



wwPDB/EMDatabank EM Map/Model Validation Summary Report ⓘ

Mar 2, 2017 – 11:26 am GMT

PDB ID : 3IYF
EMDB ID: : EMD-5140
Title : Atomic Model of the Lidless Mm-cpn in the Open State
Authors : Zhang, J.; Baker, M.L.; Schroeder, G.; Douglas, N.R.; Reissmann, S.; Jakana, J.; Dougherty, M.; Fu, C.J.; Levitt, M.; Ludtke, S.J.; Frydman, J.; Chiu, W.
Deposited on : 2009-10-23
Resolution : 8.00 Å(reported)

This is a wwPDB/EMDatabank EM Map/Model Validation Summary Report
for a publicly released PDB/EMDB entry.

We welcome your comments at validation@mail.wwpdb.org
A user guide is available at
<http://wwpdb.org/validation/2016/EMValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

MolProbity : 4.02b-467
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et. al. (1996)
Validation Pipeline (wwPDB-VP) : recalc29047

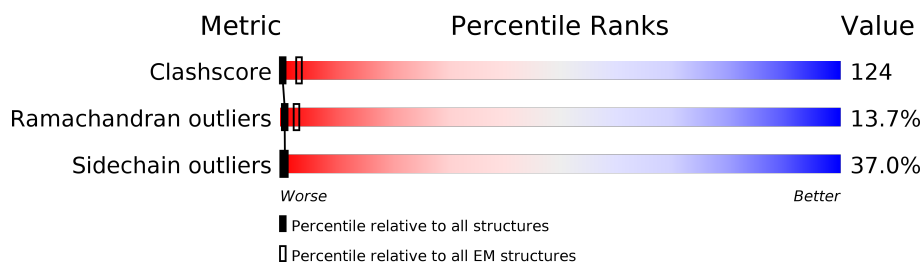
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 8.00 Å.

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



| Metric | Whole archive (#Entries) | EM structures (#Entries) |
|-----------------------|-----------------------------|-----------------------------|
| Clashscore | 125131 | 1336 |
| Ramachandran outliers | 121729 | 1120 |
| Sidechain outliers | 121581 | 1026 |

The table below summarises the geometric issues observed across the polymeric chains. The red, orange, yellow and green segments on the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1 | A | 521 | |
| 1 | B | 521 | |
| 1 | C | 521 | |
| 1 | D | 521 | |
| 1 | E | 521 | |
| 1 | F | 521 | |
| 1 | G | 521 | |
| 1 | H | 521 | |
| 1 | I | 521 | |

Continued on next page...

Continued from previous page...

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|---|
| 1 | J | 521 | <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> |
| 1 | K | 521 | <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> |
| 1 | L | 521 | <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> |
| 1 | M | 521 | <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> |
| 1 | N | 521 | <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> |
| 1 | O | 521 | <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> |
| 1 | P | 521 | <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> <div><div></div><div></div><div></div><div></div></div> |

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 58624 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Chaperonin.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 1 | A | 491 | Total | C | N | O | S | 0 | 0 |
| | | | 3664 | 2272 | 635 | 733 | 24 | | |
| 1 | B | 491 | Total | C | N | O | S | 0 | 0 |
| | | | 3664 | 2272 | 635 | 733 | 24 | | |
| 1 | C | 491 | Total | C | N | O | S | 0 | 0 |
| | | | 3664 | 2272 | 635 | 733 | 24 | | |
| 1 | D | 491 | Total | C | N | O | S | 0 | 0 |
| | | | 3664 | 2272 | 635 | 733 | 24 | | |
| 1 | E | 491 | Total | C | N | O | S | 0 | 0 |
| | | | 3664 | 2272 | 635 | 733 | 24 | | |
| 1 | F | 491 | Total | C | N | O | S | 0 | 0 |
| | | | 3664 | 2272 | 635 | 733 | 24 | | |
| 1 | G | 491 | Total | C | N | O | S | 0 | 0 |
| | | | 3664 | 2272 | 635 | 733 | 24 | | |
| 1 | H | 491 | Total | C | N | O | S | 0 | 0 |
| | | | 3664 | 2272 | 635 | 733 | 24 | | |
| 1 | I | 491 | Total | C | N | O | S | 0 | 0 |
| | | | 3664 | 2272 | 635 | 733 | 24 | | |
| 1 | J | 491 | Total | C | N | O | S | 0 | 0 |
| | | | 3664 | 2272 | 635 | 733 | 24 | | |
| 1 | K | 491 | Total | C | N | O | S | 0 | 0 |
| | | | 3664 | 2272 | 635 | 733 | 24 | | |
| 1 | L | 491 | Total | C | N | O | S | 0 | 0 |
| | | | 3664 | 2272 | 635 | 733 | 24 | | |
| 1 | M | 491 | Total | C | N | O | S | 0 | 0 |
| | | | 3664 | 2272 | 635 | 733 | 24 | | |
| 1 | N | 491 | Total | C | N | O | S | 0 | 0 |
| | | | 3664 | 2272 | 635 | 733 | 24 | | |
| 1 | O | 491 | Total | C | N | O | S | 0 | 0 |
| | | | 3664 | 2272 | 635 | 733 | 24 | | |
| 1 | P | 491 | Total | C | N | O | S | 0 | 0 |
| | | | 3664 | 2272 | 635 | 733 | 24 | | |

There are 80 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|---------|------------|
| A | 241 | GLU | - | LINKER | UNP Q877G8 |
| A | 242 | THR | - | LINKER | UNP Q877G8 |
| A | 243 | ALA | - | LINKER | UNP Q877G8 |
| A | 244 | SER | - | LINKER | UNP Q877G8 |
| A | 245 | GLU | - | LINKER | UNP Q877G8 |
| B | 241 | GLU | - | LINKER | UNP Q877G8 |
| B | 242 | THR | - | LINKER | UNP Q877G8 |
| B | 243 | ALA | - | LINKER | UNP Q877G8 |
| B | 244 | SER | - | LINKER | UNP Q877G8 |
| B | 245 | GLU | - | LINKER | UNP Q877G8 |
| C | 241 | GLU | - | LINKER | UNP Q877G8 |
| C | 242 | THR | - | LINKER | UNP Q877G8 |
| C | 243 | ALA | - | LINKER | UNP Q877G8 |
| C | 244 | SER | - | LINKER | UNP Q877G8 |
| C | 245 | GLU | - | LINKER | UNP Q877G8 |
| D | 241 | GLU | - | LINKER | UNP Q877G8 |
| D | 242 | THR | - | LINKER | UNP Q877G8 |
| D | 243 | ALA | - | LINKER | UNP Q877G8 |
| D | 244 | SER | - | LINKER | UNP Q877G8 |
| D | 245 | GLU | - | LINKER | UNP Q877G8 |
| E | 241 | GLU | - | LINKER | UNP Q877G8 |
| E | 242 | THR | - | LINKER | UNP Q877G8 |
| E | 243 | ALA | - | LINKER | UNP Q877G8 |
| E | 244 | SER | - | LINKER | UNP Q877G8 |
| E | 245 | GLU | - | LINKER | UNP Q877G8 |
| F | 241 | GLU | - | LINKER | UNP Q877G8 |
| F | 242 | THR | - | LINKER | UNP Q877G8 |
| F | 243 | ALA | - | LINKER | UNP Q877G8 |
| F | 244 | SER | - | LINKER | UNP Q877G8 |
| F | 245 | GLU | - | LINKER | UNP Q877G8 |
| G | 241 | GLU | - | LINKER | UNP Q877G8 |
| G | 242 | THR | - | LINKER | UNP Q877G8 |
| G | 243 | ALA | - | LINKER | UNP Q877G8 |
| G | 244 | SER | - | LINKER | UNP Q877G8 |
| G | 245 | GLU | - | LINKER | UNP Q877G8 |
| H | 241 | GLU | - | LINKER | UNP Q877G8 |
| H | 242 | THR | - | LINKER | UNP Q877G8 |
| H | 243 | ALA | - | LINKER | UNP Q877G8 |
| H | 244 | SER | - | LINKER | UNP Q877G8 |
| H | 245 | GLU | - | LINKER | UNP Q877G8 |
| I | 241 | GLU | - | LINKER | UNP Q877G8 |
| I | 242 | THR | - | LINKER | UNP Q877G8 |
| I | 243 | ALA | - | LINKER | UNP Q877G8 |

Continued on next page...

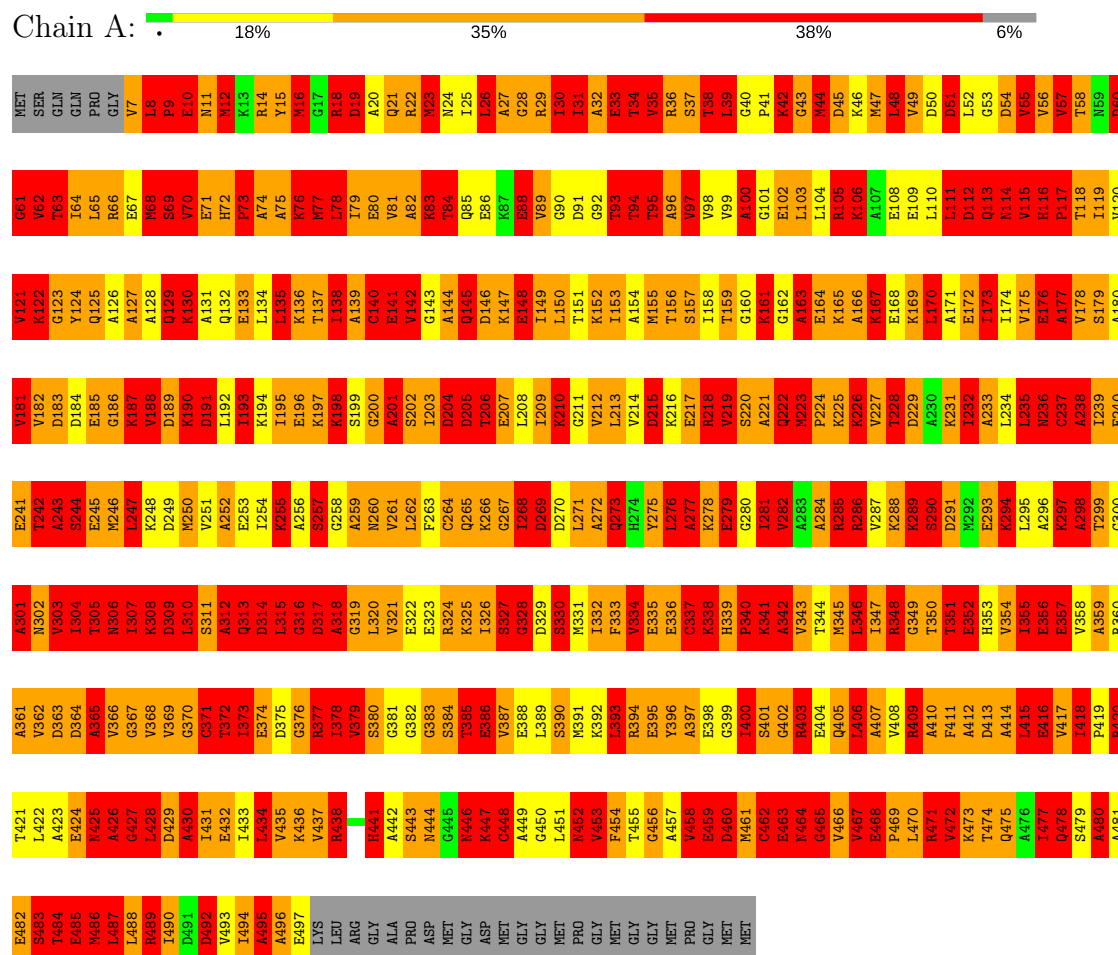
Continued from previous page...

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|---------|------------|
| I | 244 | SER | - | LINKER | UNP Q877G8 |
| I | 245 | GLU | - | LINKER | UNP Q877G8 |
| J | 241 | GLU | - | LINKER | UNP Q877G8 |
| J | 242 | THR | - | LINKER | UNP Q877G8 |
| J | 243 | ALA | - | LINKER | UNP Q877G8 |
| J | 244 | SER | - | LINKER | UNP Q877G8 |
| J | 245 | GLU | - | LINKER | UNP Q877G8 |
| K | 241 | GLU | - | LINKER | UNP Q877G8 |
| K | 242 | THR | - | LINKER | UNP Q877G8 |
| K | 243 | ALA | - | LINKER | UNP Q877G8 |
| K | 244 | SER | - | LINKER | UNP Q877G8 |
| K | 245 | GLU | - | LINKER | UNP Q877G8 |
| L | 241 | GLU | - | LINKER | UNP Q877G8 |
| L | 242 | THR | - | LINKER | UNP Q877G8 |
| L | 243 | ALA | - | LINKER | UNP Q877G8 |
| L | 244 | SER | - | LINKER | UNP Q877G8 |
| L | 245 | GLU | - | LINKER | UNP Q877G8 |
| M | 241 | GLU | - | LINKER | UNP Q877G8 |
| M | 242 | THR | - | LINKER | UNP Q877G8 |
| M | 243 | ALA | - | LINKER | UNP Q877G8 |
| M | 244 | SER | - | LINKER | UNP Q877G8 |
| M | 245 | GLU | - | LINKER | UNP Q877G8 |
| N | 241 | GLU | - | LINKER | UNP Q877G8 |
| N | 242 | THR | - | LINKER | UNP Q877G8 |
| N | 243 | ALA | - | LINKER | UNP Q877G8 |
| N | 244 | SER | - | LINKER | UNP Q877G8 |
| N | 245 | GLU | - | LINKER | UNP Q877G8 |
| O | 241 | GLU | - | LINKER | UNP Q877G8 |
| O | 242 | THR | - | LINKER | UNP Q877G8 |
| O | 243 | ALA | - | LINKER | UNP Q877G8 |
| O | 244 | SER | - | LINKER | UNP Q877G8 |
| O | 245 | GLU | - | LINKER | UNP Q877G8 |
| P | 241 | GLU | - | LINKER | UNP Q877G8 |
| P | 242 | THR | - | LINKER | UNP Q877G8 |
| P | 243 | ALA | - | LINKER | UNP Q877G8 |
| P | 244 | SER | - | LINKER | UNP Q877G8 |
| P | 245 | GLU | - | LINKER | UNP Q877G8 |

