



## wwPDB EM Validation Summary Report ⓘ

Mar 28, 2026 – 01:25 PM UTC

PDB ID : 7TBK / pdb\_00007tbk  
EMDB ID : EMD-11967  
Title : Composite structure of the dilated human nuclear pore complex (NPC) symmetric core generated with a 37Å in situ cryo-ET map of CD4+ T cell NPC  
Authors : Petrovic, S.; Samanta, D.; Perriches, T.; Bley, C.J.; Thierbach, K.; Brown, B.; Nie, S.; Mobbs, G.W.; Stevens, T.A.; Liu, X.; Tomaleri, G.P.; Schaus, L.; Hoelz, A.  
Deposited on : 2021-12-22  
Resolution : 37.00 Å(reported)

This is a wwPDB EM Validation Summary Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

EMDB validation analysis : 0.0.1.dev132  
Mogul : 2022.3.0, CSD as543be (2022)  
MolProbity : 4-5-2 with Phenix2.0  
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)  
EM percentile statistics : 202505.v01 (Using data in the EMDb archive up until May 2025)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.49

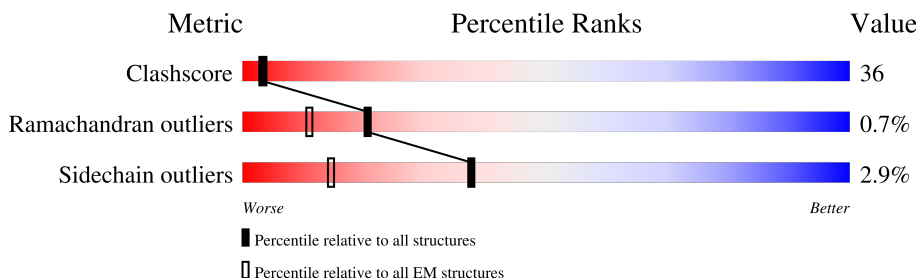
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 37.00 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<br>(#Entries) | EM structures<br>(#Entries) |
|-----------------------|-----------------------------|-----------------------------|
| Clashscore            | 229148                      | 23984                       |
| Ramachandran outliers | 224038                      | 23583                       |
| Sidechain outliers    | 223484                      | 23102                       |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

| Mol | Chain | Length | Quality of chain                                   |
|-----|-------|--------|----------------------------------------------------|
| 1   | A1    | 1316   | <div> <div>36%</div> <div>86% 7% 6%</div> </div>   |
| 1   | A3    | 1316   | <div> <div>78%</div> <div>78% 15% 6%</div> </div>  |
| 2   | A2    | 1328   | <div> <div>53%</div> <div>72% 21% . .</div> </div> |
| 2   | A4    | 1328   | <div> <div>86%</div> <div>60% 32% . .</div> </div> |
| 3   | A5    | 1330   | <div> <div>50%</div> <div>80% 15% .</div> </div>   |
| 3   | A6    | 1330   | <div> <div>85%</div> <div>60% 35% .</div> </div>   |
| 4   | B1    | 14     | <div> <div>79%</div> <div>86% 14%</div> </div>     |
| 4   | B2    | 14     | <div> <div>50%</div> <div>50%</div> </div>         |

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| Mol | Chain | Length | Quality of chain                    |
|-----|-------|--------|-------------------------------------|
| 4   | B3    | 14     | <div>100%</div> <div>86%14%</div>   |
| 4   | B4    | 14     | <div>100%</div> <div>50%50%</div>   |
| 4   | B5    | 14     | <div>64%36%</div>                   |
| 4   | B6    | 14     | <div>100%</div> <div>100%</div>     |
| 5   | C1    | 19     | <div>84%5%11%</div>                 |
| 5   | C2    | 19     | <div>26%</div> <div>95%5%</div>     |
| 5   | C3    | 19     | <div>89%</div> <div>84%5%11%</div>  |
| 5   | C4    | 19     | <div>11%</div> <div>68%26%5%</div>  |
| 5   | C5    | 19     | <div>21%</div> <div>58%32%11%</div> |
| 5   | C6    | 19     | <div>89%</div> <div>58%32%11%</div> |
| 6   | D1    | 644    | <div>60%</div> <div>69%27%. </div>  |
| 6   | D2    | 644    | <div>55%</div> <div>82%14%. </div>  |
| 6   | D3    | 644    | <div>76%</div> <div>63%34%. </div>  |
| 6   | D4    | 644    | <div>96%</div> <div>82%14%. </div>  |
| 6   | D5    | 644    | <div>42%</div> <div>83%13%. </div>  |
| 6   | D6    | 644    | <div>81%</div> <div>82%15%. </div>  |
| 6   | D7    | 644    | <div>96%</div> <div>81%16%. </div>  |
| 7   | E1    | 8      | <div>25%</div> <div>75%25%</div>    |
| 7   | E2    | 8      | <div>25%</div> <div>75%25%</div>    |
| 7   | E3    | 8      | <div>100%</div> <div>75%25%</div>   |
| 7   | E4    | 8      | <div>100%</div> <div>75%25%</div>   |
| 7   | E5    | 8      | <div>12%</div> <div>75%25%</div>    |
| 7   | E6    | 8      | <div>100%</div> <div>75%25%</div>   |
| 7   | E7    | 8      | <div>100%</div> <div>75%25%</div>   |
| 8   | F1    | 1858   | <div>67%</div> <div>81%7%12%</div>  |

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| Mol | Chain | Length | Quality of chain                      |
|-----|-------|--------|---------------------------------------|
| 8   | F2    | 1858   | <div>84%</div> <div>81% 7% 12%</div>  |
| 9   | G1    | 53     | <div>91%</div> <div>68% 32%</div>     |
| 9   | G2    | 53     | <div>100%</div> <div>85% 15%</div>    |
| 10  | H1    | 13     | <div>92%</div> <div>100%</div>        |
| 10  | H2    | 13     | <div>100%</div> <div>100%</div>       |
| 11  | I1    | 1756   | <div>49%</div> <div>68% 20% 12%</div> |
| 11  | I2    | 1756   | <div>73%</div> <div>67% 21% 12%</div> |
| 11  | I3    | 1756   | <div>67%</div> <div>79% 9% 12%</div>  |
| 11  | I4    | 1756   | <div>35%</div> <div>79% 8% 12%</div>  |
| 11  | I5    | 1756   | <div>88%</div> <div>77% 11% 12%</div> |
| 12  | J1    | 63     | <div>70%</div> <div>71% 29%</div>     |
| 12  | J2    | 63     | <div>65%</div> <div>73% 27%</div>     |
| 12  | J3    | 63     | <div>46%</div> <div>78% 22%</div>     |
| 12  | J4    | 63     | <div>76%</div> <div>79% 21%</div>     |
| 12  | J5    | 63     | <div>100%</div> <div>79% 21%</div>    |
| 13  | K1    | 9      | <div>100%</div> <div>100%</div>       |
| 13  | K2    | 9      | <div>100%</div> <div>100%</div>       |
| 13  | K3    | 9      | <div>100%</div> <div>100%</div>       |
| 13  | K4    | 9      | <div>100%</div> <div>100%</div>       |
| 13  | K5    | 9      | <div>100%</div> <div>100%</div>       |
| 14  | L1    | 2      | <div>100%</div> <div>100%</div>       |
| 14  | L2    | 2      | <div>100%</div> <div>100%</div>       |
| 14  | L3    | 2      | <div>100%</div> <div>100%</div>       |
| 14  | L4    | 2      | <div>100%</div> <div>100%</div>       |
| 14  | L5    | 2      | <div>100%</div> <div>100%</div>       |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 15  | M1    | 183    |                  |
| 15  | M2    | 183    |                  |
| 15  | M3    | 183    |                  |
| 15  | M4    | 183    |                  |
| 16  | N1    | 222    |                  |
| 16  | N2    | 222    |                  |
| 16  | N3    | 222    |                  |
| 16  | N4    | 222    |                  |
| 17  | O1    | 241    |                  |
| 17  | O2    | 241    |                  |
| 17  | O3    | 241    |                  |
| 17  | O4    | 241    |                  |
| 18  | P1    | 116    |                  |
| 18  | P2    | 116    |                  |
| 18  | P3    | 116    |                  |
| 18  | P4    | 116    |                  |
| 19  | Q1    | 84     |                  |
| 19  | Q2    | 84     |                  |
| 19  | Q3    | 84     |                  |
| 19  | Q4    | 84     |                  |
| 20  | R1    | 40     |                  |
| 20  | R2    | 40     |                  |
| 20  | R3    | 40     |                  |
| 20  | R4    | 40     |                  |
| 21  | S1    | 1156   |                  |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 21  | S2    | 1156   |                  |
| 21  | S3    | 1156   |                  |
| 21  | S4    | 1156   |                  |
| 22  | T1    | 258    |                  |
| 22  | T2    | 258    |                  |
| 22  | T3    | 258    |                  |
| 22  | T4    | 258    |                  |
| 23  | U1    | 436    |                  |
| 23  | U2    | 436    |                  |
| 23  | U3    | 436    |                  |
| 23  | U4    | 436    |                  |
| 24  | V1    | 621    |                  |
| 24  | V2    | 621    |                  |
| 24  | V3    | 621    |                  |
| 24  | V4    | 621    |                  |
| 25  | W1    | 286    |                  |
| 25  | W2    | 286    |                  |
| 25  | W3    | 286    |                  |
| 25  | W4    | 286    |                  |
| 26  | X1    | 698    |                  |
| 26  | X2    | 698    |                  |
| 26  | X3    | 698    |                  |
| 26  | X4    | 698    |                  |
| 27  | Y1    | 346    |                  |
| 27  | Y2    | 346    |                  |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 27  | Y3    | 346    |                  |
| 27  | Y4    | 346    |                  |
| 28  | Z1    | 1037   |                  |
| 28  | Z2    | 1037   |                  |
| 28  | Z3    | 1037   |                  |
| 28  | Z4    | 1037   |                  |
| 29  | a1    | 380    |                  |
| 29  | a2    | 380    |                  |
| 29  | a3    | 380    |                  |
| 29  | a4    | 380    |                  |
| 30  | b1    | 391    |                  |
| 30  | b2    | 391    |                  |
| 30  | b3    | 391    |                  |
| 30  | b4    | 391    |                  |

## 2 Entry composition

There are 30 unique types of molecules in this entry. The entry contains 358888 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 NUP155.

| Mol | Chain | Residues | Atoms |      |      |      |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
| 1   | A1    | 1231     | Total | C    | N    | O    | S  | 1       | 0     |
|     |       |          | 9730  | 6152 | 1707 | 1843 | 28 |         |       |
| 1   | A3    | 1231     | Total | C    | N    | O    | S  | 1       | 0     |
|     |       |          | 9730  | 6152 | 1707 | 1843 | 28 |         |       |

- Molecule 2 is a protein called NUP155.

| Mol | Chain | Residues | Atoms |      |      |      |    |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|----|---------|-------|
| 2   | A2    | 1269     | Total | C    | N    | O    | S  | Se | 0       | 0     |
|     |       |          | 9946  | 6277 | 1745 | 1890 | 22 | 12 |         |       |
| 2   | A4    | 1269     | Total | C    | N    | O    | S  | Se | 0       | 0     |
|     |       |          | 9946  | 6277 | 1745 | 1890 | 22 | 12 |         |       |

- Molecule 3 is a protein called NUP155.

| Mol | Chain | Residues | Atoms |      |      |      |    |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|----|---------|-------|
| 3   | A5    | 1276     | Total | C    | N    | O    | S  | Se | 1       | 0     |
|     |       |          | 10030 | 6331 | 1762 | 1901 | 24 | 12 |         |       |
| 3   | A6    | 1276     | Total | C    | N    | O    | S  | Se | 1       | 0     |
|     |       |          | 10030 | 6331 | 1762 | 1901 | 24 | 12 |         |       |

- Molecule 4 is a protein called NUP53 R3.

| Mol | Chain | Residues | Atoms |    |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|----|----|----|---|---------|-------|
| 4   | B1    | 14       | Total | C  | N  | O  | S | 0       | 0     |
|     |       |          | 111   | 73 | 19 | 18 | 1 |         |       |
| 4   | B2    | 14       | Total | C  | N  | O  | S | 0       | 0     |
|     |       |          | 111   | 73 | 19 | 18 | 1 |         |       |
| 4   | B3    | 14       | Total | C  | N  | O  | S | 0       | 0     |
|     |       |          | 111   | 73 | 19 | 18 | 1 |         |       |
| 4   | B4    | 14       | Total | C  | N  | O  | S | 0       | 0     |
|     |       |          | 111   | 73 | 19 | 18 | 1 |         |       |

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| Mol | Chain | Residues | Atoms |    |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|----|----|----|---|---------|-------|
| 4   | B5    | 14       | Total | C  | N  | O  | S | 0       | 0     |
|     |       |          | 111   | 73 | 19 | 18 | 1 |         |       |
| 4   | B6    | 14       | Total | C  | N  | O  | S | 0       | 0     |
|     |       |          | 111   | 73 | 19 | 18 | 1 |         |       |

- Molecule 5 is a protein called NUP98 R3.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 5   | C1    | 17       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 138   | 88  | 24 | 25 | 1 |         |       |
| 5   | C2    | 19       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 157   | 100 | 29 | 27 | 1 |         |       |
| 5   | C3    | 17       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 138   | 88  | 24 | 25 | 1 |         |       |
| 5   | C4    | 19       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 157   | 100 | 29 | 27 | 1 |         |       |
| 5   | C5    | 17       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 138   | 88  | 24 | 25 | 1 |         |       |
| 5   | C6    | 17       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 138   | 88  | 24 | 25 | 1 |         |       |

- Molecule 6 is a protein called NUP93 SOL.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 6   | D1    | 621      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 5034  | 3200 | 874 | 934 | 26 |         |       |
| 6   | D2    | 621      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 5034  | 3200 | 874 | 934 | 26 |         |       |
| 6   | D3    | 621      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 5034  | 3200 | 874 | 934 | 26 |         |       |
| 6   | D4    | 621      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 5034  | 3200 | 874 | 934 | 26 |         |       |
| 6   | D5    | 621      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 5034  | 3200 | 874 | 934 | 26 |         |       |
| 6   | D6    | 621      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 5034  | 3200 | 874 | 934 | 26 |         |       |
| 6   | D7    | 621      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 5034  | 3200 | 874 | 934 | 26 |         |       |

- Molecule 7 is a protein called NUP53 R2.

| Mol | Chain | Residues | Atoms |    |    |    | AltConf | Trace |
|-----|-------|----------|-------|----|----|----|---------|-------|
| 7   | E1    | 8        | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 63    | 42 | 11 | 10 |         |       |
| 7   | E2    | 8        | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 63    | 42 | 11 | 10 |         |       |
| 7   | E3    | 8        | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 63    | 42 | 11 | 10 |         |       |
| 7   | E4    | 8        | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 63    | 42 | 11 | 10 |         |       |
| 7   | E5    | 8        | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 63    | 42 | 11 | 10 |         |       |
| 7   | E6    | 8        | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 63    | 42 | 11 | 10 |         |       |
| 7   | E7    | 8        | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 63    | 42 | 11 | 10 |         |       |

- Molecule 8 is a protein called NUP188.

| Mol | Chain | Residues | Atoms |      |      |      |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
| 8   | F1    | 1641     | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 12779 | 8190 | 2201 | 2333 | 55 |         |       |
| 8   | F2    | 1641     | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 12779 | 8190 | 2201 | 2333 | 55 |         |       |

- Molecule 9 is a protein called NUP93 R2.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 9   | G1    | 53       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 438   | 274 | 75 | 88 | 1 |         |       |
| 9   | G2    | 53       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 438   | 274 | 75 | 88 | 1 |         |       |

- Molecule 10 is a protein called NUP98 R2.

| Mol | Chain | Residues | Atoms |    |    |    | AltConf | Trace |
|-----|-------|----------|-------|----|----|----|---------|-------|
| 10  | H1    | 13       | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 94    | 58 | 15 | 21 |         |       |
| 10  | H2    | 13       | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 94    | 58 | 15 | 21 |         |       |

- Molecule 11 is a protein called NUP205.

| Mol | Chain | Residues | Atoms |      |      |      |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
| 11  | I1    | 1542     | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 12307 | 7880 | 2084 | 2278 | 65 |         |       |
| 11  | I2    | 1542     | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 12307 | 7880 | 2084 | 2278 | 65 |         |       |
| 11  | I3    | 1542     | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 12307 | 7880 | 2084 | 2278 | 65 |         |       |
| 11  | I4    | 1542     | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 12307 | 7880 | 2084 | 2278 | 65 |         |       |
| 11  | I5    | 1542     | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 12307 | 7880 | 2084 | 2278 | 65 |         |       |

- Molecule 12 is a protein called NUP93 R2.

| Mol | Chain | Residues | Atoms |     |    |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|-----|---|---------|-------|
| 12  | J1    | 63       | Total | C   | N  | O   | S | 0       | 0     |
|     |       |          | 504   | 315 | 86 | 102 | 1 |         |       |
| 12  | J2    | 63       | Total | C   | N  | O   | S | 0       | 0     |
|     |       |          | 504   | 315 | 86 | 102 | 1 |         |       |
| 12  | J3    | 63       | Total | C   | N  | O   | S | 0       | 0     |
|     |       |          | 504   | 315 | 86 | 102 | 1 |         |       |
| 12  | J4    | 63       | Total | C   | N  | O   | S | 0       | 0     |
|     |       |          | 504   | 315 | 86 | 102 | 1 |         |       |
| 12  | J5    | 63       | Total | C   | N  | O   | S | 0       | 0     |
|     |       |          | 504   | 315 | 86 | 102 | 1 |         |       |

- Molecule 13 is a protein called NUP98 R1.

| Mol | Chain | Residues | Atoms |    |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|----|----|----|---|---------|-------|
| 13  | K1    | 9        | Total | C  | N  | O  | S | 0       | 0     |
|     |       |          | 73    | 51 | 10 | 11 | 1 |         |       |
| 13  | K2    | 9        | Total | C  | N  | O  | S | 0       | 0     |
|     |       |          | 73    | 51 | 10 | 11 | 1 |         |       |
| 13  | K3    | 9        | Total | C  | N  | O  | S | 0       | 0     |
|     |       |          | 73    | 51 | 10 | 11 | 1 |         |       |
| 13  | K4    | 9        | Total | C  | N  | O  | S | 0       | 0     |
|     |       |          | 73    | 51 | 10 | 11 | 1 |         |       |
| 13  | K5    | 9        | Total | C  | N  | O  | S | 0       | 0     |
|     |       |          | 73    | 51 | 10 | 11 | 1 |         |       |

- Molecule 14 is a protein called NUP53 R1.

| Mol | Chain | Residues | Atoms |    |   |   | AltConf | Trace |
|-----|-------|----------|-------|----|---|---|---------|-------|
| 14  | L1    | 2        | Total | C  | N | O | 0       | 0     |
|     |       |          | 15    | 11 | 2 | 2 |         |       |
| 14  | L2    | 2        | Total | C  | N | O | 0       | 0     |
|     |       |          | 15    | 11 | 2 | 2 |         |       |
| 14  | L3    | 2        | Total | C  | N | O | 0       | 0     |
|     |       |          | 15    | 11 | 2 | 2 |         |       |
| 14  | L4    | 2        | Total | C  | N | O | 0       | 0     |
|     |       |          | 15    | 11 | 2 | 2 |         |       |
| 14  | L5    | 2        | Total | C  | N | O | 0       | 0     |
|     |       |          | 15    | 11 | 2 | 2 |         |       |

- Molecule 15 is a protein called NUP62.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 15  | M1    | 169      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1372  | 855 | 235 | 276 | 6 |         |       |
| 15  | M2    | 169      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1372  | 855 | 235 | 276 | 6 |         |       |
| 15  | M3    | 169      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1372  | 855 | 235 | 276 | 6 |         |       |
| 15  | M4    | 169      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1372  | 855 | 235 | 276 | 6 |         |       |

- Molecule 16 is a protein called NUP58.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 16  | N1    | 180      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1401  | 876 | 236 | 282 | 7 |         |       |
| 16  | N2    | 180      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1401  | 876 | 236 | 282 | 7 |         |       |
| 16  | N3    | 180      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1401  | 876 | 236 | 282 | 7 |         |       |
| 16  | N4    | 180      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1401  | 876 | 236 | 282 | 7 |         |       |

- Molecule 17 is a protein called NUP54.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 17  | O1    | 241      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1971  | 1239 | 360 | 368 | 4 |         |       |
| 17  | O2    | 241      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1971  | 1239 | 360 | 368 | 4 |         |       |

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| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 17  | O3    | 241      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1971  | 1239 | 360 | 368 | 4 |         |       |
| 17  | O4    | 241      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1971  | 1239 | 360 | 368 | 4 |         |       |

- Molecule 18 is a protein called NUP54 Ferredoxin-like domain.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 18  | P1    | 116      | Total | C   | N   | O   | S | 1       | 0     |
|     |       |          | 900   | 560 | 160 | 178 | 2 |         |       |
| 18  | P2    | 116      | Total | C   | N   | O   | S | 1       | 0     |
|     |       |          | 900   | 560 | 160 | 178 | 2 |         |       |
| 18  | P3    | 116      | Total | C   | N   | O   | S | 1       | 0     |
|     |       |          | 900   | 560 | 160 | 178 | 2 |         |       |
| 18  | P4    | 116      | Total | C   | N   | O   | S | 1       | 0     |
|     |       |          | 900   | 560 | 160 | 178 | 2 |         |       |

- Molecule 19 is a protein called NUP54 Ferredoxin-like domain.

| Mol | Chain | Residues | Atoms |     |     |     |   |    | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|----|---------|-------|
| 19  | Q1    | 84       | Total | C   | N   | O   | S | Se | 1       | 0     |
|     |       |          | 658   | 421 | 114 | 117 | 1 | 5  |         |       |
| 19  | Q2    | 80       | Total | C   | N   | O   | S | Se | 1       | 0     |
|     |       |          | 616   | 399 | 103 | 108 | 1 | 5  |         |       |
| 19  | Q3    | 84       | Total | C   | N   | O   | S | Se | 1       | 0     |
|     |       |          | 658   | 421 | 114 | 117 | 1 | 5  |         |       |
| 19  | Q4    | 80       | Total | C   | N   | O   | S | Se | 1       | 0     |
|     |       |          | 616   | 399 | 103 | 108 | 1 | 5  |         |       |

- Molecule 20 is a protein called NUP93 R1.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 20  | R1    | 40       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 311   | 195 | 59 | 57 |         |       |
| 20  | R2    | 40       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 311   | 195 | 59 | 57 |         |       |
| 20  | R3    | 40       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 311   | 195 | 59 | 57 |         |       |
| 20  | R4    | 40       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 311   | 195 | 59 | 57 |         |       |

- Molecule 21 is a protein called NUP133.

| Mol | Chain | Residues | Atoms |      |      |      |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
| 21  | S1    | 902      | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 6013  | 3738 | 1046 | 1210 | 19 |         |       |
| 21  | S2    | 902      | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 6013  | 3738 | 1046 | 1210 | 19 |         |       |
| 21  | S3    | 902      | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 6013  | 3738 | 1046 | 1210 | 19 |         |       |
| 21  | S4    | 902      | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 6013  | 3738 | 1046 | 1210 | 19 |         |       |

- Molecule 22 is a protein called NUP107 CTD.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 22  | T1    | 247      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 1993  | 1282 | 343 | 355 | 13 |         |       |
| 22  | T2    | 247      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 1993  | 1282 | 343 | 355 | 13 |         |       |
| 22  | T3    | 247      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 1993  | 1282 | 343 | 355 | 13 |         |       |
| 22  | T4    | 247      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 1993  | 1282 | 343 | 355 | 13 |         |       |

- Molecule 23 is a protein called NUP107 NTD.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 23  | U1    | 419      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3404  | 2178 | 557 | 657 | 12 |         |       |
| 23  | U2    | 419      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3404  | 2178 | 557 | 657 | 12 |         |       |
| 23  | U3    | 419      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3404  | 2178 | 557 | 657 | 12 |         |       |
| 23  | U4    | 419      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3404  | 2178 | 557 | 657 | 12 |         |       |

- Molecule 24 is a protein called NUP96.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 24  | V1    | 511      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3805  | 2417 | 648 | 730 | 10 |         |       |
| 24  | V2    | 511      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3805  | 2417 | 648 | 730 | 10 |         |       |
| 24  | V3    | 511      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3805  | 2417 | 648 | 730 | 10 |         |       |

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| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 24  | V4    | 511      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3805  | 2417 | 648 | 730 | 10 |         |       |

- Molecule 25 is a protein called SEC13.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 25  | W1    | 274      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2160  | 1379 | 369 | 409 | 3 |         |       |
| 25  | W2    | 274      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2160  | 1379 | 369 | 409 | 3 |         |       |
| 25  | W3    | 274      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2160  | 1379 | 369 | 409 | 3 |         |       |
| 25  | W4    | 274      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2160  | 1379 | 369 | 409 | 3 |         |       |

- Molecule 26 is a protein called NUP75.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 26  | X1    | 620      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4535  | 2884 | 753 | 877 | 21 |         |       |
| 26  | X2    | 620      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4535  | 2884 | 753 | 877 | 21 |         |       |
| 26  | X3    | 620      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4535  | 2884 | 753 | 877 | 21 |         |       |
| 26  | X4    | 620      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4535  | 2884 | 753 | 877 | 21 |         |       |

- Molecule 27 is a protein called SEH1.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 27  | Y1    | 307      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2438  | 1543 | 422 | 462 | 11 |         |       |
| 27  | Y2    | 307      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2438  | 1543 | 422 | 462 | 11 |         |       |
| 27  | Y3    | 307      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2438  | 1543 | 422 | 462 | 11 |         |       |
| 27  | Y4    | 307      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2438  | 1543 | 422 | 462 | 11 |         |       |

- Molecule 28 is a protein called NUP160.

| Mol | Chain | Residues | Atoms |      |      |      |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
| 28  | Z1    | 896      | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 6622  | 4232 | 1099 | 1275 | 16 |         |       |
| 28  | Z2    | 896      | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 6622  | 4232 | 1099 | 1275 | 16 |         |       |
| 28  | Z3    | 896      | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 6622  | 4232 | 1099 | 1275 | 16 |         |       |
| 28  | Z4    | 896      | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 6622  | 4232 | 1099 | 1275 | 16 |         |       |

- Molecule 29 is a protein called NUP43.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 29  | a1    | 316      | Total | C    | N   | O   | S  | 33      | 1     |
|     |       |          | 2587  | 1639 | 447 | 488 | 13 |         |       |
| 29  | a2    | 316      | Total | C    | N   | O   | S  | 33      | 1     |
|     |       |          | 2587  | 1639 | 447 | 488 | 13 |         |       |
| 29  | a3    | 316      | Total | C    | N   | O   | S  | 33      | 1     |
|     |       |          | 2587  | 1639 | 447 | 488 | 13 |         |       |
| 29  | a4    | 316      | Total | C    | N   | O   | S  | 33      | 1     |
|     |       |          | 2587  | 1639 | 447 | 488 | 13 |         |       |

- Molecule 30 is a protein called NUP37.

