Full wwPDB X-ray Structure Validation Report (i)

Aug 28, 2023 – 05:16 PM EDT

PDB ID	:	3LJ2
Title	:	IRE1 complexed with JAK Inhibitor I
Authors	:	Lee, K.P.K.; Sicheri, F.
Deposited on	:	2010-01-25
Resolution	:	3.33 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 types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

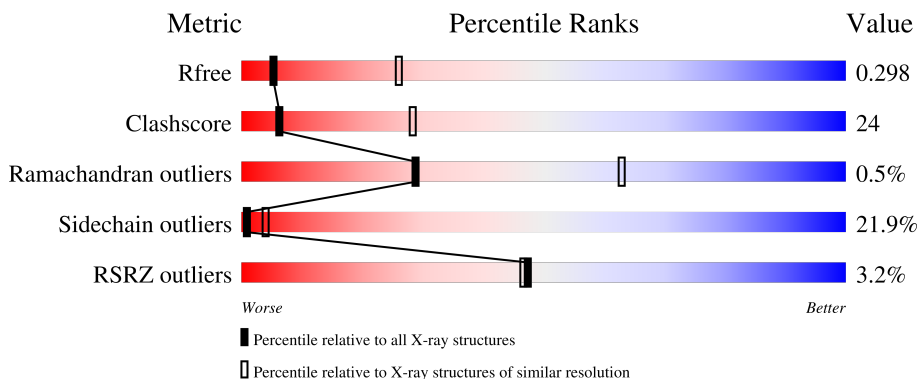|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 3.33 Å.

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

Metric	Percentile Ranks	Value
Rfree		0.298
Clashscore		24
Ramachandran outliers		0.5%
Sidechain outliers		21.9%
RSRZ outliers		3.2%

Worse .... *Better*

▌ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1060 (3.38-3.30)
Clashscore	141614	1111 (3.38-3.30)
Ramachandran outliers	138981	1090 (3.38-3.30)
Sidechain outliers	138945	1089 (3.38-3.30)
RSRZ outliers	127900	1028 (3.38-3.30)

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 >=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	434	4% / 51% 33% 9% · 6%
1	B	434	2% / 52% 32% 8% · 6%

2 Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 6344 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 Serine/threonine-protein kinase/endoribonuclease IRE1.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	407	Total	C	N	O	P	S	0	0	0
			3149	2015	534	581	3	16			
1	B	407	Total	C	N	O	P	S	0	0	0
			3149	2015	534	581	3	16			

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	CYS	deletion	UNP P32361
A	?	-	GLN	deletion	UNP P32361
A	?	-	VAL	deletion	UNP P32361
A	?	-	GLU	deletion	UNP P32361
A	?	-	THR	deletion	UNP P32361
A	?	-	GLU	deletion	UNP P32361
A	?	-	HIS	deletion	UNP P32361
A	?	-	SER	deletion	UNP P32361
A	?	-	SER	deletion	UNP P32361
A	?	-	SER	deletion	UNP P32361
A	?	-	ARG	deletion	UNP P32361
A	?	-	HIS	deletion	UNP P32361
A	?	-	THR	deletion	UNP P32361
A	?	-	VAL	deletion	UNP P32361
A	?	-	VAL	deletion	UNP P32361
A	?	-	SER	deletion	UNP P32361
A	?	-	SER	deletion	UNP P32361
A	?	-	ASP	deletion	UNP P32361
A	?	-	SER	deletion	UNP P32361
A	?	-	PHE	deletion	UNP P32361
A	?	-	TYR	deletion	UNP P32361
A	?	-	ASP	deletion	UNP P32361
A	?	-	PRO	deletion	UNP P32361
A	?	-	PHE	deletion	UNP P32361
B	?	-	CYS	deletion	UNP P32361

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Chain	Residue	Modelled	Actual	Comment	Reference
B	?	-	GLN	deletion	UNP P32361
B	?	-	VAL	deletion	UNP P32361
B	?	-	GLU	deletion	UNP P32361
B	?	-	THR	deletion	UNP P32361
B	?	-	GLU	deletion	UNP P32361
B	?	-	HIS	deletion	UNP P32361
B	?	-	SER	deletion	UNP P32361
B	?	-	SER	deletion	UNP P32361
B	?	-	SER	deletion	UNP P32361
B	?	-	ARG	deletion	UNP P32361
B	?	-	HIS	deletion	UNP P32361
B	?	-	THR	deletion	UNP P32361
B	?	-	VAL	deletion	UNP P32361
B	?	-	VAL	deletion	UNP P32361
B	?	-	SER	deletion	UNP P32361
B	?	-	SER	deletion	UNP P32361
B	?	-	ASP	deletion	UNP P32361
B	?	-	SER	deletion	UNP P32361
B	?	-	PHE	deletion	UNP P32361
B	?	-	TYR	deletion	UNP P32361
B	?	-	ASP	deletion	UNP P32361
B	?	-	PRO	deletion	UNP P32361
B	?	-	PHE	deletion	UNP P32361

- Molecule 2 is 2-TERT-BUTYL-9-FLUORO-3,6-DIHYDRO-7H-BENZ[H]-IMIDAZ[4,5-F]ISOQUINOLINE-7-ONE (three-letter code: IZA) (formula: $C_{18}H_{16}FN_3O$).
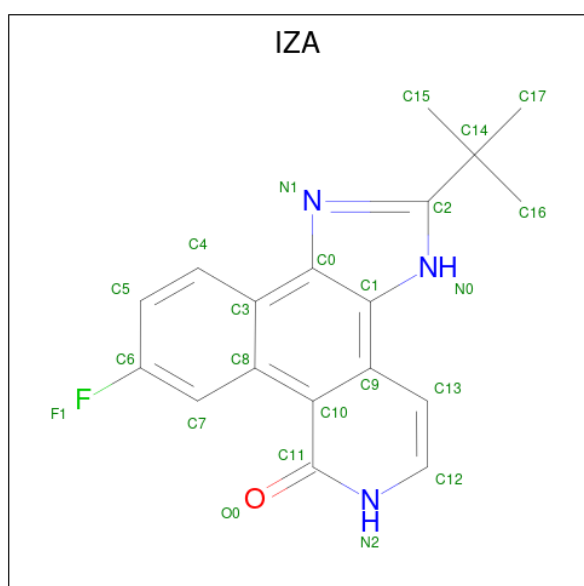
| Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	F	N	O	0	0
			23	18	1	3	1		
2	B	1	Total	C	F	N	O	0	0
			23	18	1	3	1		

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry 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: Serine/threonine-protein kinase/endoribonuclease IRE1
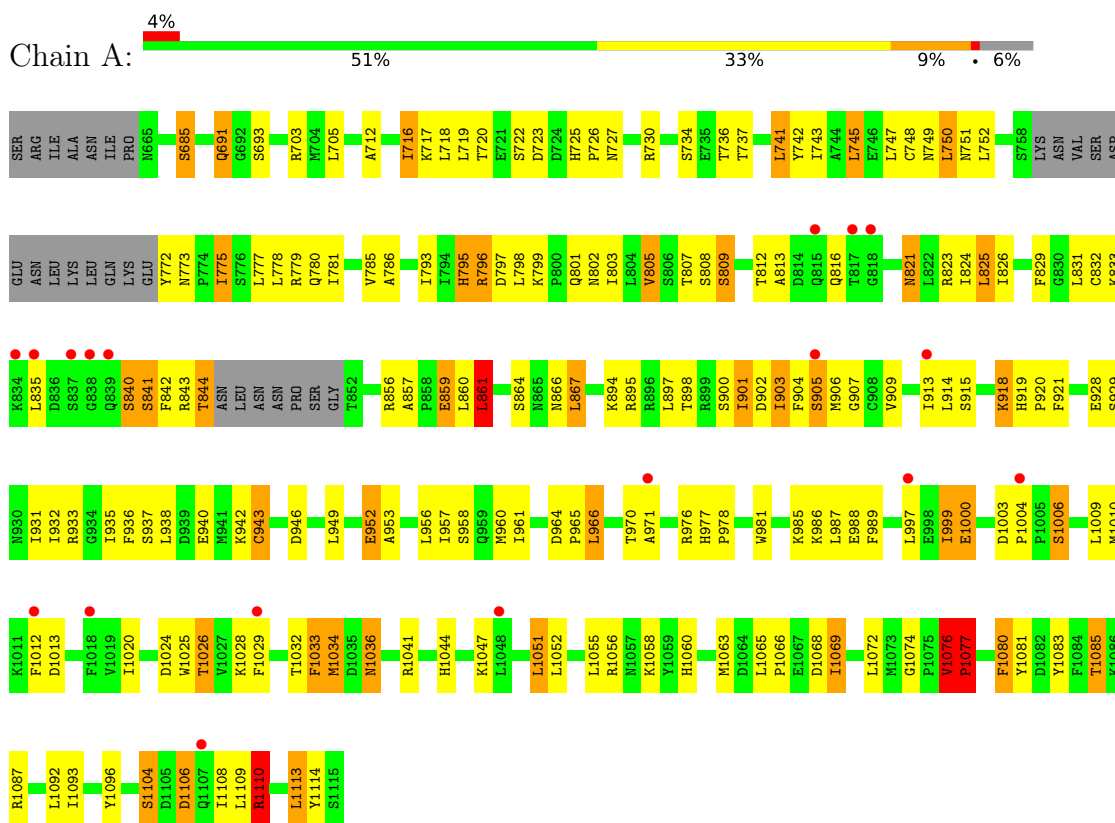
- Molecule 1: Serine/threonine-protein kinase/endoribonuclease IRE1
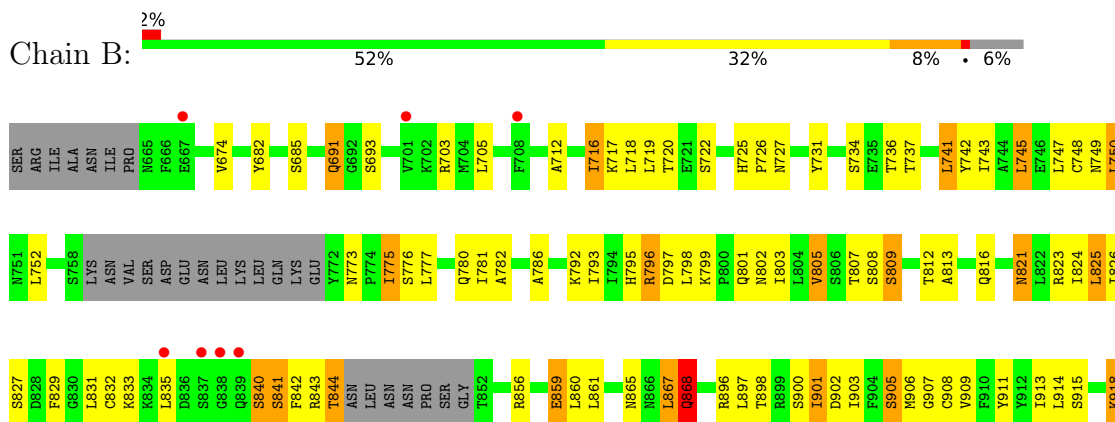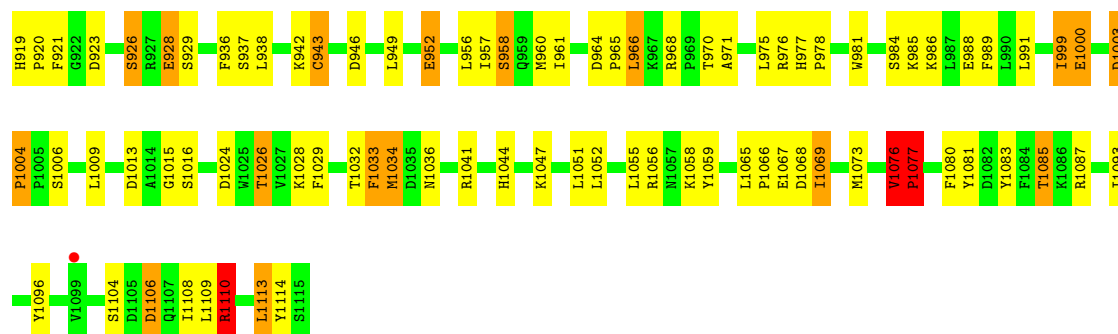
4   Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 32 1 2	Depositor
Cell constants a, b, c, α, β, γ	126.18Å 126.18Å 175.16Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	51.50 – 3.33 51.50 – 3.33	Depositor EDS
% Data completeness (in resolution range)	94.6 (51.50-3.33) 94.6 (51.50-3.33)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.12	Depositor
$< I/\sigma(I) >$ [1]	1.95 (at 3.33Å)	Xtriage
Refinement program	REFMAC 5.5.0072	Depositor
R, R_{free}	0.254 , 0.293 0.254 , 0.298	Depositor DCC
R_{free} test set	1151 reflections (5.15%)	wwPDB-VP
Wilson B-factor (Å^2)	78.8	Xtriage
Anisotropy	0.073	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 49.4	EDS
L-test for twinning[2]	$< |L| > = 0.45, < L^2 > = 0.27$	Xtriage
Estimated twinning fraction	0.069 for -h,-k,l	Xtriage
F_o,F_c correlation	0.88	EDS
Total number of atoms	6344	wwPDB-VP
Average B, all atoms (Å^2)	40.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.85% 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: IZA, TPO, SEP

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	0.71	0/3184	0.85	8/4311 (0.2%)
1	B	0.78	1/3184 (0.0%)	0.85	6/4311 (0.1%)
All	All	0.75	1/6368 (0.0%)	0.85	14/8622 (0.2%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	2
1	B	0	2
All	All	0	4

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	908	CYS	CB-SG	-5.01	1.73	1.81

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	895	ARG	N-CA-CB	-14.35	84.77	110.60
1	B	868	GLN	N-CA-CB	-14.33	84.81	110.60
1	A	894	LYS	N-CA-C	-10.73	82.02	111.00
1	B	867	LEU	N-CA-C	8.67	134.41	111.00
1	B	1076	VAL	C-N-CD	-7.95	103.11	120.60
1	A	1076	VAL	C-N-CD	-7.62	103.83	120.60
1	A	861	LEU	CA-CB-CG	-6.38	100.63	115.30
1	A	1110	ARG	NE-CZ-NH1	6.03	123.31	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	1110	ARG	NE-CZ-NH2	-5.59	117.51	120.30
1	B	1110	ARG	NE-CZ-NH2	-5.49	117.56	120.30
1	A	795	HIS	N-CA-C	-5.40	96.41	111.00
1	B	1110	ARG	NE-CZ-NH1	5.33	122.96	120.30
1	B	827	SER	N-CA-C	5.23	125.13	111.00
1	A	856	ARG	NE-CZ-NH2	5.17	122.88	120.30

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1003	ASP	Peptide
1	A	1076	VAL	Peptide
1	B	1003	ASP	Peptide
1	B	1076	VAL	Peptide

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	3149	0	3012	154	2
1	B	3149	0	3012	147	0
2	A	23	0	16	1	0
2	B	23	0	16	1	0
All	All	6344	0	6056	301	2

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 24.

All (301) 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:A:829:PHE:HA	1:A:832:CYS:SG	1.81	1.20
1:B:829:PHE:HA	1:B:832:CYS:SG	1.86	1.15
1:B:865:ASN:CB	1:B:868:GLN:OE1	1.96	1.13

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:861:LEU:N	1:A:861:LEU:HD23	1.52	1.10
1:A:860:LEU:C	1:A:861:LEU:HD23	1.79	1.01
1:B:835:LEU:HD13	1:B:840:SEP:HA	1.44	0.99
1:A:835:LEU:HD13	1:A:840:SEP:HA	1.47	0.97
1:B:842:PHE:HD2	1:B:844:TPO:HG22	1.30	0.94
1:B:812:THR:HG22	1:B:821:ASN:O	1.71	0.91
1:A:725:HIS:HD2	1:A:727:ASN:H	1.16	0.90
1:B:1069:ILE:HD13	1:B:1069:ILE:H	1.38	0.87
1:A:1026:THR:HG23	1:A:1034:MET:CE	2.06	0.85
1:A:842:PHE:HD2	1:A:844:TPO:HG22	1.39	0.85
1:A:861:LEU:N	1:A:861:LEU:CD2	2.31	0.85
1:A:812:THR:HG22	1:A:821:ASN:O	1.77	0.84
1:A:829:PHE:CA	1:A:832:CYS:SG	2.65	0.84
1:A:1000:GLU:HB3	1:A:1009:LEU:HD11	1.57	0.84
1:A:1069:ILE:HD13	1:A:1069:ILE:H	1.43	0.82
1:B:795:HIS:O	1:B:902:ASP:OD1	1.97	0.82
1:A:808:SER:O	1:A:812:THR:HG23	1.79	0.80
1:B:829:PHE:CA	1:B:832:CYS:SG	2.68	0.80
1:A:796:ARG:NH1	1:A:831:LEU:O	2.15	0.80
1:B:725:HIS:HD2	1:B:727:ASN:H	1.28	0.80
1:B:898:THR:O	1:B:901:ILE:CG2	2.29	0.79
1:B:743:ILE:HG22	1:B:745:LEU:HD21	1.64	0.79
1:B:796:ARG:NH1	1:B:831:LEU:O	2.15	0.79
1:A:749:ASN:C	1:A:750:LEU:HD23	2.03	0.79
1:A:1036:ASN:HD21	1:A:1058:LYS:NZ	1.81	0.79
1:A:1108:ILE:HG22	1:A:1109:LEU:HD12	1.63	0.79
1:B:1026:THR:HG23	1:B:1034:MET:CE	2.13	0.78
1:A:1076:VAL:HG12	1:A:1077:PRO:HD3	1.65	0.78
1:A:725:HIS:CD2	1:A:727:ASN:H	2.01	0.78
1:A:898:THR:O	1:A:901:ILE:CG2	2.32	0.77
1:B:741:LEU:HD12	1:B:742:TYR:N	2.00	0.77
1:B:1081:TYR:CE2	1:B:1085:THR:HG21	2.19	0.77
1:B:1069:ILE:HD13	1:B:1069:ILE:N	2.00	0.76
1:B:743:ILE:CG2	1:B:745:LEU:HD21	2.16	0.76
1:A:743:ILE:CG2	1:A:745:LEU:HD21	2.16	0.75
1:A:743:ILE:HG22	1:A:745:LEU:HD21	1.68	0.75
1:B:1000:GLU:HB3	1:B:1009:LEU:HD11	1.67	0.75
1:A:1081:TYR:CE2	1:A:1085:THR:HG21	2.20	0.75
1:A:981:TRP:CE2	1:A:985:LYS:NZ	2.55	0.75
1:B:1108:ILE:HG22	1:B:1109:LEU:HD12	1.69	0.75
1:B:921:PHE:CE1	1:B:936:PHE:HB3	2.22	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1110:ARG:HG3	1:A:1110:ARG:HH11	1.54	0.73
1:B:1051:LEU:HD12	1:B:1051:LEU:O	1.89	0.73
1:A:1026:THR:HG23	1:A:1034:MET:HE1	1.72	0.72
1:B:1036:ASN:HD21	1:B:1058:LYS:NZ	1.88	0.72
1:B:749:ASN:C	1:B:750:LEU:HD23	2.11	0.71
1:A:921:PHE:CE1	1:A:936:PHE:HB3	2.25	0.71
1:B:898:THR:O	1:B:901:ILE:HG22	1.91	0.70
1:B:808:SER:O	1:B:812:THR:HG23	1.91	0.70
1:A:797:ASP:O	1:A:802:ASN:ND2	2.24	0.70
1:B:1083:TYR:CE2	1:B:1087:ARG:NH2	2.59	0.70
1:B:860:LEU:HD11	1:B:901:ILE:HD12	1.73	0.69
1:A:905:SER:O	1:A:909:VAL:HG23	1.92	0.69
1:A:795:HIS:CD2	1:A:798:LEU:CD2	2.76	0.69
1:B:905:SER:O	1:B:909:VAL:HG23	1.91	0.69
1:A:1069:ILE:HD13	1:A:1069:ILE:N	2.08	0.69
1:A:801:GLN:OE1	1:A:801:GLN:N	2.26	0.68
1:B:824:ILE:C	1:B:825:LEU:HD13	2.14	0.68
1:A:999:ILE:N	1:A:999:ILE:HD12	2.07	0.68
1:A:1051:LEU:HD12	1:A:1051:LEU:O	1.94	0.68
1:B:1110:ARG:HG3	1:B:1110:ARG:HH11	1.58	0.68
1:A:1036:ASN:HD21	1:A:1058:LYS:HZ3	1.43	0.67
1:B:1066:PRO:HB2	1:B:1069:ILE:HD11	1.75	0.67
1:B:1083:TYR:CD2	1:B:1087:ARG:NH2	2.63	0.67
1:B:795:HIS:CD2	1:B:798:LEU:CD2	2.77	0.67
1:B:1033:PHE:O	1:B:1036:ASN:OD1	2.14	0.66
1:B:842:PHE:CD2	1:B:844:TPO:HG22	2.22	0.66
1:B:718:LEU:HD22	1:B:793:ILE:HD13	1.77	0.66
1:A:795:HIS:CG	1:A:798:LEU:HD23	2.30	0.66
1:B:725:HIS:CD2	1:B:727:ASN:H	2.12	0.66
1:A:898:THR:O	1:A:901:ILE:HG23	1.95	0.66
1:B:795:HIS:CD2	1:B:798:LEU:HD21	2.31	0.66
1:B:999:ILE:HD12	1:B:999:ILE:N	2.11	0.66
1:A:859:GLU:OE1	1:A:965:PRO:HG3	1.95	0.66
1:A:1055:LEU:C	1:A:1055:LEU:HD23	2.15	0.66
1:B:981:TRP:CE2	1:B:985:LYS:NZ	2.64	0.65
1:A:795:HIS:CG	1:A:798:LEU:CD2	2.79	0.65
1:A:1076:VAL:HG12	1:A:1077:PRO:CD	2.26	0.65
1:A:741:LEU:HD12	1:A:742:TYR:N	2.11	0.65
1:A:750:LEU:HD23	1:A:750:LEU:N	2.11	0.65
1:B:797:ASP:O	1:B:802:ASN:ND2	2.29	0.65
1:B:1106:ASP:O	1:B:1110:ARG:HG2	1.95	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1076:VAL:HG12	1:B:1077:PRO:HD3	1.78	0.64
1:A:718:LEU:HD22	1:A:793:ILE:HD13	1.78	0.64
1:A:1026:THR:HG23	1:A:1034:MET:HE2	1.79	0.64
1:B:812:THR:CG2	1:B:821:ASN:O	2.46	0.64
1:B:718:LEU:HD22	1:B:793:ILE:CD1	2.28	0.64
1:B:859:GLU:OE1	1:B:965:PRO:HG3	1.98	0.63
1:B:743:ILE:HG22	1:B:745:LEU:CD2	2.29	0.62
1:B:914:LEU:O	1:B:943:CYS:HB2	1.99	0.62
1:A:685:SER:HA	1:B:682:TYR:CE2	2.34	0.62
1:A:1108:ILE:HG22	1:A:1109:LEU:CD1	2.29	0.62
1:A:743:ILE:HG22	1:A:745:LEU:CD2	2.29	0.62
1:B:1055:LEU:C	1:B:1055:LEU:HD23	2.20	0.62
1:B:749:ASN:CB	1:B:750:LEU:HD23	2.29	0.61
1:B:750:LEU:HD23	1:B:750:LEU:N	2.15	0.61
1:B:1065:LEU:N	1:B:1065:LEU:HD23	2.15	0.61
1:A:749:ASN:CB	1:A:750:LEU:HD23	2.31	0.61
1:A:718:LEU:HD22	1:A:793:ILE:CD1	2.29	0.61
1:A:1066:PRO:HB2	1:A:1069:ILE:HD11	1.82	0.61
1:A:1106:ASP:O	1:A:1110:ARG:HG2	2.00	0.61
1:B:805:VAL:HG23	1:B:824:ILE:CD1	2.31	0.61
2:A:1:IZA:O0	2:A:1:IZA:H7	1.99	0.60
1:B:898:THR:HG23	1:B:900:SER:OG	2.01	0.60
1:A:1083:TYR:CE2	1:A:1087:ARG:NH2	2.69	0.60
1:A:1081:TYR:O	1:A:1085:THR:HG23	2.01	0.60
1:A:898:THR:O	1:A:901:ILE:HG22	2.01	0.59
1:B:946:ASP:HB3	1:B:949:LEU:HD13	1.83	0.59
1:B:956:LEU:HD12	1:B:956:LEU:O	2.02	0.59
2:B:1:IZA:O0	2:B:1:IZA:H7	2.03	0.59
1:A:946:ASP:HB3	1:A:949:LEU:HD13	1.85	0.58
1:B:795:HIS:CG	1:B:798:LEU:CD2	2.86	0.58
1:B:716:ILE:HG22	1:B:717:LYS:N	2.19	0.58
1:B:1026:THR:HG23	1:B:1034:MET:HE1	1.85	0.58
1:B:898:THR:O	1:B:901:ILE:HG23	2.03	0.58
1:B:1076:VAL:HG12	1:B:1077:PRO:CD	2.34	0.57
1:A:1083:TYR:CD2	1:A:1087:ARG:NH2	2.72	0.57
1:B:712:ALA:CB	1:B:741:LEU:HD21	2.35	0.57
1:B:741:LEU:HD12	1:B:741:LEU:C	2.25	0.57
1:A:1020:ILE:HD13	1:A:1025:TRP:HB3	1.86	0.57
1:A:685:SER:HA	1:B:682:TYR:CZ	2.39	0.56
1:B:1026:THR:HG23	1:B:1034:MET:HE2	1.87	0.56
1:B:805:VAL:HG23	1:B:824:ILE:HD13	1.86	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:956:LEU:HD12	1:B:956:LEU:C	2.25	0.56
1:A:956:LEU:HD12	1:A:956:LEU:O	2.05	0.56
1:A:999:ILE:N	1:A:999:ILE:CD1	2.68	0.56
1:B:1051:LEU:HD12	1:B:1051:LEU:C	2.26	0.56
1:A:795:HIS:CD2	1:A:798:LEU:HD21	2.41	0.55
1:A:1033:PHE:C	1:A:1033:PHE:CD2	2.79	0.55
1:B:861:LEU:HD13	1:B:928:GLU:HG3	1.89	0.55
1:B:795:HIS:CG	1:B:798:LEU:HD23	2.42	0.55
1:B:801:GLN:N	1:B:801:GLN:OE1	2.40	0.55
1:B:921:PHE:CD1	1:B:936:PHE:HB3	2.42	0.54
1:B:782:ALA:HB3	1:B:975:LEU:HD21	1.89	0.54
1:B:1081:TYR:O	1:B:1085:THR:HG23	2.07	0.54
1:B:1066:PRO:CB	1:B:1069:ILE:HD11	2.38	0.54
1:A:824:ILE:C	1:A:825:LEU:HD13	2.28	0.54
1:B:977:HIS:ND1	1:B:978:PRO:HD2	2.23	0.53
1:A:805:VAL:HG23	1:A:824:ILE:HD13	1.89	0.53
1:B:748:CYS:SG	1:B:825:LEU:HD23	2.48	0.53
1:B:781:ILE:HG12	1:B:824:ILE:HG21	1.90	0.53
1:B:749:ASN:HB2	1:B:750:LEU:HD23	1.91	0.53
1:A:860:LEU:HD11	1:A:901:ILE:HD12	1.91	0.53
1:B:1036:ASN:HD21	1:B:1058:LYS:HZ3	1.56	0.52
1:B:1036:ASN:HD21	1:B:1058:LYS:HZ2	1.56	0.52
1:A:775:ILE:HD13	1:A:775:ILE:N	2.25	0.52
1:A:956:LEU:HD12	1:A:956:LEU:C	2.28	0.52
1:B:795:HIS:CG	1:B:798:LEU:HD21	2.44	0.52
1:A:805:VAL:HG23	1:A:824:ILE:CD1	2.40	0.52
1:A:812:THR:CG2	1:A:821:ASN:O	2.54	0.52
1:B:841:SEP:HA	1:B:897:LEU:O	2.09	0.51
1:B:952:GLU:OE1	1:B:986:LYS:NZ	2.38	0.51
1:A:712:ALA:CB	1:A:741:LEU:HD21	2.40	0.51
1:A:795:HIS:CG	1:A:798:LEU:HD21	2.46	0.51
1:A:1036:ASN:ND2	1:A:1058:LYS:NZ	2.55	0.51
1:A:741:LEU:HD12	1:A:741:LEU:C	2.30	0.51
1:A:1080:PHE:CD1	1:A:1080:PHE:C	2.83	0.51
1:A:946:ASP:C	1:A:946:ASP:OD1	2.49	0.51
1:A:1106:ASP:C	1:A:1106:ASP:OD1	2.49	0.51
1:B:1033:PHE:C	1:B:1033:PHE:CD2	2.85	0.51
1:A:716:ILE:HG22	1:A:717:LYS:N	2.26	0.51
1:A:691:GLN:HG2	1:A:747:LEU:HD11	1.93	0.50
1:A:921:PHE:CD1	1:A:936:PHE:HB3	2.45	0.50
1:A:977:HIS:ND1	1:A:978:PRO:HD2	2.25	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:842:PHE:CD2	1:A:844:TPO:HG22	2.31	0.50
1:B:843:ARG:O	1:B:844:TPO:C	2.59	0.50
1:B:999:ILE:N	1:B:999:ILE:CD1	2.74	0.50
1:B:1076:VAL:HG12	1:B:1077:PRO:N	2.27	0.50
1:B:1108:ILE:HG22	1:B:1109:LEU:CD1	2.41	0.49
1:A:1104:SER:O	1:A:1110:ARG:CD	2.60	0.49
1:A:1096:TYR:CE1	1:A:1113:LEU:HD12	2.48	0.49
1:B:782:ALA:CB	1:B:975:LEU:HD21	2.43	0.49
1:A:786:ALA:HB2	1:A:971:ALA:HB1	1.94	0.48
1:A:953:ALA:O	1:A:957:ILE:HG13	2.14	0.48
1:B:1003:ASP:CB	1:B:1004:PRO:CD	2.91	0.48
1:A:752:LEU:HD21	1:A:913:ILE:HD11	1.95	0.48
1:A:987:LEU:O	1:A:987:LEU:HD12	2.14	0.48
1:A:907:GLY:HA2	1:A:960:MET:HE1	1.96	0.48
1:A:999:ILE:CD1	1:A:999:ILE:H	2.25	0.48
1:A:1006:SER:H	1:A:1009:LEU:HD12	1.79	0.48
1:A:1096:TYR:CE1	1:A:1113:LEU:CD1	2.96	0.48
1:A:937:SER:O	1:A:938:LEU:HD23	2.14	0.48
1:A:749:ASN:HB2	1:A:750:LEU:HD23	1.94	0.47
1:B:1044:HIS:CB	1:B:1047:LYS:HD2	2.43	0.47
1:A:795:HIS:O	1:A:902:ASP:OD1	2.32	0.47
1:A:907:GLY:HA2	1:A:960:MET:CE	2.44	0.47
1:A:807:THR:O	1:A:812:THR:HG21	2.13	0.47
1:A:898:THR:HG23	1:A:900:SER:OG	2.14	0.47
1:B:1080:PHE:CD1	1:B:1080:PHE:C	2.87	0.47
1:B:915:SER:HB2	1:B:918:LYS:HB2	1.95	0.47
1:A:1051:LEU:HD12	1:A:1051:LEU:C	2.33	0.47
1:B:809:SER:O	1:B:813:ALA:HB2	2.15	0.47
1:A:781:ILE:HG12	1:A:824:ILE:HG21	1.96	0.47
1:B:775:ILE:HD13	1:B:775:ILE:N	2.30	0.46
1:B:868:GLN:H	1:B:868:GLN:HG3	1.20	0.46
1:A:1036:ASN:HD21	1:A:1058:LYS:HZ2	1.63	0.46
1:B:691:GLN:HG2	1:B:747:LEU:HD11	1.97	0.46
1:B:860:LEU:HD11	1:B:901:ILE:CD1	2.43	0.46
1:B:1000:GLU:HG3	1:B:1009:LEU:HG	1.96	0.46
1:A:751:ASN:OD1	1:A:751:ASN:C	2.54	0.46
1:A:1000:GLU:HG3	1:A:1009:LEU:HG	1.98	0.46
1:A:809:SER:O	1:A:813:ALA:HB2	2.16	0.46
1:A:805:VAL:CG2	1:A:824:ILE:HD13	2.46	0.45
1:B:752:LEU:HD21	1:B:913:ILE:HD11	1.98	0.45
1:B:805:VAL:CG2	1:B:824:ILE:CD1	2.93	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:919:HIS:ND1	1:B:920:PRO:HD2	2.31	0.45
1:A:723:ASP:HB2	1:A:730:ARG:HA	1.97	0.45
1:A:914:LEU:O	1:A:943:CYS:HB2	2.16	0.45
1:B:1096:TYR:CE1	1:B:1113:LEU:CD1	3.00	0.45
1:B:907:GLY:HA2	1:B:960:MET:HE1	1.98	0.45
1:B:907:GLY:HA2	1:B:960:MET:CE	2.47	0.45
1:A:805:VAL:CG2	1:A:824:ILE:CD1	2.94	0.45
1:A:843:ARG:O	1:A:844:TPO:C	2.64	0.45
1:A:915:SER:HB2	1:A:918:LYS:HB2	1.98	0.45
1:A:1029:PHE:CD2	1:A:1033:PHE:CE1	3.05	0.45
1:B:859:GLU:OE1	1:B:968:ARG:NH2	2.47	0.45
1:B:1069:ILE:H	1:B:1069:ILE:CD1	2.10	0.45
1:A:807:THR:O	1:A:812:THR:CG2	2.65	0.44
1:A:841:SEP:HA	1:A:897:LEU:O	2.17	0.44
1:B:719:LEU:HD13	1:B:731:TYR:HB2	1.98	0.44
1:B:1044:HIS:HB3	1:B:1047:LYS:HD2	1.99	0.44
1:A:919:HIS:ND1	1:A:920:PRO:HD2	2.32	0.44
1:A:1044:HIS:CB	1:A:1047:LYS:HD2	2.47	0.44
1:A:1066:PRO:CB	1:A:1069:ILE:HD11	2.47	0.44
1:B:841:SEP:O1P	1:B:896:ARG:CB	2.66	0.44
1:B:911:TYR:O	1:B:915:SER:OG	2.27	0.44
1:A:1028:LYS:HB3	1:A:1087:ARG:HG2	1.99	0.44
1:A:1065:LEU:N	1:A:1065:LEU:HD23	2.31	0.44
1:B:749:ASN:OD1	1:B:807:THR:HG23	2.17	0.44
1:A:997:LEU:HD21	1:A:1012:PHE:CE1	2.52	0.44
1:A:1072:LEU:C	1:A:1074:GLY:H	2.21	0.44
1:A:1076:VAL:HG12	1:A:1077:PRO:N	2.32	0.44
1:A:981:TRP:HB2	1:A:986:LYS:HE2	2.00	0.44
1:B:1029:PHE:CD2	1:B:1033:PHE:CE1	3.06	0.44
1:A:857:ALA:HA	1:A:904:PHE:CD1	2.53	0.44
1:A:921:PHE:HD1	1:A:935:ILE:O	2.00	0.44
1:B:786:ALA:HB2	1:B:971:ALA:HB1	2.00	0.44
1:A:1113:LEU:HB3	1:A:1114:TYR:CE1	2.53	0.43
1:B:805:VAL:CG2	1:B:824:ILE:HD13	2.48	0.43
1:B:1028:LYS:HB3	1:B:1087:ARG:HG2	1.99	0.43
1:B:1015:GLY:O	1:B:1016:SER:C	2.56	0.43
1:B:1069:ILE:O	1:B:1073:MET:N	2.33	0.43
1:A:748:CYS:SG	1:A:825:LEU:HD23	2.58	0.43
1:A:795:HIS:ND1	1:A:798:LEU:HD23	2.33	0.43
1:A:1110:ARG:HH11	1:A:1110:ARG:CG	2.25	0.43
1:A:743:ILE:HG21	1:A:745:LEU:HD21	1.99	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:825:LEU:HD13	1:B:825:LEU:N	2.33	0.43
1:B:937:SER:O	1:B:938:LEU:HD23	2.18	0.43
1:B:1066:PRO:O	1:B:1067:GLU:C	2.56	0.43
1:A:829:PHE:CB	1:A:832:CYS:HG	2.30	0.43
1:A:977:HIS:CG	1:A:978:PRO:HD2	2.54	0.43
1:A:988:GLU:O	1:A:989:PHE:C	2.57	0.43
1:B:999:ILE:CD1	1:B:999:ILE:H	2.32	0.43
1:B:1113:LEU:HB3	1:B:1114:TYR:CE1	2.54	0.42
1:A:1092:LEU:HD22	1:A:1092:LEU:O	2.19	0.42
1:B:725:HIS:CD2	1:B:726:PRO:HD2	2.54	0.42
1:A:1044:HIS:HB3	1:A:1047:LYS:HD2	2.02	0.42
1:A:725:HIS:CD2	1:A:726:PRO:N	2.88	0.42
1:A:829:PHE:CB	1:A:832:CYS:SG	3.07	0.42
1:A:952:GLU:OE1	1:A:986:LYS:NZ	2.44	0.42
1:A:1055:LEU:HD23	1:A:1055:LEU:O	2.19	0.42
1:B:999:ILE:HG22	1:B:999:ILE:O	2.19	0.42
1:B:986:LYS:O	1:B:989:PHE:HB3	2.20	0.42
1:B:977:HIS:CE1	1:B:978:PRO:HD2	2.54	0.42
1:A:1113:LEU:CB	1:A:1114:TYR:CD1	3.03	0.42
1:B:674:VAL:O	1:B:674:VAL:HG23	2.20	0.42
1:A:780:GLN:OE1	1:A:824:ILE:N	2.51	0.42
1:A:785:VAL:HG11	1:A:906:MET:HE2	2.01	0.41
1:A:1108:ILE:HG22	1:A:1109:LEU:N	2.34	0.41
1:B:781:ILE:HD13	1:B:803:ILE:HD13	2.02	0.41
1:A:977:HIS:CE1	1:A:978:PRO:HD2	2.56	0.41
1:A:918:LYS:HE2	1:A:940:GLU:OE1	2.21	0.41
1:B:824:ILE:C	1:B:825:LEU:CD1	2.87	0.41
1:A:921:PHE:CD2	1:A:931:ILE:HG12	2.55	0.41
1:B:795:HIS:O	1:B:902:ASP:CG	2.58	0.41
1:A:778:LEU:O	1:A:779:ARG:C	2.59	0.41
1:A:960:MET:HB3	1:A:960:MET:HE2	1.99	0.41
1:B:842:PHE:CD1	1:B:842:PHE:N	2.89	0.41
1:B:1110:ARG:HH11	1:B:1110:ARG:CG	2.28	0.41
1:B:1113:LEU:HB3	1:B:1114:TYR:CD1	2.55	0.41
1:A:719:LEU:HD23	1:A:719:LEU:HA	1.85	0.41
1:B:964:ASP:OD1	1:B:966:LEU:HD12	2.20	0.41
1:B:991:LEU:HD11	1:B:1059:TYR:CD1	2.56	0.41
1:A:903:ILE:N	1:A:903:ILE:CD1	2.84	0.41
1:B:957:ILE:O	1:B:958:SER:C	2.58	0.41
1:A:781:ILE:HD13	1:A:803:ILE:HD13	2.02	0.41
1:A:1033:PHE:CD2	1:A:1033:PHE:O	2.73	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:712:ALA:HB1	1:B:741:LEU:HD21	2.03	0.41
1:B:981:TRP:NE1	1:B:985:LYS:NZ	2.68	0.41
1:A:964:ASP:OD1	1:A:966:LEU:HD12	2.21	0.41
1:B:923:ASP:O	1:B:926:SER:N	2.54	0.41
1:B:988:GLU:O	1:B:989:PHE:C	2.59	0.41
1:A:1113:LEU:CB	1:A:1114:TYR:CE1	3.03	0.40
1:A:1113:LEU:HB2	1:A:1114:TYR:CD1	2.56	0.40
1:B:776:SER:O	1:B:780:GLN:HG3	2.22	0.40
1:B:792:LYS:HB3	1:B:835:LEU:HB2	2.04	0.40
1:B:829:PHE:CB	1:B:832:CYS:SG	3.09	0.40
1:B:1058:LYS:HB3	1:B:1073:MET:HE1	2.02	0.40

All (2) 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:A:867:LEU:CD1	1:A:1063:MET:SD[3_455]	1.89	0.31
1:A:933:ARG:NH2	1:A:1010:MET:SD[6_565]	2.13	0.07

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	399/434 (92%)	373 (94%)	24 (6%)	2 (0%)	29	63
1	B	399/434 (92%)	373 (94%)	24 (6%)	2 (0%)	29	63
All	All	798/868 (92%)	746 (94%)	48 (6%)	4 (0%)	29	63

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1077	PRO

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Mol	Chain	Res	Type
1	B	1077	PRO
1	A	1004	PRO
1	B	1004	PRO

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	324/395 (82%)	251 (78%)	73 (22%)	1	3
1	B	324/395 (82%)	255 (79%)	69 (21%)	1	4
All	All	648/790 (82%)	506 (78%)	142 (22%)	1	4

All (142) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	685	SER
1	A	691	GLN
1	A	693	SER
1	A	703	ARG
1	A	705	LEU
1	A	716	ILE
1	A	720	THR
1	A	722	SER
1	A	734	SER
1	A	736	THR
1	A	737	THR
1	A	741	LEU
1	A	745	LEU
1	A	750	LEU
1	A	772	TYR
1	A	773	ASN
1	A	775	ILE
1	A	777	LEU
1	A	796	ARG
1	A	799	LYS

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Full wwPDB X-ray Structure Validation Report 3LJ2

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Mol	Chain	Res	Type
1	A	805	VAL
1	A	809	SER
1	A	816	GLN
1	A	821	ASN
1	A	823	ARG
1	A	825	LEU
1	A	826	ILE
1	A	833	LYS
1	A	859	GLU
1	A	861	LEU
1	A	864	SER
1	A	866	ASN
1	A	867	LEU
1	A	901	ILE
1	A	903	ILE
1	A	905	SER
1	A	918	LYS
1	A	928	GLU
1	A	929	SER
1	A	932	ILE
1	A	942	LYS
1	A	943	CYS
1	A	952	GLU
1	A	958	SER
1	A	961	ILE
1	A	966	LEU
1	A	970	THR
1	A	976	ARG
1	A	999	ILE
1	A	1000	GLU
1	A	1006	SER
1	A	1013	ASP
1	A	1024	ASP
1	A	1026	THR
1	A	1032	THR
1	A	1033	PHE
1	A	1034	MET
1	A	1036	ASN
1	A	1041	ARG
1	A	1051	LEU
1	A	1052	LEU
1	A	1056	ARG

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Mol	Chain	Res	Type
1	A	1060	HIS
1	A	1068	ASP
1	A	1069	ILE
1	A	1077	PRO
1	A	1080	PHE
1	A	1085	THR
1	A	1093	ILE
1	A	1104	SER
1	A	1106	ASP
1	A	1110	ARG
1	A	1113	LEU
1	B	685	SER
1	B	691	GLN
1	B	693	SER
1	B	703	ARG
1	B	705	LEU
1	B	716	ILE
1	B	720	THR
1	B	722	SER
1	B	734	SER
1	B	736	THR
1	B	737	THR
1	B	741	LEU
1	B	745	LEU
1	B	750	LEU
1	B	773	ASN
1	B	775	ILE
1	B	777	LEU
1	B	796	ARG
1	B	799	LYS
1	B	805	VAL
1	B	809	SER
1	B	816	GLN
1	B	821	ASN
1	B	823	ARG
1	B	825	LEU
1	B	826	ILE
1	B	833	LYS
1	B	856	ARG
1	B	859	GLU
1	B	867	LEU
1	B	868	GLN

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Mol	Chain	Res	Type
1	B	901	ILE
1	B	903	ILE
1	B	905	SER
1	B	906	MET
1	B	918	LYS
1	B	926	SER
1	B	928	GLU
1	B	929	SER
1	B	942	LYS
1	B	943	CYS
1	B	952	GLU
1	B	958	SER
1	B	961	ILE
1	B	966	LEU
1	B	970	THR
1	B	976	ARG
1	B	984	SER
1	B	999	ILE
1	B	1000	GLU
1	B	1006	SER
1	B	1013	ASP
1	B	1024	ASP
1	B	1026	THR
1	B	1032	THR
1	B	1033	PHE
1	B	1034	MET
1	B	1041	ARG
1	B	1052	LEU
1	B	1056	ARG
1	B	1068	ASP
1	B	1069	ILE
1	B	1077	PRO
1	B	1085	THR
1	B	1093	ILE
1	B	1104	SER
1	B	1106	ASP
1	B	1110	ARG
1	B	1113	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	725	HIS
1	A	727	ASN
1	A	787	HIS
1	A	866	ASN
1	A	1036	ASN
1	A	1090	ASN
1	B	725	HIS
1	B	727	ASN
1	B	787	HIS
1	B	1036	ASN
1	B	1090	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

6 non-standard protein/DNA/RNA residues 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	#$|Z| > 2$
1	SEP	B	841	1	8,9,10	2.05	3 (37%)	8,12,14	1.54	2 (25%)
1	SEP	A	841	1	8,9,10	1.92	2 (25%)	8,12,14	1.59	2 (25%)
1	SEP	A	840	1	8,9,10	2.22	3 (37%)	8,12,14	2.35	2 (25%)
1	SEP	B	840	1	8,9,10	2.33	3 (37%)	8,12,14	2.24	1 (12%)
1	TPO	B	844	1	8,10,11	1.38	1 (12%)	10,14,16	1.03	1 (10%)
1	TPO	A	844	1	8,10,11	0.93	0	10,14,16	1.23	1 (10%)

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
1	SEP	B	841	1	-	2/5/8/10	-
1	SEP	A	841	1	-	2/5/8/10	-
1	SEP	A	840	1	-	2/5/8/10	-
1	SEP	B	840	1	-	3/5/8/10	-
1	TPO	B	844	1	-	6/9/11/13	-
1	TPO	A	844	1	-	3/9/11/13	-

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	840	SEP	P-O1P	4.94	1.66	1.50
1	A	840	SEP	P-O1P	4.83	1.66	1.50
1	B	841	SEP	P-O1P	4.39	1.64	1.50
1	A	841	SEP	P-O1P	4.04	1.63	1.50
1	B	844	TPO	P-OG1	3.26	1.65	1.59
1	A	840	SEP	P-O3P	2.86	1.65	1.54
1	B	840	SEP	P-O3P	2.81	1.65	1.54
1	B	840	SEP	P-O2P	2.58	1.64	1.54
1	B	841	SEP	P-O3P	2.29	1.63	1.54
1	B	841	SEP	P-O2P	2.24	1.63	1.54
1	A	841	SEP	P-O3P	2.19	1.63	1.54
1	A	840	SEP	P-O2P	2.19	1.63	1.54

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	840	SEP	P-OG-CB	-5.44	103.31	118.30
1	A	840	SEP	P-OG-CB	-4.42	106.13	118.30
1	A	840	SEP	OG-CB-CA	4.08	112.11	108.14
1	A	841	SEP	OG-CB-CA	3.34	111.40	108.14
1	B	841	SEP	P-OG-CB	-3.06	109.88	118.30
1	B	841	SEP	OG-CB-CA	2.54	110.62	108.14
1	A	844	TPO	O3P-P-O2P	2.33	116.56	107.64
1	A	841	SEP	O3P-P-OG	2.02	112.10	106.73
1	B	844	TPO	O3P-P-O2P	2.00	115.28	107.64

There are no chirality outliers.

All (18) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	840	SEP	N-CA-CB-OG

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W O R L D W I D E
wwPDB
PROTEIN DATA BANK

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Mol	Chain	Res	Type	Atoms
1	A	841	SEP	CB-OG-P-O2P
1	A	841	SEP	CB-OG-P-O3P
1	A	844	TPO	N-CA-CB-OG1
1	A	844	TPO	C-CA-CB-CG2
1	B	840	SEP	N-CA-CB-OG
1	B	840	SEP	CB-OG-P-O2P
1	B	840	SEP	CB-OG-P-O3P
1	B	841	SEP	CB-OG-P-O2P
1	B	841	SEP	CB-OG-P-O3P
1	B	844	TPO	N-CA-CB-OG1
1	A	840	SEP	CB-OG-P-O2P
1	B	844	TPO	C-CA-CB-CG2
1	A	844	TPO	N-CA-CB-CG2
1	B	844	TPO	N-CA-CB-CG2
1	B	844	TPO	CB-OG1-P-O1P
1	B	844	TPO	CB-OG1-P-O3P
1	B	844	TPO	O-C-CA-CB

There are no ring outliers.

6 monomers are involved in 11 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	B	841	SEP	2	0
1	A	841	SEP	1	0
1	A	840	SEP	1	0
1	B	840	SEP	1	0
1	B	844	TPO	3	0
1	A	844	TPO	3	0

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

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	#$|Z| > 2$
2	IZA	A	1	-	21,26,26	1.79	5 (23%)	28,41,41	1.48	3 (10%)
2	IZA	B	1	-	21,26,26	2.04	8 (38%)	28,41,41	1.15	3 (10%)

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	IZA	A	1	-	-	2/6/6/6	0/4/4/4
2	IZA	B	1	-	-	3/6/6/6	0/4/4/4

All (13) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1	IZA	C9-C10	4.44	1.50	1.41
2	A	1	IZA	C8-C10	3.67	1.48	1.41
2	B	1	IZA	C14-C2	-3.37	1.48	1.52
2	B	1	IZA	C13-C12	3.30	1.41	1.36
2	B	1	IZA	C8-C10	3.23	1.47	1.41
2	A	1	IZA	C9-C1	-3.05	1.39	1.45
2	A	1	IZA	C13-C12	3.02	1.40	1.36
2	B	1	IZA	C7-C6	2.98	1.41	1.36
2	A	1	IZA	C9-C10	2.92	1.47	1.41
2	B	1	IZA	C3-C0	-2.73	1.39	1.45
2	B	1	IZA	C9-C1	-2.37	1.40	1.45
2	B	1	IZA	C11-N2	2.18	1.36	1.33
2	A	1	IZA	C3-C0	-2.18	1.41	1.45

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	1	IZA	C12-C13-C9	3.71	122.97	119.77
2	A	1	IZA	C13-C12-N2	-3.66	120.21	123.81
2	B	1	IZA	C12-N2-C11	2.94	123.47	116.43
2	B	1	IZA	C5-C6-C7	-2.77	120.17	123.23
2	B	1	IZA	C6-C7-C8	2.68	121.34	119.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	1	IZA	C12-N2-C11	2.45	122.29	116.43

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	1	IZA	C15-C14-C2-N1
2	B	1	IZA	C16-C14-C2-N1
2	A	1	IZA	C17-C14-C2-N1
2	B	1	IZA	C17-C14-C2-N1
2	A	1	IZA	C15-C14-C2-N1

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1	IZA	1	0
2	B	1	IZA	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 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 IZA A 1

Bond lengths

Bond angles

Torsions

Rings

Ligand IZA B 1

Bond lengths

Bond angles

Torsions

Rings
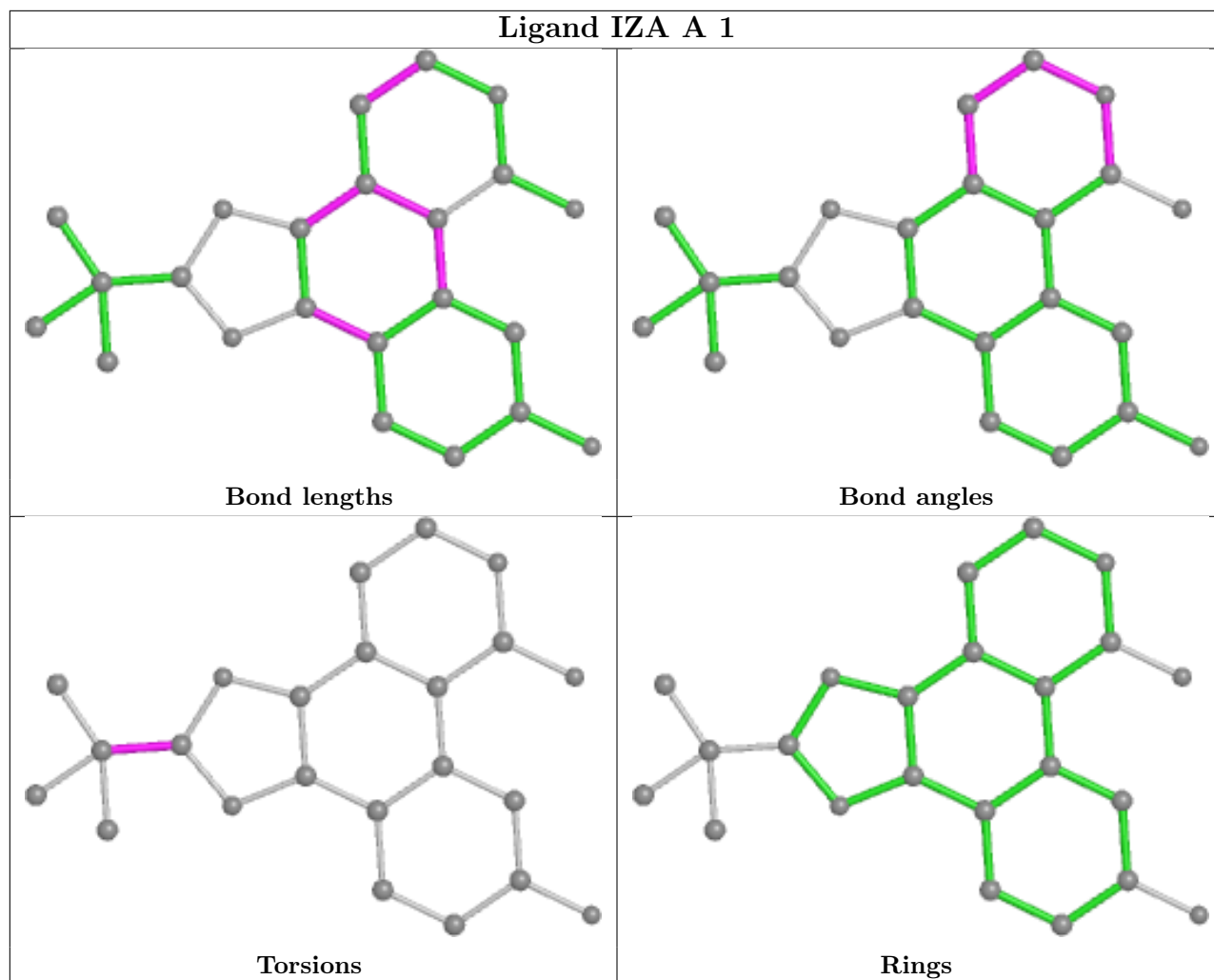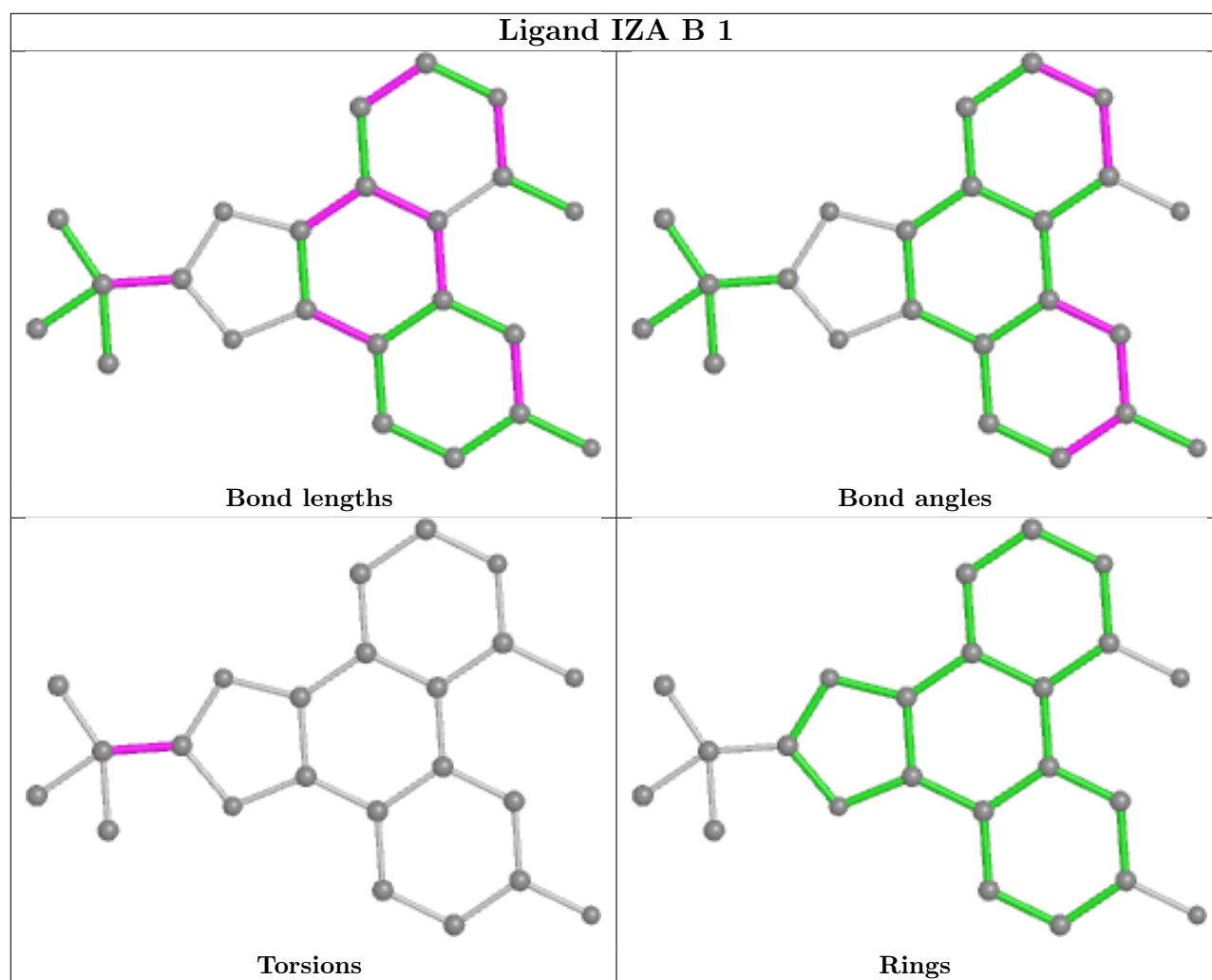
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

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, 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(Å^2)	Q<0.9
1	A	404/434 (93%)	0.59	18 (4%)	33 34	39, 40, 41, 41	0
1	B	404/434 (93%)	0.52	8 (1%)	65 64	39, 40, 41, 42	0
All	All	808/868 (93%)	0.55	26 (3%)	47 46	39, 40, 41, 42	0

All (26) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	838	GLY	4.7
1	A	818	GLY	4.0
1	A	838	GLY	3.6
1	A	1018	PHE	3.3
1	B	708	PHE	3.2
1	A	839	GLN	3.1
1	B	835	LEU	3.0
1	A	837	SER	3.0
1	A	1048	LEU	2.9
1	B	667	GLU	2.8
1	A	1012	PHE	2.8
1	A	905	SER	2.7
1	B	837	SER	2.7
1	A	817	THR	2.6
1	A	913	ILE	2.6
1	A	997	LEU	2.5
1	A	834	LYS	2.5
1	B	839	GLN	2.4
1	A	1004	PRO	2.3
1	A	971	ALA	2.3
1	B	701	VAL	2.3
1	A	1107	GLN	2.2
1	B	1099	VAL	2.2
1	A	835	LEU	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	1029	PHE	2.0
1	A	815	GLN	2.0

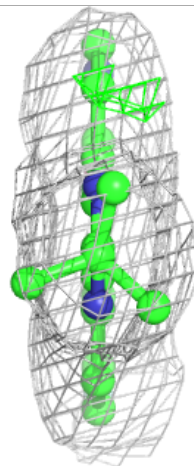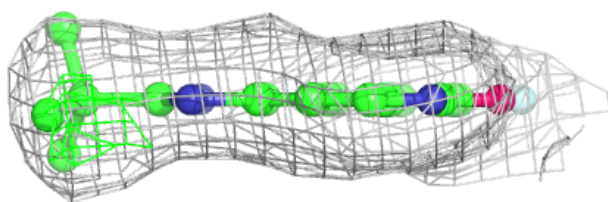## 6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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
1	SEP	B	840	10/11	0.71	0.34	40,41,41,43	0
1	SEP	A	840	10/11	0.76	0.23	40,41,41,43	0
1	SEP	A	841	10/11	0.77	0.16	40,40,41,42	0
1	SEP	B	841	10/11	0.84	0.20	40,40,41,42	0
1	TPO	A	844	11/12	0.86	0.26	40,40,41,42	0
1	TPO	B	844	11/12	0.91	0.17	40,40,41,42	0

6.3 Carbohydrates ⓘ

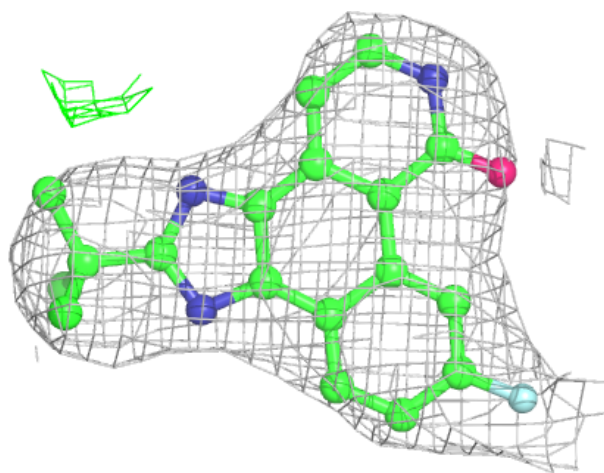There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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.
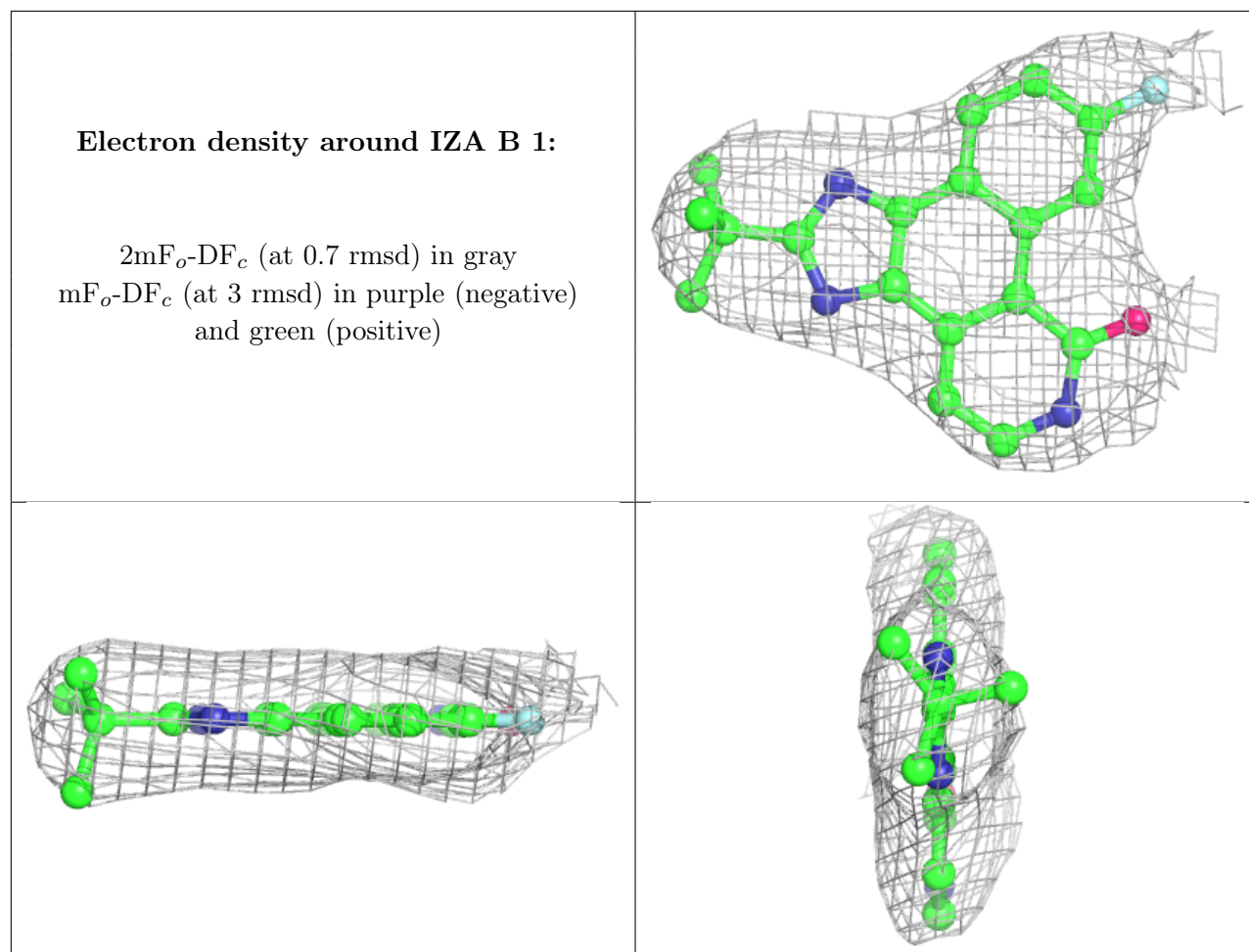
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	IZA	A	1	23/23	0.95	0.31	41,44,46,46	0
2	IZA	B	1	23/23	0.97	0.37	37,41,44,46	0

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 IZA A 1:

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

Electron density around IZA B 1:

$2mF_o$-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 ⓘ

There are no such residues in this entry.