



# wwPDB X-ray Structure Validation Summary Report

Mar 20, 2026 – 05:08 AM UTC

PDB ID : 6SP4 / pdb\_00006sp4  
Title : KEAP1 IN COMPLEX WITH COMPOUND 23  
Authors : Ontoria, J.M.; Biancofiore, I.; Fezzardi, P.; Torrente de Haro, E.; Colarusso, S.; Bianchi, E.; Andreini, M.; Patsilidakos, A.; Summa, V.; Pacifici, R.; Munoz-Sanjuan, I.; Park, L.; Bresciani, A.; Dominguez, C.; Toledo-Sherman, L.; Harper, S.  
Deposited on : 2019-08-30  
Resolution : 2.59 Å(reported)

This is a wwPDB X-ray Structure Validation Summary Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the  symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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The following versions of software and data (see [references](#) ①) were used in the production of this report:

MolProbity : 4-5-2 with Phenix2.0  
Mogul : 2022.3.0, CSD as543be (2022)  
Xtrriage (Phenix) : 2.0  
EDS : 3.0  
Buster-report : wwPDB partial adaption of 1.1.7 (2018)  
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)  
CCP4 : 9.0.010 (Gargrove)  
Density-Fitness : 1.0.12  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.49

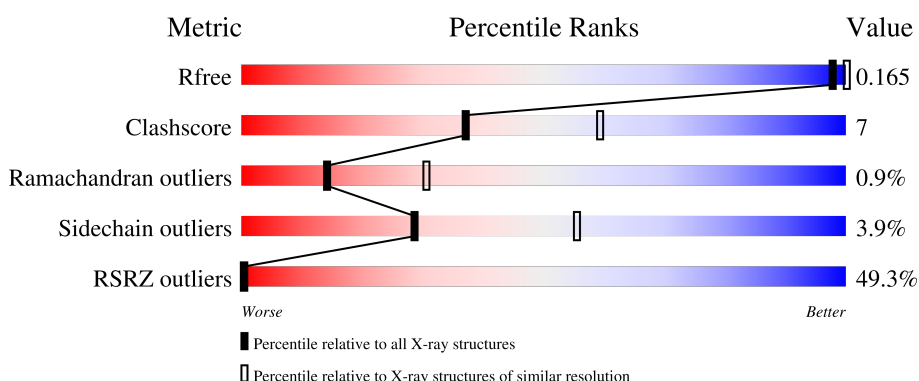
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.59 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))
$R_{free}$	180053	4008 (2.60-2.60)
Clashscore	190562	4347 (2.60-2.60)
Ramachandran outliers	187476	4277 (2.60-2.60)
Sidechain outliers	187428	4277 (2.60-2.60)
RSRZ outliers	180081	4008 (2.60-2.60)

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 of the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 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  $\leq 5\%$ . 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	293	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">34%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 34%, orange 34% 75%, yellow 75% 80%, green 80% 95%, grey 95% 100%);"></div> <div style="text-align: right;">75% 20% ..</div> </div>
1	B	293	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">48%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 48%, orange 48% 90%, yellow 90% 95%, green 95% 98%, grey 98% 100%);"></div> <div style="text-align: right;">90% 7% .</div> </div>
1	C	293	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">35%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 35%, orange 35% 78%, yellow 78% 85%, green 85% 95%, grey 95% 100%);"></div> <div style="text-align: right;">78% 15% ..</div> </div>
1	D	293	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">53%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 53%, orange 53% 80%, yellow 80% 85%, green 85% 95%, grey 95% 100%);"></div> <div style="text-align: right;">80% 16% ..</div> </div>
1	E	293	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">63%</div> <div style="width: 100%; height: 15px; background: linear-gradient(to right, red 63%, orange 63% 80%, yellow 80% 85%, green 85% 95%, grey 95% 100%);"></div> <div style="text-align: right;">80% 16% ..</div> </div>

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Mol	Chain	Length	Quality of chain
1	F	293	 <p>A horizontal bar chart representing the quality of chain. The bar is divided into three segments: a red segment on the left labeled '53%', a green segment in the middle labeled '89%', and a yellow segment on the right labeled '8%'. There is a small grey dot at the end of the bar.</p>

## 2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 13531 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 Kelch-like ECH-associated protein 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	284	2181	1357	396	413	15	0	0	0
1	B	285	2185	1359	397	414	15	0	0	0
1	C	284	2181	1357	396	413	15	0	0	0
1	D	284	2181	1357	396	413	15	0	0	0
1	E	284	2181	1357	396	413	15	0	0	0
1	F	286	2192	1364	398	415	15	0	0	0

There are 36 discrepancies between the modelled and reference sequences:

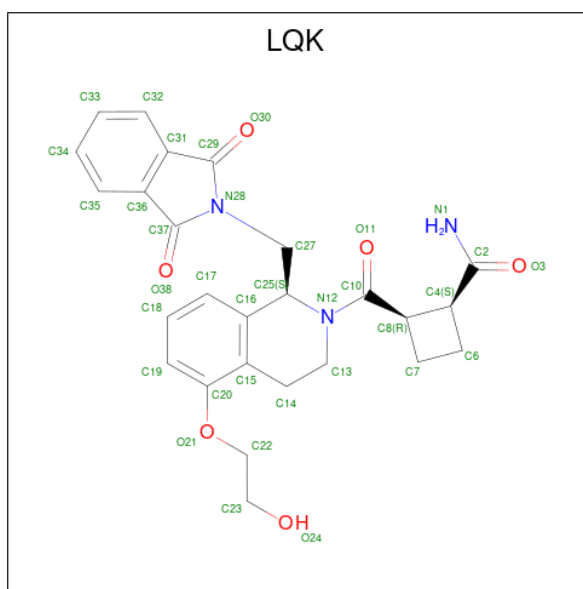
Chain	Residue	Modelled	Actual	Comment	Reference
A	317	GLY	-	expression tag	UNP Q14145
A	318	SER	-	expression tag	UNP Q14145
A	319	HIS	-	expression tag	UNP Q14145
A	320	MET	-	expression tag	UNP Q14145
A	540	ALA	GLU	conflict	UNP Q14145
A	542	ALA	GLU	conflict	UNP Q14145
B	317	GLY	-	expression tag	UNP Q14145
B	318	SER	-	expression tag	UNP Q14145
B	319	HIS	-	expression tag	UNP Q14145
B	320	MET	-	expression tag	UNP Q14145
B	540	ALA	GLU	conflict	UNP Q14145
B	542	ALA	GLU	conflict	UNP Q14145
C	317	GLY	-	expression tag	UNP Q14145
C	318	SER	-	expression tag	UNP Q14145
C	319	HIS	-	expression tag	UNP Q14145
C	320	MET	-	expression tag	UNP Q14145
C	540	ALA	GLU	conflict	UNP Q14145

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Chain	Residue	Modelled	Actual	Comment	Reference
C	542	ALA	GLU	conflict	UNP Q14145
D	317	GLY	-	expression tag	UNP Q14145
D	318	SER	-	expression tag	UNP Q14145
D	319	HIS	-	expression tag	UNP Q14145
D	320	MET	-	expression tag	UNP Q14145
D	540	ALA	GLU	conflict	UNP Q14145
D	542	ALA	GLU	conflict	UNP Q14145
E	317	GLY	-	expression tag	UNP Q14145
E	318	SER	-	expression tag	UNP Q14145
E	319	HIS	-	expression tag	UNP Q14145
E	320	MET	-	expression tag	UNP Q14145
E	540	ALA	GLU	conflict	UNP Q14145
E	542	ALA	GLU	conflict	UNP Q14145
F	317	GLY	-	expression tag	UNP Q14145
F	318	SER	-	expression tag	UNP Q14145
F	319	HIS	-	expression tag	UNP Q14145
F	320	MET	-	expression tag	UNP Q14145
F	540	ALA	GLU	conflict	UNP Q14145
F	542	ALA	GLU	conflict	UNP Q14145

- Molecule 2 is (1 {S},2 {R})-2-[[[(1 {S})-1-[[1,3-bis(oxidanylidene)isoindol-2-yl]methyl]-5-(2-hydroxyethoxy)-3,4-dihydro-1 {H}-isoquinolin-2-yl]carbonyl]cyclobutane-1-carboxamide (CCD ID: LQK) (formula: C<sub>26</sub>H<sub>27</sub>N<sub>3</sub>O<sub>6</sub>) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
2	A	1	35	26	3	6	0	0