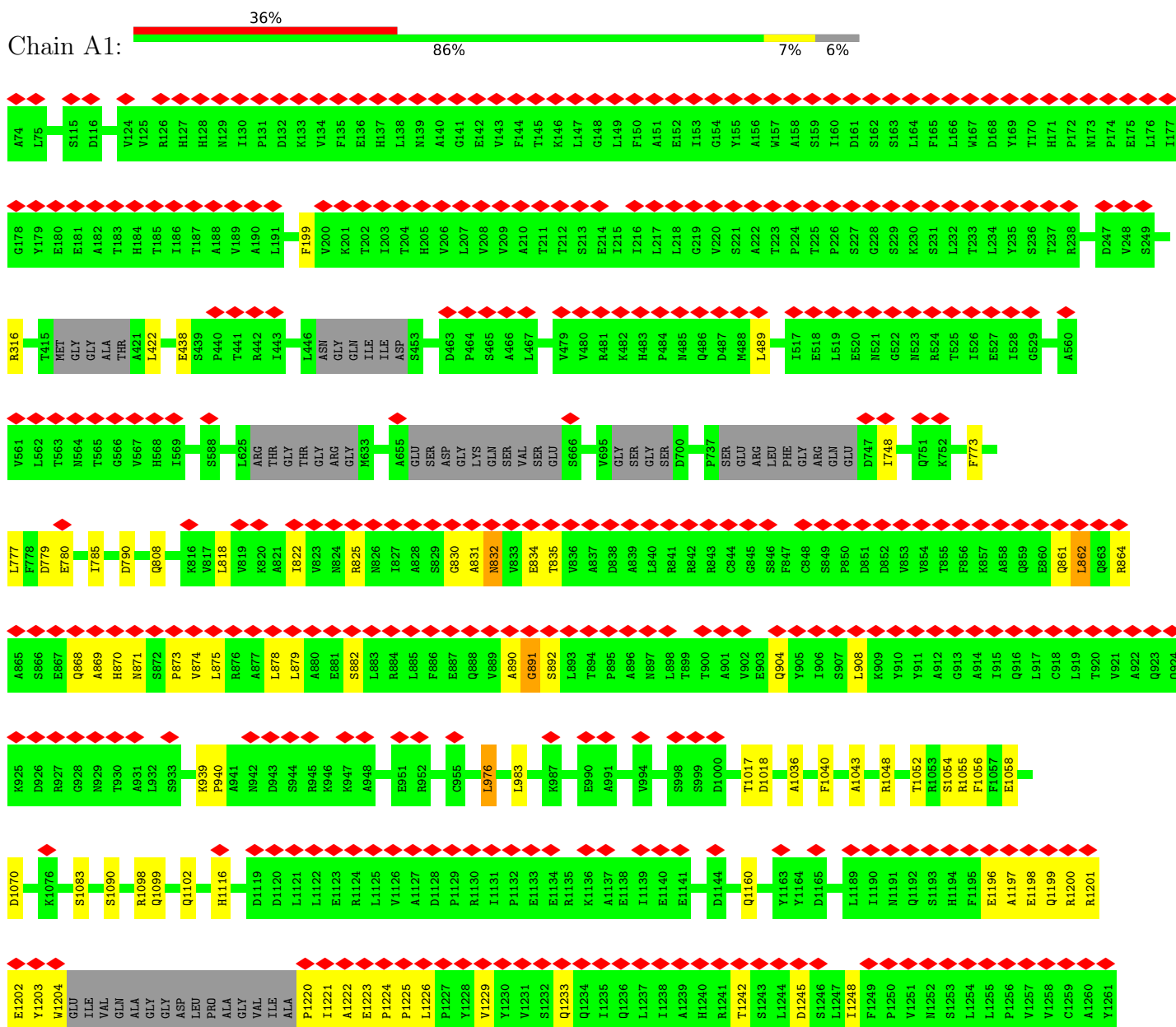
| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 30  | b1    | 343      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2638  | 1676 | 447 | 500 | 15 |         |       |
| 30  | b2    | 343      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2638  | 1676 | 447 | 500 | 15 |         |       |
| 30  | b3    | 343      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2638  | 1676 | 447 | 500 | 15 |         |       |
| 30  | b4    | 343      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2638  | 1676 | 447 | 500 | 15 |         |       |



### 3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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.

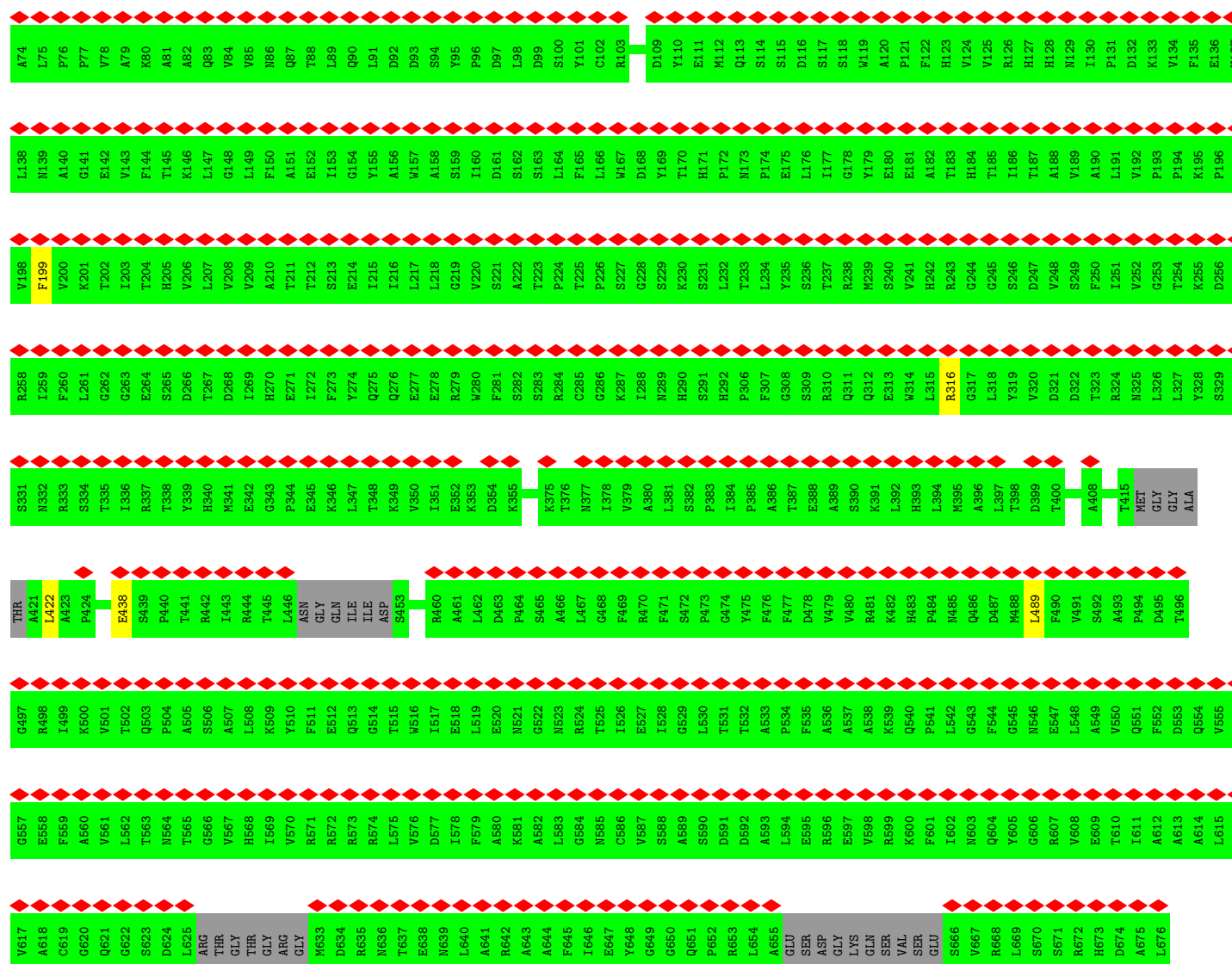
#### • Molecule 1: NUP155

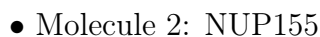




● Molecule 1: NUP155

Chain A3:

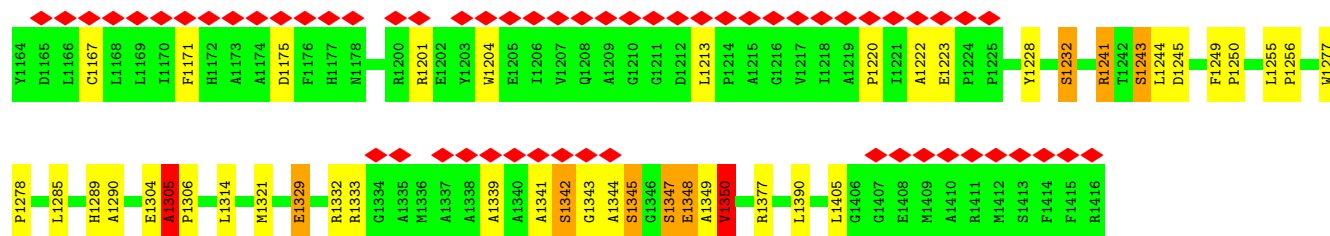




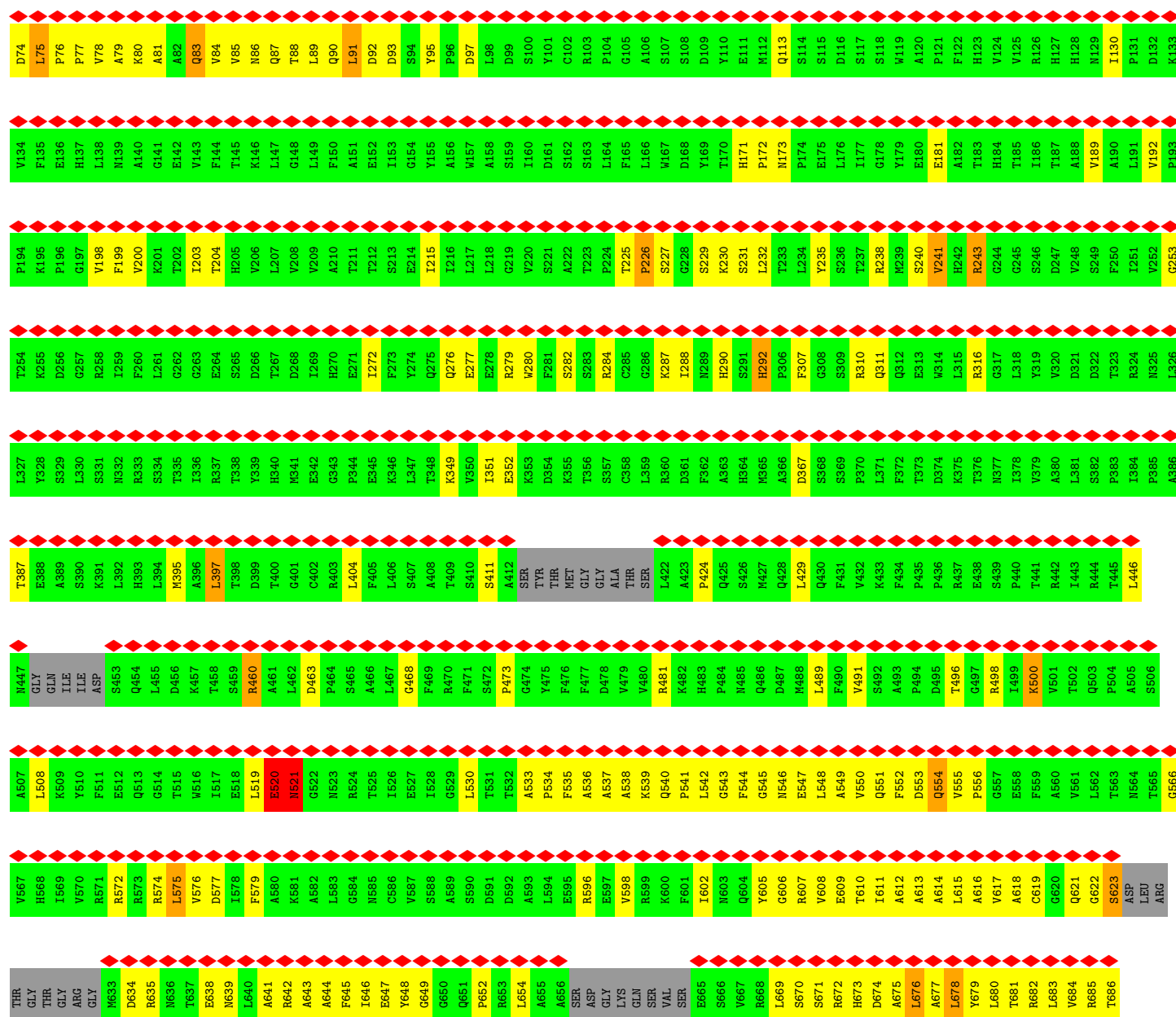
| Response   | Percentage |
|------------|------------|
| Not enough | 53%        |
| Enough     | 72%        |

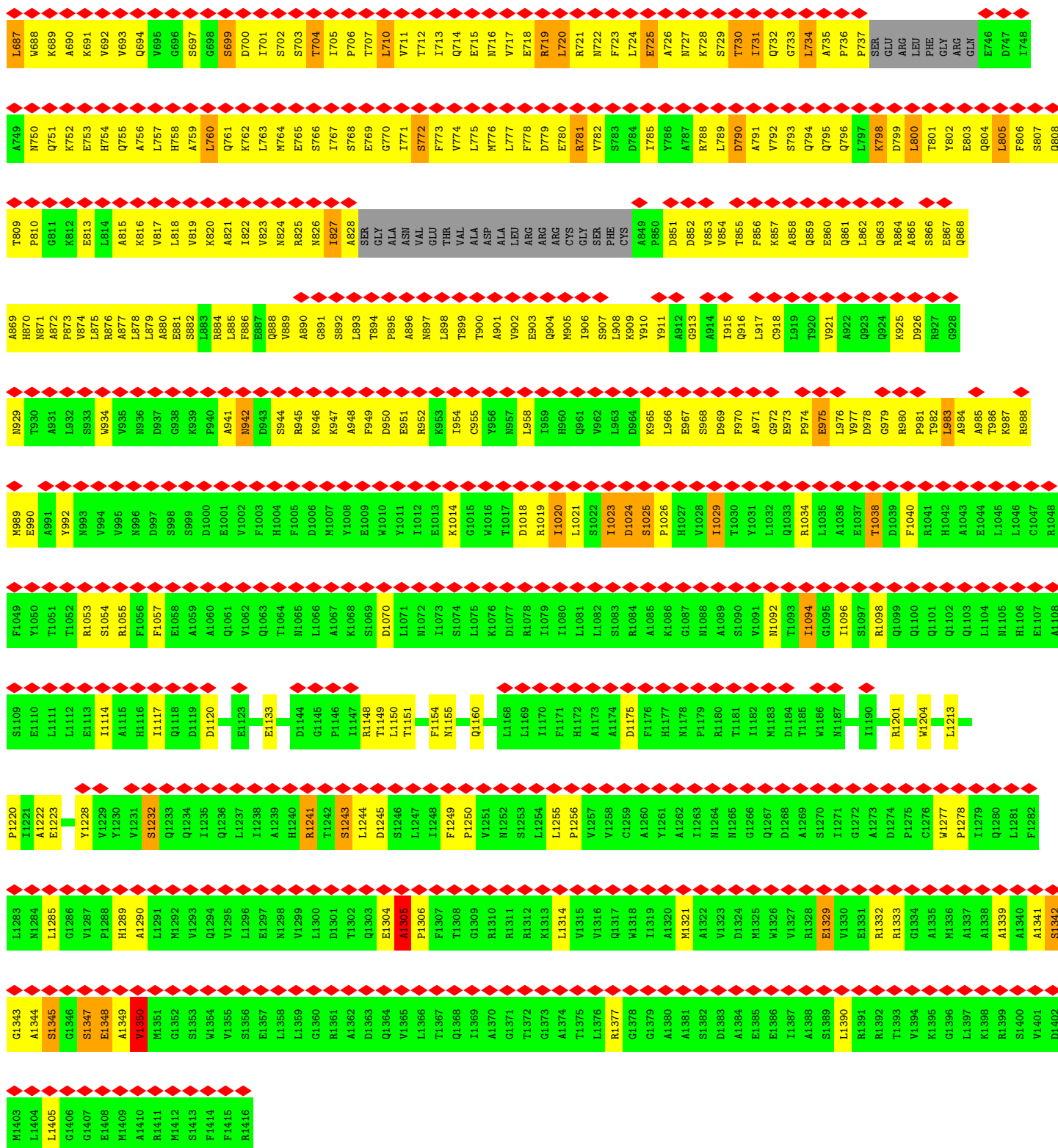


|       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| F199  | F200  | I203  | I204  | I215  | T223  | P224  | T225  | P226  | S227  | G228  | S229  | G230  | G231  | L232  | Y235  | R238  | M239  | S240  | V241  | E242  | R243  | G253  | L272  | Q276  | E277  | E278  | R279  | W280  | F281  | S282  | R284  | K287  | L288  | R289  | H290  | H291  | H292  | P306  | F307  | R310  | Q311  | R316  | K349  | V350  | I351  | E352  |       |       |       |       |       |       |       |       |       |       |       |       |       |
| D367  | M395  | L397  | L404  | S411  | A412  | SER   | TYR   | THR   | MET   | GLY   | ALA   | THR   | SER   | L422  | A423  | P424  | L429  | K433  | F434  | P435  | P436  | R437  | E438  | S439  | P440  | T441  | R442  | I443  | R444  | T445  | L446  | N447  | GLY   | ILE   | ILE   | ASP   | S453  | Q454  | L455  | D456  | S459  | R460  | A461  | L462  | D463  | G468  | F469  | R470  |       |       |       |       |       |       |       |       |       |       |       |
| F471  | S472  | P473  | G474  | Y475  | F476  | F477  | D478  | V479  | V480  | R481  | K482  | M488  | L489  | F490  | V491  | S492  | A493  | P494  | D495  | T496  | G497  | R498  | I499  | K500  | V501  | T502  | Q503  | A507  | L508  | K509  | Y510  | F511  | E512  | Q513  | G514  | T515  | W516  | I517  | E518  | L519  | E520  | N521  | L530  | F535  | A536  | A537  | A538  | L542  | G543  | F544  | G545  | N546  | E547  | L548  |       |       |       |       |       |
| A549  | V550  | Q551  | F552  | Q554  | V555  | P556  | G557  | E558  | F559  | G566  | V567  | H568  | I569  | V570  | R571  | S572  | R573  | R574  | L575  | V576  | D577  | I578  | F579  | A580  | K581  | A582  | L583  | G584  | C586  | V587  | S588  | A589  | S590  | D591  | D592  | A593  | L594  | E595  | E596  | E597  | V598  | R599  | K600  | I601  | I602  | N603  | Q604  | Y605  | G606  | R607  | F608  | E609  | T610  | I611  | A612  | A613  |       |       |       |
| A614  | L615  | A616  | V617  | C619  | G620  | Q621  | G622  | S623  | ASP   | LEU   | ARG   | THR   | GLY   | THR   | GLY   | ARG   | GLY   | M633  | D634  | R635  | N636  | T637  | E638  | N639  | L640  | A641  | R642  | A643  | A644  | I646  | E647  | Y648  | G649  | G650  | Q651  | P652  | R653  | L654  | A655  | A656  | SER   | ASP   | GLY   | LVS   | GLN   | SER   | VAL   | E665  | S666  | V667  | R668  | L669  | Q732  | L673  | S671  | R672  | H673  |       |       |
| D674  | A675  | L676  | A677  | L678  | Y679  | L680  | T681  | R682  | L683  | V684  | R685  | T686  | L687  | V688  | K689  | A690  | K691  | V692  | V693  | S697  | G698  | S699  | D700  | S703  | T704  | I705  | P706  | T707  | L710  | V711  | T712  | I713  | Q714  | W715  | W716  | W717  | E718  | R719  | L720  | R721  | N722  | F723  | L724  | E725  | A726  | N727  | K728  | T729  | T730  | I731  | Q732  | L733  | L734  | A735  | P736  | P737  | SER   |       |       |
| GLU   | ARG   | LEU   | PHE   | GLY   | ARG   | GLN   | E746  | A749  | W750  | K752  | E753  | H754  | Q755  | A756  | L757  | K758  | A759  | L760  | K761  | K762  | L763  | M764  | E765  | S766  | I767  | S768  | E769  | G770  | I771  | S772  | F773  | V774  | L775  | M776  | L777  | D779  | E780  | R781  | V782  | I785  | L789  | D790  | A791  | V792  | S793  | Q794  | Q795  | Q796  | G797  | L797  | K798  | D799  | L800  | T801  | Y802  |       |       |       |       |
| E803  | Q804  | L805  | F806  | Q807  | Q808  | T809  | P810  | G811  | K812  | Q813  | L814  | A815  | K816  | W817  | L818  | W819  | K820  | A821  | I822  | V823  | R824  | R825  | N826  | I827  | A828  | SER   | GLY   | ALA   | ASN   | VAL   | GLU   | THR   | VAL   | ALA   | ASP   | ALA   | LEU   | ARG   | ARG   | CYS   | GLY   | PHE   | CYS   | A849  | P850  | D851  | R852  | V853  | W854  | T855  | K856  | K857  | G858  | Q859  | E860  | Q861  | L862  |       |       |
| Q863  | R864  | A865  | S866  | E867  | Q868  | A869  | H870  | N871  | A872  | P873  | V874  | R875  | R876  | A877  | L878  | R879  | A880  | E881  | S882  | R883  | R884  | L885  | F886  | E887  | Q888  | V889  | A890  | E891  | R892  | K953  | L954  | C955  | Y956  | N957  | L958  | R959  | T959  | R960  | Q961  | V962  | L963  | D964  | K965  | L966  | E967  | S968  | D969  | F970  | A971  | G972  | E973  | P974  | E975  | L976  | V977  | G979  | R980  | P981  | T982  |
| L983  | A984  | A985  | T986  | K987  | R988  | M989  | E990  | A991  | Y992  | N993  | V994  | V995  | N996  | D997  | S998  | S999  | D1000 | E1001 | V1002 | F1003 | H1004 | F1005 | M1006 | M1007 | Y1008 | E1009 | W1010 | Y1011 | I1012 | E1013 | K1014 | G1015 | W1016 | T1017 | D1018 | I1019 | R1020 | L1021 | E1022 | I1023 | D1024 | S1025 | P1026 | H1027 | V1028 | I1029 | T1030 | Y1031 | L1032 | Q1033 | R1034 | L1035 | A1036 | E1037 | T1038 | D1039 | R1041 | H1042 |       |
| A1043 | E1044 | L1045 | L1046 | C1047 | R1048 | F1049 | Y1050 | T1051 | T1052 | R1053 | S1054 | L1055 | F1056 | F1057 | E1058 | A1059 | A1060 | Q1061 | V1062 | Q1063 | T1064 | M1065 | L1066 | A1067 | K1068 | S1069 | D1070 | L1071 | M1072 | I1073 | S1074 | L1075 | R1078 | I1079 | I1080 | L1081 | L1082 | S1083 | R1084 | A1085 | K1086 | K1087 | M1088 | A1089 | S1090 | V1091 | M1092 | T1093 | I1094 | G1095 | I1096 | S1097 | R1098 | Q1099 | Q1100 | Q1101 | Q1102 | Q1103 |       |
| L1104 | N1105 | H1106 | E1107 | E1108 | S1109 | E1110 | L1111 | L1112 | E1113 | I1114 | A1115 | H1116 | I1117 | Q1118 | D1119 | D1120 | L1121 | L1122 | E1123 | R1124 | L1125 | V1126 | A1127 | D1128 | P1129 | R1130 | I1131 | P1132 | E1133 | E1134 | R1135 | K1136 | E1137 | E1138 | I1139 | E1140 | E1141 | F1142 | L1143 | D1144 | G1145 | P1146 | I1147 | R1148 | T1149 | L1150 | T1151 | D1152 | L1153 | F1154 | N1155 | D1156 | Y1157 | A1158 | D1159 | Q1160 | A1161 | N1162 | Y1163 |



