Full wwPDB X-ray Structure Validation Report ⓘ

May 17, 2020 – 07:54 pm BST

PDB ID	:	4XIZ
Title	:	Structure of a phospholipid trafficking complex with substrate
Authors	:	Yu, F.; He, F.; Wang, C.; Zhang, P.
Deposited on	:	2015-01-08
Resolution	:	2.00 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 following versions of software and data (see references ⓘ) were used in the production of this report:

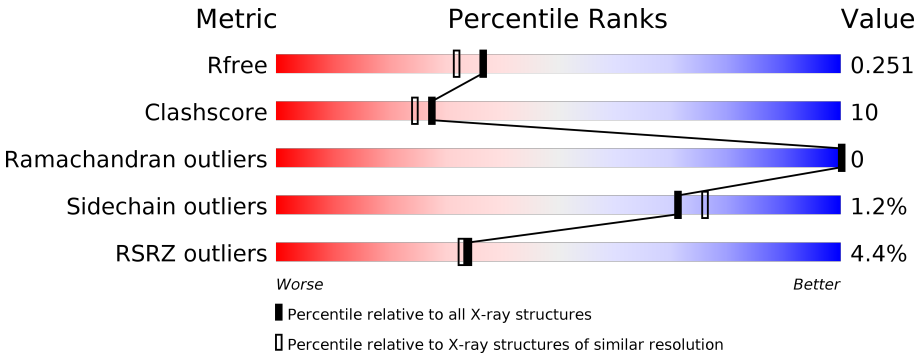
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.11
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.11

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.00 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	8085 (2.00-2.00)
Clashscore	141614	9178 (2.00-2.00)
Ramachandran outliers	138981	9054 (2.00-2.00)
Sidechain outliers	138945	9053 (2.00-2.00)
RSRZ outliers	127900	7900 (2.00-2.00)

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 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% 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	170	5% 88% 11%
1	B	170	5% 75% 24%
2	M	70	3% 97%
2	N	70	% 99%

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 4323 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.

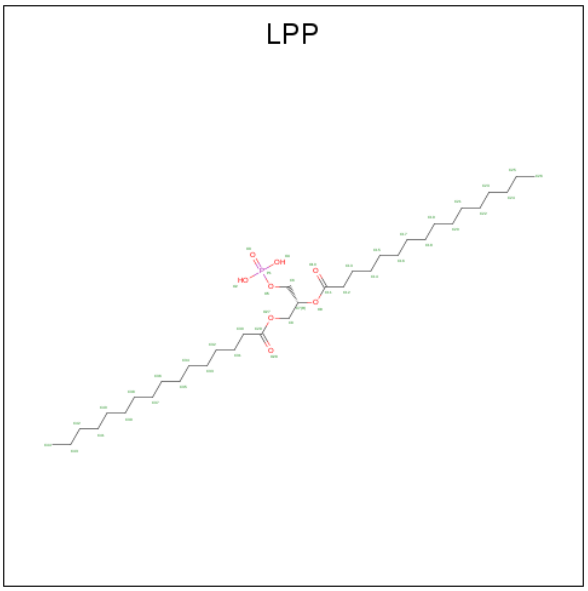
- Molecule 1 is a protein called Protein UPS1, mitochondrial.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	170	Total	C	N	O	S	0	0	0
			1370	871	237	256	6			
1	B	170	Total	C	N	O	S	0	0	0
			1367	868	237	256	6			

- Molecule 2 is a protein called Mitochondrial distribution and morphology protein 35.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	M	70	Total	C	N	O	S	0	0	0
			559	356	88	111	4			
2	N	70	Total	C	N	O	S	0	0	0
			559	356	88	111	4			

- Molecule 3 is 2-(HEXADECANOYLOXY)-1-[(PHOSPHONOOXY)METHYL]ETHYL HEXADECANOATE (three-letter code: LPP) (formula: $C_{35}H_{69}O_8P$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	O	P	0	0
			44	35	8	1		
3	B	1	Total	C	O	P	0	0
			44	35	8	1		

- Molecule 4 is water.

