



Full wwPDB EM Validation Report ⓘ

Nov 5, 2024 – 10:12 AM JST

PDB ID : 8HRI
EMDB ID : EMD-34974
Title : SARS-CoV-2 Delta variant spike protein
Authors : Xu, J.; Cheng, H.; Liu, N.; Wang, H.W.
Deposited on : 2022-12-15
Resolution : 2.90 Å (reported)

This is a Full wwPDB EM 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/EMValidationReportHelp>

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:

EMDB validation analysis : **FAILED**
MolProbity : 4.02b-467
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : **FAILED**
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

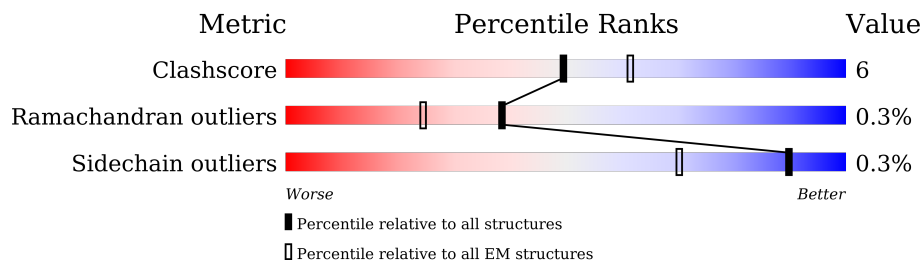
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.90 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)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the 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 $\leq 5\%$

Mol	Chain	Length	Quality of chain
1	A	1249	
1	B	1249	
1	C	1249	

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 24531 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 Spike glycoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1041	8170	5233	1360	1539	38	0	0
1	B	1044	8191	5245	1366	1542	38	0	0
1	C	1041	8170	5233	1360	1539	38	0	0