• Molecule 2: NUP155

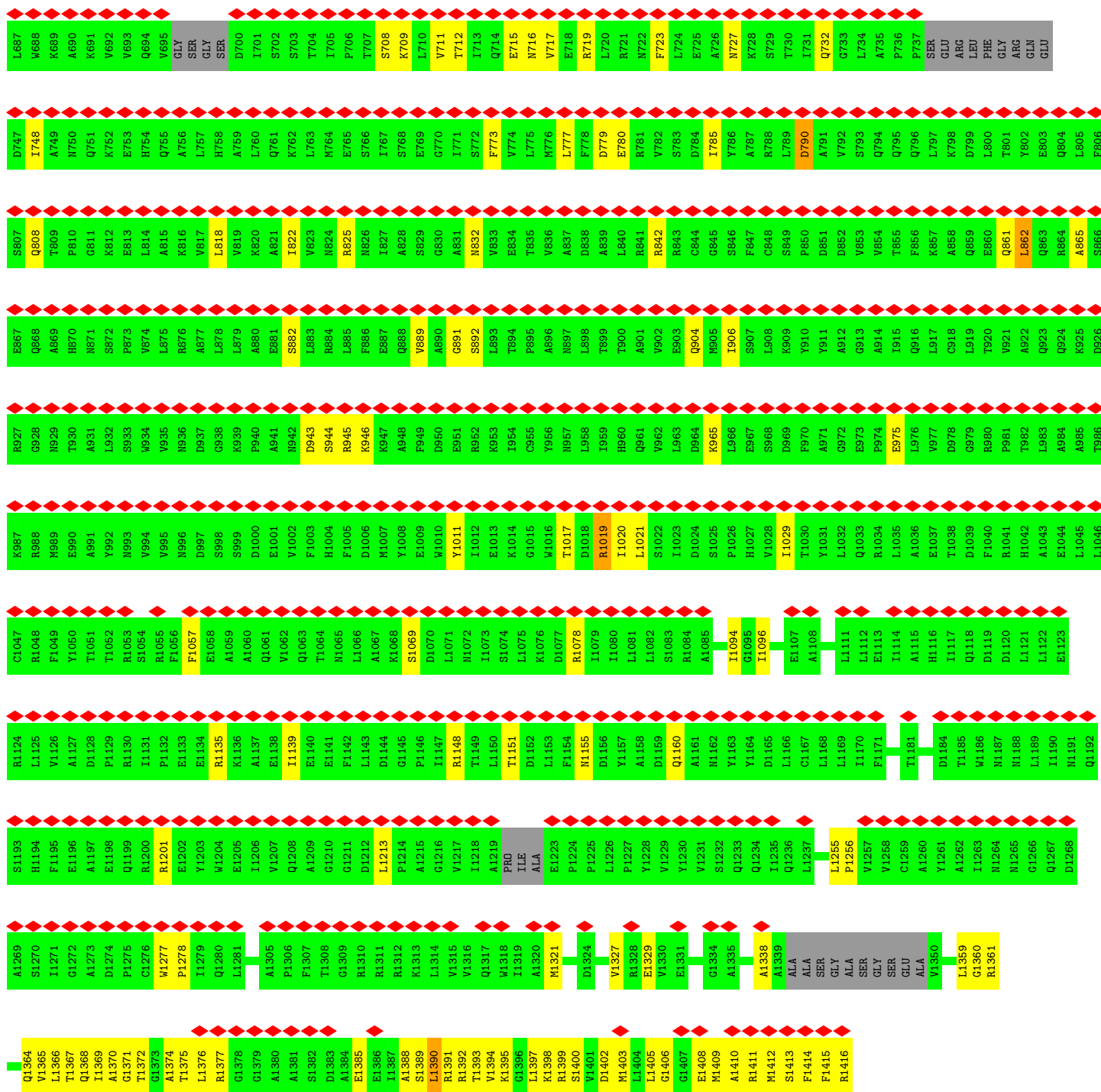




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|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| G1286 | V1287 | P1288 | H1289 | A1290 | L1291 | M1292 | V1293 | Q1294 | L1295 | L1296 | E1297 | N1298 | V1299 | L1300 | D1301 | T1302 | Q1303 | E1304 | A1305 | F1306 | P1307 | T1308 | G1309 | R1310 | R1311 | R1312 | K1313 | L1314 | V1315 | V1316 | Q1317 | W1318 | I1319 | A1320 | M1321 | A1322 | V1323 | D1324 | M1325 | W1326 | V1327 | R1328 | E1329 | V1330 | E1331 | R1332 | R1333 | G1334 | A1335 | M1336 | A1337 | A1338 | ALA   | ALA   | SER   | GLY   | ALA   | SER   |       |       |
| L1226 | P1227 | Y1228 | V1229 | Y1230 | V1231 | S1232 | Q1233 | Q1234 | I1235 | Q1236 | L1237 | I1238 | A1239 | H1240 | R1241 | T1242 | S1243 | L1244 | D1245 | S1246 | L1247 | I1248 | F1249 | P1250 | V1251 | N1252 | S1253 | L1254 | L1255 | P1256 | V1257 | V1258 | C1259 | A1260 | Y1261 | A1262 | I1263 | N1264 | N1265 | G1266 | Q1267 | D1268 | A1269 | S1270 | I1271 | G1272 | A1273 | D1274 | P1275 | C1276 | W1277 | P1278 | T1279 | Q1280 | L1281 | F1282 | L1283 | N1284 | L1285 |       |
| L1166 | C1167 | L1168 | L1169 | I1170 | F1171 | H1172 | A1173 | A1174 | D1175 | F1176 | H1177 | M1178 | P1179 | R1180 | T1181 | I1182 | M1183 | L1184 | T1185 | W1186 | M1187 | N1188 | L1189 | I1190 | M1191 | Q1192 | S1193 | H1194 | F1195 | E1196 | A1197 | E1198 | Q1199 | R1200 | R1201 | E1202 | Y1203 | W1204 | E1205 | I1206 | V1207 | Q1208 | A1209 | G1210 | G1211 | D1212 | L1213 | P1214 | A1215 | G1216 | V1217 | L1218 | A1219 | PRO   | ILE   | ALA   | E1223 | P1224 | P1225 |       |
| S1090 | V1091 | N1092 | T1093 | I1094 | G1095 | I1096 | S1097 | R1098 | Q1099 | Q1100 | Q1101 | Q1102 | L1104 | N1105 | H1106 | E1107 | A1108 | S1109 | E1110 | L1111 | L1112 | E1113 | I1114 | A1115 | H1116 | I1117 | Q1118 | D1119 | D1120 | L1121 | L1122 | E1123 | R1124 | P1129 | R1130 | R1135 | I1139 | R1148 | T1149 | L1150 | T1151 | D1152 | L1153 | F1154 | N1155 | A1158 | D1159 | Q1160 | A1161 | N1162 | Y1163 | Y1164 | D1165 |       |       |       |       |       |       |       |
| S1025 | P1026 | H1027 | V1028 | I1029 | T1030 | Y1031 | L1032 | Q1033 | R1034 | L1035 | A1036 | I1037 | T1038 | D1039 | F1040 | H1041 | H1042 | A1043 | E1044 | L1045 | L1046 | C1047 | R1048 | F1049 | Y1050 | T1051 | T1052 | R1053 | S1054 | R1055 | F1056 | F1057 | E1058 | A1059 | A1060 | Q1061 | V1062 | Q1063 | T1064 | M1065 | L1066 | A1067 | K1068 | S1069 | K1076 | D1077 | R1078 | I1079 | I1080 | L1081 | A1082 | Y1083 | R1084 | Y1085 | K1086 | N1088 | A1089 |       |       |       |
| K965  | L966  | E967  | S968  | D969  | F970  | A971  | G972  | E973  | P974  | E975  | L976  | V977  | D978  | G979  | R980  | P981  | T982  | L983  | A984  | A985  | T986  | K987  | R988  | M989  | E990  | A991  | Y992  | N993  | V994  | V995  | N996  | D997  | S998  | S999  | D1000 | E1001 | V1002 | F1003 | H1004 | F1005 | D1006 | M1007 | I1008 | E1009 | W1010 | Y1011 | I1012 | E1013 | G1014 | G1015 | W1016 | T1017 | S1083 | R1018 | R1019 | I1020 | L1021 | S1022 | I1023 | D1024 |
| M905  | I906  | S907  | L908  | K909  | Y910  | Y911  | A912  | G913  | A914  | I915  | Q916  | L917  | C918  | L919  | T920  | V921  | A922  | Q923  | Q924  | K925  | D926  | R927  | G928  | N929  | T930  | A931  | L932  | S933  | W934  | V935  | N936  | D937  | G938  | K939  | P940  | A941  | N942  | D943  | S944  | R945  | K946  | R947  | A948  | F949  | E950  | E951  | R952  | K953  | I954  | C955  | Y956  | N957  | L958  | I959  | H960  | Q961  | V962  | L963  | D964  |       |
| I827  | N832  | S849  | P850  | D851  | D852  | V853  | W854  | T855  | F856  | K857  | A858  | Q859  | E860  | Q861  | L862  | Q863  | R864  | A865  | S866  | E867  | Q868  | A869  | H870  | N871  | S872  | P873  | W874  | L875  | A877  | L878  | L879  | A880  | E881  | S882  | L883  | R884  | L885  | F886  | E887  | Q888  | V889  | A890  | G891  | S892  | L893  | T894  | P895  | A896  | N897  | L898  | T899  | T900  | A901  | V902  | E903  | Q904  |       |       |       |       |
| ASP   | GLY   | LYS   | GLN   | SER   | VAL   | SER   | GLU   | S666  | S670  | S671  | R672  | H673  | D674  | A675  | L676  | V695  | GLY   | SER   | GLY   | SER   | D700  | F737  | SER   | GLU   | ARG   | LEU   | PHE   | GLY   | ARG   | GLN   | D747  | I748  | A759  | L760  | F773  | L777  | F778  | D779  | E780  | I785  | D790  | Q808  | L818  | I822  | R825  | R826  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| ASP   | S453  | Q454  | S459  | R460  | A461  | L462  | D463  | V480  | R481  | K482  | H483  | P484  | N485  | Q486  | M488  | L489  | D495  | T496  | G497  | R498  | V501  | F511  | Q512  | Q513  | G514  | T515  | W516  | I517  | E518  | L519  | E520  | N521  | G522  | N523  | R524  | L562  | T563  | N564  | T565  | G566  | V567  | H568  | I569  | R573  | R574  | L575  | V576  | R577  | I578  | F579  | A580  |       |       |       |       |       |       |       |       |       |
| T170  | H171  | P172  | N173  | P174  | E175  | L176  | I177  | G178  | Y179  | E180  | I186  | T187  | A188  | V189  | F199  | V220  | D221  | A222  | P226  | S227  | G228  | S229  | L232  | T233  | L234  | Y235  | R316  | T415  | MET   | GLY   | GLY   | ALA   | THR   | A421  | L422  | P436  | T441  | R442  | I443  | R444  | T445  | L446  | ASN   | GLY   | GLN   | ILE   | ILE   |       |       |       |       |       |       |       |       |       |       |       |       |       |
| D74   | D109  | Y110  | Y111  | Y112  | Q113  | S114  | S115  | D116  | S117  | S118  | W119  | A120  | P121  | F122  | H123  | V124  | V125  | R126  | H127  | H128  | N129  | I130  | P131  | D132  | K133  | V134  | F135  | E136  | H137  | L138  | N139  | A140  | G141  | E142  | V143  | F144  | T145  | K146  | L147  | F150  | I153  | A156  | W157  | A158  | S159  | I160  | D161  | S162  | S163  | L164  | F165  | L166  | W167  | D168  | Y169  |       |       |       |       |       |





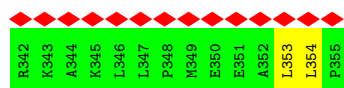


Chain B2:  50% 50%



• Molecule 4: NUP53 R3

Chain B3:  100%  
86% 14%



• Molecule 4: NUP53 R3

Chain B4:  100%  
50% 50%



• Molecule 4: NUP53 R3

Chain B5:  64% 36%



• Molecule 4: NUP53 R3

Chain B6:  100%  
100%



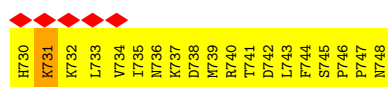
• Molecule 5: NUP98 R3

Chain C1:  84% 5% 11%

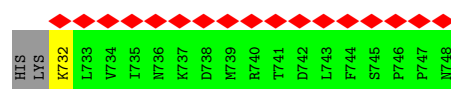
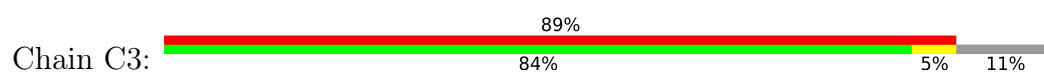


• Molecule 5: NUP98 R3

Chain C2:  26% 95% 5%



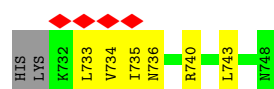
• Molecule 5: NUP98 R3



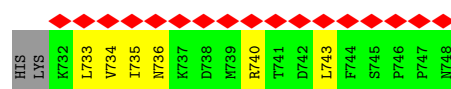
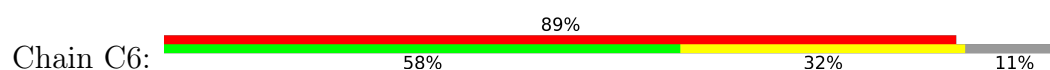
• Molecule 5: NUP98 R3



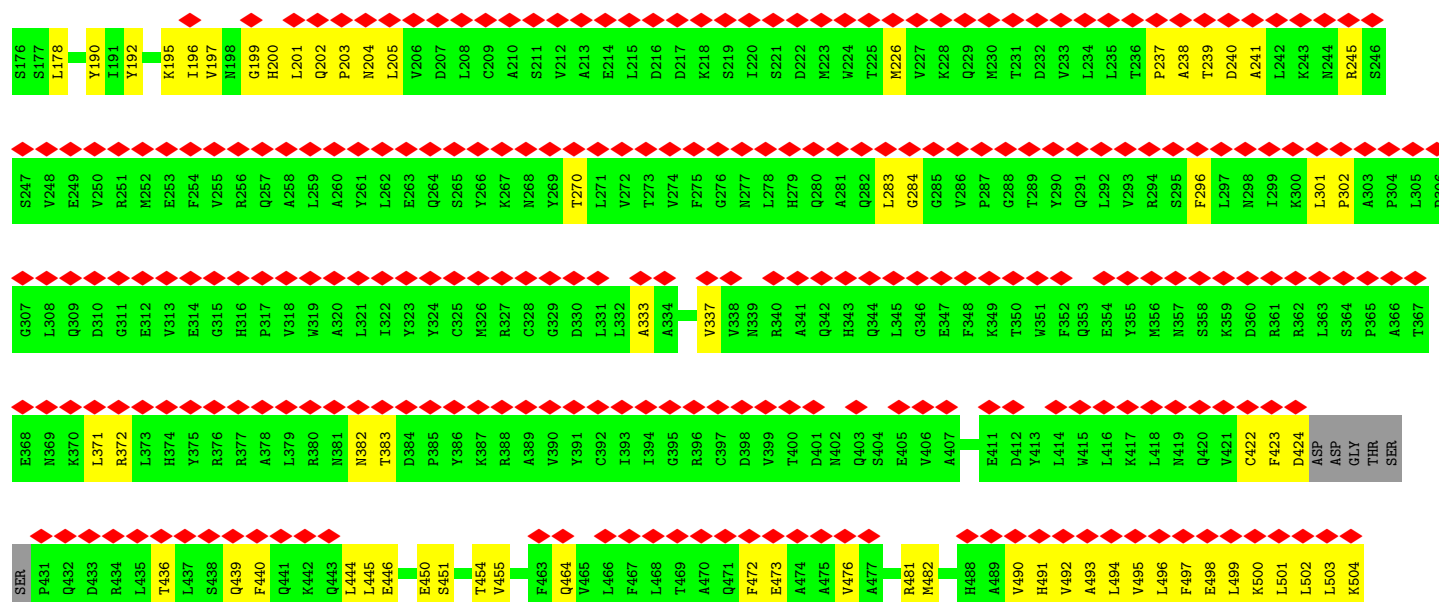
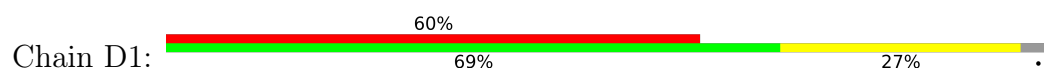
• Molecule 5: NUP98 R3

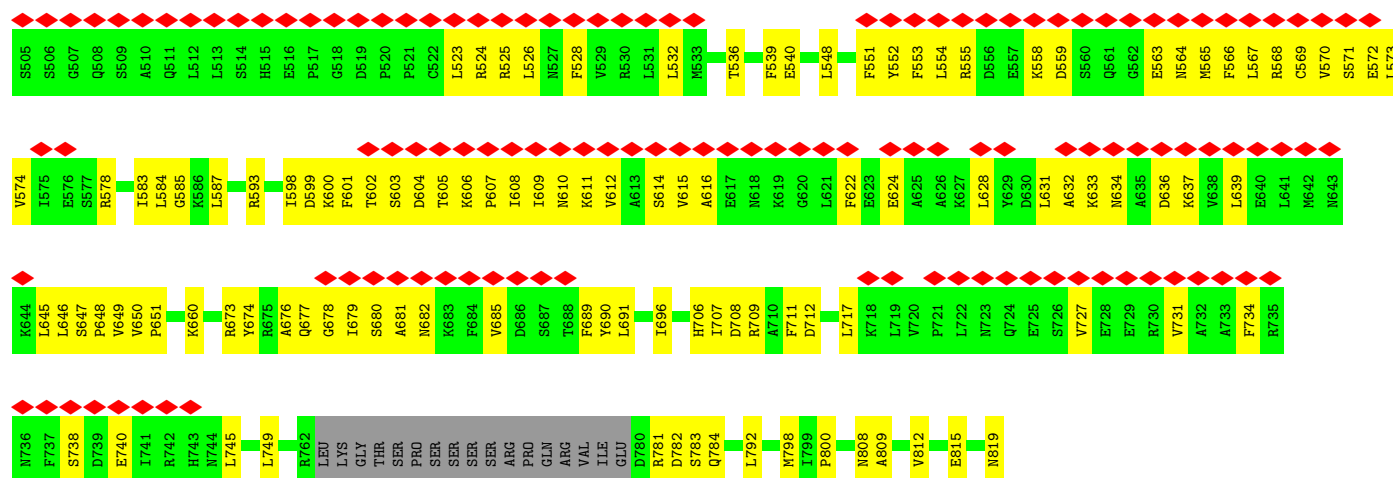


• Molecule 5: NUP98 R3

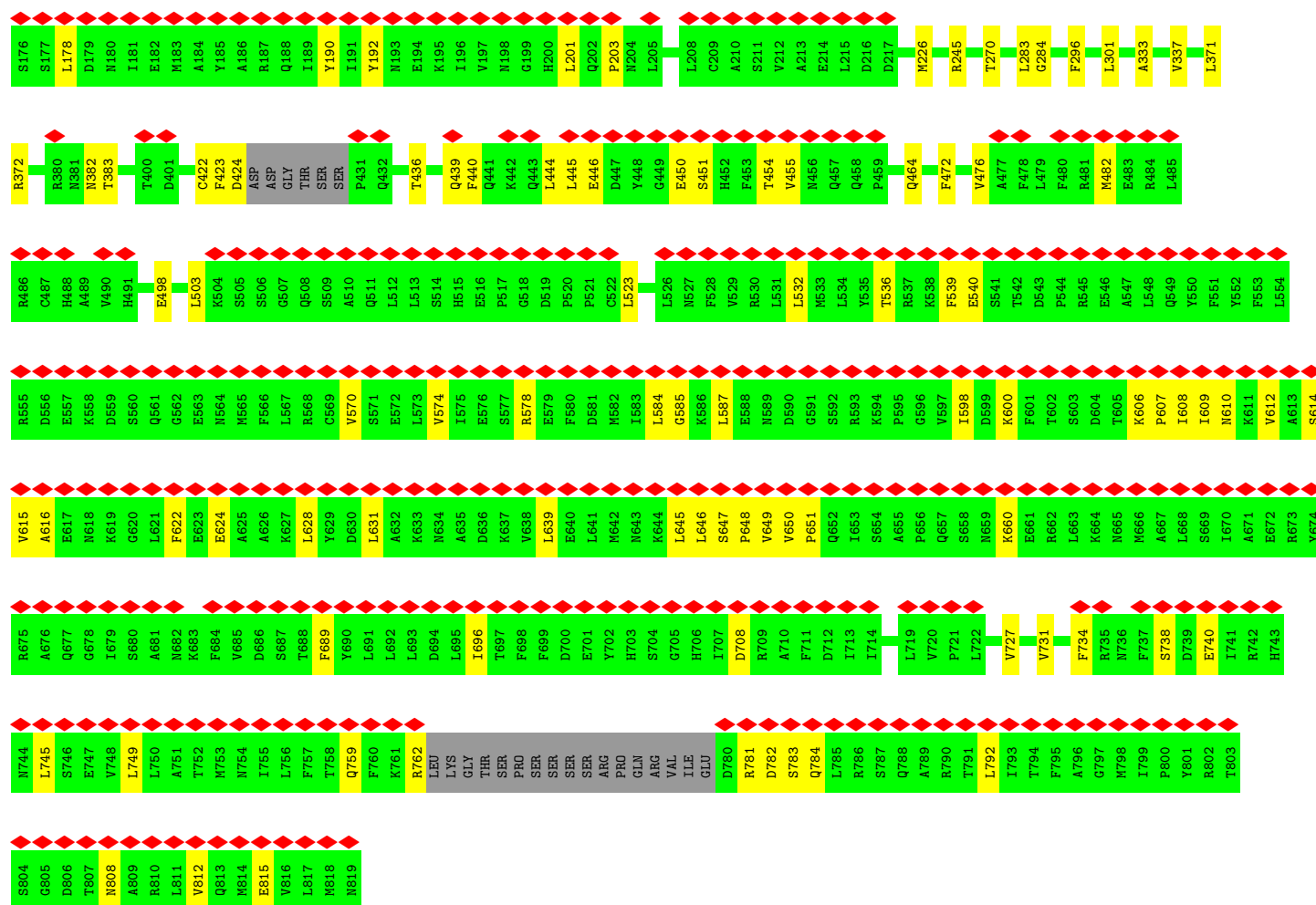
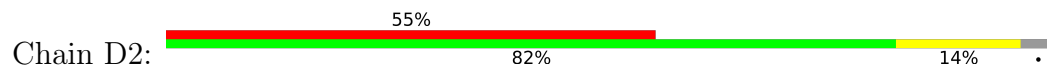


• Molecule 6: NUP93 SOL

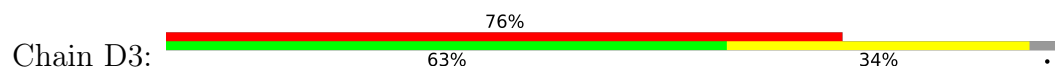




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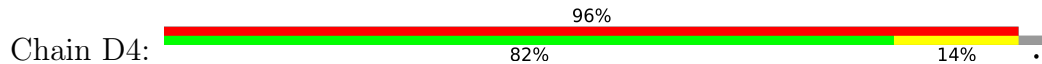


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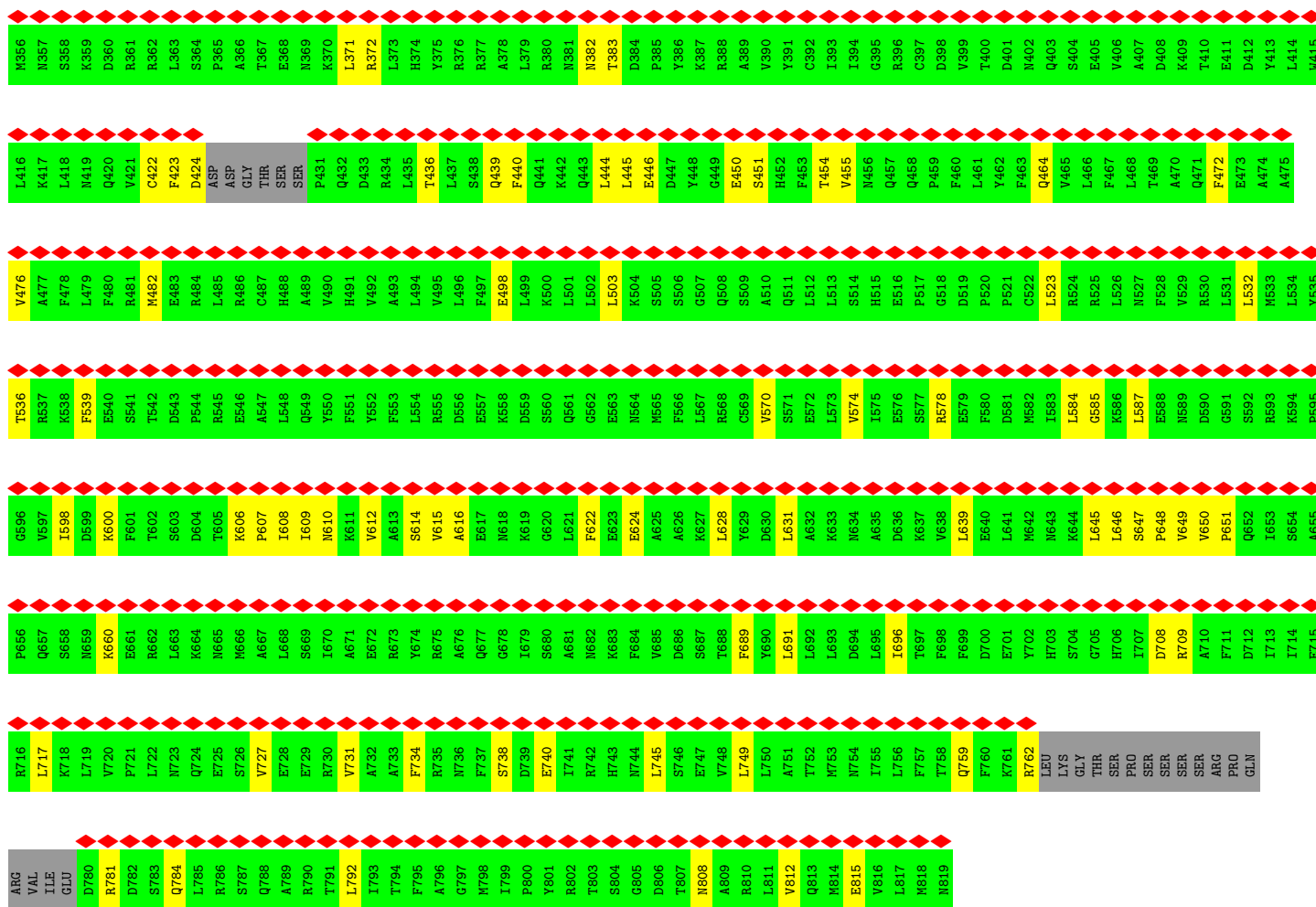


|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| S176 | S177 | L178 | Y190 | I191 | Y192 | I196 | G199 | H200 | L201 | Q202 | P203 | N204 | L205 | V206 | D217 | K218 | S219 | I220 | S221 | D222 | M223 | V224 | T225 | M226 | V227 | K228 | Q229 | M230 | T231 | D232 | V233 | L234 | L235 | L236 | P237 | A238 | T239 | D240 | A241 | L242 | N244 | R245 | S246 | S247 | V248 | E249 | V250 | R251 | M252 | E253 | F254 | V255 | R256 | Q257 |      |      |      |      |      |      |
| A258 | L259 | A260 | Y261 | L262 | E263 | Q264 | S265 | Y266 | K267 | N268 | Y269 | L270 | V271 | V272 | T273 | V274 | F275 | G276 | N277 | L278 | H279 | Q280 | A281 | T282 | L283 | G284 | G285 | V286 | P287 | G288 | T289 | V290 | Q291 | L292 | V293 | R294 | S295 | F296 | L297 | N298 | I299 | K300 | L301 | P302 | A303 | F304 | L305 | F306 | E307 | V308 | Q309 | E253 | G310 | E312 | V313 | E314 | H316 | P317 |      |      |
| V318 | W319 | A320 | L321 | L322 | Y323 | Y324 | C325 | M326 | K327 | C328 | G329 | D330 | L331 | L332 | A333 | A334 | S335 | Q336 | V337 | V338 | N339 | R340 | A341 | Q342 | H343 | Q344 | L345 | G346 | F347 | F348 | K349 | T350 | W351 | F352 | Q353 | E354 | Y355 | M356 | N357 | S358 | K359 | D360 | R361 | R362 | L363 | S364 | P365 | A366 | T367 | E368 | N369 | K370 | L371 | R372 | L373 | H374 | R376 | R377 |      |      |
| A378 | L379 | R380 | N381 | N382 | T383 | D384 | P385 | Y386 | K387 | R388 | A389 | Y390 | L391 | C392 | I393 | I394 | G395 | R396 | C397 | V398 | V399 | T400 | D401 | N402 | Q403 | S404 | E405 | V406 | A407 | D408 | K409 | T410 | E411 | D412 | Y413 | L414 | W415 | L416 | K417 | L418 | N419 | Q420 | V421 | C422 | F423 | D424 | ASP  | GLY  | THR  | SER  | SER  | P431 | Q432 | D433 | R434 | L435 | T436 | L437 |      |      |
| S438 | Q439 | F440 | Q441 | K442 | Q443 | L444 | L445 | E446 | D447 | Y448 | G449 | E450 | S451 | H452 | F453 | T454 | V455 | M456 | Q457 | Q458 | F459 | F460 | L461 | Y462 | F463 | Q464 | V465 | L466 | F467 | L468 | T469 | A470 | Q471 | F472 | A473 | E474 | A475 | V476 | M482 | V492 | A493 | L494 | V495 | L496 | F497 | E498 | L499 | K500 | L501 | L502 | L503 | K504 | H515 | E516 | P517 | G518 |      |      |      |      |
| D519 | P520 | P521 | C522 | L523 | R524 | R525 | L526 | N527 | F528 | L532 | T536 | F539 | L548 | F551 | Y552 | F553 | L554 | R555 | D556 | E557 | K558 | D559 | G562 | E563 | N564 | N565 | F566 | L567 | R568 | C569 | S571 | E572 | L573 | V574 | L575 | E576 | A577 | S577 | R578 | E579 | F580 | D581 | M582 | L583 | L584 | G585 | K586 | L587 | E588 | N589 | D590 | G591 | S592 |      |      |      |      |      |      |      |
| R593 | K594 | T598 | D599 | K600 | F601 | T602 | S603 | D604 | T605 | K606 | P607 | L608 | T609 | N610 | V611 | V612 | A613 | S614 | V615 | A616 | E617 | N618 | K619 | G620 | L621 | F622 | E623 | E624 | A625 | A626 | V627 | L628 | V629 | D630 | L631 | E576 | A632 | K633 | N634 | A635 | D636 | V637 | V638 | L639 | E640 | L641 | M642 | N643 | K644 | L645 | L646 | S647 | P648 | V649 | V650 | P651 | Q652 | T653 | S654 |      |
| A655 | S658 | N659 | K660 | E661 | R662 | L663 | K664 | N665 | H666 | A667 | L668 | S669 | T670 | A671 | E672 | R673 | V674 | R675 | A676 | D677 | G678 | V679 | S680 | A681 | N682 | K683 | F684 | V685 | D686 | S687 | T688 | F689 | Y690 | L691 | L692 | L693 | D694 | L695 | T696 | T697 | F698 | F699 | D700 | E701 | Y702 | H703 | S704 | G705 | H706 | I707 | D708 | R709 | A710 | PRO  | ARG  | PRO  | D712 | I713 | I714 | E715 |
| R716 | L717 | K718 | L719 | V720 | P721 | L722 | N723 | Q724 | E725 | S726 | V727 | E728 | E729 | R730 | V731 | A732 | A733 | F734 | R735 | N736 | F737 | S738 | D739 | E740 | I741 | R742 | H743 | N744 | L745 | S746 | E747 | V748 | L749 | L750 | A751 | T752 | M753 | N754 | I755 | L756 | F757 | T758 | Q759 | F760 | K761 | R762 | LEU  | LYS  | THR  | SER  | PRO  | SER  | SER  | ARG  | ARG  | GLN  |      |      |      |      |
| ARG  | VAL  | ILE  | GLU  | D780 | R781 | D782 | S783 | Q784 | L785 | R786 | S787 | Q788 | A789 | R790 | T791 | L792 | I793 | T794 | F795 | A796 | G797 | N798 | I799 | P800 | Y801 | R802 | T803 | S804 | G805 | D806 | T807 | N808 | A809 | R810 | L811 | V812 | Q813 | N814 | E815 | V816 | L817 | N818 | N819 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

