WORLDWIDE PDB PROTEIN DATA BANK

Full wwPDB NMR Structure Validation Report ⓘ

Apr 21, 2024 – 05:35 AM EDT

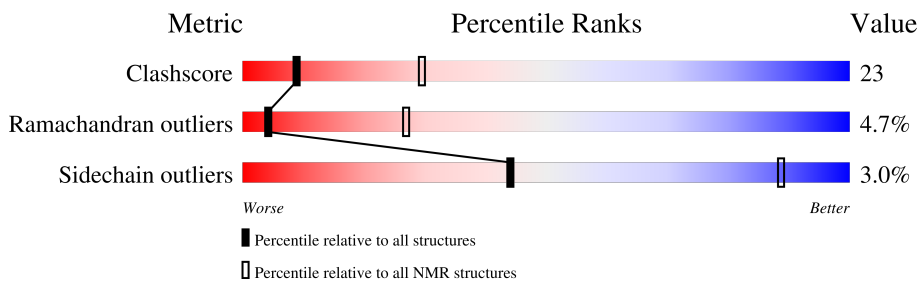|		
PDB ID	:	2M6L
BMRB ID	:	19143
Title	:	Solution structure of the Escherichia coli holo ferric enterobactin binding protein
Authors	:	Chu, B.C.H.; Otten, R.; Krewulak, K.D.; Mulder, F.A.A.; Vogel, H.J.
Deposited on	:	2013-04-05

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
SOLUTION NMR

The overall completeness of chemical shifts assignment is 35%.

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
Clashscore		23
Ramachandran outliers		4.7%
Sidechain outliers		3.0%

Worse   *Better*

■ Percentile relative to all structures

▯ Percentile relative to all NMR structures

Metric	Whole archive (#Entries)	NMR archive (#Entries)
Clashscore	158937	12864
Ramachandran outliers	154571	11451
Sidechain outliers	154315	11428

The table below summarises the geometric issues observed across the polymeric chains and their fit to the experimental data. The red, orange, yellow and green segments indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria. A cyan segment indicates the fraction of residues that are not part of the well-defined cores, and 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%

Mol	Chain	Length	Quality of chain
1	A	315	57% 32% • 7%

2 Ensemble composition and analysis ⓘ

This entry contains 30 models. Model 12 is the overall representative, medoid model (most similar to other models). The authors have identified model 1 as representative, based on the following criterion: *lowest energy.*

The following residues are included in the computation of the global validation metrics.

Well-defined (core) protein residues			
Well-defined core	Residue range (total)	Backbone RMSD (Å)	Medoid model
1	A:24-A:315 (292)	0.10	12

Ill-defined regions of proteins are excluded from the global statistics.

Ligands and non-protein polymers are included in the analysis.

The models can be grouped into 4 clusters and 6 single-model clusters were found.

Cluster number	Models
1	1, 6, 8, 9, 10, 12, 18, 19, 23, 24, 27, 29
2	5, 11, 16, 21, 26
3	2, 17, 20, 25
4	13, 14, 15
Single-model clusters	3; 4; 7; 22; 28; 30

3 Entry composition ⓘ

There is only 1 type of molecule in this entry. The entry contains 4462 atoms, of which 2235 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Ferrienterobactin-binding periplasmic protein.

Mol	Chain	Residues	Atoms						Trace
			Total	C	H	N	O	S	
1	A	292	4462	1405	2235	386	433	3	0

There are 23 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	expression tag	UNP P0AEL6
A	2	GLY	-	expression tag	UNP P0AEL6
A	3	HIS	-	expression tag	UNP P0AEL6
A	4	HIS	-	expression tag	UNP P0AEL6
A	5	HIS	-	expression tag	UNP P0AEL6
A	6	HIS	-	expression tag	UNP P0AEL6
A	7	HIS	-	expression tag	UNP P0AEL6
A	8	HIS	-	expression tag	UNP P0AEL6
A	9	HIS	-	expression tag	UNP P0AEL6
A	10	HIS	-	expression tag	UNP P0AEL6
A	11	HIS	-	expression tag	UNP P0AEL6
A	12	HIS	-	expression tag	UNP P0AEL6
A	13	SER	-	expression tag	UNP P0AEL6
A	14	SER	-	expression tag	UNP P0AEL6
A	15	GLY	-	expression tag	UNP P0AEL6
A	16	HIS	-	expression tag	UNP P0AEL6
A	17	ILE	-	expression tag	UNP P0AEL6
A	18	ASP	-	expression tag	UNP P0AEL6
A	19	ASP	-	expression tag	UNP P0AEL6
A	20	ASP	-	expression tag	UNP P0AEL6
A	21	ASP	-	expression tag	UNP P0AEL6
A	22	LYS	-	expression tag	UNP P0AEL6
A	23	HIS	-	expression tag	UNP P0AEL6

4 Residue-property plots ⓘ

4.1 Average score per residue in the NMR ensemble

These plots are provided for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic is the same as shown in the summary in section 1 of this report. The second graphic shows the sequence where residues are colour-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 outliers are shown as green connectors. Residues which are classified as ill-defined in the NMR ensemble, are shown in cyan with an underline colour-coded according to the previous scheme. Residues which were present in the experimental sample, but not modelled in the final structure are shown in grey.

- Molecule 1: Ferrienterobactin-binding periplasmic protein

Chain A:

4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

4.2.1 Score per residue for model 1

- Molecule 1: Ferrienterobactin-binding periplasmic protein

Chain A:

T296 F297 D300 A304 L308 D309 R310 L311 K312 F315

4.2.2 Score per residue for model 2

• Molecule 1: Ferrienterobactin-binding periplasmic protein

Chain A: 57%   32%   •   7%

MET GLY HIS HIS HIS HIS HIS HIS HIS HIS HIS HIS SER SER GLY HIS HIS ILE ASP ASP ASP ASP LYS HIS A24 D25 W26 P27 R28 D32 S33 R34 G35 S41 Q42 P43 Q44 R45 T49 S50 V51 A59 V64 I65 A66 S67 G68 A69 T70 T71 P72 N73 N74 R75 V76 A77

D78 D79 Q80 L83 R84 Q85 K88 R93 K94 L95 Q96 R97 I100 G101 M112 P113 L127 A128 L129 Y130 D131 Q132 L133 P138 T139 L140 N143 Y144 D145 D146 K147 S148 W149 G157 G161 R169 I170 D174 A179 Q183 P187 P188 Q189 P190 V191

T192 V195 N204 L205 W206 T207 S210 A211 Q212 G213 Q214 M215 L223 A224 K225 L226 P227 A228 G229 L230 N231 A232 D241 I242 I243 N249 A252 G253 L254 N255 G256 F262 D265 L277 L278 L281 P282 A283 N286 K287 Q288 V289 Y290 A291 L292 G293 T294 E295

T296 F297 D300 A304 L308 D309 R310 L311 K312 F315

4.2.3 Score per residue for model 3

• Molecule 1: Ferrienterobactin-binding periplasmic protein

Chain A: 57%   32%   •   7%

MET GLY HIS HIS HIS HIS HIS HIS HIS HIS HIS HIS SER SER GLY HIS HIS ILE ASP ASP ASP ASP LYS HIS A24 D25 W26 P27 R28 D32 S33 R34 G35 S41 Q42 P43 Q44 R45 V51 D61 V64 I65 A66 S67 G68 A69 T70 T71 P72 N73 N74 R75 V76 A77 D78 D79

Q80 L83 R84 Q85 K88 R93 K94 L95 Q96 R97 I100 G101 E102 M112 P113 L127 A128 L129 Y130 D131 Q132 L133 P138 T139 L140 I141 I142 N143 Y144 D145 D146 K147 S148 W149 G157 G161 Q165 I170 D174 Q183 P187 P188 Q189 P190 V191 T192

V195 A198 H201 N204 L205 W206 T207 S210 A211 Q212 G213 Q214 M215 L223 A224 K225 L226 P227 A228 G229 L230 N231 A232 D241 N249 A252 G253 L254 N255 G256 F262 D265 L277 L278 L281 P282 A283 N286 K287 Q288 V289 Y290 A291 L292 G293 T294

E295 T296 F297 D300 A304 V307 L308 D309 R310 L311 K312 F315

4.2.4 Score per residue for model 4

• Molecule 1: Ferrienterobactin-binding periplasmic protein

Chain A: 57%   32%   •   7%

MET GLY HIS HIS HIS HIS HIS HIS HIS HIS HIS HIS SER SER GLY HIS HIS ILE ASP ASP ASP ASP LYS HIS A24 D25 W26 P27 R28 D32 S33 R34 G35 S41 Q42 P43 Q44 R45 T49 S50 V51 V64 I65 A66 S67 G68 A69 T70 T71 P72 N73 N74 R75 V76 A77 D78 D79

Q80 L83 R84 Q85 K88 R93 K94 L95 Q96 R97 I100 G101 M112 P113 L127 A128 L129 Y130 D131 Q132 L133 P138 T139 L140 I141 I142 N143 Y144 D145 D146 K147 S148 W149 G157 G161 I170 D174 A179 Q183 P187 P188 Q189 P190 V191 T192

V195 Y196 T197 A198 A199 N204 L205 W206 T207 P208 E209 S210 A211 Q212 G213 Q214 M215 L223 A224 K225 L226 P227 A228 G229 L230 N231 A232 D241 I242 I243 N249 A252 G253 L254 N255 G256 F262 D265 L277 L278 L281 P282 A283 N286 K287 Q288 V289 Y290 A291 L292

G293 T296 F297 D300 A304 L308 D309 R310 L311 K312 F315

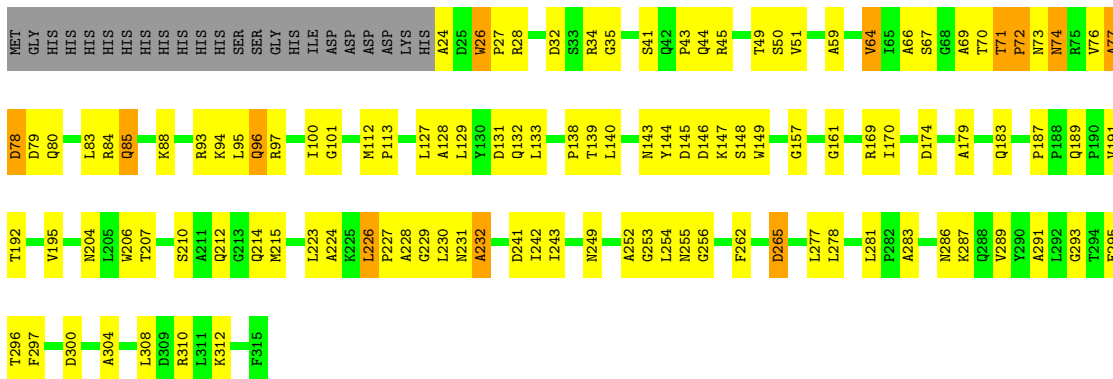### 4.2.5 Score per residue for model 5

• Molecule 1: Ferrienterobactin-binding periplasmic protein

Chain A: 57%   32%   •   7%

MET GLY HIS HIS HIS HIS HIS HIS HIS HIS HIS SER SER GLY HIS ILE ASP ASP ASP LYS HIS A24 D25 W26 P27 R28 D32 S33 R34 G35 S41 Q42 P43 Q44 R45 A59 V64 I65 A66 S67 G68 A69 T70 T71 P72 N73 N74 R75 V76 A77 D78 D79 Q80

