wwPDB X-ray Structure Validation Summary Report (i)

Sep 4, 2023 – 04:32 PM EDT

PDB ID : 3UQ4

Title : X-ray structure of a pentameric ligand gated ion channel from Erwinia chrysanthemi (ELIC) mutant F247L (F16L)

Authors : Gonzalez-Gutierrez, G.; Lukk, T.; Agarwal, V.; Papke, D.; Nair, S.K.; Grosman, C.

Deposited on : 2011-11-19

Resolution : 3.50 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	:	2.35
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)	:	2.35

1   Overall quality at a glance ⓘ

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

The reported resolution of this entry is 3.50 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.
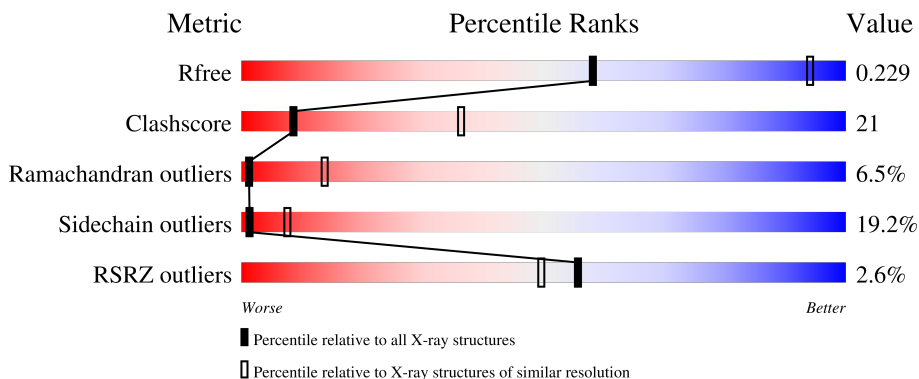
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1659 (3.60-3.40)
Clashscore	141614	1036 (3.58-3.42)
Ramachandran outliers	138981	1005 (3.58-3.42)
Sidechain outliers	138945	1006 (3.58-3.42)
RSRZ outliers	127900	1559 (3.60-3.40)

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	324	2% / 45% 37% 11% • 5%
1	B	324	2% / 44% 37% 12% • 5%
1	C	324	2% / 47% 36% 10% • 5%
1	D	324	2% / 46% 36% 11% • 5%
1	E	324	3% / 44% 39% 10% • 5%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
1	F	324	2% / 45% / 36% / 13% / 5%
1	G	324	3% / 46% / 35% / 11% / 5%
1	H	324	2% / 48% / 35% / 10% / 5%
1	I	324	3% / 45% / 37% / 11% / 5%
1	J	324	3% / 46% / 39% / 9% / 5%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	NA	A	323	-	-	-	X

2 Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 25022 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 Gamma-aminobutyric-acid receptor subunit beta-1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	307	Total	C	N	O	S	0	0	0
			2502	1630	416	450	6			
1	B	307	Total	C	N	O	S	0	0	0
			2502	1630	416	450	6			
1	C	307	Total	C	N	O	S	0	0	0
			2502	1630	416	450	6			
1	D	307	Total	C	N	O	S	0	0	0
			2502	1630	416	450	6			
1	E	307	Total	C	N	O	S	0	0	0
			2502	1630	416	450	6			
1	F	307	Total	C	N	O	S	0	0	0
			2502	1630	416	450	6			
1	G	307	Total	C	N	O	S	0	0	0
			2502	1630	416	450	6			
1	H	307	Total	C	N	O	S	0	0	0
			2502	1630	416	450	6			
1	I	307	Total	C	N	O	S	0	0	0
			2502	1630	416	450	6			
1	J	307	Total	C	N	O	S	0	0	0
			2502	1630	416	450	6			

There are 30 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	GLY	-	expression tag	UNP E0SJQ4
A	0	SER	-	expression tag	UNP E0SJQ4
A	247	LEU	PHE	engineered mutation	UNP E0SJQ4
B	-1	GLY	-	expression tag	UNP E0SJQ4
B	0	SER	-	expression tag	UNP E0SJQ4
B	247	LEU	PHE	engineered mutation	UNP E0SJQ4
C	-1	GLY	-	expression tag	UNP E0SJQ4
C	0	SER	-	expression tag	UNP E0SJQ4
C	247	LEU	PHE	engineered mutation	UNP E0SJQ4

