



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 21, 2024 – 08:48 PM EST

PDB ID : 4QN9
Title : Structure of human NAPE-PLD
Authors : Garau, G.
Deposited on : 2014-06-17
Resolution : 2.65 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 : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.36
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) : 2.36

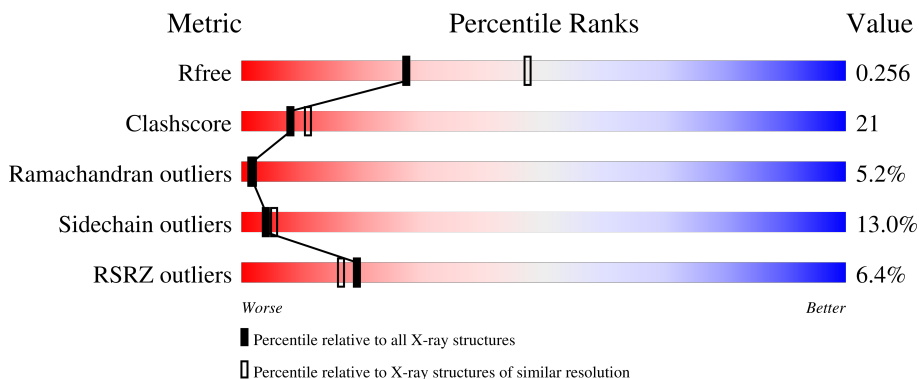
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.65 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	1332 (2.68-2.64)
Clashscore	141614	1374 (2.68-2.64)
Ramachandran outliers	138981	1349 (2.68-2.64)
Sidechain outliers	138945	1349 (2.68-2.64)
RSRZ outliers	127900	1318 (2.68-2.64)

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	393	
1	B	393	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	DXC	B	610	-	-	-	X
5	SO4	B	611	-	-	X	-

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 5875 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.

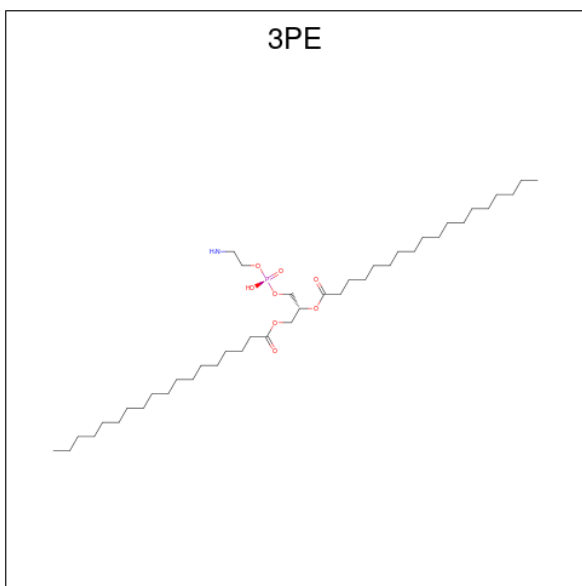
- Molecule 1 is a protein called N-acyl-phosphatidylethanolamine-hydrolyzing phospholipase D.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	321	Total 2679	C 1732	N 452	O 482	S 13	0	8	0
1	B	322	Total 2682	C 1732	N 452	O 485	S 13	0	7	0

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

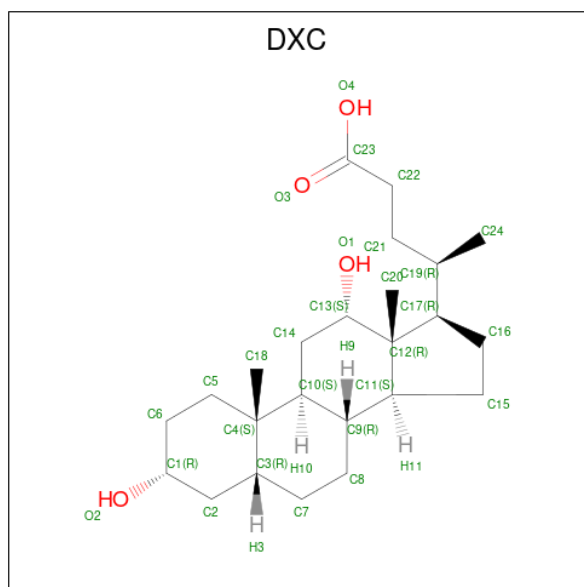
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	2	Total 2	Zn 2	0	0
2	B	2	Total 2	Zn 2	0	0

- Molecule 3 is 1,2-Distearoyl-sn-glycerophosphoethanolamine (three-letter code: 3PE) (formula: C₄₁H₈₂NO₈P).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
3	A	1	Total	C	N	O	P	0	0
			44	34	1	8	1		
3	B	1	Total	C	N	O	P	0	0
			44	34	1	8	1		

- Molecule 4 is (3ALPHA,5BETA,12ALPHA)-3,12-DIHYDROXYCHOLAN-24-OIC ACID (three-letter code: DXC) (formula: C₂₄H₄₀O₄).



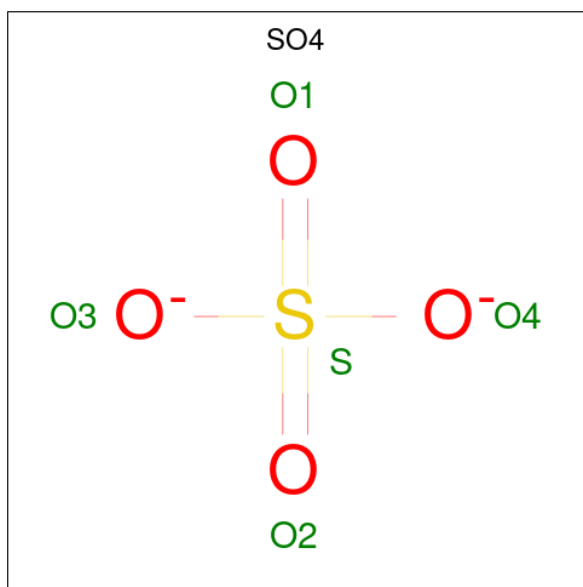
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			28	24	4		
4	A	1	Total	C	O	0	0
			28	24	4		
4	A	1	Total	C	O	0	0
			28	24	4		
4	A	1	Total	C	O	0	0
			28	24	4		
4	B	1	Total	C	O	0	0
			28	24	4		
4	B	1	Total	C	O	0	0
			28	24	4		
4	B	1	Total	C	O	0	0
			28	24	4		
4	B	1	Total	C	O	0	0
			28	24	4		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total	C	O	0	0
			28	24	4		
4	B	1	Total	C	O	0	0
			28	24	4		

- Molecule 5 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	O	S	0	0
			5	4	1		
5	A	1	Total	O	S	0	0
			5	4	1		
5	B	1	Total	O	S	0	0
			5	4	1		

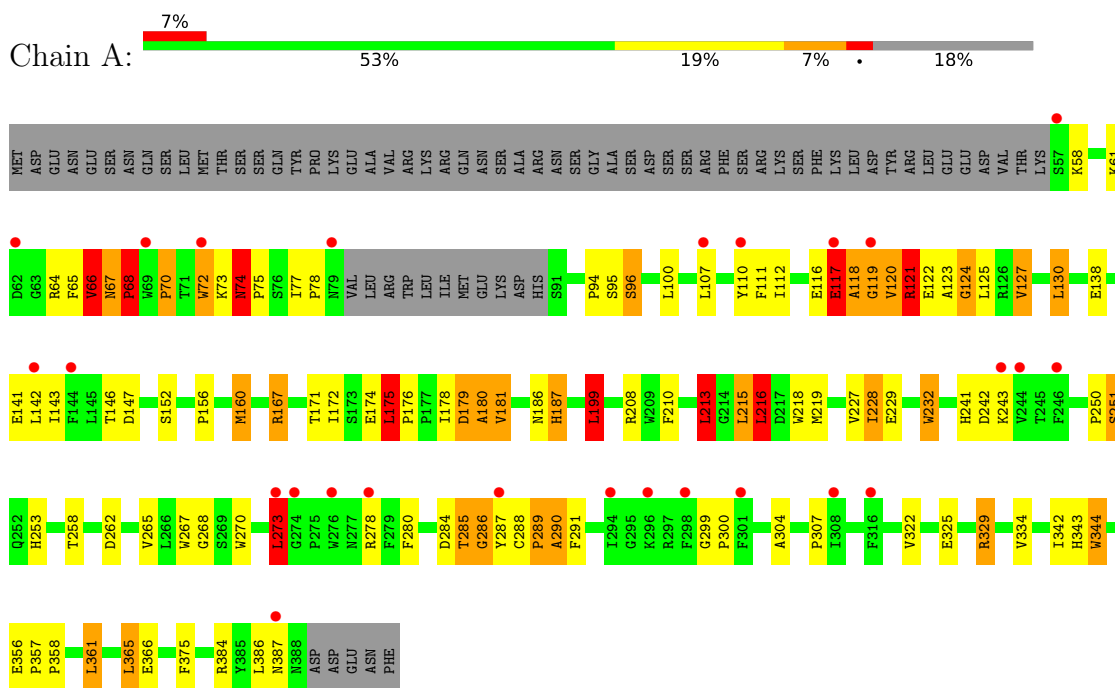
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	36	Total	O	0	0
			36	36		
6	B	62	Total	O	0	1
			63	63		

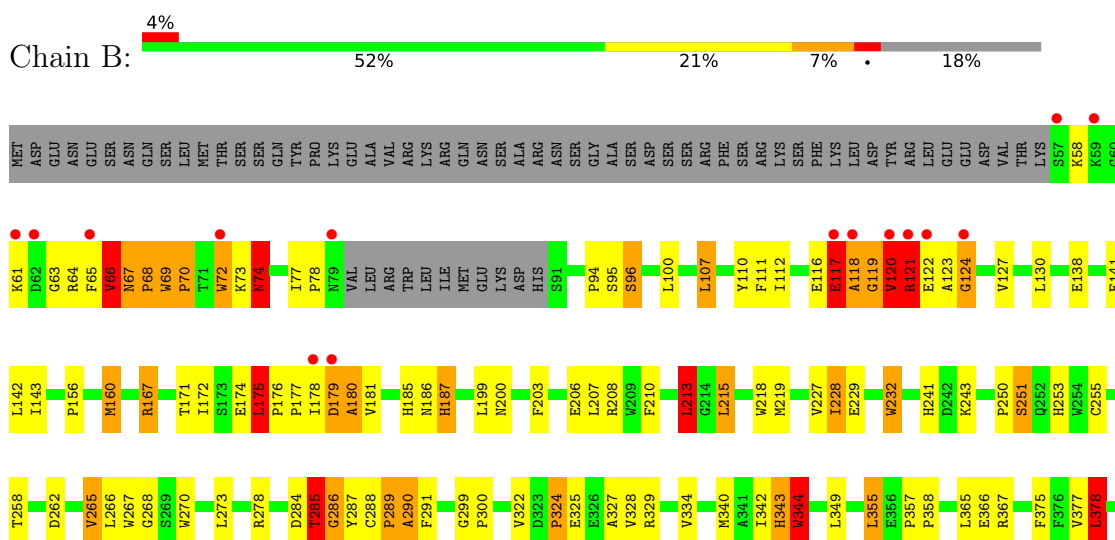
3 Residue-property plots i

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: N-acyl-phosphatidylethanolamine-hydrolyzing phospholipase D



- Molecule 1: N-acyl-phosphatidylethanolamine-hydrolyzing phospholipase D



3354		
	N357	
	N358	
	D359	
	ASP	
	GLU	
	ASN	
	PHE	

4 Data and refinement statistics

Property	Value	Source
Space group	P 65 2 2	Depositor
Cell constants a, b, c, α , β , γ	95.10Å 95.10Å 444.17Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	82.36 – 2.65 82.36 – 2.65	Depositor EDS
% Data completeness (in resolution range)	100.0 (82.36-2.65) 100.0 (82.36-2.65)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.68 (at 2.65Å)	Xtrriage
Refinement program	CCP4, REFMAC 5.7.0029	Depositor
R, R_{free}	0.214 , 0.253 0.217 , 0.256	Depositor DCC
R_{free} test set	1794 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å ²)	72.1	Xtrriage
Anisotropy	0.241	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 58.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	5875	wwPDB-VP
Average B, all atoms (Å ²)	76.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.91% 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: 3PE, SO4, DXC, ZN

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	0.66	1/2774 (0.0%)	1.12	25/3777 (0.7%)
1	B	0.83	2/2773 (0.1%)	1.13	25/3777 (0.7%)
All	All	0.75	3/5547 (0.1%)	1.13	50/7554 (0.7%)

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	9
1	B	0	8
All	All	0	17

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	72	TRP	CB-CG	8.52	1.65	1.50
1	A	72	TRP	CB-CG	6.10	1.61	1.50
1	B	69	TRP	CB-CG	-5.59	1.40	1.50

All (50) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	121	ARG	NE-CZ-NH2	-22.64	108.98	120.30
1	B	121	ARG	NE-CZ-NH1	-16.39	112.10	120.30
1	B	121	ARG	NE-CZ-NH2	13.98	127.29	120.30
1	A	121	ARG	NE-CZ-NH1	12.41	126.50	120.30
1	A	121	ARG	CD-NE-CZ	10.84	138.77	123.60
1	B	384	ARG	NE-CZ-NH2	-8.30	116.15	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	121	ARG	CD-NE-CZ	7.20	133.69	123.60
1	B	232	TRP	CA-CB-CG	7.11	127.21	113.70
1	A	232	TRP	CA-CB-CG	6.80	126.61	113.70
1	A	287	TYR	N-CA-C	-6.79	92.67	111.00
1	B	175[A]	LEU	CA-CB-CG	6.68	130.66	115.30
1	B	175[B]	LEU	CA-CB-CG	6.68	130.66	115.30
1	A	361	LEU	CB-CG-CD2	6.41	121.90	111.00
1	B	328	VAL	CG1-CB-CG2	6.37	121.08	110.90
1	B	175[A]	LEU	C-N-CD	-6.30	106.73	120.60
1	B	175[B]	LEU	C-N-CD	-6.30	106.73	120.60
1	B	384	ARG	NE-CZ-NH1	6.26	123.43	120.30
1	B	213	LEU	CB-CG-CD2	6.22	121.57	111.00
1	A	329	ARG	NE-CZ-NH2	6.18	123.39	120.30
1	A	127	VAL	CG1-CB-CG2	6.16	120.75	110.90
1	A	215	LEU	CB-CG-CD2	6.16	121.47	111.00
1	B	215	LEU	CB-CG-CD1	6.07	121.32	111.00
1	B	142	LEU	CA-CB-CG	5.93	128.95	115.30
1	A	273	LEU	CB-CG-CD2	5.91	121.04	111.00
1	B	287	TYR	N-CA-C	-5.89	95.09	111.00
1	A	365	LEU	CB-CG-CD1	5.89	121.01	111.00
1	A	66	VAL	CG1-CB-CG2	5.84	120.25	110.90
1	A	130	LEU	CB-CG-CD1	5.84	120.92	111.00
1	A	199	LEU	CB-CG-CD1	5.77	120.81	111.00
1	A	175[A]	LEU	CA-CB-CG	5.69	128.40	115.30
1	A	175[B]	LEU	CA-CB-CG	5.69	128.40	115.30
1	B	378	LEU	CB-CG-CD1	5.68	120.66	111.00
1	A	107	LEU	CB-CG-CD2	5.65	120.60	111.00
1	B	107	LEU	CB-CG-CD1	5.58	120.48	111.00
1	A	213	LEU	CB-CG-CD1	5.56	120.46	111.00
1	A	142	LEU	CB-CG-CD2	5.55	120.44	111.00
1	B	130	LEU	CB-CG-CD2	5.39	120.16	111.00
1	A	265	VAL	CG1-CB-CG2	5.37	119.50	110.90
1	B	365	LEU	CB-CG-CD2	5.34	120.08	111.00
1	B	66	VAL	CG1-CB-CG2	5.33	119.43	110.90
1	A	216	LEU	CB-CG-CD1	5.31	120.03	111.00
1	B	355	LEU	CB-CG-CD1	5.31	120.02	111.00
1	A	216	LEU	CB-CG-CD2	5.30	120.01	111.00
1	A	181	VAL	CG1-CB-CG2	5.27	119.33	110.90
1	B	265	VAL	CG1-CB-CG2	5.15	119.13	110.90
1	A	175[A]	LEU	C-N-CD	-5.12	109.34	120.60
1	A	175[B]	LEU	C-N-CD	-5.12	109.34	120.60
1	B	175[A]	LEU	CB-CG-CD2	5.11	119.68	111.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	175[B]	LEU	CB-CG-CD2	5.11	119.68	111.00
1	B	285	THR	C-N-CA	-5.03	111.73	122.30

There are no chirality outliers.

