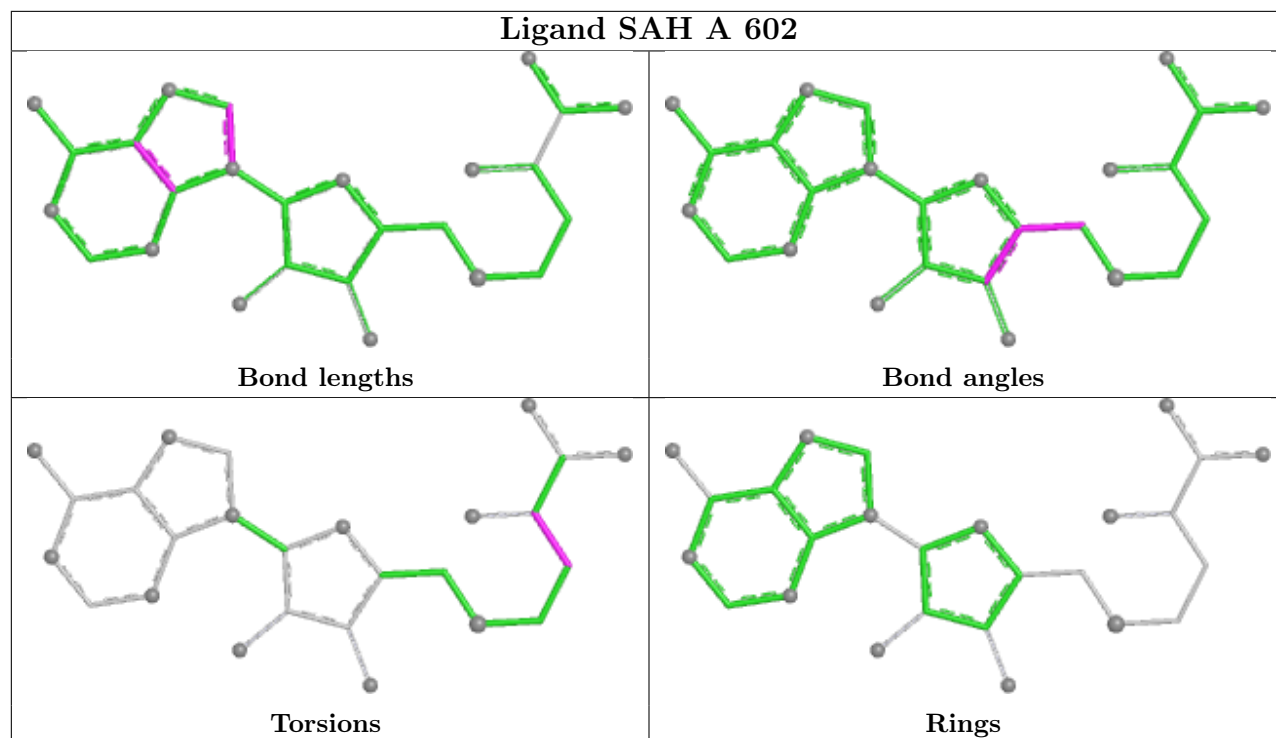
There are no ring outliers.