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
D	-1	GLY	-	expression tag	UNP E0SJQ4
D	0	SER	-	expression tag	UNP E0SJQ4
D	247	LEU	PHE	engineered mutation	UNP E0SJQ4
E	-1	GLY	-	expression tag	UNP E0SJQ4
E	0	SER	-	expression tag	UNP E0SJQ4
E	247	LEU	PHE	engineered mutation	UNP E0SJQ4
F	-1	GLY	-	expression tag	UNP E0SJQ4
F	0	SER	-	expression tag	UNP E0SJQ4
F	247	LEU	PHE	engineered mutation	UNP E0SJQ4
G	-1	GLY	-	expression tag	UNP E0SJQ4
G	0	SER	-	expression tag	UNP E0SJQ4
G	247	LEU	PHE	engineered mutation	UNP E0SJQ4
H	-1	GLY	-	expression tag	UNP E0SJQ4
H	0	SER	-	expression tag	UNP E0SJQ4
H	247	LEU	PHE	engineered mutation	UNP E0SJQ4
I	-1	GLY	-	expression tag	UNP E0SJQ4
I	0	SER	-	expression tag	UNP E0SJQ4
I	247	LEU	PHE	engineered mutation	UNP E0SJQ4
J	-1	GLY	-	expression tag	UNP E0SJQ4
J	0	SER	-	expression tag	UNP E0SJQ4
J	247	LEU	PHE	engineered mutation	UNP E0SJQ4

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

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total 1	Na 1	0	0
2	F	1	Total 1	Na 1	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: Gamma-aminobutyric-acid receptor subunit beta-1

- Molecule 1: Gamma-aminobutyric-acid receptor subunit beta-1

C313 V314 L315 V316 I317 ARG GLY ILE THR LEU

- Molecule 1: Gamma-aminobutyric-acid receptor subunit beta-1

Chain C:

2%

47%   36%   10%   · 5%

GLY SER ALA PRO ALA ASP ASN ALA ALA ASP ALA ARG P11 V12 S15 V16 S17 I18 F19 I20 N21 K22 I23 V26 N27 T28 L29 E30 Q31 T32 Y38 I39 V40 A41 Q42 W43 T44 L56 I63 W66 L71 W72 I79 V82 G83 S84 P85 D86 T87 R91
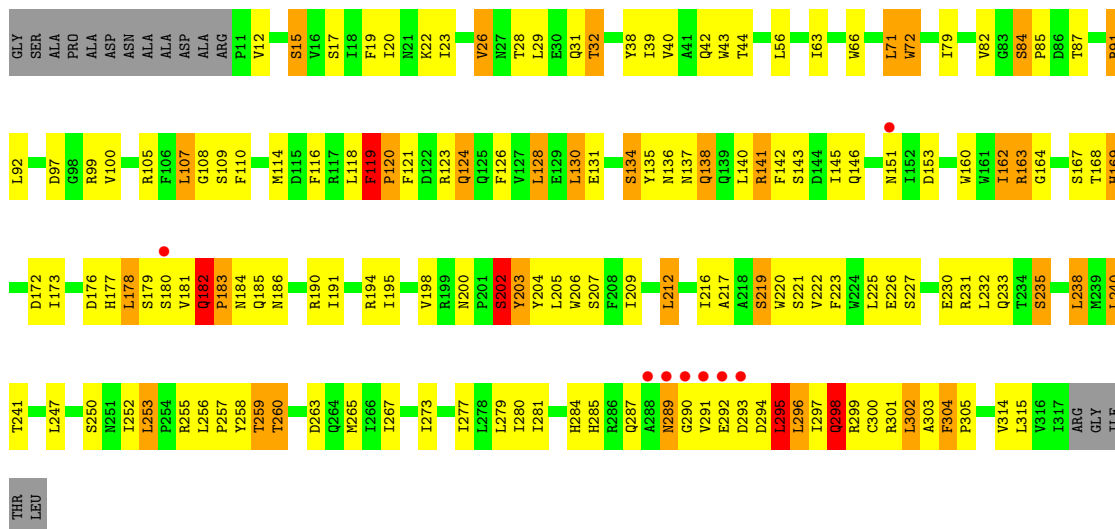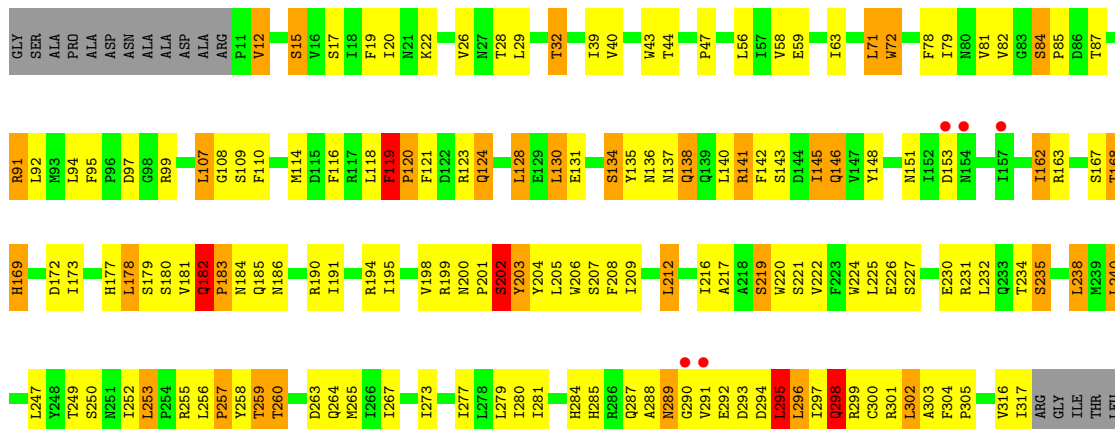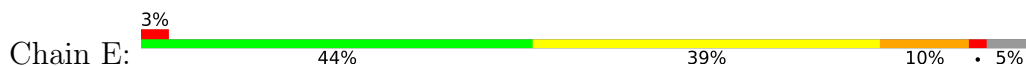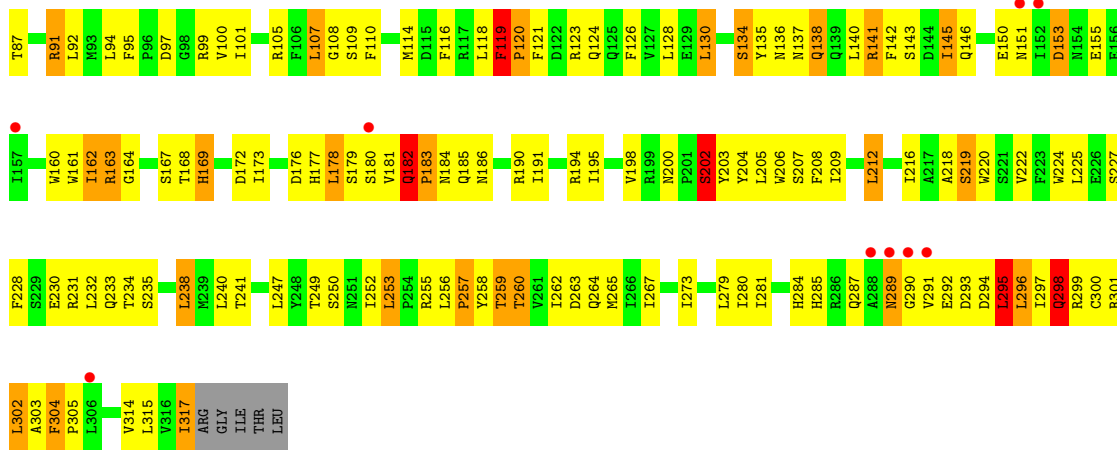
L92 D97 G98 R99 V100 R105 F106 L107 G108 S109 F110 M114 D115 F116 R117 L118 F119 P120 F121 D122 R123 Q124 Q125 F126 V127 L128 E129 L130 E131 S134 Y135 N136 N137 Q138 Q139 L140 R141 F142 S143 D144 I145 Q146 N151 I152 D153 W160 W161 I162 R163 G164 S167 T168 H169

