



wwPDB X-ray Structure Validation Summary Report ⓘ

Apr 25, 2026 – 11:57 AM EDT

PDB ID : 3QA8 / pdb_00003qa8
Title : Crystal Structure of inhibitor of kappa B kinase beta
Authors : Xu, G.; Lo, Y.C.; Li, Q.; Napolitano, G.; Wu, X.; Jiang, X.; Dreano, M.; Karin, M.; Wu, H.
Deposited on : 2011-01-10
Resolution : 3.60 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

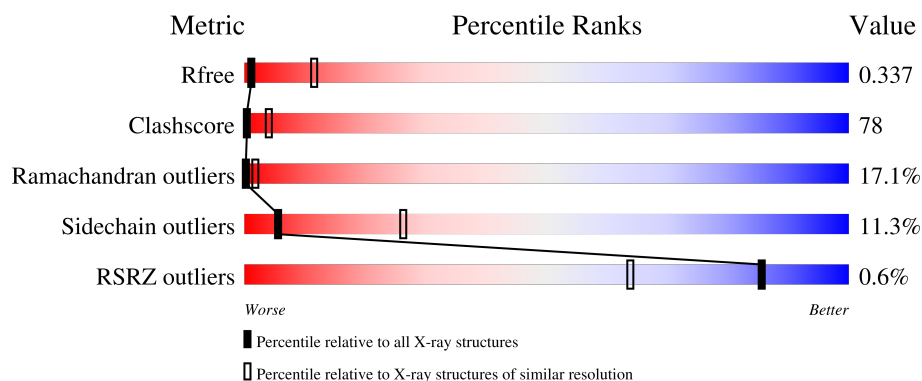
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.60 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	1747 (3.70-3.50)
Clashscore	190562	1827 (3.70-3.50)
Ramachandran outliers	187476	1773 (3.70-3.50)
Sidechain outliers	187428	1772 (3.70-3.50)
RSRZ outliers	180081	1745 (3.70-3.50)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	676	<div> <div>%</div> <div> <div></div> <div>22%</div> <div>45%</div> <div>21%</div> <div>•</div> <div>8%</div> </div> </div>
1	B	676	<div> <div>22%</div> <div>43%</div> <div>23%</div> <div>•</div> <div>8%</div> </div>
1	C	676	<div> <div>%</div> <div> <div></div> <div>22%</div> <div>44%</div> <div>22%</div> <div>•</div> <div>8%</div> </div> </div>
1	D	676	<div> <div>22%</div> <div>45%</div> <div>21%</div> <div>•</div> <div>8%</div> </div>
1	E	676	<div> <div>%</div> <div> <div></div> <div>23%</div> <div>44%</div> <div>21%</div> <div>•</div> <div>8%</div> </div> </div>

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Mol	Chain	Length	Quality of chain
1	F	676	<div><div></div><div>23%43%22%•8%</div></div>
1	G	676	<div><div></div><div>22%38%18%•20%</div></div>
1	H	676	<div><div></div><div>20%39%18%•20%</div></div>

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 39026 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 MGC80376 protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	622	Total	C	N	O	S	0	0	0
			5048	3189	899	929	31			
1	B	622	Total	C	N	O	S	0	0	0
			5048	3189	899	929	31			
1	C	622	Total	C	N	O	S	0	0	0
			5048	3189	899	929	31			
1	D	622	Total	C	N	O	S	0	0	0
			5048	3189	899	929	31			
1	E	622	Total	C	N	O	S	0	0	0
			5048	3189	899	929	31			
1	F	622	Total	C	N	O	S	0	0	0
			5048	3189	899	929	31			
1	G	541	Total	C	N	O	S	0	0	0
			4369	2764	779	800	26			
1	H	541	Total	C	N	O	S	0	0	0
			4369	2764	779	800	26			

There are 152 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	0	GLY	-	expression tag	UNP Q6INT1
A	1	GLY	-	expression tag	UNP Q6INT1
A	2	GLY	-	expression tag	UNP Q6INT1
A	3	ARG	-	expression tag	UNP Q6INT1
A	4	SER	-	expression tag	UNP Q6INT1
A	5	PRO	-	expression tag	UNP Q6INT1
A	6	SER	-	expression tag	UNP Q6INT1
A	7	LEU	-	expression tag	UNP Q6INT1
A	8	PRO	-	expression tag	UNP Q6INT1
A	9	THR	-	expression tag	UNP Q6INT1
A	10	GLN	-	expression tag	UNP Q6INT1
A	11	THR	-	expression tag	UNP Q6INT1
A	12	CYS	-	expression tag	UNP Q6INT1