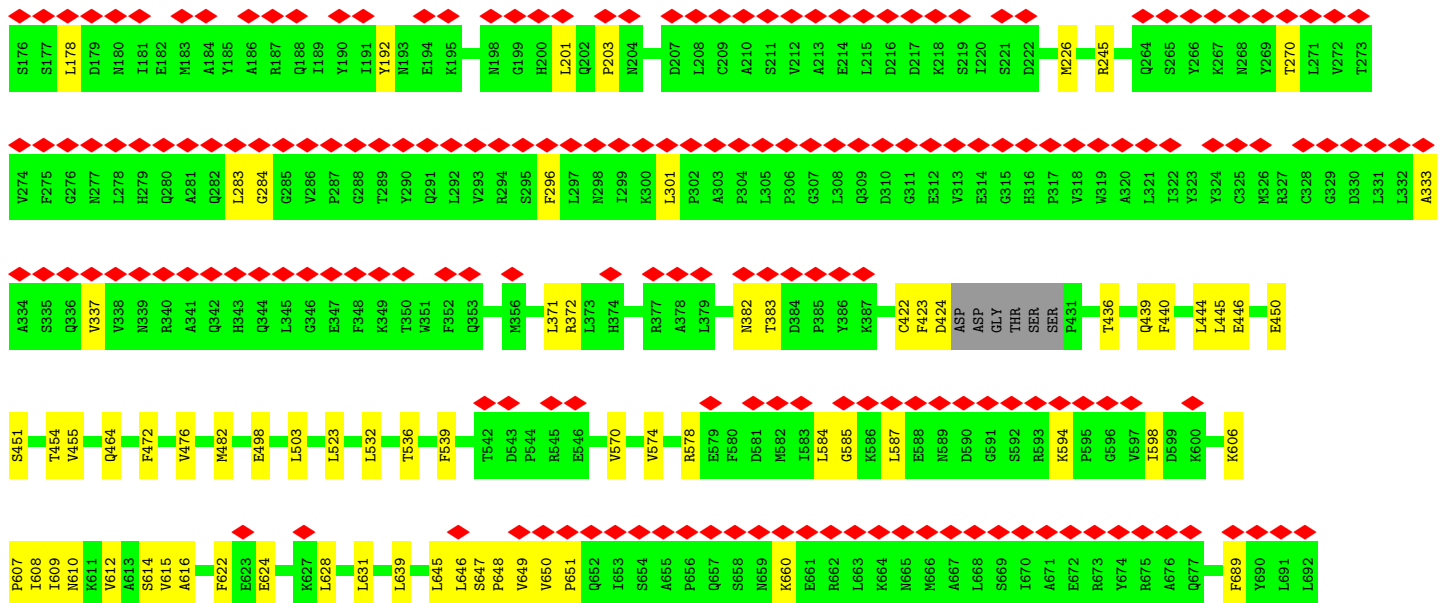
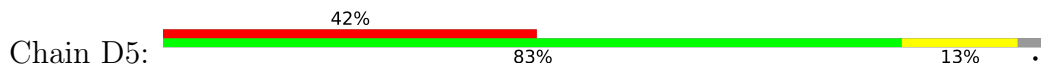
● Molecule 6: NUP93 SOL



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|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| T236 | P237 | A238 | T239 | D240 | A241 | L242 | K243 | N244 | R245 | S246 | S247 | V248 | Q249 | V250 | R251 | M252 | E253 | F254 | V255 | R256 | Q257 | A258 | L259 | A260 | Y261 | L262 | E263 | Q264 | S265 | Y266 | K267 | N268 | Y269 | T270 | L271 | V272 | T273 | V274 | F275 | G276 | N277 | L278 | H279 | Q280 | A281 | S282 | L283 | G284 | C285 | V286 | P287 | G288 | T289 | Y290 | Q291 | L292 | V293 | R294 | S295 |
| F296 | L297 | N298 | I299 | K300 | L301 | P302 | A303 | P304 | L305 | P306 | G307 | L308 | Q309 | D310 | G311 | E312 | V313 | E314 | G315 | H316 | P317 | V318 | W319 | A320 | L321 | I322 | Y323 | Y324 | C325 | M326 | R327 | C328 | G329 | D330 | L331 | L332 | A333 | A334 | S335 | Q336 | V337 | V338 | N339 | R340 | A341 | Q342 | H343 | Q344 | L345 | G346 | E347 | F348 | K349 | T350 | W351 | F352 | Q353 | E354 | Y355 |
| S176 | S177 | L178 | D179 | I180 | I181 | E182 | M183 | A184 | Y185 | A186 | R187 | Q188 | I189 | Y190 | I191 | Y192 | N193 | E194 | K195 | I196 | V197 | N198 | G199 | H200 | L201 | Q202 | P203 | N204 | L205 | V206 | D207 | L208 | C209 | A210 | S211 | V212 | A213 | E214 | L215 | D216 | D217 | K218 | S219 | I220 | S221 | D222 | M223 | W224 | T225 | M226 | V227 | K228 | Q229 | M230 | T231 | D232 | V233 | L234 | I235 |



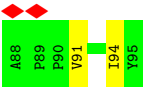
• Molecule 6: NUP93 SOL



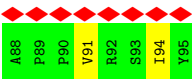
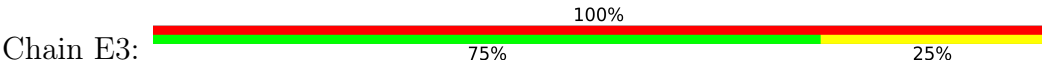




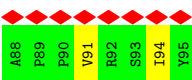
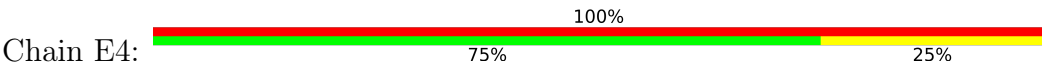




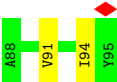
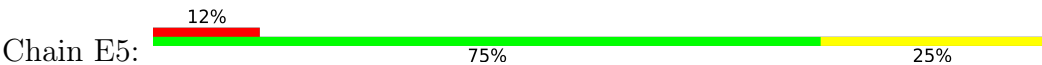
• Molecule 7: NUP53 R2



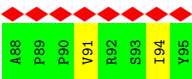
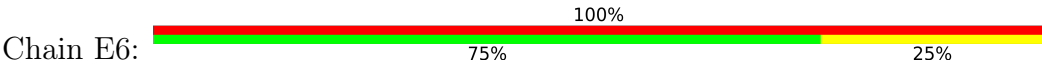
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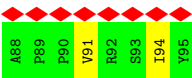
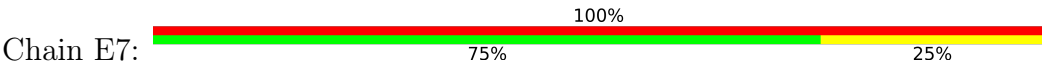
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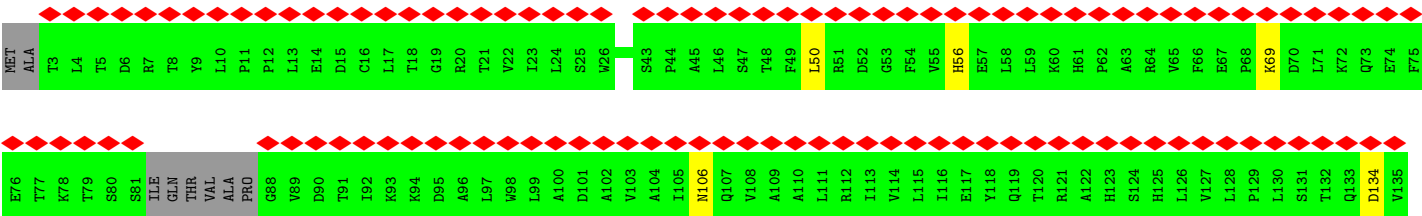
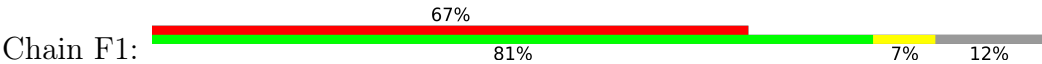
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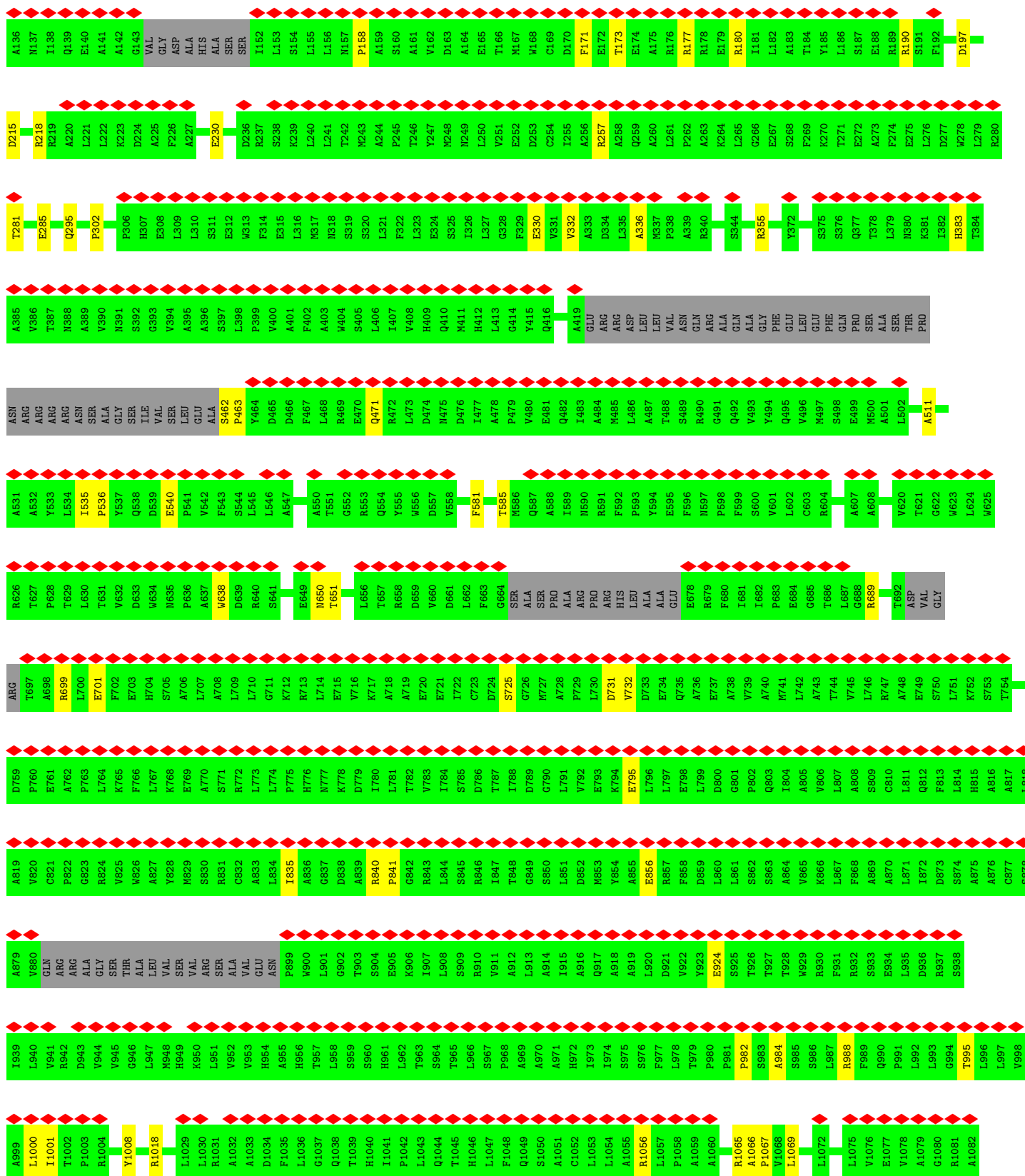


• Molecule 7: NUP53 R2



• Molecule 8: NUP188







|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| MET  | ALA  | T3   | L4   | T5   | D6   | R7   | T8   | Y9   | L10  | P11  | P12  | L13  | E14  | D15  | C16  | L17  | T18  | G19  | R20  | T21  | V22  | I23  | L24  | S25  | W26  | R27  | L28  | V29  | A30  | S31  | A32  | L33  | E34  | D35  | A36  | D37  | L38  | A39  | R40  | L41  | T42  | S43  | P44  | A45  | L46  | S47  | T48  | F49  | L50  | R51  | D52  | G53  | F54  | V55  | H56  | E57  | L58  | L59  | R60  |      |
| H61  | P62  | A63  | R64  | V65  | H66  | E67  | P68  | K69  | D70  | L71  | K72  | Q73  | E74  | F75  | E76  | T77  | K78  | T79  | S80  | S81  | I82  | GLN  | THR  | VAL  | GLY  | ALA  | PRO  | G88  | W89  | D90  | T91  | I92  | K93  | K94  | D95  | A96  | L97  | W98  | L99  | A100 | D101 | A102 | V103 | A104 | E105 | T106 | Q107 | V108 | A109 | A110 | L111 | R112 | I113 | V114 | L115 | T116 | E117 | Q118 | L119 | T120 |
| R121 | A122 | A123 | S124 | P125 | L126 | V127 | L128 | P129 | L130 | S131 | T132 | Q133 | D134 | V135 | A136 | N137 | I138 | Q139 | E140 | A141 | A142 | G143 | VAL  | GLY  | ASP  | ALA  | HIS  | ALA  | SER  | SER  | I152 | L153 | S154 | L155 | L156 | N157 | P158 | A159 | S160 | A161 | V162 | D163 | E164 | E165 | T166 | M167 | Q168 | C169 | D170 | F171 | E172 | T173 | E174 | A175 | R176 | R177 | E178 | R179 | R180 |      |
| I181 | L182 | A183 | T184 | Y185 | L186 | S187 | E188 | R189 | R190 | S191 | F192 | T193 | A194 | A195 | V196 | D197 | A198 | L199 | V200 | T201 | F202 | L203 | L204 | H205 | S206 | A207 | P208 | G209 | Q210 | H211 | K212 | D213 | L214 | D215 | S216 | L217 | R218 | R219 | A220 | L221 | L222 | K223 | D224 | A225 | F226 | A227 | F228 | D229 | E230 | D231 | L232 | D233 | V234 | P235 | D236 | R237 | S238 | K239 | L240 |      |
| L241 | T242 | M243 | A244 | P245 | T246 | Y247 | M248 | N249 | L250 | V251 | E252 | D253 | C254 | I255 | A256 | R257 | A258 | Q259 | A260 | L261 | P262 | A263 | K264 | L265 | G266 | E267 | S268 | F269 | K270 | T271 | E272 | A273 | F274 | E275 | L276 | D277 | W278 | L279 | R280 | T281 | A282 | I283 | T284 | E285 | A286 | V287 | H288 | L289 | S289 | L290 | S291 | L292 | A293 | F294 | Q295 | A296 | L297 | D298 | L299 | D300 |
| T301 | P302 | Y303 | F304 | A305 | P306 | H307 | E308 | L309 | L310 | S311 | E312 | W313 | F314 | E315 | L316 | M317 | N318 | S319 | S320 | L321 | F322 | L323 | E324 | S325 | L326 | L327 | G328 | F329 | E330 | V331 | V332 | A333 | D334 | L335 | A336 | N337 | P338 | A339 | R340 | S341 | L342 | V343 | S344 | A345 | I346 | C347 | L348 | K349 | M350 | L351 | N352 | L353 | D354 | R355 | T356 | L357 | Q358 | F359 | L360 |      |
| H361 | D362 | F363 | D364 | Y365 | P366 | D367 | G368 | E369 | L370 | F371 | Y372 | L373 | L374 | S375 | S376 | T377 | T378 | L379 | N380 | K381 | I382 | H383 | T384 | A385 | V386 | T387 | N388 | A389 | V390 | N391 | S392 | G393 | V394 | A395 | A396 | S397 | L398 | P399 | V400 | A401 | L402 | A403 | W404 | S405 | L406 | I407 | V408 | H409 | Q410 | M411 | H412 | L413 | G414 | Y415 | Q416 | E417 | R418 | A419 | GLU  |      |
| ARG  | ARG  | ASP  | LEU  | VAL  | ASN  | GLN  | ARG  | ALA  | GLN  | PHE  | GLU  | LEU  | GLU  | PHE  | GLN  | PRO  | SER  | ALA  | THR  | PRO  | ASN  | ARG  | ARG  | ASN  | SER  | ALA  | GLY  | SER  | ILE  | VAL  | SER  | LEU  | ALA  | S462 | P463 | Y464 | D465 | D466 | F467 | L468 | R469 | E470 | Q471 | R472 | L473 | D474 | N475 | D476 | L477 | A478 | P479 | V480 |      |      |      |      |      |      |      |      |
| E481 | Q482 | I483 | A484 | M485 | L486 | A487 | T488 | L489 | R490 | G491 | Q492 | V493 | Y494 | Q495 | V496 | M497 | S498 | E499 | M500 | A501 | L502 | C503 | L504 | G505 | T506 | T507 | H508 | E509 | A510 | A511 | F512 | R513 | P514 | A515 | V516 | G517 | A518 | R519 | A520 | R521 | L522 | V523 | F524 | Q525 | D526 | L527 | L528 | K529 | R530 | A531 | A532 | P533 | Y534 | I535 | P536 | Y537 | D539 | E540 |      |      |
| P541 | V542 | F543 | S544 | L545 | L546 | A547 | I548 | L549 | A550 | T551 | G552 | R553 | Q554 | Y555 | V556 | D557 | V558 | T559 | D560 | A561 | L562 | S563 | A564 | S565 | S566 | L567 | N568 | Q569 | V570 | Y571 | T572 | D573 | M574 | L575 | D576 | D577 | E578 | T579 | L580 | F581 | T582 | Q583 | F584 | T585 | M586 | Q587 | D588 | E589 | L589 | N590 | R591 | F592 | P593 | Y594 | E595 | F596 | N597 | P598 | F599 | S600 |
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| D661 | L662 | F663 | G664 | SER  | ALA  | SER  | PRO  | ARG  | ARG  | HIS  | LEU  | ALA  | GLU  | E678 | R679 | F680 | I681 | I682 | P683 | E684 | G685 | T686 | L687 | G688 | R689 | F690 | V691 | T692 | ASP  | VAL  | GLY  | ARG  | T697 | A698 | R699 | L700 | E701 | F702 | E703 | H704 | S705 | A706 | L707 | A708 | L709 | L710 | G711 | K712 | R713 | L714 | L715 | V716 | K717 | L718 | A719 | E720 |      |      |      |      |
| E721 | I722 | C723 | D724 | S725 | G726 | M727 | A728 | R729 | L730 | D731 | V732 | D733 | E734 | Q735 | A736 | E737 | A738 | V739 | A740 | M741 | L742 | G743 | T744 | W745 | L746 | R747 | A748 | E749 | S750 | L751 | K752 | S753 | T754 | A755 | K756 | G757 | G758 | D759 | P760 | E761 | A762 | P763 | L764 | K765 | F766 | L767 | K768 | E769 | A770 | S771 | R772 | L773 | L774 | P775 | H776 | N777 | K778 | D779 | I780 |      |
| L781 | T782 | V783 | I784 | S785 | D786 | T787 | L788 | G789 | G790 | L791 | V792 | E793 | K794 | E795 | L796 | L797 | E798 | L799 | D800 | G801 | P802 | Q803 | I804 | A805 | V806 | L807 | A808 | S809 | C810 | L811 | Q812 | F813 | L814 | H815 | A816 | A817 | L818 | A819 | V820 | C821 | P822 | G823 | R824 | V825 | W826 | A827 | Y828 | M829 | S830 | R831 | C832 | A833 | L834 | I835 | R840 | P841 | L844 |      |      |      |

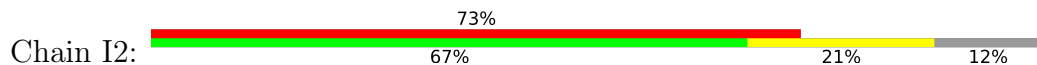




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|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| M1    | T2    | D3    | L4    | R5    | K6    | L7    | E8    | A9    | L10   | Q11   | A12   | L13   | H14   | A15   | E16   | L17   | V18   | A19   | V20   | R21   | Q22   | H23   | R24   | F25   | E26   | G27   | L28   | Q29   | V30   | L31   | E32   | T33   | L34   | L35   | E36   | E37   | Q38   | T39   | D40   | A41   | F42   | K43   | A44   | L45   | I46   | A47   | K48   | P49   | A50   | R51   | D52   | T53   | K54   | D55   | R56   | E57   | A58   | K59   |       |       |       |
| I68   | G69   | E70   | E71   | E72   | E77   | E94   | A106  | E107  | G108  | T112  | E128  | R129  | K130  | Y131  | L132  | L133  | D134  | C135  | M136  | R137  | L138  | I139  | L140  | E141  | I142  | A143  | L152  | S155  | F156  | G157  | V158  | A159  | A160  | E161  | D162  | K163  | I164  | F165  | G166  | I167  | P168  | P169  | P170  | W171  | E172  | R173  | ASN   | LYS   | GLU   | ASN   | GLN   | PRO   |       |       |       |       |       |       |       |       |       |
| THR   | Q181  | V182  | K183  | F184  | F185  | I186  | P187  | R188  | C189  | M190  | E191  | A192  | M193  | K194  | W212  | LEU   | GLN   | ALA   | SER   | LEU   | VAL   | ARG   | PRO   | L222  | E237  | Q238  | H239  | E240  | C241  | L242  | A243  | S244  | I245  | L246  | H247  | A248  | A249  | F263  | I264  | K265  | I266  | L267  | R268  | K269  | W270  | D271  | K272  | Y273  | D274  | H275  | F276  | L277  | I278  | H279  | L280  |       |       |       |       |       |       |
| I281  | P282  | V283  | L284  | A285  | L288  | G292  | L300  | Q301  | I310  | C311  | LYS   | GLY   | GLY   | ASP   | ASP   | S318  | W319  | A320  | L321  | P322  | V323  | L324  | G325  | A326  | A327  | V328  | R329  | A330  | W331  | N352  | L353  | D354  | E355  | E356  | D357  | E358  | Q359  | R360  | T361  | K362  | Q363  | F364  | L365  | D366  | A367  | L368  | K369  | E370  | G371  | A372  | F373  | D374  | F375  |       |       |       |       |       |       |       |       |
| I376  | L377  | S378  | V379  | A380  | A381  | D382  | C383  | Q389  | Q401  | R402  | K403  | L404  | P405  | S406  | L407  | P408  | S409  | P413  | F414  | S415  | H416  | F417  | L418  | Q419  | H420  | S421  | L422  | H425  | L426  | F429  | V440  | K443  | L444  | E447  | Q451  | Q460  | D461  | M462  | D463  | L464  | E465  | R466  | D480  | A481  | R503  | A504  | S505  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| T506  | P507  | L508  | T527  | N531  | D535  | E536  | GLY   | HIS   | ALA   | SER   | GLY   | PRO   | MET   | LYS   | ARG   | Q548  | S568  | GLU   | ARG   | PRO   | ASN   | PRO   | ARG   | HIS   | ARG   | PRO   | GLY   | ARG   | ALA   | ASP   | PRO   | ALA   | E590  | M598  | T615  | A616  | R617  | E624  | N627  | T640  | R645  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| M656  | T657  | R658  | K659  | T660  | H661  | E662  | E663  | L664  | D665  | F679  | SER   | LEU   | PRO   | GLY   | GLY   | GLN   | ALA   | GLY   | ALA   | PRO   | GLN   | ARG   | ILE   | SER   | PHE   | LEU   | GLY   | THR   | P699  | G700  | P701  | Q702  | T714  | E717  | Q718  | L736  | ASN   | SER   | LEU   | N740  | D741  | S742  | P746  | E747  | W748  | L749  | G750  | S751  | S752  | R754  | T755  |       |       |       |       |       |       |       |       |       |       |
| D763  | D767  | N771  | K774  | S777  | D778  | P779  | L797  | V798  | T799  | F800  | G808  | N812  | I813  | S814  | I815  | D816  | D817  | A818  | N819  | A820  | H892  | L893  | H894  | R895  | P896  | E897  | V898  | S899  | R900  | Y901  | Q902  | G903  | E904  | A905  | G906  | V907  | R908  | P911  | V912  | F941  | GLY   | HIS   | A915  | A916  | Y917  | S918  | A919  | F920  | E921  | T852  | I853  |       |       |       |       |       |       |       |       |       |       |
| H854  | Q855  | D856  | P857  | I858  | S859  | L860  | Q861  | S862  | S872  | I873  | L874  | R875  | A876  | T877  | Q878  | V879  | W880  | L881  | R882  | A883  | L884  | E885  | L886  | Q887  | A888  | C949  | L950  | K951  | L952  | A821  | L830  | T822  | N823  | L824  | P832  | F833  | S834  | R835  | N837  | E838  | V839  | L840  | F841  | N842  | E843  | T846  | L849  | R850  | H851  | T852  | I853  |       |       |       |       |       |       |       |       |       |       |
| G923  | I924  | L925  | S926  | H927  | L928  | S929  | L930  | V931  | V932  | D933  | L934  | C935  | K936  | V937  | C938  | Q939  | N939  | L940  | G941  | H942  | L945  | T946  | L947  | A948  | C949  | L950  | K951  | L952  | A821  | L830  | T822  | N823  | L824  | P832  | F833  | S834  | R835  | N837  | E838  | V839  | L840  | F841  | N842  | E843  | T846  | L849  | R850  | H851  | T852  | I853  |       |       |       |       |       |       |       |       |       |       |       |
| E984  | R985  | N986  | G987  | E988  | G989  | E990  | T991  | S992  | S993  | A994  | S995  | L996  | P1056 | K1057 | G1058 | P1059 | F1060 | D1061 | M1062 | Q1063 | K1064 | S1065 | L1066 | F1067 | H1068 | S1069 | L1070 | L1071 | S1011 | G1012 | E1013 | N1014 | Y1015 | R1016 | V1017 | K1018 | L1019 | A1020 | I1021 | L1022 | D1023 | F1024 | L1025 | Y1026 | A1027 | C1028 | L1029 | R1030 | A1031 | T1032 | P1033 | D1034 | Q1035 | P1036 | T1037 | I1038 | A1039 | H1040 | L1041 | L1042 | L1043 |
| G1044 | F1045 | H1046 | C1047 | E1048 | L1049 | S1050 | K1051 | L1052 | G1053 | I1054 | E1055 | P1056 | K1057 | G1058 | P1059 | F1060 | D1061 | M1062 | Q1063 | K1064 | S1065 | L1066 | F1067 | H1068 | S1069 | L1070 | L1071 | S1011 | G1012 | E1013 | N1014 | Y1015 | R1016 | V1017 | K1018 | L1019 | A1020 | I1021 | L1022 | D1023 | F1024 | L1025 | Y1026 | A1027 | C1028 | L1029 | R1030 | A1031 | T1032 | P1033 | D1034 | Q1035 | P1036 | T1037 | I1038 | A1039 | H1040 | L1041 | L1042 | L1043 |       |
| L1104 | W1105 | K1106 | S1107 | P1108 | L1109 | S1110 | A1111 | S1112 | L1113 | V1114 | M1115 | D1116 | E1117 | L1118 | R1119 | A1120 | T1121 | N1122 | F1123 | L1124 | F1125 | H1126 | M1127 | L1128 | L1129 | R1130 | E1131 | L1132 | Q1133 | I1134 | Q1135 | P1136 | Q1137 | L1138 | P1139 | W1140 | D1141 | G1142 | Q1143 | L1144 | V1145 | T1146 | G1147 | C1148 | E1149 | F1150 | L1151 | L1152 | S1153 | D1154 | A1155 | S1156 | L1157 | A1158 | Y1159 | I1160 | D1161 | Y1162 | L1163 |       |       |