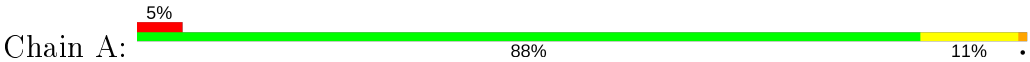
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	122	Total	O	0	0
			122	122		
4	B	121	Total	O	0	0
			121	121		
4	M	72	Total	O	0	0
			72	72		
4	N	65	Total	O	0	0
			65	65		

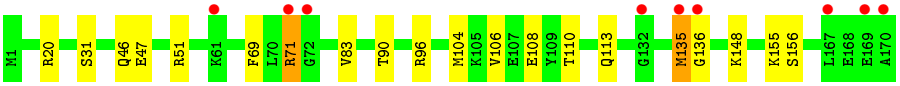
3 Residue-property plots (i)

These plots are drawn for all protein, RNA and DNA 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: Protein UPS1, mitochondrial

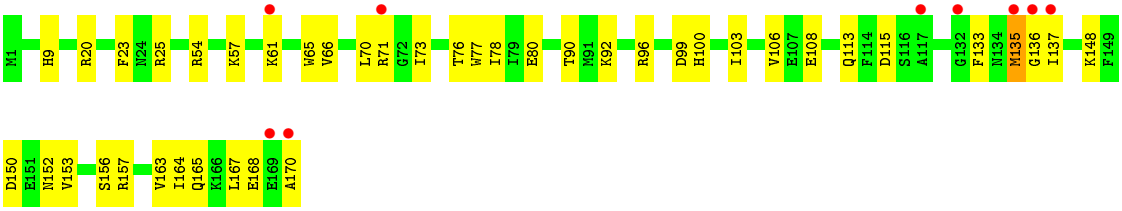
Chain A:





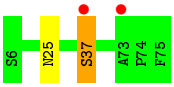
- Molecule 1: Protein UPS1, mitochondrial

Chain B:



- Molecule 2: Mitochondrial distribution and morphology protein 35

Chain M:



- Molecule 2: Mitochondrial distribution and morphology protein 35

Chain N:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	43.02Å 74.12Å 87.91Å 90.00° 95.14° 90.00°	Depositor
Resolution (Å)	34.13 – 2.00 34.13 – 2.00	Depositor EDS
% Data completeness (in resolution range)	99.2 (34.13-2.00) 99.2 (34.13-2.00)	Depositor EDS
R_{merge}	0.12	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	13.81 (at 2.00Å)	Xtriage
Refinement program	PHENIX 1.9-1692	Depositor
R, R_{free}	0.196 , 0.240 0.201 , 0.251	Depositor DCC
R_{free} test set	1821 reflections (4.96%)	wwPDB-VP
Wilson B-factor (Å^2)	21.6	Xtriage
Anisotropy	1.057	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 53.8	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	4323	wwPDB-VP
Average B, all atoms (Å^2)	43.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.55% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: LPP

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	0.47	0/1401	0.64	1/1893 (0.1%)
1	B	0.50	0/1398	0.59	0/1889
2	M	0.38	0/573	0.46	0/774
2	N	0.35	0/573	0.47	0/774
All	All	0.45	0/3945	0.58	1/5330 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	136	GLY	N-CA-C	6.63	129.67	113.10

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	1370	0	1376	22	0
1	B	1367	0	1367	50	2
2	M	559	0	525	2	0
2	N	559	0	525	1	0
3	A	44	0	67	18	0
3	B	44	0	67	15	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	A	122	0	0	2	0
4	B	121	0	0	3	0
4	M	72	0	0	2	2
4	N	65	0	0	1	2
All	All	4323	0	3927	79	4

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 10.

