



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 9, 2026 – 01:37 PM UTC

PDB ID : 1W4C / pdb_00001w4c
Title : P4 protein from Bacteriophage PHI12 apo state
Authors : Mancini, E.J.; Kainov, D.E.; Grimes, J.M.; Tuma, R.; Bamford, D.H.; Stuart, D.I.
Deposited on : 2004-07-22
Resolution : 2.50 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

<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
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

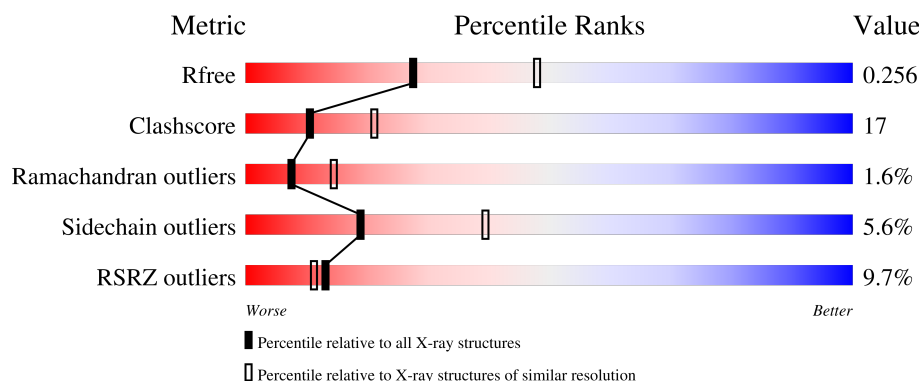
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.50 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	5829 (2.50-2.50)
Clashscore	190562	6492 (2.50-2.50)
Ramachandran outliers	187476	6378 (2.50-2.50)
Sidechain outliers	187428	6380 (2.50-2.50)
RSRZ outliers	180081	5833 (2.50-2.50)

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	331	5% 63% 21% • • 13%
1	B	331	8% 63% 24% 5% 8%
1	C	331	8% 65% 22% 5% 8%
1	D	331	8% 62% 21% • • 13%
1	E	331	10% 64% 23% • 8%

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Mol	Chain	Length	Quality of chain
1	F	331	
1	G	331	
1	H	331	
1	I	331	
1	J	331	
1	K	331	
1	L	331	
1	M	331	
1	N	331	
1	O	331	
1	P	331	
1	Q	331	
1	R	331	
1	S	331	
1	T	331	
1	U	331	
1	V	331	
1	W	331	
1	X	331	

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 57270 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 NTPASE P4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	289	Total	C	N	O	S	0	0	1
			2171	1361	379	424	7			
1	B	304	Total	C	N	O	S	0	0	0
			2288	1434	399	448	7			
1	C	304	Total	C	N	O	S	0	0	0
			2288	1433	399	449	7			
1	D	289	Total	C	N	O	S	0	0	1
			2171	1361	379	424	7			
1	E	304	Total	C	N	O	S	0	0	0
			2289	1434	399	449	7			
1	F	304	Total	C	N	O	S	0	0	0
			2289	1434	399	449	7			
1	G	304	Total	C	N	O	S	0	0	0
			2289	1434	399	449	7			
1	H	289	Total	C	N	O	S	0	0	1
			2171	1361	379	424	7			
1	I	289	Total	C	N	O	S	0	0	1
			2171	1361	379	424	7			
1	J	304	Total	C	N	O	S	0	0	0
			2289	1434	399	449	7			
1	K	304	Total	C	N	O	S	0	0	0
			2289	1434	399	449	7			
1	L	289	Total	C	N	O	S	0	0	1
			2171	1361	379	424	7			
1	M	304	Total	C	N	O	S	0	0	0
			2289	1434	399	449	7			
1	N	304	Total	C	N	O	S	0	0	0
			2289	1434	399	449	7			
1	O	304	Total	C	N	O	S	0	0	0
			2289	1434	399	449	7			
1	P	304	Total	C	N	O	S	0	0	0
			2289	1434	399	449	7			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	Q	304	Total	C	N	O	S	0	0	0
			2289	1434	399	449	7			
1	R	304	Total	C	N	O	S	0	0	0
			2289	1434	399	449	7			
1	S	304	Total	C	N	O	S	0	0	0
			2289	1434	399	449	7			
1	T	304	Total	C	N	O	S	0	0	0
			2289	1434	399	449	7			
1	U	289	Total	C	N	O	S	0	0	1
			2171	1361	379	424	7			
1	V	304	Total	C	N	O	S	0	0	0
			2289	1434	399	449	7			
1	W	304	Total	C	N	O	S	0	0	0
			2289	1434	399	449	7			
1	X	289	Total	C	N	O	S	0	0	1
			2171	1361	379	424	7			

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	110	Total	O	0	0
			110	110		
2	B	119	Total	O	0	0
			119	119		
2	C	129	Total	O	0	0
			129	129		
2	D	145	Total	O	0	0
			145	145		
2	E	143	Total	O	0	0
			143	143		
2	F	151	Total	O	0	0
			151	151		
2	G	101	Total	O	0	0
			101	101		
2	H	178	Total	O	0	0
			178	178		
2	I	193	Total	O	0	0
			193	193		
2	J	159	Total	O	0	0
			159	159		
2	K	122	Total	O	0	0
			122	122		

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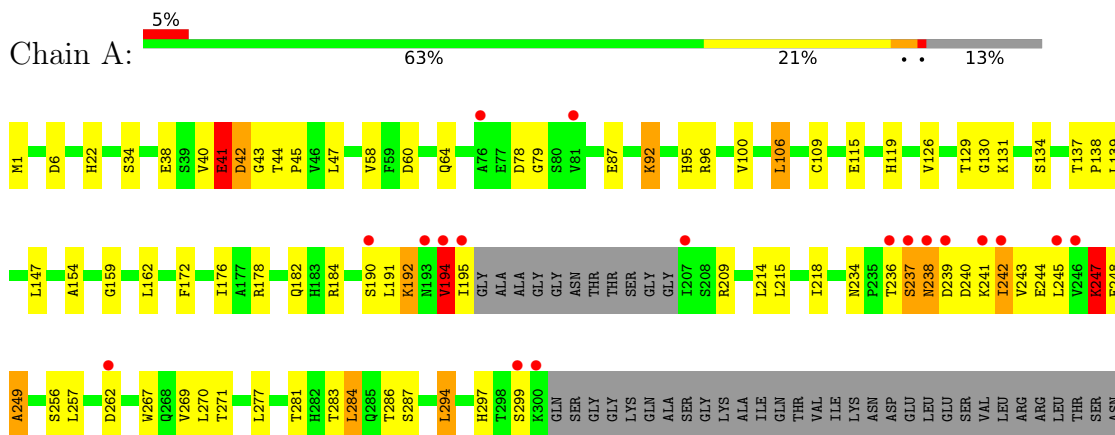
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	L	93	Total 93	O 93	0	0
2	M	169	Total 169	O 169	0	0
2	N	202	Total 202	O 202	0	0
2	O	144	Total 144	O 144	0	0
2	P	103	Total 103	O 103	0	0
2	Q	93	Total 93	O 93	0	0
2	R	110	Total 110	O 110	0	0
2	S	146	Total 146	O 146	0	0
2	T	88	Total 88	O 88	0	0
2	U	73	Total 73	O 73	0	0
2	V	118	Total 118	O 118	0	0
2	W	120	Total 120	O 120	0	0
2	X	153	Total 153	O 153	0	0

