



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 1, 2014 – 01:33 AM GMT

PDB ID : 1F4Z
Title : BACTERIORHODOPSIN-M PHOTOINTERMEDIATE STATE OF THE E204Q MUTANT AT 1.8 ANGSTROM RESOLUTION
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Deposited on : 2000-06-10
Resolution : 1.80 Å(reported)

This is a full wwPDB validation report for a publicly released PDB entry.
We welcome your comments at validation@mail.wwpdb.org
A user guide is available at <http://wwpdb.org/ValidationPDFNotes.html>

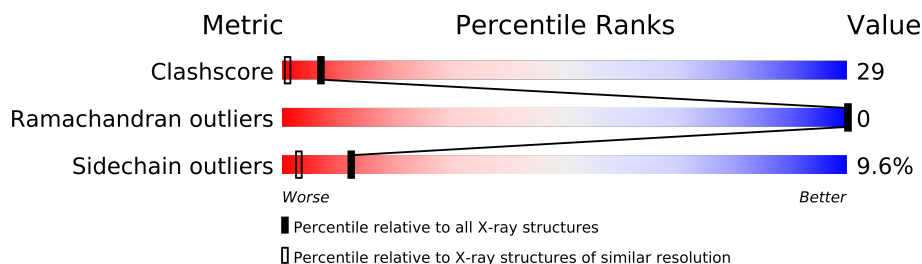
The following versions of software and data (see [references](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.15 2013
Xtriage (Phenix) : **NOT EXECUTED**
EDS : **NOT EXECUTED**
Percentile statistics : 21963
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et. al. (1996)
Validation Pipeline (wwPDB-VP) : stable22683

1 Overall quality at a glance

The reported resolution of this entry is 1.80 Å.


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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	79885	4461 (1.80-1.80)
Ramachandran outliers	78287	4404 (1.80-1.80)
Sidechain outliers	78261	4403 (1.80-1.80)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	227	

2 Entry composition i

There are 5 unique types of molecules in this entry. The entry contains 2075 atoms, of which 0 are hydrogen and 0 are deuterium.

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.

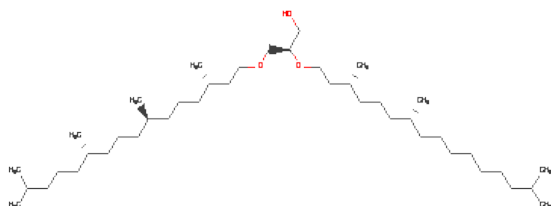
- Molecule 1 is a protein called BACTERIORHODOPSIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	222	1720	1159	263	289	9	0	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	204	GLN	GLU	ENGINEERED	UNP P02945

- Molecule 2 is 1-[2,6,10,14-TETRAMETHYL-HEXADECAN-16-YL]-2-[2,10,14-TRIMETHYLHEXADECAN-16-YL]GLYCEROL (three-letter code: LI1) (formula: C₄₂H₈₆O₃).



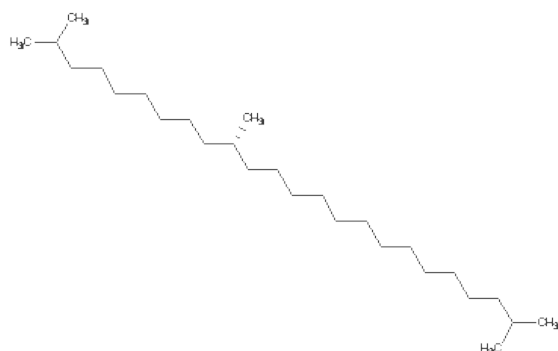
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
2	A	1	32	29	3	0	0
2	A	1	41	38	3	0	0

