



Full wwPDB X-ray Structure Validation Report ⓘ

Jul 27, 2026 – 10:22 am BST

PDB ID : 9T0R / pdb_00009t0r
Title : Crystal structure of SARS-CoV-2 Mpro in complex with GK729
Authors : El Kilani, H.; Hilgenfeld, R.
Deposited on : 2025-10-20
Resolution : 1.55 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4-5-2 with Phenix2.0
Mogul : 1.8.4, CSD as541be (2020)
Xtriage (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 : 9.0.015 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.50

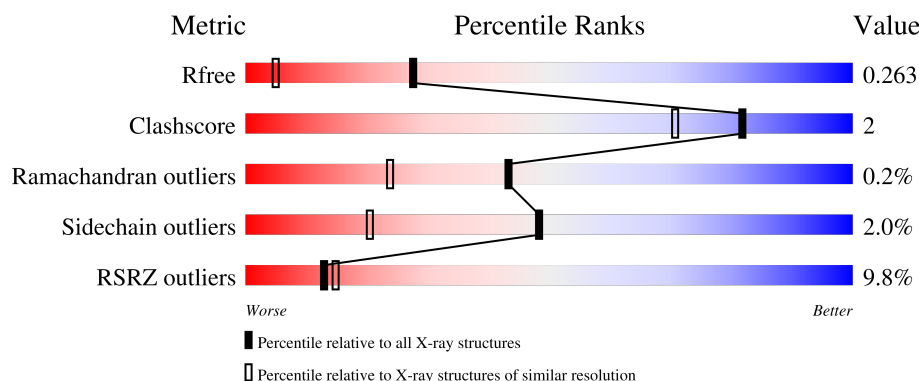
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.55 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	2145 (1.56-1.56)
Clashscore	190562	2189 (1.56-1.56)
Ramachandran outliers	187476	2153 (1.56-1.56)
Sidechain outliers	187428	2150 (1.56-1.56)
RSRZ outliers	180081	2146 (1.56-1.56)

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 $\leq 5\%$. 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	306	
1	B	306	
1	C	306	
1	D	306	

2 Entry composition [i](#)

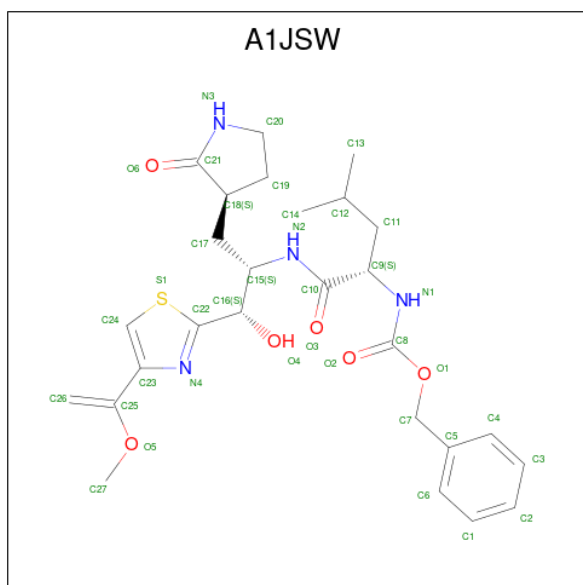
There are 3 unique types of molecules in this entry. The entry contains 10245 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 3C-like proteinase nsp5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	301	Total	C	N	O	S	0	0	0
			2329	1474	396	437	22			
1	B	306	Total	C	N	O	S	0	0	0
			2367	1499	402	444	22			
1	C	306	Total	C	N	O	S	0	0	0
			2367	1499	402	444	22			
1	D	306	Total	C	N	O	S	0	1	0
			2375	1504	405	444	22			

- Molecule 2 is (phenylmethyl) {N}-[(2 {S})-1-[[[(1 {S}),2 {S})-1-[4-(1-methoxyethenyl)-1,3-t hiazol-2-yl]-1-oxidanyl-3-[(3 {S})-2-oxidanylidene pyrrolidin-3-yl]propan-2-yl]amino]-4-m ethyl-1-oxidanylidene-pentan-2-yl]carbamate (CCD ID: A1JSW) (formula: C₂₇H₃₆N₄O₆S) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	S	0	0
			38	27	4	6	1		

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	B	1	Total	C	N	O	S	0	0
			38	27	4	6	1		
2	C	1	Total	C	N	O	S	0	0
			38	27	4	6	1		
2	D	1	Total	C	N	O	S	0	0
			38	27	4	6	1		

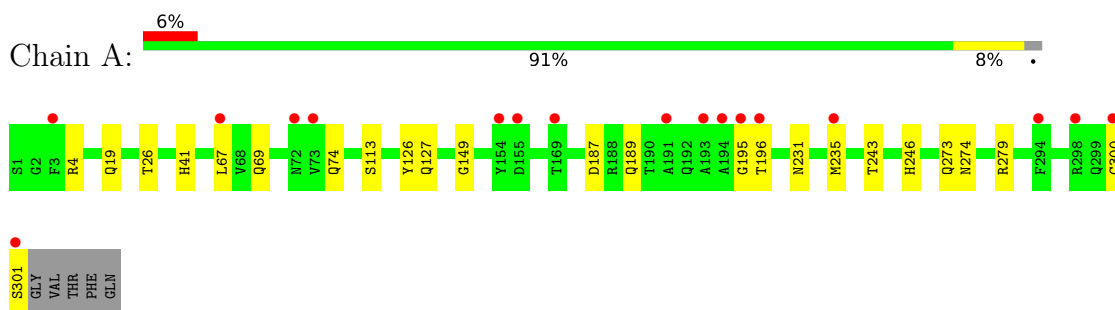
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	190	Total	O	0	0
			190	190		
3	B	213	Total	O	0	0
			213	213		
3	C	112	Total	O	0	0
			112	112		
3	D	140	Total	O	0	0
			140	140		

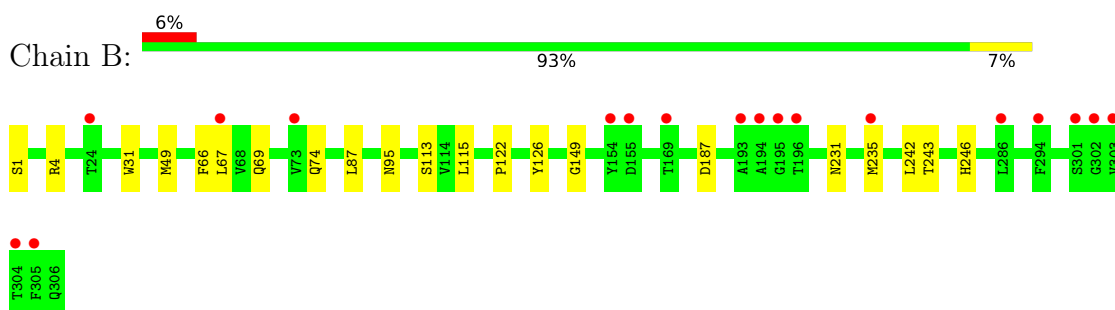
3 Residue-property plots [i](#)

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.