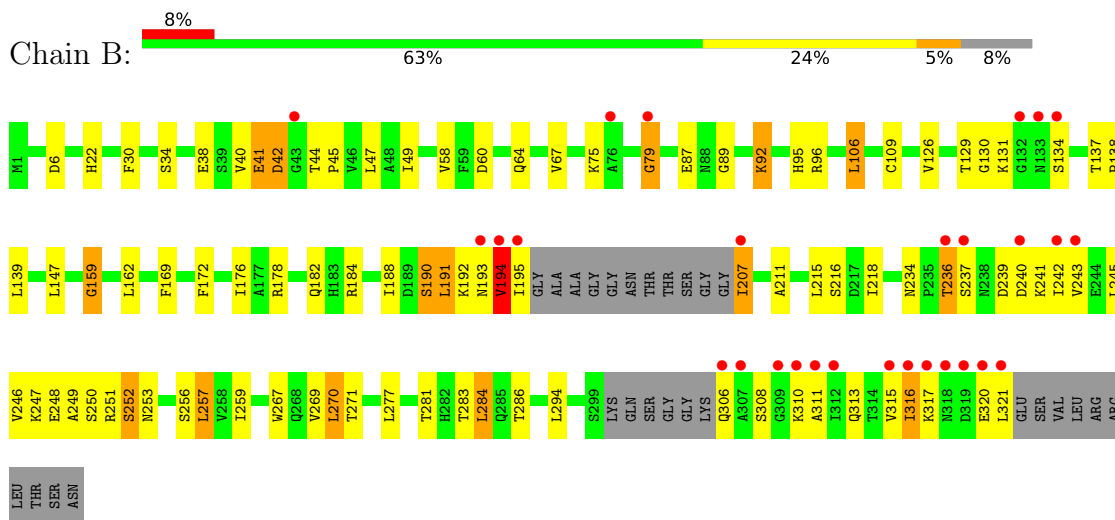
3 Residue-property plots [i](#)

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.

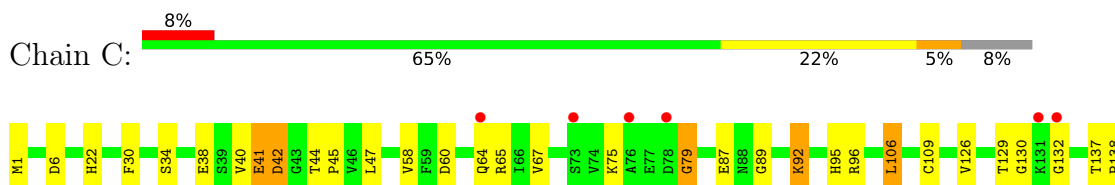
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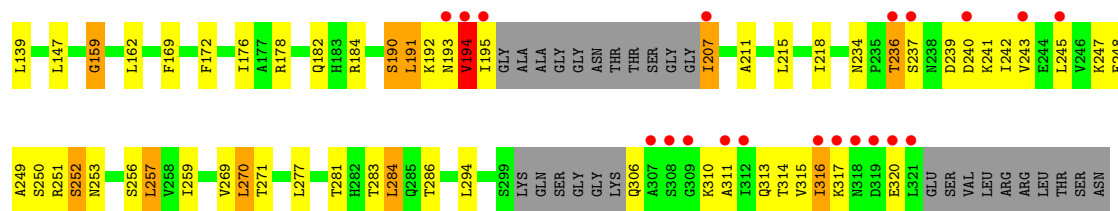


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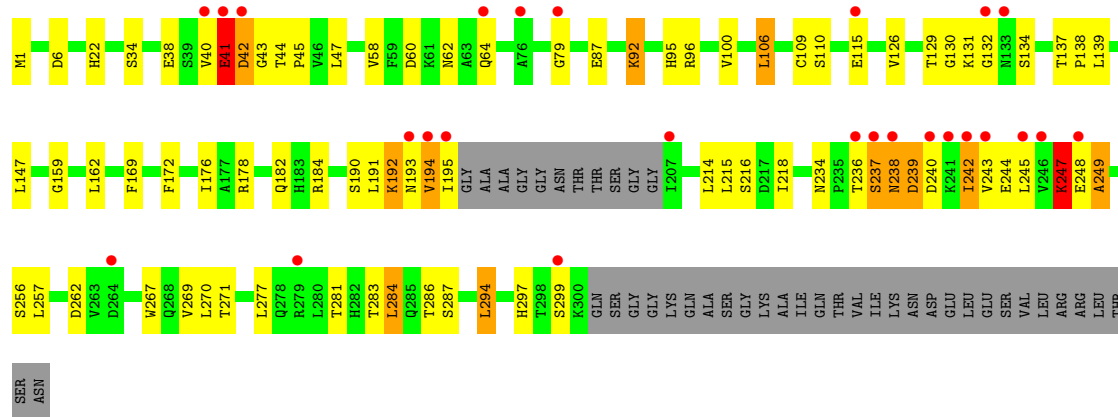


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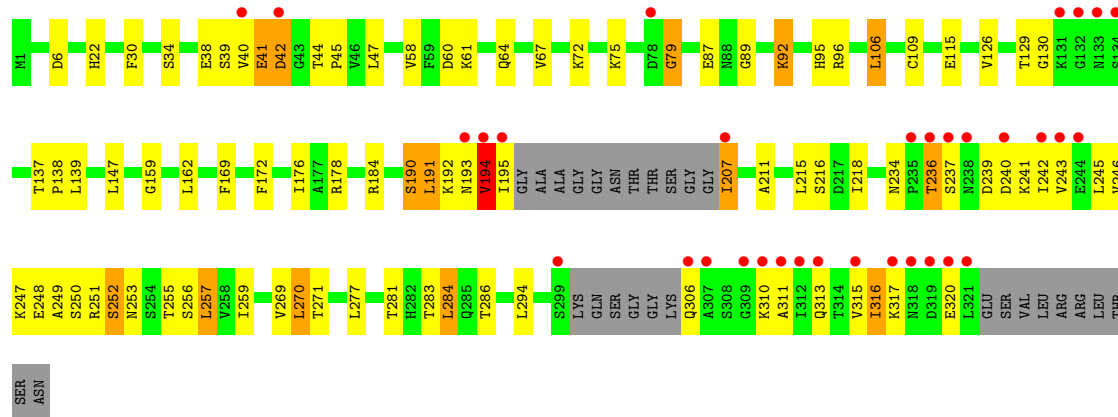