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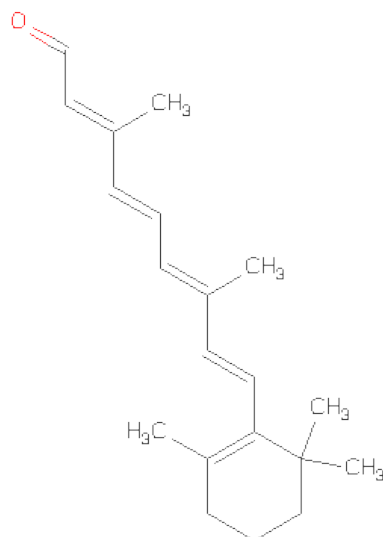
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C 18 18	0	0
2	A	1	Total C 16 16	0	0
2	A	1	Total C 8 8	0	0
2	A	1	Total C 8 8	0	0
2	A	1	Total C O 38 35 3	0	0
2	A	1	Total C 18 18	0	0
2	A	1	Total C 16 16	0	0
2	A	1	Total C O 40 37 3	0	0
2	A	1	Total C 17 17	0	0
2	A	1	Total C 18 18	0	0
2	A	1	Total C 13 13	0	0

- Molecule 3 is 2,10,23-TRIMETHYL-TETRACOSANE (three-letter code: SQU) (formula: $C_{27}H_{56}$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C 27 27	0	0

- Molecule 4 is RETINAL (three-letter code: RET) (formula: $C_{20}H_{28}O$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C 20 20	0	0

- Molecule 5 is water.

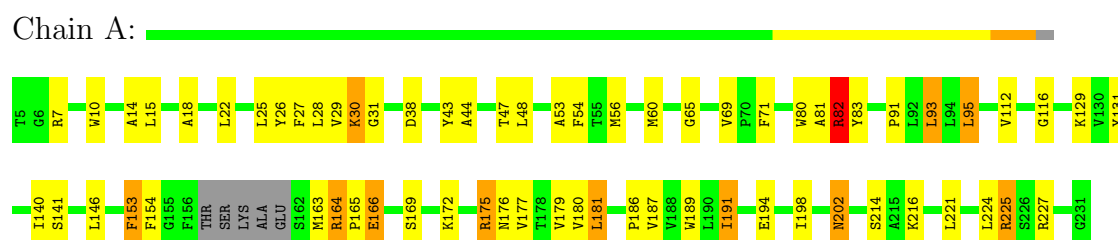
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	25	Total O 25 25	0	0

3 Residue-property plots

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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.

Note EDS was not executed.

• Molecule 1: BACTERIORHODOPSIN



4 Data and refinement statistics

Xtriage (Phenix) and EDS were not executed - this section will therefore be incomplete.

Property	Value	Source
Space group	P 63	Depositor
Cell constants a, b, c, α , β , γ	60.63Å 60.63Å 108.16Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	12.00 – 1.80	Depositor
% Data completeness (in resolution range)	99.5 (12.00-1.80)	Depositor
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	SHELXL-97	Depositor
R, R_{free}	0.142 , 0.203	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	2075	wwPDB-VP
Average B, all atoms (Å ²)	29.0	wwPDB-VP

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: SQU, RET, LI1

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	0.41	0/1767	1.24	4/2413 (0.2%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	82	ARG	CD-NE-CZ	22.23	154.73	123.60
1	A	175	ARG	NE-CZ-NH2	-9.61	115.50	120.30
1	A	189	TRP	CA-CB-CG	5.18	123.55	113.70
1	A	83	TYR	CB-CG-CD1	-5.10	117.94	121.00

There are no chirality outliers.

There are no planarity outliers.

5.2 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 hydrogens added by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, and the number in parentheses is this value normalized per 1000 atoms of the molecule in the chain. The Symm-Clashes column gives symmetry related clashes, in the same way as for the Clashes column.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1720	0	1778	80	0
2	A	283	0	457	85	0
3	A	27	0	53	12	0
4	A	20	0	26	3	0
5	A	25	0	0	4	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	2075	0	2314	126	0

Clashscore is defined as the number of clashes calculated for the entry per 1000 atoms (including hydrogens) of the entry. The overall clashscore for this entry is 29.