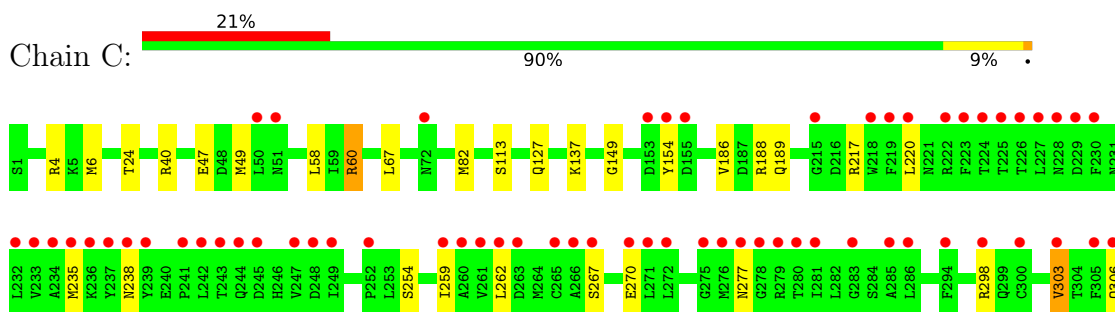
- Molecule 1: 3C-like proteinase nsp5



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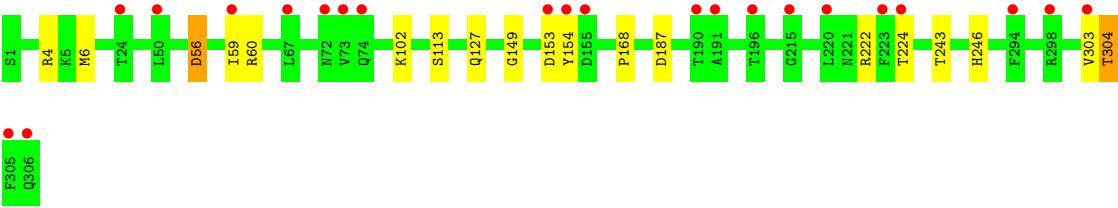


- Molecule 1: 3C-like proteinase nsp5



- Molecule 1: 3C-like proteinase nsp5





4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	67.75Å 102.79Å 104.70Å 90.00° 101.06° 90.00°	Depositor
Resolution (Å)	46.04 – 1.55 46.04 – 1.55	Depositor EDS
% Data completeness (in resolution range)	98.8 (46.04-1.55) 98.8 (46.04-1.55)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.71 (at 1.55Å)	Xtriage
Refinement program	REFMAC 5.8.0419	Depositor
R, R_{free}	0.216 , 0.245 0.234 , 0.263	Depositor DCC
R_{free} test set	10007 reflections (4.92%)	wwPDB-VP
Wilson B-factor (Å ²)	17.5	Xtriage
Anisotropy	0.536	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 26.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	10245	wwPDB-VP
Average B, all atoms (Å ²)	28.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 48.28 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 8.7942e-05. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

¹Intensities estimated from amplitudes.

²Theoretical 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: A1JSW

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	0.62	0/2381	0.98	1/3236 (0.0%)
1	B	0.63	0/2420	0.99	1/3289 (0.0%)
1	C	0.59	0/2420	0.99	1/3289 (0.0%)
1	D	0.59	0/2431	0.96	4/3303 (0.1%)
All	All	0.61	0/9652	0.98	7/13117 (0.1%)

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	1
1	B	0	1
1	D	0	1
All	All	0	3

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	187	ASP	CA-CB-CG	6.21	118.81	112.60
1	D	187	ASP	CA-CB-CG	5.56	118.16	112.60
1	C	127	GLN	N-CA-CB	-5.51	101.42	110.52
1	D	304	THR	N-CA-CB	-5.46	102.05	111.55
1	D	127	GLN	N-CA-CB	-5.43	101.56	110.52
1	D	304	THR	CB-CA-C	5.21	120.48	109.79
1	B	187	ASP	CA-CB-CG	5.16	117.76	112.60

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	279	ARG	Sidechain
1	B	4	ARG	Sidechain
1	D	4	ARG	Sidechain

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	2329	0	2277	13	0
1	B	2367	0	2313	12	0
1	C	2367	0	2313	18	0
1	D	2375	0	2326	7	0
2	A	38	0	0	1	0
2	B	38	0	0	1	0
2	C	38	0	0	0	0
2	D	38	0	0	0	0
3	A	190	0	0	2	0
3	B	213	0	0	1	0
3	C	112	0	0	3	0
3	D	140	0	0	1	0
All	All	10245	0	9229	47	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 2.