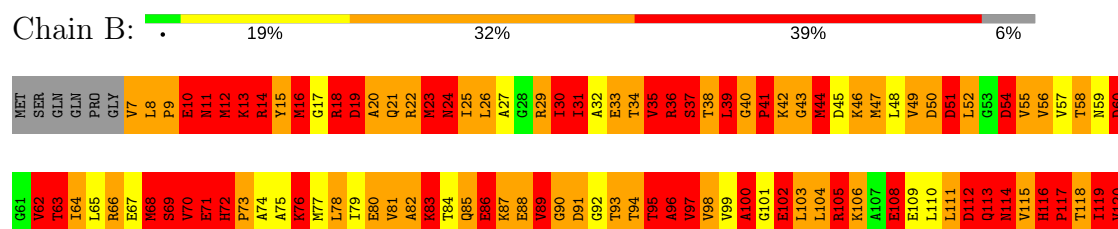
3 Residue-property plots

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Chaperonin



• Molecule 1: Chaperonin



| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| E482 | E483 | T484 | E485 | E486 | L487 | L488 | R489 | L490 | D491 | D492 | V493 | L494 | A495 | A496 | E497 | L498 | L499 | L500 | L501 | L502 | L503 | L504 | L505 | L506 | L507 | L508 | L509 | L510 | L511 | L512 | L513 | L514 | L515 | L516 | L517 | L518 | L519 | L520 | L521 | L522 | L523 | L524 | L525 | L526 | L527 | L528 | L529 | L530 | L531 | L532 | L533 | L534 | L535 | L536 | L537 | L538 | L539 | L540 | L541 | L542 | L543 | L544 | L545 | L546 | L547 | L548 | L549 | L550 | L551 | L552 | L553 | L554 | L555 | L556 | L557 | L558 | L559 | L560 | L561 | L562 | L563 | L564 | L565 | L566 | L567 | L568 | L569 | L570 | L571 | L572 | L573 | L574 | L575 | L576 | L577 | L578 | L579 | L580 | L581 | L582 | L583 | L584 | L585 | L586 | L587 | L588 | L589 | L590 | L591 | L592 | L593 | L594 | L595 | L596 | L597 | L598 | L599 | L600 | L601 | L602 | L603 | L604 | L605 | L606 | L607 | L608 | L609 | L610 | L611 | L612 | L613 | L614 | L615 | L616 | L617 | L618 | L619 | L620 | L621 | L622 | L623 | L624 | L625 | L626 | L627 | L628 | L629 | L630 | L631 | L632 | L633 | L634 | L635 | L636 | L637 | L638 | L639 | L640 | L641 | L642 | L643 | L644 | L645 | L646 | L647 | L648 | L649 | L650 | L651 | L652 | L653 | L654 | L655 | L656 | L657 | L658 | L659 | L660 | L661 | L662 | L663 | L664 | L665 | L666 | L667 | L668 | L669 | L670 | L671 | L672 | L673 | L674 | L675 | L676 | L677 | L678 | L679 | L680 | L681 | L682 | L683 | L684 | L685 | L686 | L687 | L688 | L689 | L690 | L691 | L692 | L693 | L694 | L695 | L696 | L697 | L698 | L699 | L700 | L701 | L702 | L703 | L704 | L705 | L706 | L707 | L708 | L709 | L710 | L711 | L712 | L713 | L714 | L715 | L716 | L717 | L718 | L719 | L720 | L721 | L722 | L723 | L724 | L725 | L726 | L727 | L728 | L729 | L730 | L731 | L732 | L733 | L734 | L735 | L736 | L737 | L738 | L739 | L740 | L741 | L742 | L743 | L744 | L745 | L746 | L747 | L748 | L749 | L750 | L751 | L752 | L753 | L754 | L755 | L756 | L757 | L758 | L759 | L760 | L761 | L762 | L763 | L764 | L765 | L766 | L767 | L768 | L769 | L770 | L771 | L772 | L773 | L774 | L775 | L776 | L777 | L778 | L779 | L780 | L781 | L782 | L783 | L784 | L785 | L786 | L787 | L788 | L789 | L790 | L791 | L792 | L793 | L794 | L795 | L796 | L797 | L798 | L799 | L800 | L801 | L802 | L803 | L804 | L805 | L806 | L807 | L808 | L809 | L810 | L811 | L812 | L813 | L814 | L815 | L816 | L817 | L818 | L819 | L820 | L821 | L822 | L823 | L824 | L825 | L826 | L827 | L828 | L829 | L830 | L831 | L832 | L833 | L834 | L835 | L836 | L837 | L838 | L839 | L840 | L841 | L842 | L843 | L844 | L845 | L846 | L847 | L848 | L849 | L850 | L851 | L852 | L853 | L854 | L855 | L856 | L857 | L858 | L859 | L860 | L861 | L862 | L863 | L864 | L865 | L866 | L867 | L868 | L869 | L870 | L871 | L872 | L873 | L874 | L875 | L876 | L877 | L878 | L879 | L880 | L881 | L882 | L883 | L884 | L885 | L886 | L887 | L888 | L889 | L890 | L891 | L892 | L893 | L894 | L895 | L896 | L897 | L898 | L899 | L900 | L901 | L902 | L903 | L904 | L905 | L906 | L907 | L908 | L909 | L910 | L911 | L912 | L913 | L914 | L915 | L916 | L917 | L918 | L919 | L920 | L921 | L922 | L923 | L924 | L925 | L926 | L927 | L928 | L929 | L930 | L931 | L932 | L933 | L934 | L935 | L936 | L937 | L938 | L939 | L940 | L941 | L942 | L943 | L944 | L945 | L946 | L947 | L948 | L949 | L950 | L951 | L952 | L953 | L954 | L955 | L956 | L957 | L958 | L959 | L960 | L961 | L962 | L963 | L964 | L965 | L966 | L967 | L968 | L969 | L970 | L971 | L972 | L973 | L974 | L975 | L976 | L977 | L978 | L979 | L980 | L981 | L982 | L983 | L984 | L985 | L986 | L987 | L988 | L989 | L990 | L991 | L992 | L993 | L994 | L995 | L996 | L997 | L998 | L999 | L1000 | L1001 | L1002 | L1003 | L1004 | L1005 | L1006 | L1007 | L1008 | L1009 | L1010 | L1011 | L1012 | L1013 | L1014 | L1015 | L1016 | L1017 | L1018 | L1019 | L1020 | L1021 | L1022 | L1023 | L1024 | L1025 | L1026 | L1027 | L1028 | L1029 | L1030 | L1031 | L1032 | L1033 | L1034 | L1035 | L1036 | L1037 | L1038 | L1039 | L1040 | L1041 | L1042 | L1043 | L1044 | L1045 | L1046 | L1047 | L1048 | L1049 | L1050 | L1051 | L1052 | L1053 | L1054 | L1055 | L1056 | L1057 | L1058 | L1059 | L1060 | L1061 | L1062 | L1063 | L1064 | L1065 | L1066 | L1067 | L1068 | L1069 | L1070 | L1071 | L1072 | L1073 | L1074 | L1075 | L1076 | L1077 | L1078 | L1079 | L1080 | L1081 | L1082 | L1083 | L1084 | L1085 | L1086 | L1087 | L1088 | L1089 | L1090 | L1091 | L1092 | L1093 | L1094 | L1095 | L1096 | L1097 | L1098 | L1099 | L1100 | L1101 | L1102 | L1103 | L1104 | L1105 | L1106 | L1107 | L1108 | L1109 | L1110 | L1111 | L1112 | L1113 | L1114 | L1115 | L1116 | L1117 | L1118 | L1119 | L1120 | L1121 | L1122 | L1123 | L1124 | L1125 | L1126 | L1127 | L1128 | L1129 | L1130 | L1131 | L1132 | L1133 | L1134 | L1135 | L1136 | L1137 | L1138 | L1139 | L1140 | L1141 | L1142 | L1143 | L1144 | L1145 | L1146 | L1147 | L1148 | L1149 | L1150 | L1151 | L1152 | L1153 | L1154 | L1155 | L1156 | L1157 | L1158 | L1159 | L1160 | L1161 | L1162 | L1163 | L1164 | L1165 | L1166 | L1167 | L1168 | L1169 | L1170 | L1171 | L1172 | L1173 | L1174 | L1175 | L1176 | L1177 | L1178 | L1179 | L1180 | L1181 | L1182 | L1183 | L1184 | L1185 | L1186 | L1187 | L1188 | L1189 | L1190 | L1191 | L1192 | L1193 | L1194 | L1195 | L1196 | L1197 | L1198 | L1199 | L1200 | L1201 | L1202 | L1203 | L1204 | L1205 | L1206 | L1207 | L1208 | L1209 | L1210 | L1211 | L1212 | L1213 | L1214 | L1215 | L1216 | L1217 | L1218 | L1219 | L1220 | L1221 | L1222 | L1223 | L1224 | L1225 | L1226 | L1227 | L1228 | L1229 | L1230 | L1231 | L1232 | L1233 | L1234 | L1235 | L1236 | L1237 | L1238 | L1239 | L1240 | L1241 | L1242 | L1243 | L1244 | L1245 | L1246 | L1247 | L1248 | L1249 | L1250 | L1251 | L1252 | L1253 | L1254 | L1255 | L1256 | L1257 | L1258 | L1259 | L1260 | L1261 | L1262 | L1263 | L1264 | L1265 | L1266 | L1267 | L1268 | L1269 | L1270 | L1271 | L1272 | L1273 | L1274 | L1275 | L1276 | L1277 | L1278 | L1279 | L1280 | L1281 | L1282 | L1283 | L1284 | L1285 | L1286 | L1287 | L1288 | L1289 | L1290 | L1291 | L1292 | L1293 | L1294 | L1295 | L1296 | L1297 | L1298 | L1299 | L1300 | L1301 | L1302 | L1303 | L1304 | L1305 | L1306 | L1307 | L1308 | L1309 | L1310 | L1311 | L1312 | L1313 | L1314 | L1315 | L1316 | L1317 | L1318 | L1319 | L1320 | L1321 | L1322 | L1323 | L1324 | L1325 | L1326 | L1327 | L1328 | L1329 | L1330 | L1331 | L1332 | L1333 | L1334 | L1335 | L1336 | L1337 | L1338 | L1339 | L1340 | L1341 | L1342 | L1343 | L1344 | L1345 | L1346 | L1347 | L1348 | L1349 | L1350 | L1351 | L1352 | L1353 | L1354 | L1355 | L1356 | L1357 | L1358 | L1359 | L1360 | L1361 | L1362 | L1363 | L1364 | L1365 | L1366 | L1367 | L1368 | L1369 | L1370 | L1371 | L1372 | L1373 | L1374 | L1375 | L1376 | L1377 | L1378 | L1379 | L1380 | L1381 | L1382 | L1383 | L1384 | L1385 | L1386 | L1387 | L1388 | L1389 | L1390 | L1391 | L1392 | L1393 | L1394 | L1395 | L1396 | L1397 | L1398 | L1399 | L1400 | L1401 | L1402 | L1403 | L1404 | L1405 | L1406 | L1407 | L1408 | L1409 | L1410 | L1411 | L1412 | L1413 | L1414 | L1415 | L1416 | L1417 | L1418 | L1419 | L1420 | L1421 | L1422 | L1423 | L1424 | L1425 | L1426 | L1427 | L1428 | L1429 | L1430 | L1431 | L1432 | L1433 | L1434 | L1435 | L1436 | L1437 | L1438 | L1439 | L1440 | L1441 | L1442 | L1443 | L1444 | L1445 | L1446 | L1447 | L1448 | L1449 | L1450 | L1451 | L1452 | L1453 | L1454 | L1455 | L1456 | L1457 | L1458 | L1459 | L1460 | L1461 | L1462 | L1463 | L1464 | L1465 | L1466 | L1467 | L1468 | L1469 | L1470 | L1471 | L1472 | L1473 | L1474 | L1475 | L1476 | L1477 | L1478 | L1479 | L1480 | L1481 | L1482 | L1483 | L1484 | L1485 | L1486 | L1487 | L1488 | L1489 | L1490 | L1491 | L1492 | L1493 | L1494 | L1495 | L1496 | L1497 | L1498 | L1499 | L1500 | L1501 | L1502 | L1503 | L1504 | L1505 | L1506 | L1507 | L1508 | L1509 | L1510 | L1511 | L1512 | L1513 | L1514 | L1515 | L1516 | L1517 | L1518 | L1519 | L1520 | L1521 | L1522 | L1523 | L1524 | L1525 | L1526 | L1527 | L1528 | L1529 | L1530 | L1531 | L1532 | L1533 | L1534 | L1535 | L1536 | L1537 | L1538 | L1539 | L1540 | L1541 | L1542 | L1543 | L1544 | L1545 | L1546 | L1547 | L1548 | L1549 | L1550 | L1551 | L1552 | L1553 | L1554 | L1555 | L1556 | L1557 | L1558 | L1559 | L1560 | L1561 | L1562 | L1563 | L1564 | L1565 | L1566 | L1567 | L1568 | L1569 | L1570 | L1571 | L1572 | L1573 | L1574 | L1575 | L1576 | L1577 | L1578 | L1579 | L1580 | L1581 | L1582 | L1583 | L1584 | L1585 | L1586 | L1587 | L1588 | L1589 | L1590 | L1591 | L1592 | L1593 | L1594 | L1595 | L1596 | L1597 | L1598 | L1599 | L1600 | L1601 | L1602 | L1603 | L1604 | L1605 | L1606 | L1607 | L1608 | L1609 | L1610 | L1611 | L1612 | L1613 | L1614 | L1615 | L1616 | L1617 | L1618 | L1619 | L1620 | L1621 | L1622 | L1623 | L1624 | L1625 | L1626 | L1627 | L1628 | L1629 | L1630 | L1631 | L1632 | L1633 | L1634 | L1635 | L1636 | L1637 | L1638 | L1639 | L1640 | L1641 | L1642 | L1643 | L1644 | L1645 | L1646 | L1647 | L1648 | L1649 | L1650 | L1651 | L1652 | L1653 | L1654 | L1655 | L1656 | L1657 | L1658 | L1659 | L1660 | L1661 | L1662 | L1663 | L1664 | L1665 | L1666 | L1667 | L1668 | L1669 | L1670 | L1671 | L1672 | L1673 | L1674 | L1675 | L1676 | L1677 | L1678 | L1679 | L1680 | L1681 | L1682 | L1683 | L1684 | L1685 | L1686 | L1687 | L1688 | L1689 | L1690 | L1691 | L1692 | L1693 | L1694 | L1695 | L1696 | L1697 | L1698 | L1699 | L1700 | L1701 | L1702 | L1703 | L1704 | L1705 | L1706 | L1707 | L1708 | L1709 | L1710 | L1711 | L1712 | L1713 | L1714 | L1715 | L1716 | L1717 | L1718 | L1719 | L1720 | L1721 | L1722 | L1723 | L1724 | L1725 | L1726 | L1727 | L1728 | L1729 | L1730 | L1731 | L1732 | L1733 | L1734 | L1735 | L1736 | L1737 | L1738 | L1739 | L1740 | L1741 | L1742 | L1743 | L1744 | L1745 | L1746 | L1747 | L1748 | L1749 | L1750 | L1751 | L1752 | L1753 | L1754 | L1755 | L1756 | L1757 | L1758 | L1759 | L1760 | L1761 | L1762 | L1763 | L1764 | L1765 | L1766 | L1767 | L1768 | L1769 | L1770 | L1771 | L1772 | L1773 | L1774 | L1775 | L1776 | L1777 | L1778 | L1779 | L1780 | L1781 | L1782 | L1783 | L1784 | L1785 | L1786 | L1787 | L1788 | L1789 | L1790 | L1791 | L1792 | L1793 | L1794 | L1795 | L1796 | L1797 | L1798 | L1799 | L1800 | L1801 | L1802 | L1803 | L1804 | L1805 | L1806 | L1807 | L1808 | L1809 | L1810 | L1811 | L1812 | L1813 | L1814 | L1815 | L1816 | L1817 | L1818 | L1819 | L1820 | L1821 | L1822 | L1823 | L1824 | L1825 | L1826 | L1827 | L1828 | L1829 | L1830 | L1831 | L1832 | L1833 | L1834 | L1835 | L1836 | L1837 | L1838 | L1839 | L1840 | L1841 | L1842 | L1843 | L1844 | L1845 | L1846 | L1847 | L1848 | L1849 | L1850 | L1851 | L1852 | L1853 | L1854 | L1855 | L1856 | L1857 | L1858 | L1859 | L1860 | L1861 | L1862 | L1863 | L1864 | L1865 | L1866 | L1867 | L1868 | L1869 | L1870 | L1871 | L1872 | L1873 | L1874 | L1875 | L1876 | L1877 | L1878 | L1879 | L1880 | L1881 | L1882 | L1883 | L1884 | L1885 | L1886 | L1887 | L1888 | L1889 | L1890 | L1891 | L1892 | L1893 | L1894 | L1895 | L1896 | L1897 | L1898 | L1899 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|