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| L1685 | L1728 | F1735 | L1736 | E1737 | Y1738 | E1739 | SER | GLU | GLN | VAL | SER | GLU | GLN | PRO | ARG | GLY | GLY | GLY | VAL | VAL | VAL | GLY | ASN | SER | GLY | GLY | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR 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THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | 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| THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR | THR</ |
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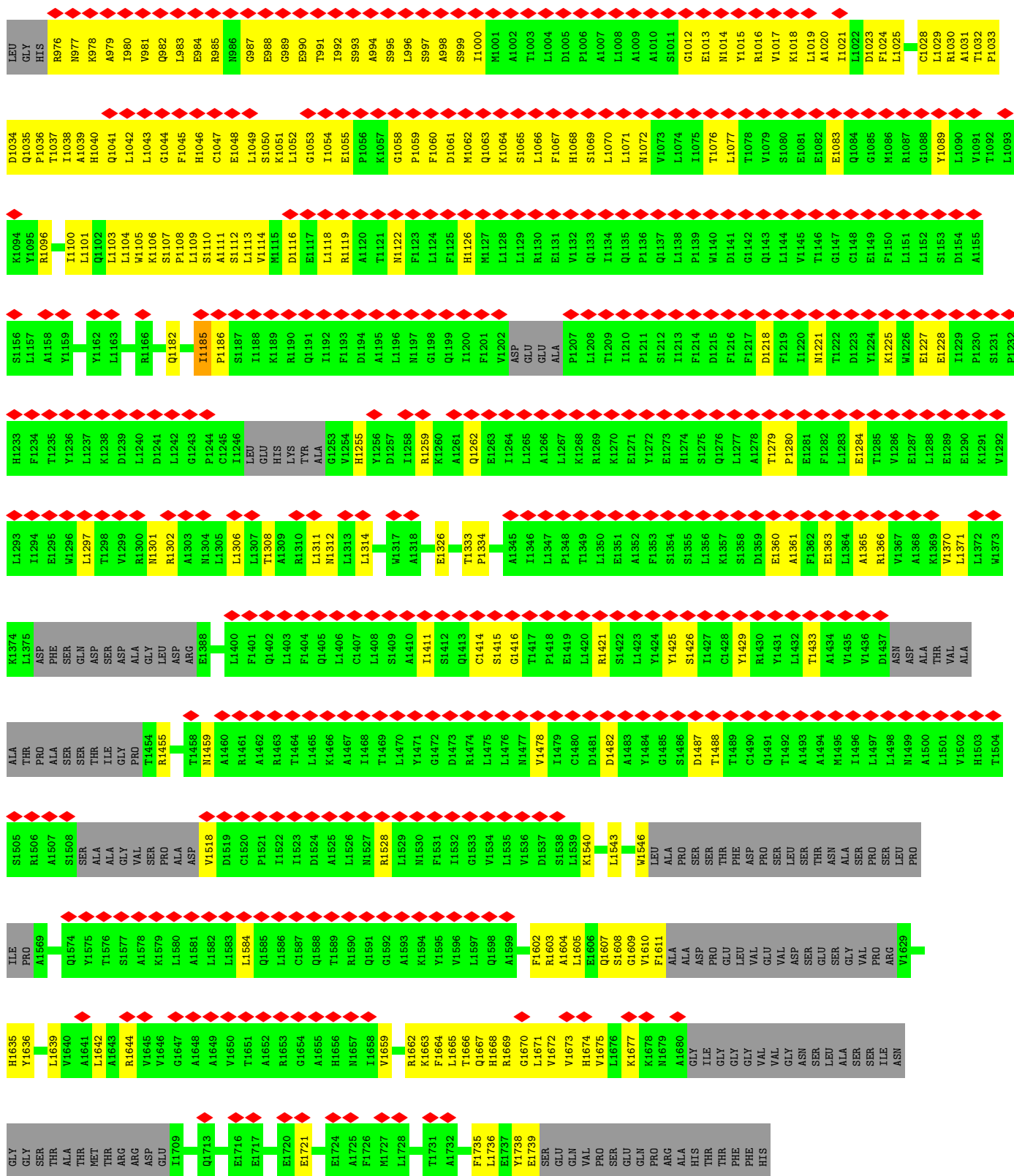
• Molecule 11: NUP205



|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| M1  | T2  | D3  | L4  | R5  | K6  | L7  | E8  | A9  | L10 | Q11 | A12 | L13 | H14 | A15 | E16 | L17 | V18 | A19 | V20 | R21 | Q22 | H23 | L24 | R25 | E26 | G27 | L28 | Q29 | V30 | L31 | E32 | T33 | L34 | L35 | E36 | E37 | Q38 | T39 | D40  | A41 | L101 | I102 | D103 | C104 | D105 | A106 | E107 | G108 | P409 | V110 | E111 | T112 | Q113 | K114 | R115 | P116 | L117 | A118 | E119 | G120 |
| K61 | E62 | P63 | K64 | K65 | L66 | K67 | F68 | G69 | E70 | E71 | E72 | Y73 | F74 | L75 | N76 | E77 | D78 | F79 | V80 | N81 | D82 | C83 | L84 | K85 | E86 | A87 | D88 | E89 | L90 | D91 | L92 | N93 | E94 | K95 | E96 | S97 | A98 | A99 | I100 | A41 | I101 | I102 | D103 | C104 | D105 | A106 | E107 | G108 | P409 | V110 | E111 | T112 | Q113 | K114 | R115 | P116 | L117 | A118 | E119 | G120 |

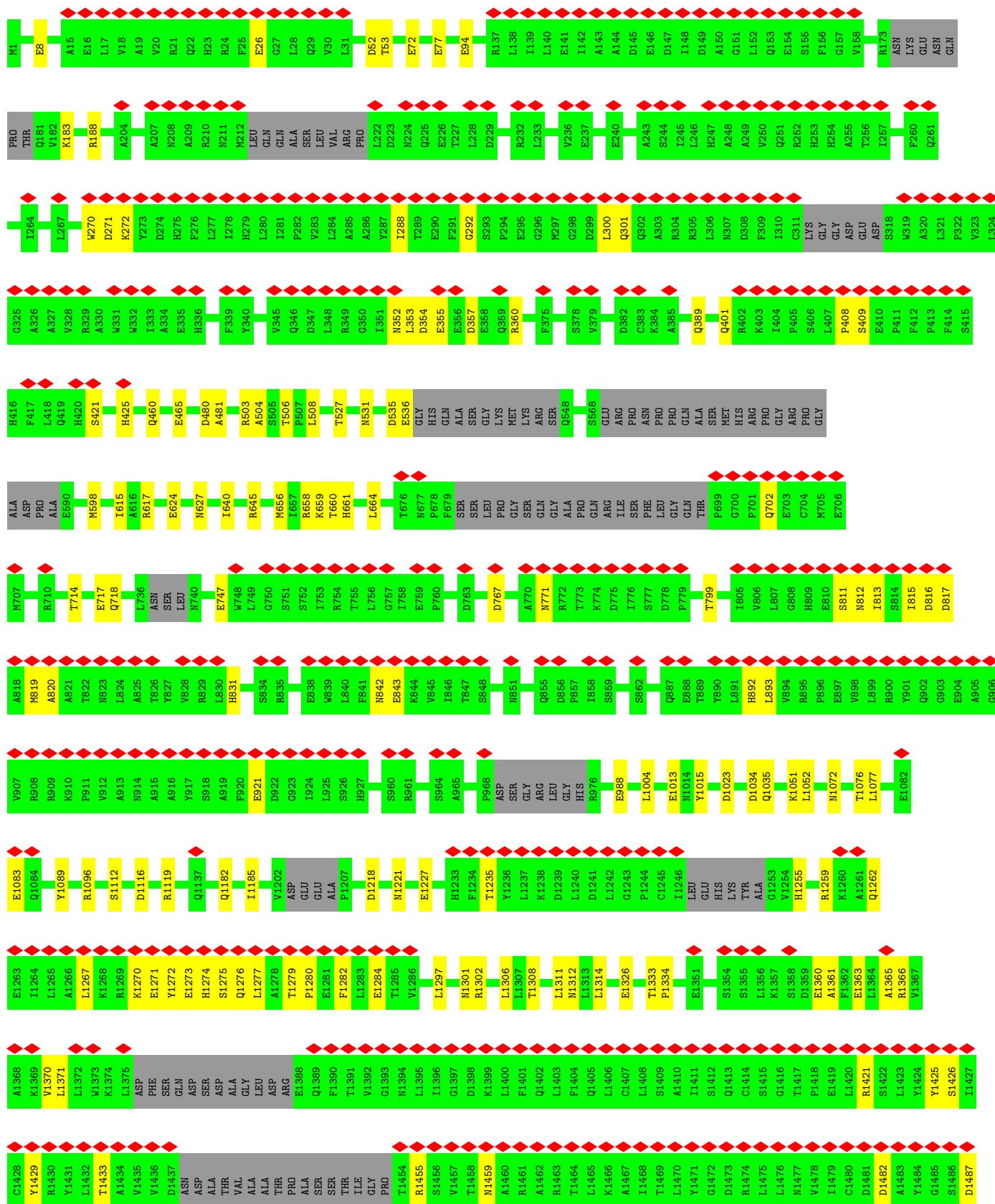


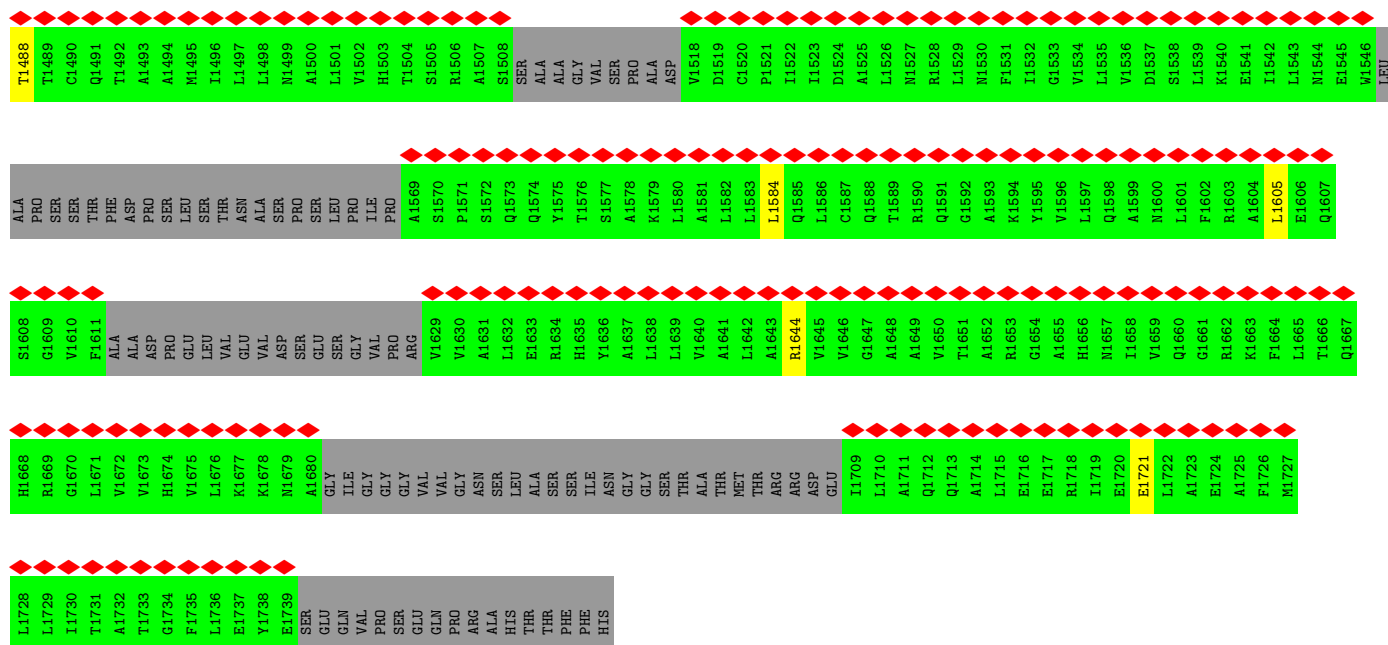
|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| A913 | N914 | A915 | A916 | Y917 | S918 | A919 | F920 | S921 | D922 | G923 | I924 | L925 | S926 | H927 | L928 | S929 | L930 | V931 | V932 | D933 | L934 | G935 | K936 | Y937 | C938 | N939 | L940 | G941 | H942 | A943 | E944 | L945 | T946 | L947 | A948 | C949 | L950 | K951 | L952 | L953 | E954 | K955 | L956 | S957 | T958 | S959 | S960 | R961 | L962 | L963 | S964 | A965 | W966 | S967 | P968 | ASP  | SER  | GLY  | ARG |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T852 | I853 | H854 | Q855 | D856 | P857 | L858 | S859 | L860 | C861 | S862 | A863 | S864 | P865 | D866 | S867 | P868 | L869 | W870 | V871 | S872 | L873 | L874 | R875 | A876 | L877 | Q878 | W879 | M880 | T881 | K882 | A883 | L884 | E885 | L886 | Q887 | E888 | T889 | W890 | L891 | H892 | L893 | W894 | R895 | P896 | E897 | S898 | L899 | R900 | Y901 | Q902 | A905 | G906 | V907 | R908 | S909 | E910 | P911 | V912 |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |



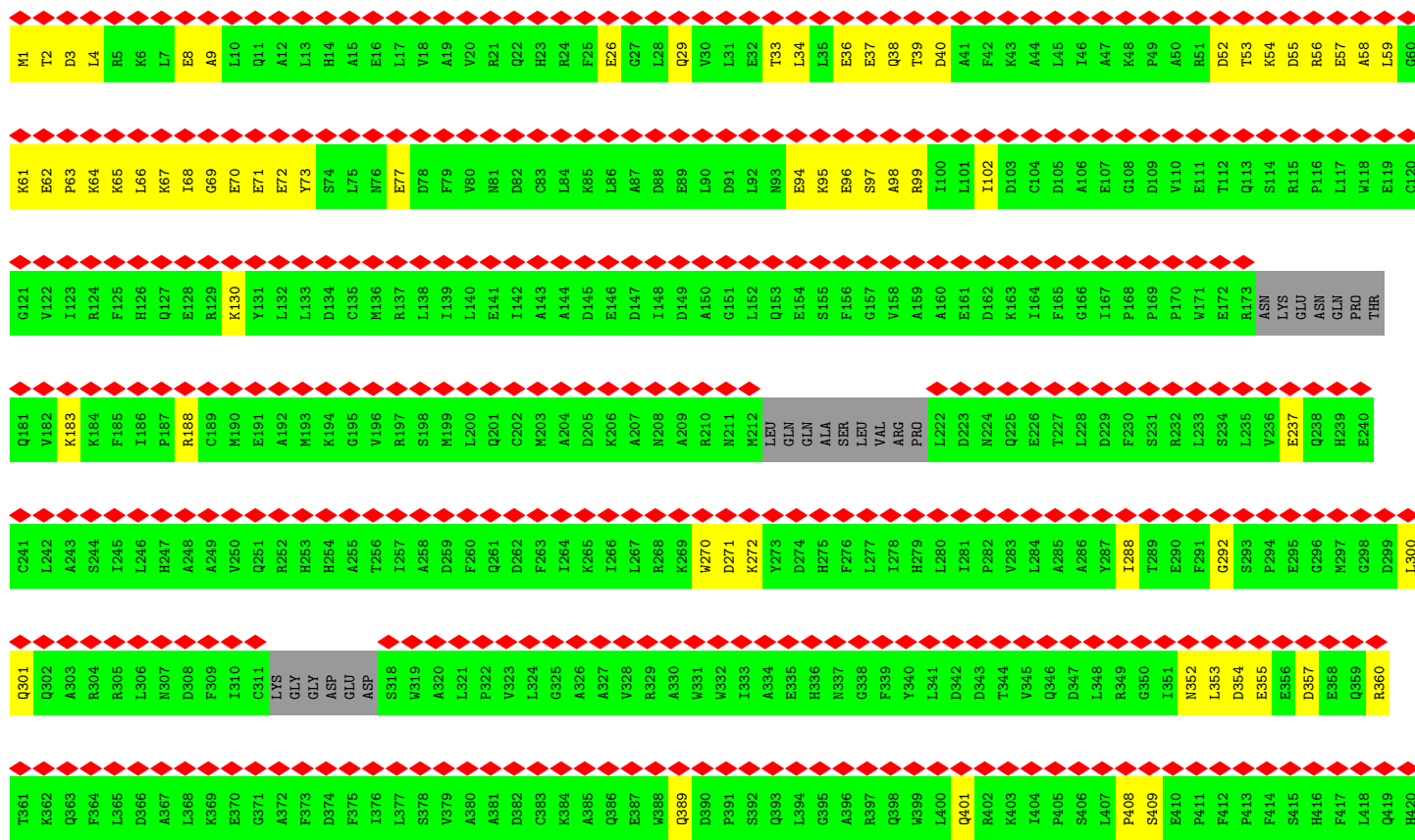
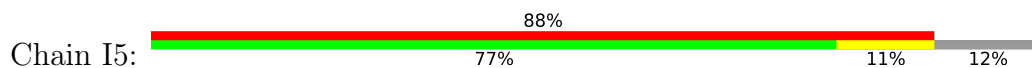
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| F800 | N801 | E802 | D803 | L804 | I805 | V806 | L807 | G808 | H809 | E810 | S811 | N812 | I813 | S814 | I815 | D816 | D817 | A818 | M819 | A820 | A821 | T822 | N823 | L824 | A825 | T826 | Y827 | V828 | R829 | L830 | H831 | P832 | F833 | S834 | T773 | K774 | S777 | D778 | P779 | S780 | Q781 | I784 | L785 | R786 | L787 | S788 | C789 | L790 | D791 | F792 | W793 | M794 | V795 | C796 | L797 | V798 | T799 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |







● Molecule 11: NUP205



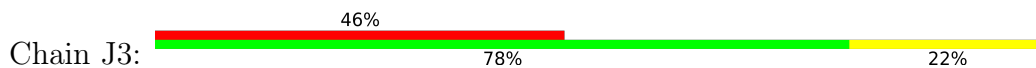
|       |       |       |       |      |      |      |      |      |      |      |      |
|-------|-------|-------|-------|------|------|------|------|------|------|------|------|
| D1141 | E1081 | I1021 | R961  | Y901 | F941 | Q781 | A721 | H661 | C601 | SER  | S421 |
| G1142 | E1082 | L1022 | I962  | Q902 | N942 | L782 | F722 | E662 | Y602 | GLY  | L422 |
| Q1143 | E1083 | D1023 | L963  | G903 | E943 | R783 | I723 | E663 | L603 | LYS  | M423 |
| L1144 | Q1084 | F1024 | S964  | E904 | K944 | L784 | Q724 | L664 | R604 | LYS  | V424 |
| V1145 | G1085 | L1025 | A965  | A905 | V845 | L785 | L725 | D665 | L605 | ARG  | H425 |
| T1146 | G1086 | Y1026 | V966  | G906 | L846 | R786 | L726 | A666 | I606 | SER  | L426 |
| G1147 | R1087 | A1027 | S967  | V907 | T847 | L787 | L727 | M667 | A607 | Q548 | E427 |
| C1148 | G1088 | C1028 | P968  | R908 | S848 | S788 | T728 | V668 | K608 | S549 | G428 |
| E1149 | Y1089 | L1029 | ASP   | R909 | L849 | C789 | L729 | R669 | L609 | L550 | F429 |
| F1150 | L1090 | R1030 | SER   | K910 | T850 | L790 | L730 | V670 | A610 | T551 | V430 |
| L1151 | V1091 | A1031 | GLY   | P911 | N851 | D791 | V731 | V671 | T611 | S553 | D431 |
| L1152 | T1092 | T1032 | ARG   | V912 | T852 | F792 | P732 | E672 | E612 | Q554 | A432 |
| S1153 | L1093 | P1033 | LEU   | A913 | L853 | V793 | P733 | A673 | S613 | I555 | T433 |
| D1154 | K1094 | D1034 | HIS   | N914 | H854 | M794 | E734 | A674 | E614 | F556 | I434 |
| A1155 | Y1095 | Q1035 | R976  | A915 | Q855 | V795 | G735 | M675 | I615 | K557 | S435 |
| S1156 | R1096 | P1036 | N977  | A916 | D856 | C796 | L736 | T676 | A616 | F496 | N436 |
| L1157 | K978  | T1037 | K978  | Y917 | P857 | L797 | ASN  | N677 | R617 | E558 | L437 |
| A1158 | A979  | I1038 | A979  | S918 | L858 | V798 | SER  | N678 | K618 | L559 | P438 |
| Y1159 | R1098 | A1039 | V981  | S918 | S859 | V798 | LEU  | F679 | R619 | E560 | D439 |
| I1160 | I1100 | H1040 | Q982  | F920 | L860 | T799 | N740 | SER  | L620 | Y561 | V440 |
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| Y1162 | T1102 | L1042 | L983  | D922 | S862 | E802 | S742 | PRG  | M622 | T563 | R442 |
| L1163 | L1103 | L1043 | E984  | G923 | A863 | D803 | V743 | GLY  | D623 | T564 | K443 |
| A1164 | L1104 | G1044 | R985  | I924 | S864 | L804 | P744 | SER  | E624 | K565 | L444 |
| S1165 | V1105 | F1045 | N986  | L925 | P865 | I805 | F745 | GLN  | D625 | V566 | R445 |
| R1166 | K1106 | H1046 | G987  | S926 | D866 | V806 | P746 | GLY  | D626 | C567 | T446 |
| A1167 | S1107 | C1047 | E988  | H927 | S867 | L807 | E747 | ALA  | N627 | T506 | L447 |
| I1168 | P1108 | E1048 | G989  | L928 | P868 | G808 | V748 | PRG  | L628 | P507 | E447 |
| L1169 | L1109 | L1049 | E990  | S929 | P869 | H809 | L749 | ARG  | V509 | L508 | E448 |
| F1170 | S1110 | S1050 | T991  | L930 | L869 | E810 | G750 | ILE  | D630 | V509 | D449 |
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| Y1172 | S1112 | L1052 | S993  | V932 | V671 | N812 | S752 | PHE  | I632 | A611 | Q451 |
| L1173 | L1113 | G1053 | A994  | D933 | L873 | I813 | I753 | LEU  | G633 | GLN  | R452 |
| G1174 | V1114 | I1054 | S995  | L934 | L874 | S814 | R754 | GLY  | L633 | ALA  | Q453 |
| K1175 | M1115 | E1055 | L996  | G935 | R875 | I815 | L755 | THR  | K634 | SER  | L454 |
| E1176 | D1116 | P1056 | S997  | X936 | A876 | D816 | L756 | P699 | L635 | HIS  | R455 |
| L1177 | E1117 | K1057 | A998  | Y937 | L877 | D817 | G757 | G700 | S636 | ARG  | P456 |
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| V1180 | A1120 | F1060 | M1001 | L940 | M880 | A820 | V761 | M705 | V639 | PRG  | E459 |
| S1181 | T1121 | D1061 | A1002 | G941 | L881 | A821 | V762 | C704 | I640 | GLY  | Q460 |
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| I1185 | F1125 | S1065 | P1006 | L945 | E885 | A825 | F766 | F709 | L644 | ALA  | L464 |
| P1186 | H1126 | L1066 | A1007 | T946 | L886 | T826 | D767 | R710 | R645 | C525 | E465 |
| S1187 | M1127 | F1067 | L1008 | L947 | Q887 | V827 | D767 | E711 | A646 | E592 | R466 |
| I1188 | L1128 | H1068 | A1009 | A948 | E888 | V828 | V768 | E712 | C647 | P593 | F467 |
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| R1190 | R1130 | L1070 | S1011 | L950 | V890 | R829 | A770 | G713 | F649 | S595 | I469 |
| Q1191 | E1131 | L1071 | G1012 | K951 | Y891 | L830 | N771 | T714 | Y650 | H630 | I470 |
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| A1195 | Q1135 | I1075 | R1016 | X955 | V894 | S834 | D775 | Q718 | A654 | L533 | A474 |
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| M1197 | Q1137 | L1077 | K1018 | L957 | P896 | V836 | S777 | N720 | M656 | E536 | E476 |
| G1198 | L1138 | T1078 | L1019 | T958 | E897 | M637 | D778 |      | I657 | GLY  | G477 |
| Q1199 | P1139 | V1079 | A1020 | S959 | V898 | E838 | P779 |      | R658 | HIS  | R478 |
| I1200 | W1140 | S1080 |       | S960 | L899 | M639 | S780 |      | K659 | GLN  | P479 |
|       |       |       |       |      | R900 | L840 |      |      | T660 | ALA  | D480 |



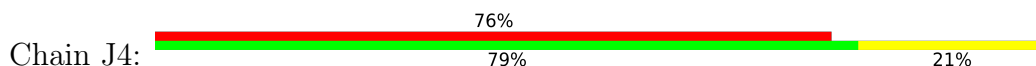




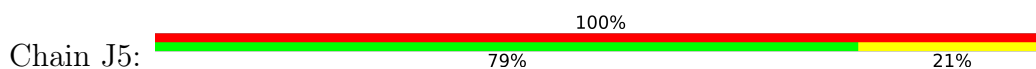
- Molecule 12: NUP93 R2



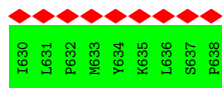
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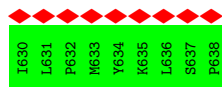
- Molecule 12: NUP93 R2



- Molecule 13: NUP98 R1

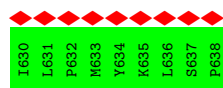


- Molecule 13: NUP98 R1



- Molecule 13: NUP98 R1





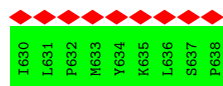
- Molecule 13: NUP98 R1

Chain K4:  100%

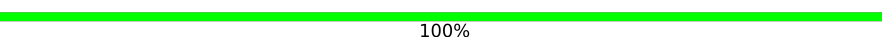
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- Molecule 13: NUP98 R1

Chain K5:  100%  
100%

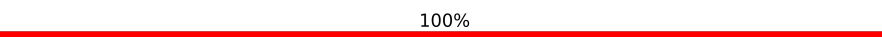


- Molecule 14: NUP53 R1

Chain L1:  100%

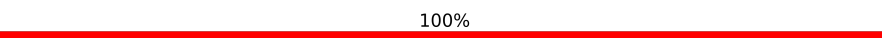
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- Molecule 14: NUP53 R1

Chain L2:  100%  
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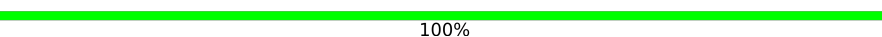


- Molecule 14: NUP53 R1

Chain L3:  100%  
100%

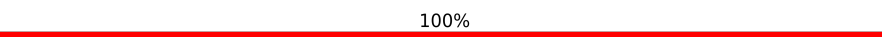


- Molecule 14: NUP53 R1

Chain L4:  100%

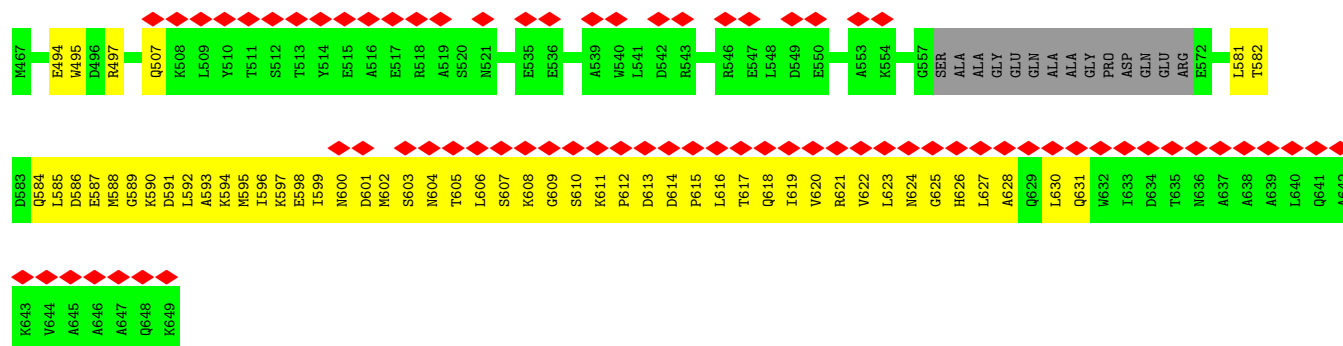
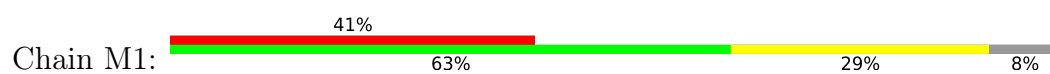
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- Molecule 14: NUP53 R1

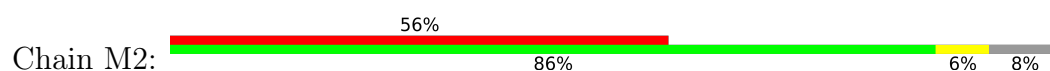
Chain L5:  100%  
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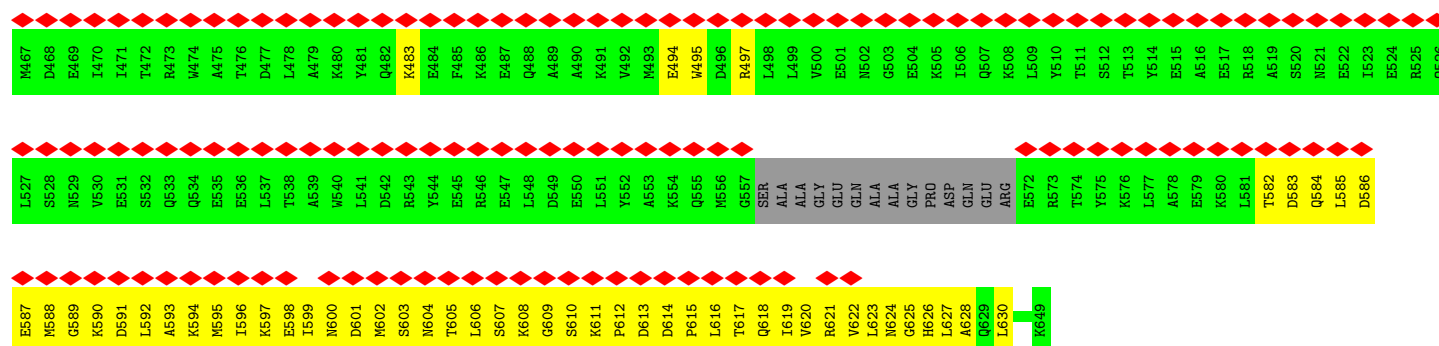
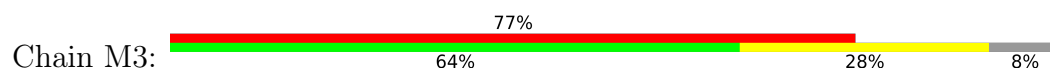
- Molecule 15: NUP62