L83 R84 Q85 K88 R93 K94 L95 Q96 R97 I100 G101 M112 P113 L127 A128 L129 Y130 D131 Q132 L133 P138 T139 L140 N143 Y144 D145 D146 K147 S148 W149 G157 G161 R169 I170 D174 A179 Q183 P187 P188 Q189 P190 V191 T192 V195 Y196

T197 A198 A199 N204 L205 W206 T207 P208 E209 S210 A211 Q212 G213 Q214 M215 L223 A224 K225 L226 P227 A228 G229 L230 N231 A232 D241 I242 I243 N249 A252 G253 L254 N255 G256 F262 D265 L277 L278 L281 P282 A283 N286 K287 Q288 V289 Y290 A291 L292 G293

T296 F297 D300 A304 L308 D309 R310 L311 K312 F315

4.2.6 Score per residue for model 6

• Molecule 1: Ferrienterobactin-binding periplasmic protein

Chain A: 57%   32%   •   7%

MET GLY HIS HIS HIS HIS HIS HIS HIS HIS HIS SER SER GLY HIS ILE ASP ASP ASP LYS HIS A24 D25 W26 P27 R28 D32 S33 R34 G35 S41 Q42 P43 Q44 R45 A59 V64 I65 A66 S67 G68 A69 T70 T71 P72 N73 N74 R75 V76 A77 D78 D79 Q80

L83 R84 Q85 K88 R93 K94 L95 Q96 R97 I100 G101 M112 P113 L127 A128 L129 Y130 D131 Q132 L133 P138 T139 L140 N143 Y144 D145 D146 K147 S148 W149 G157 G161 R169 I170 D174 A179 Q183 P187 P188 Q189 P190 V191 T192 V195 Y196

T197 A198 A199 N204 L205 W206 T207 P208 E209 S210 A211 Q212 G213 Q214 M215 L223 A224 K225 L226 P227 A228 G229 L230 N231 A232 D241 I242 I243 N249 A252 G253 L254 N255 G256 F262 D265 L277 L278 L281 P282 A283 N286 K287 Q288 V289 Y290 A291 L292 G293 T294

E295 T296 F297 D300 A304 V307 L308 D309 R310 L311 K312 F315

4.2.7 Score per residue for model 7

• Molecule 1: Ferrienterobactin-binding periplasmic protein

4.2.8 Score per residue for model 8

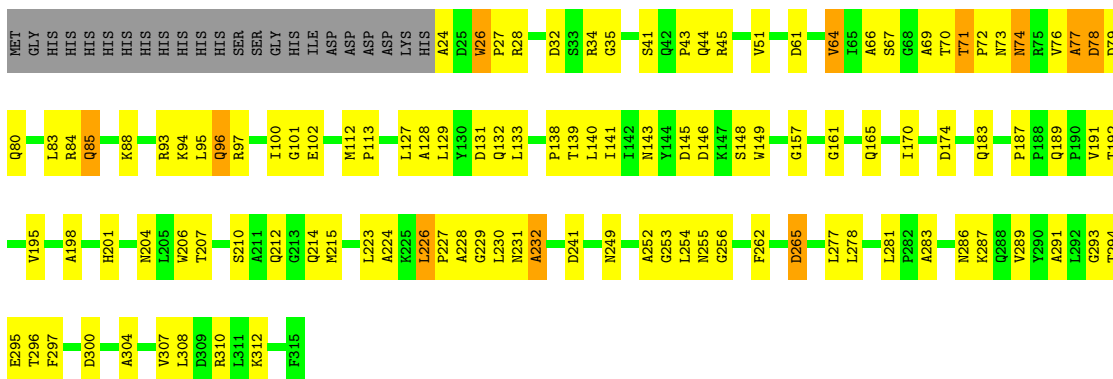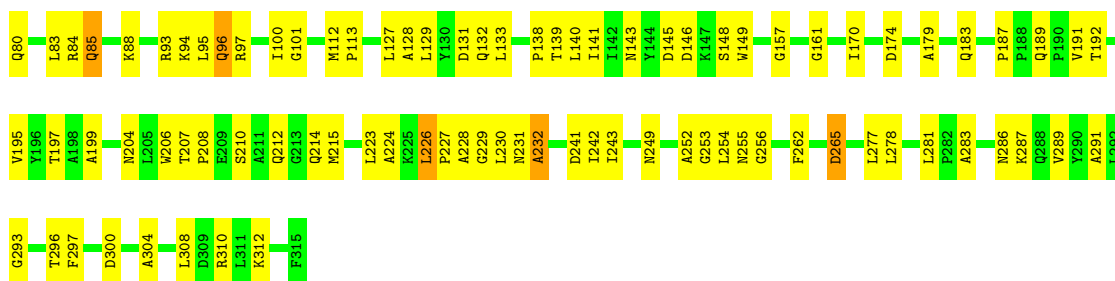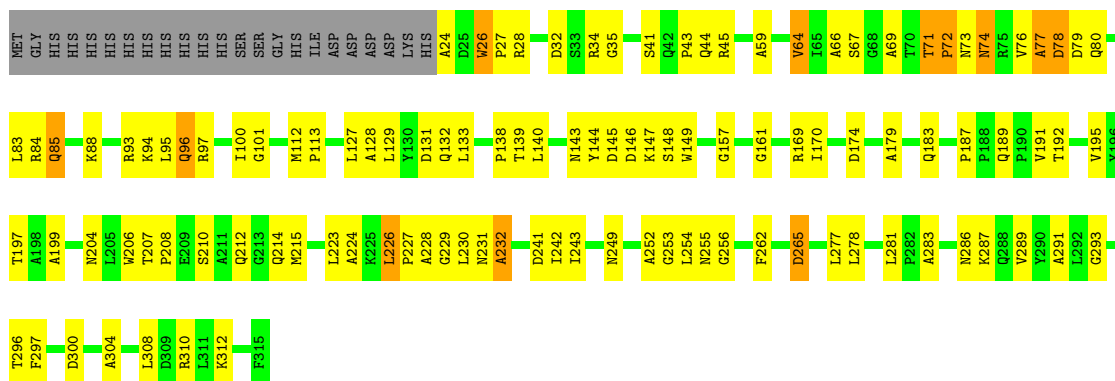• Molecule 1: Ferrienterobactin-binding periplasmic protein

4.2.9 Score per residue for model 9

• Molecule 1: Ferrienterobactin-binding periplasmic protein

4.2.10 Score per residue for model 10

• Molecule 1: Ferrienterobactin-binding periplasmic protein

4.2.11 Score per residue for model 11

• Molecule 1: Ferrienterobactin-binding periplasmic protein

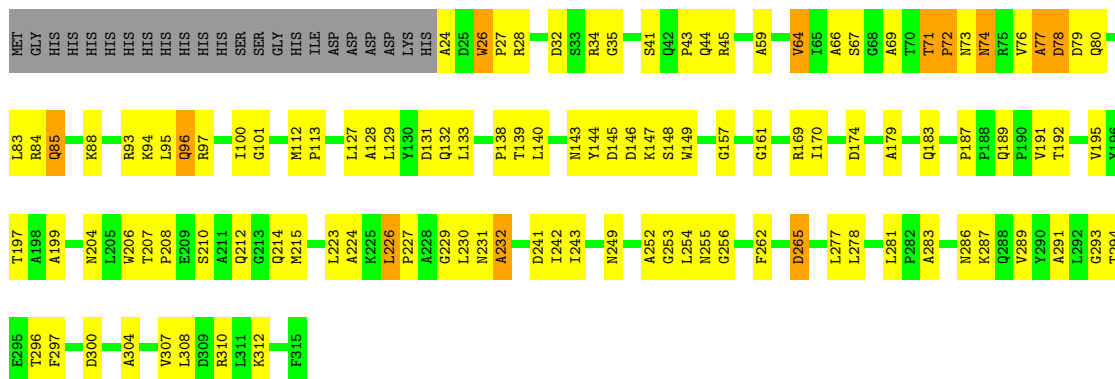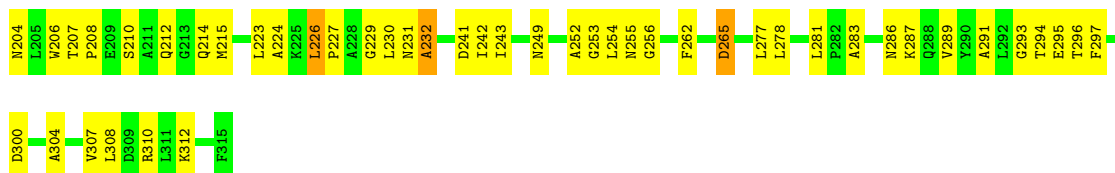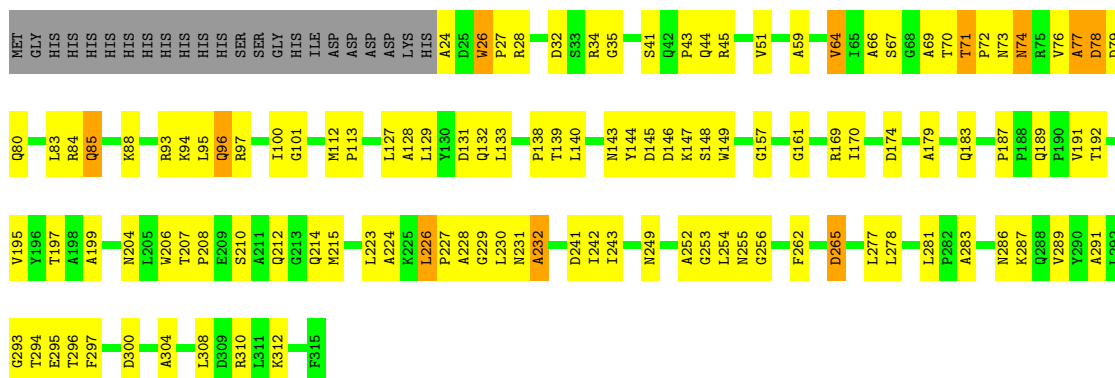### 4.2.12 Score per residue for model 12 (medoid)

