



wwPDB X-ray Structure Validation Summary Report ⓘ

Apr 26, 2026 – 04:01 AM EDT

PDB ID : 8ZQ6 / pdb_00008zq6
Title : preF6P of RSV glycoprotein
Authors : Han, X.; Lang, Q.; Huang, Q.; Yan, J.
Deposited on : 2024-06-01
Resolution : 2.77 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity	:	4-5-2 with Phenix2.0
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

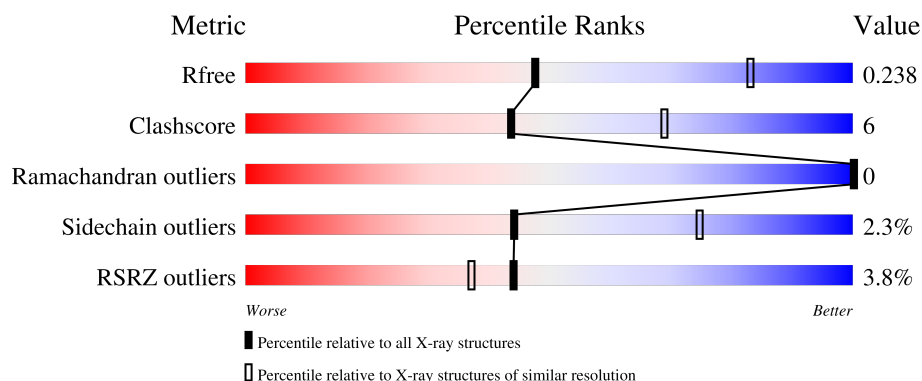
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.77 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	5248 (2.80-2.76)
Clashscore	190562	5693 (2.80-2.76)
Ramachandran outliers	187476	5590 (2.80-2.76)
Sidechain outliers	187428	5592 (2.80-2.76)
RSRZ outliers	180081	5251 (2.80-2.76)

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	522	
1	B	522	
1	C	522	
1	D	522	
1	E	522	

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Mol	Chain	Length	Quality of chain
1	F	522	3% 74% 12% • 13%

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 20971 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 Fusion glycoprotein F0,Fibritin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	451	Total	C	N	O	S	0	0	0
			3482	2201	573	687	21			
1	B	455	Total	C	N	O	S	0	0	0
			3500	2210	577	692	21			
1	C	451	Total	C	N	O	S	0	0	0
			3480	2201	572	686	21			
1	D	452	Total	C	N	O	S	0	0	0
			3489	2206	574	688	21			
1	E	454	Total	C	N	O	S	0	0	0
			3507	2220	576	690	21			
1	F	455	Total	C	N	O	S	0	0	0
			3513	2223	577	692	21			

There are 318 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	10	MET	-	initiating methionine	UNP C3UPB8
A	11	LYS	-	expression tag	UNP C3UPB8
A	12	CYS	-	expression tag	UNP C3UPB8
A	13	LEU	-	expression tag	UNP C3UPB8
A	14	LEU	-	expression tag	UNP C3UPB8
A	15	TYR	-	expression tag	UNP C3UPB8
A	16	LEU	-	expression tag	UNP C3UPB8
A	17	ALA	-	expression tag	UNP C3UPB8
A	18	PHE	-	expression tag	UNP C3UPB8
A	19	LEU	-	expression tag	UNP C3UPB8
A	20	PHE	-	expression tag	UNP C3UPB8
A	21	ILE	-	expression tag	UNP C3UPB8
A	22	GLY	-	expression tag	UNP C3UPB8
A	23	VAL	-	expression tag	UNP C3UPB8
A	24	ASN	-	expression tag	UNP C3UPB8
A	25	CYS	-	expression tag	UNP C3UPB8
A	66	GLU	LYS	conflict	UNP C3UPB8

