



# Full wwPDB X-ray Structure Validation Report ⓘ

Oct 4, 2023 – 06:05 PM EDT

PDB ID : 6OB0  
Title : Compound 2 bound structure of WT Lipoprotein Lipase in Complex with GPIHBP1 Mutant N78D N82D produced in HEK293-F cells  
Authors : Arora, R.; Horton, P.A.; Benson, T.E.; Romanowski, M.J.  
Deposited on : 2019-03-19  
Resolution : 2.81 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](mailto: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>.

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

MolProbity : 4.02b-467  
Xtrriage (Phenix) : 1.13  
EDS : **FAILED**  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.35.1

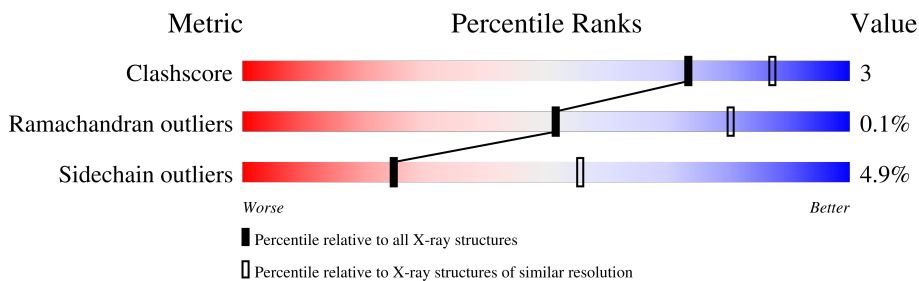
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.81 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))
Clashscore	141614	4060 (2.84-2.80)
Ramachandran outliers	138981	3978 (2.84-2.80)
Sidechain outliers	138945	3980 (2.84-2.80)

## 2 Entry composition

There are 8 unique types of molecules in this entry. The entry contains 17194 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 Lipoprotein lipase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	442	Total 3518	C 2236	N 611	O 655	S 16	0	1	0
1	B	442	Total 3511	C 2231	N 609	O 655	S 16	0	0	0
1	C	442	Total 3518	C 2236	N 611	O 655	S 16	0	1	0
1	D	442	Total 3518	C 2236	N 611	O 655	S 16	0	1	0

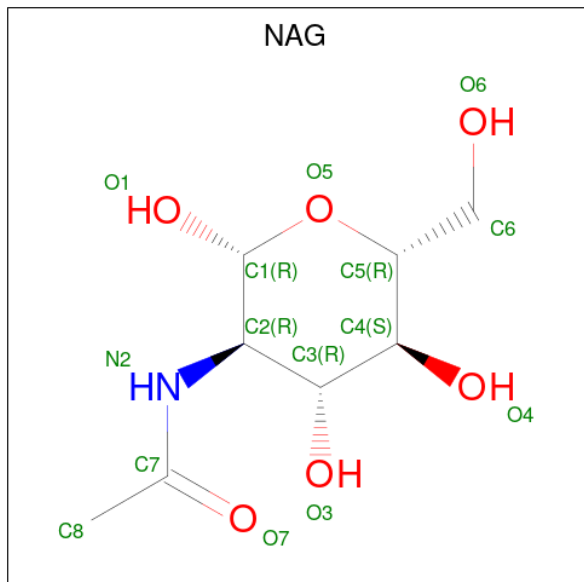
- Molecule 2 is a protein called Glycosylphosphatidylinositol-anchored high density lipoprotein-binding protein 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	E	83	Total 628	C 378	N 110	O 129	S 11	0	0	0
2	F	81	Total 613	C 367	N 108	O 127	S 11	0	0	0
2	G	81	Total 613	C 367	N 108	O 127	S 11	0	0	0
2	H	81	Total 613	C 367	N 108	O 127	S 11	0	0	0

There are 8 discrepancies between the modelled and reference sequences:

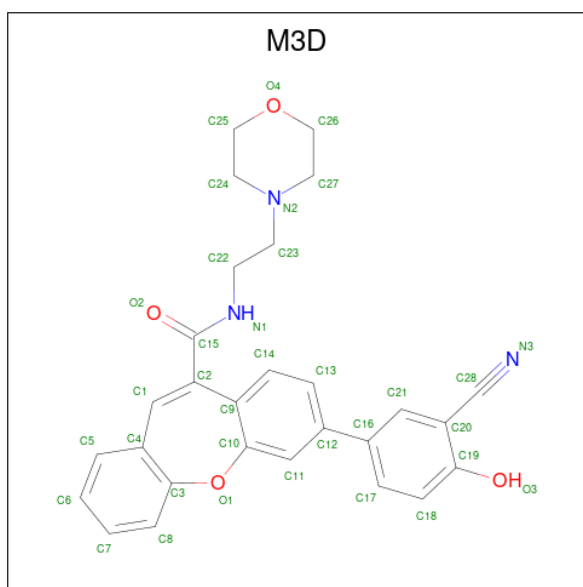
Chain	Residue	Modelled	Actual	Comment	Reference
E	78	ASP	ASN	engineered mutation	UNP Q8IV16
E	82	ASP	ASN	engineered mutation	UNP Q8IV16
F	78	ASP	ASN	engineered mutation	UNP Q8IV16
F	82	ASP	ASN	engineered mutation	UNP Q8IV16
G	78	ASP	ASN	engineered mutation	UNP Q8IV16
G	82	ASP	ASN	engineered mutation	UNP Q8IV16
H	78	ASP	ASN	engineered mutation	UNP Q8IV16
H	82	ASP	ASN	engineered mutation	UNP Q8IV16

- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula:  $C_8H_{15}NO_6$ ).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
3	A	1	Total 14	C 8	N 1	O 5	0	0
3	A	1	Total 14	C 8	N 1	O 5	0	0
3	B	1	Total 14	C 8	N 1	O 5	0	0
3	B	1	Total 14	C 8	N 1	O 5	0	0
3	C	1	Total 14	C 8	N 1	O 5	0	0
3	C	1	Total 14	C 8	N 1	O 5	0	0
3	D	1	Total 14	C 8	N 1	O 5	0	0
3	D	1	Total 14	C 8	N 1	O 5	0	0

- Molecule 4 is 7-(3-cyano-4-hydroxyphenyl)-N-[2-(morpholin-4-yl)ethyl]dibenzo[b,f]oxepin e-10-carboxamide (three-letter code: M3D) (formula:  $C_{28}H_{25}N_3O_4$ ) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
4	A	1	Total	C	N	O	0	0
			35	28	3	4		
4	A	1	Total	C	N	O	0	0
			35	28	3	4		
4	B	1	Total	C	N	O	0	0
			35	28	3	4		
4	B	1	Total	C	N	O	0	0
			35	28	3	4		
4	C	1	Total	C	N	O	0	0
			35	28	3	4		
4	C	1	Total	C	N	O	0	0
			35	28	3	4		
4	D	1	Total	C	N	O	0	0
			35	28	3	4		
4	D	1	Total	C	N	O	0	0
			35	28	3	4		

- Molecule 5 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C<sub>2</sub>H<sub>6</sub>O<sub>2</sub>).