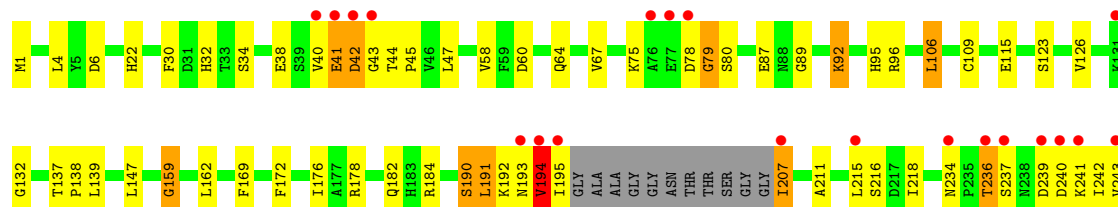
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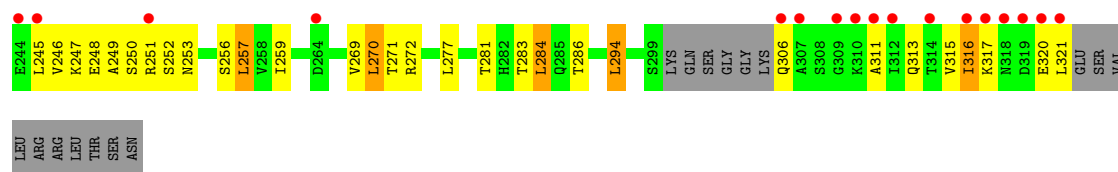


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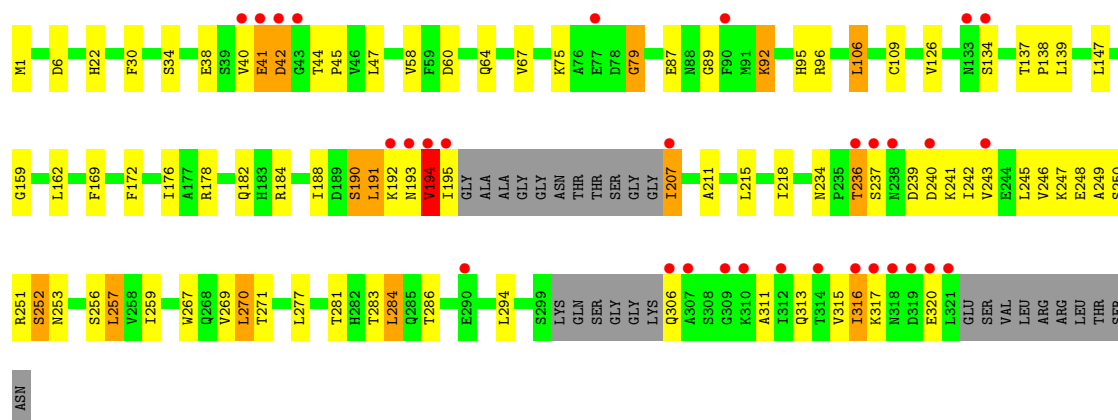


● Molecule 1: NTPASE P4

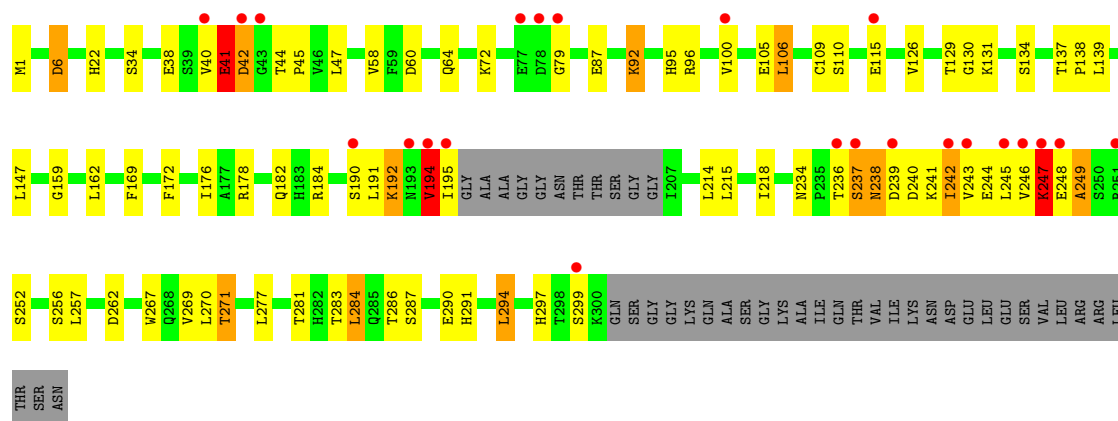




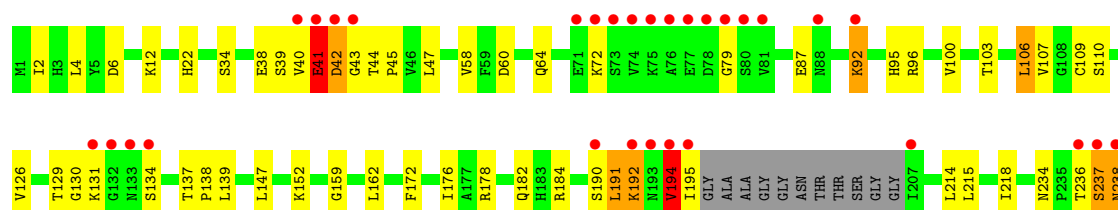
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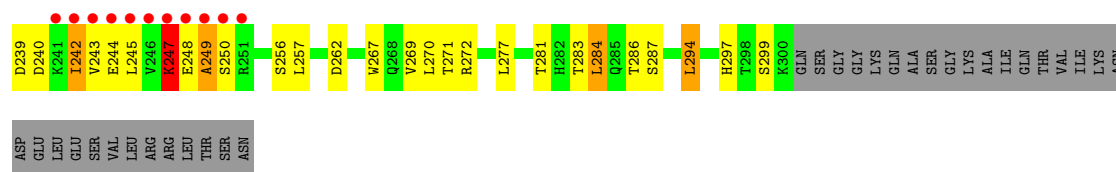