All (79) 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:135:MET:SD	1:B:136:GLY:N	2.24	1.10
1:B:133:PHE:CD2	1:B:135:MET:HG3	1.97	0.99
1:B:133:PHE:HD2	1:B:135:MET:CG	1.81	0.92
1:B:133:PHE:CD2	1:B:135:MET:CG	2.54	0.91
1:B:133:PHE:HD2	1:B:135:MET:HG3	1.40	0.85
1:B:133:PHE:CE2	1:B:135:MET:HB3	2.15	0.82
1:B:136:GLY:C	1:B:137:ILE:HD13	2.05	0.77
1:A:106:VAL:HB	3:A:201:LPP:H311	1.68	0.76
1:B:152:ASN:HB3	3:B:201:LPP:H182	1.68	0.73
1:B:136:GLY:O	1:B:137:ILE:HD13	1.88	0.72
1:B:164:ILE:O	1:B:168:GLU:HG3	1.90	0.72
1:A:108:GLU:OE1	3:A:201:LPP:H221	1.91	0.70
1:B:70:LEU:HD21	1:B:135:MET:CB	2.21	0.70
1:B:70:LEU:HD21	1:B:135:MET:HB3	1.74	0.70
1:B:90:THR:HG22	1:B:113:GLN:OE1	1.91	0.69
3:B:201:LPP:H332	3:B:201:LPP:HC61	1.73	0.68
1:B:103:ILE:HG23	1:B:135:MET:HG2	1.75	0.68
1:B:106:VAL:HB	3:B:201:LPP:H322	1.76	0.66
1:B:153:VAL:HA	3:B:201:LPP:H211	1.80	0.63
2:N:75:PHE:O	4:N:122:HOH:O	2.16	0.63
1:A:156:SER:HA	3:A:201:LPP:H171	1.81	0.62
1:B:133:PHE:HD2	1:B:135:MET:HG2	1.64	0.61
1:B:153:VAL:HA	3:B:201:LPP:H232	1.83	0.60
1:B:78:ILE:HG12	3:B:201:LPP:H312	1.83	0.59
1:B:65:TRP:CZ3	1:B:66:VAL:HG23	2.39	0.57
3:A:201:LPP:HC62	3:A:201:LPP:H121	1.86	0.57
1:A:104:MET:HB3	3:A:201:LPP:H392	1.87	0.56
1:A:156:SER:OG	3:A:201:LPP:H212	2.06	0.56
1:B:137:ILE:HD13	1:B:137:ILE:N	2.20	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:110:THR:OG1	3:A:201:LPP:H241	2.05	0.56
1:B:133:PHE:CD2	1:B:135:MET:CB	2.88	0.56
1:B:96:ARG:HA	3:B:201:LPP:H302	1.88	0.56
1:B:133:PHE:CD2	1:B:135:MET:HB3	2.42	0.55
1:B:156:SER:HB3	3:B:201:LPP:H231	1.89	0.55
1:B:156:SER:HB2	3:B:201:LPP:H152	1.89	0.55
1:B:23:PHE:O	1:B:54:ARG:NH2	2.40	0.54
1:B:108:GLU:OE2	3:B:201:LPP:H171	2.07	0.54
1:B:76:THR:HG22	1:B:100:HIS:CD2	2.43	0.54
3:B:201:LPP:H311	3:B:201:LPP:HC61	1.90	0.53
1:A:156:SER:HB2	3:A:201:LPP:H191	1.90	0.53
1:A:51:ARG:HD3	1:A:83:VAL:HG22	1.90	0.52
1:B:70:LEU:HD21	1:B:135:MET:HB2	1.90	0.52
1:A:96:ARG:HA	3:A:201:LPP:H302	1.91	0.52
1:A:90:THR:OG1	1:A:113:GLN:OE1	2.13	0.52
1:A:46:GLN:HG2	1:A:47:GLU:HG3	1.92	0.51
1:A:155:LYS:HE2	3:A:201:LPP:H151	1.93	0.51
1:B:150:ASP:HB2	4:B:325:HOH:O	2.10	0.51
1:A:156:SER:CB	3:A:201:LPP:H251	2.42	0.50
1:A:31:SER:OG	3:A:201:LPP:H162	2.13	0.49
1:A:156:SER:OG	3:A:201:LPP:H232	2.12	0.49
1:A:135:MET:HG2	4:A:323:HOH:O	2.14	0.48
3:A:201:LPP:H222	4:A:390:HOH:O	2.13	0.48
1:B:76:THR:HG22	1:B:100:HIS:HD2	1.78	0.47
2:M:37:SER:OG	4:M:125:HOH:O	2.20	0.47
1:B:135:MET:SD	1:B:136:GLY:CA	3.02	0.46
1:A:71:ARG:HB2	1:A:71:ARG:HE	1.25	0.46
1:B:115:ASP:OD1	4:B:406:HOH:O	2.20	0.46
1:B:20:ARG:NH2	2:M:25:ASN:HB3	2.31	0.46
1:B:135:MET:C	1:B:135:MET:SD	2.93	0.46
1:B:9:HIS:CE1	1:B:157:ARG:HD2	2.51	0.45
1:B:96:ARG:CA	3:B:201:LPP:H302	2.46	0.45
1:B:152:ASN:C	3:B:201:LPP:H182	2.38	0.44
1:B:92:LYS:NZ	4:B:410:HOH:O	2.33	0.44
1:B:148:LYS:NZ	3:B:201:LPP:O4	2.51	0.44
1:B:133:PHE:HE2	1:B:135:MET:HB3	1.75	0.44
1:A:31:SER:HB3	3:A:201:LPP:H141	2.00	0.43
1:B:73:ILE:HG12	1:B:100:HIS:CE1	2.54	0.43
1:A:108:GLU:OE1	3:A:201:LPP:H252	2.19	0.43
1:B:57:LYS:HE2	1:B:77:TRP:CZ2	2.55	0.42
1:A:148:LYS:NZ	3:A:201:LPP:O2	2.41	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:20:ARG:HD2	4:M:165:HOH:O	2.19	0.42
1:A:20:ARG:HH11	1:A:20:ARG:HG2	1.85	0.41
1:B:167:LEU:O	1:B:170:ALA:HB3	2.19	0.41
1:A:69:PHE:HB3	1:A:135:MET:HB3	2.03	0.40
1:B:156:SER:CB	3:B:201:LPP:H231	2.50	0.40
1:B:54:ARG:HD3	1:B:80:GLU:OE1	2.20	0.40
3:A:201:LPP:H161	3:A:201:LPP:H131	1.86	0.40
1:B:99:ASP:OD1	1:B:99:ASP:N	2.54	0.40
1:B:25:ARG:HA	1:B:163:VAL:HG21	2.03	0.40