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Chain	Residue	Modelled	Actual	Comment	Reference
A	67	PRO	ASN	conflict	UNP C3UPB8
A	76	VAL	ILE	conflict	UNP C3UPB8
A	121	GLY	-	linker	UNP C3UPB8
A	122	GLY	-	linker	UNP C3UPB8
A	123	GLY	-	linker	UNP C3UPB8
A	124	GLY	-	linker	UNP C3UPB8
A	125	SER	-	linker	UNP C3UPB8
A	126	GLY	-	linker	UNP C3UPB8
A	127	GLY	-	linker	UNP C3UPB8
A	128	GLY	-	linker	UNP C3UPB8
A	129	GLY	-	linker	UNP C3UPB8
A	130	SER	-	linker	UNP C3UPB8
A	131	GLY	-	linker	UNP C3UPB8
A	132	GLY	-	linker	UNP C3UPB8
A	133	GLY	-	linker	UNP C3UPB8
A	134	GLY	-	linker	UNP C3UPB8
A	135	SER	-	linker	UNP C3UPB8
A	136	ARG	-	linker	UNP C3UPB8
A	137	PHE	-	linker	UNP C3UPB8
A	138	PRO	-	linker	UNP C3UPB8
A	139	PRO	-	linker	UNP C3UPB8
A	215	PRO	SER	conflict	UNP C3UPB8
A	216	PRO	ASN	conflict	UNP C3UPB8
A	279	PRO	GLN	conflict	UNP C3UPB8
A	514	SER	-	linker	UNP C3UPB8
A	515	ALA	-	linker	UNP C3UPB8
A	516	ILE	-	linker	UNP C3UPB8
A	517	GLY	-	linker	UNP C3UPB8
A	545	HIS	-	expression tag	UNP A0A346FJN8
A	546	HIS	-	expression tag	UNP A0A346FJN8
A	547	HIS	-	expression tag	UNP A0A346FJN8
A	548	HIS	-	expression tag	UNP A0A346FJN8
A	549	HIS	-	expression tag	UNP A0A346FJN8
A	550	HIS	-	expression tag	UNP A0A346FJN8
A	551	HIS	-	expression tag	UNP A0A346FJN8
A	552	HIS	-	expression tag	UNP A0A346FJN8
B	10	MET	-	initiating methionine	UNP C3UPB8
B	11	LYS	-	expression tag	UNP C3UPB8
B	12	CYS	-	expression tag	UNP C3UPB8
B	13	LEU	-	expression tag	UNP C3UPB8
B	14	LEU	-	expression tag	UNP C3UPB8
B	15	TYR	-	expression tag	UNP C3UPB8

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Chain	Residue	Modelled	Actual	Comment	Reference
B	16	LEU	-	expression tag	UNP C3UPB8
B	17	ALA	-	expression tag	UNP C3UPB8
B	18	PHE	-	expression tag	UNP C3UPB8
B	19	LEU	-	expression tag	UNP C3UPB8
B	20	PHE	-	expression tag	UNP C3UPB8
B	21	ILE	-	expression tag	UNP C3UPB8
B	22	GLY	-	expression tag	UNP C3UPB8
B	23	VAL	-	expression tag	UNP C3UPB8
B	24	ASN	-	expression tag	UNP C3UPB8
B	25	CYS	-	expression tag	UNP C3UPB8
B	66	GLU	LYS	conflict	UNP C3UPB8
B	67	PRO	ASN	conflict	UNP C3UPB8
B	76	VAL	ILE	conflict	UNP C3UPB8
B	100	GLY	-	linker	UNP C3UPB8
B	101	GLY	-	linker	UNP C3UPB8
B	102	GLY	-	linker	UNP C3UPB8
B	124	GLY	-	linker	UNP C3UPB8
B	125	SER	-	linker	UNP C3UPB8
B	126	GLY	-	linker	UNP C3UPB8
B	127	GLY	-	linker	UNP C3UPB8
B	128	GLY	-	linker	UNP C3UPB8
B	129	GLY	-	linker	UNP C3UPB8
B	130	SER	-	linker	UNP C3UPB8
B	131	GLY	-	linker	UNP C3UPB8
B	132	GLY	-	linker	UNP C3UPB8
B	133	GLY	-	linker	UNP C3UPB8
B	134	GLY	-	linker	UNP C3UPB8
B	135	SER	-	linker	UNP C3UPB8
B	136	ARG	-	linker	UNP C3UPB8
B	137	PHE	-	linker	UNP C3UPB8
B	138	PRO	-	linker	UNP C3UPB8
B	139	PRO	-	linker	UNP C3UPB8
B	215	PRO	SER	conflict	UNP C3UPB8
B	216	PRO	ASN	conflict	UNP C3UPB8
B	279	PRO	GLN	conflict	UNP C3UPB8
B	514	SER	-	linker	UNP C3UPB8
B	515	ALA	-	linker	UNP C3UPB8
B	516	ILE	-	linker	UNP C3UPB8
B	517	GLY	-	linker	UNP C3UPB8
B	545	HIS	-	expression tag	UNP A0A346FJN8
B	546	HIS	-	expression tag	UNP A0A346FJN8
B	547	HIS	-	expression tag	UNP A0A346FJN8

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Chain	Residue	Modelled	Actual	Comment	Reference
B	548	HIS	-	expression tag	UNP A0A346FJN8
B	549	HIS	-	expression tag	UNP A0A346FJN8
B	550	HIS	-	expression tag	UNP A0A346FJN8
B	551	HIS	-	expression tag	UNP A0A346FJN8
B	552	HIS	-	expression tag	UNP A0A346FJN8
C	10	MET	-	initiating methionine	UNP C3UPB8
C	11	LYS	-	expression tag	UNP C3UPB8
C	12	CYS	-	expression tag	UNP C3UPB8
C	13	LEU	-	expression tag	UNP C3UPB8
C	14	LEU	-	expression tag	UNP C3UPB8
C	15	TYR	-	expression tag	UNP C3UPB8
C	16	LEU	-	expression tag	UNP C3UPB8
C	17	ALA	-	expression tag	UNP C3UPB8
C	18	PHE	-	expression tag	UNP C3UPB8
C	19	LEU	-	expression tag	UNP C3UPB8
C	20	PHE	-	expression tag	UNP C3UPB8
C	21	ILE	-	expression tag	UNP C3UPB8
C	22	GLY	-	expression tag	UNP C3UPB8
C	23	VAL	-	expression tag	UNP C3UPB8
C	24	ASN	-	expression tag	UNP C3UPB8
C	25	CYS	-	expression tag	UNP C3UPB8
C	66	GLU	LYS	conflict	UNP C3UPB8
C	67	PRO	ASN	conflict	UNP C3UPB8
C	76	VAL	ILE	conflict	UNP C3UPB8
C	121	GLY	-	linker	UNP C3UPB8
C	122	GLY	-	linker	UNP C3UPB8
C	123	GLY	-	linker	UNP C3UPB8
C	124	GLY	-	linker	UNP C3UPB8
C	125	SER	-	linker	UNP C3UPB8
C	126	GLY	-	linker	UNP C3UPB8
C	127	GLY	-	linker	UNP C3UPB8
C	128	GLY	-	linker	UNP C3UPB8
C	129	GLY	-	linker	UNP C3UPB8
C	130	SER	-	linker	UNP C3UPB8
C	131	GLY	-	linker	UNP C3UPB8
C	132	GLY	-	linker	UNP C3UPB8
C	133	GLY	-	linker	UNP C3UPB8
C	134	GLY	-	linker	UNP C3UPB8
C	135	SER	-	linker	UNP C3UPB8
C	136	ARG	-	linker	UNP C3UPB8
C	137	PHE	-	linker	UNP C3UPB8
C	138	PRO	-	linker	UNP C3UPB8

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Chain	Residue	Modelled	Actual	Comment	Reference
C	139	PRO	-	linker	UNP C3UPB8
C	215	PRO	SER	conflict	UNP C3UPB8
C	216	PRO	ASN	conflict	UNP C3UPB8
C	279	PRO	GLN	conflict	UNP C3UPB8
C	514	SER	-	linker	UNP C3UPB8
C	515	ALA	-	linker	UNP C3UPB8
C	516	ILE	-	linker	UNP C3UPB8
C	517	GLY	-	linker	UNP C3UPB8
C	545	HIS	-	expression tag	UNP A0A346FJN8
C	546	HIS	-	expression tag	UNP A0A346FJN8
C	547	HIS	-	expression tag	UNP A0A346FJN8
C	548	HIS	-	expression tag	UNP A0A346FJN8
C	549	HIS	-	expression tag	UNP A0A346FJN8
C	550	HIS	-	expression tag	UNP A0A346FJN8
C	551	HIS	-	expression tag	UNP A0A346FJN8
C	552	HIS	-	expression tag	UNP A0A346FJN8
D	10	MET	-	initiating methionine	UNP C3UPB8
D	11	LYS	-	expression tag	UNP C3UPB8
D	12	CYS	-	expression tag	UNP C3UPB8
D	13	LEU	-	expression tag	UNP C3UPB8
D	14	LEU	-	expression tag	UNP C3UPB8
D	15	TYR	-	expression tag	UNP C3UPB8
D	16	LEU	-	expression tag	UNP C3UPB8
D	17	ALA	-	expression tag	UNP C3UPB8
D	18	PHE	-	expression tag	UNP C3UPB8
D	19	LEU	-	expression tag	UNP C3UPB8
D	20	PHE	-	expression tag	UNP C3UPB8
D	21	ILE	-	expression tag	UNP C3UPB8
D	22	GLY	-	expression tag	UNP C3UPB8
D	23	VAL	-	expression tag	UNP C3UPB8
D	24	ASN	-	expression tag	UNP C3UPB8
D	25	CYS	-	expression tag	UNP C3UPB8
D	66	GLU	LYS	conflict	UNP C3UPB8
D	67	PRO	ASN	conflict	UNP C3UPB8
D	76	VAL	ILE	conflict	UNP C3UPB8
D	121	GLY	-	linker	UNP C3UPB8
D	122	GLY	-	linker	UNP C3UPB8
D	123	GLY	-	linker	UNP C3UPB8
D	124	GLY	-	linker	UNP C3UPB8
D	125	SER	-	linker	UNP C3UPB8
D	126	GLY	-	linker	UNP C3UPB8
D	127	GLY	-	linker	UNP C3UPB8

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Chain	Residue	Modelled	Actual	Comment	Reference
D	128	GLY	-	linker	UNP C3UPB8
D	129	GLY	-	linker	UNP C3UPB8
D	130	SER	-	linker	UNP C3UPB8
D	131	GLY	-	linker	UNP C3UPB8
D	132	GLY	-	linker	UNP C3UPB8
D	133	GLY	-	linker	UNP C3UPB8
D	134	GLY	-	linker	UNP C3UPB8
D	135	SER	-	linker	UNP C3UPB8
D	136	ARG	-	linker	UNP C3UPB8
D	137	PHE	-	linker	UNP C3UPB8
D	138	PRO	-	linker	UNP C3UPB8
D	139	PRO	-	linker	UNP C3UPB8
D	215	PRO	SER	conflict	UNP C3UPB8
D	216	PRO	ASN	conflict	UNP C3UPB8
D	279	PRO	GLN	conflict	UNP C3UPB8
D	514	SER	-	linker	UNP C3UPB8
D	515	ALA	-	linker	UNP C3UPB8
D	516	ILE	-	linker	UNP C3UPB8
D	517	GLY	-	linker	UNP C3UPB8
D	545	HIS	-	expression tag	UNP A0A346FJN8
D	546	HIS	-	expression tag	UNP A0A346FJN8
D	547	HIS	-	expression tag	UNP A0A346FJN8
D	548	HIS	-	expression tag	UNP A0A346FJN8
D	549	HIS	-	expression tag	UNP A0A346FJN8
D	550	HIS	-	expression tag	UNP A0A346FJN8
D	551	HIS	-	expression tag	UNP A0A346FJN8
D	552	HIS	-	expression tag	UNP A0A346FJN8
E	10	MET	-	initiating methionine	UNP C3UPB8
E	11	LYS	-	expression tag	UNP C3UPB8
E	12	CYS	-	expression tag	UNP C3UPB8
E	13	LEU	-	expression tag	UNP C3UPB8
E	14	LEU	-	expression tag	UNP C3UPB8
E	15	TYR	-	expression tag	UNP C3UPB8
E	16	LEU	-	expression tag	UNP C3UPB8
E	17	ALA	-	expression tag	UNP C3UPB8
E	18	PHE	-	expression tag	UNP C3UPB8
E	19	LEU	-	expression tag	UNP C3UPB8
E	20	PHE	-	expression tag	UNP C3UPB8
E	21	ILE	-	expression tag	UNP C3UPB8
E	22	GLY	-	expression tag	UNP C3UPB8
E	23	VAL	-	expression tag	UNP C3UPB8
E	24	ASN	-	expression tag	UNP C3UPB8