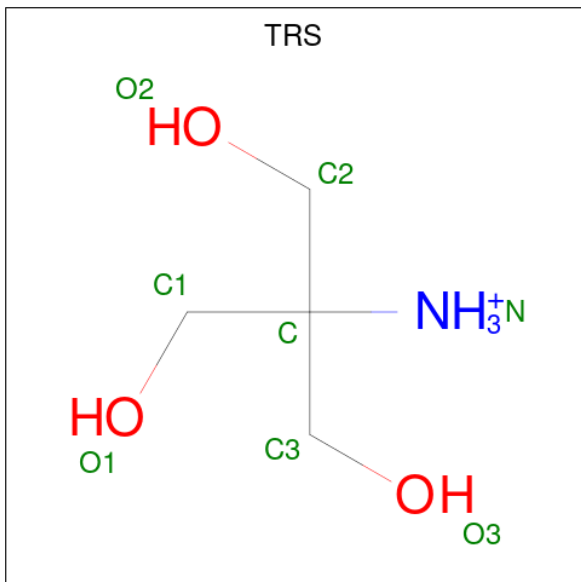


Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C O 4 2 2	0	0
5	A	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	B	1	Total C O 4 2 2	0	0
5	C	1	Total C O 4 2 2	0	0
5	C	1	Total C O 4 2 2	0	0
5	D	1	Total C O 4 2 2	0	0
5	D	1	Total C O 4 2 2	0	0

- Molecule 6 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	1	Total Ca 1 1	0	0
6	B	1	Total Ca 1 1	0	0
6	C	1	Total Ca 1 1	0	0
6	D	1	Total Ca 1 1	0	0

- Molecule 7 is 2-AMINO-2-HYDROXYMETHYL-PROPANE-1,3-DIOL (three-letter code: TRS) (formula:  $C_4H_{12}NO_3$ ).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
7	B	1	8	4	1	3	0	0

- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	63	Total	O	0	0
			63	63		
8	B	50	Total	O	0	0
			50	50		
8	C	48	Total	O	0	0
			48	48		
8	D	58	Total	O	0	0
			58	58		
8	E	2	Total	O	0	0
			2	2		
8	F	2	Total	O	0	0
			2	2		
8	G	2	Total	O	0	0
			2	2		
8	H	1	Total	O	0	0
			1	1		

SEQUENCE-PLOTS INFOmissingINFO

### 3 Data and refinement statistics

EDS failed to run properly - this section is therefore incomplete.

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	153.43Å 191.42Å 97.18Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	37.15 – 2.81	Depositor
% Data completeness (in resolution range)	99.1 (37.15-2.81)	Depositor
$R_{merge}$	0.15	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.45 (at 2.82Å)	Xtrriage
Refinement program	BUSTER 2.11.7	Depositor
R, $R_{free}$	0.198 , 0.233	Depositor
Wilson B-factor (Å <sup>2</sup> )	57.8	Xtrriage
Anisotropy	0.722	Xtrriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.51$ , $\langle L^2 \rangle = 0.34$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	17194	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	67.0	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 39.88 % 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 2.9706e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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.



## 4 Model quality [i](#)

### 4.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: CA, TRS, EDO, M3D, NAG

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	0.52	0/3611	0.70	0/4889
1	B	0.52	0/3600	0.69	0/4874
1	C	0.52	0/3611	0.69	0/4889
1	D	0.52	0/3611	0.68	0/4889
2	E	0.47	0/639	0.71	0/873
2	F	0.49	0/624	0.66	0/852
2	G	0.50	0/624	0.70	0/852
2	H	0.48	0/624	0.70	0/852
All	All	0.51	0/16944	0.69	0/22970

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 4.2 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	3518	0	3438	20	0
1	B	3511	0	3431	24	0
1	C	3518	0	3438	23	0
1	D	3518	0	3438	21	0
2	E	628	0	593	7	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	F	613	0	573	12	0
2	G	613	0	573	9	0
2	H	613	0	573	6	0
3	A	28	0	26	0	0
3	B	28	0	26	0	0
3	C	28	0	26	0	0
3	D	28	0	26	0	0
4	A	70	0	0	0	0
4	B	70	0	0	1	0
4	C	70	0	0	1	0
4	D	70	0	0	1	0
5	A	8	0	12	1	0
5	B	8	0	12	2	0
5	C	8	0	12	3	0
5	D	8	0	12	2	0
6	A	1	0	0	0	0
6	B	1	0	0	0	0
6	C	1	0	0	0	0
6	D	1	0	0	0	0
7	B	8	0	12	0	0
8	A	63	0	0	0	0
8	B	50	0	0	0	0
8	C	48	0	0	0	0
8	D	58	0	0	0	0
8	E	2	0	0	0	0
8	F	2	0	0	0	0
8	G	2	0	0	0	0
8	H	1	0	0	0	0
All	All	17194	0	16221	111	0