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	B	1	Total	C	N	O	0	0
			35	26	3	6		
2	C	1	Total	C	N	O	0	0
			35	26	3	6		
2	D	1	Total	C	N	O	0	0
			35	26	3	6		
2	E	1	Total	C	N	O	0	0
			35	26	3	6		
2	F	1	Total	C	N	O	0	0
			35	26	3	6		

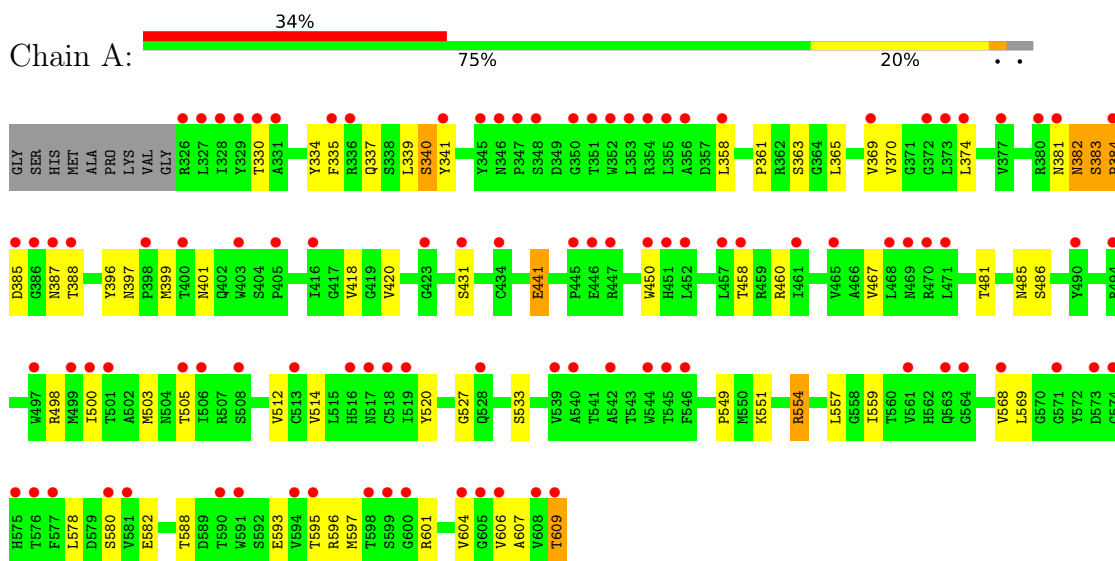
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	42	Total	O	0	0
			42	42		
3	B	27	Total	O	0	0
			27	27		
3	C	39	Total	O	0	0
			39	39		
3	D	34	Total	O	0	0
			34	34		
3	E	41	Total	O	0	0
			41	41		
3	F	37	Total	O	0	0
			37	37		

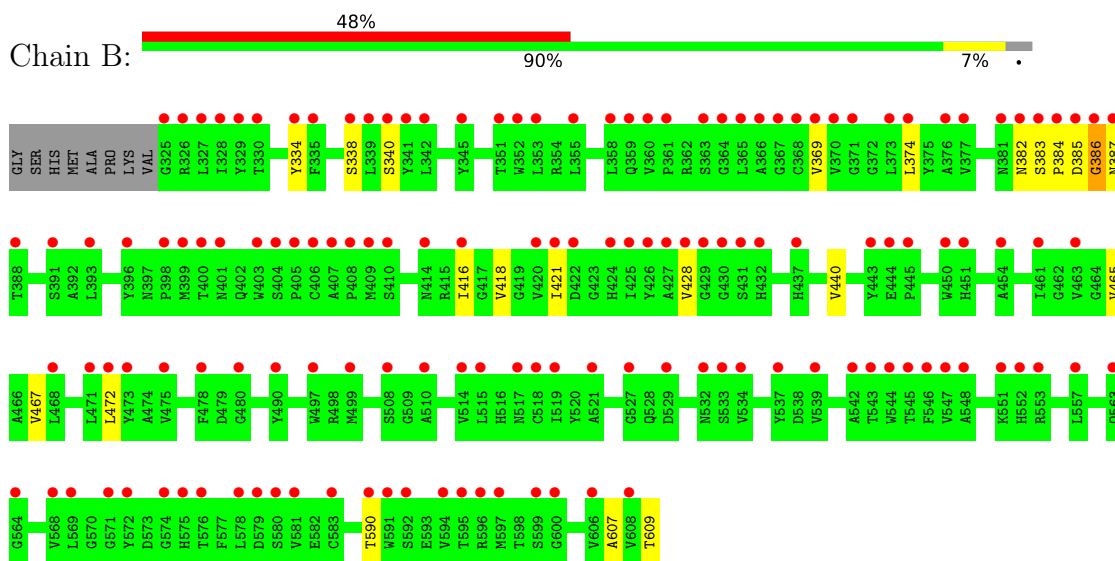
### 3 Residue-property plots [i](#)

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 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.

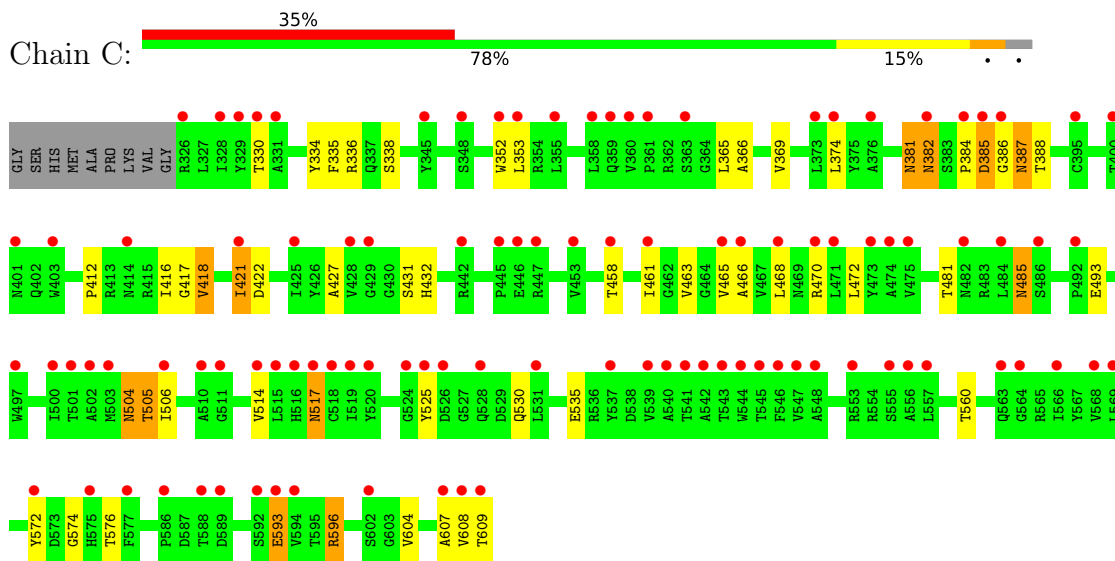
- Molecule 1: Kelch-like ECH-associated protein 1



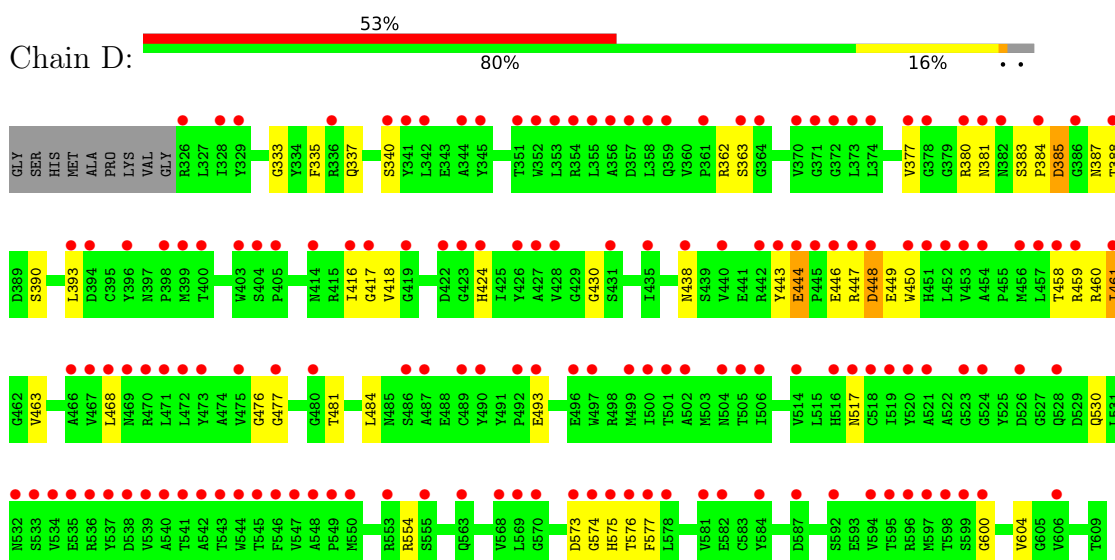
- Molecule 1: Kelch-like ECH-associated protein 1



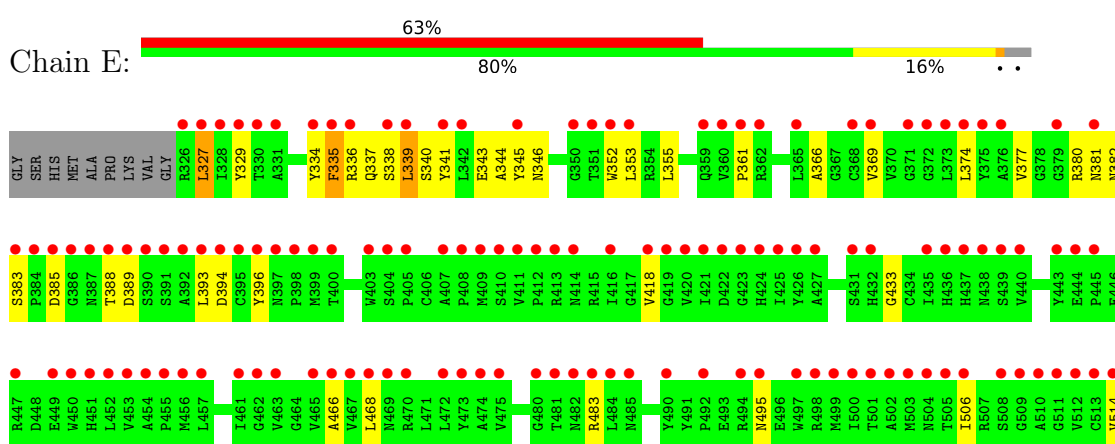
- Molecule 1: Kelch-like ECH-associated protein 1

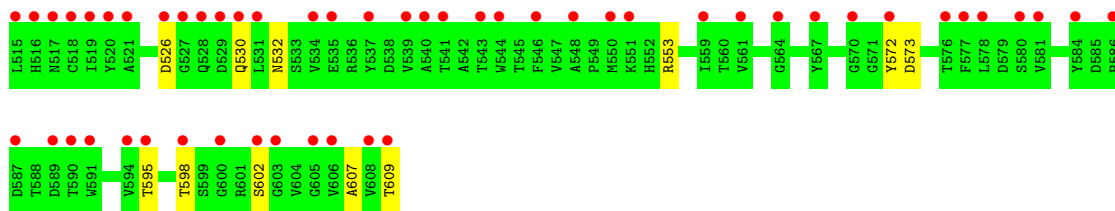


• Molecule 1: Kelch-like ECH-associated protein 1



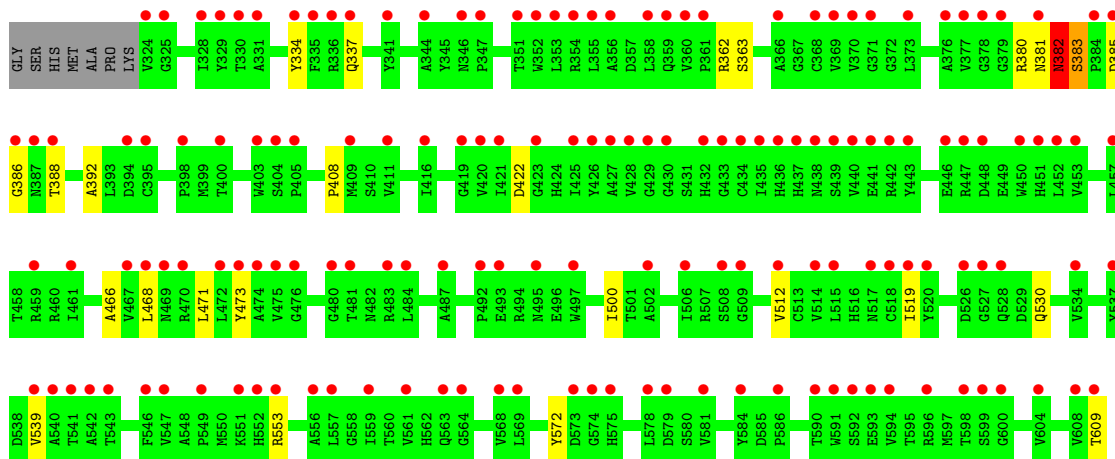
• Molecule 1: Kelch-like ECH-associated protein 1





● Molecule 1: Kelch-like ECH-associated protein 1

Chain F: 53% 89% 8%



## 4 Data and refinement statistics i

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	112.45Å 91.88Å 112.31Å 90.00° 119.89° 90.00°	Depositor
Resolution (Å)	47.99 – 2.59 47.99 – 2.59	Depositor EDS
% Data completeness (in resolution range)	96.6 (47.99-2.59) 97.2 (47.99-2.59)	Depositor EDS
$R_{merge}$	0.08	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.93 (at 2.61Å)	Xtrriage
Refinement program	REFMAC 5.8.0049	Depositor
R, $R_{free}$	0.175 , 0.225 0.175 , 0.165	Depositor DCC
$R_{free}$ test set	898 reflections (1.46%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	46.6	Xtrriage
Anisotropy	0.875	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.30 , 39.1	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.37$ , $\langle L^2 \rangle = 0.19$	Xtrriage
Estimated twinning fraction	0.260 for l,k,-h-l 0.260 for -h-l,k,h 0.296 for -h-l,-k,l 0.238 for h,-k,-h-l 0.358 for l,-k,h	Xtrriage
Reported twinning fraction	0.381 for H, K, L 0.152 for H+L, -K, -L 0.231 for L, -K, H 0.110 for L, K, -H-L 0.036 for -H-L, K, H 0.090 for -H, -K, H+L	Depositor
Outliers	4 of 59516 reflections (0.007%)	Xtrriage
$F_o, F_c$ correlation	0.80	EDS
Total number of atoms	13531	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	64.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 15.19% of the height of the origin peak. No significant pseudotranslation is detected.*

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

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

## 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: LQK

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	0.58	0/2234	0.81	1/3043 (0.0%)
1	B	0.60	0/2238	0.78	0/3048
1	C	0.59	0/2234	0.83	1/3043 (0.0%)
1	D	0.58	0/2234	0.77	1/3043 (0.0%)
1	E	0.55	0/2234	0.76	0/3043
1	F	0.58	0/2245	0.80	3/3058 (0.1%)
All	All	0.58	0/13419	0.79	6/18278 (0.0%)

There are no bond length outliers.

The worst 5 of 6 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	362	ARG	N-CA-C	5.79	117.64	108.79
1	A	554	ARG	N-CA-C	5.75	117.14	108.46
1	F	382	ASN	N-CA-C	5.36	122.20	110.80
1	F	385	ASP	N-CA-C	-5.22	105.50	111.14
1	C	385	ASP	N-CA-C	-5.02	100.28	108.67

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2181	0	2078	44	0
1	B	2185	0	2081	14	0
1	C	2181	0	2078	37	0
1	D	2181	0	2078	33	0
1	E	2181	0	2078	45	0
1	F	2192	0	2090	22	0
2	A	35	0	0	1	0
2	B	35	0	0	0	0
2	C	35	0	0	0	0
2	D	35	0	0	1	0
2	E	35	0	0	0	0
2	F	35	0	0	0	0
3	A	42	0	0	0	0
3	B	27	0	0	0	0
3	C	39	0	0	3	0
3	D	34	0	0	1	0
3	E	41	0	0	1	0
3	F	37	0	0	1	0
All	All	13531	0	12483	183	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 7.

The worst 5 of 183 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:E:329:TYR:CE1	1:E:344:ALA:HB2	1.86	1.11
1:E:329:TYR:HE1	1:E:344:ALA:HB2	1.42	0.81
1:E:355:LEU:HD23	1:E:396:TYR:OH	1.80	0.81
1:C:422:ASP:OD2	1:C:470:ARG:NH2	2.13	0.80
1:C:385:ASP:HB2	1:D:380:ARG:CZ	2.13	0.78

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	282/293 (96%)	262 (93%)	16 (6%)	4 (1%)	9	19
1	B	283/293 (97%)	265 (94%)	15 (5%)	3 (1%)	11	25
1	C	282/293 (96%)	263 (93%)	18 (6%)	1 (0%)	30	51
1	D	282/293 (96%)	258 (92%)	21 (7%)	3 (1%)	11	25
1	E	282/293 (96%)	258 (92%)	22 (8%)	2 (1%)	18	38
1	F	284/293 (97%)	265 (93%)	16 (6%)	3 (1%)	11	25
All	All	1695/1758 (96%)	1571 (93%)	108 (6%)	16 (1%)	14	30

5 of 16 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	383	SER
1	B	383	SER
1	C	381	ASN
1	B	386	GLY
1	D	481	THR

### 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	229/235 (97%)	217 (95%)	12 (5%)	21	44
1	B	229/235 (97%)	223 (97%)	6 (3%)	40	68
1	C	229/235 (97%)	211 (92%)	18 (8%)	11	26
1	D	229/235 (97%)	220 (96%)	9 (4%)	28	55
1	E	229/235 (97%)	225 (98%)	4 (2%)	53	78
1	F	230/235 (98%)	225 (98%)	5 (2%)	45	72
All	All	1375/1410 (98%)	1321 (96%)	54 (4%)	28	55

5 of 54 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	485	ASN
1	C	604	VAL
1	F	382	ASN
1	C	504	ASN
1	C	530	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 27 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	562	HIS
1	D	517	ASN
1	F	337	GLN
1	D	424	HIS
1	D	575	HIS

### 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 oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

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
2	LQK	B	701	-	38,39,39	1.16	2 (5%)	51,57,57	1.58	14 (27%)
2	LQK	A	701	-	38,39,39	1.05	2 (5%)	51,57,57	1.73	12 (23%)
2	LQK	E	701	-	38,39,39	1.08	2 (5%)	51,57,57	1.50	13 (25%)
2	LQK	D	701	-	38,39,39	1.08	2 (5%)	51,57,57	1.57	14 (27%)
2	LQK	F	701	-	38,39,39	1.02	2 (5%)	51,57,57	1.53	13 (25%)
2	LQK	C	701	-	38,39,39	1.11	2 (5%)	51,57,57	1.54	12 (23%)

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
2	LQK	B	701	-	-	3/19/58/58	0/5/5/5
2	LQK	A	701	-	-	4/19/58/58	0/5/5/5
2	LQK	E	701	-	-	4/19/58/58	0/5/5/5
2	LQK	D	701	-	-	5/19/58/58	0/5/5/5
2	LQK	F	701	-	-	3/19/58/58	0/5/5/5
2	LQK	C	701	-	-	5/19/58/58	0/5/5/5

The worst 5 of 12 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	701	LQK	C37-N28	-4.36	1.34	1.39
2	E	701	LQK	C37-N28	-4.31	1.34	1.39
2	C	701	LQK	C37-N28	-4.23	1.34	1.39
2	F	701	LQK	C37-N28	-3.76	1.35	1.39
2	C	701	LQK	C29-N28	-3.69	1.35	1.39

The worst 5 of 78 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	701	LQK	C31-C29-N28	4.07	108.89	105.88
2	C	701	LQK	O21-C20-C15	3.87	121.15	115.75
2	F	701	LQK	C31-C29-N28	3.61	108.55	105.88
2	A	701	LQK	C36-C37-N28	3.60	108.54	105.88
2	A	701	LQK	C7-C6-C4	-3.58	85.35	88.94

There are no chirality outliers.

5 of 24 torsion outliers are listed below:

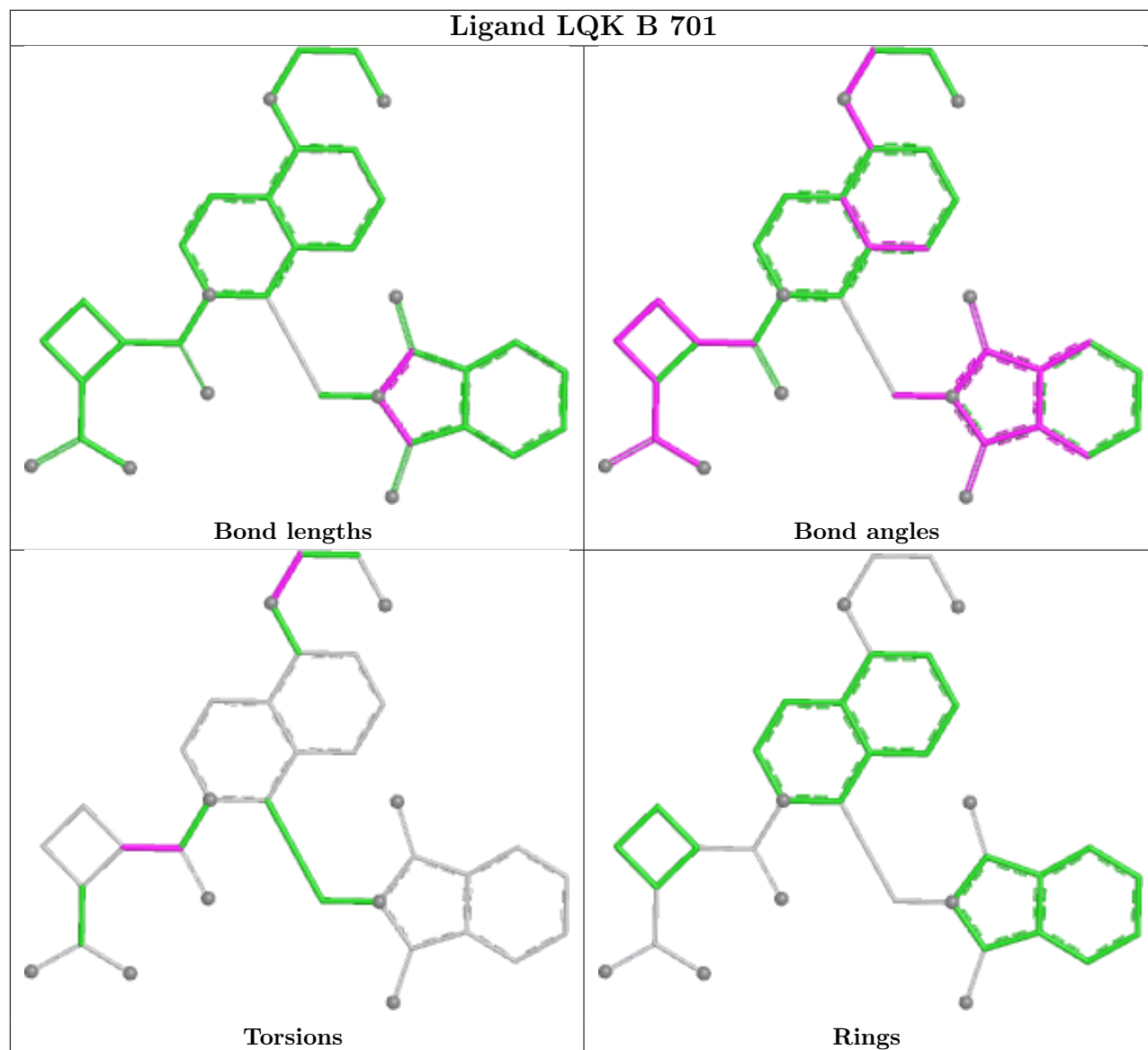
Mol	Chain	Res	Type	Atoms
2	C	701	LQK	O21-C22-C23-O24
2	F	701	LQK	O21-C22-C23-O24
2	D	701	LQK	O21-C22-C23-O24
2	B	701	LQK	C23-C22-O21-C20
2	A	701	LQK	O11-C10-C8-C4