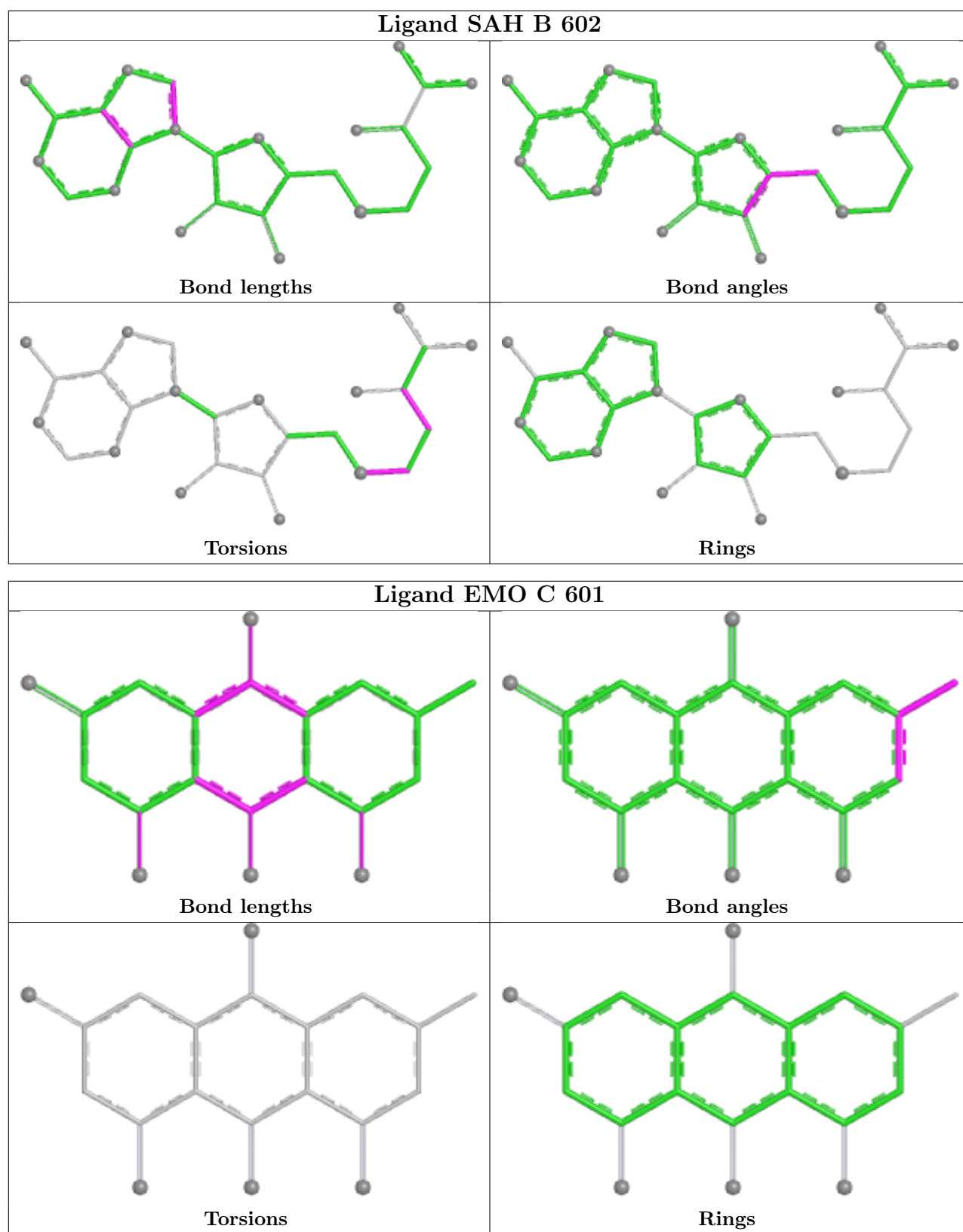
6 monomers are involved in 27 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	C	602	SAH	4	0
2	A	601	EMO	5	0
3	A	602	SAH	6	0
2	B	601	EMO	4	0
3	B	602	SAH	5	0
2	C	601	EMO	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.







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 [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	476/506 (94%)	-0.82	3 (0%) 85 80	23, 34, 62, 110	0
1	B	473/506 (93%)	0.03	10 (2%) 63 54	38, 74, 122, 159	0
1	C	474/506 (93%)	-0.12	4 (0%) 82 75	36, 67, 115, 138	0
All	All	1423/1518 (93%)	-0.30	17 (1%) 76 68	23, 56, 115, 159	0

All (17) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	43	ALA	3.8
1	B	394	HIS	3.6
1	B	227	GLU	3.2
1	C	115	GLU	3.1
1	B	345	GLN	2.9
1	C	393	PRO	2.7
1	B	385	SER	2.5
1	C	443	ASN	2.5
1	A	115	GLU	2.5
1	B	253	GLU	2.5
1	C	344	ASP	2.3
1	A	48	ALA	2.2
1	B	245	ILE	2.2
1	B	480	ARG	2.2
1	B	387	ILE	2.1
1	B	232	LEU	2.1
1	B	481	ALA	2.1

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

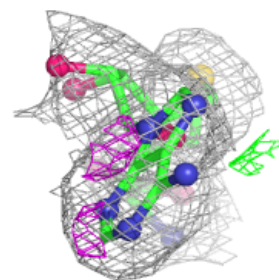
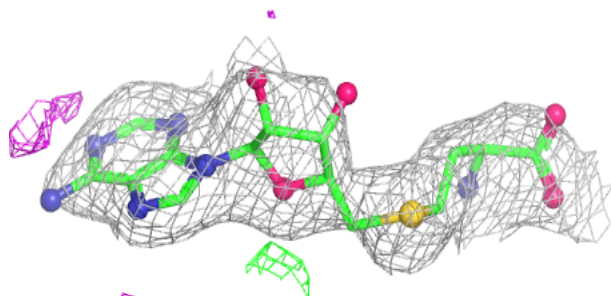
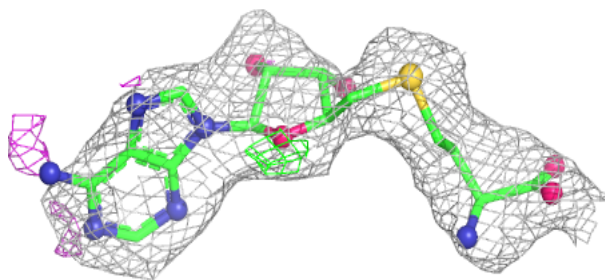
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists 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	SAH	B	602	26/26	0.85	0.13	77,85,93,95	0
3	SAH	C	602	26/26	0.89	0.11	53,61,69,72	0
3	SAH	A	602	26/26	0.94	0.09	29,34,40,41	0
2	EMO	C	601	20/20	0.95	0.07	39,47,49,50	0
2	EMO	B	601	20/20	0.95	0.08	54,58,63,64	0
2	EMO	A	601	20/20	0.97	0.07	17,29,33,39	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.

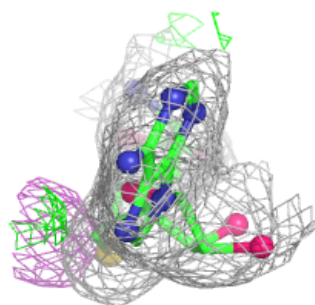
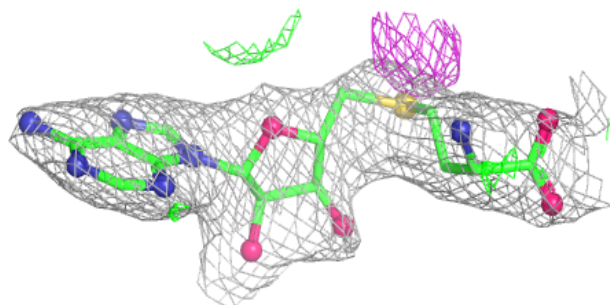
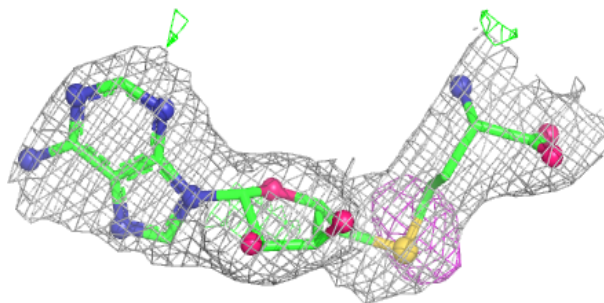
Electron density around SAH B 602:

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

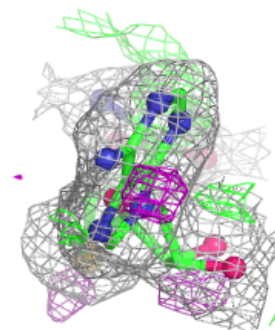
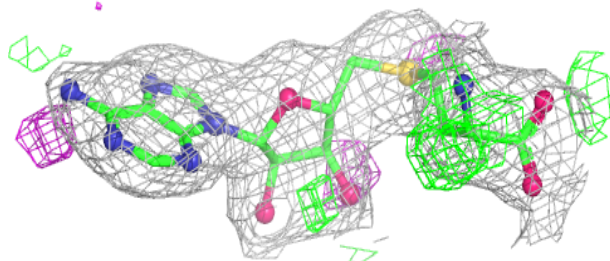
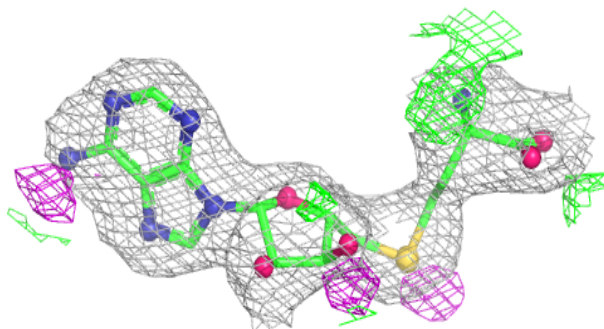


Electron density around SAH C 602:

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

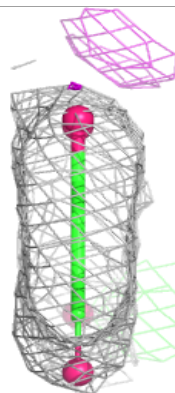
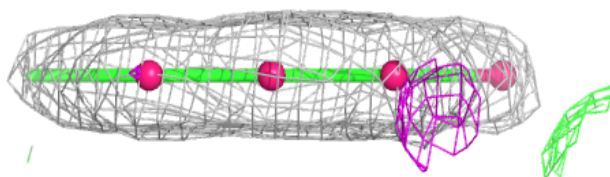
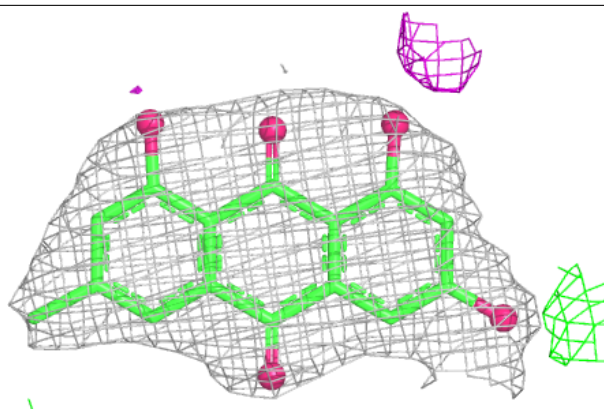
**Electron density around SAH A 602:**

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

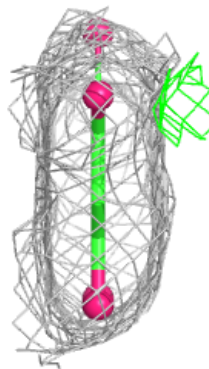
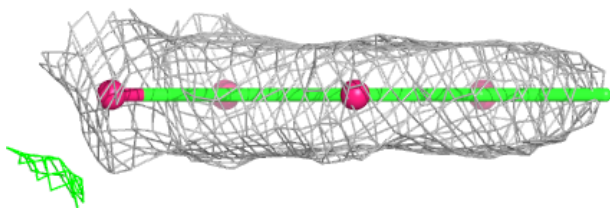
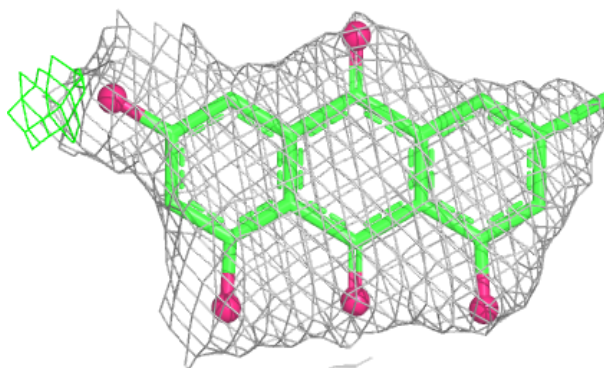


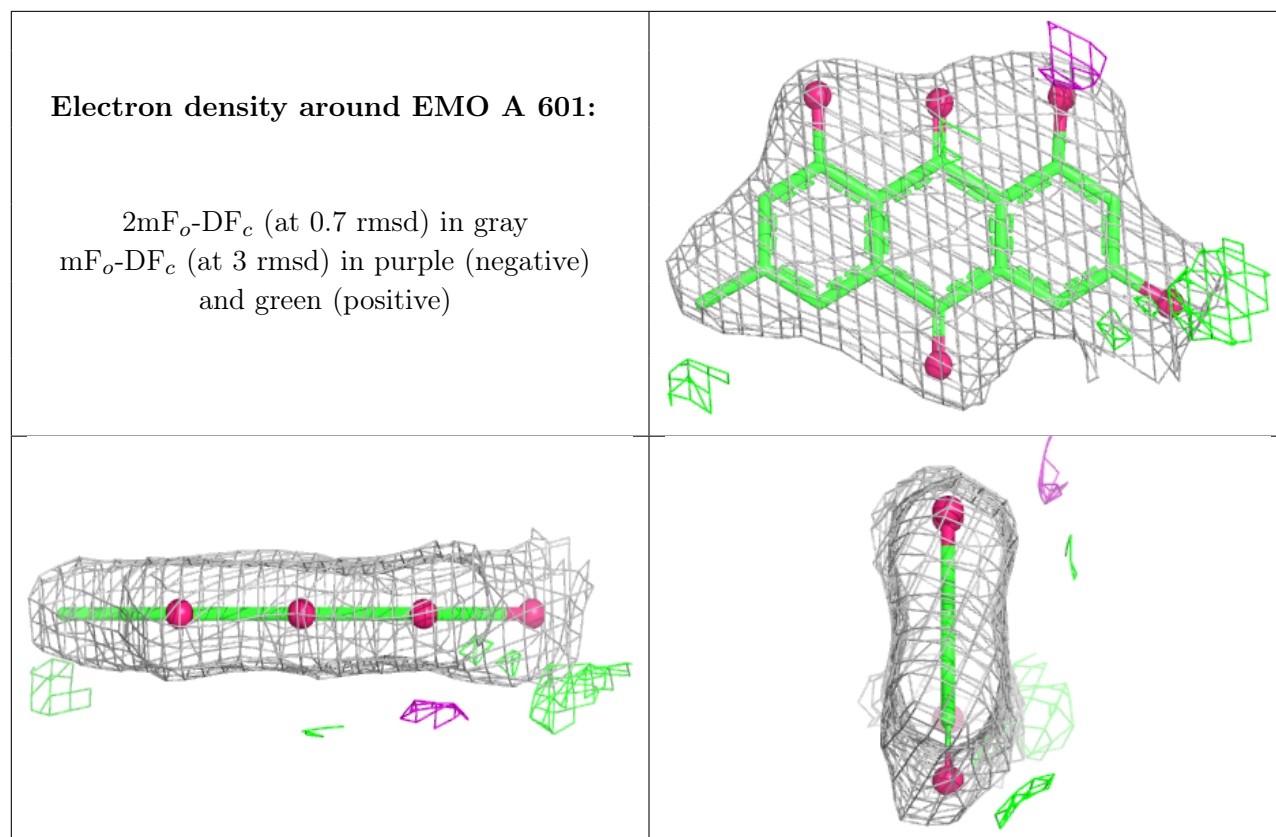
Electron density around EMO C 601:

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

**Electron density around EMO B 601:**

$2mF_o - DF_c$ (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.