Full wwPDB X-ray Structure Validation Report ⓘ

Nov 14, 2022 – 04:31 PM EST

PDB ID	:	5TLN
Title	:	BINDING OF HYDROXAMIC ACID INHIBITORS TO CRYSTALLINE THERMOLYSIN SUGGESTS A PENTACOORDINATE ZINC INTERMEDIATE IN CATALYSIS
Authors	:	Matthews, B.W.; Holmes, M.A.
Deposited on	:	1982-02-08
Resolution	:	2.30 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:

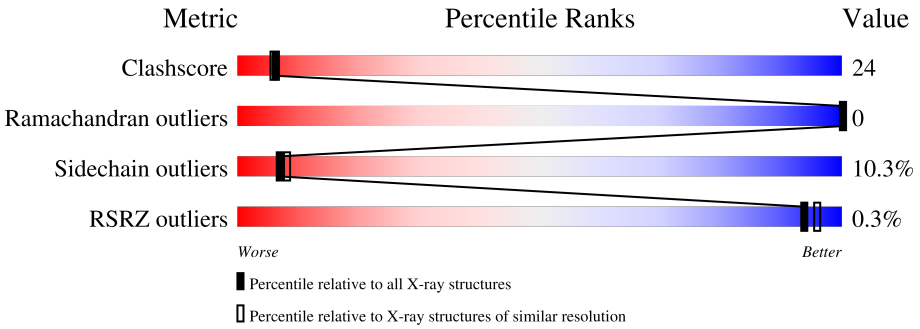
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.31.2
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.2

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 2.30 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))
Clashscore	141614	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (2.30-2.30)
RSRZ outliers	127900	4938 (2.30-2.30)

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	316	22% 50% 24% ·

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	BAN	A	322	-	X	-	-

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 2606 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 THERMOLYSIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	316	Total	C	N	O	S	0	0	0
			2432	1528	408	494	2			

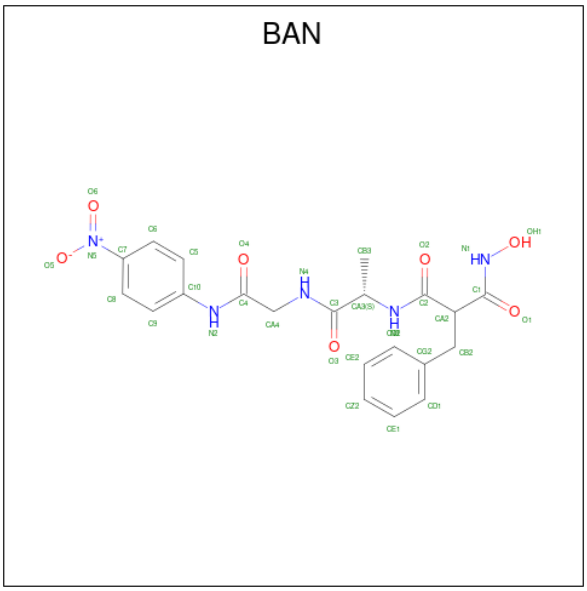
- Molecule 2 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	4	Total	Ca	0	0
			4	4		

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

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

- Molecule 4 is HONH-BENZYLMALONYL-L-ALANYLGLYCINE-P-NITROANILIDE (three-letter code: BAN) (formula: $C_{21}H_{23}N_5O_7$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C N O 23 15 3 5	0	0

- Molecule 5 is water.

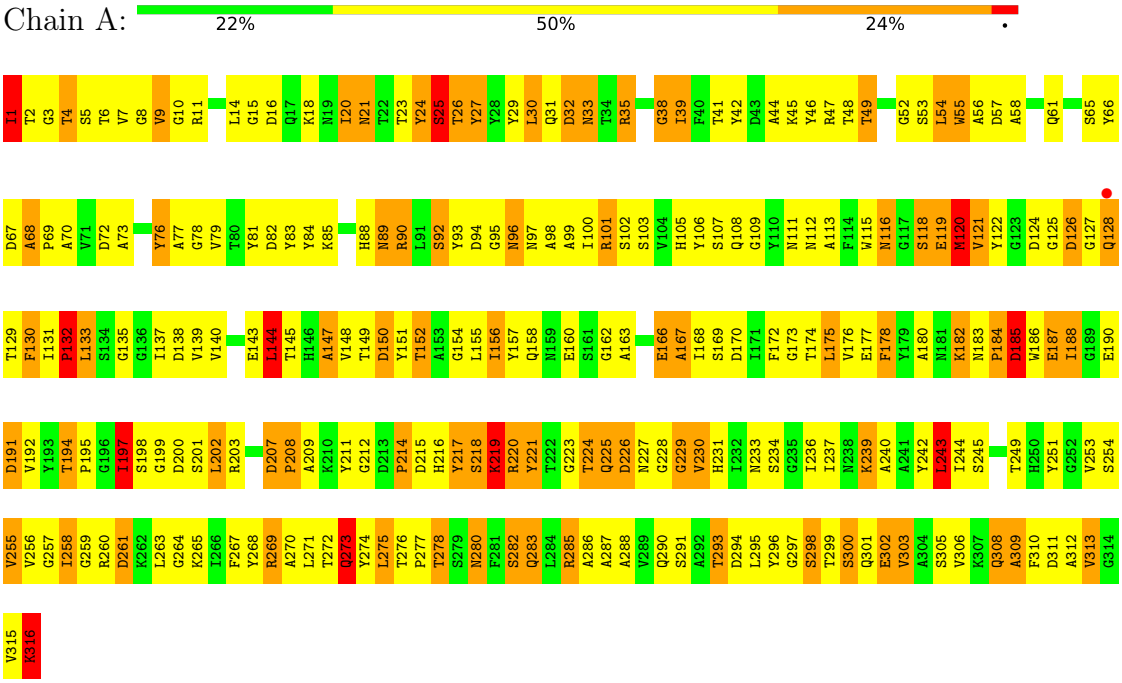
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	146	Total O 146 146	0	0

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: THERMOLYSIN

Chain A:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 61 2 2	Depositor
Cell constants a, b, c, α, β, γ	94.20Å 94.20Å 131.40Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	10.00 – 2.30 22.63 – 2.31	Depositor EDS
% Data completeness (in resolution range)	(Not available) (10.00-2.30) 76.6 (22.63-2.31)	Depositor EDS
R_{merge}	0.02	Depositor
R_{sym}	0.07	Depositor
$< I/\sigma(I) >$ [1]	88777.78 (at 2.31Å)	Xtriage
Refinement program	TNT, PROLSQ	Depositor
R, R_{free}	0.179 , (Not available) 0.164 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å^2)	18.6	Xtriage
Anisotropy	0.037	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 60.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	2606	wwPDB-VP
Average B, all atoms (Å^2)	11.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.12% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

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

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: CA, ZN, BAN

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	2.29	107/2491 (4.3%)	3.28	332/3391 (9.8%)

All (107) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	101	ARG	CG-CD	12.21	1.82	1.51
1	A	35	ARG	C-N	-9.80	1.15	1.33
1	A	102	SER	CA-CB	9.63	1.67	1.52
1	A	25	SER	CB-OG	9.09	1.54	1.42
1	A	166	GLU	CD-OE1	-9.02	1.15	1.25
1	A	144	LEU	C-O	8.66	1.39	1.23
1	A	302	GLU	CD-OE2	-8.66	1.16	1.25
1	A	186	TRP	CG-CD2	8.61	1.58	1.43
1	A	119	GLU	CD-OE1	-8.56	1.16	1.25
1	A	265	LYS	CA-CB	-8.29	1.35	1.53
1	A	95	GLY	C-O	7.88	1.36	1.23
1	A	65	SER	C-O	7.79	1.38	1.23
1	A	20	ILE	C-O	7.77	1.38	1.23
1	A	190	GLU	CD-OE1	-7.66	1.17	1.25
1	A	187	GLU	CD-OE2	7.62	1.34	1.25
1	A	8	GLY	N-CA	7.61	1.57	1.46
1	A	44	ALA	C-O	7.50	1.37	1.23
1	A	282	SER	CA-CB	-7.45	1.41	1.52
1	A	10	GLY	C-N	-7.45	1.17	1.34
1	A	278	THR	CB-OG1	7.41	1.58	1.43
1	A	38	GLY	CA-C	-7.40	1.40	1.51
1	A	53	SER	CA-CB	7.28	1.63	1.52
1	A	11	ARG	NE-CZ	7.22	1.42	1.33
1	A	108	GLN	C-O	7.11	1.36	1.23
1	A	267	PHE	C-O	6.97	1.36	1.23
1	A	101	ARG	NE-CZ	-6.88	1.24	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	260	ARG	C-N	-6.87	1.18	1.34
1	A	115	TRP	CD2-CE2	-6.83	1.33	1.41
1	A	118	SER	CB-OG	-6.77	1.33	1.42
1	A	101	ARG	CZ-NH2	6.61	1.41	1.33
1	A	194	THR	CB-OG1	6.51	1.56	1.43
1	A	118	SER	CA-CB	-6.45	1.43	1.52
1	A	297	GLY	N-CA	-6.45	1.36	1.46
1	A	98	ALA	C-O	6.40	1.35	1.23
1	A	119	GLU	CB-CG	-6.31	1.40	1.52
1	A	214	PRO	CA-CB	-6.29	1.41	1.53
1	A	230	VAL	CB-CG1	-6.27	1.39	1.52
1	A	93	TYR	CG-CD1	-6.24	1.31	1.39
1	A	9	VAL	C-O	6.20	1.35	1.23
1	A	152	THR	N-CA	6.18	1.58	1.46
1	A	52	GLY	C-O	6.17	1.33	1.23
1	A	160	GLU	CG-CD	-6.07	1.42	1.51
1	A	96	ASN	CG-OD1	6.04	1.37	1.24
1	A	116	ASN	CG-ND2	-6.03	1.17	1.32
1	A	242	TYR	CZ-OH	6.03	1.48	1.37
1	A	265	LYS	CB-CG	-6.02	1.36	1.52
1	A	10	GLY	C-O	6.01	1.33	1.23
1	A	199	GLY	CA-C	-5.98	1.42	1.51
1	A	305	SER	CB-OG	-5.87	1.34	1.42
1	A	245	SER	CB-OG	5.86	1.49	1.42
1	A	88	HIS	CA-C	-5.85	1.37	1.52
1	A	308	GLN	CD-NE2	5.83	1.47	1.32
1	A	127	GLY	C-O	5.80	1.32	1.23
1	A	11	ARG	CZ-NH2	5.76	1.40	1.33
1	A	173	GLY	CA-C	-5.75	1.42	1.51
1	A	225	GLN	C-O	5.72	1.34	1.23
1	A	297	GLY	C-N	-5.72	1.20	1.34
1	A	264	GLY	CA-C	-5.72	1.42	1.51
1	A	212	GLY	C-O	5.70	1.32	1.23
1	A	160	GLU	CD-OE1	-5.69	1.19	1.25
1	A	92	SER	CB-OG	5.68	1.49	1.42
1	A	316	LYS	C-OXT	5.67	1.34	1.23
1	A	198	SER	N-CA	5.67	1.57	1.46
1	A	4	THR	N-CA	5.66	1.57	1.46
1	A	46	TYR	CB-CG	-5.64	1.43	1.51
1	A	81	TYR	CG-CD1	-5.63	1.31	1.39
1	A	297	GLY	C-O	-5.63	1.14	1.23
1	A	255	VAL	CB-CG1	-5.62	1.41	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	203	ARG	CZ-NH2	5.58	1.40	1.33
1	A	208	PRO	N-CA	-5.57	1.37	1.47
1	A	273	GLN	C-O	5.55	1.33	1.23
1	A	93	TYR	N-CA	5.55	1.57	1.46
1	A	162	GLY	C-O	5.52	1.32	1.23
1	A	115	TRP	NE1-CE2	5.49	1.44	1.37
1	A	306	VAL	C-O	5.49	1.33	1.23
1	A	4	THR	C-O	5.47	1.33	1.23
1	A	265	LYS	CD-CE	5.46	1.65	1.51
1	A	44	ALA	CA-CB	-5.45	1.41	1.52
1	A	39	ILE	C-N	-5.40	1.21	1.34
1	A	168	ILE	C-O	5.40	1.33	1.23
1	A	182	LYS	CE-NZ	5.38	1.62	1.49
1	A	217	TYR	C-O	5.38	1.33	1.23
1	A	132	PRO	N-CD	5.35	1.55	1.47
1	A	295	LEU	N-CA	-5.35	1.35	1.46
1	A	278	THR	C-N	-5.32	1.21	1.34
1	A	290	GLN	C-O	5.31	1.33	1.23
1	A	302	GLU	CD-OE1	-5.28	1.19	1.25
1	A	47	ARG	NE-CZ	-5.27	1.26	1.33
1	A	105	HIS	C-N	-5.26	1.22	1.34
1	A	101	ARG	CZ-NH1	5.25	1.39	1.33
1	A	11	ARG	C-N	-5.25	1.23	1.33
1	A	76	TYR	C-N	-5.22	1.22	1.34
1	A	3	GLY	C-O	5.21	1.31	1.23
1	A	55	TRP	CD2-CE2	-5.21	1.35	1.41
1	A	24	TYR	C-O	5.15	1.33	1.23
1	A	78	GLY	CA-C	5.12	1.60	1.51
1	A	58	ALA	CA-CB	5.11	1.63	1.52
1	A	39	ILE	CA-CB	5.10	1.66	1.54
1	A	10	GLY	N-CA	5.09	1.53	1.46
1	A	265	LYS	N-CA	5.06	1.56	1.46
1	A	55	TRP	NE1-CE2	5.05	1.44	1.37
1	A	177	GLU	CG-CD	-5.04	1.44	1.51
1	A	148	VAL	C-O	5.02	1.32	1.23
1	A	126	ASP	C-N	-5.02	1.24	1.33
1	A	149	THR	C-O	5.01	1.32	1.23
1	A	265	LYS	CE-NZ	5.01	1.61	1.49
1	A	45	LYS	CE-NZ	5.00	1.61	1.49

All (332) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	47	ARG	NE-CZ-NH1	24.88	132.74	120.30
1	A	211	TYR	CB-CG-CD2	-24.75	106.15	121.00
1	A	47	ARG	CD-NE-CZ	22.70	155.38	123.60
1	A	101	ARG	CD-NE-CZ	22.38	154.93	123.60
1	A	260	ARG	NE-CZ-NH2	-18.71	110.94	120.30
1	A	90	ARG	NE-CZ-NH1	17.33	128.96	120.30
1	A	101	ARG	NE-CZ-NH1	16.83	128.72	120.30
1	A	211	TYR	CB-CG-CD1	16.57	130.94	121.00
1	A	67	ASP	CB-CG-OD1	15.74	132.47	118.30
1	A	11	ARG	NE-CZ-NH2	-14.74	112.93	120.30
1	A	138	ASP	CB-CG-OD1	14.28	131.15	118.30
1	A	29	TYR	CB-CG-CD2	14.20	129.52	121.00
1	A	143	GLU	CG-CD-OE1	13.98	146.26	118.30
1	A	200	ASP	CB-CG-OD1	13.60	130.54	118.30
1	A	27	TYR	CB-CG-CD1	13.37	129.02	121.00
1	A	27	TYR	CB-CG-CD2	-13.34	113.00	121.00
1	A	101	ARG	NE-CZ-NH2	-13.27	113.66	120.30
1	A	227	ASN	O-C-N	13.09	145.46	123.20
1	A	261	ASP	CB-CG-OD1	-13.01	106.59	118.30
1	A	182	LYS	CG-CD-CE	12.71	150.04	111.90
1	A	101	ARG	CA-CB-CG	12.59	141.09	113.40
1	A	130	PHE	CB-CG-CD1	12.48	129.54	120.80
1	A	90	ARG	NE-CZ-NH2	-12.26	114.17	120.30
1	A	29	TYR	CB-CG-CD1	-12.03	113.78	121.00
1	A	226	ASP	CB-CG-OD1	12.02	129.12	118.30
1	A	120	MET	CG-SD-CE	11.99	119.39	100.20
1	A	27	TYR	CZ-CE2-CD2	-11.59	109.37	119.80
1	A	35	ARG	NE-CZ-NH1	11.57	126.08	120.30
1	A	297	GLY	C-N-CA	11.44	150.29	121.70
1	A	11	ARG	CD-NE-CZ	-11.30	107.78	123.60
1	A	101	ARG	CG-CD-NE	-11.24	88.20	111.80
1	A	47	ARG	NE-CZ-NH2	-11.15	114.72	120.30
1	A	200	ASP	CB-CG-OD2	-11.11	108.30	118.30
1	A	101	ARG	CB-CA-C	10.67	131.74	110.40
1	A	264	GLY	CA-C-O	10.64	139.75	120.60
1	A	178	PHE	CB-CG-CD2	10.61	128.23	120.80
1	A	265	LYS	CA-CB-CG	10.54	136.59	113.40
1	A	220	ARG	NE-CZ-NH2	-10.52	115.04	120.30
1	A	315	VAL	O-C-N	10.49	139.48	122.70
1	A	198	SER	N-CA-CB	-10.45	94.82	110.50
1	A	119	GLU	OE1-CD-OE2	10.36	135.73	123.30
1	A	16	ASP	CB-CG-OD2	-10.35	108.99	118.30
1	A	39	ILE	CB-CG1-CD1	10.30	142.74	113.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	113	ALA	C-N-CA	10.01	146.72	121.70
1	A	282	SER	CB-CA-C	9.97	129.03	110.10
1	A	151	TYR	CB-CG-CD1	9.88	126.93	121.00
1	A	308	GLN	CG-CD-OE1	9.74	141.08	121.60
1	A	261	ASP	OD1-CG-OD2	9.61	141.55	123.30
1	A	212	GLY	CA-C-O	-9.50	103.50	120.60
1	A	126	ASP	CB-CG-OD1	-9.29	109.94	118.30
1	A	143	GLU	CG-CD-OE2	-9.19	99.93	118.30
1	A	35	ARG	NE-CZ-NH2	-9.14	115.73	120.30
1	A	122	TYR	CG-CD2-CE2	9.04	128.54	121.30
1	A	66	TYR	C-N-CA	9.04	144.30	121.70
1	A	130	PHE	CB-CG-CD2	-9.02	114.49	120.80
1	A	27	TYR	CG-CD2-CE2	9.01	128.51	121.30
1	A	251	TYR	CB-CG-CD1	-8.96	115.62	121.00
1	A	198	SER	CB-CA-C	8.92	127.04	110.10
1	A	251	TYR	CB-CG-CD2	8.70	126.22	121.00
1	A	32	ASP	CB-CG-OD1	8.68	126.11	118.30
1	A	151	TYR	CB-CG-CD2	-8.66	115.80	121.00
1	A	273	GLN	CA-CB-CG	8.64	132.40	113.40
1	A	261	ASP	N-CA-CB	-8.62	95.09	110.60
1	A	298	SER	N-CA-CB	-8.61	97.59	110.50
1	A	138	ASP	OD1-CG-OD2	-8.54	107.06	123.30
1	A	203	ARG	NE-CZ-NH1	8.52	124.56	120.30
1	A	101	ARG	C-N-CA	8.51	142.97	121.70
1	A	162	GLY	O-C-N	-8.44	109.20	122.70
1	A	191	ASP	CB-CG-OD1	8.43	125.88	118.30
1	A	94	ASP	CB-CG-OD2	8.36	125.82	118.30
1	A	309	ALA	CB-CA-C	8.33	122.60	110.10
1	A	150	ASP	CB-CG-OD2	8.33	125.80	118.30
1	A	166	GLU	OE1-CD-OE2	-8.30	113.34	123.30
1	A	147	ALA	CB-CA-C	8.24	122.46	110.10
1	A	269	ARG	NE-CZ-NH2	-8.18	116.21	120.30
1	A	177	GLU	OE1-CD-OE2	-8.16	113.50	123.30
1	A	103	SER	O-C-N	8.14	135.73	122.70
1	A	78	GLY	CA-C-O	-8.14	105.95	120.60
1	A	274	TYR	CG-CD2-CE2	8.11	127.79	121.30
1	A	220	ARG	NH1-CZ-NH2	8.02	128.22	119.40
1	A	11	ARG	NH1-CZ-NH2	8.01	128.22	119.40
1	A	143	GLU	OE1-CD-OE2	-7.92	113.80	123.30
1	A	46	TYR	CB-CG-CD2	7.89	125.73	121.00
1	A	274	TYR	CZ-CE2-CD2	-7.88	112.71	119.80
1	A	219	LYS	CB-CG-CD	7.88	132.09	111.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	119	GLU	CG-CD-OE2	-7.87	102.57	118.30
1	A	53	SER	CA-C-O	-7.84	103.64	120.10
1	A	168	ILE	CB-CG1-CD1	7.83	135.83	113.90
1	A	38	GLY	CA-C-O	-7.83	106.51	120.60
1	A	234	SER	O-C-N	-7.82	109.90	123.20
1	A	239	LYS	CB-CG-CD	7.82	131.94	111.60
1	A	270	ALA	CA-C-O	7.82	136.52	120.10
1	A	84	TYR	CB-CG-CD2	7.80	125.68	121.00
1	A	18	LYS	O-C-N	7.79	135.17	122.70
1	A	270	ALA	O-C-N	-7.73	110.34	122.70
1	A	290	GLN	CA-CB-CG	-7.70	96.46	113.40
1	A	308	GLN	CG-CD-NE2	-7.64	98.36	116.70
1	A	119	GLU	N-CA-CB	-7.63	96.86	110.60
1	A	14	LEU	CB-CG-CD1	7.55	123.83	111.00
1	A	46	TYR	CB-CG-CD1	-7.54	116.47	121.00
1	A	264	GLY	O-C-N	-7.46	110.75	122.70
1	A	53	SER	CB-CA-C	-7.46	95.92	110.10
1	A	9	VAL	CB-CA-C	-7.45	97.24	111.40
1	A	45	LYS	CB-CA-C	-7.39	95.61	110.40
1	A	2	THR	CA-C-N	7.38	130.96	116.20
1	A	167	ALA	CB-CA-C	7.38	121.17	110.10
1	A	56	ALA	CA-C-O	7.32	135.47	120.10
1	A	268	TYR	CB-CG-CD1	7.32	125.39	121.00
1	A	282	SER	N-CA-CB	-7.29	99.57	110.50
1	A	259	GLY	O-C-N	-7.26	111.09	122.70
1	A	211	TYR	CA-CB-CG	-7.25	99.62	113.40
1	A	231	HIS	N-CA-CB	7.24	123.63	110.60
1	A	261	ASP	CB-CG-OD2	-7.22	111.80	118.30
1	A	217	TYR	CG-CD2-CE2	-7.20	115.54	121.30
1	A	101	ARG	CB-CG-CD	7.20	130.31	111.60
1	A	47	ARG	NH1-CZ-NH2	-7.17	111.51	119.40
1	A	122	TYR	CZ-CE2-CD2	-7.17	113.34	119.80
1	A	167	ALA	O-C-N	-7.15	111.26	122.70
1	A	225	GLN	CB-CA-C	7.14	124.68	110.40
1	A	26	THR	CA-CB-CG2	7.13	122.39	112.40
1	A	220	ARG	NE-CZ-NH1	-7.13	116.74	120.30
1	A	85	LYS	O-C-N	-7.09	111.35	122.70
1	A	72	ASP	CB-CG-OD2	6.99	124.59	118.30
1	A	285	ARG	NE-CZ-NH1	6.96	123.78	120.30
1	A	296	TYR	CB-CG-CD1	6.95	125.17	121.00
1	A	224	THR	CA-CB-CG2	6.94	122.11	112.40
1	A	85	LYS	CA-C-O	6.92	134.64	120.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	197	ILE	CA-C-O	6.92	134.63	120.10
1	A	9	VAL	CA-CB-CG1	6.90	121.25	110.90
1	A	163	ALA	C-N-CA	6.84	138.80	121.70
1	A	315	VAL	CA-C-N	-6.84	102.16	117.20
1	A	48	THR	O-C-N	-6.83	111.76	122.70
1	A	158	GLN	N-CA-CB	6.83	122.89	110.60
1	A	258	ILE	O-C-N	-6.81	111.62	123.20
1	A	140	VAL	O-C-N	-6.81	111.80	122.70
1	A	184	PRO	O-C-N	6.79	133.57	122.70
1	A	77	ALA	N-CA-CB	6.79	119.61	110.10
1	A	56	ALA	O-C-N	-6.78	111.85	122.70
1	A	113	ALA	CA-C-N	6.72	131.98	117.20
1	A	45	LYS	CB-CG-CD	6.70	129.03	111.60
1	A	312	ALA	C-N-CA	6.67	138.37	121.70
1	A	224	THR	N-CA-C	6.66	128.97	111.00
1	A	66	TYR	CG-CD2-CE2	6.65	126.62	121.30
1	A	85	LYS	CA-CB-CG	-6.65	98.77	113.40
1	A	101	ARG	N-CA-CB	-6.64	98.64	110.60
1	A	256	VAL	CG1-CB-CG2	-6.63	100.28	110.90
1	A	61	GLN	O-C-N	6.63	133.31	122.70
1	A	124	ASP	CB-CG-OD1	-6.62	112.34	118.30
1	A	88	HIS	CA-CB-CG	-6.61	102.37	113.60
1	A	42	TYR	CZ-CE2-CD2	-6.60	113.86	119.80
1	A	45	LYS	O-C-N	6.59	133.24	122.70
1	A	186	TRP	CA-C-N	-6.57	102.74	117.20
1	A	129	THR	O-C-N	-6.52	112.28	122.70
1	A	115	TRP	CA-C-N	6.50	131.49	117.20
1	A	267	PHE	CB-CG-CD1	6.48	125.34	120.80
1	A	293	THR	O-C-N	6.46	133.03	122.70
1	A	263	LEU	O-C-N	-6.45	112.24	123.20
1	A	130	PHE	CB-CA-C	-6.45	97.51	110.40
1	A	186	TRP	CD1-CG-CD2	-6.45	101.14	106.30
1	A	49	THR	CA-CB-OG1	-6.43	95.50	109.00
1	A	57	ASP	CB-CG-OD2	-6.43	112.52	118.30
1	A	156	ILE	CA-CB-CG2	6.42	123.74	110.90
1	A	157	TYR	CZ-CE2-CD2	-6.40	114.04	119.80
1	A	211	TYR	CB-CA-C	-6.38	97.63	110.40
1	A	54	LEU	O-C-N	6.36	132.88	122.70
1	A	113	ALA	CA-C-O	-6.35	106.77	120.10
1	A	126	ASP	CB-CG-OD2	6.34	124.01	118.30
1	A	260	ARG	NH1-CZ-NH2	6.32	126.36	119.40
1	A	85	LYS	N-CA-CB	-6.24	99.37	110.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	122	TYR	O-C-N	6.22	133.78	123.20
1	A	108	GLN	CG-CD-OE1	-6.18	109.24	121.60
1	A	89	ASN	CB-CG-OD1	-6.17	109.26	121.60
1	A	90	ARG	CG-CD-NE	-6.17	98.84	111.80
1	A	157	TYR	CB-CG-CD2	6.12	124.67	121.00
1	A	212	GLY	O-C-N	6.10	132.46	122.70
1	A	201	SER	CA-CB-OG	-6.09	94.75	111.20
1	A	82	ASP	CB-CG-OD1	6.09	123.78	118.30
1	A	65	SER	CB-CA-C	6.08	121.65	110.10
1	A	265	LYS	CD-CE-NZ	-6.08	97.72	111.70
1	A	296	TYR	C-N-CA	6.07	135.04	122.30
1	A	288	ALA	O-C-N	-6.06	113.00	122.70
1	A	242	TYR	C-N-CA	6.06	136.84	121.70
1	A	47	ARG	C-N-CA	6.05	136.82	121.70
1	A	287	ALA	CB-CA-C	-6.05	101.03	110.10
1	A	169	SER	O-C-N	-6.04	113.03	122.70
1	A	310	PHE	CG-CD1-CE1	-6.04	114.15	120.80
1	A	217	TYR	CB-CG-CD1	-6.02	117.39	121.00
1	A	93	TYR	N-CA-CB	-6.01	99.77	110.60
1	A	1	ILE	CA-CB-CG1	-6.01	99.59	111.00
1	A	275	LEU	CB-CA-C	6.00	121.60	110.20
1	A	14	LEU	CA-C-N	5.98	128.16	116.20
1	A	233	ASN	O-C-N	5.98	132.26	122.70
1	A	41	THR	CA-C-N	-5.96	104.08	117.20
1	A	33	ASN	N-CA-CB	-5.96	99.87	110.60
1	A	170	ASP	N-CA-CB	5.95	121.31	110.60
1	A	288	ALA	C-N-CA	5.95	136.58	121.70
1	A	9	VAL	CA-C-N	5.95	128.09	116.20
1	A	81	TYR	CG-CD1-CE1	5.95	126.06	121.30
1	A	278	THR	CA-CB-CG2	-5.94	104.09	112.40
1	A	300	SER	CA-C-O	5.93	132.56	120.10
1	A	186	TRP	O-C-N	5.93	132.19	122.70
1	A	178	PHE	CE1-CZ-CE2	-5.93	109.33	120.00
1	A	288	ALA	N-CA-CB	-5.92	101.82	110.10
1	A	243	LEU	O-C-N	-5.91	113.25	122.70
1	A	186	TRP	CB-CG-CD1	5.90	134.68	127.00
1	A	251	TYR	CZ-CE2-CD2	-5.90	114.49	119.80
1	A	185	ASP	CB-CG-OD1	-5.90	112.99	118.30
1	A	283	GLN	CA-CB-CG	-5.89	100.44	113.40
1	A	166	GLU	CA-C-O	-5.89	107.73	120.10
1	A	291	SER	CB-CA-C	-5.89	98.91	110.10
1	A	221	TYR	CB-CG-CD1	-5.88	117.47	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	24	TYR	CD1-CE1-CZ	-5.87	114.52	119.80
1	A	53	SER	CA-C-N	5.87	130.11	117.20
1	A	257	GLY	CA-C-O	-5.87	110.04	120.60
1	A	215	ASP	CB-CG-OD1	5.86	123.57	118.30
1	A	157	TYR	CG-CD2-CE2	5.85	125.98	121.30
1	A	227	ASN	CA-C-O	-5.85	107.82	120.10
1	A	135	GLY	CA-C-O	5.82	131.08	120.60
1	A	178	PHE	CZ-CE2-CD2	5.82	127.08	120.10
1	A	84	TYR	CZ-CE2-CD2	5.80	125.02	119.80
1	A	211	TYR	O-C-N	5.77	133.01	123.20
1	A	186	TRP	CZ3-CH2-CZ2	-5.76	114.68	121.60
1	A	8	GLY	O-C-N	-5.76	113.49	122.70
1	A	223	GLY	C-N-CA	5.75	136.09	121.70
1	A	288	ALA	CB-CA-C	5.75	118.73	110.10
1	A	103	SER	CA-C-O	-5.74	108.04	120.10
1	A	108	GLN	O-C-N	5.72	132.93	123.20
1	A	29	TYR	CZ-CE2-CD2	5.71	124.94	119.80
1	A	81	TYR	CB-CG-CD1	5.69	124.42	121.00
1	A	4	THR	CA-CB-CG2	5.68	120.35	112.40
1	A	83	TYR	CD1-CE1-CZ	-5.68	114.69	119.80
1	A	183	ASN	CB-CG-OD1	-5.67	110.27	121.60
1	A	38	GLY	N-CA-C	5.66	127.24	113.10
1	A	260	ARG	C-N-CA	5.65	135.83	121.70
1	A	242	TYR	CA-C-N	5.65	129.63	117.20
1	A	155	LEU	CB-CG-CD1	5.65	120.60	111.00
1	A	21	ASN	CB-CG-OD1	5.63	132.86	121.60
1	A	46	TYR	CD1-CE1-CZ	-5.62	114.74	119.80
1	A	5	SER	N-CA-CB	5.61	118.91	110.50
1	A	70	ALA	O-C-N	-5.60	113.73	122.70
1	A	92	SER	C-N-CA	-5.56	107.79	121.70
1	A	149	THR	CA-CB-CG2	5.56	120.19	112.40
1	A	21	ASN	CA-CB-CG	-5.56	101.17	113.40
1	A	311	ASP	O-C-N	-5.55	113.82	122.70
1	A	275	LEU	O-C-N	5.55	131.58	122.70
1	A	106	TYR	CZ-CE2-CD2	5.53	124.78	119.80
1	A	133	LEU	CA-C-N	5.52	129.34	117.20
1	A	254	SER	CA-CB-OG	5.52	126.10	111.20
1	A	207	ASP	CB-CG-OD2	-5.52	113.33	118.30
1	A	217	TYR	CD1-CE1-CZ	-5.51	114.84	119.80
1	A	211	TYR	CA-C-O	-5.51	108.53	120.10
1	A	1	ILE	O-C-N	-5.51	113.89	122.70
1	A	2	THR	O-C-N	-5.50	113.84	123.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	299	THR	CA-CB-CG2	-5.49	104.72	112.40
1	A	180	ALA	CB-CA-C	5.48	118.32	110.10
1	A	188	ILE	CA-CB-CG1	-5.47	100.61	111.00
1	A	30	LEU	C-N-CA	5.46	135.36	121.70
1	A	44	ALA	C-N-CA	5.46	135.35	121.70
1	A	18	LYS	CG-CD-CE	5.45	128.25	111.90
1	A	73	ALA	N-CA-CB	-5.45	102.47	110.10
1	A	187	GLU	CG-CD-OE1	5.45	129.19	118.30
1	A	96	ASN	O-C-N	5.44	131.41	122.70
1	A	224	THR	CA-CB-OG1	-5.43	97.59	109.00
1	A	236	ILE	CA-CB-CG2	-5.43	100.04	110.90
1	A	274	TYR	N-CA-CB	-5.43	100.83	110.60
1	A	76	TYR	CZ-CE2-CD2	-5.42	114.92	119.80
1	A	156	ILE	CB-CG1-CD1	-5.42	98.73	113.90
1	A	265	LYS	O-C-N	-5.38	114.10	122.70
1	A	45	LYS	N-CA-CB	5.37	120.27	110.60
1	A	191	ASP	OD1-CG-OD2	-5.37	113.10	123.30
1	A	122	TYR	C-N-CA	-5.37	111.03	122.30
1	A	268	TYR	O-C-N	-5.36	114.12	122.70
1	A	14	LEU	CB-CG-CD2	-5.36	101.89	111.00
1	A	116	ASN	CA-C-N	5.35	126.89	116.20
1	A	148	VAL	CA-C-N	5.35	128.97	117.20
1	A	274	TYR	CB-CG-CD2	5.35	124.21	121.00
1	A	260	ARG	CA-CB-CG	5.34	125.16	113.40
1	A	133	LEU	CA-CB-CG	-5.34	103.01	115.30
1	A	236	ILE	CB-CG1-CD1	5.33	128.82	113.90
1	A	315	VAL	CA-CB-CG1	5.33	118.89	110.90
1	A	168	ILE	CA-CB-CG1	-5.32	100.89	111.00
1	A	25	SER	CA-CB-OG	-5.32	96.84	111.20
1	A	224	THR	C-N-CA	-5.32	108.41	121.70
1	A	316	LYS	N-CA-CB	-5.31	101.04	110.60
1	A	41	THR	O-C-N	5.31	131.19	122.70
1	A	286	ALA	CA-C-O	5.31	131.24	120.10
1	A	259	GLY	CA-C-O	5.30	130.14	120.60
1	A	76	TYR	CA-C-O	-5.30	108.97	120.10
1	A	183	ASN	N-CA-CB	-5.30	101.06	110.60
1	A	128	GLN	CA-CB-CG	-5.29	101.77	113.40
1	A	310	PHE	CZ-CE2-CD2	-5.29	113.76	120.10
1	A	106	TYR	CB-CG-CD2	5.28	124.17	121.00
1	A	255	VAL	CG1-CB-CG2	5.26	119.32	110.90
1	A	42	TYR	CG-CD1-CE1	-5.25	117.10	121.30
1	A	301	GLN	CG-CD-OE1	5.25	132.10	121.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	218	SER	CB-CA-C	-5.25	100.13	110.10
1	A	47	ARG	CG-CD-NE	-5.24	100.79	111.80
1	A	79	VAL	CG1-CB-CG2	5.23	119.27	110.90
1	A	187	GLU	OE1-CD-OE2	-5.22	117.04	123.30
1	A	301	GLN	OE1-CD-NE2	-5.21	109.93	121.90
1	A	198	SER	CA-CB-OG	5.20	125.24	111.20
1	A	15	GLY	CA-C-O	5.19	129.94	120.60
1	A	186	TRP	CH2-CZ2-CE2	5.19	122.59	117.40
1	A	121	VAL	N-CA-CB	-5.19	100.09	111.50
1	A	192	VAL	CA-CB-CG2	5.18	118.66	110.90
1	A	106	TYR	N-CA-CB	-5.17	101.28	110.60
1	A	260	ARG	CA-C-N	5.17	128.58	117.20
1	A	8	GLY	CA-C-N	5.17	128.57	117.20
1	A	202	LEU	CB-CA-C	5.17	120.02	110.20
1	A	265	LYS	CB-CG-CD	-5.16	98.19	111.60
1	A	115	TRP	CA-C-O	-5.16	109.28	120.10
1	A	145	THR	CA-CB-CG2	-5.14	105.21	112.40
1	A	148	VAL	CA-C-O	-5.14	109.31	120.10
1	A	73	ALA	CA-C-O	5.13	130.87	120.10
1	A	83	TYR	CG-CD1-CE1	5.12	125.39	121.30
1	A	174	THR	CA-C-N	5.09	128.40	117.20
1	A	229	GLY	C-N-CA	5.08	134.41	121.70
1	A	197	ILE	O-C-N	-5.08	114.57	122.70
1	A	23	THR	CA-C-N	-5.08	106.03	117.20
1	A	184	PRO	CA-C-O	-5.07	108.04	120.20
1	A	209	ALA	C-N-CA	5.07	134.36	121.70
1	A	7	VAL	CA-C-O	-5.06	109.47	120.10
1	A	67	ASP	OD1-CG-OD2	-5.05	113.70	123.30
1	A	102	SER	CB-CA-C	-5.05	100.50	110.10
1	A	94	ASP	CB-CG-OD1	-5.05	113.76	118.30
1	A	239	LYS	CG-CD-CE	5.04	127.03	111.90
1	A	96	ASN	OD1-CG-ND2	5.04	133.49	121.90
1	A	157	TYR	CA-C-N	5.03	128.27	117.20
1	A	296	TYR	CB-CG-CD2	-5.02	117.99	121.00
1	A	303	VAL	CA-CB-CG1	5.02	118.43	110.90
1	A	68	ALA	CB-CA-C	5.02	117.62	110.10
1	A	251	TYR	CG-CD2-CE2	5.00	125.30	121.30

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	2432	0	2251	113	1
2	A	4	0	0	0	0
3	A	1	0	0	0	0
4	A	23	0	15	3	0
5	A	146	0	0	35	10
All	All	2606	0	2266	113	10

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 (113) 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:101:ARG:CD	1:A:101:ARG:CG	1.82	1.54
1:A:92:SER:CB	5:A:451:HOH:O	1.88	1.19
1:A:92:SER:OG	5:A:451:HOH:O	1.65	1.12
1:A:118:SER:N	5:A:442:HOH:O	1.78	1.11
1:A:92:SER:HA	5:A:451:HOH:O	1.53	1.09
1:A:308:GLN:HG2	5:A:388:HOH:O	1.52	1.08
1:A:228:GLY:C	5:A:382:HOH:O	1.94	1.06
1:A:218:SER:HB3	5:A:435:HOH:O	1.54	1.04
1:A:101:ARG:CG	1:A:101:ARG:NE	2.29	0.96
1:A:119:GLU:OE1	5:A:447:HOH:O	1.85	0.94
1:A:219:LYS:HE2	5:A:391:HOH:O	1.72	0.88
1:A:228:GLY:CA	5:A:382:HOH:O	2.26	0.82
1:A:278:THR:HG22	1:A:278:THR:O	1.82	0.80
1:A:219:LYS:CE	5:A:391:HOH:O	2.26	0.80
1:A:111:ASN:O	1:A:112:ASN:HB2	1.83	0.79
1:A:116:ASN:OD1	5:A:442:HOH:O	2.02	0.78
1:A:216:HIS:ND1	5:A:435:HOH:O	2.17	0.78
1:A:137:ILE:HG22	1:A:182:LYS:NZ	2.00	0.77
1:A:137:ILE:HG22	1:A:182:LYS:HZ3	1.50	0.76
1:A:269:ARG:NH1	1:A:294:ASP:OD2	2.18	0.76
1:A:228:GLY:HA2	5:A:382:HOH:O	1.85	0.75
1:A:197:ILE:HD13	1:A:197:ILE:N	2.05	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:273:GLN:CG	5:A:372:HOH:O	2.38	0.70
1:A:131:ILE:HB	1:A:132:PRO:CD	2.21	0.69
1:A:280:ASN:ND2	1:A:283:GLN:H	1.90	0.69
1:A:216:HIS:CE1	5:A:435:HOH:O	2.46	0.68
1:A:150:ASP:HA	5:A:379:HOH:O	1.94	0.67
1:A:273:GLN:HG3	5:A:372:HOH:O	1.94	0.67
1:A:1:ILE:N	1:A:31:GLN:HE22	1.92	0.67
1:A:128:GLN:O	1:A:195:PRO:HD2	1.96	0.66
1:A:191:ASP:HB2	5:A:350:HOH:O	1.94	0.66
1:A:101:ARG:NE	1:A:101:ARG:HG3	2.12	0.65
1:A:144:LEU:O	1:A:147:ALA:HB3	1.96	0.65
1:A:278:THR:O	1:A:278:THR:CG2	2.45	0.65
1:A:280:ASN:HD22	1:A:280:ASN:C	2.00	0.65
1:A:273:GLN:HB3	5:A:372:HOH:O	1.97	0.64
1:A:120:MET:SD	1:A:144:LEU:HD23	2.38	0.63
1:A:217:TYR:O	1:A:220:ARG:HB2	1.97	0.63
1:A:187:GLU:OE1	5:A:411:HOH:O	2.15	0.63
1:A:30:LEU:HB2	1:A:55:TRP:HB3	1.81	0.62
1:A:229:GLY:N	5:A:382:HOH:O	2.26	0.62
1:A:131:ILE:HG23	1:A:195:PRO:HG3	1.82	0.61
1:A:152:THR:HG21	1:A:272:THR:HG22	1.84	0.59
1:A:126:ASP:OD2	1:A:128:GLN:N	2.31	0.59
1:A:172:PHE:O	1:A:176:VAL:HG23	2.04	0.57
1:A:33:ASN:ND2	5:A:459:HOH:O	2.37	0.56
1:A:188:ILE:HG22	4:A:322:BAN:H15	1.89	0.55
1:A:276:THR:HB	1:A:277:PRO:CD	2.37	0.55
1:A:282:SER:HA	1:A:316:LYS:HD2	1.88	0.55
1:A:92:SER:CA	5:A:451:HOH:O	2.07	0.54
1:A:218:SER:CB	5:A:435:HOH:O	2.30	0.54
1:A:207:ASP:OD1	5:A:361:HOH:O	2.18	0.54
1:A:240:ALA:O	1:A:244:ILE:HG13	2.08	0.53
1:A:308:GLN:CG	5:A:388:HOH:O	2.31	0.53
1:A:120:MET:C	1:A:121:VAL:HG23	2.28	0.52
1:A:137:ILE:H	1:A:182:LYS:HZ2	1.58	0.51
1:A:285:ARG:HD3	1:A:316:LYS:HD3	1.92	0.51
1:A:271:LEU:HA	1:A:275:LEU:HD12	1.93	0.51
1:A:100:ILE:HD11	5:A:451:HOH:O	2.10	0.51
1:A:273:GLN:CB	5:A:372:HOH:O	2.53	0.51
1:A:4:THR:HG22	1:A:24:TYR:HB3	1.93	0.50
1:A:131:ILE:HB	1:A:132:PRO:HD2	1.93	0.50
1:A:35:ARG:HD2	1:A:39:ILE:HD12	1.92	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:214:PRO:HB3	1:A:219:LYS:HB3	1.92	0.50
1:A:111:ASN:O	1:A:112:ASN:CB	2.56	0.49
1:A:32:ASP:OD1	1:A:35:ARG:NH1	2.42	0.48
1:A:298:SER:CB	5:A:424:HOH:O	2.61	0.48
1:A:249:THR:HA	1:A:253:VAL:O	2.14	0.47
1:A:133:LEU:H	1:A:133:LEU:HD12	1.80	0.47
1:A:298:SER:HB3	5:A:424:HOH:O	2.14	0.47
1:A:1:ILE:N	1:A:31:GLN:NE2	2.61	0.47
1:A:178:PHE:CD1	1:A:184:PRO:HB2	2.49	0.47
1:A:300:SER:HB2	1:A:302:GLU:OE1	2.15	0.46
1:A:243:LEU:HD12	1:A:243:LEU:HA	1.70	0.46
1:A:258:ILE:HG21	1:A:302:GLU:HA	1.97	0.46
1:A:202:LEU:HD12	1:A:202:LEU:HA	1.78	0.45
1:A:178:PHE:CE1	1:A:184:PRO:HB2	2.51	0.45
1:A:280:ASN:ND2	1:A:280:ASN:C	2.69	0.45
1:A:185:ASP:OD2	1:A:187:GLU:HB2	2.17	0.45
1:A:21:ASN:HD22	1:A:21:ASN:HA	1.49	0.44
1:A:139:VAL:HG22	4:A:322:BAN:CZ2	2.47	0.44
1:A:68:ALA:HB3	1:A:69:PRO:HD3	1.98	0.44
1:A:109:GLY:HA2	1:A:125:GLY:O	2.18	0.44
1:A:137:ILE:HG22	1:A:182:LYS:HZ2	1.82	0.44
1:A:96:ASN:O	1:A:97:ASN:HB2	2.17	0.43
1:A:217:TYR:N	1:A:313:VAL:O	2.44	0.43
1:A:92:SER:HB2	1:A:97:ASN:HA	1.99	0.43
1:A:166:GLU:HG3	1:A:230:VAL:HG12	2.00	0.43
1:A:167:ALA:CB	1:A:237:ILE:HB	2.49	0.43
1:A:285:ARG:CD	1:A:316:LYS:HD3	2.48	0.43
1:A:32:ASP:O	1:A:38:GLY:HA2	2.19	0.43
1:A:237:ILE:HA	1:A:237:ILE:HD13	1.71	0.42
1:A:30:LEU:HA	1:A:30:LEU:HD23	1.75	0.42
1:A:221:TYR:CD2	5:A:382:HOH:O	2.71	0.42
1:A:269:ARG:HG3	1:A:273:GLN:HG2	2.00	0.42
1:A:194:THR:HA	1:A:195:PRO:HD2	1.92	0.42
1:A:76:TYR:OH	1:A:182:LYS:HE3	2.20	0.42
1:A:221:TYR:CE2	5:A:382:HOH:O	2.57	0.42
1:A:99:ALA:CB	1:A:101:ARG:NH1	2.82	0.42
1:A:116:ASN:C	5:A:442:HOH:O	2.57	0.42
1:A:25:SER:O	1:A:27:TYR:N	2.46	0.42
1:A:130:PHE:HZ	1:A:202:LEU:HD22	1.84	0.42
1:A:156:ILE:HD13	1:A:156:ILE:HG21	1.91	0.42
1:A:197:ILE:N	1:A:197:ILE:CD1	2.75	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:285:ARG:HD3	1:A:316:LYS:NZ	2.35	0.42
1:A:154:GLY:HA2	5:A:379:HOH:O	2.19	0.41
1:A:293:THR:HA	1:A:303:VAL:HG21	2.02	0.41
1:A:255:VAL:HG11	1:A:309:ALA:HB2	2.03	0.41
1:A:255:VAL:HG22	1:A:308:GLN:HB3	2.03	0.41
1:A:175:LEU:HD12	1:A:175:LEU:HA	1.78	0.41
1:A:90:ARG:NH1	1:A:90:ARG:HG3	2.36	0.41
1:A:226:ASP:OD1	4:A:322:BAN:H29	2.21	0.41
1:A:131:ILE:HG21	1:A:131:ILE:HD13	1.47	0.40

All (10) 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)
5:A:372:HOH:O	5:A:409:HOH:O[5_564]	1.17	1.03
5:A:369:HOH:O	5:A:407:HOH:O[5_564]	1.19	1.01
5:A:332:HOH:O	5:A:336:HOH:O[10_664]	1.34	0.86
5:A:485:HOH:O	5:A:485:HOH:O[7_555]	1.54	0.66
5:A:436:HOH:O	5:A:447:HOH:O[10_664]	1.78	0.42
5:A:372:HOH:O	5:A:463:HOH:O[5_564]	1.92	0.28
5:A:418:HOH:O	5:A:418:HOH:O[12_565]	1.95	0.25
5:A:379:HOH:O	5:A:396:HOH:O[10_664]	1.99	0.21
5:A:333:HOH:O	5:A:337:HOH:O[10_664]	2.10	0.10
1:A:6:THR:CB	5:A:473:HOH:O[12_565]	2.12	0.08

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	314/316 (99%)	297 (95%)	17 (5%)	0	100 100

There are no Ramachandran outliers to report.

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	252/252 (100%)	226 (90%)	26 (10%)	7 8

All (26) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1	ILE
1	A	9	VAL
1	A	20	ILE
1	A	25	SER
1	A	26	THR
1	A	49	THR
1	A	54	LEU
1	A	89	ASN
1	A	107	SER
1	A	120	MET
1	A	132	PRO
1	A	144	LEU
1	A	175	LEU
1	A	185	ASP
1	A	197	ILE
1	A	208	PRO
1	A	219	LYS
1	A	224	THR
1	A	225	GLN
1	A	239	LYS
1	A	243	LEU
1	A	261	ASP
1	A	273	GLN
1	A	280	ASN
1	A	313	VAL
1	A	316	LYS

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

Mol	Chain	Res	Type
1	A	21	ASN
1	A	31	GLN
1	A	33	ASN
1	A	97	ASN
1	A	280	ASN
1	A	308	GLN

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 monosaccharides in this entry.

5.6 Ligand geometry

Of 6 ligands modelled in this entry, 5 are monoatomic - leaving 1 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
4	BAN	A	322	3	21,23,34	4.04	12 (57%)	23,29,45	4.10	15 (65%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	BAN	A	322	3	-	10/25/26/35	0/1/1/2

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	322	BAN	CB2-CA2	-9.89	1.34	1.54
4	A	322	BAN	O1-C1	7.80	1.38	1.23
4	A	322	BAN	CA3-N3	7.02	1.59	1.45
4	A	322	BAN	CB3-CA3	-6.53	1.35	1.52
4	A	322	BAN	CA4-C4	5.63	1.68	1.49
4	A	322	BAN	C2-N3	3.31	1.41	1.34
4	A	322	BAN	O3-C3	3.03	1.29	1.23
4	A	322	BAN	CE2-CD2	-2.83	1.33	1.38
4	A	322	BAN	O4-C4	2.76	1.35	1.19
4	A	322	BAN	C3-N4	2.46	1.39	1.33
4	A	322	BAN	CE1-CD1	-2.44	1.33	1.38
4	A	322	BAN	OH1-N1	2.31	1.45	1.40

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	322	BAN	O4-C4-CA4	-12.05	90.53	125.42
4	A	322	BAN	CB3-CA3-C3	6.58	122.65	110.14
4	A	322	BAN	CG2-CB2-CA2	5.87	126.15	113.38
4	A	322	BAN	O3-C3-CA3	-5.68	107.91	120.52
4	A	322	BAN	C4-CA4-N4	-4.49	95.12	112.82
4	A	322	BAN	O2-C2-N3	4.35	130.98	122.93
4	A	322	BAN	CA3-C3-N4	3.89	124.51	116.45
4	A	322	BAN	CB2-CG2-CD1	-3.66	113.64	120.91
4	A	322	BAN	O1-C1-N1	-3.31	118.98	123.27
4	A	322	BAN	C3-CA3-N3	-3.00	104.18	111.60
4	A	322	BAN	CB3-CA3-N3	2.95	115.92	110.38
4	A	322	BAN	CA3-N3-C2	-2.81	115.21	121.29
4	A	322	BAN	CD2-CG2-CD1	2.72	122.44	118.17
4	A	322	BAN	CA4-N4-C3	-2.44	115.99	122.79
4	A	322	BAN	O3-C3-N4	2.12	127.54	122.99

There are no chirality outliers.

All (10) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	322	BAN	N1-C1-CA2-CB2

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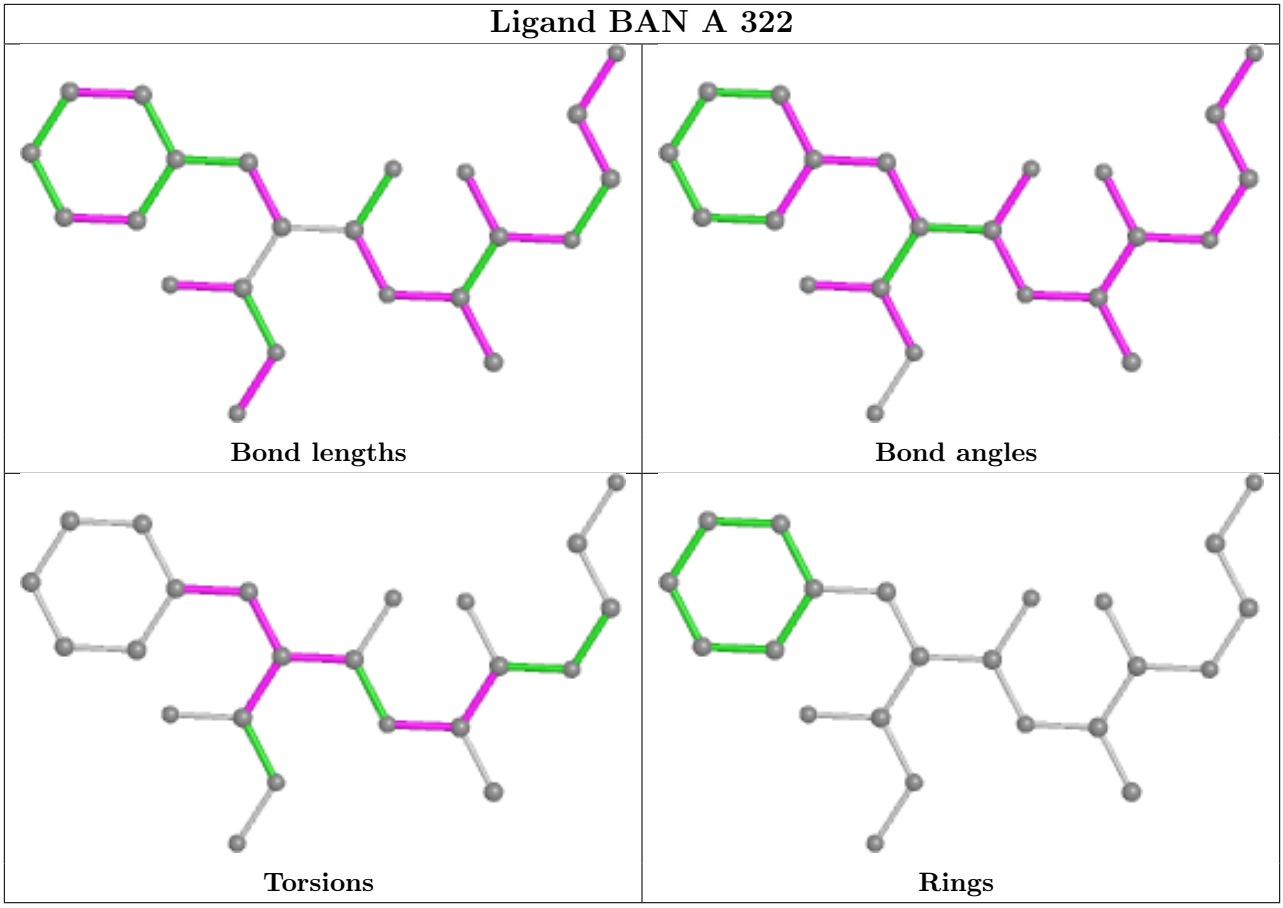
Mol	Chain	Res	Type	Atoms
4	A	322	BAN	O1-C1-CA2-CB2
4	A	322	BAN	O2-C2-CA2-CB2
4	A	322	BAN	N3-C2-CA2-CB2
4	A	322	BAN	O3-C3-CA3-CB3
4	A	322	BAN	CA2-CB2-CG2-CD1
4	A	322	BAN	CA2-CB2-CG2-CD2
4	A	322	BAN	C1-CA2-CB2-CG2
4	A	322	BAN	C3-CA3-N3-C2
4	A	322	BAN	N4-C3-CA3-CB3

There are no ring outliers.

1 monomer is involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	322	BAN	3	0

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



5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	3

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	260:ARG	C	261:ASP	N	1.18
1	A	10:GLY	C	11:ARG	N	1.16
1	A	35:ARG	C	36:GLY	N	1.15

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	316/316 (100%)	-0.73	1 (0%)	94	96	2, 10, 19, 27	0

All (1) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	128	GLN	2.1

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

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

6.3 Carbohydrates

There are no monosaccharides in this entry.

6.4 Ligands

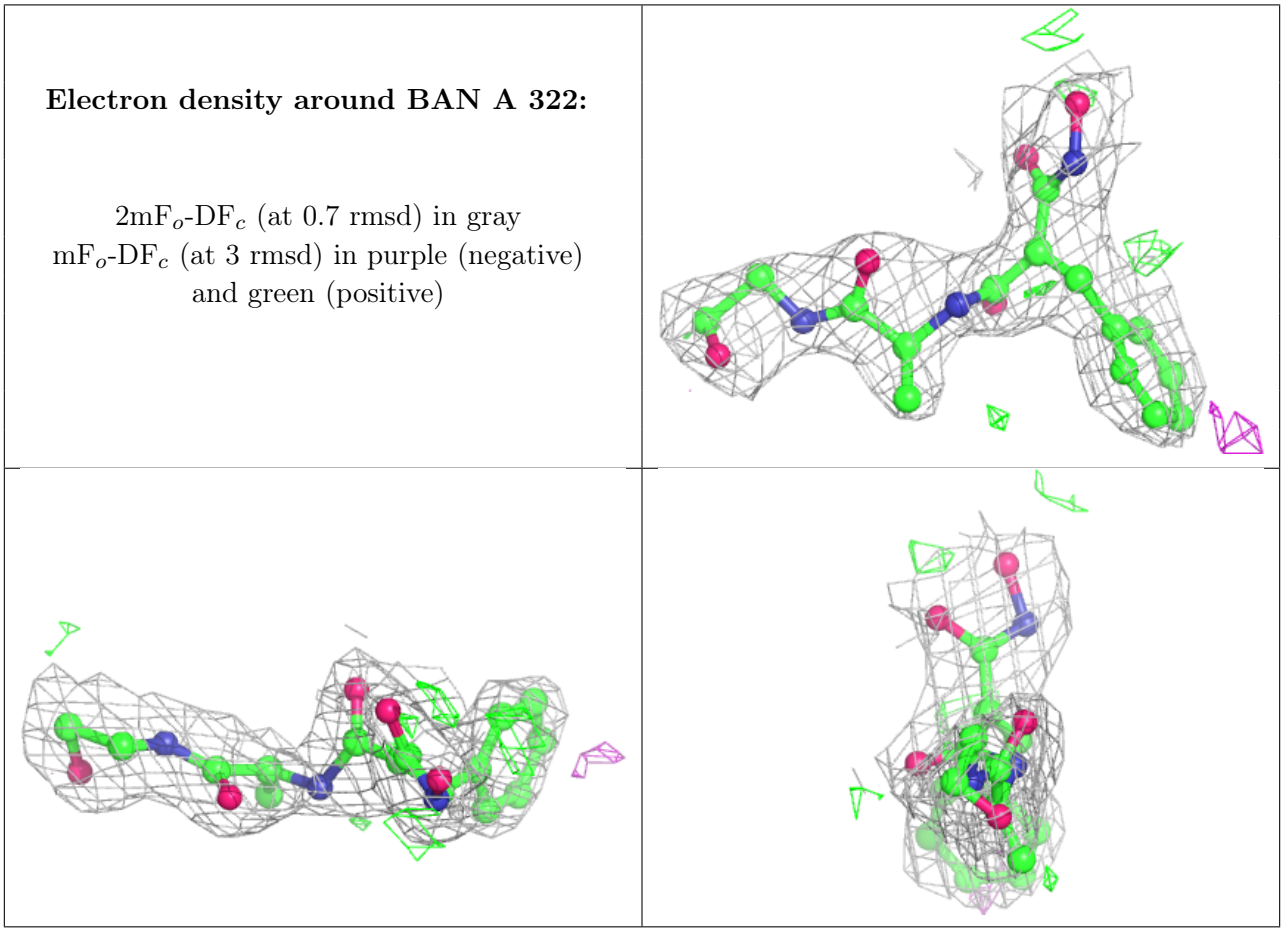
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9'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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	BAN	A	322	23/33	0.93	0.15	21,23,31,33	0
2	CA	A	318	1/1	0.98	0.05	13,13,13,13	0
2	CA	A	320	1/1	0.99	0.05	13,13,13,13	0
3	ZN	A	321	1/1	0.99	0.06	16,16,16,16	0
2	CA	A	319	1/1	0.99	0.03	11,11,11,11	0
2	CA	A	317	1/1	1.00	0.04	9,9,9,9	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 BAN A 322:

$2mF_o$-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.