There are 303 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-4	MET	-	initiating methionine	UNP P0DTC2
A	-3	PRO	-	expression tag	UNP P0DTC2
A	-2	ARG	-	expression tag	UNP P0DTC2
A	-1	GLY	-	expression tag	UNP P0DTC2
A	0	PRO	-	expression tag	UNP P0DTC2
A	1	VAL	-	expression tag	UNP P0DTC2
A	2	ALA	-	expression tag	UNP P0DTC2
A	3	ALA	-	expression tag	UNP P0DTC2
A	4	LEU	-	expression tag	UNP P0DTC2
A	5	LEU	-	expression tag	UNP P0DTC2
A	6	LEU	-	expression tag	UNP P0DTC2
A	7	LEU	-	expression tag	UNP P0DTC2
A	8	ILE	-	expression tag	UNP P0DTC2
A	9	LEU	-	expression tag	UNP P0DTC2
A	10	HIS	-	expression tag	UNP P0DTC2
A	11	GLY	-	expression tag	UNP P0DTC2
A	12	ALA	-	expression tag	UNP P0DTC2
A	13	TRP	-	expression tag	UNP P0DTC2
A	14	SER	-	expression tag	UNP P0DTC2
A	67	VAL	ALA	variant	UNP P0DTC2
A	?	-	HIS	deletion	UNP P0DTC2
A	?	-	VAL	deletion	UNP P0DTC2
A	95	ILE	THR	variant	UNP P0DTC2
A	?	-	GLY	deletion	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	VAL	deletion	UNP P0DTC2
A	?	-	TYR	deletion	UNP P0DTC2
A	142	ASP	TYR	conflict	UNP P0DTC2
A	210A	ILE	LEU	conflict	UNP P0DTC2
A	210D	GLU	-	insertion	UNP P0DTC2
A	210E	PRO	-	insertion	UNP P0DTC2
A	210F	GLU	-	insertion	UNP P0DTC2
A	339	ASP	GLY	variant	UNP P0DTC2
A	371	LEU	SER	variant	UNP P0DTC2
A	373	PRO	SER	variant	UNP P0DTC2
A	375	PHE	SER	variant	UNP P0DTC2
A	417	ASN	LYS	variant	UNP P0DTC2
A	440	LYS	ASN	variant	UNP P0DTC2
A	446	SER	GLY	variant	UNP P0DTC2
A	477	ASN	SER	variant	UNP P0DTC2
A	478	LYS	THR	variant	UNP P0DTC2
A	484	ALA	GLU	variant	UNP P0DTC2
A	493	ARG	GLN	variant	UNP P0DTC2
A	496	SER	GLY	variant	UNP P0DTC2
A	498	ARG	GLN	variant	UNP P0DTC2
A	501	TYR	ASN	variant	UNP P0DTC2
A	505	HIS	TYR	variant	UNP P0DTC2
A	547	LYS	THR	variant	UNP P0DTC2
A	614	GLY	ASP	variant	UNP P0DTC2
A	655	TYR	HIS	variant	UNP P0DTC2
A	679	LYS	ASN	variant	UNP P0DTC2
A	681	HIS	PRO	variant	UNP P0DTC2
A	682	GLY	ARG	conflict	UNP P0DTC2
A	683	SER	ARG	conflict	UNP P0DTC2
A	685	SER	ARG	conflict	UNP P0DTC2
A	764	LYS	ASN	variant	UNP P0DTC2
A	796	TYR	ASP	variant	UNP P0DTC2
A	856	LYS	ASN	variant	UNP P0DTC2
A	954	HIS	GLN	variant	UNP P0DTC2
A	969	LYS	ASN	variant	UNP P0DTC2
A	981	PHE	LEU	variant	UNP P0DTC2
A	986	PRO	LYS	engineered mutation	UNP P0DTC2
A	987	PRO	VAL	engineered mutation	UNP P0DTC2
A	1209	LEU	-	expression tag	UNP P0DTC2
A	1210	VAL	-	expression tag	UNP P0DTC2
A	1211	PRO	-	expression tag	UNP P0DTC2
A	1212	ARG	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
A	1213	GLY	-	expression tag	UNP P0DTC2
A	1214	SER	-	expression tag	UNP P0DTC2
A	1215	GLY	-	expression tag	UNP P0DTC2
A	1216	TYR	-	expression tag	UNP P0DTC2
A	1217	ILE	-	expression tag	UNP P0DTC2
A	1218	PRO	-	expression tag	UNP P0DTC2
A	1219	GLU	-	expression tag	UNP P0DTC2
A	1220	ALA	-	expression tag	UNP P0DTC2
A	1221	PRO	-	expression tag	UNP P0DTC2
A	1222	ARG	-	expression tag	UNP P0DTC2
A	1223	ASP	-	expression tag	UNP P0DTC2
A	1224	GLY	-	expression tag	UNP P0DTC2
A	1225	GLN	-	expression tag	UNP P0DTC2
A	1226	ALA	-	expression tag	UNP P0DTC2
A	1227	TYR	-	expression tag	UNP P0DTC2
A	1228	VAL	-	expression tag	UNP P0DTC2
A	1229	ARG	-	expression tag	UNP P0DTC2
A	1230	LYS	-	expression tag	UNP P0DTC2
A	1231	ASP	-	expression tag	UNP P0DTC2
A	1232	GLY	-	expression tag	UNP P0DTC2
A	1233	GLU	-	expression tag	UNP P0DTC2
A	1234	TRP	-	expression tag	UNP P0DTC2
A	1235	VAL	-	expression tag	UNP P0DTC2
A	1236	LEU	-	expression tag	UNP P0DTC2
A	1237	LEU	-	expression tag	UNP P0DTC2
A	1238	SER	-	expression tag	UNP P0DTC2
A	1239	THR	-	expression tag	UNP P0DTC2
A	1240	PHE	-	expression tag	UNP P0DTC2
A	1241	LEU	-	expression tag	UNP P0DTC2
A	1242	HIS	-	expression tag	UNP P0DTC2
A	1243	HIS	-	expression tag	UNP P0DTC2
A	1244	HIS	-	expression tag	UNP P0DTC2
A	1245	HIS	-	expression tag	UNP P0DTC2
A	1246	HIS	-	expression tag	UNP P0DTC2
A	1247	HIS	-	expression tag	UNP P0DTC2
B	-4	MET	-	initiating methionine	UNP P0DTC2
B	-3	PRO	-	expression tag	UNP P0DTC2
B	-2	ARG	-	expression tag	UNP P0DTC2
B	-1	GLY	-	expression tag	UNP P0DTC2
B	0	PRO	-	expression tag	UNP P0DTC2
B	1	VAL	-	expression tag	UNP P0DTC2
B	2	ALA	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	3	ALA	-	expression tag	UNP P0DTC2
B	4	LEU	-	expression tag	UNP P0DTC2
B	5	LEU	-	expression tag	UNP P0DTC2
B	6	LEU	-	expression tag	UNP P0DTC2
B	7	LEU	-	expression tag	UNP P0DTC2
B	8	ILE	-	expression tag	UNP P0DTC2
B	9	LEU	-	expression tag	UNP P0DTC2
B	10	HIS	-	expression tag	UNP P0DTC2
B	11	GLY	-	expression tag	UNP P0DTC2
B	12	ALA	-	expression tag	UNP P0DTC2
B	13	TRP	-	expression tag	UNP P0DTC2
B	14	SER	-	expression tag	UNP P0DTC2
B	67	VAL	ALA	variant	UNP P0DTC2
B	?	-	HIS	deletion	UNP P0DTC2
B	?	-	VAL	deletion	UNP P0DTC2
B	95	ILE	THR	variant	UNP P0DTC2
B	?	-	GLY	deletion	UNP P0DTC2
B	?	-	VAL	deletion	UNP P0DTC2
B	?	-	TYR	deletion	UNP P0DTC2
B	142	ASP	TYR	conflict	UNP P0DTC2
B	210A	ILE	LEU	conflict	UNP P0DTC2
B	210D	GLU	-	insertion	UNP P0DTC2
B	210E	PRO	-	insertion	UNP P0DTC2
B	210F	GLU	-	insertion	UNP P0DTC2
B	339	ASP	GLY	variant	UNP P0DTC2
B	371	LEU	SER	variant	UNP P0DTC2
B	373	PRO	SER	variant	UNP P0DTC2
B	375	PHE	SER	variant	UNP P0DTC2
B	417	ASN	LYS	variant	UNP P0DTC2
B	440	LYS	ASN	variant	UNP P0DTC2
B	446	SER	GLY	variant	UNP P0DTC2
B	477	ASN	SER	variant	UNP P0DTC2
B	478	LYS	THR	variant	UNP P0DTC2
B	484	ALA	GLU	variant	UNP P0DTC2
B	493	ARG	GLN	variant	UNP P0DTC2
B	496	SER	GLY	variant	UNP P0DTC2
B	498	ARG	GLN	variant	UNP P0DTC2
B	501	TYR	ASN	variant	UNP P0DTC2
B	505	HIS	TYR	variant	UNP P0DTC2
B	547	LYS	THR	variant	UNP P0DTC2
B	614	GLY	ASP	variant	UNP P0DTC2
B	655	TYR	HIS	variant	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	679	LYS	ASN	variant	UNP P0DTC2
B	681	HIS	PRO	variant	UNP P0DTC2
B	682	GLY	ARG	conflict	UNP P0DTC2
B	683	SER	ARG	conflict	UNP P0DTC2
B	685	SER	ARG	conflict	UNP P0DTC2
B	764	LYS	ASN	variant	UNP P0DTC2
B	796	TYR	ASP	variant	UNP P0DTC2
B	856	LYS	ASN	variant	UNP P0DTC2
B	954	HIS	GLN	variant	UNP P0DTC2
B	969	LYS	ASN	variant	UNP P0DTC2
B	981	PHE	LEU	variant	UNP P0DTC2
B	986	PRO	LYS	engineered mutation	UNP P0DTC2
B	987	PRO	VAL	engineered mutation	UNP P0DTC2
B	1209	LEU	-	expression tag	UNP P0DTC2
B	1210	VAL	-	expression tag	UNP P0DTC2
B	1211	PRO	-	expression tag	UNP P0DTC2
B	1212	ARG	-	expression tag	UNP P0DTC2
B	1213	GLY	-	expression tag	UNP P0DTC2
B	1214	SER	-	expression tag	UNP P0DTC2
B	1215	GLY	-	expression tag	UNP P0DTC2
B	1216	TYR	-	expression tag	UNP P0DTC2
B	1217	ILE	-	expression tag	UNP P0DTC2
B	1218	PRO	-	expression tag	UNP P0DTC2
B	1219	GLU	-	expression tag	UNP P0DTC2
B	1220	ALA	-	expression tag	UNP P0DTC2
B	1221	PRO	-	expression tag	UNP P0DTC2
B	1222	ARG	-	expression tag	UNP P0DTC2
B	1223	ASP	-	expression tag	UNP P0DTC2
B	1224	GLY	-	expression tag	UNP P0DTC2
B	1225	GLN	-	expression tag	UNP P0DTC2
B	1226	ALA	-	expression tag	UNP P0DTC2
B	1227	TYR	-	expression tag	UNP P0DTC2
B	1228	VAL	-	expression tag	UNP P0DTC2
B	1229	ARG	-	expression tag	UNP P0DTC2
B	1230	LYS	-	expression tag	UNP P0DTC2
B	1231	ASP	-	expression tag	UNP P0DTC2
B	1232	GLY	-	expression tag	UNP P0DTC2
B	1233	GLU	-	expression tag	UNP P0DTC2
B	1234	TRP	-	expression tag	UNP P0DTC2
B	1235	VAL	-	expression tag	UNP P0DTC2
B	1236	LEU	-	expression tag	UNP P0DTC2
B	1237	LEU	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	1238	SER	-	expression tag	UNP P0DTC2
B	1239	THR	-	expression tag	UNP P0DTC2
B	1240	PHE	-	expression tag	UNP P0DTC2
B	1241	LEU	-	expression tag	UNP P0DTC2
B	1242	HIS	-	expression tag	UNP P0DTC2
B	1243	HIS	-	expression tag	UNP P0DTC2
B	1244	HIS	-	expression tag	UNP P0DTC2
B	1245	HIS	-	expression tag	UNP P0DTC2
B	1246	HIS	-	expression tag	UNP P0DTC2
B	1247	HIS	-	expression tag	UNP P0DTC2
C	-4	MET	-	initiating methionine	UNP P0DTC2
C	-3	PRO	-	expression tag	UNP P0DTC2
C	-2	ARG	-	expression tag	UNP P0DTC2
C	-1	GLY	-	expression tag	UNP P0DTC2
C	0	PRO	-	expression tag	UNP P0DTC2
C	1	VAL	-	expression tag	UNP P0DTC2
C	2	ALA	-	expression tag	UNP P0DTC2
C	3	ALA	-	expression tag	UNP P0DTC2
C	4	LEU	-	expression tag	UNP P0DTC2
C	5	LEU	-	expression tag	UNP P0DTC2
C	6	LEU	-	expression tag	UNP P0DTC2
C	7	LEU	-	expression tag	UNP P0DTC2
C	8	ILE	-	expression tag	UNP P0DTC2
C	9	LEU	-	expression tag	UNP P0DTC2
C	10	HIS	-	expression tag	UNP P0DTC2
C	11	GLY	-	expression tag	UNP P0DTC2
C	12	ALA	-	expression tag	UNP P0DTC2
C	13	TRP	-	expression tag	UNP P0DTC2
C	14	SER	-	expression tag	UNP P0DTC2
C	67	VAL	ALA	variant	UNP P0DTC2
C	?	-	HIS	deletion	UNP P0DTC2
C	?	-	VAL	deletion	UNP P0DTC2
C	95	ILE	THR	variant	UNP P0DTC2
C	?	-	GLY	deletion	UNP P0DTC2
C	?	-	VAL	deletion	UNP P0DTC2
C	?	-	TYR	deletion	UNP P0DTC2
C	142	ASP	TYR	conflict	UNP P0DTC2
C	210A	ILE	LEU	conflict	UNP P0DTC2
C	210D	GLU	-	insertion	UNP P0DTC2
C	210E	PRO	-	insertion	UNP P0DTC2
C	210F	GLU	-	insertion	UNP P0DTC2
C	339	ASP	GLY	variant	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
C	371	LEU	SER	variant	UNP P0DTC2
C	373	PRO	SER	variant	UNP P0DTC2
C	375	PHE	SER	variant	UNP P0DTC2
C	417	ASN	LYS	variant	UNP P0DTC2
C	440	LYS	ASN	variant	UNP P0DTC2
C	446	SER	GLY	variant	UNP P0DTC2
C	477	ASN	SER	variant	UNP P0DTC2
C	478	LYS	THR	variant	UNP P0DTC2
C	484	ALA	GLU	variant	UNP P0DTC2
C	493	ARG	GLN	variant	UNP P0DTC2
C	496	SER	GLY	variant	UNP P0DTC2
C	498	ARG	GLN	variant	UNP P0DTC2
C	501	TYR	ASN	variant	UNP P0DTC2
C	505	HIS	TYR	variant	UNP P0DTC2
C	547	LYS	THR	variant	UNP P0DTC2
C	614	GLY	ASP	variant	UNP P0DTC2
C	655	TYR	HIS	variant	UNP P0DTC2
C	679	LYS	ASN	variant	UNP P0DTC2
C	681	HIS	PRO	variant	UNP P0DTC2
C	682	GLY	ARG	conflict	UNP P0DTC2
C	683	SER	ARG	conflict	UNP P0DTC2
C	685	SER	ARG	conflict	UNP P0DTC2
C	764	LYS	ASN	variant	UNP P0DTC2
C	796	TYR	ASP	variant	UNP P0DTC2
C	856	LYS	ASN	variant	UNP P0DTC2
C	954	HIS	GLN	variant	UNP P0DTC2
C	969	LYS	ASN	variant	UNP P0DTC2
C	981	PHE	LEU	variant	UNP P0DTC2
C	986	PRO	LYS	engineered mutation	UNP P0DTC2
C	987	PRO	VAL	engineered mutation	UNP P0DTC2
C	1209	LEU	-	expression tag	UNP P0DTC2
C	1210	VAL	-	expression tag	UNP P0DTC2
C	1211	PRO	-	expression tag	UNP P0DTC2
C	1212	ARG	-	expression tag	UNP P0DTC2
C	1213	GLY	-	expression tag	UNP P0DTC2
C	1214	SER	-	expression tag	UNP P0DTC2
C	1215	GLY	-	expression tag	UNP P0DTC2
C	1216	TYR	-	expression tag	UNP P0DTC2
C	1217	ILE	-	expression tag	UNP P0DTC2
C	1218	PRO	-	expression tag	UNP P0DTC2
C	1219	GLU	-	expression tag	UNP P0DTC2
C	1220	ALA	-	expression tag	UNP P0DTC2

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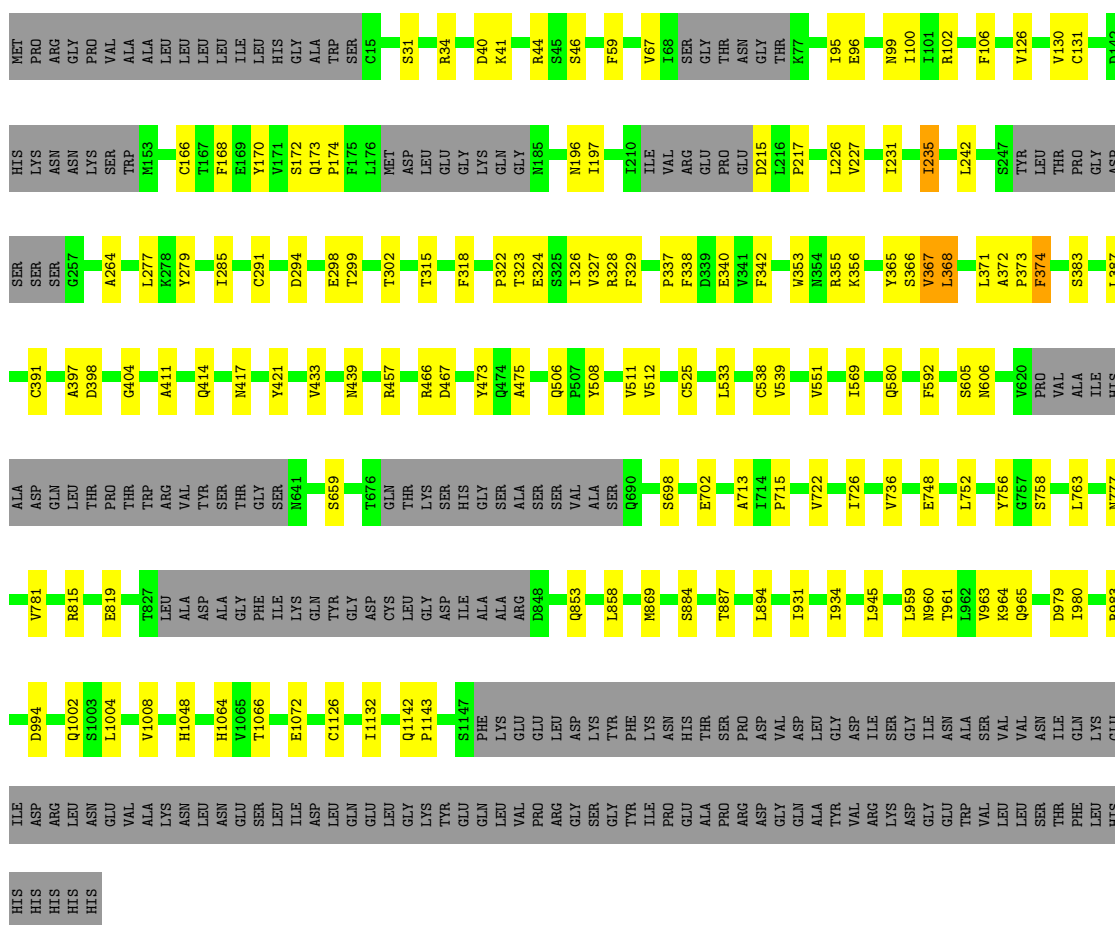
Chain	Residue	Modelled	Actual	Comment	Reference
C	1221	PRO	-	expression tag	UNP P0DTC2
C	1222	ARG	-	expression tag	UNP P0DTC2
C	1223	ASP	-	expression tag	UNP P0DTC2
C	1224	GLY	-	expression tag	UNP P0DTC2
C	1225	GLN	-	expression tag	UNP P0DTC2
C	1226	ALA	-	expression tag	UNP P0DTC2
C	1227	TYR	-	expression tag	UNP P0DTC2
C	1228	VAL	-	expression tag	UNP P0DTC2
C	1229	ARG	-	expression tag	UNP P0DTC2
C	1230	LYS	-	expression tag	UNP P0DTC2
C	1231	ASP	-	expression tag	UNP P0DTC2
C	1232	GLY	-	expression tag	UNP P0DTC2
C	1233	GLU	-	expression tag	UNP P0DTC2
C	1234	TRP	-	expression tag	UNP P0DTC2
C	1235	VAL	-	expression tag	UNP P0DTC2
C	1236	LEU	-	expression tag	UNP P0DTC2
C	1237	LEU	-	expression tag	UNP P0DTC2
C	1238	SER	-	expression tag	UNP P0DTC2
C	1239	THR	-	expression tag	UNP P0DTC2
C	1240	PHE	-	expression tag	UNP P0DTC2
C	1241	LEU	-	expression tag	UNP P0DTC2
C	1242	HIS	-	expression tag	UNP P0DTC2
C	1243	HIS	-	expression tag	UNP P0DTC2
C	1244	HIS	-	expression tag	UNP P0DTC2
C	1245	HIS	-	expression tag	UNP P0DTC2
C	1246	HIS	-	expression tag	UNP P0DTC2
C	1247	HIS	-	expression tag	UNP P0DTC2