• Molecule 1: Ferrienterobactin-binding periplasmic protein

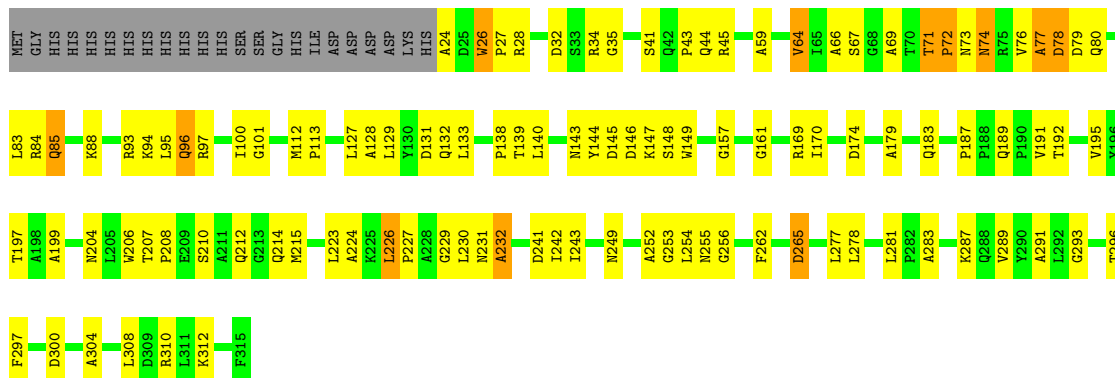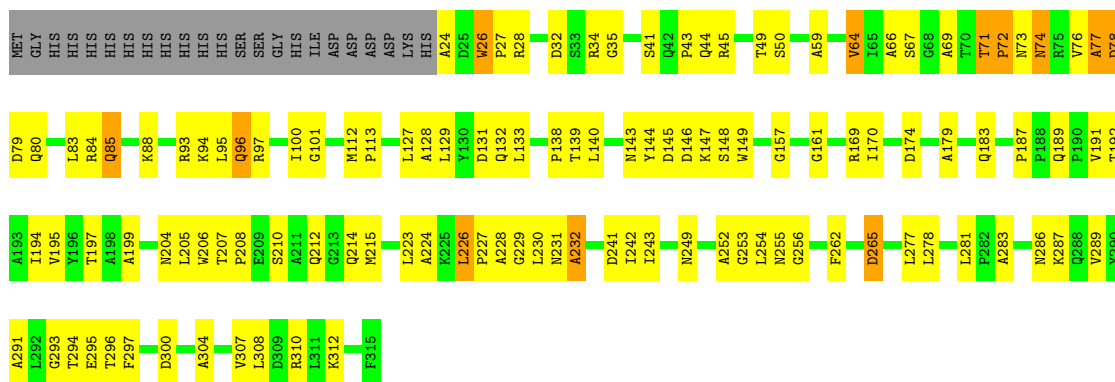MET GLY HIS HIS HIS HIS HIS HIS HIS HIS HIS SER SER GLY HIS ILE ASP ASP ASP LYS HIS A24 D25 W26 P27 R28 D32 S33 R34 G35 S41 Q42 P43 Q44 R45 T49 S50 A59 V64 I65 A66 S67 G68 A69 T70 T71 P72 N73 N74 R75 V76 A77 D78

D79 Q80 L83 R84 Q85 K88 R93 K94 L95 Q96 R97 I100 G101 M112 P113 L127 A128 L129 Y130 D131 Q132 L133 P138 T139 L140 N143 Y144 D145 D146 K147 S148 W149 G157 G161 R169 I170 D174 A179 Q183 P187 P188 Q189 P190 V191 T192

A193 I194 V195 Y196 T197 A198 A199 N204 L205 W206 T207 P208 E209 S210 A211 Q212 G213 Q214 M215 L223 A224 K225 L226 P227 A228 G229 L230 N231 I242 I243 N249 A252 G253 L254 N255 G256 F262 D265 L277 L278 L281 P282 A283 N286 K287 Q288 V289 Y290

A291 L292 G293 T294 E295 T296 F297 D300 A304 V307 L308 D309 R310 L311 K312 F315

4.2.13 Score per residue for model 13

• Molecule 1: Ferrienterobactin-binding periplasmic protein

Chain A: 57%   33%   •   7%

MET GLY HIS HIS HIS HIS HIS HIS HIS HIS HIS SER SER GLY HIS ILE ASP ASP ASP LYS HIS A24 D25 W26 P27 R28 D32 S33 R34 G35 S41 Q42 P43 Q44 R45 A59 V64 I65 A66 S67 G68 A69 T70 T71 P72 N73 N74 R75 V76 A77 D78 D79 Q80

L83 R84 Q85 K88 R93 K94 L95 Q96 R97 I100 G101 M112 P113 L127 A128 L129 Y130 D131 Q132 L133 P138 T139 L140 N143 Y144 D145 D146 K147 S148 W149 G157 G161 R169 I170 D174 Q183 P187 P188 Q189 P190 V191 T192 A193 I194 V195 Y196 T197

A198 A199 N204 L205 W206 T207 P208 E209 S210 A211 Q212 G213 Q214 M215 L223 A224 K225 L226 P227 A228 G229 L230 N231 A232 D241 I242 I243 N249 A252 G253 L254 N255 G256 F262 D265 L277 L278 L281 P282 A283 N286 K287 Q288 V289 Y290 A291 L292 G293 T294 E295

T296 F297 D300 A304 L308 D309 R310 L311 K312 F315

4.2.14 Score per residue for model 14

• Molecule 1: Ferrienterobactin-binding periplasmic protein

Chain A: 56%   32%   •   7%

MET GLY HIS HIS HIS HIS HIS HIS HIS HIS HIS SER SER GLY HIS ILE ASP ASP ASP LYS HIS A24 D25 W26 P27 R28 D32 S33 R34 G35 S41 Q42 P43 Q44 R45 V51 A59 V64 I65 A66 S67 G68 A69 T70 T71 P72 N73 N74 R75 V76 A77 D78 D79

Q80 G81 F82 L83 R84 Q85 W86 S87 K88 R93 K94 L95 Q96 R97 I100 G101 E102 M112 P113 L127 A128 L129 Y130 D131 Q132 L133 P138 T139 L140 I141 I142 N143 Y144 D145 D146 K147 S148 W149 G157 G161 R169 I170 D174 Q183 P187 P188 Q189 P190 V191

T192 V195 N204 L205 W206 T207 P208 E209 S210 A211 Q212 G213 Q214 M215 L223 A224 K225 L226 P227 A228 G229 L230 N231 A232 D241 I242 I243 N249 A252 G253 L254 N255 G256 F262 D265 L277 L278 L281 P282 A283 N286 K287 Q288 V289 Y290 A291 L292 G293 T294

E295 T296 F297 D300 A304 L308 D309 R310 L311 K312 F315

4.2.15 Score per residue for model 15

• Molecule 1: Ferrienterobactin-binding periplasmic protein

4.2.16 Score per residue for model 16

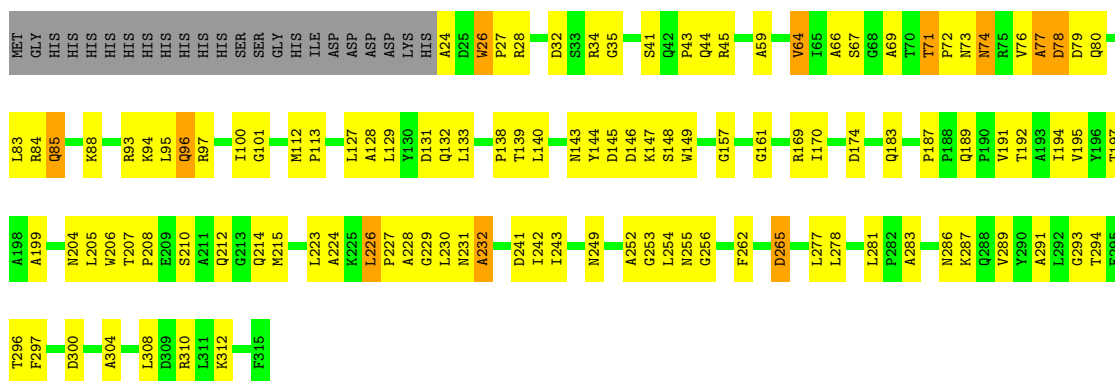• Molecule 1: Ferrienterobactin-binding periplasmic protein