D172 I173 D176 H177 L178 S179 S180 V181 Q182 P183 N184 Q185 N186 R190 I191 R194 I195 V198 R199 N200 P201 S202 Y203 Y204 L205 W206 S207 F208 I209 L212 I216 A217 A218 S219 W220 S221 V222 F223 W224 L225 E226 S227 E230 R231 L232 Q233 T234 S235 L238 M239 L240

T241 L247 S250 N251 I252 L253 P254 R255 L256 P257 Y258 T259 T260 D263 Q264 M265 I266 I267 I273 I277 L278 L279 I280 I281 H284 H285 R286 Q287 A288 N289 G290 V291 E292 D293 D294 I295 L296 I297 Q298 R299 C300 R301 L302 A303 F304 P305 V314 L315 V316 I317 ARG GLY ILE

THR LEU

- Molecule 1: Gamma-aminobutyric-acid receptor subunit beta-1

Chain D:

2%

46%   36%   11%   · 5%

GLY SER ALA PRO ALA ASP ASN ALA ALA ASP ALA ARG P11 V12 S15 V16 S17 I18 F19 I20 N21 K22 V26 N27 T28 L29 T32 I39 V40 W43 T44 P47 L56 I57 V58 E59 I63 L71 W72 F78 I79 N80 V81 V82 G83 S84 P85 D86 T87

R91 L92 M93 L94 F95 P96 D97 G98 R99 L107 G108 S109 F110 M114 D115 F116 R117 L118 F119 P120 F121 D122 R123 Q124 L128 E129 L130 E131 S134 Y135 N136 N137 Q138 Q139 L140 R141 F142 S143 D144 I145 Q146 V147 Y148 N151 I152 D153 N154 I157 I162 R163 S167 T168

H169 D172 I173 H177 L178 S179 S180 V181 Q182 P183 N184 Q185 N186 R190 I191 R194 I195 V198 R199 N200 P201 S202 Y203 Y204 L205 W206 S207 F208 I209 L212 I216 A217 A218 S219 W220 S221 V222 F223 W224 L225 E226 S227 E230 R231 L232 Q233 T234 S235 L238 M239 L240