All (17) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	116	GLU	Peptide
1	A	117	GLU	Peptide
1	A	118	ALA	Peptide
1	A	121	ARG	Sidechain
1	A	175[A]	LEU	Peptide
1	A	285	THR	Peptide,Mainchain
1	A	286	GLY	Peptide,Mainchain
1	B	116	GLU	Peptide
1	B	117	GLU	Peptide
1	B	118	ALA	Peptide
1	B	120	VAL	Peptide
1	B	175[A]	LEU	Peptide
1	B	285	THR	Peptide
1	B	286	GLY	Peptide,Mainchain

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	2679	0	2572	94	0
1	B	2682	0	2567	108	0
2	A	2	0	0	0	0
2	B	2	0	0	0	0
3	A	44	0	62	1	0
3	B	44	0	62	1	0
4	A	112	0	156	18	0
4	B	196	0	273	34	0
5	A	10	0	0	1	0
5	B	5	0	0	2	0
6	A	36	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	B	63	0	0	3	0
All	All	5875	0	5692	244	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 21.

All (244) 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:B:118:ALA:HB1	1:B:138:GLU:OE1	1.41	1.17
4:B:610:DXC:H242	4:B:610:DXC:H203	1.19	1.14
1:A:118:ALA:HB1	1:A:138:GLU:OE1	1.50	1.10
1:B:175[B]:LEU:HB2	1:B:176[B]:PRO:HD2	1.09	1.07
1:A:232:TRP:HZ3	1:A:267:TRP:O	1.39	1.06
1:B:232:TRP:HZ3	1:B:267:TRP:O	1.39	1.05
1:B:175[B]:LEU:CB	1:B:176[B]:PRO:HD2	1.84	1.03
1:A:175[B]:LEU:CB	1:A:176[B]:PRO:HD2	1.83	1.03
1:A:175[B]:LEU:HD12	1:A:175[B]:LEU:H	1.25	1.00
1:A:175[B]:LEU:HB2	1:A:176[B]:PRO:HD2	1.39	0.99
1:B:175[B]:LEU:H	1:B:175[B]:LEU:HD22	1.30	0.92
1:B:175[B]:LEU:HB2	1:B:176[B]:PRO:CD	1.97	0.91
1:B:65:PHE:O	1:B:66:VAL:HB	1.71	0.90
1:B:174[A]:GLU:O	1:B:175[A]:LEU:HG	1.72	0.89
1:A:143:ILE:O	1:A:179[B]:ASP:HB3	1.75	0.87
1:B:286:GLY:HA2	1:B:322:VAL:HG13	1.54	0.86
1:A:232:TRP:CZ3	1:A:267:TRP:O	2.27	0.85
1:A:178[B]:ILE:HA	1:A:179[B]:ASP:HB2	1.58	0.85
1:B:175[B]:LEU:H	1:B:175[B]:LEU:CD2	1.89	0.85
1:B:186:ASN:O	1:B:187:HIS:HB2	1.76	0.85
1:B:119:GLY:HA3	1:B:138:GLU:HB3	1.57	0.84
1:B:118:ALA:CB	1:B:138:GLU:OE1	2.26	0.84
1:B:232:TRP:CZ3	1:B:267:TRP:O	2.29	0.84
4:B:603:DXC:H221	4:B:603:DXC:H161	1.62	0.81
1:A:174[A]:GLU:O	1:A:175[A]:LEU:HB2	1.80	0.81
1:A:175[B]:LEU:CB	1:A:176[B]:PRO:CD	2.59	0.80
1:A:67:ASN:HB2	1:A:68:PRO:HD2	1.61	0.80
1:A:289:PRO:O	1:A:290:ALA:HB3	1.82	0.80
1:B:143:ILE:O	1:B:179[B]:ASP:HB3	1.82	0.80
1:A:186:ASN:O	1:A:187:HIS:HB2	1.80	0.79
1:B:178[B]:ILE:HA	1:B:179[B]:ASP:HB2	1.66	0.78
4:B:610:DXC:H242	4:B:610:DXC:C20	2.02	0.77

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:120:VAL:HG22	1:A:141:GLU:HA	1.65	0.77
1:B:66:VAL:O	1:B:67:ASN:CG	2.24	0.77
1:A:118:ALA:CB	1:A:138:GLU:OE1	2.33	0.76
1:B:175[B]:LEU:CB	1:B:176[B]:PRO:CD	2.60	0.75
1:B:66:VAL:O	1:B:67:ASN:CB	2.35	0.74
1:B:69:TRP:HH2	1:B:213:LEU:HD13	1.52	0.74
1:B:171:THR:HG1	1:B:174[B]:GLU:HG3	1.52	0.73
1:A:66:VAL:O	1:A:67:ASN:CG	2.27	0.73
1:B:120:VAL:HG22	1:B:141:GLU:HA	1.70	0.72
1:A:174[A]:GLU:O	1:A:175[A]:LEU:CB	2.38	0.72
1:B:289:PRO:O	1:B:290:ALA:HB3	1.89	0.71
1:A:171:THR:HG1	1:A:174[B]:GLU:HG3	1.54	0.70
1:B:179[B]:ASP:O	1:B:180[B]:ALA:HB2	1.91	0.70
1:B:67:ASN:HB2	1:B:68:PRO:HD2	1.71	0.70
4:A:507:DXC:H161	4:A:507:DXC:H221	1.72	0.69
1:B:167:ARG:NH2	5:B:611:SO4:O3	2.26	0.69
1:A:286:GLY:HA2	1:A:322:VAL:HG13	1.75	0.69
1:A:119:GLY:HA2	1:A:138:GLU:HB3	1.74	0.68
1:A:160:MET:HE1	4:A:505:DXC:H243	1.76	0.68
4:B:610:DXC:H241	4:B:610:DXC:H13	1.75	0.68
1:A:179[B]:ASP:O	1:A:180[B]:ALA:HB2	1.93	0.68
1:A:160:MET:CE	4:A:505:DXC:H243	2.25	0.67
1:A:289:PRO:O	1:A:290:ALA:CB	2.42	0.67
1:A:175[B]:LEU:HD12	1:A:175[B]:LEU:N	2.03	0.67
4:B:610:DXC:H203	4:B:610:DXC:C24	2.08	0.66
1:A:66:VAL:O	1:A:67:ASN:CB	2.41	0.66
1:A:178[B]:ILE:CA	1:A:179[B]:ASP:HB2	2.25	0.66
1:B:66:VAL:O	1:B:67:ASN:ND2	2.29	0.66
1:B:174[A]:GLU:O	1:B:175[A]:LEU:CB	2.43	0.65
1:B:218:TRP:CE3	1:B:219:MET:HE2	2.31	0.65
1:B:186:ASN:O	1:B:187:HIS:CB	2.42	0.64
1:B:119:GLY:CA	1:B:138:GLU:HB3	2.26	0.64
4:B:608:DXC:H242	4:B:608:DXC:H13	1.80	0.63
1:A:175[B]:LEU:HB3	1:A:176[B]:PRO:HD2	1.79	0.63
1:A:67:ASN:CB	1:A:68:PRO:HD2	2.27	0.62
1:B:218:TRP:HE3	1:B:219:MET:HE2	1.64	0.62
1:B:175[B]:LEU:CD2	1:B:175[B]:LEU:N	2.61	0.62
1:A:119:GLY:CA	1:A:138:GLU:HB3	2.29	0.62
1:A:186:ASN:O	1:A:187:HIS:CB	2.47	0.62
1:A:213:LEU:HA	1:A:229:GLU:HG2	1.82	0.61
1:A:167:ARG:HH21	1:A:167:ARG:HB3	1.65	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:200:ASN:O	1:B:203:PHE:O	2.18	0.61
1:A:66:VAL:O	1:A:66:VAL:HG23	2.01	0.61
1:A:218:TRP:HE3	1:A:219:MET:HE2	1.65	0.60
1:A:288:CYS:C	1:A:289:PRO:O	2.39	0.60
1:B:289:PRO:O	1:B:290:ALA:CB	2.46	0.60
1:A:218:TRP:CE3	1:A:219:MET:HE2	2.37	0.60
1:A:66:VAL:O	1:A:67:ASN:ND2	2.35	0.59
1:B:66:VAL:O	1:B:66:VAL:HG13	2.02	0.59
1:B:288:CYS:C	1:B:289:PRO:O	2.41	0.59
1:B:178[B]:ILE:CA	1:B:179[B]:ASP:HB2	2.32	0.58
4:B:610:DXC:H13	4:B:610:DXC:C24	2.32	0.58
1:B:218:TRP:CE3	1:B:219:MET:CE	2.86	0.58
1:B:167:ARG:HH21	1:B:167:ARG:HB3	1.68	0.58
1:A:299:GLY:HA2	1:A:300:PRO:C	2.23	0.58
4:B:609:DXC:H183	4:B:610:DXC:H181	1.86	0.58
1:A:167:ARG:NH2	5:A:508:SO4:O1	2.33	0.58
1:B:213:LEU:HA	1:B:229:GLU:HG2	1.84	0.57
1:B:67:ASN:CB	1:B:68:PRO:HD2	2.34	0.57
1:B:69:TRP:CH2	1:B:213:LEU:HD13	2.37	0.57
1:B:118:ALA:HB3	6:B:710:HOH:O	2.04	0.57
1:B:174[A]:GLU:O	1:B:175[A]:LEU:CG	2.50	0.57
1:B:120:VAL:O	1:B:121:ARG:HB2	2.05	0.56
1:B:123:ALA:O	1:B:124:GLY:O	2.23	0.56
1:A:67:ASN:HB2	1:A:68:PRO:CD	2.33	0.56
1:A:65:PHE:O	1:A:66:VAL:HG22	2.06	0.55
1:A:172:ILE:HG23	1:A:199:LEU:HD13	1.88	0.55
4:A:505:DXC:H13	4:A:505:DXC:H242	1.87	0.55
4:A:504:DXC:H243	1:B:160:MET:HE1	1.89	0.55
1:A:286:GLY:CA	1:A:322:VAL:HG13	2.37	0.54
4:B:603:DXC:H161	4:B:603:DXC:C22	2.36	0.54
1:B:179[B]:ASP:O	1:B:180[B]:ALA:CB	2.55	0.54
1:B:66:VAL:O	1:B:67:ASN:HB3	2.07	0.54
1:B:210:PHE:HB3	1:B:270:TRP:CH2	2.42	0.54
1:B:388:ASN:O	1:B:389:ASP:HB2	2.07	0.54
4:A:504:DXC:H242	4:A:504:DXC:H13	1.89	0.53
1:B:299:GLY:HA2	1:B:300:PRO:C	2.28	0.53
1:A:210:PHE:HB3	1:A:270:TRP:CH2	2.42	0.53
4:B:603:DXC:H242	4:B:603:DXC:C13	2.39	0.53
1:B:120:VAL:CG1	1:B:122:GLU:OE2	2.56	0.53
1:B:179[A]:ASP:HB3	1:B:206:GLU:O	2.08	0.53
1:A:171:THR:OG1	1:A:174[A]:GLU:OE1	2.27	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:504:DXC:H243	1:B:160:MET:CE	2.37	0.53
1:B:66:VAL:O	1:B:66:VAL:CG1	2.56	0.53
1:A:179[B]:ASP:O	1:A:180[B]:ALA:CB	2.57	0.52
1:B:251:SER:HB3	1:B:268:GLY:HA2	1.92	0.52
1:B:227:VAL:O	1:B:228:ILE:HD12	2.08	0.52
4:A:507:DXC:H161	4:A:507:DXC:C22	2.39	0.52
1:B:178[B]:ILE:HG22	1:B:180[B]:ALA:H	1.75	0.52
4:A:507:DXC:C13	4:A:507:DXC:H242	2.41	0.51
4:B:603:DXC:C22	4:B:603:DXC:C16	2.89	0.51
4:A:507:DXC:H182	4:B:607:DXC:H203	1.92	0.51
4:B:603:DXC:H221	4:B:603:DXC:C16	2.37	0.51
1:A:120:VAL:HG12	1:A:121:ARG:H	1.74	0.51
1:A:258:THR:HG21	4:A:507:DXC:H3	1.92	0.51
4:B:609:DXC:C13	4:B:609:DXC:C24	2.89	0.51
1:A:120:VAL:O	1:A:121:ARG:HB2	2.10	0.50
1:B:357:PRO:HB2	1:B:358:PRO:HD3	1.93	0.50
1:B:64:ARG:HA	1:B:70:PRO:HD3	1.93	0.50
1:B:384:ARG:HD3	6:B:750:HOH:O	2.11	0.50
4:B:609:DXC:O1	4:B:609:DXC:H241	2.10	0.50
1:B:120:VAL:HG12	1:B:122:GLU:OE2	2.11	0.50
1:A:64:ARG:HA	1:A:70:PRO:HD3	1.94	0.49
1:B:120:VAL:HG12	1:B:121:ARG:N	2.28	0.49
4:B:601:DXC:H203	4:B:603:DXC:H182	1.94	0.49
4:B:609:DXC:C13	4:B:609:DXC:H242	2.42	0.49
1:A:285:THR:HG21	1:A:291:PHE:CZ	2.47	0.49
1:A:120:VAL:HG12	1:A:121:ARG:N	2.27	0.49
1:A:179[A]:ASP:O	1:A:208:ARG:N	2.27	0.49
1:B:63:GLY:O	1:B:70:PRO:HD2	2.13	0.49
1:B:175[A]:LEU:HB3	1:B:177[A]:PRO:HD3	1.95	0.48
1:B:120:VAL:HG12	1:B:121:ARG:H	1.78	0.48
1:A:175[B]:LEU:H	1:A:175[B]:LEU:CD1	2.03	0.48
1:A:178[B]:ILE:HG22	1:A:180[B]:ALA:H	1.79	0.48
4:B:609:DXC:H242	4:B:609:DXC:H13	1.96	0.47
1:B:273:LEU:HD22	1:B:278:ARG:HD2	1.97	0.47
1:A:119:GLY:C	1:A:120:VAL:HG23	2.35	0.47
1:A:218:TRP:CE3	1:A:219:MET:CE	2.97	0.47
4:B:607:DXC:H13	4:B:607:DXC:H242	1.95	0.47
1:A:167:ARG:NH2	1:B:171:THR:HG21	2.29	0.47
4:B:603:DXC:H242	4:B:603:DXC:O1	2.14	0.47
1:A:232:TRP:CE3	1:A:250:PRO:HA	2.50	0.47
1:B:174[A]:GLU:N	1:B:174[A]:GLU:OE1	2.48	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:175[B]:LEU:HB2	1:A:176[B]:PRO:CD	2.20	0.47
1:B:171:THR:OG1	1:B:174[A]:GLU:OE1	2.28	0.47
1:B:285:THR:HG21	1:B:291:PHE:CZ	2.50	0.47
4:B:601:DXC:H242	4:B:601:DXC:H13	1.96	0.47
4:B:603:DXC:H182	4:B:603:DXC:H71	1.60	0.47
1:B:67:ASN:HB2	1:B:68:PRO:CD	2.43	0.46
4:B:603:DXC:H61	4:B:603:DXC:H10	1.74	0.46
4:B:610:DXC:C24	4:B:610:DXC:C13	2.93	0.46
1:B:340:MET:SD	1:B:378:LEU:HD22	2.55	0.46
1:B:180[A]:ALA:HA	1:B:208:ARG:O	2.14	0.46
1:B:172:ILE:O	1:B:175[B]:LEU:CD2	2.63	0.46
1:B:258:THR:HG21	4:B:603:DXC:H3	1.97	0.46
1:A:120:VAL:CG1	1:A:122:GLU:OE2	2.64	0.46
4:A:507:DXC:H182	4:A:507:DXC:H71	1.60	0.46
1:A:110:TYR:OH	1:A:118:ALA:CB	2.64	0.46
1:B:68:PRO:HD3	6:B:758:HOH:O	2.15	0.46
1:A:156:PRO:HD2	3:A:503:3PE:H362	1.98	0.45
1:A:67:ASN:CB	1:A:68:PRO:CD	2.92	0.45
4:A:507:DXC:C22	4:A:507:DXC:C16	2.94	0.45
1:A:120:VAL:HG12	1:A:122:GLU:OE2	2.17	0.45
4:A:507:DXC:H61	4:A:507:DXC:H10	1.74	0.45
1:A:111:PHE:CD2	1:A:175[B]:LEU:HA	2.52	0.45
1:A:125:LEU:C	1:A:125:LEU:HD23	2.38	0.44
1:B:94:PRO:O	1:B:95:SER:HB2	2.16	0.44
4:A:507:DXC:C8	4:B:602:DXC:H222	2.48	0.44
4:B:608:DXC:H13	4:B:608:DXC:C24	2.47	0.44
1:B:111:PHE:CD2	1:B:175[B]:LEU:HA	2.52	0.44
1:A:167:ARG:HH21	1:A:167:ARG:CB	2.31	0.44
1:A:172:ILE:HA	1:A:175[B]:LEU:HD11	1.99	0.44
1:A:227:VAL:O	1:A:228:ILE:HD12	2.18	0.44
1:A:66:VAL:O	1:A:67:ASN:HB3	2.14	0.43
1:A:180[A]:ALA:HA	1:A:208:ARG:O	2.18	0.43
1:A:253:HIS:CE1	1:A:284:ASP:HB3	2.52	0.43
1:B:185:HIS:HB2	1:B:255:CYS:SG	2.58	0.43
4:B:603:DXC:H201	4:B:603:DXC:H9	1.53	0.43
4:A:507:DXC:H9	4:A:507:DXC:H201	1.52	0.43
1:B:118:ALA:HA	1:B:121:ARG:NH1	2.32	0.43
1:B:218:TRP:CZ3	1:B:219:MET:CE	3.01	0.43
1:A:357:PRO:HB2	1:A:358:PRO:HD3	2.00	0.43
1:B:112:ILE:HG12	1:B:174[A]:GLU:HG2	2.01	0.43
1:A:288:CYS:HG	1:A:290:ALA:HB3	1.84	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:216:LEU:HB2	1:A:229:GLU:CD	2.40	0.42
1:B:178[A]:ILE:HA	1:B:179[A]:ASP:HA	1.72	0.42
1:B:215:LEU:HD13	1:B:265:VAL:HG11	2.02	0.42
1:A:178[A]:ILE:HA	1:A:179[A]:ASP:HA	1.73	0.42
1:A:112:ILE:HG12	1:A:174[A]:GLU:HG2	2.00	0.42
1:A:280:PHE:O	1:A:304:ALA:HA	2.19	0.42
1:A:123:ALA:O	1:A:124:GLY:O	2.36	0.42
1:B:174[A]:GLU:O	1:B:175[A]:LEU:HB2	2.19	0.42
1:A:288:CYS:SG	1:A:289:PRO:O	2.77	0.42
1:B:119:GLY:C	1:B:120:VAL:HG23	2.40	0.42
1:A:174[A]:GLU:OE1	1:A:174[A]:GLU:N	2.52	0.42
4:A:507:DXC:H242	4:A:507:DXC:O1	2.19	0.42
1:B:172:ILE:HD13	1:B:199:LEU:HG	2.02	0.42
1:B:253:HIS:CE1	1:B:284:ASP:HB3	2.55	0.42
1:A:172:ILE:O	1:A:175[B]:LEU:CD1	2.68	0.42
1:B:74:ASN:OD1	1:B:74:ASN:N	2.52	0.42
1:B:232:TRP:CE3	1:B:250:PRO:HA	2.55	0.42
1:B:273:LEU:HD22	1:B:278:ARG:CD	2.50	0.42
1:B:156:PRO:HD2	3:B:606:3PE:H362	2.00	0.42
4:B:610:DXC:H243	4:B:610:DXC:H222	1.71	0.42
1:A:356:GLU:N	1:A:357:PRO:CD	2.83	0.41
1:B:100:LEU:HD23	1:B:100:LEU:HA	1.93	0.41
1:B:232:TRP:CZ3	1:B:266:LEU:HD22	2.55	0.41
1:B:181:VAL:HG23	1:B:207:LEU:HD11	2.02	0.41
4:B:609:DXC:H242	4:B:609:DXC:H203	2.03	0.41
1:A:94:PRO:O	1:A:95:SER:HB2	2.20	0.41
1:A:117:GLU:HB2	1:A:121:ARG:NH2	2.36	0.41
4:B:609:DXC:C24	4:B:609:DXC:O1	2.68	0.41
1:A:74:ASN:N	1:A:75:PRO:HD2	2.35	0.41
1:A:251:SER:HB3	1:A:268:GLY:HA2	2.01	0.41
1:A:307:PRO:HA	1:A:342:ILE:O	2.20	0.41
1:A:77:ILE:HG22	1:A:78:PRO:HD2	2.02	0.41
4:A:507:DXC:H82	4:B:602:DXC:H222	2.01	0.41
1:B:77:ILE:HG22	1:B:78:PRO:HD2	2.02	0.41
1:B:171:THR:OG1	1:B:174[B]:GLU:HG3	2.18	0.41
1:B:324:PRO:O	1:B:327:ALA:HB3	2.20	0.41
1:B:65:PHE:O	1:B:66:VAL:CB	2.55	0.41
1:B:175[B]:LEU:HD22	1:B:175[B]:LEU:N	2.14	0.41
1:A:178[B]:ILE:HA	1:A:179[B]:ASP:CB	2.41	0.41
4:B:607:DXC:H201	4:B:607:DXC:H142	1.82	0.41
1:B:110:TYR:OH	1:B:118:ALA:CB	2.69	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:146:THR:O	1:A:147:ASP:C	2.59	0.40
1:B:342:ILE:C	1:B:343:HIS:O	2.58	0.40
1:B:167:ARG:NH1	5:B:611:SO4:O3	2.54	0.40
1:A:273:LEU:HD12	1:A:278:ARG:HD2	2.03	0.40
1:B:177[A]:PRO:HD2	1:B:203:PHE:CZ	2.56	0.40
1:B:343:HIS:O	1:B:344:TRP:CD1	2.75	0.40
4:B:609:DXC:H9	4:B:609:DXC:H182	1.91	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	325/393 (83%)	284 (87%)	22 (7%)	19 (6%)	1	1
1	B	325/393 (83%)	281 (86%)	26 (8%)	18 (6%)	2	1
All	All	650/786 (83%)	565 (87%)	48 (7%)	37 (6%)	2	1

