wwPDB EM Validation Summary Report (i)

Jul 15, 2025 – 11:44 AM JST

|		
PDB ID	:	9J97 / pdb_00009j97
EMDB ID	:	EMD-61254
Title	:	Closed structure of human XPR1
Authors	:	Wang, Y.; Wang, Y.; Yang, H.; Shen, H.
Deposited on	:	2024-08-22
Resolution	:	3.30 Å(reported)

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.30 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.

Metric	Percentile Ranks	Value
Clashscore		13
Ramachandran outliers		0.9%
Sidechain outliers		12.2%

Worse   *Better*

■ Percentile relative to all structures
▯ Percentile relative to all EM structures
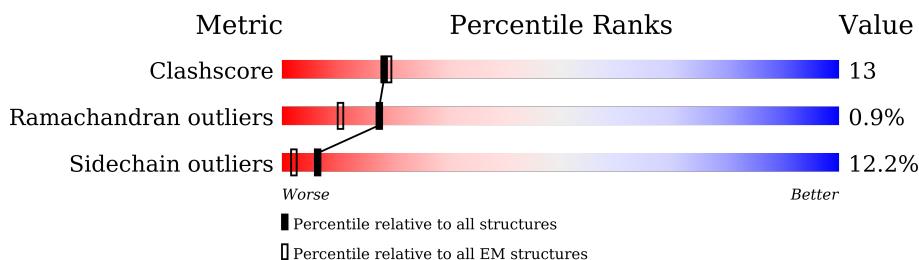
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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

Mol	Chain	Length	Quality of chain
1	A	969	28% 9% • • 59%
1	B	969	29% 9% • • 59%
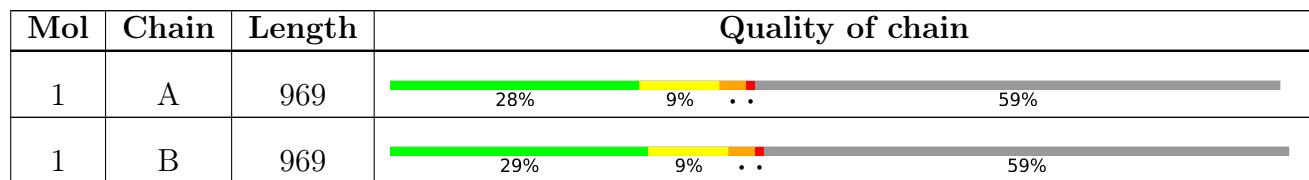
The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	PO4	A	1003	-	X	-	-

2   Entry composition ⓘ

There are 4 unique types of molecules in this entry. The entry contains 6704 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 Solute carrier family 53 member 1,Green fluorescent protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	393	Total 3272	C 2198	N 526	O 532	S 16	0	0
1	B	393	Total 3272	C 2198	N 526	O 532	S 16	0	0

There are 82 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	697	GLY	-	linker	UNP Q9UBH6
A	698	GLY	-	linker	UNP Q9UBH6
A	699	ARG	-	linker	UNP Q9UBH6
A	700	LEU	-	linker	UNP Q9UBH6
A	701	GLU	-	linker	UNP Q9UBH6
A	702	VAL	-	linker	UNP Q9UBH6
A	703	LEU	-	linker	UNP Q9UBH6
A	704	PHE	-	linker	UNP Q9UBH6
A	705	GLN	-	linker	UNP Q9UBH6
A	706	GLY	-	linker	UNP Q9UBH6
A	707	PRO	-	linker	UNP Q9UBH6
A	708	ALA	-	linker	UNP Q9UBH6
A	709	ALA	-	linker	UNP Q9UBH6
A	710	ALA	-	linker	UNP Q9UBH6
A	711	ALA	-	linker	UNP Q9UBH6
A	712	VAL	-	linker	UNP Q9UBH6
A	775	LEU	PHE	conflict	UNP P42212
A	776	THR	SER	conflict	UNP P42212
A	818	THR	LYS	conflict	UNP P42212
A	917	LYS	ALA	conflict	UNP P42212
A	942	LEU	HIS	conflict	UNP P42212
A	950	SER	-	expression tag	UNP P42212
A	951	GLY	-	expression tag	UNP P42212
A	952	LEU	-	expression tag	UNP P42212
A	953	ARG	-	expression tag	UNP P42212
A	954	SER	-	expression tag	UNP P42212

