



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 5, 2026 – 03:59 PM UTC

PDB ID : 3NNK / pdb_00003nnk
Title : Biochemical and Structural Characterization of a Ureidoglycine Aminotransferase in the Klebsiella pneumoniae Uric Acid Catabolic Pathway
Authors : French, J.B.; Ealick, S.E.
Deposited on : 2010-06-23
Resolution : 2.58 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
Mogul	:	2022.3.0, CSD as543be (2022)
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

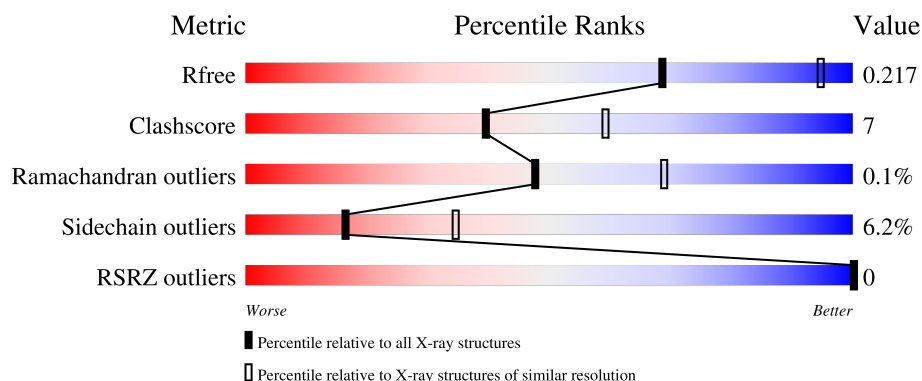
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.58 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	4770 (2.60-2.56)
Clashscore	190562	5124 (2.60-2.56)
Ramachandran outliers	187476	5046 (2.60-2.56)
Sidechain outliers	187428	5046 (2.60-2.56)
RSRZ outliers	180081	4770 (2.60-2.56)

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	411	 80% 18% .
1	B	411	 79% 18% .
1	C	411	 80% 18% .
1	D	411	 77% 20% .
1	E	411	 79% 20% .

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Mol	Chain	Length	Quality of chain
1	F	411	 80% 18% .
1	G	411	 79% 18% .
1	H	411	 80% 18% .
1	J	411	 81% 17% .
1	K	411	 84% 14% .
1	L	411	 82% 14% .
1	M	411	 78% 20% .
1	O	411	 84% 15% .
1	P	411	 82% 17% .
1	R	411	 80% 18% .
1	S	411	 80% 17% .

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 51634 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 Ureidoglycine-glyoxylate aminotransferase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	411	Total	C	N	O	P	S	0	0	0
			3158	1987	558	586	1	26			
1	B	410	Total	C	N	O	P	S	0	0	0
			3175	1996	567	586	1	25			
1	C	410	Total	C	N	O	P	S	0	0	0
			3164	1988	565	585	1	25			
1	D	410	Total	C	N	O	P	S	0	0	0
			3180	1999	567	588	1	25			
1	E	410	Total	C	N	O	P	S	0	0	0
			3147	1981	557	583	1	25			
1	F	410	Total	C	N	O	P	S	0	0	0
			3171	1994	566	585	1	25			
1	G	410	Total	C	N	O	P	S	0	0	0
			3164	1988	565	585	1	25			
1	H	410	Total	C	N	O	P	S	0	0	0
			3183	2000	567	590	1	25			
1	J	410	Total	C	N	O	P	S	0	0	0
			3154	1984	558	586	1	25			
1	K	410	Total	C	N	O	P	S	0	0	0
			3175	1996	567	586	1	25			
1	L	409	Total	C	N	O	P	S	0	0	0
			3156	1982	564	584	1	25			
1	M	410	Total	C	N	O	P	S	0	0	0
			3183	2000	567	590	1	25			
1	O	410	Total	C	N	O	P	S	0	0	0
			3154	1984	558	586	1	25			
1	P	410	Total	C	N	O	P	S	0	0	0
			3175	1996	567	586	1	25			
1	R	410	Total	C	N	O	P	S	0	0	0
			3164	1988	565	585	1	25			
1	S	410	Total	C	N	O	P	S	0	0	0
			3179	1999	567	587	1	25			