4.2.17 Score per residue for model 17

• Molecule 1: Ferrienterobactin-binding periplasmic protein

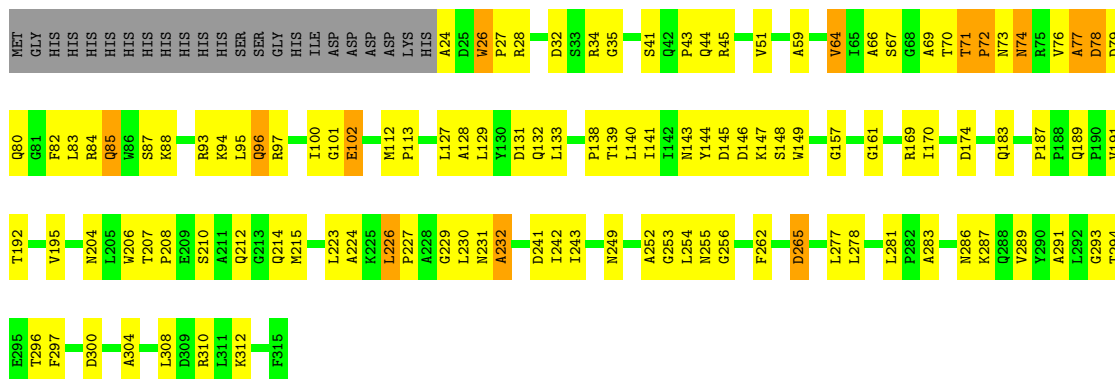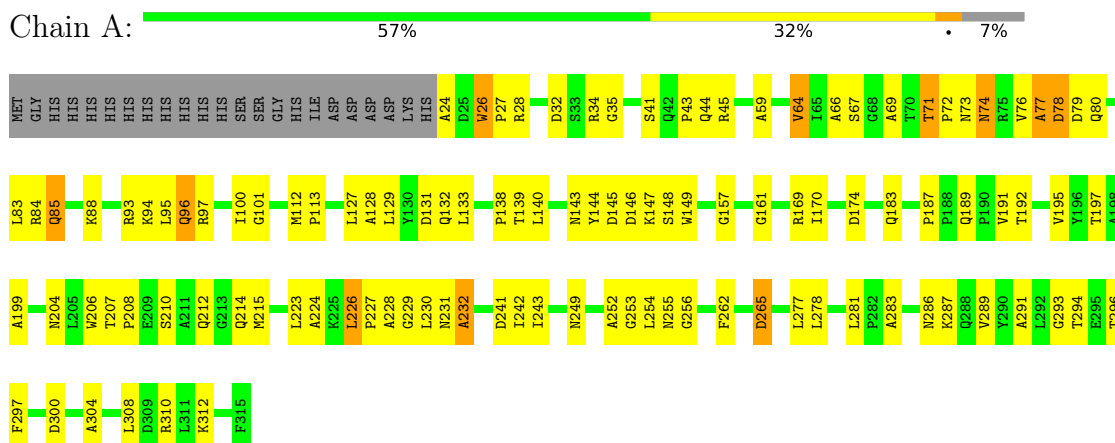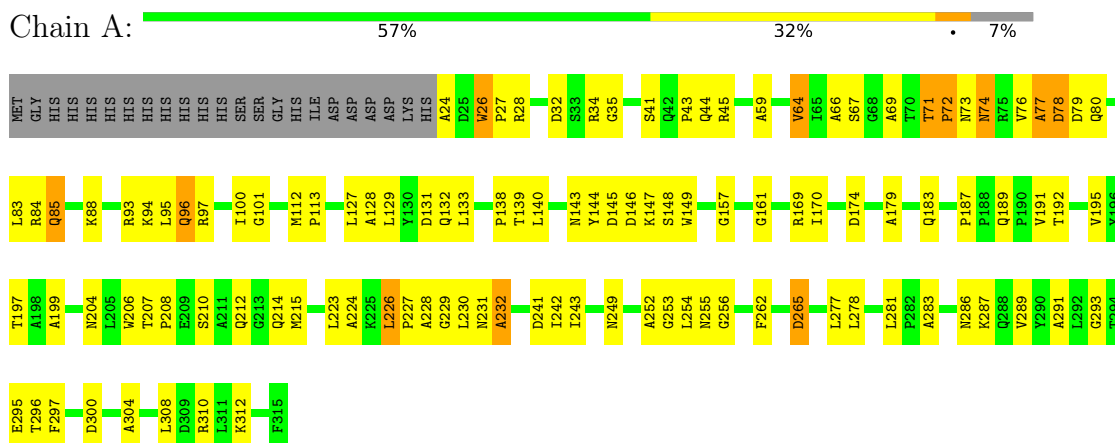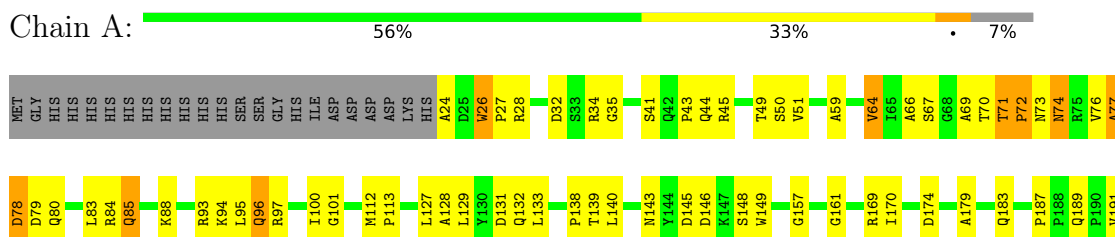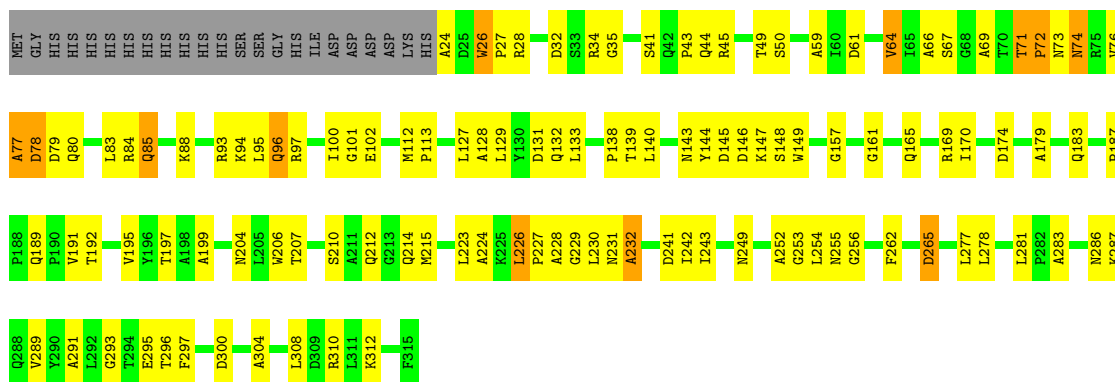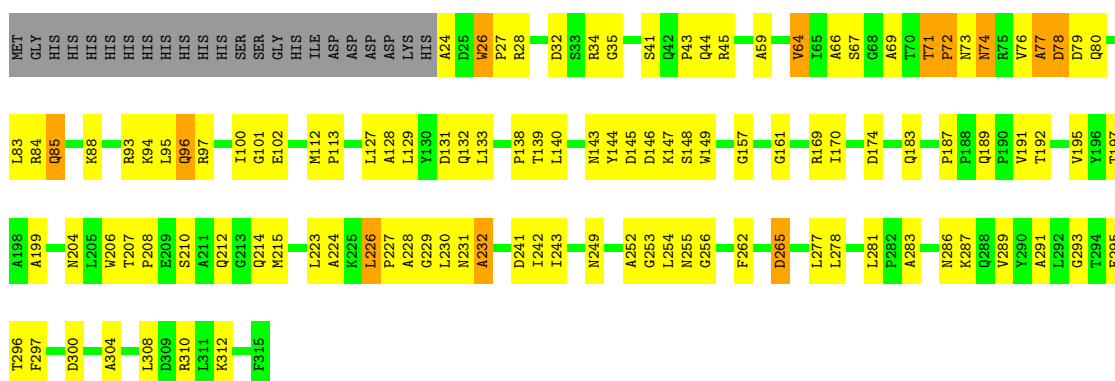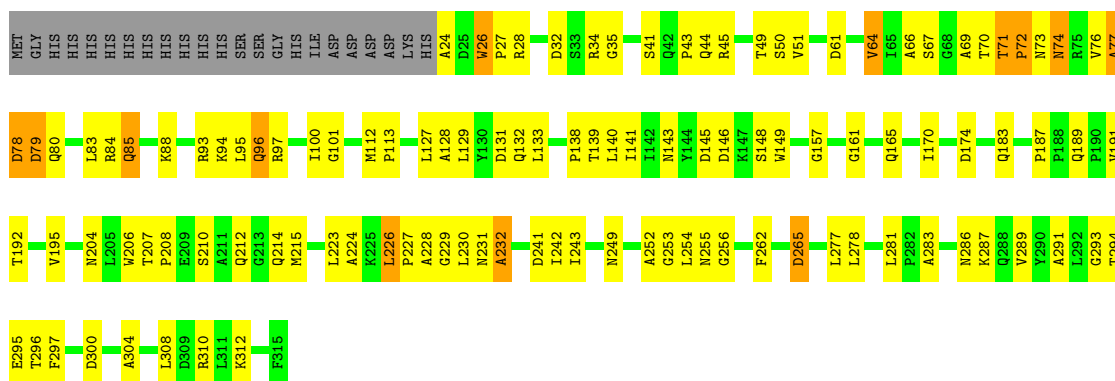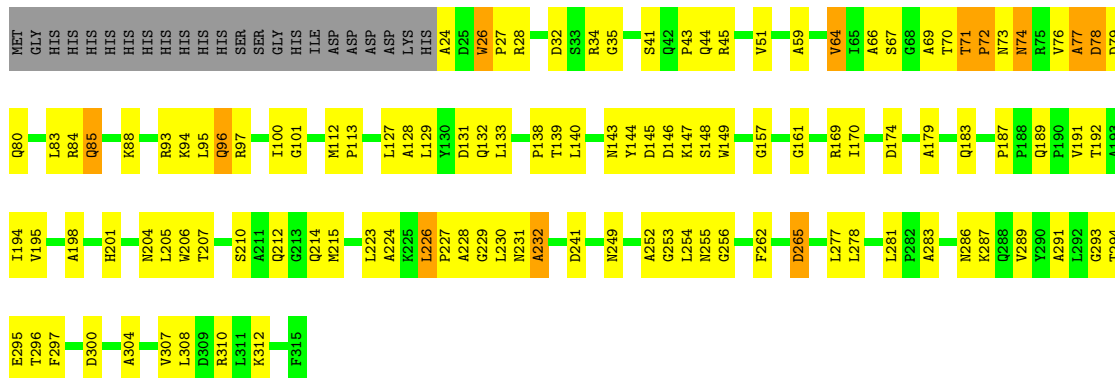T192 V195 Y196 T197 A198 A199 N204 L205 W206 T207 S210 A211 Q212 G213 Q214 M215 L223 A224 K225 L226 P227 A228 G229 L230 N231 A232 D241 I242 I243 N249 A252 G253 L254 N255 G256 F262 D265 L277 L278 L281 P282 A283 N286 K287 Q288 V289 Y290 A291

L292 G293 T294 E295 T296 F297 D300 A304 V307 L308 D309 R310 L311 K312 F315

4.2.18 Score per residue for model 18

• Molecule 1: Ferrienterobactin-binding periplasmic protein

Chain A: 55% 34% • 7%

MET GLY HIS HIS HIS HIS HIS HIS HIS HIS HIS SER SER GLY HIS ILE ASP ASP ASP LYS HIS A24 D25 W26 P27 R28 D32 S33 R34 G35 S41 Q42 P43 Q44 R45 A59 V64 I65 A66 S67 G68 A69 T70 T71 P72 N73 N74 R75 V76 A77 D78 D79 Q80