All (126) close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
2:A:602:LI1:H451	2:A:602:LI1:H162	1.49	0.94
1:A:47:THR:HG21	2:A:612:LI1:H141	1.57	0.86
2:A:602:LI1:H241	2:A:603:LI1:H211	1.56	0.85
2:A:603:LI1:H293	2:A:609:LI1:H301	1.59	0.84
1:A:198:ILE:HG22	2:A:604:LI1:H162	1.60	0.82
1:A:153:PHE:HA	1:A:175:ARG:HD2	1.66	0.78
1:A:131:TYR:OH	2:A:602:LI1:H13	1.84	0.77
1:A:18:ALA:O	1:A:22:LEU:HD13	1.86	0.75
1:A:176:ASN:HD21	2:A:610:LI1:H12	1.53	0.73
2:A:610:LI1:H272	2:A:610:LI1:H562	1.73	0.70
2:A:602:LI1:H142	2:A:603:LI1:H142	1.74	0.70
1:A:44:ALA:HA	2:A:612:LI1:H13	1.73	0.69
1:A:202:ASN:H	1:A:202:ASN:HD22	1.37	0.69
1:A:146:LEU:HD21	2:A:609:LI1:H272	1.73	0.69
1:A:95:LEU:HG	2:A:613:LI1:H121	1.72	0.69
2:A:610:LI1:H411	2:A:610:LI1:H111	1.74	0.68
2:A:612:LI1:H143	5:A:512:HOH:O	1.94	0.68
3:A:701:SQU:H42	3:A:701:SQU:H102	1.77	0.66
1:A:187:VAL:HG11	2:A:610:LI1:H291	1.78	0.66
2:A:601:LI1:H161	2:A:601:LI1:H12	1.80	0.64
2:A:610:LI1:H172	2:A:610:LI1:H461	1.79	0.64
2:A:610:LI1:H271	2:A:610:LI1:H58	1.80	0.64
1:A:129:LYS:HE2	5:A:413:HOH:O	1.97	0.63
3:A:701:SQU:H31	3:A:701:SQU:H61	1.80	0.63
1:A:172:LYS:HD3	2:A:610:LI1:O3	1.99	0.62
1:A:25:LEU:HB3	2:A:611:LI1:H172	1.81	0.62
1:A:131:TYR:CD2	2:A:602:LI1:H12	2.34	0.61
1:A:186:PRO:HB3	4:A:301:RET:H183	1.81	0.61
1:A:225:ARG:NH2	3:A:701:SQU:H291	2.16	0.61
2:A:602:LI1:H243	2:A:603:LI1:H172	1.83	0.60
1:A:179:VAL:HG11	2:A:610:LI1:H162	1.84	0.60
1:A:180:VAL:HG21	2:A:610:LI1:H511	1.84	0.59
2:A:602:LI1:H2	2:A:602:LI1:H121	1.83	0.59
1:A:153:PHE:CZ	2:A:610:LI1:H121	2.38	0.58
1:A:43:TYR:CE1	1:A:224:LEU:HD13	2.39	0.58

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:69:VAL:HG12	1:A:71:PHE:HD2	1.67	0.58
1:A:202:ASN:HD22	1:A:202:ASN:N	2.02	0.57
1:A:95:LEU:CG	2:A:613:LI1:H121	2.34	0.57
1:A:131:TYR:CE2	2:A:602:LI1:H12	2.39	0.57
1:A:141:SER:HB3	4:A:301:RET:H41	1.88	0.56
2:A:610:LI1:C27	2:A:610:LI1:H58	2.35	0.55
1:A:221:LEU:HD11	3:A:701:SQU:H251	1.88	0.55
2:A:601:LI1:H161	2:A:601:LI1:H111	1.89	0.55
2:A:610:LI1:H111	2:A:610:LI1:C41	2.36	0.54
3:A:701:SQU:C16	3:A:701:SQU:H13	2.38	0.53
1:A:187:VAL:HG11	2:A:610:LI1:C29	2.39	0.53
2:A:604:LI1:C28	2:A:610:LI1:H28	2.38	0.53
1:A:54:PHE:CE2	2:A:612:LI1:H28	2.44	0.53
1:A:14:ALA:HB1	2:A:606:LI1:H161	1.91	0.53
2:A:602:LI1:H162	2:A:602:LI1:C45	2.34	0.52
2:A:603:LI1:H293	2:A:609:LI1:C30	2.36	0.52
1:A:53:ALA:HB2	1:A:216:LYS:HD3	1.91	0.52
1:A:180:VAL:HG22	2:A:610:LI1:H202	1.92	0.52
1:A:80:TRP:CH2	2:A:607:LI1:H443	2.45	0.52
1:A:187:VAL:HG22	2:A:603:LI1:H28	1.92	0.52
1:A:116:GLY:HA2	5:A:511:HOH:O	2.09	0.52
1:A:56:MET:HA	1:A:56:MET:HE2	1.92	0.51
2:A:604:LI1:C29	2:A:610:LI1:H28	2.41	0.51
3:A:701:SQU:H162	3:A:701:SQU:H13	1.92	0.51
1:A:177:VAL:O	1:A:181:LEU:HB2	2.11	0.51
1:A:60:MET:SD	1:A:82:ARG:HG3	2.51	0.51
1:A:91:PRO:HG2	2:A:613:LI1:H18	1.92	0.50
1:A:131:TYR:CE2	2:A:602:LI1:H112	2.46	0.50
1:A:47:THR:CG2	2:A:612:LI1:H141	2.35	0.50
2:A:602:LI1:H152	2:A:603:LI1:H141	1.93	0.50
1:A:176:ASN:OD1	2:A:610:LI1:O1	2.30	0.50
2:A:601:LI1:C16	2:A:601:LI1:H12	2.42	0.49
3:A:701:SQU:H42	3:A:701:SQU:C10	2.41	0.49
1:A:165:PRO:O	1:A:169:SER:HB2	2.13	0.49
1:A:28:LEU:HD23	1:A:47:THR:HG21	1.95	0.48
2:A:602:LI1:H162	2:A:602:LI1:H443	1.95	0.48
1:A:154:PHE:HE1	2:A:609:LI1:H121	1.77	0.48
2:A:602:LI1:H491	2:A:602:LI1:H511	1.55	0.48
1:A:146:LEU:CD2	2:A:609:LI1:H272	2.44	0.48
1:A:140:ILE:CG1	2:A:601:LI1:H272	2.44	0.48
1:A:164:ARG:HB2	1:A:166:GLU:HG3	1.97	0.47
1:A:69:VAL:HG12	1:A:71:PHE:CD2	2.48	0.47

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
2:A:607:LI1:H511	2:A:607:LI1:H552	1.50	0.47
1:A:187:VAL:O	1:A:191:ILE:HG23	2.15	0.47
1:A:131:TYR:CZ	2:A:602:LI1:H112	2.50	0.46
1:A:29:VAL:HG21	2:A:611:LI1:H161	1.96	0.46
2:A:602:LI1:H151	2:A:602:LI1:H443	1.98	0.46
1:A:95:LEU:HD23	1:A:95:LEU:HA	1.79	0.46
1:A:54:PHE:CD2	2:A:612:LI1:H28	2.50	0.46
1:A:80:TRP:CZ3	2:A:607:LI1:H443	2.50	0.46
2:A:607:LI1:H2	2:A:607:LI1:H422	1.57	0.46
1:A:112:VAL:HG21	2:A:613:LI1:C13	2.46	0.45
2:A:601:LI1:H303	2:A:608:LI1:C30	2.46	0.45
2:A:607:LI1:H462	2:A:607:LI1:H443	1.44	0.45
1:A:180:VAL:HA	2:A:610:LI1:H202	1.98	0.45
3:A:701:SQU:H181	3:A:701:SQU:H32	1.97	0.45
1:A:140:ILE:HD11	2:A:601:LI1:H251	2.00	0.44
3:A:701:SQU:H142	3:A:701:SQU:H102	1.79	0.44
2:A:611:LI1:H243	2:A:611:LI1:H212	1.51	0.44
1:A:131:TYR:HH	2:A:602:LI1:H13	1.80	0.44
1:A:27:PHE:CD1	1:A:224:LEU:HD12	2.52	0.44
2:A:602:LI1:H172	2:A:603:LI1:H161	1.99	0.44
1:A:176:ASN:ND2	2:A:610:LI1:O2	2.50	0.44
2:A:602:LI1:C17	2:A:603:LI1:H161	2.47	0.44
1:A:93:LEU:HD12	1:A:93:LEU:HA	1.88	0.44
2:A:602:LI1:H443	2:A:602:LI1:C16	2.48	0.43
1:A:176:ASN:ND2	2:A:610:LI1:H12	2.27	0.43
1:A:80:TRP:CZ2	2:A:607:LI1:H421	2.53	0.43
2:A:604:LI1:H292	2:A:610:LI1:H28	2.00	0.43
1:A:95:LEU:CD2	2:A:613:LI1:H121	2.49	0.43
3:A:701:SQU:H222	3:A:701:SQU:H172	2.00	0.43
2:A:602:LI1:H243	2:A:602:LI1:H211	1.51	0.43
2:A:602:LI1:H562	2:A:602:LI1:H603	1.72	0.43
1:A:7:ARG:O	1:A:10:TRP:HD1	2.02	0.43
1:A:141:SER:CB	4:A:301:RET:H41	2.49	0.43
1:A:140:ILE:CG1	2:A:601:LI1:H251	2.49	0.42
1:A:140:ILE:HG13	2:A:601:LI1:H272	2.01	0.42
1:A:164:ARG:NE	1:A:166:GLU:OE2	2.50	0.42
2:A:602:LI1:H152	2:A:603:LI1:H152	2.00	0.42
1:A:26:TYR:O	1:A:30:LYS:HB2	2.19	0.42
1:A:164:ARG:HG2	1:A:164:ARG:H	1.56	0.42
1:A:180:VAL:HG22	2:A:610:LI1:H522	2.02	0.42
1:A:180:VAL:CG2	2:A:610:LI1:H202	2.50	0.41
3:A:701:SQU:C22	3:A:701:SQU:H172	2.50	0.41

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:18:ALA:HB2	2:A:606:LI1:C18	2.50	0.41
1:A:65:GLY:HA3	1:A:81:ALA:HB2	2.03	0.41
1:A:31:GLY:HA3	5:A:512:HOH:O	2.21	0.41
1:A:80:TRP:CH2	2:A:607:LI1:H421	2.56	0.41
1:A:214:SER:HA	3:A:701:SQU:H132	2.03	0.40
2:A:613:LI1:H191	2:A:613:LI1:H212	1.63	0.40
1:A:180:VAL:CG2	2:A:610:LI1:H522	2.52	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution. The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	218/227 (96%)	215 (99%)	3 (1%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution. The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	178/182 (98%)	161 (90%)	17 (10%)	12	3

All (17) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	15	LEU
1	A	30	LYS
1	A	38	ASP

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Mol	Chain	Res	Type
1	A	48	LEU
1	A	82	ARG
1	A	93	LEU
1	A	95	LEU
1	A	153	PHE
1	A	163	MET
1	A	164	ARG
1	A	166	GLU
1	A	181	LEU
1	A	191	ILE
1	A	194	GLU
1	A	202	ASN
1	A	225	ARG
1	A	227	ARG

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

Mol	Chain	Res	Type
1	A	176	ASN
1	A	202	ASN

5.3.3 RNA ⓘ

There are no RNA chains 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 carbohydrates in this entry.

5.6 Ligand geometry ⓘ

15 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	RET	A	301	1	19,20,21	0.88	0	26,27,28	1.67	6 (23%)
2	LI1	A	601	-	30,31,44	1.06	1 (3%)	26,33,51	1.59	9 (34%)
2	LI1	A	602	-	40,40,44	0.85	2 (5%)	43,45,51	1.64	11 (25%)
2	LI1	A	603	-	17,17,44	0.66	0	13,18,51	1.51	3 (23%)
2	LI1	A	604	-	15,15,44	1.29	2 (13%)	7,14,51	1.04	0
2	LI1	A	605	-	6,7,44	0.85	0	3,6,51	1.98	1 (33%)
2	LI1	A	606	-	6,7,44	1.23	1 (16%)	3,6,51	1.48	1 (33%)
2	LI1	A	607	-	36,37,44	1.13	3 (8%)	28,38,51	1.26	3 (10%)
2	LI1	A	608	-	17,17,44	0.77	0	14,18,51	1.50	4 (28%)
2	LI1	A	609	-	15,15,44	1.33	2 (13%)	7,14,51	0.89	0
2	LI1	A	610	-	39,39,44	0.95	1 (2%)	31,41,51	1.26	4 (12%)
2	LI1	A	611	-	16,16,44	1.18	1 (6%)	17,18,51	1.60	6 (35%)
2	LI1	A	612	-	17,17,44	0.75	0	13,18,51	1.46	2 (15%)
2	LI1	A	613	-	12,12,44	1.30	2 (16%)	9,12,51	1.71	3 (33%)
3	SQU	A	701	-	26,26,26	1.28	5 (19%)	28,28,28	1.88	10 (35%)

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	RET	A	301	1	-	0/13/30/31	0/1/1/1
2	LI1	A	601	-	2/2/3/8	0/31/32/49	0/0/0/0
2	LI1	A	602	-	-	0/44/44/49	0/0/0/0
2	LI1	A	603	-	-	0/16/16/49	0/0/0/0
2	LI1	A	604	-	-	1/12/13/49	0/0/0/0
2	LI1	A	605	-	-	0/5/5/49	0/0/0/0
2	LI1	A	606	-	-	0/5/5/49	0/0/0/0
2	LI1	A	607	-	-	0/37/38/49	0/0/0/0
2	LI1	A	608	-	-	0/16/16/49	0/0/0/0
2	LI1	A	609	-	-	0/12/13/49	0/0/0/0
2	LI1	A	610	-	-	1/39/39/49	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	LI1	A	611	-	1/1/3/8	0/17/17/49	0/0/0/0
2	LI1	A	612	-	-	0/16/16/49	0/0/0/0
2	LI1	A	613	-	1/1/1/8	0/10/11/49	0/0/0/0
3	SQU	A	701	-	-	0/25/25/25	0/0/0/0

All (20) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	611	LI1	C27-C26	4.25	1.56	1.55
3	A	701	SQU	C14-C12	-3.18	1.35	1.52
2	A	604	LI1	C29-C28	3.07	1.54	1.49
2	A	609	LI1	C11-C12	-3.05	1.53	1.55
2	A	607	LI1	C60-C58	2.97	1.54	1.49
2	A	601	LI1	O3-C3	2.92	1.55	1.42
2	A	609	LI1	C30-C28	2.88	1.54	1.49
2	A	613	LI1	C24-C23	2.87	1.54	1.49
2	A	607	LI1	O3-C3	2.85	1.54	1.42
2	A	602	LI1	O3-C3	2.83	1.54	1.42
3	A	701	SQU	C23-C22	-2.80	1.34	1.51
2	A	610	LI1	O3-C3	2.77	1.54	1.42
2	A	613	LI1	C11-C12	-2.74	1.54	1.55
3	A	701	SQU	C18-C17	-2.74	1.34	1.51
3	A	701	SQU	C9-C7	-2.61	1.35	1.51
2	A	606	LI1	C22-C21	-2.51	1.54	1.55
2	A	607	LI1	C12-C11	2.33	1.55	1.51
2	A	602	LI1	C3-C2	2.26	1.55	1.50
2	A	604	LI1	C11-C12	-2.23	1.54	1.55
3	A	701	SQU	C4-C2	-2.00	1.35	1.51

All (63) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	701	SQU	C15-C14-C12	5.04	129.65	115.14
2	A	602	LI1	O3-C3-C2	-4.39	101.19	111.90
2	A	612	LI1	C15-C16-C17	-3.58	107.59	114.68
2	A	612	LI1	C27-C26-C25	-3.46	107.83	114.68
2	A	602	LI1	C22-C21-C20	-3.31	108.13	114.68
4	A	301	RET	C18-C5-C6	3.26	128.21	124.51
2	A	603	LI1	C15-C16-C17	-3.23	108.28	114.68
2	A	611	LI1	C26-C25-C23	-3.20	108.64	115.42
2	A	601	LI1	C21-C20-C18	-3.19	105.96	115.14
4	A	301	RET	C20-C13-C12	-3.12	113.05	118.09