● Molecule 1: Chaperonin

Chain D: 

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----|
| MET | SER | GLN | GLN | PRO | GLY | V7 | L8 | P9 | E10 | N11 | M12 | M13 | R14 | Y15 | M16 | G17 | L78 | D19 | A20 | Q21 | R22 | M23 | N24 | T25 | L26 | G27 | A28 | R29 | L30 | G90 | D91 | T31 | A32 | E33 | T34 | V35 | R36 | S37 | T38 | L39 | G40 | P41 | K42 | G43 | M44 | D45 | K46 | A107 | M47 | L48 | E109 | V49 | D50 | D51 | L52 | G53 | N114 | D54 | V115 | V55 | H116 | V56 | P117 | T118 | N119 | T59 | D60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| G61 | V62 | T63 | I64 | R65 | R66 | E67 | M68 | S69 | V70 | E71 | H72 | P73 | A74 | A75 | K76 | M77 | L78 | I79 | E80 | V81 | R82 | K83 | T84 | Q85 | E86 | K87 | E88 | R89 | G90 | D91 | G92 | T93 | T94 | T95 | A96 | V97 | V98 | V99 | A100 | G101 | E102 | L103 | M104 | R105 | K106 | A107 | E108 | E109 | L110 | L111 | D112 | Q113 | N114 | V115 | H116 | P117 | T118 | N119 | V120 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| V121 | K122 | G123 | Y124 | Q125 | A126 | A127 | A128 | Q129 | K130 | A131 | H132 | Q133 | L134 | L135 | K136 | T137 | I138 | A139 | C140 | E141 | V142 | G143 | A144 | Q145 | D146 | K147 | E148 | L149 | K210 | L211 | K152 | L213 | T214 | D215 | T216 | E217 | I158 | T159 | G160 | K161 | Q222 | G162 | A163 | E164 | K165 | A166 | K167 | V227 | T228 | K168 | D229 | A230 | K231 | E172 | I173 | N174 | L235 | V175 | E176 | A177 | V178 | T179 | A180 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| V181 | V182 | D183 | S244 | E185 | K186 | K187 | V188 | D189 | K190 | E191 | L192 | L193 | K194 | I195 | E196 | K197 | L198 | S199 | G200 | E201 | S202 | T203 | D204 | Q205 | T206 | E207 | L208 | D209 | K210 | L211 | K212 | L213 | D215 | K216 | E217 | R218 | V219 | S220 | A221 | Q222 | M223 | P224 | K225 | K226 | V227 | T228 | K288 | E289 | A290 | D291 | E292 | E293 | K294 | L295 | A296 | K297 | K298 | L299 | T300 | E301 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A301 | N302 | V303 | T304 | A305 | N306 | I307 | K308 | D309 | G310 | S311 | A312 | Q313 | D314 | L315 | G316 | K317 | L318 | A319 | S320 | V321 | L262 | F263 | K324 | K325 | L326 | S327 | G328 | D329 | S330 | L331 | K332 | F333 | V334 | E335 | E336 | C337 | K338 | R339 | P340 | K341 | A342 | V343 | E344 | M345 | L346 | T347 | R348 | G349 | T350 | E351 | R352 | D413 | A414 | L415 | E416 | V417 | T418 | A419 | R420 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A361 | V362 | D363 | S364 | A365 | V366 | G367 | V368 | V369 | G370 | S371 | T372 | L373 | E374 | D375 | G376 | K377 | L378 | V379 | S380 | H441 | A442 | S443 | N444 | G445 | E386 | V387 | E388 | L389 | G390 | M391 | L392 | K393 | L394 | E395 | V396 | A397 | E398 | G399 | D400 | S401 | G402 | E403 | E404 | Q405 | L406 | A407 | V408 | R409 | L410 | F411 | A412 | D413 | A414 | Q475 | E416 | V417 | T418 | S479 | A480 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T421 | L422 | A423 | E424 | N425 | A426 | G427 | L428 | D429 | A430 | L431 | E432 | L433 | L434 | V435 | K436 | V437 | R438 | A439 | A440 | H441 | A442 | S443 | N444 | G445 | E446 | K447 | C448 | A449 | G450 | L451 | N452 | V453 | T454 | E455 | G456 | A457 | V458 | E459 | D460 | M461 | C462 | E463 | N464 | G465 | V466 | V467 | E468 | P469 | L470 | R471 | V472 | K473 | T474 | Q475 | A476 | L477 | Q478 | S479 | A480 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A481 | E482 | S483 | T484 | E485 | N486 | L487 | L488 | R489 | L490 | D491 | H492 | V493 | L494 | A495 | A496 | E497 | L498 | L499 | A500 | G501 | A502 | A503 | A504 | M505 | E506 | A507 | E508 | G509 | L510 | M511 | P512 | G513 | L514 | E515 | G516 | E517 | E518 | P519 | G520 | A521 | A522 | E523 | E524 | E525 | E526 | E527 | E528 | E529 | E530 | E531 | E532 | E533 | E534 | E535 | E536 | E537 | E538 | E539 | E540 | E541 | E542 | E543 | E544 | E545 | E546 | E547 | E548 | E549 | E550 | E551 | E552 | E553 | E554 | E555 | E556 | E557 | E558 | E559 | E560 | E561 | E562 | E563 | E564 | E565 | E566 | E567 | E568 | E569 | E570 | E571 | E572 | E573 | E574 | E575 | E576 | E577 | E578 | E579 | E580 | E581 | E582 | E583 | E584 | E585 | E586 | E587 | E588 | E589 | E590 | E591 | E592 | E593 | E594 | E595 | E596 | E597 | E598 | E599 | E600 | E601 | E602 | E603 | E604 | E605 | E606 | E607 | E608 | E609 | E610 | E611 | E612 | E613 | E614 | E615 | E616 | E617 | E618 | E619 | E620 | E621 | E622 | E623 | E624 | E625 | E626 | E627 | E628 | E629 | E630 | E631 | E632 | E633 | E634 | E635 | E636 | E637 | E638 | E639 | E640 | E641 | E642 | E643 | E644 | E645 | E646 | E647 | E648 | E649 | E650 | E651 | E652 | E653 | E654 | E655 | E656 | E657 | E658 | E659 | E660 | E661 | E662 | E663 | E664 | E665 | E666 | E667 | E668 | E669 | E670 | E671 | E672 | E673 | E674 | E675 | E676 | E677 | E678 | E679 | E680 | E681 | E682 | E683 | E684 | E685 | E686 | E687 | E688 | E689 | E690 | E691 | E692 | E693 | E694 | E695 | E696 | E697 | E698 | E699 | E700 | E701 | E702 | E703 | E704 | E705 | E706 | E707 | E708 | E709 | E710 | E711 | E712 | E713 | E714 | E715 | E716 | E717 | E718 | E719 | E720 | E721 | E722 | E723 | E724 | E725 | E726 | E727 | E728 | E729 | E730 | E731 | E732 | E733 | E734 | E735 | E736 | E737 | E738 | E739 | E740 | E741 | E742 | E743 | E744 | E745 | E746 | E747 | E748 | E749 | E750 | E751 | E752 | E753 | E754 | E755 | E756 | E757 | E758 | E759 | E760 | E761 | E762 | E763 | E764 | E765 | E766 | E767 | E768 | E769 | E770 | E771 | E772 | E773 | E774 | E775 | E776 | E777 | E778 | E779 | E780 | E781 | E782 | E783 | E784 | E785 | E786 | E787 | E788 | E789 | E790 | E791 | E792 | E793 | E794 | E795 | E796 | E797 | E798 | E799 | E800 | E801 | E802 | E803 | E804 | E805 | E806 | E807 | E808 | E809 | E810 | E811 | E812 | E813 | E814 | E815 | E816 | E817 | E818 | E819 | E820 | E821 | E822 | E823 | E824 | E825 | E826 | E827 | E828 | E829 | E830 | E831 | E832 | E833 | E834 | E835 | E836 | E837 | E838 | E839 | E840 | E841 | E842 | E843 | E844 | E845 | E846 | E847 | E848 | E849 | E850 | E851 | E852 | E853 | E854 | E855 | E856 | E857 | E858 | E859 | E860 | E861 | E862 | E863 | E864 | E865 | E866 | E867 | E868 | E869 | E870 | E871 | E872 | E873 | E874 | E875 | E876 | E877 | E878 | E879 | E880 | E881 | E882 | E883 | E884 | E885 | E886 | E887 | E888 | E889 | E890 | E891 | E892 | E893 | E894 | E895 | E896 | E897 | E898 | E899 | E900 | E901 | E902 | E903 | E904 | E905 | E906 | E907 | E908 | E909 | E910 | E911 | E912 | E913 | E914 | E915 | E916 | E917 | E918 | E919 | E920 | E921 | E922 | E923 | E924 | E925 | E926 | E927 | E928 | E929 | E930 | E931 | E932 | E933 | E934 | E935 | E936 | E937 | E938 | E939 | E940 | E941 | E942 | E943 | E944 | E945 | E946 | E947 | E948 | E949 | E950 | E951 | E952 | E953 | E954 | E955 | E956 | E957 | E958 | E959 | E960 | E961 | E962 | E963 | E964 | E965 | E966 | E967 | E968 | E969 | E970 | E971 | E972 | E973 | E974 | E975 | E976 | E977 | E978 | E979 | E980 | E981 | E982 | E983 | E984 | E985 | E986 | E987 | E988 | E989 | E990 | E991 | E992 | E993 | E994 | E995 | E996 | E997 | E998 | E999 | E1000 | E1001 | E1002 | E1003 | E1004 | E1005 | E1006 | E1007 | E1008 | E1009 | E1010 | E1011 | E1012 | E1013 | E1014 | E1015 | E1016 | E1017 | E1018 | E1019 | E1020 | E1021 | E1022 | E1023 | E1024 | E1025 | E1026 | E1027 | E1028 | E1029 | E1030 | E1031 | E1032 | E1033 | E1034 | E1035 | E1036 | E1037 | E1038 | E1039 | E1040 | E1041 | E1042 | E1043 | E1044 | E1045 | E1046 | E1047 | E1048 | E1049 | E1050 | E1051 | E1052 | E1053 | E1054 | E1055 | E1056 | E1057 | E1058 | E1059 | E1060 | E1061 | E1062 | E1063 | E1064 | E1065 | E1066 | E1067 | E1068 | E1069 | E1070 | E1071 | E1072 | E1073 | E1074 | E1075 | E1076 | E1077 | E1078 | E1079 | E1080 | E1081 | E1082 | E1083 | E1084 | E1085 | E1086 | E1087 | E1088 | E1089 | E1090 | E1091 | E1092 | E1093 | E1094 | E1095 | E1096 | E1097 | E1098 | E1099 | E1100 | E1101 | E1102 | E1103 | E1104 | E1105 | E1106 | E1107 | E1108 | E1109 | E1110 | E1111 | E1112 | E1113 | E1114 | E1115 | E1116 | E1117 | E1118 | E1119 | E1120 | E1121 | E1122 | E1123 | E1124 | E1125 | E1126 | E1127 | E1128 | E1129 | E1130 | E1131 | E1132 | E1133 | E1134 | E1135 | E1136 | E1137 | E1138 | E1139 | E1140 | E1141 | E1142 | E1143 | E1144 | E1145 | E1146 | E1147 | E1148 | E1149 | E1150 | E1151 | E1152 | E1153 | E1154 | E1155 | E1156 | E1157 | E1158 | E1159 | E1160 | E1161 | E1162 | E1163 | E1164 | E1165 | E1166 | E1167 | E1168 | E1169 | E1170 | E1171 | E1172 | E1173 | E1174 | E1175 | E1176 | E1177 | E1178 | E1179 | E1180 | E1181 | E1182 | E1183 | E1184 | E1185 | E1186 | E1187 | E1188 | E1189 | E1190 | E1191 | E1192 | E1193 | E1194 | E1195 | E1196 | E1197 | E1198 | E1199 | E1200 | E1201 | E1202 | E1203 | E1204 | E1205 | E1206 | E1207 | E1208 | E1209 | E1210 | E1211 | E1212 | E1213 | E1214 | E1215 | E1216 | E1217 | E1218 | E1219 | E1220 | E1221 | E1222 | E1223 | E1224 | E1225 | E1226 | E1227 | E1228 | E1229 | E1230 | E1231 | E1232 | E1233 | E1234 | E1235 | E1236 | E1237 | E1238 | E1239 | E1240 | E1241 | E1242 | E1243 | E1244 | E1245 | E1246 | E1247 | E1248 | E1249 | E1250 | E1251 | E1252 | E1253 | E1254 | E1255 | E1256 | E1257 | E1258 | E1259 | E1260 | E1261 | E1262 | E1263 | E1264 | E1265 | E1266 | E1267 | E1268 | E1269 | E1270 | E1271 | E1272 | E1273 | E1274 | E1275 | E1276 | E1277 | E1278 | E1279 | E1280 | E1281 | E1282 | E1283 | E1284 | E1285 | E1286 | E1287 | E1288 | E1289 | E1290 | E1291 | E1292 | E1293 | E1294 | E1295 | E1296 | E1297 | E1298 | E1299 | E1300 | E1301 | E1302 | E1303 | E1304 | E1305 | E1306 | E1307 | E1308 | E1309 | E1310 | E1311 | E1312 | E1313 | E1314 | E1315 | E1316 | E1317 | E1318 | E1319 | E1320 | E1321 | E1322 | E1323 | E1324 | E1325 | E1326 | E1327 | E1328 | E1329 | E1330 | E1331 | E1332 | E1333 | E1334 | E1335 | E1336 | E1337 | E1338 | E1339 | E1340 | E1341 | E1342 | E1343 | E1344 | E1345 | E1346 | E1347 | E1348 | E1349 | E1350 | E1351 | E1352 | E1353 | E1354 | E1355 | E1356 | E1357 | E1358 | E1359 | E1360 | E1361 | E1362 | E1363 | E1364 | E1365 | E1366 | E1367 | E1368 | E1369 | E1370 | E1371 | E1372 | E1373 | E1374 | E1375 | E1376 | E1377 | E1378 | E1379 | E1380 | E1381 | E1382 | E1383 | E1384 | E1385 | E1386 | E1387 | E1388 | E1389 | E1390 | E1391 | E1392 | E1393 | E1394 | E1395 | E1396 | E1397 | E1398 | E1399 | E1400 | E1401 | E1402 | E1403 | E1404 | E1405 | E1406 | E1407 | E1408 | E1409 | E1410 | E1411 | E1412 | E1413 | E1414 | E1415 | E1416 | E1417 | E1418 | E1419 | E1420 | E1421 | E1422 | E1423 | E1424 | E1425 | E1426 | E1427 | E1428 | E1429 | E1430 | E1431 | E1432 | E1433 | E1434 | E1435 | E1436 | E1437 | E1438 | E1439 | E1440 | E1441 | E1442 | E1443 | E1444 | E1445 | E1446 | E1447 | E1448 | E1449 | E1450 | E1451 | E1452 | E1453 | E1454 | E1455 | E1456 | E1457 | E1458 | E1459 | E1460 | E1461 | E1462 | E1463 | E1464 | E1465 | E1466 | E1467 | E1468 | E1469 | E1470 | E1471 | E1472 | E1473 | E1474 | E1475 | E1476 | E1477 | E1478 | E1479 | E1480 | E1481 | E1482 | E1483 | E1484 | E1485 | E1486 | E1487 | E1488 | E1489 | E1490 | E1491 | E1492 | E1493 | E1494 | E1495 | E1496 | E1497 | E1498 | E1499 | E1500 | E1501 | E1502 | E1503 | E1504 | E1505 | E1506 | E1 |