All (4) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:71:ARG:CG	1:B:165:GLN:OE1[1_655]	1.67	0.53
1:B:71:ARG:CD	1:B:165:GLN:OE1[1_655]	1.83	0.37
4:M:112:HOH:O	4:N:102:HOH:O[2_655]	2.03	0.17
4:M:115:HOH:O	4:N:108:HOH:O[2_655]	2.13	0.07

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	168/170 (99%)	166 (99%)	2 (1%)	0	100	100
1	B	168/170 (99%)	168 (100%)	0	0	100	100
2	M	68/70 (97%)	66 (97%)	2 (3%)	0	100	100
2	N	68/70 (97%)	67 (98%)	1 (2%)	0	100	100
All	All	472/480 (98%)	467 (99%)	5 (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	156/156 (100%)	154 (99%)	2 (1%)	69 74
1	B	155/156 (99%)	153 (99%)	2 (1%)	69 74
2	M	60/60 (100%)	59 (98%)	1 (2%)	60 65
2	N	60/60 (100%)	60 (100%)	0	100 100
All	All	431/432 (100%)	426 (99%)	5 (1%)	71 76

All (5) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	71	ARG
1	A	135	MET
1	B	61	LYS
1	B	135	MET
2	M	37	SER

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	9	HIS

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 (i)

There are no carbohydrates in this entry.

