



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 03:31 PM UTC

PDB ID : 6CNL / pdb_00006cnl
Title : Crystal Structure of H105A PGAM5 Dodecamer
Authors : Ruiz, K.; Agnew, C.; Jura, N.
Deposited on : 2018-03-08
Resolution : 2.60 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity	:	4-5-2 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

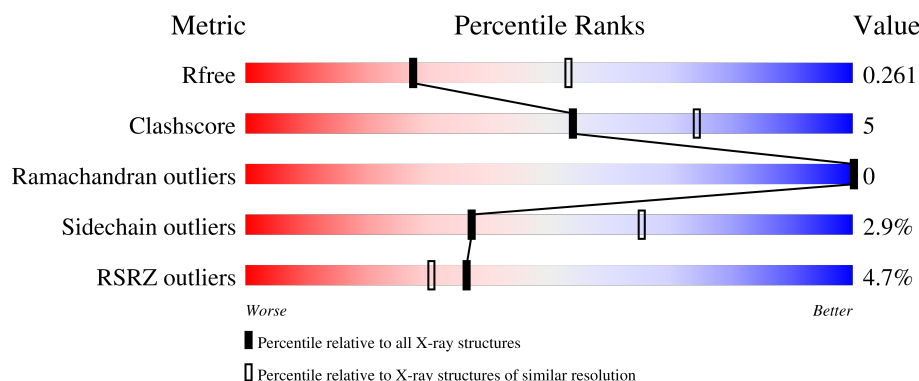
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.60 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	4008 (2.60-2.60)
Clashscore	190562	4347 (2.60-2.60)
Ramachandran outliers	187476	4277 (2.60-2.60)
Sidechain outliers	187428	4277 (2.60-2.60)
RSRZ outliers	180081	4008 (2.60-2.60)

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	223	2% 74% 9% 17%
1	B	223	5% 73% 11% 16%
1	C	223	2% 76% 9% 15%
1	D	223	2% 74% 12% 14%
1	E	223	2% 74% 9% 16%

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Mol	Chain	Length	Quality of chain
1	F	223	
1	G	223	
1	H	223	
1	I	223	
1	J	223	
1	K	223	
1	L	223	
2	M	14	
2	N	14	
2	O	14	
2	P	14	
2	Q	14	
2	R	14	
2	S	14	
2	T	14	
2	U	14	
2	V	14	
2	W	14	
2	X	14	

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 18873 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 Serine/threonine-protein phosphatase PGAM5, mitochondrial.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	186	Total	C	N	O	S	0	0	0
			1459	922	271	261	5			
1	C	189	Total	C	N	O	S	0	0	0
			1475	935	269	266	5			
1	L	192	Total	C	N	O	S	0	0	0
			1478	932	271	270	5			
1	J	184	Total	C	N	O	S	0	0	0
			1397	887	249	256	5			
1	F	187	Total	C	N	O	S	0	0	0
			1462	925	270	262	5			
1	H	186	Total	C	N	O	S	0	0	0
			1458	921	266	266	5			
1	K	187	Total	C	N	O	S	0	1	0
			1444	914	268	257	5			
1	D	191	Total	C	N	O	S	0	0	0
			1479	938	269	267	5			
1	B	188	Total	C	N	O	S	0	0	0
			1458	922	265	266	5			
1	I	183	Total	C	N	O	S	0	0	0
			1410	892	258	255	5			
1	G	189	Total	C	N	O	S	0	0	0
			1461	923	268	265	5			
1	E	187	Total	C	N	O	S	0	0	0
			1463	925	269	264	5			

There are 288 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	67	MET	-	initiating methionine	UNP Q96HS1
A	68	HIS	-	expression tag	UNP Q96HS1
A	69	HIS	-	expression tag	UNP Q96HS1
A	70	HIS	-	expression tag	UNP Q96HS1
A	71	HIS	-	expression tag	UNP Q96HS1

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Chain	Residue	Modelled	Actual	Comment	Reference
A	72	HIS	-	expression tag	UNP Q96HS1
A	73	HIS	-	expression tag	UNP Q96HS1
A	74	SER	-	expression tag	UNP Q96HS1
A	75	SER	-	expression tag	UNP Q96HS1
A	76	GLY	-	expression tag	UNP Q96HS1
A	77	VAL	-	expression tag	UNP Q96HS1
A	78	ASP	-	expression tag	UNP Q96HS1
A	79	LEU	-	expression tag	UNP Q96HS1
A	80	GLY	-	expression tag	UNP Q96HS1
A	81	THR	-	expression tag	UNP Q96HS1
A	82	GLU	-	expression tag	UNP Q96HS1
A	83	ASN	-	expression tag	UNP Q96HS1
A	84	LEU	-	expression tag	UNP Q96HS1
A	85	TYR	-	expression tag	UNP Q96HS1
A	86	PHE	-	expression tag	UNP Q96HS1
A	87	GLN	-	expression tag	UNP Q96HS1
A	88	SER	-	expression tag	UNP Q96HS1
A	89	MET	-	expression tag	UNP Q96HS1
A	105	ALA	HIS	engineered mutation	UNP Q96HS1
C	67	MET	-	initiating methionine	UNP Q96HS1
C	68	HIS	-	expression tag	UNP Q96HS1
C	69	HIS	-	expression tag	UNP Q96HS1
C	70	HIS	-	expression tag	UNP Q96HS1
C	71	HIS	-	expression tag	UNP Q96HS1
C	72	HIS	-	expression tag	UNP Q96HS1
C	73	HIS	-	expression tag	UNP Q96HS1
C	74	SER	-	expression tag	UNP Q96HS1
C	75	SER	-	expression tag	UNP Q96HS1
C	76	GLY	-	expression tag	UNP Q96HS1
C	77	VAL	-	expression tag	UNP Q96HS1
C	78	ASP	-	expression tag	UNP Q96HS1
C	79	LEU	-	expression tag	UNP Q96HS1
C	80	GLY	-	expression tag	UNP Q96HS1
C	81	THR	-	expression tag	UNP Q96HS1
C	82	GLU	-	expression tag	UNP Q96HS1
C	83	ASN	-	expression tag	UNP Q96HS1
C	84	LEU	-	expression tag	UNP Q96HS1
C	85	TYR	-	expression tag	UNP Q96HS1
C	86	PHE	-	expression tag	UNP Q96HS1
C	87	GLN	-	expression tag	UNP Q96HS1
C	88	SER	-	expression tag	UNP Q96HS1
C	89	MET	-	expression tag	UNP Q96HS1

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Chain	Residue	Modelled	Actual	Comment	Reference
C	105	ALA	HIS	engineered mutation	UNP Q96HS1
L	67	MET	-	initiating methionine	UNP Q96HS1
L	68	HIS	-	expression tag	UNP Q96HS1
L	69	HIS	-	expression tag	UNP Q96HS1
L	70	HIS	-	expression tag	UNP Q96HS1
L	71	HIS	-	expression tag	UNP Q96HS1
L	72	HIS	-	expression tag	UNP Q96HS1
L	73	HIS	-	expression tag	UNP Q96HS1
L	74	SER	-	expression tag	UNP Q96HS1
L	75	SER	-	expression tag	UNP Q96HS1
L	76	GLY	-	expression tag	UNP Q96HS1
L	77	VAL	-	expression tag	UNP Q96HS1
L	78	ASP	-	expression tag	UNP Q96HS1
L	79	LEU	-	expression tag	UNP Q96HS1
L	80	GLY	-	expression tag	UNP Q96HS1
L	81	THR	-	expression tag	UNP Q96HS1
L	82	GLU	-	expression tag	UNP Q96HS1
L	83	ASN	-	expression tag	UNP Q96HS1
L	84	LEU	-	expression tag	UNP Q96HS1
L	85	TYR	-	expression tag	UNP Q96HS1
L	86	PHE	-	expression tag	UNP Q96HS1
L	87	GLN	-	expression tag	UNP Q96HS1
L	88	SER	-	expression tag	UNP Q96HS1
L	89	MET	-	expression tag	UNP Q96HS1
L	105	ALA	HIS	engineered mutation	UNP Q96HS1
J	67	MET	-	initiating methionine	UNP Q96HS1
J	68	HIS	-	expression tag	UNP Q96HS1
J	69	HIS	-	expression tag	UNP Q96HS1
J	70	HIS	-	expression tag	UNP Q96HS1
J	71	HIS	-	expression tag	UNP Q96HS1
J	72	HIS	-	expression tag	UNP Q96HS1
J	73	HIS	-	expression tag	UNP Q96HS1
J	74	SER	-	expression tag	UNP Q96HS1
J	75	SER	-	expression tag	UNP Q96HS1
J	76	GLY	-	expression tag	UNP Q96HS1
J	77	VAL	-	expression tag	UNP Q96HS1
J	78	ASP	-	expression tag	UNP Q96HS1
J	79	LEU	-	expression tag	UNP Q96HS1
J	80	GLY	-	expression tag	UNP Q96HS1
J	81	THR	-	expression tag	UNP Q96HS1
J	82	GLU	-	expression tag	UNP Q96HS1
J	83	ASN	-	expression tag	UNP Q96HS1