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

All (111) 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:80:HIS:HB2	5:B:505:EDO:H21	1.62	0.80
1:D:467:ASP:HB2	2:H:109:TRP:HE1	1.51	0.75
1:B:467:ASP:HB2	2:F:109:TRP:HE1	1.55	0.70
2:H:72:PRO:HD2	2:H:75:GLU:HB2	1.75	0.68
1:D:80:HIS:HB2	5:D:505:EDO:H12	1.77	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:G:92:LEU:HD21	2:G:126:VAL:HG13	1.78	0.66
1:D:467:ASP:HB2	2:H:109:TRP:NE1	2.12	0.64
1:B:83:THR:O	1:B:118:GLN:HA	1.98	0.63
1:C:467:ASP:HB2	2:G:109:TRP:HE1	1.64	0.62
2:F:89:CYS:HB3	2:F:137:ASN:HB3	1.83	0.61
1:D:441:LYS:HG3	1:D:470:LEU:HD11	1.85	0.58
1:B:402:LEU:HB3	1:B:444:PHE:HZ	1.71	0.56
1:B:178:ARG:HD2	1:B:319:LYS:HE2	1.87	0.56
1:C:402:LEU:HB3	1:C:444:PHE:HZ	1.71	0.55
1:B:427:ALA:HB1	1:B:450:VAL:HG11	1.89	0.55
2:E:63:LEU:HD21	2:E:132:GLN:O	2.07	0.55
1:A:467:ASP:HB2	2:E:109:TRP:NE1	2.21	0.55
1:A:178:ARG:HD2	1:A:319:LYS:HE2	1.89	0.54
1:B:467:ASP:HB2	2:F:109:TRP:NE1	2.22	0.54
1:C:178:ARG:HD2	1:C:319:LYS:HE2	1.89	0.54
1:D:178:ARG:HD2	1:D:319:LYS:HE2	1.89	0.54
1:D:402:LEU:HB3	1:D:444:PHE:HZ	1.71	0.54
1:A:226:PRO:HG3	1:A:327:LYS:HD3	1.89	0.54
1:C:467:ASP:HB2	2:G:109:TRP:NE1	2.21	0.54
2:H:67:THR:HG22	2:H:109:TRP:HA	1.90	0.54
1:A:80:HIS:HB2	5:A:505:EDO:H12	1.88	0.54
1:A:402:LEU:HB3	1:A:444:PHE:HZ	1.72	0.54
4:B:504:M3D:N1	4:B:504:M3D:C14	2.71	0.53
1:A:252:ILE:HD13	1:B:252:ILE:HD13	1.89	0.53
1:C:399:ILE:HD11	1:C:402:LEU:HG	1.90	0.53
2:G:67:THR:HG22	2:G:109:TRP:HA	1.91	0.53
1:A:399:ILE:HD11	1:A:402:LEU:HG	1.90	0.53
1:A:364:ILE:HD11	1:A:405:LEU:HD21	1.91	0.52
1:C:441:LYS:HG3	1:C:470:LEU:HD11	1.91	0.52
1:B:364:ILE:HD11	1:B:405:LEU:HD21	1.91	0.52
1:B:80:HIS:HB2	5:B:505:EDO:C2	2.36	0.52
1:A:158:TYR:CD1	1:A:272:ILE:HD11	2.45	0.52
1:D:364:ILE:HD11	1:D:405:LEU:HD21	1.92	0.52
1:C:252:ILE:HD13	1:D:252:ILE:HD13	1.92	0.51
1:C:364:ILE:HD11	1:C:405:LEU:HD21	1.92	0.51
1:C:158:TYR:CG	1:C:272:ILE:HD11	2.46	0.51
1:A:307:LYS:HG2	1:A:307:LYS:O	2.11	0.51
1:C:82:TRP:HB2	1:C:160:LEU:HD12	1.93	0.50
1:D:399:ILE:HD11	1:D:402:LEU:HG	1.93	0.50
1:A:467:ASP:HB2	2:E:109:TRP:HE1	1.76	0.50
1:C:80:HIS:HB2	5:C:505:EDO:H11	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:399:ILE:HD11	1:B:402:LEU:HG	1.94	0.49
1:B:441:LYS:HG3	1:B:470:LEU:HD11	1.94	0.49
2:H:133:SER:O	2:H:136:CYS:SG	2.70	0.49
2:G:108:THR:HB	2:G:137:ASN:ND2	2.28	0.49
1:A:233:TYR:CE1	1:A:327:LYS:HD2	2.48	0.48
1:C:209:LEU:HD23	1:C:232:ILE:HB	1.95	0.48
2:H:67:THR:HA	2:H:108:THR:O	2.13	0.48
1:D:80:HIS:HB2	5:D:505:EDO:C1	2.44	0.48
1:C:89:GLU:H	5:C:505:EDO:H22	1.78	0.47
1:B:158:TYR:CG	1:B:272:ILE:HD11	2.49	0.47
1:D:91:TRP:CD2	1:D:272:ILE:HD13	2.49	0.47
1:B:404:MET:HG3	1:B:463:VAL:HG22	1.96	0.47
4:D:504:M3D:C14	4:D:504:M3D:N1	2.77	0.47
2:F:65:CYS:SG	2:F:83:CYS:SG	3.13	0.47
1:C:257:LEU:HD23	1:C:257:LEU:HA	1.76	0.47
2:E:67:THR:HG22	2:E:109:TRP:HA	1.97	0.46
1:B:240:GLN:HG3	1:B:270:ARG:HG2	1.98	0.46
1:D:158:TYR:CD1	1:D:272:ILE:HD11	2.51	0.46
2:F:95:HIS:CE1	2:F:102:LEU:HD12	2.51	0.45
1:D:113:TRP:CE3	1:D:131:VAL:HG21	2.50	0.45
1:B:158:TYR:CD1	1:B:272:ILE:HD11	2.51	0.45
1:B:245:ILE:HD11	1:B:260:VAL:HB	1.98	0.45
2:E:118:THR:HB	2:E:127:THR:HG23	1.98	0.45
2:G:65:CYS:HB2	2:G:83:CYS:SG	2.56	0.45
1:A:143:GLU:O	1:A:147:ASN:HA	2.17	0.45
1:B:143:GLU:O	1:B:147:ASN:HA	2.16	0.44
2:F:108:THR:HB	2:F:137:ASN:ND2	2.33	0.44
1:B:74:LYS:HE2	1:B:76:PHE:CZ	2.52	0.44
1:C:35:ILE:H	1:C:35:ILE:HG13	1.60	0.44
1:D:209:LEU:HD23	1:D:232:ILE:HB	2.00	0.44
1:D:404:MET:HG3	1:D:463:VAL:HG22	1.99	0.44
1:A:81:GLY:HA3	1:A:159:SER:HB3	1.99	0.43
1:A:113:TRP:CE3	1:A:131:VAL:HG21	2.53	0.43
1:D:120:HIS:CD2	1:D:122:PRO:HD2	2.53	0.43
1:B:367:TYR:HB3	2:F:121:VAL:HG21	2.01	0.43
1:C:113:TRP:CE3	1:C:131:VAL:HG21	2.52	0.43
4:C:504:M3D:C14	4:C:504:M3D:N1	2.81	0.43
1:B:367:TYR:CB	2:F:121:VAL:HG21	2.49	0.43
1:C:91:TRP:CD2	1:C:272:ILE:HD13	2.54	0.43
1:C:91:TRP:HZ2	5:C:505:EDO:H11	1.84	0.43
1:A:321:ARG:CB	1:A:321:ARG:HH21	2.32	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:35:ILE:H	1:A:35:ILE:HG13	1.61	0.43
1:B:113:TRP:CE3	1:B:131:VAL:HG21	2.54	0.42
2:G:117:ILE:HG13	2:G:118:THR:N	2.34	0.42
1:A:441:LYS:HG3	1:A:470:LEU:HD11	2.01	0.42
1:C:404:MET:HG3	1:C:463:VAL:HG22	2.00	0.42
2:F:72:PRO:HG2	2:F:75:GLU:HB2	2.01	0.42
1:C:250:ARG:NH2	1:C:259:ASP:HA	2.34	0.42
2:E:117:ILE:HG13	2:E:118:THR:N	2.35	0.42
2:G:65:CYS:HB3	2:G:110:CYS:SG	2.60	0.42
1:B:226:PRO:HG3	1:B:327:LYS:HD3	2.02	0.42
2:G:117:ILE:HG13	2:G:118:THR:H	1.84	0.42
1:A:404:MET:HG3	1:A:463:VAL:HG22	2.02	0.42
1:D:83:THR:O	1:D:118:GLN:HA	2.20	0.41
2:E:73:ARG:HB2	2:E:104:THR:HB	2.02	0.41
1:C:248:ALA:HB1	1:D:252:ILE:HD12	2.02	0.41
2:F:73:ARG:HB2	2:F:104:THR:HB	2.02	0.41
1:A:209:LEU:HD23	1:A:232:ILE:HB	2.02	0.41
1:D:155:LEU:HB2	1:D:179:ILE:HG12	2.01	0.41
2:F:138:VAL:HG13	2:F:143:SER:HB2	2.02	0.41
1:C:158:TYR:CD1	1:C:272:ILE:HD11	2.56	0.41
1:D:257:LEU:HD23	1:D:257:LEU:HA	1.88	0.41
1:B:367:TYR:HB3	2:F:121:VAL:CG2	2.51	0.40
1:C:155:LEU:HB2	1:C:179:ILE:HG12	2.02	0.40
1:D:35:ILE:H	1:D:35:ILE:HG13	1.61	0.40

There are no symmetry-related clashes.