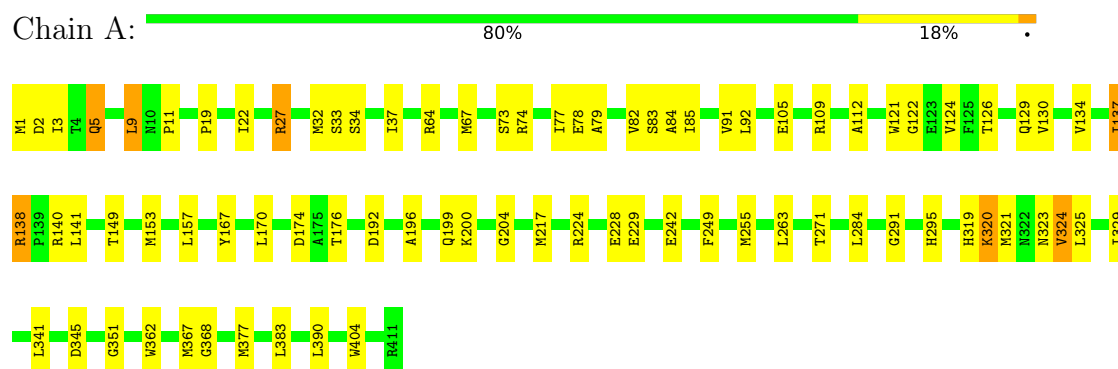
- Molecule 2 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	41	Total O 41 41	0	0
2	B	51	Total O 51 51	0	0
2	C	39	Total O 39 39	0	0
2	D	33	Total O 33 33	0	0
2	E	49	Total O 49 49	0	0
2	F	73	Total O 73 73	0	0
2	G	66	Total O 66 66	0	0
2	H	59	Total O 59 59	0	0
2	J	73	Total O 73 73	0	0
2	K	71	Total O 71 71	0	0
2	L	64	Total O 64 64	0	0
2	M	59	Total O 59 59	0	0
2	O	69	Total O 69 69	0	0
2	P	76	Total O 76 76	0	0
2	R	69	Total O 69 69	0	0
2	S	60	Total O 60 60	0	0

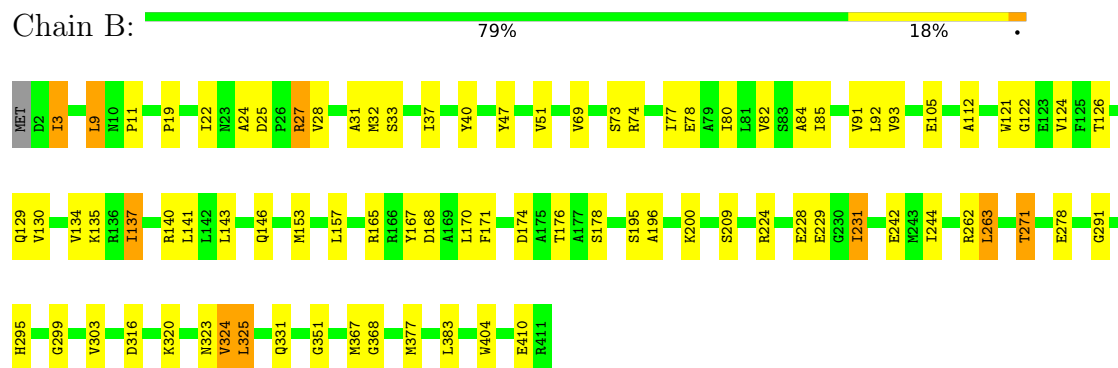
3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

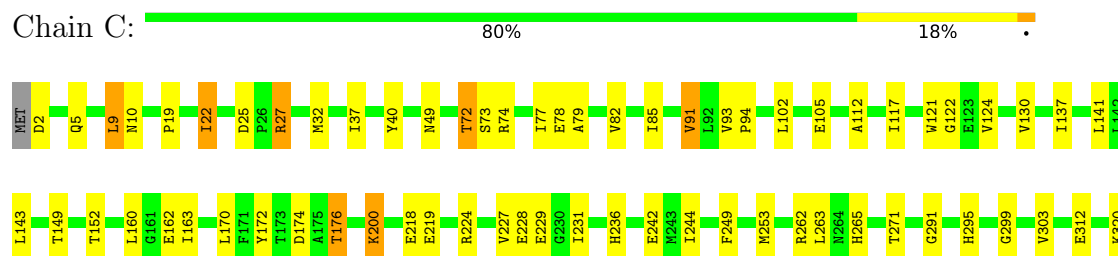
- Molecule 1: Ureidoglycine-glyoxylate aminotransferase