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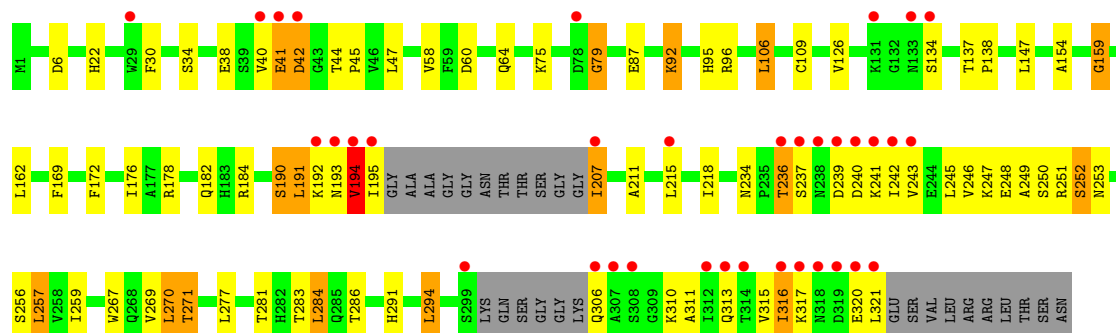


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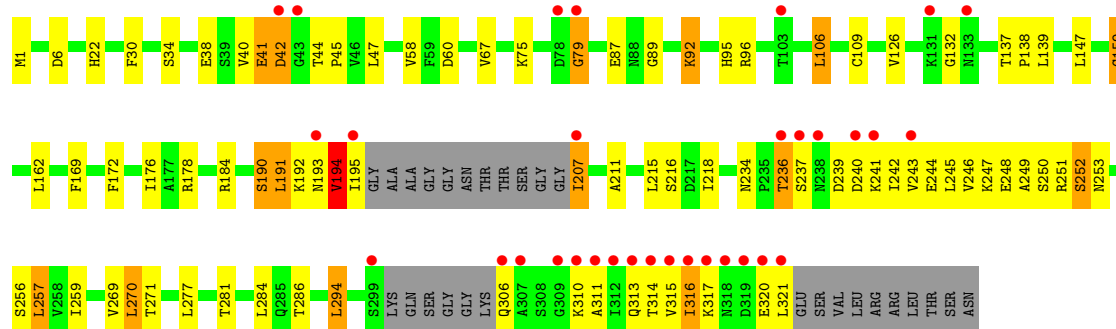




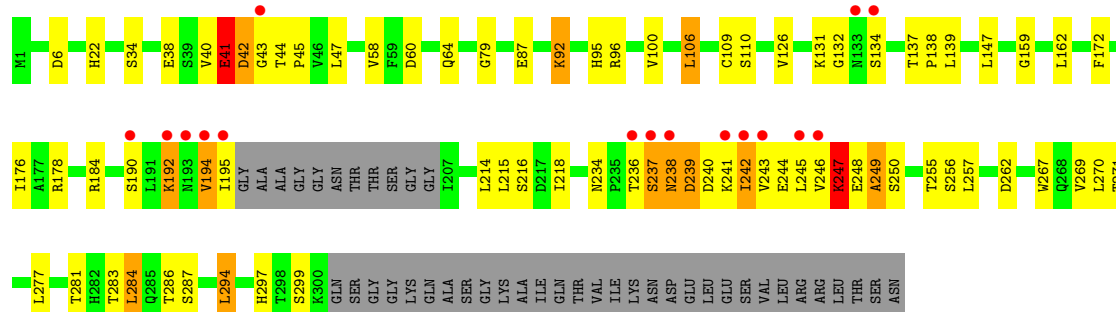
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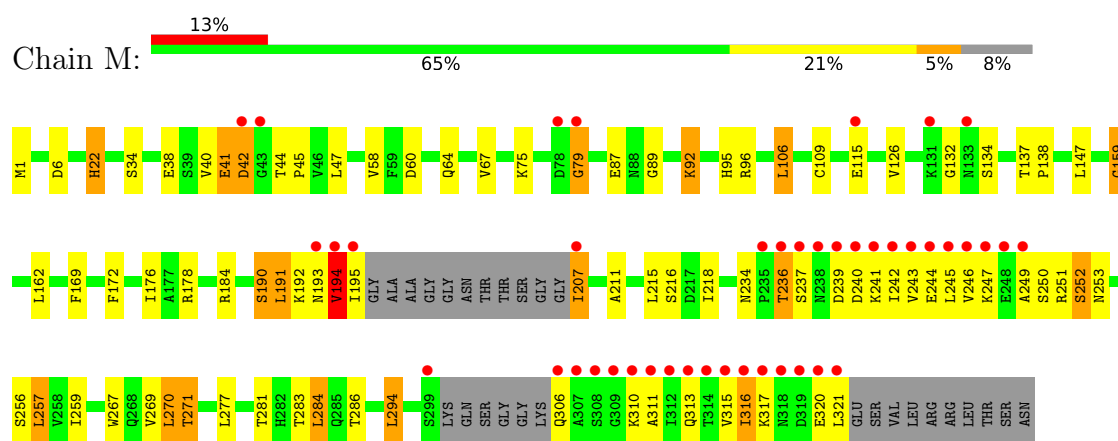
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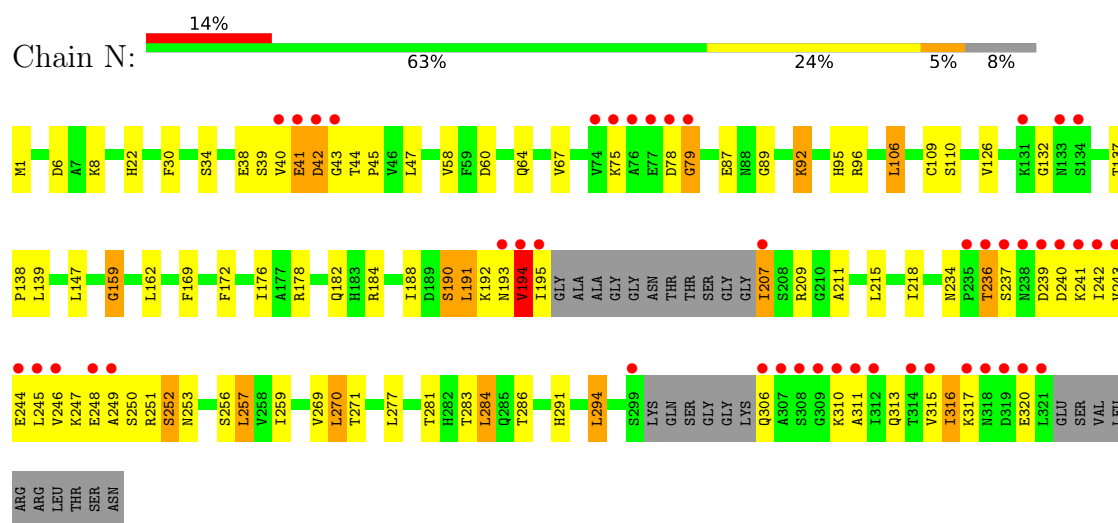
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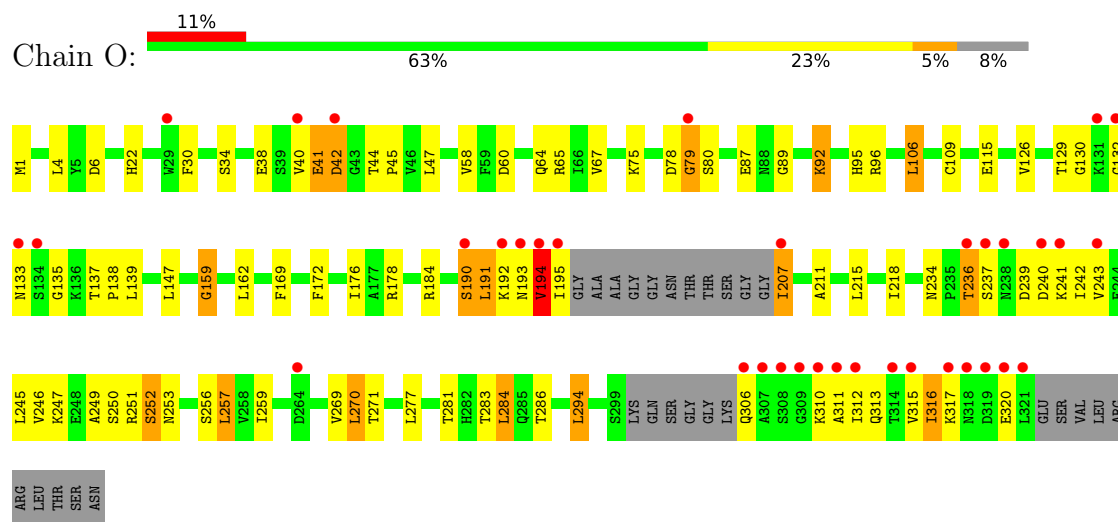
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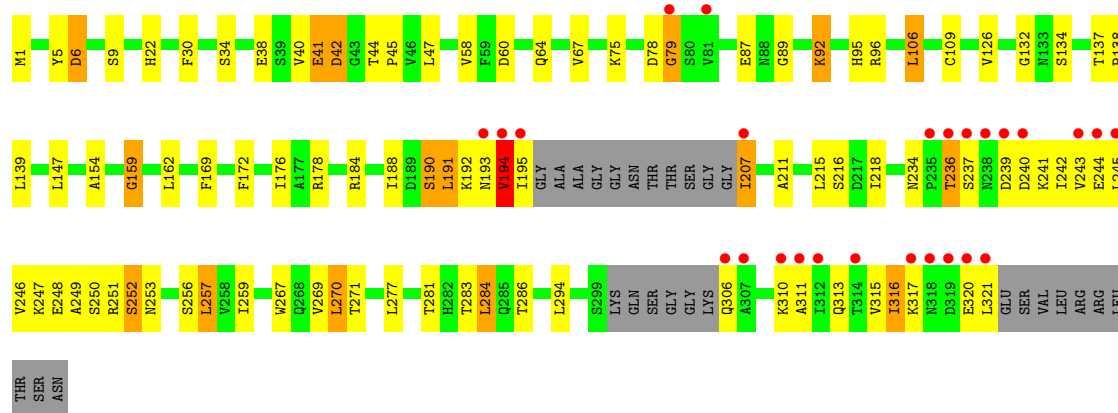