| | | |
|------|------|------|
| V362 | L422 | E482 |
| D363 | A423 | S483 |
| D364 | A424 | T484 |
| A365 | N425 | E485 |
| V366 | M426 | M486 |
| G367 | G427 | L487 |
| V368 | L428 | L488 |
| V369 | D429 | R489 |
| G370 | A430 | I490 |
| C371 | I431 | D491 |
| T372 | E432 | D492 |
| I373 | I433 | I493 |
| E374 | L434 | L494 |
| D375 | V435 | A495 |
| G376 | K436 | A496 |
| R377 | V437 | E497 |
| I378 | R438 | LYS |
| V379 | A439 | LEU |
| S380 | A440 | ARG |
| G381 | H441 | GLY |
| G382 | A442 | ALA |
| G383 | S443 | PRO |
| S384 | N444 | ASP |
| T385 | G445 | MET |
| E386 | M446 | GLY |
| V387 | K447 | ASP |
| E388 | C448 | MET |
| L389 | A449 | GLY |
| S390 | G450 | GLY |
| K391 | L451 | MET |
| I392 | M452 | PRO |
| L393 | V453 | GLY |
| R394 | F454 | MET |
| E395 | T455 | GLY |
| V396 | G456 | GLY |
| A397 | T457 | MET |
| E398 | V458 | PRO |
| G399 | E459 | GLY |
| I400 | D460 | MET |
| S401 | M461 | G40 |
| G402 | C462 | P41 |
| R403 | E463 | K42 |
| E404 | M464 | G43 |
| Q405 | G465 | M44 |
| L406 | V466 | D45 |
| A407 | V467 | K46 |
| V408 | E468 | M47 |
| R409 | P469 | L48 |
| A410 | L470 | E109 |
| F411 | R471 | V49 |
| A412 | V472 | D50 |
| D413 | R473 | D51 |
| A414 | T474 | L52 |
| L415 | Q475 | G53 |
| E416 | D476 | D54 |
| V417 | A477 | V55 |
| V418 | I477 | V56 |
| P419 | Q478 | V57 |
| R420 | S479 | T58 |
| T421 | A480 | N59 |
| | A481 | D60 |

• Molecule 1: Chaperonin

Chain F: 18% 32% 41% 6%

| | | | | | | | | |
|-----|------|------|------|------|------|------|------|------|
| MET | G61 | V121 | V182 | T242 | R302 | V362 | L422 | E482 |
| SER | V62 | K122 | D183 | A243 | V303 | D363 | A423 | S483 |
| GLN | T63 | G123 | E184 | S244 | I304 | D364 | A424 | T484 |
| PRO | L64 | Y124 | D185 | E245 | T305 | A365 | N425 | E485 |
| GLY | L65 | G125 | K186 | M246 | R306 | V366 | M426 | M486 |
| | E67 | A126 | G187 | L247 | I307 | G367 | G427 | L487 |
| V7 | R68 | A127 | V188 | K248 | K308 | V368 | L428 | L488 |
| L8 | M68 | A128 | D189 | D249 | D309 | V369 | D429 | R489 |
| P9 | S69 | I129 | D190 | M250 | L310 | G370 | A430 | I490 |
| E10 | V70 | K130 | D191 | V251 | S311 | C371 | I431 | D491 |
| N11 | E71 | A131 | L192 | A252 | A312 | T372 | E432 | D492 |
| M12 | H72 | Q132 | I193 | E253 | Q313 | I373 | I433 | I493 |
| K13 | P73 | E133 | K194 | L254 | D314 | E374 | L434 | L494 |
| R14 | A74 | L134 | I195 | K255 | L315 | D375 | V435 | A495 |
| Y15 | A75 | K135 | E196 | A256 | G316 | G376 | K436 | A496 |
| M16 | K76 | K136 | K197 | S257 | D317 | R377 | V437 | E497 |
| G17 | M77 | T137 | I198 | E258 | G318 | I378 | R438 | LYS |
| R18 | L78 | A138 | S199 | A259 | G319 | V379 | A439 | LEU |
| D19 | I79 | A139 | G200 | N260 | L320 | S380 | A440 | ARG |
| A20 | E80 | C140 | A201 | V261 | V321 | G381 | H441 | GLY |
| Q21 | V81 | V142 | S202 | L262 | E322 | G382 | A442 | ALA |
| R22 | A82 | G143 | T203 | F263 | E323 | G383 | S443 | PRO |
| M23 | K83 | G144 | D204 | C264 | R324 | S384 | N444 | ASP |
| N24 | T84 | A144 | D205 | Q265 | K325 | T385 | G445 | MET |
| I25 | O85 | Q145 | T206 | K266 | I326 | E386 | M446 | GLY |
| L26 | E86 | D146 | E207 | G267 | S327 | V387 | K447 | ASP |
| A27 | R87 | K147 | L208 | I268 | G328 | E388 | C448 | MET |
| G28 | E88 | E148 | T209 | D269 | D329 | L389 | A449 | GLY |
| R29 | V89 | I149 | K210 | D270 | S330 | S390 | G450 | GLY |
| I30 | G90 | M150 | G211 | L271 | N331 | M391 | L451 | MET |
| I31 | D91 | T151 | V212 | K272 | I332 | K392 | M452 | PRO |
| A32 | E92 | K152 | L213 | Q273 | F333 | L393 | V453 | GLY |
| E33 | T93 | I153 | V214 | G274 | V334 | R394 | F454 | MET |
| T34 | T94 | M154 | D215 | Y275 | E335 | E395 | T455 | GLY |
| V35 | T95 | G155 | K216 | L276 | E336 | V396 | G456 | GLY |
| R36 | A96 | T156 | E217 | K277 | C337 | A397 | A457 | MET |
| S37 | V97 | S157 | R218 | E278 | K338 | E398 | V458 | PRO |
| T38 | V98 | I158 | V219 | E279 | H339 | G399 | E459 | GLY |
| L39 | V99 | T159 | S220 | G280 | F340 | I400 | D460 | MET |
| M40 | A100 | G160 | A221 | I281 | K341 | S401 | M461 | G40 |
| P41 | G101 | K161 | Q222 | V282 | A342 | G402 | C462 | P41 |
| K42 | E102 | G162 | K223 | A283 | V343 | R403 | E463 | K42 |
| G43 | L103 | A163 | P224 | A284 | T344 | E404 | M464 | G43 |
| M44 | L104 | E164 | K225 | R285 | K345 | Q405 | G465 | M44 |
| D45 | R105 | K165 | K226 | R286 | L346 | L406 | V466 | D45 |
| K46 | K106 | A166 | V227 | V287 | I347 | A407 | V467 | K46 |
| M47 | A107 | K167 | T228 | K288 | R348 | V408 | E468 | M47 |
| L48 | E108 | E168 | D229 | R289 | G349 | R409 | P469 | L48 |
| V49 | E109 | K169 | A230 | S290 | T350 | A410 | L470 | E109 |
| D50 | L110 | I170 | K231 | D291 | T351 | F411 | R471 | V49 |
| D51 | L111 | A171 | T232 | M292 | E352 | A412 | V472 | D50 |
| L52 | D112 | E172 | E293 | K294 | H353 | D413 | V473 | D51 |
| G53 | Q113 | I173 | L234 | K295 | V354 | A414 | T474 | L52 |
| D54 | N114 | I174 | L235 | L296 | I355 | Q475 | Q476 | D54 |
| V55 | V115 | V175 | N236 | A296 | E356 | E416 | A476 | V55 |
| V56 | H116 | E176 | C237 | K297 | F357 | V417 | T477 | V56 |
| V57 | P117 | A177 | A238 | A298 | V358 | I418 | Q478 | V57 |
| T58 | T118 | V178 | T239 | T299 | A359 | S479 | S480 | T58 |
| N59 | I119 | S179 | E240 | G300 | R360 | R420 | A480 | N59 |
| D60 | V120 | V181 | E241 | A301 | A361 | T421 | A481 | D60 |

• Molecule 1: Chaperonin

Chain G: 22% 31% 39% 6%

| | | | | | | | | |
|-----|------|------|------|------|------|------|------|------|
| MET | G61 | V121 | V182 | T242 | R302 | V362 | L422 | E482 |
| SER | V62 | K122 | D183 | A243 | V303 | D363 | A423 | S483 |
| GLN | T63 | G123 | E184 | S244 | I304 | D364 | A424 | T484 |
| PRO | L64 | Y124 | D185 | E245 | T305 | A365 | N425 | E485 |
| GLY | L65 | G125 | K186 | M246 | R306 | V366 | M426 | M486 |
| | R66 | A126 | G187 | L247 | I307 | G367 | G427 | L487 |
| V7 | E67 | A127 | V188 | K248 | K308 | V368 | L428 | L488 |
| L8 | M68 | A128 | D189 | D249 | D309 | V369 | D429 | R489 |
| P9 | S69 | I129 | D190 | M250 | L310 | G370 | A430 | I490 |
| E10 | V70 | K130 | D191 | V251 | S311 | C371 | I431 | D491 |
| N11 | E71 | A131 | L192 | A252 | A312 | T372 | E432 | D492 |
| M12 | H72 | Q131 | I193 | E253 | Q313 | I373 | I433 | I493 |
| K13 | P73 | E133 | K194 | L254 | D314 | E374 | L434 | L494 |
| R14 | A74 | L134 | I195 | K255 | L315 | D375 | V435 | A495 |
| Y15 | A75 | K135 | E196 | A256 | G316 | G376 | K436 | A496 |
| M16 | K76 | K136 | K197 | S257 | D317 | R377 | V437 | E497 |
| G17 | M77 | T137 | I198 | E258 | G318 | I378 | R438 | LYS |
| R18 | L78 | A138 | S199 | A259 | G319 | V379 | A439 | LEU |
| D19 | I79 | A139 | G200 | N260 | L320 | S380 | A440 | ARG |
| A20 | E80 | C140 | A201 | V261 | V321 | G381 | H441 | GLY |
| Q21 | V81 | V142 | S202 | L262 | E322 | G382 | A442 | ALA |
| R22 | A82 | G143 | T203 | F263 | E323 | G383 | S443 | PRO |
| M23 | K83 | G144 | D204 | C264 | R324 | S384 | N444 | ASP |
| N24 | T84 | A144 | D205 | Q265 | K325 | T385 | G445 | MET |
| I25 | O85 | Q145 | T206 | K266 | I326 | E386 | M446 | GLY |
| L26 | E86 | D146 | E207 | G267 | S327 | V387 | K447 | ASP |
| A27 | R87 | K147 | L208 | I268 | G328 | E388 | C448 | MET |
| G28 | E88 | E148 | T209 | D269 | D329 | L389 | A449 | GLY |
| R29 | V89 | I149 | K210 | D270 | S330 | S390 | G450 | GLY |
| I30 | G90 | M150 | G211 | L271 | N331 | M391 | L451 | MET |
| I31 | D91 | T151 | V212 | K272 | I332 | K392 | M452 | PRO |
| A32 | E92 | K152 | L213 | Q273 | F333 | L393 | V453 | GLY |
| E33 | T93 | I153 | V214 | G274 | V334 | R394 | F454 | MET |
| T34 | T94 | M154 | D215 | Y275 | E335 | E395 | T455 | GLY |
| V35 | T95 | G155 | K216 | L276 | E336 | V396 | G456 | GLY |
| R36 | A96 | T156 | E217 | K277 | C337 | A397 | A457 | MET |
| S37 | V97 | S157 | R218 | E278 | K338 | E398 | V458 | PRO |
| T38 | V98 | I158 | V219 | E279 | H339 | G399 | E459 | GLY |
| L39 | V99 | T159 | S220 | G280 | F340 | I400 | D460 | MET |
| M40 | A100 | G160 | A221 | I281 | K341 | S401 | M461 | G40 |
| P41 | G101 | K161 | Q222 | V282 | A342 | G402 | C462 | P41 |
| K42 | E102 | G162 | K223 | A283 | V343 | R403 | E463 | K42 |
| G43 | L103 | A163 | P224 | A284 | T344 | E404 | M464 | G43 |
| M44 | L104 | E164 | K225 | R285 | K345 | Q405 | G465 | M44 |
| D45 | R105 | K165 | K226 | R286 | L346 | L406 | V466 | D45 |
| K46 | K106 | A166 | V227 | V287 | I347 | A407 | V467 | K46 |
| M47 | A107 | K167 | T228 | K288 | R348 | V408 | E468 | M47 |
| L48 | E108 | E168 | D229 | R289 | G349 | R409 | P469 | L48 |
| V49 | E109 | K169 | A230 | S290 | T350 | A410 | L470 | E109 |
| D50 | L110 | I170 | K231 | D291 | T351 | F411 | R471 | V49 |
| D51 | L111 | A171 | T232 | M292 | E352 | A412 | V472 | D50 |
| L52 | D112 | E172 | E293 | K294 | H353 | D413 | V473 | D51 |
| G53 | Q113 | I173 | L234 | K295 | V354 | A414 | T474 | L52 |
| D54 | N114 | I174 | L235 | L296 | I355 | Q475 | Q476 | D54 |
| V55 | V115 | V175 | N236 | A296 | E356 | E416 | A476 | V55 |
| V56 | H116 | E176 | C237 | K297 | F357 | V417 | T477 | V56 |
| V57 | P117 | A177 | A238 | A298 | V358 | I418 | Q478 | V57 |
| T58 | T118 | V178 | T239 | T299 | A359 | S479 | S480 | T58 |
| N59 | I119 | S179 | E240 | G300 | R360 | R420 | A480 | N59 |
| D60 | V120 | V181 | E241 | A301 | A361 | T421 | A481 | D60 |