5.6 Ligand geometry (i)

2 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	$\#\|Z\| > 2$
3	LPP	A	201	-	43,43,43	0.76	3 (6%)	47,48,48	1.00	2 (4%)
3	LPP	B	201	-	43,43,43	1.02	2 (4%)	47,48,48	1.11	3 (6%)

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	LPP	A	201	-	-	28/45/45/45	-
3	LPP	B	201	-	-	27/45/45/45	-

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	201	LPP	O27-C29	3.94	1.44	1.33
3	B	201	LPP	O9-C11	3.33	1.43	1.34
3	A	201	LPP	O27-C29	3.08	1.42	1.33
3	A	201	LPP	O9-C11	2.24	1.40	1.34
3	A	201	LPP	O9-C7	-2.17	1.41	1.46

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	B	201	LPP	O9-C11-C12	4.29	120.75	111.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	201	LPP	O27-C29-C30	3.45	122.75	111.91
3	A	201	LPP	O9-C11-C12	3.19	118.37	111.50
3	B	201	LPP	O27-C29-C30	3.10	121.65	111.91
3	B	201	LPP	C7-O9-C11	-2.90	110.64	117.79

There are no chirality outliers.

All (55) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	201	LPP	C12-C11-O9-C7
3	B	201	LPP	C12-C11-O9-C7
3	A	201	LPP	O28-C29-O27-C8
3	A	201	LPP	C30-C29-O27-C8
3	A	201	LPP	O10-C11-O9-C7
3	B	201	LPP	O10-C11-O9-C7
3	B	201	LPP	C30-C29-O27-C8
3	B	201	LPP	O28-C29-O27-C8
3	A	201	LPP	C18-C19-C20-C21
3	B	201	LPP	C18-C19-C20-C21
3	A	201	LPP	C15-C16-C17-C18
3	B	201	LPP	C21-C22-C23-C24
3	B	201	LPP	C17-C18-C19-C20
3	A	201	LPP	C16-C17-C18-C19
3	A	201	LPP	C34-C35-C36-C37
3	A	201	LPP	C20-C21-C22-C23
3	B	201	LPP	C30-C31-C32-C33
3	A	201	LPP	C37-C38-C39-C40
3	B	201	LPP	C19-C20-C21-C22
3	B	201	LPP	C35-C36-C37-C38
3	A	201	LPP	C21-C22-C23-C24
3	B	201	LPP	C31-C32-C33-C34
3	B	201	LPP	C33-C34-C35-C36
3	A	201	LPP	C35-C36-C37-C38
3	A	201	LPP	C31-C32-C33-C34
3	B	201	LPP	C16-C17-C18-C19
3	B	201	LPP	C38-C39-C40-C41
3	A	201	LPP	C32-C33-C34-C35
3	A	201	LPP	C14-C15-C16-C17
3	B	201	LPP	C20-C21-C22-C23
3	B	201	LPP	C13-C14-C15-C16
3	B	201	LPP	C22-C23-C24-C25
3	B	201	LPP	C12-C13-C14-C15