L83 R84 Q85 K88 R93 K94 L95 Q96 R97 I100 G101 E102 M112 P113 L127 A128 L129 Y130 D131 Q132 L133 P138 T139 L140 N143 Y144 D145 D146 K147 S148 W149 G157 G161 R169 I170 D174 A179 Q183 P187 P188 Q189 P190 V191 T192 A193 I194

V195 Y196 T197 A198 A199 N204 L205 W206 T207 P208 E209 S210 A211 Q212 G213 Q214 M215 L223 A224 K225 L226 P227 A228 G229 L230 N231 A232 D241 I242 I243 N249 A252 G253 L254 N255 G256 F262 D265 L277 L278 L281 P282 A283 N286 K287 Q288 V289 Y290 A291 L292

G293 T294 E295 T296 F297 R298 L299 D300 A304 V307 L308 D309 R310 L311 K312 F315

4.2.19 Score per residue for model 19

• Molecule 1: Ferrienterobactin-binding periplasmic protein

Chain A: 56% 33% • 7%

MET GLY HIS HIS HIS HIS HIS HIS HIS HIS HIS SER SER GLY HIS ILE ASP ASP ASP LYS HIS A24 D25 W26 P27 R28 D32 S33 R34 G35 S41 Q42 P43 Q44 R45 V51 A59 V64 I65 A66 S67 G68 A69 T70 T71 P72 N73 N74 R75 V76 A77 D78 D79

Q80 L83 R84 Q85 K88 R93 K94 L95 Q96 R97 I100 G101 M112 P113 L127 A128 L129 Y130 D131 Q132 L133 P138 T139 L140 N143 Y144 D145 D146 K147 S148 W149 G157 G161 R169 I170 D174 A179 Q183 P187 P188 Q189 P190 V191 T192 A193

I194 V195 A198 H201 N204 L205 W206 T207 S210 A211 Q212 G213 Q214 M215 L223 A224 K225 L226 P227 A228 G229 L230 N231 A232 D241 N249 A252 G253 L254 N255 G256 F262 D265 L277 L278 L281 P282 A283 N286 K287 Q288 V289 Y290 A291 L292 G293 T294

E295 T296 F297 D300 A304 L308 D309 R310 L311 K312 F315

4.2.20 Score per residue for model 20

• Molecule 1: Ferrienterobactin-binding periplasmic protein

Chain A: 56% 33% • 7%

MET GLY HIS HIS HIS HIS HIS HIS HIS HIS HIS SER SER GLY HIS ILE ASP ASP ASP ASP LYS HIS A24 D25 W26 P27 R28 D32 S33 R34 G35 S41 Q42 P43 Q44 R45 T49 S50 A59 I60 D61 V64 I65 A66 S67 G68 A69 T70 T71 P72 N73 N74 R75 V76

A77 D78 D79 Q80 L83 R84 Q85 K88 R93 K94 L95 Q96 R97 I100 G101 E102 M112 P113 L127 A128 L129 Y130 D131 Q132 L133 P138 T139 L140 N143 Y144 D145 D146 K147 S148 W149 G157 G161 Q165 R169 I170 D174 A179 Q183 P187

P188 Q189 P190 V191 T192 V195 Y196 T197 A198 A199 N204 L205 W206 T207 S210 A211 Q212 G213 Q214 M215 L223 A224 K225 L226 P227 A228 G229 L230 N231 A232 D241 I242 I243 N249 A252 G253 L254 N255 G256 F262 D265 L277 L278 L281 P282 A283 N286 K287

Q288 V289 Y290 A291 L292 G293 T294 E295 T296 F297 D300 A304 L308 D309 R310 L311 K312 F315

4.2.21 Score per residue for model 21

• Molecule 1: Ferrienterobactin-binding periplasmic protein

Chain A: 57% 32% • 7%

MET GLY HIS HIS HIS HIS HIS HIS HIS HIS HIS SER SER GLY HIS ILE ASP ASP ASP ASP LYS HIS A24 D25 W26 P27 R28 D32 S33 R34 G35 S41 Q42 P43 Q44 R45 A59 V64 I65 A66 S67 G68 A69 T70 T71 P72 N73 N74 R75 V76 A77 D78 D79 Q80

L83 R84 Q85 K88 R93 K94 L95 Q96 R97 I100 G101 E102 M112 P113 L127 A128 L129 Y130 D131 Q132 L133 P138 T139 L140 N143 Y144 D145 D146 K147 S148 W149 G157 G161 R169 I170 D174 Q183 P187 P188 Q189 P190 V191 T192 V195 Y196 T197

A198 A199 N204 L205 W206 T207 P208 E209 S210 A211 Q212 G213 Q214 M215 L223 A224 K225 L226 P227 A228 G229 L230 N231 A232 D241 I242 I243 N249 A252 G253 L254 N255 G256 F262 D265 L277 L278 L281 P282 A283 N286 K287 Q288 V289 Y290 A291 L292 G293 T294 E295

T296 F297 D300 A304 L308 D309 R310 L311 K312 F315

4.2.22 Score per residue for model 22

• Molecule 1: Ferrienterobactin-binding periplasmic protein

Chain A: 57% 32% • 7%

MET GLY HIS HIS HIS HIS HIS HIS HIS HIS HIS SER SER GLY HIS ILE ASP ASP ASP ASP LYS HIS A24 D25 W26 P27 R28 D32 S33 R34 G35 S41 Q42 P43 Q44 R45 T49 S50 V51 D61 V64 I65 A66 S67 G68 A69 T70 T71 P72 N73 N74 R75 V76 A77

D78 D79 Q80 L83 R84 Q85 K88 R93 K94 L95 Q96 R97 I100 G101 M112 P113 L127 A128 L129 Y130 D131 Q132 L133 P138 T139 L140 I141 I142 N143 Y144 D145 D146 K147 S148 W149 G157 G161 Q165 I170 D174 Q183 P187 P188 Q189 P190 V191

T192 V195 N204 L205 W206 T207 P208 E209 S210 A211 Q212 G213 Q214 M215 L223 A224 K225 L226 P227 A228 G229 L230 N231 A232 D241 I242 I243 N249 A252 G253 L254 N255 G256 F262 D265 L277 L278 L281 P282 A283 N286 K287 Q288 V289 Y290 A291 L292 G293 T294

E295 T296 F297 D300 A304 L308 D309 R310 L311 K312 F315

4.2.23 Score per residue for model 23

• Molecule 1: Ferrienterobactin-binding periplasmic protein

4.2.24 Score per residue for model 24

• Molecule 1: Ferrienterobactin-binding periplasmic protein

4.2.25 Score per residue for model 25

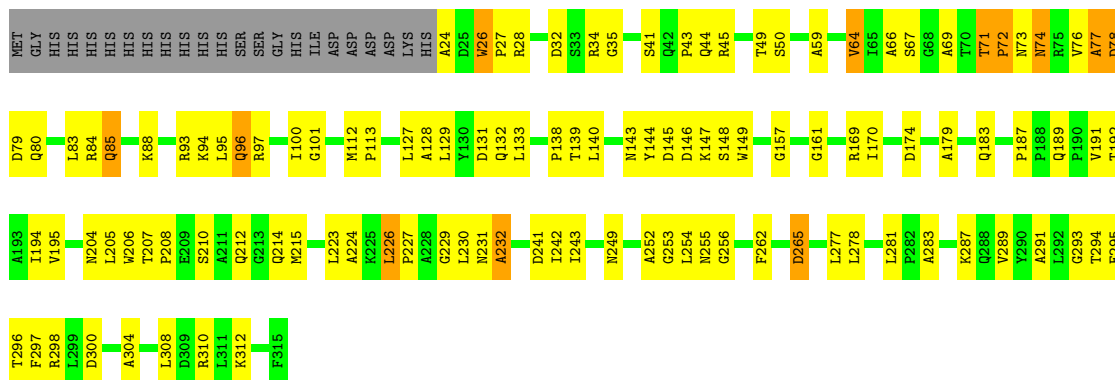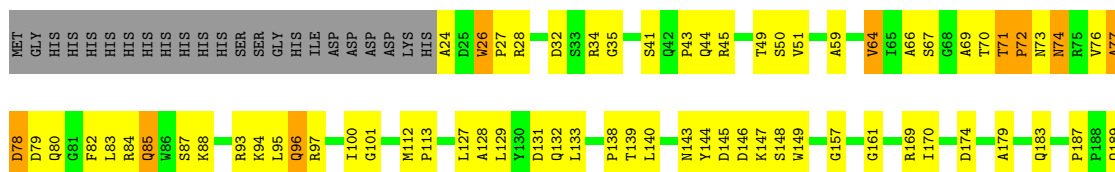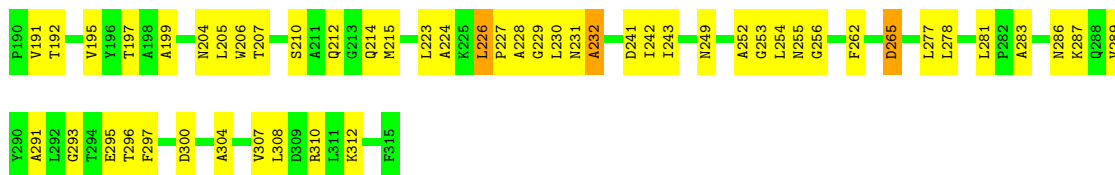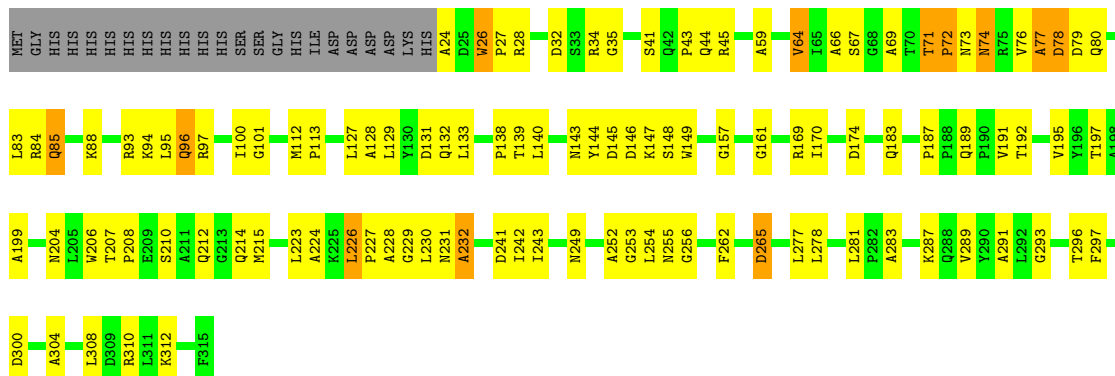• Molecule 1: Ferrienterobactin-binding periplasmic protein