All (37) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	66	VAL
1	A	67	ASN
1	A	119	GLY
1	A	120	VAL
1	A	121	ARG
1	A	187	HIS
1	B	66	VAL
1	B	67	ASN
1	B	119	GLY
1	B	120	VAL
1	B	121	ARG

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Mol	Chain	Res	Type
1	B	187	HIS
1	A	117	GLU
1	A	124	GLY
1	A	179[A]	ASP
1	A	179[B]	ASP
1	A	344	TRP
1	B	117	GLU
1	B	124	GLY
1	B	179[A]	ASP
1	B	179[B]	ASP
1	B	180[A]	ALA
1	B	180[B]	ALA
1	B	290	ALA
1	B	344	TRP
1	A	70	PRO
1	A	180[A]	ALA
1	A	180[B]	ALA
1	A	290	ALA
1	B	70	PRO
1	A	289	PRO
1	B	96	SER
1	A	68	PRO
1	A	96	SER
1	B	289	PRO
1	B	74	ASN
1	A	74	ASN

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	291/352 (83%)	250 (86%)	41 (14%)	3 4
1	B	291/352 (83%)	257 (88%)	34 (12%)	5 7
All	All	582/704 (83%)	507 (87%)	75 (13%)	4 5

All (75) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	58	LYS
1	A	61	LYS
1	A	66	VAL
1	A	68	PRO
1	A	72	TRP
1	A	73	LYS
1	A	74	ASN
1	A	96	SER
1	A	100	LEU
1	A	117	GLU
1	A	127	VAL
1	A	130	LEU
1	A	152	SER
1	A	160	MET
1	A	167	ARG
1	A	175[A]	LEU
1	A	175[B]	LEU
1	A	181	VAL
1	A	199	LEU
1	A	213	LEU
1	A	215	LEU
1	A	216	LEU
1	A	228	ILE
1	A	241	HIS
1	A	242	ASP
1	A	243	LYS
1	A	251	SER
1	A	262	ASP
1	A	273	LEU
1	A	325	GLU
1	A	329	ARG
1	A	334	VAL
1	A	343	HIS
1	A	344	TRP
1	A	361	LEU
1	A	365	LEU
1	A	366	GLU
1	A	375	PHE
1	A	384	ARG
1	A	386	LEU
1	A	387	ASN
1	B	58	LYS
1	B	61	LYS

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Mol	Chain	Res	Type
1	B	66	VAL
1	B	68	PRO
1	B	72	TRP
1	B	73	LYS
1	B	74	ASN
1	B	96	SER
1	B	107	LEU
1	B	117	GLU
1	B	127	VAL
1	B	160	MET
1	B	167	ARG
1	B	213	LEU
1	B	228	ILE
1	B	241	HIS
1	B	243	LYS
1	B	251	SER
1	B	262	ASP
1	B	324	PRO
1	B	325	GLU
1	B	329	ARG
1	B	334	VAL
1	B	343	HIS
1	B	344	TRP
1	B	349	LEU
1	B	355	LEU
1	B	366	GLU
1	B	367	ARG
1	B	375	PHE
1	B	377	VAL
1	B	378	LEU
1	B	384	ARG
1	B	387	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	277	ASN
1	B	277	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](#)

Of 20 ligands modelled in this entry, 4 are monoatomic - leaving 16 for Mogul analysis.

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
5	SO4	A	509	-	4,4,4	0.40	0	6,6,6	0.31	0
4	DXC	B	608	-	31,31,31	1.12	2 (6%)	49,49,49	1.59	10 (20%)
4	DXC	B	603	-	31,31,31	1.28	3 (9%)	49,49,49	3.81	23 (46%)
4	DXC	A	505	-	31,31,31	0.97	1 (3%)	49,49,49	1.32	6 (12%)
4	DXC	B	601	-	31,31,31	0.96	1 (3%)	49,49,49	1.36	7 (14%)
4	DXC	A	504	-	31,31,31	0.93	2 (6%)	49,49,49	1.34	7 (14%)
4	DXC	B	609	-	31,31,31	1.15	3 (9%)	49,49,49	2.11	13 (26%)
3	3PE	B	606	2	43,43,50	1.03	2 (4%)	46,48,55	1.41	5 (10%)
4	DXC	A	506	-	31,31,31	0.95	1 (3%)	49,49,49	1.32	6 (12%)
5	SO4	B	611	-	4,4,4	0.60	0	6,6,6	0.66	0
4	DXC	B	610	-	31,31,31	1.00	2 (6%)	49,49,49	2.37	16 (32%)
5	SO4	A	508	-	4,4,4	0.44	0	6,6,6	0.44	0
4	DXC	B	602	-	31,31,31	0.94	1 (3%)	49,49,49	1.19	6 (12%)
3	3PE	A	503	2	43,43,50	0.97	2 (4%)	46,48,55	1.37	4 (8%)
4	DXC	A	507	-	31,31,31	1.23	3 (9%)	49,49,49	3.49	20 (40%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	DXC	B	607	-	31,31,31	1.08	4 (12%)	49,49,49	1.51	11 (22%)

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
4	DXC	B	608	-	-	3/9/71/71	0/4/4/4
4	DXC	B	603	-	-	3/9/71/71	0/4/4/4
4	DXC	A	505	-	-	2/9/71/71	0/4/4/4
4	DXC	B	601	-	-	0/9/71/71	0/4/4/4
4	DXC	A	504	-	-	2/9/71/71	0/4/4/4
4	DXC	B	609	-	-	1/9/71/71	0/4/4/4
3	3PE	B	606	2	-	18/47/47/54	-
4	DXC	A	506	-	-	3/9/71/71	0/4/4/4
4	DXC	B	610	-	-	9/9/71/71	1/4/4/4
4	DXC	B	602	-	-	3/9/71/71	0/4/4/4
3	3PE	A	503	2	-	18/47/47/54	-
4	DXC	A	507	-	-	4/9/71/71	0/4/4/4
4	DXC	B	607	-	-	0/9/71/71	0/4/4/4

All (27) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	606	3PE	O21-C21	4.82	1.47	1.34
4	B	603	DXC	C12-C11	-4.80	1.47	1.55
3	A	503	3PE	O21-C21	4.27	1.46	1.34
4	A	507	DXC	C12-C11	-3.10	1.50	1.55
4	A	507	DXC	C12-C17	-3.02	1.50	1.55
3	B	606	3PE	O31-C31	2.85	1.41	1.33
4	B	609	DXC	C12-C11	-2.82	1.50	1.55
4	B	608	DXC	C12-C11	-2.70	1.50	1.55
4	B	608	DXC	C12-C17	-2.52	1.51	1.55
4	A	506	DXC	C12-C11	-2.50	1.51	1.55
4	B	607	DXC	C4-C3	-2.42	1.51	1.55
4	B	610	DXC	C4-C3	-2.35	1.51	1.55
4	A	505	DXC	C12-C11	-2.33	1.51	1.55
3	A	503	3PE	O31-C31	2.32	1.40	1.33
4	B	602	DXC	C12-C11	-2.32	1.51	1.55

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	504	DXC	C14-C13	2.29	1.57	1.53
4	B	609	DXC	C12-C17	-2.28	1.51	1.55
4	B	607	DXC	C12-C13	-2.27	1.51	1.54
4	A	504	DXC	C12-C11	-2.26	1.51	1.55
4	B	610	DXC	C4-C10	-2.17	1.52	1.56
4	B	607	DXC	C20-C12	-2.16	1.50	1.54
4	A	507	DXC	C4-C3	-2.16	1.51	1.55
4	B	607	DXC	C2-C3	-2.13	1.50	1.53
4	B	609	DXC	C12-C13	-2.08	1.51	1.54
4	B	601	DXC	C20-C12	-2.05	1.50	1.54
4	B	603	DXC	C4-C3	-2.04	1.52	1.55
4	B	603	DXC	C4-C10	-2.03	1.52	1.56

All (134) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	603	DXC	C12-C11-C9	-14.48	98.73	114.71
4	A	507	DXC	C12-C11-C9	-13.45	99.87	114.71
4	B	603	DXC	C11-C9-C10	-11.35	93.89	109.09
4	A	507	DXC	C11-C9-C10	-10.81	94.61	109.09
4	B	603	DXC	C11-C12-C13	7.72	114.59	107.40
4	B	603	DXC	C8-C9-C10	7.45	119.73	110.49
4	B	603	DXC	C15-C11-C12	6.62	110.04	103.55
4	A	507	DXC	C8-C9-C10	6.57	118.64	110.49
4	A	507	DXC	C12-C17-C19	-6.44	111.81	119.50
4	B	610	DXC	C10-C14-C13	-6.19	106.13	114.30
4	B	609	DXC	C14-C13-C12	6.09	117.50	111.24
3	A	503	3PE	O21-C21-C22	5.87	124.15	111.50
4	B	610	DXC	C12-C11-C9	-5.82	108.29	114.71
4	A	507	DXC	C15-C11-C12	5.58	109.03	103.55
4	B	610	DXC	C4-C10-C9	5.35	118.04	112.42
4	B	603	DXC	C12-C17-C19	-5.24	113.24	119.50
3	B	606	3PE	O21-C21-C22	5.09	122.46	111.50
4	B	603	DXC	C20-C12-C17	-5.06	103.29	111.21
4	B	609	DXC	C10-C14-C13	4.58	120.35	114.30
4	A	507	DXC	C3-C2-C1	-4.39	106.31	112.76
4	B	609	DXC	C11-C12-C13	4.38	111.48	107.40
4	B	610	DXC	C12-C17-C19	-4.35	114.30	119.50
4	B	610	DXC	C11-C9-C10	-4.25	103.40	109.09
4	B	610	DXC	C20-C12-C13	-4.21	104.78	109.07
4	B	610	DXC	C14-C13-C12	-4.12	107.01	111.24
4	A	507	DXC	C14-C10-C4	4.11	117.96	113.73