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
A	955	ASP	-	expression tag	UNP P42212
A	956	TYR	-	expression tag	UNP P42212
A	957	LYS	-	expression tag	UNP P42212
A	958	ASP	-	expression tag	UNP P42212
A	959	HIS	-	expression tag	UNP P42212
A	960	ASP	-	expression tag	UNP P42212
A	961	ILE	-	expression tag	UNP P42212
A	962	ASP	-	expression tag	UNP P42212
A	963	TYR	-	expression tag	UNP P42212
A	964	LYS	-	expression tag	UNP P42212
A	965	ASP	-	expression tag	UNP P42212
A	966	ASP	-	expression tag	UNP P42212
A	967	ASP	-	expression tag	UNP P42212
A	968	ASP	-	expression tag	UNP P42212
A	969	LYS	-	expression tag	UNP P42212
B	697	GLY	-	linker	UNP Q9UBH6
B	698	GLY	-	linker	UNP Q9UBH6
B	699	ARG	-	linker	UNP Q9UBH6
B	700	LEU	-	linker	UNP Q9UBH6
B	701	GLU	-	linker	UNP Q9UBH6
B	702	VAL	-	linker	UNP Q9UBH6
B	703	LEU	-	linker	UNP Q9UBH6
B	704	PHE	-	linker	UNP Q9UBH6
B	705	GLN	-	linker	UNP Q9UBH6
B	706	GLY	-	linker	UNP Q9UBH6
B	707	PRO	-	linker	UNP Q9UBH6
B	708	ALA	-	linker	UNP Q9UBH6
B	709	ALA	-	linker	UNP Q9UBH6
B	710	ALA	-	linker	UNP Q9UBH6
B	711	ALA	-	linker	UNP Q9UBH6
B	712	VAL	-	linker	UNP Q9UBH6
B	775	LEU	PHE	conflict	UNP P42212
B	776	THR	SER	conflict	UNP P42212
B	818	THR	LYS	conflict	UNP P42212
B	917	LYS	ALA	conflict	UNP P42212
B	942	LEU	HIS	conflict	UNP P42212
B	950	SER	-	expression tag	UNP P42212
B	951	GLY	-	expression tag	UNP P42212
B	952	LEU	-	expression tag	UNP P42212
B	953	ARG	-	expression tag	UNP P42212
B	954	SER	-	expression tag	UNP P42212
B	955	ASP	-	expression tag	UNP P42212

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
B	956	TYR	-	expression tag	UNP P42212
B	957	LYS	-	expression tag	UNP P42212
B	958	ASP	-	expression tag	UNP P42212
B	959	HIS	-	expression tag	UNP P42212
B	960	ASP	-	expression tag	UNP P42212
B	961	ILE	-	expression tag	UNP P42212
B	962	ASP	-	expression tag	UNP P42212
B	963	TYR	-	expression tag	UNP P42212
B	964	LYS	-	expression tag	UNP P42212
B	965	ASP	-	expression tag	UNP P42212
B	966	ASP	-	expression tag	UNP P42212
B	967	ASP	-	expression tag	UNP P42212
B	968	ASP	-	expression tag	UNP P42212
B	969	LYS	-	expression tag	UNP P42212

- Molecule 2 is (2R)-3-{[(S)-(2-aminoethoxy)(hydroxy)phosphoryl]oxy}-2-(tetradecanoyloxy) propyl octadecanoate (CCD ID: 8PE) (formula: $C_{37}H_{74}NO_8P$).

8PE
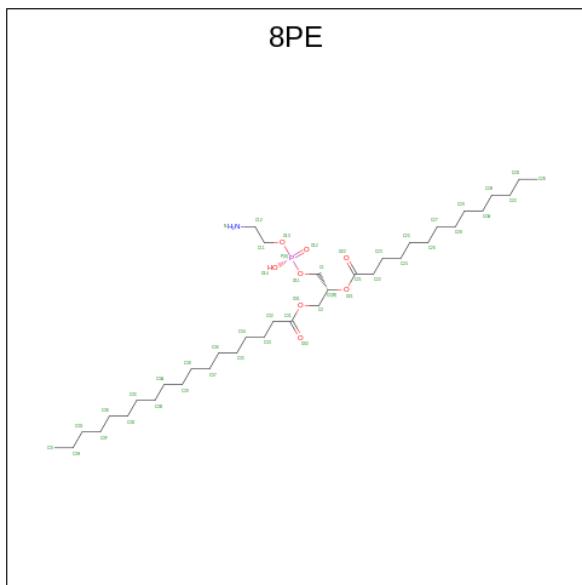
Mol	Chain	Residues	Atoms					AltConf
2	A	1	Total	C	N	O	P	0
			47	37	1	8	1	
2	B	1	Total	C	N	O	P	0
			47	37	1	8	1	

- Molecule 3 is CHOLESTEROL (CCD ID: CLR) (formula: $C_{27}H_{46}O$).