## 4.3 Torsion angles [\(i\)](#)

### 4.3.1 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	441/448 (98%)	423 (96%)	17 (4%)	1 (0%)	47 76

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	440/448 (98%)	420 (96%)	20 (4%)	0	100	100
1	C	441/448 (98%)	423 (96%)	18 (4%)	0	100	100
1	D	441/448 (98%)	419 (95%)	22 (5%)	0	100	100
2	E	81/131 (62%)	73 (90%)	7 (9%)	1 (1%)	13	37
2	F	79/131 (60%)	71 (90%)	8 (10%)	0	100	100
2	G	79/131 (60%)	68 (86%)	10 (13%)	1 (1%)	12	34
2	H	79/131 (60%)	73 (92%)	6 (8%)	0	100	100
All	All	2081/2316 (90%)	1970 (95%)	108 (5%)	3 (0%)	51	80

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	31	ARG
2	G	137	ASN
2	E	70	SER

#### 4.3.2 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	386/389 (99%)	368 (95%)	18 (5%)	26	57
1	B	385/389 (99%)	371 (96%)	14 (4%)	35	67
1	C	386/389 (99%)	371 (96%)	15 (4%)	32	64
1	D	386/389 (99%)	367 (95%)	19 (5%)	25	55
2	E	78/122 (64%)	73 (94%)	5 (6%)	17	44
2	F	76/122 (62%)	69 (91%)	7 (9%)	9	26
2	G	76/122 (62%)	69 (91%)	7 (9%)	9	26
2	H	76/122 (62%)	71 (93%)	5 (7%)	16	42
All	All	1849/2044 (90%)	1759 (95%)	90 (5%)	25	55

All (90) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	32	ARG
1	A	38	GLU
1	A	84	VAL
1	A	101	LYS
1	A	115	SER
1	A	221	ILE
1	A	225	LYS
1	A	250	ARG
1	A	252	ILE
1	A	257	LEU
1	A	264	VAL
1	A	295	GLU
1	A	298	GLU
1	A	321	ARG
1	A	350	SER
1	A	372	GLU
1	A	384	SER
1	A	450	VAL
1	B	32	ARG
1	B	35	ILE
1	B	38	GLU
1	B	84	VAL
1	B	115	SER
1	B	119	GLU
1	B	214	ARG
1	B	221	ILE
1	B	225	LYS
1	B	250	ARG
1	B	252	ILE
1	B	264	VAL
1	B	295	GLU
1	B	350	SER
1	C	30	GLN
1	C	32	ARG
1	C	84	VAL
1	C	101	LYS
1	C	115	SER
1	C	118	GLN
1	C	221	ILE
1	C	225	LYS
1	C	252	ILE
1	C	255	ARG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	C	295	GLU
1	C	330	LEU
1	C	350	SER
1	C	384	SER
1	C	385	THR
1	D	32	ARG
1	D	35	ILE
1	D	38	GLU
1	D	101	LYS
1	D	115	SER
1	D	118	GLN
1	D	159	SER
1	D	193	GLU
1	D	221	ILE
1	D	225	LYS
1	D	250	ARG
1	D	252	ILE
1	D	254	GLU
1	D	264	VAL
1	D	295	GLU
1	D	350	SER
1	D	353	GLU
1	D	384	SER
1	D	450	VAL
2	E	88	THR
2	E	108	THR
2	E	127	THR
2	E	128	MET
2	E	133	SER
2	F	82	ASP
2	F	88	THR
2	F	102	LEU
2	F	105	THR
2	F	117	ILE
2	F	128	MET
2	F	133	SER
2	G	75	GLU
2	G	76	ARG
2	G	78	ASP
2	G	91	THR
2	G	102	LEU
2	G	127	THR

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Mol	Chain	Res	Type
2	G	133	SER
2	H	74	ASP
2	H	82	ASP
2	H	127	THR
2	H	132	GLN
2	H	133	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	177	ASN
1	A	429	GLN
1	A	454	GLN
1	B	152	ASN
1	B	177	ASN
1	B	429	GLN
1	C	177	ASN
1	C	429	GLN
1	D	177	ASN
1	D	429	GLN
2	E	125	GLN
2	E	142	GLN
2	F	125	GLN
2	H	106	HIS

#### 4.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

#### 4.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 4.6 Ligand geometry

Of 29 ligands modelled in this entry, 4 are monoatomic - leaving 25 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

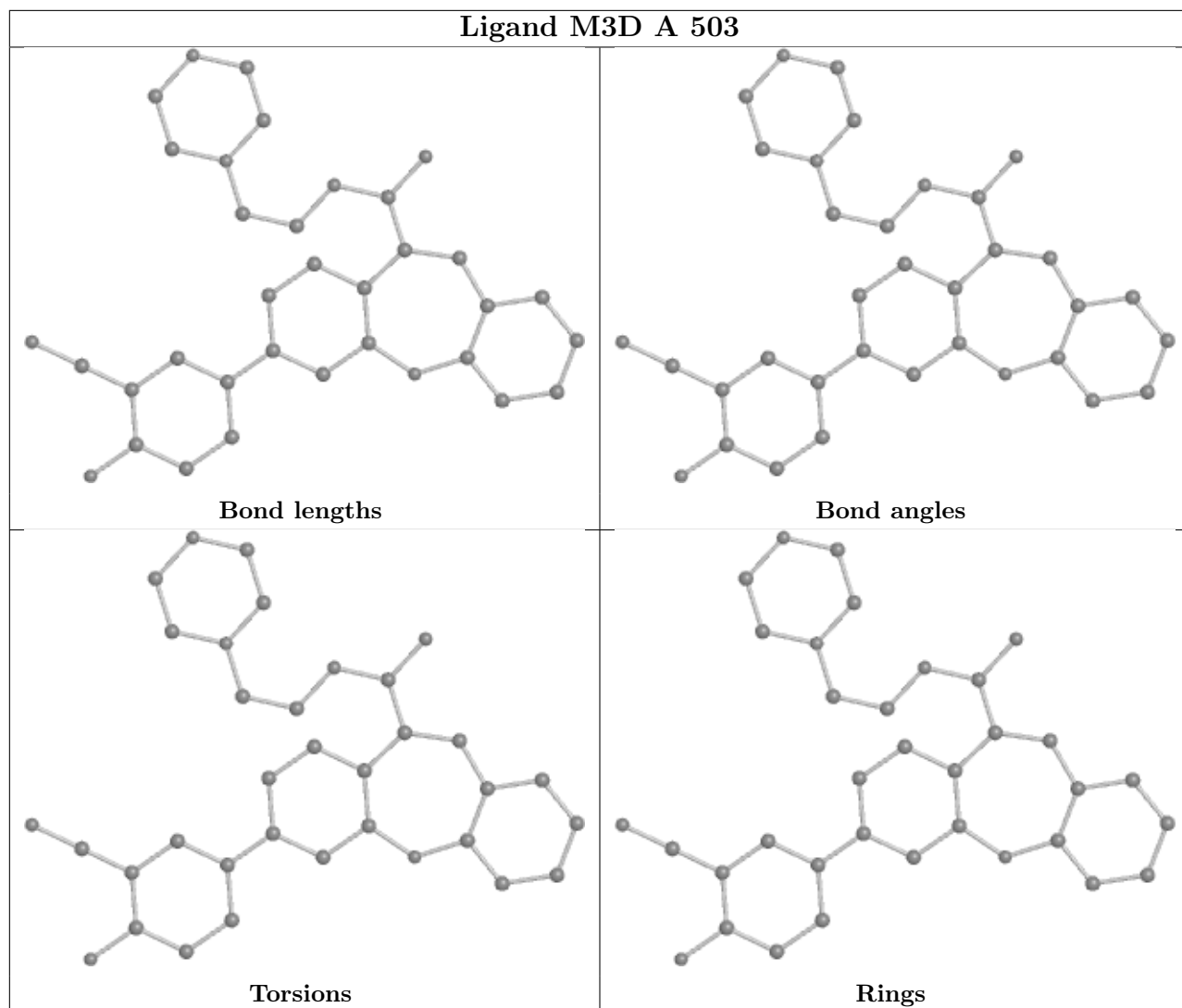
There are no chirality outliers.

