



# Full wwPDB X-ray Structure Validation Report ⓘ

Oct 10, 2023 – 02:22 AM EDT

PDB ID : 7LQN  
Title : Glucosamine-6-phosphate Deaminase from H. influenzae  
Authors : Subramanian, R.; Srinivasachari, S.  
Deposited on : 2021-02-14  
Resolution : 3.00 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](mailto: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>.

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

MolProbity : 4.02b-467  
Xtriage (Phenix) : 1.13  
EDS : 2.35.1  
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) : 2.35.1

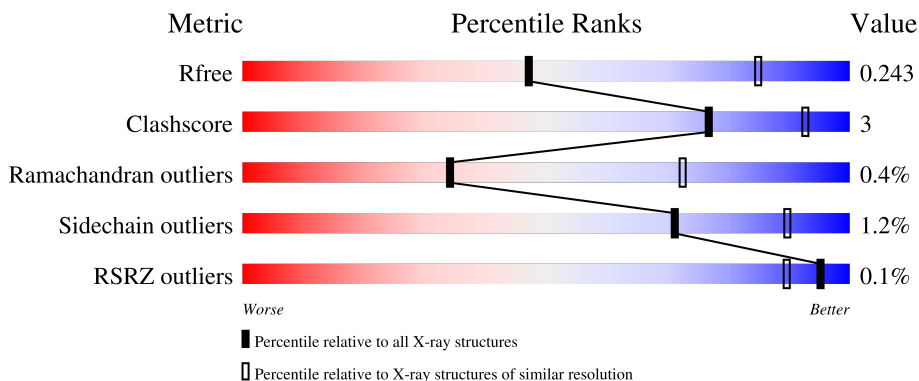
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.00 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))
$R_{free}$	130704	2092 (3.00-3.00)
Clashscore	141614	2416 (3.00-3.00)
Ramachandran outliers	138981	2333 (3.00-3.00)
Sidechain outliers	138945	2336 (3.00-3.00)
RSRZ outliers	127900	1990 (3.00-3.00)

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  $\geq 3$ , 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	286	83% 8% 9%
1	B	286	83% 8% 9%
1	C	286	82% 9% 9%
1	D	286	80% 11% 9%
1	E	286	83% 9% 9%

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Mol	Chain	Length	Quality of chain
1	F	286	 <p>% 84% 7% 9%</p>
1	G	286	 <p>87% 5% 9%</p>
1	H	286	 <p>81% 10% 9%</p>
1	I	286	 <p>82% 9% 9%</p>
1	J	286	 <p>84% 7% 9%</p>
1	K	286	 <p>84% 8% 9%</p>
1	L	286	 <p>86% 6% 9%</p>

## 2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 25020 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 Glucosamine-6-phosphate deaminase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	261	2085	1331	358	387	9	0	0	0
1	B	261	2085	1331	358	387	9	0	0	0
1	C	261	2085	1331	358	387	9	0	0	0
1	D	261	2085	1331	358	387	9	0	0	0
1	E	261	2085	1331	358	387	9	0	0	0
1	F	261	2085	1331	358	387	9	0	0	0
1	G	261	2085	1331	358	387	9	0	0	0
1	H	261	2085	1331	358	387	9	0	0	0
1	I	261	2085	1331	358	387	9	0	0	0
1	J	261	2085	1331	358	387	9	0	0	0
1	K	261	2085	1331	358	387	9	0	0	0
1	L	261	2085	1331	358	387	9	0	0	0

There are 192 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-15	HIS	-	expression tag	UNP Q4QP46
A	-14	HIS	-	expression tag	UNP Q4QP46
A	-13	HIS	-	expression tag	UNP Q4QP46
A	-12	HIS	-	expression tag	UNP Q4QP46
A	-11	HIS	-	expression tag	UNP Q4QP46

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-10	HIS	-	expression tag	UNP Q4QP46
A	-9	ILE	-	expression tag	UNP Q4QP46
A	-8	THR	-	expression tag	UNP Q4QP46
A	-7	SER	-	expression tag	UNP Q4QP46
A	-6	LEU	-	expression tag	UNP Q4QP46
A	-5	TYR	-	expression tag	UNP Q4QP46
A	-4	LYS	-	expression tag	UNP Q4QP46
A	-3	LYS	-	expression tag	UNP Q4QP46
A	-2	ALA	-	expression tag	UNP Q4QP46
A	-1	GLY	-	expression tag	UNP Q4QP46
A	0	PHE	-	expression tag	UNP Q4QP46
B	-15	HIS	-	expression tag	UNP Q4QP46
B	-14	HIS	-	expression tag	UNP Q4QP46
B	-13	HIS	-	expression tag	UNP Q4QP46
B	-12	HIS	-	expression tag	UNP Q4QP46
B	-11	HIS	-	expression tag	UNP Q4QP46
B	-10	HIS	-	expression tag	UNP Q4QP46
B	-9	ILE	-	expression tag	UNP Q4QP46
B	-8	THR	-	expression tag	UNP Q4QP46
B	-7	SER	-	expression tag	UNP Q4QP46
B	-6	LEU	-	expression tag	UNP Q4QP46
B	-5	TYR	-	expression tag	UNP Q4QP46
B	-4	LYS	-	expression tag	UNP Q4QP46
B	-3	LYS	-	expression tag	UNP Q4QP46
B	-2	ALA	-	expression tag	UNP Q4QP46
B	-1	GLY	-	expression tag	UNP Q4QP46
B	0	PHE	-	expression tag	UNP Q4QP46
C	-15	HIS	-	expression tag	UNP Q4QP46
C	-14	HIS	-	expression tag	UNP Q4QP46
C	-13	HIS	-	expression tag	UNP Q4QP46
C	-12	HIS	-	expression tag	UNP Q4QP46
C	-11	HIS	-	expression tag	UNP Q4QP46
C	-10	HIS	-	expression tag	UNP Q4QP46
C	-9	ILE	-	expression tag	UNP Q4QP46
C	-8	THR	-	expression tag	UNP Q4QP46
C	-7	SER	-	expression tag	UNP Q4QP46
C	-6	LEU	-	expression tag	UNP Q4QP46
C	-5	TYR	-	expression tag	UNP Q4QP46
C	-4	LYS	-	expression tag	UNP Q4QP46
C	-3	LYS	-	expression tag	UNP Q4QP46
C	-2	ALA	-	expression tag	UNP Q4QP46
C	-1	GLY	-	expression tag	UNP Q4QP46