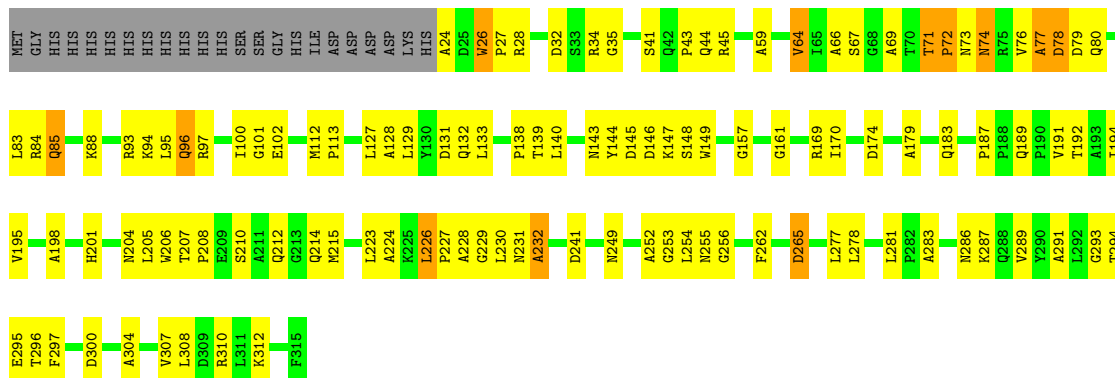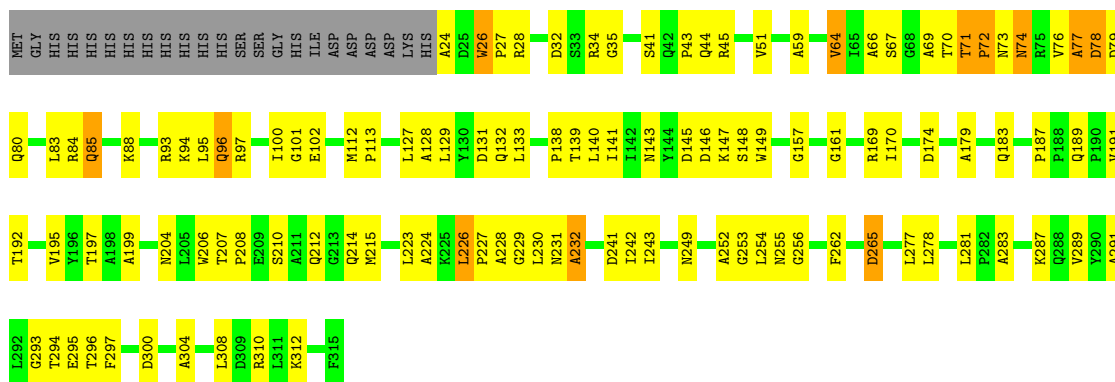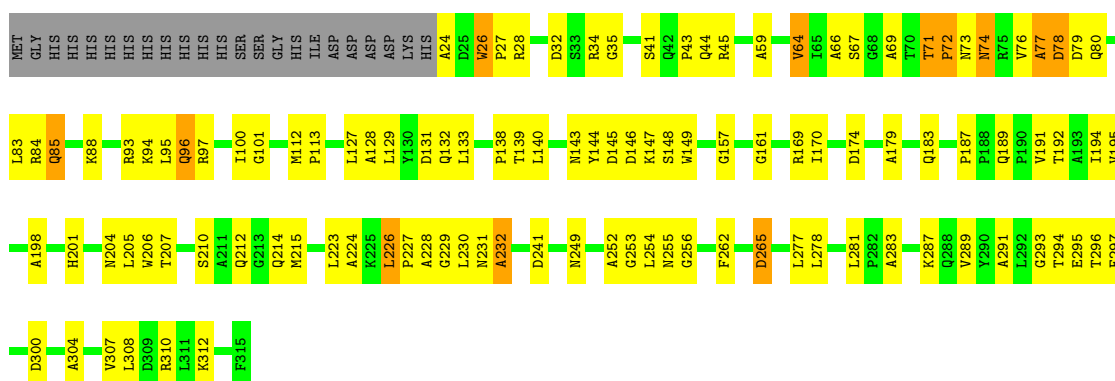P190 V191 T192 V195 Y196 T197 A198 A199 N204 L205 W206 T207 S210 A211 Q212 G213 Q214 M215 L223 A224 K225 L226 P227 A228 G229 L230 N231 A232 D241 I242 I243 N249 A252 G253 L254 N255 G256 F262 D265 L277 L278 L281 P282 A283 N286 K287 Q288 V289

Y290 A291 L292 G293 T294 E295 T296 F297 D300 A304 V307 L308 D309 R310 L311 K312 F315

4.2.26 Score per residue for model 26

• Molecule 1: Ferrienterobactin-binding periplasmic protein

Chain A: 58% 31% • 7%

MET GLY HIS HIS HIS HIS HIS HIS HIS HIS HIS SER SER GLY ILE ASP ASP ASP ASP LYS HIS A24 D25 W26 P27 R28 D32 S33 R34 G35 S41 Q42 P43 Q44 R45 A59 V64 I65 A66 S67 G68 A69 T70 T71 P72 N73 N74 R75 V76 A77 D78 D79 Q80

L83 R84 Q85 K88 R93 K94 L95 Q96 R97 I100 G101 M112 P113 L127 A128 L129 Y130 D131 Q132 L133 P138 T139 L140 N143 Y144 D145 D146 K147 S148 W149 G157 G161 R169 I170 D174 Q183 P187 P188 Q189 P190 V191 T192 V195 Y196 T197 A198

A199 N204 L205 W206 T207 P208 E209 S210 A211 Q212 G213 Q214 M215 L223 A224 K225 L226 P227 A228 G229 L230 N231 A232 D241 I242 I243 N249 A252 G253 L254 N255 G256 F262 D265 L277 L278 L281 P282 A283 K287 Q288 V289 Y290 A291 L292 G293 T296 F297

D300 A304 L308 D309 R310 L311 K312 F315

4.2.27 Score per residue for model 27

• Molecule 1: Ferrienterobactin-binding periplasmic protein

Chain A: 56% 33% • 7%

MET GLY HIS HIS HIS HIS HIS HIS HIS HIS HIS SER SER GLY ILE ASP ASP ASP ASP LYS HIS A24 D25 W26 P27 R28 D32 S33 R34 G35 S41 Q42 P43 Q44 R45 A59 V64 I65 A66 S67 G68 A69 T70 T71 P72 N73 N74 R75 V76 A77 D78 D79 Q80

L83 R84 Q85 K88 R93 K94 L95 Q96 R97 I100 G101 E102 M112 P113 L127 A128 L129 Y130 D131 Q132 L133 P138 T139 L140 N143 Y144 D145 D146 K147 S148 W149 G157 G161 R169 I170 D174 A179 Q183 P187 P188 Q189 P190 V191 T192 A193 I194

V195 A198 H201 N204 L205 W206 T207 P208 E209 S210 A211 Q212 G213 Q214 M215 L223 A224 K225 L226 P227 A228 G229 L230 N231 A232 D241 N249 A252 G253 L254 N255 G256 F262 D265 L277 L278 L281 P282 A283 N286 K287 Q288 V289 Y290 A291 L292 G293 T294

E295 T296 F297 D300 A304 V307 L308 D309 R310 L311 K312 F315

4.2.28 Score per residue for model 28

• Molecule 1: Ferrienterobactin-binding periplasmic protein

Chain A: 56% 33% • 7%

4.2.29 Score per residue for model 29
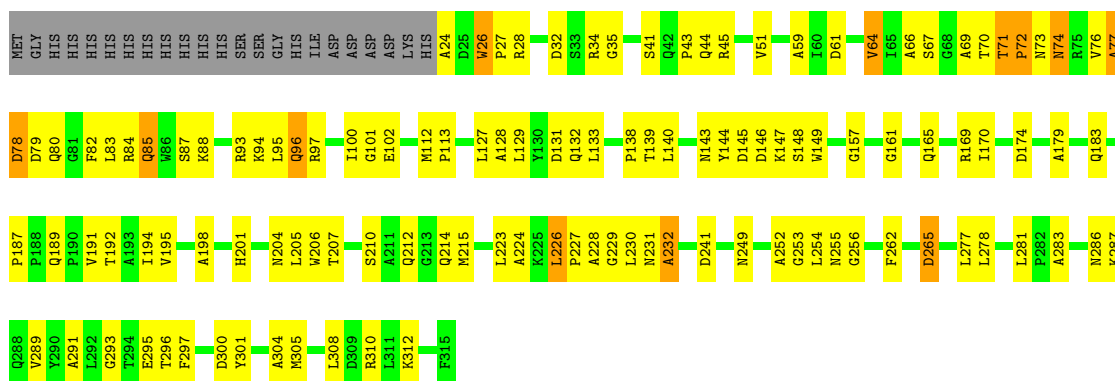
• Molecule 1: Ferrienterobactin-binding periplasmic protein

4.2.30 Score per residue for model 30

• Molecule 1: Ferrienterobactin-binding periplasmic protein

5 Refinement protocol and experimental data overview ⓘ

The models were refined using the following method: *simulated annealing.*

Of the 100 calculated structures, 30 were deposited, based on the following criterion: *structures with the lowest energy.*

The following table shows the software used for structure solution, optimisation and refinement.

Software name	Classification	Version
X-PLOR NIH	refinement	

The following table shows chemical shift validation statistics as aggregates over all chemical shift files. Detailed validation can be found in section 7 of this report.

Chemical shift file(s)	working_cs.cif
Number of chemical shift lists	1
Total number of shifts	1406
Number of shifts mapped to atoms	1349
Number of unparsed shifts	0
Number of shifts with mapping errors	57
Number of shifts with mapping warnings	0
Assignment completeness (well-defined parts)	35%

6 Model quality ⓘ

6.1 Standard geometry ⓘ

There are no covalent bond-length or bond-angle outliers.

There are no bond-length outliers.

There are no bond-angle outliers.

There are no chirality outliers.

There are no planarity outliers.

6.2 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 each 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 averaged over the ensemble.

Mol	Chain	Non-H	H(model)	H(added)	Clashes
1	A	2227	2235	2229	104±3
All	All	66810	67050	66870	3120

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 23.

