wwPDB X-ray Structure Validation Summary Report (i)

Oct 16, 2023 – 06:13 PM JST

PDB ID	:	8H58
Title	:	Crystal structure of YhaJ effector binding domain
Authors	:	Kim, M.; Ryu, S.E.
Deposited on	:	2022-10-12
Resolution	:	2.64 Å(reported)

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

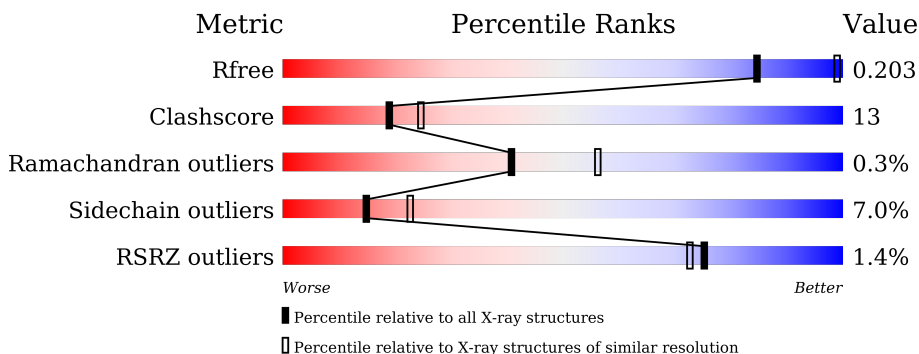|		
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 2.64 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	Percentile Ranks	Value
Rfree		0.203
Clashscore		13
Ramachandran outliers		0.3%
Sidechain outliers		7.0%
RSRZ outliers		1.4%

Worse   Better

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1426 (2.66-2.62)
Clashscore	141614	1472 (2.66-2.62)
Ramachandran outliers	138981	1446 (2.66-2.62)
Sidechain outliers	138945	1446 (2.66-2.62)
RSRZ outliers	127900	1408 (2.66-2.62)

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	207	76% 15% 5% ··
1	B	207	2% / 71% 26% ··
1	C	207	69% 24% 5% ·
1	D	207	3% / 72% 23% ···
1	E	207	% / 71% 23% · · ·
1	F	207	2% / 74% 22% ··

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Mol	Chain	Length	Quality of chain
1	G	207	2% · · / 70% 24%
1	H	207	3% · · / 71% 24%
1	I	207	% · · / 75% 17%
1	J	207	% · · / 71% 25%
1	K	207	· · / 75% 20%
1	L	207	% · · / 65% 30%
1	M	207	% · · / 70% 25%
1	N	207	% · · · / 69% 26%
1	O	207	· · / 78% 15%
1	P	207	% · · / 69% 26%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 25530 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 HTH-type transcriptional regulator YhaJ.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	202	Total 1584	C 1006	N 278	O 293	S 7	0	0	0
1	B	204	Total 1593	C 1011	N 279	O 295	S 8	0	0	0
1	C	202	Total 1584	C 1006	N 278	O 293	S 7	0	0	0
1	D	204	Total 1593	C 1010	N 278	O 297	S 8	0	0	0
1	E	202	Total 1584	C 1006	N 278	O 293	S 7	0	0	0
1	F	205	Total 1606	C 1019	N 281	O 298	S 8	0	0	0
1	G	202	Total 1584	C 1006	N 278	O 293	S 7	0	0	0
1	H	203	Total 1593	C 1011	N 278	O 296	S 8	0	0	0
1	I	201	Total 1575	C 1000	N 276	O 292	S 7	0	0	0
1	J	204	Total 1593	C 1011	N 279	O 295	S 8	0	0	0
1	K	202	Total 1584	C 1006	N 278	O 293	S 7	0	0	0
1	L	203	Total 1592	C 1010	N 278	O 296	S 8	0	0	0
1	M	203	Total 1593	C 1011	N 279	O 296	S 7	0	0	0
1	N	205	Total 1606	C 1019	N 281	O 298	S 8	0	0	0
1	O	202	Total 1584	C 1006	N 278	O 293	S 7	0	0	0
1	P	201	Total 1573	C 1000	N 273	O 292	S 8	0	0	0