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	609	DXC	C2-C3-C7	-4.10	104.23	111.74
4	B	610	DXC	C2-C3-C4	-3.97	108.44	112.66
4	B	603	DXC	C3-C2-C1	-3.97	106.93	112.76
4	A	507	DXC	C11-C12-C13	3.88	111.02	107.40
4	B	609	DXC	O1-C13-C12	-3.79	104.62	111.03
4	B	603	DXC	C14-C10-C4	3.70	117.55	113.73
4	A	504	DXC	C3-C2-C1	-3.68	107.36	112.76
3	B	606	3PE	O31-C31-O32	-3.67	114.33	123.59
4	A	505	DXC	C5-C6-C1	-3.64	105.79	110.47
4	B	609	DXC	C8-C9-C10	-3.62	106.00	110.49
4	B	608	DXC	C21-C19-C17	-3.52	103.01	110.28
4	B	603	DXC	C5-C6-C1	3.51	114.97	110.47
4	B	603	DXC	C18-C4-C5	3.48	113.87	108.26
4	A	507	DXC	C18-C4-C5	3.45	113.83	108.26
4	B	601	DXC	C2-C3-C7	-3.45	105.42	111.74
3	A	503	3PE	O31-C31-O32	-3.41	114.98	123.59
4	B	609	DXC	C18-C4-C10	-3.34	106.58	111.18
4	A	507	DXC	C14-C13-C12	3.33	114.66	111.24
4	B	610	DXC	C10-C4-C3	3.30	113.22	108.58
4	B	607	DXC	C18-C4-C10	-3.24	106.72	111.18
4	B	610	DXC	C11-C12-C13	3.24	110.41	107.40
4	A	507	DXC	C7-C3-C4	-3.19	106.57	112.31
4	A	504	DXC	C5-C4-C10	3.18	116.35	111.35
4	A	505	DXC	C3-C2-C1	-3.18	108.09	112.76
4	B	603	DXC	C7-C3-C4	-3.15	106.65	112.31
4	B	609	DXC	C6-C5-C4	-3.12	107.43	112.78
4	A	506	DXC	C21-C19-C17	-3.10	103.87	110.28
4	B	607	DXC	C5-C4-C10	3.07	116.18	111.35
4	B	603	DXC	C8-C7-C3	-3.05	105.73	111.84
4	B	603	DXC	C2-C1-C6	-3.03	106.94	110.55
4	B	610	DXC	C5-C4-C10	-3.00	106.63	111.35
4	B	607	DXC	C6-C5-C4	2.98	117.89	112.78
4	B	603	DXC	C8-C9-C11	2.98	117.17	112.08
4	A	505	DXC	C5-C4-C10	2.97	116.03	111.35
4	B	608	DXC	C18-C4-C3	-2.93	105.39	110.36
4	B	608	DXC	C12-C11-C9	-2.93	111.48	114.71
4	B	608	DXC	C24-C19-C21	2.92	114.94	110.36
4	B	603	DXC	C14-C10-C9	-2.89	106.12	110.82
3	B	606	3PE	O22-C21-C22	-2.89	112.48	123.73
4	A	507	DXC	C20-C12-C17	-2.86	106.73	111.21
4	B	608	DXC	C21-C22-C23	-2.86	104.91	112.51
4	B	607	DXC	C14-C13-C12	-2.83	108.33	111.24

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	609	DXC	C10-C4-C3	2.83	112.56	108.58
4	B	608	DXC	C14-C10-C4	-2.83	110.81	113.73
4	B	601	DXC	C10-C14-C13	-2.83	110.57	114.30
4	A	507	DXC	C14-C10-C9	-2.80	106.27	110.82
4	B	607	DXC	C10-C14-C13	-2.77	110.64	114.30
4	B	603	DXC	C24-C19-C17	-2.77	108.68	112.92
4	B	610	DXC	C3-C2-C1	-2.76	108.71	112.76
4	A	505	DXC	C24-C19-C17	-2.73	108.74	112.92
4	A	507	DXC	C8-C7-C3	-2.72	106.39	111.84
4	A	506	DXC	C17-C12-C11	-2.70	97.37	100.09
4	B	601	DXC	C5-C6-C1	2.68	113.91	110.47
3	A	503	3PE	O22-C21-C22	-2.65	113.40	123.73
4	A	507	DXC	C5-C6-C1	2.65	113.86	110.47
4	B	609	DXC	C17-C12-C13	-2.64	115.25	117.67
4	B	603	DXC	C22-C21-C19	-2.64	109.69	114.52
4	B	608	DXC	C12-C17-C19	-2.60	116.39	119.50
4	B	608	DXC	C10-C4-C3	2.59	112.22	108.58
4	B	603	DXC	O2-C1-C2	2.59	115.01	109.85
4	A	504	DXC	C18-C4-C5	-2.59	104.09	108.26
4	B	609	DXC	C2-C3-C4	2.58	115.40	112.66
4	A	507	DXC	C2-C1-C6	-2.58	107.47	110.55
4	B	607	DXC	C2-C3-C7	-2.56	107.05	111.74
4	A	507	DXC	C8-C9-C11	2.55	116.44	112.08
4	B	607	DXC	O2-C1-C2	-2.54	104.79	109.85
4	A	507	DXC	C6-C5-C4	-2.54	108.43	112.78
4	A	504	DXC	O1-C13-C14	2.47	114.15	109.12
4	B	602	DXC	C10-C4-C3	2.46	112.04	108.58
4	A	504	DXC	C5-C6-C1	-2.45	107.32	110.47
3	B	606	3PE	C2-O21-C21	2.44	123.81	117.79
4	A	507	DXC	C24-C19-C17	-2.42	109.21	112.92
4	A	505	DXC	C18-C4-C5	-2.42	104.36	108.26
4	A	506	DXC	C24-C19-C21	2.35	114.04	110.36
4	A	506	DXC	C12-C11-C9	2.34	117.30	114.71
4	B	602	DXC	C21-C19-C17	-2.33	105.46	110.28
4	A	504	DXC	C12-C17-C19	-2.29	116.76	119.50
4	B	608	DXC	C22-C21-C19	2.29	118.70	114.52
4	B	608	DXC	C20-C12-C17	-2.28	107.65	111.21
4	B	610	DXC	C17-C12-C13	2.25	119.72	117.67
4	B	610	DXC	C17-C12-C11	2.25	102.36	100.09
4	A	505	DXC	C24-C19-C21	-2.25	106.84	110.36
3	A	503	3PE	O31-C3-C2	-2.24	101.92	108.43
4	B	610	DXC	C18-C4-C10	-2.24	108.10	111.18

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	603	DXC	C6-C5-C4	-2.23	108.96	112.78
4	B	609	DXC	C4-C10-C9	-2.21	110.10	112.42
4	B	603	DXC	C18-C4-C3	-2.20	106.64	110.36
4	A	506	DXC	C8-C9-C10	2.16	113.17	110.49
3	B	606	3PE	O31-C3-C2	-2.16	102.16	108.43
4	B	610	DXC	C7-C8-C9	-2.15	108.60	112.14
4	A	507	DXC	C18-C4-C3	-2.14	106.73	110.36
4	B	602	DXC	C16-C17-C19	-2.14	108.83	112.15
4	B	602	DXC	C17-C12-C11	-2.14	97.94	100.09
4	B	607	DXC	O4-C23-C22	2.12	120.86	114.03
4	B	607	DXC	C21-C22-C23	-2.12	106.89	112.51
4	B	601	DXC	C18-C4-C10	-2.11	108.28	111.18
4	B	603	DXC	C2-C3-C4	-2.11	110.42	112.66
4	B	601	DXC	C5-C4-C10	2.10	114.66	111.35
4	B	601	DXC	C14-C13-C12	-2.10	109.08	111.24
4	A	504	DXC	C4-C10-C9	-2.10	110.22	112.42
4	B	601	DXC	C7-C8-C9	-2.06	108.74	112.14
4	B	607	DXC	C10-C4-C3	2.04	111.45	108.58
4	B	602	DXC	C24-C19-C21	2.04	113.56	110.36
4	B	609	DXC	C16-C17-C12	-2.04	101.55	103.55
4	A	506	DXC	C17-C12-C13	2.03	119.52	117.67
4	B	602	DXC	C11-C9-C10	-2.03	106.38	109.09
4	B	607	DXC	C2-C1-C6	-2.02	108.14	110.55
4	B	603	DXC	O4-C23-C22	2.01	120.49	114.03

There are no chirality outliers.

All (66) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	503	3PE	C1-O11-P-O12
3	B	606	3PE	C1-O11-P-O12
4	B	610	DXC	C12-C17-C19-C24
4	B	610	DXC	C16-C17-C19-C21
3	A	503	3PE	O32-C31-O31-C3
3	A	503	3PE	C32-C31-O31-C3
3	B	606	3PE	C32-C31-O31-C3
4	B	610	DXC	C24-C19-C21-C22
3	B	606	3PE	O32-C31-O31-C3
4	B	610	DXC	C16-C17-C19-C24
4	B	610	DXC	C12-C17-C19-C21
4	B	608	DXC	C24-C19-C21-C22
3	A	503	3PE	C31-C32-C33-C34

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Mol	Chain	Res	Type	Atoms
4	A	507	DXC	C17-C19-C21-C22
4	B	603	DXC	C17-C19-C21-C22
3	B	606	3PE	C31-C32-C33-C34
3	B	606	3PE	C1-O11-P-O13
4	A	507	DXC	C19-C21-C22-C23
4	B	603	DXC	C19-C21-C22-C23
4	A	507	DXC	C24-C19-C21-C22
3	A	503	3PE	C21-C22-C23-C24
3	B	606	3PE	C21-C22-C23-C24
4	B	603	DXC	C24-C19-C21-C22
3	B	606	3PE	C34-C35-C36-C37
3	A	503	3PE	C34-C35-C36-C37
3	A	503	3PE	C1-O11-P-O13
4	B	610	DXC	C17-C19-C21-C22
3	A	503	3PE	C3A-C3B-C3C-C3D
4	B	602	DXC	C24-C19-C21-C22
4	A	506	DXC	C24-C19-C21-C22
3	B	606	3PE	O11-C1-C2-C3
3	B	606	3PE	C3A-C3B-C3C-C3D
4	B	609	DXC	C16-C17-C19-C21
3	B	606	3PE	C37-C38-C39-C3A
3	A	503	3PE	C37-C38-C39-C3A
3	A	503	3PE	C1-O11-P-O14
3	B	606	3PE	O11-C1-C2-O21
3	A	503	3PE	C29-C2A-C2B-C2C
3	A	503	3PE	O11-C1-C2-C3
3	A	503	3PE	O11-C1-C2-O21
3	B	606	3PE	C24-C25-C26-C27
3	A	503	3PE	C23-C24-C25-C26
3	B	606	3PE	C23-C24-C25-C26
3	B	606	3PE	C29-C2A-C2B-C2C
4	B	610	DXC	C19-C21-C22-C23
3	A	503	3PE	C24-C25-C26-C27
4	B	608	DXC	C21-C22-C23-O4
4	B	608	DXC	C21-C22-C23-O3
4	A	506	DXC	C21-C22-C23-O3
3	A	503	3PE	O31-C31-C32-C33
3	B	606	3PE	O31-C31-C32-C33
4	A	506	DXC	C21-C22-C23-O4
4	B	610	DXC	C21-C22-C23-O4
3	B	606	3PE	C33-C34-C35-C36
4	A	505	DXC	C21-C22-C23-O4

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Mol	Chain	Res	Type	Atoms
4	B	602	DXC	C21-C22-C23-O3
3	B	606	3PE	O32-C31-C32-C33
4	B	610	DXC	C21-C22-C23-O3
3	B	606	3PE	C1-O11-P-O14
4	A	505	DXC	C21-C22-C23-O3
3	A	503	3PE	O32-C31-C32-C33
4	A	504	DXC	C21-C22-C23-O4
4	A	504	DXC	C21-C22-C23-O3
3	A	503	3PE	O21-C21-C22-C23
4	A	507	DXC	C12-C17-C19-C24
4	B	602	DXC	C21-C22-C23-O4

All (1) ring outliers are listed below:

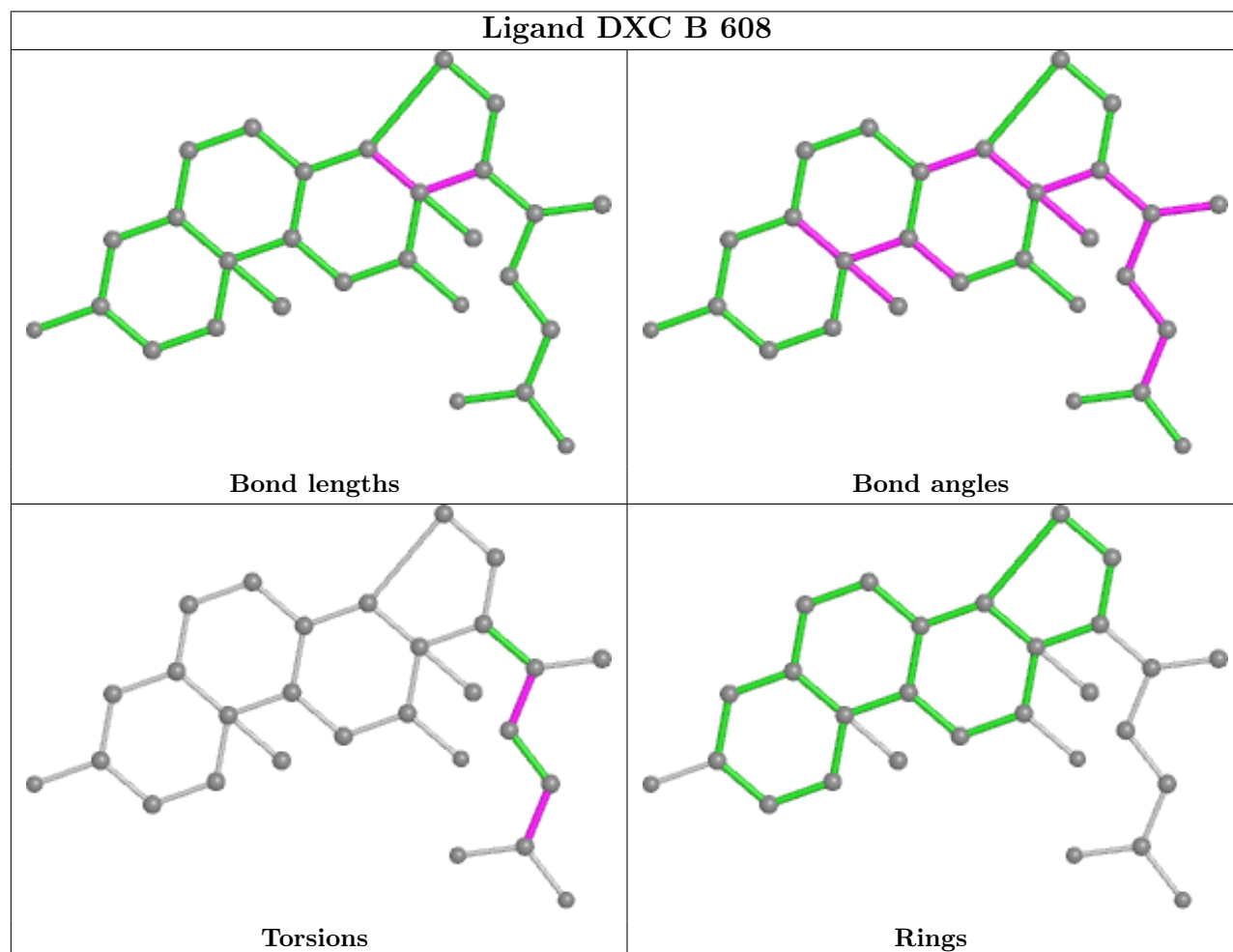
Mol	Chain	Res	Type	Atoms
4	B	610	DXC	C1-C2-C3-C4-C5-C6