All (47) 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:C:60:ARG:HH11	1:C:60:ARG:HG2	1.33	0.92
1:C:24:THR:HG23	3:C:505:HOH:O	1.82	0.78
1:D:56:ASP:OD2	1:D:60:ARG:NH2	2.21	0.73
1:A:127:GLN:O	1:C:4:ARG:NH1	2.29	0.65
1:A:69:GLN:NE2	1:A:74:GLN:OE1	2.31	0.63
1:A:301:SER:HB3	3:A:659:HOH:O	1.98	0.63
1:B:231:ASN:HB3	1:B:235:MET:HE3	1.80	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:58:LEU:HD22	1:C:82:MET:HE3	1.82	0.62
1:C:24:THR:HG22	3:C:571:HOH:O	2.02	0.59
1:D:243:THR:H	1:D:246:HIS:CD2	2.22	0.57
1:C:217:ARG:HB3	1:C:220:LEU:HD12	1.90	0.54
1:B:69:GLN:NE2	1:B:74:GLN:OE1	2.40	0.53
1:C:60:ARG:HG2	1:C:60:ARG:NH1	2.14	0.52
1:A:273:GLN:HE21	1:A:274:ASN:HD21	1.57	0.52
1:A:4:ARG:NH1	3:A:505:HOH:O	2.45	0.50
1:B:49:MET:HE1	2:B:401:A1JSW:C26	2.41	0.50
1:A:19:GLN:HE21	1:A:26:THR:HG21	1.76	0.50
1:C:262:LEU:N	1:C:262:LEU:HD22	2.27	0.50
1:B:243:THR:H	1:B:246:HIS:CD2	2.29	0.49
1:C:40:ARG:HB2	1:C:82:MET:HE2	1.95	0.48
1:D:243:THR:H	1:D:246:HIS:HD2	1.61	0.48
1:C:49:MET:HE2	1:C:189:GLN:OE1	2.14	0.47
1:B:1:SER:HA	3:B:536:HOH:O	2.14	0.47
1:B:126:TYR:CD2	1:D:6:MET:HE2	2.49	0.47
1:D:153:ASP:OD1	1:D:153:ASP:C	2.58	0.46
1:C:60:ARG:HH11	1:C:60:ARG:CG	2.13	0.45
1:C:220:LEU:HA	1:C:267:SER:OG	2.18	0.44
1:B:115:LEU:HD11	1:B:122:PRO:HB3	2.00	0.44
1:D:113:SER:O	1:D:149:GLY:HA2	2.18	0.43
1:C:137:LYS:NZ	3:C:507:HOH:O	2.52	0.43
1:B:31:TRP:CD2	1:B:95:ASN:HB2	2.54	0.43
1:B:66:PHE:CE1	1:B:87:LEU:HD21	2.54	0.43
1:B:231:ASN:HB3	1:B:235:MET:CE	2.46	0.43
1:B:113:SER:O	1:B:149:GLY:HA2	2.18	0.42
1:C:113:SER:O	1:C:149:GLY:HA2	2.19	0.42
1:A:231:ASN:HB3	1:A:235:MET:HE3	2.01	0.42
1:D:168:PRO:HD2	3:D:613:HOH:O	2.20	0.42
1:A:126:TYR:CD2	1:C:6:MET:HE2	2.54	0.42
1:A:41:HIS:HD2	2:A:401:A1JSW:C26	2.34	0.41
1:C:186:VAL:HG23	1:C:188:ARG:HG2	2.02	0.41
1:A:113:SER:O	1:A:149:GLY:HA2	2.20	0.41
1:A:300:CYS:O	1:A:301:SER:HB3	2.21	0.41
1:C:254:SER:OG	1:C:259:ILE:O	2.36	0.41
1:A:273:GLN:HE21	1:A:274:ASN:ND2	2.17	0.41
1:B:242:LEU:HA	1:B:246:HIS:HD2	1.86	0.41
1:C:298:ARG:HA	1:C:303:VAL:HG13	2.02	0.40
1:A:243:THR:H	1:A:246:HIS:CD2	2.39	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	299/306 (98%)	290 (97%)	8 (3%)	1 (0%)	36	18
1	B	304/306 (99%)	297 (98%)	7 (2%)	0	100	100
1	C	304/306 (99%)	296 (97%)	7 (2%)	1 (0%)	36	18
1	D	305/306 (100%)	300 (98%)	5 (2%)	0	100	100
All	All	1212/1224 (99%)	1183 (98%)	27 (2%)	2 (0%)	43	24

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	195	GLY
1	C	154	TYR

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	259/263 (98%)	256 (99%)	3 (1%)	63	40
1	B	263/263 (100%)	262 (100%)	1 (0%)	84	73
1	C	263/263 (100%)	254 (97%)	9 (3%)	32	7
1	D	264/263 (100%)	256 (97%)	8 (3%)	36	9
All	All	1049/1052 (100%)	1028 (98%)	21 (2%)	48	20

All (21) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	67	LEU
1	A	189	GLN
1	A	196	THR
1	B	67	LEU
1	C	47	GLU
1	C	60	ARG
1	C	67	LEU
1	C	235	MET
1	C	238	ASN
1	C	270	GLU
1	C	277	ASN
1	C	303	VAL
1	C	306	GLN
1	D	56	ASP
1	D	59	ILE
1	D	102	LYS
1	D	154	TYR
1	D	222	ARG
1	D	224	THR
1	D	303	VAL
1	D	304	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (28) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	19	GLN
1	A	69	GLN
1	A	127	GLN
1	A	203	ASN
1	A	246	HIS
1	A	274	ASN
1	B	64	HIS
1	B	119	ASN
1	B	127	GLN
1	B	142	ASN
1	B	203	ASN
1	B	246	HIS
1	B	274	ASN
1	C	69	GLN
1	C	74	GLN
1	C	119	ASN
1	C	127	GLN
1	C	203	ASN

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Mol	Chain	Res	Type
1	C	273	GLN
1	C	274	ASN
1	C	306	GLN
1	D	74	GLN
1	D	127	GLN
1	D	142	ASN
1	D	203	ASN
1	D	246	HIS
1	D	273	GLN
1	D	274	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

4 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	A1JSW	A	401	1	40,40,40	1.11	1 (2%)	44,54,54	1.04	4 (9%)
2	A1JSW	D	401	1	40,40,40	1.06	1 (2%)	44,54,54	0.92	2 (4%)
2	A1JSW	B	401	1	40,40,40	0.97	1 (2%)	44,54,54	1.21	4 (9%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	A1JSW	C	401	1	40,40,40	1.06	2 (5%)	44,54,54	0.90	2 (4%)

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	A1JSW	A	401	1	-	3/35/49/49	0/3/3/3
2	A1JSW	D	401	1	-	3/35/49/49	0/3/3/3
2	A1JSW	B	401	1	-	4/35/49/49	0/3/3/3
2	A1JSW	C	401	1	-	1/35/49/49	0/3/3/3

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	401	A1JSW	C25-C23	-5.93	1.41	1.46
2	D	401	A1JSW	C25-C23	-5.69	1.41	1.46
2	C	401	A1JSW	C25-C23	-5.31	1.41	1.46
2	B	401	A1JSW	C25-C23	-4.73	1.42	1.46
2	C	401	A1JSW	C24-S1	2.12	1.76	1.72