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. 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. 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.

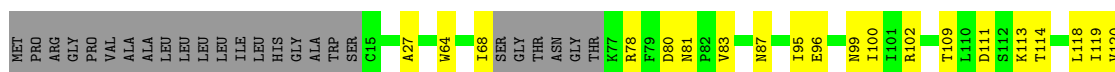
- Molecule 1: Spike glycoprotein

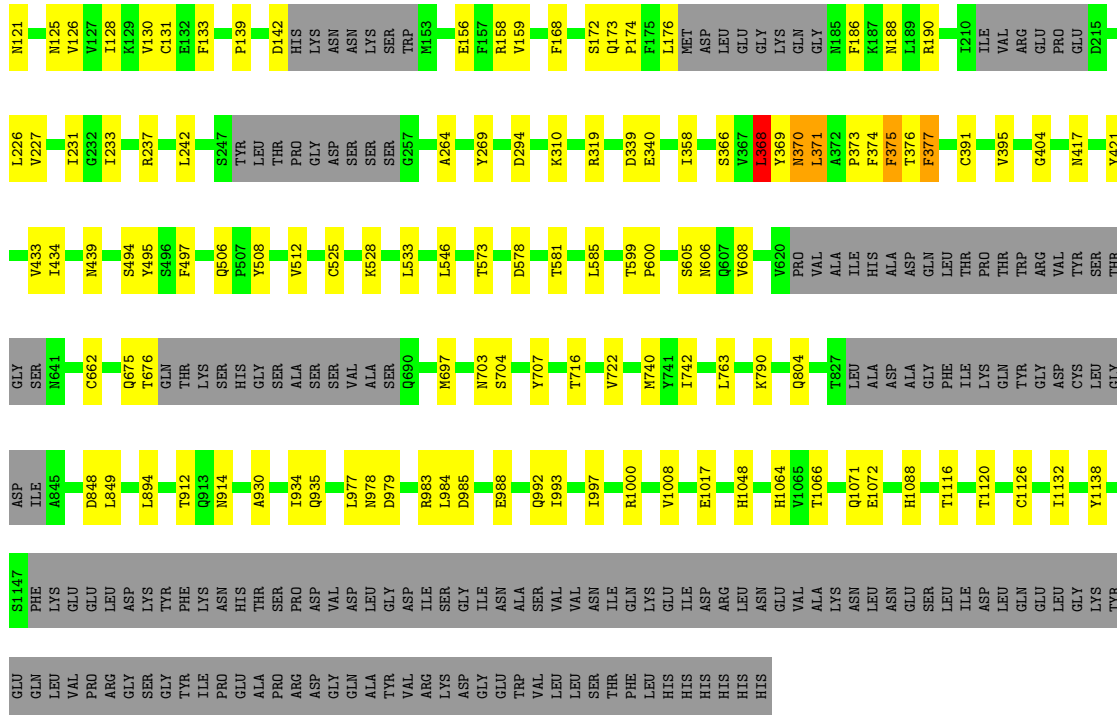
Chain A: 



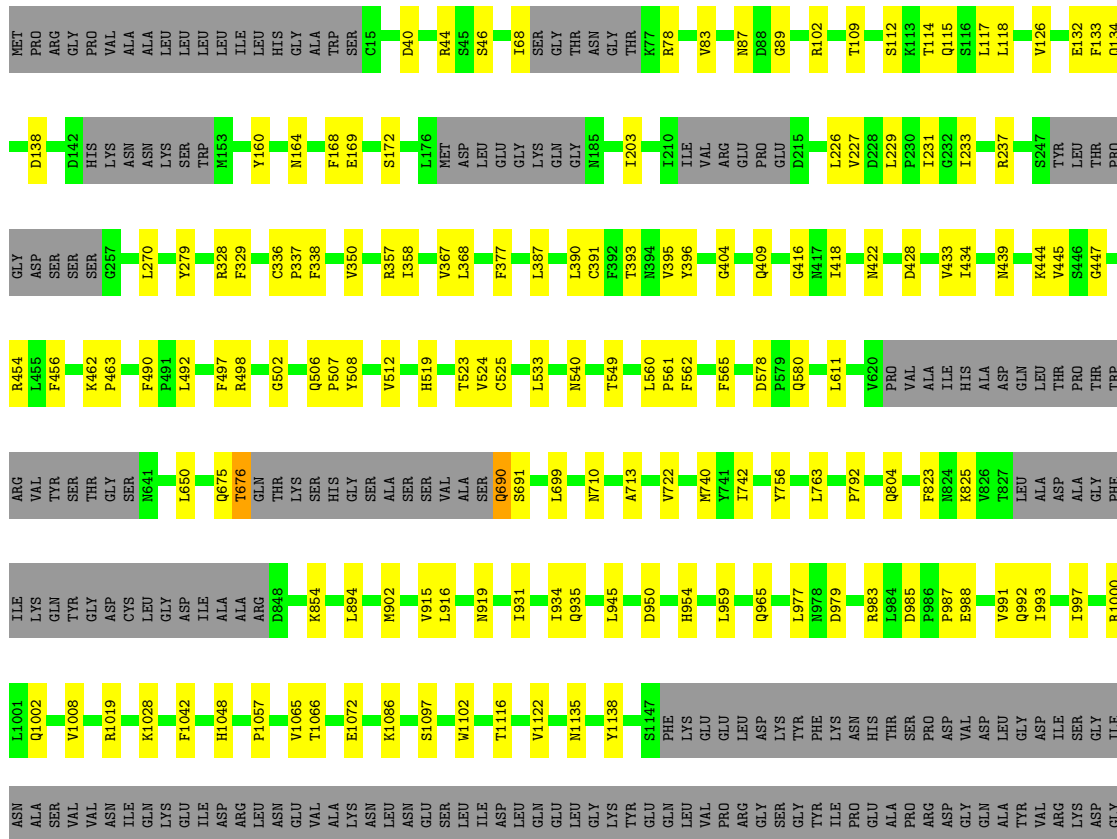
- Molecule 1: Spike glycoprotein

Chain B: 





● Molecule 1: Spike glycoprotein



GLU
TRP
VAL
LEU
LEU
SER
THR
PHE
LEU
HIS
HIS
HIS
HIS
HIS

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	167167	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	1500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor

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	0.27	0/8359	0.50	0/11367
1	B	0.27	0/8380	0.50	0/11395
1	C	0.27	0/8359	0.49	0/11367
All	All	0.27	0/25098	0.50	0/34129

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	8170	0	8006	94	0
1	B	8191	0	8029	88	0
1	C	8170	0	8006	102	0
All	All	24531	0	24041	268	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.

All (268) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:391:CYS:HA	1:C:525:CYS:HB3	1.45	0.97

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:375:PHE:HE1	1:B:434:ILE:HG23	1.27	0.97
1:B:391:CYS:HA	1:B:525:CYS:HB3	1.48	0.91
1:A:372:ALA:HB1	1:A:373:PRO:HD2	1.66	0.78
1:B:176:LEU:HG	1:B:190:ARG:HE	1.48	0.78
1:C:132:GLU:HB3	1:C:164:ASN:HB3	1.64	0.78
1:A:391:CYS:HB2	1:A:525:CYS:HA	1.65	0.76
1:A:126:VAL:HG13	1:A:174:PRO:HA	1.69	0.75
1:A:46:SER:HA	1:A:279:TYR:O	1.89	0.72
1:B:96:GLU:O	1:B:188:ASN:HB2	1.89	0.72
1:A:365:TYR:HA	1:A:368:LEU:HD23	1.72	0.71
1:B:375:PHE:CE1	1:B:434:ILE:HG23	2.19	0.70
1:B:83:VAL:HG11	1:B:237:ARG:HH11	1.56	0.70
1:B:81:ASN:HD21	1:B:242:LEU:HD23	1.57	0.69
1:C:804:GLN:NE2	1:C:935:GLN:OE1	2.26	0.69
1:C:422:ASN:HD21	1:C:454:ARG:H	1.41	0.68
1:A:983:ARG:HG2	1:C:390:LEU:HD21	1.75	0.68
1:C:112:SER:HB3	1:C:134:GLN:NE2	2.08	0.68
1:B:113:LYS:HG3	1:B:114:THR:HG23	1.76	0.67
1:A:40:ASP:OD2	1:A:44:ARG:NH1	2.26	0.66
1:C:203:ILE:HB	1:C:227:VAL:HB	1.75	0.66
1:C:676:THR:HB	1:C:691:SER:H	1.61	0.65
1:B:546:LEU:HD11	1:B:573:THR:HG21	1.78	0.65
1:C:391:CYS:HA	1:C:525:CYS:CB	2.26	0.65
1:C:902:MET:HB3	1:C:916:LEU:HD11	1.79	0.65
1:C:115:GLN:HG2	1:C:233:ILE:HG21	1.79	0.64
1:B:439:ASN:ND2	1:B:506:GLN:OE1	2.30	0.64
1:B:848:ASP:OD1	1:B:849:LEU:N	2.30	0.64
1:B:370:ASN:O	1:B:371:LEU:C	2.36	0.64
1:C:329:PHE:O	1:C:580:GLN:NE2	2.30	0.63
1:B:126:VAL:HB	1:B:174:PRO:HA	1.81	0.62
1:B:1126:CYS:HB2	1:B:1132:ILE:HD13	1.81	0.62
1:C:40:ASP:OD2	1:C:44:ARG:NH2	2.31	0.62
1:C:1116:THR:HG22	1:C:1138:TYR:HB3	1.81	0.62
1:A:1126:CYS:HB2	1:A:1132:ILE:HD13	1.81	0.62
1:A:226:LEU:HG	1:A:227:VAL:HG23	1.82	0.61
1:A:96:GLU:OE2	1:A:100:ILE:N	2.32	0.61
1:C:540:ASN:HB3	1:C:549:THR:HG22	1.81	0.61
1:C:404:GLY:HA2	1:C:508:TYR:HD2	1.65	0.61
1:C:367:VAL:HG23	1:C:368:LEU:HD12	1.83	0.61
1:C:1048:HIS:HA	1:C:1066:THR:HG22	1.83	0.61
1:A:318:PHE:O	1:A:592:PHE:HA	1.99	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:804:GLN:NE2	1:B:935:GLN:OE1	2.34	0.61
1:A:659:SER:HB3	1:A:698:SER:HB2	1.83	0.60
1:B:173:GLN:OE1	1:B:174:PRO:HD2	2.01	0.60
1:B:172:SER:OG	1:B:173:GLN:N	2.34	0.60
1:A:433:VAL:HG22	1:A:512:VAL:HG22	1.83	0.59
1:A:131:CYS:HB3	1:A:166:CYS:HA	1.83	0.59
1:C:126:VAL:HB	1:C:172:SER:HB2	1.84	0.59
1:A:353:TRP:O	1:A:466:ARG:NH2	2.31	0.59
1:A:1142:GLN:HG3	1:A:1143:PRO:HD3	1.83	0.59
1:C:117:LEU:HD11	1:C:231:ILE:HG21	1.85	0.58
1:B:358:ILE:HB	1:B:395:VAL:HB	1.85	0.58
1:C:89:GLY:HA3	1:C:270:LEU:HD12	1.85	0.58
1:C:991:VAL:HG23	1:C:992:GLN:HE21	1.68	0.58
1:B:1072:GLU:HG2	1:C:894:LEU:HD21	1.85	0.57
1:A:404:GLY:HA2	1:A:508:TYR:HD2	1.68	0.57
1:A:329:PHE:O	1:A:580:GLN:NE2	2.38	0.57
1:B:139:PRO:HA	1:B:158:ARG:O	2.05	0.57
1:A:869:MET:HG2	1:C:699:LEU:HD21	1.86	0.57
1:B:375:PHE:HE1	1:B:434:ILE:CG2	2.11	0.57
1:B:310:LYS:HG3	1:B:600:PRO:HA	1.86	0.56
1:B:599:THR:HB	1:B:608:VAL:HG12	1.87	0.56
1:B:95:ILE:HG13	1:B:186:PHE:HB2	1.88	0.56
1:C:763:LEU:HG	1:C:1008:VAL:HG21	1.87	0.56
1:A:326:ILE:HG22	1:A:328:ARG:HG2	1.86	0.56
1:A:763:LEU:HG	1:A:1008:VAL:HG21	1.86	0.56
1:B:100:ILE:HG22	1:B:242:LEU:HD12	1.88	0.56
1:B:376:THR:O	1:B:377:PHE:HB2	2.05	0.55
1:B:978:ASN:OD1	1:B:979:ASP:N	2.40	0.55
1:B:226:LEU:HG	1:B:227:VAL:HG23	1.88	0.55
1:A:291:CYS:HB2	1:A:298:GLU:HA	1.89	0.55
1:A:756:TYR:OH	1:A:994:ASP:OD1	2.24	0.55
1:C:433:VAL:HG22	1:C:512:VAL:HG22	1.89	0.55
1:A:931:ILE:O	1:A:934:ILE:HG22	2.06	0.55
1:A:894:LEU:HB3	1:C:713:ALA:HB3	1.89	0.55
1:A:31:SER:O	1:A:59:PHE:HA	2.07	0.54
1:A:99:ASN:O	1:A:102:ARG:NH1	2.40	0.54
1:B:707:TYR:HB3	1:C:792:PRO:HG3	1.88	0.54
1:B:99:ASN:O	1:B:102:ARG:NH1	2.38	0.54
1:A:337:PRO:HB2	1:A:340:GLU:OE1	2.07	0.54
1:B:675:GLN:O	1:B:676:THR:C	2.45	0.54
1:B:1116:THR:HG22	1:B:1138:TYR:HB3	1.90	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:131:CYS:HB2	1:B:133:PHE:CD1	2.43	0.54
1:B:125:ASN:HA	1:B:174:PRO:HD3	1.89	0.53
1:B:64:TRP:HE1	1:B:264:ALA:HB1	1.74	0.53
1:C:756:TYR:HE2	1:C:997:ILE:HG21	1.73	0.53
1:C:722:VAL:HG22	1:C:1065:VAL:HG22	1.89	0.53
1:B:68:ILE:HG22	1:B:78:ARG:HB2	1.90	0.53
1:B:1048:HIS:HA	1:B:1066:THR:HG22	1.90	0.53
1:C:112:SER:HB3	1:C:134:GLN:HE21	1.73	0.53
1:C:328:ARG:NH2	1:C:578:ASP:OD2	2.29	0.53
1:C:357:ARG:NH2	1:C:396:TYR:OH	2.41	0.52
1:C:988:GLU:O	1:C:992:GLN:HG2	2.09	0.52
1:A:383:SER:HB2	1:C:456:PHE:HE1	1.74	0.52
1:C:377:PHE:CD1	1:C:434:ILE:HG12	2.46	0.51
1:B:319:ARG:HH22	1:C:740:MET:HG2	1.74	0.51
1:C:226:LEU:HD23	1:C:227:VAL:HG23	1.91	0.51