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Chain	Residue	Modelled	Actual	Comment	Reference
J	84	LEU	-	expression tag	UNP Q96HS1
J	85	TYR	-	expression tag	UNP Q96HS1
J	86	PHE	-	expression tag	UNP Q96HS1
J	87	GLN	-	expression tag	UNP Q96HS1
J	88	SER	-	expression tag	UNP Q96HS1
J	89	MET	-	expression tag	UNP Q96HS1
J	105	ALA	HIS	engineered mutation	UNP Q96HS1
F	67	MET	-	initiating methionine	UNP Q96HS1
F	68	HIS	-	expression tag	UNP Q96HS1
F	69	HIS	-	expression tag	UNP Q96HS1
F	70	HIS	-	expression tag	UNP Q96HS1
F	71	HIS	-	expression tag	UNP Q96HS1
F	72	HIS	-	expression tag	UNP Q96HS1
F	73	HIS	-	expression tag	UNP Q96HS1
F	74	SER	-	expression tag	UNP Q96HS1
F	75	SER	-	expression tag	UNP Q96HS1
F	76	GLY	-	expression tag	UNP Q96HS1
F	77	VAL	-	expression tag	UNP Q96HS1
F	78	ASP	-	expression tag	UNP Q96HS1
F	79	LEU	-	expression tag	UNP Q96HS1
F	80	GLY	-	expression tag	UNP Q96HS1
F	81	THR	-	expression tag	UNP Q96HS1
F	82	GLU	-	expression tag	UNP Q96HS1
F	83	ASN	-	expression tag	UNP Q96HS1
F	84	LEU	-	expression tag	UNP Q96HS1
F	85	TYR	-	expression tag	UNP Q96HS1
F	86	PHE	-	expression tag	UNP Q96HS1
F	87	GLN	-	expression tag	UNP Q96HS1
F	88	SER	-	expression tag	UNP Q96HS1
F	89	MET	-	expression tag	UNP Q96HS1
F	105	ALA	HIS	engineered mutation	UNP Q96HS1
H	67	MET	-	initiating methionine	UNP Q96HS1
H	68	HIS	-	expression tag	UNP Q96HS1
H	69	HIS	-	expression tag	UNP Q96HS1
H	70	HIS	-	expression tag	UNP Q96HS1
H	71	HIS	-	expression tag	UNP Q96HS1
H	72	HIS	-	expression tag	UNP Q96HS1
H	73	HIS	-	expression tag	UNP Q96HS1
H	74	SER	-	expression tag	UNP Q96HS1
H	75	SER	-	expression tag	UNP Q96HS1
H	76	GLY	-	expression tag	UNP Q96HS1
H	77	VAL	-	expression tag	UNP Q96HS1

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Chain	Residue	Modelled	Actual	Comment	Reference
H	78	ASP	-	expression tag	UNP Q96HS1
H	79	LEU	-	expression tag	UNP Q96HS1
H	80	GLY	-	expression tag	UNP Q96HS1
H	81	THR	-	expression tag	UNP Q96HS1
H	82	GLU	-	expression tag	UNP Q96HS1
H	83	ASN	-	expression tag	UNP Q96HS1
H	84	LEU	-	expression tag	UNP Q96HS1
H	85	TYR	-	expression tag	UNP Q96HS1
H	86	PHE	-	expression tag	UNP Q96HS1
H	87	GLN	-	expression tag	UNP Q96HS1
H	88	SER	-	expression tag	UNP Q96HS1
H	89	MET	-	expression tag	UNP Q96HS1
H	105	ALA	HIS	engineered mutation	UNP Q96HS1
K	67	MET	-	initiating methionine	UNP Q96HS1
K	68	HIS	-	expression tag	UNP Q96HS1
K	69	HIS	-	expression tag	UNP Q96HS1
K	70	HIS	-	expression tag	UNP Q96HS1
K	71	HIS	-	expression tag	UNP Q96HS1
K	72	HIS	-	expression tag	UNP Q96HS1
K	73	HIS	-	expression tag	UNP Q96HS1
K	74	SER	-	expression tag	UNP Q96HS1
K	75	SER	-	expression tag	UNP Q96HS1
K	76	GLY	-	expression tag	UNP Q96HS1
K	77	VAL	-	expression tag	UNP Q96HS1
K	78	ASP	-	expression tag	UNP Q96HS1
K	79	LEU	-	expression tag	UNP Q96HS1
K	80	GLY	-	expression tag	UNP Q96HS1
K	81	THR	-	expression tag	UNP Q96HS1
K	82	GLU	-	expression tag	UNP Q96HS1
K	83	ASN	-	expression tag	UNP Q96HS1
K	84	LEU	-	expression tag	UNP Q96HS1
K	85	TYR	-	expression tag	UNP Q96HS1
K	86	PHE	-	expression tag	UNP Q96HS1
K	87	GLN	-	expression tag	UNP Q96HS1
K	88	SER	-	expression tag	UNP Q96HS1
K	89	MET	-	expression tag	UNP Q96HS1
K	105	ALA	HIS	engineered mutation	UNP Q96HS1
D	67	MET	-	initiating methionine	UNP Q96HS1
D	68	HIS	-	expression tag	UNP Q96HS1
D	69	HIS	-	expression tag	UNP Q96HS1
D	70	HIS	-	expression tag	UNP Q96HS1
D	71	HIS	-	expression tag	UNP Q96HS1

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Chain	Residue	Modelled	Actual	Comment	Reference
D	72	HIS	-	expression tag	UNP Q96HS1
D	73	HIS	-	expression tag	UNP Q96HS1
D	74	SER	-	expression tag	UNP Q96HS1
D	75	SER	-	expression tag	UNP Q96HS1
D	76	GLY	-	expression tag	UNP Q96HS1
D	77	VAL	-	expression tag	UNP Q96HS1
D	78	ASP	-	expression tag	UNP Q96HS1
D	79	LEU	-	expression tag	UNP Q96HS1
D	80	GLY	-	expression tag	UNP Q96HS1
D	81	THR	-	expression tag	UNP Q96HS1
D	82	GLU	-	expression tag	UNP Q96HS1
D	83	ASN	-	expression tag	UNP Q96HS1
D	84	LEU	-	expression tag	UNP Q96HS1
D	85	TYR	-	expression tag	UNP Q96HS1
D	86	PHE	-	expression tag	UNP Q96HS1
D	87	GLN	-	expression tag	UNP Q96HS1
D	88	SER	-	expression tag	UNP Q96HS1
D	89	MET	-	expression tag	UNP Q96HS1
D	105	ALA	HIS	engineered mutation	UNP Q96HS1
B	67	MET	-	initiating methionine	UNP Q96HS1
B	68	HIS	-	expression tag	UNP Q96HS1
B	69	HIS	-	expression tag	UNP Q96HS1
B	70	HIS	-	expression tag	UNP Q96HS1
B	71	HIS	-	expression tag	UNP Q96HS1
B	72	HIS	-	expression tag	UNP Q96HS1
B	73	HIS	-	expression tag	UNP Q96HS1
B	74	SER	-	expression tag	UNP Q96HS1
B	75	SER	-	expression tag	UNP Q96HS1
B	76	GLY	-	expression tag	UNP Q96HS1
B	77	VAL	-	expression tag	UNP Q96HS1
B	78	ASP	-	expression tag	UNP Q96HS1
B	79	LEU	-	expression tag	UNP Q96HS1
B	80	GLY	-	expression tag	UNP Q96HS1
B	81	THR	-	expression tag	UNP Q96HS1
B	82	GLU	-	expression tag	UNP Q96HS1
B	83	ASN	-	expression tag	UNP Q96HS1
B	84	LEU	-	expression tag	UNP Q96HS1
B	85	TYR	-	expression tag	UNP Q96HS1
B	86	PHE	-	expression tag	UNP Q96HS1
B	87	GLN	-	expression tag	UNP Q96HS1
B	88	SER	-	expression tag	UNP Q96HS1
B	89	MET	-	expression tag	UNP Q96HS1

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Chain	Residue	Modelled	Actual	Comment	Reference
B	105	ALA	HIS	engineered mutation	UNP Q96HS1
I	67	MET	-	initiating methionine	UNP Q96HS1
I	68	HIS	-	expression tag	UNP Q96HS1
I	69	HIS	-	expression tag	UNP Q96HS1
I	70	HIS	-	expression tag	UNP Q96HS1
I	71	HIS	-	expression tag	UNP Q96HS1
I	72	HIS	-	expression tag	UNP Q96HS1
I	73	HIS	-	expression tag	UNP Q96HS1
I	74	SER	-	expression tag	UNP Q96HS1
I	75	SER	-	expression tag	UNP Q96HS1
I	76	GLY	-	expression tag	UNP Q96HS1
I	77	VAL	-	expression tag	UNP Q96HS1
I	78	ASP	-	expression tag	UNP Q96HS1
I	79	LEU	-	expression tag	UNP Q96HS1
I	80	GLY	-	expression tag	UNP Q96HS1
I	81	THR	-	expression tag	UNP Q96HS1
I	82	GLU	-	expression tag	UNP Q96HS1
I	83	ASN	-	expression tag	UNP Q96HS1
I	84	LEU	-	expression tag	UNP Q96HS1
I	85	TYR	-	expression tag	UNP Q96HS1
I	86	PHE	-	expression tag	UNP Q96HS1
I	87	GLN	-	expression tag	UNP Q96HS1
I	88	SER	-	expression tag	UNP Q96HS1
I	89	MET	-	expression tag	UNP Q96HS1
I	105	ALA	HIS	engineered mutation	UNP Q96HS1
G	67	MET	-	initiating methionine	UNP Q96HS1
G	68	HIS	-	expression tag	UNP Q96HS1
G	69	HIS	-	expression tag	UNP Q96HS1
G	70	HIS	-	expression tag	UNP Q96HS1
G	71	HIS	-	expression tag	UNP Q96HS1
G	72	HIS	-	expression tag	UNP Q96HS1
G	73	HIS	-	expression tag	UNP Q96HS1
G	74	SER	-	expression tag	UNP Q96HS1
G	75	SER	-	expression tag	UNP Q96HS1
G	76	GLY	-	expression tag	UNP Q96HS1
G	77	VAL	-	expression tag	UNP Q96HS1
G	78	ASP	-	expression tag	UNP Q96HS1
G	79	LEU	-	expression tag	UNP Q96HS1
G	80	GLY	-	expression tag	UNP Q96HS1
G	81	THR	-	expression tag	UNP Q96HS1
G	82	GLU	-	expression tag	UNP Q96HS1
G	83	ASN	-	expression tag	UNP Q96HS1