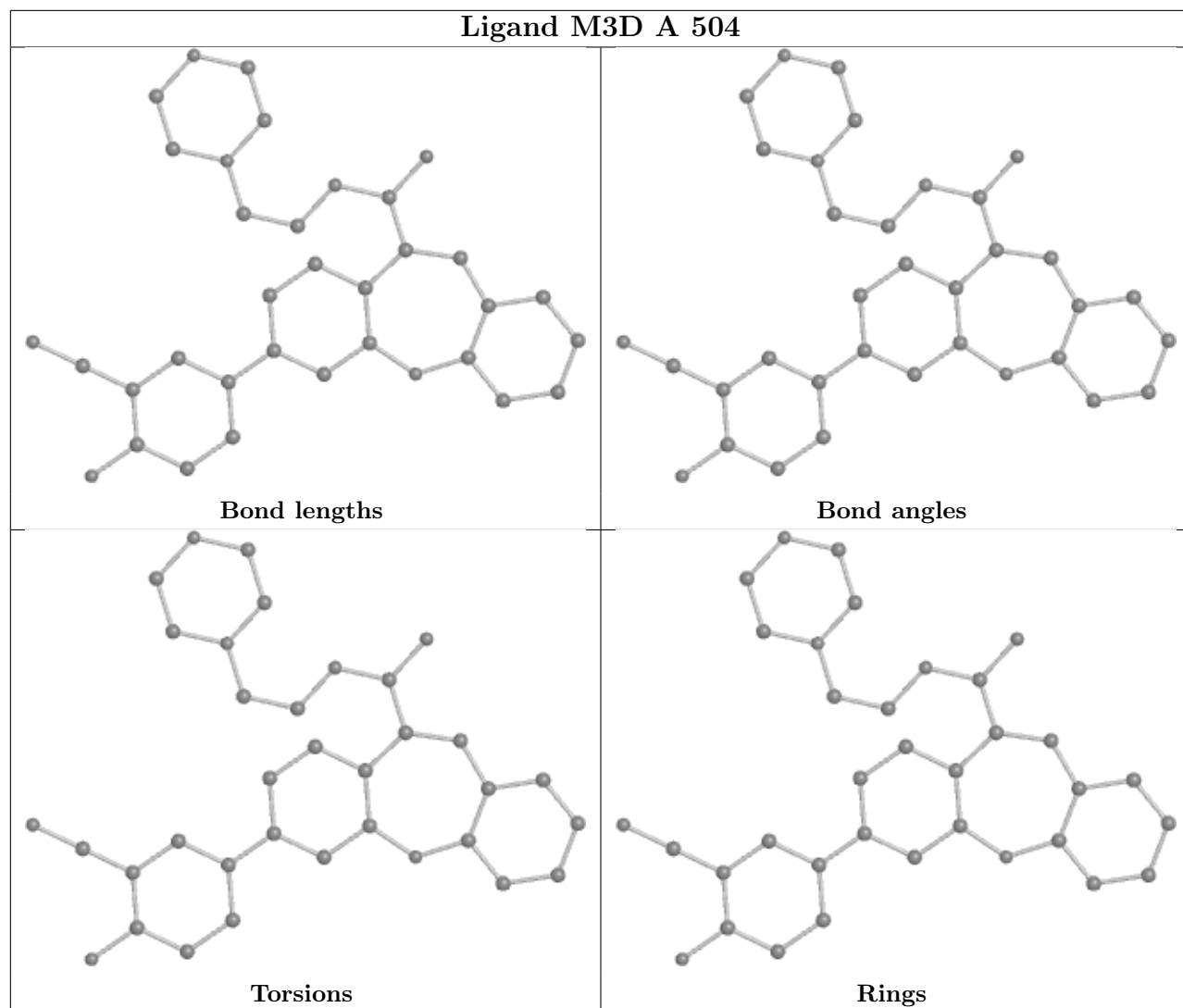
There are no torsion outliers.

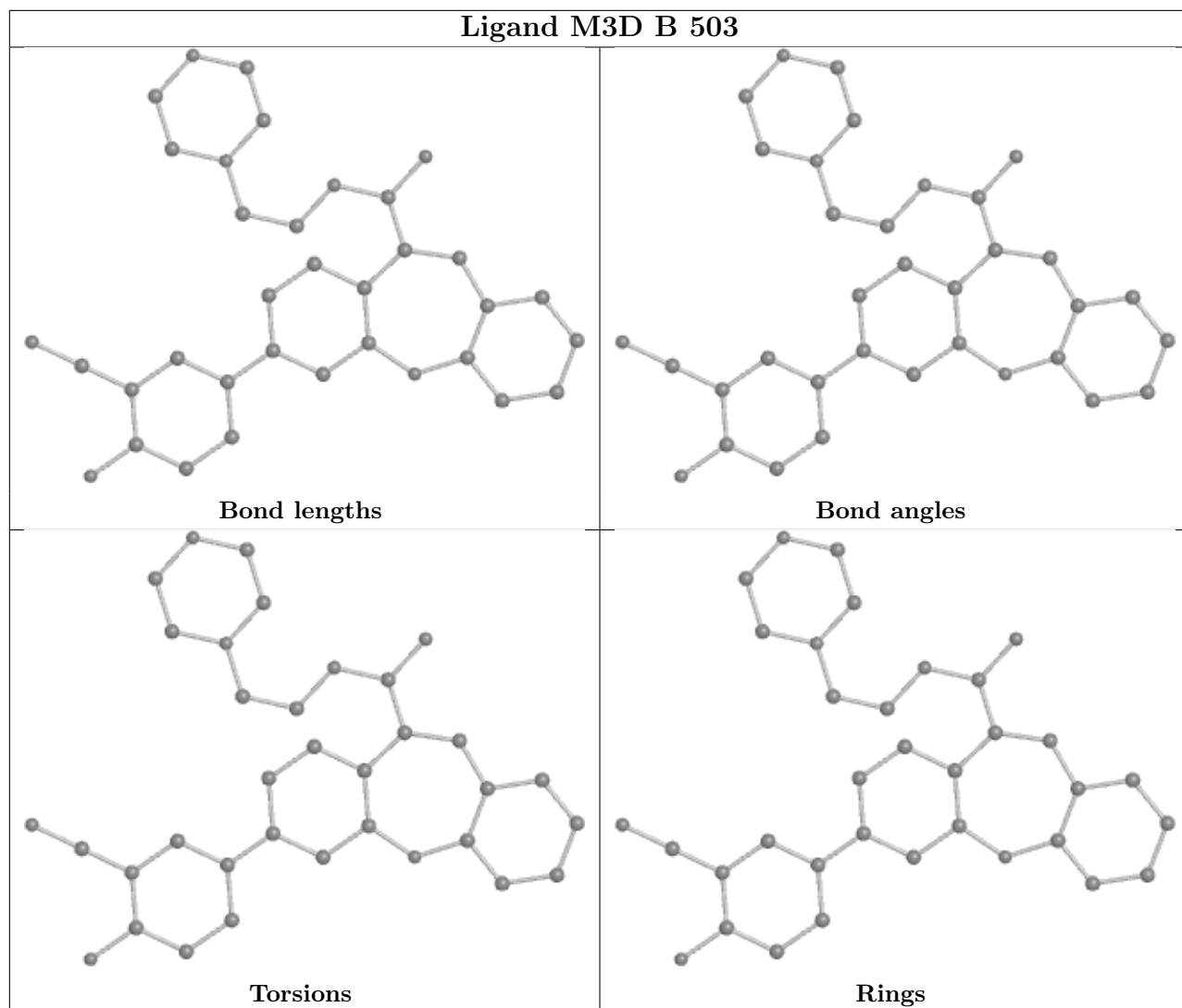
There are no ring outliers.