• Molecule 1: NTPASE P4

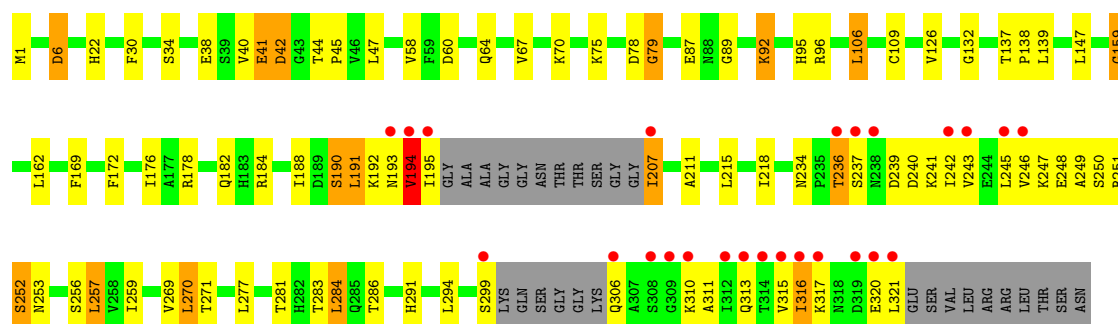


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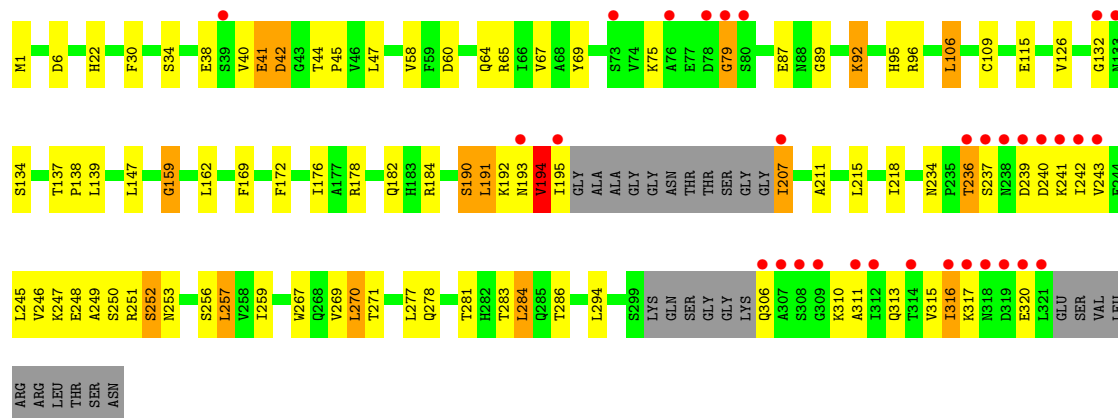




