Full wwPDB X-ray Structure Validation Report (i)

May 13, 2020 – 04:18 am BST

PDB ID	:	4CI2
Title	:	Structure of the DDB1-CRBN E3 ubiquitin ligase bound to lenalidomide
Authors	:	Fischer, E.S.; Boehm, K.; Thoma, N.H.
Deposited on	:	2013-12-05
Resolution	:	2.95 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 (i) symbol.

The following versions of software and data (see references (i)) 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 2.95 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.
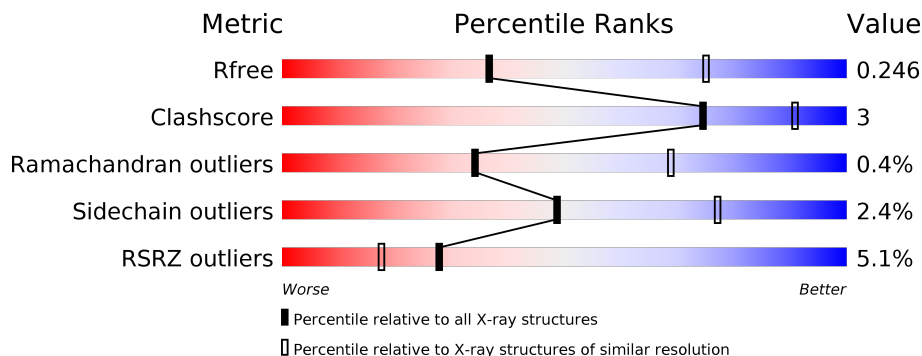
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3104 (3.00-2.92)
Clashscore	141614	3462 (3.00-2.92)
Ramachandran outliers	138981	3340 (3.00-2.92)
Sidechain outliers	138945	3343 (3.00-2.92)
RSRZ outliers	127900	2986 (3.00-2.92)

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	1158	6% / 83% / 10% / 6%
2	B	469	2% / 71% / 8% / 21%

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 11439 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 DNA DAMAGE-BINDING PROTEIN 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	1091	Total 8434	C 5361	N 1420	O 1608	S 45	0	0	0

There are 18 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-17	MET	-	expression tag	UNP Q16531
A	-16	HIS	-	expression tag	UNP Q16531
A	-15	HIS	-	expression tag	UNP Q16531
A	-14	HIS	-	expression tag	UNP Q16531
A	-13	HIS	-	expression tag	UNP Q16531
A	-12	HIS	-	expression tag	UNP Q16531
A	-11	HIS	-	expression tag	UNP Q16531
A	-10	ARG	-	expression tag	UNP Q16531
A	-9	ARG	-	expression tag	UNP Q16531
A	-8	LEU	-	expression tag	UNP Q16531
A	-7	VAL	-	expression tag	UNP Q16531
A	-6	PRO	-	expression tag	UNP Q16531
A	-5	ARG	-	expression tag	UNP Q16531
A	-4	GLY	-	expression tag	UNP Q16531
A	-3	SER	-	expression tag	UNP Q16531
A	-2	GLY	-	expression tag	UNP Q16531
A	-1	GLY	-	expression tag	UNP Q16531
A	0	ARG	-	expression tag	UNP Q16531

- Molecule 2 is a protein called PROTEIN CEREBLON.

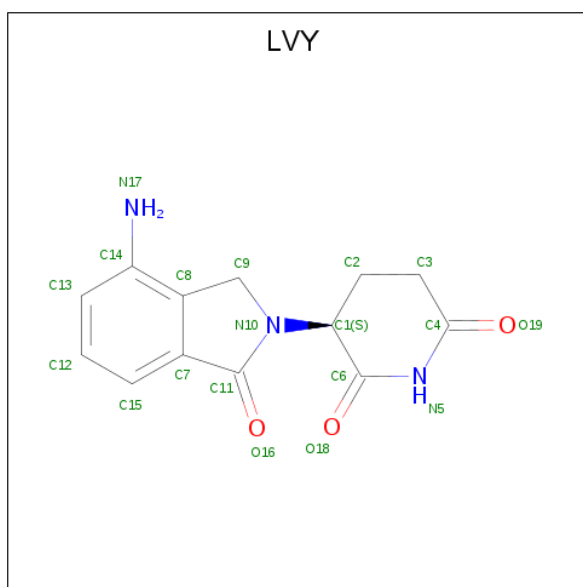| Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	370	Total 2977	C 1891	N 522	O 542	S 22	0	0	0