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	601	LI1	O3-C3-C2	-3.11	104.32	111.90
2	A	613	LI1	C20-C21-C22	-3.07	108.61	114.68
3	A	701	SQU	C5-C4-C2	3.05	131.14	115.69
2	A	605	LI1	C22-C21-C20	-2.93	107.89	114.46
3	A	701	SQU	C23-C22-C21	2.93	130.44	114.61
4	A	301	RET	C11-C10-C9	-2.91	123.11	127.29
2	A	610	LI1	O2-C41-C42	2.91	113.17	107.52
2	A	603	LI1	C27-C26-C25	-2.90	108.94	114.68
3	A	701	SQU	C18-C17-C16	2.84	129.98	114.61
4	A	301	RET	C11-C12-C13	-2.83	118.32	126.38
2	A	611	LI1	C27-C26-C25	-2.80	108.16	114.46
2	A	610	LI1	O3-C3-C2	-2.79	105.10	111.90
2	A	607	LI1	C45-C46-C47	-2.77	109.19	114.68
2	A	608	LI1	C20-C21-C22	-2.75	109.23	114.68
2	A	601	LI1	C17-C16-C15	-2.72	109.29	114.68
2	A	602	LI1	C21-C22-C23	-2.71	107.33	115.14
2	A	602	LI1	C26-C25-C23	-2.70	109.69	115.42
2	A	602	LI1	C15-C16-C17	-2.64	109.46	114.68
2	A	602	LI1	C51-C50-C48	-2.61	107.63	115.14
3	A	701	SQU	C10-C9-C7	2.60	128.67	114.61
2	A	610	LI1	C27-C26-C25	-2.59	109.56	114.68
2	A	602	LI1	C27-C26-C25	-2.58	108.66	114.46
2	A	610	LI1	O1-C11-C12	2.57	115.00	109.22
2	A	607	LI1	O3-C3-C2	-2.57	105.63	111.90
4	A	301	RET	C18-C5-C4	-2.52	108.70	113.34
2	A	601	LI1	O1-C11-C12	2.52	114.88	109.22
2	A	608	LI1	C27-C26-C25	-2.50	109.73	114.68
3	A	701	SQU	C26-C27-C28	2.50	128.35	115.69
2	A	602	LI1	C41-C42-C43	-2.49	107.89	113.59
2	A	611	LI1	C16-C15-C13	-2.49	107.97	115.14
3	A	701	SQU	C14-C12-C11	2.48	124.72	111.92
4	A	301	RET	C10-C11-C12	-2.47	114.89	123.24
2	A	602	LI1	C46-C45-C43	-2.44	108.10	115.14
2	A	602	LI1	C11-C12-C13	-2.38	108.15	113.59
2	A	607	LI1	C46-C45-C43	-2.35	108.36	115.14
2	A	611	LI1	C16-C17-C18	-2.34	108.39	115.14
2	A	613	LI1	C21-C20-C18	-2.33	108.43	115.14
2	A	601	LI1	O2-C41-C42	2.32	112.03	107.52
2	A	601	LI1	C16-C17-C18	-2.31	108.49	115.14
3	A	701	SQU	C20-C18-C17	2.29	127.00	114.61
3	A	701	SQU	C25-C23-C22	2.28	126.94	114.61
2	A	601	LI1	C20-C21-C22	-2.25	110.22	114.68

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	601	LI1	C27-C26-C25	-2.22	110.28	114.68
2	A	603	LI1	C16-C15-C13	-2.21	108.77	115.14
2	A	608	LI1	C21-C20-C18	-2.19	108.83	115.14
3	A	701	SQU	C9-C7-C6	2.18	126.42	114.61
2	A	611	LI1	C21-C20-C18	-2.14	108.99	115.14
2	A	611	LI1	C21-C22-C23	-2.13	109.00	115.14
2	A	608	LI1	C17-C16-C15	-2.10	110.51	114.68
2	A	602	LI1	C46-C47-C48	-2.07	109.18	115.14
2	A	613	LI1	C17-C16-C15	-2.03	110.67	114.68
2	A	601	LI1	C50-C48-C47	-2.02	108.87	127.24
2	A	606	LI1	C22-C21-C20	-2.00	109.96	114.46

All (4) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
2	A	613	LI1	C18
2	A	601	LI1	C2
2	A	601	LI1	C18
2	A	611	LI1	C13

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	610	LI1	C11-O1-C1-C2
2	A	604	LI1	C17-C18-C20-C21

There are no ring outliers.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

EDS was not executed - this section will therefore be empty.

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

EDS was not executed - this section will therefore be empty.

6.3 Carbohydrates ⓘ

EDS was not executed - this section will therefore be empty.

6.4 Ligands ⓘ

EDS was not executed - this section will therefore be empty.

6.5 Other polymers ⓘ

EDS was not executed - this section will therefore be empty.