| | | | | |
|------|------|------|------|------|
| A481 | A361 | A301 | E241 | V181 |
| E482 | V362 | R302 | T242 | V182 |
| S483 | D363 | V303 | A243 | D183 |
| T484 | D364 | I304 | S244 | D184 |
| E485 | A365 | T305 | E245 | E185 |
| M486 | V366 | N306 | M246 | E186 |
| L487 | G367 | I307 | L247 | K187 |
| L488 | V368 | K308 | K248 | V188 |
| R489 | V369 | D309 | D249 | D189 |
| I490 | G370 | L310 | M250 | K190 |
| D491 | C371 | S311 | V251 | D191 |
| D492 | T372 | A312 | A252 | L192 |
| V493 | I373 | I313 | E253 | I193 |
| I494 | E374 | D314 | E254 | K194 |
| A495 | D375 | L315 | K255 | I195 |
| A496 | G376 | G316 | A256 | E196 |
| E497 | R377 | D317 | S257 | K197 |
| LVS | I378 | A318 | G258 | K198 |
| LEU | V379 | G319 | A259 | S199 |
| ARG | S380 | L320 | M260 | G200 |
| GLY | G381 | V321 | V261 | A201 |
| ALA | G382 | E322 | L262 | S202 |
| PRO | G383 | S323 | F263 | L203 |
| ASP | S384 | K324 | C264 | D204 |
| MET | T385 | K325 | Q265 | D205 |
| GLY | E386 | L326 | K266 | T206 |
| ASP | V387 | S327 | G267 | E207 |
| MET | E388 | G328 | L268 | L208 |
| GLY | L389 | D329 | D269 | L209 |
| GLY | S390 | G330 | D270 | K210 |
| MET | M391 | K331 | L271 | G211 |
| PRO | K392 | L332 | A272 | V212 |
| GLY | L393 | F333 | Q273 | L213 |
| MET | T394 | V334 | H274 | V214 |
| GLY | E395 | E335 | Y275 | D215 |
| GLY | Y396 | E336 | L276 | K216 |
| MET | A397 | G337 | A277 | E217 |
| PRO | E398 | K338 | K278 | R218 |
| GLY | G399 | H339 | E279 | V219 |
| MET | I400 | P340 | G280 | S220 |
| MET | S401 | K341 | L281 | A221 |
| | G402 | A342 | V282 | Q222 |
| | R403 | V343 | A283 | M223 |
| | E404 | T344 | A284 | P224 |
| | Q405 | K345 | R285 | K225 |
| | L406 | L346 | R286 | K226 |
| | A407 | I347 | V287 | T228 |
| | E408 | R348 | K288 | T228 |
| | R409 | G349 | D289 | D229 |
| | A410 | T350 | S290 | A230 |
| | F411 | T351 | D291 | K231 |
| | A412 | E352 | M292 | L232 |
| | D413 | H353 | E293 | A233 |
| | T414 | K354 | K294 | L234 |
| | Q415 | L355 | L295 | L235 |
| | V416 | E356 | A296 | V236 |
| | V417 | E357 | K297 | C237 |
| | I418 | T358 | A298 | A238 |
| | P419 | S179 | T299 | L239 |
| | R420 | D60 | G300 | E240 |

• Molecule 1: Chaperonin

Chain H: 18% 30% 43% 6%

| | | | | | | | |
|-----|------|------|------|------|------|------|------|
| MET | G61 | V121 | V181 | A301 | A361 | T421 | A481 |
| SER | V62 | K122 | V182 | R302 | V362 | L422 | E482 |
| GLN | T63 | G123 | D183 | V303 | D363 | A423 | S483 |
| GLN | I64 | Y124 | D184 | I304 | D364 | E424 | T484 |
| PRO | L65 | Q125 | E185 | T305 | A365 | M425 | E485 |
| GLY | R66 | A126 | G186 | N306 | V366 | A426 | M486 |
| | E67 | A127 | K187 | I307 | G367 | G427 | L487 |
| | M68 | A128 | V188 | K308 | V368 | L428 | L488 |
| | P69 | Q129 | D189 | D309 | V369 | D429 | R489 |
| | V70 | K130 | K190 | L310 | G370 | A430 | I490 |
| | E71 | A131 | D191 | S311 | C371 | I431 | D491 |
| | H72 | Q132 | L192 | A312 | A252 | E432 | D492 |
| | P73 | E133 | E193 | I313 | I373 | I433 | V493 |
| | A74 | L134 | K194 | D314 | E374 | L434 | I494 |
| | K75 | L135 | I195 | L315 | D375 | V435 | A495 |
| | K76 | K136 | E196 | G316 | G376 | K436 | A496 |
| | M77 | E137 | K197 | D317 | R377 | V437 | E497 |
| | L78 | T138 | K198 | A318 | I378 | R438 | LVS |
| | I79 | A139 | S199 | G319 | V379 | A439 | LEU |
| | E80 | G140 | G200 | L320 | S380 | A440 | ARG |
| | V81 | E141 | A201 | V321 | G381 | R441 | GLY |
| | K82 | Y142 | S202 | E322 | G382 | A442 | ALA |
| | K83 | G143 | L203 | E323 | G383 | S443 | PRO |
| | T84 | A144 | D204 | K324 | S384 | M444 | ASP |
| | Q85 | Q145 | D205 | K325 | T385 | G445 | MET |
| | E86 | D146 | T206 | L326 | E386 | M446 | MET |
| | K87 | K147 | E207 | S327 | V387 | K447 | ASP |
| | E88 | E148 | L208 | G328 | E388 | C448 | MET |
| | R89 | I149 | D209 | D329 | L389 | A449 | GLY |
| | G90 | L150 | K210 | S330 | S390 | G450 | GLY |
| | D91 | T151 | G211 | K331 | M391 | L451 | MET |
| | G92 | K152 | V212 | L332 | K392 | M452 | PRO |
| | T93 | I153 | L213 | F333 | L393 | V453 | GLY |
| | T94 | A154 | D214 | V334 | R394 | F454 | MET |
| | M95 | M155 | V215 | E335 | E395 | T455 | GLY |
| | A96 | T156 | K216 | E336 | Y396 | G456 | GLY |
| | V97 | S157 | E217 | C337 | A397 | A457 | MET |
| | V98 | T158 | R218 | K338 | E398 | V458 | PRO |
| | V99 | L159 | V219 | H339 | G399 | E459 | GLY |
| | A100 | G160 | S220 | P340 | I400 | D460 | MET |
| | G101 | K161 | A221 | K341 | S401 | M461 | MET |
| | E102 | G162 | Q222 | A342 | G402 | C462 | |
| | L103 | A163 | M223 | V343 | R403 | E463 | |
| | L104 | E164 | P224 | T344 | E404 | M464 | |
| | R105 | K165 | K225 | M345 | Q405 | G465 | |
| | K106 | A166 | V226 | L346 | L406 | V466 | |
| | A107 | K167 | V227 | R347 | A407 | E467 | |
| | E108 | E168 | T228 | R348 | V408 | E468 | |
| | E109 | K169 | D229 | G349 | R409 | P469 | |
| | L110 | L170 | A230 | T350 | A410 | L470 | |
| | L111 | A171 | K231 | T351 | F411 | R471 | |
| | D112 | E172 | L232 | E352 | A412 | V472 | |
| | Q113 | I173 | A233 | H353 | D413 | K473 | |
| | N114 | L174 | L234 | V354 | A414 | T474 | |
| | V115 | V175 | L235 | I355 | L415 | Q475 | |
| | H116 | E176 | K236 | E356 | V416 | A476 | |
| | P117 | A177 | C237 | E357 | V417 | I477 | |
| | T118 | V178 | A238 | V358 | I418 | Q478 | |
| | N119 | S179 | L239 | A359 | P419 | S479 | |
| | D120 | A180 | E240 | R360 | R420 | A480 | |

• Molecule 1: Chaperonin

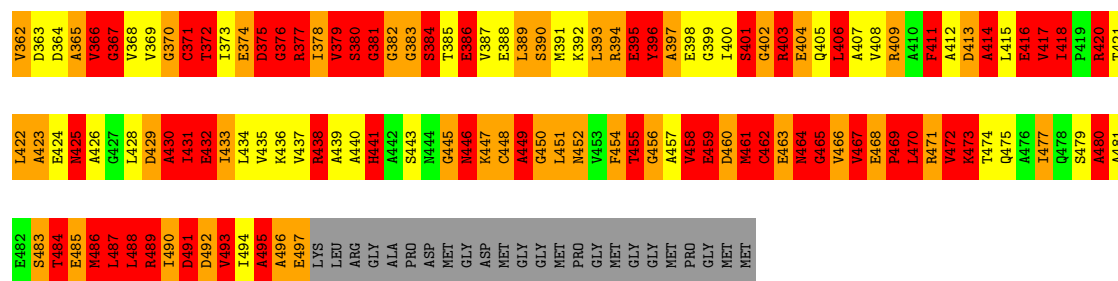
Chain I: 

| | | | | | | | | |
|------|------|------|------|------|------|------|------|-----|
| A481 | T421 | A361 | A301 | E241 | V181 | V121 | G61 | MET |
| E482 | L422 | V362 | N302 | T242 | V182 | K122 | V62 | SER |
| S483 | A423 | D363 | V303 | A243 | D183 | G123 | T63 | GLN |
| T484 | E424 | D364 | I304 | S244 | D184 | Y124 | I64 | GLY |
| E485 | N425 | A365 | T305 | E245 | E185 | Q125 | L65 | |
| N486 | A426 | V366 | N306 | N246 | G186 | A126 | R66 | |
| L487 | G427 | G367 | I307 | L247 | E187 | A127 | E67 | |
| L488 | L428 | V368 | K308 | K248 | V188 | A128 | M68 | |
| R489 | N429 | V369 | D309 | D249 | D189 | Q129 | S69 | |
| L490 | A430 | G370 | L310 | M250 | K190 | K130 | V70 | |
| D491 | L431 | C371 | S311 | V251 | D191 | A131 | E71 | |
| E492 | E432 | T372 | A312 | E252 | L192 | Q132 | H72 | |
| V493 | L433 | I373 | Q313 | E253 | I193 | E133 | P73 | |
| L494 | V434 | E374 | L314 | L254 | K194 | L134 | A74 | |
| A495 | V435 | D375 | L315 | K255 | I195 | L135 | A75 | |
| A496 | K436 | G376 | G316 | A256 | E196 | K136 | K76 | |
| E497 | V437 | R377 | D317 | S257 | K197 | T137 | M77 | |
| LYS | R438 | I378 | A318 | G258 | K198 | L138 | L78 | |
| LEU | A439 | V379 | G319 | A259 | G199 | A139 | I79 | |
| ARG | A440 | S380 | L320 | N260 | G200 | C140 | E80 | |
| GLY | H441 | G381 | V321 | L261 | A201 | E141 | V81 | |
| ALA | A442 | G382 | E322 | L262 | S202 | V142 | R22 | |
| PRO | S443 | G383 | E323 | P263 | I203 | G143 | M23 | |
| ASP | N444 | S384 | R324 | C264 | D204 | A144 | T34 | |
| MET | G445 | T385 | K325 | Q265 | D205 | Q145 | Q85 | |
| GLY | N446 | E386 | L326 | K266 | T206 | D146 | E86 | |
| ASP | K447 | V387 | S327 | G267 | E207 | K147 | K87 | |
| MET | C448 | E388 | G328 | L268 | L208 | E148 | E88 | |
| GLY | A449 | L389 | D329 | D269 | I209 | I149 | V89 | |
| GLY | G450 | S390 | S330 | D270 | K210 | L150 | G90 | |
| MET | L451 | N391 | M331 | L271 | G211 | T151 | D91 | |
| PRO | N452 | K392 | L332 | A272 | V212 | K152 | G92 | |
| GLY | V453 | L393 | F333 | Q273 | L213 | L153 | T93 | |
| MET | F454 | K394 | V334 | H274 | L214 | A154 | T94 | |
| GLY | T455 | E395 | E335 | V275 | D215 | M155 | T95 | |
| GLY | G456 | V386 | E336 | L276 | K216 | T156 | A96 | |
| MET | A457 | A397 | C337 | A277 | E217 | S157 | V97 | |
| PRO | V458 | E389 | K338 | K278 | E218 | L158 | V98 | |
| GLY | E459 | G399 | H339 | E279 | V219 | T159 | V99 | |
| MET | D460 | I400 | P340 | G280 | S220 | G160 | A100 | |
| MET | M461 | A401 | K341 | E281 | A221 | K161 | G101 | |
| | C462 | G402 | A342 | V282 | Q222 | G162 | E102 | |
| | E463 | R403 | V343 | A283 | K223 | A163 | L103 | |
| | N464 | E404 | T344 | A284 | P224 | E164 | L104 | |
| | G465 | Q405 | N345 | R285 | K225 | K165 | R105 | |
| | V466 | L406 | L346 | R286 | K226 | A166 | K106 | |
| | V467 | A407 | I347 | V287 | V227 | K167 | A107 | |
| | E468 | V408 | R348 | K288 | T228 | E168 | E108 | |
| | P469 | R409 | G349 | K289 | D229 | K169 | E109 | |
| | L470 | A410 | T350 | D290 | A230 | L170 | D50 | |
| | R471 | F411 | T351 | E291 | K231 | A171 | D51 | |
| | V472 | A412 | E352 | M292 | L232 | E172 | L112 | |
| | K473 | D413 | K353 | E293 | K233 | I173 | Q113 | |
| | T474 | A414 | V354 | K294 | L234 | L174 | M14 | |
| | A475 | L415 | T355 | L295 | L235 | V175 | V115 | |
| | G476 | E416 | E356 | A296 | M236 | E176 | V56 | |
| | L477 | V417 | E357 | K297 | C237 | A177 | P17 | |
| | K478 | I418 | V358 | A298 | A238 | V178 | T118 | |
| | S479 | P419 | A359 | T299 | L239 | S179 | V59 | |
| | A480 | E420 | P360 | C200 | E240 | A180 | E120 | |