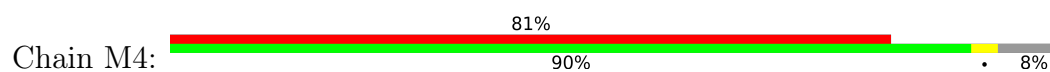
• Molecule 15: NUP62

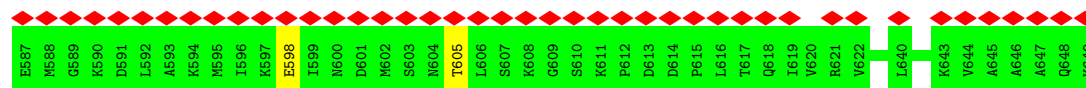
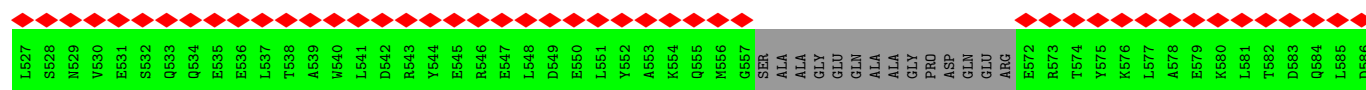


• Molecule 15: NUP62

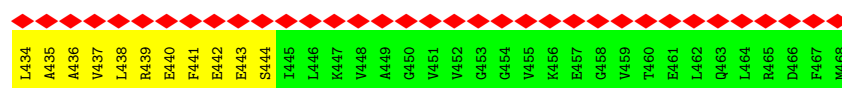
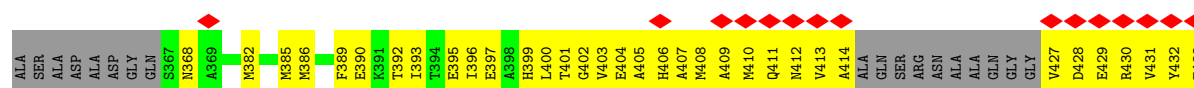
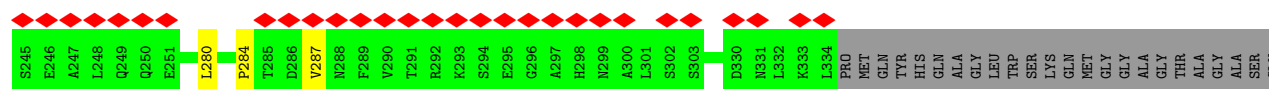


• Molecule 15: NUP62

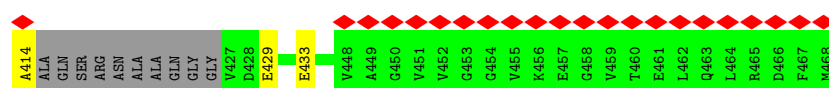
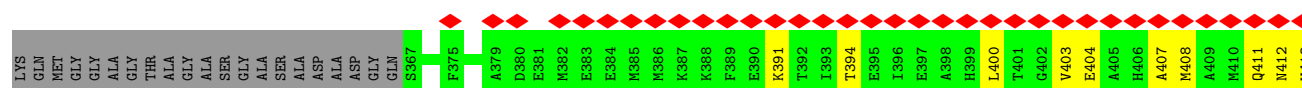




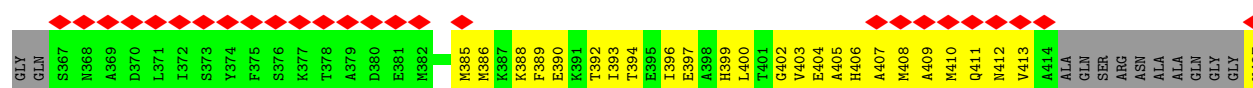
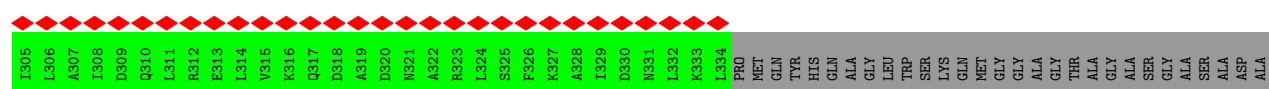
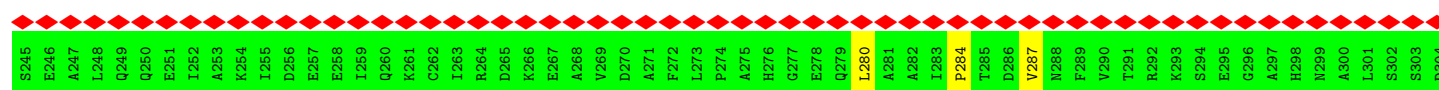
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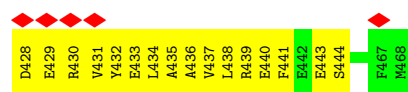


## • Molecule 16: NUP58

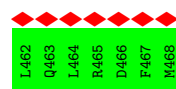
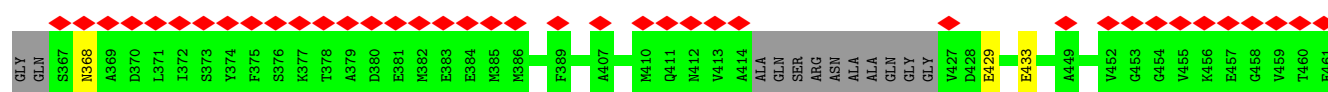
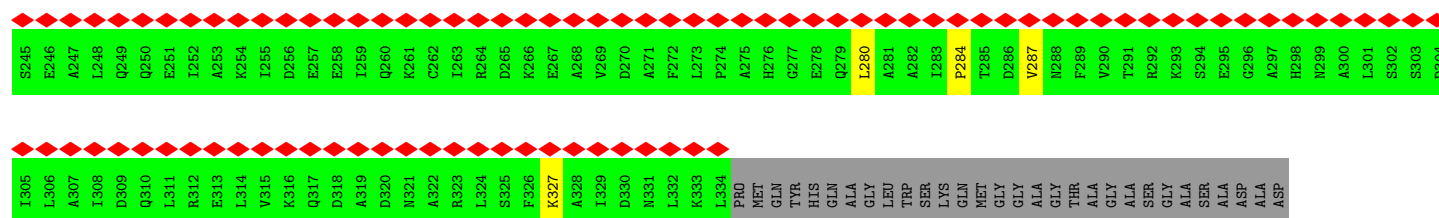
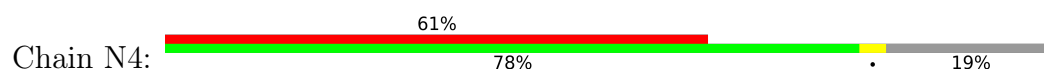


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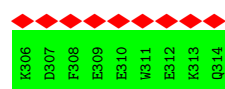
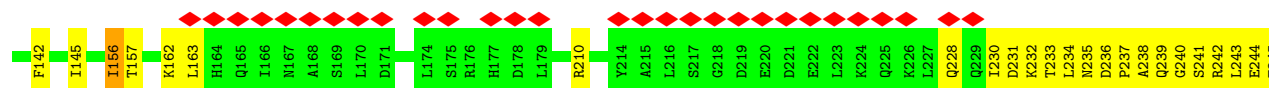
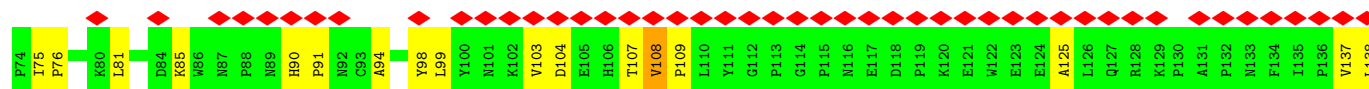




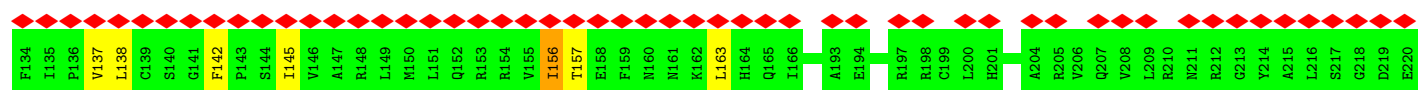
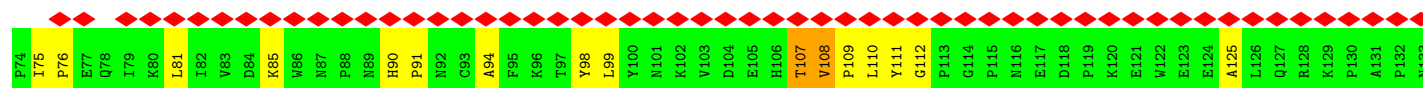
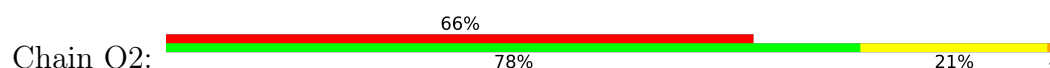
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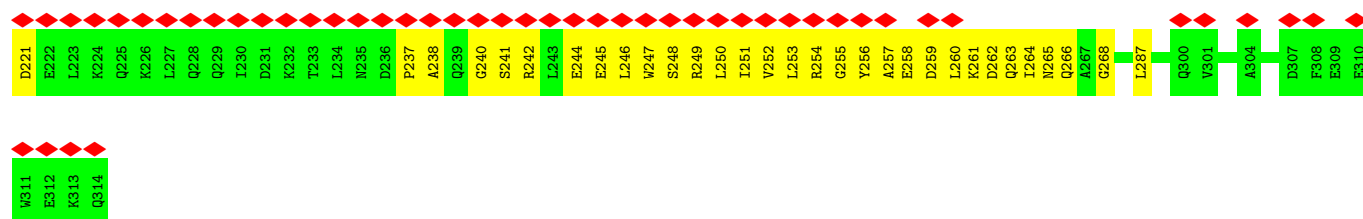


• Molecule 17: NUP54

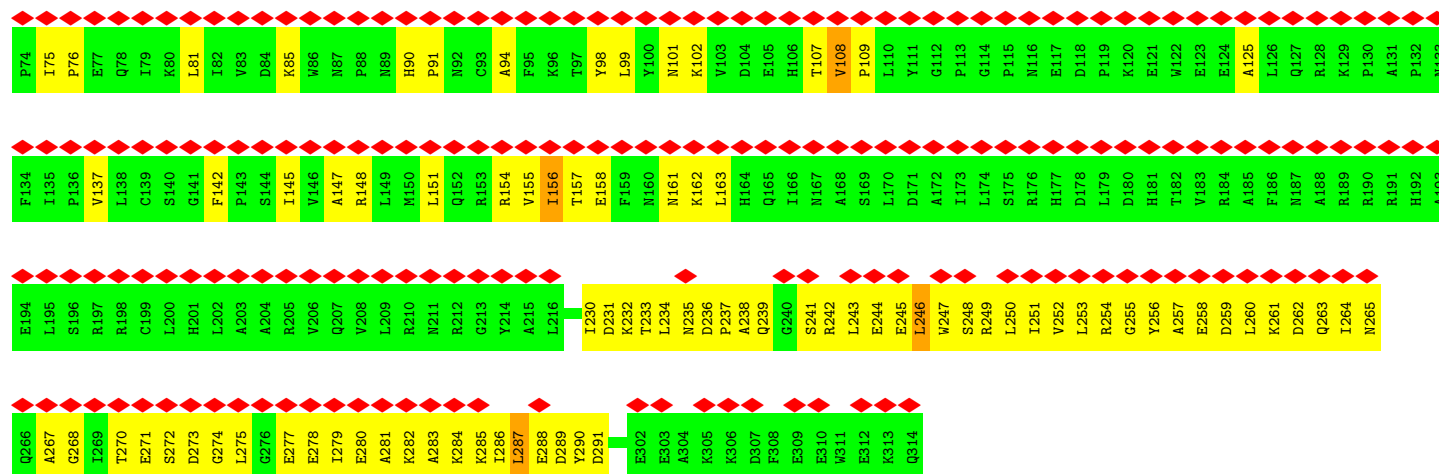
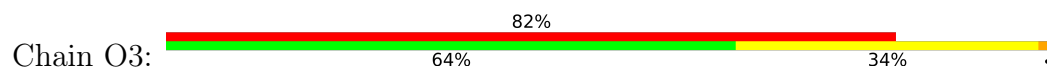


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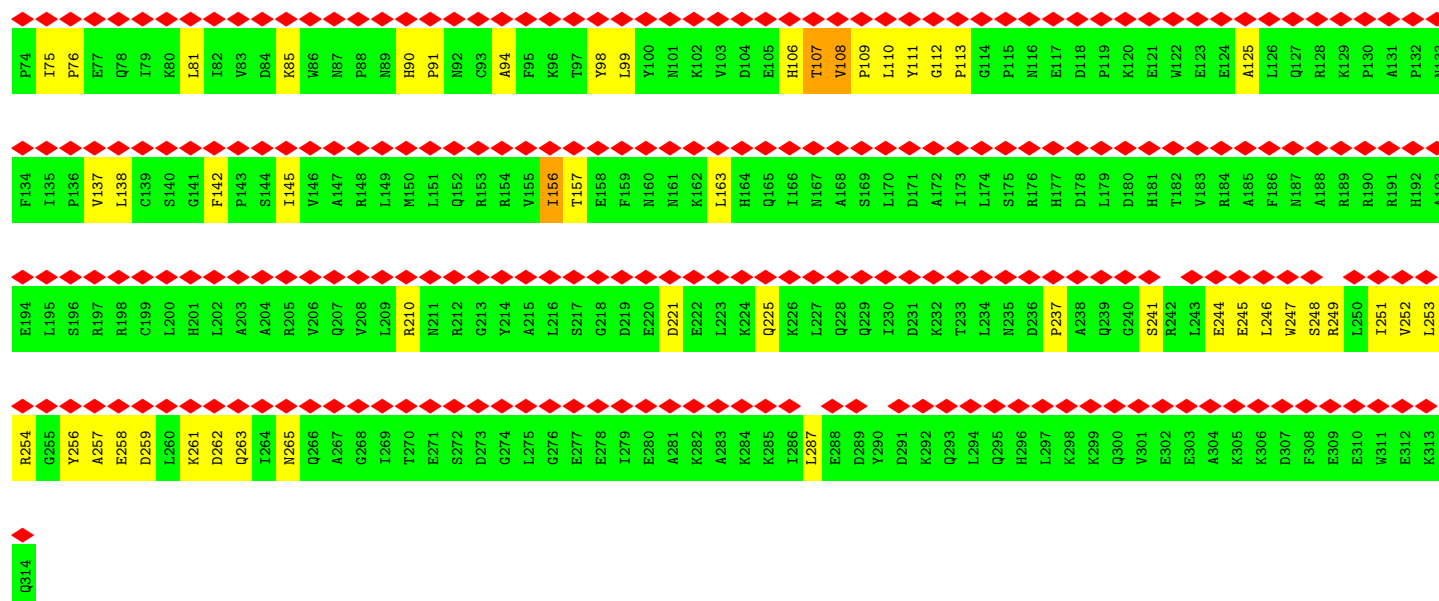
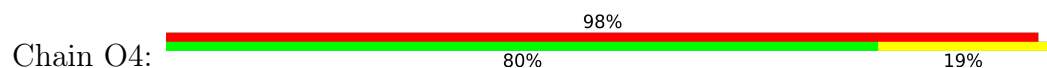




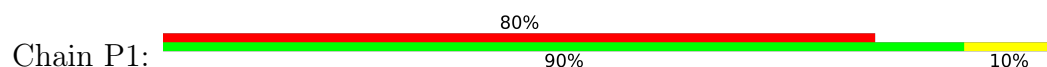
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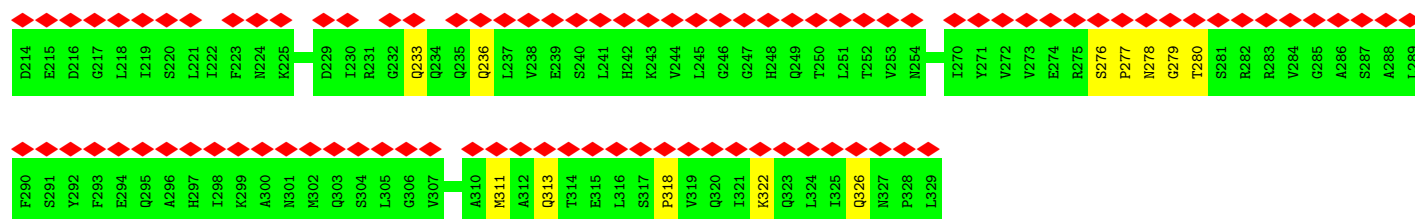


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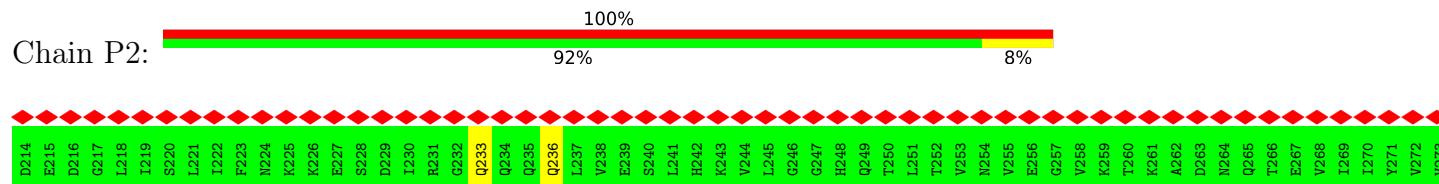


• Molecule 18: NUP54 Ferredoxin-like domain

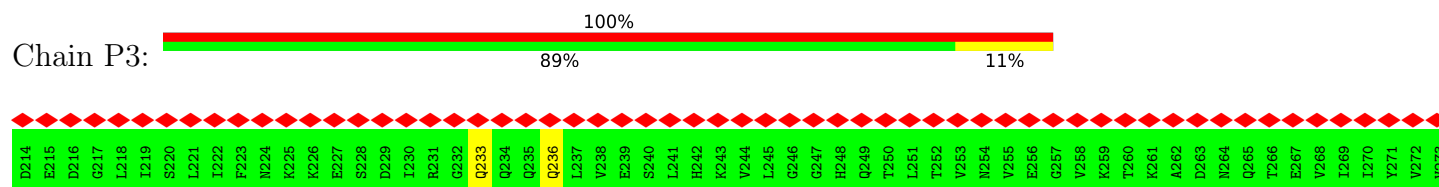




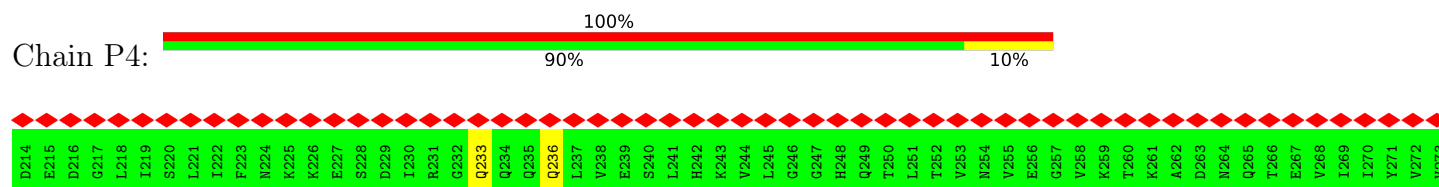
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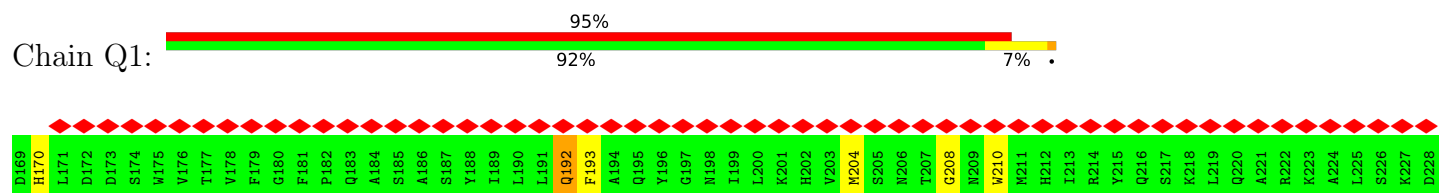
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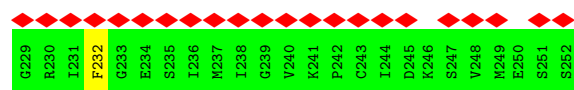


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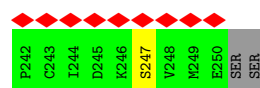
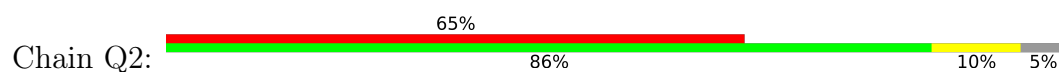


• Molecule 19: NUP54 Ferredoxin-like domain

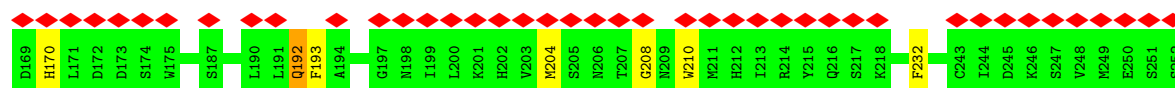




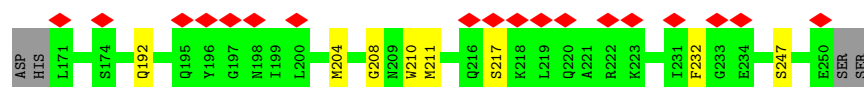
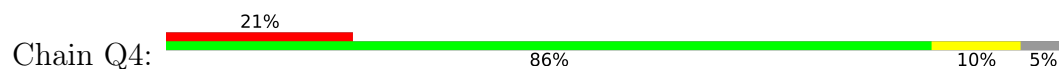
- Molecule 19: NUP54 Ferredoxin-like domain



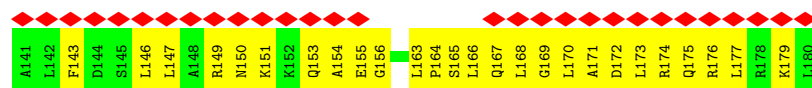
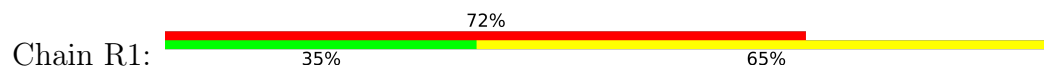
- Molecule 19: NUP54 Ferredoxin-like domain



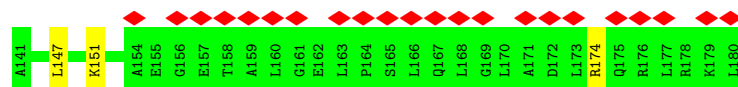
- Molecule 19: NUP54 Ferredoxin-like domain