1:A:170:TYR:HE1	1:A:172:SER:HB2	1.75	0.51
1:A:196:ASN:HD22	1:A:235:ILE:HG21	1.76	0.51
1:C:68:ILE:HD12	1:C:78:ARG:HG3	1.93	0.51
1:C:409:GLN:OE1	1:C:416:GLY:HA3	2.11	0.51
1:C:823:PHE:CD1	1:C:1057:PRO:HD3	2.46	0.51
1:B:433:VAL:HG22	1:B:512:VAL:HG22	1.93	0.51
1:C:823:PHE:HD1	1:C:1057:PRO:HD3	1.76	0.51
1:A:748:GLU:O	1:A:752:LEU:HG	2.11	0.50
1:C:915:VAL:O	1:C:919:ASN:ND2	2.43	0.50
1:C:950:ASP:O	1:C:954:HIS:ND1	2.44	0.50
1:B:231:ILE:HG22	1:B:233:ILE:HG23	1.93	0.50
1:B:993:ILE:O	1:B:997:ILE:HG12	2.10	0.50
1:C:979:ASP:O	1:C:983:ARG:HB2	2.11	0.50
1:A:592:PHE:CE1	1:B:740:MET:HE1	2.47	0.50
1:B:404:GLY:HA2	1:B:508:TYR:CD2	2.47	0.50
1:B:763:LEU:HG	1:B:1008:VAL:HG21	1.92	0.50
1:A:961:THR:O	1:A:965:GLN:HG2	2.12	0.50
1:B:139:PRO:HB3	1:B:159:VAL:HA	1.94	0.50
1:B:495:TYR:HB3	1:B:497:PHE:CE1	2.46	0.50
1:A:713:ALA:HB3	1:B:894:LEU:HB3	1.93	0.50
1:C:133:PHE:CE1	1:C:160:TYR:HB3	2.47	0.50
1:C:490:PHE:CE2	1:C:492:LEU:HB2	2.46	0.50
1:A:702:GLU:OE2	1:B:790:LYS:NZ	2.34	0.49
1:C:338:PHE:HD2	1:C:368:LEU:HD11	1.76	0.49
1:C:519:HIS:HB3	1:C:565:PHE:HE1	1.78	0.49
1:A:173:GLN:HG3	1:A:174:PRO:HD2	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:417:ASN:O	1:A:421:TYR:HB2	2.12	0.49
1:A:342:PHE:CZ	1:A:511:VAL:HG21	2.47	0.49
1:A:457:ARG:NH1	1:A:467:ASP:OD2	2.45	0.49
1:A:371:LEU:O	1:A:372:ALA:HB2	2.13	0.49
1:B:131:CYS:HB2	1:B:133:PHE:CE1	2.47	0.49
1:B:716:THR:OG1	1:B:1071:GLN:O	2.20	0.49
1:B:81:ASN:ND2	1:B:242:LEU:HD23	2.24	0.49
1:C:336:CYS:HB2	1:C:337:PRO:HD2	1.94	0.49
1:B:118:LEU:HD21	1:B:120:VAL:HG23	1.95	0.49
1:B:988:GLU:O	1:B:992:GLN:HG2	2.12	0.49
1:C:676:THR:HB	1:C:691:SER:N	2.28	0.48
1:C:931:ILE:O	1:C:934:ILE:HG22	2.14	0.48
1:C:985:ASP:HB3	1:C:987:PRO:HD2	1.95	0.48
1:B:294:ASP:N	1:B:294:ASP:OD1	2.46	0.48
1:B:533:LEU:HD21	1:B:585:LEU:HD11	1.96	0.48
1:C:358:ILE:HB	1:C:395:VAL:HB	1.96	0.48
1:C:988:GLU:OE1	1:C:988:GLU:N	2.45	0.48
1:A:323:THR:O	1:A:539:VAL:HG12	2.14	0.48
1:C:497:PHE:CE2	1:C:507:PRO:HB3	2.48	0.48
1:A:41:LYS:HG2	1:C:562:PHE:HD2	1.78	0.48
1:A:338:PHE:HE2	1:A:365:TYR:CE1	2.32	0.48
1:A:372:ALA:HB1	1:A:373:PRO:CD	2.42	0.48
1:C:409:GLN:NE2	1:C:418:ILE:HG12	2.28	0.47
1:C:445:VAL:O	1:C:498:ARG:NH1	2.47	0.47
1:A:373:PRO:O	1:A:373:PRO:HG2	2.13	0.47
1:C:395:VAL:HG23	1:C:524:VAL:HG11	1.95	0.47
1:A:884:SER:OG	1:A:887:THR:OG1	2.33	0.47
1:B:119:ILE:HG23	1:B:128:ILE:HG13	1.96	0.47
1:B:374:PHE:O	1:B:375:PHE:HB2	2.14	0.47
1:A:777:ASN:O	1:A:781:VAL:HG23	2.15	0.47
1:B:984:LEU:HD13	1:B:988:GLU:HB3	1.97	0.47
1:A:299:THR:HA	1:A:302:THR:HG22	1.96	0.47
1:A:41:LYS:HE2	1:C:562:PHE:HB2	1.96	0.47
1:A:605:SER:OG	1:A:606:ASN:N	2.48	0.47
1:A:294:ASP:OD1	1:A:294:ASP:N	2.46	0.46
1:A:130:VAL:HG12	1:A:168:PHE:HB3	1.97	0.46
1:A:858:LEU:HD13	1:A:959:LEU:HD22	1.97	0.46
1:B:130:VAL:HG12	1:B:168:PHE:HB3	1.96	0.46
1:C:350:VAL:HG12	1:C:422:ASN:HB3	1.97	0.46
1:C:533:LEU:HD23	1:C:533:LEU:H	1.80	0.46
1:C:742:ILE:O	1:C:1000:ARG:NH1	2.48	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:853:GLN:HG2	1:A:963:VAL:HG21	1.96	0.46
1:B:662:CYS:HB2	1:B:697:MET:HG2	1.97	0.46
1:C:444:LYS:HG3	1:C:447:GLY:H	1.81	0.45
1:B:494:SER:OG	1:B:495:TYR:N	2.48	0.45
1:C:439:ASN:CG	1:C:506:GLN:HG2	2.36	0.45
1:A:356:LYS:HB2	1:A:397:ALA:HB3	1.99	0.45
1:A:1048:HIS:HA	1:A:1066:THR:HG22	1.99	0.45
1:A:328:ARG:NH2	1:A:580:GLN:HB2	2.32	0.45
1:A:398:ASP:O	1:A:511:VAL:HA	2.16	0.45
1:A:411:ALA:HB3	1:A:414:GLN:HG3	1.98	0.45
1:B:578:ASP:HB3	1:B:581:THR:O	2.17	0.45
1:B:1088:HIS:HB3	1:B:1120:THR:HG21	1.98	0.45
1:B:605:SER:OG	1:B:606:ASN:N	2.49	0.45
1:A:1002:GLN:HE22	1:C:1002:GLN:NE2	2.14	0.45
1:B:368:LEU:O	1:B:370:ASN:N	2.49	0.45
1:A:736:VAL:HG11	1:A:1004:LEU:HD11	1.98	0.44
1:B:977:LEU:HD23	1:B:977:LEU:H	1.81	0.44
1:C:46:SER:HA	1:C:279:TYR:O	2.17	0.44
1:B:80:ASP:OD1	1:B:80:ASP:N	2.49	0.44
1:B:121:ASN:HD21	1:B:176:LEU:HB2	1.82	0.44
1:A:355:ARG:HG2	1:A:466:ARG:HH12	1.82	0.44
1:A:538:CYS:HB3	1:A:551:VAL:HG23	1.99	0.44
1:B:111:ASP:OD1	1:B:113:LYS:HG2	2.17	0.44
1:C:168:PHE:CE2	1:C:229:LEU:HD22	2.53	0.44
1:C:611:LEU:HD12	1:C:650:LEU:HD13	1.99	0.44
1:C:1102:TRP:HB2	1:C:1135:ASN:ND2	2.33	0.44
1:B:142:ASP:O	1:B:156:GLU:HB3	2.18	0.44
1:A:815:ARG:HD2	1:A:819:GLU:HB3	1.98	0.44
1:B:722:VAL:HA	1:B:1064:HIS:O	2.17	0.44
1:C:138:ASP:N	1:C:138:ASP:OD1	2.51	0.44
1:C:560:LEU:HB2	1:C:561:PRO:HD2	2.00	0.44
1:B:417:ASN:O	1:B:421:TYR:HB2	2.18	0.43