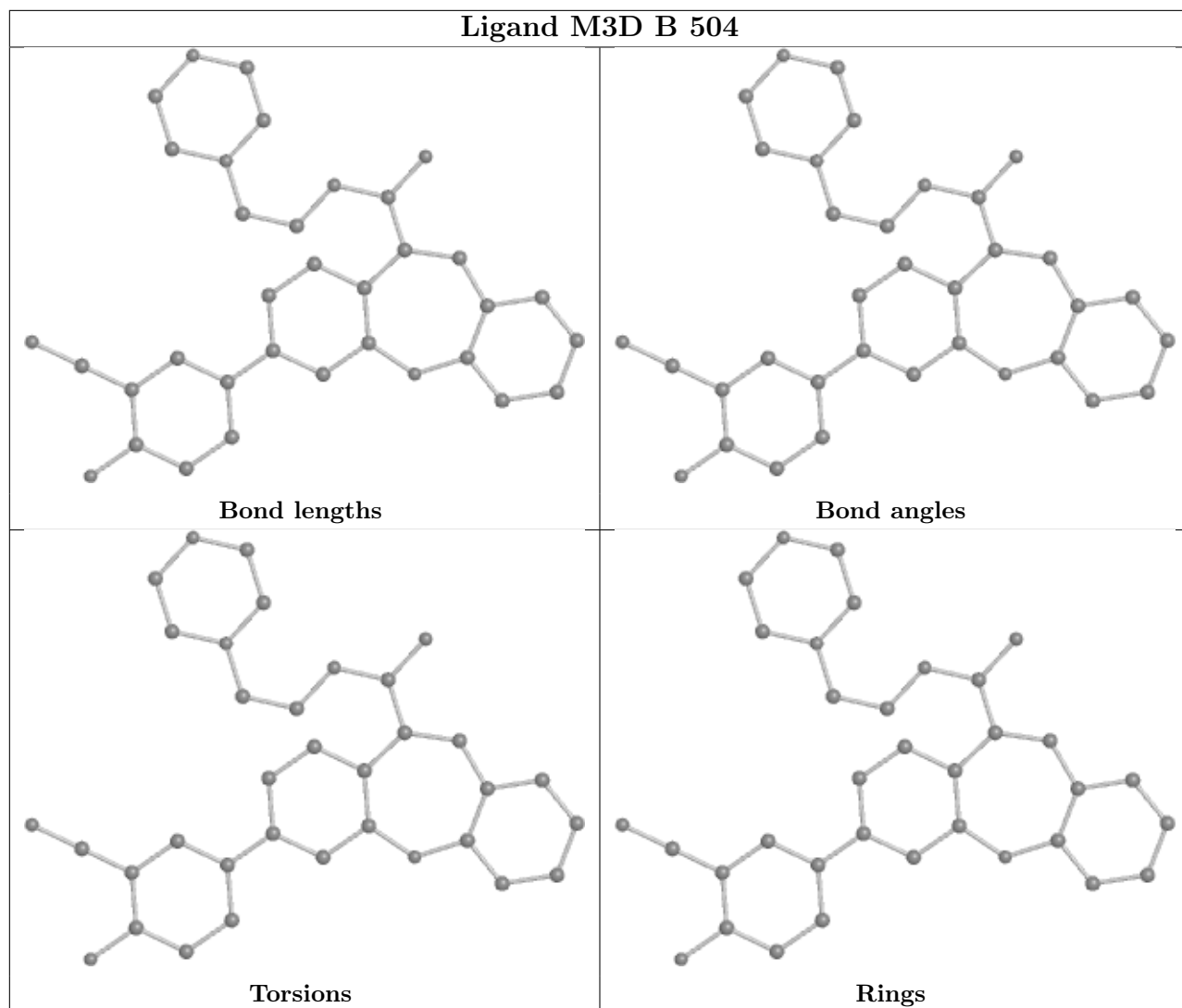
No monomer is involved in short contacts.