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Chain	Residue	Modelled	Actual	Comment	Reference
A	13	GLY	-	expression tag	UNP Q6INT1
A	14	PRO	-	expression tag	UNP Q6INT1
A	15	TRP	-	expression tag	UNP Q6INT1
A	16	GLU	-	expression tag	UNP Q6INT1
A	177	GLU	SER	engineered mutation	UNP Q6INT1
A	181	GLU	SER	engineered mutation	UNP Q6INT1
B	0	GLY	-	expression tag	UNP Q6INT1
B	1	GLY	-	expression tag	UNP Q6INT1
B	2	GLY	-	expression tag	UNP Q6INT1
B	3	ARG	-	expression tag	UNP Q6INT1
B	4	SER	-	expression tag	UNP Q6INT1
B	5	PRO	-	expression tag	UNP Q6INT1
B	6	SER	-	expression tag	UNP Q6INT1
B	7	LEU	-	expression tag	UNP Q6INT1
B	8	PRO	-	expression tag	UNP Q6INT1
B	9	THR	-	expression tag	UNP Q6INT1
B	10	GLN	-	expression tag	UNP Q6INT1
B	11	THR	-	expression tag	UNP Q6INT1
B	12	CYS	-	expression tag	UNP Q6INT1
B	13	GLY	-	expression tag	UNP Q6INT1
B	14	PRO	-	expression tag	UNP Q6INT1
B	15	TRP	-	expression tag	UNP Q6INT1
B	16	GLU	-	expression tag	UNP Q6INT1
B	177	GLU	SER	engineered mutation	UNP Q6INT1
B	181	GLU	SER	engineered mutation	UNP Q6INT1
C	0	GLY	-	expression tag	UNP Q6INT1
C	1	GLY	-	expression tag	UNP Q6INT1
C	2	GLY	-	expression tag	UNP Q6INT1
C	3	ARG	-	expression tag	UNP Q6INT1
C	4	SER	-	expression tag	UNP Q6INT1
C	5	PRO	-	expression tag	UNP Q6INT1
C	6	SER	-	expression tag	UNP Q6INT1
C	7	LEU	-	expression tag	UNP Q6INT1
C	8	PRO	-	expression tag	UNP Q6INT1
C	9	THR	-	expression tag	UNP Q6INT1
C	10	GLN	-	expression tag	UNP Q6INT1
C	11	THR	-	expression tag	UNP Q6INT1
C	12	CYS	-	expression tag	UNP Q6INT1
C	13	GLY	-	expression tag	UNP Q6INT1
C	14	PRO	-	expression tag	UNP Q6INT1
C	15	TRP	-	expression tag	UNP Q6INT1
C	16	GLU	-	expression tag	UNP Q6INT1

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Chain	Residue	Modelled	Actual	Comment	Reference
C	177	GLU	SER	engineered mutation	UNP Q6INT1
C	181	GLU	SER	engineered mutation	UNP Q6INT1
D	0	GLY	-	expression tag	UNP Q6INT1
D	1	GLY	-	expression tag	UNP Q6INT1
D	2	GLY	-	expression tag	UNP Q6INT1
D	3	ARG	-	expression tag	UNP Q6INT1
D	4	SER	-	expression tag	UNP Q6INT1
D	5	PRO	-	expression tag	UNP Q6INT1
D	6	SER	-	expression tag	UNP Q6INT1
D	7	LEU	-	expression tag	UNP Q6INT1
D	8	PRO	-	expression tag	UNP Q6INT1
D	9	THR	-	expression tag	UNP Q6INT1
D	10	GLN	-	expression tag	UNP Q6INT1
D	11	THR	-	expression tag	UNP Q6INT1
D	12	CYS	-	expression tag	UNP Q6INT1
D	13	GLY	-	expression tag	UNP Q6INT1
D	14	PRO	-	expression tag	UNP Q6INT1
D	15	TRP	-	expression tag	UNP Q6INT1
D	16	GLU	-	expression tag	UNP Q6INT1
D	177	GLU	SER	engineered mutation	UNP Q6INT1
D	181	GLU	SER	engineered mutation	UNP Q6INT1
E	0	GLY	-	expression tag	UNP Q6INT1
E	1	GLY	-	expression tag	UNP Q6INT1
E	2	GLY	-	expression tag	UNP Q6INT1
E	3	ARG	-	expression tag	UNP Q6INT1
E	4	SER	-	expression tag	UNP Q6INT1
E	5	PRO	-	expression tag	UNP Q6INT1
E	6	SER	-	expression tag	UNP Q6INT1
E	7	LEU	-	expression tag	UNP Q6INT1
E	8	PRO	-	expression tag	UNP Q6INT1
E	9	THR	-	expression tag	UNP Q6INT1
E	10	GLN	-	expression tag	UNP Q6INT1
E	11	THR	-	expression tag	UNP Q6INT1
E	12	CYS	-	expression tag	UNP Q6INT1
E	13	GLY	-	expression tag	UNP Q6INT1
E	14	PRO	-	expression tag	UNP Q6INT1
E	15	TRP	-	expression tag	UNP Q6INT1
E	16	GLU	-	expression tag	UNP Q6INT1
E	177	GLU	SER	engineered mutation	UNP Q6INT1
E	181	GLU	SER	engineered mutation	UNP Q6INT1
F	0	GLY	-	expression tag	UNP Q6INT1
F	1	GLY	-	expression tag	UNP Q6INT1

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Chain	Residue	Modelled	Actual	Comment	Reference
F	2	GLY	-	expression tag	UNP Q6INT1
F	3	ARG	-	expression tag	UNP Q6INT1
F	4	SER	-	expression tag	UNP Q6INT1
F	5	PRO	-	expression tag	UNP Q6INT1
F	6	SER	-	expression tag	UNP Q6INT1
F	7	LEU	-	expression tag	UNP Q6INT1
F	8	PRO	-	expression tag	UNP Q6INT1
F	9	THR	-	expression tag	UNP Q6INT1
F	10	GLN	-	expression tag	UNP Q6INT1
F	11	THR	-	expression tag	UNP Q6INT1
F	12	CYS	-	expression tag	UNP Q6INT1
F	13	GLY	-	expression tag	UNP Q6INT1
F	14	PRO	-	expression tag	UNP Q6INT1
F	15	TRP	-	expression tag	UNP Q6INT1
F	16	GLU	-	expression tag	UNP Q6INT1
F	177	GLU	SER	engineered mutation	UNP Q6INT1
F	181	GLU	SER	engineered mutation	UNP Q6INT1
G	0	GLY	-	expression tag	UNP Q6INT1
G	1	GLY	-	expression tag	UNP Q6INT1
G	2	GLY	-	expression tag	UNP Q6INT1
G	3	ARG	-	expression tag	UNP Q6INT1
G	4	SER	-	expression tag	UNP Q6INT1
G	5	PRO	-	expression tag	UNP Q6INT1
G	6	SER	-	expression tag	UNP Q6INT1
G	7	LEU	-	expression tag	UNP Q6INT1
G	8	PRO	-	expression tag	UNP Q6INT1
G	9	THR	-	expression tag	UNP Q6INT1
G	10	GLN	-	expression tag	UNP Q6INT1
G	11	THR	-	expression tag	UNP Q6INT1
G	12	CYS	-	expression tag	UNP Q6INT1
G	13	GLY	-	expression tag	UNP Q6INT1
G	14	PRO	-	expression tag	UNP Q6INT1
G	15	TRP	-	expression tag	UNP Q6INT1
G	16	GLU	-	expression tag	UNP Q6INT1
G	177	GLU	SER	engineered mutation	UNP Q6INT1
G	181	GLU	SER	engineered mutation	UNP Q6INT1
H	0	GLY	-	expression tag	UNP Q6INT1
H	1	GLY	-	expression tag	UNP Q6INT1
H	2	GLY	-	expression tag	UNP Q6INT1
H	3	ARG	-	expression tag	UNP Q6INT1
H	4	SER	-	expression tag	UNP Q6INT1
H	5	PRO	-	expression tag	UNP Q6INT1

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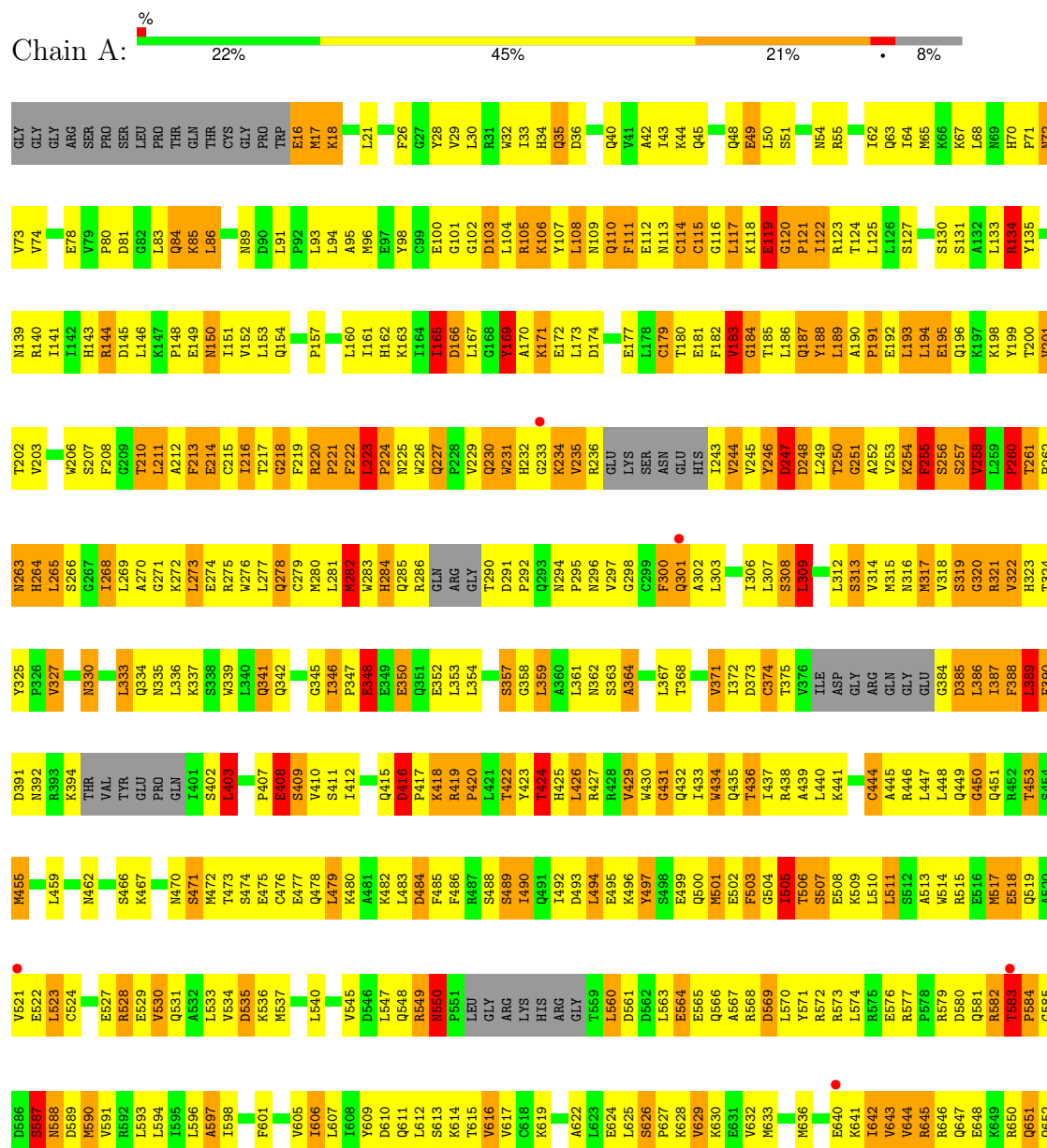
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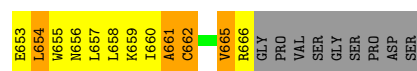
Chain	Residue	Modelled	Actual	Comment	Reference
H	6	SER	-	expression tag	UNP Q6INT1
H	7	LEU	-	expression tag	UNP Q6INT1
H	8	PRO	-	expression tag	UNP Q6INT1
H	9	THR	-	expression tag	UNP Q6INT1
H	10	GLN	-	expression tag	UNP Q6INT1
H	11	THR	-	expression tag	UNP Q6INT1
H	12	CYS	-	expression tag	UNP Q6INT1
H	13	GLY	-	expression tag	UNP Q6INT1
H	14	PRO	-	expression tag	UNP Q6INT1
H	15	TRP	-	expression tag	UNP Q6INT1
H	16	GLU	-	expression tag	UNP Q6INT1
H	177	GLU	SER	engineered mutation	UNP Q6INT1
H	181	GLU	SER	engineered mutation	UNP Q6INT1

3 Residue-property plots

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

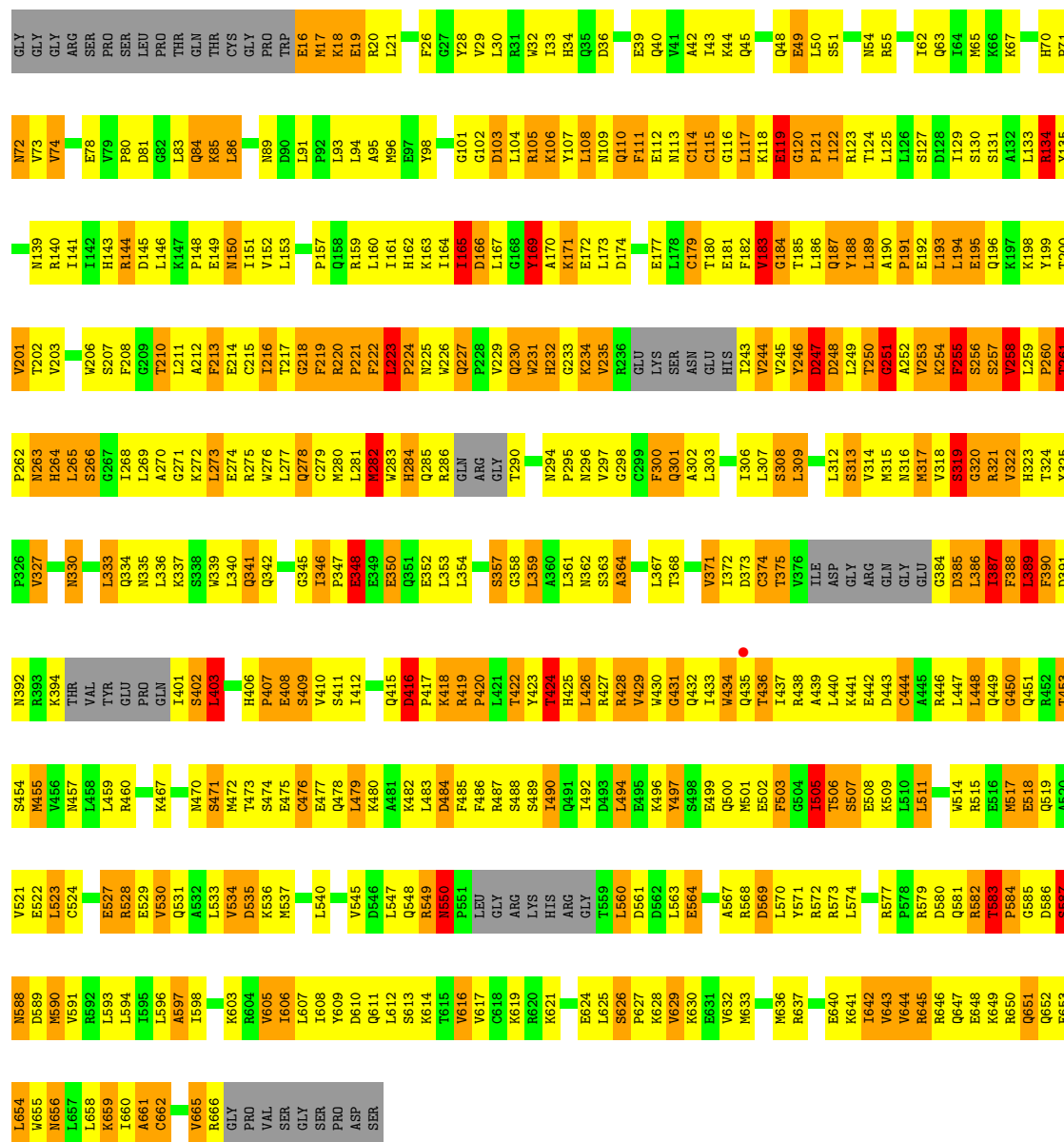
• Molecule 1: MGC80376 protein





• Molecule 1: MGC80376 protein

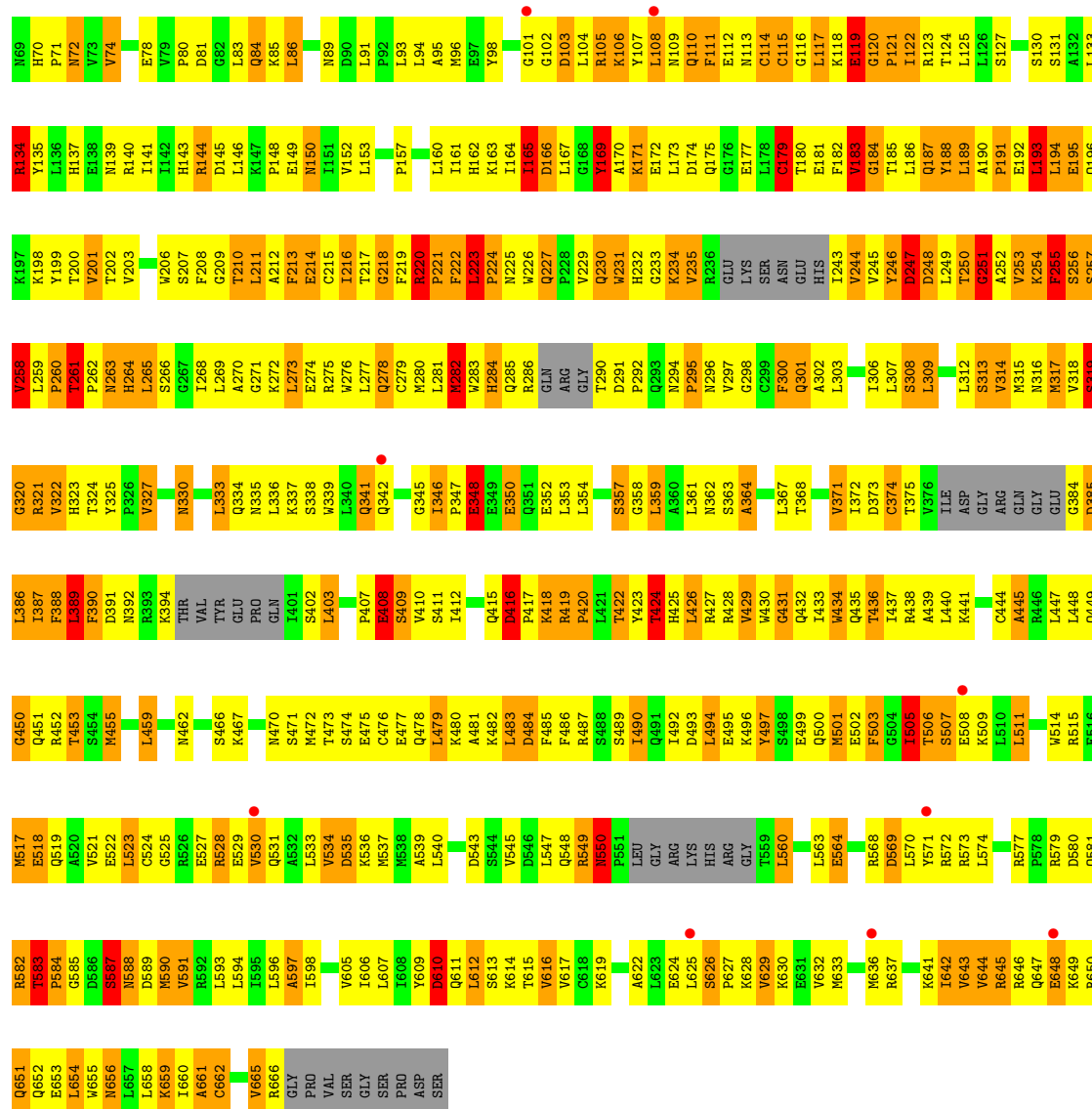
Chain B: 22% 43% 23% 8%



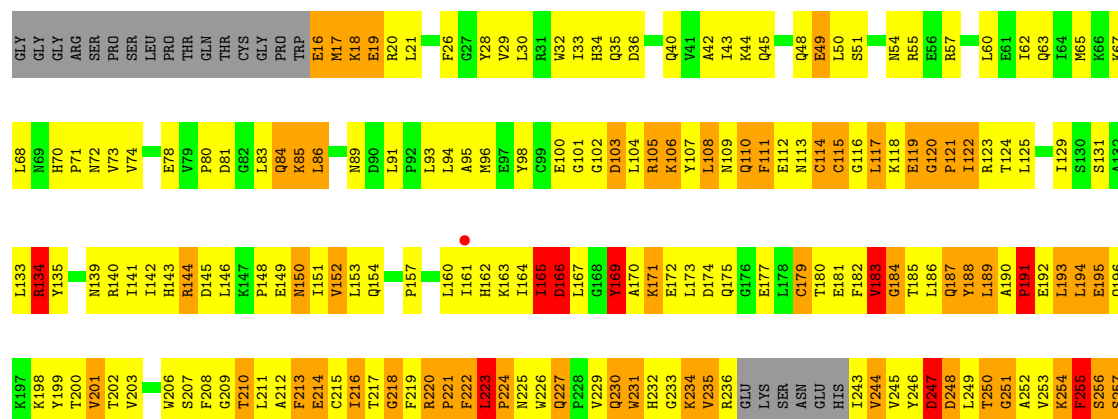
• Molecule 1: MGC80376 protein

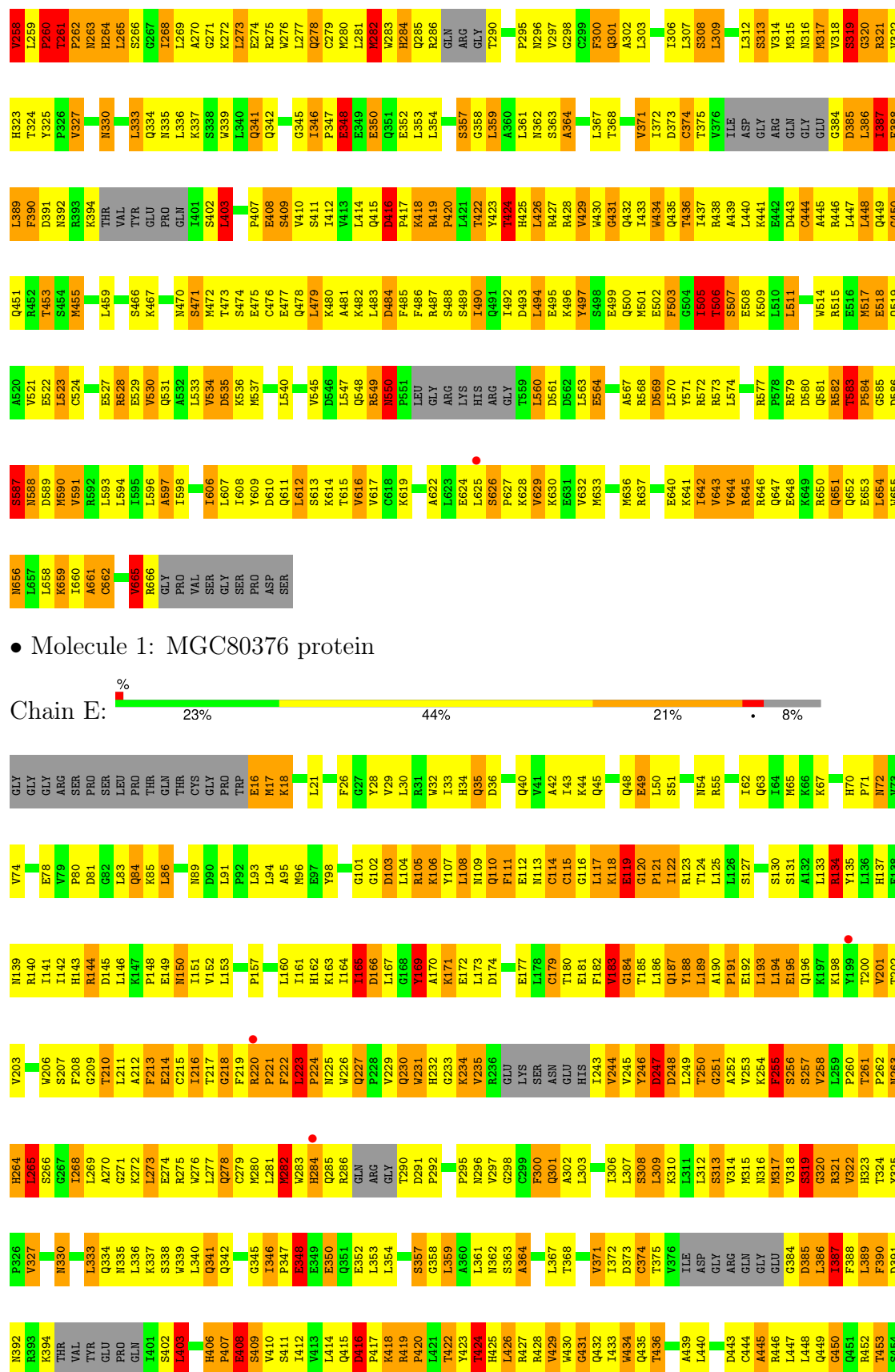
Chain C: 22% 44% 22% 8%





Chain D: 22% 45% 21% 8%





Q651
Q652
E653
L654
W655
N656
L657
L658
K659
I660
A661
C662
S663
K664
V665
R666
GLY
PRO
VAL
SER
GLY
SER
PRO
ASP
SER

• Molecule 1: MGC80376 protein

Chain G: 22% 38% 18% • 20%

LEU	LYS	ILE	ALA	CYS	SER	LEU	LYS	ARG	GLU	VAL	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	ASP	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU	LYS	ILE	ASP	GLY	LEU	LYS	ARG	GLY	LEU
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• Molecule 1: MGC80376 protein

Chain H: 20% 39% 18% • 20%

GLY	GLY	GLY	ARG	SER	PRO	SER	SER	LEU	PRO	THR	GLN	THR	THR	CYS	GLY	PRO	PRO	ASP	SER	E16	M17	K18	L21	G25	F26	G27	Y28	V29	L30	R31	W32	I33	H34	Q35	D36	Q40	V41	A42	I43	K44	Q45	Q48	E49	L50	S51	N54	R55	W58	I62	Q63	I64	M65	K66	K67	L68	N69
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4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	103.17Å 140.34Å 161.17Å 71.28° 79.56° 86.04°	Depositor
Resolution (Å)	15.00 – 3.60 15.00 – 3.60	Depositor EDS
% Data completeness (in resolution range)	78.7 (15.00-3.60) 78.0 (15.00-3.60)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	0.04	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.18 (at 3.48Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.6.4_486)	Depositor
R, R_{free}	0.308 , 0.344 0.302 , 0.337	Depositor DCC
R_{free} test set	4846 reflections (4.56%)	wwPDB-VP
Wilson B-factor (Å ²)	84.5	Xtriage
Anisotropy	0.749	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.19 , 107.0	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	0.91	EDS
Total number of atoms	39026	wwPDB-VP
Average B, all atoms (Å ²)	199.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.42% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality

5.1 Standard geometry

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z > 5$	RMSZ	$\# Z > 5$
1	A	0.96	9/5136 (0.2%)	1.33	50/6931 (0.7%)
1	B	0.98	12/5136 (0.2%)	1.34	53/6931 (0.8%)
1	C	1.02	10/5136 (0.2%)	1.34	59/6931 (0.9%)
1	D	0.96	8/5136 (0.2%)	1.32	50/6931 (0.7%)
1	E	1.00	9/5136 (0.2%)	1.33	48/6931 (0.7%)
1	F	0.99	10/5136 (0.2%)	1.33	47/6931 (0.7%)
1	G	0.96	7/4448 (0.2%)	1.32	42/6012 (0.7%)
1	H	0.98	8/4448 (0.2%)	1.33	43/6012 (0.7%)
All	All	0.98	73/39712 (0.2%)	1.33	392/53610 (0.7%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	11
1	B	0	11
1	C	0	10
1	D	0	11
1	E	0	10
1	F	0	11
1	G	0	11
1	H	0	11
All	All	0	86

The worst 5 of 73 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	E	261	THR	CA-C	10.16	1.65	1.52
1	C	261	THR	CA-C	10.05	1.65	1.52
1	G	261	THR	CA-C	9.20	1.64	1.52
1	A	261	THR	CA-C	9.04	1.64	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	F	119	GLU	N-CA	-8.27	1.38	1.46

The worst 5 of 392 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	223	LEU	CA-C-N	-12.93	107.72	120.52
1	F	223	LEU	C-N-CA	-12.93	107.72	120.52
1	A	223	LEU	CA-C-N	-11.84	108.06	120.85
1	A	223	LEU	C-N-CA	-11.84	108.06	120.85
1	F	426	LEU	N-CA-C	-11.84	98.93	113.50

There are no chirality outliers.

5 of 86 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	119	GLU	Peptide
1	A	120	GLY	Peptide
1	A	169	TYR	Peptide
1	A	221	PRO	Peptide
1	A	223	LEU	Peptide

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	5048	0	5120	804	3
1	B	5048	0	5120	849	2
1	C	5048	0	5120	870	4
1	D	5048	0	5120	888	0
1	E	5048	0	5120	849	2
1	F	5048	0	5120	843	0
1	G	4369	0	4430	634	0
1	H	4369	0	4430	650	1
All	All	39026	0	39580	6134	6

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 78.

The worst 5 of 6134 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:E:547:LEU:CD1	1:E:615:THR:HG22	1.18	1.61
1:E:547:LEU:HD13	1:E:615:THR:CG2	1.16	1.54
1:C:496:LYS:CB	1:D:655:TRP:HE1	1.25	1.48
1:A:524:CYS:SG	1:A:643:VAL:HG11	1.55	1.46
1:C:496:LYS:HB2	1:D:655:TRP:NE1	1.23	1.43

The worst 5 of 6 symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:501:MET:SD	1:E:364:ALA:O[1_565]	1.61	0.59
1:E:515:ARG:NH1	1:H:394:LYS:NZ[1_465]	1.76	0.44
1:B:617:VAL:CG2	1:C:519:GLN:OE1[1_465]	1.96	0.24
1:A:522:GLU:OE1	1:C:295:PRO:CB[1_565]	2.01	0.19
1:A:522:GLU:OE1	1:C:295:PRO:CG[1_565]	2.04	0.16

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	610/676 (90%)	360 (59%)	145 (24%)	105 (17%)	0	2
1	B	610/676 (90%)	362 (59%)	143 (23%)	105 (17%)	0	2
1	C	610/676 (90%)	359 (59%)	147 (24%)	104 (17%)	0	2
1	D	610/676 (90%)	363 (60%)	143 (23%)	104 (17%)	0	2
1	E	610/676 (90%)	361 (59%)	147 (24%)	102 (17%)	0	2
1	F	610/676 (90%)	362 (59%)	144 (24%)	104 (17%)	0	2
1	G	527/676 (78%)	310 (59%)	126 (24%)	91 (17%)	0	1
1	H	527/676 (78%)	313 (59%)	121 (23%)	93 (18%)	0	1

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
All	All	4714/5408 (87%)	2790 (59%)	1116 (24%)	808 (17%)	0 2

5 of 808 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	101	GLY
1	A	106	LYS
1	A	110	GLN
1	A	111	PHE
1	A	166	ASP

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	563/609 (92%)	498 (88%)	65 (12%)	5 25
1	B	563/609 (92%)	497 (88%)	66 (12%)	5 25
1	C	563/609 (92%)	496 (88%)	67 (12%)	5 24
1	D	563/609 (92%)	498 (88%)	65 (12%)	5 25
1	E	563/609 (92%)	500 (89%)	63 (11%)	6 27
1	F	563/609 (92%)	498 (88%)	65 (12%)	5 25
1	G	488/609 (80%)	437 (90%)	51 (10%)	6 29
1	H	488/609 (80%)	436 (89%)	52 (11%)	6 28
All	All	4354/4872 (89%)	3860 (89%)	494 (11%)	5 26

5 of 494 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	416	ASP
1	H	51	SER
1	E	314	VAL
1	G	606	ILE
1	H	390	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 153 such sidechains are listed below:

Mol	Chain	Res	Type
1	F	365	GLN
1	H	230	GLN
1	F	548	GLN
1	G	301	GLN
1	H	449	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [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	622/676 (92%)	-0.26	5 (0%) 82 58	76, 189, 275, 337	0
1	B	622/676 (92%)	-0.23	1 (0%) 91 80	71, 191, 274, 336	0
1	C	622/676 (92%)	0.01	9 (1%) 73 46	58, 188, 275, 327	0
1	D	622/676 (92%)	-0.36	2 (0%) 90 75	85, 194, 278, 327	0
1	E	622/676 (92%)	-0.11	5 (0%) 82 58	74, 190, 274, 330	0
1	F	622/676 (92%)	-0.35	2 (0%) 90 75	93, 200, 283, 331	0
1	G	541/676 (80%)	-0.33	2 (0%) 88 70	96, 214, 302, 387	0
1	H	541/676 (80%)	-0.29	2 (0%) 88 70	79, 194, 293, 423	0
All	All	4814/5408 (89%)	-0.24	28 (0%) 85 64	58, 195, 283, 423	0

The worst 5 of 28 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	508	GLU	4.2
1	C	636	MET	3.8
1	C	648	GLU	3.8
1	H	544	SER	3.7
1	C	101	GLY	3.0

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](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.