1:C:977:LEU:HD22	1:C:993:ILE:HD12	1.99	0.43
1:A:366:SER:C	1:A:368:LEU:H	2.22	0.43
1:A:298:GLU:HG2	1:A:315:THR:CG2	2.47	0.43
1:A:323:THR:HG23	1:A:324:GLU:OE1	2.18	0.43
1:A:533:LEU:H	1:A:533:LEU:HD23	1.84	0.43
1:A:46:SER:CA	1:A:279:TYR:O	2.61	0.43
1:B:703:ASN:OD1	1:B:704:SER:N	2.51	0.43
1:C:87:ASN:O	1:C:89:GLY:N	2.52	0.43
1:C:502:GLY:O	1:C:506:GLN:NE2	2.52	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:960:ASN:OD1	1:A:964:LYS:HE2	2.19	0.43
1:C:393:THR:O	1:C:523:THR:OG1	2.36	0.43
1:C:1097:SER:HB2	1:C:1102:TRP:CD2	2.53	0.43
1:A:34:ARG:NH1	1:A:217:PRO:O	2.51	0.43
1:A:355:ARG:NH2	1:A:356:LYS:O	2.51	0.43
1:B:118:LEU:HD13	1:B:133:PHE:CE2	2.53	0.43
1:C:710:ASN:N	1:C:710:ASN:OD1	2.52	0.43
1:C:462:LYS:HD3	1:C:463:PRO:HD2	2.01	0.43
1:A:67:VAL:HG21	1:A:242:LEU:HD22	2.00	0.42
1:A:95:ILE:HG22	1:A:264:ALA:HB3	2.00	0.42
1:A:979:ASP:OD1	1:A:980:ILE:N	2.51	0.42
1:C:825:LYS:HB3	1:C:945:LEU:HD12	2.00	0.42
1:A:277:LEU:HD23	1:A:285:ILE:HD13	2.01	0.42
1:A:387:LEU:H	1:A:387:LEU:HD23	1.84	0.42
1:B:376:THR:HG22	1:B:377:PHE:H	1.83	0.42
1:B:912:THR:OG1	1:B:914:ASN:OD1	2.22	0.42
1:A:473:TYR:CE2	1:A:475:ALA:HB2	2.54	0.42
1:B:742:ILE:O	1:B:1000:ARG:NH1	2.52	0.42
1:C:387:LEU:H	1:C:387:LEU:HD23	1.85	0.42
1:C:428:ASP:OD1	1:C:428:ASP:N	2.52	0.42
1:A:322:PRO:HB3	1:A:538:CYS:SG	2.60	0.42
1:B:366:SER:HA	1:B:369:TYR:CE2	2.54	0.42
1:C:825:LYS:HE2	1:C:825:LYS:HB2	1.84	0.42
1:A:106:PHE:HB3	1:A:235:ILE:CD1	2.50	0.42
1:A:215:ASP:N	1:A:215:ASP:OD1	2.53	0.42
1:C:102:ARG:HA	1:C:102:ARG:HD3	1.88	0.42
1:C:676:THR:HG22	1:C:690:GLN:HB3	2.01	0.42
1:C:1028:LYS:NZ	1:C:1042:PHE:O	2.44	0.42
1:C:118:LEU:HD21	1:C:133:PHE:CE2	2.55	0.42
1:C:169:GLU:OE1	1:C:169:GLU:N	2.52	0.42
1:B:339:ASP:OD1	1:B:340:GLU:N	2.53	0.41
1:B:984:LEU:HD12	1:B:985:ASP:O	2.20	0.41
1:C:40:ASP:N	1:C:40:ASP:OD1	2.52	0.41
1:A:722:VAL:HA	1:A:1064:HIS:O	2.20	0.41
1:A:758:SER:H	1:C:965:GLN:NE2	2.18	0.41
1:C:168:PHE:HE2	1:C:229:LEU:HD22	1.86	0.41
1:A:130:VAL:HG11	1:A:231:ILE:HD12	2.01	0.41
1:A:197:ILE:HD12	1:A:197:ILE:HA	1.98	0.41
1:A:373:PRO:O	1:A:373:PRO:CG	2.69	0.41
1:B:1072:GLU:HG2	1:C:894:LEU:CD2	2.48	0.41
1:C:854:LYS:HB2	1:C:854:LYS:HE2	1.80	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:959:LEU:HD23	1:C:959:LEU:HA	1.85	0.41
1:C:1072:GLU:OE1	1:C:1072:GLU:N	2.49	0.41
1:A:736:VAL:HG22	1:A:858:LEU:HD22	2.03	0.41
1:C:1086:LYS:HD2	1:C:1122:VAL:HG21	2.03	0.41
1:B:87:ASN:HD22	1:B:269:TYR:HE2	1.69	0.41
1:C:756:TYR:CE2	1:C:997:ILE:HG21	2.52	0.41
1:B:1017:GLU:OE1	1:C:1019:ARG:NH2	2.54	0.41
1:C:83:VAL:HG11	1:C:237:ARG:NH2	2.35	0.41
1:A:421:TYR:CD1	1:A:457:ARG:HB3	2.56	0.41
1:A:726:ILE:HD13	1:A:945:LEU:HD13	2.02	0.41
1:B:930:ALA:O	1:B:934:ILE:HG12	2.21	0.41
1:A:569:ILE:HD12	1:A:569:ILE:H	1.86	0.40
1:B:109:THR:HA	1:B:237:ARG:NH2	2.37	0.40
1:B:495:TYR:HB3	1:B:497:PHE:CD1	2.56	0.40
1:C:497:PHE:CD1	1:C:507:PRO:HD3	2.56	0.40
1:A:327:VAL:O	1:A:327:VAL:HG12	2.22	0.40
1:A:439:ASN:CG	1:A:506:GLN:HG2	2.42	0.40
1:B:27:ALA:HB3	1:B:64:TRP:HB3	2.03	0.40
1:B:78:ARG:NH2	1:B:80:ASP:OD2	2.55	0.40
1:A:715:PRO:HA	1:A:1072:GLU:HA	2.03	0.40
1:C:109:THR:HG22	1:C:114:THR:HG22	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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	1023/1249 (82%)	970 (95%)	50 (5%)	3 (0%)	37 66
1	B	1026/1249 (82%)	967 (94%)	53 (5%)	6 (1%)	22 52
1	C	1023/1249 (82%)	974 (95%)	49 (5%)	0	100 100
All	All	3072/3747 (82%)	2911 (95%)	152 (5%)	9 (0%)	38 66

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	371	LEU
1	B	377	PHE
1	A	235	ILE
1	A	374	PHE
1	B	368	LEU
1	B	373	PRO
1	B	375	PHE
1	B	528	LYS
1	A	367	VAL

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 PDB entries followed by that with respect to all EM entries.

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	912/1086 (84%)	909 (100%)	3 (0%)	91	97
1	B	913/1086 (84%)	910 (100%)	3 (0%)	91	97
1	C	912/1086 (84%)	909 (100%)	3 (0%)	91	97
All	All	2737/3258 (84%)	2728 (100%)	9 (0%)	90	97

All (9) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	367	VAL
1	A	368	LEU
1	A	374	PHE
1	B	368	LEU
1	B	370	ASN
1	B	983	ARG
1	C	675	GLN
1	C	676	THR
1	C	690	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1002	GLN
1	B	81	ASN
1	B	439	ASN
1	B	804	GLN
1	C	165	ASN
1	C	804	GLN
1	C	935	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.