L247 Y248 T249 S250 N251 I252 L253 P254 R255 L256 P257 Y258 T259 T260 D263 Q264 M265 I266 I267 I273 I277 L278 L279 I280 I281 H284 H285 R286 Q287 A288 N289 G290 V291 E292 D293 D294 I295 L296 I297 Q298 R299 C300 R301 L302 A303 F304 P305 V316 I317 ARG GLY ILE THR LEU

- Molecule 1: Gamma-aminobutyric-acid receptor subunit beta-1

Chain E:

3%

44%   39%   10%   · 5%

GLY SER ALA PRO ALA ASP ASN ALA ALA ASP ALA ARG P11 V12 S15 V16 S17 I18 F19 I20 N21 K22 I23 V26 N27 T28 L29 E30 Q31 T32 Y38 I39 V40 A41 Q42 W43 T44 P47 L56 E59 I63 L71 W72 F78 V81 V82 G83 S84 P85 D86
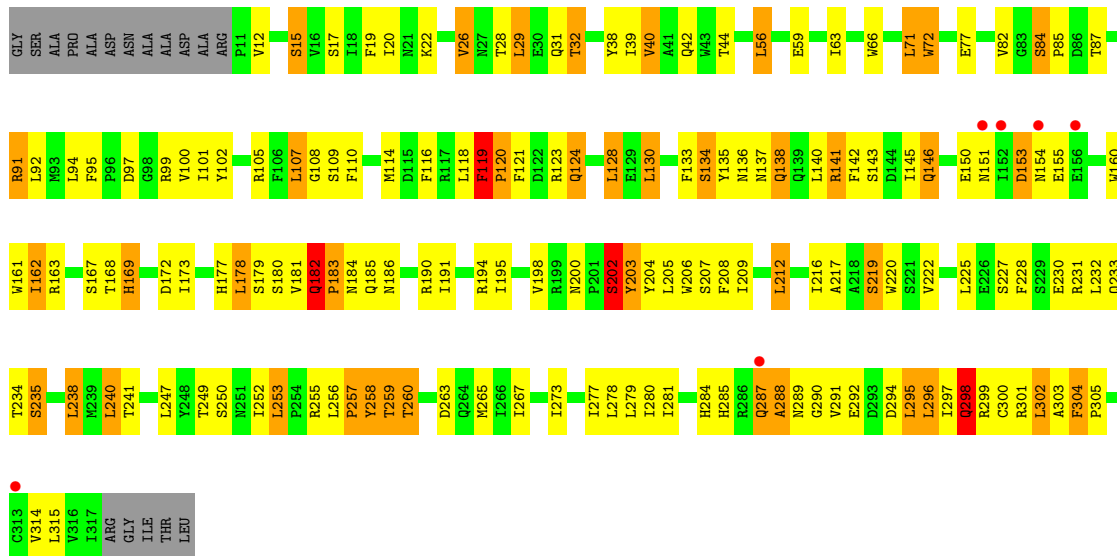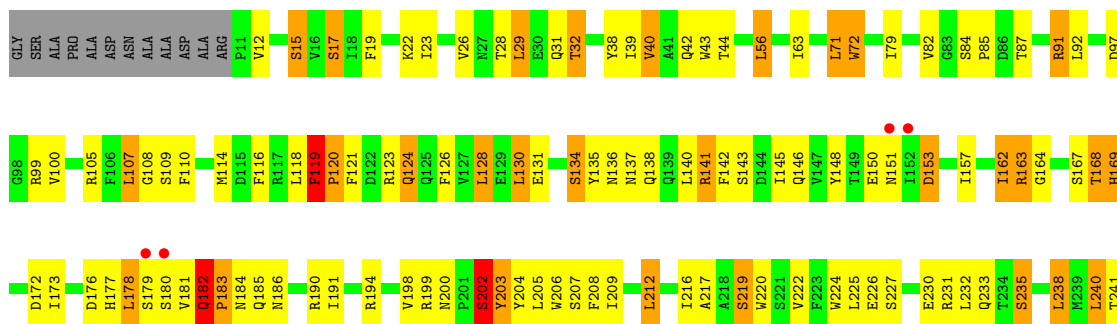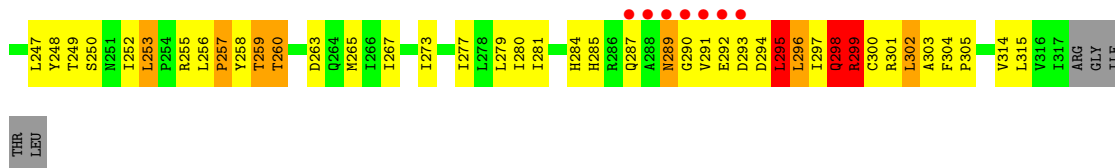
• Molecule 1: Gamma-aminobutyric-acid receptor subunit beta-1

Chain F:

• Molecule 1: Gamma-aminobutyric-acid receptor subunit beta-1

Chain G:

L247 Y248 T249 S250 N251 I252 L253 P254 R255 L256 P257 Y258 T259 T260 D263 Q264 M265 I266 I267 I273 I277 L278 L279 I280 I281 H284 H285 R286 Q287 A288 N289 G290 V291 E292 D293 D294 L295 L296 I297 Q298 R299 C300 R301 L302 A303 F304 P305 V314 L315 V316 I317 ARG GLY ILE

THR LEU

• Molecule 1: Gamma-aminobutyric-acid receptor subunit beta-1

Chain H:

2%

48%　　　　　　35%　　　10%　• 5%

GLY SER ALA PRO ALA ASP ASN ALA ALA ASP ALA ARG P11 V12 S15 V16 S17 I18 F19 K22 V26 N27 T28 L29 E30 Q31 T32 Y38 I39 V40 T44 L56 I57 V58 E59 I63 W66 L71 W72 E77 V82 G83 S84 P85 D86 T87 R91 L92

M93 L94 D97 G98 R99 R105 F106 L107 G108 S109 F110 M114 D115 F116 R117 L118 F119 P120 F121 D122 R123 Q124 L128 E129 L130 S134 Y135 N136 N137 Q138 Q139 L140 R141 F142 S143 D144 I145 Q146 T149 E150 N151 I152 D153 W160 W161 I162 R163 S167 T168 H169 D172

I173 H177 L178 S179 S180 V181 Q182 P183 N184 Q185 N186 R190 I191 R194 V198 R199 N200 P201 S202 Y203 Y204 L205 W206 S207 F208 I209 L212 I216 A217 A218 S219 W220 S221 V222 F223 W224 L225 E226 S227 F228 S229 E230 R231 L232 Q233 T234 S235 L238 M239 L240 T241 L247

Y248 T249 S250 N251 I252 L253 P254 R255 L256 P257 Y258 T259 T260 D263 Q264 M265 I266 I267 I273 I277 L278 I280 I281 H284 H285 R286 Q287 A288 N289 G290 V291 E292 D293 L295 L296 I297 Q296 R299 C300 R301 L302 A303 F304 P305 V314 L315 I317 ARG GLY ILE THR LEU

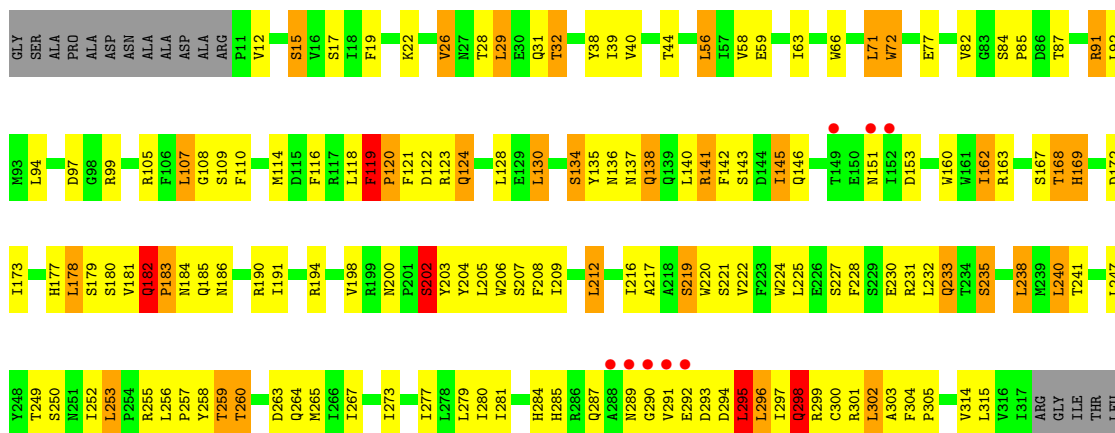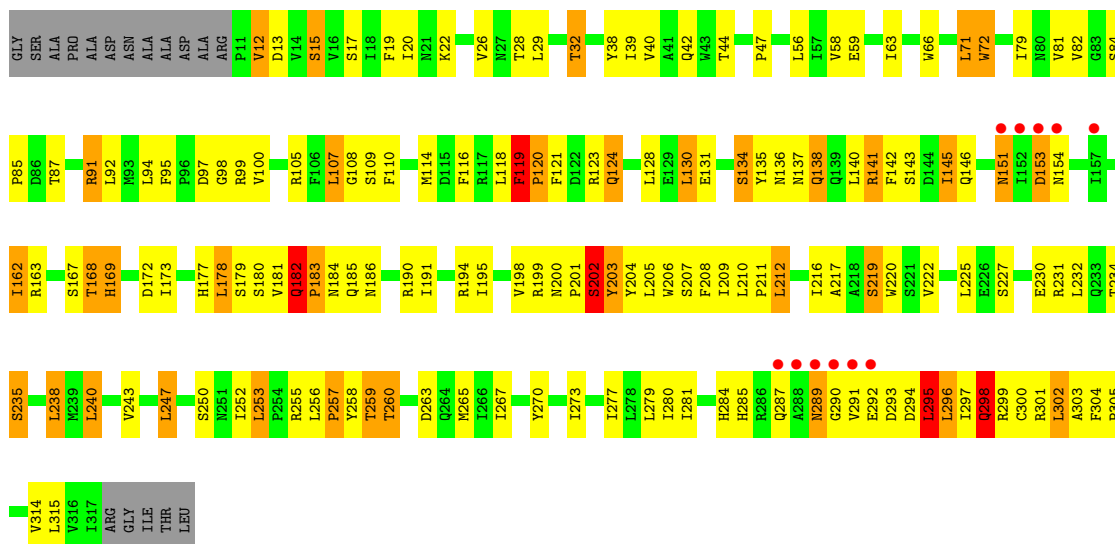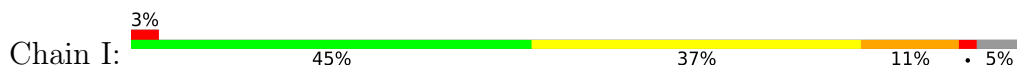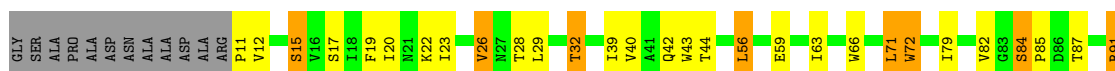• Molecule 1: Gamma-aminobutyric-acid receptor subunit beta-1