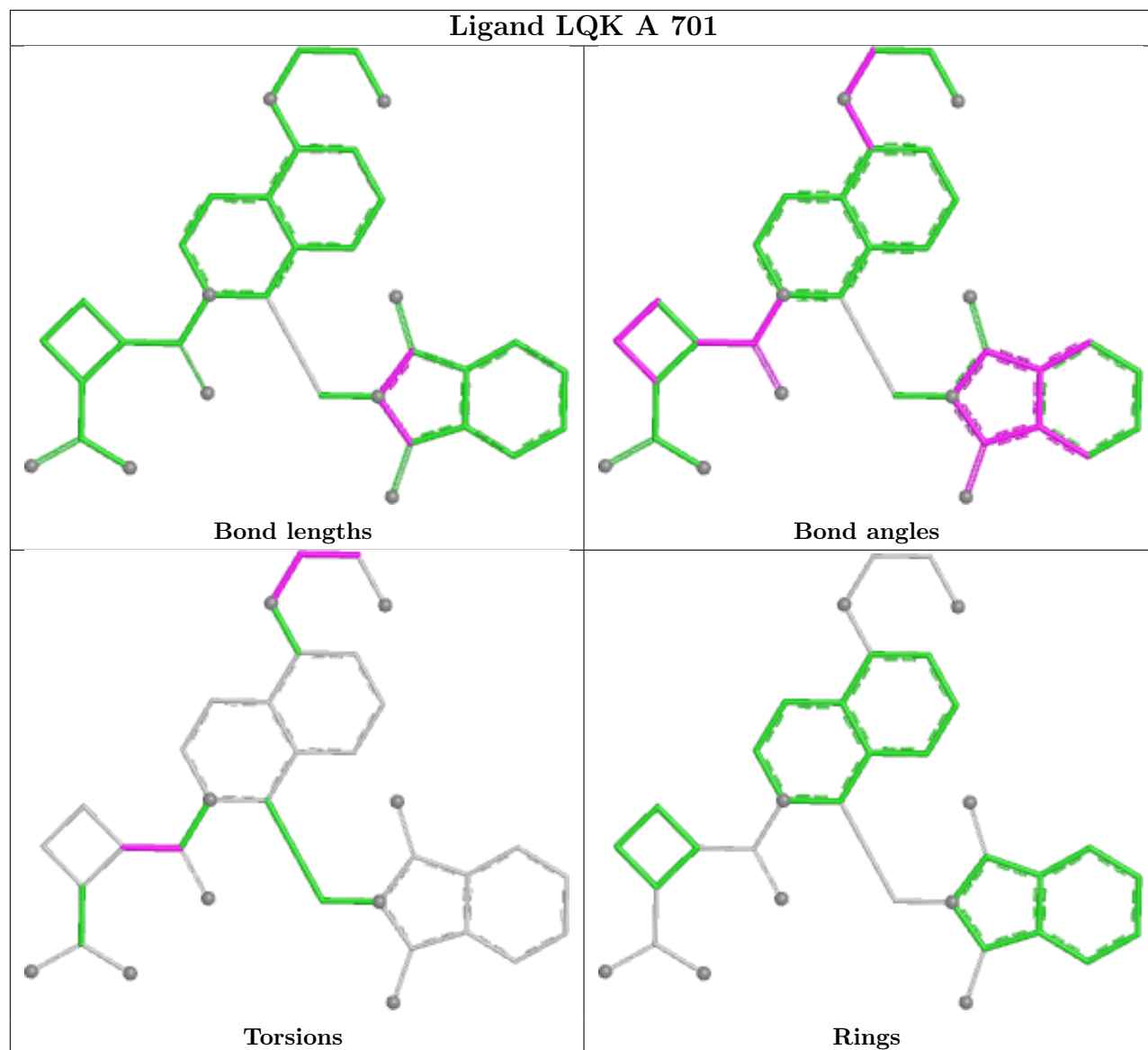
There are no ring outliers.

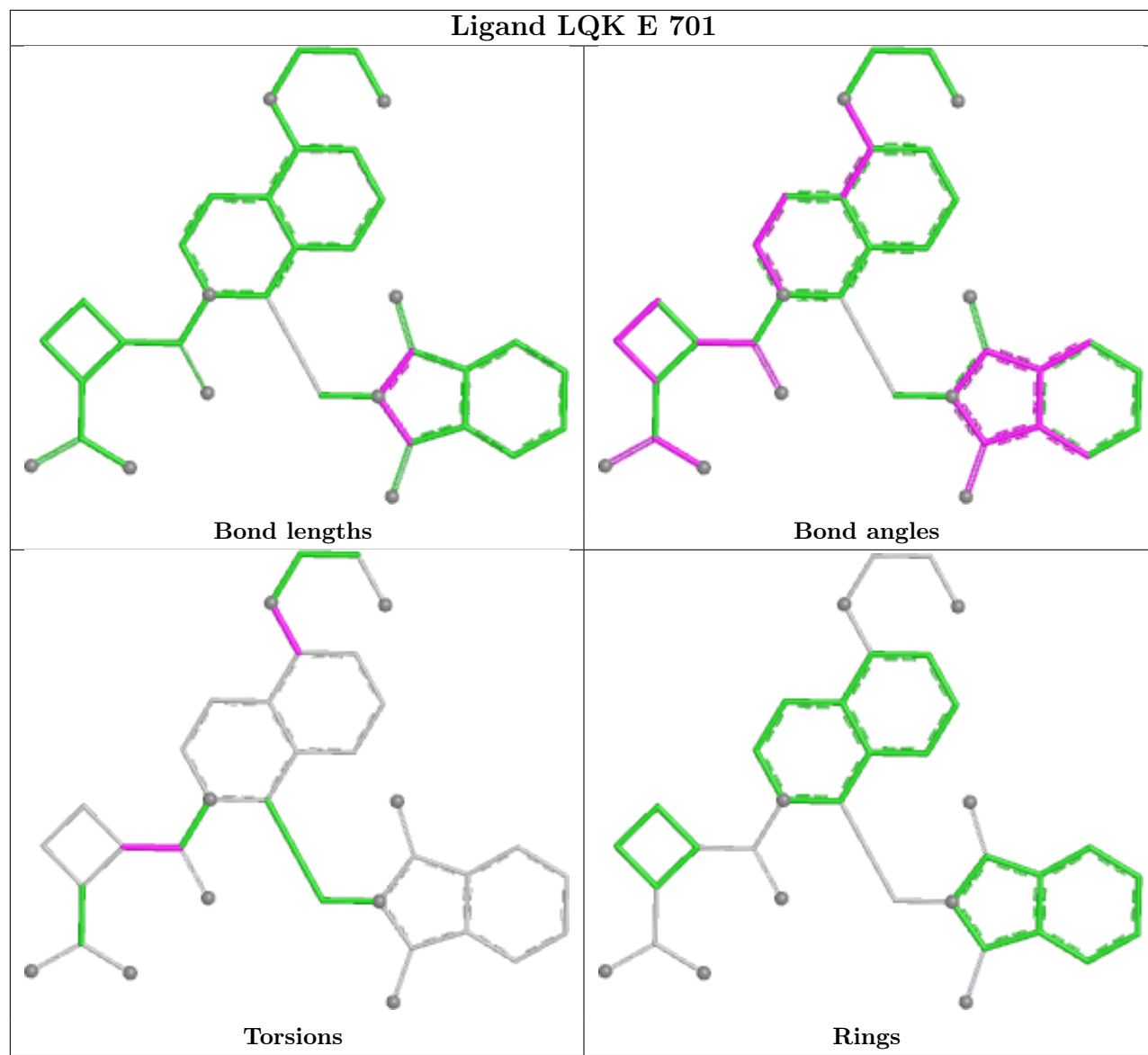
2 monomers are involved in 2 short contacts:

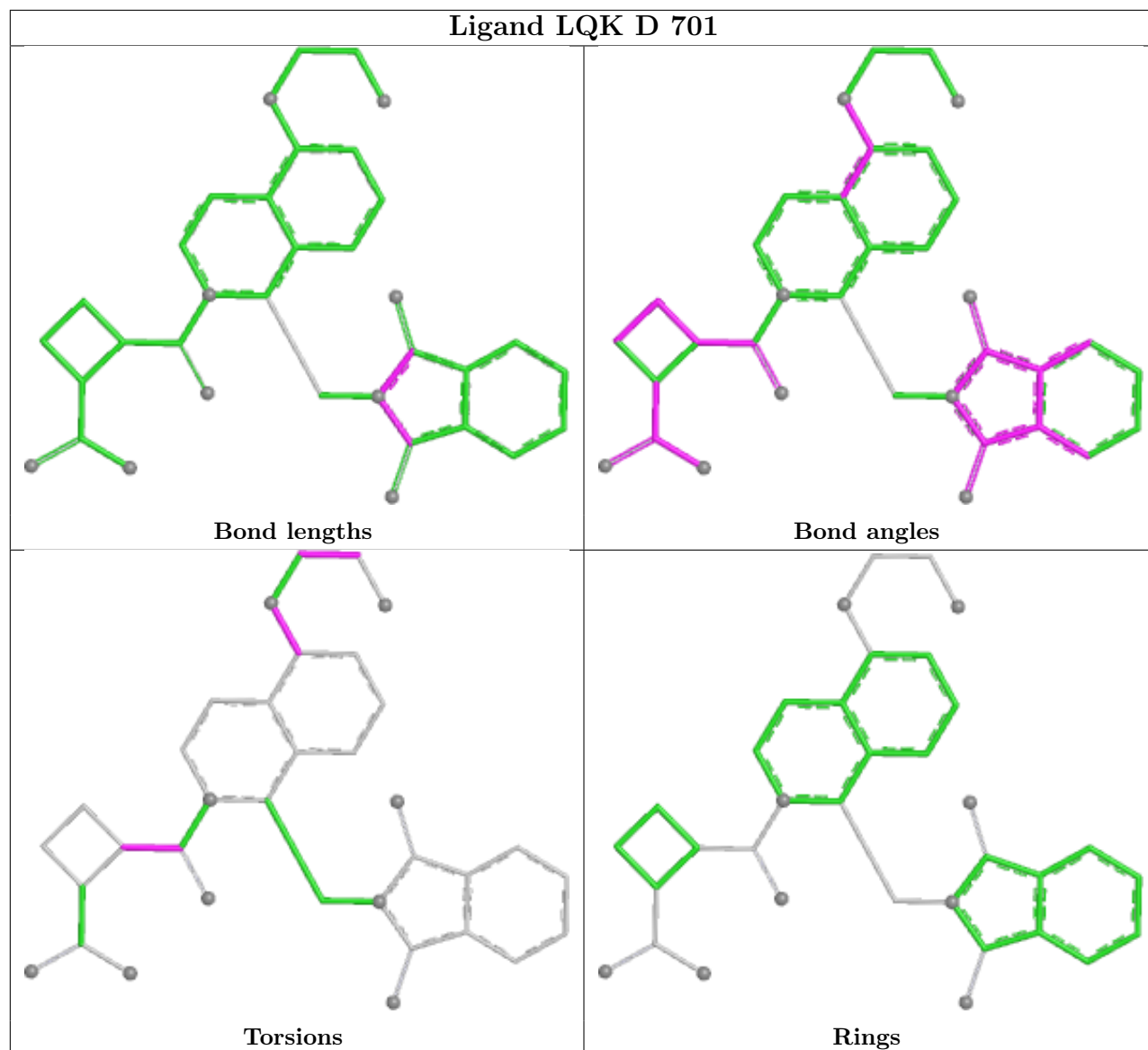
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	701	LQK	1	0
2	D	701	LQK	1	0

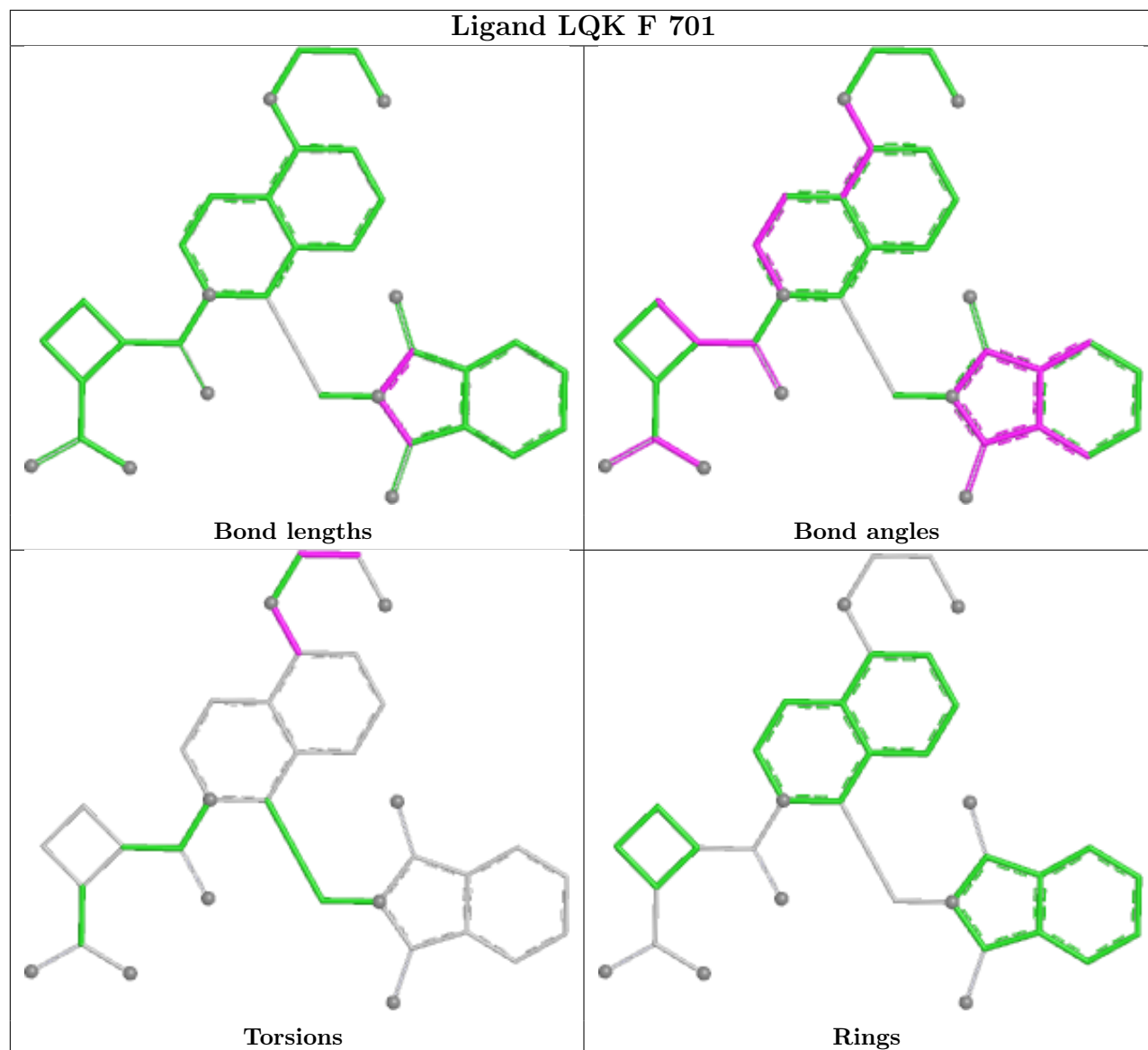
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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

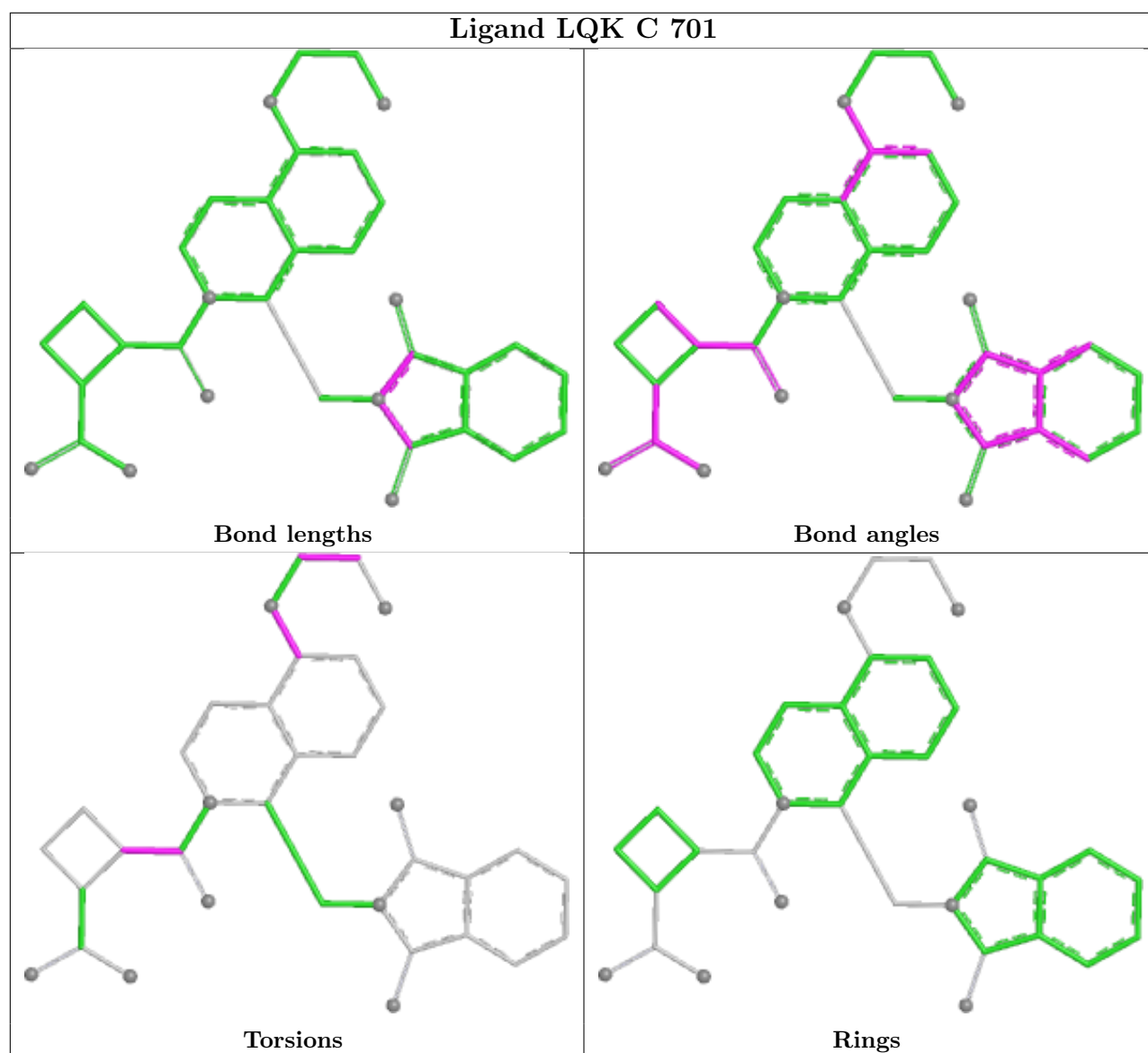












## 5.7 Other polymers [i](#)

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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9	
1	A	284/293 (96%)	1.72	100 (35%)	1   1	8, 53, 88, 121	0
1	B	285/293 (97%)	2.19	142 (49%)	0   0	15, 65, 98, 129	0
1	C	284/293 (96%)	1.73	103 (36%)	1   0	12, 54, 82, 109	0
1	D	284/293 (96%)	2.24	155 (54%)	0   0	24, 66, 96, 112	0
1	E	284/293 (96%)	2.55	186 (65%)	0   0	36, 75, 106, 130	0
1	F	286/293 (97%)	2.24	155 (54%)	0   0	31, 68, 95, 137	0
All	All	1707/1758 (97%)	2.11	841 (49%)	0   0	8, 63, 98, 137	0

The worst 5 of 841 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	514	VAL	8.4
1	E	461	ILE	8.1
1	D	502	ALA	7.6
1	D	446	GLU	7.1
1	A	398	PRO	6.8

### 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](#)

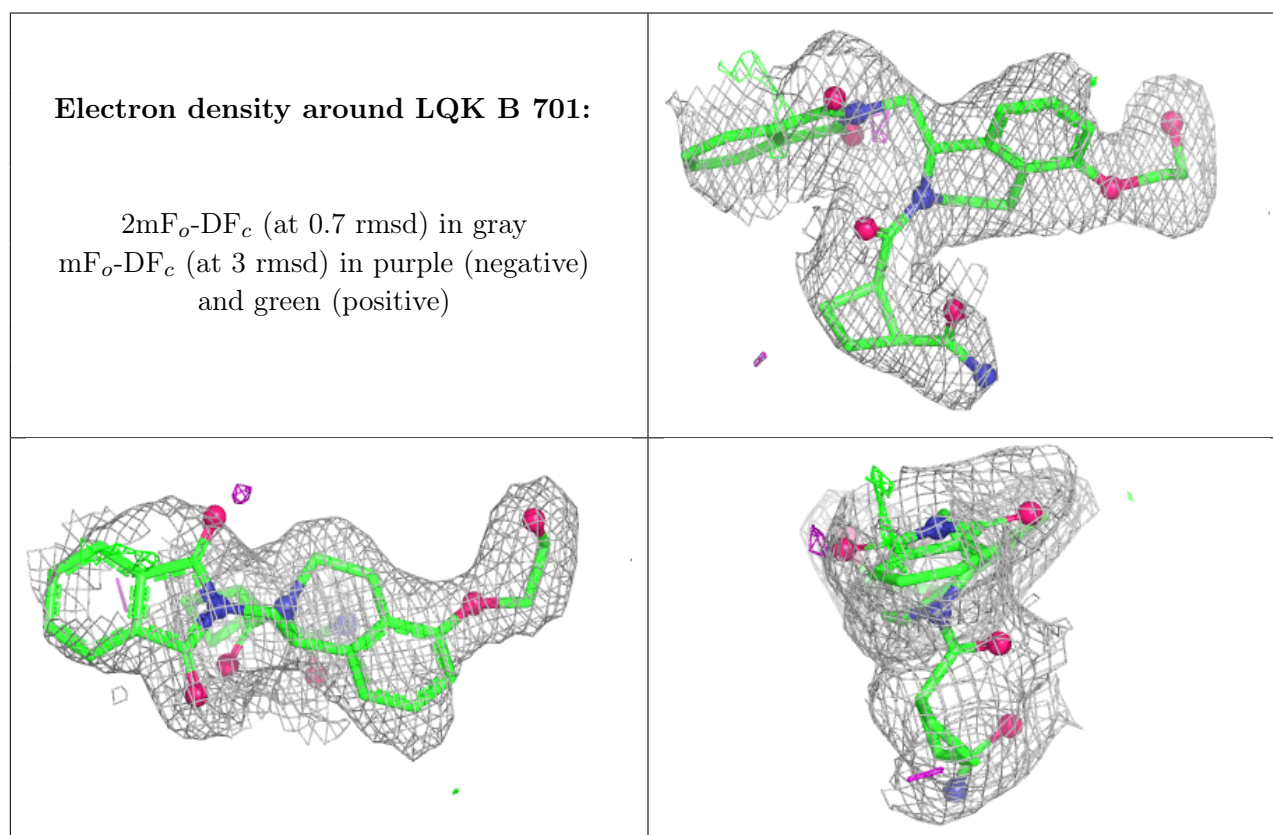
There are no oligosaccharides in this entry.

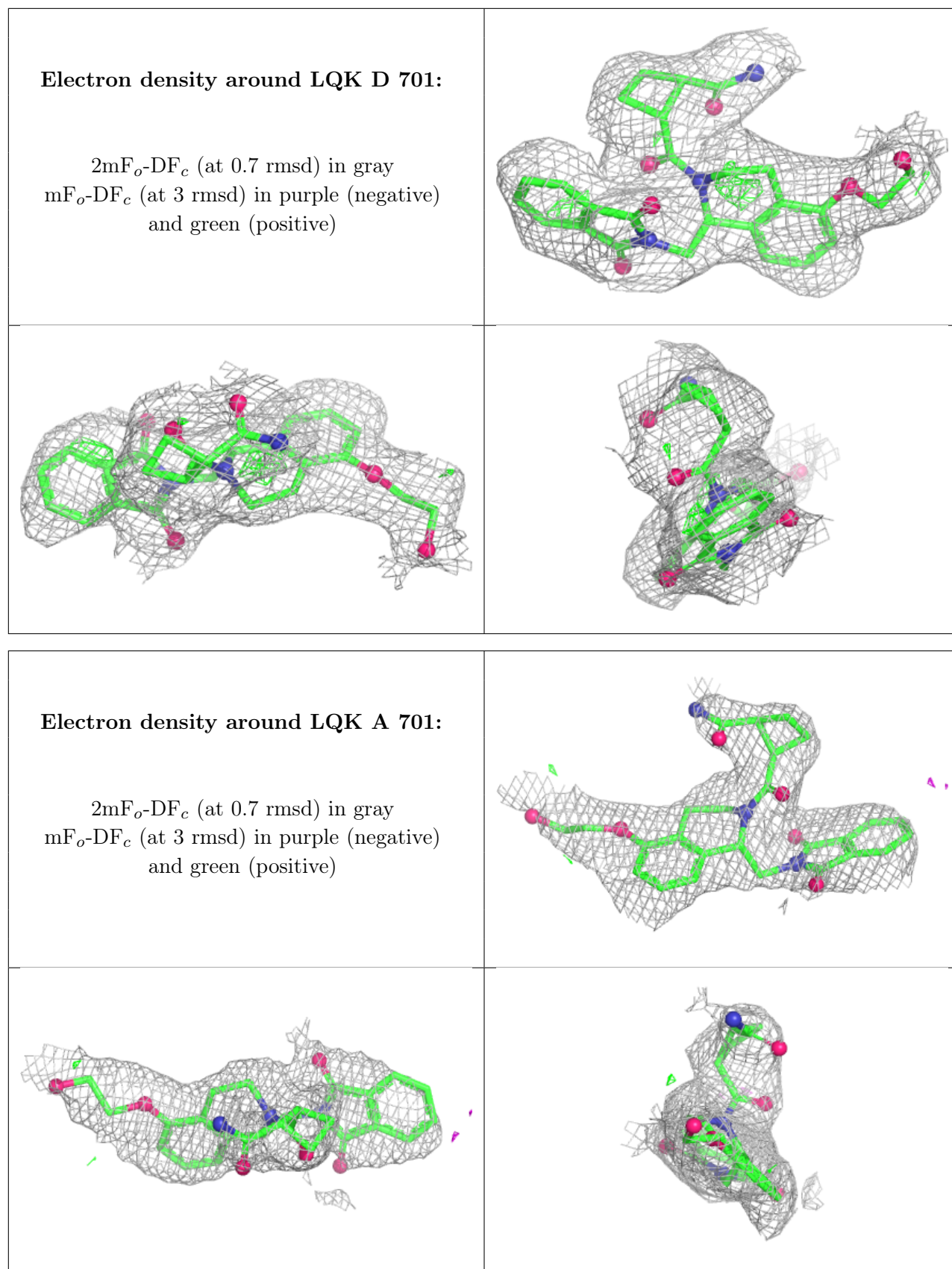
## 6.4 Ligands [i](#)

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<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
2	LQK	B	701	35/35	0.82	0.19	40,57,83,87	0
2	LQK	D	701	35/35	0.84	0.18	41,57,75,81	0
2	LQK	A	701	35/35	0.85	0.19	49,65,87,93	0
2	LQK	C	701	35/35	0.86	0.15	32,51,74,78	0
2	LQK	E	701	35/35	0.86	0.14	33,56,71,77	0
2	LQK	F	701	35/35	0.89	0.14	39,47,62,72	0

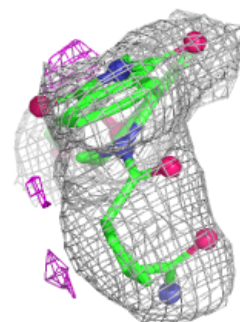
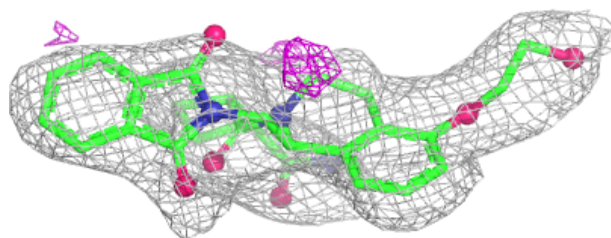
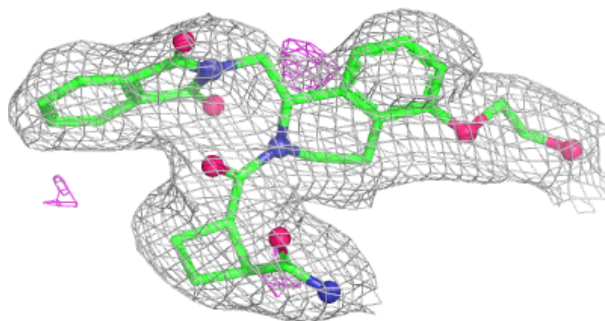
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.



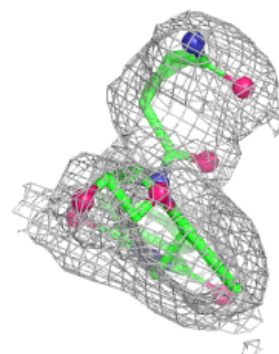
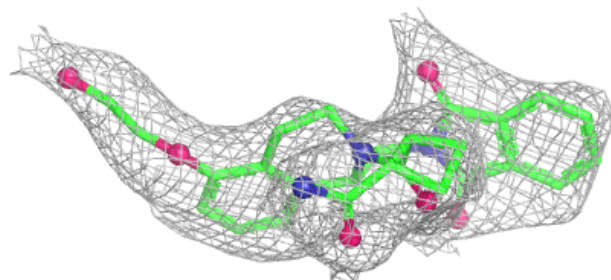
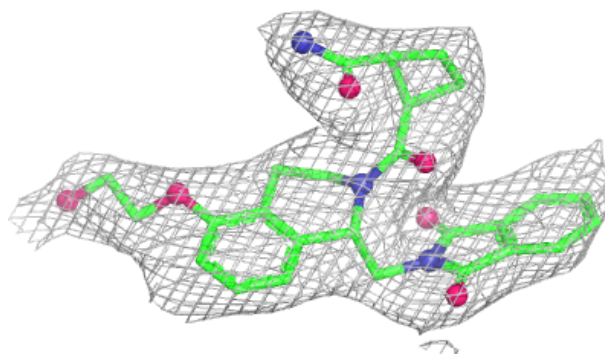


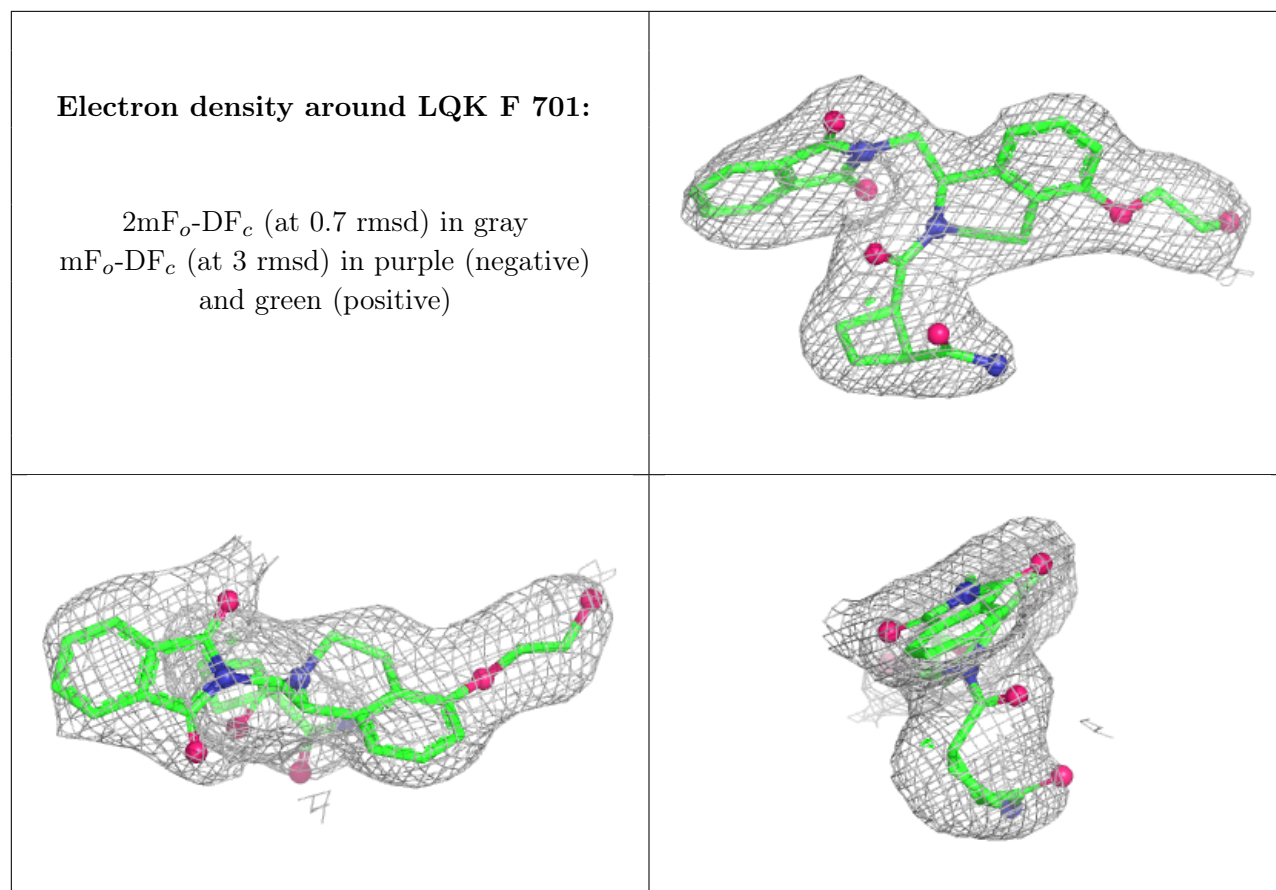
**Electron density around LQK C 701:**

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

**Electron density around LQK E 701:**

$2mF_o-DF_c$  (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.