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Chain	Residue	Modelled	Actual	Comment	Reference
E	25	CYS	-	expression tag	UNP C3UPB8
E	66	GLU	LYS	conflict	UNP C3UPB8
E	67	PRO	ASN	conflict	UNP C3UPB8
E	76	VAL	ILE	conflict	UNP C3UPB8
E	121	GLY	-	linker	UNP C3UPB8
E	122	GLY	-	linker	UNP C3UPB8
E	123	GLY	-	linker	UNP C3UPB8
E	124	GLY	-	linker	UNP C3UPB8
E	125	SER	-	linker	UNP C3UPB8
E	126	GLY	-	linker	UNP C3UPB8
E	127	GLY	-	linker	UNP C3UPB8
E	128	GLY	-	linker	UNP C3UPB8
E	129	GLY	-	linker	UNP C3UPB8
E	130	SER	-	linker	UNP C3UPB8
E	131	GLY	-	linker	UNP C3UPB8
E	132	GLY	-	linker	UNP C3UPB8
E	133	GLY	-	linker	UNP C3UPB8
E	134	GLY	-	linker	UNP C3UPB8
E	135	SER	-	linker	UNP C3UPB8
E	136	ARG	-	linker	UNP C3UPB8
E	137	PHE	-	linker	UNP C3UPB8
E	138	PRO	-	linker	UNP C3UPB8
E	139	PRO	-	linker	UNP C3UPB8
E	215	PRO	SER	conflict	UNP C3UPB8
E	216	PRO	ASN	conflict	UNP C3UPB8
E	279	PRO	GLN	conflict	UNP C3UPB8
E	514	SER	-	linker	UNP C3UPB8
E	515	ALA	-	linker	UNP C3UPB8
E	516	ILE	-	linker	UNP C3UPB8
E	517	GLY	-	linker	UNP C3UPB8
E	545	HIS	-	expression tag	UNP A0A346FJN8
E	546	HIS	-	expression tag	UNP A0A346FJN8
E	547	HIS	-	expression tag	UNP A0A346FJN8
E	548	HIS	-	expression tag	UNP A0A346FJN8
E	549	HIS	-	expression tag	UNP A0A346FJN8
E	550	HIS	-	expression tag	UNP A0A346FJN8
E	551	HIS	-	expression tag	UNP A0A346FJN8
E	552	HIS	-	expression tag	UNP A0A346FJN8
F	10	MET	-	initiating methionine	UNP C3UPB8
F	11	LYS	-	expression tag	UNP C3UPB8
F	12	CYS	-	expression tag	UNP C3UPB8
F	13	LEU	-	expression tag	UNP C3UPB8