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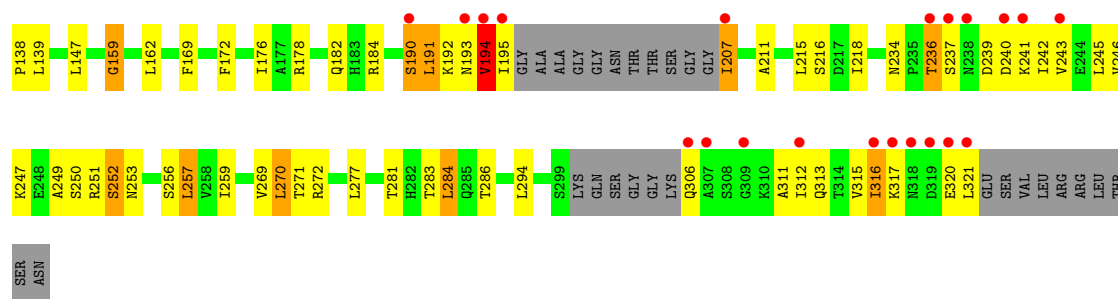


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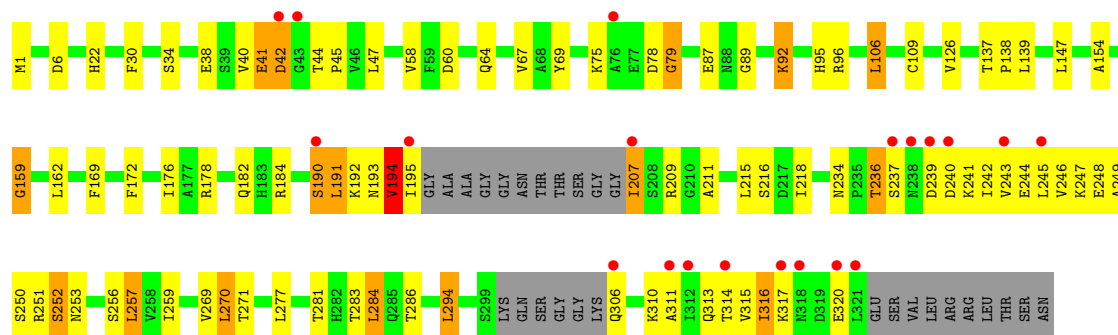


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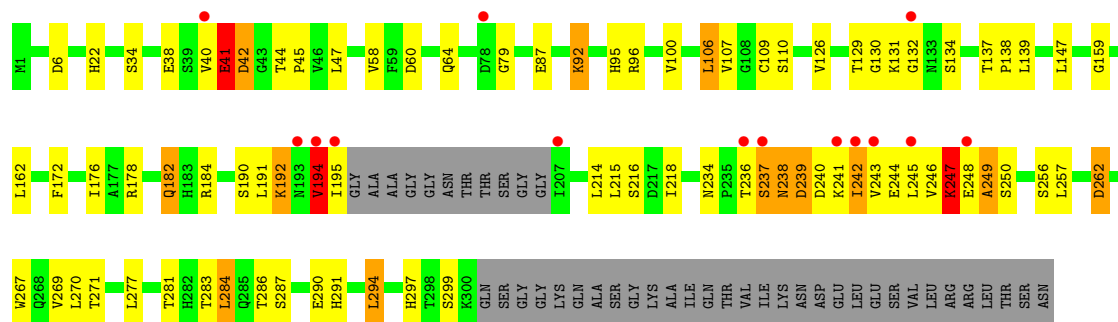




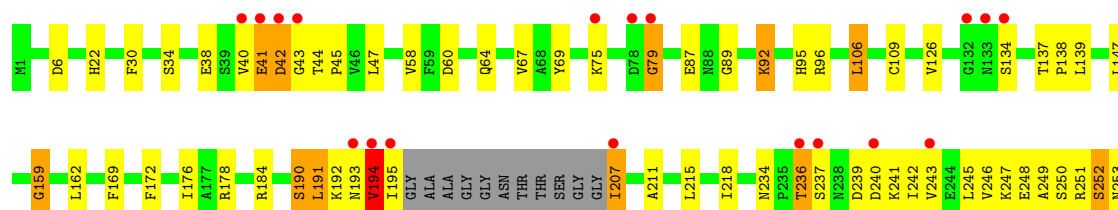
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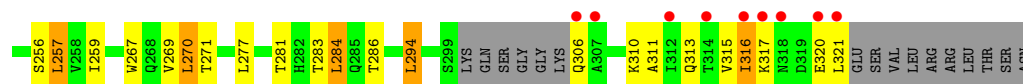


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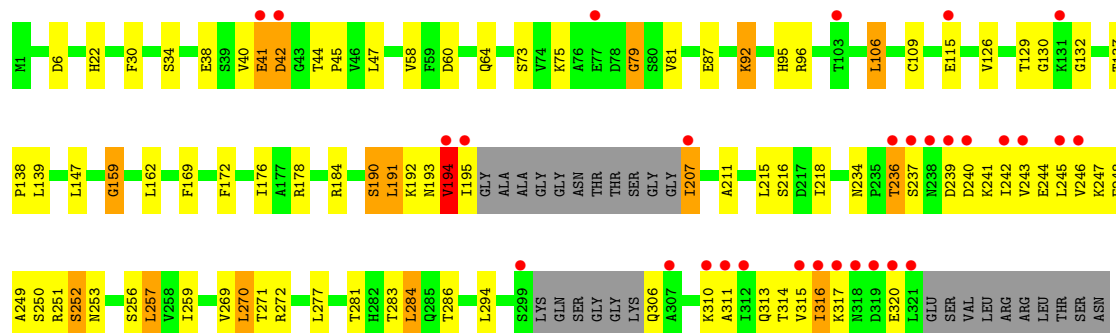


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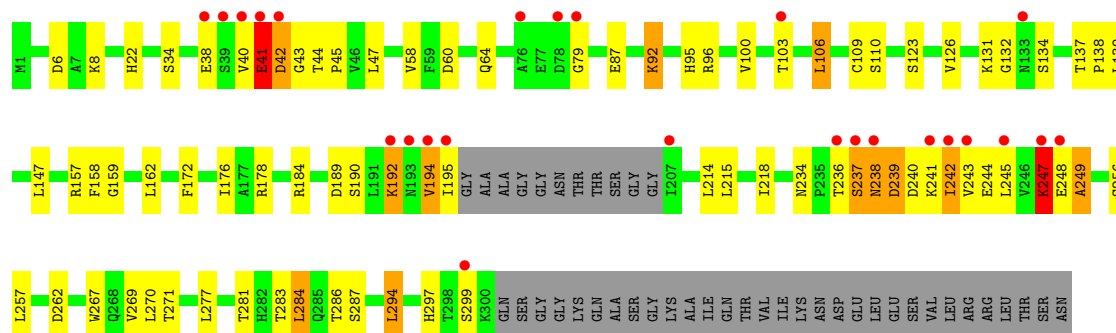




● Molecule 1: NTPASE P4



● Molecule 1: NTPASE P4



4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	115.40Å 126.30Å 155.60Å 90.00° 91.60° 90.50°	Depositor
Resolution (Å)	20.00 – 2.50 20.00 – 2.50	Depositor EDS
% Data completeness (in resolution range)	96.0 (20.00-2.50) 96.0 (20.00-2.50)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.35 (at 2.50Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.251 , 0.224 (Not available) , 0.256	Depositor DCC
R_{free} test set	14484 reflections (4.97%)	wwPDB-VP
Wilson B-factor (Å ²)	41.2	Xtriage
Anisotropy	0.307	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 57.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.51$, $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	0.004 for h,-k,-l 0.006 for -h,k,-l 0.001 for -h,-k,l	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	57270	wwPDB-VP
Average B, all atoms (Å ²)	45.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.17% 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, 0.333 respectively for untwinned datasets, and 0.375, 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	0.41	1/2208 (0.0%)	0.98	14/2991 (0.5%)
1	B	0.40	0/2324	0.95	11/3145 (0.3%)
1	C	0.40	0/2323	0.95	9/3142 (0.3%)
1	D	0.45	1/2208 (0.0%)	0.97	14/2991 (0.5%)
1	E	0.42	0/2325	0.95	8/3146 (0.3%)
1	F	0.43	0/2325	0.95	9/3146 (0.3%)
1	G	0.41	0/2325	0.95	10/3146 (0.3%)
1	H	0.46	1/2208 (0.0%)	0.98	13/2991 (0.4%)
1	I	0.48	1/2208 (0.0%)	0.98	16/2991 (0.5%)
1	J	0.45	0/2325	0.96	9/3146 (0.3%)
1	K	0.41	0/2325	0.96	8/3146 (0.3%)
1	L	0.42	1/2208 (0.0%)	0.98	14/2991 (0.5%)
1	M	0.45	0/2325	0.96	8/3146 (0.3%)
1	N	0.45	0/2325	0.96	12/3146 (0.4%)
1	O	0.43	0/2325	0.95	8/3146 (0.3%)
1	P	0.39	0/2325	0.96	10/3146 (0.3%)
1	Q	0.39	0/2325	0.95	11/3146 (0.3%)
1	R	0.42	0/2325	0.96	9/3146 (0.3%)
1	S	0.43	0/2325	0.96	9/3146 (0.3%)
1	T	0.38	0/2325	0.95	9/3146 (0.3%)
1	U	0.40	1/2208 (0.0%)	0.98	14/2991 (0.5%)
1	V	0.40	0/2325	0.95	8/3146 (0.3%)
1	W	0.40	0/2325	0.96	8/3146 (0.3%)
1	X	0.45	1/2208 (0.0%)	0.97	14/2991 (0.5%)
All	All	0.42	7/54978 (0.0%)	0.96	255/74414 (0.3%)

The worst 5 of 7 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	299	SER	C-N	-5.61	1.25	1.33
1	X	299	SER	C-N	-5.54	1.25	1.33
1	U	299	SER	C-N	-5.52	1.25	1.33
1	D	299	SER	C-N	-5.52	1.25	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	I	299	SER	C-N	-5.51	1.25	1.33

The worst 5 of 255 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	T	194	VAL	N-CA-C	-8.21	100.94	110.21
1	V	191	LEU	N-CA-C	-8.16	103.23	113.02
1	M	191	LEU	N-CA-C	-8.13	103.26	113.02
1	E	194	VAL	N-CA-C	-8.07	101.09	110.21
1	W	194	VAL	N-CA-C	-8.05	101.12	110.21

There are no chirality outliers.

There are no planarity outliers.

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	2171	0	2147	76	0
1	B	2288	0	2271	77	0
1	C	2288	0	2266	82	0
1	D	2171	0	2147	77	1
1	E	2289	0	2271	81	1
1	F	2289	0	2271	85	0
1	G	2289	0	2271	68	0
1	H	2171	0	2147	81	1
1	I	2171	0	2147	87	0
1	J	2289	0	2271	67	0
1	K	2289	0	2271	82	0
1	L	2171	0	2147	73	0
1	M	2289	0	2271	100	0
1	N	2289	0	2271	92	1
1	O	2289	0	2271	93	0
1	P	2289	0	2271	94	0
1	Q	2289	0	2271	91	0
1	R	2289	0	2271	88	0
1	S	2289	0	2271	81	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	T	2289	0	2271	84	0
1	U	2171	0	2147	84	0
1	V	2289	0	2271	79	0
1	W	2289	0	2271	91	1
1	X	2171	0	2147	81	1
2	A	110	0	0	6	0
2	B	119	0	0	5	0
2	C	129	0	0	3	0
2	D	145	0	0	4	0
2	E	143	0	0	11	0
2	F	151	0	0	9	0
2	G	101	0	0	1	0
2	H	178	0	0	9	0
2	I	193	0	0	11	0
2	J	159	0	0	2	0
2	K	122	0	0	2	0
2	L	93	0	0	4	0
2	M	169	0	0	12	0
2	N	202	0	0	5	0
2	O	144	0	0	6	0
2	P	103	0	0	8	0
2	Q	93	0	0	6	0
2	R	110	0	0	3	0
2	S	146	0	0	8	0
2	T	88	0	0	4	0
2	U	73	0	0	7	0
2	V	118	0	0	5	0
2	W	120	0	0	7	0
2	X	153	0	0	7	0
All	All	57270	0	53631	1805	3

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 17.

The worst 5 of 1805 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:I:39:SER:HA	1:M:115:GLU:CD	1.56	1.31
1:I:39:SER:HA	1:M:115:GLU:OE2	1.15	1.28
1:S:251:ARG:HD2	1:T:236:THR:HG23	1.27	1.15
1:K:251:ARG:HD2	1:L:236:THR:HG23	1.14	1.13

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:T:251:ARG:HD2	1:U:236:THR:HG23	1.15	1.13

All (3) 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:H:115:GLU:OE2	1:N:39:SER:OG[1_655]	1.92	0.28
1:E:39:SER:CB	1:W:115:GLU:OE1[1_645]	2.04	0.16
1:D:115:GLU:OE2	1:X:38:GLU:O[1_545]	2.17	0.03

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	285/331 (86%)	265 (93%)	16 (6%)	4 (1%)	9	17
1	B	298/331 (90%)	286 (96%)	7 (2%)	5 (2%)	7	13
1	C	298/331 (90%)	286 (96%)	7 (2%)	5 (2%)	7	13
1	D	285/331 (86%)	266 (93%)	15 (5%)	4 (1%)	9	17
1	E	298/331 (90%)	288 (97%)	5 (2%)	5 (2%)	7	13
1	F	298/331 (90%)	285 (96%)	8 (3%)	5 (2%)	7	13
1	G	298/331 (90%)	287 (96%)	6 (2%)	5 (2%)	7	13
1	H	285/331 (86%)	266 (93%)	15 (5%)	4 (1%)	9	17
1	I	285/331 (86%)	266 (93%)	15 (5%)	4 (1%)	9	17
1	J	298/331 (90%)	285 (96%)	8 (3%)	5 (2%)	7	13
1	K	298/331 (90%)	284 (95%)	9 (3%)	5 (2%)	7	13
1	L	285/331 (86%)	265 (93%)	16 (6%)	4 (1%)	9	17
1	M	298/331 (90%)	287 (96%)	6 (2%)	5 (2%)	7	13

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	N	298/331 (90%)	286 (96%)	7 (2%)	5 (2%)	7	13
1	O	298/331 (90%)	285 (96%)	8 (3%)	5 (2%)	7	13
1	P	298/331 (90%)	287 (96%)	6 (2%)	5 (2%)	7	13
1	Q	298/331 (90%)	287 (96%)	6 (2%)	5 (2%)	7	13
1	R	298/331 (90%)	286 (96%)	7 (2%)	5 (2%)	7	13
1	S	298/331 (90%)	288 (97%)	5 (2%)	5 (2%)	7	13
1	T	298/331 (90%)	286 (96%)	7 (2%)	5 (2%)	7	13
1	U	285/331 (86%)	266 (93%)	15 (5%)	4 (1%)	9	17
1	V	298/331 (90%)	285 (96%)	8 (3%)	5 (2%)	7	13
1	W	298/331 (90%)	286 (96%)	7 (2%)	5 (2%)	7	13
1	X	285/331 (86%)	265 (93%)	16 (6%)	4 (1%)	9	17
All	All	7061/7944 (89%)	6723 (95%)	225 (3%)	113 (2%)	7	14

5 of 113 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	236	THR
1	C	236	THR
1	E	236	THR
1	F	236	THR
1	G	236	THR

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	234/265 (88%)	218 (93%)	16 (7%)	14	31
1	B	247/265 (93%)	235 (95%)	12 (5%)	22	45
1	C	246/265 (93%)	234 (95%)	12 (5%)	22	45
1	D	234/265 (88%)	218 (93%)	16 (7%)	14	31
1	E	247/265 (93%)	235 (95%)	12 (5%)	22	45

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	F	247/265 (93%)	234 (95%)	13 (5%)	20	42
1	G	247/265 (93%)	235 (95%)	12 (5%)	22	45
1	H	234/265 (88%)	218 (93%)	16 (7%)	14	31
1	I	234/265 (88%)	218 (93%)	16 (7%)	14	31
1	J	247/265 (93%)	234 (95%)	13 (5%)	20	42
1	K	247/265 (93%)	234 (95%)	13 (5%)	20	42
1	L	234/265 (88%)	218 (93%)	16 (7%)	14	31
1	M	247/265 (93%)	234 (95%)	13 (5%)	20	42
1	N	247/265 (93%)	234 (95%)	13 (5%)	20	42
1	O	247/265 (93%)	234 (95%)	13 (5%)	20	42
1	P	247/265 (93%)	235 (95%)	12 (5%)	22	45
1	Q	247/265 (93%)	235 (95%)	12 (5%)	22	45
1	R	247/265 (93%)	235 (95%)	12 (5%)	22	45
1	S	247/265 (93%)	235 (95%)	12 (5%)	22	45
1	T	247/265 (93%)	234 (95%)	13 (5%)	20	42
1	U	234/265 (88%)	218 (93%)	16 (7%)	14	31
1	V	247/265 (93%)	234 (95%)	13 (5%)	20	42
1	W	247/265 (93%)	235 (95%)	12 (5%)	22	45
1	X	234/265 (88%)	218 (93%)	16 (7%)	14	31
All	All	5836/6360 (92%)	5512 (94%)	324 (6%)	19	39

5 of 324 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	R	92	LYS
1	V	162	LEU
1	R	271	THR
1	T	257	LEU
1	W	194	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 291 such sidechains are listed below:

Mol	Chain	Res	Type
1	T	22	HIS

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Mol	Chain	Res	Type
1	X	253	ASN
1	T	268	GLN
1	V	238	ASN
1	I	182	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 oligosaccharides 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 [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	289/331 (87%)	0.38	18 (6%) 26 23	25, 38, 90, 114	0
1	B	304/331 (91%)	0.55	28 (9%) 14 13	26, 39, 89, 118	0
1	C	304/331 (91%)	0.45	26 (8%) 16 14	24, 37, 89, 119	0
1	D	289/331 (87%)	0.19	26 (8%) 15 13	22, 36, 90, 113	0
1	E	304/331 (91%)	0.37	33 (10%) 10 9	23, 37, 90, 119	0
1	F	304/331 (91%)	0.45	37 (12%) 8 7	23, 37, 89, 118	0
1	G	304/331 (91%)	0.47	31 (10%) 12 10	25, 38, 88, 119	0
1	H	289/331 (87%)	0.29	23 (7%) 18 16	20, 34, 90, 113	0
1	I	289/331 (87%)	0.49	41 (14%) 6 5	19, 33, 90, 113	0
1	J	304/331 (91%)	0.41	35 (11%) 9 8	20, 34, 88, 118	0
1	K	304/331 (91%)	0.46	32 (10%) 11 10	24, 38, 89, 119	0
1	L	289/331 (87%)	0.45	16 (5%) 30 27	25, 39, 90, 114	0
1	M	304/331 (91%)	0.53	43 (14%) 6 5	18, 34, 89, 119	0
1	N	304/331 (91%)	0.54	46 (15%) 5 4	19, 34, 90, 119	0
1	O	304/331 (91%)	0.39	35 (11%) 9 8	23, 36, 89, 119	0
1	P	304/331 (91%)	0.46	26 (8%) 16 14	26, 39, 90, 119	0
1	Q	304/331 (91%)	0.56	25 (8%) 17 15	27, 40, 90, 119	0
1	R	304/331 (91%)	0.51	32 (10%) 11 10	23, 37, 89, 119	0
1	S	304/331 (91%)	0.42	28 (9%) 14 13	22, 37, 89, 118	0
1	T	304/331 (91%)	0.43	20 (6%) 24 21	24, 40, 89, 118	0
1	U	289/331 (87%)	0.43	14 (4%) 35 31	27, 40, 91, 114	0
1	V	304/331 (91%)	0.42	27 (8%) 15 13	26, 39, 89, 119	0
1	W	304/331 (91%)	0.32	30 (9%) 13 11	25, 38, 90, 118	0
1	X	289/331 (87%)	0.22	25 (8%) 16 14	21, 36, 91, 114	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB($\text{\AA}^2$)	Q<0.9
All	All	7191/7944 (90%)	0.43	697 (9%) 13 11	18, 37, 91, 119	0

The worst 5 of 697 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	321	LEU	8.8
1	F	195	ILE	8.4
1	I	195	ILE	8.1
1	J	195	ILE	8.0
1	N	309	GLY	7.7

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](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.