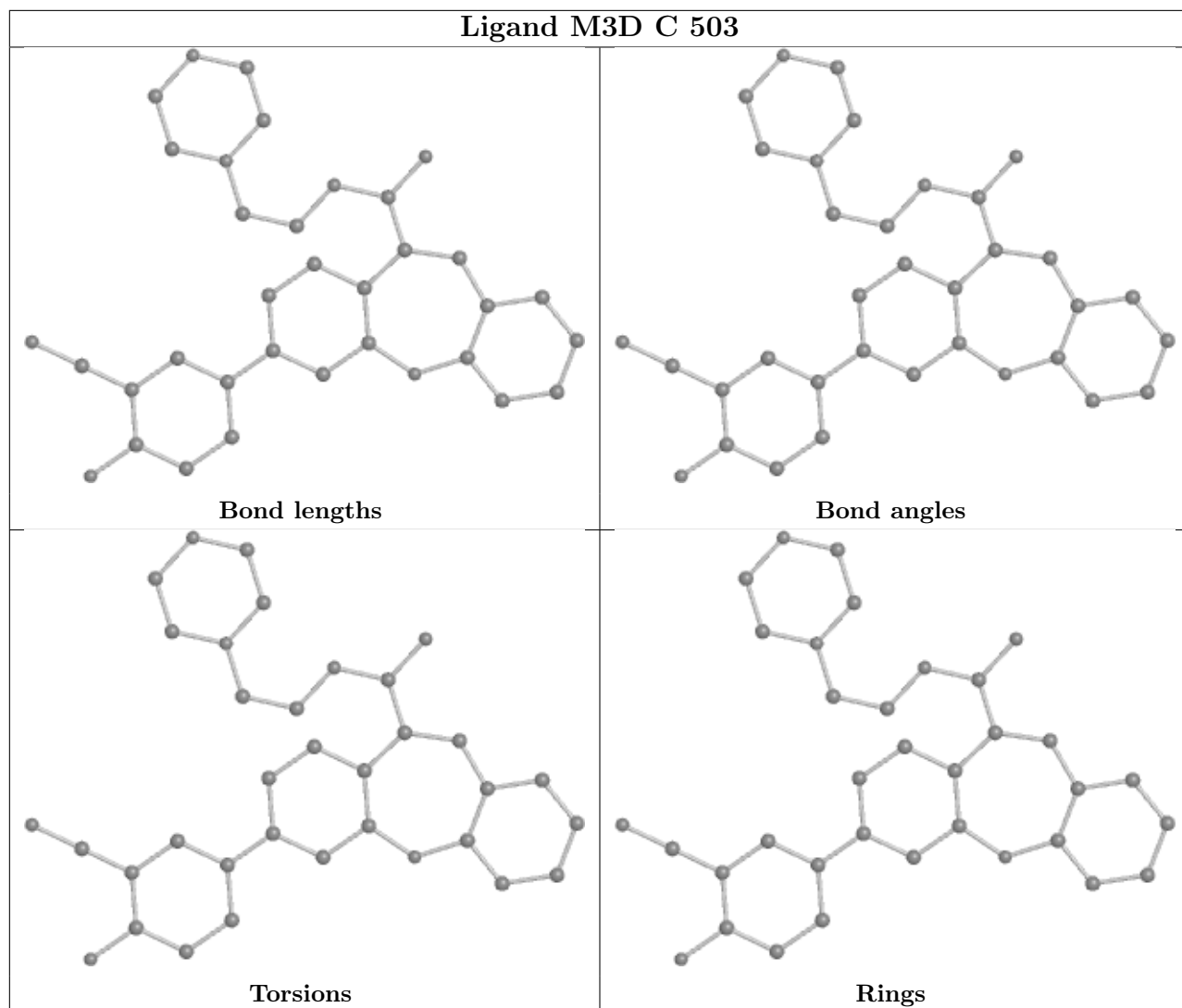
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