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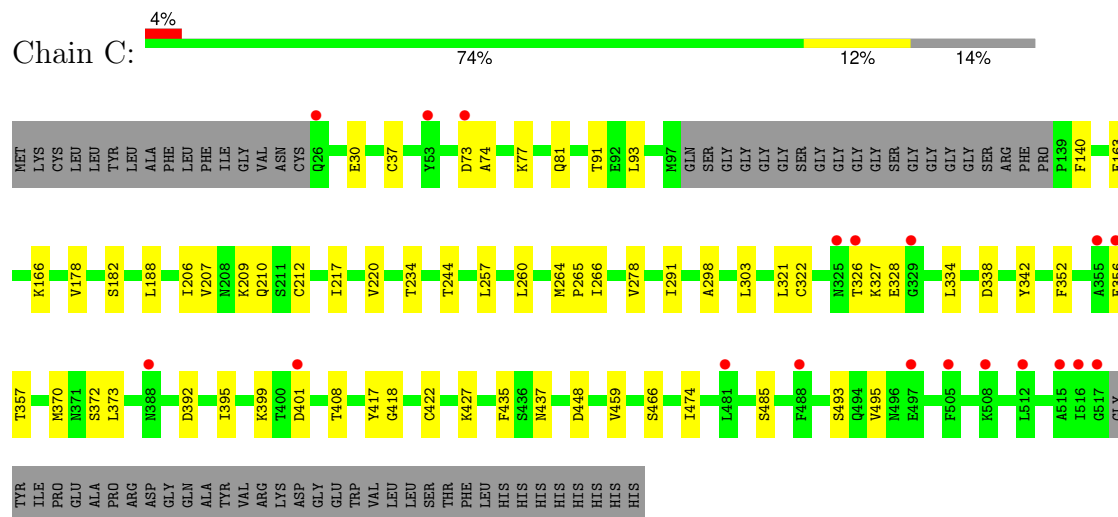
Chain	Residue	Modelled	Actual	Comment	Reference
F	14	LEU	-	expression tag	UNP C3UPB8
F	15	TYR	-	expression tag	UNP C3UPB8
F	16	LEU	-	expression tag	UNP C3UPB8
F	17	ALA	-	expression tag	UNP C3UPB8
F	18	PHE	-	expression tag	UNP C3UPB8
F	19	LEU	-	expression tag	UNP C3UPB8
F	20	PHE	-	expression tag	UNP C3UPB8
F	21	ILE	-	expression tag	UNP C3UPB8
F	22	GLY	-	expression tag	UNP C3UPB8
F	23	VAL	-	expression tag	UNP C3UPB8
F	24	ASN	-	expression tag	UNP C3UPB8
F	25	CYS	-	expression tag	UNP C3UPB8
F	66	GLU	LYS	conflict	UNP C3UPB8
F	67	PRO	ASN	conflict	UNP C3UPB8
F	76	VAL	ILE	conflict	UNP C3UPB8
F	121	GLY	-	linker	UNP C3UPB8
F	122	GLY	-	linker	UNP C3UPB8
F	123	GLY	-	linker	UNP C3UPB8
F	124	GLY	-	linker	UNP C3UPB8
F	125	SER	-	linker	UNP C3UPB8
F	126	GLY	-	linker	UNP C3UPB8
F	127	GLY	-	linker	UNP C3UPB8
F	128	GLY	-	linker	UNP C3UPB8
F	129	GLY	-	linker	UNP C3UPB8
F	130	SER	-	linker	UNP C3UPB8
F	131	GLY	-	linker	UNP C3UPB8
F	132	GLY	-	linker	UNP C3UPB8
F	133	GLY	-	linker	UNP C3UPB8
F	134	GLY	-	linker	UNP C3UPB8
F	135	SER	-	linker	UNP C3UPB8
F	136	ARG	-	linker	UNP C3UPB8
F	137	PHE	-	linker	UNP C3UPB8
F	138	PRO	-	linker	UNP C3UPB8
F	139	PRO	-	linker	UNP C3UPB8
F	215	PRO	SER	conflict	UNP C3UPB8
F	216	PRO	ASN	conflict	UNP C3UPB8
F	279	PRO	GLN	conflict	UNP C3UPB8
F	514	SER	-	linker	UNP C3UPB8
F	515	ALA	-	linker	UNP C3UPB8
F	516	ILE	-	linker	UNP C3UPB8
F	517	GLY	-	linker	UNP C3UPB8
F	545	HIS	-	expression tag	UNP A0A346FJN8

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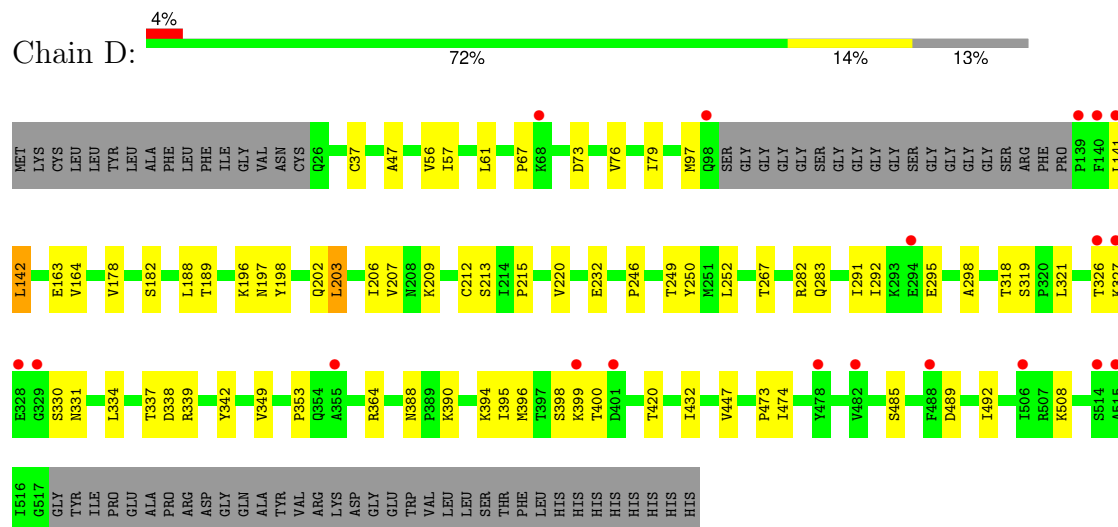
Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
F	546	HIS	-	expression tag	UNP A0A346FJN8
F	547	HIS	-	expression tag	UNP A0A346FJN8
F	548	HIS	-	expression tag	UNP A0A346FJN8
F	549	HIS	-	expression tag	UNP A0A346FJN8
F	550	HIS	-	expression tag	UNP A0A346FJN8
F	551	HIS	-	expression tag	UNP A0A346FJN8
F	552	HIS	-	expression tag	UNP A0A346FJN8

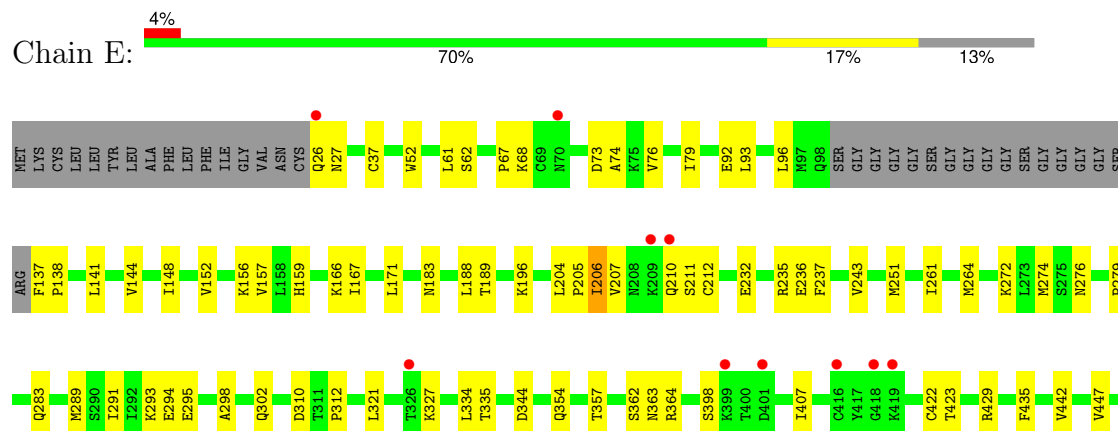
Chain C:



Chain D:



Chain E:



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	159.16Å 170.08Å 190.88Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	26.94 – 2.77 26.94 – 2.77	Depositor EDS
% Data completeness (in resolution range)	86.6 (26.94-2.77) 86.8 (26.94-2.77)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.65 (at 2.77Å)	Xtriage
Refinement program	PHENIX (1.20.1_4487: ???)	Depositor
R, R_{free}	0.198 , 0.237 0.198 , 0.238	Depositor DCC
R_{free} test set	1997 reflections (1.51%)	wwPDB-VP
Wilson B-factor (Å ²)	44.7	Xtriage
Anisotropy	0.012	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 40.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	20971	wwPDB-VP
Average B, all atoms (Å ²)	48.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.24% 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](#)

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	0.14	0/3534	0.34	0/4792
1	B	0.13	0/3552	0.33	0/4815
1	C	0.12	0/3533	0.33	0/4791
1	D	0.15	0/3542	0.35	0/4803
1	E	0.12	0/3562	0.35	0/4832
1	F	0.13	0/3568	0.33	0/4840
All	All	0.13	0/21291	0.34	0/28873

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	3482	0	3534	53	0
1	B	3500	0	3548	48	0
1	C	3480	0	3534	38	0
1	D	3489	0	3542	40	0
1	E	3507	0	3557	53	0
1	F	3513	0	3562	39	0
All	All	20971	0	21277	259	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 6.

The worst 5 of 259 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:B:270:GLN:HG2	1:B:309:ILE:HD12	1.58	0.84
1:E:293:LYS:HG3	1:E:294:GLU:HG3	1.64	0.80
1:D:67:PRO:HB3	1:D:207:VAL:HB	1.65	0.79
1:F:49:ARG:NH1	1:F:368:ASP:OD1	2.19	0.75
1:B:206:ILE:HD12	1:B:215:PRO:HB3	1.67	0.74

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	447/522 (86%)	434 (97%)	13 (3%)	0	100	100
1	B	451/522 (86%)	426 (94%)	25 (6%)	0	100	100
1	C	447/522 (86%)	434 (97%)	13 (3%)	0	100	100
1	D	448/522 (86%)	434 (97%)	14 (3%)	0	100	100
1	E	450/522 (86%)	440 (98%)	10 (2%)	0	100	100
1	F	451/522 (86%)	437 (97%)	14 (3%)	0	100	100
All	All	2694/3132 (86%)	2605 (97%)	89 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	411/463 (89%)	402 (98%)	9 (2%)	45	75
1	B	412/463 (89%)	398 (97%)	14 (3%)	32	65
1	C	411/463 (89%)	402 (98%)	9 (2%)	45	75
1	D	412/463 (89%)	405 (98%)	7 (2%)	53	80
1	E	414/463 (89%)	409 (99%)	5 (1%)	63	84
1	F	415/463 (90%)	402 (97%)	13 (3%)	35	68
All	All	2475/2778 (89%)	2418 (98%)	57 (2%)	44	75

5 of 57 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	244	THR
1	F	423	THR
1	D	203	LEU
1	F	410	LEU
1	F	214	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 23 such sidechains are listed below:

Mol	Chain	Res	Type
1	E	26	GLN
1	E	460	ASN
1	E	361	GLN
1	E	462	GLN
1	C	81	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [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	451/522 (86%)	-0.11	8 (1%) 67 60	16, 40, 83, 122	0
1	B	455/522 (87%)	0.09	20 (4%) 39 33	19, 44, 96, 126	0
1	C	451/522 (86%)	-0.08	19 (4%) 40 34	17, 39, 91, 140	0
1	D	452/522 (86%)	0.02	19 (4%) 40 34	17, 43, 91, 154	0
1	E	454/522 (86%)	0.11	20 (4%) 39 33	18, 42, 94, 131	0
1	F	455/522 (87%)	0.03	16 (3%) 47 40	18, 44, 90, 142	0
All	All	2718/3132 (86%)	0.01	102 (3%) 44 37	16, 42, 92, 154	0

The worst 5 of 102 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	140	PHE	5.6
1	F	515	ALA	5.1
1	B	517	GLY	4.8
1	B	141	LEU	4.8
1	C	488	PHE	4.6

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

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

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.