- Molecule 1: Ureidoglycine-glyoxylate aminotransferase



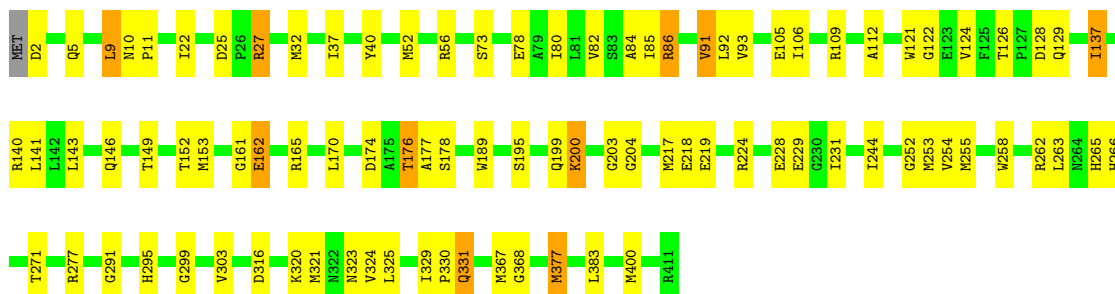
- Molecule 1: Ureidoglycine-glyoxylate aminotransferase





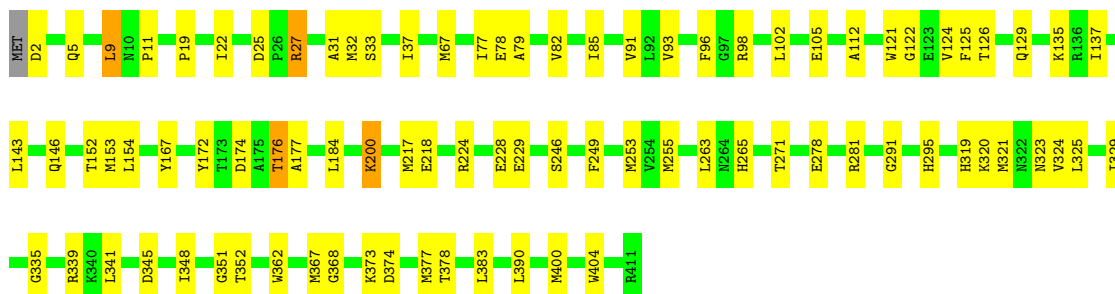
- Molecule 1: Ureidoglycine-glyoxylate aminotransferase

Chain D: 77% 20% .



- Molecule 1: Ureidoglycine-glyoxylate aminotransferase

Chain E: 79% 20% .



- Molecule 1: Ureidoglycine-glyoxylate aminotransferase

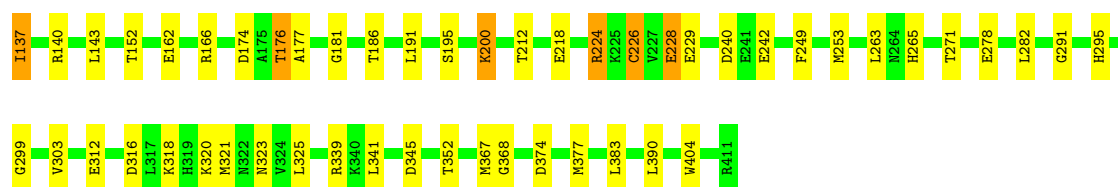
Chain F: 80% 18% .



- Molecule 1: Ureidoglycine-glyoxylate aminotransferase

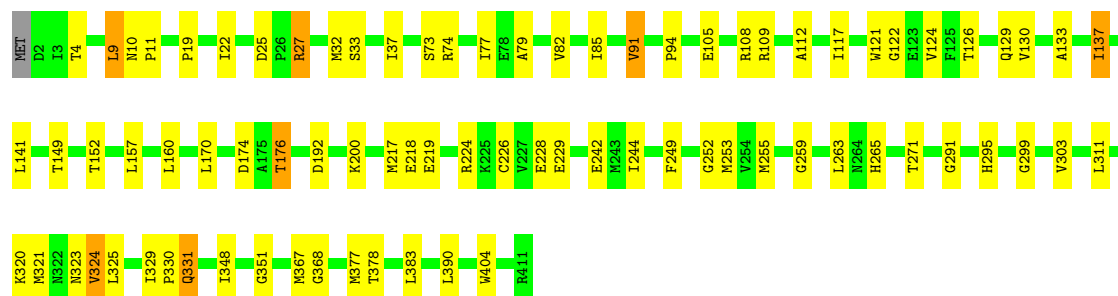
Chain G: 79% 18% .