There are 64 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	92	GLY	-	expression tag	UNP P67661
A	93	SER	-	expression tag	UNP P67661
A	94	HIS	-	expression tag	UNP P67661
A	95	MET	-	expression tag	UNP P67661
B	92	GLY	-	expression tag	UNP P67661
B	93	SER	-	expression tag	UNP P67661
B	94	HIS	-	expression tag	UNP P67661
B	95	MET	-	expression tag	UNP P67661
C	92	GLY	-	expression tag	UNP P67661
C	93	SER	-	expression tag	UNP P67661
C	94	HIS	-	expression tag	UNP P67661
C	95	MET	-	expression tag	UNP P67661
D	92	GLY	-	expression tag	UNP P67661
D	93	SER	-	expression tag	UNP P67661
D	94	HIS	-	expression tag	UNP P67661
D	95	MET	-	expression tag	UNP P67661
E	92	GLY	-	expression tag	UNP P67661
E	93	SER	-	expression tag	UNP P67661
E	94	HIS	-	expression tag	UNP P67661
E	95	MET	-	expression tag	UNP P67661
F	92	GLY	-	expression tag	UNP P67661
F	93	SER	-	expression tag	UNP P67661
F	94	HIS	-	expression tag	UNP P67661
F	95	MET	-	expression tag	UNP P67661
G	92	GLY	-	expression tag	UNP P67661
G	93	SER	-	expression tag	UNP P67661
G	94	HIS	-	expression tag	UNP P67661
G	95	MET	-	expression tag	UNP P67661
H	92	GLY	-	expression tag	UNP P67661
H	93	SER	-	expression tag	UNP P67661
H	94	HIS	-	expression tag	UNP P67661
H	95	MET	-	expression tag	UNP P67661
I	92	GLY	-	expression tag	UNP P67661
I	93	SER	-	expression tag	UNP P67661
I	94	HIS	-	expression tag	UNP P67661
I	95	MET	-	expression tag	UNP P67661
J	92	GLY	-	expression tag	UNP P67661
J	93	SER	-	expression tag	UNP P67661
J	94	HIS	-	expression tag	UNP P67661
J	95	MET	-	expression tag	UNP P67661
K	92	GLY	-	expression tag	UNP P67661
K	93	SER	-	expression tag	UNP P67661

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Chain	Residue	Modelled	Actual	Comment	Reference
K	94	HIS	-	expression tag	UNP P67661
K	95	MET	-	expression tag	UNP P67661
L	92	GLY	-	expression tag	UNP P67661
L	93	SER	-	expression tag	UNP P67661
L	94	HIS	-	expression tag	UNP P67661
L	95	MET	-	expression tag	UNP P67661
M	92	GLY	-	expression tag	UNP P67661
M	93	SER	-	expression tag	UNP P67661
M	94	HIS	-	expression tag	UNP P67661
M	95	MET	-	expression tag	UNP P67661
N	92	GLY	-	expression tag	UNP P67661
N	93	SER	-	expression tag	UNP P67661
N	94	HIS	-	expression tag	UNP P67661
N	95	MET	-	expression tag	UNP P67661
O	92	GLY	-	expression tag	UNP P67661
O	93	SER	-	expression tag	UNP P67661
O	94	HIS	-	expression tag	UNP P67661
O	95	MET	-	expression tag	UNP P67661
P	92	GLY	-	expression tag	UNP P67661
P	93	SER	-	expression tag	UNP P67661
P	94	HIS	-	expression tag	UNP P67661
P	95	MET	-	expression tag	UNP P67661

- Molecule 2 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	2	Total 2	Na 2	0	0
2	C	1	Total 1	Na 1	0	0
2	D	1	Total 1	Na 1	0	0
2	F	1	Total 1	Na 1	0	0
2	G	1	Total 1	Na 1	0	0
2	H	1	Total 1	Na 1	0	0
2	I	1	Total 1	Na 1	0	0
2	J	1	Total 1	Na 1	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	L	2	Total 2	Na 2	0	0
2	M	1	Total 1	Na 1	0	0
2	N	1	Total 1	Na 1	0	0
2	O	1	Total 1	Na 1	0	0
2	P	1	Total 1	Na 1	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	10	Total 10	O 10	0	0
3	B	6	Total 6	O 6	0	0
3	C	4	Total 4	O 4	0	0
3	D	6	Total 6	O 6	0	0
3	E	5	Total 5	O 5	0	0
3	F	4	Total 4	O 4	0	0
3	G	8	Total 8	O 8	0	0
3	H	6	Total 6	O 6	0	0
3	I	7	Total 7	O 7	0	0
3	J	3	Total 3	O 3	0	0
3	K	5	Total 5	O 5	0	0
3	L	8	Total 8	O 8	0	0
3	M	5	Total 5	O 5	0	0
3	N	4	Total 4	O 4	0	0