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Chain	Residue	Modelled	Actual	Comment	Reference
C	0	PHE	-	expression tag	UNP Q4QP46
D	-15	HIS	-	expression tag	UNP Q4QP46
D	-14	HIS	-	expression tag	UNP Q4QP46
D	-13	HIS	-	expression tag	UNP Q4QP46
D	-12	HIS	-	expression tag	UNP Q4QP46
D	-11	HIS	-	expression tag	UNP Q4QP46
D	-10	HIS	-	expression tag	UNP Q4QP46
D	-9	ILE	-	expression tag	UNP Q4QP46
D	-8	THR	-	expression tag	UNP Q4QP46
D	-7	SER	-	expression tag	UNP Q4QP46
D	-6	LEU	-	expression tag	UNP Q4QP46
D	-5	TYR	-	expression tag	UNP Q4QP46
D	-4	LYS	-	expression tag	UNP Q4QP46
D	-3	LYS	-	expression tag	UNP Q4QP46
D	-2	ALA	-	expression tag	UNP Q4QP46
D	-1	GLY	-	expression tag	UNP Q4QP46
D	0	PHE	-	expression tag	UNP Q4QP46
E	-15	HIS	-	expression tag	UNP Q4QP46
E	-14	HIS	-	expression tag	UNP Q4QP46
E	-13	HIS	-	expression tag	UNP Q4QP46
E	-12	HIS	-	expression tag	UNP Q4QP46
E	-11	HIS	-	expression tag	UNP Q4QP46
E	-10	HIS	-	expression tag	UNP Q4QP46
E	-9	ILE	-	expression tag	UNP Q4QP46
E	-8	THR	-	expression tag	UNP Q4QP46
E	-7	SER	-	expression tag	UNP Q4QP46
E	-6	LEU	-	expression tag	UNP Q4QP46
E	-5	TYR	-	expression tag	UNP Q4QP46
E	-4	LYS	-	expression tag	UNP Q4QP46
E	-3	LYS	-	expression tag	UNP Q4QP46
E	-2	ALA	-	expression tag	UNP Q4QP46
E	-1	GLY	-	expression tag	UNP Q4QP46
E	0	PHE	-	expression tag	UNP Q4QP46
F	-15	HIS	-	expression tag	UNP Q4QP46
F	-14	HIS	-	expression tag	UNP Q4QP46
F	-13	HIS	-	expression tag	UNP Q4QP46
F	-12	HIS	-	expression tag	UNP Q4QP46
F	-11	HIS	-	expression tag	UNP Q4QP46
F	-10	HIS	-	expression tag	UNP Q4QP46
F	-9	ILE	-	expression tag	UNP Q4QP46
F	-8	THR	-	expression tag	UNP Q4QP46
F	-7	SER	-	expression tag	UNP Q4QP46