- Molecule 20: NUP93 R1



- Molecule 20: NUP93 R1

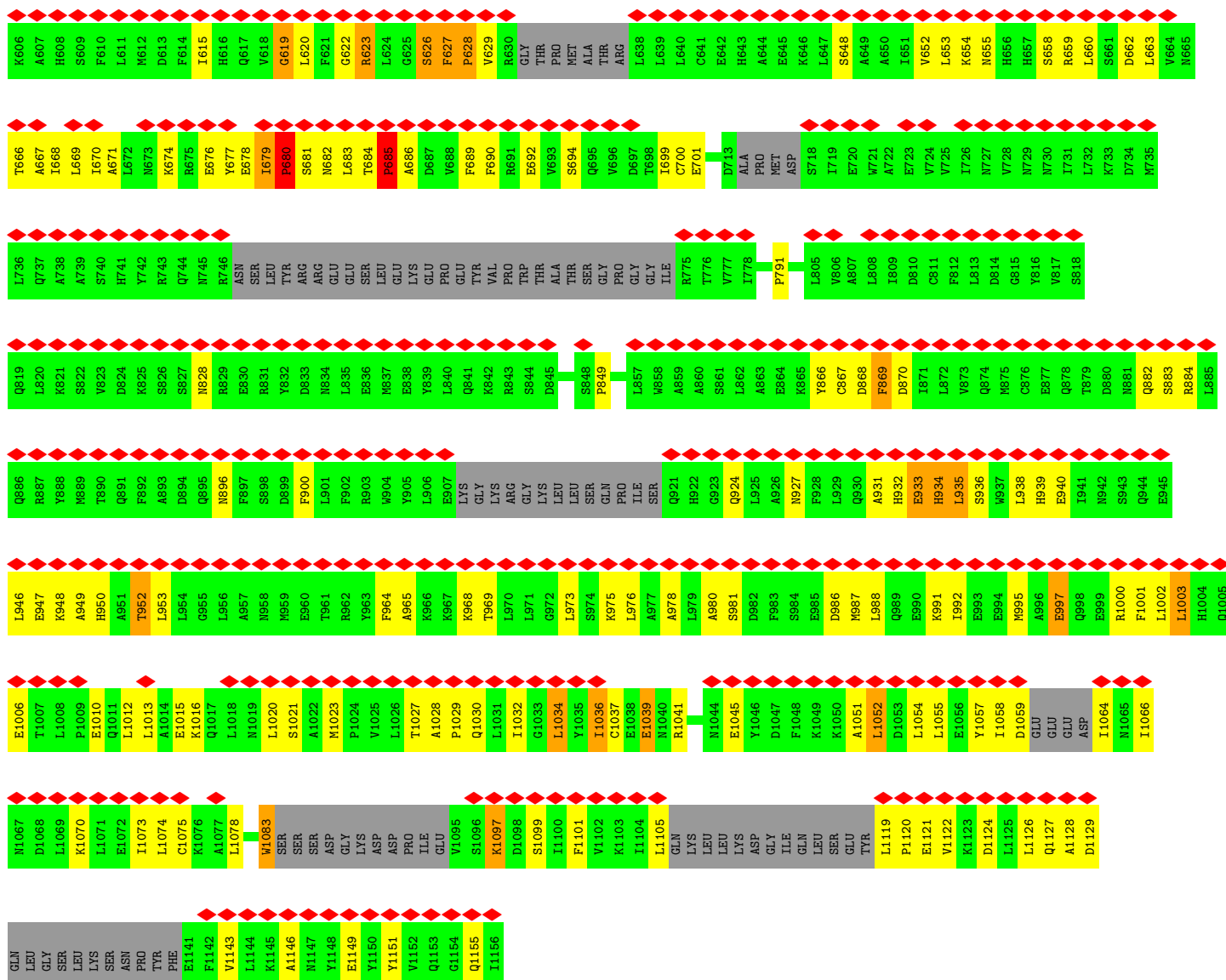


- Molecule 20: NUP93 R1

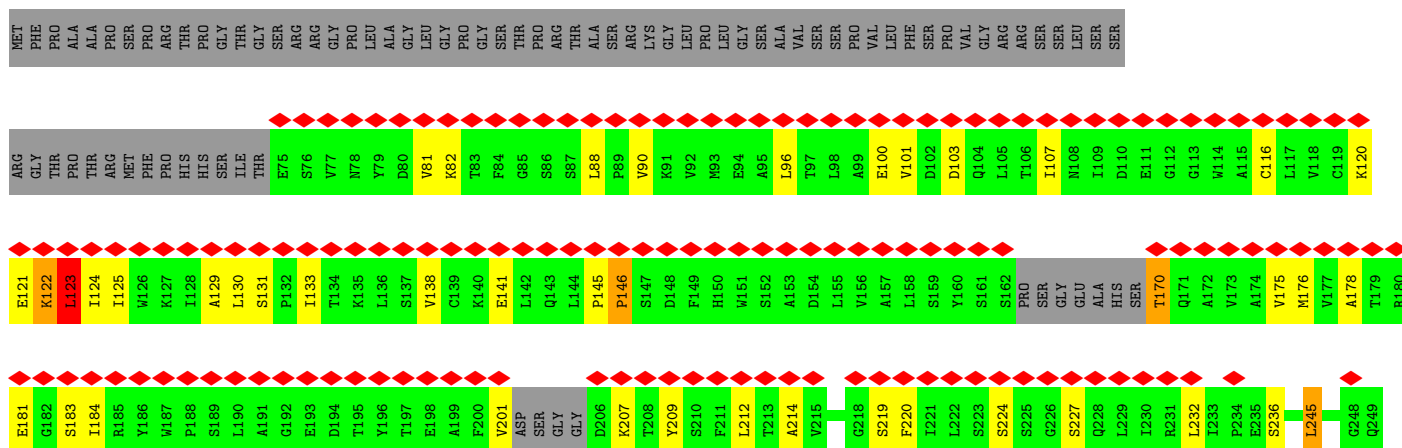








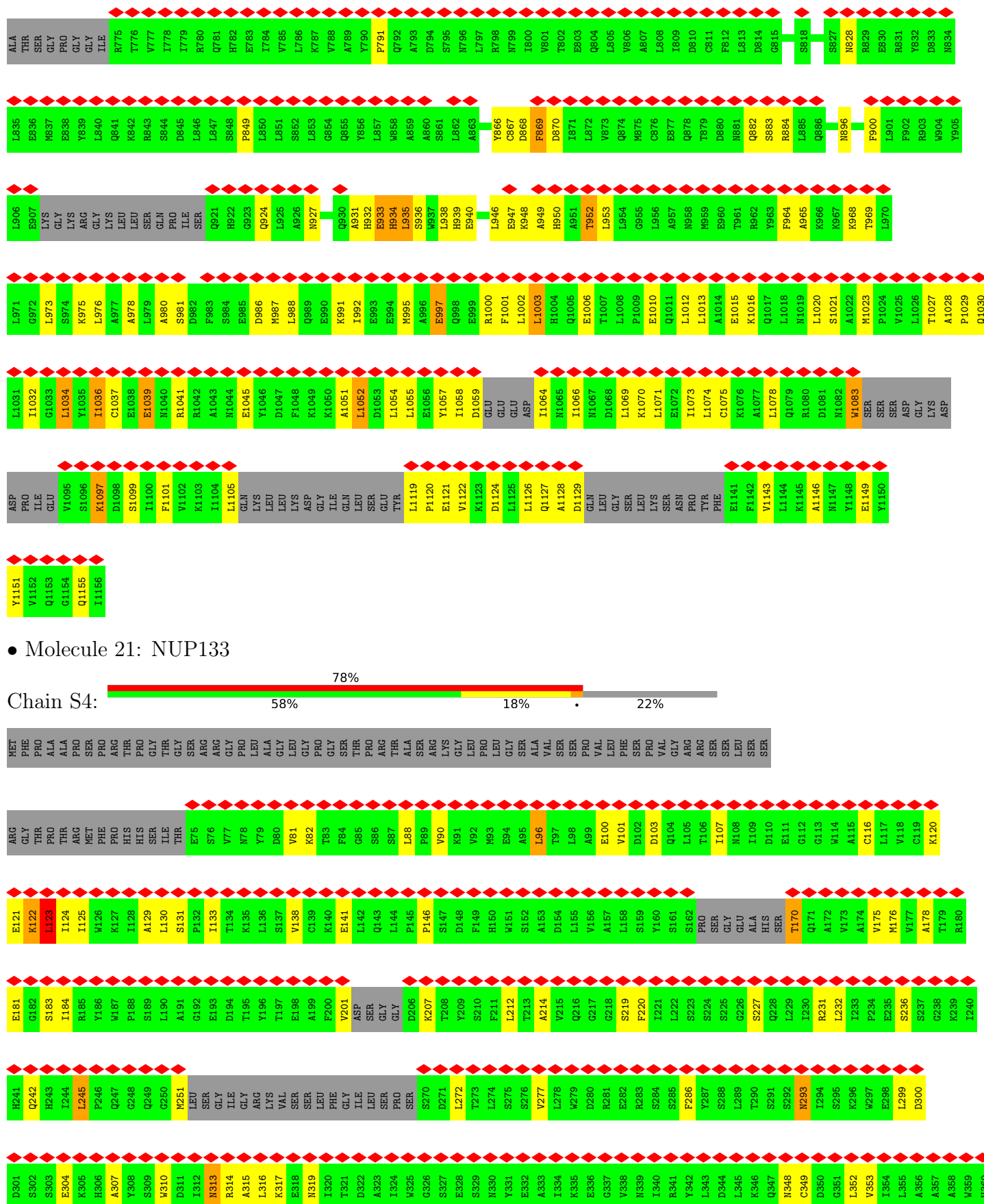
• Molecule 21: NUP133



|       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |     |     |       |       |       |       |       |      |      |      |      |       |       |       |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |     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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      | 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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |    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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |
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| SER   | ASP   | GLY   | LYS   | ASP   | ASP   | PRO   | ILE   | GLU   | L1026 | T1027 | A1028 | P1029 | Q1030 | L1031 | I1032 | G1033 | L1034 | Y1035 | C1036 | E1037 | E1038 | S1039 | I1100 | F1101 | V1102 | K1103 | L1104 | L1105 | G1N   | LYS   | LEU   | LEU   | LYS   | ASP   | GLY   | ILE   | G1N   | L1052 | D1053 | L1054 | L1055 | E1056 | Y1057 | I1058 | D1059 | GLU   | GLU   | ASP   | I1064 | M1065 | I1066 | M1067 | D1068 | L1069 | K1070 | L1071 | E1072 | I1073 | C1074 | P1075 | K1076 | A1077 | L1078 | Q1079 | R1080 | D1081 | M1082 | H1083 | SER   | SER   | L1119 | P1120 | E1121 | V1122 | K1123 | D1124 | L1125 | L1126 | Q1127 | A1128 | D1129 | G1N | LEU | GLY   | SER   | LEU   | LYS   | LYS   | ASN  | PRO  | TYR  | PHE  | E1141 | F1142 | V1143 | L1144 | K1145 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |     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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |
| F964  | A965  | K966  | K967  | K968  | T969  | L970  | L971  | G972  | L973  | S974  | K975  | L976  | A977  | A978  | L979  | A980  | S981  | D982  | F983  | S984  | E985  | D986  | M987  | L988  | Q989  | E990  | K991  | I992  | E993  | E994  | M995  | A996  | E997  | Q998  | E999  | R1000 | F1001 | L1002 | L1003 | H1004 | Q1005 | E1006 | L1007 | L1008 | P1009 | E1010 | Q1011 | L1012 | L1013 | A1014 | E1015 | K1016 | L1020 | S1021 | A1022 | P1024 | V1025 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |     |     |       |       |       |       |       |      |      |      |      |       |       |       |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Q841  | K842  | R843  | S844  | D845  | L846  | L847  | S848  | P849  | L850  | L851  | S852  | L853  | Q854  | Q855  | Y856  | L857  | W858  | A859  | A860  | S861  | L862  | A863  | E864  | K865  | Y866  | C867  | D868  | F869  | D870  | I871  | L872  | W873  | Q874  | R875  | C876  | E877  | Q878  | T879  | D880  | R881  | Q882  | S883  | R884  | L885  | Q886  | H889  | T890  | Q891  | F892  | A893  | D894  | D895  | H896  | F897  | S898  | D899  | F900  | L901  |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |     |     |       |       |       |       |       |      |      |      |      |       |       |       |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |
| F902  | R903  | W904  | Y905  | L906  | E907  | LYS   | GLY   | LYS   | ARG   | LYS   | LEU   | LEU   | SER   | GLN   | PRO   | ILE   | SER   | Q921  | H922  | G923  | Q924  | L925  | A926  | N927  | F928  | L929  | Q930  | A931  | H932  | E933  | H934  | L935  | S936  | W937  | L938  | H939  | E940  | T941  | E945  | L946  | E947  | K948  | A949  | L950  | A951  | T952  | L953  | L954  | Q955  | L956  | A1014 | E1015 | K1016 | L1020 | S1021 | A1022 | P1024 | V1025 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |     |     |       |       |       |       |       |      |      |      |      |       |       |       |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |    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|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      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| L1026 | T1027 | A1028 | P1029 | Q1030 | L1031 | I1032 | G1033 | L1034 | Y1035 | C1036 | E1037 | E1038 | S1039 | I1100 | F1101 | V1102 | K1103 | L1104 | L1105 | G1N   | LYS   | LEU   | LEU   | LYS   | ASP   | GLY   | ILE   | G1N   | L1052 | D1053 | L1054 | L1055 | E1056 | Y1057 | I1058 | D1059 | GLU   | GLU   | ASP   | I1064 | M1065 | I1066 | M1067 | D1068 | L1069 | K1070 | L1071 | E1072 | I1073 | C1074 | P1075 | K1076 | A1077 | L1078 | Q1079 | R1080 | D1081 | M1082 | H1083 | SER   | SER   | L1119 | P1120 | E1121 | V1122 | K1123 | D1124 | L1125 | L1126 | Q1127 | A1128 | D1129 | G1N   | LEU   | GLY   | SER   | LEU   | LYS   | LYS   | ASN   | PRO   | TYR | PHE | E1141 | F1142 | V1143 | L1144 | K1145 |      |      |      |      |       |       |       |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |
| SER   | VAL   | ALA   | GLY   | PRO   | ASN   | SER   | GLU   | SER   | MET   | ILE   | PHE   | GLU   | THR   | THR   | LYS   | ASN   | GLU   | THR   | ILE   | ALA   | GLN   | ASP   | K518  | I519  | K520  | G455  | A456  | C457  | G458  | G459  | V460  | P461  | I462  | I463  | F464  | S465  | R466  | N467  | S468  | G469  | L470  | V471  | S472  | I473  | T474  | S475  | R476  | E477  | ASN   | VAL   | SER   | ILE   | LEU   | PRO   | MET   | ALA   | GLU   | ASP   | LEU   | GLY   | THR   | ARG   | SER   | VAL   | ALA   | GLY   | PRO   | ASN   | SER   | GLU   | SER   | MET   | ILE   | PHE   | GLU   | THR   | THR   | LYS   | ASN   | GLU   | THR   | ILE | ALA | GLN   | ASP   | K518  | I519  | K520  | G455 | A456 | C457 | G458 | G459  | V460  | P461  | I462  | I463  | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR | ARG | SER | VAL | ALA | GLY | PRO | ASN | SER | GLU | SER | MET | ILE | PHE | GLU | THR | THR | LYS | ASN | GLU | THR | ILE | ALA | GLN | ASP | K518 | I519 | K520 | G455 | A456 | C457 | G458 | G459 | V460 | P461 | I462 | I463 | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR | ARG | SER | VAL | ALA | GLY | PRO | ASN | SER | GLU | SER | MET | ILE | PHE | GLU | THR | THR | LYS | ASN | GLU | THR | ILE | ALA | GLN | ASP | K518 | I519 | K520 | G455 | A456 | C457 | G458 | G459 | V460 | P461 | I462 | I463 | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR | ARG | SER | VAL | ALA | GLY | PRO | ASN | SER | GLU | SER | MET | ILE | PHE | GLU | THR | THR | LYS | ASN | GLU | THR | ILE | ALA | GLN | ASP | K518 | I519 | K520 | G455 | A456 | C457 | G458 | G459 | V460 | P461 | I462 | I463 | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR | ARG | SER | VAL | ALA | GLY | PRO | ASN | SER | GLU | SER | MET | ILE | PHE | GLU | THR | THR | LYS | ASN | GLU | THR | ILE | ALA | GLN | ASP | K518 | I519 | K520 | G455 | A456 | C457 | G458 | G459 | V460 | P461 | I462 | I463 | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR | ARG | SER | VAL | ALA | GLY | PRO | ASN | SER | GLU | SER | MET | ILE | PHE | GLU | THR | THR | LYS | ASN | GLU | THR | ILE | ALA | GLN | ASP | K518 | I519 | K520 | G455 | A456 | C457 | G458 | G459 | V460 | P461 | I462 | I463 | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR | ARG | SER | VAL | ALA | GLY | PRO | ASN | SER | GLU | SER | MET | ILE | PHE | GLU | THR | THR | LYS | ASN | GLU | THR | ILE | ALA | GLN | ASP | K518 | I519 | K520 | G455 | A456 | C457 | G458 | G459 | V460 | P461 | I462 | I463 | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR | ARG | SER | VAL | ALA | GLY | PRO | ASN | SER | GLU | SER | MET | ILE | PHE | GLU | THR | THR | LYS | ASN | GLU | THR | ILE | ALA | GLN | ASP | K518 | I519 | K520 | G455 | A456 | C457 | G458 | G459 | V460 | P461 | I462 | I463 | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR | ARG | SER | VAL | ALA | GLY | PRO | ASN | SER | GLU | SER | MET | ILE | PHE | GLU | THR | THR | LYS | ASN | GLU | THR | ILE | ALA | GLN | ASP | K518 | I519 | K520 | G455 | A456 | C457 | G458 | G459 | V460 | P461 | I462 | I463 | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR | ARG | SER | VAL | ALA | GLY | PRO | ASN | SER | GLU | SER | MET | ILE | PHE | GLU | THR | THR | LYS | ASN | GLU | THR | ILE | ALA | GLN | ASP | K518 | I519 | K520 | G455 | A456 | C457 | G458 | G459 | V460 | P461 | I462 | I463 | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR | ARG | SER | VAL | ALA | GLY | PRO | ASN | SER | GLU | SER | MET | ILE | PHE | GLU | THR | THR | LYS | ASN | GLU | THR | ILE | ALA | GLN | ASP | K518 | I519 | K520 | G455 | A456 | C457 | G458 | G459 | V460 | P461 | I462 | I463 | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR | ARG | SER | VAL | ALA | GLY | PRO | ASN | SER | GLU | SER | MET | ILE | PHE | GLU | THR | THR | LYS | ASN | GLU | THR | ILE | ALA | GLN | ASP | K518 | I519 | K520 | G455 | A456 | C457 | G458 | G459 | V460 | P461 | I462 | I463 | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR | ARG | SER | VAL | ALA | GLY | PRO | ASN | SER | GLU | SER | MET | ILE | PHE | GLU | THR | THR | LYS | ASN | GLU | THR | ILE | ALA | GLN | ASP | K518 | I519 | K520 | G455 | A456 | C457 | G458 | G459 | V460 | P461 | I462 | I463 | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR | ARG | SER | VAL | ALA | GLY | PRO | ASN | SER | GLU | SER | MET | ILE | PHE | GLU | THR | THR | LYS | ASN | GLU | THR | ILE | ALA | GLN | ASP | K518 | I519 | K520 | G455 | A456 | C457 | G458 | G459 | V460 | P461 | I462 | I463 | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR | ARG | SER | VAL | ALA | GLY | PRO | ASN | SER | GLU | SER | MET | ILE | PHE | GLU | THR | THR | LYS | ASN | GLU | THR | ILE | ALA | GLN | ASP | K518 | I519 | K520 | G455 | A456 | C457 | G458 | G459 | V460 | P461 | I462 | I463 | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR | ARG | SER | VAL | ALA | GLY | PRO | ASN | SER | GLU | SER | MET | ILE | PHE | GLU | THR | THR | LYS | ASN | GLU | THR | ILE | ALA | GLN | ASP | K518 | I519 | K520 | G455 | A456 | C457 | G458 | G459 | V460 | P461 | I462 | I463 | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR | ARG | SER | VAL | ALA | GLY | PRO | ASN | SER | GLU | SER | MET | ILE | PHE | GLU | THR | THR | LYS | ASN | GLU | THR | ILE | ALA | GLN | ASP | K518 | I519 | K520 | G455 | A456 | C457 | G458 | G459 | V460 | P461 | I462 | I463 | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR | ARG | SER | VAL | ALA | GLY | PRO | ASN | SER | GLU | SER | MET | ILE | PHE | GLU | THR | THR | LYS | ASN | GLU | THR | ILE | ALA | GLN | ASP | K518 | I519 | K520 | G455 | A456 | C457 | G458 | G459 | V460 | P461 | I462 | I463 | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR | ARG | SER | VAL | ALA | GLY | PRO | ASN | SER | GLU | SER | MET | ILE | PHE | GLU | THR | THR | LYS | ASN | GLU | THR | ILE | ALA | GLN | ASP | K518 | I519 | K520 | G455 | A456 | C457 | G458 | G459 | V460 | P461 | I462 | I463 | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR | ARG | SER | VAL | ALA | GLY | PRO | ASN | SER | GLU | SER | MET | ILE | PHE | GLU | THR | THR | LYS | ASN | GLU | THR | ILE | ALA | GLN | ASP | K518 | I519 | K520 | G455 | A456 | C457 | G458 | G459 | V460 | P461 | I462 | I463 | F464 | S465 | R466 | N467 | S468 | G469 | L470 | V471 | S472 | I473 | T474 | S475 | R476 | E477 | ASN | VAL | SER | ILE | LEU | PRO | MET | ALA | GLU | ASP | LEU | GLY | THR |

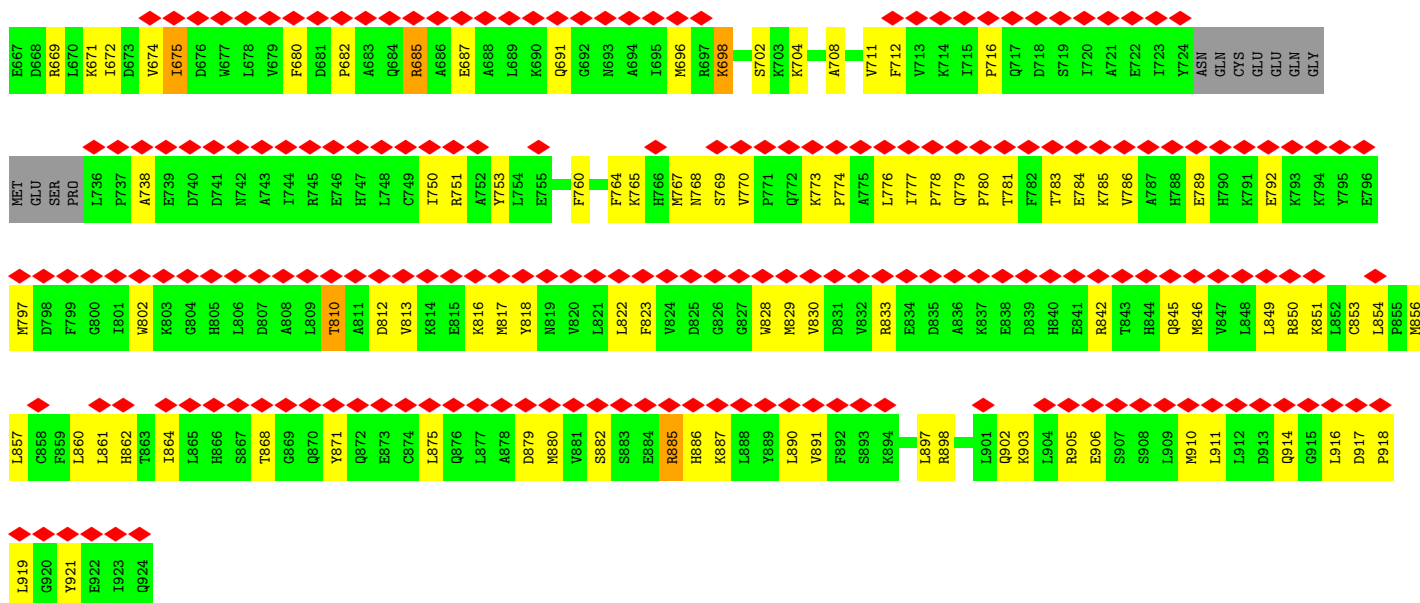
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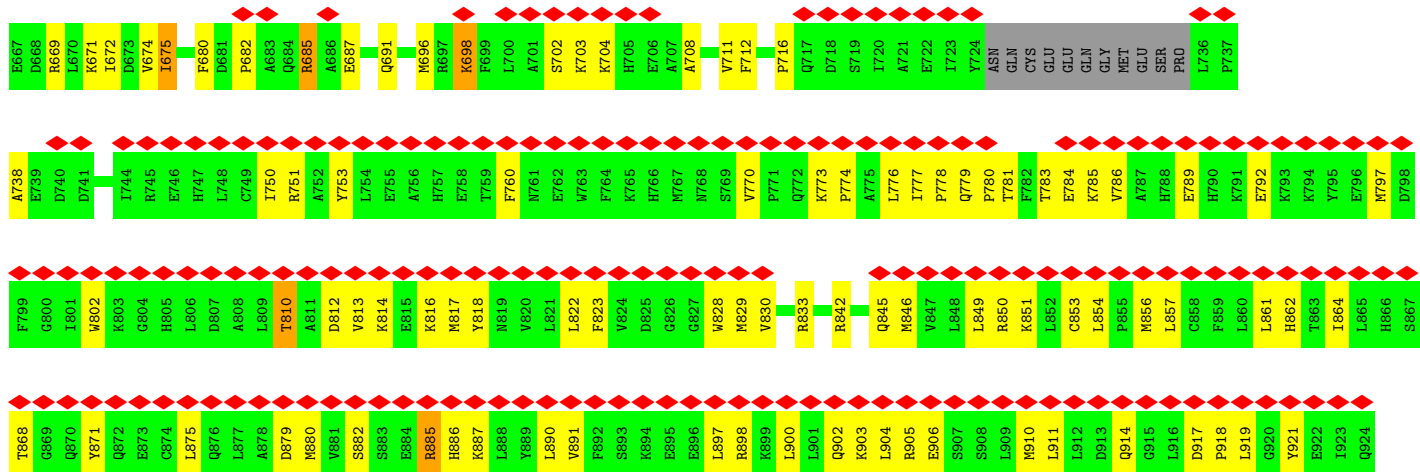
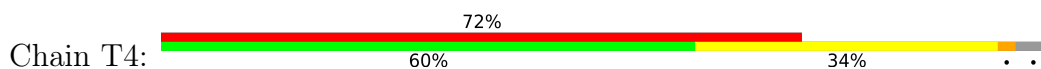


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| D1081 | S1021 | T961 | L901 | Q841 | Q781 | W721 | S661 | L601 | V541 | ILE  |
| N1082 | A1022 | R962 | F902 | R842 | H782 | A722 | D662 | E602 | D542 | LEU  |
| W1083 | M1023 | Y963 | R903 | R843 | E783 | E723 | L663 | D603 | E543 | ALA  |
| SER   | P1024 | F964 | W904 | S844 | I784 | V724 | V664 | K604 | A424 | ASP  |
| SER   | V1025 | A965 | Y905 | D845 | V785 | V725 | N665 | M605 | V425 | LEU  |
| ASP   | L1026 | K966 | L906 | L846 | L786 | I726 | T666 | K606 | Y426 | GLY  |
| GLY   | T1027 | K967 | E907 | L847 | K787 | M727 | A667 | A607 | V427 | SER  |
| LYS   | A1028 | K968 | LYS  | S848 | V788 | V728 | I668 | H608 | C428 | ALA  |
| ASP   | P1029 | T969 | LYS  | P849 | A789 | M729 | L669 | S609 | S429 | SER  |
| PRO   | Q1030 | L970 | ARG  | L850 | Y790 | N730 | L699 | S609 | Y369 | ALA  |
| PRO   | Q1031 | L971 | GLY  | L851 | P791 | I731 | A671 | F610 | T430 | SER  |
| ILE   | L1032 | G972 | LYS  | S852 | Q792 | L732 | L672 | M612 | G431 | VAL  |
| GLU   | I1033 | L973 | LEU  | L853 | A793 | K733 | N673 | D613 | T432 | ALA  |
| V1095 | G1033 | L974 | LEU  | G854 | D794 | D734 | K674 | F614 | G433 | PRO  |
| S1096 | S974  | S975 | SER  | Q855 | S795 | M735 | R675 | I615 | K434 | ASN  |
| K1097 | K976  | S796 | GLN  | Y856 | N796 | L736 | E676 | H616 | F435 | SER  |
| D1098 | L976  | N797 | PRO  | Y857 | L797 | Q737 | Y677 | H617 | S436 | GLU  |
| S1099 | A977  | L797 | ILE  | L857 | L797 | Q737 | E677 | Q617 | S437 | SER  |
| I1100 | A978  | R798 | SER  | W858 | R798 | A738 | E678 | Q618 | L437 | ILE  |
| F1101 | A978  | N799 | Q921 | A859 | N799 | A739 | I679 | G619 | Q439 | PRO  |
| V1102 | L979  | H922 | H922 | A860 | N799 | A739 | P680 | L620 | E440 | GLU  |
| K1103 | A980  | G923 | G923 | S861 | I600 | S740 | S681 | L621 | K441 | THR  |
| I1104 | S981  | Q924 | Q924 | L862 | T902 | H742 | N682 | G622 | I442 | THR  |
| L1105 | D982  | L925 | L925 | A863 | E903 | R743 | L683 | R623 | V443 | LYS  |
| GLN   | F983  | A926 | A926 | E864 | Q904 | Q744 | T684 | L624 | F444 | ASN  |
| LYS   | S984  | N927 | N927 | E865 | L605 | M745 | P685 | G625 | N445 | GLU  |
| LEU   | E985  | F928 | F928 | Y866 | V606 | R746 | A686 | S626 | N446 | THR  |
| LEU   | D986  | L929 | L929 | C867 | A807 | A807 | D687 | F627 | A446 | ILE  |
| LYS   | N987  | Q930 | Q930 | D868 | L608 | SER  | V688 | P628 | Q447 | ALA  |
| ASP   | F1048 | A931 | A931 | F869 | I609 | TYR  | F689 | V629 | G448 | GLN  |
| GLY   | K1049 | H932 | H932 | D870 | D610 | ARG  | R690 | R630 | D449 | ASP  |
| ILE   | K1050 | E933 | E933 | L871 | C811 | ARG  | R691 | G630 | K518 | ASP  |
| GLN   | A1051 | H934 | H934 | L872 | F812 | GLU  | E992 | GLY  | I519 | K518 |
| LEU   | L1052 | L935 | L935 | W873 | L813 | GLU  | E993 | THR  | V451 | I519 |
| SER   | D1053 | S936 | S936 | Q874 | D814 | SER  | V693 | PRO  | K520 | K520 |
| GLU   | L1054 | N937 | N937 | M875 | G815 | LEU  | S694 | MET  | L452 | K520 |
| TYR   | L1055 | L938 | L938 | C876 | Y816 | GLU  | S695 | ALA  | G453 | L521 |
| L1119 | E1056 | H939 | H939 | E877 | W817 | LYS  | Q696 | THR  | G454 | L522 |
| P1120 | Y1057 | E940 | E940 | Q878 | S618 | GLU  | V697 | ARG  | G455 | K523 |
| E1121 | I1058 | N941 | N941 | T879 | Q819 | PRO  | D697 | A524 | A456 | A524 |
| V1122 | D1059 | N942 | N942 | D880 | L820 | TYR  | T698 | A525 | C457 | A525 |
| K1123 | F1001 | R943 | R943 | N881 | K821 | VAL  | I699 | F526 | G458 | F526 |
| D1124 | L1002 | Q844 | Q844 | Q882 | S822 | THR  | C700 | L527 | G459 | L527 |
| L1125 | L1003 | L946 | L946 | S883 | V823 | ALA  | E701 | GLU  | V460 | Q528 |
| L1126 | H1004 | E947 | E947 | L885 | D824 | THR  | C702 | PRO  | P461 | Q528 |
| L1127 | Q1005 | R884 | R884 | Q886 | K825 | GLY  | L703 | GLU  | I463 | C530 |
| Q1127 | E1006 | Q887 | Q887 | S827 | S826 | GLY  | L704 | VAL  | I464 | R531 |
| A1128 | T1007 | Y888 | Y888 | N828 | H706 | GLY  | E945 | GLU  | F464 | R531 |
| D1129 | L1008 | H889 | H889 | R829 | E707 | GLY  | K646 | ALA  | S465 | K532 |
| GLN   | E1010 | T952 | T952 | R829 | E708 | ILE  | L647 | PRO  | R466 | K532 |
| LEU   | Q1011 | L953 | L953 | E829 | Q709 | THR  | S648 | GLY  | N467 | K532 |
| GLY   | L1012 | L954 | L954 | R829 | Q709 | THR  | A649 | GLY  | T408 | K532 |
| SER   | L1013 | G955 | G955 | R829 | Q709 | THR  | A650 | GLY  | V409 | K532 |
| LEU   | A1014 | L956 | L956 | R829 | Q709 | THR  | A650 | GLY  | V409 | K532 |
| LYS   | E1015 | A957 | A957 | R829 | Q709 | THR  | A650 | GLY  | V409 | K532 |
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| PRO   | L1018 | E960 | E960 | R829 | Q709 | THR  | A650 | GLY  | V409 | K532 |
| TYR   | L1019 | E960 | E960 | R829 | Q709 | THR  | A650 | GLY  | V409 | K532 |
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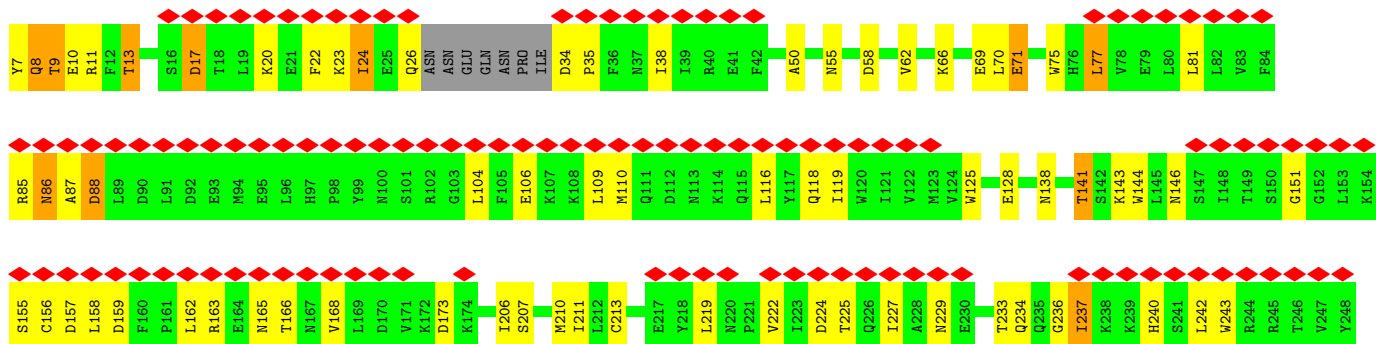
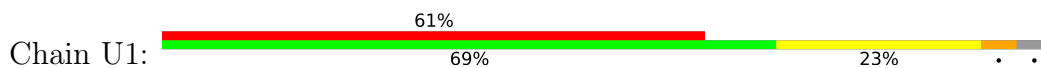