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-23	MET	-	expression tag	UNP P0CF65
B	-22	ASP	-	expression tag	UNP P0CF65
B	-21	TRP	-	expression tag	UNP P0CF65
B	-20	SER	-	expression tag	UNP P0CF65
B	-19	HIS	-	expression tag	UNP P0CF65
B	-18	PRO	-	expression tag	UNP P0CF65
B	-17	GLN	-	expression tag	UNP P0CF65
B	-16	PHE	-	expression tag	UNP P0CF65
B	-15	GLU	-	expression tag	UNP P0CF65
B	-14	LYS	-	expression tag	UNP P0CF65
B	-13	SER	-	expression tag	UNP P0CF65
B	-12	ALA	-	expression tag	UNP P0CF65
B	-11	VAL	-	expression tag	UNP P0CF65
B	-10	ASP	-	expression tag	UNP P0CF65
B	-9	GLU	-	expression tag	UNP P0CF65
B	-8	ASN	-	expression tag	UNP P0CF65
B	-7	LEU	-	expression tag	UNP P0CF65
B	-6	TYR	-	expression tag	UNP P0CF65
B	-5	PHE	-	expression tag	UNP P0CF65
B	-4	GLN	-	expression tag	UNP P0CF65
B	-3	GLY	-	expression tag	UNP P0CF65
B	-2	GLY	-	expression tag	UNP P0CF65
B	-1	GLY	-	expression tag	UNP P0CF65
B	0	ARG	-	expression tag	UNP P0CF65

- Molecule 3 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	B	1	Total Zn 1 1		0	0

- Molecule 4 is S-Lenalidomide (three-letter code: LVY) (formula: $C_{13}H_{13}N_3O_3$).

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	B	1	Total 19	C 13	N 3	O 3	0	0

• Molecule 5 is water.

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	6	Total 6	O 6	0	0
5	B	2	Total 2	O 2	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 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: DNA DAMAGE-BINDING PROTEIN 1

- Molecule 2: PROTEIN CEREBLON
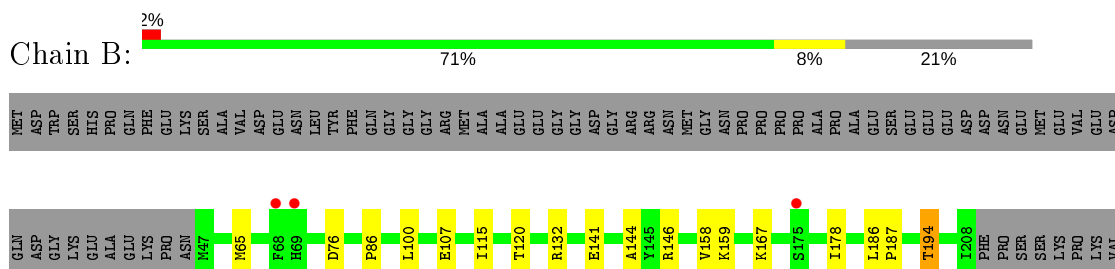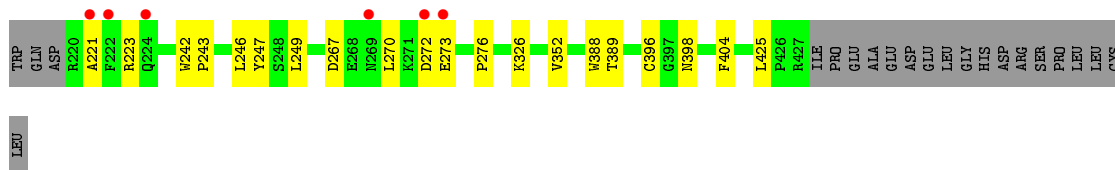
4   Data and refinement statistics (i)

Property	Value	Source
Space group	P 32 2 1	Depositor
Cell constants a, b, c, α, β, γ	172.11Å 172.11Å 139.84Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	29.71 – 2.95 29.71 – 2.95	Depositor EDS
% Data completeness (in resolution range)	99.8 (29.71-2.95) 99.8 (29.71-2.95)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.27 (at 2.95Å)	Xtriage
Refinement program	BUSTER 2.11.4	Depositor
R, R_{free}	0.193 , 0.234 0.207 , 0.246	Depositor DCC
R_{free} test set	2528 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	81.9	Xtriage
Anisotropy	0.017	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 66.3	EDS
L-test for twinning[2]	$< |L| > = 0.49, < L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.026 for -h,-k,l	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	11439	wwPDB-VP
Average B, all atoms (Å^2)	95.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.75% of the height of the origin peak. No significant pseudotranslation is detected.*

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[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: ZN, LVY

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	0.45	0/8589	0.70	1/11653 (0.0%)
2	B	0.48	0/3051	0.71	0/4141
All	All	0.46	0/11640	0.71	1/15794 (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	970	ASN	C-N-CA	5.13	134.53	121.70

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	8434	0	8337	58	0
2	B	2977	0	2918	15	0
3	B	1	0	0	0	0
4	B	19	0	13	0	0
5	A	6	0	0	0	0
5	B	2	0	0	0	0
All	All	11439	0	11268	72	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 (72) 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)
2:B:144:ALA:HB3	2:B:159:LYS:HB2	1.60	0.83
1:A:765:VAL:HG12	1:A:806:GLN:HB3	1.71	0.72
1:A:255:GLN:HB2	1:A:279:ARG:HH22	1.57	0.69
1:A:69:PRO:HD2	1:A:72:GLU:HG3	1.82	0.62
1:A:934:ALA:HB2	1:A:945:ILE:HD11	1.82	0.61
1:A:953:TRP:HB2	1:A:970:ASN:HB2	1.82	0.60
1:A:889:ARG:HH11	1:A:904:ASN:HD21	1.48	0.60
1:A:826:ASN:HB3	1:A:852:GLN:HE22	1.67	0.58
1:A:971:ALA:HB3	1:A:1077:HIS:O	2.05	0.56
1:A:1136:LEU:O	1:A:1139:ILE:HG12	2.05	0.56
1:A:180:PHE:HE1	1:A:193:TYR:HD2	1.53	0.56
1:A:1039:LEU:HD22	1:A:1139:ILE:HD12	1.90	0.54
1:A:324:VAL:HB	1:A:332:GLN:HB2	1.88	0.54
1:A:1080:ARG:HG3	1:A:1081:LYS:H	1.73	0.54
1:A:49:LEU:HD22	1:A:333:LEU:HD11	1.91	0.53
2:B:100:LEU:HB2	2:B:158:VAL:HG22	1.91	0.53
2:B:267:ASP:HB3	2:B:270:LEU:HB2	1.91	0.53
1:A:432:GLN:HG2	1:A:434:ARG:HH21	1.74	0.52
2:B:167:LYS:HB2	2:B:186:LEU:HD21	1.91	0.52
1:A:14:ALA:HB1	1:A:327:ARG:HG3	1.92	0.52
1:A:812:TYR:CZ	2:B:243:PRO:HB3	2.48	0.49
1:A:578:HIS:NE2	1:A:580:GLU:HG2	2.28	0.49
1:A:340:SER:HB3	1:A:346:TYR:CE2	2.48	0.49
1:A:952:ASN:OD1	1:A:970:ASN:HB3	2.13	0.48
2:B:76:ASP:HB3	2:B:187:PRO:HG3	1.95	0.48
2:B:65:MET:HG2	2:B:146:ARG:HB2	1.96	0.48
2:B:388:TRP:HB3	2:B:404:PHE:CE1	2.48	0.47
1:A:273:LEU:HB2	1:A:281:PHE:HB2	1.96	0.47
2:B:246:LEU:HD12	2:B:249:LEU:HD12	1.95	0.47
1:A:269:SER:HA	1:A:285:LEU:HB2	1.96	0.47
2:B:120:THR:HG22	2:B:141:GLU:HG3	1.97	0.47
1:A:1109:VAL:HG21	1:A:1126:ALA:HB2	1.97	0.47
1:A:272:LEU:HD21	1:A:336:LEU:HD11	1.96	0.47
1:A:261:HIS:HA	1:A:272:LEU:O	2.15	0.47
1:A:864:LYS:HE2	1:A:891:TYR:HE1	1.80	0.47
1:A:736:LEU:HG	1:A:816:LEU:HD22	1.98	0.46
1:A:1105:MET:SD	1:A:1130:ILE:HD11	2.56	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:194:THR:HG21	2:B:247:TYR:HD1	1.81	0.46
1:A:564:ILE:HG22	1:A:582:LEU:HB2	1.97	0.46
2:B:396:CYS:SG	2:B:398:ASN:HB2	2.55	0.46
2:B:242:TRP:HB3	2:B:246:LEU:HD23	1.97	0.46
1:A:1109:VAL:HG12	1:A:1129:LEU:HD22	1.98	0.45
1:A:32:LEU:HD13	1:A:66:LEU:HD11	1.98	0.45
1:A:375:LEU:HB2	1:A:1012:LEU:HD21	1.98	0.45
1:A:40:GLU:HB3	1:A:42:TYR:CE2	2.51	0.45
1:A:18:CYS:HG	1:A:313:CYS:HG	1.64	0.45
1:A:403:ASP:HA	1:A:698:THR:HG22	1.98	0.44
1:A:1024:THR:HG22	1:A:1043:LEU:HD23	2.00	0.44
1:A:358:PRO:HD2	1:A:380:GLY:HA2	1.98	0.44
1:A:385:GLY:HA3	1:A:719:GLU:O	2.17	0.44
1:A:1109:VAL:HG11	1:A:1126:ALA:HA	2.00	0.44
1:A:45:THR:C	1:A:47:GLU:H	2.20	0.44
1:A:1076:PHE:O	1:A:1082:THR:HA	2.18	0.44
1:A:851:PHE:HB3	1:A:858:LEU:HD22	2.00	0.44
1:A:516:LEU:HB2	1:A:532:THR:HG22	2.00	0.43
1:A:913:TYR:HB2	1:A:924:GLY:HA3	1.99	0.43
2:B:326:LYS:HG3	2:B:425:LEU:HD13	1.99	0.43
1:A:762:SER:O	1:A:803:HIS:HA	2.19	0.41
2:B:86:PRO:HG2	2:B:107:GLU:HG2	2.01	0.41
1:A:586:ILE:HG13	1:A:608:ASP:HB3	2.02	0.41
1:A:334:VAL:HG12	1:A:349:ALA:HA	2.01	0.41
1:A:741:GLU:HG2	1:A:751:ALA:HA	2.02	0.41
1:A:1104:LYS:HA	1:A:1104:LYS:HD3	1.87	0.41
1:A:538:VAL:HG22	1:A:558:ILE:HD11	2.02	0.41
1:A:607:GLY:HA2	1:A:635:PRO:HB3	2.02	0.41
1:A:40:GLU:HG2	1:A:54:GLU:HG3	2.02	0.41
1:A:168:LYS:HB3	1:A:221:ALA:HB2	2.03	0.41
1:A:654:ASP:HA	1:A:675:GLU:HG3	2.02	0.40
1:A:596:PHE:HB3	1:A:661:SER:HB2	2.03	0.40
1:A:586:ILE:HG21	1:A:608:ASP:H	1.86	0.40
1:A:793:ILE:HG21	1:A:853:TYR:CZ	2.56	0.40
1:A:282:MET:HB2	1:A:305:LEU:HD11	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	1077/1158 (93%)	1003 (93%)	69 (6%)	5 (0%)	29	64
2	B	366/469 (78%)	344 (94%)	21 (6%)	1 (0%)	41	73
All	All	1443/1627 (89%)	1347 (93%)	90 (6%)	6 (0%)	34	69

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	945	ILE
1	A	36	ASN
1	A	562	THR
2	B	221	ALA
1	A	368	GLU
1	A	564	ILE

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	928/1014 (92%)	908 (98%)	20 (2%)	52	79
2	B	326/416 (78%)	316 (97%)	10 (3%)	40	71
All	All	1254/1430 (88%)	1224 (98%)	30 (2%)	49	77

All (30) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	45	THR
1	A	52	VAL
1	A	98	ILE
1	A	189	HIS
1	A	259	VAL
1	A	317	LEU
1	A	552	LEU
1	A	590	SER
1	A	614	PHE
1	A	661	SER
1	A	685	ASP
1	A	743	GLN
1	A	766	SER
1	A	771	PHE
1	A	786	VAL
1	A	872	SER
1	A	919	ASP
1	A	920	PHE
1	A	944	GLU
1	A	1137	THR
2	B	115	ILE
2	B	132	ARG
2	B	178	ILE
2	B	194	THR
2	B	223	ARG
2	B	272	ASP
2	B	273	GLU
2	B	276	PRO
2	B	352	VAL
2	B	389	THR

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	664	HIS
1	A	852	GLN
1	A	990	GLN
1	A	999	HIS
2	B	104	HIS
2	B	164	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no carbohydrates in this entry.

5.6 Ligand geometry (i)

Of 2 ligands modelled in this entry, 1 is monoatomic - leaving 1 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
4	LVY	B	1429	-	21,21,21	0.86	0	28,31,31	1.89	6 (21%)

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	LVY	B	1429	-	-	0/4/29/29	0/3/3/3

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	B	1429	LVY	O16-C11-N10	5.90	129.67	125.24
4	B	1429	LVY	O16-C11-C7	-3.16	122.54	128.68

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| Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	B	1429	LVY	C8-C7-C11	-2.89	106.14	108.39
4	B	1429	LVY	C2-C3-C4	-2.73	109.30	114.12
4	B	1429	LVY	C3-C4-N5	2.47	119.42	116.65
4	B	1429	LVY	C7-C11-N10	2.27	107.79	106.44

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 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 LVY B 1429

Bond lengths

Bond angles

Torsions

Rings
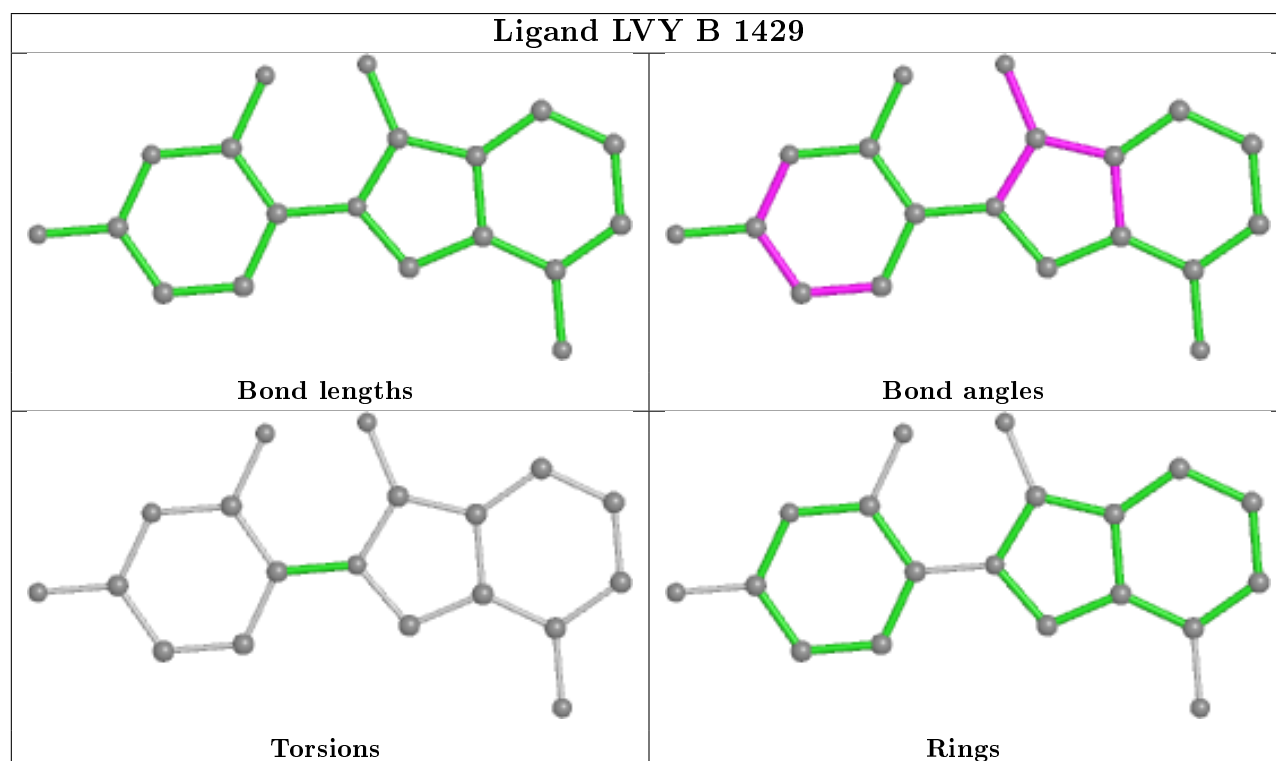
5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data (i)