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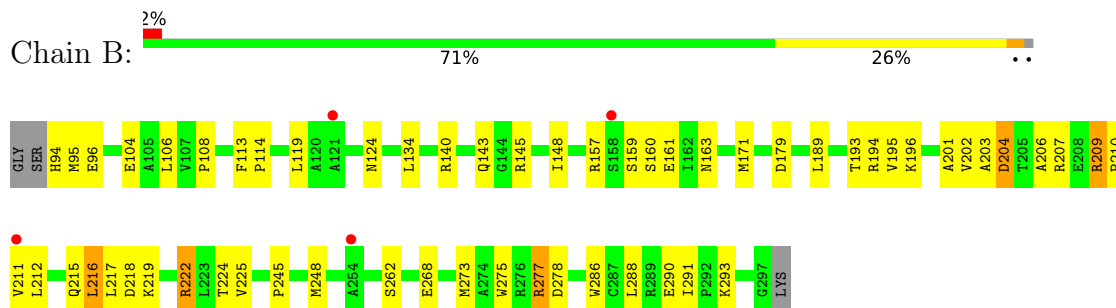| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	O	8	Total 8	O 8	0	0
3	P	5	Total 5	O 5	0	0

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.
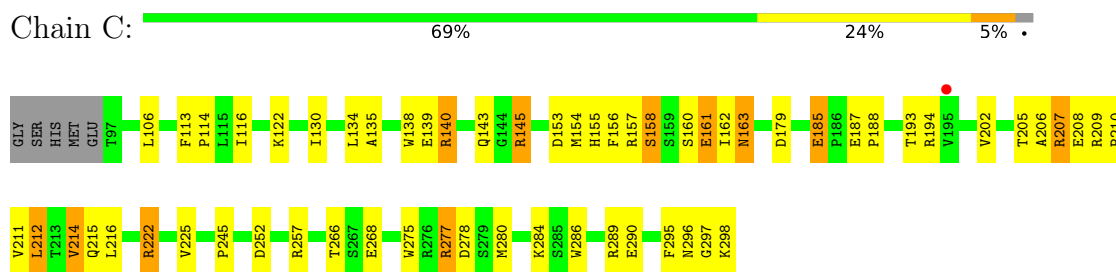
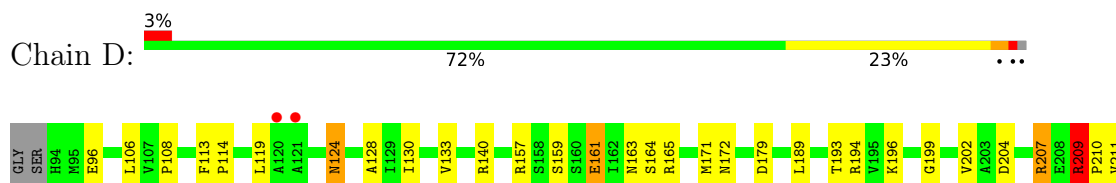• Molecule 1: HTH-type transcriptional regulator YhaJ

• Molecule 1: HTH-type transcriptional regulator YhaJ

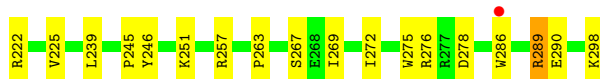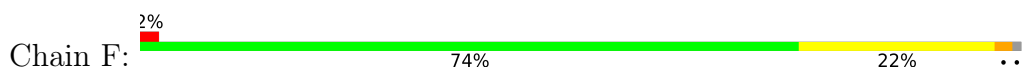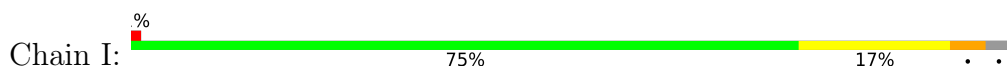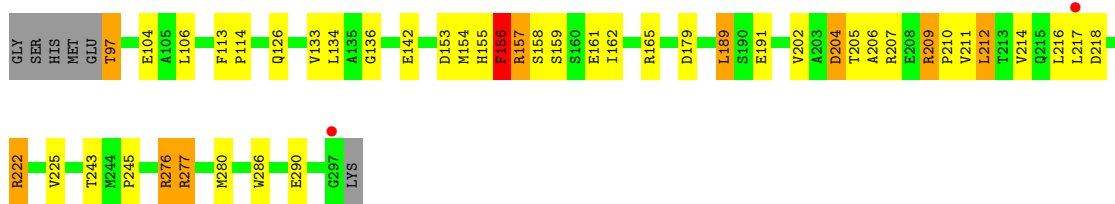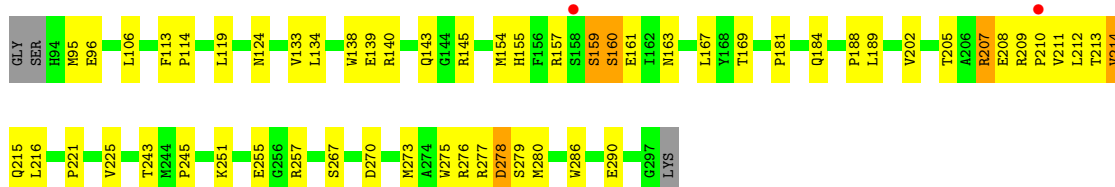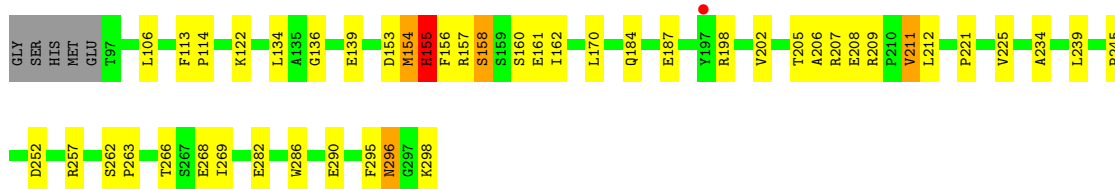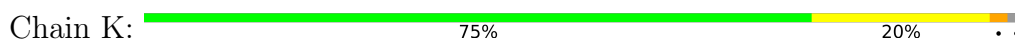• Molecule 1: HTH-type transcriptional regulator YhaJ