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Chain	Residue	Modelled	Actual	Comment	Reference
G	84	LEU	-	expression tag	UNP Q96HS1
G	85	TYR	-	expression tag	UNP Q96HS1
G	86	PHE	-	expression tag	UNP Q96HS1
G	87	GLN	-	expression tag	UNP Q96HS1
G	88	SER	-	expression tag	UNP Q96HS1
G	89	MET	-	expression tag	UNP Q96HS1
G	105	ALA	HIS	engineered mutation	UNP Q96HS1
E	67	MET	-	initiating methionine	UNP Q96HS1
E	68	HIS	-	expression tag	UNP Q96HS1
E	69	HIS	-	expression tag	UNP Q96HS1
E	70	HIS	-	expression tag	UNP Q96HS1
E	71	HIS	-	expression tag	UNP Q96HS1
E	72	HIS	-	expression tag	UNP Q96HS1
E	73	HIS	-	expression tag	UNP Q96HS1
E	74	SER	-	expression tag	UNP Q96HS1
E	75	SER	-	expression tag	UNP Q96HS1
E	76	GLY	-	expression tag	UNP Q96HS1
E	77	VAL	-	expression tag	UNP Q96HS1
E	78	ASP	-	expression tag	UNP Q96HS1
E	79	LEU	-	expression tag	UNP Q96HS1
E	80	GLY	-	expression tag	UNP Q96HS1
E	81	THR	-	expression tag	UNP Q96HS1
E	82	GLU	-	expression tag	UNP Q96HS1
E	83	ASN	-	expression tag	UNP Q96HS1
E	84	LEU	-	expression tag	UNP Q96HS1
E	85	TYR	-	expression tag	UNP Q96HS1
E	86	PHE	-	expression tag	UNP Q96HS1
E	87	GLN	-	expression tag	UNP Q96HS1
E	88	SER	-	expression tag	UNP Q96HS1
E	89	MET	-	expression tag	UNP Q96HS1
E	105	ALA	HIS	engineered mutation	UNP Q96HS1

- Molecule 2 is a protein called PGAM5 Multimerization Motif Peptide.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	M	11	Total	C	N	O	0	0	0
			101	63	20	18			
2	O	11	Total	C	N	O	0	0	0
			101	63	20	18			
2	X	10	Total	C	N	O	0	0	0
			92	58	19	15			
2	V	11	Total	C	N	O	0	0	0
			101	63	20	18			

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	R	11	Total	C	N	O	0	0	0
			101	63	20	18			
2	T	11	Total	C	N	O	0	0	0
			101	63	20	18			
2	W	11	Total	C	N	O	0	0	0
			101	63	20	18			
2	P	11	Total	C	N	O	0	0	0
			101	63	20	18			
2	N	11	Total	C	N	O	0	0	0
			101	63	20	18			
2	U	11	Total	C	N	O	0	0	0
			101	63	20	18			
2	S	11	Total	C	N	O	0	0	0
			101	63	20	18			
2	Q	10	Total	C	N	O	0	0	0
			97	61	19	17			

- Molecule 3 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Mg	0	0
			1	1		
3	C	5	Total	Mg	0	0
			5	5		
3	L	2	Total	Mg	0	0
			2	2		
3	J	2	Total	Mg	0	0
			2	2		
3	F	4	Total	Mg	0	0
			4	4		
3	H	2	Total	Mg	0	0
			2	2		
3	K	1	Total	Mg	0	0
			1	1		
3	D	3	Total	Mg	0	0
			3	3		
3	B	2	Total	Mg	0	0
			2	2		
3	I	3	Total	Mg	0	0
			3	3		
3	G	3	Total	Mg	0	0
			3	3		

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	E	2	Total 2	Mg 2	0	0
3	P	1	Total 1	Mg 1	0	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	16	Total 16	O 16	0	0
4	C	16	Total 16	O 16	0	0
4	L	19	Total 19	O 19	0	0
4	J	10	Total 10	O 10	0	0
4	F	23	Total 23	O 23	0	0
4	H	12	Total 12	O 12	0	0
4	K	12	Total 12	O 12	0	0
4	D	17	Total 17	O 17	0	0
4	B	16	Total 16	O 16	0	0
4	I	14	Total 14	O 14	0	0
4	G	11	Total 11	O 11	0	0
4	E	21	Total 21	O 21	0	0
4	M	1	Total 1	O 1	0	0
4	O	3	Total 3	O 3	0	0
4	X	1	Total 1	O 1	0	0
4	V	1	Total 1	O 1	0	0
4	R	1	Total 1	O 1	0	0

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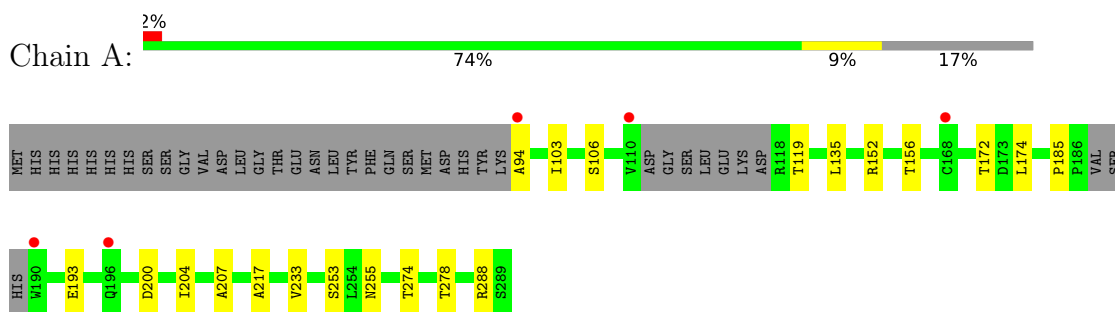
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	P	1	Total 1	O 1	0	0
4	N	1	Total 1	O 1	0	0
4	U	1	Total 1	O 1	0	0
4	Q	2	Total 2	O 2	0	0

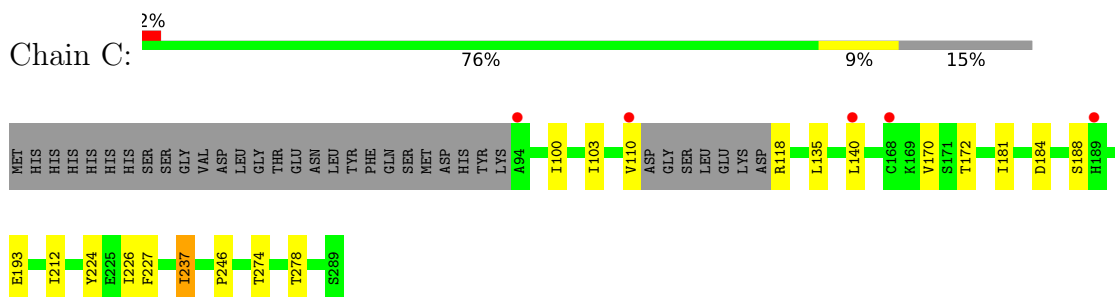
3 Residue-property plots [i](#)

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

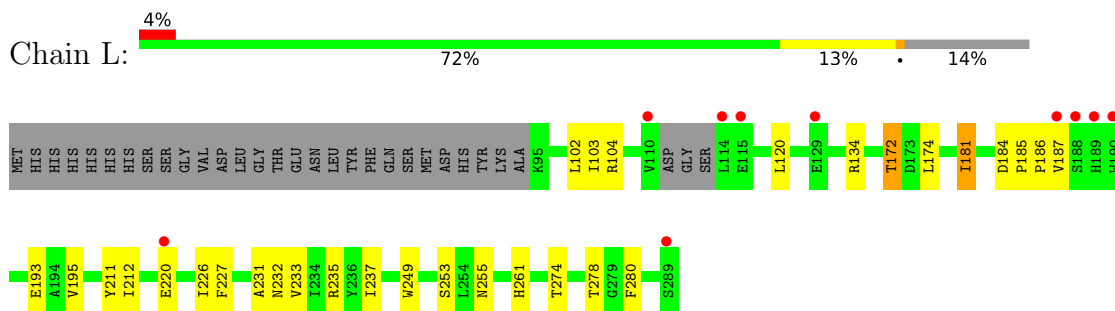
- Molecule 1: Serine/threonine-protein phosphatase PGAM5, mitochondrial



- Molecule 1: Serine/threonine-protein phosphatase PGAM5, mitochondrial

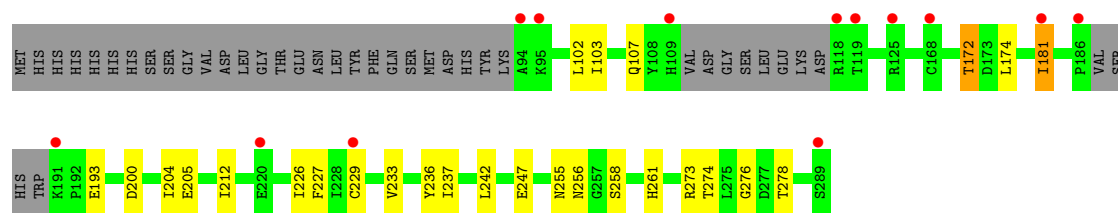


- Molecule 1: Serine/threonine-protein phosphatase PGAM5, mitochondrial

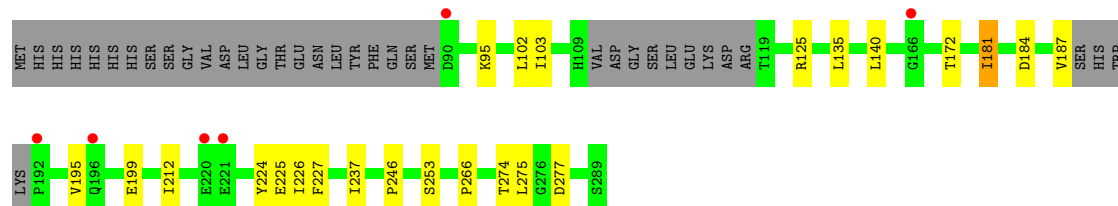
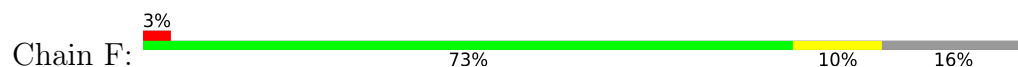


- Molecule 1: Serine/threonine-protein phosphatase PGAM5, mitochondrial

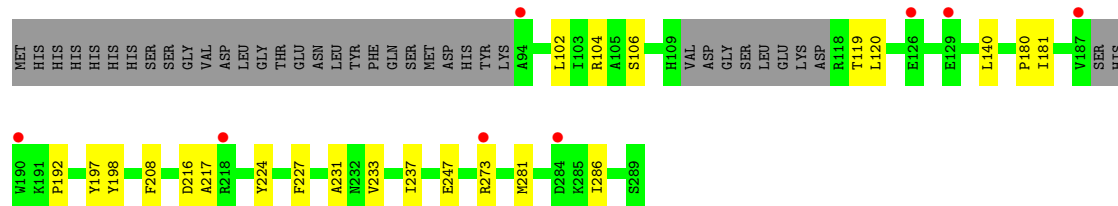
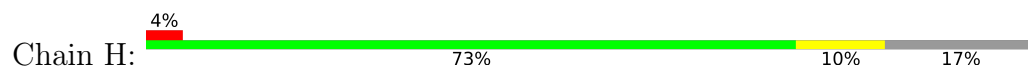




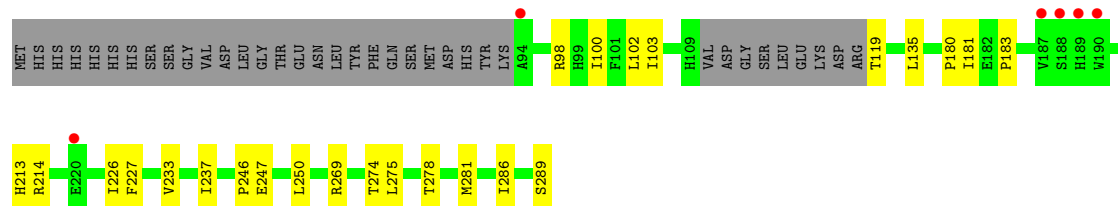
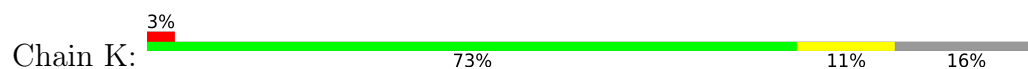
- Molecule 1: Serine/threonine-protein phosphatase PGAM5, mitochondrial



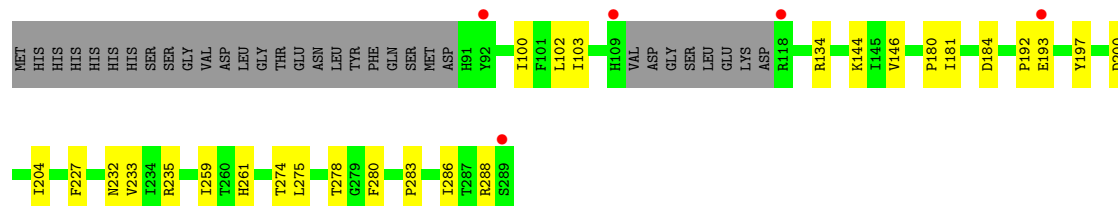
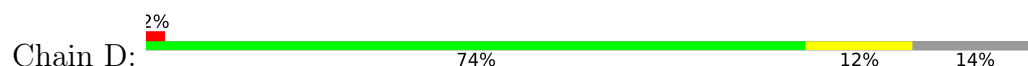
- Molecule 1: Serine/threonine-protein phosphatase PGAM5, mitochondrial



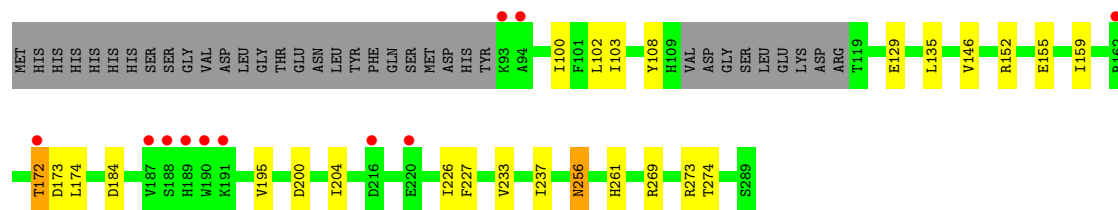
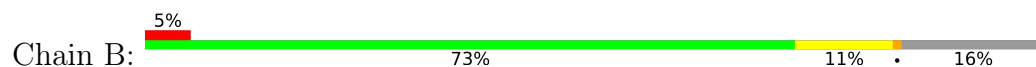
- Molecule 1: Serine/threonine-protein phosphatase PGAM5, mitochondrial



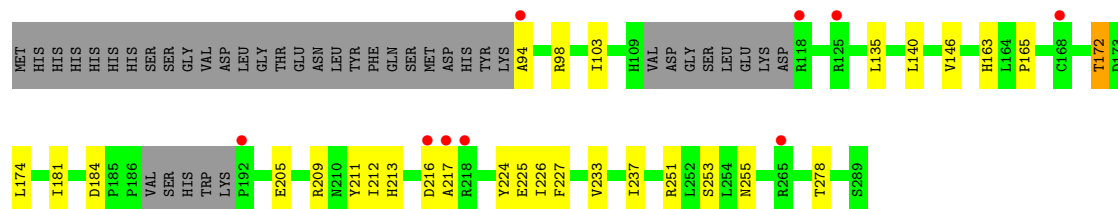
- Molecule 1: Serine/threonine-protein phosphatase PGAM5, mitochondrial



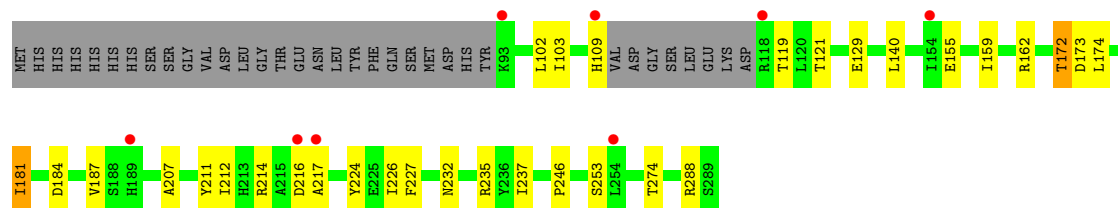
- Molecule 1: Serine/threonine-protein phosphatase PGAM5, mitochondrial



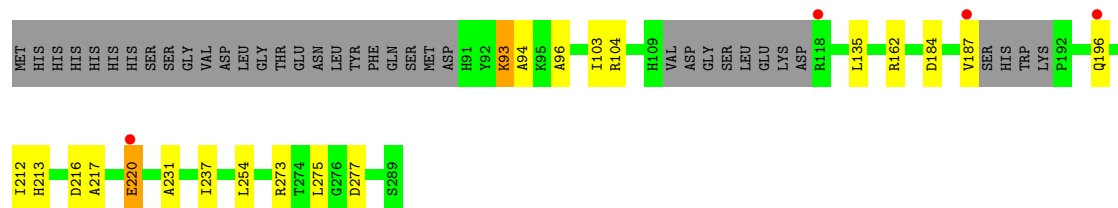
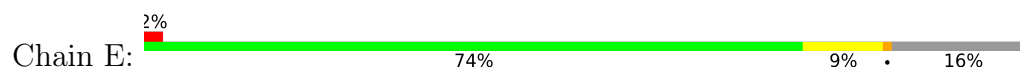
- Molecule 1: Serine/threonine-protein phosphatase PGAM5, mitochondrial



- Molecule 1: Serine/threonine-protein phosphatase PGAM5, mitochondrial

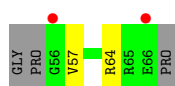


- Molecule 1: Serine/threonine-protein phosphatase PGAM5, mitochondrial

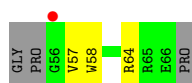


- Molecule 2: PGAM5 Multimerization Motif Peptide

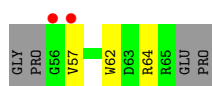




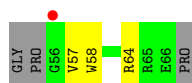
- Molecule 2: PGAM5 Multimerization Motif Peptide



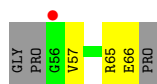
- Molecule 2: PGAM5 Multimerization Motif Peptide



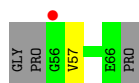
- Molecule 2: PGAM5 Multimerization Motif Peptide



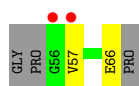
- Molecule 2: PGAM5 Multimerization Motif Peptide



- Molecule 2: PGAM5 Multimerization Motif Peptide



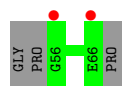
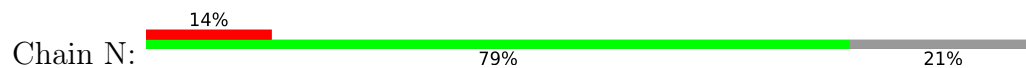
- Molecule 2: PGAM5 Multimerization Motif Peptide



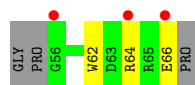
- Molecule 2: PGAM5 Multimerization Motif Peptide



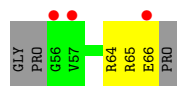
- Molecule 2: PGAM5 Multimerization Motif Peptide



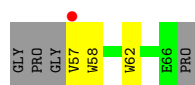
- Molecule 2: PGAM5 Multimerization Motif Peptide



- Molecule 2: PGAM5 Multimerization Motif Peptide



- Molecule 2: PGAM5 Multimerization Motif Peptide



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	49.37Å 242.54Å 272.46Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	48.60 – 2.60 48.60 – 2.60	Depositor EDS
% Data completeness (in resolution range)	98.5 (48.60-2.60) 99.8 (48.60-2.60)	Depositor EDS
R_{merge}	0.20	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.81 (at 2.61Å)	Xtriage
Refinement program	PHENIX (1.12_2829: ???)	Depositor
R, R_{free}	0.223 , 0.264 0.225 , 0.261	Depositor DCC
R_{free} test set	5091 reflections (4.97%)	wwPDB-VP
Wilson B-factor (Å ²)	35.9	Xtriage
Anisotropy	0.441	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.39 , 51.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	18873	wwPDB-VP
Average B, all atoms (Å ²)	35.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.09% 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 [i](#)

5.1 Standard geometry [i](#)

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

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	0.20	0/1491	0.44	0/2027
1	B	0.19	0/1491	0.44	0/2030
1	C	0.20	0/1509	0.43	0/2052
1	D	0.19	0/1513	0.41	0/2059
1	E	0.32	0/1495	0.55	2/2029 (0.1%)
1	F	0.20	0/1494	0.44	0/2027
1	G	0.19	0/1493	0.42	0/2030
1	H	0.22	0/1490	0.45	0/2025
1	I	0.20	0/1440	0.45	0/1957
1	J	0.21	0/1427	0.44	0/1946
1	K	0.19	0/1479	0.42	0/2013
1	L	0.21	0/1509	0.45	0/2053
2	M	0.19	0/105	0.54	0/143
2	N	0.15	0/105	0.46	0/143
2	O	0.27	0/105	0.51	0/143
2	P	0.18	0/105	0.58	0/143
2	Q	0.25	0/101	0.44	0/138
2	R	0.22	0/105	0.60	0/143
2	S	0.25	0/105	0.51	0/143
2	T	0.16	0/105	0.47	0/143
2	U	0.20	0/105	0.41	0/143
2	V	0.21	0/105	0.67	0/143
2	W	0.20	0/105	0.56	0/143
2	X	0.20	0/96	0.53	0/131
All	All	0.21	0/19078	0.45	2/25947 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	220	GLU	CB-CG-CD	-5.47	103.30	112.60
1	E	93	LYS	N-CA-CB	-5.19	102.47	110.56

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	1459	0	1439	11	0
1	B	1458	0	1422	19	0
1	C	1475	0	1454	9	0
1	D	1479	0	1445	13	0
1	E	1463	0	1444	18	0
1	F	1462	0	1449	15	0
1	G	1461	0	1409	18	0
1	H	1458	0	1432	13	0
1	I	1410	0	1382	20	0
1	J	1397	0	1344	18	0
1	K	1444	0	1416	13	0
1	L	1478	0	1439	20	0
2	M	101	0	84	3	0
2	N	101	0	84	0	0
2	O	101	0	84	3	0
2	P	101	0	84	1	0
2	Q	97	0	81	2	0
2	R	101	0	84	2	0
2	S	101	0	84	3	0
2	T	101	0	84	1	0
2	U	101	0	84	3	0
2	V	101	0	84	3	0
2	W	101	0	84	2	0
2	X	92	0	78	1	0
3	A	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	2	0	0	0	0
3	C	5	0	0	0	0
3	D	3	0	0	0	0
3	E	2	0	0	0	0
3	F	4	0	0	0	0
3	G	3	0	0	0	0
3	H	2	0	0	0	0
3	I	3	0	0	0	0
3	J	2	0	0	0	0
3	K	1	0	0	0	0
3	L	2	0	0	0	0
3	P	1	0	0	0	0
4	A	16	0	0	0	0
4	B	16	0	0	0	0
4	C	16	0	0	1	0
4	D	17	0	0	0	0
4	E	21	0	0	0	0
4	F	23	0	0	1	0
4	G	11	0	0	0	0
4	H	12	0	0	0	0
4	I	14	0	0	1	0
4	J	10	0	0	0	0
4	K	12	0	0	0	0
4	L	19	0	0	0	0
4	M	1	0	0	0	0
4	N	1	0	0	0	0
4	O	3	0	0	0	0
4	P	1	0	0	0	0
4	Q	2	0	0	0	0
4	R	1	0	0	0	0
4	U	1	0	0	0	0
4	V	1	0	0	0	0
4	X	1	0	0	0	0
All	All	18873	0	18074	179	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 5.

All (179) 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:G:129:GLU:OE2	1:G:162:ARG:NH2	2.06	0.89
1:F:199:GLU:OE2	2:S:65:ARG:NH1	2.10	0.84
1:E:94:ALA:N	1:E:220:GLU:OE2	2.13	0.81
1:A:204:ILE:HD12	1:A:233:VAL:HG22	1.64	0.78
1:K:103:ILE:HD13	1:K:226:ILE:HG23	1.66	0.77
1:A:152:ARG:O	1:A:156:THR:HG23	1.87	0.73
1:B:204:ILE:HD12	1:B:233:VAL:HG22	1.69	0.73
1:B:102:LEU:HD23	1:B:227:PHE:HB2	1.70	0.73
1:J:102:LEU:HD23	1:J:227:PHE:HB2	1.71	0.73
1:D:283:PRO:HA	1:D:286:ILE:HD12	1.70	0.72
1:G:103:ILE:HD13	1:G:226:ILE:HG23	1.72	0.72
2:U:62:TRP:O	2:U:64:ARG:NH2	2.25	0.70
1:H:102:LEU:HD23	1:H:227:PHE:HB2	1.74	0.69
1:B:103:ILE:HD11	1:B:135:LEU:HD11	1.74	0.69
1:F:184:ASP:OD1	2:Q:58:TRP:N	2.25	0.69
1:L:103:ILE:HD13	1:L:226:ILE:HG23	1.75	0.69
1:L:186:PRO:O	1:K:269:ARG:NH1	2.29	0.66
1:D:204:ILE:HD12	1:D:233:VAL:HG22	1.77	0.65
1:K:183:PRO:HG3	1:K:250:LEU:HD12	1.76	0.65
1:L:195:VAL:HG22	2:M:64:ARG:O	1.97	0.64
1:E:103:ILE:CD1	1:E:135:LEU:HD11	2.27	0.64
1:E:94:ALA:O	1:E:220:GLU:OE2	2.15	0.64
1:I:94:ALA:N	4:I:401:HOH:O	2.30	0.63
1:C:181:ILE:HD11	1:C:246:PRO:HB2	1.80	0.63
1:A:253:SER:OG	1:B:273:ARG:NH2	2.31	0.63
1:D:102:LEU:HD23	1:D:227:PHE:HB2	1.81	0.63
1:J:204:ILE:HD12	1:J:233:VAL:HG22	1.79	0.62
1:F:125:ARG:NH1	4:F:401:HOH:O	2.31	0.62
1:J:200:ASP:O	1:J:204:ILE:HG12	2.00	0.62
1:A:106:SER:H	1:A:156:THR:HG21	1.66	0.61
1:B:184:ASP:OD2	2:M:57:VAL:HA	2.02	0.60
1:G:216:ASP:OD1	1:G:217:ALA:N	2.35	0.59
1:L:184:ASP:OD2	2:W:57:VAL:HA	2.03	0.59
1:L:195:VAL:CG2	2:M:64:ARG:O	2.51	0.58
1:I:135:LEU:HD13	1:I:226:ILE:HD13	1.86	0.57
1:C:103:ILE:CD1	1:C:135:LEU:HD11	2.35	0.57
1:C:184:ASP:OD2	2:P:57:VAL:HA	2.04	0.56
2:R:65:ARG:O	2:R:66:GLU:HB2	2.05	0.56
1:A:200:ASP:O	1:A:204:ILE:HG12	2.05	0.56
1:G:181:ILE:HD11	1:G:246:PRO:HB2	1.88	0.56
1:I:98:ARG:NH2	1:I:225:GLU:OE2	2.34	0.56
1:J:255:ASN:O	1:J:258:SER:OG	2.21	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:108:TYR:CD2	1:B:152:ARG:HD2	2.41	0.56
1:L:172:THR:HG22	1:L:174:LEU:H	1.71	0.55
1:F:195:VAL:HG22	2:S:64:ARG:O	2.06	0.55
2:X:62:TRP:O	2:X:64:ARG:NH1	2.38	0.55
1:E:216:ASP:OD1	1:E:217:ALA:N	2.39	0.55
1:K:102:LEU:HD23	1:K:227:PHE:HB2	1.88	0.54
1:F:102:LEU:HD23	1:F:227:PHE:HB2	1.90	0.54
1:F:103:ILE:HD13	1:F:226:ILE:HG23	1.87	0.54
1:D:200:ASP:O	1:D:204:ILE:HG12	2.08	0.54
1:B:200:ASP:O	1:B:204:ILE:HG12	2.07	0.54
1:B:103:ILE:CD1	1:B:135:LEU:HD11	2.36	0.54
1:E:184:ASP:OD2	2:R:57:VAL:HA	2.07	0.54
1:E:93:LYS:CB	1:E:220:GLU:CD	2.81	0.53
1:K:233:VAL:O	1:K:237:ILE:HG12	2.09	0.52
1:J:103:ILE:HD13	1:J:226:ILE:HG23	1.91	0.52
1:I:184:ASP:OD2	2:V:58:TRP:N	2.36	0.52
1:I:216:ASP:OD1	1:I:217:ALA:N	2.43	0.52
1:H:198:TYR:HB2	2:U:64:ARG:HD3	1.91	0.52
1:L:220:GLU:CD	1:L:220:GLU:H	2.19	0.51
1:H:281:MET:HE3	1:H:286:ILE:HG12	1.91	0.51
1:E:104:ARG:NH1	1:E:254:LEU:O	2.43	0.51
1:F:253:SER:HB3	1:E:273:ARG:HA	1.92	0.51
1:B:256:ASN:OD1	1:B:256:ASN:N	2.41	0.50
1:A:174:LEU:HB3	1:A:207:ALA:HB2	1.94	0.50
1:D:184:ASP:OD2	2:O:58:TRP:N	2.34	0.50
1:I:103:ILE:CD1	1:I:135:LEU:HD11	2.42	0.50
1:C:212:ILE:HG13	1:C:237:ILE:HG23	1.94	0.49
1:C:140:LEU:HD22	1:C:224:TYR:CD2	2.47	0.49
1:J:233:VAL:O	1:J:237:ILE:HG12	2.12	0.49
2:V:64:ARG:HD2	2:V:64:ARG:N	2.27	0.49
1:J:255:ASN:HB2	1:J:278:THR:HG21	1.95	0.49
1:F:212:ILE:HG13	1:F:237:ILE:HG23	1.95	0.49
1:G:129:GLU:OE2	1:G:159:ILE:HG23	2.13	0.49
1:G:212:ILE:HG13	1:G:237:ILE:HG23	1.93	0.49
1:I:103:ILE:HD11	1:I:135:LEU:HD11	1.95	0.49
1:E:96:ALA:HB2	1:E:220:GLU:C	2.38	0.48
1:C:118:ARG:N	4:C:402:HOH:O	2.47	0.48
1:D:232:ASN:OD1	1:D:235:ARG:NH2	2.46	0.48
1:B:261:HIS:CB	1:B:274:THR:HG22	2.44	0.48
1:E:93:LYS:C	1:E:220:GLU:OE2	2.56	0.48
1:G:172:THR:HG22	1:G:174:LEU:H	1.78	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:255:ASN:HB2	1:A:278:THR:HG21	1.96	0.48
1:H:208:PHE:HB2	1:H:237:ILE:HD13	1.96	0.48
1:J:181:ILE:HD12	1:J:247:GLU:HA	1.95	0.47
1:I:172:THR:HG22	1:I:174:LEU:H	1.78	0.47
1:C:100:ILE:HG23	1:C:227:PHE:CD1	2.49	0.47
1:L:181:ILE:CD1	1:L:249:TRP:CD1	2.97	0.47
1:G:232:ASN:OD1	1:G:235:ARG:NH2	2.47	0.47
1:H:233:VAL:O	1:H:237:ILE:HG12	2.15	0.47
1:G:119:THR:OG1	1:G:155:GLU:OE2	2.25	0.47
1:D:134:ARG:HG2	1:D:280:PHE:CD2	2.50	0.47
1:D:180:PRO:O	1:D:181:ILE:HG23	2.16	0.46
1:E:93:LYS:CB	1:E:220:GLU:OE2	2.63	0.46
1:L:172:THR:HG21	1:L:211:TYR:OH	2.14	0.46
1:C:135:LEU:HD13	1:C:226:ILE:HD13	1.97	0.46
1:A:103:ILE:CD1	1:A:135:LEU:HD11	2.46	0.46
1:K:100:ILE:HG23	1:K:227:PHE:CD1	2.51	0.46
1:F:135:LEU:HD13	1:F:226:ILE:HD13	1.98	0.46
1:L:261:HIS:CB	1:L:274:THR:HG22	2.46	0.45
1:E:103:ILE:HD11	1:E:135:LEU:HD11	1.96	0.45
1:E:104:ARG:NE	1:E:231:ALA:HB2	2.31	0.45
1:H:140:LEU:HD22	1:H:224:TYR:CE2	2.51	0.45
1:K:281:MET:HE2	1:K:286:ILE:HG12	1.98	0.45
1:B:129:GLU:OE1	1:B:159:ILE:HG23	2.17	0.45
1:J:107:GLN:HA	1:J:256:ASN:OD1	2.16	0.45
1:I:140:LEU:HD22	1:I:224:TYR:CE2	2.51	0.45
1:J:261:HIS:CB	1:J:274:THR:HG22	2.46	0.45
1:H:104:ARG:HD2	1:H:231:ALA:HB2	1.99	0.45
1:B:233:VAL:O	1:B:237:ILE:HG12	2.17	0.45
1:G:172:THR:HG21	1:G:211:TYR:OH	2.17	0.45
1:G:174:LEU:HB3	1:G:207:ALA:HB2	1.99	0.45
1:H:181:ILE:HD12	1:H:247:GLU:HG3	1.99	0.44
1:L:212:ILE:HG13	1:L:237:ILE:HG23	1.98	0.44
1:D:184:ASP:OD2	2:O:57:VAL:HA	2.18	0.44
1:G:184:ASP:OD2	2:T:57:VAL:HA	2.17	0.44
1:G:214:ARG:NH1	2:S:66:GLU:OE1	2.50	0.44
1:D:146:VAL:O	1:D:227:PHE:HA	2.18	0.43
1:L:102:LEU:HD23	1:L:227:PHE:HB2	2.00	0.43
1:E:94:ALA:C	1:E:220:GLU:OE2	2.61	0.43
1:I:212:ILE:HG13	1:I:237:ILE:HG23	2.00	0.43
1:L:104:ARG:NE	1:L:231:ALA:HB2	2.34	0.43
1:I:163:HIS:C	1:I:165:PRO:HD3	2.43	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:172:THR:HA	1:G:173:ASP:OD2	2.19	0.43
1:G:102:LEU:HD23	1:G:227:PHE:HB2	2.01	0.43
1:L:261:HIS:HB3	1:L:274:THR:HG22	2.00	0.43
1:K:181:ILE:HD11	1:K:246:PRO:HB2	2.01	0.43
1:I:172:THR:HG21	1:I:211:TYR:OH	2.18	0.43
1:K:214:ARG:NH1	2:W:66:GLU:OE1	2.44	0.42
1:F:140:LEU:HD22	1:F:224:TYR:CE2	2.54	0.42
1:D:192:PRO:HG2	1:D:197:TYR:CZ	2.54	0.42
1:G:140:LEU:HD22	1:G:224:TYR:CE2	2.54	0.42
1:L:184:ASP:OD1	1:L:185:PRO:HA	2.19	0.42
1:J:103:ILE:HA	1:J:258:SER:O	2.19	0.42
1:J:205:GLU:OE1	1:J:236:TYR:OH	2.36	0.42
1:H:216:ASP:OD1	1:H:217:ALA:N	2.52	0.42
1:I:255:ASN:HB2	1:I:278:THR:HG21	2.01	0.42
1:F:95:LYS:HB3	1:F:266:PRO:HB3	2.02	0.42
1:B:146:VAL:O	1:B:227:PHE:HA	2.19	0.42
1:D:103:ILE:CD1	1:D:259:ILE:HG12	2.49	0.42
1:A:185:PRO:HB2	1:B:269:ARG:NH1	2.33	0.42
1:J:172:THR:HG22	1:J:174:LEU:H	1.85	0.42
1:K:181:ILE:HD12	1:K:247:GLU:HG3	2.02	0.42
1:I:184:ASP:OD2	2:V:57:VAL:HA	2.20	0.42
1:F:181:ILE:HD11	1:F:246:PRO:HB2	2.02	0.42
1:H:192:PRO:HG2	1:H:197:TYR:CZ	2.54	0.42
1:I:233:VAL:O	1:I:237:ILE:HG12	2.20	0.42
1:L:232:ASN:OD1	1:L:235:ARG:NH2	2.53	0.41
1:F:275:LEU:HB3	1:E:275:LEU:HB3	2.01	0.41
1:C:172:THR:HA	1:B:173:ASP:OD2	2.20	0.41
1:H:180:PRO:O	1:H:181:ILE:HG23	2.21	0.41
1:H:106:SER:HB2	1:H:120:LEU:HD22	2.02	0.41
1:J:242:LEU:O	1:I:251:ARG:NH1	2.52	0.41
1:K:135:LEU:HD13	1:K:226:ILE:HD13	2.02	0.41
1:K:98:ARG:HD3	1:K:213:HIS:O	2.20	0.41
1:E:212:ILE:HG13	1:E:237:ILE:HG23	2.01	0.41
1:J:256:ASN:N	1:J:256:ASN:HD22	2.18	0.41
1:B:195:VAL:CG2	2:O:64:ARG:O	2.69	0.41
1:I:205:GLU:O	1:I:209:ARG:HG3	2.21	0.41
1:G:109:HIS:CE1	1:G:121:THR:HG22	2.55	0.41
1:A:288:ARG:HD3	1:B:273:ARG:NH2	2.36	0.41
1:L:233:VAL:O	1:L:237:ILE:HG12	2.21	0.41
1:D:261:HIS:HB3	1:D:274:THR:HG22	2.02	0.41
1:B:172:THR:HG22	1:B:174:LEU:H	1.86	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:213:HIS:HA	2:Q:62:TRP:CH2	2.55	0.41
1:K:180:PRO:O	1:K:181:ILE:HG23	2.21	0.41
1:A:94:ALA:HA	1:A:217:ALA:HA	2.04	0.40
1:J:212:ILE:HG13	1:J:237:ILE:HG23	2.03	0.40
1:F:277:ASP:OD1	1:E:277:ASP:OD1	2.39	0.40
1:H:273:ARG:HD2	1:G:288:ARG:HD3	2.03	0.40
1:L:181:ILE:HD12	1:L:249:TRP:CD1	2.57	0.40
1:L:255:ASN:HB2	1:L:278:THR:HG21	2.03	0.40
1:B:135:LEU:HD13	1:B:226:ILE:HD13	2.03	0.40
1:L:134:ARG:HG2	1:L:280:PHE:CD2	2.57	0.40
1:J:273:ARG:HG3	1:I:253:SER:HB3	2.04	0.40
1:I:146:VAL:O	1:I:227:PHE:HA	2.21	0.40
1:I:213:HIS:HA	2:U:62:TRP:CH2	2.56	0.40
1:J:258:SER:HB3	1:J:276:GLY:HA2	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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	180/223 (81%)	178 (99%)	2 (1%)	0	100	100
1	B	184/223 (82%)	180 (98%)	4 (2%)	0	100	100
1	C	185/223 (83%)	181 (98%)	4 (2%)	0	100	100
1	D	187/223 (84%)	179 (96%)	8 (4%)	0	100	100
1	E	181/223 (81%)	179 (99%)	2 (1%)	0	100	100
1	F	181/223 (81%)	179 (99%)	2 (1%)	0	100	100
1	G	185/223 (83%)	183 (99%)	2 (1%)	0	100	100
1	H	180/223 (81%)	176 (98%)	4 (2%)	0	100	100
1	I	177/223 (79%)	175 (99%)	2 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	J	178/223 (80%)	175 (98%)	3 (2%)	0	100	100
1	K	184/223 (82%)	180 (98%)	4 (2%)	0	100	100
1	L	188/223 (84%)	184 (98%)	4 (2%)	0	100	100
2	M	9/14 (64%)	8 (89%)	1 (11%)	0	100	100
2	N	9/14 (64%)	8 (89%)	1 (11%)	0	100	100
2	O	9/14 (64%)	9 (100%)	0	0	100	100
2	P	9/14 (64%)	8 (89%)	1 (11%)	0	100	100
2	Q	8/14 (57%)	7 (88%)	1 (12%)	0	100	100
2	R	9/14 (64%)	9 (100%)	0	0	100	100
2	S	9/14 (64%)	8 (89%)	1 (11%)	0	100	100
2	T	9/14 (64%)	8 (89%)	1 (11%)	0	100	100
2	U	9/14 (64%)	7 (78%)	2 (22%)	0	100	100
2	V	9/14 (64%)	7 (78%)	2 (22%)	0	100	100
2	W	9/14 (64%)	9 (100%)	0	0	100	100
2	X	8/14 (57%)	8 (100%)	0	0	100	100
All	All	2296/2844 (81%)	2245 (98%)	51 (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	152/193 (79%)	148 (97%)	4 (3%)	40	68
1	B	151/193 (78%)	147 (97%)	4 (3%)	40	68
1	C	154/193 (80%)	147 (96%)	7 (4%)	24	50
1	D	152/193 (79%)	146 (96%)	6 (4%)	28	55
1	E	153/193 (79%)	150 (98%)	3 (2%)	48	74
1	F	153/193 (79%)	149 (97%)	4 (3%)	40	68

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	G	148/193 (77%)	143 (97%)	5 (3%)	32	60
1	H	153/193 (79%)	152 (99%)	1 (1%)	76	89
1	I	145/193 (75%)	143 (99%)	2 (1%)	59	81
1	J	141/193 (73%)	137 (97%)	4 (3%)	38	66
1	K	147/193 (76%)	142 (97%)	5 (3%)	32	60
1	L	152/193 (79%)	146 (96%)	6 (4%)	28	55
2	M	10/12 (83%)	10 (100%)	0	100	100
2	N	10/12 (83%)	10 (100%)	0	100	100
2	O	10/12 (83%)	10 (100%)	0	100	100
2	P	10/12 (83%)	9 (90%)	1 (10%)	7	16
2	Q	10/12 (83%)	9 (90%)	1 (10%)	7	16
2	R	10/12 (83%)	10 (100%)	0	100	100
2	S	10/12 (83%)	10 (100%)	0	100	100
2	T	10/12 (83%)	10 (100%)	0	100	100
2	U	10/12 (83%)	9 (90%)	1 (10%)	7	16
2	V	10/12 (83%)	10 (100%)	0	100	100
2	W	10/12 (83%)	10 (100%)	0	100	100
2	X	9/12 (75%)	8 (89%)	1 (11%)	6	12
All	All	1920/2460 (78%)	1865 (97%)	55 (3%)	37	65

All (55) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	119	THR
1	A	172	THR
1	A	193	GLU
1	A	274	THR
1	C	110	VAL
1	C	170	VAL
1	C	188	SER
1	C	193	GLU
1	C	237	ILE
1	C	274	THR
1	C	278	THR
1	L	120	LEU
1	L	172	THR

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Mol	Chain	Res	Type
1	L	181	ILE
1	L	187	VAL
1	L	193	GLU
1	L	253	SER
1	J	172	THR
1	J	181	ILE
1	J	193	GLU
1	J	229	CYS
1	F	181	ILE
1	F	187	VAL
1	F	225	GLU
1	F	274	THR
1	H	119	THR
1	K	119	THR
1	K	274	THR
1	K	275	LEU
1	K	278	THR
1	K	289	SER
1	D	100	ILE
1	D	144	LYS
1	D	193	GLU
1	D	275	LEU
1	D	278	THR
1	D	288	ARG
1	B	100	ILE
1	B	155	GLU
1	B	172	THR
1	B	256	ASN
1	I	172	THR
1	I	181	ILE
1	G	172	THR
1	G	181	ILE
1	G	187	VAL
1	G	253	SER
1	G	274	THR
1	E	162	ARG
1	E	187	VAL
1	E	196	GLN
2	X	57	VAL
2	P	57	VAL
2	U	66	GLU
2	Q	57	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	L	256	ASN
1	J	107	GLN
1	F	107	GLN
1	H	109	HIS
1	K	109	HIS
1	K	127	GLN
1	K	196	GLN
1	I	109	HIS
1	G	256	ASN

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](#)

Of 31 ligands modelled in this entry, 31 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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	186/223 (83%)	0.06	5 (2%) 56 50	22, 31, 49, 56	0
1	B	188/223 (84%)	0.16	11 (5%) 28 23	22, 32, 54, 66	0
1	C	189/223 (84%)	0.03	5 (2%) 57 51	20, 30, 45, 56	1 (0%)
1	D	191/223 (85%)	0.15	5 (2%) 57 51	22, 33, 53, 61	0
1	E	187/223 (83%)	0.09	4 (2%) 63 58	19, 31, 44, 56	1 (0%)
1	F	187/223 (83%)	0.12	6 (3%) 50 44	20, 31, 45, 60	2 (1%)
1	G	189/223 (84%)	0.30	8 (4%) 40 35	26, 37, 54, 62	0
1	H	186/223 (83%)	0.34	8 (4%) 40 34	25, 37, 52, 59	0
1	I	183/223 (82%)	0.41	9 (4%) 35 29	26, 37, 53, 66	0
1	J	184/223 (82%)	0.44	13 (7%) 22 17	26, 38, 51, 64	0
1	K	187/223 (83%)	0.26	6 (3%) 50 44	21, 35, 52, 66	1 (0%)
1	L	192/223 (86%)	0.16	10 (5%) 33 27	22, 33, 53, 67	0
2	M	11/14 (78%)	0.42	2 (18%) 3 3	28, 31, 49, 51	0
2	N	11/14 (78%)	0.56	2 (18%) 3 3	26, 32, 48, 52	0
2	O	11/14 (78%)	0.63	1 (9%) 15 11	27, 31, 48, 55	0
2	P	11/14 (78%)	0.33	2 (18%) 3 3	26, 31, 45, 52	0
2	Q	10/14 (71%)	0.41	1 (10%) 12 9	27, 32, 43, 52	0
2	R	11/14 (78%)	0.55	1 (9%) 15 11	28, 34, 44, 53	0
2	S	11/14 (78%)	1.23	3 (27%) 1 1	36, 38, 55, 61	0
2	T	11/14 (78%)	0.50	1 (9%) 15 11	31, 37, 47, 56	0
2	U	11/14 (78%)	0.93	3 (27%) 1 1	35, 41, 55, 56	0
2	V	11/14 (78%)	0.87	1 (9%) 15 11	37, 39, 50, 55	0
2	W	11/14 (78%)	0.76	2 (18%) 3 3	33, 42, 52, 52	0
2	X	10/14 (71%)	0.89	2 (20%) 3 2	32, 37, 54, 54	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
All	All	2379/2844 (83%)	0.23	111 (4%) 36 30	19, 34, 52, 67	5 (0%)

All (111) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	110	VAL	5.6
1	E	196	GLN	4.8
2	S	56	GLY	4.7
2	T	56	GLY	4.6
1	I	168	CYS	4.2
1	B	189	HIS	4.1
2	R	56	GLY	3.9
1	B	220	GLU	3.8
2	P	56	GLY	3.7
2	U	56	GLY	3.7
1	J	94	ALA	3.6
2	O	56	GLY	3.5
1	G	217	ALA	3.5
2	V	56	GLY	3.5
1	H	190	TRP	3.5
1	I	217	ALA	3.5
2	S	66	GLU	3.5
2	X	57	VAL	3.5
1	E	220	GLU	3.5
1	L	188	SER	3.4
2	X	56	GLY	3.4
2	N	56	GLY	3.4
1	D	109	HIS	3.4
1	C	94	ALA	3.3
1	B	191	LYS	3.3
1	D	118	ARG	3.1
2	M	56	GLY	3.1
1	B	162	ARG	3.1
1	A	110	VAL	3.0
1	K	190	TRP	3.0
2	W	57	VAL	3.0
1	B	190	TRP	3.0
1	G	189	HIS	3.0
1	J	125	ARG	3.0
1	K	220	GLU	2.9
1	A	168	CYS	2.9
1	J	119	THR	2.9

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Mol	Chain	Res	Type	RSRZ
1	L	110	VAL	2.9
1	B	188	SER	2.9
1	L	187	VAL	2.9
1	L	190	TRP	2.9
1	H	187	VAL	2.9
1	K	94	ALA	2.8
1	F	166	GLY	2.8
1	J	95	LYS	2.7
1	J	181	ILE	2.7
1	K	188	SER	2.7
1	K	189	HIS	2.7
1	I	94	ALA	2.7
1	I	265	ARG	2.7
1	A	190	TRP	2.7
2	S	57	VAL	2.7
1	B	172	THR	2.7
1	L	189	HIS	2.6
1	A	94	ALA	2.6
1	F	192	PRO	2.6
1	I	192	PRO	2.6
2	P	66	GLU	2.6
1	K	187	VAL	2.6
1	L	220	GLU	2.5
1	J	229	CYS	2.5
1	F	90	ASP	2.5
1	I	125	ARG	2.5
1	G	93	LYS	2.5
2	Q	57	VAL	2.5
1	L	289	SER	2.5
1	J	186	PRO	2.5
1	F	196	GLN	2.4
1	A	196	GLN	2.4
1	E	187	VAL	2.4
1	L	114	LEU	2.4
1	C	189	HIS	2.4
1	I	118	ARG	2.4
1	J	118	ARG	2.4
1	H	94	ALA	2.4
1	F	220	GLU	2.3
1	H	126	GLU	2.3
1	D	289	SER	2.3
1	B	94	ALA	2.3

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Mol	Chain	Res	Type	RSRZ
1	G	254	LEU	2.3
1	J	220	GLU	2.3
2	U	66	GLU	2.3
1	I	216	ASP	2.3
1	J	168	CYS	2.2
2	M	66	GLU	2.2
1	E	118	ARG	2.2
1	B	216	ASP	2.2
1	J	289	SER	2.2
1	L	129	GLU	2.2
1	D	193	GLU	2.2
1	H	284	ASP	2.2
1	G	118	ARG	2.1
1	C	168	CYS	2.1
1	C	140	LEU	2.1
2	W	56	GLY	2.1
1	L	115	GLU	2.1
1	D	92	TYR	2.1
1	G	109	HIS	2.1
2	N	66	GLU	2.1
1	B	93	LYS	2.1
1	B	187	VAL	2.1
1	F	221	GLU	2.1
1	H	129	GLU	2.1
1	J	109	HIS	2.1
1	J	191	LYS	2.0
1	G	154	ILE	2.0
1	H	218	ARG	2.0
1	H	273	ARG	2.0
1	I	218	ARG	2.0
1	G	216	ASP	2.0
2	U	64	ARG	2.0

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](#)

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(Å ²)	Q<0.9
3	MG	C	301	1/1	0.74	0.26	58,58,58,58	0
3	MG	G	303	1/1	0.86	0.40	52,52,52,52	0
3	MG	H	302	1/1	0.89	0.26	41,41,41,41	0
3	MG	I	301	1/1	0.89	0.16	49,49,49,49	0
3	MG	J	302	1/1	0.89	0.13	39,39,39,39	0
3	MG	B	301	1/1	0.91	0.20	50,50,50,50	0
3	MG	F	302	1/1	0.92	0.24	41,41,41,41	0
3	MG	D	303	1/1	0.93	0.08	40,40,40,40	0
3	MG	L	301	1/1	0.94	0.06	21,21,21,21	0
3	MG	L	302	1/1	0.94	0.05	26,26,26,26	0
3	MG	G	301	1/1	0.94	0.24	55,55,55,55	0
3	MG	C	305	1/1	0.94	0.16	31,31,31,31	0
3	MG	F	301	1/1	0.95	0.06	13,13,13,13	0
3	MG	F	303	1/1	0.95	0.06	32,32,32,32	0
3	MG	F	304	1/1	0.95	0.11	29,29,29,29	0
3	MG	D	302	1/1	0.96	0.05	30,30,30,30	0
3	MG	P	101	1/1	0.96	0.14	30,30,30,30	0
3	MG	G	302	1/1	0.97	0.05	13,13,13,13	0
3	MG	I	303	1/1	0.97	0.14	39,39,39,39	0
3	MG	E	301	1/1	0.97	0.06	32,32,32,32	0
3	MG	C	304	1/1	0.97	0.14	36,36,36,36	0
3	MG	J	301	1/1	0.98	0.04	20,20,20,20	0
3	MG	K	301	1/1	0.98	0.05	14,14,14,14	0
3	MG	D	301	1/1	0.98	0.04	16,16,16,16	0
3	MG	I	302	1/1	0.98	0.03	17,17,17,17	0
3	MG	C	302	1/1	0.98	0.15	27,27,27,27	0
3	MG	A	301	1/1	0.99	0.02	15,15,15,15	0
3	MG	C	303	1/1	0.99	0.03	13,13,13,13	0
3	MG	H	301	1/1	0.99	0.02	18,18,18,18	0
3	MG	E	302	1/1	0.99	0.07	21,21,21,21	0
3	MG	B	302	1/1	0.99	0.05	11,11,11,11	0

6.5 Other polymers [i](#)

There are no such residues in this entry.