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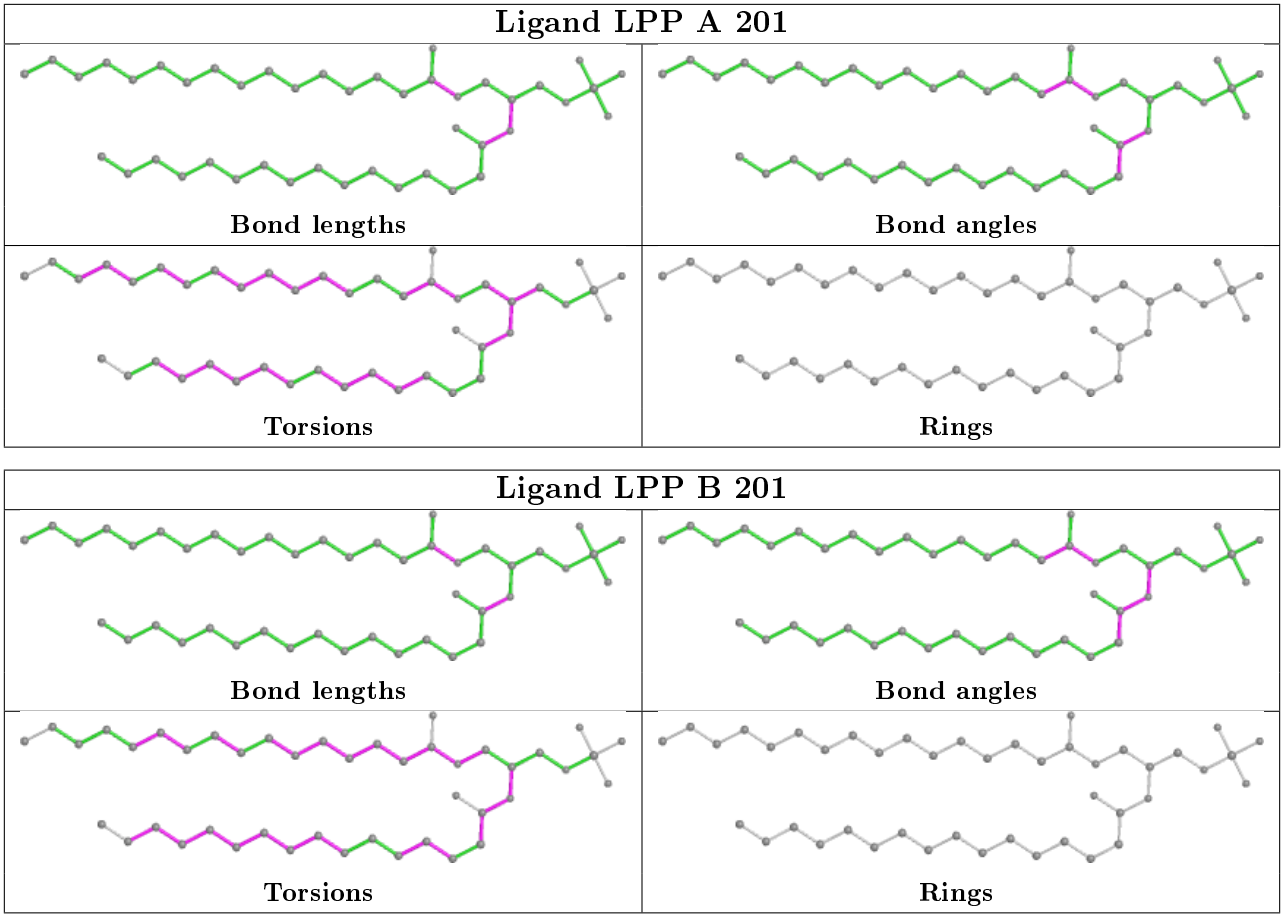
Mol	Chain	Res	Type	Atoms
3	A	201	LPP	O9-C7-C8-O27
3	A	201	LPP	C6-C7-C8-O27
3	B	201	LPP	C7-C8-O27-C29
3	A	201	LPP	O5-C6-C7-C8
3	B	201	LPP	C23-C24-C25-C26
3	A	201	LPP	O5-C6-C7-O9
3	B	201	LPP	C37-C38-C39-C40
3	A	201	LPP	C6-C7-O9-C11
3	B	201	LPP	C29-C30-C31-C32
3	A	201	LPP	C22-C23-C24-C25
3	B	201	LPP	C6-C7-O9-C11
3	A	201	LPP	C33-C34-C35-C36
3	B	201	LPP	O27-C29-C30-C31
3	B	201	LPP	O9-C11-C12-C13
3	A	201	LPP	C19-C20-C21-C22
3	A	201	LPP	O27-C29-C30-C31
3	A	201	LPP	O28-C29-C30-C31
3	B	201	LPP	O10-C11-C12-C13
3	B	201	LPP	C32-C33-C34-C35
3	A	201	LPP	C13-C14-C15-C16
3	A	201	LPP	C40-C41-C42-C43
3	A	201	LPP	C39-C40-C41-C42

There are no ring outliers.

2 monomers are involved in 33 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	201	LPP	18	0
3	B	201	LPP	15	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.



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

6.1 Protein, DNA and RNA chains

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, 95^{th} 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	170/170 (100%)	0.15	9 (5%)	26 25	24, 35, 66, 93	0
1	B	170/170 (100%)	0.02	9 (5%)	26 25	22, 35, 64, 94	0
2	M	70/70 (100%)	-0.20	2 (2%)	51 50	26, 39, 58, 68	0
2	N	70/70 (100%)	0.53	1 (1%)	75 74	41, 55, 91, 105	0
All	All	480/480 (100%)	0.11	21 (4%)	34 33	22, 38, 71, 105	0

All (21) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	136	GLY	13.8
1	A	136	GLY	9.5
1	A	170	ALA	7.5
1	B	170	ALA	5.7
2	N	38	VAL	4.8
1	B	71	ARG	4.5
1	B	137	ILE	4.1
1	B	132	GLY	3.8
1	A	169	GLU	3.7
1	A	135	MET	3.5
1	A	72	GLY	3.2
1	B	135	MET	3.1
1	B	169	GLU	3.1
1	A	71	ARG	3.1
1	B	61	LYS	2.9
2	M	73	ALA	2.9
1	A	167	LEU	2.6
1	A	132	GLY	2.3
1	A	61	LYS	2.2
2	M	37	SER	2.1
1	B	117	ALA	2.1

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 carbohydrates in this entry.

6.4 Ligands (i)

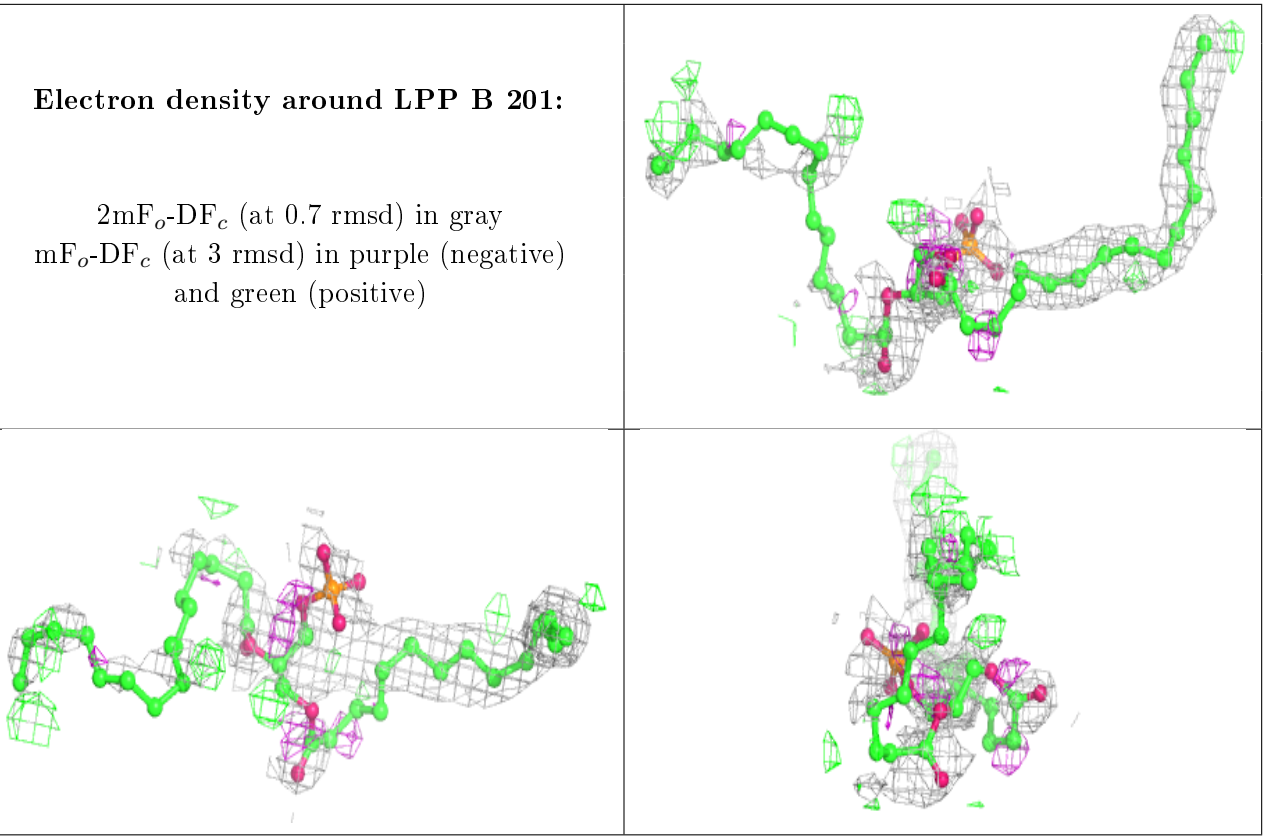
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' 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
3	LPP	B	201	44/44	0.70	0.34	30,70,127,129	0
3	LPP	A	201	44/44	0.79	0.31	30,75,134,137	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.

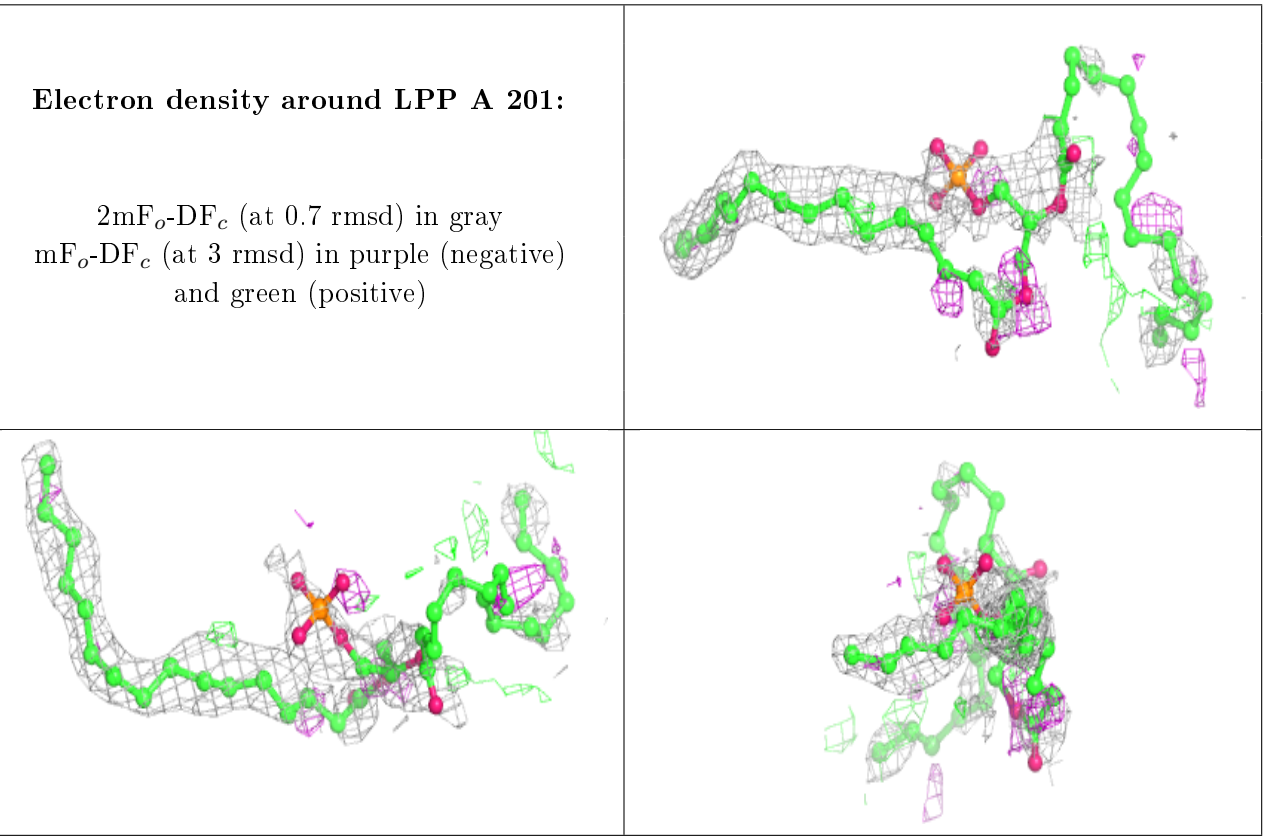
Electron density around LPP B 201:

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



Electron density around LPP A 201:

$2mF_o$-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.