All unique clashes are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models Worst	Models Total
1:A:226:LEU:N	1:A:226:LEU:HD12	0.82	1.89	3	30
1:A:226:LEU:HD12	1:A:226:LEU:H	0.71	1.46	22	30
1:A:296:THR:O	1:A:296:THR:HG22	0.69	1.86	30	30
1:A:95:LEU:O	1:A:96:GLN:CB	0.69	2.41	26	30
1:A:43:PRO:O	1:A:45:ARG:N	0.66	2.28	30	30
1:A:128:ALA:O	1:A:131:ASP:OD1	0.64	2.16	26	30
1:A:183:GLN:NE2	1:A:312:LYS:NZ	0.64	2.46	30	30
1:A:212:GLN:NE2	1:A:297:PHE:CD1	0.62	2.67	15	30
1:A:24:ALA:N	1:A:28:ARG:NH1	0.62	2.48	10	30
1:A:226:LEU:N	1:A:226:LEU:CD1	0.61	2.62	28	30
1:A:149:TRP:CD1	1:A:215:MET:SD	0.60	2.94	30	30
1:A:69:ALA:O	1:A:100:ILE:HD12	0.60	1.97	4	30
1:A:227:PRO:C	1:A:229:GLY:H	0.60	2.00	30	30
1:A:145:ASP:OD1	1:A:146:ASP:N	0.59	2.35	4	30

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:149:TRP:CG	1:A:215:MET:SD	0.59	2.95	3	30
1:A:149:TRP:CD2	1:A:215:MET:SD	0.59	2.95	8	24
1:A:73:ASN:O	1:A:74:ASN:CB	0.58	2.52	21	30
1:A:149:TRP:CE2	1:A:215:MET:SD	0.58	2.97	6	24
1:A:223:LEU:HD22	1:A:223:LEU:N	0.57	2.11	30	1
1:A:100:ILE:HG22	1:A:101:GLY:N	0.57	2.14	18	30
1:A:85:GLN:NE2	1:A:88:LYS:NZ	0.57	2.53	10	30
1:A:223:LEU:CD2	1:A:223:LEU:N	0.57	2.68	20	29
1:A:223:LEU:N	1:A:223:LEU:CD2	0.57	2.67	30	1
1:A:84:ARG:O	1:A:85:GLN:CB	0.56	2.52	21	30
1:A:93:ARG:O	1:A:94:LYS:HB2	0.56	2.00	26	30
1:A:227:PRO:O	1:A:229:GLY:N	0.56	2.38	27	30
1:A:139:THR:C	1:A:140:LEU:HD12	0.56	2.21	6	30
1:A:157:GLY:O	1:A:161:GLY:N	0.55	2.39	22	30
1:A:189:GLN:N	1:A:189:GLN:OE1	0.55	2.40	8	30
1:A:71:THR:O	1:A:73:ASN:N	0.55	2.40	21	30
1:A:223:LEU:N	1:A:223:LEU:HD22	0.55	2.17	24	29
1:A:131:ASP:OD1	1:A:132:GLN:N	0.55	2.40	24	30
1:A:143:ASN:ND2	1:A:145:ASP:OD1	0.54	2.40	22	30
1:A:67:SER:O	1:A:97:ARG:O	0.54	2.25	18	30
1:A:191:VAL:HG22	1:A:192:THR:N	0.54	2.18	6	30
1:A:278:LEU:HD12	1:A:278:LEU:N	0.54	2.18	30	30
1:A:283:ALA:O	1:A:287:LYS:N	0.54	2.41	19	30
1:A:189:GLN:O	1:A:189:GLN:NE2	0.53	2.41	21	30
1:A:83:LEU:CD1	1:A:83:LEU:N	0.53	2.71	20	30
1:A:191:VAL:CG2	1:A:192:THR:N	0.53	2.72	3	30
1:A:100:ILE:CG2	1:A:101:GLY:N	0.53	2.72	8	30
1:A:83:LEU:N	1:A:83:LEU:HD12	0.53	2.18	13	30
1:A:74:ASN:ND2	1:A:294:THR:OG1	0.52	2.43	22	18
1:A:226:LEU:HD23	1:A:249:ASN:ND2	0.52	2.19	30	30
1:A:198:ALA:O	1:A:201:HIS:CE1	0.52	2.62	19	7
1:A:170:ILE:O	1:A:174:ASP:N	0.52	2.42	22	30
1:A:230:LEU:O	1:A:232:ALA:N	0.52	2.43	19	30
1:A:73:ASN:O	1:A:73:ASN:OD1	0.52	2.28	17	30
1:A:277:LEU:CD2	1:A:277:LEU:N	0.52	2.73	21	30
1:A:254:LEU:HD12	1:A:254:LEU:N	0.52	2.19	24	30
1:A:212:GLN:NE2	1:A:297:PHE:O	0.51	2.42	4	14
1:A:149:TRP:N	1:A:214:GLN:OE1	0.51	2.43	30	6
1:A:291:ALA:O	1:A:310:ARG:CZ	0.51	2.59	1	30
1:A:85:GLN:NE2	1:A:88:LYS:HZ1	0.51	2.03	13	7
1:A:76:VAL:O	1:A:77:ALA:O	0.51	2.28	29	30

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models Worst	Total
1:A:277:LEU:N	1:A:277:LEU:HD22	0.50	2.20	4	30
1:A:183:GLN:NE2	1:A:312:LYS:HZ2	0.50	2.04	18	30
1:A:265:ASP:OD1	1:A:310:ARG:NH2	0.50	2.45	28	30
1:A:296:THR:O	1:A:296:THR:CG2	0.50	2.59	26	30
1:A:71:THR:CB	1:A:72:PRO:CD	0.50	2.90	26	30
1:A:26:TRP:CB	1:A:27:PRO:CD	0.49	2.90	26	30
1:A:195:VAL:O	1:A:204:ASN:O	0.49	2.30	19	30
1:A:73:ASN:O	1:A:74:ASN:ND2	0.49	2.45	27	30
1:A:32:ASP:OD1	1:A:34:ARG:N	0.49	2.45	7	30
1:A:64:VAL:CG2	1:A:66:ALA:O	0.49	2.60	30	30
1:A:227:PRO:C	1:A:229:GLY:N	0.48	2.66	27	30
1:A:262:PHE:CE1	1:A:293:GLY:O	0.48	2.66	30	30
1:A:230:LEU:C	1:A:232:ALA:H	0.48	2.11	30	30
1:A:143:ASN:ND2	1:A:146:ASP:CG	0.48	2.67	8	26
1:A:127:LEU:HD12	1:A:127:LEU:N	0.48	2.24	22	30
1:A:183:GLN:NE2	1:A:312:LYS:HZ1	0.47	2.05	28	28
1:A:59:ALA:HB1	1:A:169:ARG:NH1	0.47	2.24	30	27
1:A:224:ALA:CB	1:A:255:ASN:OD1	0.47	2.62	3	30
1:A:32:ASP:OD1	1:A:35:GLY:O	0.47	2.32	4	30
1:A:102:GLU:N	1:A:102:GLU:CD	0.47	2.67	18	7
1:A:73:ASN:O	1:A:74:ASN:HB2	0.47	2.09	21	30
1:A:78:ASP:C	1:A:80:GLN:N	0.47	2.67	22	30
1:A:157:GLY:O	1:A:161:GLY:CA	0.47	2.63	24	30
1:A:189:GLN:N	1:A:189:GLN:CD	0.47	2.68	3	30
1:A:82:PHE:CZ	1:A:87:SER:OG	0.47	2.65	25	3
1:A:206:TRP:NE1	1:A:210:SER:OG	0.46	2.48	16	30
1:A:187:PRO:O	1:A:189:GLN:OE1	0.46	2.33	21	30
1:A:300:ASP:O	1:A:304:ALA:CB	0.46	2.63	14	30
1:A:93:ARG:O	1:A:94:LYS:CB	0.46	2.63	22	30
1:A:206:TRP:HE1	1:A:210:SER:HG	0.46	1.54	22	9
1:A:224:ALA:HB2	1:A:255:ASN:OD1	0.46	2.10	22	29
1:A:78:ASP:O	1:A:80:GLN:N	0.45	2.49	22	18
1:A:147:LYS:O	1:A:214:GLN:OE1	0.45	2.34	18	22
1:A:140:LEU:HD12	1:A:140:LEU:N	0.45	2.27	29	30
1:A:51:VAL:HG21	1:A:70:THR:HG23	0.45	1.89	22	13
1:A:129:LEU:O	1:A:133:LEU:N	0.45	2.42	6	30
1:A:286:ASN:OD1	1:A:286:ASN:O	0.45	2.34	4	24
1:A:252:ALA:O	1:A:253:GLY:C	0.44	2.53	26	30
1:A:304:ALA:O	1:A:308:LEU:CB	0.44	2.65	21	30
1:A:95:LEU:O	1:A:96:GLN:HB3	0.44	2.12	26	19
1:A:32:ASP:OD1	1:A:32:ASP:C	0.44	2.54	22	30

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:144:TYR:O	1:A:147:LYS:O	0.44	2.36	8	25
1:A:253:GLY:O	1:A:256:GLY:N	0.44	2.51	7	30
1:A:179:ALA:O	1:A:183:GLN:N	0.44	2.49	30	23
1:A:278:LEU:N	1:A:278:LEU:CD1	0.44	2.81	24	30
1:A:78:ASP:C	1:A:80:GLN:H	0.43	2.16	22	30
1:A:297:PHE:CE2	1:A:298:ARG:CZ	0.43	3.01	18	2
1:A:143:ASN:CG	1:A:145:ASP:OD1	0.43	2.57	30	30
1:A:144:TYR:O	1:A:214:GLN:NE2	0.43	2.49	15	11
1:A:148:SER:C	1:A:214:GLN:OE1	0.43	2.58	4	30
1:A:143:ASN:OD1	1:A:145:ASP:OD1	0.42	2.37	12	19
1:A:127:LEU:N	1:A:127:LEU:CD1	0.42	2.83	22	30
1:A:49:THR:OG1	1:A:50:SER:N	0.42	2.52	2	9
1:A:242:ILE:CG1	1:A:243:ILE:N	0.42	2.82	20	23
1:A:61:ASP:CB	1:A:165:GLN:NE2	0.42	2.83	3	4
1:A:112:MET:N	1:A:113:PRO:CD	0.42	2.82	8	30
1:A:226:LEU:HD13	1:A:230:LEU:HD21	0.42	1.91	29	9
1:A:79:ASP:OD1	1:A:79:ASP:N	0.42	2.53	20	15
1:A:194:ILE:HG22	1:A:205:LEU:HD12	0.42	1.92	24	10
1:A:208:PRO:C	1:A:210:SER:N	0.42	2.73	13	21
1:A:295:GLU:C	1:A:297:PHE:H	0.42	2.18	30	20
1:A:79:ASP:N	1:A:79:ASP:OD1	0.41	2.53	2	15
1:A:131:ASP:OD1	1:A:131:ASP:N	0.41	2.53	1	30
1:A:197:THR:HG22	1:A:199:ALA:H	0.41	1.75	26	16
1:A:286:ASN:ND2	1:A:288:GLN:CG	0.41	2.83	19	1
1:A:83:LEU:HD23	1:A:300:ASP:CB	0.41	2.44	19	18
1:A:242:ILE:CG1	1:A:243:ILE:H	0.41	2.28	20	11
1:A:300:ASP:O	1:A:304:ALA:N	0.41	2.44	21	18
1:A:102:GLU:O	1:A:102:GLU:OE1	0.41	2.38	14	1
1:A:95:LEU:O	1:A:96:GLN:HB2	0.41	2.12	26	3
1:A:149:TRP:NE1	1:A:215:MET:SD	0.41	2.94	24	6
1:A:230:LEU:C	1:A:232:ALA:N	0.41	2.74	30	6
1:A:296:THR:HG23	1:A:307:VAL:HG21	0.41	1.92	29	10
1:A:141:ILE:HG23	1:A:141:ILE:O	0.41	2.16	3	5
1:A:253:GLY:O	1:A:254:LEU:C	0.40	2.59	7	1
1:A:205:LEU:HD23	1:A:206:TRP:N	0.40	2.31	25	1
1:A:300:ASP:O	1:A:304:ALA:HB2	0.40	2.17	28	1
1:A:301:TYR:CE2	1:A:305:MET:CE	0.40	3.04	30	1

