



wwPDB X-ray Structure Validation Summary Report ⓘ

Feb 1, 2016 – 06:20 PM GMT

PDB ID : 4L62
Title : Crystal Structure of Pseudomonas aeruginosa transcriptional regulator PA2196 bound to its operator DNA
Authors : Choe, J.W.; Kim, Y.W.
Deposited on : 2013-06-11
Resolution : 2.90 Å(reported)

This is a wwPDB X-ray Structure Validation Summary Report for a publicly released PDB entry.
We welcome your comments at validation@mail.wwpdb.org
A user guide is available at
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix) : 1.9-1692
EDS : rb-20026688
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk26865

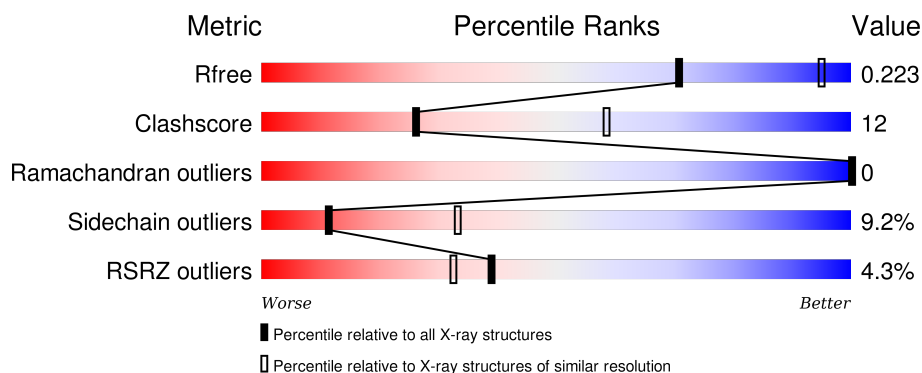
1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.90 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}	91344	1451 (2.90-2.90)
Clashscore	102246	1668 (2.90-2.90)
Ramachandran outliers	100387	1630 (2.90-2.90)
Sidechain outliers	100360	1632 (2.90-2.90)
RSRZ outliers	91569	1456 (2.90-2.90)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. 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	190	<div> <div>3%</div> <div> <div></div> <div>73%</div> <div>24%</div> <div>.</div> </div> </div>
1	B	190	<div> <div>4%</div> <div> <div></div> <div>78%</div> <div>16%</div> <div>..</div> </div> </div>
1	C	190	<div> <div>5%</div> <div> <div></div> <div>76%</div> <div>21%</div> <div>.</div> </div> </div>
1	D	190	<div> <div>3%</div> <div> <div></div> <div>75%</div> <div>21%</div> <div>...</div> </div> </div>
1	E	190	<div> <div>4%</div> <div> <div></div> <div>71%</div> <div>24%</div> <div>5%</div> </div> </div>

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Mol	Chain	Length	Quality of chain
1	F	190	
1	G	190	
1	H	190	
1	I	190	
1	J	190	
1	K	190	
1	L	190	
1	M	190	
1	N	190	
1	O	190	
1	P	190	
2	Q	25	
2	S	25	
2	U	25	
2	W	25	
3	R	25	
3	T	25	
3	V	25	
3	X	25	

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 27921 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 Transcriptional regulator.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	190	Total	C	N	O	S	0	0	0
			1491	935	263	282	11			
1	B	187	Total	C	N	O	S	0	0	0
			1465	919	260	275	11			
1	C	190	Total	C	N	O	S	0	0	0
			1491	935	263	282	11			
1	D	187	Total	C	N	O	S	0	0	0
			1465	919	260	275	11			
1	E	190	Total	C	N	O	S	0	0	0
			1491	935	263	282	11			
1	F	187	Total	C	N	O	S	0	0	0
			1465	919	260	275	11			
1	G	187	Total	C	N	O	S	0	0	0
			1465	919	260	275	11			
1	H	190	Total	C	N	O	S	0	0	0
			1491	935	263	282	11			
1	I	190	Total	C	N	O	S	0	0	0
			1491	935	263	282	11			
1	J	187	Total	C	N	O	S	0	0	0
			1465	919	260	275	11			
1	K	190	Total	C	N	O	S	0	0	0
			1491	935	263	282	11			
1	L	187	Total	C	N	O	S	0	0	0
			1465	919	260	275	11			
1	M	190	Total	C	N	O	S	0	0	0
			1491	935	263	282	11			
1	N	187	Total	C	N	O	S	0	0	0
			1465	919	260	275	11			
1	O	190	Total	C	N	O	S	0	0	0
			1491	935	263	282	11			
1	P	187	Total	C	N	O	S	0	0	0
			1465	919	260	275	11			

- Molecule 2 is a DNA chain called DNA (25-MER).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	Q	25	Total	C	N	O	P	0	0	0
			505	239	88	153	25			
2	S	25	Total	C	N	O	P	0	0	0
			505	239	88	153	25			
2	U	25	Total	C	N	O	P	0	0	0
			505	239	88	153	25			
2	W	25	Total	C	N	O	P	0	0	0
			505	239	88	153	25			

- Molecule 3 is a DNA chain called DNA (25-MER).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	R	25	Total	C	N	O	P	0	0	0
			511	242	97	147	25			
3	T	25	Total	C	N	O	P	0	0	0
			511	242	97	147	25			
3	V	25	Total	C	N	O	P	0	0	0
			511	242	97	147	25			
3	X	25	Total	C	N	O	P	0	0	0
			511	242	97	147	25			

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	19	Total	O	0	0
			19	19		
4	B	31	Total	O	0	0
			31	31		
4	C	5	Total	O	0	0
			5	5		
4	D	3	Total	O	0	0
			3	3		
4	E	12	Total	O	0	0
			12	12		
4	F	5	Total	O	0	0
			5	5		
4	G	24	Total	O	0	0
			24	24		
4	H	13	Total	O	0	0
			13	13		
4	I	4	Total	O	0	0
			4	4		

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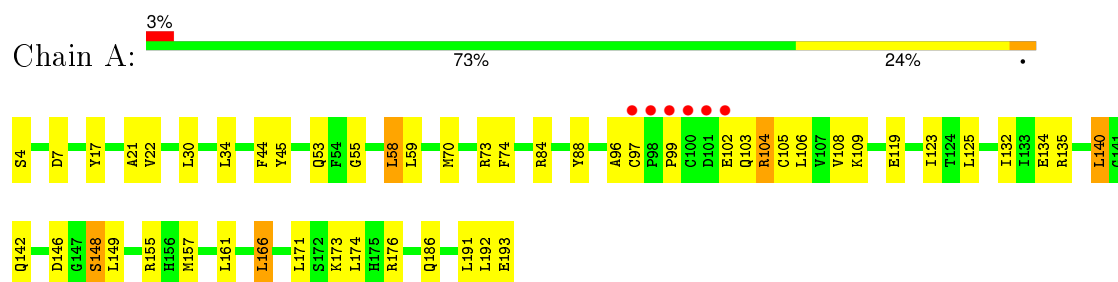
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	J	1	Total 1	O 1	0	0
4	K	15	Total 15	O 15	0	0
4	L	19	Total 19	O 19	0	0
4	M	8	Total 8	O 8	0	0
4	N	4	Total 4	O 4	0	0
4	Q	3	Total 3	O 3	0	0
4	R	2	Total 2	O 2	0	0
4	S	13	Total 13	O 13	0	0
4	T	7	Total 7	O 7	0	0
4	U	12	Total 12	O 12	0	0
4	V	9	Total 9	O 9	0	0

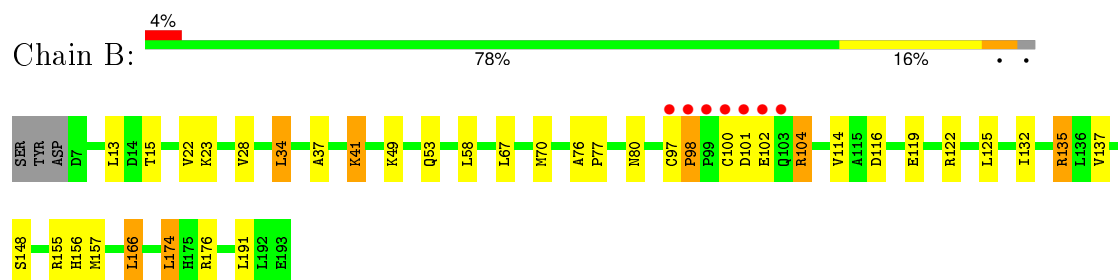
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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 ($\text{RSRZ} > 2$). 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.

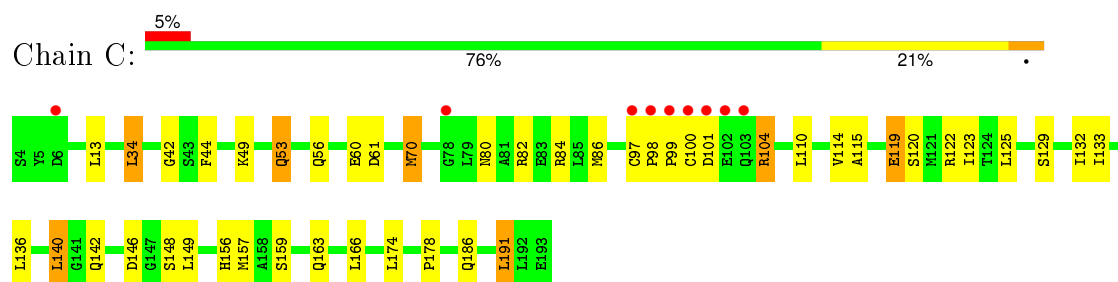
- Molecule 1: Transcriptional regulator



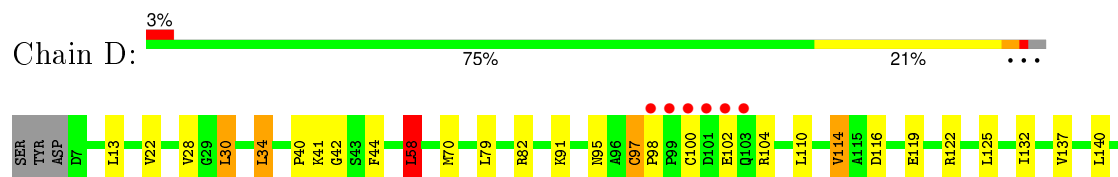
- Molecule 1: Transcriptional regulator



- Molecule 1: Transcriptional regulator



- Molecule 1: Transcriptional regulator





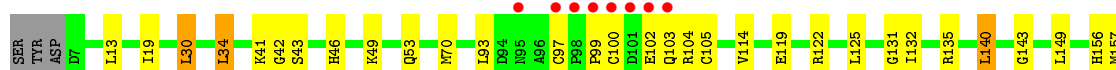
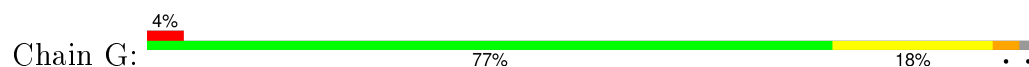
- Molecule 1: Transcriptional regulator



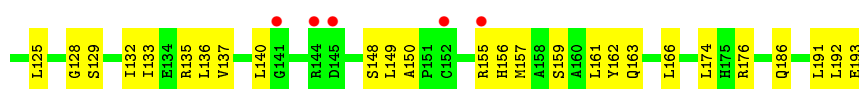
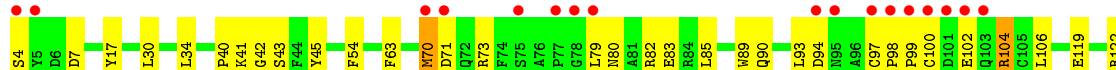
- Molecule 1: Transcriptional regulator



- Molecule 1: Transcriptional regulator



- Molecule 1: Transcriptional regulator

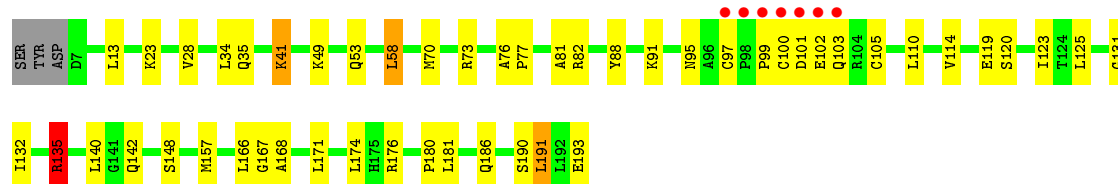


- Molecule 1: Transcriptional regulator

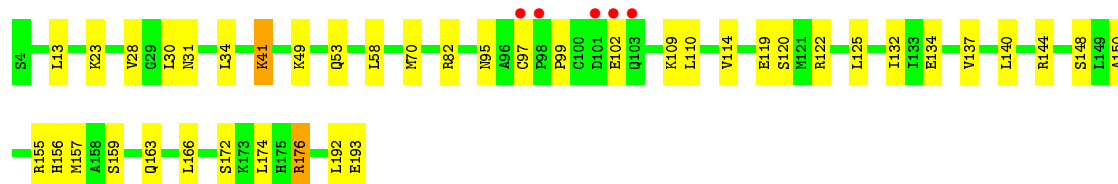
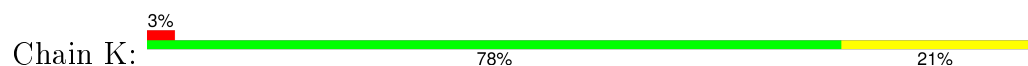




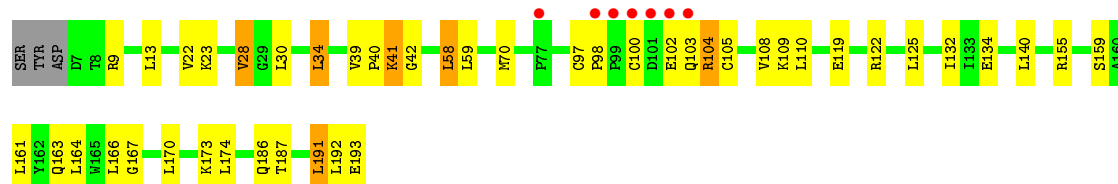
- Molecule 1: Transcriptional regulator



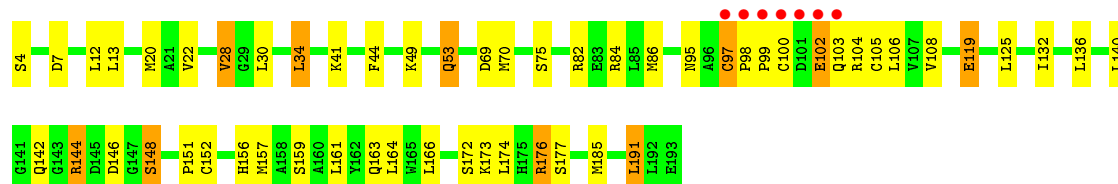
- Molecule 1: Transcriptional regulator



- Molecule 1: Transcriptional regulator

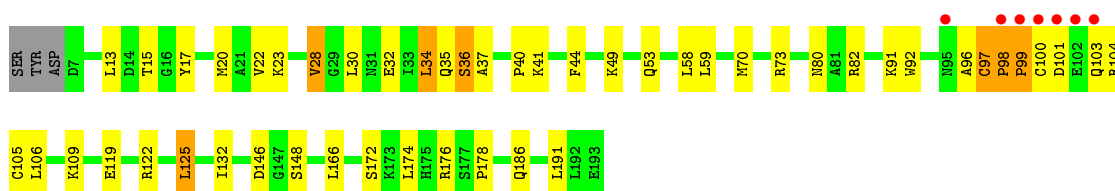


- Molecule 1: Transcriptional regulator

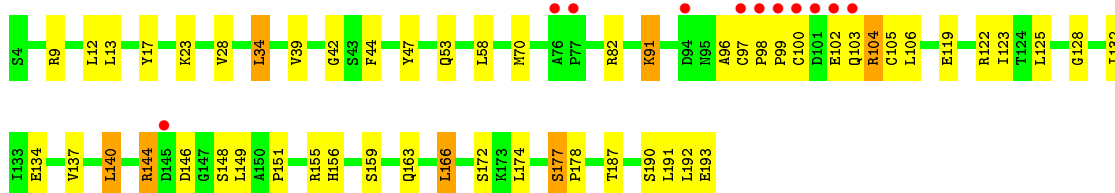


- Molecule 1: Transcriptional regulator

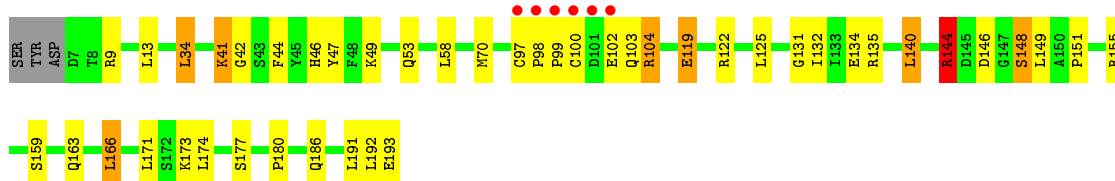
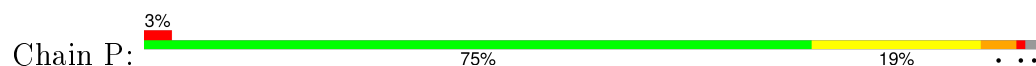




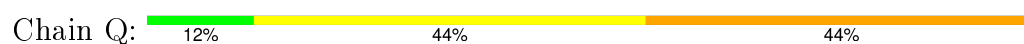
- Molecule 1: Transcriptional regulator



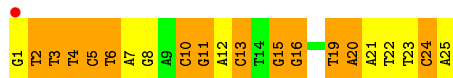
- Molecule 1: Transcriptional regulator



- Molecule 2: DNA (25-MER)



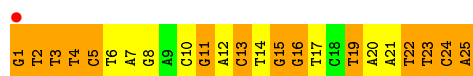
- Molecule 2: DNA (25-MER)



- Molecule 2: DNA (25-MER)



- Molecule 2: DNA (25-MER)



- Molecule 3: DNA (25-MER)



- Molecule 3: DNA (25-MER)



- Molecule 3: DNA (25-MER)



- Molecule 3: DNA (25-MER)



4 Data and refinement statistics

Property	Value	Source
Space group	P 32 2 1	Depositor
Cell constants a, b, c, α , β , γ	211.99Å 211.99Å 282.77Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	19.95 – 2.90 19.95 – 2.90	Depositor EDS
% Data completeness (in resolution range)	99.9 (19.95-2.90) 93.8 (19.95-2.90)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.08 (at 2.88Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.8.1_1168)	Depositor
R, R_{free}	0.198 , 0.238 0.183 , 0.223	Depositor DCC
R_{free} test set	7635 reflections (5.03%)	DCC
Wilson B-factor (Å ²)	53.3	Xtriage
Anisotropy	0.388	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 38.5	EDS
Estimated twinning fraction	0.025 for -h,-k,l	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.51$, $\langle L^2 \rangle = 0.35$	Xtriage
Outliers	0 of 162298 reflections	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	27921	wwPDB-VP
Average B, all atoms (Å ²)	42.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.72% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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	0.67	0/1521	0.81	1/2052 (0.0%)
1	B	0.73	0/1494	0.85	3/2015 (0.1%)
1	C	0.60	0/1521	0.81	0/2052
1	D	0.59	0/1494	0.80	2/2015 (0.1%)
1	E	0.63	0/1521	0.86	1/2052 (0.0%)
1	F	0.55	0/1494	0.84	1/2015 (0.0%)
1	G	0.63	0/1494	0.79	0/2015
1	H	0.54	0/1521	0.77	1/2052 (0.0%)
1	I	0.68	0/1521	0.87	5/2052 (0.2%)
1	J	0.71	0/1494	0.86	3/2015 (0.1%)
1	K	0.61	0/1521	0.79	2/2052 (0.1%)
1	L	0.60	0/1494	0.78	2/2015 (0.1%)
1	M	0.62	1/1521 (0.1%)	0.81	2/2052 (0.1%)
1	N	0.58	0/1494	0.81	2/2015 (0.1%)
1	O	0.55	0/1521	0.77	0/2052
1	P	0.66	0/1494	0.82	2/2015 (0.1%)
2	Q	1.72	15/565 (2.7%)	3.14	86/867 (9.9%)
2	S	1.60	6/565 (1.1%)	2.89	76/867 (8.8%)
2	U	1.86	20/565 (3.5%)	3.53	97/867 (11.2%)
2	W	1.60	6/565 (1.1%)	3.13	78/867 (9.0%)
3	R	1.61	11/574 (1.9%)	3.11	75/882 (8.5%)
3	T	1.59	11/574 (1.9%)	2.74	69/882 (7.8%)
3	V	1.76	15/574 (2.6%)	3.19	88/882 (10.0%)
3	X	1.60	8/574 (1.4%)	2.94	78/882 (8.8%)
All	All	0.88	93/28676 (0.3%)	1.50	674/39532 (1.7%)

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	C	0	1

The worst 5 of 93 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	V	4	DA	N9-C4	-10.39	1.31	1.37
2	W	13	DC	N1-C2	10.30	1.50	1.40
3	X	1	DT	N1-C2	10.24	1.46	1.38
2	U	2	DT	N1-C2	9.62	1.45	1.38
2	S	13	DC	N1-C2	8.55	1.48	1.40

The worst 5 of 674 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	W	13	DC	N1-C2-O2	21.02	131.51	118.90
2	W	13	DC	N3-C2-O2	-19.31	108.39	121.90
2	U	15	DG	O4'-C1'-N9	-19.23	94.54	108.00
2	U	11	DG	O4'-C1'-N9	-17.58	95.69	108.00
3	R	13	DG	N1-C6-O6	17.07	130.14	119.90

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	97	CYS	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	1491	0	1461	39	0
1	B	1465	0	1443	26	0
1	C	1491	0	1461	29	0
1	D	1465	0	1443	30	0
1	E	1491	0	1461	39	0
1	F	1465	0	1443	39	0
1	G	1465	0	1443	32	0
1	H	1491	0	1461	38	0
1	I	1491	0	1461	30	0
1	J	1465	0	1443	25	2
1	K	1491	0	1461	20	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	L	1465	0	1443	36	0
1	M	1491	0	1461	33	0
1	N	1465	0	1443	35	0
1	O	1491	0	1461	36	0
1	P	1465	0	1443	34	0
2	Q	505	0	267	29	0
2	S	505	0	267	30	0
2	U	505	0	267	32	0
2	W	505	0	267	27	0
3	R	511	0	273	30	0
3	T	511	0	273	31	0
3	V	511	0	273	36	0
3	X	511	0	273	34	0
4	A	19	0	0	2	2
4	B	31	0	0	4	0
4	C	5	0	0	0	0
4	D	3	0	0	1	0
4	E	12	0	0	4	0
4	F	5	0	0	2	0
4	G	24	0	0	0	0
4	H	13	0	0	8	0
4	I	4	0	0	0	0
4	J	1	0	0	0	0
4	K	15	0	0	3	0
4	L	19	0	0	5	0
4	M	8	0	0	1	0
4	N	4	0	0	0	0
4	Q	3	0	0	0	0
4	R	2	0	0	0	0
4	S	13	0	0	0	0
4	T	7	0	0	0	0
4	U	12	0	0	0	0
4	V	9	0	0	0	0
All	All	27921	0	25392	625	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 12.

The worst 5 of 625 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:U:24:DC:N3	3:V:2:DG:N2	2.03	1.07
2:Q:1:DG:N2	3:R:25:DC:N3	2.03	1.06
1:P:100:CYS:SG	1:P:104:ARG:NH2	2.31	1.03
2:U:1:DG:N2	3:V:25:DC:N3	2.06	1.01
2:U:15:DG:H1	3:V:11:DC:H42	1.09	0.99

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:J:176:ARG:NH1	4:A:201:HOH:O[2_874]	2.05	0.15
1:J:101:ASP:OD2	4:A:205:HOH:O[2_874]	2.18	0.02

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	188/190 (99%)	186 (99%)	2 (1%)	0	100	100
1	B	185/190 (97%)	181 (98%)	4 (2%)	0	100	100
1	C	188/190 (99%)	184 (98%)	4 (2%)	0	100	100
1	D	185/190 (97%)	182 (98%)	3 (2%)	0	100	100
1	E	188/190 (99%)	187 (100%)	1 (0%)	0	100	100
1	F	185/190 (97%)	184 (100%)	1 (0%)	0	100	100
1	G	185/190 (97%)	183 (99%)	2 (1%)	0	100	100
1	H	188/190 (99%)	185 (98%)	3 (2%)	0	100	100
1	I	188/190 (99%)	186 (99%)	2 (1%)	0	100	100
1	J	185/190 (97%)	181 (98%)	4 (2%)	0	100	100
1	K	188/190 (99%)	185 (98%)	3 (2%)	0	100	100
1	L	185/190 (97%)	182 (98%)	3 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	M	188/190 (99%)	185 (98%)	3 (2%)	0	100	100
1	N	185/190 (97%)	180 (97%)	5 (3%)	0	100	100
1	O	188/190 (99%)	184 (98%)	4 (2%)	0	100	100
1	P	185/190 (97%)	182 (98%)	3 (2%)	0	100	100
All	All	2984/3040 (98%)	2937 (98%)	47 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	159/159 (100%)	149 (94%)	10 (6%)	22	54
1	B	156/159 (98%)	145 (93%)	11 (7%)	18	47
1	C	159/159 (100%)	143 (90%)	16 (10%)	9	28
1	D	156/159 (98%)	143 (92%)	13 (8%)	14	38
1	E	159/159 (100%)	141 (89%)	18 (11%)	7	22
1	F	156/159 (98%)	139 (89%)	17 (11%)	8	23
1	G	156/159 (98%)	141 (90%)	15 (10%)	10	31
1	H	159/159 (100%)	147 (92%)	12 (8%)	17	44
1	I	159/159 (100%)	146 (92%)	13 (8%)	14	39
1	J	156/159 (98%)	141 (90%)	15 (10%)	10	31
1	K	159/159 (100%)	144 (91%)	15 (9%)	11	32
1	L	156/159 (98%)	144 (92%)	12 (8%)	16	42
1	M	159/159 (100%)	138 (87%)	21 (13%)	5	14
1	N	156/159 (98%)	139 (89%)	17 (11%)	8	23
1	O	159/159 (100%)	145 (91%)	14 (9%)	12	35
1	P	156/159 (98%)	144 (92%)	12 (8%)	16	42
All	All	2520/2544 (99%)	2289 (91%)	231 (9%)	11	33

5 of 231 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	H	93	LEU
1	J	58	LEU
1	O	149	LEU
1	H	129	SER
1	I	120	SER

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	163	GLN
1	I	163	GLN
1	J	103	GLN
1	M	142	GLN
1	N	103	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	190/190 (100%)	-0.40	6 (3%) 51 43	20, 29, 53, 127	0
1	B	187/190 (98%)	-0.29	7 (3%) 45 38	17, 31, 55, 128	0
1	C	190/190 (100%)	-0.12	9 (4%) 35 29	21, 43, 75, 135	0
1	D	187/190 (98%)	-0.28	6 (3%) 51 43	23, 38, 67, 145	0
1	E	190/190 (100%)	-0.23	7 (3%) 45 38	22, 42, 73, 122	0
1	F	187/190 (98%)	0.10	14 (7%) 17 11	31, 53, 92, 160	0
1	G	187/190 (98%)	-0.22	8 (4%) 39 32	22, 37, 73, 161	0
1	H	190/190 (100%)	0.38	22 (11%) 6 4	28, 68, 99, 146	0
1	I	190/190 (100%)	-0.38	6 (3%) 51 43	17, 27, 52, 132	0
1	J	187/190 (98%)	-0.31	7 (3%) 45 38	14, 28, 54, 138	0
1	K	190/190 (100%)	-0.32	5 (2%) 59 54	21, 36, 64, 130	0
1	L	187/190 (98%)	-0.37	7 (3%) 45 38	18, 33, 63, 141	0
1	M	190/190 (100%)	-0.25	7 (3%) 45 38	20, 37, 61, 132	0
1	N	187/190 (98%)	-0.13	7 (3%) 45 38	27, 46, 78, 136	0
1	O	190/190 (100%)	-0.04	11 (5%) 26 20	23, 49, 88, 136	0
1	P	187/190 (98%)	-0.37	6 (3%) 51 43	21, 32, 67, 138	0
2	Q	25/25 (100%)	-0.68	0 100 100	19, 31, 47, 50	0
2	S	25/25 (100%)	-0.34	1 (4%) 42 35	25, 39, 55, 70	0
2	U	25/25 (100%)	-0.69	0 100 100	18, 26, 40, 55	0
2	W	25/25 (100%)	-0.33	1 (4%) 42 35	22, 36, 45, 66	0
3	R	25/25 (100%)	-0.55	0 100 100	23, 30, 51, 71	0
3	T	25/25 (100%)	-0.34	0 100 100	27, 35, 54, 58	0
3	V	25/25 (100%)	-0.71	0 100 100	17, 24, 42, 67	0
3	X	25/25 (100%)	-0.36	0 100 100	25, 32, 48, 56	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
All	All	3216/3240 (99%)	-0.22	137 (4%) 39 32	14, 38, 84, 161	0

The worst 5 of 137 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	N	101	ASP	16.4
1	G	99	PRO	12.5
1	F	101	ASP	12.5
1	B	98	PRO	12.1
1	F	100	CYS	10.8

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

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

6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.