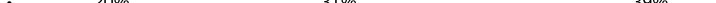
• Molecule 1: Chaperonin

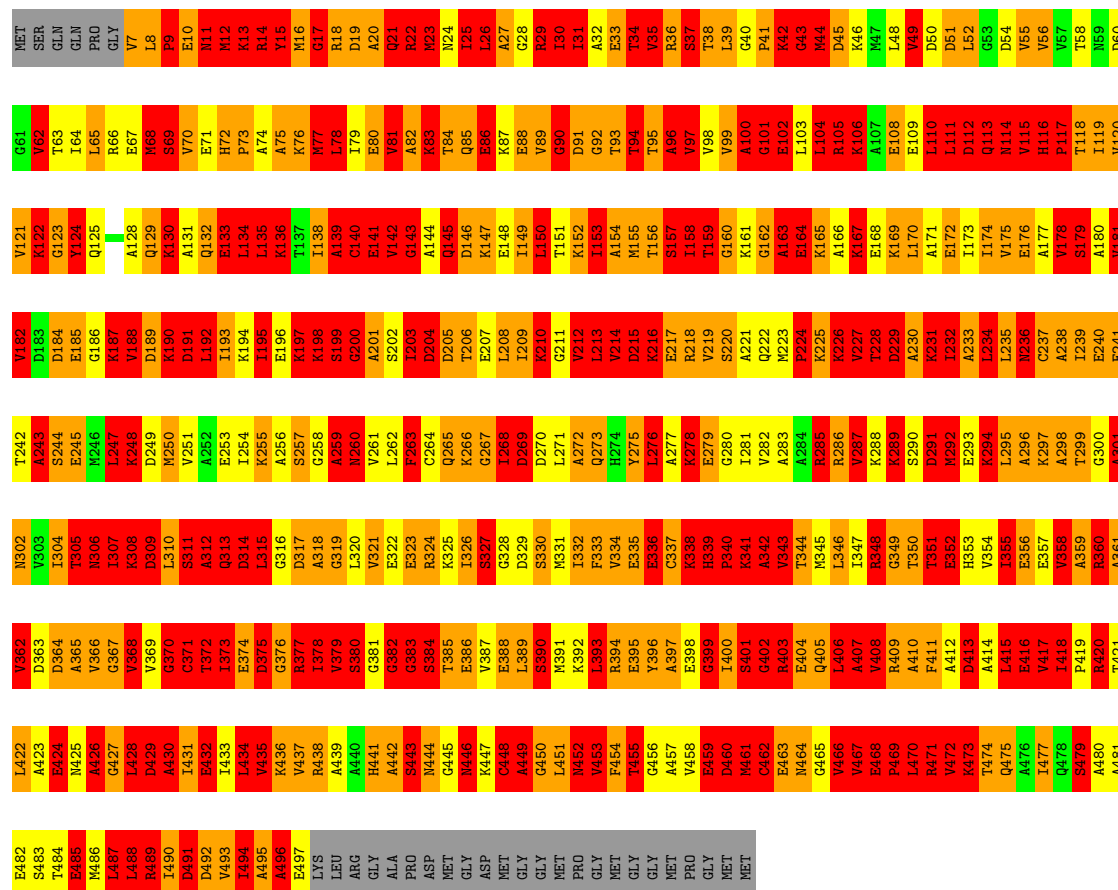
Chain J: 

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| MET | SER | GLN | GLN | PRO | GLY | V7 | L8 | P9 | E10 | E11 | E12 | K13 | E14 | E15 | E16 | E17 | E18 | E19 | E20 | E21 | E22 | E23 | E24 | E25 | E26 | E27 | E28 | E29 | E30 | E31 | E32 | E33 | E34 | E35 | E36 | E37 | E38 | E39 | E40 | E41 | E42 | E43 | E44 | E45 | E46 | E47 | E48 | E49 | E50 | E51 | E52 | E53 | E54 | E55 | E56 | E57 | E58 | E59 | E60 |
| G61 | V62 | T63 | I64 | L65 | R66 | E67 | M68 | S69 | V70 | E71 | E72 | E73 | E74 | E75 | E76 | E77 | E78 | E79 | E80 | E81 | E82 | E83 | E84 | E85 | E86 | E87 | E88 | E89 | E90 | E91 | E92 | E93 | E94 | E95 | E96 | E97 | E98 | E99 | A100 | G101 | E102 | E103 | E104 | E105 | E106 | E107 | E108 | E109 | E110 | E111 | E112 | E113 | E114 | E115 | E116 | E117 | E118 | E119 | E120 |
| V121 | K122 | G123 | Y124 | Q125 | A126 | A127 | A128 | Q129 | K130 | A131 | Q132 | E133 | E134 | E135 | E136 | E137 | E138 | E139 | E140 | E141 | E142 | E143 | E144 | E145 | E146 | E147 | E148 | E149 | E150 | E151 | E152 | E153 | E154 | E155 | E156 | E157 | E158 | E159 | G160 | E161 | E162 | E163 | E164 | E165 | E166 | E167 | E168 | E169 | E170 | E171 | E172 | E173 | E174 | E175 | E176 | E177 | E178 | E179 | E180 |
| V181 | V182 | D183 | D184 | E185 | E186 | E187 | E188 | D189 | K190 | E191 | E192 | E193 | E194 | E195 | E196 | E197 | E198 | E199 | E200 | E201 | E202 | E203 | E204 | E205 | E206 | E207 | E208 | E209 | E210 | E211 | E212 | E213 | E214 | E215 | E216 | E217 | E218 | E219 | E220 | E221 | E222 | E223 | E224 | E225 | E226 | E227 | E228 | E229 | E230 | E231 | E232 | E233 | E234 | E235 | E236 | E237 | E238 | E239 | E240 |
| E241 | T242 | A243 | S244 | E245 | M246 | L247 | K248 | E249 | E250 | E251 | E252 | E253 | E254 | E255 | E256 | E257 | E258 | E259 | E260 | E261 | E262 | E263 | E264 | E265 | E266 | E267 | E268 | E269 | E270 | E271 | E272 | E273 | E274 | E275 | E276 | E277 | E278 | E279 | E280 | E281 | E282 | E283 | E284 | E285 | E286 | E287 | E288 | E289 | E290 | E291 | E292 | E293 | E294 | E295 | E296 | E297 | E298 | E299 | E300 |
| A301 | N302 | V303 | I304 | N305 | N306 | I307 | K308 | D309 | E310 | E311 | E312 | E313 | E314 | E315 | E316 | E317 | E318 | E319 | E320 | E321 | E322 | E323 | E324 | E325 | E326 | E327 | E328 | E329 | E330 | E331 | E332 | E333 | E334 | E335 | E336 | E337 | E338 | E339 | E340 | E341 | E342 | E343 | E344 | E345 | E346 | E347 | E348 | E349 | E350 | E351 | E352 | E353 | E354 | E355 | E356 | E357 | E358 | E359 | E360 |
| E361 | E362 | D363 | D364 | A365 | V366 | G367 | V368 | V369 | E370 | E371 | E372 | E373 | E374 | E375 | E376 | E377 | E378 | E379 | E380 | E381 | E382 | E383 | E384 | E385 | E386 | E387 | E388 | E389 | E390 | E391 | E392 | E393 | E394 | E395 | E396 | E397 | E398 | E399 | E400 | E401 | E402 | E403 | E404 | E405 | E406 | E407 | E408 | E409 | E410 | E411 | E412 | E413 | E414 | E415 | E416 | E417 | E418 | E419 | E420 |
| T421 | L422 | A423 | E424 | N425 | A426 | G427 | L428 | E429 | E430 | E431 | E432 | E433 | E434 | E435 | E436 | E437 | E438 | E439 | E440 | E441 | E442 | E443 | E444 | E445 | E446 | E447 | E448 | E449 | E450 | E451 | E452 | E453 | E454 | E455 | E456 | E457 | E458 | E459 | E460 | E461 | E462 | E463 | E464 | E465 | E466 | E467 | E468 | E469 | E470 | E471 | E472 | E473 | E474 | E475 | E476 | E477 | E478 | E479 | E480 |
| A481 | E482 | S483 | T484 | E485 | N486 | L487 | L488 | E489 | E490 | E491 | E492 | E493 | E494 | E495 | E496 | E497 | E498 | E499 | E500 | E501 | E502 | E503 | E504 | E505 | E506 | E507 | E508 | E509 | E510 | E511 | E512 | E513 | E514 | E515 | E516 | E517 | E518 | E519 | E520 | E521 | E522 | E523 | E524 | E525 | E526 | E527 | E528 | E529 | E530 | E531 | E532 | E533 | E534 | E535 | E536 | E537 | E538 | E539 | E540 |



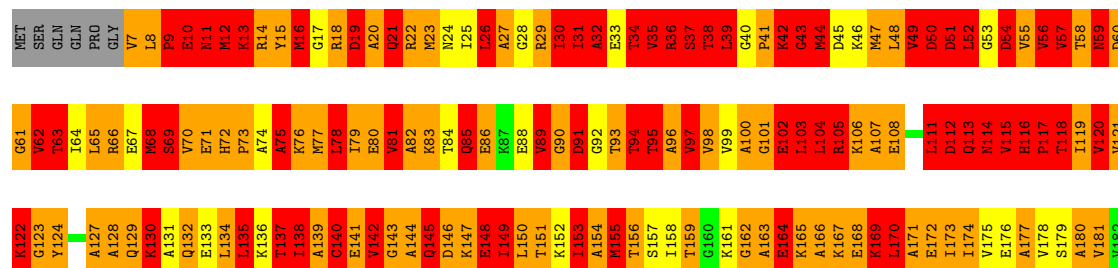
- Molecule 1: Chaperonin

Chain K: 