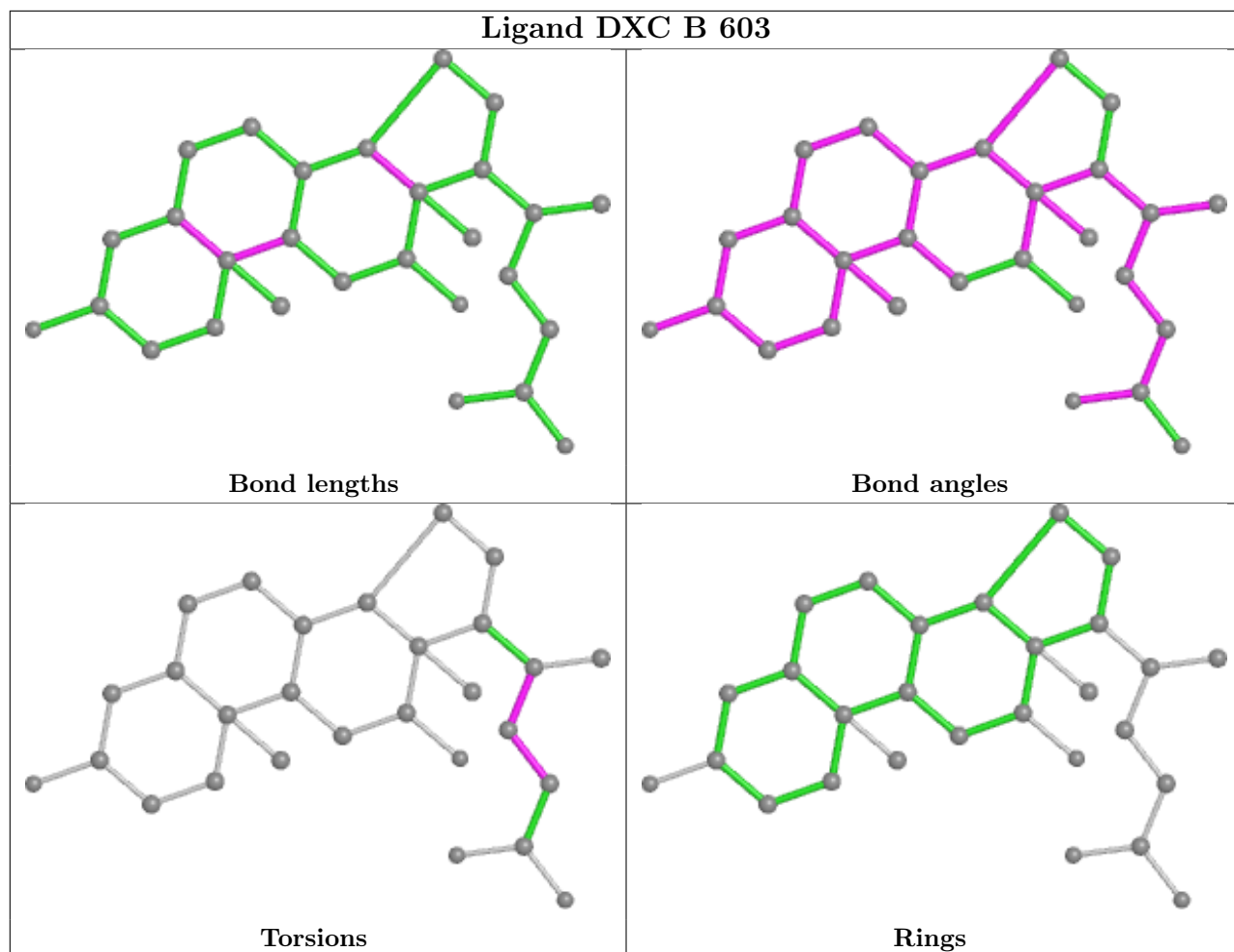
14 monomers are involved in 54 short contacts:

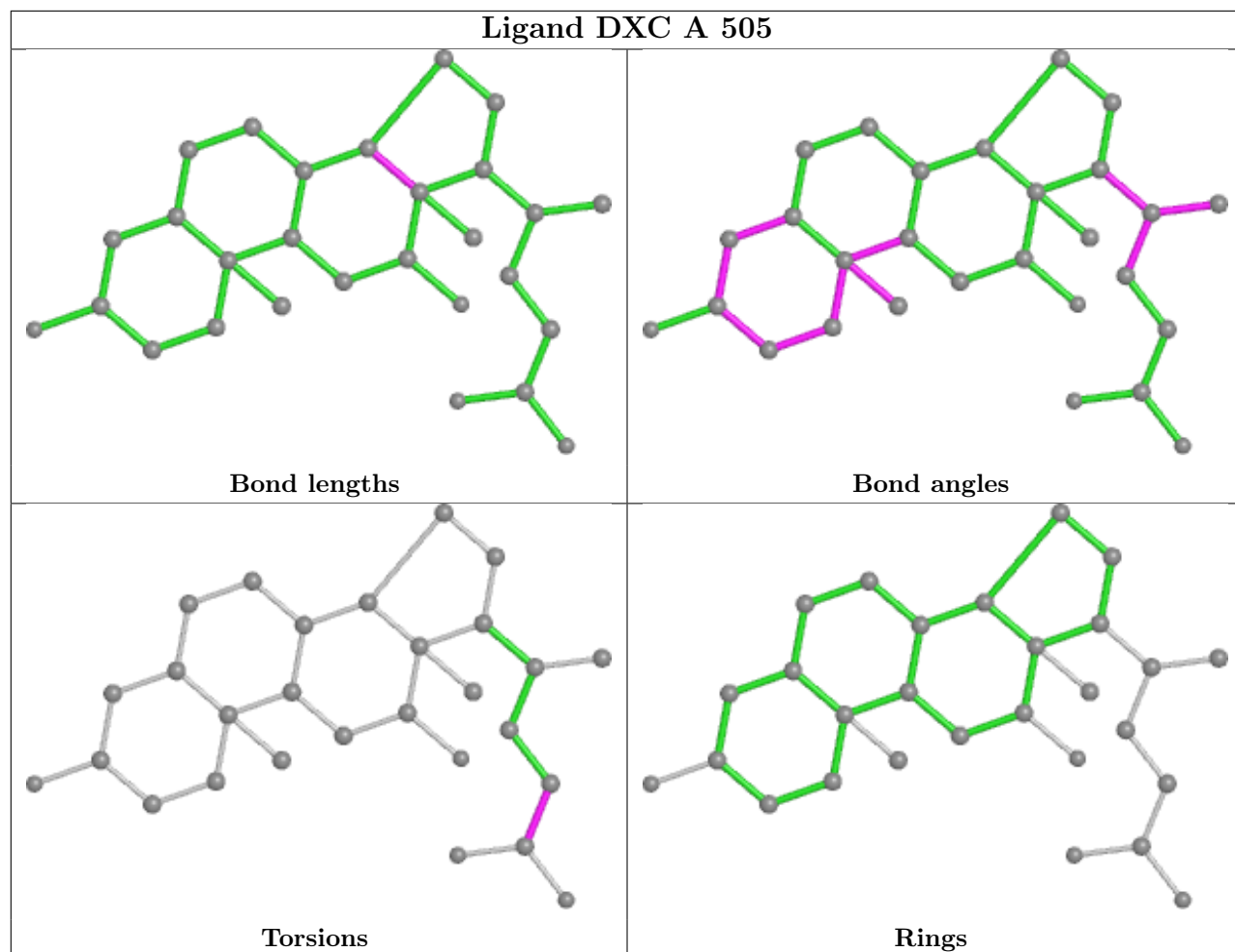
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	608	DXC	2	0
4	B	603	DXC	11	0
4	A	505	DXC	3	0
4	B	601	DXC	2	0
4	A	504	DXC	3	0
4	B	609	DXC	8	0
3	B	606	3PE	1	0
5	B	611	SO4	2	0
4	B	610	DXC	8	0
5	A	508	SO4	1	0
4	B	602	DXC	2	0
3	A	503	3PE	1	0
4	A	507	DXC	12	0
4	B	607	DXC	3	0

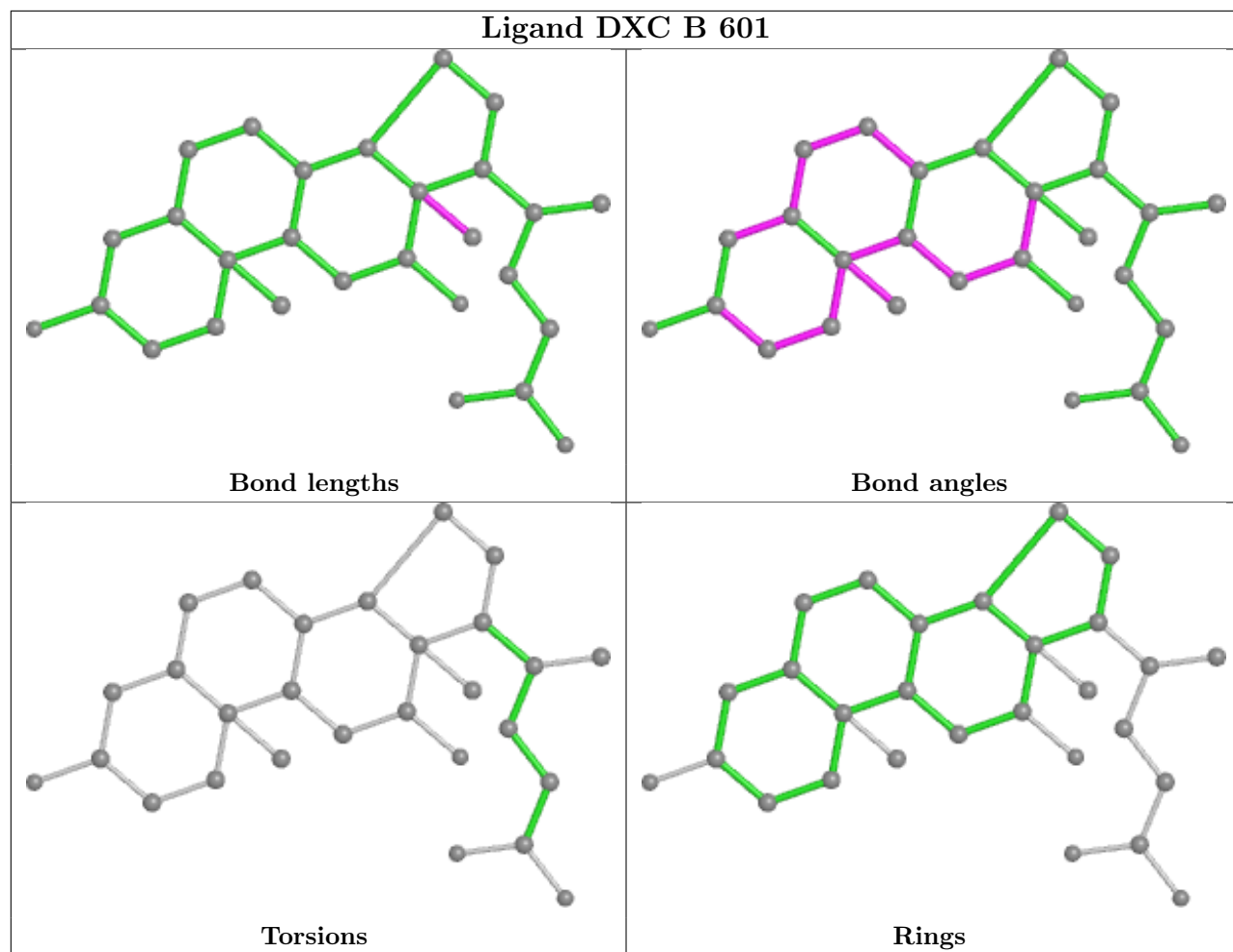
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

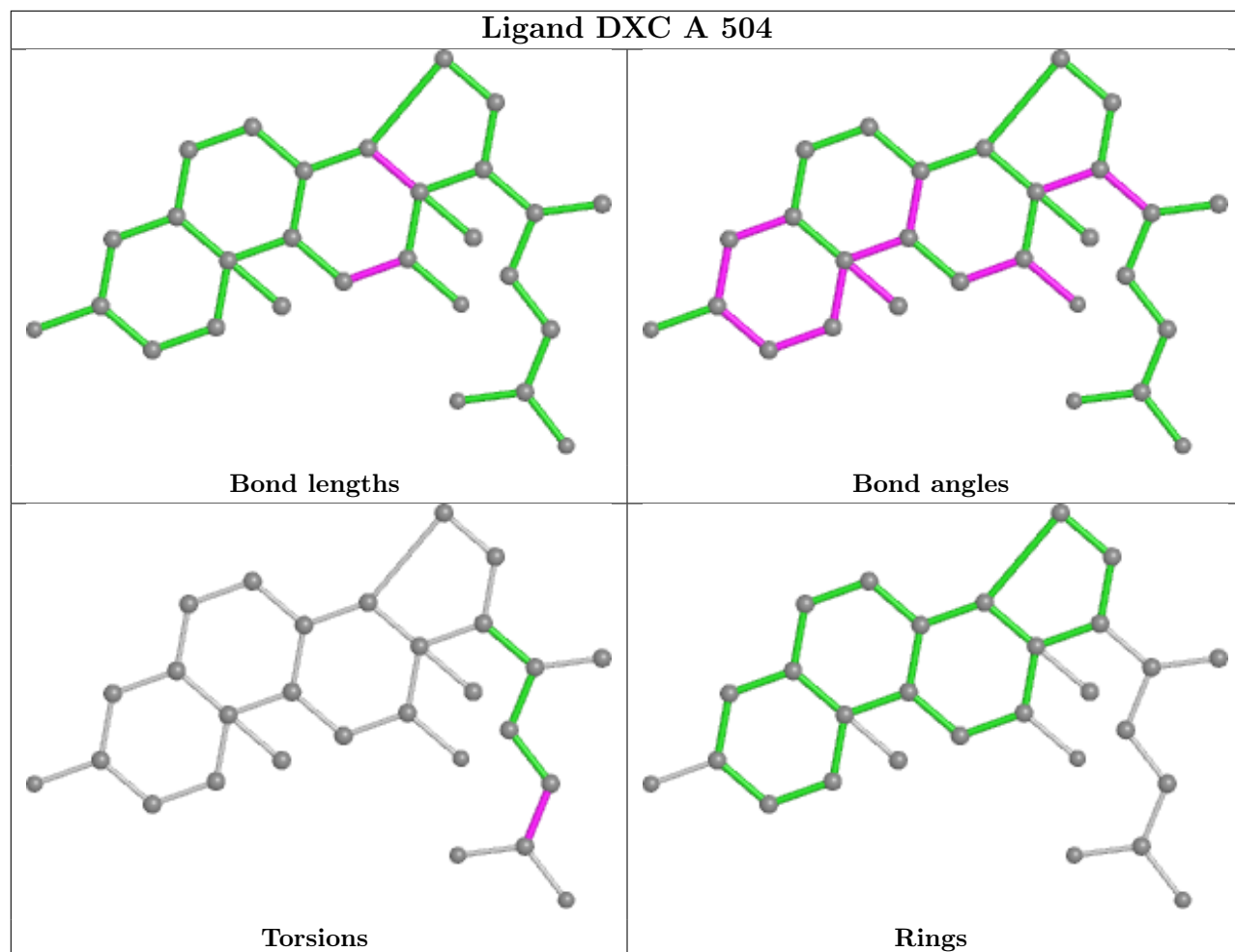
average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