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Chain	Residue	Modelled	Actual	Comment	Reference
F	-6	LEU	-	expression tag	UNP Q4QP46
F	-5	TYR	-	expression tag	UNP Q4QP46
F	-4	LYS	-	expression tag	UNP Q4QP46
F	-3	LYS	-	expression tag	UNP Q4QP46
F	-2	ALA	-	expression tag	UNP Q4QP46
F	-1	GLY	-	expression tag	UNP Q4QP46
F	0	PHE	-	expression tag	UNP Q4QP46
G	-15	HIS	-	expression tag	UNP Q4QP46
G	-14	HIS	-	expression tag	UNP Q4QP46
G	-13	HIS	-	expression tag	UNP Q4QP46
G	-12	HIS	-	expression tag	UNP Q4QP46
G	-11	HIS	-	expression tag	UNP Q4QP46
G	-10	HIS	-	expression tag	UNP Q4QP46
G	-9	ILE	-	expression tag	UNP Q4QP46
G	-8	THR	-	expression tag	UNP Q4QP46
G	-7	SER	-	expression tag	UNP Q4QP46
G	-6	LEU	-	expression tag	UNP Q4QP46
G	-5	TYR	-	expression tag	UNP Q4QP46
G	-4	LYS	-	expression tag	UNP Q4QP46
G	-3	LYS	-	expression tag	UNP Q4QP46
G	-2	ALA	-	expression tag	UNP Q4QP46
G	-1	GLY	-	expression tag	UNP Q4QP46
G	0	PHE	-	expression tag	UNP Q4QP46
H	-15	HIS	-	expression tag	UNP Q4QP46
H	-14	HIS	-	expression tag	UNP Q4QP46
H	-13	HIS	-	expression tag	UNP Q4QP46
H	-12	HIS	-	expression tag	UNP Q4QP46
H	-11	HIS	-	expression tag	UNP Q4QP46
H	-10	HIS	-	expression tag	UNP Q4QP46
H	-9	ILE	-	expression tag	UNP Q4QP46
H	-8	THR	-	expression tag	UNP Q4QP46
H	-7	SER	-	expression tag	UNP Q4QP46
H	-6	LEU	-	expression tag	UNP Q4QP46
H	-5	TYR	-	expression tag	UNP Q4QP46
H	-4	LYS	-	expression tag	UNP Q4QP46
H	-3	LYS	-	expression tag	UNP Q4QP46
H	-2	ALA	-	expression tag	UNP Q4QP46
H	-1	GLY	-	expression tag	UNP Q4QP46
H	0	PHE	-	expression tag	UNP Q4QP46
I	-15	HIS	-	expression tag	UNP Q4QP46
I	-14	HIS	-	expression tag	UNP Q4QP46
I	-13	HIS	-	expression tag	UNP Q4QP46

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Chain	Residue	Modelled	Actual	Comment	Reference
I	-12	HIS	-	expression tag	UNP Q4QP46
I	-11	HIS	-	expression tag	UNP Q4QP46
I	-10	HIS	-	expression tag	UNP Q4QP46
I	-9	ILE	-	expression tag	UNP Q4QP46
I	-8	THR	-	expression tag	UNP Q4QP46
I	-7	SER	-	expression tag	UNP Q4QP46
I	-6	LEU	-	expression tag	UNP Q4QP46
I	-5	TYR	-	expression tag	UNP Q4QP46
I	-4	LYS	-	expression tag	UNP Q4QP46
I	-3	LYS	-	expression tag	UNP Q4QP46
I	-2	ALA	-	expression tag	UNP Q4QP46
I	-1	GLY	-	expression tag	UNP Q4QP46
I	0	PHE	-	expression tag	UNP Q4QP46
J	-15	HIS	-	expression tag	UNP Q4QP46
J	-14	HIS	-	expression tag	UNP Q4QP46
J	-13	HIS	-	expression tag	UNP Q4QP46
J	-12	HIS	-	expression tag	UNP Q4QP46
J	-11	HIS	-	expression tag	UNP Q4QP46
J	-10	HIS	-	expression tag	UNP Q4QP46
J	-9	ILE	-	expression tag	UNP Q4QP46
J	-8	THR	-	expression tag	UNP Q4QP46
J	-7	SER	-	expression tag	UNP Q4QP46
J	-6	LEU	-	expression tag	UNP Q4QP46
J	-5	TYR	-	expression tag	UNP Q4QP46
J	-4	LYS	-	expression tag	UNP Q4QP46
J	-3	LYS	-	expression tag	UNP Q4QP46
J	-2	ALA	-	expression tag	UNP Q4QP46
J	-1	GLY	-	expression tag	UNP Q4QP46
J	0	PHE	-	expression tag	UNP Q4QP46
K	-15	HIS	-	expression tag	UNP Q4QP46
K	-14	HIS	-	expression tag	UNP Q4QP46
K	-13	HIS	-	expression tag	UNP Q4QP46
K	-12	HIS	-	expression tag	UNP Q4QP46
K	-11	HIS	-	expression tag	UNP Q4QP46
K	-10	HIS	-	expression tag	UNP Q4QP46
K	-9	ILE	-	expression tag	UNP Q4QP46
K	-8	THR	-	expression tag	UNP Q4QP46
K	-7	SER	-	expression tag	UNP Q4QP46
K	-6	LEU	-	expression tag	UNP Q4QP46
K	-5	TYR	-	expression tag	UNP Q4QP46
K	-4	LYS	-	expression tag	UNP Q4QP46
K	-3	LYS	-	expression tag	UNP Q4QP46