- Molecule 1: Chaperonin

Chain L:  16% 36% 40% 6%



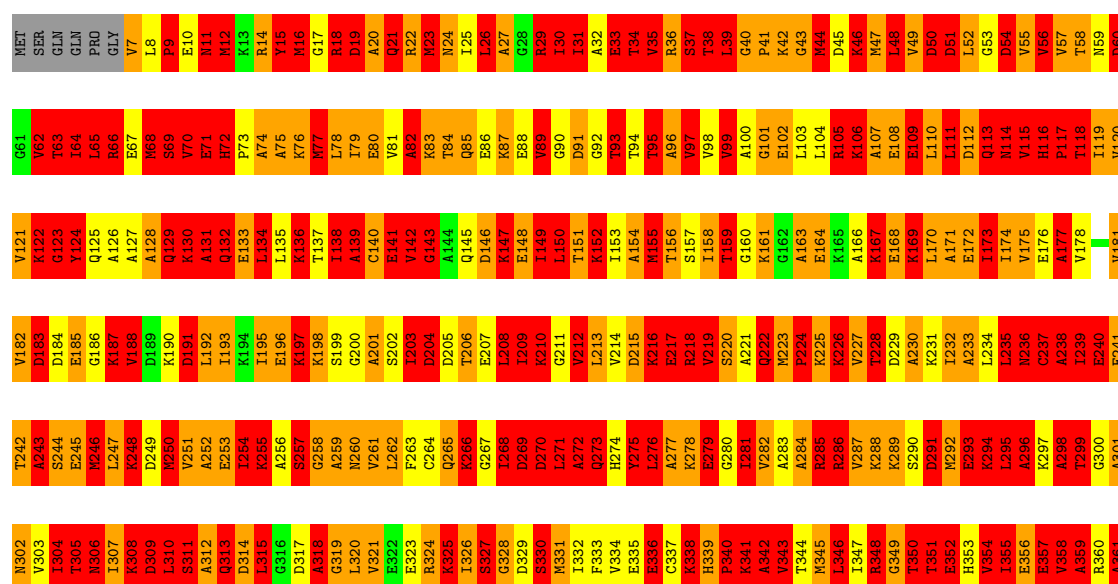
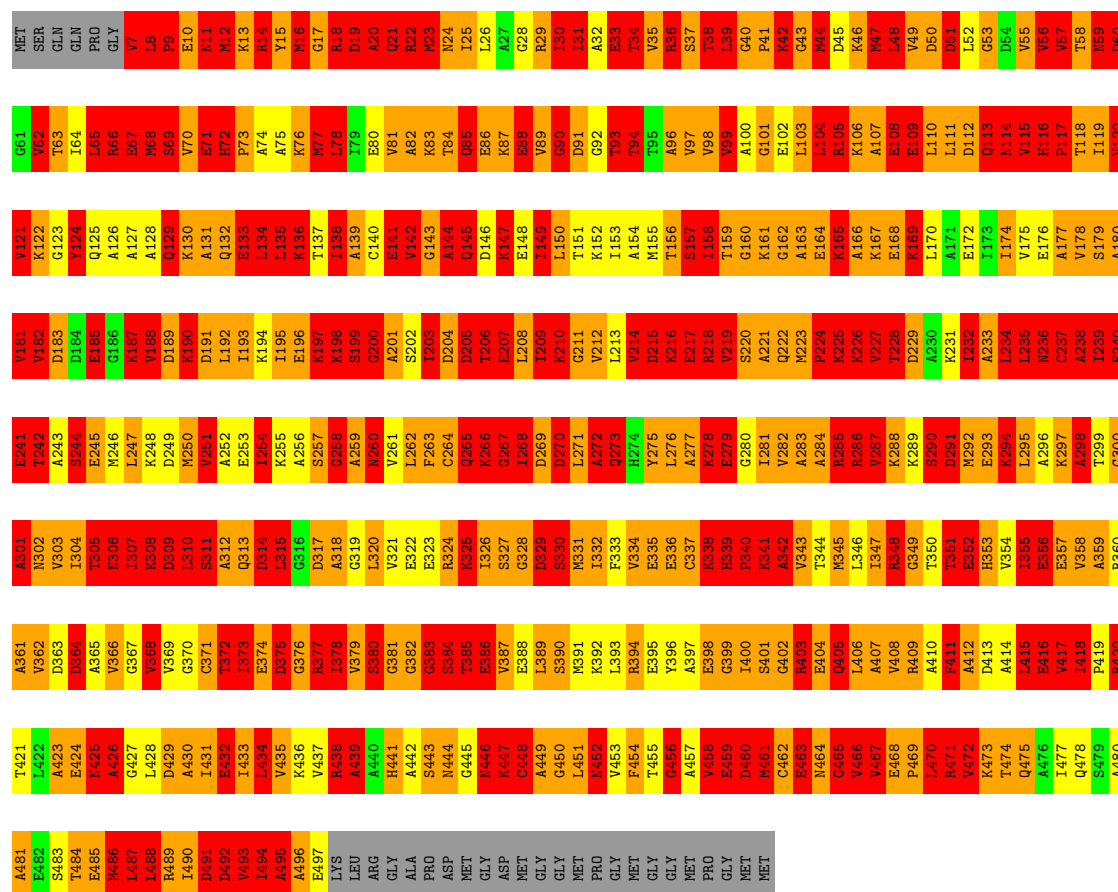
| | | | | | |
|------|------|------|------|------|------|
| S483 | A423 | D363 | V303 | A243 | D183 |
| A484 | A424 | D364 | T304 | S244 | D184 |
| A485 | A425 | A365 | T305 | E245 | E185 |
| A486 | A426 | V366 | N306 | M246 | K187 |
| A487 | A427 | G367 | T307 | L247 | K187 |
| A488 | L428 | V368 | K308 | K248 | V188 |
| A489 | A429 | V369 | D309 | D249 | D189 |
| A490 | A430 | G370 | L310 | M250 | K190 |
| A491 | A431 | C371 | S311 | V251 | D191 |
| A492 | A432 | T372 | A312 | A252 | L192 |
| V493 | A433 | L373 | D313 | E253 | K193 |
| A494 | L434 | E374 | D314 | L254 | K194 |
| A495 | A435 | D375 | L315 | K255 | T195 |
| A496 | A436 | G376 | G316 | A256 | E196 |
| A497 | A437 | R377 | D317 | S257 | K197 |
| LVS | A438 | L378 | A318 | G258 | K198 |
| LEU | A439 | V379 | G319 | A259 | S199 |
| ARG | A440 | S380 | L320 | M260 | G200 |
| GLY | H441 | G381 | V321 | V261 | A201 |
| ALA | A442 | G382 | E322 | L262 | S202 |
| PRO | S443 | G383 | E323 | F263 | L203 |
| ASP | N444 | S384 | R324 | C264 | D204 |
| MET | C445 | T385 | K325 | O265 | D205 |
| GLY | N446 | E386 | L326 | K266 | T206 |
| ASP | A447 | V387 | S327 | G267 | E207 |
| MET | C448 | E388 | G328 | L268 | L208 |
| GLY | A449 | L389 | D329 | D269 | L209 |
| GLY | C450 | S390 | S330 | D270 | K210 |
| MET | L451 | M391 | M331 | L271 | G211 |
| PRO | N452 | K392 | L332 | A272 | V212 |
| GLY | V453 | L393 | F333 | Q273 | L213 |
| MET | F454 | R394 | V334 | H274 | V214 |
| GLY | T455 | E395 | E335 | V275 | D215 |
| GLY | C456 | V396 | E336 | L276 | K216 |
| MET | A457 | A397 | C337 | A277 | E217 |
| PRO | V458 | E398 | K338 | K278 | R218 |
| GLY | E459 | G399 | R339 | E279 | V219 |
| MET | D460 | L400 | P340 | G280 | S220 |
| MET | N461 | A401 | K341 | L281 | A221 |
| C462 | C462 | G402 | A342 | V282 | Q222 |
| E463 | E463 | R403 | V343 | K283 | M223 |
| N464 | N464 | E404 | T344 | A284 | P224 |
| C465 | C465 | K405 | K345 | R285 | K225 |
| V466 | V466 | L406 | L346 | R286 | K226 |
| V467 | V467 | A407 | L347 | V287 | T227 |
| E468 | E468 | V408 | R348 | K288 | V228 |
| P469 | P469 | R409 | G349 | K289 | D229 |
| L470 | L470 | A410 | T350 | S290 | A230 |
| R471 | R471 | F411 | L351 | D291 | K231 |
| V472 | V472 | A412 | E352 | K292 | L232 |
| K473 | K473 | D413 | H353 | E293 | A233 |
| T474 | T474 | A414 | V354 | K294 | L234 |
| L475 | L475 | L415 | L355 | L295 | L235 |
| A476 | A476 | E416 | E356 | A296 | N236 |
| L477 | L477 | V417 | E357 | K297 | C237 |
| Q478 | Q478 | L418 | V358 | A298 | A238 |
| S479 | S479 | R419 | R359 | T299 | L239 |
| A480 | A480 | P420 | K360 | G300 | E240 |
| A481 | A481 | T421 | A361 | A301 | E241 |
| L482 | L482 | L422 | V362 | V202 | T242 |

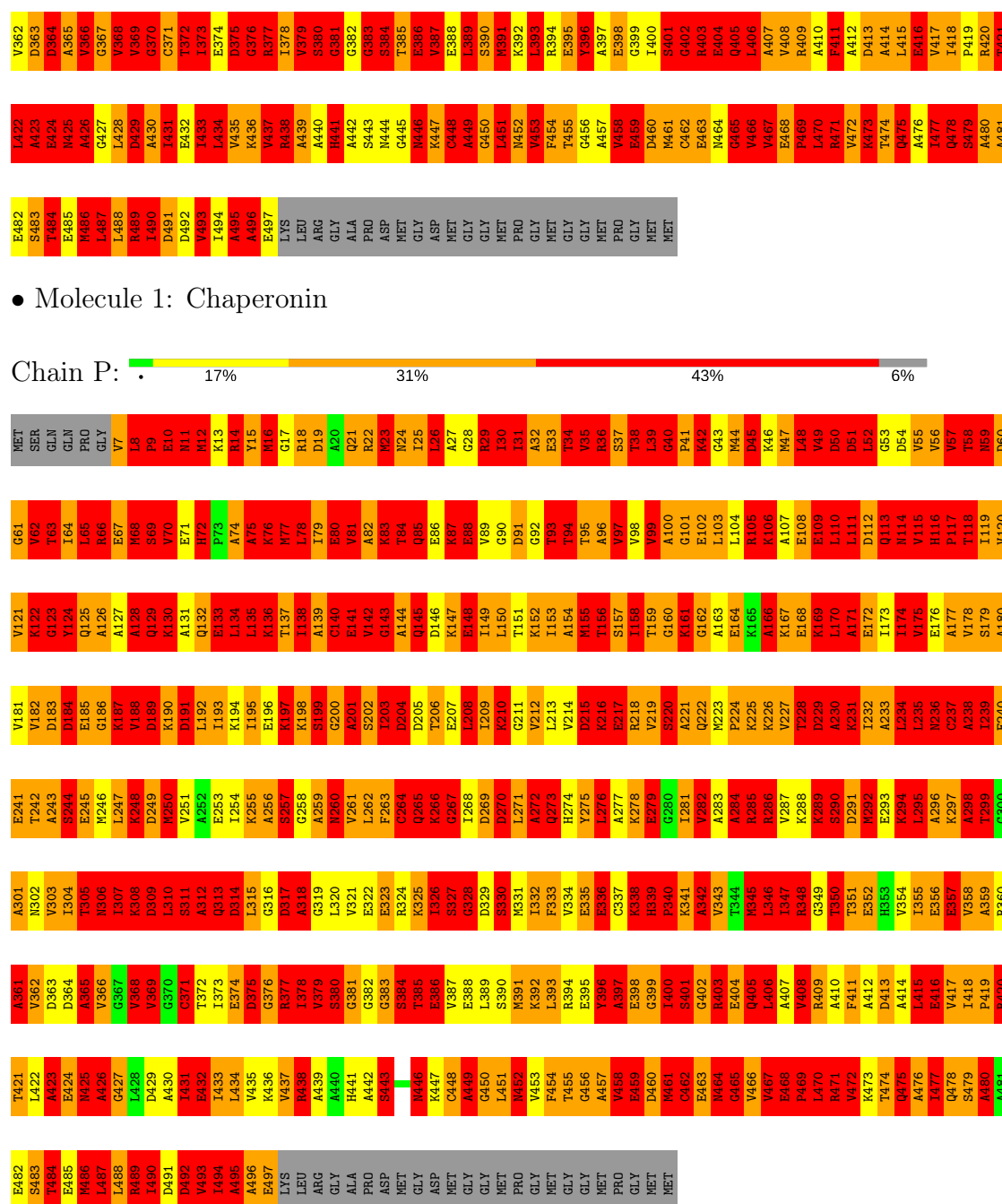
- Molecule 1: Chaperonin

Chain M: 17% 33% 42% 6%

| | | | | | | | | |
|------|------|------|------|------|------|------|------|------|
| MET | S483 | T421 | A361 | A301 | E241 | V181 | V121 | G61 |
| | T482 | L422 | V362 | N302 | T242 | V182 | K122 | V62 |
| | T484 | A423 | D363 | V303 | A243 | D183 | G123 | T63 |
| | A485 | E424 | D364 | T304 | S244 | D184 | Y124 | I64 |
| | A486 | N425 | A365 | T305 | E245 | E185 | Q125 | L65 |
| | L487 | A426 | V366 | N306 | M246 | G186 | A126 | R66 |
| | L488 | G427 | G367 | T307 | L247 | K187 | A127 | E67 |
| | L489 | L428 | V368 | K308 | K248 | V188 | A128 | M68 |
| | L490 | A429 | V369 | D309 | D249 | D189 | K129 | S69 |
| | L491 | A430 | G370 | L310 | M250 | K190 | K130 | V70 |
| L492 | T431 | C371 | S311 | V251 | D191 | A131 | E71 | |
| L493 | E432 | T372 | A312 | A252 | L192 | Q132 | H72 | |
| L494 | L433 | T373 | Q313 | E253 | I193 | P73 | P73 | |
| A495 | L434 | E374 | D314 | L254 | K194 | L134 | A74 | |
| A496 | V435 | D375 | L315 | K255 | I195 | L135 | A75 | |
| A497 | A436 | G376 | G316 | A256 | E196 | K136 | K76 | |
| L498 | V437 | R377 | D317 | S257 | K197 | T137 | R77 | |
| LEU | R438 | L378 | A318 | G258 | K198 | I138 | L78 | |
| ARG | A439 | V379 | G319 | A259 | S199 | A139 | I79 | |
| GLY | A440 | S380 | L320 | M260 | G200 | C140 | E80 | |
| ALA | H441 | G381 | V321 | V261 | A201 | V141 | V81 | |
| PRO | A442 | G382 | E322 | L262 | S202 | V142 | A82 | |
| ASP | S443 | G383 | E323 | F263 | L203 | G143 | K83 | |
| MET | N444 | S384 | R324 | C264 | D204 | A144 | T84 | |
| GLY | G445 | T385 | R325 | Q265 | D205 | Q145 | Q85 | |
| ASP | N446 | G386 | L326 | K266 | T206 | D146 | E86 | |
| MET | R447 | V387 | S327 | G267 | E207 | K147 | K87 | |
| GLY | C448 | G388 | G328 | L268 | L208 | E148 | E88 | |
| GLY | A449 | L389 | D329 | D269 | T209 | I149 | V89 | |
| MET | G450 | S390 | S330 | D270 | K210 | L150 | G90 | |
| PRO | L451 | M391 | R331 | L271 | G211 | T151 | D91 | |
| GLY | N452 | K392 | L332 | A272 | V212 | K152 | G92 | |
| MET | V453 | L393 | F333 | Q273 | L213 | I153 | T93 | |
| GLY | F454 | R394 | V334 | H274 | V214 | A154 | T94 | |
| GLY | T455 | E395 | E335 | Y275 | D215 | M155 | T95 | |
| MET | G456 | V386 | E336 | L276 | K216 | T156 | A96 | |
| PRO | A457 | A397 | C337 | A277 | E217 | S157 | V97 | |
| GLY | V458 | E398 | R338 | K278 | R218 | I158 | V98 | |
| MET | E459 | G399 | H339 | E279 | V219 | T159 | V99 | |
| MET | D460 | D460 | Q400 | P340 | G280 | S220 | G160 | A100 |
| | N461 | S401 | K341 | L281 | D281 | A221 | K161 | G101 |
| | C462 | G402 | A342 | V282 | Q222 | Q222 | G162 | E102 |
| | A463 | E403 | V343 | A283 | M223 | A163 | L103 | G43 |
| | N464 | E404 | T344 | P224 | A284 | E164 | L104 | M44 |
| | G465 | Q405 | K345 | R285 | K225 | K165 | R105 | D45 |
| | V466 | L406 | L346 | R286 | K226 | A166 | K106 | K46 |
| | V467 | A407 | T347 | G287 | V227 | K167 | A107 | M47 |
| | E468 | V408 | R348 | K288 | T228 | E168 | E108 | L48 |
| | P469 | R409 | G349 | R289 | D229 | K169 | E109 | V49 |
| L470 | A410 | T350 | S290 | A230 | L170 | L110 | D50 | |
| R471 | R471 | F411 | D291 | K231 | A171 | L111 | D51 | |
| N472 | A412 | E352 | M292 | L232 | E172 | D112 | L52 | |
| K473 | D413 | H353 | E293 | A233 | I173 | Q113 | G53 | |
| T474 | A414 | V354 | K294 | L234 | I174 | N114 | D54 | |
| T475 | L415 | I355 | L295 | L235 | V175 | V115 | V55 | |
| A476 | E416 | E356 | A296 | N236 | E176 | H116 | V56 | |
| L477 | V417 | E357 | K297 | C237 | P177 | P117 | V57 | |
| Q478 | L418 | V358 | A298 | A238 | V178 | T118 | T58 | |
| S479 | A419 | A359 | T299 | L239 | S179 | I119 | N59 | |
| R480 | R480 | P460 | C200 | E200 | A180 | H180 | D60 | |