CLR
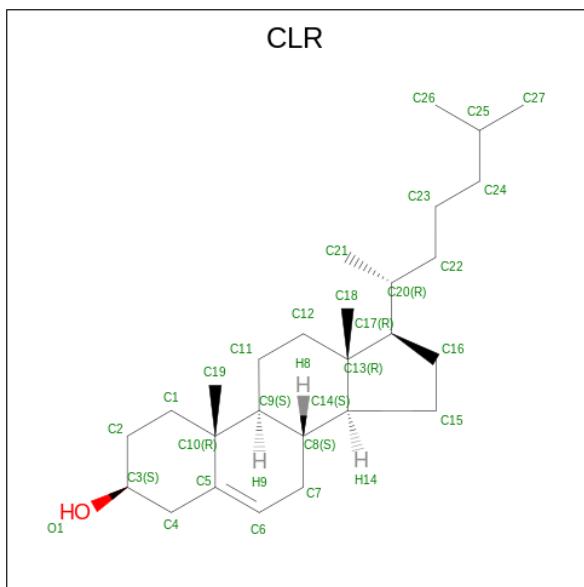
Mol	Chain	Residues	Atoms			AltConf
3	A	1	Total 28	C 27	O 1	0
3	B	1	Total 28	C 27	O 1	0

- Molecule 4 is PHOSPHATE ION (CCD ID: PO4) (formula: O_4P) (labeled as "Ligand of Interest" by depositor).

PO4
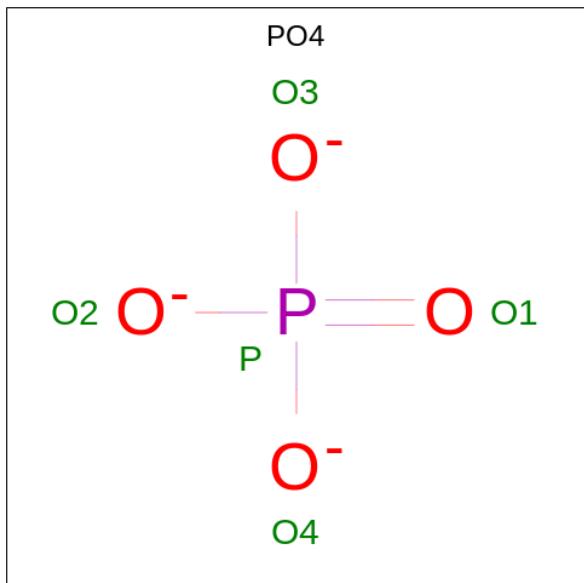
Mol	Chain	Residues	Atoms			AltConf
4	A	1	Total 5	O 4	P 1	0

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms			AltConf
			Total	O	P	
4	B	1	5	4	1	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. 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. 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: Solute carrier family 53 member 1,Green fluorescent protein

• Molecule 1: Solute carrier family 53 member 1,Green fluorescent protein

Chain B:

29%   9%   · ·   59%

MET LYS PHE ALA GLU HIS LEU SER ALA HIS ILE THR PRO GLU TRP ARG LYS GLN TYR ILE GLN TYR GLU ALA PHE LYS ASP MET LEU TYR SER ALA GLN ASP GLN ALA PRO SER VAL GLU VAL THR ASP GLU ASP VAL THR LYS ARG TYR PHE ALA LYS PHE GLU GLU LYS PHE PHE GLN

THR CYS GLU LYS GLU LEU ALA LYS ILE ASN THR PHE TYR SER GLU LYS LEU ALA GLU GLN ALA ARG ARG PHE ALA THR LEU GLN ASN GLU GLU LEU SER SER LEU ASP ALA GLN LYS GLU SER THR GLY VAL THR THR LEU ARG GLN ARG LYS PRO VAL PHE HIS LEU SER HIS GLU

GLU ARG VAL GLN HIS ARG ASN ILE LYS ASP LEU LYS ALA PHE SER GLU PHE TYR LEU SER LEU ILE LEU GLN ASN TYR GLN ASN LEU ASN PHE THR GLU PHE ARG LYS ILE LEU LYS HIS ASP ILE LEU GLU LYS THR SER ARG GLY ALA ASP TRP ARG VAL ALA HIS VAL

GLU VAL ALA PRO PHE TYR THR CYS LYS LYS LYS ILE ASN GLN LEU LEU ILE SER GLU THR ALA VAL VAL THR ASN GLU LEU ASP GLY ASP GLN LYS ALA LYS LYS ALA MET LYS ARG LEU ARG PRO LEU GLY ALA ALA GLN P228 L259 W266 I269 R270 I271 L277 L278 I279