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Chain	Residue	Modelled	Actual	Comment	Reference
K	-2	ALA	-	expression tag	UNP Q4QP46
K	-1	GLY	-	expression tag	UNP Q4QP46
K	0	PHE	-	expression tag	UNP Q4QP46
L	-15	HIS	-	expression tag	UNP Q4QP46
L	-14	HIS	-	expression tag	UNP Q4QP46
L	-13	HIS	-	expression tag	UNP Q4QP46
L	-12	HIS	-	expression tag	UNP Q4QP46
L	-11	HIS	-	expression tag	UNP Q4QP46
L	-10	HIS	-	expression tag	UNP Q4QP46
L	-9	ILE	-	expression tag	UNP Q4QP46
L	-8	THR	-	expression tag	UNP Q4QP46
L	-7	SER	-	expression tag	UNP Q4QP46
L	-6	LEU	-	expression tag	UNP Q4QP46
L	-5	TYR	-	expression tag	UNP Q4QP46
L	-4	LYS	-	expression tag	UNP Q4QP46
L	-3	LYS	-	expression tag	UNP Q4QP46
L	-2	ALA	-	expression tag	UNP Q4QP46
L	-1	GLY	-	expression tag	UNP Q4QP46
L	0	PHE	-	expression tag	UNP Q4QP46

### 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.

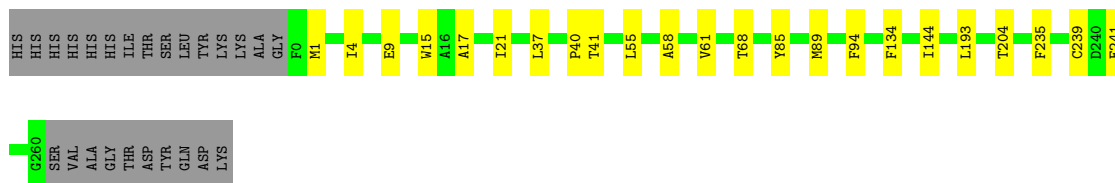
- Molecule 1: Glucosamine-6-phosphate deaminase

Chain A: 




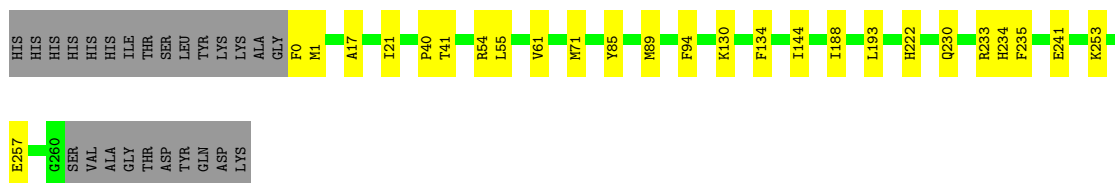
- Molecule 1: Glucosamine-6-phosphate deaminase

Chain B: 




- Molecule 1: Glucosamine-6-phosphate deaminase

Chain C: 



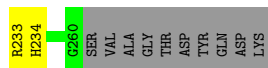
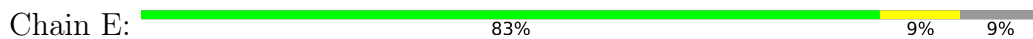
- Molecule 1: Glucosamine-6-phosphate deaminase

Chain D: 

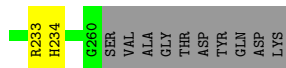
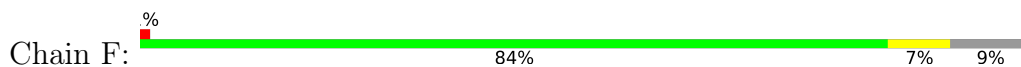




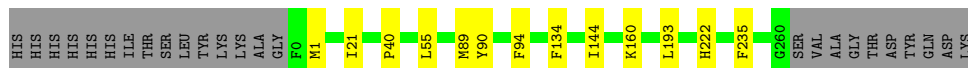
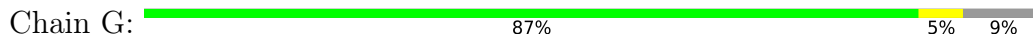
- Molecule 1: Glucosamine-6-phosphate deaminase



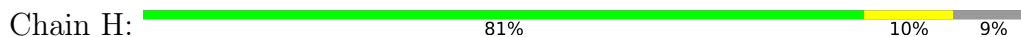
- Molecule 1: Glucosamine-6-phosphate deaminase



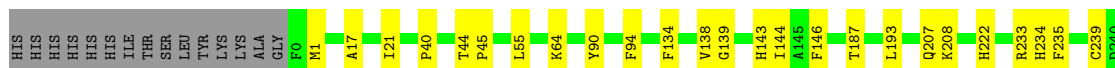
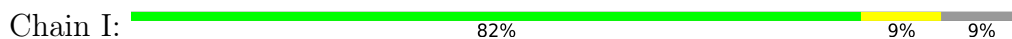
- Molecule 1: Glucosamine-6-phosphate deaminase

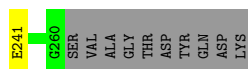


- Molecule 1: Glucosamine-6-phosphate deaminase

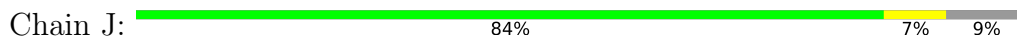


- Molecule 1: Glucosamine-6-phosphate deaminase

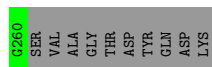
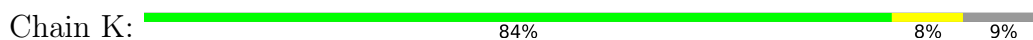