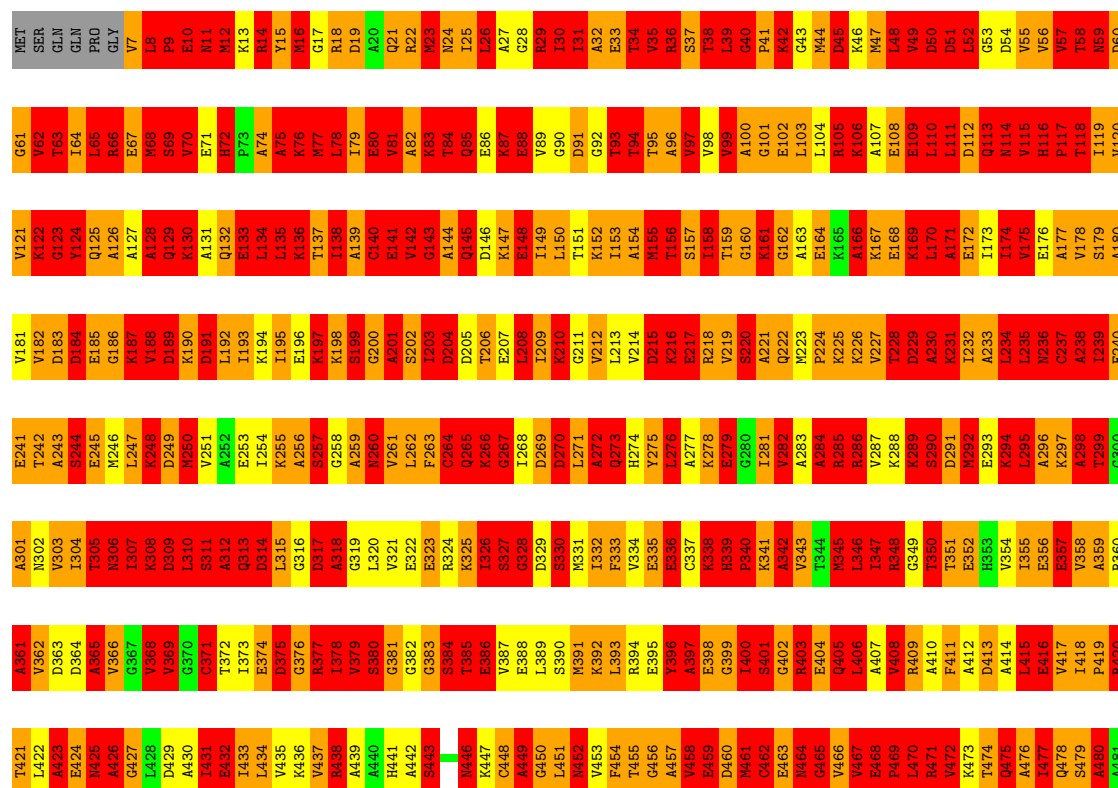
- Molecule 1: Chaperonin





- Molecule 1: Chaperonin

Chain P: 



4 Experimental information

| Property | Value | Source |
|--------------------------------------|------------------------|-----------|
| Reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, D | Depositor |
| Number of particles used | Not provided | Depositor |
| Resolution determination method | FSC at 0.5 cut-off | Depositor |
| CTF correction method | Each micrograph | Depositor |
| Microscope | JEM3200FSC | Depositor |
| Voltage (kV) | 300 | Depositor |
| Electron dose ($e^-/\text{\AA}^2$) | 20 | Depositor |
| Minimum defocus (nm) | 1000 | Depositor |
| Maximum defocus (nm) | 3000 | Depositor |
| Magnification | 112000 | Depositor |
| Image detector | Gatan 4kX4k CCD Camera | Depositor |

5 Model quality ⓘ

5.1 Standard geometry ⓘ

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

| Mol | Chain | Bond lengths | | Bond angles | |
|-----|-------|--------------|-------------------|-------------|---------------------|
| | | RMSZ | $\# Z > 2$ | RMSZ | $\# Z > 2$ |
| 1 | A | 2.13 | 73/3685 (2.0%) | 3.56 | 638/4961 (12.9%) |
| 1 | B | 2.15 | 80/3685 (2.2%) | 3.61 | 635/4961 (12.8%) |
| 1 | C | 2.12 | 79/3685 (2.1%) | 3.69 | 614/4961 (12.4%) |
| 1 | D | 2.07 | 58/3685 (1.6%) | 3.59 | 632/4961 (12.7%) |
| 1 | E | 2.10 | 73/3685 (2.0%) | 3.47 | 599/4961 (12.1%) |
| 1 | F | 2.15 | 89/3685 (2.4%) | 3.59 | 631/4961 (12.7%) |
| 1 | G | 2.10 | 70/3685 (1.9%) | 3.62 | 649/4961 (13.1%) |
| 1 | H | 2.11 | 70/3685 (1.9%) | 3.63 | 603/4961 (12.2%) |
| 1 | I | 2.10 | 62/3685 (1.7%) | 3.55 | 644/4961 (13.0%) |
| 1 | J | 2.14 | 86/3685 (2.3%) | 3.54 | 640/4961 (12.9%) |
| 1 | K | 2.12 | 80/3685 (2.2%) | 3.55 | 641/4961 (12.9%) |
| 1 | L | 2.11 | 75/3685 (2.0%) | 3.53 | 632/4961 (12.7%) |
| 1 | M | 2.15 | 75/3685 (2.0%) | 3.58 | 624/4961 (12.6%) |
| 1 | N | 2.12 | 65/3685 (1.8%) | 3.62 | 603/4961 (12.2%) |
| 1 | O | 2.10 | 73/3685 (2.0%) | 3.69 | 649/4961 (13.1%) |
| 1 | P | 2.15 | 89/3685 (2.4%) | 3.64 | 639/4961 (12.9%) |
| All | All | 2.12 | 1197/58960 (2.0%) | 3.59 | 10073/79376 (12.7%) |

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 | 71 | 243 |
| 1 | B | 55 | 257 |
| 1 | C | 57 | 264 |
| 1 | D | 60 | 284 |
| 1 | E | 51 | 259 |
| 1 | F | 58 | 270 |
| 1 | G | 63 | 258 |
| 1 | H | 61 | 282 |
| 1 | I | 60 | 252 |

Continued on next page...

Continued from previous page...

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|-----|-------|---------------------|---------------------|
| 1 | J | 53 | 260 |
| 1 | K | 57 | 267 |
| 1 | L | 44 | 284 |
| 1 | M | 54 | 279 |
| 1 | N | 50 | 292 |
| 1 | O | 63 | 275 |
| 1 | P | 67 | 288 |
| All | All | 924 | 4314 |

The worst 5 of 1197 bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|--------|-------|-------------|----------|
| 1 | N | 245 | GLU | CD-OE1 | 10.06 | 1.36 | 1.25 |
| 1 | H | 86 | GLU | CD-OE1 | -9.98 | 1.14 | 1.25 |
| 1 | B | 336 | GLU | CD-OE2 | 9.94 | 1.36 | 1.25 |
| 1 | I | 164 | GLU | CD-OE1 | 9.93 | 1.36 | 1.25 |
| 1 | A | 88 | GLU | CD-OE1 | 9.88 | 1.36 | 1.25 |

The worst 5 of 10073 bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-----------|--------|-------------|----------|
| 1 | O | 286 | ARG | NE-CZ-NH1 | 42.76 | 141.68 | 120.30 |
| 1 | N | 285 | ARG | NE-CZ-NH1 | 38.96 | 139.78 | 120.30 |
| 1 | H | 14 | ARG | CD-NE-CZ | 38.07 | 176.90 | 123.60 |
| 1 | O | 377 | ARG | NE-CZ-NH2 | -37.58 | 101.51 | 120.30 |
| 1 | D | 15 | TYR | CB-CG-CD2 | 37.41 | 143.44 | 121.00 |

5 of 924 chirality outliers are listed below:

| Mol | Chain | Res | Type | Atom |
|-----|-------|-----|------|------|
| 1 | A | 7 | VAL | CA |
| 1 | A | 8 | LEU | CA |
| 1 | A | 10 | GLU | CA |
| 1 | A | 15 | TYR | CA |
| 1 | A | 30 | ILE | CB |

5 of 4314 planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|-----|-------|-----|------|-----------|
| 1 | A | 10 | GLU | Mainchain |
| 1 | A | 11 | ASN | Mainchain |
| 1 | A | 12 | MET | Peptide |

Continued on next page...

Continued from previous page...

| Mol | Chain | Res | Type | Group |
|-----|-------|-----|------|---------|
| 1 | A | 8 | LEU | Peptide |
| 1 | A | 9 | PRO | 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 | 3664 | 0 | 3787 | 1077 | 0 |
| 1 | B | 3664 | 0 | 3782 | 945 | 0 |
| 1 | C | 3664 | 0 | 3787 | 975 | 0 |
| 1 | D | 3664 | 0 | 3790 | 980 | 0 |
| 1 | E | 3664 | 0 | 3785 | 964 | 0 |
| 1 | F | 3664 | 0 | 3789 | 872 | 0 |
| 1 | G | 3664 | 0 | 3789 | 910 | 0 |
| 1 | H | 3664 | 0 | 3790 | 965 | 0 |
| 1 | I | 3664 | 0 | 3786 | 928 | 0 |
| 1 | J | 3664 | 0 | 3788 | 945 | 0 |
| 1 | K | 3664 | 0 | 3791 | 949 | 0 |
| 1 | L | 3664 | 0 | 3788 | 955 | 0 |
| 1 | M | 3664 | 0 | 3793 | 1021 | 0 |
| 1 | N | 3664 | 0 | 3791 | 970 | 0 |
| 1 | O | 3664 | 0 | 3793 | 952 | 0 |
| 1 | P | 3664 | 0 | 3786 | 980 | 0 |
| All | All | 58624 | 0 | 60615 | 14494 | 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 124.

The worst 5 of 14494 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:F:461:MET:CE | 1:F:461:MET:HA | 1.29 | 1.55 |
| 1:H:165:LYS:NZ | 1:H:165:LYS:HA | 1.30 | 1.45 |
| 1:N:403:ARG:HH11 | 1:N:403:ARG:CG | 1.06 | 1.44 |
| 1:M:420:ARG:HH11 | 1:M:420:ARG:CB | 1.31 | 1.41 |
| 1:B:488:LEU:CD2 | 1:B:488:LEU:O | 1.68 | 1.40 |

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

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

| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|-----------------|------------|------------|------------|-------------|---|
| 1 | A | 489/521 (94%) | 345 (71%) | 78 (16%) | 66 (14%) | 0 | 6 |
| 1 | B | 489/521 (94%) | 343 (70%) | 85 (17%) | 61 (12%) | 0 | 7 |
| 1 | C | 489/521 (94%) | 346 (71%) | 68 (14%) | 75 (15%) | 0 | 4 |
| 1 | D | 489/521 (94%) | 339 (69%) | 80 (16%) | 70 (14%) | 0 | 5 |
| 1 | E | 489/521 (94%) | 339 (69%) | 80 (16%) | 70 (14%) | 0 | 5 |
| 1 | F | 489/521 (94%) | 345 (71%) | 74 (15%) | 70 (14%) | 0 | 5 |
| 1 | G | 489/521 (94%) | 347 (71%) | 77 (16%) | 65 (13%) | 0 | 6 |
| 1 | H | 489/521 (94%) | 334 (68%) | 84 (17%) | 71 (14%) | 0 | 5 |
| 1 | I | 489/521 (94%) | 343 (70%) | 78 (16%) | 68 (14%) | 0 | 5 |
| 1 | J | 489/521 (94%) | 350 (72%) | 71 (14%) | 68 (14%) | 0 | 5 |
| 1 | K | 489/521 (94%) | 353 (72%) | 81 (17%) | 55 (11%) | 0 | 9 |
| 1 | L | 489/521 (94%) | 337 (69%) | 89 (18%) | 63 (13%) | 0 | 6 |
| 1 | M | 489/521 (94%) | 352 (72%) | 76 (16%) | 61 (12%) | 0 | 7 |
| 1 | N | 489/521 (94%) | 348 (71%) | 72 (15%) | 69 (14%) | 0 | 5 |
| 1 | O | 489/521 (94%) | 343 (70%) | 73 (15%) | 73 (15%) | 0 | 5 |
| 1 | P | 489/521 (94%) | 339 (69%) | 80 (16%) | 70 (14%) | 0 | 5 |
| All | All | 7824/8336 (94%) | 5503 (70%) | 1246 (16%) | 1075 (14%) | 1 | 6 |

5 of 1075 Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | A | 8 | LEU |
| 1 | A | 9 | PRO |
| 1 | A | 10 | GLU |
| 1 | A | 16 | MET |

Continued on next page...

Continued from previous page...

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | A | 62 | VAL |

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

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

| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles | |
|-----|-------|-----------------|------------|------------|-------------|---|
| 1 | A | 393/413 (95%) | 261 (66%) | 132 (34%) | 0 | 2 |
| 1 | B | 393/413 (95%) | 245 (62%) | 148 (38%) | 0 | 0 |
| 1 | C | 393/413 (95%) | 261 (66%) | 132 (34%) | 0 | 2 |
| 1 | D | 393/413 (95%) | 240 (61%) | 153 (39%) | 0 | 0 |
| 1 | E | 393/413 (95%) | 248 (63%) | 145 (37%) | 0 | 1 |
| 1 | F | 393/413 (95%) | 241 (61%) | 152 (39%) | 0 | 0 |
| 1 | G | 393/413 (95%) | 252 (64%) | 141 (36%) | 0 | 1 |
| 1 | H | 393/413 (95%) | 240 (61%) | 153 (39%) | 0 | 0 |
| 1 | I | 393/413 (95%) | 247 (63%) | 146 (37%) | 0 | 1 |
| 1 | J | 393/413 (95%) | 258 (66%) | 135 (34%) | 0 | 1 |
| 1 | K | 393/413 (95%) | 257 (65%) | 136 (35%) | 0 | 1 |
| 1 | L | 393/413 (95%) | 249 (63%) | 144 (37%) | 0 | 1 |
| 1 | M | 393/413 (95%) | 237 (60%) | 156 (40%) | 0 | 0 |
| 1 | N | 393/413 (95%) | 251 (64%) | 142 (36%) | 0 | 1 |
| 1 | O | 393/413 (95%) | 240 (61%) | 153 (39%) | 0 | 0 |
| 1 | P | 393/413 (95%) | 233 (59%) | 160 (41%) | 0 | 0 |
| All | All | 6288/6608 (95%) | 3960 (63%) | 2328 (37%) | 1 | 1 |

5 of 2328 residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | H | 172 | GLU |
| 1 | J | 8 | LEU |
| 1 | O | 433 | ILE |
| 1 | H | 271 | LEU |

Continued on next page...

Continued from previous page...

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | I | 98 | VAL |

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 177 such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | G | 464 | ASN |
| 1 | I | 339 | HIS |
| 1 | O | 441 | HIS |
| 1 | H | 24 | ASN |
| 1 | H | 425 | ASN |

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.