Full wwPDB X-ray Structure Validation Report ⓘ

Oct 17, 2021 – 02:09 AM EDT

PDB ID	:	1RYY
Title	:	Acetobacter turbidans alpha-amino acid ester hydrolase Y206A mutant
Authors	:	Barends, T.R.M.
Deposited on	:	2003-12-23
Resolution	:	2.80 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 following versions of software and data (see references ⓘ) were used in the production of this report:

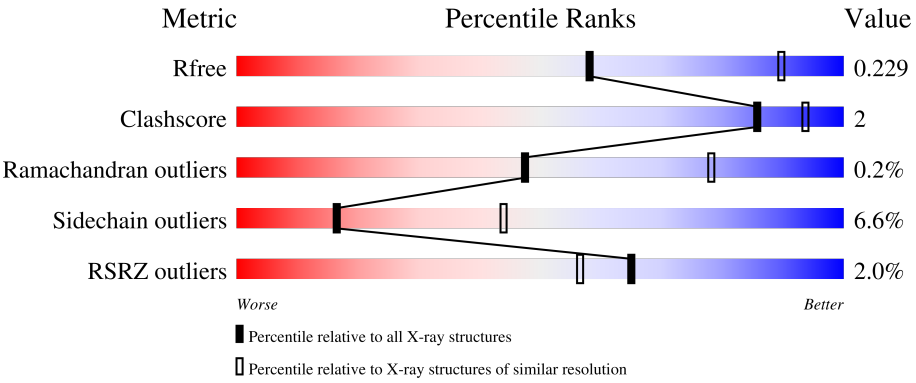
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.23.2
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.23.2

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

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 <=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	652	84% 9% • 6%
1	B	652	82% 11% • 6%
1	C	652	82% 10% • 6%
1	D	652	84% 9% • 6%
1	E	652	82% 11% • 6%

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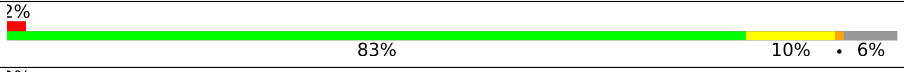
Mol	Chain	Length	Quality of chain
1	F	652	
1	G	652	
1	H	652	

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 39009 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 alpha-amino acid ester hydrolase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	612	Total	C	N	O	S	0	0	0
			4836	3081	838	898	19			
1	B	612	Total	C	N	O	S	0	0	0
			4836	3081	838	898	19			
1	C	612	Total	C	N	O	S	0	0	0
			4836	3081	838	898	19			
1	D	612	Total	C	N	O	S	0	0	0
			4836	3081	838	898	19			
1	E	612	Total	C	N	O	S	0	0	0
			4836	3081	838	898	19			
1	F	612	Total	C	N	O	S	0	0	0
			4836	3081	838	898	19			
1	G	612	Total	C	N	O	S	0	0	0
			4836	3081	838	898	19			
1	H	612	Total	C	N	O	S	0	0	0
			4836	3081	838	898	19			

There are 208 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	206	ALA	TYR	engineered mutation	UNP Q8VRK8
A	668	LYS	-	expression tag	UNP Q8VRK8
A	669	LEU	-	expression tag	UNP Q8VRK8
A	670	GLY	-	expression tag	UNP Q8VRK8
A	671	PRO	-	expression tag	UNP Q8VRK8
A	672	GLU	-	expression tag	UNP Q8VRK8
A	673	GLN	-	expression tag	UNP Q8VRK8
A	674	LYS	-	expression tag	UNP Q8VRK8
A	675	LEU	-	expression tag	UNP Q8VRK8
A	676	ILE	-	expression tag	UNP Q8VRK8
A	677	SER	-	expression tag	UNP Q8VRK8
A	678	GLU	-	expression tag	UNP Q8VRK8
A	679	GLU	-	expression tag	UNP Q8VRK8

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Chain	Residue	Modelled	Actual	Comment	Reference
A	680	ASP	-	expression tag	UNP Q8VRK8
A	681	LEU	-	expression tag	UNP Q8VRK8
A	682	ASN	-	expression tag	UNP Q8VRK8
A	683	SER	-	expression tag	UNP Q8VRK8
A	684	ALA	-	expression tag	UNP Q8VRK8
A	685	VAL	-	expression tag	UNP Q8VRK8
A	686	ASP	-	expression tag	UNP Q8VRK8
A	687	HIS	-	expression tag	UNP Q8VRK8
A	688	HIS	-	expression tag	UNP Q8VRK8
A	689	HIS	-	expression tag	UNP Q8VRK8
A	690	HIS	-	expression tag	UNP Q8VRK8
A	691	HIS	-	expression tag	UNP Q8VRK8
A	692	HIS	-	expression tag	UNP Q8VRK8
B	206	ALA	TYR	engineered mutation	UNP Q8VRK8
B	668	LYS	-	expression tag	UNP Q8VRK8
B	669	LEU	-	expression tag	UNP Q8VRK8
B	670	GLY	-	expression tag	UNP Q8VRK8
B	671	PRO	-	expression tag	UNP Q8VRK8
B	672	GLU	-	expression tag	UNP Q8VRK8
B	673	GLN	-	expression tag	UNP Q8VRK8
B	674	LYS	-	expression tag	UNP Q8VRK8
B	675	LEU	-	expression tag	UNP Q8VRK8
B	676	ILE	-	expression tag	UNP Q8VRK8
B	677	SER	-	expression tag	UNP Q8VRK8
B	678	GLU	-	expression tag	UNP Q8VRK8
B	679	GLU	-	expression tag	UNP Q8VRK8
B	680	ASP	-	expression tag	UNP Q8VRK8
B	681	LEU	-	expression tag	UNP Q8VRK8
B	682	ASN	-	expression tag	UNP Q8VRK8
B	683	SER	-	expression tag	UNP Q8VRK8
B	684	ALA	-	expression tag	UNP Q8VRK8
B	685	VAL	-	expression tag	UNP Q8VRK8
B	686	ASP	-	expression tag	UNP Q8VRK8
B	687	HIS	-	expression tag	UNP Q8VRK8
B	688	HIS	-	expression tag	UNP Q8VRK8
B	689	HIS	-	expression tag	UNP Q8VRK8
B	690	HIS	-	expression tag	UNP Q8VRK8
B	691	HIS	-	expression tag	UNP Q8VRK8
B	692	HIS	-	expression tag	UNP Q8VRK8
C	206	ALA	TYR	engineered mutation	UNP Q8VRK8
C	668	LYS	-	expression tag	UNP Q8VRK8
C	669	LEU	-	expression tag	UNP Q8VRK8

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Chain	Residue	Modelled	Actual	Comment	Reference
C	670	GLY	-	expression tag	UNP Q8VRK8
C	671	PRO	-	expression tag	UNP Q8VRK8
C	672	GLU	-	expression tag	UNP Q8VRK8
C	673	GLN	-	expression tag	UNP Q8VRK8
C	674	LYS	-	expression tag	UNP Q8VRK8
C	675	LEU	-	expression tag	UNP Q8VRK8
C	676	ILE	-	expression tag	UNP Q8VRK8
C	677	SER	-	expression tag	UNP Q8VRK8
C	678	GLU	-	expression tag	UNP Q8VRK8
C	679	GLU	-	expression tag	UNP Q8VRK8
C	680	ASP	-	expression tag	UNP Q8VRK8
C	681	LEU	-	expression tag	UNP Q8VRK8
C	682	ASN	-	expression tag	UNP Q8VRK8
C	683	SER	-	expression tag	UNP Q8VRK8
C	684	ALA	-	expression tag	UNP Q8VRK8
C	685	VAL	-	expression tag	UNP Q8VRK8
C	686	ASP	-	expression tag	UNP Q8VRK8
C	687	HIS	-	expression tag	UNP Q8VRK8
C	688	HIS	-	expression tag	UNP Q8VRK8
C	689	HIS	-	expression tag	UNP Q8VRK8
C	690	HIS	-	expression tag	UNP Q8VRK8
C	691	HIS	-	expression tag	UNP Q8VRK8
C	692	HIS	-	expression tag	UNP Q8VRK8
D	206	ALA	TYR	engineered mutation	UNP Q8VRK8
D	668	LYS	-	expression tag	UNP Q8VRK8
D	669	LEU	-	expression tag	UNP Q8VRK8
D	670	GLY	-	expression tag	UNP Q8VRK8
D	671	PRO	-	expression tag	UNP Q8VRK8
D	672	GLU	-	expression tag	UNP Q8VRK8
D	673	GLN	-	expression tag	UNP Q8VRK8
D	674	LYS	-	expression tag	UNP Q8VRK8
D	675	LEU	-	expression tag	UNP Q8VRK8
D	676	ILE	-	expression tag	UNP Q8VRK8
D	677	SER	-	expression tag	UNP Q8VRK8
D	678	GLU	-	expression tag	UNP Q8VRK8
D	679	GLU	-	expression tag	UNP Q8VRK8
D	680	ASP	-	expression tag	UNP Q8VRK8
D	681	LEU	-	expression tag	UNP Q8VRK8
D	682	ASN	-	expression tag	UNP Q8VRK8
D	683	SER	-	expression tag	UNP Q8VRK8
D	684	ALA	-	expression tag	UNP Q8VRK8
D	685	VAL	-	expression tag	UNP Q8VRK8

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Chain	Residue	Modelled	Actual	Comment	Reference
D	686	ASP	-	expression tag	UNP Q8VRK8
D	687	HIS	-	expression tag	UNP Q8VRK8
D	688	HIS	-	expression tag	UNP Q8VRK8
D	689	HIS	-	expression tag	UNP Q8VRK8
D	690	HIS	-	expression tag	UNP Q8VRK8
D	691	HIS	-	expression tag	UNP Q8VRK8
D	692	HIS	-	expression tag	UNP Q8VRK8
E	206	ALA	TYR	engineered mutation	UNP Q8VRK8
E	668	LYS	-	expression tag	UNP Q8VRK8
E	669	LEU	-	expression tag	UNP Q8VRK8
E	670	GLY	-	expression tag	UNP Q8VRK8
E	671	PRO	-	expression tag	UNP Q8VRK8
E	672	GLU	-	expression tag	UNP Q8VRK8
E	673	GLN	-	expression tag	UNP Q8VRK8
E	674	LYS	-	expression tag	UNP Q8VRK8
E	675	LEU	-	expression tag	UNP Q8VRK8
E	676	ILE	-	expression tag	UNP Q8VRK8
E	677	SER	-	expression tag	UNP Q8VRK8
E	678	GLU	-	expression tag	UNP Q8VRK8
E	679	GLU	-	expression tag	UNP Q8VRK8
E	680	ASP	-	expression tag	UNP Q8VRK8
E	681	LEU	-	expression tag	UNP Q8VRK8
E	682	ASN	-	expression tag	UNP Q8VRK8
E	683	SER	-	expression tag	UNP Q8VRK8
E	684	ALA	-	expression tag	UNP Q8VRK8
E	685	VAL	-	expression tag	UNP Q8VRK8
E	686	ASP	-	expression tag	UNP Q8VRK8
E	687	HIS	-	expression tag	UNP Q8VRK8
E	688	HIS	-	expression tag	UNP Q8VRK8
E	689	HIS	-	expression tag	UNP Q8VRK8
E	690	HIS	-	expression tag	UNP Q8VRK8
E	691	HIS	-	expression tag	UNP Q8VRK8
E	692	HIS	-	expression tag	UNP Q8VRK8
F	206	ALA	TYR	engineered mutation	UNP Q8VRK8
F	668	LYS	-	expression tag	UNP Q8VRK8
F	669	LEU	-	expression tag	UNP Q8VRK8
F	670	GLY	-	expression tag	UNP Q8VRK8
F	671	PRO	-	expression tag	UNP Q8VRK8
F	672	GLU	-	expression tag	UNP Q8VRK8
F	673	GLN	-	expression tag	UNP Q8VRK8
F	674	LYS	-	expression tag	UNP Q8VRK8
F	675	LEU	-	expression tag	UNP Q8VRK8

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Chain	Residue	Modelled	Actual	Comment	Reference
F	676	ILE	-	expression tag	UNP Q8VRK8
F	677	SER	-	expression tag	UNP Q8VRK8
F	678	GLU	-	expression tag	UNP Q8VRK8
F	679	GLU	-	expression tag	UNP Q8VRK8
F	680	ASP	-	expression tag	UNP Q8VRK8
F	681	LEU	-	expression tag	UNP Q8VRK8
F	682	ASN	-	expression tag	UNP Q8VRK8
F	683	SER	-	expression tag	UNP Q8VRK8
F	684	ALA	-	expression tag	UNP Q8VRK8
F	685	VAL	-	expression tag	UNP Q8VRK8
F	686	ASP	-	expression tag	UNP Q8VRK8
F	687	HIS	-	expression tag	UNP Q8VRK8
F	688	HIS	-	expression tag	UNP Q8VRK8
F	689	HIS	-	expression tag	UNP Q8VRK8
F	690	HIS	-	expression tag	UNP Q8VRK8
F	691	HIS	-	expression tag	UNP Q8VRK8
F	692	HIS	-	expression tag	UNP Q8VRK8
G	206	ALA	TYR	engineered mutation	UNP Q8VRK8
G	668	LYS	-	expression tag	UNP Q8VRK8
G	669	LEU	-	expression tag	UNP Q8VRK8
G	670	GLY	-	expression tag	UNP Q8VRK8
G	671	PRO	-	expression tag	UNP Q8VRK8
G	672	GLU	-	expression tag	UNP Q8VRK8
G	673	GLN	-	expression tag	UNP Q8VRK8
G	674	LYS	-	expression tag	UNP Q8VRK8
G	675	LEU	-	expression tag	UNP Q8VRK8
G	676	ILE	-	expression tag	UNP Q8VRK8
G	677	SER	-	expression tag	UNP Q8VRK8
G	678	GLU	-	expression tag	UNP Q8VRK8
G	679	GLU	-	expression tag	UNP Q8VRK8
G	680	ASP	-	expression tag	UNP Q8VRK8
G	681	LEU	-	expression tag	UNP Q8VRK8
G	682	ASN	-	expression tag	UNP Q8VRK8
G	683	SER	-	expression tag	UNP Q8VRK8
G	684	ALA	-	expression tag	UNP Q8VRK8
G	685	VAL	-	expression tag	UNP Q8VRK8
G	686	ASP	-	expression tag	UNP Q8VRK8
G	687	HIS	-	expression tag	UNP Q8VRK8
G	688	HIS	-	expression tag	UNP Q8VRK8
G	689	HIS	-	expression tag	UNP Q8VRK8
G	690	HIS	-	expression tag	UNP Q8VRK8
G	691	HIS	-	expression tag	UNP Q8VRK8

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Chain	Residue	Modelled	Actual	Comment	Reference
G	692	HIS	-	expression tag	UNP Q8VRK8
H	206	ALA	TYR	engineered mutation	UNP Q8VRK8
H	668	LYS	-	expression tag	UNP Q8VRK8
H	669	LEU	-	expression tag	UNP Q8VRK8
H	670	GLY	-	expression tag	UNP Q8VRK8
H	671	PRO	-	expression tag	UNP Q8VRK8
H	672	GLU	-	expression tag	UNP Q8VRK8
H	673	GLN	-	expression tag	UNP Q8VRK8
H	674	LYS	-	expression tag	UNP Q8VRK8
H	675	LEU	-	expression tag	UNP Q8VRK8
H	676	ILE	-	expression tag	UNP Q8VRK8
H	677	SER	-	expression tag	UNP Q8VRK8
H	678	GLU	-	expression tag	UNP Q8VRK8
H	679	GLU	-	expression tag	UNP Q8VRK8
H	680	ASP	-	expression tag	UNP Q8VRK8
H	681	LEU	-	expression tag	UNP Q8VRK8
H	682	ASN	-	expression tag	UNP Q8VRK8
H	683	SER	-	expression tag	UNP Q8VRK8
H	684	ALA	-	expression tag	UNP Q8VRK8
H	685	VAL	-	expression tag	UNP Q8VRK8
H	686	ASP	-	expression tag	UNP Q8VRK8
H	687	HIS	-	expression tag	UNP Q8VRK8
H	688	HIS	-	expression tag	UNP Q8VRK8
H	689	HIS	-	expression tag	UNP Q8VRK8
H	690	HIS	-	expression tag	UNP Q8VRK8
H	691	HIS	-	expression tag	UNP Q8VRK8
H	692	HIS	-	expression tag	UNP Q8VRK8

- Molecule 2 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	66	Total O 66 66	0	0
2	B	56	Total O 56 56	0	0
2	C	43	Total O 43 43	0	0
2	D	55	Total O 55 55	0	0
2	E	15	Total O 15 15	0	0
2	F	22	Total O 22 22	0	0

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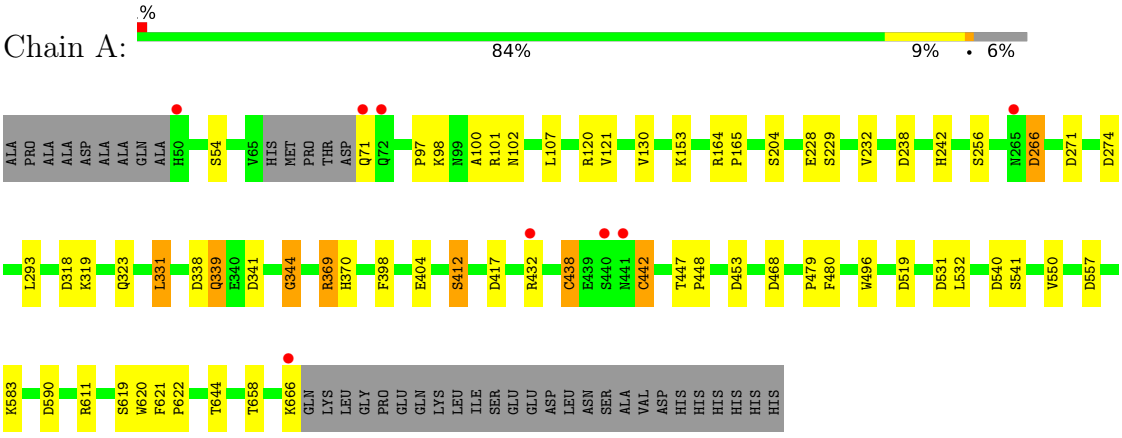
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	G	32	Total O 32 32	0	0
2	H	32	Total O 32 32	0	0

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.

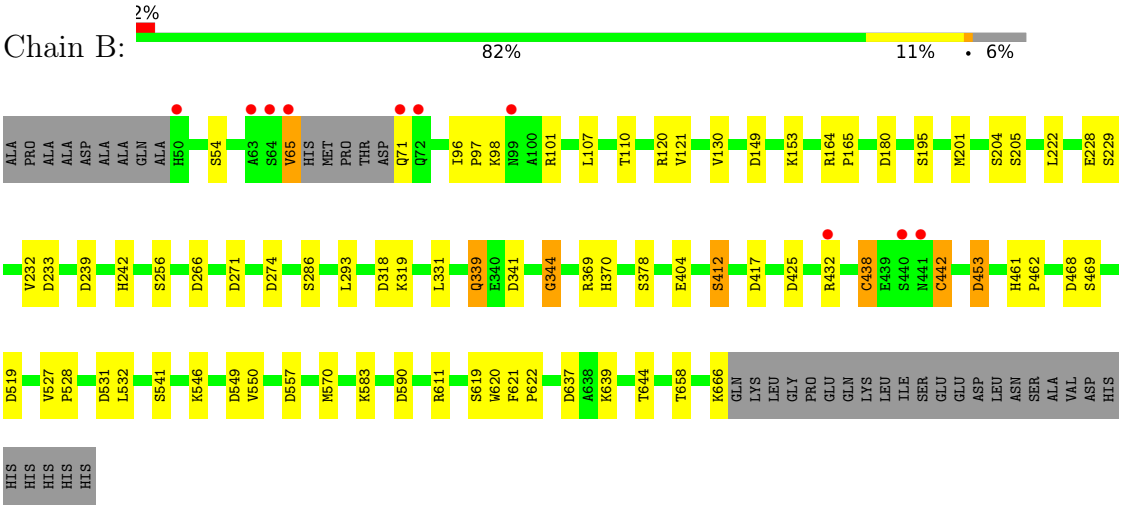
• Molecule 1: alpha-amino acid ester hydrolase

Chain A:



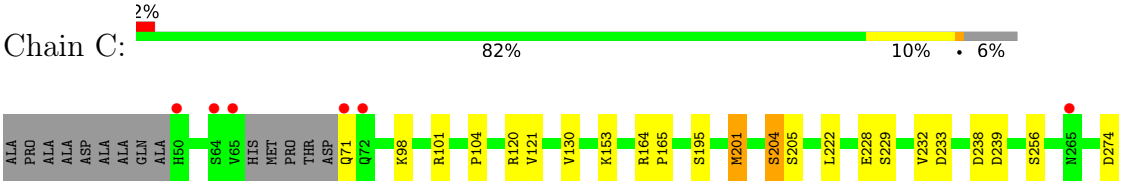
• Molecule 1: alpha-amino acid ester hydrolase

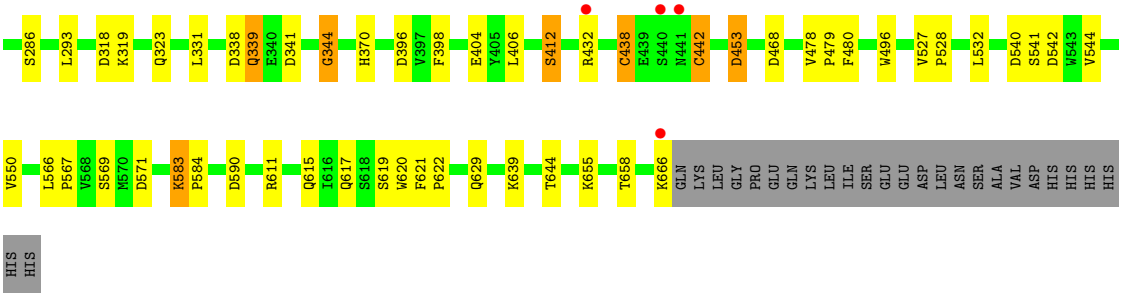
Chain B:



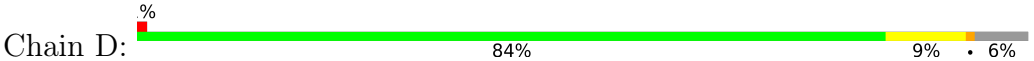
• Molecule 1: alpha-amino acid ester hydrolase

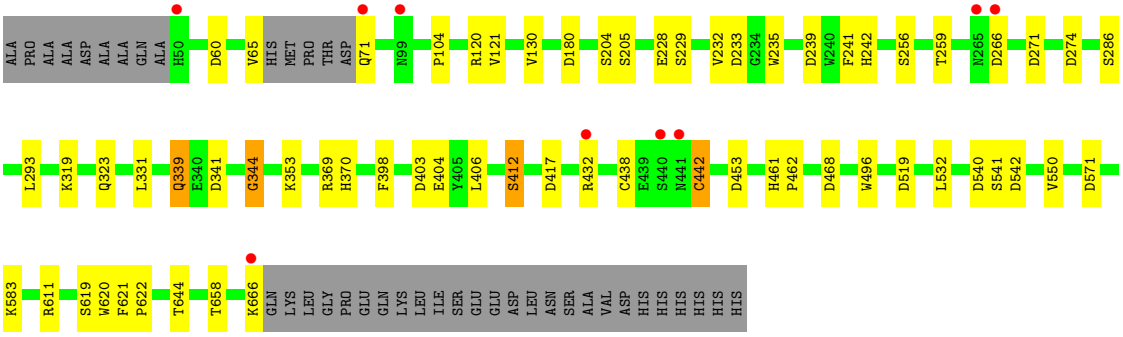
Chain C:



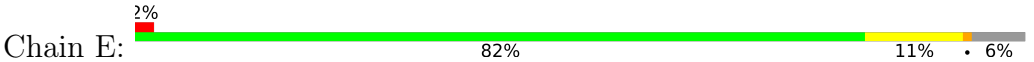


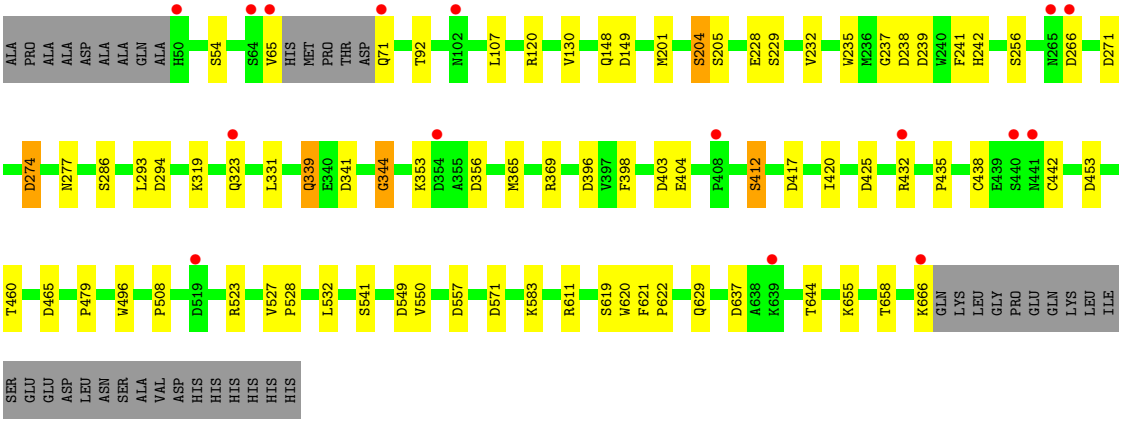
• Molecule 1: alpha-amino acid ester hydrolase



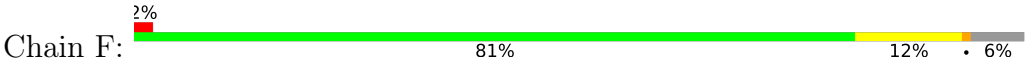


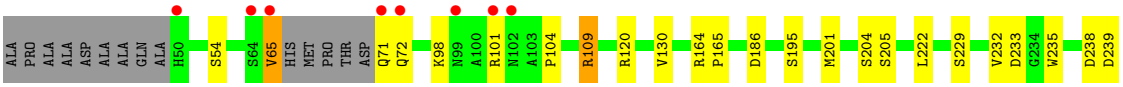
• Molecule 1: alpha-amino acid ester hydrolase

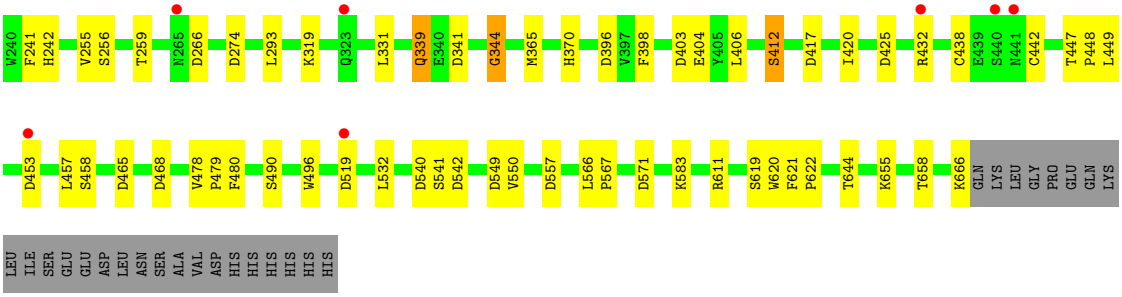




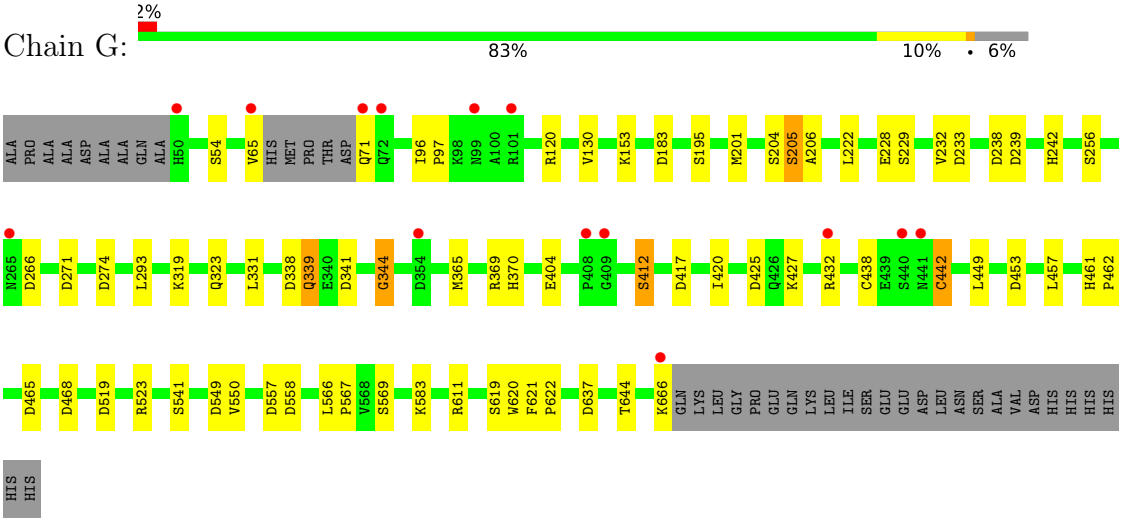
• Molecule 1: alpha-amino acid ester hydrolase



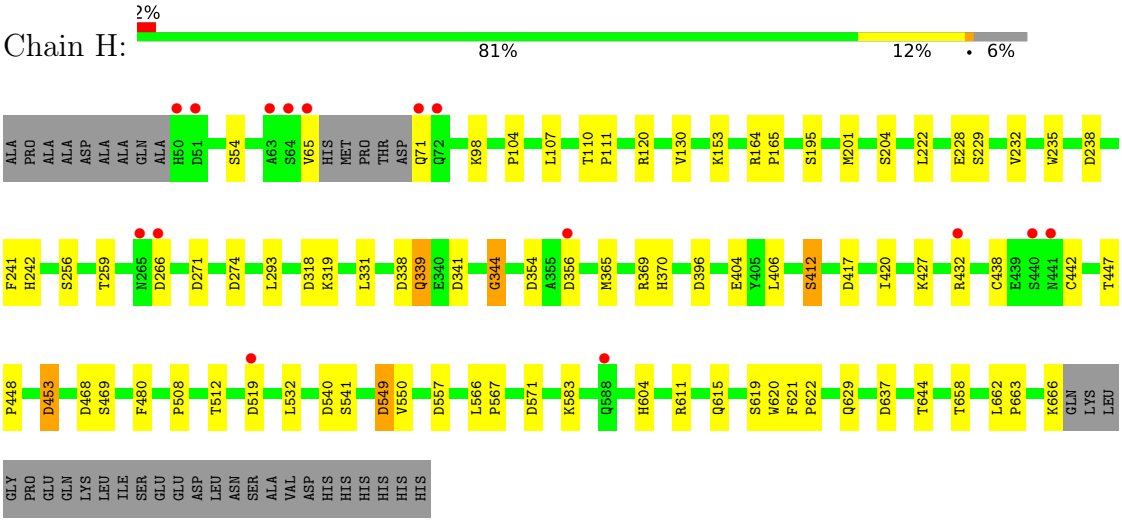




• Molecule 1: alpha-amino acid ester hydrolase



• Molecule 1: alpha-amino acid ester hydrolase



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	91.65Å 177.51Å 169.97Å 90.00° 91.03° 90.00°	Depositor
Resolution (Å)	15.00 – 2.80 15.00 – 2.80	Depositor EDS
% Data completeness (in resolution range)	99.5 (15.00-2.80) 99.5 (15.00-2.80)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.07	Depositor
$< I/\sigma(I) >$ [1]	6.60 (at 2.81Å)	Xtriage
Refinement program	REFMAC 5.1.19	Depositor
R, R_{free}	0.210 , 0.236 0.204 , 0.229	Depositor DCC
R_{free} test set	6623 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å^2)	36.9	Xtriage
Anisotropy	0.033	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 18.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.006 for -h,-l,-k 0.000 for -h,l,k 0.015 for h,-k,-l	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	39009	wwPDB-VP
Average B, all atoms (Å^2)	19.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.80% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ 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	0.24	0/4991	0.80	13/6815 (0.2%)
1	B	0.24	0/4991	0.80	17/6815 (0.2%)
1	C	0.24	0/4991	0.79	14/6815 (0.2%)
1	D	0.24	0/4991	0.80	14/6815 (0.2%)
1	E	0.23	0/4991	0.78	15/6815 (0.2%)
1	F	0.23	0/4991	0.79	16/6815 (0.2%)
1	G	0.23	0/4991	0.79	15/6815 (0.2%)
1	H	0.23	0/4991	0.78	16/6815 (0.2%)
All	All	0.24	0/39928	0.79	120/54520 (0.2%)

There are no bond length outliers.

All (120) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	F	571	ASP	CB-CG-OD2	5.84	123.56	118.30
1	B	239	ASP	CB-CG-OD2	5.80	123.53	118.30
1	C	274	ASP	CB-CG-OD2	5.78	123.50	118.30
1	C	341	ASP	CB-CG-OD2	5.73	123.46	118.30
1	A	341	ASP	CB-CG-OD2	5.69	123.42	118.30
1	F	468	ASP	CB-CG-OD2	5.67	123.41	118.30
1	F	540	ASP	CB-CG-OD2	5.67	123.40	118.30
1	B	549	ASP	CB-CG-OD2	5.66	123.40	118.30
1	D	341	ASP	CB-CG-OD2	5.66	123.39	118.30
1	A	238	ASP	CB-CG-OD2	5.64	123.38	118.30
1	A	274	ASP	CB-CG-OD2	5.64	123.37	118.30
1	G	239	ASP	CB-CG-OD2	5.64	123.37	118.30
1	D	239	ASP	CB-CG-OD2	5.56	123.30	118.30
1	C	239	ASP	CB-CG-OD2	5.50	123.25	118.30
1	H	341	ASP	CB-CG-OD2	5.50	123.25	118.30
1	B	341	ASP	CB-CG-OD2	5.49	123.24	118.30
1	G	549	ASP	CB-CG-OD2	5.46	123.22	118.30
1	G	274	ASP	CB-CG-OD2	5.46	123.21	118.30
1	B	274	ASP	CB-CG-OD2	5.45	123.21	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	519	ASP	CB-CG-OD2	5.43	123.19	118.30
1	D	274	ASP	CB-CG-OD2	5.43	123.19	118.30
1	F	557	ASP	CB-CG-OD2	5.42	123.18	118.30
1	E	238	ASP	CB-CG-OD2	5.40	123.16	118.30
1	E	341	ASP	CB-CG-OD2	5.40	123.16	118.30
1	B	637	ASP	CB-CG-OD2	5.39	123.15	118.30
1	D	233	ASP	CB-CG-OD2	5.39	123.15	118.30
1	E	274	ASP	CB-CG-OD2	5.38	123.14	118.30
1	F	239	ASP	CB-CG-OD2	5.36	123.12	118.30
1	E	557	ASP	CB-CG-OD2	5.36	123.12	118.30
1	A	271	ASP	CB-CG-OD2	5.35	123.11	118.30
1	F	341	ASP	CB-CG-OD2	5.35	123.11	118.30
1	B	590	ASP	CB-CG-OD2	5.33	123.10	118.30
1	H	238	ASP	CB-CG-OD2	5.33	123.10	118.30
1	G	238	ASP	CB-CG-OD2	5.33	123.09	118.30
1	C	238	ASP	CB-CG-OD2	5.32	123.08	118.30
1	A	540	ASP	CB-CG-OD2	5.31	123.08	118.30
1	B	557	ASP	CB-CG-OD2	5.30	123.07	118.30
1	F	233	ASP	CB-CG-OD2	5.29	123.06	118.30
1	B	531	ASP	CB-CG-OD2	5.29	123.06	118.30
1	H	519	ASP	CB-CG-OD2	5.28	123.05	118.30
1	D	60	ASP	CB-CG-OD2	5.27	123.04	118.30
1	G	519	ASP	CB-CG-OD2	5.27	123.04	118.30
1	H	571	ASP	CB-CG-OD2	5.26	123.03	118.30
1	B	121	VAL	N-CA-C	-5.25	96.82	111.00
1	F	238	ASP	CB-CG-OD2	5.25	123.03	118.30
1	F	274	ASP	CB-CG-OD2	5.25	123.03	118.30
1	D	468	ASP	CB-CG-OD2	5.25	123.02	118.30
1	D	540	ASP	CB-CG-OD2	5.25	123.02	118.30
1	H	468	ASP	CB-CG-OD2	5.24	123.02	118.30
1	H	338	ASP	CB-CG-OD2	5.24	123.01	118.30
1	H	453	ASP	CB-CG-OD2	5.24	123.01	118.30
1	D	180	ASP	CB-CG-OD2	5.23	123.01	118.30
1	G	341	ASP	CB-CG-OD2	5.23	123.01	118.30
1	A	590	ASP	CB-CG-OD2	5.22	123.00	118.30
1	G	557	ASP	CB-CG-OD2	5.22	123.00	118.30
1	A	468	ASP	CB-CG-OD2	5.21	122.99	118.30
1	A	557	ASP	CB-CG-OD2	5.21	122.99	118.30
1	G	468	ASP	CB-CG-OD2	5.20	122.98	118.30
1	F	549	ASP	CB-CG-OD2	5.20	122.98	118.30
1	E	549	ASP	CB-CG-OD2	5.19	122.97	118.30
1	C	590	ASP	CB-CG-OD2	5.19	122.97	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	542	ASP	CB-CG-OD2	5.19	122.97	118.30
1	F	186	ASP	CB-CG-OD2	5.19	122.97	118.30
1	F	542	ASP	CB-CG-OD2	5.19	122.97	118.30
1	C	233	ASP	CB-CG-OD2	5.18	122.96	118.30
1	E	465	ASP	CB-CG-OD2	5.18	122.96	118.30
1	B	425	ASP	CB-CG-OD2	5.18	122.96	118.30
1	G	338	ASP	CB-CG-OD2	5.18	122.96	118.30
1	E	571	ASP	CB-CG-OD2	5.17	122.96	118.30
1	G	233	ASP	CB-CG-OD2	5.17	122.95	118.30
1	H	274	ASP	CB-CG-OD2	5.17	122.95	118.30
1	B	468	ASP	CB-CG-OD2	5.17	122.95	118.30
1	H	557	ASP	CB-CG-OD2	5.15	122.94	118.30
1	E	637	ASP	CB-CG-OD2	5.14	122.93	118.30
1	H	354	ASP	CB-CG-OD2	5.14	122.93	118.30
1	H	549	ASP	CB-CG-OD2	5.14	122.93	118.30
1	C	338	ASP	CB-CG-OD2	5.13	122.92	118.30
1	E	271	ASP	CB-CG-OD2	5.13	122.92	118.30
1	B	149	ASP	CB-CG-OD2	5.13	122.92	118.30
1	G	465	ASP	CB-CG-OD2	5.12	122.91	118.30
1	G	558	ASP	CB-CG-OD2	5.12	122.91	118.30
1	D	571	ASP	CB-CG-OD2	5.12	122.91	118.30
1	H	540	ASP	CB-CG-OD2	5.12	122.91	118.30
1	A	121	VAL	N-CA-C	-5.11	97.20	111.00
1	A	266	ASP	CB-CG-OD2	5.11	122.90	118.30
1	E	239	ASP	CB-CG-OD2	5.10	122.89	118.30
1	A	531	ASP	CB-CG-OD2	5.10	122.89	118.30
1	B	453	ASP	CB-CG-OD2	5.09	122.88	118.30
1	G	637	ASP	CB-CG-OD2	5.09	122.88	118.30
1	C	468	ASP	CB-CG-OD2	5.09	122.88	118.30
1	D	519	ASP	CB-CG-OD2	5.09	122.88	118.30
1	B	271	ASP	CB-CG-OD2	5.08	122.87	118.30
1	E	356	ASP	CB-CG-OD2	5.08	122.87	118.30
1	H	356	ASP	CB-CG-OD2	5.08	122.87	118.30
1	C	571	ASP	CB-CG-OD2	5.08	122.87	118.30
1	C	453	ASP	CB-CG-OD2	5.07	122.87	118.30
1	G	183	ASP	CB-CG-OD2	5.07	122.86	118.30
1	H	396	ASP	CB-CG-OD2	5.07	122.86	118.30
1	F	425	ASP	CB-CG-OD2	5.07	122.86	118.30
1	D	403	ASP	CB-CG-OD2	5.05	122.85	118.30
1	D	121	VAL	N-CA-C	-5.05	97.36	111.00
1	G	271	ASP	CB-CG-OD2	5.05	122.85	118.30
1	H	637	ASP	CB-CG-OD2	5.05	122.85	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	396	ASP	CB-CG-OD2	5.05	122.84	118.30
1	A	519	ASP	CB-CG-OD2	5.04	122.84	118.30
1	C	542	ASP	CB-CG-OD2	5.04	122.84	118.30
1	D	271	ASP	CB-CG-OD2	5.04	122.83	118.30
1	C	540	ASP	CB-CG-OD2	5.04	122.83	118.30
1	E	294	ASP	CB-CG-OD2	5.04	122.83	118.30
1	F	403	ASP	CB-CG-OD2	5.04	122.83	118.30
1	B	180	ASP	CB-CG-OD2	5.02	122.82	118.30
1	C	121	VAL	N-CA-C	-5.02	97.44	111.00
1	H	271	ASP	CB-CG-OD2	5.02	122.81	118.30
1	E	149	ASP	CB-CG-OD2	5.01	122.81	118.30
1	E	403	ASP	CB-CG-OD2	5.01	122.81	118.30
1	F	519	ASP	CB-CG-OD2	5.01	122.81	118.30
1	F	396	ASP	CB-CG-OD2	5.01	122.81	118.30
1	E	396	ASP	CB-CG-OD2	5.01	122.81	118.30
1	A	338	ASP	CB-CG-OD2	5.00	122.80	118.30
1	B	233	ASP	CB-CG-OD2	5.00	122.81	118.30

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	4836	0	4609	21	0
1	B	4836	0	4609	22	0
1	C	4836	0	4609	22	0
1	D	4836	0	4609	16	0
1	E	4836	0	4609	17	0
1	F	4836	0	4609	22	0
1	G	4836	0	4609	19	0
1	H	4836	0	4609	28	0
2	A	66	0	0	0	0
2	B	56	0	0	0	0
2	C	43	0	0	0	0
2	D	55	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	E	15	0	0	0	0
2	F	22	0	0	0	0
2	G	32	0	0	0	0
2	H	32	0	0	0	0
All	All	39009	0	36872	164	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 2.

All (164) 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:550:VAL:HB	1:G:611:ARG:HB2	1.68	0.75
1:C:550:VAL:HB	1:C:611:ARG:HB2	1.69	0.74
1:C:339:GLN:HE21	1:C:339:GLN:H	1.38	0.71
1:A:550:VAL:HB	1:A:611:ARG:HB2	1.73	0.70
1:H:550:VAL:HB	1:H:611:ARG:HB2	1.75	0.69
1:D:550:VAL:HB	1:D:611:ARG:HB2	1.75	0.67
1:B:550:VAL:HB	1:B:611:ARG:HB2	1.76	0.66
1:E:550:VAL:HB	1:E:611:ARG:HB2	1.79	0.63
1:C:339:GLN:HE22	1:C:370:HIS:H	1.47	0.61
1:F:550:VAL:HB	1:F:611:ARG:HB2	1.82	0.61
1:A:339:GLN:HE22	1:A:370:HIS:H	1.46	0.61
1:A:97:PRO:HG2	1:A:100:ALA:HB2	1.84	0.59
1:A:339:GLN:HE21	1:A:339:GLN:H	1.48	0.59
1:F:339:GLN:HE22	1:F:370:HIS:H	1.51	0.58
1:C:404:GLU:HG3	1:C:412:SER:HA	1.86	0.57
1:D:339:GLN:HE22	1:D:370:HIS:H	1.52	0.56
1:G:339:GLN:HE22	1:G:370:HIS:H	1.53	0.56
1:A:438:CYS:HG	1:A:442:CYS:HG	1.54	0.55
1:F:339:GLN:HE21	1:F:339:GLN:H	1.54	0.55
1:C:339:GLN:H	1:C:339:GLN:NE2	2.04	0.54
1:H:404:GLU:HG3	1:H:412:SER:HA	1.90	0.54
1:D:339:GLN:NE2	1:D:339:GLN:H	2.06	0.53
1:D:204:SER:HA	1:D:228:GLU:O	2.09	0.53
1:D:404:GLU:HG3	1:D:412:SER:HA	1.91	0.53
1:G:438:CYS:HG	1:G:442:CYS:HG	1.55	0.52
1:B:65:VAL:HG11	1:D:259:THR:HG23	1.92	0.52
1:C:232:VAL:HB	1:C:344:GLY:HA2	1.90	0.52
1:A:339:GLN:NE2	1:A:370:HIS:H	2.08	0.52
1:E:404:GLU:HG3	1:E:412:SER:HA	1.90	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:438:CYS:HG	1:C:442:CYS:HG	1.58	0.51
1:A:232:VAL:HB	1:A:344:GLY:HA2	1.93	0.51
1:H:339:GLN:HE22	1:H:370:HIS:H	1.58	0.51
1:H:232:VAL:HB	1:H:344:GLY:HA2	1.93	0.50
1:C:339:GLN:NE2	1:C:370:HIS:H	2.09	0.50
1:C:532:LEU:HA	1:C:658:THR:HG23	1.94	0.50
1:G:404:GLU:HG3	1:G:412:SER:HA	1.93	0.49
1:H:532:LEU:HA	1:H:658:THR:HG23	1.93	0.49
1:A:339:GLN:H	1:A:339:GLN:NE2	2.11	0.49
1:B:404:GLU:HG3	1:B:412:SER:HA	1.94	0.49
1:B:232:VAL:HB	1:B:344:GLY:HA2	1.94	0.49
1:D:438:CYS:HG	1:D:442:CYS:HG	1.60	0.48
1:B:339:GLN:HE22	1:B:370:HIS:H	1.60	0.48
1:E:204:SER:HA	1:E:228:GLU:O	2.12	0.48
1:D:232:VAL:HB	1:D:344:GLY:HA2	1.95	0.48
1:F:65:VAL:HG11	1:H:259:THR:HG23	1.96	0.48
1:G:201:MET:HB2	1:G:222:LEU:HD11	1.95	0.47
1:F:339:GLN:NE2	1:F:370:HIS:H	2.12	0.47
1:A:621:PHE:CG	1:A:622:PRO:HA	2.49	0.47
1:G:425:ASP:OD2	1:G:523:ARG:NH1	2.43	0.47
1:D:339:GLN:H	1:D:339:GLN:HE21	1.62	0.47
1:E:339:GLN:HE22	1:E:369:ARG:HB2	1.79	0.47
1:E:532:LEU:HA	1:E:658:THR:HG23	1.96	0.47
1:A:318:ASP:OD1	1:A:318:ASP:N	2.47	0.47
1:F:339:GLN:H	1:F:339:GLN:NE2	2.13	0.47
1:H:339:GLN:H	1:H:339:GLN:HE21	1.62	0.46
1:H:621:PHE:CG	1:H:622:PRO:HA	2.50	0.46
1:F:532:LEU:HA	1:F:658:THR:HG23	1.96	0.46
1:D:461:HIS:HA	1:D:462:PRO:HD3	1.78	0.46
1:E:508:PRO:HG2	1:H:508:PRO:HG2	1.98	0.46
1:B:318:ASP:N	1:B:318:ASP:OD1	2.48	0.46
1:B:438:CYS:HG	1:B:442:CYS:HG	1.61	0.45
1:C:104:PRO:HB3	1:C:406:LEU:HB3	1.98	0.45
1:H:153:LYS:HA	1:H:153:LYS:HD2	1.77	0.45
1:D:369:ARG:H	1:D:369:ARG:HG3	1.60	0.45
1:F:235:TRP:HA	1:F:241:PHE:HB2	1.98	0.45
1:B:369:ARG:H	1:B:369:ARG:HG3	1.60	0.45
1:B:546:LYS:HA	1:B:570:MET:HB3	1.99	0.45
1:F:164:ARG:HA	1:F:165:PRO:HD3	1.84	0.45
1:G:339:GLN:HE21	1:G:339:GLN:H	1.64	0.45
1:A:532:LEU:HA	1:A:658:THR:HG23	1.98	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:339:GLN:HE21	1:B:339:GLN:H	1.65	0.44
1:E:235:TRP:HA	1:E:241:PHE:HB2	1.98	0.44
1:H:164:ARG:HA	1:H:165:PRO:HD3	1.84	0.44
1:B:339:GLN:HE22	1:B:369:ARG:HB2	1.82	0.44
1:C:204:SER:HA	1:C:228:GLU:O	2.18	0.44
1:F:621:PHE:CG	1:F:622:PRO:HA	2.53	0.44
1:A:404:GLU:HG3	1:A:412:SER:HA	1.98	0.44
1:H:104:PRO:HB3	1:H:406:LEU:HB3	1.99	0.44
1:F:404:GLU:HG3	1:F:412:SER:HA	1.99	0.44
1:E:339:GLN:HE21	1:E:339:GLN:H	1.65	0.44
1:F:201:MET:HB2	1:F:222:LEU:HD11	1.99	0.44
1:D:235:TRP:HA	1:D:241:PHE:HB2	1.98	0.44
1:F:109:ARG:HG3	1:F:201:MET:HE3	2.00	0.44
1:H:339:GLN:HE22	1:H:369:ARG:HB2	1.82	0.44
1:C:318:ASP:OD1	1:C:318:ASP:N	2.48	0.44
1:G:153:LYS:HD2	1:G:153:LYS:HA	1.76	0.43
1:G:204:SER:HA	1:G:228:GLU:O	2.18	0.43
1:B:339:GLN:H	1:B:339:GLN:NE2	2.17	0.43
1:C:621:PHE:CG	1:C:622:PRO:HA	2.53	0.43
1:F:480:PHE:CE1	1:F:622:PRO:HD2	2.53	0.43
1:A:204:SER:HA	1:A:228:GLU:O	2.18	0.43
1:B:153:LYS:HA	1:B:153:LYS:HD2	1.79	0.43
1:A:447:THR:HA	1:A:448:PRO:HD3	1.89	0.43
1:C:153:LYS:HA	1:C:153:LYS:HD2	1.67	0.43
1:F:255:VAL:O	1:F:259:THR:OG1	2.21	0.43
1:A:369:ARG:H	1:A:369:ARG:HG3	1.68	0.43
1:D:532:LEU:HA	1:D:658:THR:HG23	2.01	0.43
1:G:232:VAL:HB	1:G:344:GLY:HA2	2.00	0.43
1:H:566:LEU:HA	1:H:567:PRO:HD3	1.91	0.43
1:E:621:PHE:CG	1:E:622:PRO:HA	2.54	0.43
1:G:339:GLN:H	1:G:339:GLN:NE2	2.17	0.43
1:G:621:PHE:CG	1:G:622:PRO:HA	2.53	0.43
1:H:549:ASP:OD2	1:H:604:HIS:NE2	2.42	0.43
1:B:164:ARG:HA	1:B:165:PRO:HD3	1.82	0.43
1:H:318:ASP:OD1	1:H:318:ASP:N	2.51	0.43
1:B:621:PHE:CG	1:B:622:PRO:HA	2.54	0.43
1:D:621:PHE:CG	1:D:622:PRO:HA	2.54	0.43
1:C:527:VAL:HA	1:C:528:PRO:HD3	1.88	0.42
1:F:232:VAL:HB	1:F:344:GLY:HA2	1.99	0.42
1:G:566:LEU:HA	1:G:567:PRO:HD3	1.92	0.42
1:A:164:ARG:HA	1:A:165:PRO:HD3	1.86	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:449:LEU:HG	1:G:457:LEU:HD22	2.02	0.42
1:H:480:PHE:CE1	1:H:622:PRO:HD2	2.55	0.42
1:A:331:LEU:HD23	1:A:331:LEU:HA	1.94	0.42
1:C:583:LYS:HA	1:C:584:PRO:HD2	1.94	0.42
1:G:365:MET:HB2	1:G:420:ILE:HG23	2.01	0.42
1:B:461:HIS:HA	1:B:462:PRO:HD3	1.85	0.42
1:B:532:LEU:HA	1:B:658:THR:HG23	2.01	0.42
1:D:339:GLN:NE2	1:D:370:HIS:H	2.17	0.42
1:C:164:ARG:HA	1:C:165:PRO:HD3	1.86	0.42
1:F:478:VAL:HA	1:F:479:PRO:HD3	1.95	0.42
1:A:153:LYS:HA	1:A:153:LYS:HD2	1.80	0.42
1:A:339:GLN:HE22	1:A:369:ARG:HB2	1.84	0.42
1:A:480:PHE:CE1	1:A:622:PRO:HD2	2.54	0.42
1:E:92:THR:HG23	1:E:148:GLN:HB2	2.01	0.42
1:F:447:THR:HA	1:F:448:PRO:HD3	1.86	0.42
1:G:205:SER:HB3	1:G:206:ALA:H	1.63	0.41
1:A:479:PRO:HA	1:A:621:PHE:O	2.20	0.41
1:B:339:GLN:NE2	1:B:370:HIS:H	2.18	0.41
1:F:449:LEU:HG	1:F:457:LEU:HD22	2.02	0.41
1:H:339:GLN:H	1:H:339:GLN:NE2	2.19	0.41
1:B:204:SER:HA	1:B:228:GLU:O	2.21	0.41
1:H:369:ARG:H	1:H:369:ARG:HG3	1.61	0.41
1:C:478:VAL:HA	1:C:479:PRO:HD3	1.93	0.41
1:H:235:TRP:HA	1:H:241:PHE:HB2	2.02	0.41
1:E:232:VAL:HB	1:E:344:GLY:HA2	2.01	0.41
1:B:527:VAL:HA	1:B:528:PRO:HD3	1.90	0.41
1:E:339:GLN:H	1:E:339:GLN:NE2	2.19	0.41
1:B:201:MET:HB2	1:B:222:LEU:HD11	2.02	0.41
1:G:461:HIS:HA	1:G:462:PRO:HD3	1.73	0.41
1:H:204:SER:HA	1:H:228:GLU:O	2.21	0.41
1:C:544:VAL:HB	1:C:617:GLN:HG2	2.02	0.41
1:F:365:MET:HB2	1:F:420:ILE:HG23	2.02	0.41
1:B:96:ILE:HA	1:B:97:PRO:HD3	1.89	0.41
1:C:566:LEU:HA	1:C:567:PRO:HD3	1.90	0.41
1:E:274:ASP:HA	1:E:277:ASN:HB2	2.02	0.41
1:E:365:MET:HB2	1:E:420:ILE:HG23	2.02	0.41
1:F:566:LEU:HA	1:F:567:PRO:HD3	1.93	0.41
1:G:96:ILE:HA	1:G:97:PRO:HD3	1.95	0.41
1:G:339:GLN:NE2	1:G:370:HIS:H	2.18	0.41
1:H:110:THR:HA	1:H:111:PRO:HD3	1.98	0.41
1:H:447:THR:HA	1:H:448:PRO:HD3	1.87	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:480:PHE:CE1	1:C:622:PRO:HD2	2.56	0.41
1:H:662:LEU:HA	1:H:663:PRO:HD3	1.99	0.41
1:H:339:GLN:NE2	1:H:370:HIS:H	2.18	0.40
1:D:104:PRO:HB3	1:D:406:LEU:HB3	2.02	0.40
1:C:201:MET:HB2	1:C:222:LEU:HD11	2.02	0.40
1:E:425:ASP:OD2	1:E:523:ARG:NH1	2.48	0.40
1:E:527:VAL:HA	1:E:528:PRO:HD3	1.91	0.40
1:H:201:MET:HB2	1:H:222:LEU:HD11	2.02	0.40
1:H:365:MET:HB2	1:H:420:ILE:HG23	2.02	0.40
1:H:512:THR:HG23	1:H:615:GLN:HG3	2.03	0.40
1:E:479:PRO:HA	1:E:621:PHE:O	2.20	0.40
1:F:104:PRO:HB3	1:F:406:LEU:HB3	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	608/652 (93%)	571 (94%)	36 (6%)	1 (0%)	47	78
1	B	608/652 (93%)	574 (94%)	33 (5%)	1 (0%)	47	78
1	C	608/652 (93%)	580 (95%)	27 (4%)	1 (0%)	47	78
1	D	608/652 (93%)	576 (95%)	31 (5%)	1 (0%)	47	78
1	E	608/652 (93%)	573 (94%)	33 (5%)	2 (0%)	41	72
1	F	608/652 (93%)	578 (95%)	29 (5%)	1 (0%)	47	78
1	G	608/652 (93%)	574 (94%)	33 (5%)	1 (0%)	47	78
1	H	608/652 (93%)	571 (94%)	36 (6%)	1 (0%)	47	78
All	All	4864/5216 (93%)	4597 (94%)	258 (5%)	9 (0%)	47	78

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	344	GLY
1	B	344	GLY
1	C	344	GLY
1	D	344	GLY
1	E	344	GLY
1	F	344	GLY
1	G	344	GLY
1	H	344	GLY
1	E	237	GLY

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	511/543 (94%)	479 (94%)	32 (6%)	18	46
1	B	511/543 (94%)	476 (93%)	35 (7%)	16	42
1	C	511/543 (94%)	476 (93%)	35 (7%)	16	42
1	D	511/543 (94%)	482 (94%)	29 (6%)	20	50
1	E	511/543 (94%)	473 (93%)	38 (7%)	13	37
1	F	511/543 (94%)	473 (93%)	38 (7%)	13	37
1	G	511/543 (94%)	481 (94%)	30 (6%)	19	49
1	H	511/543 (94%)	480 (94%)	31 (6%)	18	48
All	All	4088/4344 (94%)	3820 (93%)	268 (7%)	16	44

All (268) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	54	SER
1	A	71	GLN
1	A	98	LYS
1	A	101	ARG
1	A	102	ASN
1	A	107	LEU
1	A	120	ARG

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Mol	Chain	Res	Type
1	A	130	VAL
1	A	229	SER
1	A	242	HIS
1	A	256	SER
1	A	266	ASP
1	A	293	LEU
1	A	319	LYS
1	A	323	GLN
1	A	331	LEU
1	A	339	GLN
1	A	369	ARG
1	A	398	PHE
1	A	412	SER
1	A	417	ASP
1	A	432	ARG
1	A	438	CYS
1	A	442	CYS
1	A	453	ASP
1	A	496	TRP
1	A	541	SER
1	A	583	LYS
1	A	619	SER
1	A	620	TRP
1	A	644	THR
1	A	666	LYS
1	B	54	SER
1	B	65	VAL
1	B	71	GLN
1	B	98	LYS
1	B	101	ARG
1	B	107	LEU
1	B	110	THR
1	B	120	ARG
1	B	130	VAL
1	B	195	SER
1	B	205	SER
1	B	229	SER
1	B	242	HIS
1	B	256	SER
1	B	266	ASP
1	B	286	SER
1	B	293	LEU

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Mol	Chain	Res	Type
1	B	319	LYS
1	B	331	LEU
1	B	339	GLN
1	B	378	SER
1	B	412	SER
1	B	417	ASP
1	B	432	ARG
1	B	438	CYS
1	B	442	CYS
1	B	453	ASP
1	B	469	SER
1	B	541	SER
1	B	583	LYS
1	B	619	SER
1	B	620	TRP
1	B	639	LYS
1	B	644	THR
1	B	666	LYS
1	C	71	GLN
1	C	98	LYS
1	C	101	ARG
1	C	120	ARG
1	C	130	VAL
1	C	195	SER
1	C	201	MET
1	C	204	SER
1	C	205	SER
1	C	229	SER
1	C	256	SER
1	C	286	SER
1	C	293	LEU
1	C	319	LYS
1	C	323	GLN
1	C	331	LEU
1	C	339	GLN
1	C	398	PHE
1	C	412	SER
1	C	432	ARG
1	C	438	CYS
1	C	442	CYS
1	C	453	ASP
1	C	496	TRP

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Mol	Chain	Res	Type
1	C	541	SER
1	C	569	SER
1	C	583	LYS
1	C	615	GLN
1	C	619	SER
1	C	620	TRP
1	C	629	GLN
1	C	639	LYS
1	C	644	THR
1	C	655	LYS
1	C	666	LYS
1	D	65	VAL
1	D	71	GLN
1	D	120	ARG
1	D	130	VAL
1	D	205	SER
1	D	229	SER
1	D	242	HIS
1	D	256	SER
1	D	266	ASP
1	D	286	SER
1	D	293	LEU
1	D	319	LYS
1	D	323	GLN
1	D	331	LEU
1	D	339	GLN
1	D	353	LYS
1	D	398	PHE
1	D	412	SER
1	D	417	ASP
1	D	432	ARG
1	D	442	CYS
1	D	453	ASP
1	D	496	TRP
1	D	541	SER
1	D	583	LYS
1	D	619	SER
1	D	620	TRP
1	D	644	THR
1	D	666	LYS
1	E	54	SER
1	E	65	VAL

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Mol	Chain	Res	Type
1	E	71	GLN
1	E	107	LEU
1	E	120	ARG
1	E	130	VAL
1	E	201	MET
1	E	204	SER
1	E	205	SER
1	E	229	SER
1	E	242	HIS
1	E	256	SER
1	E	266	ASP
1	E	286	SER
1	E	293	LEU
1	E	319	LYS
1	E	323	GLN
1	E	331	LEU
1	E	339	GLN
1	E	353	LYS
1	E	398	PHE
1	E	412	SER
1	E	417	ASP
1	E	432	ARG
1	E	435	PRO
1	E	438	CYS
1	E	442	CYS
1	E	453	ASP
1	E	460	THR
1	E	496	TRP
1	E	541	SER
1	E	583	LYS
1	E	619	SER
1	E	620	TRP
1	E	629	GLN
1	E	644	THR
1	E	655	LYS
1	E	666	LYS
1	F	54	SER
1	F	65	VAL
1	F	71	GLN
1	F	72	GLN
1	F	98	LYS
1	F	101	ARG

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Mol	Chain	Res	Type
1	F	109	ARG
1	F	120	ARG
1	F	130	VAL
1	F	195	SER
1	F	204	SER
1	F	205	SER
1	F	229	SER
1	F	242	HIS
1	F	256	SER
1	F	266	ASP
1	F	293	LEU
1	F	319	LYS
1	F	331	LEU
1	F	339	GLN
1	F	398	PHE
1	F	412	SER
1	F	417	ASP
1	F	432	ARG
1	F	438	CYS
1	F	442	CYS
1	F	453	ASP
1	F	458	SER
1	F	465	ASP
1	F	490	SER
1	F	496	TRP
1	F	541	SER
1	F	583	LYS
1	F	619	SER
1	F	620	TRP
1	F	644	THR
1	F	655	LYS
1	F	666	LYS
1	G	54	SER
1	G	65	VAL
1	G	71	GLN
1	G	120	ARG
1	G	130	VAL
1	G	195	SER
1	G	205	SER
1	G	229	SER
1	G	242	HIS
1	G	256	SER

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Mol	Chain	Res	Type
1	G	266	ASP
1	G	293	LEU
1	G	319	LYS
1	G	323	GLN
1	G	331	LEU
1	G	339	GLN
1	G	369	ARG
1	G	412	SER
1	G	417	ASP
1	G	427	LYS
1	G	432	ARG
1	G	442	CYS
1	G	453	ASP
1	G	541	SER
1	G	569	SER
1	G	583	LYS
1	G	619	SER
1	G	620	TRP
1	G	644	THR
1	G	666	LYS
1	H	54	SER
1	H	65	VAL
1	H	71	GLN
1	H	98	LYS
1	H	107	LEU
1	H	120	ARG
1	H	130	VAL
1	H	195	SER
1	H	229	SER
1	H	242	HIS
1	H	256	SER
1	H	266	ASP
1	H	293	LEU
1	H	319	LYS
1	H	331	LEU
1	H	339	GLN
1	H	412	SER
1	H	417	ASP
1	H	427	LYS
1	H	432	ARG
1	H	438	CYS
1	H	442	CYS

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Mol	Chain	Res	Type
1	H	453	ASP
1	H	469	SER
1	H	541	SER
1	H	583	LYS
1	H	619	SER
1	H	620	TRP
1	H	629	GLN
1	H	644	THR
1	H	666	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (25) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	113	ASN
1	A	133	GLN
1	A	339	GLN
1	B	113	ASN
1	B	133	GLN
1	B	339	GLN
1	C	113	ASN
1	C	133	GLN
1	C	339	GLN
1	D	113	ASN
1	D	133	GLN
1	D	339	GLN
1	E	133	GLN
1	E	339	GLN
1	F	99	ASN
1	F	113	ASN
1	F	133	GLN
1	F	339	GLN
1	G	113	ASN
1	G	133	GLN
1	G	339	GLN
1	G	652	HIS
1	H	113	ASN
1	H	133	GLN
1	H	339	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

There are no monosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

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

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} 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	612/652 (93%)	-0.44	8 (1%)	77	72	20, 20, 20, 20	0
1	B	612/652 (93%)	-0.41	10 (1%)	72	66	20, 20, 20, 20	0
1	C	612/652 (93%)	-0.38	10 (1%)	72	66	20, 20, 20, 20	0
1	D	612/652 (93%)	-0.38	9 (1%)	73	68	20, 20, 20, 20	0
1	E	612/652 (93%)	-0.07	16 (2%)	56	46	20, 20, 20, 20	0
1	F	612/652 (93%)	-0.17	15 (2%)	57	47	20, 20, 20, 20	0
1	G	612/652 (93%)	-0.26	14 (2%)	60	51	20, 20, 20, 20	0
1	H	612/652 (93%)	-0.18	15 (2%)	57	47	20, 20, 20, 20	0
All	All	4896/5216 (93%)	-0.29	97 (1%)	65	56	20, 20, 20, 20	0

All (97) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	50	HIS	6.3
1	H	50	HIS	5.9
1	D	50	HIS	4.9
1	A	441	ASN	4.9
1	G	71	GLN	4.7
1	F	71	GLN	4.7
1	C	71	GLN	4.7
1	B	71	GLN	4.2
1	C	441	ASN	4.2
1	E	441	ASN	4.0
1	F	441	ASN	4.0
1	A	71	GLN	4.0
1	E	65	VAL	3.9
1	B	50	HIS	3.8
1	H	441	ASN	3.8
1	D	265	ASN	3.7

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Mol	Chain	Res	Type	RSRZ
1	D	71	GLN	3.6
1	E	50	HIS	3.5
1	D	441	ASN	3.5
1	H	71	GLN	3.5
1	F	64	SER	3.4
1	F	50	HIS	3.4
1	F	65	VAL	3.4
1	F	432	ARG	3.3
1	E	265	ASN	3.3
1	D	666	LYS	3.2
1	C	65	VAL	3.2
1	B	441	ASN	3.2
1	E	71	GLN	3.2
1	B	64	SER	3.1
1	G	409	GLY	3.1
1	B	99	ASN	3.0
1	G	441	ASN	3.0
1	A	50	HIS	3.0
1	F	99	ASN	2.9
1	F	519	ASP	2.9
1	E	432	ARG	2.9
1	H	65	VAL	2.9
1	E	266	ASP	2.9
1	F	102	ASN	2.9
1	H	265	ASN	2.7
1	D	440	SER	2.7
1	E	440	SER	2.7
1	G	265	ASN	2.7
1	E	354	ASP	2.7
1	B	63	ALA	2.7
1	H	432	ARG	2.6
1	G	440	SER	2.6
1	G	432	ARG	2.6
1	G	50	HIS	2.6
1	C	64	SER	2.6
1	G	65	VAL	2.6
1	H	64	SER	2.6
1	F	265	ASN	2.6
1	G	101	ARG	2.5
1	A	265	ASN	2.5
1	E	102	ASN	2.5
1	G	354	ASP	2.4

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Mol	Chain	Res	Type	RSRZ
1	G	408	PRO	2.4
1	D	266	ASP	2.4
1	C	432	ARG	2.3
1	B	432	ARG	2.3
1	A	666	LYS	2.3
1	G	99	ASN	2.3
1	B	65	VAL	2.3
1	H	63	ALA	2.3
1	H	266	ASP	2.3
1	H	356	ASP	2.3
1	C	72	GLN	2.2
1	B	440	SER	2.2
1	D	432	ARG	2.2
1	G	72	GLN	2.2
1	C	265	ASN	2.2
1	E	519	ASP	2.2
1	H	51	ASP	2.2
1	F	453	ASP	2.2
1	F	72	GLN	2.2
1	A	440	SER	2.2
1	E	323	GLN	2.2
1	C	440	SER	2.2
1	E	666	LYS	2.1
1	E	408	PRO	2.1
1	E	639	LYS	2.1
1	B	72	GLN	2.1
1	H	440	SER	2.1
1	F	440	SER	2.1
1	A	72	GLN	2.1
1	H	588	GLN	2.1
1	H	519	ASP	2.1
1	G	666	LYS	2.1
1	H	72	GLN	2.1
1	D	99	ASN	2.0
1	E	64	SER	2.0
1	A	432	ARG	2.0
1	F	323	GLN	2.0
1	F	101	ARG	2.0
1	C	666	LYS	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 monosaccharides in this entry.

6.4 Ligands (i)

There are no ligands in this entry.

6.5 Other polymers (i)

There are no such residues in this entry.