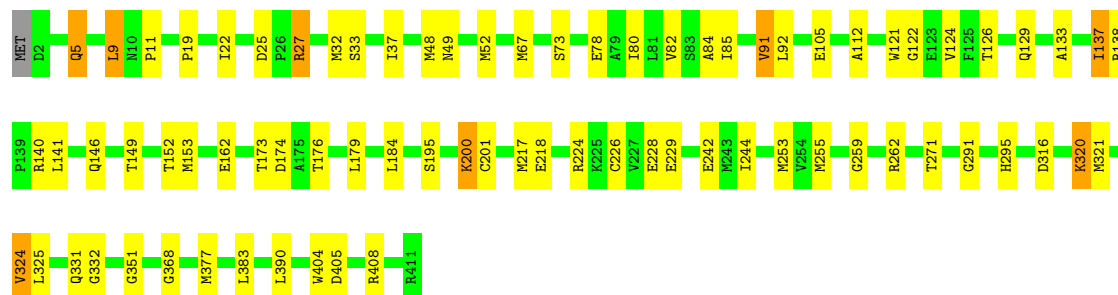
• Molecule 1: Ureidoglycine-glyoxylate aminotransferase

Chain H: 80% 18% .



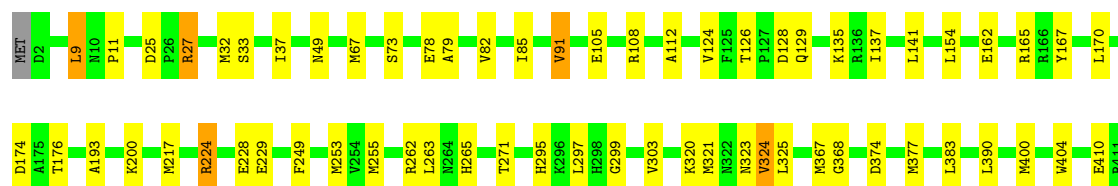
• Molecule 1: Ureidoglycine-glyoxylate aminotransferase

Chain J: 81% 17% .



• Molecule 1: Ureidoglycine-glyoxylate aminotransferase

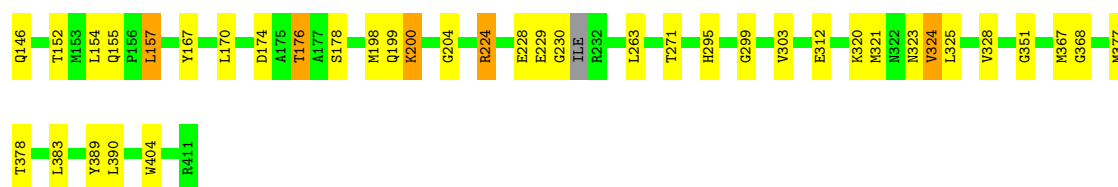
Chain K: 84% 14% .



• Molecule 1: Ureidoglycine-glyoxylate aminotransferase

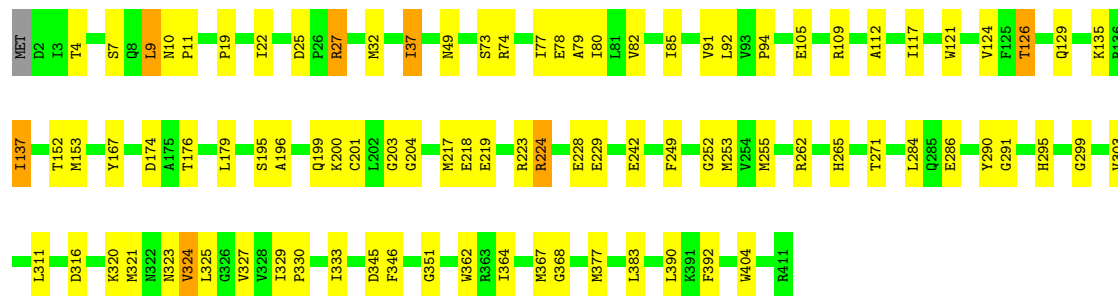
Chain L: 82% 14% .





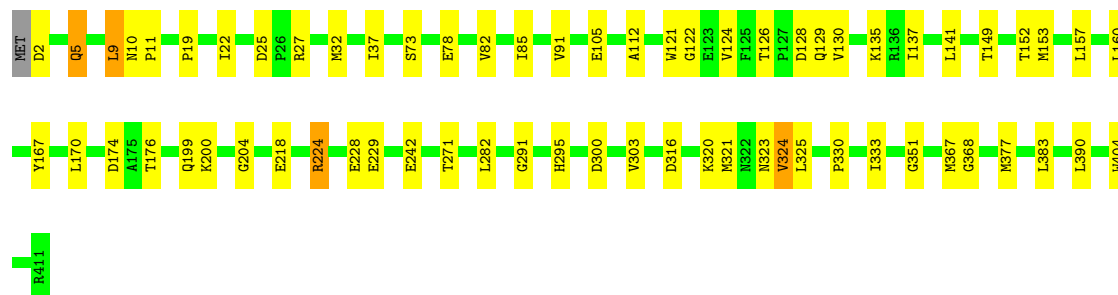
- Molecule 1: Ureidoglycine-glyoxylate aminotransferase

Chain M: 78% 20% .



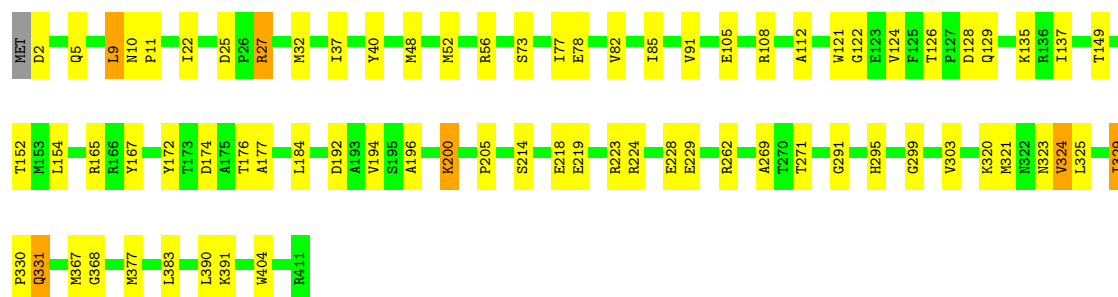
- Molecule 1: Ureidoglycine-glyoxylate aminotransferase

Chain O: 84% 15% .



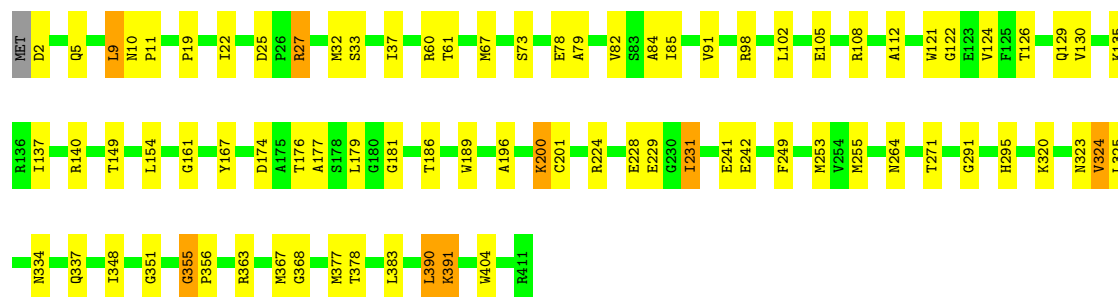
- Molecule 1: Ureidoglycine-glyoxylate aminotransferase

Chain P: 82% 17% .



- Molecule 1: Ureidoglycine-glyoxylate aminotransferase

Chain R: 80% 18% .



- Molecule 1: Ureidoglycine-glyoxylate aminotransferase

Chain S: 80% 17%



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	142.15Å 149.20Å 198.00Å 90.00° 90.28° 90.00°	Depositor
Resolution (Å)	50.00 – 2.58 50.00 – 2.58	Depositor EDS
% Data completeness (in resolution range)	93.8 (50.00-2.58) 93.9 (50.00-2.58)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.13	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.24 (at 2.58Å)	Xtriage
Refinement program	REFMAC 5.5.0109	Depositor
R, R_{free}	0.217 , 0.246 0.191 , 0.217	Depositor DCC
R_{free} test set	12155 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å ²)	38.0	Xtriage
Anisotropy	0.613	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 13.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.45$, $\langle L^2 \rangle = 0.28$	Xtriage
Estimated twinning fraction	0.046 for -k,-h,-l 0.048 for k,h,-l 0.420 for h,-k,-l	Xtriage
Reported twinning fraction	0.549 for H, K, L 0.451 for h,-k,-l	Depositor
Outliers	2 of 242432 reflections (0.001%)	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	51634	wwPDB-VP
Average B, all atoms (Å ²)	33.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 11.96% 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

Bond lengths and bond angles in the following residue types are not validated in this section: LLP

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	0.42	0/3198	0.80	0/4335
1	B	0.43	0/3215	0.80	0/4354
1	C	0.41	0/3204	0.80	0/4341
1	D	0.42	0/3220	0.82	2/4360 (0.0%)
1	E	0.42	0/3187	0.79	0/4321
1	F	0.42	0/3211	0.81	0/4349
1	G	0.42	0/3204	0.80	0/4341
1	H	0.41	0/3223	0.80	4/4364 (0.1%)
1	J	0.42	0/3194	0.81	2/4330 (0.0%)
1	K	0.42	0/3215	0.81	0/4354
1	L	0.42	0/3195	0.80	0/4327
1	M	0.42	0/3223	0.81	0/4364
1	O	0.42	0/3194	0.80	0/4330
1	P	0.42	0/3215	0.83	2/4354 (0.0%)
1	R	0.42	0/3204	0.81	2/4341 (0.0%)
1	S	0.43	0/3219	0.80	0/4358
All	All	0.42	0/51321	0.81	12/69523 (0.0%)

There are no bond length outliers.

The worst 5 of 12 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	P	329	ILE	CA-C-N	6.39	126.88	119.47
1	P	329	ILE	C-N-CA	6.39	126.88	119.47
1	D	329	ILE	CA-C-N	6.16	127.54	119.84
1	D	329	ILE	C-N-CA	6.16	127.54	119.84
1	H	329	ILE	CA-C-N	5.74	125.87	119.32

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	3158	0	3090	48	0
1	B	3175	0	3127	53	0
1	C	3164	0	3101	52	0
1	D	3180	0	3133	55	0
1	E	3147	0	3076	45	0
1	F	3171	0	3121	48	0
1	G	3164	0	3101	53	0
1	H	3183	0	3135	51	0
1	J	3154	0	3084	45	0
1	K	3175	0	3127	40	0
1	L	3156	0	3089	43	0
1	M	3183	0	3135	52	0
1	O	3154	0	3084	40	0
1	P	3175	0	3127	45	0
1	R	3164	0	3101	47	0
1	S	3179	0	3133	51	0
2	A	41	0	0	0	0
2	B	51	0	0	3	0
2	C	39	0	0	1	0
2	D	33	0	0	0	0
2	E	49	0	0	0	0
2	F	73	0	0	2	0
2	G	66	0	0	2	0
2	H	59	0	0	0	0
2	J	73	0	0	0	0
2	K	71	0	0	0	0
2	L	64	0	0	0	0
2	M	59	0	0	0	0
2	O	69	0	0	0	0
2	P	76	0	0	3	0
2	R	69	0	0	0	0
2	S	60	0	0	0	0
All	All	51634	0	49764	677	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 7.

The worst 5 of 677 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:72:THR:HG23	1:C:200:LLP:OP2	1.58	1.03
1:H:126:THR:H	1:H:129:GLN:HE21	1.14	0.96
1:K:174:ASP:OD1	1:K:176:THR:HG23	1.69	0.92
1:O:295:HIS:HE1	1:O:368:GLY:H	1.14	0.91
1:K:9:LEU:HD13	1:K:11:PRO:HD3	1.53	0.90

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	408/411 (99%)	388 (95%)	20 (5%)	0	100	100
1	B	407/411 (99%)	390 (96%)	17 (4%)	0	100	100
1	C	407/411 (99%)	384 (94%)	22 (5%)	1 (0%)	43	63
1	D	407/411 (99%)	392 (96%)	14 (3%)	1 (0%)	43	63
1	E	407/411 (99%)	391 (96%)	15 (4%)	1 (0%)	43	63
1	F	407/411 (99%)	390 (96%)	17 (4%)	0	100	100
1	G	407/411 (99%)	391 (96%)	15 (4%)	1 (0%)	43	63
1	H	407/411 (99%)	395 (97%)	11 (3%)	1 (0%)	43	63
1	J	407/411 (99%)	392 (96%)	15 (4%)	0	100	100
1	K	407/411 (99%)	395 (97%)	12 (3%)	0	100	100
1	L	404/411 (98%)	391 (97%)	13 (3%)	0	100	100
1	M	407/411 (99%)	392 (96%)	14 (3%)	1 (0%)	43	63
1	O	407/411 (99%)	393 (97%)	14 (3%)	0	100	100
1	P	407/411 (99%)	392 (96%)	14 (3%)	1 (0%)	43	63
1	R	407/411 (99%)	395 (97%)	11 (3%)	1 (0%)	43	63

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	S	407/411 (99%)	394 (97%)	12 (3%)	1 (0%)	43 63
All	All	6510/6576 (99%)	6265 (96%)	236 (4%)	9 (0%)	48 69

5 of 9 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	H	331	GLN
1	R	391	LYS
1	D	331	GLN
1	G	226	CYS
1	S	246	SER

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	323/336 (96%)	303 (94%)	20 (6%)	16 34
1	B	327/336 (97%)	307 (94%)	20 (6%)	17 35
1	C	324/336 (96%)	303 (94%)	21 (6%)	15 33
1	D	328/336 (98%)	308 (94%)	20 (6%)	17 35
1	E	321/336 (96%)	302 (94%)	19 (6%)	18 36
1	F	326/336 (97%)	308 (94%)	18 (6%)	19 39
1	G	324/336 (96%)	302 (93%)	22 (7%)	14 31
1	H	329/336 (98%)	309 (94%)	20 (6%)	17 35
1	J	323/336 (96%)	303 (94%)	20 (6%)	16 34
1	K	327/336 (97%)	310 (95%)	17 (5%)	21 42
1	L	323/336 (96%)	298 (92%)	25 (8%)	12 25
1	M	329/336 (98%)	309 (94%)	20 (6%)	17 35
1	O	323/336 (96%)	306 (95%)	17 (5%)	20 41
1	P	327/336 (97%)	307 (94%)	20 (6%)	17 35
1	R	324/336 (96%)	305 (94%)	19 (6%)	18 36

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	S	328/336 (98%)	304 (93%)	24 (7%)	13	27
All	All	5206/5376 (97%)	4884 (94%)	322 (6%)	16	34

5 of 322 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	M	137	ILE
1	R	130	VAL
1	M	377	MET
1	P	22	ILE
1	S	22	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 139 such sidechains are listed below:

Mol	Chain	Res	Type
1	P	10	ASN
1	P	146	GLN
1	S	10	ASN
1	F	401	GLN
1	F	388	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

16 non-standard protein/DNA/RNA residues are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
1	LLP	H	200	1	23,24,25	1.63	2 (8%)	25,32,34	1.64	5 (20%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
1	LLP	F	200	1	23,24,25	1.63	2 (8%)	25,32,34	1.51	5 (20%)
1	LLP	K	200	1	23,24,25	1.63	2 (8%)	25,32,34	1.68	5 (20%)
1	LLP	D	200	1	23,24,25	1.64	2 (8%)	25,32,34	1.54	4 (16%)
1	LLP	A	200	1	23,24,25	1.64	2 (8%)	25,32,34	1.42	4 (16%)
1	LLP	S	200	1	23,24,25	1.64	2 (8%)	25,32,34	1.65	5 (20%)
1	LLP	O	200	1	23,24,25	1.61	1 (4%)	25,32,34	1.67	5 (20%)
1	LLP	L	200	1	23,24,25	1.63	2 (8%)	25,32,34	1.46	4 (16%)
1	LLP	M	200	1	23,24,25	1.63	1 (4%)	25,32,34	1.74	5 (20%)
1	LLP	C	200	1	23,24,25	1.64	2 (8%)	25,32,34	1.59	6 (24%)
1	LLP	G	200	1	23,24,25	1.63	2 (8%)	25,32,34	1.59	5 (20%)
1	LLP	P	200	1	23,24,25	1.62	2 (8%)	25,32,34	1.68	5 (20%)
1	LLP	R	200	1	23,24,25	1.63	2 (8%)	25,32,34	1.54	5 (20%)
1	LLP	B	200	1	23,24,25	1.61	1 (4%)	25,32,34	1.75	6 (24%)
1	LLP	J	200	1	23,24,25	1.64	2 (8%)	25,32,34	1.47	5 (20%)
1	LLP	E	200	1	23,24,25	1.61	2 (8%)	25,32,34	1.71	5 (20%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	LLP	H	200	1	-	5/16/17/19	0/1/1/1
1	LLP	F	200	1	-	7/16/17/19	0/1/1/1
1	LLP	K	200	1	-	4/16/17/19	0/1/1/1
1	LLP	D	200	1	-	5/16/17/19	0/1/1/1
1	LLP	A	200	1	-	7/16/17/19	0/1/1/1
1	LLP	S	200	1	-	7/16/17/19	0/1/1/1
1	LLP	O	200	1	-	4/16/17/19	0/1/1/1
1	LLP	L	200	1	-	5/16/17/19	0/1/1/1
1	LLP	M	200	1	-	6/16/17/19	0/1/1/1
1	LLP	C	200	1	-	10/16/17/19	0/1/1/1
1	LLP	G	200	1	-	7/16/17/19	0/1/1/1
1	LLP	P	200	1	-	3/16/17/19	0/1/1/1
1	LLP	R	200	1	-	7/16/17/19	0/1/1/1
1	LLP	B	200	1	-	8/16/17/19	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	LLP	J	200	1	-	6/16/17/19	0/1/1/1
1	LLP	E	200	1	-	4/16/17/19	0/1/1/1

The worst 5 of 29 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	G	200	LLP	C4'-NZ	6.51	1.49	1.27
1	F	200	LLP	C4'-NZ	6.50	1.48	1.27
1	S	200	LLP	C4'-NZ	6.49	1.48	1.27
1	J	200	LLP	C4'-NZ	6.49	1.48	1.27
1	K	200	LLP	C4'-NZ	6.49	1.48	1.27

The worst 5 of 79 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	200	LLP	OP4-C5'-C5	5.62	119.90	109.36
1	K	200	LLP	OP4-C5'-C5	5.48	119.62	109.36
1	E	200	LLP	OP4-C5'-C5	5.38	119.44	109.36
1	M	200	LLP	OP4-C5'-C5	5.18	119.07	109.36
1	P	200	LLP	OP4-C5'-C5	5.13	118.98	109.36

There are no chirality outliers.

5 of 95 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	200	LLP	C4-C4'-NZ-CE
1	A	200	LLP	C5'-OP4-P-OP2
1	A	200	LLP	C-CA-CB-CG
1	B	200	LLP	C-CA-CB-CG
1	C	200	LLP	C4-C4'-NZ-CE

There are no ring outliers.

9 monomers are involved in 14 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	D	200	LLP	2	0
1	S	200	LLP	1	0
1	L	200	LLP	2	0
1	C	200	LLP	3	0
1	G	200	LLP	2	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	P	200	LLP	1	0
1	R	200	LLP	1	0
1	J	200	LLP	1	0
1	E	200	LLP	1	0

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	410/411 (99%)	-1.43	0 100 100	26, 36, 45, 53	0
1	B	409/411 (99%)	-1.48	0 100 100	27, 33, 43, 57	0
1	C	409/411 (99%)	-1.45	0 100 100	26, 34, 47, 57	0
1	D	409/411 (99%)	-1.49	0 100 100	26, 33, 42, 46	0
1	E	409/411 (99%)	-1.47	0 100 100	25, 35, 44, 48	0
1	F	409/411 (99%)	-1.50	0 100 100	26, 32, 43, 56	0
1	G	409/411 (99%)	-1.45	0 100 100	26, 34, 45, 58	0
1	H	409/411 (99%)	-1.51	0 100 100	25, 32, 41, 47	0
1	J	409/411 (99%)	-1.51	0 100 100	25, 31, 41, 46	0
1	K	409/411 (99%)	-1.48	0 100 100	25, 31, 43, 55	0
1	L	408/411 (99%)	-1.47	0 100 100	25, 32, 43, 61	0
1	M	409/411 (99%)	-1.49	0 100 100	25, 33, 42, 46	0
1	O	409/411 (99%)	-1.49	0 100 100	24, 31, 41, 46	0
1	P	409/411 (99%)	-1.48	0 100 100	25, 32, 44, 55	0
1	R	409/411 (99%)	-1.46	0 100 100	27, 32, 43, 61	0
1	S	409/411 (99%)	-1.48	0 100 100	27, 33, 43, 46	0
All	All	6544/6576 (99%)	-1.48	0 100 100	24, 33, 44, 61	0

There are no RSRZ outliers to report.

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

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
1	LLP	A	200	24/25	0.99	0.03	32,33,35,35	0
1	LLP	C	200	24/25	0.99	0.03	32,33,33,34	0
1	LLP	M	200	24/25	0.99	0.04	30,33,34,35	0
1	LLP	O	200	24/25	0.99	0.03	28,30,31,31	0
1	LLP	R	200	24/25	0.99	0.03	29,31,31,32	0
1	LLP	F	200	24/25	1.00	0.03	28,30,30,31	0
1	LLP	G	200	24/25	1.00	0.02	30,31,31,31	0
1	LLP	H	200	24/25	1.00	0.03	28,31,32,33	0
1	LLP	J	200	24/25	1.00	0.03	28,30,30,30	0
1	LLP	K	200	24/25	1.00	0.03	29,31,31,32	0
1	LLP	L	200	24/25	1.00	0.03	28,29,30,30	0
1	LLP	B	200	24/25	1.00	0.02	29,30,32,32	0
1	LLP	D	200	24/25	1.00	0.03	29,30,30,31	0
1	LLP	P	200	24/25	1.00	0.03	30,32,32,32	0
1	LLP	E	200	24/25	1.00	0.03	31,32,33,33	0
1	LLP	S	200	24/25	1.00	0.03	31,32,33,33	0

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.