L285 G438 R293 N306 N310 L311 S312 L332 P338 I339 S340 V341 I342 V346 L351 Y352 M355 T363 K364 T365 V381 K388 V389 Q399 S404 M408 E411 C415 F416 Y417 S418 L419 E420 L421 E425 S426 K427 G428 L429 S434 GLU GLU

S437 G438 I439 C440 H441 K442 Y443 T444 Y445 G446 V447 R448 A449 I450 V451 Q452 C453 I454 P455 A456 W457 I461 L464 A473 L477 K482 M489 L495 K500 T507 I515 V516 F517 Y518 I519 I520 S521 S522 D529 D533 L536 F537 D538 E543 N544 T545

F546 L547 R548 V552 Y553 V567 F571 A572 W573 T574 I575 Q576 I577 S578 I579 T580 SER THR LEU L585 P586 H587 D590 I591 T594 A597 E600 R604 W607 R611 L612 E613 N614 L617 N618 N619 G620 G621 E622 F623 R624 A625 V626 ARG ASP ILE SER VAL

ALA PRO LEU ASN ALA ASP ASP GLN THR LEU LEU GLU GLN MET ASP GLN ASP ASP GLY VAL ARG ASN ARG GLN LYS ASN ARG SER TRP LYS TYR ASN GLN SER ILE SER LEU ARG ARG PRO ARG LEU ALA SER GLN SER LYS ALA ARG ASP THR LYS VAL LEU ILE GLU ASP THR ASP

ASP GLU ALA ASN THR GLY GLY ARG LEU GLU VAL LEU PHE GLN GLY PRO ALA ALA ALA VAL SER LYS GLY GLU GLU LEU PHE THR GLY VAL VAL PRO ILE LEU VAL GLU LEU ASP GLY ASP VAL ASN GLY HIS LYS PHE SER VAL SER GLY GLU GLY GLU GLY ASP ALA THR TYR GLY

LYS LEU THR LEU LYS PHE ILE CYS THR THR GLY LYS LEU PRO VAL PRO TRP PRO THR LEU VAL THR THR LEU THR TYR GLY VAL GLN CYS PHE SER ARG TYR PRO ASP HIS MET LYS GLN HIS ASP PHE PHE LYS SER ALA MET PRO GLU GLY TYR VAL GLN GLU ARG THR ILE PHE PHE

LYS ASP ASP GLY ASN TYR LYS THR ARG ALA GLU VAL LYS PHE GLU GLY ASP THR LEU VAL ASN ARG ILE GLU LEU LYS GLY ILE ASP PHE LYS GLU ASP GLY ASN ILE LEU GLY HIS LYS LEU GLU TYR ASN TYR ASN SER HIS ASN VAL TYR ILE MET ALA ASP LYS GLN LYS ASN GLY

ILE LYS VAL ASN PHE LYS ILE ARG HIS ASN ILE GLU ASP GLY SER VAL GLN LEU ALA ASP HIS TYR GLN GLN ASN THR PRO ILE GLY ASP GLY PRO VAL LEU LEU PRO ASP ASN HIS TYR LEU SER THR GLN SER LYS LEU SER LYS ASP PRO ASN GLU LYS ARG ASP HIS MET VAL LEU

LEU GLU PHE VAL THR ALA ALA GLY ILE THR LEU GLY MET ASP GLU LEU TYR LYS SER GLY LEU ARG SER ASP ASP ILE LYS ASP TYR LYS ASP ASP ASP ASP LYS

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	150104	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	50	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor

5   Model quality ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: CLR, 8PE, PO4

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	0.83	16/3381 (0.5%)	1.04	40/4598 (0.9%)
1	B	0.81	15/3381 (0.4%)	1.02	34/4598 (0.7%)
All	All	0.82	31/6762 (0.5%)	1.03	74/9196 (0.8%)

The worst 5 of 31 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	454	ILE	C-N	14.27	1.50	1.34
1	A	454	ILE	C-N	14.13	1.49	1.34
1	B	454	ILE	C-O	-12.20	1.09	1.24
1	A	454	ILE	C-O	-12.13	1.09	1.24
1	A	621	GLY	C-O	-11.26	1.10	1.23

The worst 5 of 74 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	454	ILE	CA-C-N	16.43	136.95	119.87
1	B	454	ILE	C-N-CA	16.43	136.95	119.87
1	A	454	ILE	CA-C-N	16.31	136.83	119.87
1	A	454	ILE	C-N-CA	16.31	136.83	119.87
1	A	575	ILE	N-CA-C	-13.55	98.41	110.74

There are no chirality outliers.

There are no planarity outliers.

5.2   Too-close contacts ⓘ

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	3272	0	3258	76	0
1	B	3272	0	3258	78	0
2	A	47	0	73	8	0
2	B	47	0	73	8	0
3	A	28	0	46	5	0
3	B	28	0	46	4	0
4	A	5	0	0	0	0
4	B	5	0	0	1	0
All	All	6704	0	6754	173	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 13.

The worst 5 of 173 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:489:MET:HE1	1:B:574:THR:OG1	1.43	1.16
1:A:489:MET:HE1	1:A:574:THR:OG1	1.48	1.12
1:B:489:MET:HE2	1:B:518:TYR:HB2	1.35	1.05
1:A:489:MET:HE2	1:A:518:TYR:HB2	1.35	1.02
1:B:572:ALA:HA	1:B:575:ILE:HG13	1.49	0.95

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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	387/969 (40%)	356 (92%)	27 (7%)	4 (1%)	13	42
1	B	387/969 (40%)	358 (92%)	26 (7%)	3 (1%)	16	46

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
All	All	774/1938 (40%)	714 (92%)	53 (7%)	7 (1%)	17 44

5 of 7 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	586	PRO
1	A	622	GLU
1	B	586	PRO
1	B	622	GLU
1	A	445	TYR

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 PDB entries followed by that with respect to all EM entries.

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	347/857 (40%)	304 (88%)	43 (12%)	4 16
1	B	347/857 (40%)	305 (88%)	42 (12%)	4 16
All	All	694/1714 (40%)	609 (88%)	85 (12%)	6 16

5 of 85 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	439	ILE
1	B	519	ILE
1	B	442	LYS
1	B	454	ILE
1	B	552	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	499	HIS
1	A	614	ASN
1	B	479	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	499	HIS
1	B	614	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

6 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
4	PO4	A	1003	-	4,4,4	2.96	4 (100%)	6,6,6	0.43	0
2	8PE	B	1001	-	46,46,46	1.04	3 (6%)	49,51,51	1.39	5 (10%)
4	PO4	B	1003	-	4,4,4	1.47	1 (25%)	6,6,6	0.99	0
2	8PE	A	1001	-	46,46,46	1.04	3 (6%)	49,51,51	1.39	5 (10%)
3	CLR	B	1002	-	31,31,31	0.96	0	48,48,48	1.85	12 (25%)
3	CLR	A	1002	-	31,31,31	0.96	0	48,48,48	1.86	12 (25%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns.

'-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	CLR	B	1002	-	-	4/10/68/68	0/4/4/4
2	8PE	A	1001	-	-	22/50/50/50	-
3	CLR	A	1002	-	-	4/10/68/68	0/4/4/4
2	8PE	B	1001	-	-	22/50/50/50	-

The worst 5 of 11 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1003	PO4	P-O1	4.51	1.61	1.50
2	B	1001	8PE	O32-C31	-3.21	1.13	1.22
2	A	1001	8PE	O32-C31	-3.17	1.13	1.22
4	B	1003	PO4	P-O3	-2.33	1.47	1.54
4	A	1003	PO4	P-O3	2.29	1.61	1.54

The worst 5 of 34 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	1002	CLR	C19-C10-C1	-6.32	99.45	109.43
3	B	1002	CLR	C19-C10-C1	-6.28	99.51	109.43
2	A	1001	8PE	O21-C21-C22	5.70	123.79	111.50
2	B	1001	8PE	O21-C21-C22	5.69	123.76	111.50
2	B	1001	8PE	O13-P-O12	-4.39	91.92	109.07

There are no chirality outliers.

5 of 52 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1001	8PE	O22-C21-O21-C2
2	A	1001	8PE	C22-C21-O21-C2
2	B	1001	8PE	O22-C21-O21-C2
2	B	1001	8PE	C22-C21-O21-C2
3	A	1002	CLR	C21-C20-C22-C23

There are no ring outliers.

5 monomers are involved in 26 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	1001	8PE	8	0
4	B	1003	PO4	1	0

Continued on next page...

Continued from previous page...

| Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1001	8PE	8	0
3	B	1002	CLR	4	0
3	A	1002	CLR	5	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand PO4 A 1003