Chain I:

3%

45%　　　　　　37%　　　11%　• 5%

GLY SER ALA PRO ALA ASP ASN ALA ALA ASP ALA ARG P11 V12 D13 V14 S15 V16 S17 I18 F19 I20 N21 K22 V26 N27 T28 L29 T32 Y38 I39 V40 A41 Q42 W43 T44 P47 L56 I57 V58 E59 I63 W66 L71 W72 I79 N80 V81 V82 G83 S84

P85 D86 T87 R91 L92 M93 L94 F95 P96 D97 G98 R99 V100 R105 F106 L107 G108 S109 F110 M114 D115 F116 R117 L118 F119 P120 F121 D122 R123 Q124 L128 E129 L130 E131 S134 Y135 N136 N137 Q138 Q139 L140 R141 F142 S143 D144 I145 Q146 N151 I152 D153 N154 I157

I162 R163 S167 T168 H169 D172 I173 H177 L178 S179 S180 V181 Q182 P183 N184 Q185 N186 R190 I191 R194 I195 V198 R199 N200 P201 S202 Y203 Y204 L205 W206 S207 F208 I209 L210 P211 L212 I216 A217 A218 S219 W220 V222 S221 L225 E226 S227 E230 R231 L232 Q233 T234

S235 L238 M239 L240 V243 L247 S250 N251 I252 L253 P254 R255 L256 P257 Y258 T259 T260 D263 Q264 M265 I266 I267 Y270 I273 I277 L278 L279 I280 I281 H284 H285 R286 Q287 A288 N289 G290 V291 E292 D293 D294 L295 L296 I297 Q298 R299 C300 R301 L302 A303 F304 P305

V314 L315 V316 I317 ARG GLY ILE THR LEU

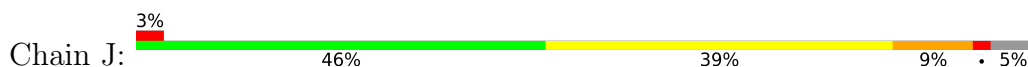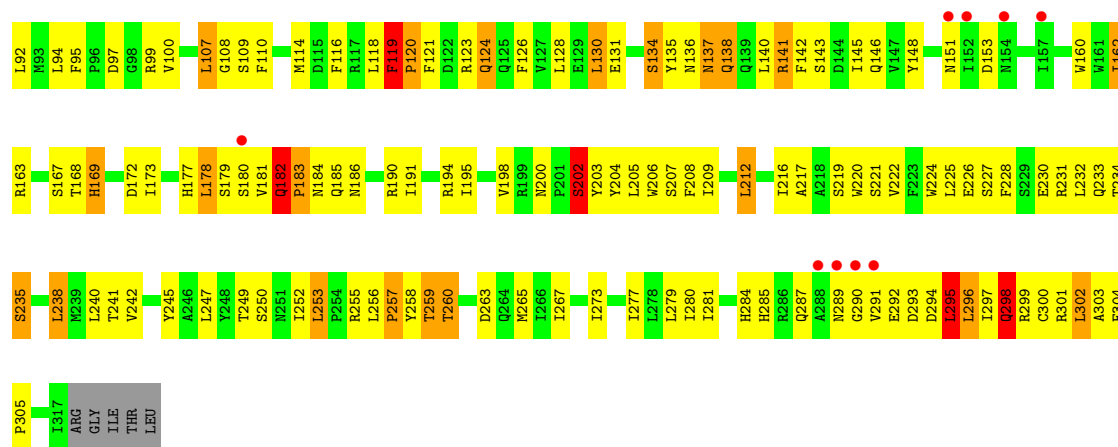• Molecule 1: Gamma-aminobutyric-acid receptor subunit beta-1

Chain J:

3%

46%　　　　　　39%　　　9%　• 5%

GLY SER ALA PRO ALA ASP ASN ALA ALA ASP ALA ARG P11 V12 S15 V16 S17 I18 F19 I20 N21 K22 I23 V26 N27 T28 L29 T32 I39 V40 A41 Q42 W43 T44 L56 E59 I63 W66 L71 W72 I79 V82 G83 S84 P85 D86 T87 R91

Residue validation row 1: L92 M93 L94 F95 P96 D97 G98 R99 V100 L107 G108 S109 F110 M114 D115 F116 R117 L118 F119 P120 F121 D122 R123 Q124 Q125 F126 V127 L128 E129 L130 E131 S134 Y135 N136 N137 Q138 Q139 L140 R141 F142 S143 D144 I145 Q146 V147 Y148 N151 I152 D153 N154 I157 W160 W161 I162

Residue validation row 2: R163 S167 T168 H169 D172 I173 H177 L178 S179 S180 V181 Q182 P183 N184 Q185 N186 R190 I191 R194 I195 V198 R199 N200 P201 S202 Y203 Y204 L205 W206 S207 F208 I209 L212 I216 A217 A218 S219 W220 S221 V222 F223 W224 L225 E226 S227 F228 S229 E230 R231 L232 Q233 T234

Residue validation row 3: S235 L238 M239 L240 T241 V242 Y245 A246 L247 Y248 T249 S250 N251 I252 L253 P254 R255 L256 P257 Y258 T259 T260 D263 Q264 M265 I266 I267 I273 I277 L278 L279 I280 I281 H284 H285 R286 Q287 A288 N289 G290 V291 E292 D293 D294 I295 L296 I297 Q298 R299 C300 R301 L302 A303 F304

Residue validation row 4: P305 I317

Legend: ARG GLY ILE THR LEU

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	105.35Å 266.94Å 110.84Å 90.00° 109.60° 90.00°	Depositor
Resolution (Å)	19.93 – 3.50 19.93 – 3.50	Depositor EDS
% Data completeness (in resolution range)	99.8 (19.93-3.50) 99.8 (19.93-3.50)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.78 (at 3.52Å)	Xtriage
Refinement program	PHENIX dev_897, REFMAC	Depositor
R, R_{free}	0.215 , 0.239 0.204 , 0.229	Depositor DCC
R_{free} test set	3594 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	97.4	Xtriage
Anisotropy	0.082	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.27 , 64.8	EDS
L-test for twinning[2]	$< |L| > = 0.48, < L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	25022	wwPDB-VP
Average B, all atoms (Å^2)	102.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.32% 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 (i)

5.1   Standard geometry (i)

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	0.69	0/2569	0.85	2/3502 (0.1%)
1	B	0.70	0/2569	0.87	2/3502 (0.1%)
1	C	0.70	0/2569	0.84	1/3502 (0.0%)
1	D	0.73	0/2569	0.88	2/3502 (0.1%)
1	E	0.73	0/2569	0.85	2/3502 (0.1%)
1	F	0.69	0/2569	0.85	1/3502 (0.0%)
1	G	0.73	0/2569	1.02	4/3502 (0.1%)
1	H	0.71	1/2569 (0.0%)	0.85	2/3502 (0.1%)
1	I	0.71	0/2569	0.87	2/3502 (0.1%)
1	J	0.70	0/2569	0.85	1/3502 (0.0%)
All	All	0.71	1/25690 (0.0%)	0.87	19/35020 (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	3
1	B	0	3
1	C	0	3
1	D	0	3
1	E	0	3
1	F	0	3
1	G	0	3
1	H	0	3
1	I	0	3
1	J	0	3
All	All	0	30

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	H	233	GLN	CG-CD	5.49	1.63	1.51

The worst 5 of 19 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	G	299	ARG	NE-CZ-NH1	-22.37	109.12	120.30
1	G	299	ARG	NE-CZ-NH2	21.64	131.12	120.30
1	G	299	ARG	CD-NE-CZ	10.27	137.97	123.60
1	J	119	PHE	C-N-CD	-9.47	99.76	120.60
1	D	119	PHE	C-N-CD	-9.39	99.95	120.60

There are no chirality outliers.

5 of 30 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	119	PHE	Peptide
1	A	137	ASN	Peptide
1	A	298	GLN	Peptide
1	B	119	PHE	Peptide
1	B	137	ASN	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	2502	0	2480	108	0
1	B	2502	0	2480	120	0
1	C	2502	0	2480	104	0
1	D	2502	0	2480	110	0
1	E	2502	0	2480	112	0
1	F	2502	0	2480	115	0
1	G	2502	0	2480	112	0
1	H	2502	0	2480	111	0
1	I	2502	0	2480	113	0
1	J	2502	0	2480	104	0
2	A	1	0	0	0	0
2	F	1	0	0	0	0
All	All	25022	0	24800	1031	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 21.

The worst 5 of 1031 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:I:300:CYS:HA	1:I:303:ALA:HB3	1.53	0.91
1:A:300:CYS:HA	1:A:303:ALA:HB3	1.54	0.89
1:F:205:LEU:HD23	1:F:209:ILE:HG13	1.54	0.89
1:I:205:LEU:HD23	1:I:209:ILE:HG13	1.55	0.88
1:D:205:LEU:HD23	1:D:209:ILE:HG13	1.56	0.87

There are no symmetry-related clashes.

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	305/324 (94%)	248 (81%)	38 (12%)	19 (6%)	1	15
1	B	305/324 (94%)	249 (82%)	36 (12%)	20 (7%)	1	13
1	C	305/324 (94%)	250 (82%)	33 (11%)	22 (7%)	1	11
1	D	305/324 (94%)	249 (82%)	33 (11%)	23 (8%)	1	11
1	E	305/324 (94%)	249 (82%)	36 (12%)	20 (7%)	1	13
1	F	305/324 (94%)	249 (82%)	37 (12%)	19 (6%)	1	15
1	G	305/324 (94%)	249 (82%)	36 (12%)	20 (7%)	1	13
1	H	305/324 (94%)	253 (83%)	34 (11%)	18 (6%)	1	15
1	I	305/324 (94%)	255 (84%)	31 (10%)	19 (6%)	1	15
1	J	305/324 (94%)	247 (81%)	39 (13%)	19 (6%)	1	15
All	All	3050/3240 (94%)	2498 (82%)	353 (12%)	199 (6%)	1	14

5 of 199 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	120	PRO
1	A	169	HIS
1	A	200	ASN
1	A	202	SER
1	B	120	PRO

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	275/285 (96%)	222 (81%)	53 (19%)	1	7
1	B	275/285 (96%)	220 (80%)	55 (20%)	1	7
1	C	275/285 (96%)	223 (81%)	52 (19%)	1	8
1	D	275/285 (96%)	221 (80%)	54 (20%)	1	7
1	E	275/285 (96%)	222 (81%)	53 (19%)	1	7
1	F	275/285 (96%)	222 (81%)	53 (19%)	1	7
1	G	275/285 (96%)	223 (81%)	52 (19%)	1	8
1	H	275/285 (96%)	224 (82%)	51 (18%)	1	8
1	I	275/285 (96%)	222 (81%)	53 (19%)	1	7
1	J	275/285 (96%)	224 (82%)	51 (18%)	1	8
All	All	2750/2850 (96%)	2223 (81%)	527 (19%)	1	7

5 of 527 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	I	247	LEU
1	J	12	VAL
1	I	240	LEU
1	J	281	ILE
1	D	206	TRP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 7 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	125	GLN
1	I	125	GLN
1	J	125	GLN
1	I	151	ASN
1	B	125	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 2 ligands modelled in this entry, 2 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 ⓘ

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, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	307/324 (94%)	-0.52	7 (2%)	60	54	57, 94, 173, 216	0
1	B	307/324 (94%)	-0.53	6 (1%)	65	60	59, 92, 176, 210	0
1	C	307/324 (94%)	-0.44	8 (2%)	56	49	56, 92, 174, 216	0
1	D	307/324 (94%)	-0.52	5 (1%)	72	66	57, 90, 172, 215	0
1	E	307/324 (94%)	-0.50	9 (2%)	51	45	57, 93, 177, 215	0
1	F	307/324 (94%)	-0.57	6 (1%)	65	60	59, 93, 173, 210	0
1	G	307/324 (94%)	-0.50	11 (3%)	42	38	57, 91, 175, 216	0
1	H	307/324 (94%)	-0.54	8 (2%)	56	49	57, 91, 174, 214	0
1	I	307/324 (94%)	-0.46	11 (3%)	42	38	56, 91, 174, 217	0
1	J	307/324 (94%)	-0.52	9 (2%)	51	45	56, 92, 174, 217	0
All	All	3070/3240 (94%)	-0.51	80 (2%)	56	49	56, 92, 176, 217	0

The worst 5 of 80 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	151	ASN	8.5
1	G	289	ASN	7.0
1	G	291	VAL	6.9
1	C	289	ASN	6.8
1	G	290	GLY	6.6

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 (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

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	323	1/1	0.60	0.41	48,48,48,48	0
2	NA	F	323	1/1	0.70	0.36	50,50,50,50	0

6.5 Other polymers (i)

There are no such residues in this entry.