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	401	A1JSW	O5-C25-C23	4.04	116.67	111.75
2	B	401	A1JSW	C23-N4-C22	3.87	114.67	110.62
2	B	401	A1JSW	O5-C25-C23	3.82	116.40	111.75
2	A	401	A1JSW	O5-C25-C23	3.81	116.38	111.75
2	B	401	A1JSW	S1-C22-N4	-3.67	109.47	114.25
2	A	401	A1JSW	O1-C7-C5	3.05	116.73	109.39
2	C	401	A1JSW	O5-C25-C23	3.01	115.42	111.75
2	B	401	A1JSW	C17-C15-N2	2.82	113.82	110.18
2	A	401	A1JSW	C23-N4-C22	2.66	113.41	110.62
2	C	401	A1JSW	O1-C7-C5	2.61	115.67	109.39
2	D	401	A1JSW	O1-C7-C5	2.33	115.00	109.39
2	A	401	A1JSW	S1-C22-N4	-2.03	111.61	114.25

There are no chirality outliers.

All (11) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	401	A1JSW	C23-C25-O5-C27
2	B	401	A1JSW	C23-C25-O5-C27
2	C	401	A1JSW	C23-C25-O5-C27
2	D	401	A1JSW	C23-C25-O5-C27
2	B	401	A1JSW	C15-C16-C22-N4
2	B	401	A1JSW	N2-C15-C16-O4
2	A	401	A1JSW	C15-C16-C22-S1
2	B	401	A1JSW	C15-C16-C22-S1
2	D	401	A1JSW	C15-C16-C22-S1
2	A	401	A1JSW	C15-C16-C22-N4
2	D	401	A1JSW	C15-C16-C22-N4

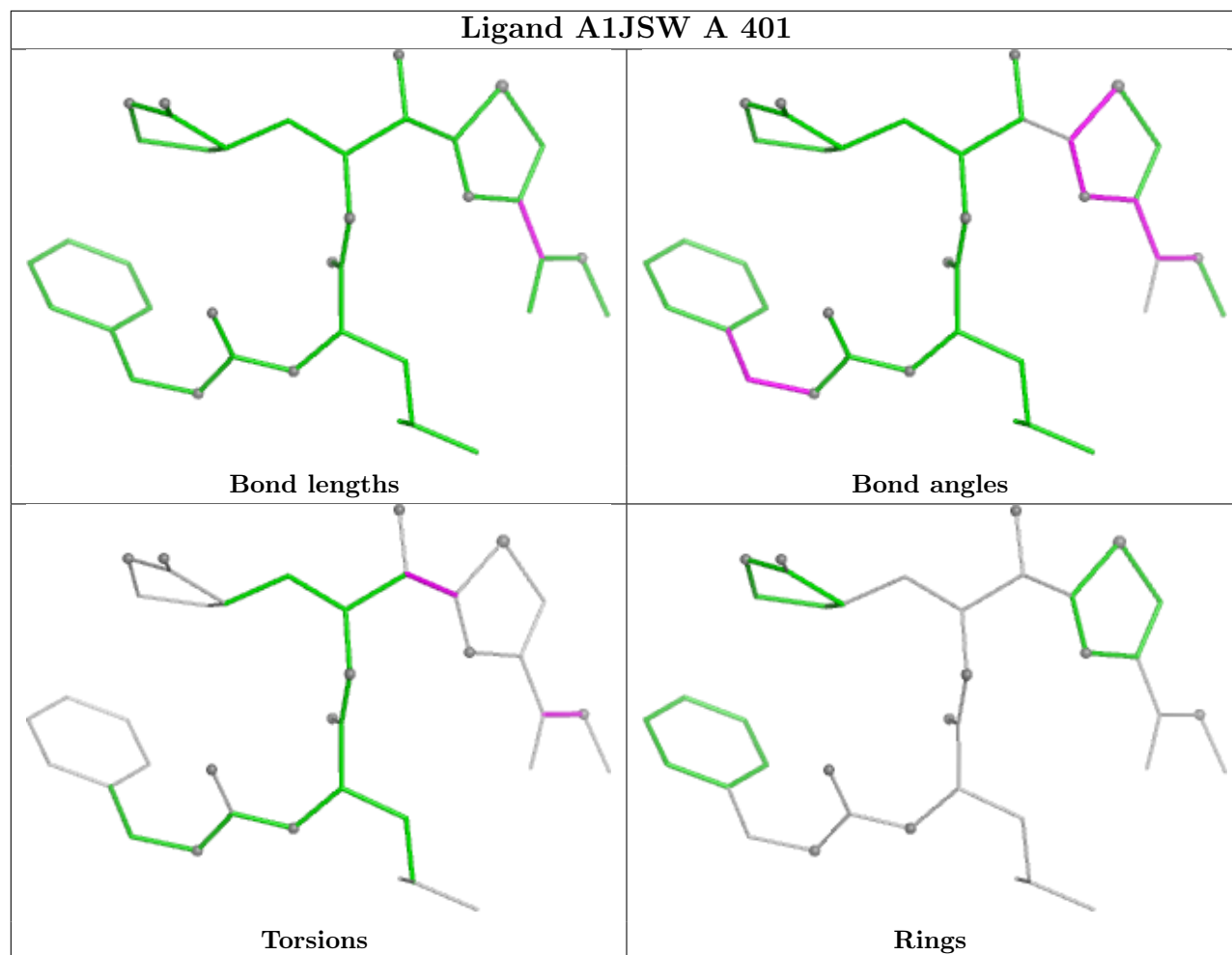
There are no ring outliers.