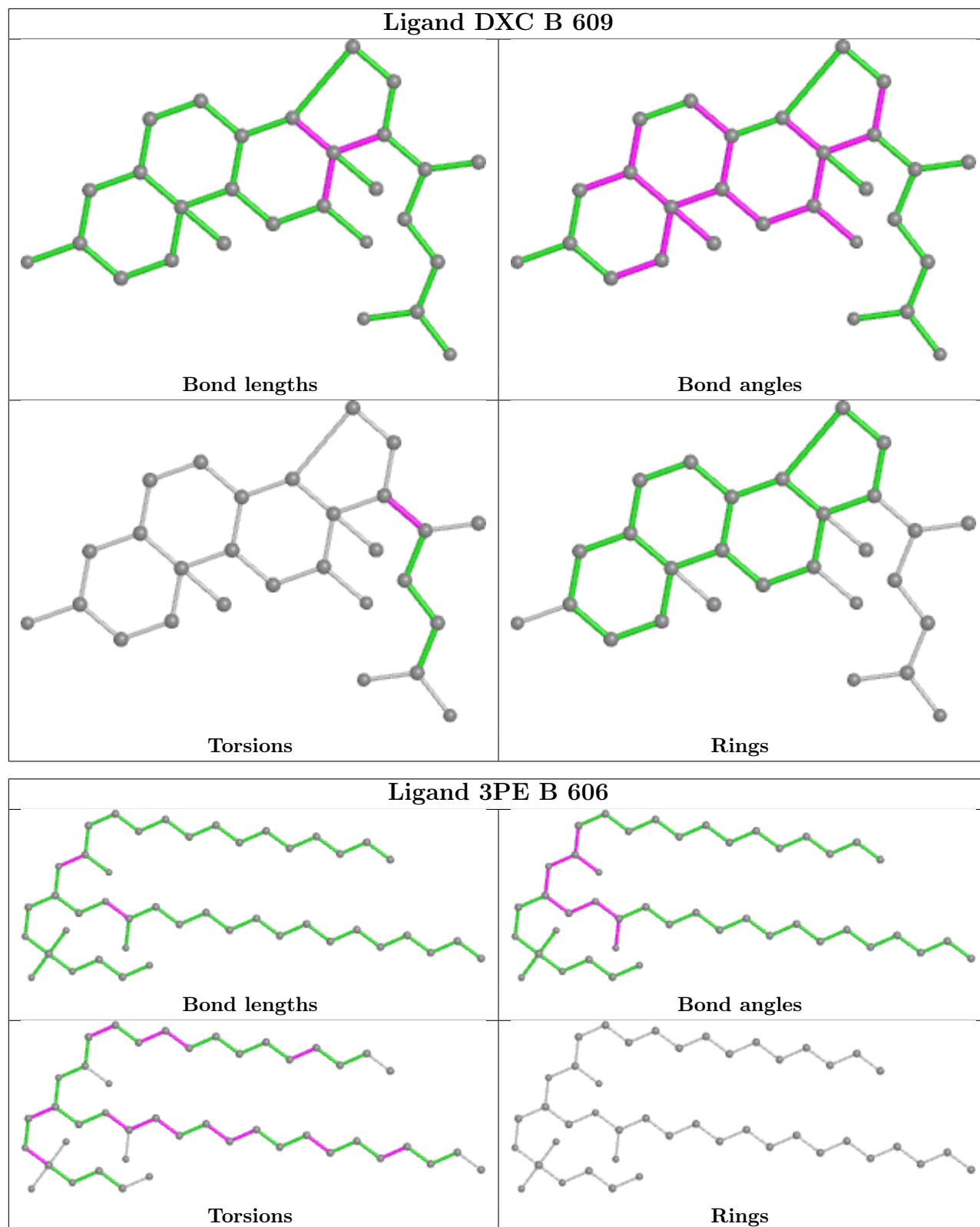


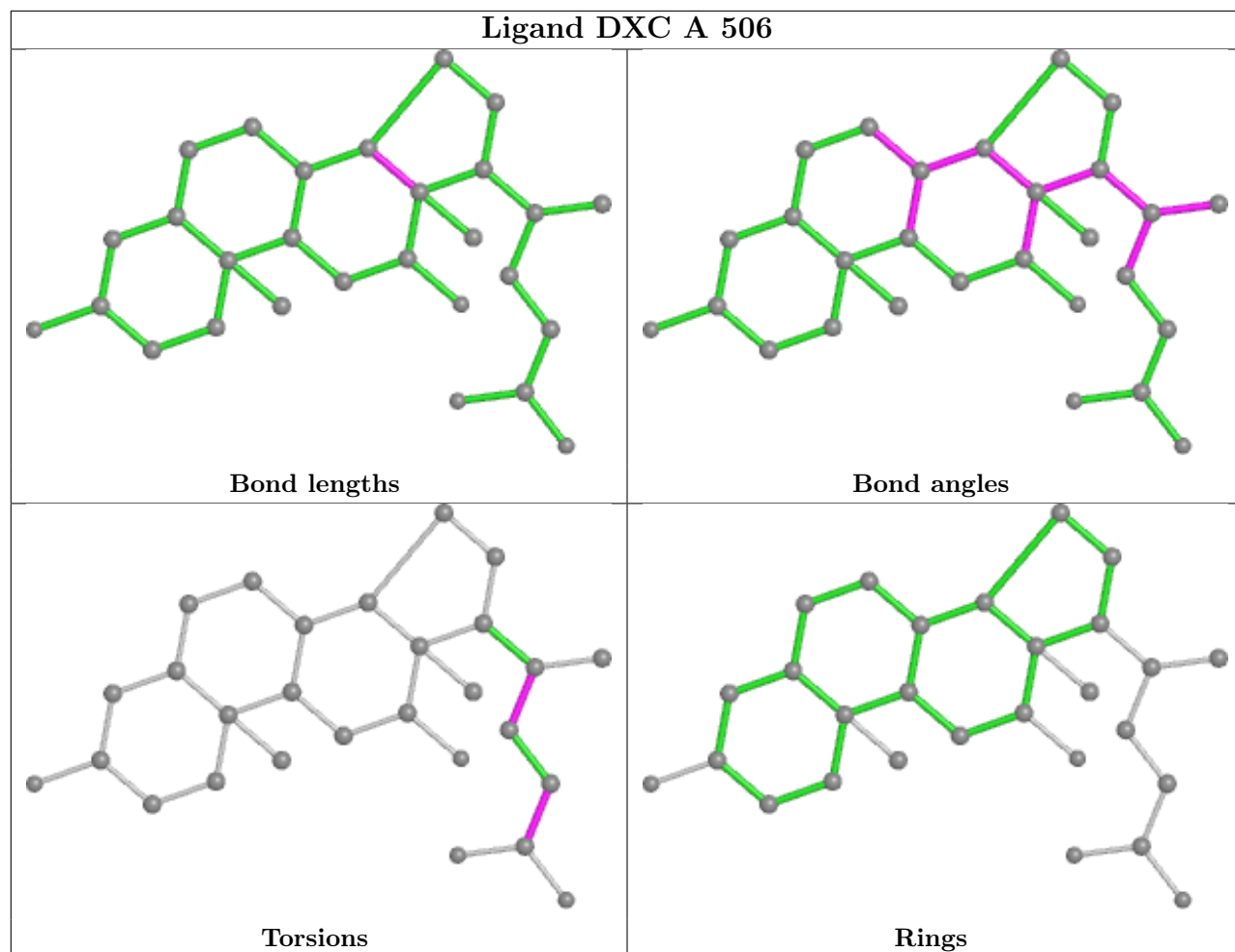


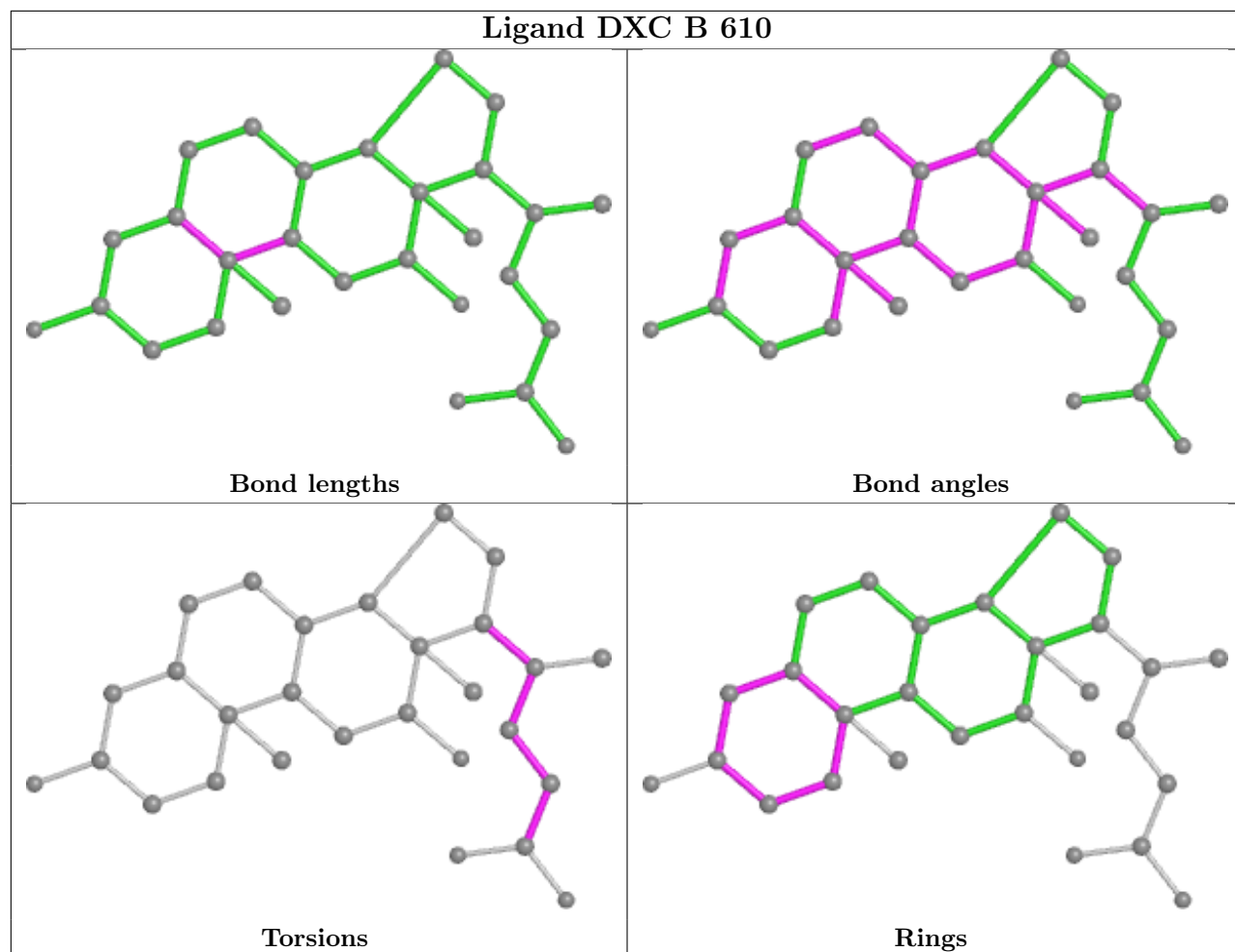


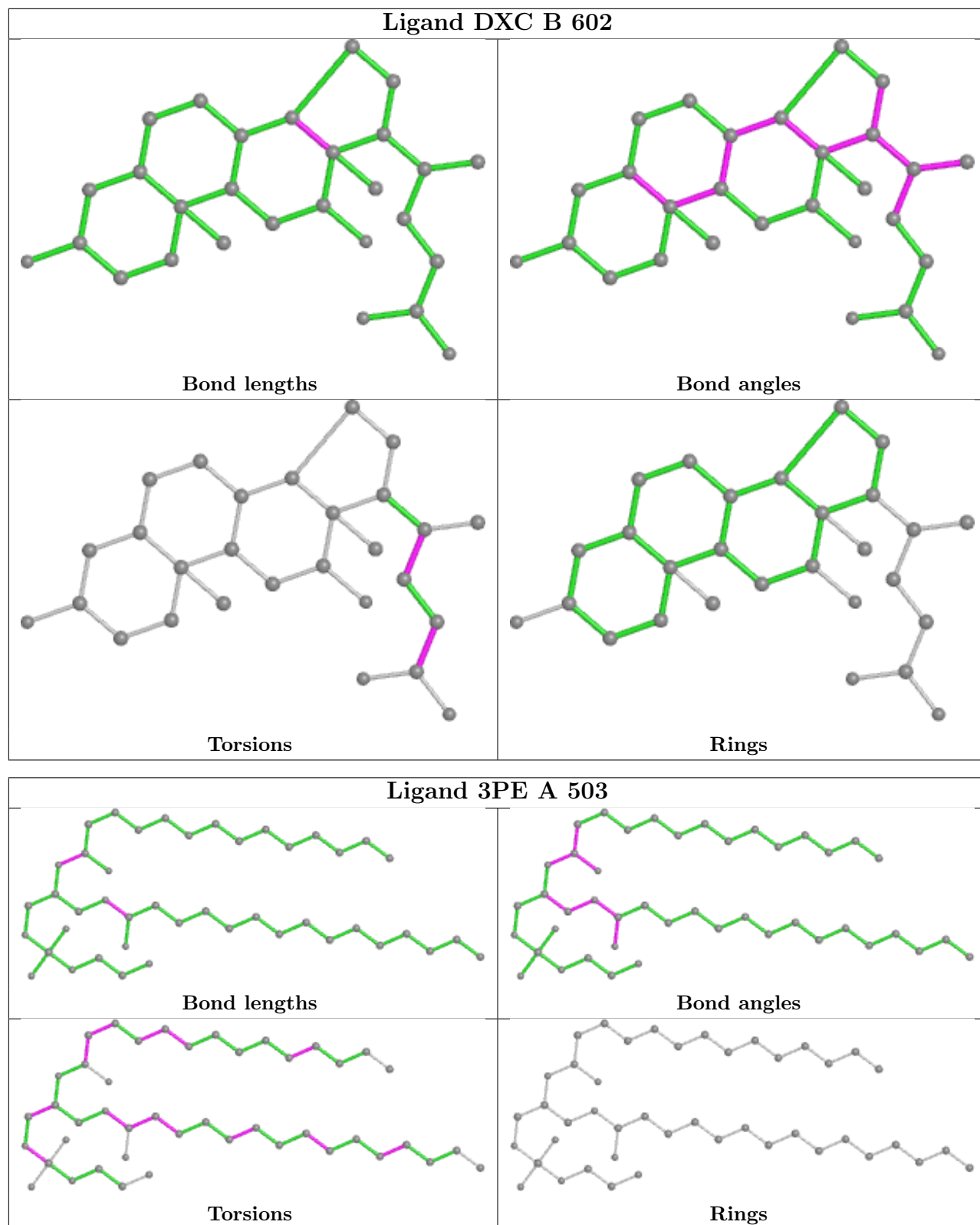


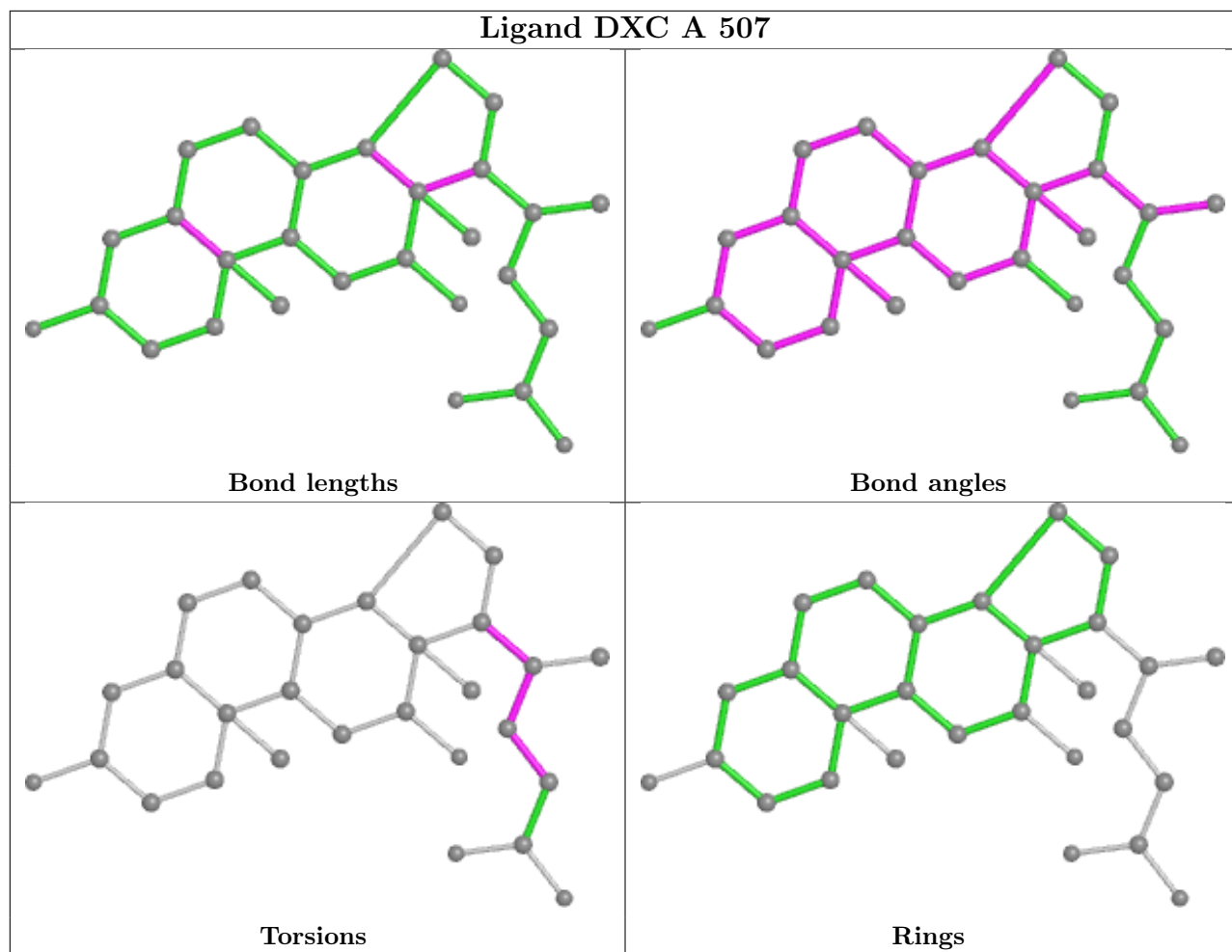


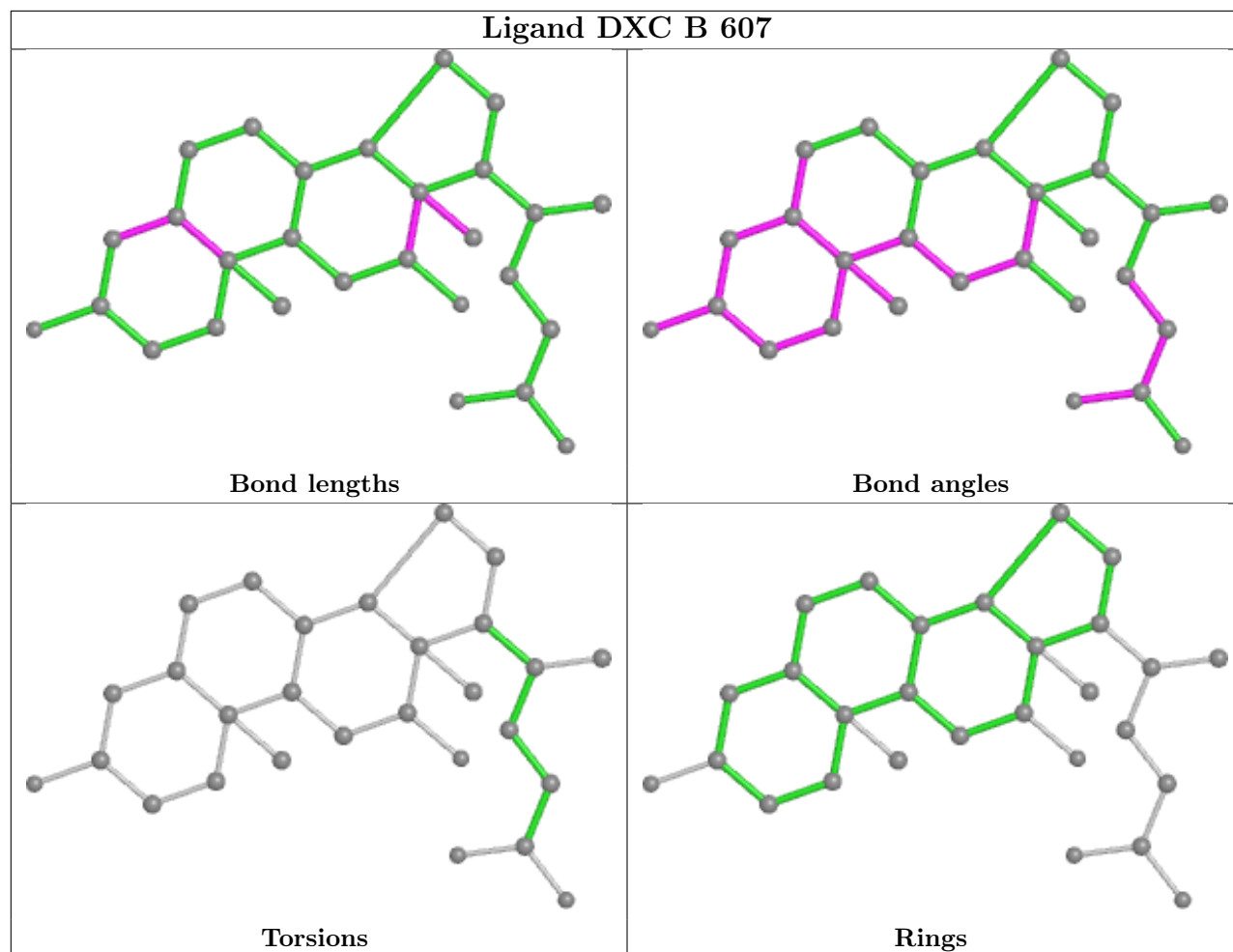












5.7 Other polymers [i](#)

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	321/393 (81%)	0.62	26 (8%) 12 9	50, 82, 135, 166	0
1	B	322/393 (81%)	0.52	15 (4%) 31 28	42, 62, 110, 134	0
All	All	643/786 (81%)	0.57	41 (6%) 19 16	42, 72, 125, 166	0

All (41) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	79	ASN	7.1
1	B	72	TRP	6.7
1	B	117	GLU	5.3
1	A	273	LEU	4.5
1	A	72	TRP	4.5
1	A	62	ASP	4.4
1	B	59	LYS	4.3
1	B	62	ASP	3.9
1	A	119	GLY	3.2
1	A	278	ARG	3.2
1	A	276	TRP	3.1
1	A	57	SER	3.1
1	A	69	TRP	3.0
1	B	57	SER	3.0
1	A	246	PHE	2.9
1	B	79	ASN	2.9
1	B	118	ALA	2.8
1	B	121	ARG	2.8
1	A	296	LYS	2.8
1	B	61	LYS	2.8
1	A	287	TYR	2.7
1	A	301	PHE	2.7
1	A	316	PHE	2.7
1	A	144	PHE	2.7

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Mol	Chain	Res	Type	RSRZ
1	B	179[A]	ASP	2.7
1	B	124	GLY	2.6
1	B	120	VAL	2.6
1	A	107	LEU	2.5
1	A	294	ILE	2.4
1	A	387	ASN	2.4
1	B	122	GLU	2.4
1	B	65	PHE	2.3
1	B	178[A]	ILE	2.3
1	A	244	VAL	2.3
1	A	298	PHE	2.2
1	A	274	GLY	2.1
1	A	243	LYS	2.1
1	A	308	ILE	2.0
1	A	142	LEU	2.0
1	A	110	TYR	2.0