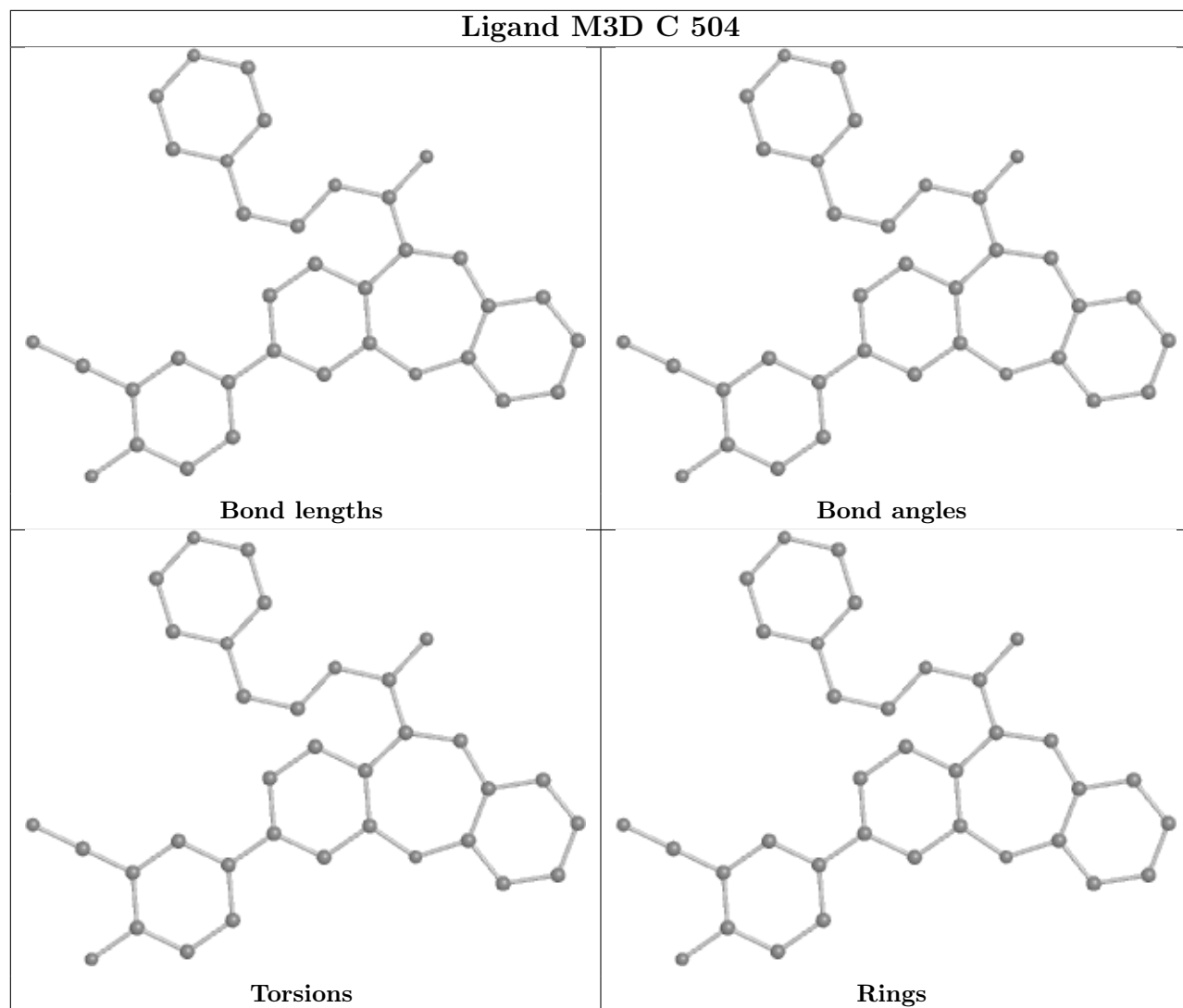




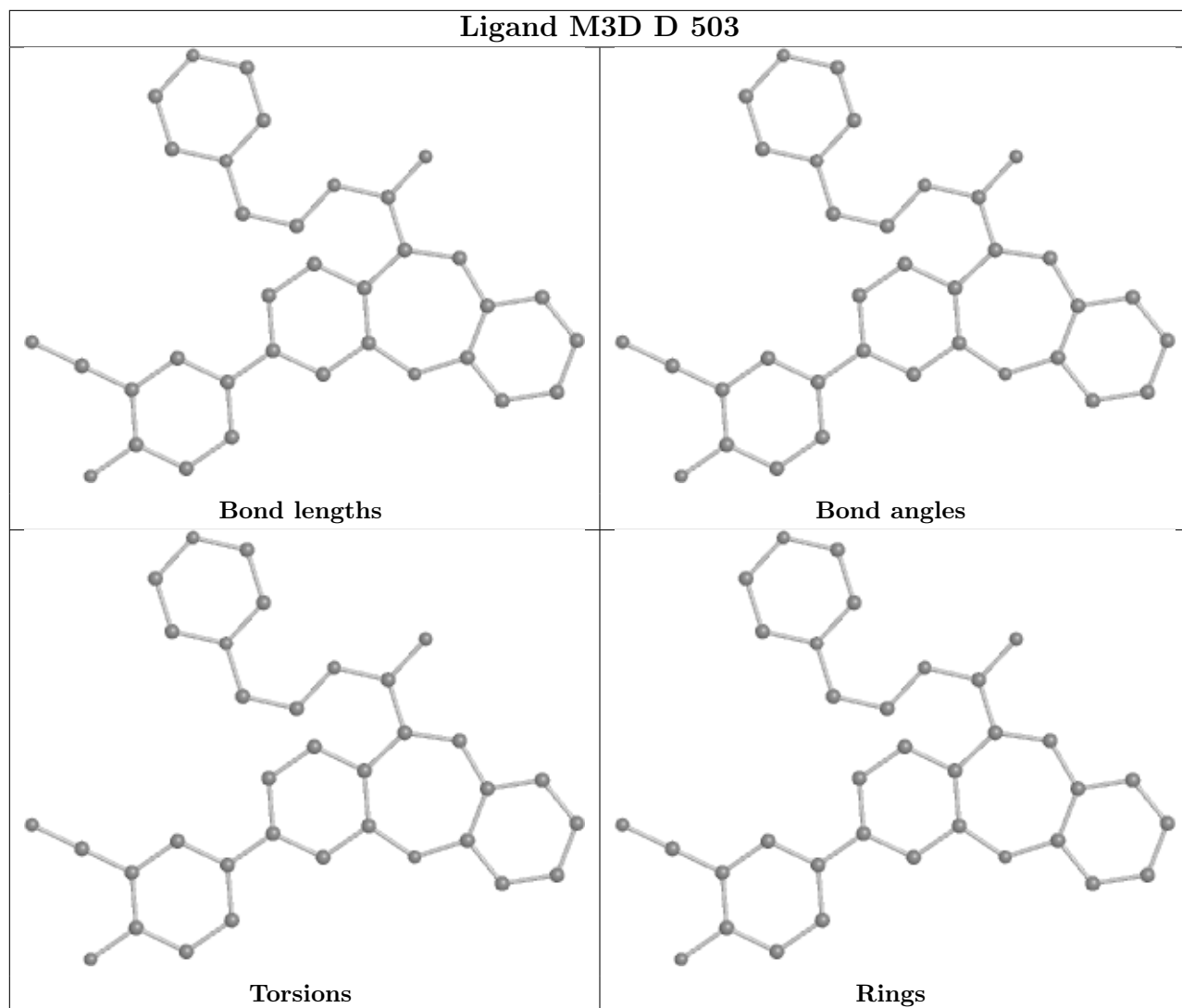


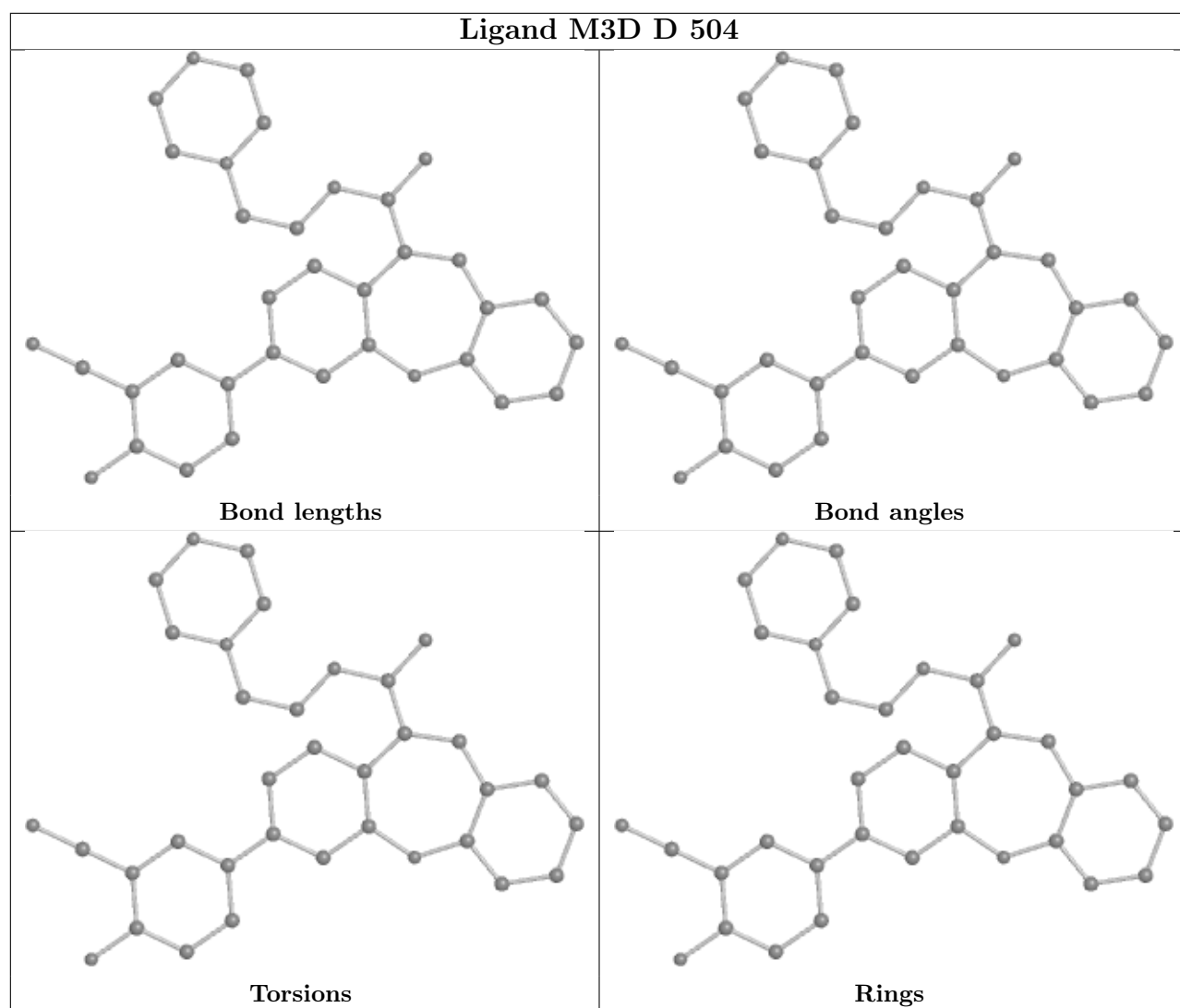












#### 4.7 Other polymers [i](#)

There are no such residues in this entry.

#### 4.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

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

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

EDS failed to run properly - this section is therefore empty.

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

EDS failed to run properly - this section is therefore empty.

### 5.3 Carbohydrates [i](#)

EDS failed to run properly - this section is therefore empty.

### 5.4 Ligands [i](#)

EDS failed to run properly - this section is therefore empty.

### 5.5 Other polymers [i](#)

EDS failed to run properly - this section is therefore empty.