2 monomers are involved in 2 short contacts:

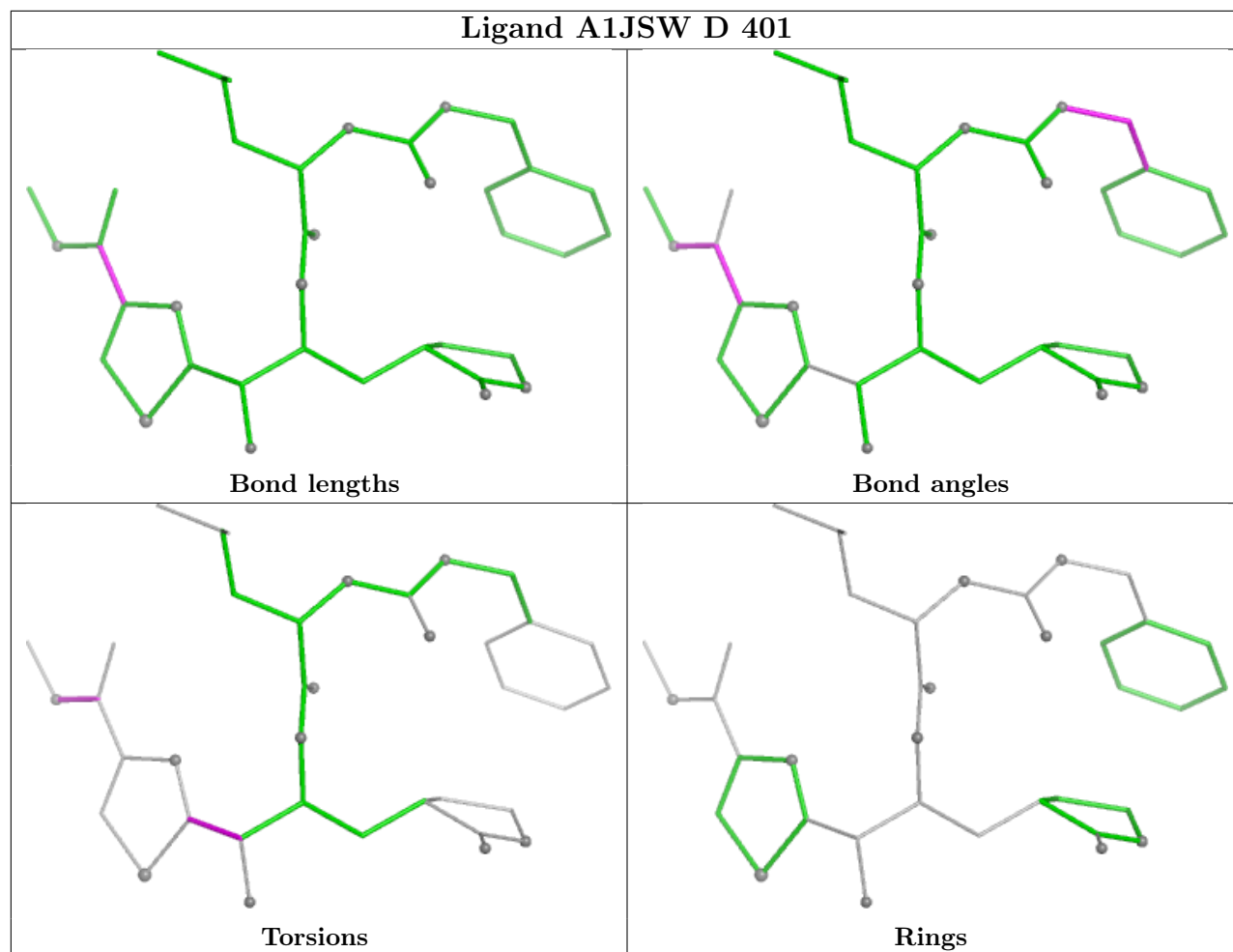
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	401	A1JSW	1	0
2	B	401	A1JSW	1	0

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.

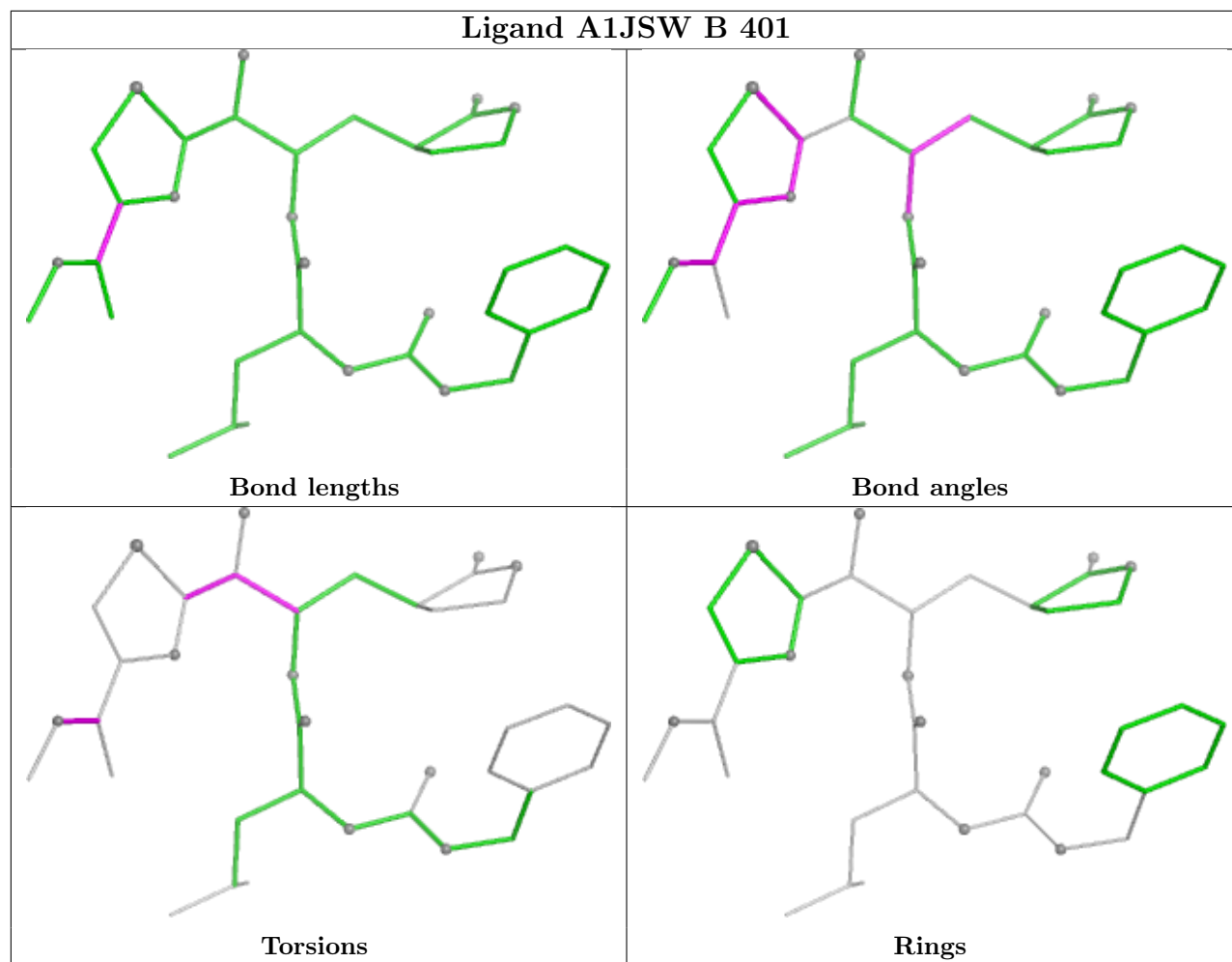
Ligand A1JSW A 401

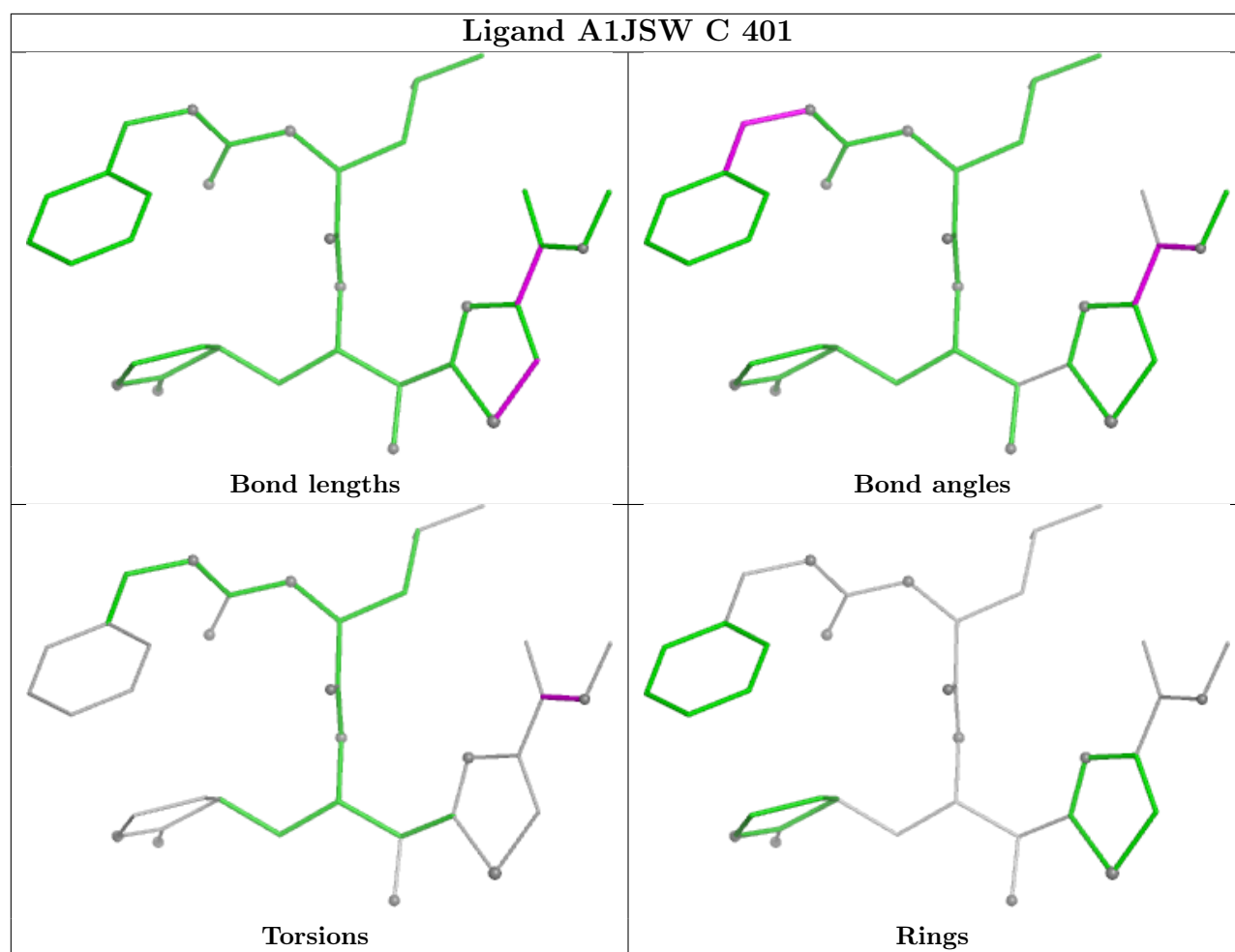


Ligand A1JSW D 401



Ligand A1JSW B 401





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	301/306 (98%)	0.44	17 (5%) 30 36	16, 25, 42, 66	0
1	B	306/306 (100%)	0.36	18 (5%) 28 34	16, 23, 40, 75	0
1	C	306/306 (100%)	0.95	63 (20%) 2 3	16, 29, 62, 82	0
1	D	306/306 (100%)	0.50	22 (7%) 21 25	14, 26, 47, 86	1 (0%)
All	All	1219/1224 (99%)	0.56	120 (9%) 13 15	14, 25, 50, 86	1 (0%)

All (120) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	154	TYR	6.3
1	D	154	TYR	6.1
1	D	223	PHE	6.0
1	C	50	LEU	5.8
1	A	194	ALA	5.5
1	B	154	TYR	5.4
1	C	223	PHE	5.3
1	C	262	LEU	5.1
1	B	303	VAL	5.0
1	C	235	MET	4.8
1	A	196	THR	4.3
1	C	234	ALA	4.3
1	C	232	LEU	4.3
1	C	227	LEU	4.2
1	C	306	GLN	4.2
1	C	233	VAL	4.2
1	C	230	PHE	4.1
1	A	154	TYR	4.1
1	C	237	TYR	4.0
1	A	195	GLY	3.9
1	A	301	SER	3.9

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Mol	Chain	Res	Type	RSRZ
1	C	271	LEU	3.8
1	C	283	GLY	3.7
1	A	294	PHE	3.7
1	B	305	PHE	3.6
1	C	224	THR	3.5
1	C	229	ASP	3.5
1	C	228	ASN	3.5
1	C	261	VAL	3.5
1	C	266	ALA	3.5
1	C	247	VAL	3.5
1	C	218	TRP	3.4
1	D	72	ASN	3.4
1	C	220	LEU	3.4
1	C	153	ASP	3.3
1	B	304	THR	3.3
1	C	276	MET	3.2
1	C	272	LEU	3.1
1	D	294	PHE	3.1
1	D	73	VAL	3.0
1	D	306	GLN	3.0
1	C	285	ALA	2.9
1	C	72	ASN	2.9
1	C	277	ASN	2.9
1	C	265	CYS	2.9
1	A	298	ARG	2.9
1	C	225	THR	2.9
1	D	303	VAL	2.9
1	C	242	LEU	2.9
1	C	294	PHE	2.8
1	D	67	LEU	2.8
1	C	226	THR	2.8
1	D	155	ASP	2.8
1	D	224	THR	2.8
1	A	67	LEU	2.8
1	A	73	VAL	2.7
1	C	260	ALA	2.7
1	B	302	GLY	2.7
1	C	241	PRO	2.7
1	B	194	ALA	2.7
1	C	275	GLY	2.7
1	A	72	ASN	2.7
1	B	195	GLY	2.6

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Mol	Chain	Res	Type	RSRZ
1	B	196	THR	2.6
1	C	155	ASP	2.6
1	C	281	ILE	2.6
1	B	301	SER	2.6
1	C	239	TYR	2.6
1	C	222	ARG	2.6
1	D	24	THR	2.5
1	D	50	LEU	2.5
1	A	235	MET	2.5
1	A	300	CYS	2.5
1	C	259	ILE	2.5
1	C	245	ASP	2.5
1	D	305	PHE	2.5
1	C	270	GLU	2.5
1	C	243	THR	2.5
1	D	191	ALA	2.4
1	D	215	GLY	2.4
1	B	73	VAL	2.4
1	A	193	ALA	2.4
1	B	193	ALA	2.4
1	C	244	GLN	2.4
1	C	278	GLY	2.4
1	D	298	ARG	2.4
1	C	303	VAL	2.4
1	C	238	ASN	2.4
1	B	155	ASP	2.4
1	C	252	PRO	2.4
1	B	67	LEU	2.3
1	C	236	LYS	2.3
1	D	59	ILE	2.3
1	C	298	ARG	2.3
1	A	3	PHE	2.3
1	C	249	ILE	2.2
1	A	191	ALA	2.2
1	D	220	LEU	2.2
1	B	235	MET	2.2
1	B	169	THR	2.2
1	C	267	SER	2.2
1	C	263	ASP	2.2
1	B	286	LEU	2.1
1	C	286	LEU	2.1
1	C	280	THR	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	155	ASP	2.1
1	B	294	PHE	2.1
1	D	196	THR	2.1
1	C	248	ASP	2.1
1	C	219	PHE	2.1
1	B	24	THR	2.1
1	C	300	CYS	2.1
1	D	153	ASP	2.1
1	D	190	THR	2.0
1	D	74	GLN	2.0
1	C	215	GLY	2.0
1	A	169	THR	2.0
1	C	279	ARG	2.0
1	C	305	PHE	2.0
1	C	51	ASN	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 oligosaccharides in this entry.

6.4 Ligands [i](#)

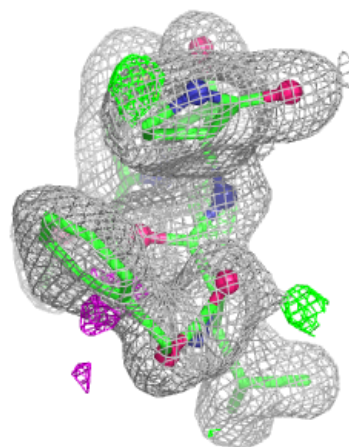
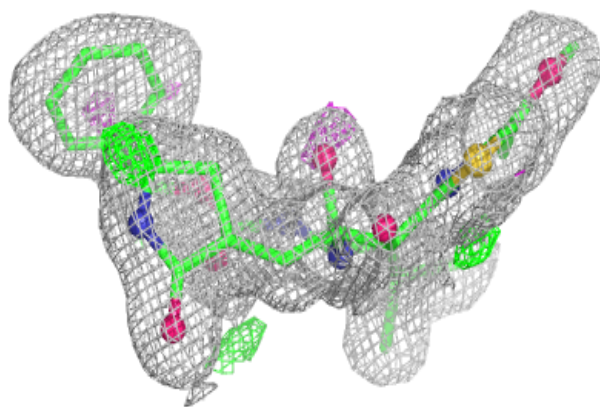
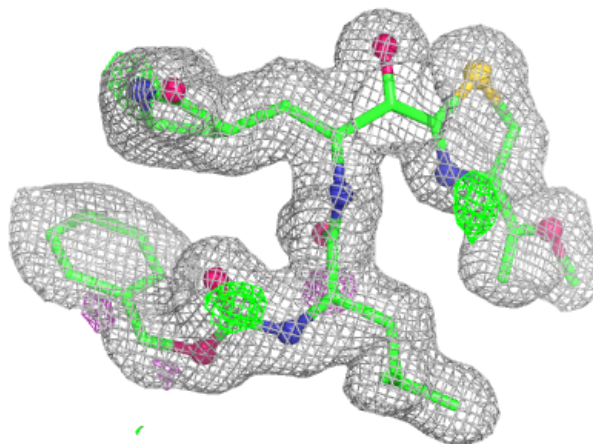
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
2	A1JSW	A	401	38/38	0.95	0.08	22,25,39,41	0
2	A1JSW	D	401	38/38	0.95	0.09	19,24,38,39	0
2	A1JSW	C	401	38/38	0.96	0.08	19,25,37,37	0
2	A1JSW	B	401	38/38	0.96	0.07	19,23,32,34	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.

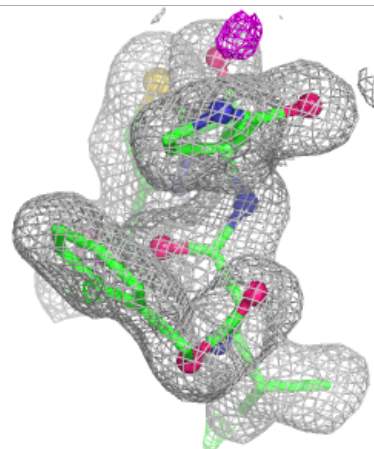
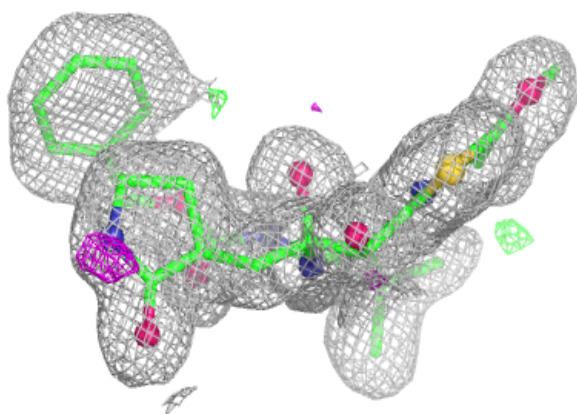
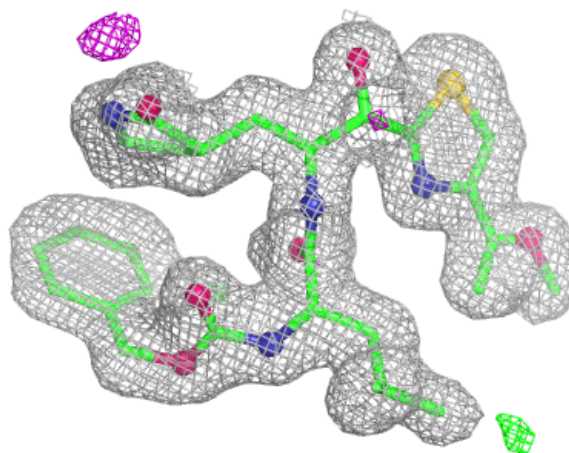
Electron density around A1JSW A 401:

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



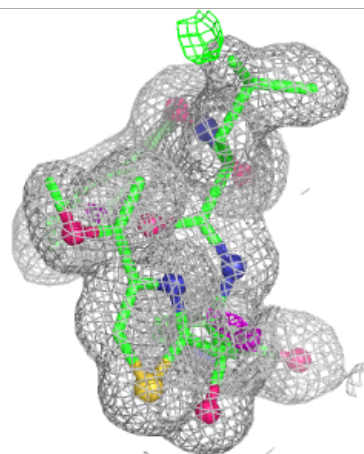
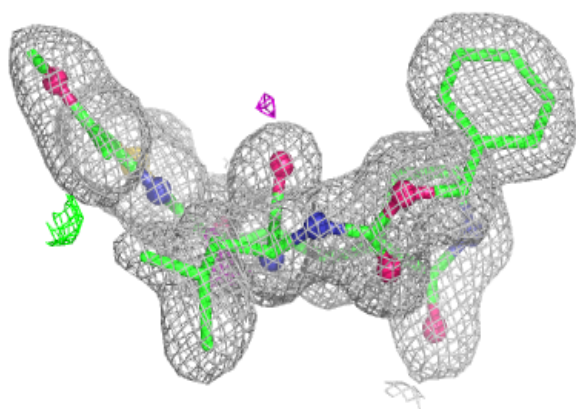
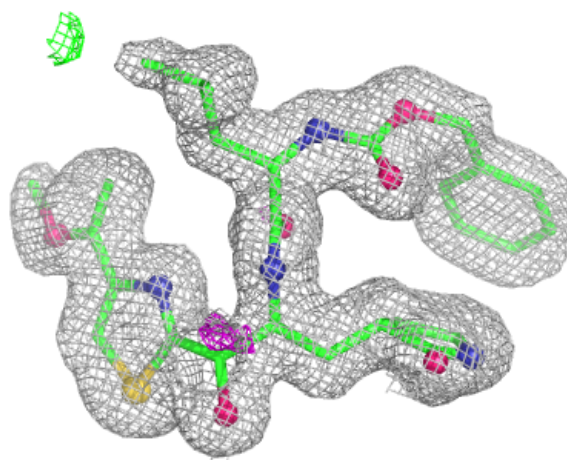
Electron density around A1JSW D 401:

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



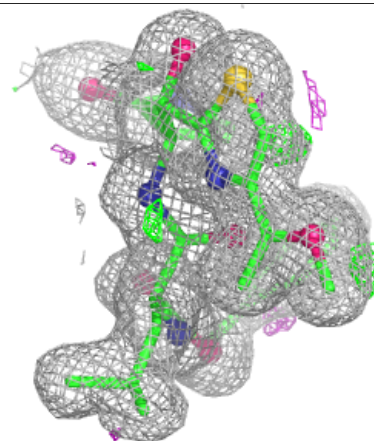
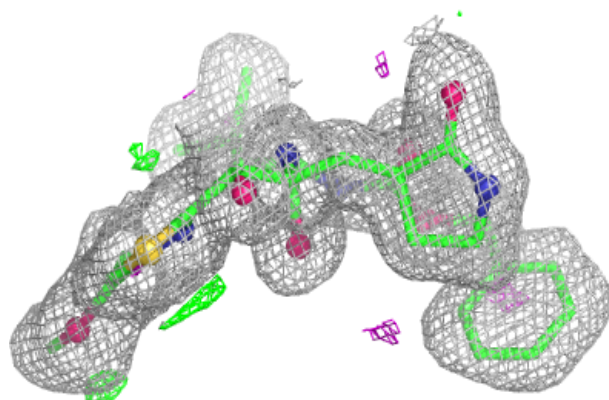
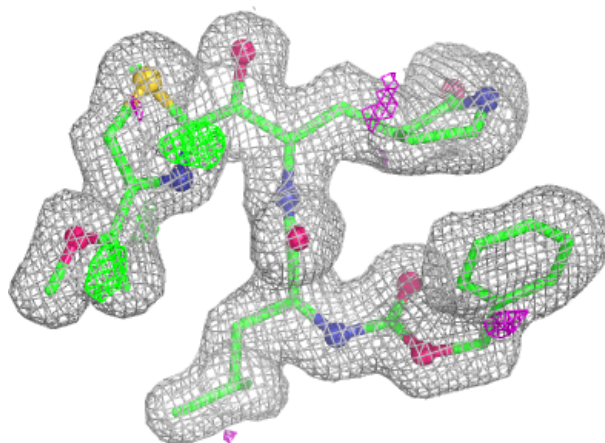
Electron density around A1JSW C 401:

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



Electron density around A1JSW B 401:

$2mF_o-DF_c$ (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.