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L212 T213 V214 Q215 L216 L217 D218 R222 V225 L239 P245 Y246 A254 P263 E268 I269 M273 A274 W275 R276 R277 W286 C287 L288 R289 E290 I291 L294 F295 N296 G297 LYS

● Molecule 1: HTH-type transcriptional regulator YhaJ

Chain E:

GLY SER HIS MET GLU T97 H98 E104 A105 L106 F113 P114 L115 I116 K122 Q126 V133 L134 W138 E142 M154 H155 F156 R157 S158 S159 S160 E161 I162 T169 L170 D179 V192 T193 R194 V195 R198 V202 A203 D204 T205 A206 R207 E208 R209 P210 V211

L212 Q215 L216 L217 D218 K219 Q220 V225 S226 L239 T243 M244 P245 T266 I269 W275 R276 R277 D278 S279 M280 W286 R289 E290 K293 N296 G297 K298

● Molecule 1: HTH-type transcriptional regulator YhaJ

Chain F:

GLY SER H94 M95 E96 L106 F113 P114 L115 I116 L119 N124 T131 E132 R140 R145 D153 M154 H155 F156 R157 S158 S159 I162 N163 T169 L170 M171 N172 L189 S190 E191 R194 V195 K196 V202 R207 E208 R209 P210 V211 L212 Q215 L216

R222 V225 L239 P245 Y246 K251 R257 P263 S267 E268 I269 I272 W275 R276 R277 D278 W286 R289 E290 K298

● Molecule 1: HTH-type transcriptional regulator YhaJ

Chain G:

GLY SER HIS MET GLU T97 L106 F113 P114 K122 L134 A135 G136 A137 W138 E139 Q143 M154 H155 F156 R157 S158 E161 N172 V173 Y174 D179 I182 E187 P188 E191 V192 V195 K196 V202 A203 D204 A206 R207 E208 R209 P210 V211 L212 T213

V214 Q215 L216 L217 D218 K219 R222 L223 T224 V225 L239 G240 V241 A242 T243 M244 P245 D252 R257 V260 S265 T266 S267 E268 E282 W286 E290 K293 K298

● Molecule 1: HTH-type transcriptional regulator YhaJ

Chain H:

GLY SER H94 M95 E96 T97 H98 L99 T100 E104 A105 L106 F113 P114 L115 I116 L119 K122 A123 N124 V133 L134 A135 E139 R140 L141 E142 R145 F156 R157 S158 S159 S160 E161 I162 N163 S164 R165 M171 P181 Q184 R194 V202 A203 D204 T205 A206

R207 E208 R209 P210 V211 V214 Q215 L216 L217 Q220 P221 R222 Q233 P245 K251 P263 S267 E268 W275 R276 R277 D278 S285 W286 E290 N296 GLY LYS

● Molecule 1: HTH-type transcriptional regulator YhaJ

Chain I:

- Molecule 1: HTH-type transcriptional regulator YhaJ

Chain J:

- Molecule 1: HTH-type transcriptional regulator YhaJ

Chain K:

- Molecule 1: HTH-type transcriptional regulator YhaJ
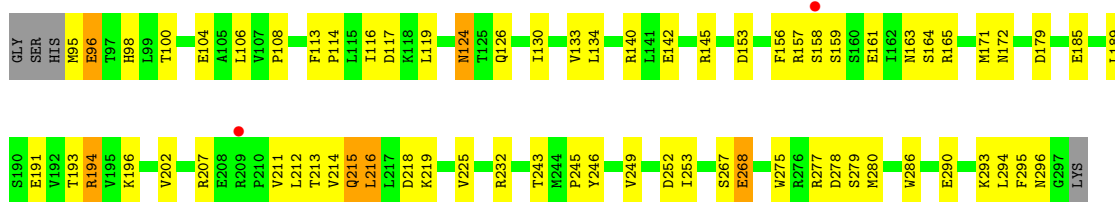
Chain L:

- Molecule 1: HTH-type transcriptional regulator YhaJ

Chain M:

• Molecule 1: HTH-type transcriptional regulator YhaJ

Chain N:

• Molecule 1: HTH-type transcriptional regulator YhaJ

Chain O:

• Molecule 1: HTH-type transcriptional regulator YhaJ

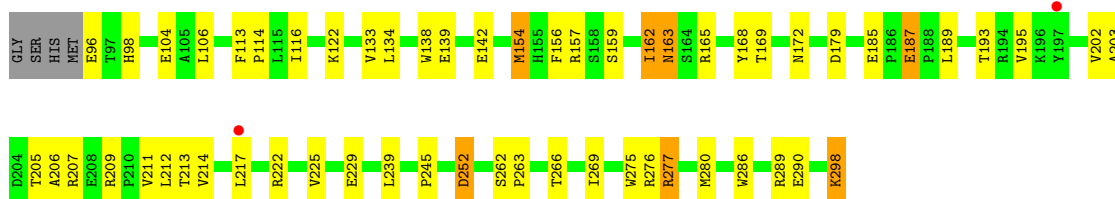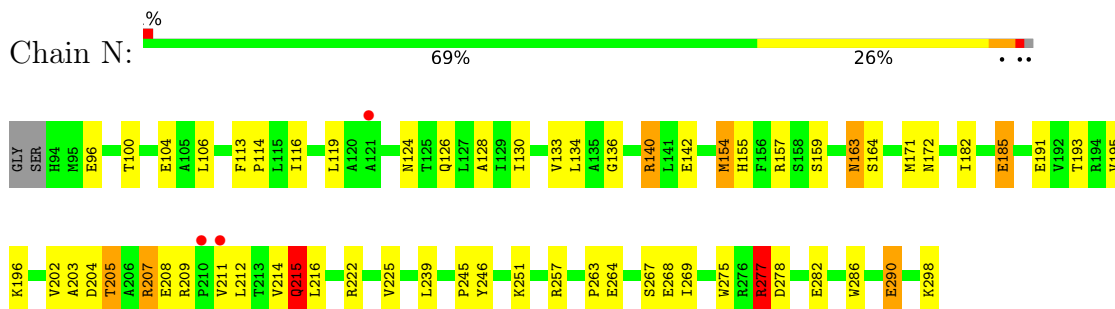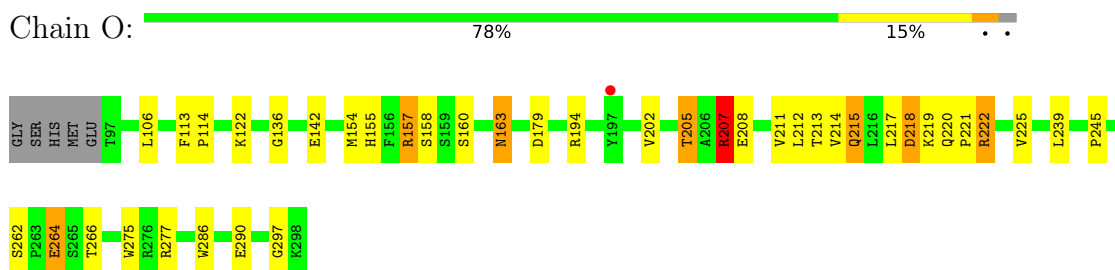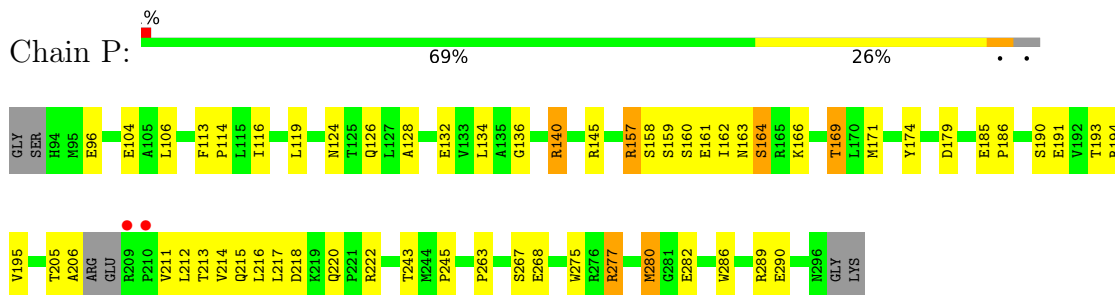Chain P:

4 Data and refinement statistics (i)

Property	Value	Source
Space group	H 3	Depositor
Cell constants a, b, c, α, β, γ	215.19Å 215.19Å 263.41Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	36.91 – 2.64 36.90 – 2.64	Depositor EDS
% Data completeness (in resolution range)	98.0 (36.91-2.64) 99.9 (36.90-2.64)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.31 (at 2.65Å)	Xtriage
Refinement program	REFMAC 5.8.0267	Depositor
R, R_{free}	0.177 , 0.236 0.158 , 0.203	Depositor DCC
R_{free} test set	6573 reflections (4.92%)	wwPDB-VP
Wilson B-factor (Å^2)	54.2	Xtriage
Anisotropy	0.074	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 41.1	EDS
L-test for twinning[2]	$< |L| > = 0.54, < L^2 > = 0.38$	Xtriage
Estimated twinning fraction	0.220 for -2/3*h-1/3*k+2/3*l,-1/3*h-2/3*k-2/3*l,2/3*h-2/3*k+1/3*l 0.220 for -h,1/3*h-1/3*k+2/3*l,2/3*h+4/3*k+1/3*l 0.227 for -1/3*h+1/3*k-2/3*l,-k,-4/3*h-2/3*k+1/3*l 0.227 for -h,2/3*h+1/3*k-2/3*l,-2/3*h-4/3*k-1/3*l 0.227 for 1/3*h+2/3*k+2/3*l,-k,4/3*h+2/3*k-1/3*l 0.227 for -1/3*h-2/3*k-2/3*l,-2/3*h-1/3*k+2/3*l,-2/3*h+2/3*k-1/3*l 0.256 for h,-h-k,-l	Xtriage

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[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.

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Property	Value	Source
Reported twinning fraction	0.139 for H, K, L 0.135 for K, H, -L 0.124 for -2/3H-1/3K+2/3L, -1/3H-2/3K-2/3L, 2/3H-2/3K+1/3L 0.124 for -1/3H-2/3K-2/3L, -2/3H-1/3K+2/3L, -2/3H+2/3K-1/3L 0.117 for -1/3H+1/3K-2/3L, -K, -4/3H-2/3K+1/3L 0.119 for -K, -1/3H+1/3K-2/3L, 4/3H+2/3K-1/3L 0.120 for 1/3H-1/3K+2/3L, -H, -2/3H-4/3K-1/3L 0.122 for -H, 1/3H-1/3K+2/3L, 2/3H+4/3K+1/3L	Depositor
Outliers	0 of 133605 reflections	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	25530	wwPDB-VP
Average B, all atoms (Å^2)	54.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.53% of the height of the origin peak. No significant pseudotranslation is detected.*

5   Model quality ⓘ

5.1   Standard geometry ⓘ

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

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	0.52	1/1615 (0.1%)	0.91	3/2196 (0.1%)
1	B	0.49	0/1624	0.83	3/2209 (0.1%)
1	C	0.56	1/1615 (0.1%)	0.86	4/2196 (0.2%)
1	D	0.53	0/1624	0.86	5/2210 (0.2%)
1	E	0.55	0/1615	0.86	5/2196 (0.2%)
1	F	0.57	1/1637 (0.1%)	0.90	4/2225 (0.2%)
1	G	0.57	3/1615 (0.2%)	0.84	2/2196 (0.1%)
1	H	0.56	1/1624 (0.1%)	0.82	1/2209 (0.0%)
1	I	0.52	0/1606	0.81	1/2185 (0.0%)
1	J	0.52	0/1624	0.82	2/2209 (0.1%)
1	K	0.61	1/1615 (0.1%)	0.85	1/2196 (0.0%)
1	L	0.56	1/1623 (0.1%)	0.84	6/2207 (0.3%)
1	M	0.54	0/1624	0.84	0/2208
1	N	0.61	4/1637 (0.2%)	0.87	6/2225 (0.3%)
1	O	0.51	0/1615	0.89	5/2196 (0.2%)
1	P	0.59	2/1603 (0.1%)	0.88	1/2180 (0.0%)
All	All	0.55	15/25916 (0.1%)	0.86	49/35243 (0.1%)

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	1
1	D	0	1
1	F	0	1
1	I	0	1
All	All	0	4

The worst 5 of 15 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	L	268	GLU	CD-OE2	8.52	1.35	1.25
1	H	142	GLU	CD-OE2	7.96	1.34	1.25
1	K	187	GLU	CD-OE2	7.52	1.33	1.25
1	N	185	GLU	CD-OE2	7.22	1.33	1.25
1	C	185	GLU	CD-OE2	6.82	1.33	1.25

The worst 5 of 49 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	O	157	ARG	CG-CD-NE	8.36	129.34	111.80
1	O	207	ARG	CG-CD-NE	8.21	129.04	111.80
1	D	218	ASP	CB-CG-OD1	7.23	124.81	118.30
1	F	94	HIS	CB-CA-C	6.96	124.33	110.40
1	O	222	ARG	CB-CG-CD	6.93	129.62	111.60

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	155	HIS	Peptide
1	D	209	ARG	Mainchain
1	F	132	GLU	Sidechain
1	I	156	PHE	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	1584	0	1628	48	0
1	B	1593	0	1630	63	0
1	C	1584	0	1630	68	0
1	D	1593	0	1622	37	1
1	E	1584	0	1630	60	1
1	F	1606	0	1647	47	0
1	G	1584	0	1629	47	1
1	H	1593	0	1630	33	1
1	I	1575	0	1617	49	0
1	J	1593	0	1628	46	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	K	1584	0	1630	54	0
1	L	1592	0	1631	64	3
1	M	1593	0	1636	47	2
1	N	1606	0	1647	51	0
1	O	1584	0	1629	32	2
1	P	1573	0	1610	58	3
2	A	2	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
2	F	1	0	0	0	0
2	G	1	0	0	0	0
2	H	1	0	0	0	0
2	I	1	0	0	0	0
2	J	1	0	0	0	0
2	L	2	0	0	0	0
2	M	1	0	0	0	0
2	N	1	0	0	0	0
2	O	1	0	0	0	0
2	P	1	0	0	0	0
3	A	10	0	0	2	0
3	B	6	0	0	2	0
3	C	4	0	0	1	0
3	D	6	0	0	1	0
3	E	5	0	0	2	0
3	F	4	0	0	0	0
3	G	8	0	0	0	0
3	H	6	0	0	0	0
3	I	7	0	0	4	0
3	J	3	0	0	0	0
3	K	5	0	0	0	0
3	L	8	0	0	5	0
3	M	5	0	0	2	0
3	N	4	0	0	0	0
3	O	8	0	0	0	0
3	P	5	0	0	1	0
All	All	25530	0	26074	669	7

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 13.

The worst 5 of 669 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:98:HIS:HB3	1:F:207:ARG:NH2	1.57	1.20
1:L:296:ASN:OD1	3:L:401:HOH:O	1.61	1.18
1:E:98:HIS:HB3	1:F:207:ARG:CZ	1.76	1.16
1:B:209:ARG:CG	1:B:216:LEU:HD22	1.79	1.13
1:C:185:GLU:OE1	1:C:187:GLU:N	1.85	1.09

The worst 5 of 7 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:L:165:ARG:CZ	1:P:160:SER:O[9_544]	1.23	0.97
1:L:165:ARG:NH2	1:P:160:SER:O[9_544]	1.48	0.72
1:L:165:ARG:NE	1:P:160:SER:O[9_544]	1.58	0.62
1:E:209:ARG:NH2	1:G:208:GLU:OE2[3_655]	1.87	0.33
1:M:209:ARG:NH2	1:O:208:GLU:O[2_555]	2.09	0.11

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	200/207 (97%)	188 (94%)	9 (4%)	3 (2%)	10	14
1	B	202/207 (98%)	191 (95%)	11 (5%)	0	100	100
1	C	200/207 (97%)	192 (96%)	8 (4%)	0	100	100
1	D	202/207 (98%)	196 (97%)	6 (3%)	0	100	100
1	E	200/207 (97%)	188 (94%)	12 (6%)	0	100	100
1	F	203/207 (98%)	196 (97%)	7 (3%)	0	100	100
1	G	200/207 (97%)	189 (94%)	10 (5%)	1 (0%)	29	43
1	H	201/207 (97%)	190 (94%)	11 (6%)	0	100	100
1	I	199/207 (96%)	185 (93%)	11 (6%)	3 (2%)	10	14
1	J	202/207 (98%)	192 (95%)	9 (4%)	1 (0%)	29	43

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	K	200/207 (97%)	190 (95%)	9 (4%)	1 (0%)	29	43
1	L	201/207 (97%)	196 (98%)	5 (2%)	0	100	100
1	M	201/207 (97%)	191 (95%)	9 (4%)	1 (0%)	29	43
1	N	203/207 (98%)	198 (98%)	5 (2%)	0	100	100
1	O	200/207 (97%)	189 (94%)	11 (6%)	0	100	100
1	P	197/207 (95%)	191 (97%)	6 (3%)	0	100	100
All	All	3211/3312 (97%)	3062 (95%)	139 (4%)	10 (0%)	41	56

5 of 10 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	156	PHE
1	A	214	VAL
1	I	156	PHE
1	I	161	GLU
1	K	155	HIS

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	173/177 (98%)	162 (94%)	11 (6%)	17	27
1	B	173/177 (98%)	162 (94%)	11 (6%)	17	27
1	C	173/177 (98%)	163 (94%)	10 (6%)	20	31
1	D	173/177 (98%)	158 (91%)	15 (9%)	10	14
1	E	173/177 (98%)	160 (92%)	13 (8%)	13	20
1	F	175/177 (99%)	161 (92%)	14 (8%)	12	18
1	G	173/177 (98%)	160 (92%)	13 (8%)	13	20
1	H	174/177 (98%)	161 (92%)	13 (8%)	13	20
1	I	172/177 (97%)	158 (92%)	14 (8%)	11	17
1	J	173/177 (98%)	161 (93%)	12 (7%)	15	23

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	K	173/177 (98%)	168 (97%)	5 (3%)	42	60
1	L	174/177 (98%)	160 (92%)	14 (8%)	12	18
1	M	174/177 (98%)	161 (92%)	13 (8%)	13	20
1	N	175/177 (99%)	162 (93%)	13 (7%)	13	21
1	O	173/177 (98%)	163 (94%)	10 (6%)	20	31
1	P	172/177 (97%)	158 (92%)	14 (8%)	11	17
All	All	2773/2832 (98%)	2578 (93%)	195 (7%)	15	23

5 of 195 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	J	155	HIS
1	L	277	ARG
1	J	207	ARG
1	K	296	ASN
1	M	179	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 13 such sidechains are listed below:

Mol	Chain	Res	Type
1	I	126	GLN
1	L	172	ASN
1	O	233	GLN
1	M	143	GLN
1	O	220	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 ⓘ

Of 15 ligands modelled in this entry, 15 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6   Fit of model and data (i)

6.1   Protein, DNA and RNA chains (i)

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å²)	Q<0.9
1	A	202/207 (97%)	-0.22	0	100	100	34, 51, 73, 97	0
1	B	204/207 (98%)	-0.12	4 (1%)	65	61	28, 56, 72, 92	0
1	C	202/207 (97%)	-0.21	1 (0%)	91	90	34, 53, 76, 88	0
1	D	204/207 (98%)	-0.05	6 (2%)	51	48	39, 56, 76, 95	0
1	E	202/207 (97%)	-0.21	2 (0%)	82	81	31, 51, 73, 83	0
1	F	205/207 (99%)	-0.12	5 (2%)	59	55	29, 52, 73, 115	0
1	G	202/207 (97%)	-0.20	5 (2%)	57	53	30, 51, 78, 87	0
1	H	203/207 (98%)	-0.03	7 (3%)	45	41	33, 53, 78, 95	0
1	I	201/207 (97%)	-0.20	2 (0%)	82	81	32, 52, 72, 93	0
1	J	204/207 (98%)	-0.06	2 (0%)	82	81	26, 57, 73, 85	0
1	K	202/207 (97%)	-0.20	1 (0%)	91	90	37, 53, 70, 84	0
1	L	203/207 (98%)	-0.11	2 (0%)	82	81	37, 55, 71, 93	0
1	M	203/207 (98%)	-0.20	2 (0%)	82	81	32, 52, 76, 96	0
1	N	205/207 (99%)	-0.12	3 (1%)	73	71	29, 53, 69, 111	0
1	O	202/207 (97%)	-0.28	1 (0%)	91	90	34, 51, 76, 91	0
1	P	201/207 (97%)	-0.10	2 (0%)	82	81	33, 54, 72, 81	0
All	All	3245/3312 (97%)	-0.15	45 (1%)	75	73	26, 53, 74, 115	0

The worst 5 of 45 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	H	217	LEU	5.2
1	H	158	SER	4.0
1	N	121	ALA	4.0
1	D	212	LEU	3.5
1	H	211	VAL	3.4

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

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

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	NA	A	302	1/1	0.85	0.17	37,37,37,37	0
2	NA	F	301	1/1	0.89	0.36	40,40,40,40	0
2	NA	G	301	1/1	0.91	0.23	40,40,40,40	0
2	NA	C	301	1/1	0.94	0.26	32,32,32,32	0
2	NA	H	301	1/1	0.94	0.19	44,44,44,44	0
2	NA	L	302	1/1	0.94	0.22	38,38,38,38	0
2	NA	D	301	1/1	0.95	0.19	49,49,49,49	0
2	NA	L	301	1/1	0.96	0.19	46,46,46,46	0
2	NA	N	301	1/1	0.96	0.41	58,58,58,58	0
2	NA	P	301	1/1	0.96	0.19	43,43,43,43	0
2	NA	I	301	1/1	0.97	0.31	26,26,26,26	0
2	NA	O	301	1/1	0.97	0.34	32,32,32,32	0
2	NA	M	301	1/1	0.97	0.25	39,39,39,39	0
2	NA	A	301	1/1	0.99	0.20	33,33,33,33	0
2	NA	J	301	1/1	0.99	0.15	37,37,37,37	0

6.5 Other polymers ⓘ

There are no such residues in this entry.