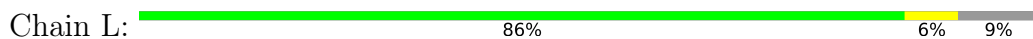
• Molecule 1: Glucosamine-6-phosphate deaminase



• Molecule 1: Glucosamine-6-phosphate deaminase



• Molecule 1: Glucosamine-6-phosphate deaminase



## 4 Data and refinement statistics i

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	103.41Å 144.30Å 131.14Å 90.00° 92.07° 90.00°	Depositor
Resolution (Å)	47.49 – 3.00 48.51 – 3.00	Depositor EDS
% Data completeness (in resolution range)	99.4 (47.49-3.00) 99.4 (48.51-3.00)	Depositor EDS
$R_{merge}$	0.17	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.63 (at 3.01Å)	Xtrriage
Refinement program	PHENIX 1.19	Depositor
R, $R_{free}$	0.194 , 0.242 0.195 , 0.243	Depositor DCC
$R_{free}$ test set	3815 reflections (4.98%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	43.3	Xtrriage
Anisotropy	0.561	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.32 , 33.2	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	0.025 for h,-k,-l	Xtrriage
$F_o, F_c$ correlation	0.92	EDS
Total number of atoms	25020	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	45.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 30.88 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.2143e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<sup>1</sup>Intensities estimated from amplitudes.

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

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

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	0.25	0/2135	0.46	0/2897
1	B	0.25	0/2135	0.46	0/2897
1	C	0.26	0/2135	0.47	0/2897
1	D	0.28	0/2135	0.50	0/2897
1	E	0.25	0/2135	0.47	0/2897
1	F	0.25	0/2135	0.47	0/2897
1	G	0.25	0/2135	0.46	0/2897
1	H	0.26	0/2135	0.48	0/2897
1	I	0.26	0/2135	0.47	0/2897
1	J	0.25	0/2135	0.47	0/2897
1	K	0.25	0/2135	0.46	0/2897
1	L	0.26	0/2135	0.48	0/2897
All	All	0.26	0/25620	0.47	0/34764

There are no bond length outliers.

There are no bond angle outliers.

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	2085	0	2045	11	0
1	B	2085	0	2045	10	0
1	C	2085	0	2045	14	0
1	D	2085	0	2045	16	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	E	2085	0	2045	14	0
1	F	2085	0	2045	14	0
1	G	2085	0	2045	7	0
1	H	2085	0	2045	17	0
1	I	2085	0	2045	14	0
1	J	2085	0	2045	13	0
1	K	2085	0	2045	13	0
1	L	2085	0	2045	8	0
All	All	25020	0	24540	148	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 3.

All (148) 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:0:PHE:HE1	1:C:230:GLN:O	1.65	0.78
1:I:44:THR:HG23	1:I:45:PRO:HD3	1.67	0.74
1:C:0:PHE:CE1	1:C:230:GLN:O	2.41	0.74
1:C:253:LYS:NZ	1:C:257:GLU:OE2	2.25	0.69
1:D:144:ILE:HG21	1:D:193:LEU:HD22	1.77	0.67
1:B:144:ILE:HG21	1:B:193:LEU:HD22	1.79	0.64
1:E:64:LYS:O	1:E:65:HIS:ND1	2.30	0.64
1:H:144:ILE:HG21	1:H:193:LEU:HD22	1.80	0.63
1:J:9:GLU:HG3	1:J:204:THR:HG21	1.80	0.63
1:I:144:ILE:HG21	1:I:193:LEU:HD22	1.81	0.63
1:K:159:ILE:HD11	1:K:184:TYR:HB3	1.81	0.62
1:C:144:ILE:HG21	1:C:193:LEU:HD22	1.81	0.62
1:J:1:MET:HG3	1:J:235:PHE:CD2	2.34	0.62
1:L:0:PHE:CG	1:L:1:MET:N	2.70	0.60
1:A:1:MET:HG3	1:A:235:PHE:CD2	2.36	0.59
1:F:117:GLU:OE2	1:F:120:ARG:NH2	2.35	0.59
1:A:107:LEU:HD13	1:A:186:LEU:HB3	1.85	0.58
1:G:1:MET:HG3	1:G:235:PHE:CD2	2.38	0.58
1:I:44:THR:CG2	1:I:45:PRO:HD3	2.33	0.58
1:C:21:ILE:HD12	1:C:61:VAL:HG11	1.86	0.56
1:D:105:ASN:OD1	1:D:124:LYS:NZ	2.38	0.56
1:L:107:LEU:HD13	1:L:186:LEU:HB3	1.87	0.56
1:A:144:ILE:HG21	1:A:193:LEU:HD22	1.87	0.56
1:G:144:ILE:HG21	1:G:193:LEU:HD22	1.88	0.56
1:J:64:LYS:O	1:J:65:HIS:ND1	2.38	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:107:LEU:HD13	1:H:186:LEU:HB3	1.88	0.55
1:J:107:LEU:HD13	1:J:186:LEU:HB3	1.88	0.55
1:F:111:THR:HG21	1:F:117:GLU:HB2	1.89	0.54
1:I:138:VAL:O	1:I:208:LYS:HE3	2.06	0.54
1:L:144:ILE:HG21	1:L:193:LEU:HD22	1.90	0.54
1:C:1:MET:HG3	1:C:235:PHE:CD2	2.43	0.54
1:H:19:HIS:HB3	1:H:200:MET:HE1	1.89	0.54
1:C:21:ILE:HG13	1:C:55:LEU:HD13	1.90	0.54
1:E:9:GLU:HG3	1:E:204:THR:HG21	1.89	0.54
1:H:117:GLU:OE1	1:H:120:ARG:NH2	2.41	0.53
1:C:17:ALA:O	1:C:21:ILE:HG12	2.08	0.53
1:E:21:ILE:HG13	1:E:55:LEU:HD13	1.89	0.53
1:K:1:MET:HG3	1:K:235:PHE:CD2	2.43	0.53
1:H:44:THR:OG1	1:H:45:PRO:HD3	2.08	0.52
1:D:1:MET:CE	1:D:3:PHE:HB2	2.39	0.52
1:E:17:ALA:O	1:E:21:ILE:HG12	2.10	0.52
1:E:144:ILE:HG21	1:E:193:LEU:HD22	1.91	0.52
1:B:1:MET:HG3	1:B:235:PHE:CD2	2.44	0.52
1:D:1:MET:HG3	1:D:235:PHE:HD2	1.74	0.52
1:H:141:ASP:OD2	1:H:149:PRO:HG3	2.10	0.52
1:I:17:ALA:O	1:I:21:ILE:HG12	2.11	0.51
1:C:233:ARG:HG3	1:C:234:HIS:CE1	2.45	0.51
1:B:9:GLU:HG3	1:B:204:THR:HG21	1.92	0.51
1:D:201:ILE:HD12	1:D:235:PHE:HE1	1.76	0.50
1:E:111:THR:HG21	1:E:117:GLU:HB2	1.92	0.50
1:D:228:ALA:O	1:D:231:MET:HG2	2.11	0.50
1:J:0:PHE:HD1	1:K:152:SER:HG	1.60	0.50
1:K:9:GLU:HG3	1:K:204:THR:HG21	1.93	0.49
1:A:233:ARG:HG3	1:A:234:HIS:CE1	2.47	0.49
1:C:21:ILE:CD1	1:C:61:VAL:HG11	2.43	0.48
1:L:105:ASN:OD1	1:L:124:LYS:NZ	2.46	0.48
1:J:0:PHE:HB2	1:K:152:SER:HA	1.96	0.48
1:F:146:PHE:HB2	1:F:187:THR:HB	1.96	0.48
1:D:12:VAL:HG13	1:D:238:VAL:HG12	1.96	0.48
1:C:71:MET:O	1:C:188:ILE:HG23	2.14	0.47
1:I:146:PHE:HB2	1:I:187:THR:HB	1.96	0.47
1:K:21:ILE:HG13	1:K:55:LEU:HD13	1.94	0.47
1:H:118:CYS:SG	1:H:186:LEU:HG	2.55	0.47
1:D:41:THR:HG22	1:D:88:PHE:CD1	2.50	0.47
1:H:148:GLU:HG3	1:H:160:LYS:NZ	2.29	0.47
1:A:17:ALA:O	1:A:21:ILE:HG12	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:17:ALA:O	1:B:21:ILE:HG12	2.15	0.47
1:K:174:PHE:CD2	1:K:181:VAL:HG22	2.51	0.46
1:B:21:ILE:HG13	1:B:55:LEU:HD13	1.96	0.46
1:D:117:GLU:OE1	1:D:120:ARG:NH2	2.48	0.46
1:I:21:ILE:HG13	1:I:55:LEU:HD13	1.98	0.46
1:J:146:PHE:HB2	1:J:187:THR:HB	1.98	0.46
1:D:1:MET:HG3	1:D:235:PHE:CD2	2.51	0.46
1:D:83:GLU:OE1	1:D:173:PHE:HB3	2.15	0.46
1:K:17:ALA:O	1:K:21:ILE:HG12	2.16	0.46
1:E:25:ASN:O	1:E:28:LYS:HD2	2.16	0.46
1:I:1:MET:HG3	1:I:235:PHE:CD2	2.50	0.46
1:H:146:PHE:HB2	1:H:187:THR:HB	1.98	0.45
1:F:144:ILE:HG21	1:F:193:LEU:HD22	1.98	0.45
1:A:27:PHE:O	1:A:33:ARG:NH2	2.50	0.45
1:D:21:ILE:HD12	1:D:61:VAL:HG21	1.99	0.44
1:K:21:ILE:HD12	1:K:61:VAL:HB	1.99	0.44
1:K:64:LYS:HG2	1:K:64:LYS:O	2.18	0.44
1:D:89:MET:HB3	1:D:94:PHE:CE2	2.53	0.44
1:B:37:LEU:O	1:B:68:THR:HA	2.18	0.44
1:E:117:GLU:OE1	1:E:120:ARG:NH2	2.50	0.44
1:B:4:ILE:HG12	1:B:15:TRP:CZ2	2.53	0.44
1:L:126:LYS:HA	1:L:126:LYS:HD3	1.74	0.44
1:F:102:GLU:H	1:F:102:GLU:HG2	1.52	0.43
1:I:233:ARG:HG3	1:I:234:HIS:CD2	2.52	0.43
1:A:111:THR:HG21	1:A:117:GLU:HB2	2.00	0.43
1:E:21:ILE:HD12	1:E:61:VAL:HB	2.00	0.43
1:F:21:ILE:HG13	1:F:55:LEU:HD13	2.00	0.43
1:H:74:TYR:OH	1:H:170:ASN:ND2	2.51	0.43
1:K:144:ILE:HG21	1:K:193:LEU:HD22	1.99	0.43
1:F:75:VAL:HG21	1:F:184:TYR:HB2	2.01	0.43
1:G:21:ILE:HD11	1:G:55:LEU:HB3	1.99	0.43
1:G:89:MET:HB3	1:G:94:PHE:CE2	2.53	0.43
1:F:233:ARG:O	1:F:234:HIS:ND1	2.50	0.43
1:J:233:ARG:O	1:J:233:ARG:NH1	2.52	0.43
1:K:28:LYS:HD2	1:K:28:LYS:HA	1.89	0.43
1:F:17:ALA:O	1:F:21:ILE:HG12	2.19	0.43
1:C:21:ILE:HD12	1:C:61:VAL:CG1	2.48	0.43
1:H:148:GLU:HG3	1:H:160:LYS:HZ1	1.84	0.43
1:H:13:SER:OG	1:H:47:LYS:HB2	2.19	0.42
1:J:64:LYS:O	1:J:64:LYS:HG2	2.19	0.42
1:F:27:PHE:O	1:F:33:ARG:NH2	2.51	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:233:ARG:HG3	1:F:234:HIS:CE1	2.54	0.42
1:I:207:GLN:HG2	1:I:208:LYS:HD3	2.02	0.42
1:I:139:GLY:HA3	1:I:143:HIS:ND1	2.34	0.42
1:J:233:ARG:HG3	1:J:234:HIS:CD2	2.54	0.42
1:D:111:THR:HG21	1:D:117:GLU:HB2	2.02	0.42
1:L:160:LYS:HD2	1:L:160:LYS:HA	1.91	0.42
1:H:9:GLU:HG2	1:H:47:LYS:HD3	2.02	0.42
1:J:144:ILE:HG21	1:J:193:LEU:HD22	2.01	0.42
1:A:37:LEU:O	1:A:68:THR:HA	2.20	0.42
1:B:41:THR:HG21	1:B:85:TYR:CE1	2.55	0.42
1:F:40:PRO:HG3	1:F:136:GLY:HA2	2.00	0.42
1:F:75:VAL:CG2	1:F:184:TYR:HB2	2.50	0.42
1:H:9:GLU:HG3	1:H:204:THR:HG21	2.02	0.42
1:C:89:MET:HB3	1:C:94:PHE:CE2	2.55	0.41
1:D:0:PHE:HB2	1:E:152:SER:HA	2.02	0.41
1:K:118:CYS:SG	1:K:186:LEU:HG	2.60	0.41
1:G:90:TYR:HA	1:G:94:PHE:HB2	2.01	0.41
1:L:107:LEU:HD22	1:L:186:LEU:HD23	2.01	0.41
1:G:21:ILE:HD12	1:G:55:LEU:HD13	2.02	0.41
1:J:37:LEU:O	1:J:68:THR:HA	2.20	0.41
1:E:221:ASN:HD22	1:E:224:TRP:HD1	1.67	0.41
1:A:67:VAL:HG21	1:A:128:TYR:CE2	2.56	0.41
1:B:21:ILE:HD12	1:B:61:VAL:HB	2.01	0.41
1:E:111:THR:HG21	1:E:117:GLU:CB	2.51	0.41
1:E:220:ILE:HD11	1:E:231:MET:HG3	2.01	0.41
1:C:41:THR:HG21	1:C:85:TYR:CE1	2.55	0.41
1:E:233:ARG:HG3	1:E:234:HIS:CD2	2.56	0.41
1:H:17:ALA:O	1:H:21:ILE:HG12	2.21	0.41
1:H:90:TYR:HA	1:H:94:PHE:HB2	2.02	0.41
1:H:126:LYS:HA	1:H:126:LYS:HD3	1.90	0.41
1:I:139:GLY:HA3	1:I:143:HIS:HD1	1.85	0.41
1:B:89:MET:HB3	1:B:94:PHE:CE2	2.56	0.41
1:F:130:LYS:HB3	1:F:130:LYS:HE2	1.91	0.41
1:L:83:GLU:OE1	1:L:173:PHE:HB3	2.21	0.41
1:A:39:LEU:HB3	1:A:49:TYR:OH	2.21	0.40
1:G:160:LYS:HA	1:G:160:LYS:HD2	1.79	0.40
1:I:64:LYS:O	1:I:64:LYS:HG2	2.20	0.40
1:D:37:LEU:O	1:D:68:THR:HA	2.21	0.40
1:J:118:CYS:SG	1:J:186:LEU:HG	2.62	0.40
1:A:75:VAL:CG2	1:A:186:LEU:HD13	2.52	0.40
1:I:90:TYR:HA	1:I:94:PHE:HB2	2.03	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	259/286 (91%)	249 (96%)	9 (4%)	1 (0%)	34	72
1	B	259/286 (91%)	252 (97%)	5 (2%)	2 (1%)	19	57
1	C	259/286 (91%)	250 (96%)	8 (3%)	1 (0%)	34	72
1	D	259/286 (91%)	250 (96%)	8 (3%)	1 (0%)	34	72
1	E	259/286 (91%)	250 (96%)	8 (3%)	1 (0%)	34	72
1	F	259/286 (91%)	253 (98%)	5 (2%)	1 (0%)	34	72
1	G	259/286 (91%)	250 (96%)	8 (3%)	1 (0%)	34	72
1	H	259/286 (91%)	251 (97%)	7 (3%)	1 (0%)	34	72
1	I	259/286 (91%)	251 (97%)	7 (3%)	1 (0%)	34	72
1	J	259/286 (91%)	251 (97%)	7 (3%)	1 (0%)	34	72
1	K	259/286 (91%)	250 (96%)	8 (3%)	1 (0%)	34	72
1	L	259/286 (91%)	252 (97%)	6 (2%)	1 (0%)	34	72
All	All	3108/3432 (91%)	3009 (97%)	86 (3%)	13 (0%)	34	72

All (13) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	58	ALA
1	F	40	PRO
1	A	40	PRO
1	B	40	PRO
1	D	40	PRO
1	E	40	PRO
1	I	40	PRO
1	J	40	PRO
1	L	40	PRO

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Mol	Chain	Res	Type
1	C	40	PRO
1	G	40	PRO
1	H	40	PRO
1	K	40	PRO

### 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	227/248 (92%)	225 (99%)	2 (1%)	78	92
1	B	227/248 (92%)	224 (99%)	3 (1%)	69	89
1	C	227/248 (92%)	222 (98%)	5 (2%)	52	81
1	D	227/248 (92%)	223 (98%)	4 (2%)	59	85
1	E	227/248 (92%)	225 (99%)	2 (1%)	78	92
1	F	227/248 (92%)	225 (99%)	2 (1%)	78	92
1	G	227/248 (92%)	225 (99%)	2 (1%)	78	92
1	H	227/248 (92%)	225 (99%)	2 (1%)	78	92
1	I	227/248 (92%)	223 (98%)	4 (2%)	59	85
1	J	227/248 (92%)	226 (100%)	1 (0%)	91	97
1	K	227/248 (92%)	225 (99%)	2 (1%)	78	92
1	L	227/248 (92%)	224 (99%)	3 (1%)	69	89
All	All	2724/2976 (92%)	2692 (99%)	32 (1%)	71	90

All (32) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	134	PHE
1	A	239	CYS
1	B	134	PHE
1	B	239	CYS
1	B	241	GLU
1	C	54	ARG

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Mol	Chain	Res	Type
1	C	130	LYS
1	C	134	PHE
1	C	222	HIS
1	C	241	GLU
1	D	134	PHE
1	D	200	MET
1	D	240	ASP
1	D	253	LYS
1	E	134	PHE
1	E	222	HIS
1	F	134	PHE
1	F	222	HIS
1	G	134	PHE
1	G	222	HIS
1	H	134	PHE
1	H	160	LYS
1	I	134	PHE
1	I	222	HIS
1	I	239	CYS
1	I	241	GLU
1	J	134	PHE
1	K	134	PHE
1	K	239	CYS
1	L	134	PHE
1	L	239	CYS
1	L	240	ASP

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

Mol	Chain	Res	Type
1	D	110	ASN
1	D	170	ASN
1	G	11	GLN
1	I	175	ASN
1	L	110	ASN

### 5.3.3 RNA

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 monosaccharides 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 [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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	261/286 (91%)	-0.38	0 100 100	27, 42, 63, 87	0
1	B	261/286 (91%)	-0.31	0 100 100	26, 45, 76, 95	0
1	C	261/286 (91%)	-0.50	0 100 100	22, 33, 55, 77	0
1	D	261/286 (91%)	-0.49	0 100 100	21, 33, 57, 87	0
1	E	261/286 (91%)	-0.28	0 100 100	28, 45, 68, 123	0
1	F	261/286 (91%)	-0.12	2 (0%) 86 65	32, 63, 101, 125	0
1	G	261/286 (91%)	-0.18	0 100 100	24, 55, 87, 115	0
1	H	261/286 (91%)	-0.48	1 (0%) 92 79	23, 35, 56, 107	0
1	I	261/286 (91%)	-0.42	0 100 100	21, 35, 55, 92	0
1	J	261/286 (91%)	-0.44	0 100 100	25, 40, 66, 109	0
1	K	261/286 (91%)	-0.33	0 100 100	29, 49, 81, 115	0
1	L	261/286 (91%)	-0.41	0 100 100	23, 38, 63, 84	0
All	All	3132/3432 (91%)	-0.36	3 (0%) 95 89	21, 41, 77, 125	0

All (3) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	H	0	PHE	3.2
1	F	179	THR	2.4
1	F	173	PHE	2.1

### 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 monosaccharides 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.