6.1 Protein, DNA and RNA chains (i)

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å²)	Q<0.9
1	A	1091/1158 (94%)	0.29	66 (6%)	21	13	52, 98, 140, 168	0
2	B	370/469 (78%)	0.16	9 (2%)	59	42	44, 74, 121, 142	0
All	All	1461/1627 (89%)	0.25	75 (5%)	28	17	44, 93, 138, 168	0

All (75) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	370	GLN	5.5
1	A	268	GLY	3.9
1	A	419	ARG	3.9
1	A	872	SER	3.8
1	A	990	GLN	3.8
1	A	815	SER	3.7
2	B	272	ASP	3.7
2	B	273	GLU	3.6
1	A	225	PRO	3.5
1	A	369	ARG	3.4
1	A	548	ASP	3.4
1	A	73	SER	3.1
1	A	93	GLN	3.1
1	A	585	GLU	3.0
1	A	371	GLY	3.0
1	A	747	GLY	3.0
2	B	69	HIS	3.0
1	A	69	PRO	3.0
2	B	175	SER	2.9
1	A	95	GLY	2.9
2	B	221	ALA	2.9
2	B	269	ASN	2.9
1	A	226	PHE	2.8
1	A	900	ARG	2.8

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Full wwPDB X-ray Structure Validation Report

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Mol	Chain	Res	Type	RSRZ
1	A	285	LEU	2.8
1	A	97	SER	2.8
1	A	243	ASP	2.8
1	A	28	ASP	2.7
1	A	240	HIS	2.7
1	A	342	GLU	2.5
1	A	130	MET	2.5
1	A	991	HIS	2.5
1	A	336	LEU	2.5
1	A	820	LYS	2.5
1	A	895	THR	2.5
1	A	938	MET	2.5
1	A	1022	THR	2.5
1	A	174	GLN	2.4
1	A	1112	LEU	2.4
1	A	761	LEU	2.4
1	A	832	GLY	2.4
1	A	939	GLU	2.4
1	A	1061	VAL	2.4
1	A	825	PRO	2.3
1	A	965	PHE	2.3
1	A	94	SER	2.3
1	A	52	VAL	2.3
1	A	337	ASN	2.3
1	A	985	THR	2.3
1	A	962	ASP	2.3
1	A	896	GLU	2.2
1	A	644	LEU	2.2
2	B	68	PHE	2.2
1	A	460	CYS	2.2
1	A	586	ILE	2.2
1	A	856	GLY	2.1
1	A	894	THR	2.1
1	A	1108	VAL	2.1
1	A	201	GLU	2.1
2	B	224	GLN	2.1
1	A	320	GLY	2.1
1	A	984	THR	2.1
2	B	222	PHE	2.1
1	A	883	SER	2.1
1	A	1127	ASP	2.1
1	A	466	GLN	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	989	ARG	2.1
1	A	1111	ASN	2.1
1	A	416	ASP	2.1
1	A	816	LEU	2.0
1	A	745	THR	2.0
1	A	417	PRO	2.0
1	A	898	GLU	2.0
1	A	245	TYR	2.0
1	A	743	GLN	2.0

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

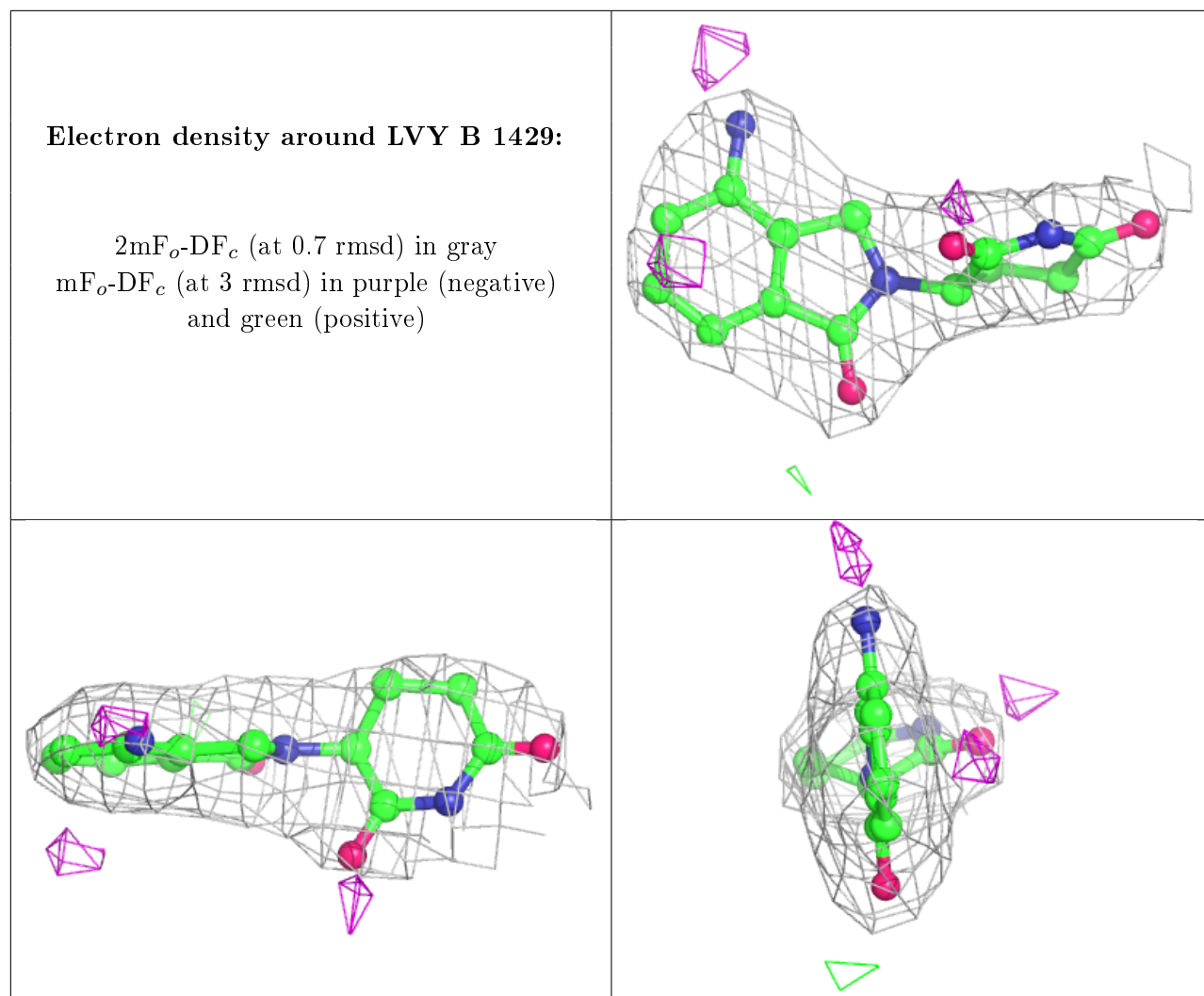There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates (i)

There are no 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, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	LVY	B	1429	19/19	0.97	0.18	43,54,61,61	0
3	ZN	B	1428	1/1	1.00	0.15	57,57,57,57	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 LVY B 1429:

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

6.5 Other polymers ⓘ

There are no such residues in this entry.