1	A	117	GLU	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 [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.

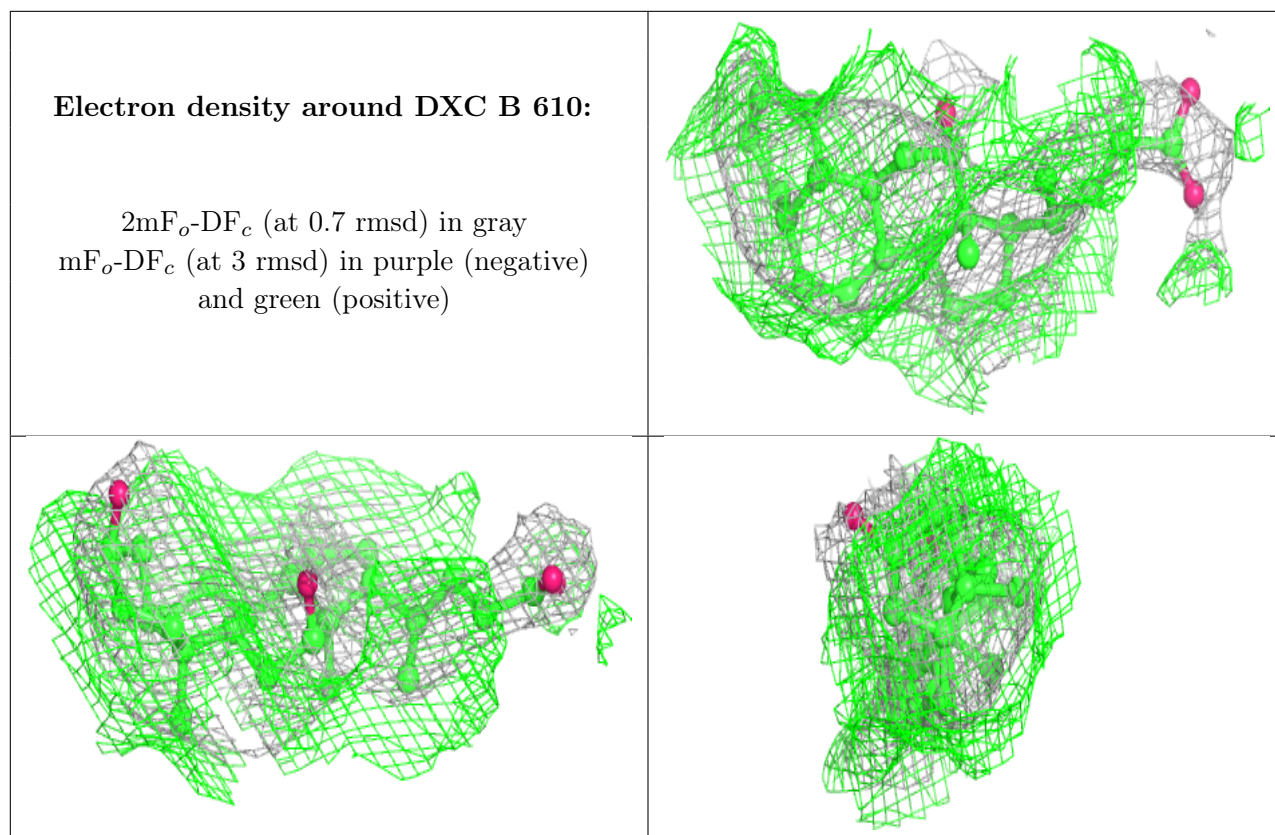
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
4	DXC	B	610	28/28	0.61	0.44	67,76,81,85	28
4	DXC	B	609	28/28	0.84	0.39	49,56,72,75	28
4	DXC	B	608	28/28	0.84	0.39	44,58,69,69	28
4	DXC	A	507	28/28	0.89	0.32	73,83,88,89	28
5	SO4	B	611	5/5	0.89	0.16	44,52,57,63	5
5	SO4	A	509	5/5	0.90	0.26	53,63,73,74	5

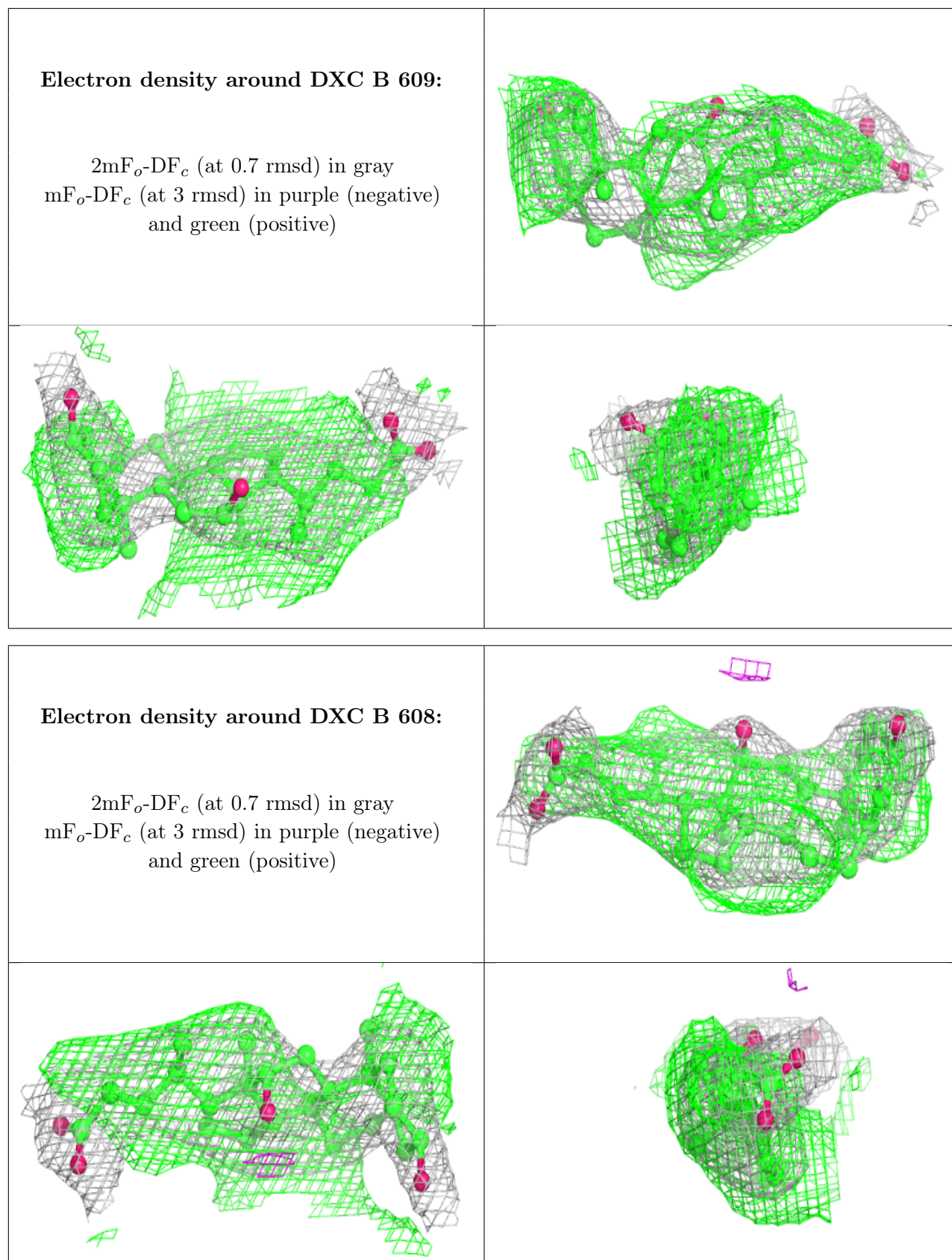
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
4	DXC	B	603	28/28	0.93	0.34	66,74,82,84	28
4	DXC	A	506	28/28	0.93	0.18	55,64,75,90	0
3	3PE	A	503	44/51	0.94	0.26	58,69,80,98	0
5	SO4	A	508	5/5	0.94	0.15	52,57,63,73	5
4	DXC	A	504	28/28	0.95	0.19	63,67,95,100	0
4	DXC	B	607	28/28	0.95	0.23	61,69,73,76	0
4	DXC	B	601	28/28	0.95	0.22	55,71,79,80	0
4	DXC	B	602	28/28	0.95	0.18	64,73,82,88	0
4	DXC	A	505	28/28	0.96	0.19	50,54,78,86	0
3	3PE	B	606	44/51	0.97	0.25	53,68,81,93	0
2	ZN	A	501	1/1	0.98	0.20	64,64,64,64	0
2	ZN	A	502	1/1	0.99	0.22	66,66,66,66	0
2	ZN	B	604	1/1	0.99	0.27	60,60,60,60	0
2	ZN	B	605	1/1	1.00	0.23	58,58,58,58	0

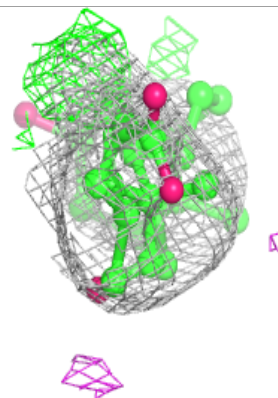
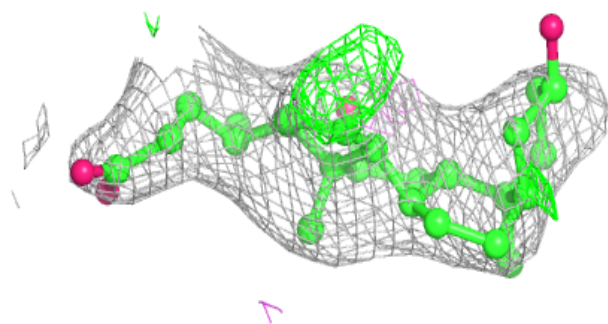
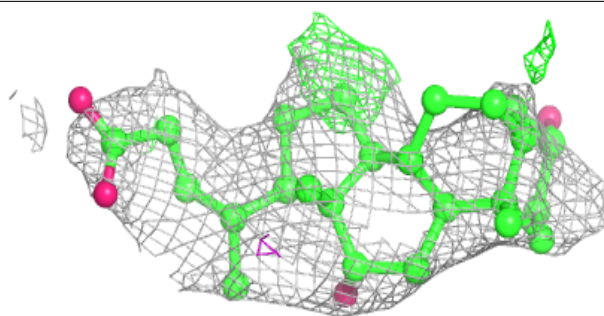
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.