6.3 Torsion angles ⓘ

6.3.1 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 PDB entries followed by that with respect to all NMR 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	290/315 (92%)	246±0 (85±0%)	30±1 (10±0%)	14±1 (5±0%)	4	27
All	All	8700/9450 (92%)	7379 (85%)	912 (10%)	409 (5%)	4	27

All 15 unique Ramachandran outliers are listed below. They are sorted by the frequency of occurrence in the ensemble.

Mol	Chain	Res	Type	Models (Total)
1	A	41	SER	30
1	A	44	GLN	30
1	A	74	ASN	30
1	A	77	ALA	30
1	A	78	ASP	30
1	A	85	GLN	30
1	A	96	GLN	30
1	A	138	PRO	30
1	A	231	ASN	30
1	A	232	ALA	30
1	A	241	ASP	30
1	A	265	ASP	30
1	A	72	PRO	25
1	A	228	ALA	23
1	A	79	ASP	1

6.3.2 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 PDB entries followed by that with respect to all NMR 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	232/253 (92%)	225±0 (97±0%)	7±0 (3±0%)	44	89
All	All	6960/7590 (92%)	6748 (97%)	212 (3%)	44	89

All 8 unique residues with a non-rotameric sidechain are listed below. They are sorted by the frequency of occurrence in the ensemble.

Mol	Chain	Res	Type	Models (Total)
1	A	26	TRP	30
1	A	64	VAL	30
1	A	71	THR	30
1	A	207	THR	30
1	A	226	LEU	30
1	A	281	LEU	30
1	A	289	VAL	30
1	A	102	GLU	2

6.3.3   RNA ⓘ

There are no RNA molecules in this entry.

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

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

6.5   Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.6   Ligand geometry ⓘ

There are no ligands in this entry.

6.7   Other polymers ⓘ

There are no such molecules in this entry.

6.8   Polymer linkage issues ⓘ

There are no chain breaks in this entry.

7 Chemical shift validation ⓘ

The completeness of assignment taking into account all chemical shift lists is 35% for the well-defined parts and 35% for the entire structure.

7.1 Chemical shift list 1

File name: working_cs.cif

Chemical shift list name: *assigned_chem_shift_list_1*

7.1.1 Bookkeeping ⓘ

The following table shows the results of parsing the chemical shift list and reports the number of nuclei with statistically unusual chemical shifts.

Total number of shifts	1406
Number of shifts mapped to atoms	1349
Number of unparsed shifts	0
Number of shifts with mapping errors	57
Number of shifts with mapping warnings	0
Number of shift outliers (ShiftChecker)	3

The following assigned chemical shifts were not mapped to the molecules present in the coordinate file.

- No matching atom found in the structure. All 57 occurrences are reported below.

List ID	Chain	Res	Type	Atom	Shift Data		
					Value	Uncertainty	Ambiguity
1	A	12	SER	CA	58.63	.	1
1	A	12	SER	CB	64.52	.	1
1	A	12	SER	C	174.7	.	1
1	A	13	SER	N	118.6	.	1
1	A	13	SER	H	8.489	.	1
1	A	13	SER	CA	58.93	.	1
1	A	13	SER	CB	64.34	.	1
1	A	13	SER	C	175.0	.	1
1	A	14	GLY	N	111.0	.	1
1	A	14	GLY	H	8.391	.	1
1	A	14	GLY	CA	45.59	.	1
1	A	14	GLY	C	173.7	.	1
1	A	15	HIS	N	119.6	.	1
1	A	15	HIS	H	8.201	.	1

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List ID	Chain	Res	Type	Atom	Shift Data		
					Value	Uncertainty	Ambiguity
1	A	15	HIS	CA	55.87	.	1
1	A	15	HIS	CB	29.86	.	1
1	A	15	HIS	C	174.6	.	1
1	A	16	ILE	N	123.8	.	1
1	A	16	ILE	H	8.155	.	1
1	A	16	ILE	CA	61.48	.	1
1	A	16	ILE	CB	39.23	.	1
1	A	16	ILE	C	175.8	.	1
1	A	17	ASP	N	124.6	.	1
1	A	17	ASP	H	8.426	.	1
1	A	17	ASP	CA	54.64	.	1
1	A	17	ASP	CB	41.45	.	1
1	A	17	ASP	C	175.9	.	1
1	A	18	ASP	N	121.4	.	1
1	A	18	ASP	H	8.222	.	1
1	A	18	ASP	CA	54.82	.	1
1	A	18	ASP	CB	41.38	.	1
1	A	18	ASP	C	176.3	.	1
1	A	19	ASP	N	120.9	.	1
1	A	19	ASP	H	8.28	.	1
1	A	19	ASP	CA	54.9	.	1
1	A	19	ASP	CB	41.32	.	1
1	A	19	ASP	C	176.3	.	1
1	A	20	ASP	N	120.9	.	1
1	A	20	ASP	H	8.199	.	1
1	A	20	ASP	CA	54.79	.	1
1	A	20	ASP	CB	41.1	.	1
1	A	20	ASP	C	176.6	.	1
1	A	21	LYS	N	121.2	.	1
1	A	21	LYS	H	8.059	.	1
1	A	21	LYS	CA	56.67	.	1
1	A	21	LYS	CB	32.71	.	1
1	A	21	LYS	C	176.8	.	1
1	A	22	HIS	N	119.4	.	1
1	A	22	HIS	H	8.334	.	1
1	A	22	HIS	CA	55.92	.	1
1	A	22	HIS	CB	29.08	.	1
1	A	22	HIS	C	174.8	.	1
1	A	23	MET	N	122.1	.	1
1	A	23	MET	H	8.289	.	1
1	A	23	MET	CA	55.91	.	1

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List ID	Chain	Res	Type	Atom	Shift Data		
					Value	Uncertainty	Ambiguity
1	A	23	MET	CB	33.16	.	1
1	A	23	MET	C	175.7	.	1

7.1.2 Chemical shift referencing ⓘ

The following table shows the suggested chemical shift referencing corrections.

Nucleus	# values	Correction ± precision, *ppm*	Suggested action
$^{13}C_\alpha$	297	-0.44 ± 0.11	None needed (< 0.5 ppm)
$^{13}C_\beta$	273	0.22 ± 0.05	None needed (< 0.5 ppm)
$^{13}C'$	290	-0.19 ± 0.09	None needed (< 0.5 ppm)
^{15}N	273	0.42 ± 0.27	None needed (< 0.5 ppm)

7.1.3 Completeness of resonance assignments ⓘ

The following table shows the completeness of the chemical shift assignments for the well-defined regions of the structure. The overall completeness is 35%, i.e. 1349 atoms were assigned a chemical shift out of a possible 3895. 0 out of 48 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^{1}H	^{13}C	^{15}N
Backbone	1087/1451 (75%)	262/589 (44%)	563/584 (96%)	262/278 (94%)
Sidechain	262/2214 (12%)	0/1450 (0%)	262/684 (38%)	0/80 (0%)
Aromatic	0/230 (0%)	0/111 (0%)	0/105 (0%)	0/14 (0%)
Overall	1349/3895 (35%)	262/2150 (12%)	825/1373 (60%)	262/372 (70%)

The following table shows the completeness of the chemical shift assignments for the full structure. The overall completeness is 35%, i.e. 1349 atoms were assigned a chemical shift out of a possible 3895. 0 out of 48 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^{1}H	^{13}C	^{15}N
Backbone	1087/1451 (75%)	262/589 (44%)	563/584 (96%)	262/278 (94%)
Sidechain	262/2214 (12%)	0/1450 (0%)	262/684 (38%)	0/80 (0%)
Aromatic	0/230 (0%)	0/111 (0%)	0/105 (0%)	0/14 (0%)
Overall	1349/3895 (35%)	262/2150 (12%)	825/1373 (60%)	262/372 (70%)

7.1.4 Statistically unusual chemical shifts ⓘ

The following table lists the statistically unusual chemical shifts. These are statistical measures, and large deviations from the mean do not necessarily imply incorrect assignments. Molecules con-

taining paramagnetic centres or hemes are expected to give rise to anomalous chemical shifts.

List Id	Chain	Res	Type	Atom	Shift, *ppm*	Expected range, *ppm*	Z-score
1	A	211	ALA	CB	31.73	10.19 – 27.75	7.3
1	A	44	GLN	H	11.22	5.39 – 11.05	5.3
1	A	104	SER	H	5.43	5.45 – 11.10	-5.0

7.1.5 Random Coil Index (RCI) plots ⓘ

The image below reports *random coil index* values for the protein chains in the structure. The height of each bar gives a probability of a given residue to be disordered, as predicted from the available chemical shifts and the amino acid sequence. A value above 0.2 is an indication of significant predicted disorder. The colour of the bar shows whether the residue is in the well-defined core (black) or in the ill-defined residue ranges (cyan), as described in section 2 on ensemble composition.If well-defined core and ill-defined regions are not identified then it is shown as gray bars.

Random coil index (RCI) for chain A: