



Full wwPDB X-ray Structure Validation Report ⓘ

Jun 25, 2024 – 01:43 pm BST

PDB ID : 9FDD
Title : The crystal structure of full length tetramer CysB from *Klebsiella aerogenes* in complex with N-acetylserine
Authors : Verschueren, K.H.G.; Dodson, E.J.; Wilkinson, A.J.
Deposited on : 2024-05-16
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 : 4.02b-467
Mogul : 1.8.4, CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.37.1
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.37.1

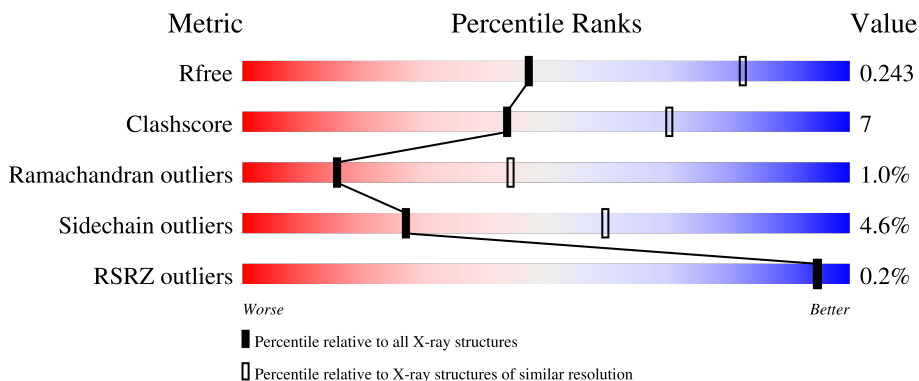
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 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.



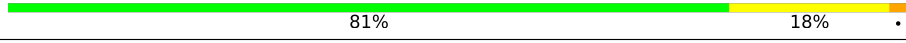


Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

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	324	84% 15% .
1	B	324	76% 22% .
1	C	324	83% 17%
1	D	324	% 80% 18% .
1	E	324	82% 17% .

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Mol	Chain	Length	Quality of chain
1	F	324	 81% 18% .
1	G	324	 84% 15% .
1	H	324	 % 77% 19% .

2 Entry composition

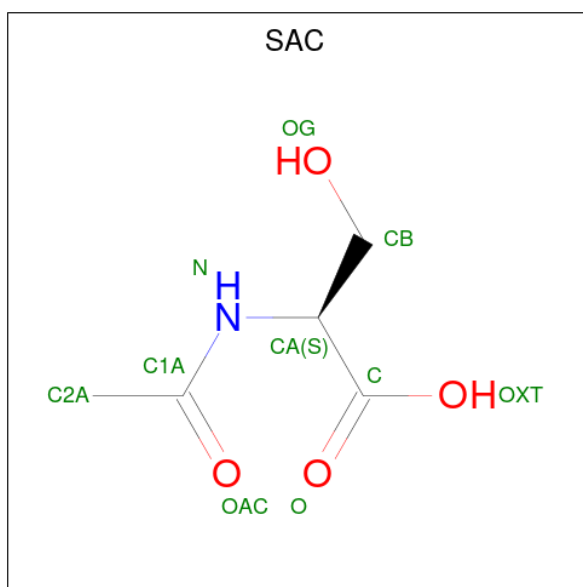
There are 3 unique types of molecules in this entry. The entry contains 41037 atoms, of which 20612 are hydrogens and 0 are deuteriums.

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 HTH-type transcriptional regulator CysB.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
1	A	324	5118	1619	2573	442	476	8	82	2	0
1	B	324	5100	1614	2564	440	474	8	82	0	0
1	C	324	5118	1619	2573	442	476	8	82	2	0
1	D	324	5100	1614	2564	440	474	8	82	0	0
1	E	324	5118	1619	2573	442	476	8	82	2	0
1	F	324	5100	1614	2564	440	474	8	82	0	0
1	G	324	5118	1619	2573	442	476	8	82	2	0
1	H	324	5100	1614	2564	440	474	8	82	0	0

- Molecule 2 is N-ACETYL-SERINE (three-letter code: SAC) (formula: C₅H₉NO₄) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
			Total	C	H	N			O
2	A	1	Total 18	C 5	H 8	N 1	O 4	4	0
2	B	1	Total 18	C 5	H 8	N 1	O 4	4	0
2	C	1	Total 18	C 5	H 8	N 1	O 4	4	0
2	D	1	Total 18	C 5	H 8	N 1	O 4	4	0
2	E	1	Total 18	C 5	H 8	N 1	O 4	4	0
2	F	1	Total 18	C 5	H 8	N 1	O 4	4	0
2	G	1	Total 18	C 5	H 8	N 1	O 4	4	0
2	H	1	Total 18	C 5	H 8	N 1	O 4	4	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	5	Total 5 5	0	0
3	B	2	Total 2 2	0	0
3	C	4	Total 4 4	0	0
3	D	1	Total 1 1	0	0

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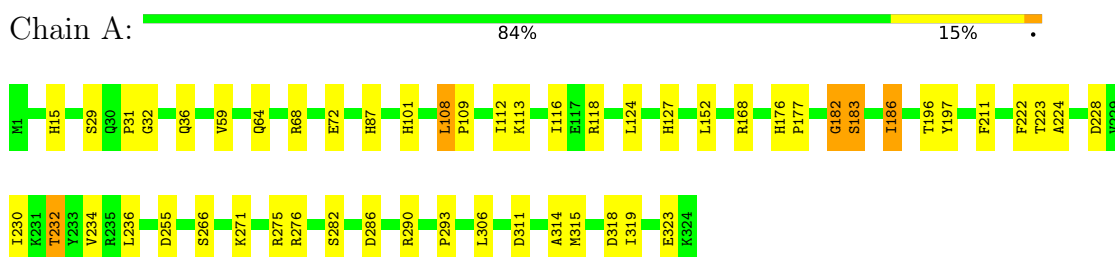
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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	E	3	Total O 3 3	0	0
3	F	2	Total O 2 2	0	0
3	G	3	Total O 3 3	0	0
3	H	1	Total O 1 1	0	0

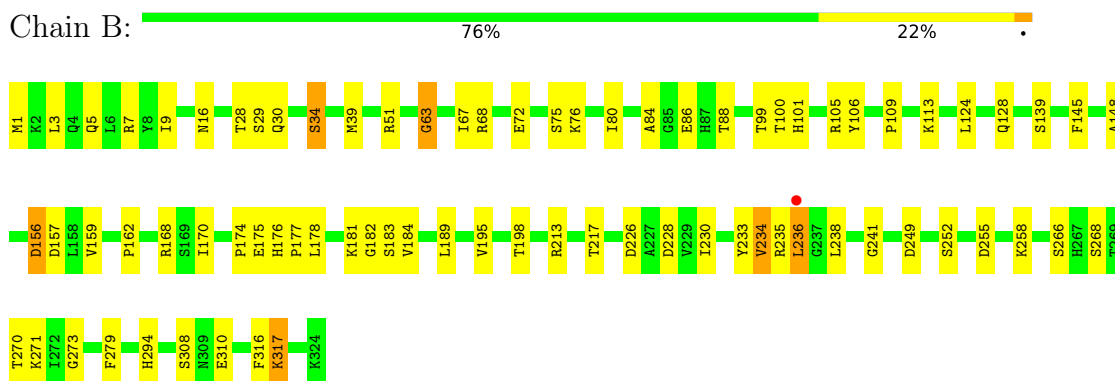
3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and 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.

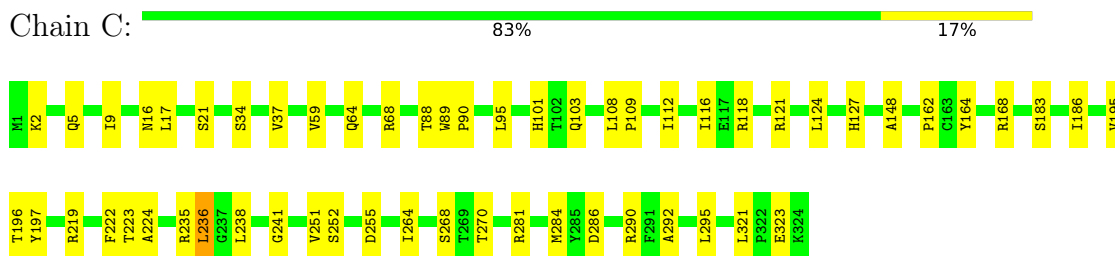
- Molecule 1: HTH-type transcriptional regulator CysB



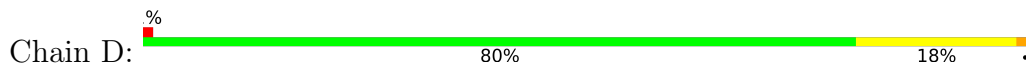
- Molecule 1: HTH-type transcriptional regulator CysB

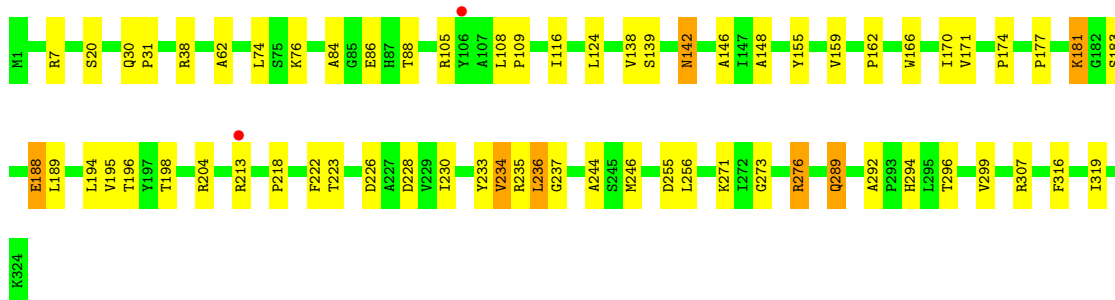


- Molecule 1: HTH-type transcriptional regulator CysB



- Molecule 1: HTH-type transcriptional regulator CysB





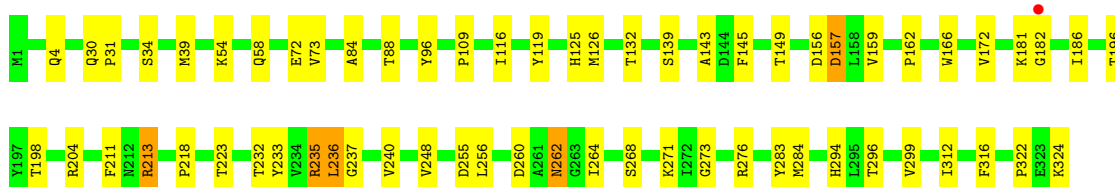
- Molecule 1: HTH-type transcriptional regulator CysB

Chain E: .



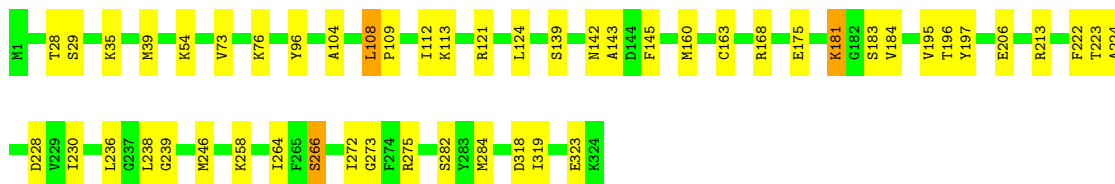
- Molecule 1: HTH-type transcriptional regulator CysB

Chain F: .



- Molecule 1: HTH-type transcriptional regulator CysB

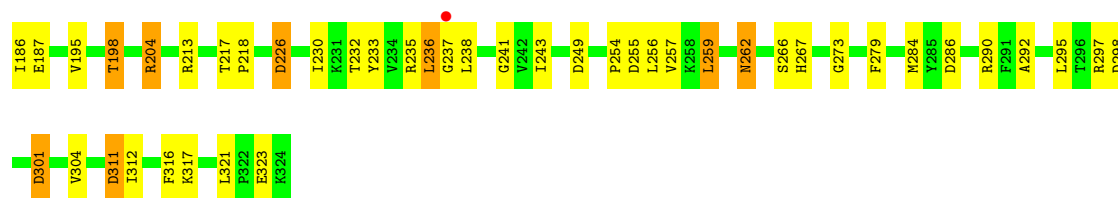
Chain G: .



- Molecule 1: HTH-type transcriptional regulator CysB

Chain H: .





4 Data and refinement statistics i

Property	Value	Source
Space group	H 3	Depositor
Cell constants a, b, c, α , β , γ	187.44Å 187.44Å 224.66Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	41.46 – 2.80 41.43 – 2.80	Depositor EDS
% Data completeness (in resolution range)	99.9 (41.46-2.80) 99.9 (41.43-2.80)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.80 (at 2.81Å)	Xtrriage
Refinement program	REFMAC 5.8.0425, REFMAC 5.8.0425	Depositor
R, R_{free}	0.180 , 0.246 0.186 , 0.243	Depositor DCC
R_{free} test set	3626 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å ²)	41.7	Xtrriage
Anisotropy	0.329	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.37 , 8.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.45$, $\langle L^2 \rangle = 0.27$	Xtrriage
Estimated twinning fraction	0.030 for $-2/3^*h-1/3^*k+2/3^*l,-1/3^*h-2/3^*k-2/3^*l,2/3^*h-2/3^*k+1/3^*l$ 0.019 for $-h,1/3^*h-1/3^*k+2/3^*l,2/3^*h+4/3^*k+1/3^*l$ 0.023 for $-1/3^*h+1/3^*k-2/3^*l,-k,-4/3^*h-2/3^*k+1/3^*l$ 0.019 for $-h,2/3^*h+1/3^*k-2/3^*l,-2/3^*h-4/3^*k-1/3^*l$ 0.020 for $1/3^*h+2/3^*k+2/3^*l,-k,4/3^*h+2/3^*k-1/3^*l$ 0.033 for $-1/3^*h-2/3^*k-2/3^*l,-2/3^*h-1/3^*k+2/3^*l,-2/3^*h+2/3^*k-1/3^*l$ 0.164 for h,-h-k,-l	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	41037	wwPDB-VP
Average B, all atoms (Å ²)	46.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 37.61 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to $4.1784e-04$. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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: SAC

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	0.44	0/2612	0.90	2/3548 (0.1%)
1	B	0.41	0/2590	0.96	9/3517 (0.3%)
1	C	0.43	0/2612	0.90	2/3548 (0.1%)
1	D	0.41	0/2590	0.93	2/3517 (0.1%)
1	E	0.43	0/2612	0.90	3/3548 (0.1%)
1	F	0.41	0/2590	0.89	2/3517 (0.1%)
1	G	0.44	0/2612	0.92	4/3548 (0.1%)
1	H	0.43	0/2590	0.95	7/3517 (0.2%)
All	All	0.43	0/20808	0.92	31/28260 (0.1%)

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	A	0	2
1	D	0	1
1	E	0	1
1	F	0	2
1	G	0	2
1	H	0	1
All	All	0	9

There are no bond length outliers.

All (31) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	145	PHE	CB-CA-C	-6.61	97.17	110.40
1	C	68	ARG	NE-CZ-NH2	-6.59	117.00	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	H	198	THR	CA-CB-OG1	-6.43	95.50	109.00
1	G	246	MET	CG-SD-CE	-6.11	90.43	100.20
1	H	65	GLU	CB-CA-C	6.08	122.56	110.40
1	B	7	ARG	N-CA-CB	5.93	121.28	110.60
1	B	7	ARG	CB-CA-C	-5.91	98.58	110.40
1	C	68	ARG	NE-CZ-NH1	5.87	123.23	120.30
1	G	258	LYS	N-CA-CB	-5.86	100.05	110.60
1	E	7	ARG	NE-CZ-NH2	5.80	123.20	120.30
1	E	105	ARG	NE-CZ-NH1	5.78	123.19	120.30
1	B	258	LYS	N-CA-CB	-5.67	100.39	110.60
1	A	315	MET	CG-SD-CE	5.55	109.09	100.20
1	B	72	GLU	CG-CD-OE2	-5.50	107.30	118.30
1	H	235	ARG	N-CA-CB	-5.46	100.77	110.60
1	H	145	PHE	CB-CA-C	-5.46	99.49	110.40
1	G	168	ARG	NE-CZ-NH2	-5.45	117.58	120.30
1	E	105	ARG	CD-NE-CZ	5.32	131.04	123.60
1	B	51	ARG	NE-CZ-NH1	5.30	122.95	120.30
1	H	213	ARG	N-CA-CB	5.25	120.05	110.60
1	D	276	ARG	N-CA-CB	-5.24	101.17	110.60
1	G	258	LYS	CB-CA-C	5.22	120.83	110.40
1	A	118	ARG	NE-CZ-NH1	5.18	122.89	120.30
1	B	39	MET	CG-SD-CE	5.17	108.47	100.20
1	H	105	ARG	NE-CZ-NH2	5.16	122.88	120.30
1	H	232	THR	CA-CB-OG1	-5.12	98.24	109.00
1	F	39	MET	CG-SD-CE	5.10	108.36	100.20
1	B	217	THR	CA-CB-OG1	-5.05	98.40	109.00
1	D	246	MET	CG-SD-CE	-5.04	92.14	100.20
1	F	204	ARG	CB-CA-C	-5.04	100.32	110.40
1	B	106	TYR	CB-CA-C	5.01	120.42	110.40

There are no chirality outliers.

All (9) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	168	ARG	Sidechain
1	A	275	ARG	Sidechain
1	D	38	ARG	Sidechain
1	E	225	THR	Peptide
1	F	235	ARG	Sidechain
1	F	276	ARG	Sidechain
1	G	121	ARG	Sidechain
1	G	275	ARG	Sidechain

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Mol	Chain	Res	Type	Group
1	H	204	ARG	Sidechain

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	2545	2573	2552	30	0
1	B	2536	2564	2553	49	0
1	C	2545	2573	2552	36	0
1	D	2536	2564	2553	50	0
1	E	2545	2573	2552	38	0
1	F	2536	2564	2553	34	0
1	G	2545	2573	2552	25	0
1	H	2536	2564	2553	37	0
2	A	10	8	8	0	0
2	B	10	8	8	0	0
2	C	10	8	8	0	0
2	D	10	8	8	2	0
2	E	10	8	8	0	0
2	F	10	8	8	1	0
2	G	10	8	8	0	0
2	H	10	8	8	0	0
3	A	5	0	0	1	0
3	B	2	0	0	0	0
3	C	4	0	0	1	0
3	D	1	0	0	0	0
3	E	3	0	0	0	0
3	F	2	0	0	0	0
3	G	3	0	0	0	0
3	H	1	0	0	0	0
All	All	20425	20612	20484	273	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 7.

All (273) 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:E:231:LYS:HE3	1:E:253:ASP:OD2	1.82	0.80
1:E:101:HIS:HB3	1:E:105:ARG:HH12	1.49	0.78
1:B:234:VAL:O	1:B:235:ARG:HG3	1.85	0.77
1:C:112:ILE:HD12	1:C:124:LEU:HD21	1.69	0.75
1:H:297:ARG:O	1:H:301:ASP:HB2	1.91	0.71
1:C:127:HIS:NE2	1:D:198:THR:HG21	2.08	0.69
1:D:138:VAL:HG21	1:D:146:ALA:HB2	1.75	0.69
1:B:101:HIS:CG	1:B:226:ASP:HB3	2.29	0.68
1:B:84:ALA:HB1	1:B:88:THR:HG21	1.77	0.67
1:A:255:ASP:HB2	3:A:502:HOH:O	1.94	0.67
1:B:178:LEU:HA	1:B:181:LYS:HD3	1.78	0.65
1:A:228:ASP:OD2	1:B:105:ARG:HD3	1.96	0.65
1:D:276:ARG:HH11	1:D:276:ARG:HG3	1.61	0.64
1:B:195:VAL:HG12	1:B:230:ILE:HG23	1.79	0.63
1:C:121:ARG:HG2	1:C:121:ARG:HH11	1.64	0.63
1:C:235:ARG:O	1:C:236:LEU:HB3	1.98	0.63
1:F:296:THR:OG1	1:F:299:VAL:HG23	2.00	0.61
1:E:228:ASP:O	1:E:232:THR:HG23	2.00	0.61
1:D:181:LYS:HE2	1:D:188:GLU:OE1	2.00	0.61
1:E:184:VAL:O	1:E:264:ILE:HD11	2.01	0.60
1:E:223:THR:OG1	1:F:125:HIS:HD2	1.84	0.60
1:A:32:GLY:O	1:A:36:GLN:HG2	2.03	0.59
1:H:168:ARG:HG3	1:H:168:ARG:HH11	1.68	0.59
3:C:501:HOH:O	1:D:116:ILE:HD11	2.02	0.58
1:E:184:VAL:HA	1:E:188:GLU:OE1	2.02	0.58
1:E:235:ARG:O	1:E:236:LEU:HD23	2.02	0.58
1:D:296:THR:OG1	1:D:299:VAL:HG23	2.02	0.58
1:A:152:LEU:HD13	1:A:271:LYS:HE3	1.85	0.58
1:E:286:ASP:O	1:E:290:ARG:HG3	2.03	0.58
1:C:124:LEU:O	1:D:222:PHE:HA	2.03	0.58
1:H:236:LEU:HG	1:H:237:GLY:N	2.18	0.58
1:A:222:PHE:HA	1:B:124:LEU:O	2.04	0.57
1:A:59:VAL:HG12	1:A:64:GLN:HG3	1.85	0.57
1:E:319:ILE:HD12	1:E:319:ILE:N	2.20	0.57
1:F:162:PRO:O	1:F:294:HIS:HE1	1.87	0.57
1:F:233:TYR:CZ	1:F:236:LEU:HD13	2.40	0.57
1:H:145:PHE:HZ	1:H:284:MET:HB3	1.68	0.57
1:F:156:ASP:O	1:F:157:ASP:HB2	2.05	0.56
1:A:87:HIS:CD2	1:D:62:ALA:HB2	2.41	0.56
1:F:196:THR:O	1:F:223:THR:HA	2.05	0.56
1:A:318:ASP:O	1:A:319:ILE:HG13	2.05	0.56
1:B:234:VAL:C	1:B:235:ARG:HG3	2.23	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:262:ASN:HD22	1:H:262:ASN:N	2.03	0.56
1:A:228:ASP:O	1:A:232:THR:HG23	2.06	0.55
1:A:112:ILE:HD12	1:A:124:LEU:HD21	1.86	0.55
1:D:174:PRO:HD3	1:D:255:ASP:O	2.07	0.55
1:G:28:THR:OG1	1:G:29:SER:N	2.39	0.55
1:B:68:ARG:HG2	1:B:68:ARG:HH11	1.72	0.55
1:H:286:ASP:OD2	1:H:290:ARG:NH1	2.33	0.55
1:E:156:ASP:O	1:G:213:ARG:HG3	2.07	0.54
1:H:262:ASN:N	1:H:262:ASN:ND2	2.56	0.54
1:C:112:ILE:HG23	1:C:124:LEU:HD22	1.89	0.54
1:C:103:GLN:NE2	1:C:164:TYR:OH	2.40	0.54
1:F:156:ASP:O	1:F:157:ASP:CB	2.56	0.54
1:D:316:PHE:HA	1:D:319:ILE:HD12	1.90	0.54
1:A:127:HIS:NE2	1:B:198:THR:HG21	2.23	0.53
1:A:230:ILE:O	1:A:234:VAL:HG23	2.09	0.53
1:B:170:ILE:HD11	1:B:189:LEU:HD22	1.89	0.53
1:F:84:ALA:HB1	1:F:88:THR:HG21	1.90	0.53
1:B:105:ARG:O	1:B:109:PRO:CD	2.57	0.53
1:D:7:ARG:HA	1:D:74:LEU:HD11	1.89	0.53
1:B:308:SER:OG	1:B:310:GLU:HG2	2.08	0.53
1:A:112:ILE:O	1:A:116:ILE:HG12	2.09	0.52
1:D:138:VAL:CG2	1:D:146:ALA:HB2	2.38	0.52
1:C:112:ILE:O	1:C:116:ILE:HG12	2.09	0.52
1:E:171:VAL:HG11	1:E:248:VAL:HG21	1.90	0.52
1:D:30:GLN:N	1:D:31:PRO:HD2	2.24	0.52
1:D:307:ARG:HG3	1:D:307:ARG:HH11	1.74	0.52
1:F:312:ILE:O	1:F:316:PHE:HD2	1.93	0.52
1:B:156:ASP:O	1:B:157:ASP:HB2	2.10	0.52
1:F:159:VAL:O	1:F:273:GLY:HA2	2.10	0.52
1:G:160:MET:SD	1:G:273:GLY:HA3	2.50	0.52
1:C:2:LYS:O	1:C:5:GLN:HB2	2.10	0.52
1:C:118:ARG:NH1	1:C:118:ARG:HG3	2.25	0.52
1:E:252:SER:O	1:E:254:PRO:HD3	2.10	0.51
1:C:127:HIS:CD2	1:D:198:THR:HG21	2.46	0.51
1:H:30:GLN:HB3	1:H:31:PRO:HD3	1.93	0.51
1:B:28:THR:OG1	1:B:29:SER:N	2.43	0.51
1:C:112:ILE:HD12	1:C:124:LEU:CD2	2.40	0.51
1:A:72:GLU:OE1	1:D:76:LYS:HD2	2.10	0.51
1:D:236:LEU:CG	1:D:237:GLY:N	2.73	0.51
1:E:286:ASP:OD2	1:E:290:ARG:NE	2.42	0.51
1:G:112:ILE:HD12	1:G:124:LEU:HD21	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:230:ILE:O	1:B:234:VAL:HG23	2.11	0.51
1:H:195:VAL:O	1:H:241:GLY:HA2	2.09	0.51
1:B:101:HIS:HB3	1:B:105:ARG:HH22	1.76	0.51
1:B:148:ALA:O	1:B:270:THR:HA	2.11	0.50
1:D:196:THR:O	1:D:223:THR:HA	2.11	0.50
1:H:292:ALA:HB3	1:H:295:LEU:HD12	1.93	0.50
1:E:255:ASP:OD1	1:E:255:ASP:N	2.45	0.50
1:E:17:LEU:HD11	1:E:58:GLN:HA	1.94	0.50
1:H:195:VAL:HG12	1:H:230:ILE:HG23	1.93	0.50
1:D:276:ARG:HG3	1:D:276:ARG:NH1	2.25	0.50
1:B:105:ARG:O	1:B:109:PRO:HG2	2.12	0.50
1:F:262:ASN:N	1:F:262:ASN:HD22	2.10	0.50
1:C:121:ARG:HG2	1:C:121:ARG:NH1	2.27	0.49
1:C:112:ILE:HG23	1:C:124:LEU:CD2	2.42	0.49
1:F:235:ARG:N	1:F:235:ARG:HD2	2.27	0.49
1:C:88:THR:HG22	1:C:89:TRP:CE3	2.47	0.49
1:D:233:TYR:C	1:D:235:ARG:H	2.15	0.49
1:B:159:VAL:O	1:B:273:GLY:HA2	2.12	0.49
1:E:29:SER:OG	1:E:31:PRO:HD2	2.13	0.49
1:E:146:ALA:O	1:E:272:ILE:HA	2.13	0.49
1:H:257:VAL:HG12	1:H:259:LEU:HD13	1.95	0.49
1:E:235:ARG:O	1:E:236:LEU:CB	2.60	0.49
1:H:91:ASP:OD1	1:H:121:ARG:NH2	2.42	0.49
1:H:168:ARG:HG3	1:H:168:ARG:NH1	2.28	0.49
1:D:234:VAL:HG12	1:D:234:VAL:O	2.13	0.49
1:F:186:ILE:HB	1:F:264:ILE:HG23	1.93	0.48
1:A:113:LYS:HA	1:B:236:LEU:HD11	1.96	0.48
1:B:101:HIS:CD2	1:B:226:ASP:HB3	2.47	0.48
1:G:222:PHE:HA	1:H:124:LEU:O	2.12	0.48
1:B:1:MET:HA	1:B:5:GLN:OE1	2.14	0.48
1:C:108:LEU:O	1:C:112:ILE:HG12	2.13	0.48
1:A:59:VAL:CG1	1:A:64:GLN:HG3	2.43	0.48
1:B:233:TYR:O	1:B:233:TYR:CD1	2.67	0.48
1:F:72:GLU:OE1	1:G:76:LYS:HD2	2.13	0.48
1:C:286:ASP:OD2	1:C:290:ARG:NE	2.38	0.48
1:D:236:LEU:HD23	1:D:237:GLY:N	2.29	0.48
1:E:112:ILE:HD12	1:E:124:LEU:CD2	2.44	0.48
1:C:168:ARG:NH2	1:C:268:SER:OG	2.29	0.47
1:E:112:ILE:HD12	1:E:124:LEU:HD21	1.95	0.47
1:A:108:LEU:O	1:A:112:ILE:HG12	2.14	0.47
1:D:162:PRO:HA	1:D:271:LYS:HG2	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:307:ARG:HG3	1:D:307:ARG:NH1	2.29	0.47
1:D:108:LEU:N	1:D:109:PRO:CD	2.77	0.47
1:D:213:ARG:HG3	1:D:213:ARG:HH11	1.79	0.47
1:E:195:VAL:O	1:E:241:GLY:HA2	2.14	0.47
1:D:236:LEU:HG	1:D:237:GLY:N	2.29	0.47
1:E:231:LYS:CE	1:E:253:ASP:OD2	2.60	0.47
1:B:105:ARG:O	1:B:109:PRO:CG	2.62	0.47
1:B:156:ASP:O	1:B:157:ASP:CB	2.61	0.47
1:C:59:VAL:HG12	1:C:64:GLN:HG3	1.97	0.47
1:C:222:PHE:HA	1:D:124:LEU:O	2.14	0.47
1:G:96:TYR:HB3	1:G:143:ALA:HA	1.96	0.47
1:H:312:ILE:O	1:H:316:PHE:HD2	1.97	0.47
1:B:235:ARG:O	1:B:236:LEU:HB2	2.15	0.46
1:F:73:VAL:HG13	1:G:73:VAL:HG13	1.95	0.46
1:D:162:PRO:O	1:D:294:HIS:HE1	1.99	0.46
1:B:178:LEU:HD23	1:B:181:LYS:HD3	1.98	0.46
1:E:163:CYS:SG	1:E:272:ILE:HG22	2.55	0.46
1:F:162:PRO:HA	1:F:271:LYS:HG2	1.96	0.46
1:B:176:HIS:CE1	1:B:178:LEU:HD12	2.50	0.46
1:E:35:LYS:O	1:E:39:MET:HG3	2.16	0.46
1:H:101:HIS:CD2	1:H:226:ASP:HB3	2.51	0.46
1:B:233:TYR:CD1	1:B:233:TYR:C	2.89	0.46
1:D:166:TRP:CE3	2:D:401:SAC:H2A1	2.51	0.46
1:G:35:LYS:O	1:G:39:MET:HG3	2.16	0.46
1:A:176:HIS:CG	1:A:177:PRO:HD2	2.51	0.46
1:C:196:THR:O	1:C:223:THR:HA	2.16	0.46
1:D:233:TYR:O	1:D:235:ARG:N	2.48	0.46
1:G:108:LEU:H	1:G:109:PRO:CD	2.28	0.46
1:B:101:HIS:CD2	1:B:128:GLN:HG2	2.50	0.46
1:A:87:HIS:CG	1:D:62:ALA:HB2	2.51	0.46
1:B:76:LYS:O	1:B:80:ILE:HG13	2.16	0.46
1:B:213:ARG:NH1	1:B:213:ARG:HG3	2.31	0.45
1:D:289:GLN:HG3	1:D:296:THR:HA	1.98	0.45
1:G:108:LEU:N	1:G:109:PRO:CD	2.78	0.45
1:A:196:THR:O	1:A:223:THR:HA	2.16	0.45
1:D:159:VAL:O	1:D:273:GLY:HA2	2.16	0.45
1:D:166:TRP:CZ3	1:D:244:ALA:HB2	2.52	0.45
1:E:95:LEU:HB3	1:E:124:LEU:HD12	1.97	0.45
1:H:104:ALA:HA	1:H:108:LEU:HD12	1.98	0.45
1:C:195:VAL:O	1:C:241:GLY:HA2	2.17	0.45
1:B:63:GLY:O	1:B:67:ILE:HG12	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:148:ALA:HB2	1:D:155:TYR:CE2	2.52	0.45
1:E:65:GLU:O	1:E:69:ILE:HG13	2.17	0.45
1:H:23:ALA:HB1	1:H:28:THR:O	2.16	0.45
1:C:162:PRO:HB2	1:C:321:LEU:HD11	1.98	0.45
1:F:96:TYR:HB3	1:F:143:ALA:HA	1.99	0.45
1:C:186:ILE:HB	1:C:264:ILE:HG23	1.98	0.45
1:A:182:GLY:O	1:A:183:SER:CB	2.65	0.44
1:E:112:ILE:CD1	1:E:124:LEU:HD21	2.47	0.44
1:G:228:ASP:OD2	1:H:105:ARG:HD3	2.17	0.44
1:A:108:LEU:H	1:A:109:PRO:CD	2.29	0.44
1:B:9:ILE:HD12	1:B:67:ILE:HD13	1.99	0.44
1:B:195:VAL:O	1:B:241:GLY:HA2	2.18	0.44
1:B:294:HIS:CD2	1:B:294:HIS:H	2.35	0.44
1:G:145:PHE:HZ	1:G:284:MET:HB3	1.83	0.44
1:C:292:ALA:HB3	1:C:295:LEU:HD12	1.99	0.44
1:F:172:VAL:HG12	1:F:240:VAL:HG22	1.98	0.44
1:H:301:ASP:O	1:H:304:VAL:HG22	2.18	0.44
1:H:311:ASP:OD1	1:H:311:ASP:N	2.49	0.44
1:H:42:ASP:O	1:H:45:GLY:N	2.50	0.44
1:G:104:ALA:O	1:G:109:PRO:HD3	2.17	0.44
1:B:168:ARG:NH2	1:B:268:SER:OG	2.45	0.44
1:D:194:LEU:HD12	1:D:218:PRO:HB2	2.00	0.44
1:E:235:ARG:O	1:E:236:LEU:HB3	2.18	0.44
1:B:101:HIS:CG	1:B:226:ASP:CB	3.00	0.43
1:F:211:PHE:CE2	1:F:218:PRO:HB3	2.53	0.43
1:C:9:ILE:HG22	1:C:37:VAL:HG22	2.00	0.43
1:D:84:ALA:HB1	1:D:88:THR:HG21	1.99	0.43
1:B:175:GLU:OE1	1:B:175:GLU:N	2.52	0.43
1:B:279:PHE:CE1	1:E:39:MET:HG2	2.53	0.43
1:C:197:TYR:HA	1:C:224:ALA:O	2.18	0.43
1:H:104:ALA:O	1:H:109:PRO:HD3	2.18	0.43
1:B:162:PRO:HA	1:B:271:LYS:HG2	2.00	0.43
1:E:101:HIS:CD2	1:E:226:ASP:OD2	2.71	0.43
1:A:286:ASP:OD2	1:A:290:ARG:NE	2.49	0.43
1:G:196:THR:O	1:G:223:THR:HA	2.18	0.43
1:E:223:THR:OG1	1:F:125:HIS:CD2	2.69	0.43
1:A:311:ASP:O	1:A:314:ALA:HB3	2.18	0.43
1:D:195:VAL:HG12	1:D:230:ILE:HG23	2.01	0.43
1:C:16:ASN:O	1:C:17:LEU:HB2	2.18	0.43
1:E:80:ILE:HG13	1:H:69:ILE:HG21	2.01	0.43
1:F:233:TYR:CD1	1:F:233:TYR:C	2.91	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:195:VAL:HG12	1:G:230:ILE:HG23	2.01	0.43
1:D:142:ASN:N	1:D:142:ASN:OD1	2.51	0.43
1:D:233:TYR:OH	1:D:236:LEU:HD22	2.19	0.43
1:G:112:ILE:HD12	1:G:124:LEU:CD2	2.49	0.43
1:H:112:ILE:O	1:H:115:PHE:N	2.52	0.42
1:F:119:TYR:CE2	1:F:283:TYR:HB3	2.54	0.42
1:G:238:LEU:HD12	1:G:239:GLY:H	1.83	0.42
1:H:37:VAL:O	1:H:41:GLU:HG3	2.18	0.42
1:A:29:SER:OG	1:A:31:PRO:HD2	2.20	0.42
1:C:108:LEU:O	1:C:109:PRO:C	2.57	0.42
1:G:108:LEU:O	1:G:112:ILE:HG12	2.19	0.42
1:G:181:LYS:C	1:G:183:SER:H	2.22	0.42
1:B:316:PHE:O	1:B:317:LYS:C	2.58	0.42
1:D:170:ILE:CD1	1:D:189:LEU:HD13	2.49	0.42
1:H:186:ILE:HG23	1:H:187:GLU:N	2.34	0.42
1:D:230:ILE:O	1:D:234:VAL:HG23	2.19	0.42
1:A:197:TYR:HA	1:A:224:ALA:O	2.19	0.42
1:F:149:THR:HG21	2:F:401:SAC:OAC	2.19	0.42
1:H:233:TYR:CD1	1:H:233:TYR:C	2.92	0.42
1:D:234:VAL:O	1:D:235:ARG:HG3	2.20	0.42
1:F:30:GLN:N	1:F:31:PRO:HD2	2.34	0.42
1:F:233:TYR:CD1	1:F:233:TYR:O	2.73	0.42
1:H:145:PHE:CZ	1:H:284:MET:HB3	2.53	0.42
1:B:30:GLN:O	1:B:34:SER:HB2	2.20	0.42
1:C:281:ARG:O	1:C:284:MET:HB2	2.19	0.42
1:H:316:PHE:O	1:H:317:LYS:C	2.58	0.42
1:E:33:ILE:O	1:E:37:VAL:HG23	2.20	0.42
1:G:197:TYR:HA	1:G:224:ALA:O	2.20	0.42
1:H:159:VAL:O	1:H:273:GLY:HA2	2.19	0.42
1:H:112:ILE:O	1:H:113:LYS:C	2.58	0.41
1:B:3:LEU:HD23	1:B:3:LEU:HA	1.91	0.41
1:E:224:ALA:HA	1:F:126:MET:O	2.20	0.41
1:H:126:MET:HE3	1:H:126:MET:HB3	1.89	0.41
1:B:99:THR:OG1	1:B:100:THR:N	2.53	0.41
1:G:184:VAL:O	1:G:264:ILE:HD11	2.21	0.41
1:F:213:ARG:O	1:F:213:ARG:HG3	2.21	0.41
1:C:95:LEU:HB3	1:C:124:LEU:HD12	2.02	0.41
1:G:109:PRO:O	1:G:113:LYS:HB2	2.20	0.41
1:G:163:CYS:SG	1:G:272:ILE:HG22	2.61	0.41
1:C:118:ARG:HG3	1:C:118:ARG:HH11	1.84	0.41
1:D:292:ALA:HB1	1:D:294:HIS:NE2	2.36	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:32:GLY:O	1:E:36:GLN:HG2	2.21	0.41
1:G:318:ASP:C	1:G:319:ILE:HD12	2.41	0.41
1:E:150:GLU:O	1:E:151:ALA:C	2.59	0.41
1:F:145:PHE:HZ	1:F:284:MET:HB3	1.85	0.41
1:E:88:THR:HG22	1:E:89:TRP:N	2.36	0.41
1:F:236:LEU:CG	1:F:237:GLY:N	2.82	0.41
1:H:101:HIS:CG	1:H:226:ASP:HB2	2.55	0.41
1:A:186:ILE:HD11	1:A:211:PHE:CD1	2.56	0.41
1:B:170:ILE:CD1	1:B:184:VAL:HG11	2.51	0.41
1:C:101:HIS:HD2	1:D:226:ASP:OD2	2.03	0.41
1:D:166:TRP:CD2	2:D:401:SAC:H2A1	2.56	0.41
1:F:235:ARG:N	1:F:235:ARG:CD	2.84	0.41
1:H:162:PRO:HB3	1:H:321:LEU:HD11	2.02	0.41
1:A:108:LEU:N	1:A:109:PRO:CD	2.84	0.41
1:B:174:PRO:HD3	1:B:255:ASP:O	2.21	0.41
1:C:219:ARG:HD3	1:D:88:THR:O	2.21	0.41
1:C:148:ALA:O	1:C:270:THR:HA	2.22	0.40
1:D:233:TYR:C	1:D:233:TYR:CD1	2.94	0.40
1:H:171:VAL:HG11	1:H:243:ILE:HD11	2.02	0.40
1:F:166:TRP:CE2	1:F:268:SER:HB2	2.56	0.40
1:F:166:TRP:HA	1:F:324:LYS:OXT	2.21	0.40
1:C:124:LEU:HD23	1:D:222:PHE:HE2	1.87	0.40
1:A:101:HIS:HE2	1:B:101:HIS:CD2	2.38	0.40
1:E:219:ARG:NH1	1:F:88:THR:OG1	2.55	0.40
1:A:108:LEU:O	1:A:109:PRO:C	2.59	0.40
1:F:198:THR:HA	1:F:223:THR:HB	2.02	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	324/324 (100%)	302 (93%)	17 (5%)	5 (2%)	10	33
1	B	322/324 (99%)	300 (93%)	17 (5%)	5 (2%)	9	31
1	C	324/324 (100%)	304 (94%)	17 (5%)	3 (1%)	17	46
1	D	322/324 (99%)	298 (92%)	23 (7%)	1 (0%)	41	72
1	E	324/324 (100%)	302 (93%)	19 (6%)	3 (1%)	17	46
1	F	322/324 (99%)	302 (94%)	17 (5%)	3 (1%)	17	46
1	G	324/324 (100%)	304 (94%)	16 (5%)	4 (1%)	13	39
1	H	322/324 (99%)	296 (92%)	24 (8%)	2 (1%)	25	56
All	All	2584/2592 (100%)	2408 (93%)	150 (6%)	26 (1%)	15	44

All (26) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	183	SER
1	A	236	LEU
1	B	236	LEU
1	C	236	LEU
1	E	236	LEU
1	G	236	LEU
1	A	182	GLY
1	B	63	GLY
1	D	234	VAL
1	E	88	THR
1	F	157	ASP
1	C	183	SER
1	G	181	LYS
1	H	108	LEU
1	A	306	LEU
1	B	317	LYS
1	F	109	PRO
1	G	266	SER
1	B	182	GLY
1	H	183	SER
1	A	108	LEU
1	F	182	GLY
1	C	251	VAL
1	B	234	VAL
1	E	108	LEU
1	G	108	LEU

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	278/276 (101%)	269 (97%)	9 (3%)	39	73
1	B	276/276 (100%)	262 (95%)	14 (5%)	24	55
1	C	278/276 (101%)	271 (98%)	7 (2%)	47	80
1	D	276/276 (100%)	261 (95%)	15 (5%)	22	53
1	E	278/276 (101%)	271 (98%)	7 (2%)	47	80
1	F	276/276 (100%)	259 (94%)	17 (6%)	18	47
1	G	278/276 (101%)	270 (97%)	8 (3%)	42	76
1	H	276/276 (100%)	251 (91%)	25 (9%)	9	27
All	All	2216/2208 (100%)	2114 (95%)	102 (5%)	27	60

All (102) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	15	HIS
1	A	68	ARG
1	A	186	ILE
1	A	232	THR
1	A	266	SER
1	A	276	ARG
1	A	282	SER
1	A	293	PRO
1	A	323	GLU
1	B	16	ASN
1	B	34	SER
1	B	75	SER
1	B	86	GLU
1	B	113	LYS
1	B	139	SER
1	B	156	ASP
1	B	177	PRO
1	B	183	SER
1	B	228	ASP

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Mol	Chain	Res	Type
1	B	238	LEU
1	B	249	ASP
1	B	252	SER
1	B	266	SER
1	C	21	SER
1	C	34	SER
1	C	90	PRO
1	C	238	LEU
1	C	252	SER
1	C	255	ASP
1	C	323	GLU
1	D	20	SER
1	D	86	GLU
1	D	105	ARG
1	D	139	SER
1	D	142	ASN
1	D	171	VAL
1	D	177	PRO
1	D	181	LYS
1	D	183	SER
1	D	188	GLU
1	D	204	ARG
1	D	228	ASP
1	D	236	LEU
1	D	256	LEU
1	D	289	GLN
1	E	3	LEU
1	E	21	SER
1	E	169	SER
1	E	238	LEU
1	E	255	ASP
1	E	282	SER
1	E	297	ARG
1	F	4	GLN
1	F	34	SER
1	F	54	LYS
1	F	58	GLN
1	F	116	ILE
1	F	132	THR
1	F	139	SER
1	F	181	LYS
1	F	213	ARG

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Mol	Chain	Res	Type
1	F	232	THR
1	F	236	LEU
1	F	248	VAL
1	F	255	ASP
1	F	256	LEU
1	F	260	ASP
1	F	262	ASN
1	F	322	PRO
1	G	54	LYS
1	G	139	SER
1	G	142	ASN
1	G	175	GLU
1	G	206	GLU
1	G	266	SER
1	G	282	SER
1	G	323	GLU
1	H	20	SER
1	H	101	HIS
1	H	140	LYS
1	H	183	SER
1	H	184	VAL
1	H	198	THR
1	H	204	ARG
1	H	217	THR
1	H	218	PRO
1	H	226	ASP
1	H	236	LEU
1	H	238	LEU
1	H	249	ASP
1	H	254	PRO
1	H	255	ASP
1	H	256	LEU
1	H	259	LEU
1	H	262	ASN
1	H	266	SER
1	H	267	HIS
1	H	279	PHE
1	H	298	ASP
1	H	301	ASP
1	H	311	ASP
1	H	323	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (29)

such sidechains are listed below:

Mol	Chain	Res	Type
1	A	87	HIS
1	B	36	GLN
1	B	125	HIS
1	B	212	ASN
1	B	262	ASN
1	B	294	HIS
1	C	16	ASN
1	C	101	HIS
1	C	167	ASN
1	D	4	GLN
1	D	36	GLN
1	D	101	HIS
1	D	125	HIS
1	D	212	ASN
1	D	262	ASN
1	D	289	GLN
1	D	294	HIS
1	E	16	ASN
1	E	101	HIS
1	E	167	ASN
1	E	262	ASN
1	F	18	ASN
1	F	125	HIS
1	F	212	ASN
1	F	262	ASN
1	F	294	HIS
1	H	125	HIS
1	H	212	ASN
1	H	262	ASN

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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

8 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
2	SAC	H	401	-	9,9,9	0.70	0	10,11,11	0.75	0
2	SAC	A	401	-	9,9,9	0.63	0	10,11,11	0.68	0
2	SAC	F	401	-	9,9,9	0.90	1 (11%)	10,11,11	0.59	0
2	SAC	D	401	-	9,9,9	0.78	1 (11%)	10,11,11	0.69	0
2	SAC	B	401	-	9,9,9	0.84	0	10,11,11	0.68	0
2	SAC	G	401	-	9,9,9	0.84	0	10,11,11	0.61	0
2	SAC	C	401	-	9,9,9	1.01	1 (11%)	10,11,11	0.45	0
2	SAC	E	401	-	9,9,9	0.67	0	10,11,11	0.98	1 (10%)

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	SAC	H	401	-	-	0/10/10/10	-
2	SAC	A	401	-	-	0/10/10/10	-
2	SAC	F	401	-	-	1/10/10/10	-
2	SAC	D	401	-	-	0/10/10/10	-
2	SAC	B	401	-	-	1/10/10/10	-
2	SAC	G	401	-	-	0/10/10/10	-
2	SAC	C	401	-	-	2/10/10/10	-
2	SAC	E	401	-	-	1/10/10/10	-

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	401	SAC	OXT-C	-2.15	1.23	1.30
2	F	401	SAC	O-C	2.07	1.28	1.22
2	C	401	SAC	OXT-C	-2.05	1.23	1.30

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	401	SAC	O-C-CA	-2.17	115.13	122.26

There are no chirality outliers.

All (5) torsion outliers are listed below:

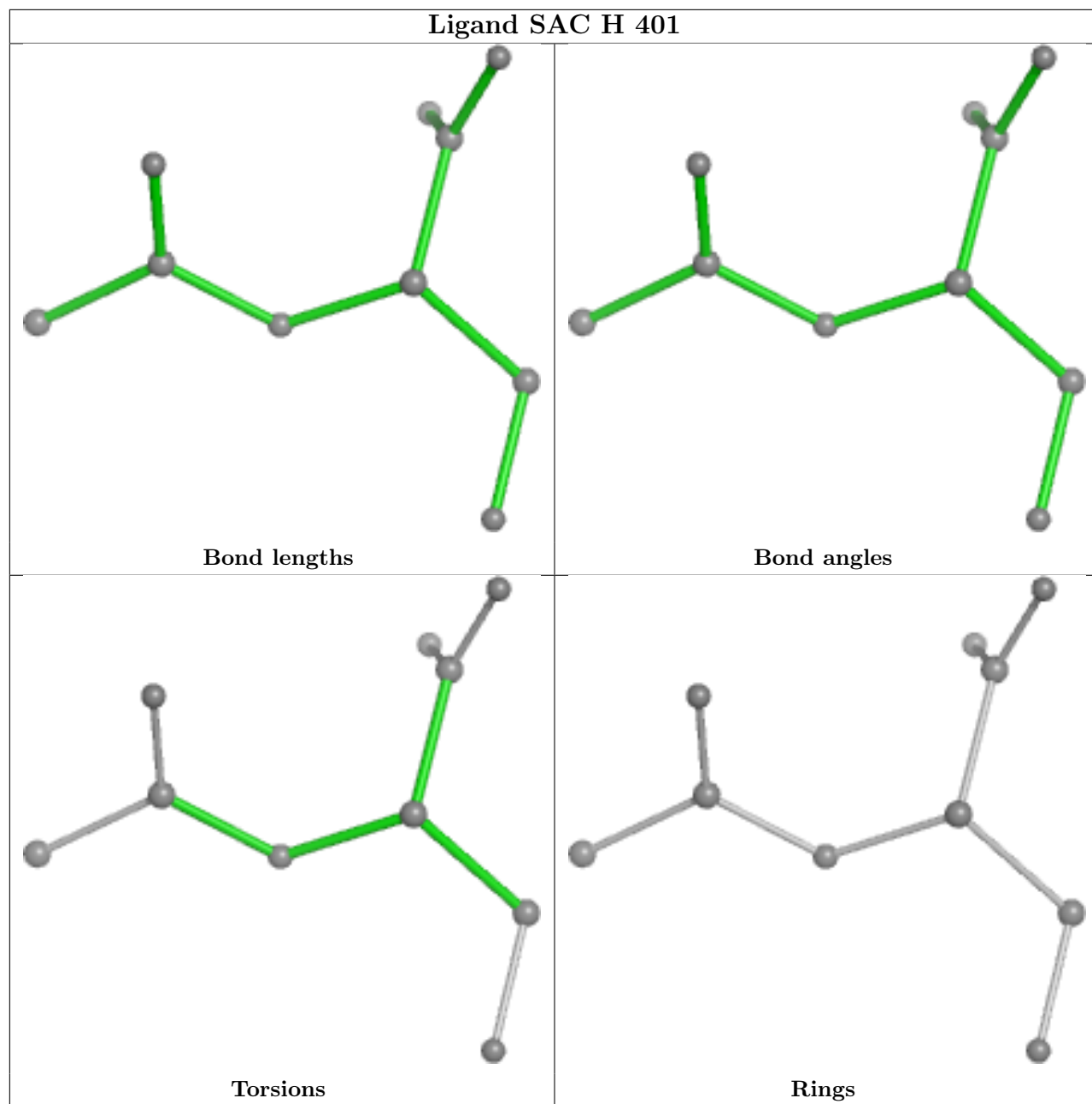
Mol	Chain	Res	Type	Atoms
2	C	401	SAC	C-CA-CB-OG
2	F	401	SAC	N-CA-CB-OG
2	E	401	SAC	C-CA-CB-OG
2	B	401	SAC	C-CA-CB-OG
2	C	401	SAC	N-CA-CB-OG

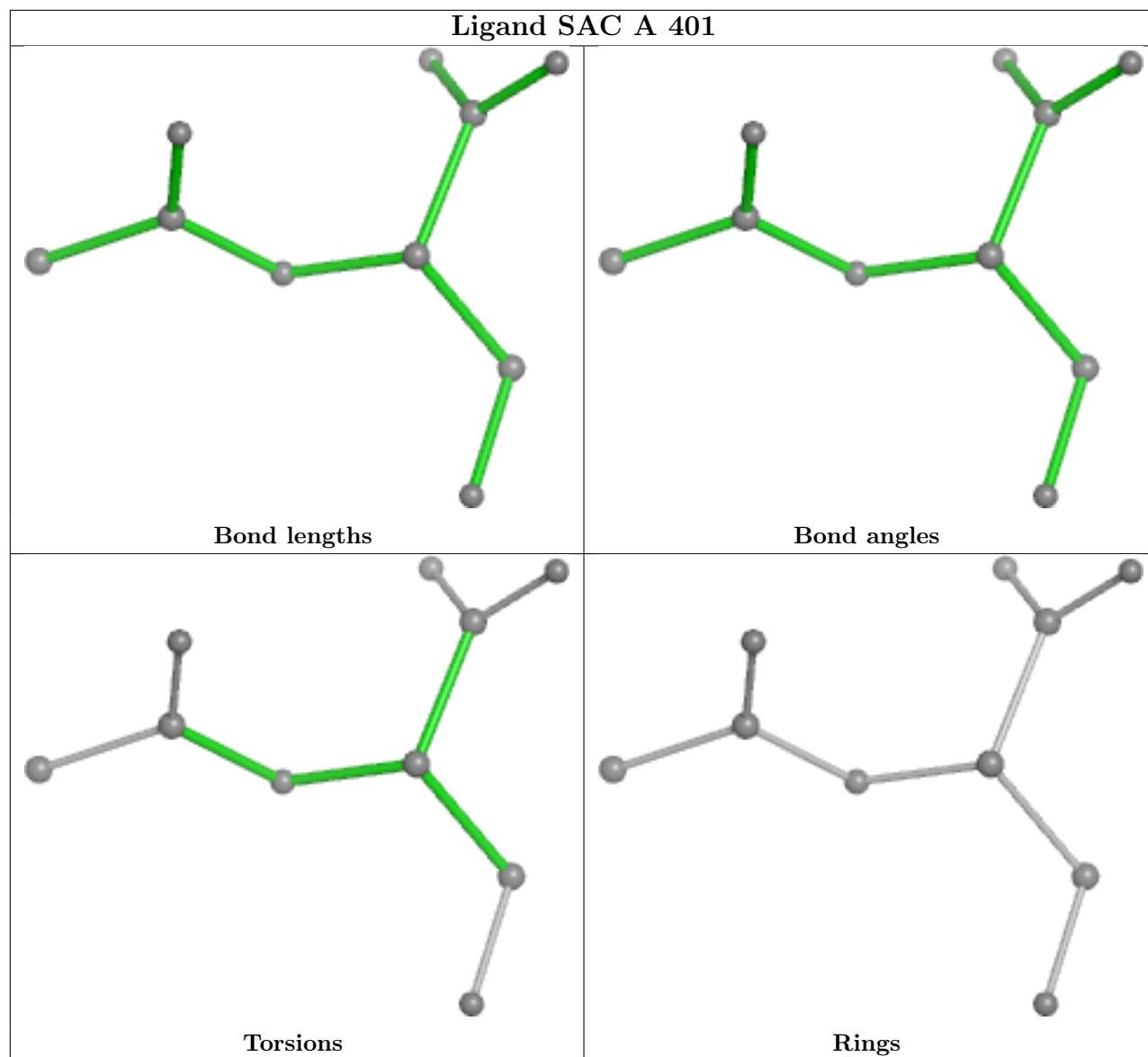
There are no ring outliers.

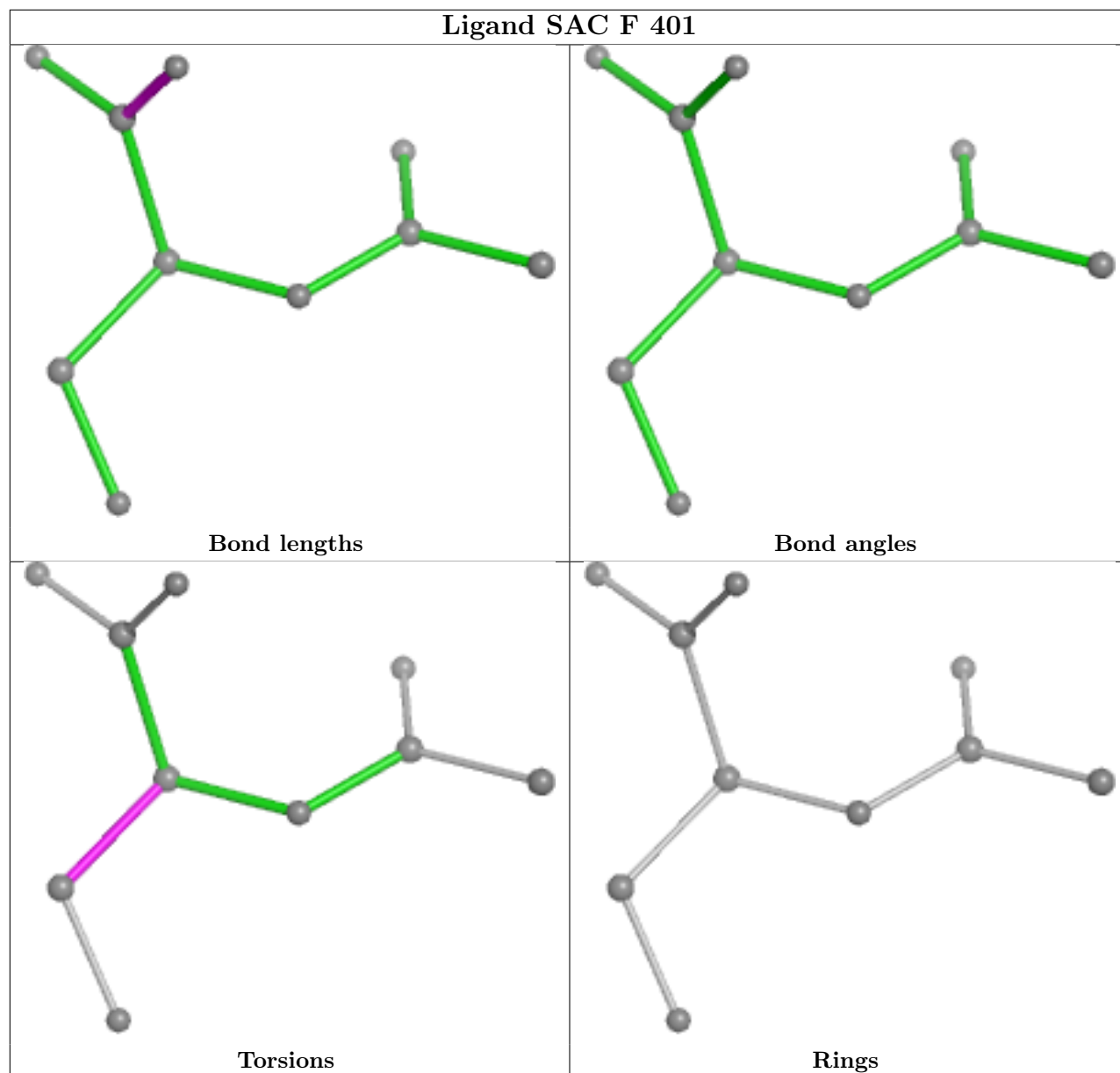
2 monomers are involved in 3 short contacts:

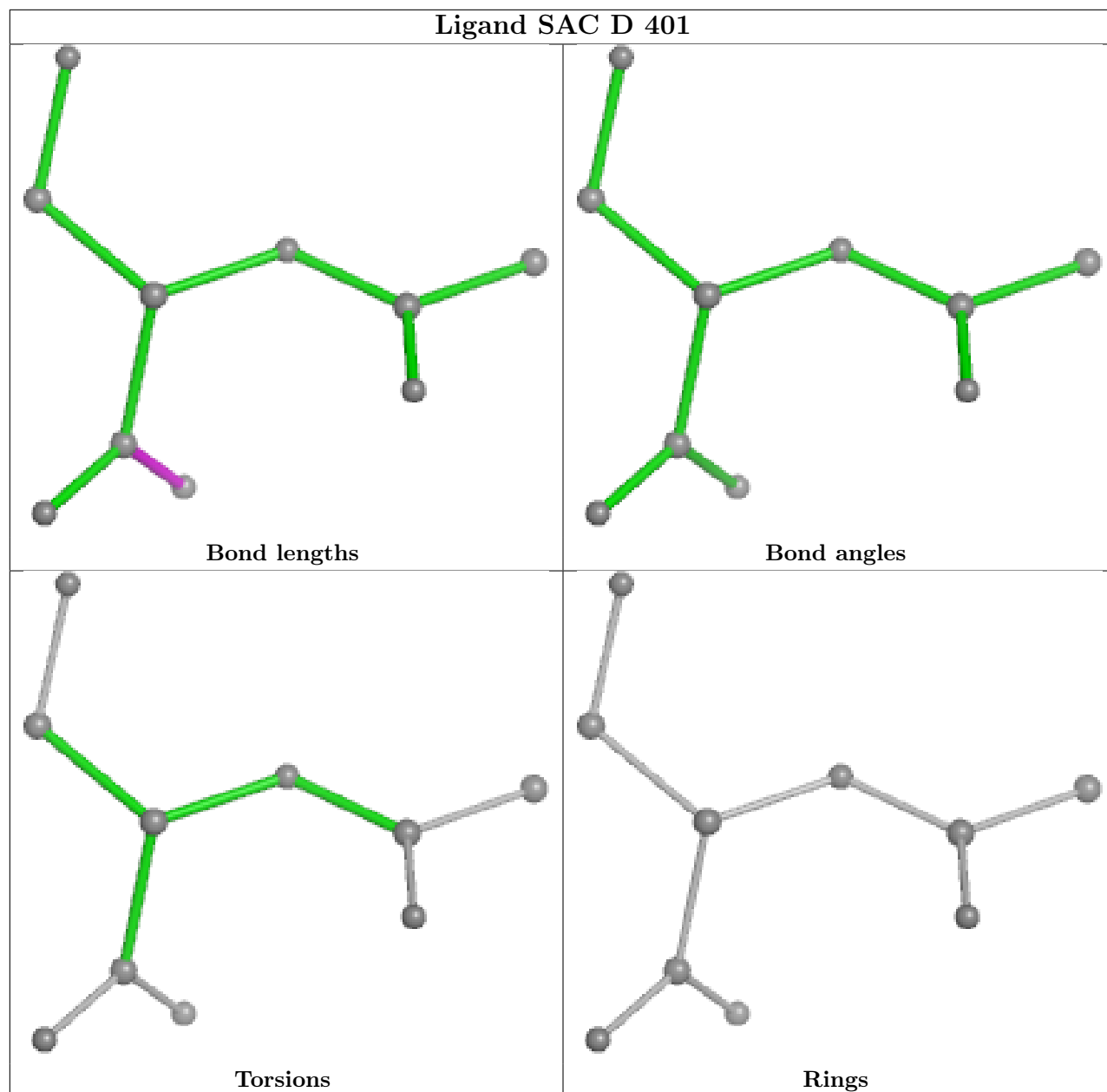
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	F	401	SAC	1	0
2	D	401	SAC	2	0

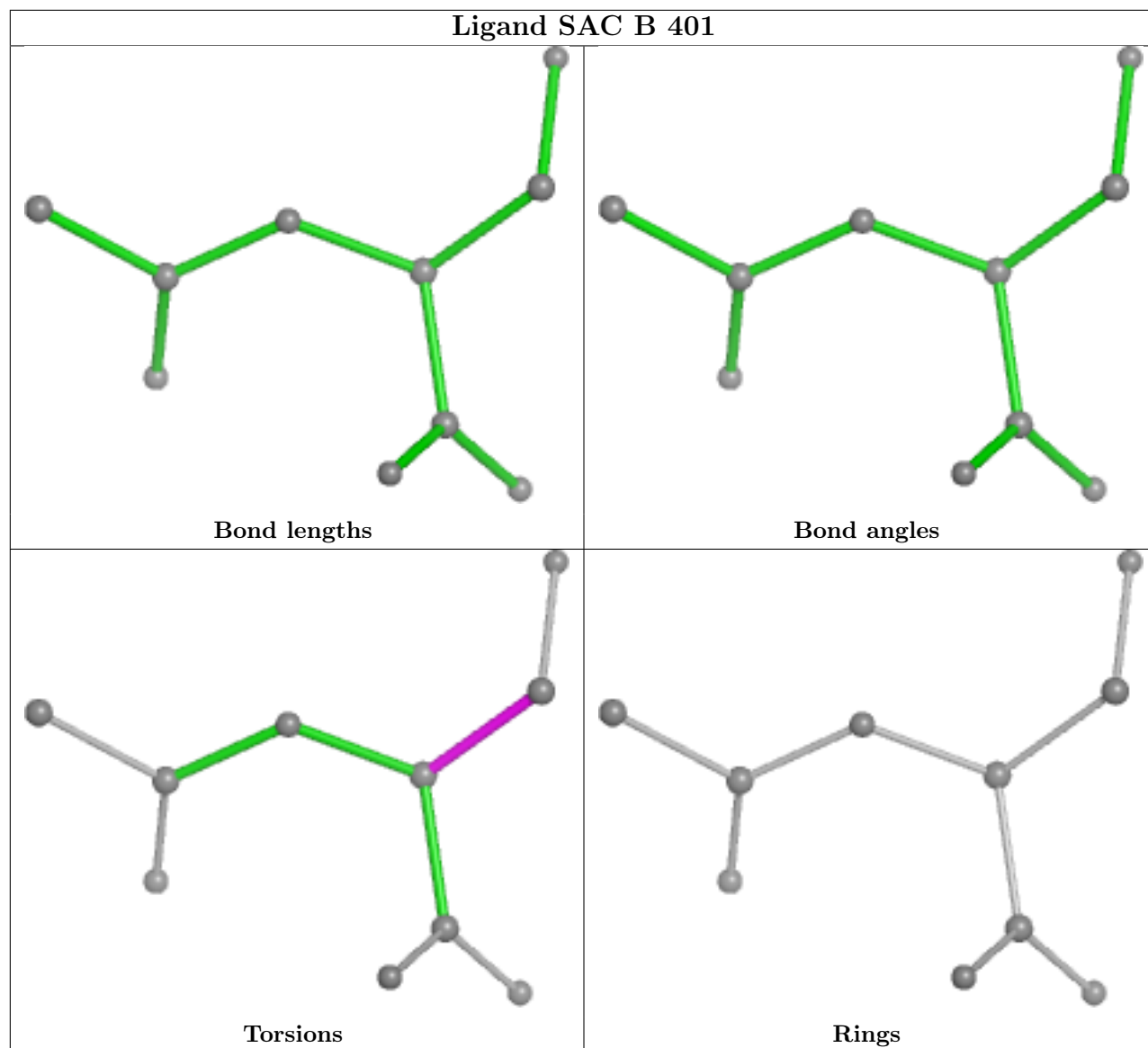
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

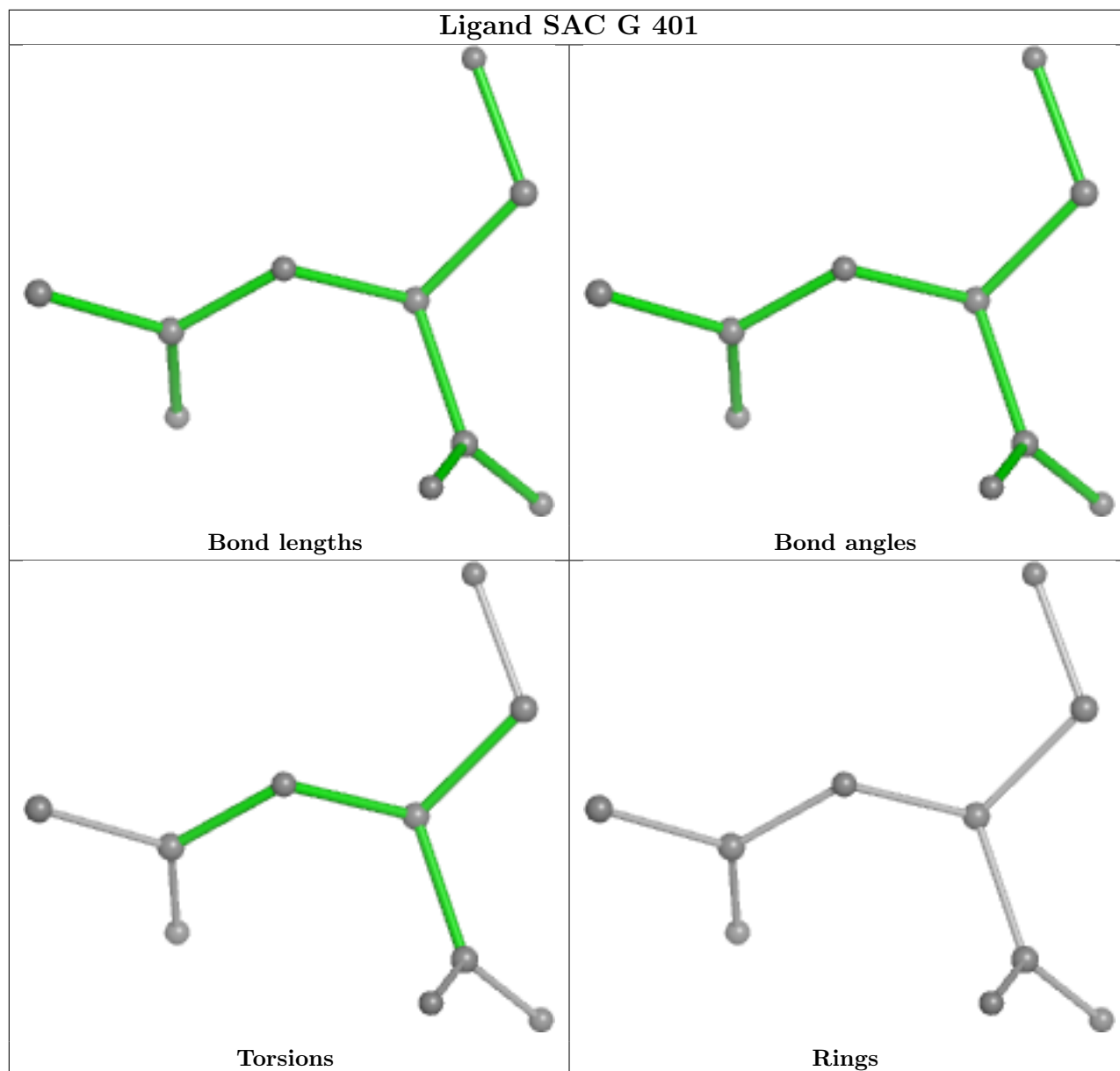


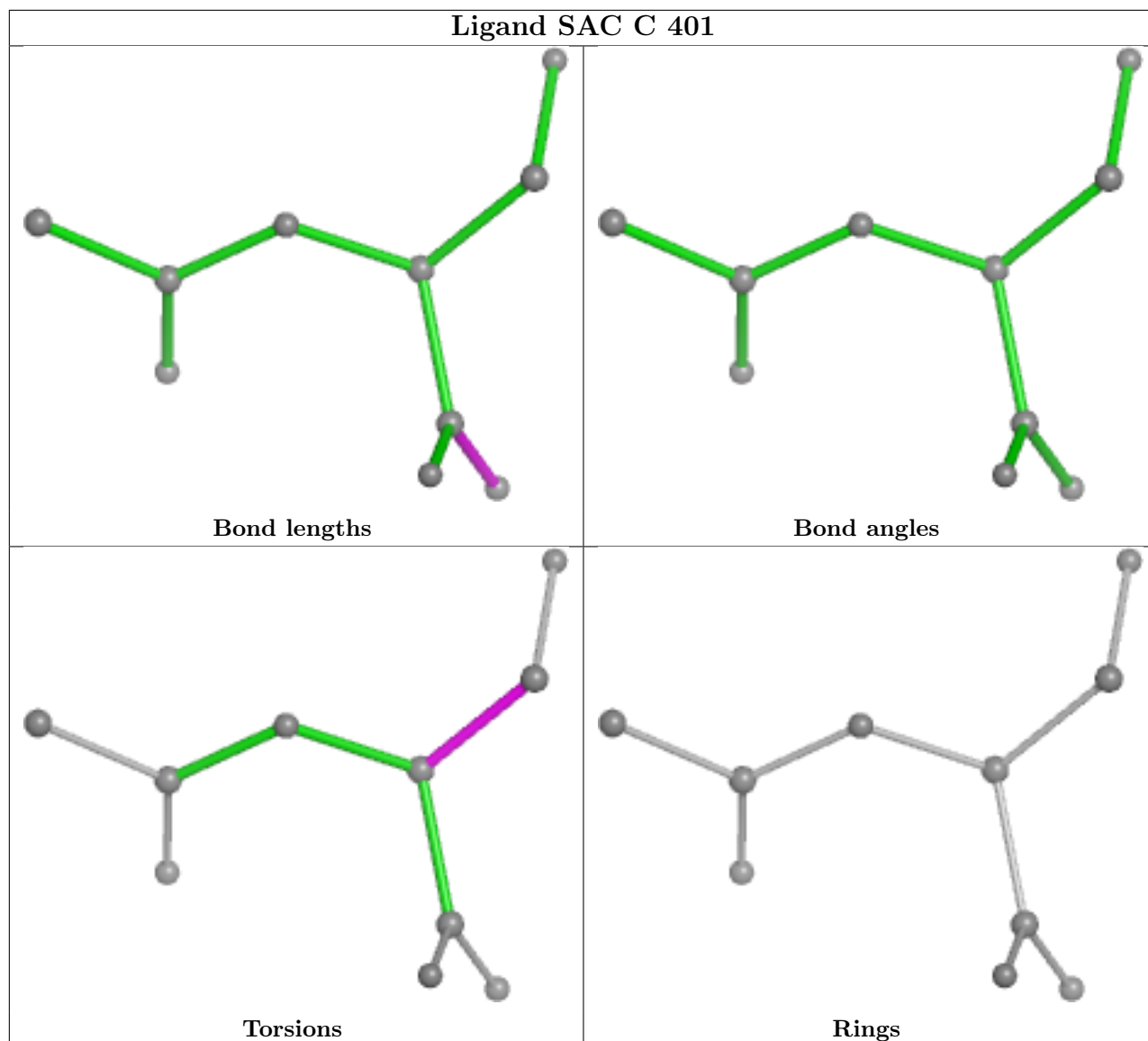


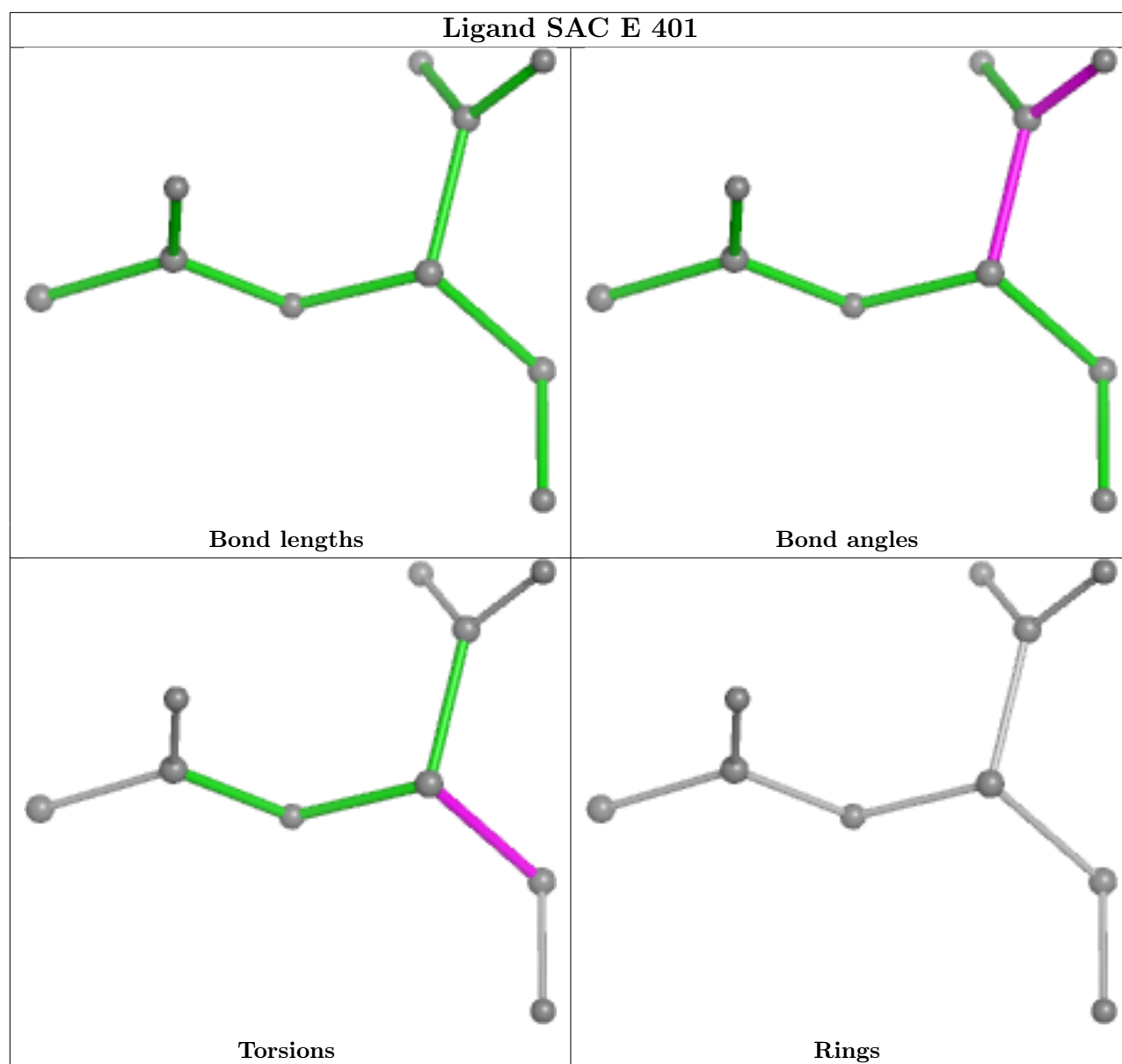












5.7 Other polymers [i](#)

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	324/324 (100%)	-0.26	0 100 100	19, 39, 76, 105	0
1	B	324/324 (100%)	-0.16	1 (0%) 94 93	25, 47, 85, 104	0
1	C	324/324 (100%)	-0.30	0 100 100	17, 36, 73, 102	0
1	D	324/324 (100%)	-0.14	2 (0%) 89 86	22, 51, 81, 111	0
1	E	324/324 (100%)	-0.28	0 100 100	21, 42, 75, 101	0
1	F	324/324 (100%)	-0.21	1 (0%) 94 93	21, 43, 76, 113	0
1	G	324/324 (100%)	-0.30	0 100 100	18, 35, 74, 99	0
1	H	324/324 (100%)	-0.19	2 (0%) 89 86	25, 46, 80, 103	0
All	All	2592/2592 (100%)	-0.23	6 (0%) 95 94	17, 43, 78, 113	0

All (6) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	182	GLY	5.9
1	D	213	ARG	2.5
1	B	236	LEU	2.4
1	D	106	TYR	2.2
1	H	237	GLY	2.1
1	H	55	HIS	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 monosaccharides in this entry.

6.4 Ligands

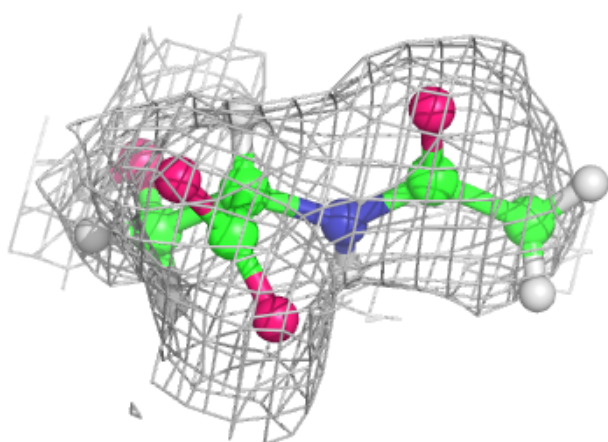
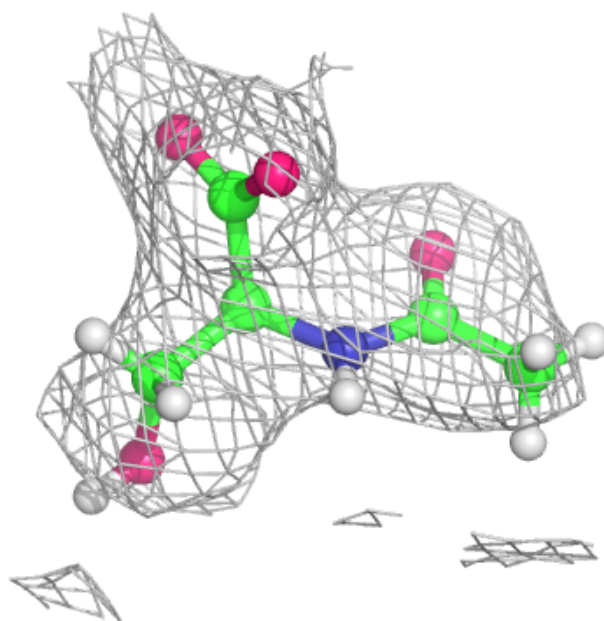
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	SAC	E	401	10/10	0.96	0.16	23,29,30,30	4
2	SAC	D	401	10/10	0.97	0.16	31,33,36,38	4
2	SAC	B	401	10/10	0.97	0.18	33,39,43,48	4
2	SAC	F	401	10/10	0.97	0.18	25,30,35,35	4
2	SAC	H	401	10/10	0.97	0.17	33,38,48,48	4
2	SAC	A	401	10/10	0.98	0.18	25,28,30,31	4
2	SAC	G	401	10/10	0.98	0.17	23,28,31,31	4
2	SAC	C	401	10/10	0.98	0.18	22,24,26,26	4

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.

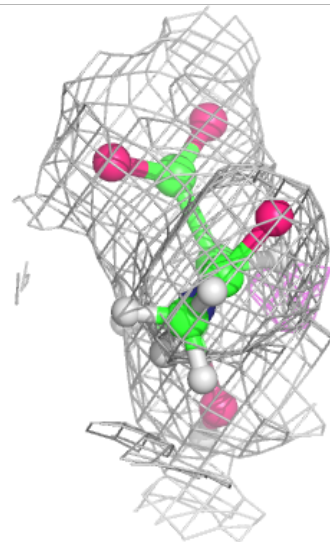
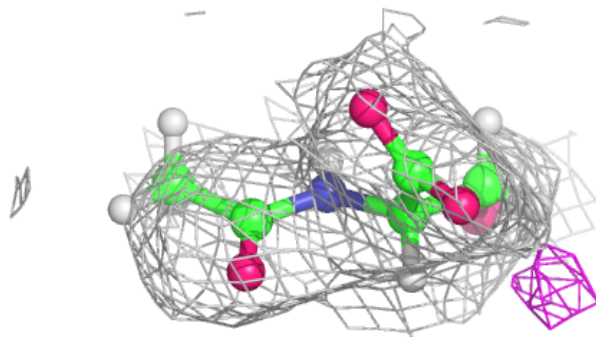
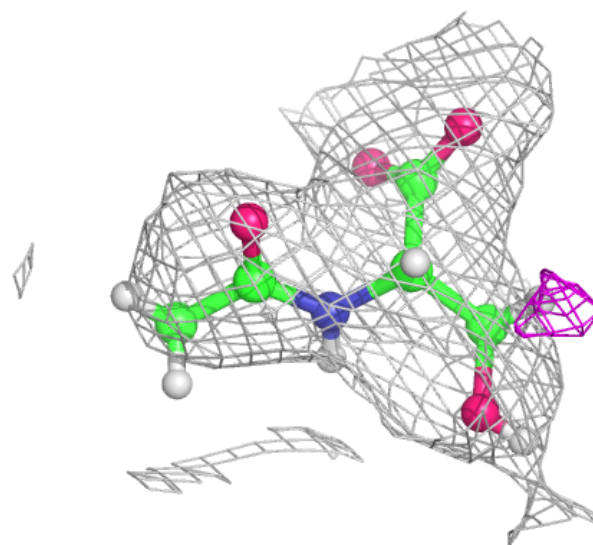
Electron density around SAC E 401:

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



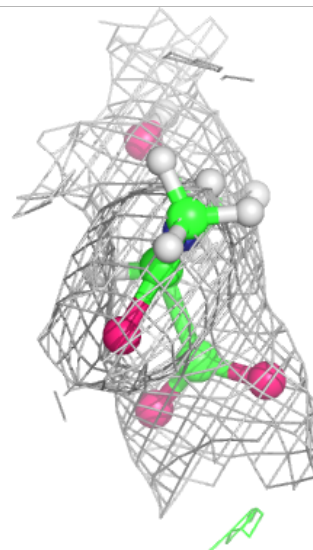
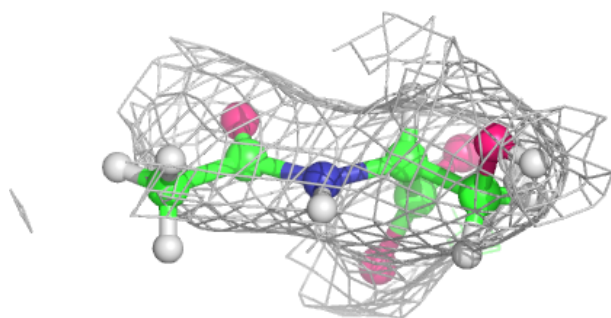
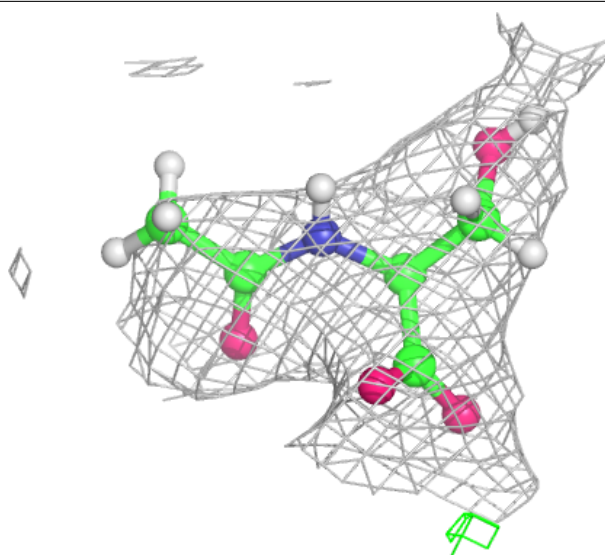
Electron density around SAC D 401:

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



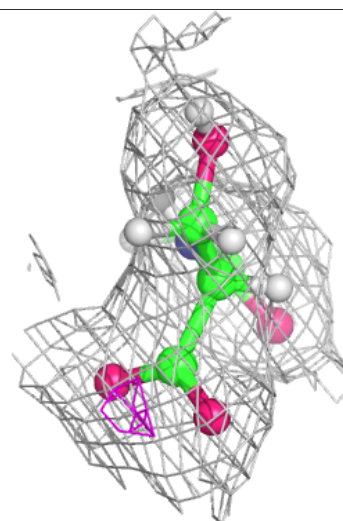
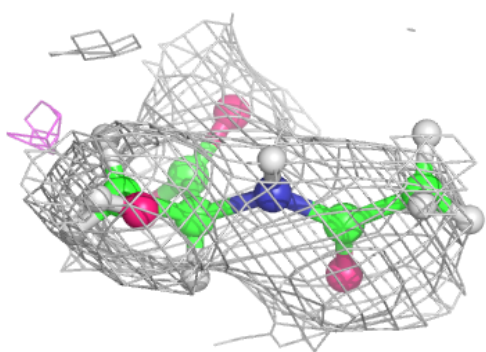
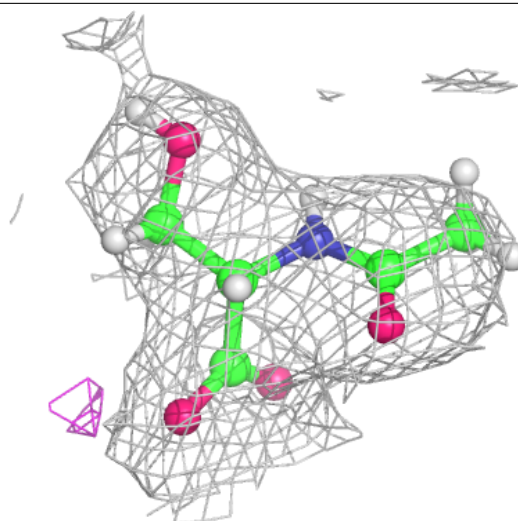
Electron density around SAC B 401:

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



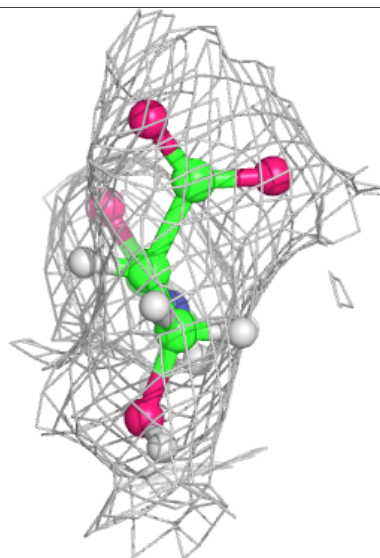
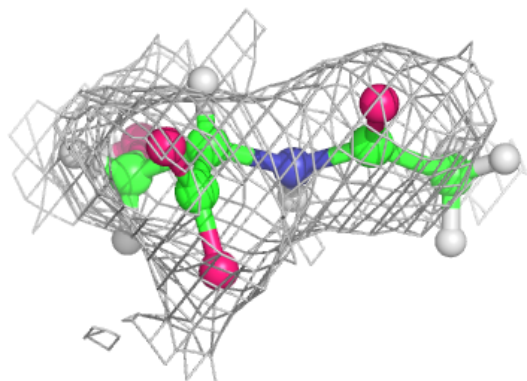
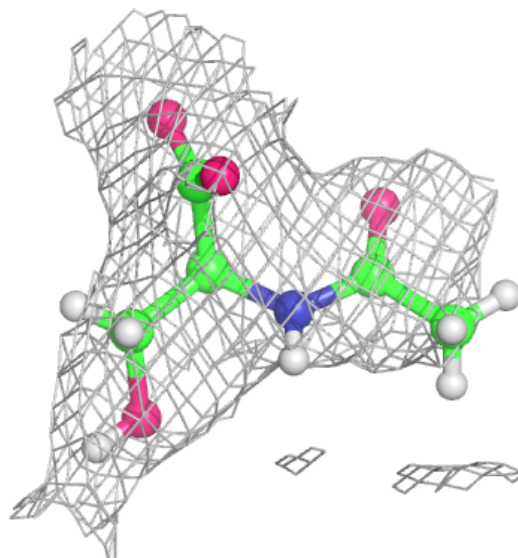
Electron density around SAC F 401:

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



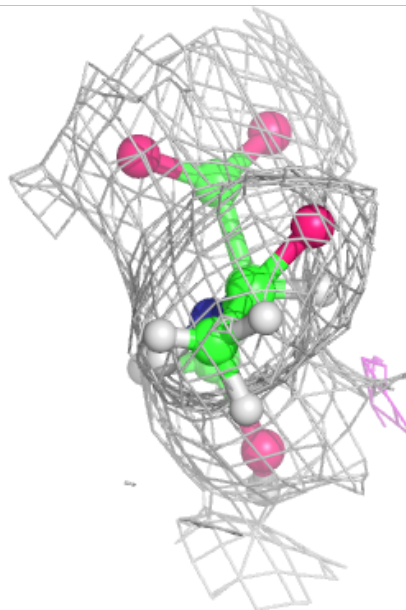
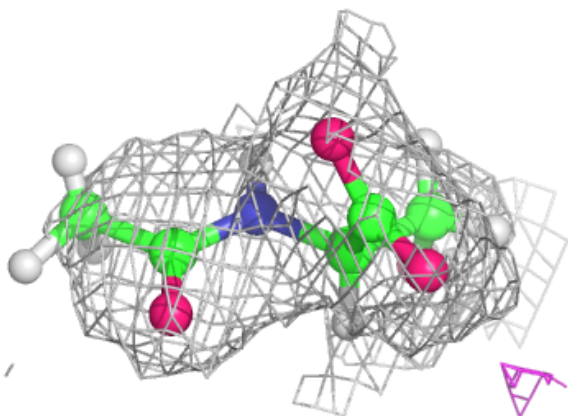
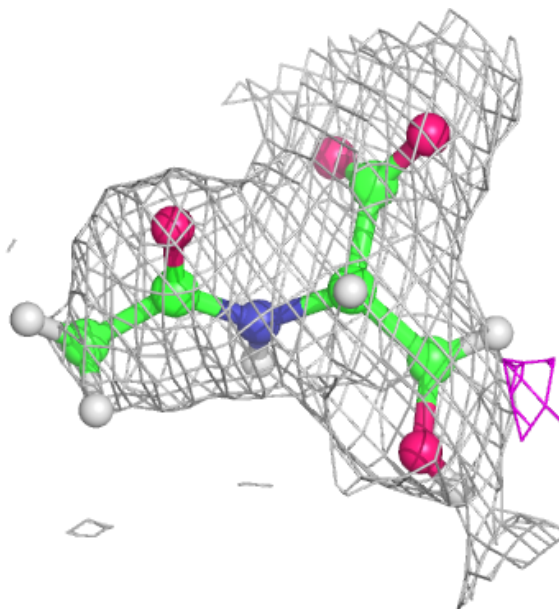
Electron density around SAC H 401:

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



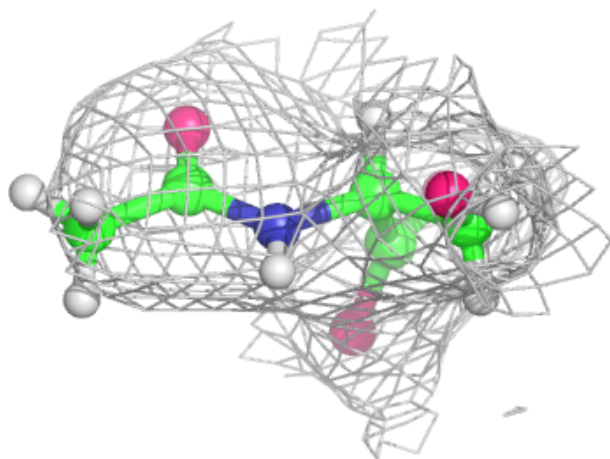
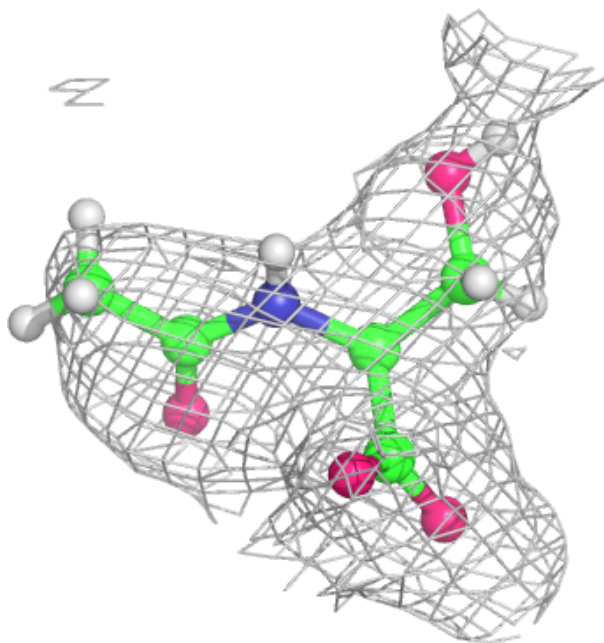
Electron density around SAC A 401:

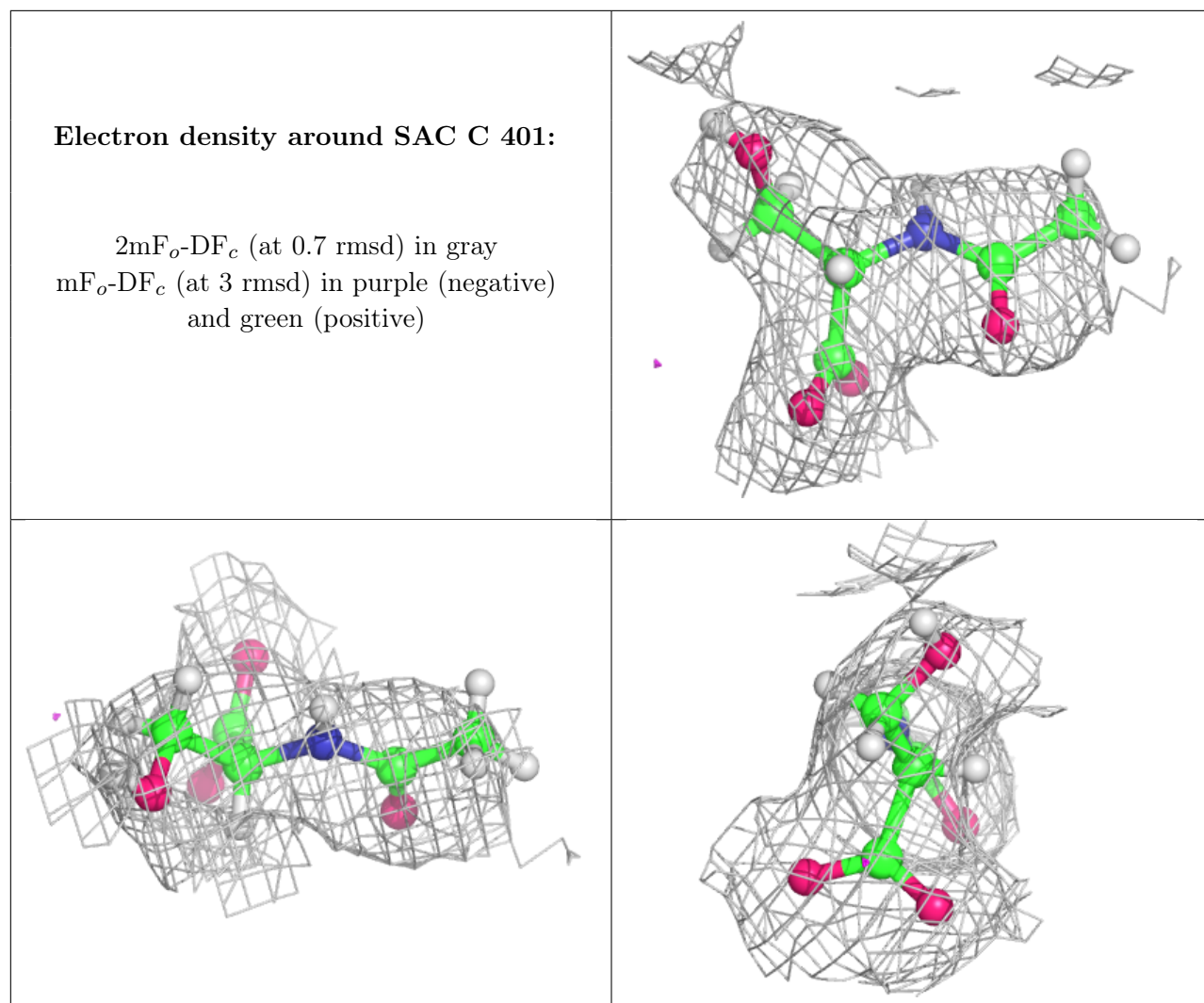
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around SAC G 401:

$2mF_o-DF_c$ (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.