Bond lengths

Bond angles

Torsions

Rings

Ligand 8PE B 1001	
Bond lengths	Bond angles
Torsions	Rings

Ligand PO4 B 1003

Bond lengths

Bond angles

Torsions

Rings

Ligand 8PE A 1001

Bond lengths

Bond angles

Torsions

Rings

Ligand CLR B 1002

Bond lengths

Bond angles

Torsions

Rings

Ligand CLR A 1002

Bond lengths

Bond angles

Torsions

Rings
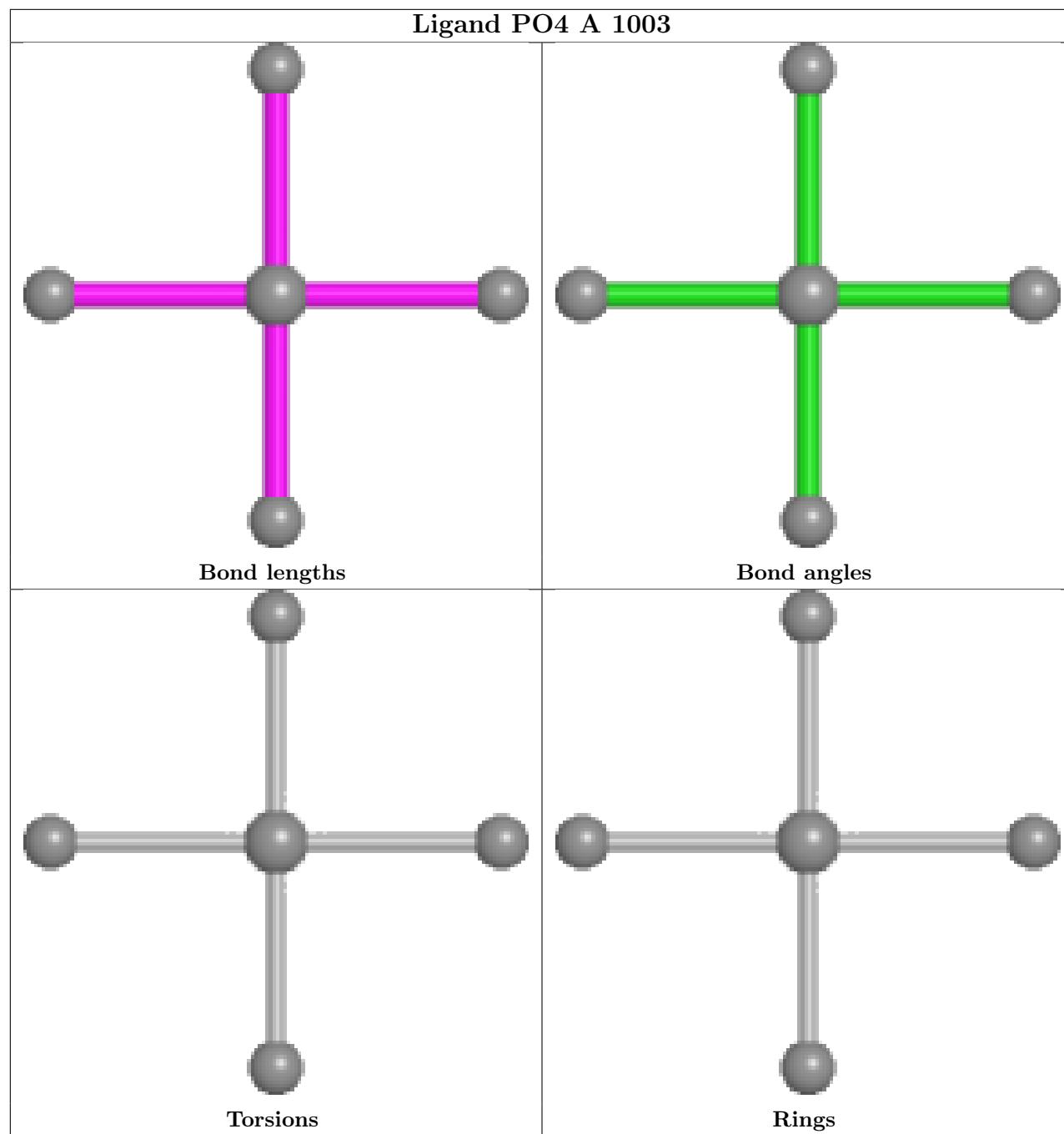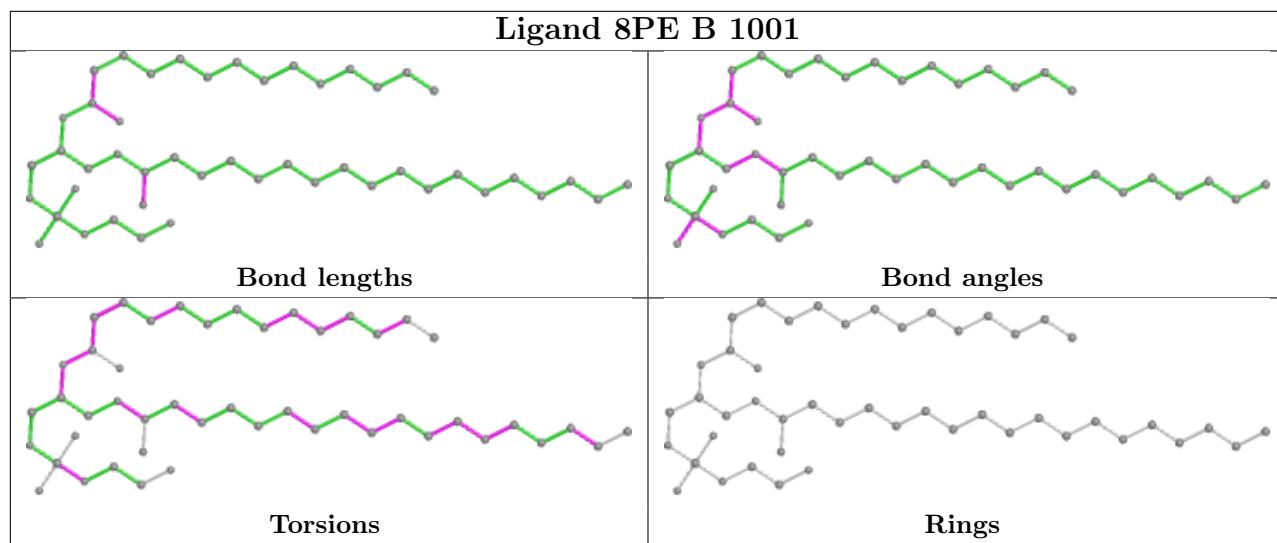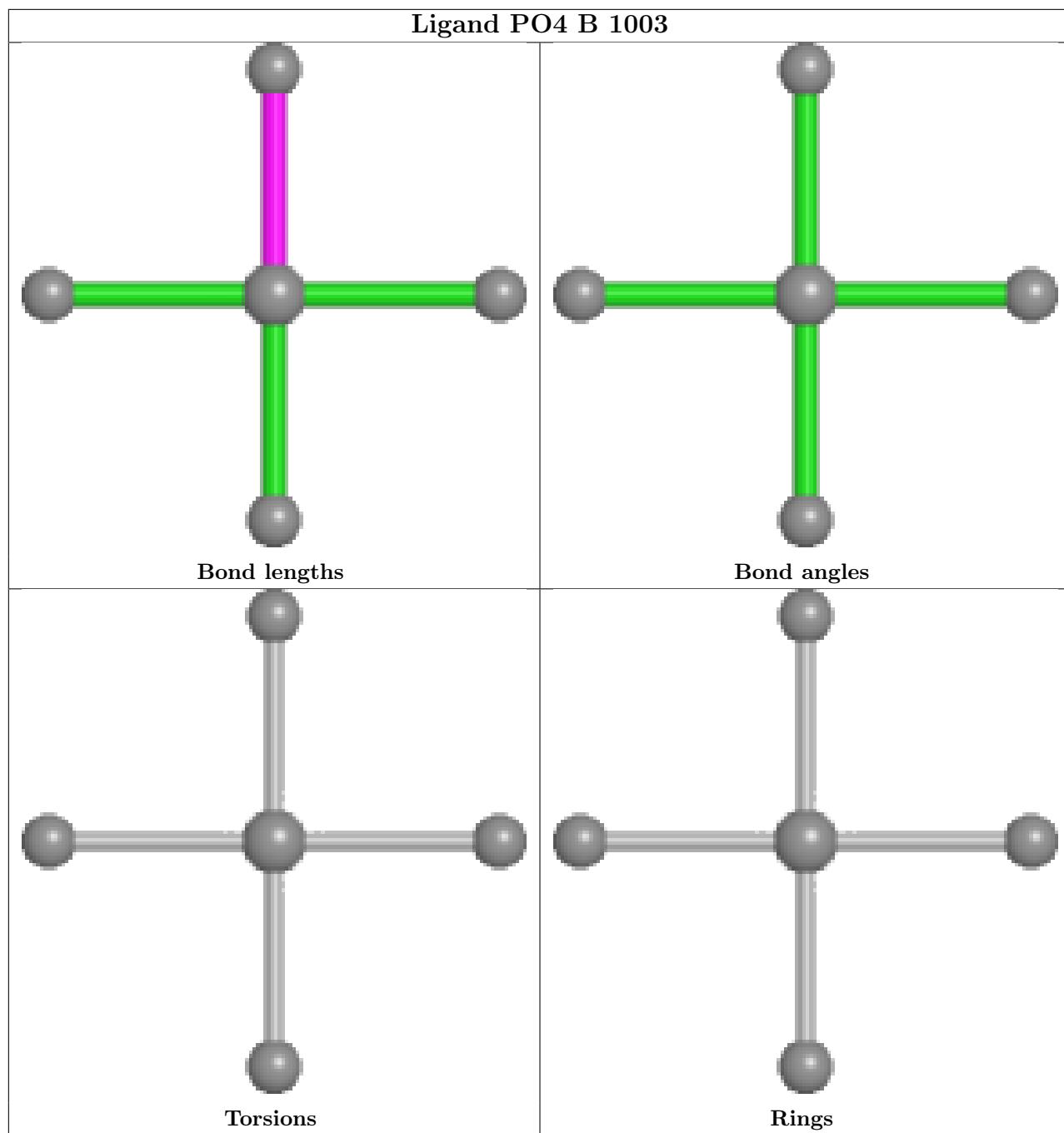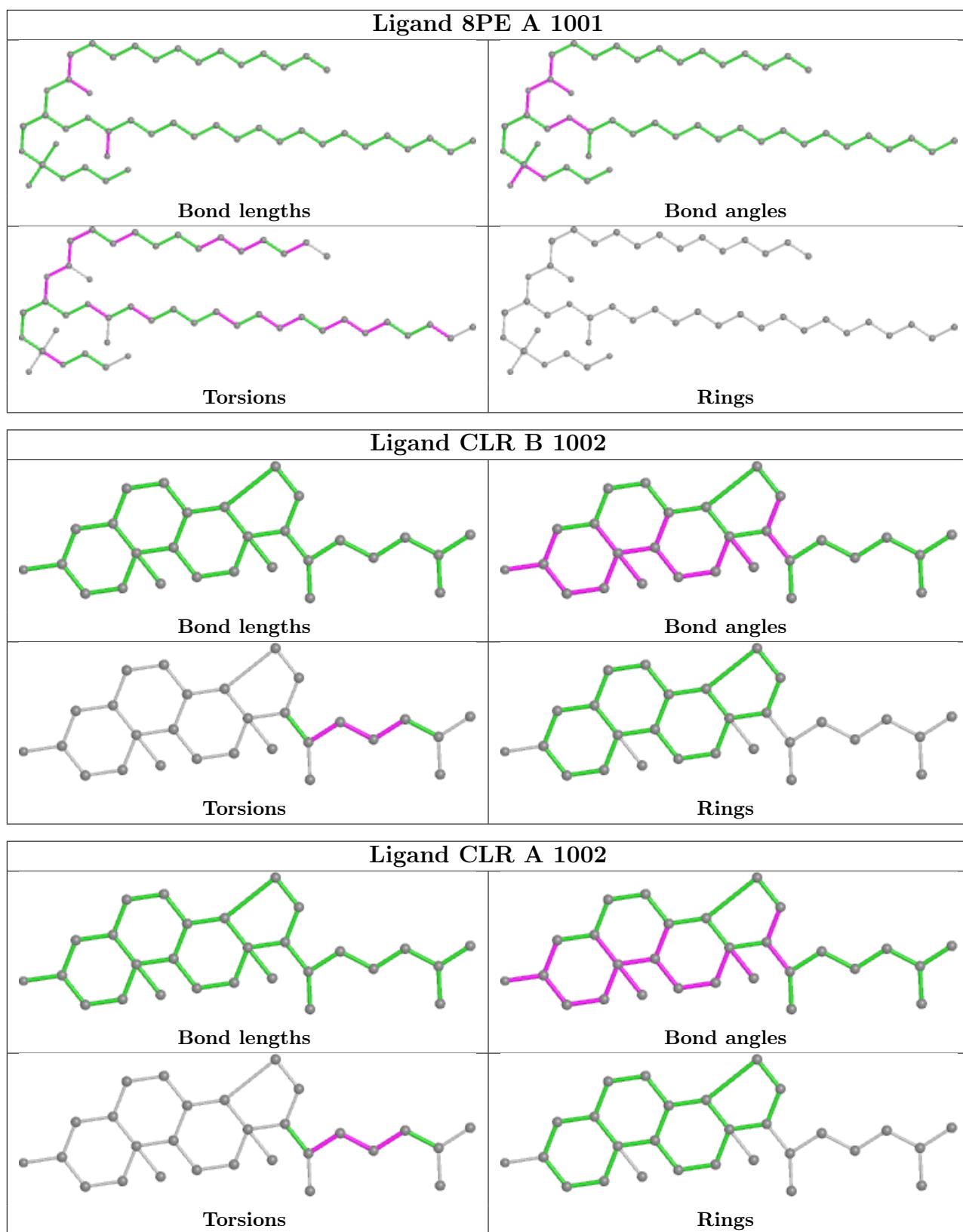
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.