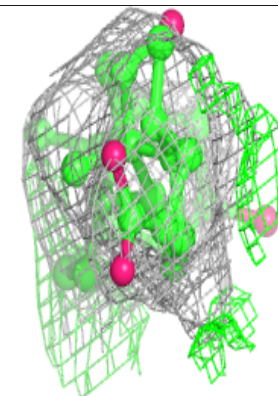
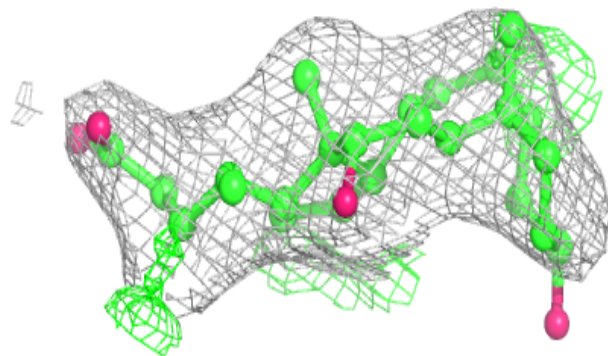
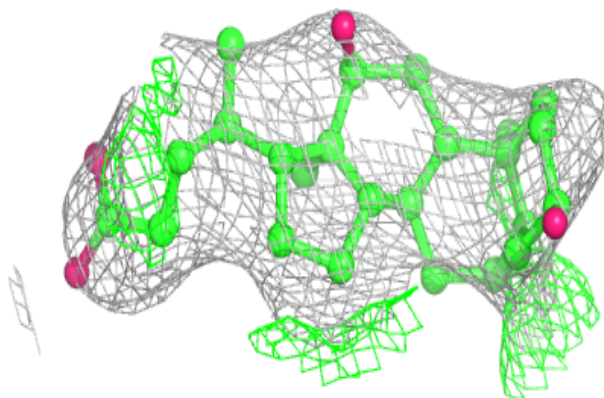


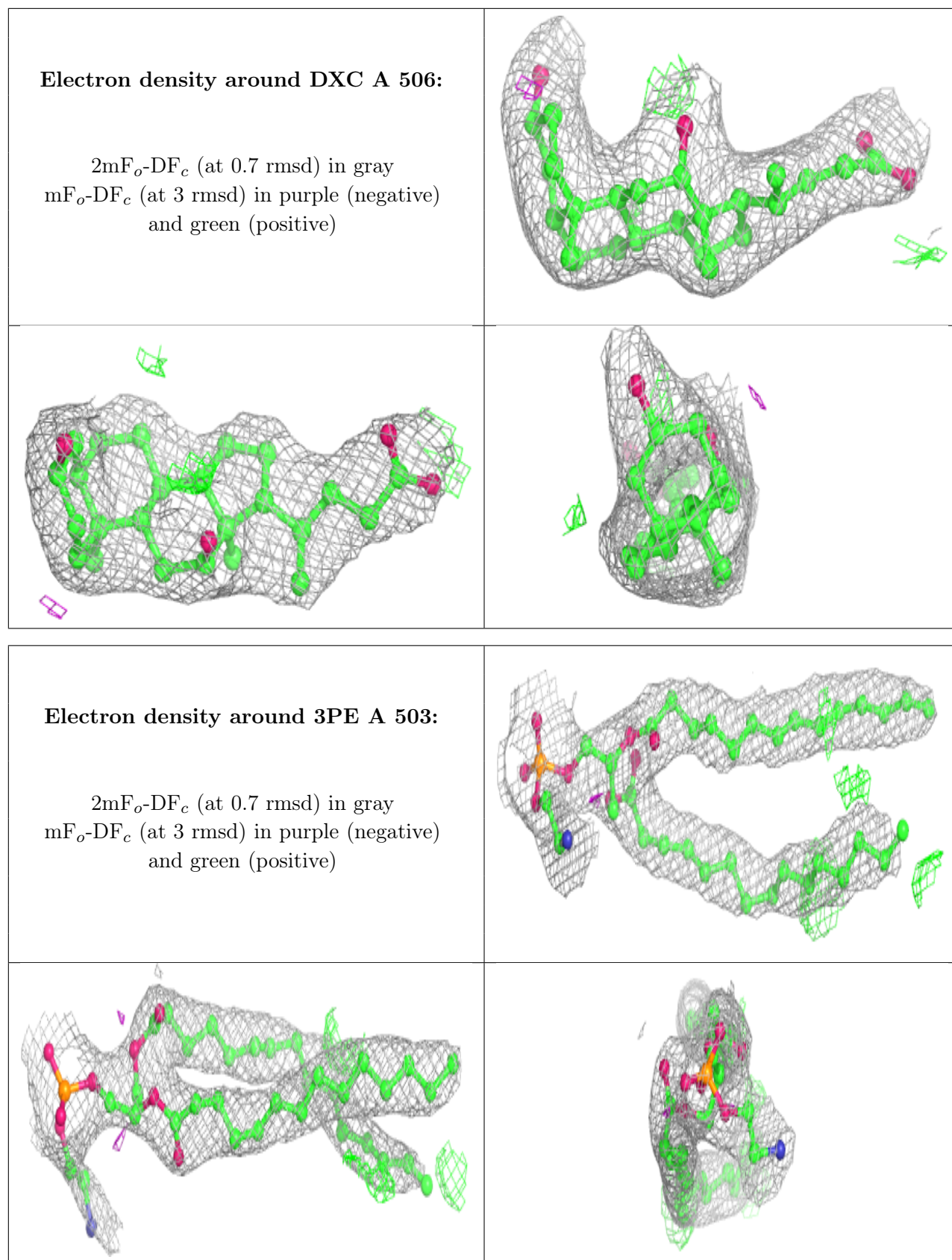
Electron density around DXC A 507:

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

**Electron density around DXC B 603:**

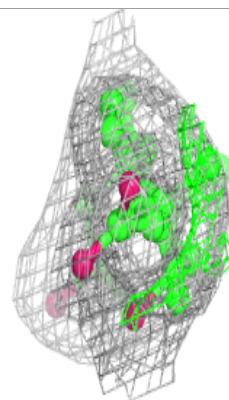
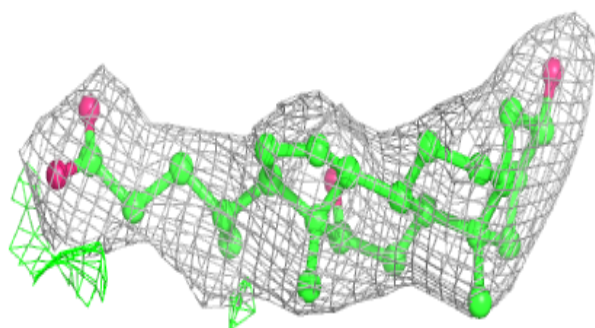
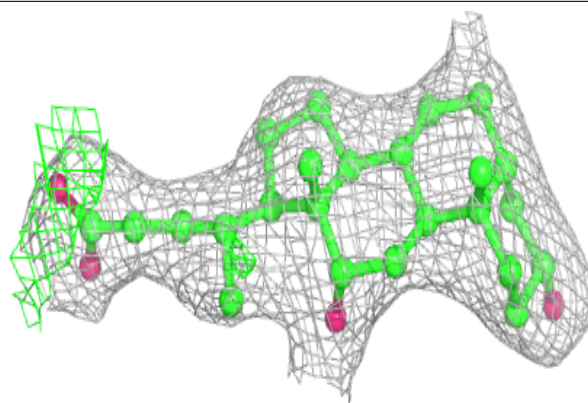
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



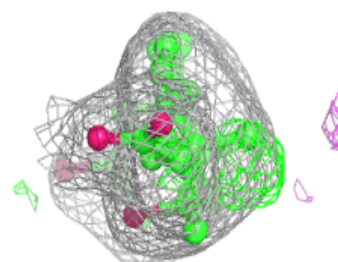
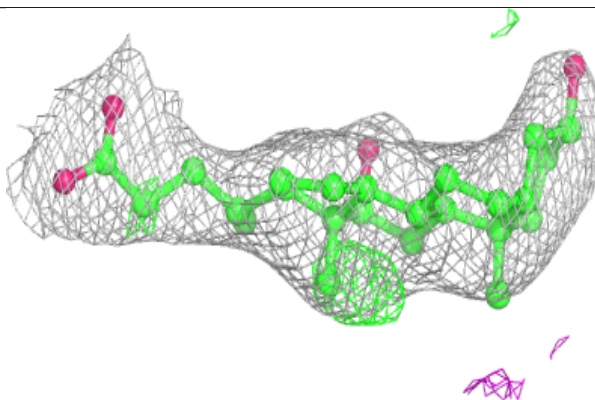
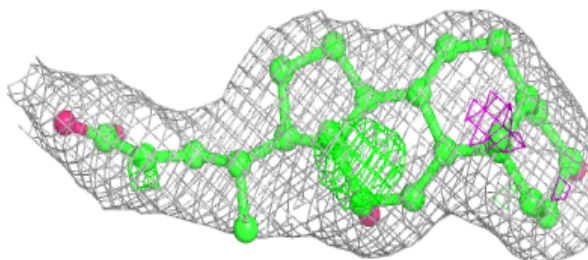


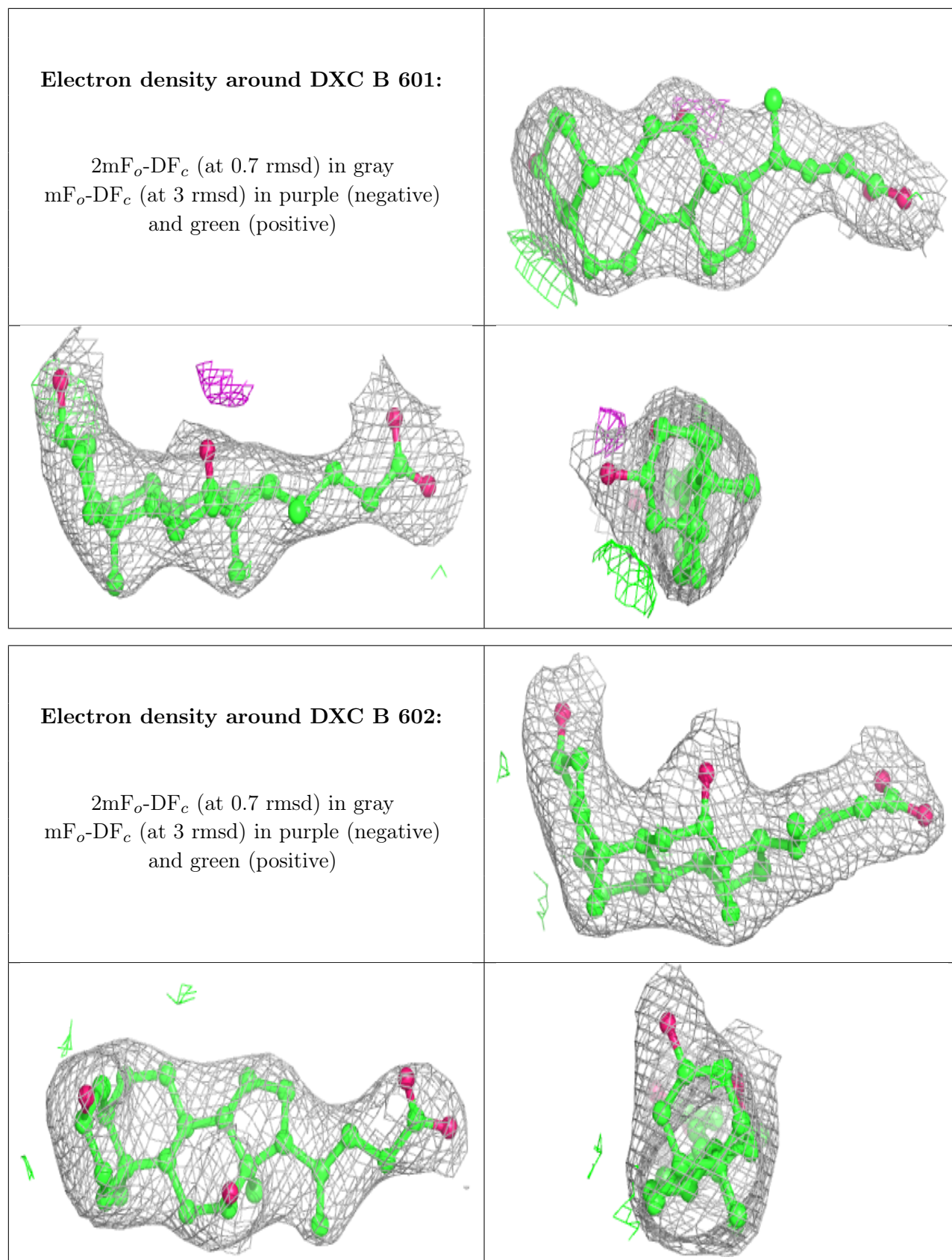
Electron density around DXC A 504:

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

**Electron density around DXC B 607:**

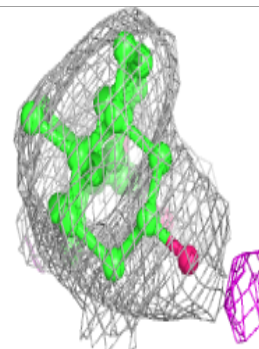
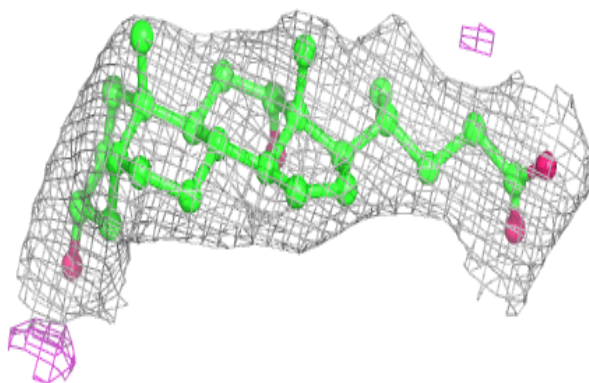
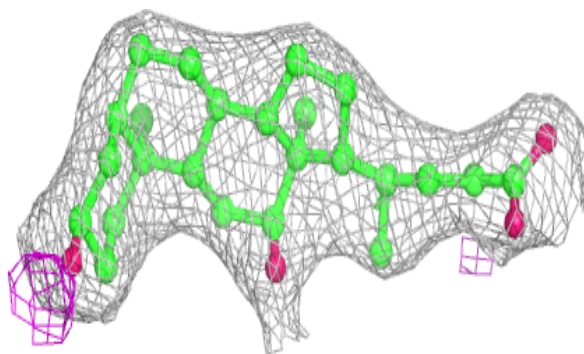
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



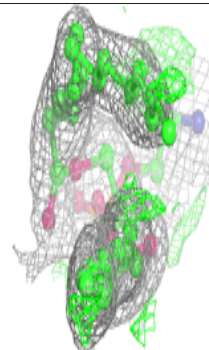
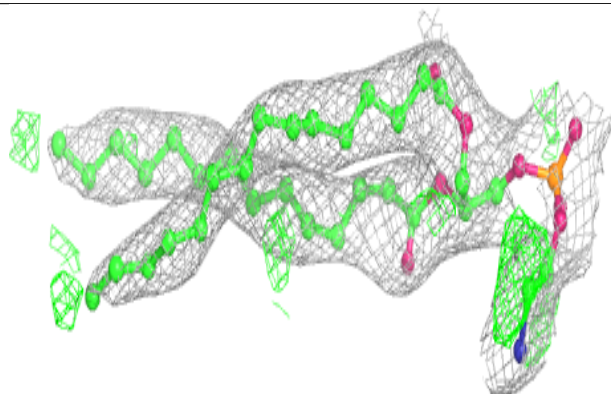
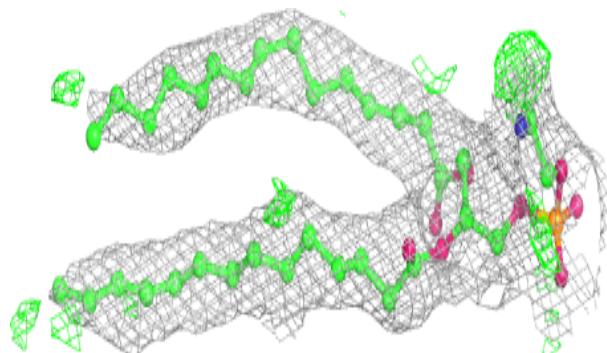


Electron density around DXC A 505:

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

**Electron density around 3PE B 606:**

$2mF_o-DF_c$ (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.