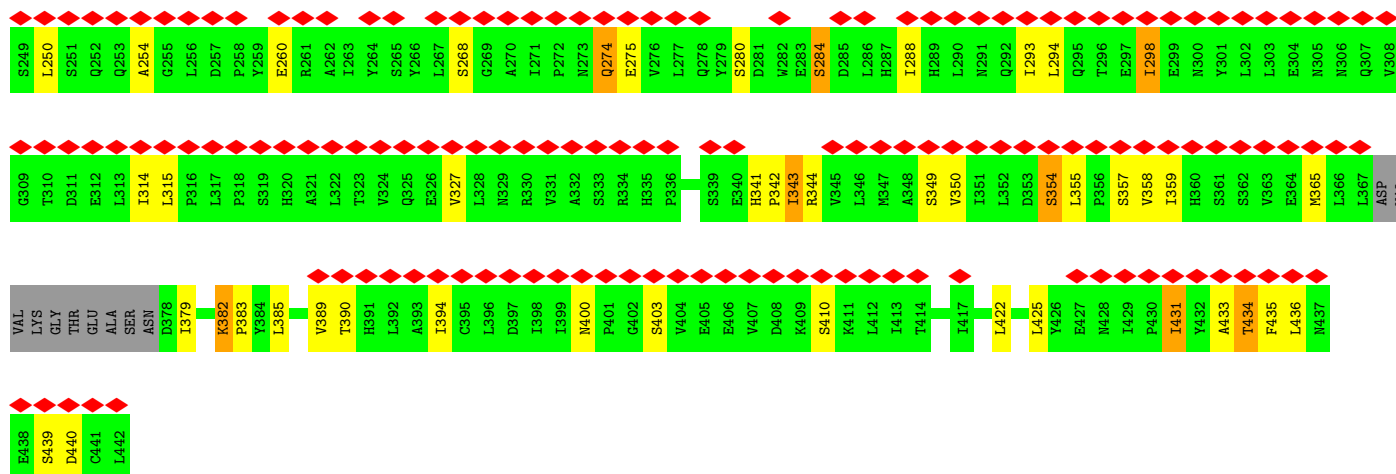
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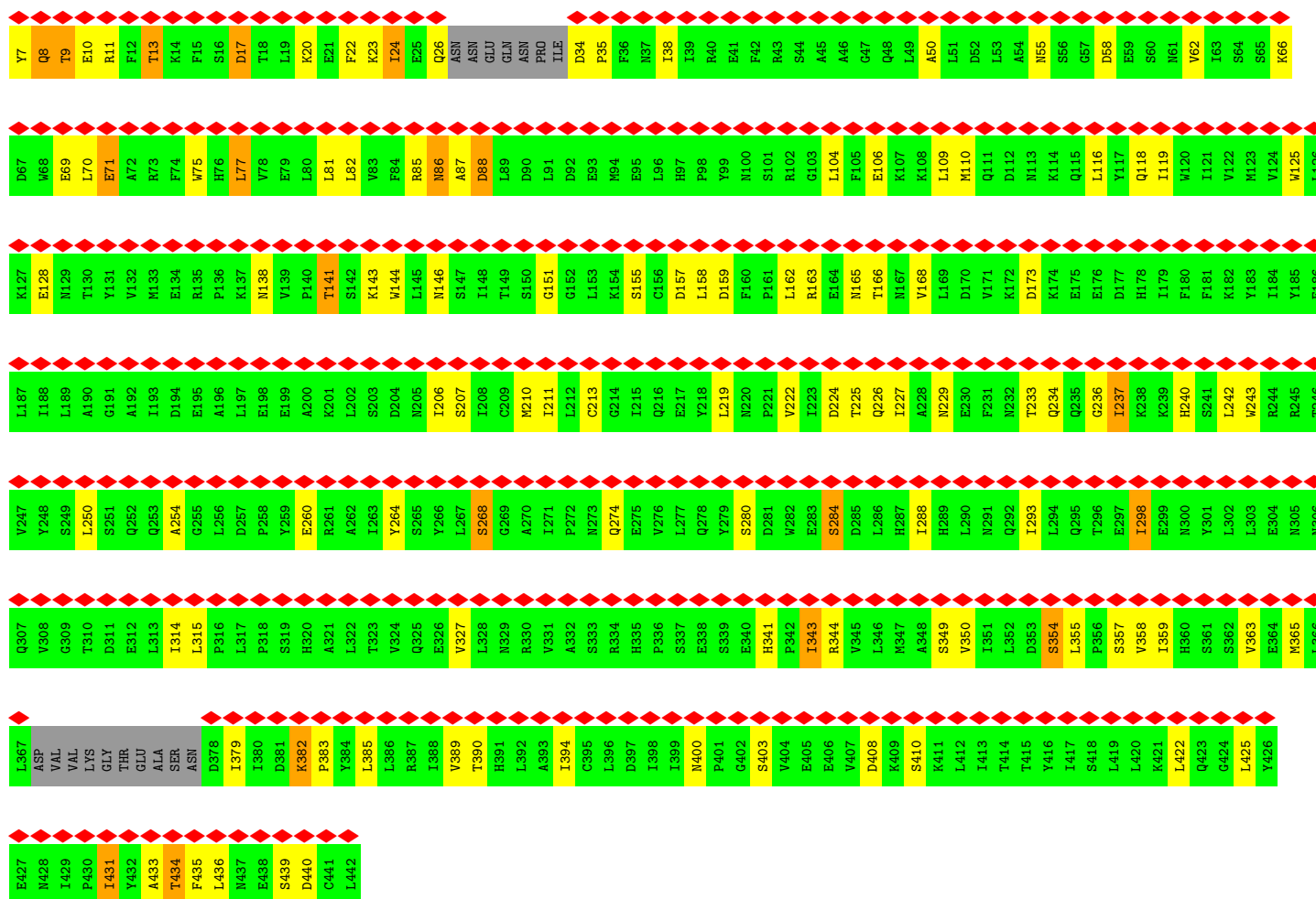
• Molecule 23: NUP107 NTD







• Molecule 23: NUP107 NTD



• Molecule 23: NUP107 NTD



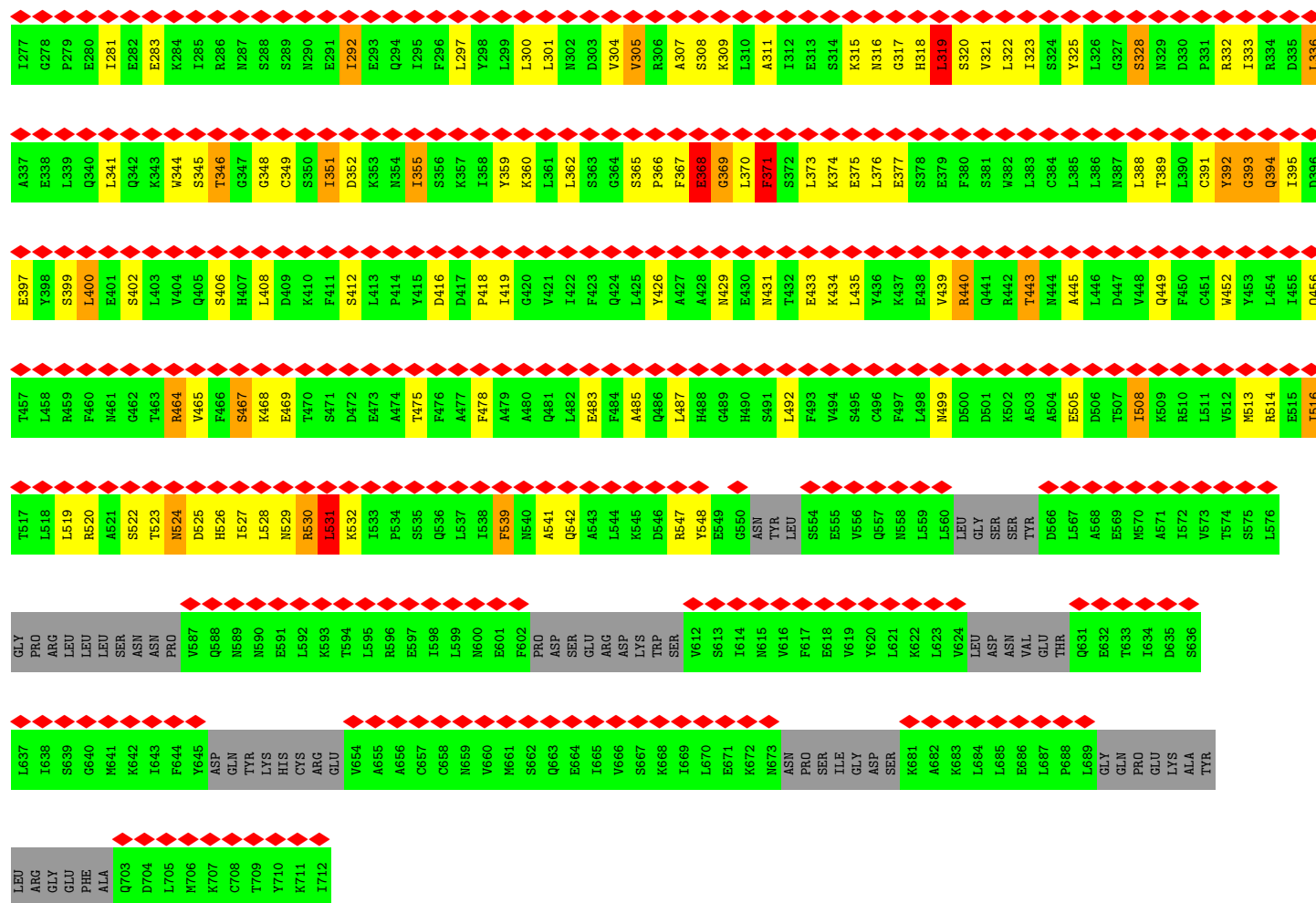




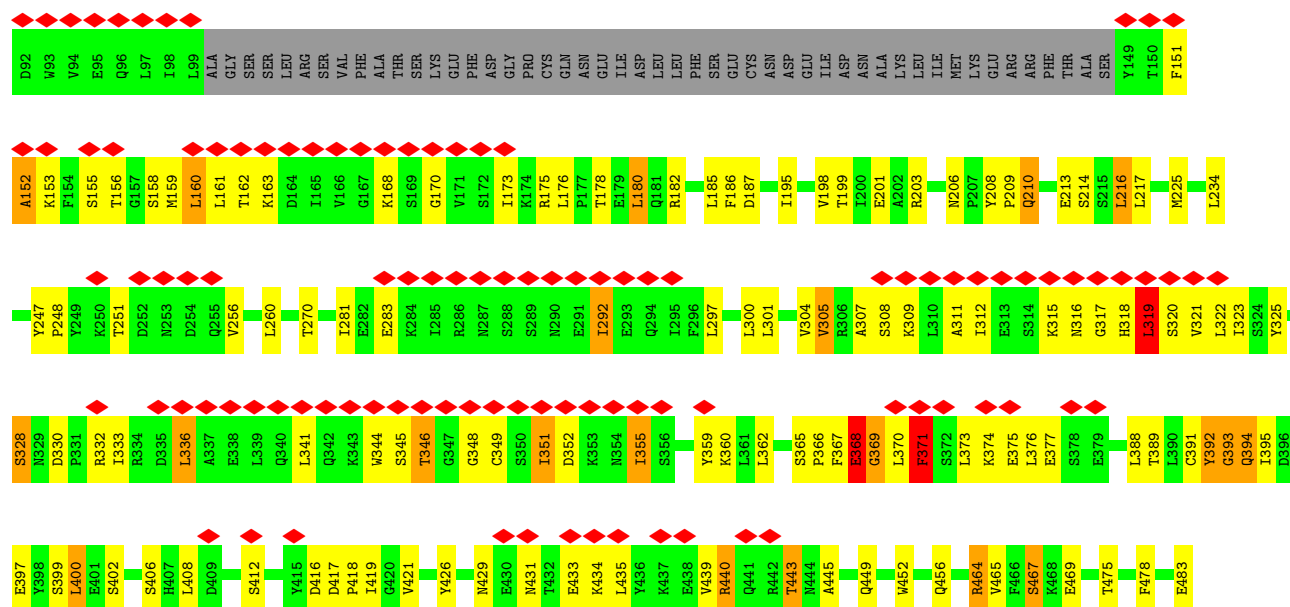


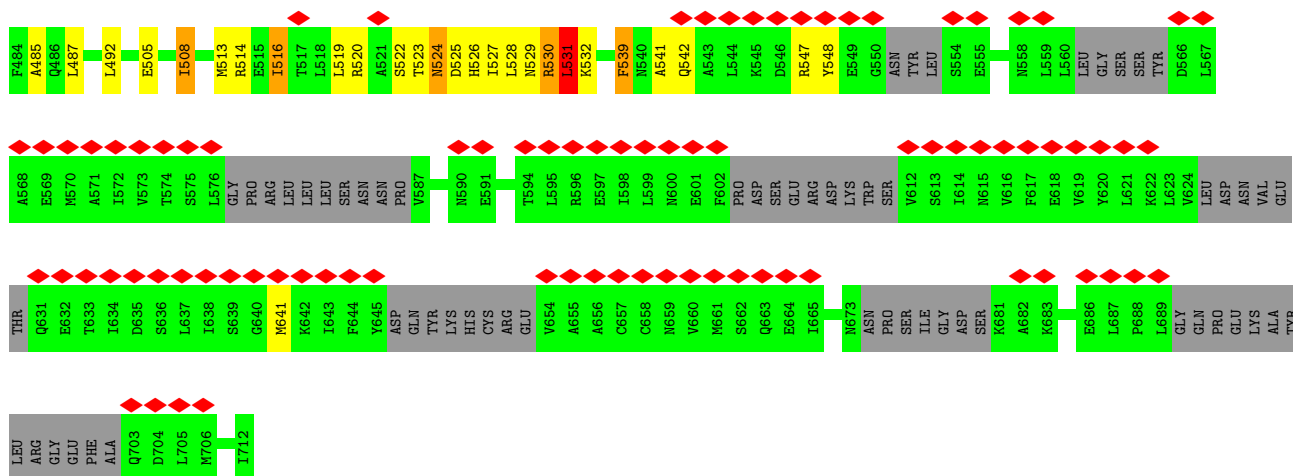
| Category  | Percentage |
|-----------|------------|
| Very bad  | 80%        |
| Bad       | 57%        |
| Good      | 21%        |
| Very good | 18%        |



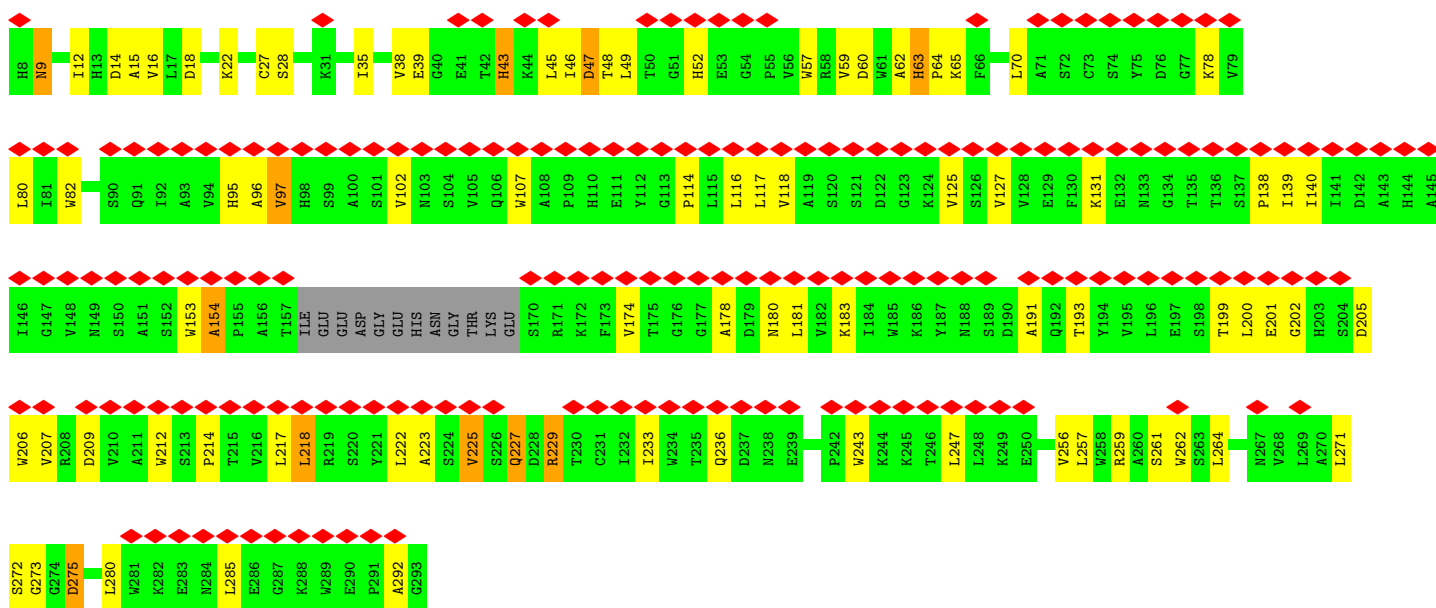


• Molecule 24: NUP96

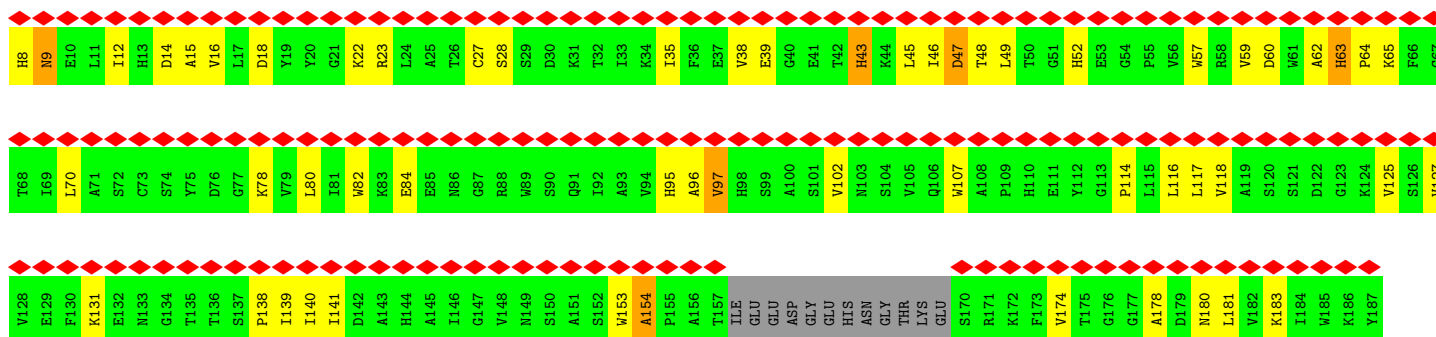


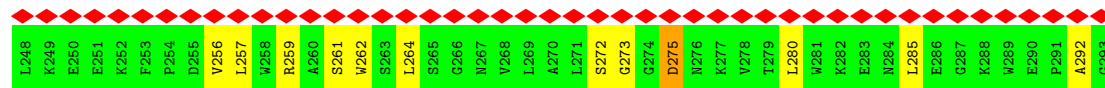
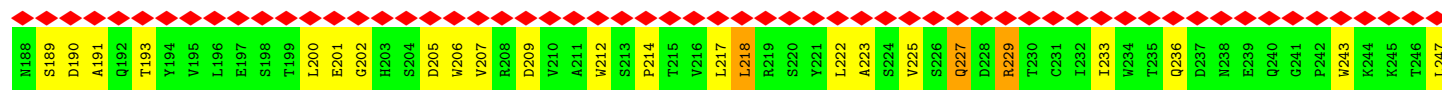


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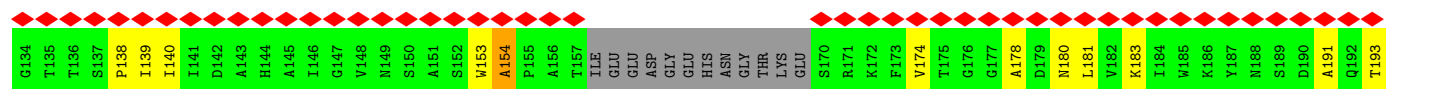
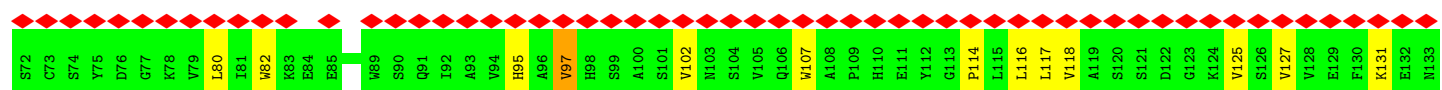
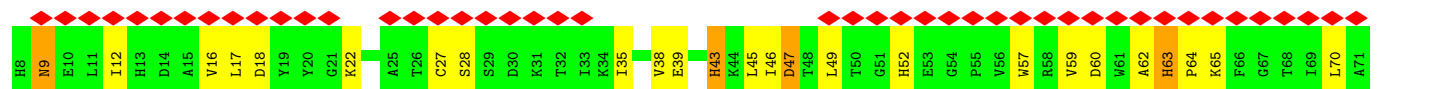


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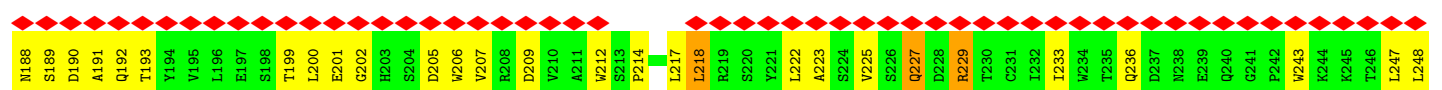
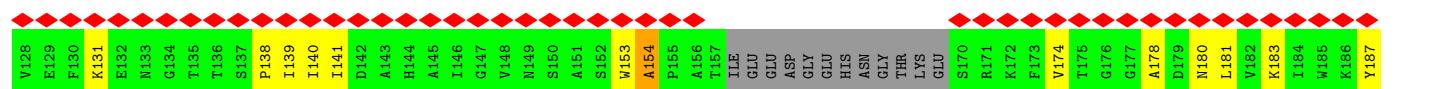
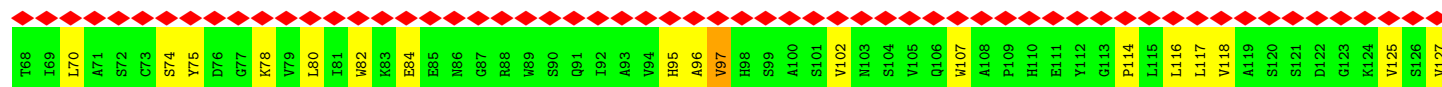
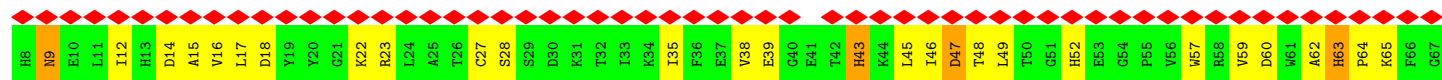




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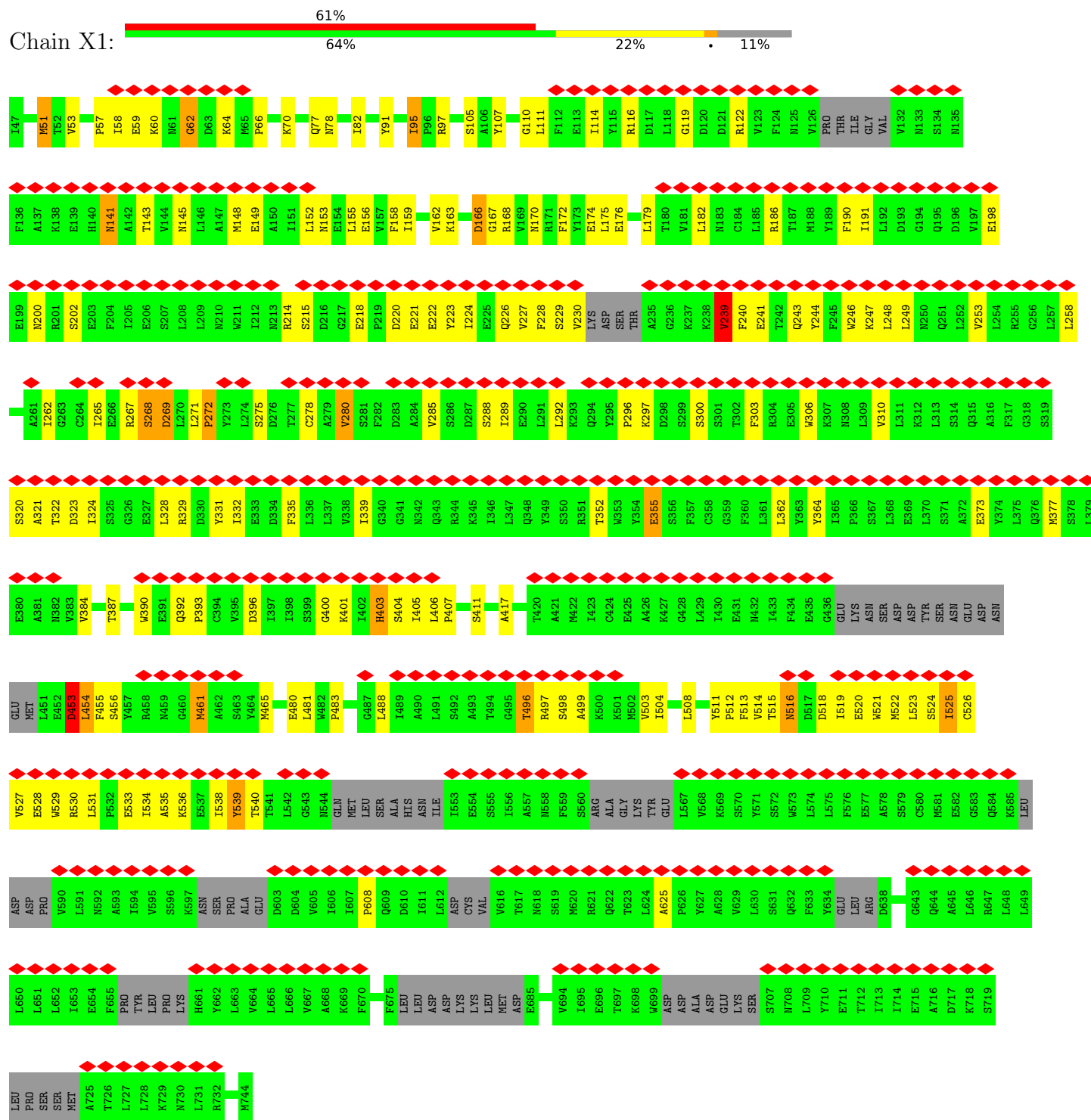


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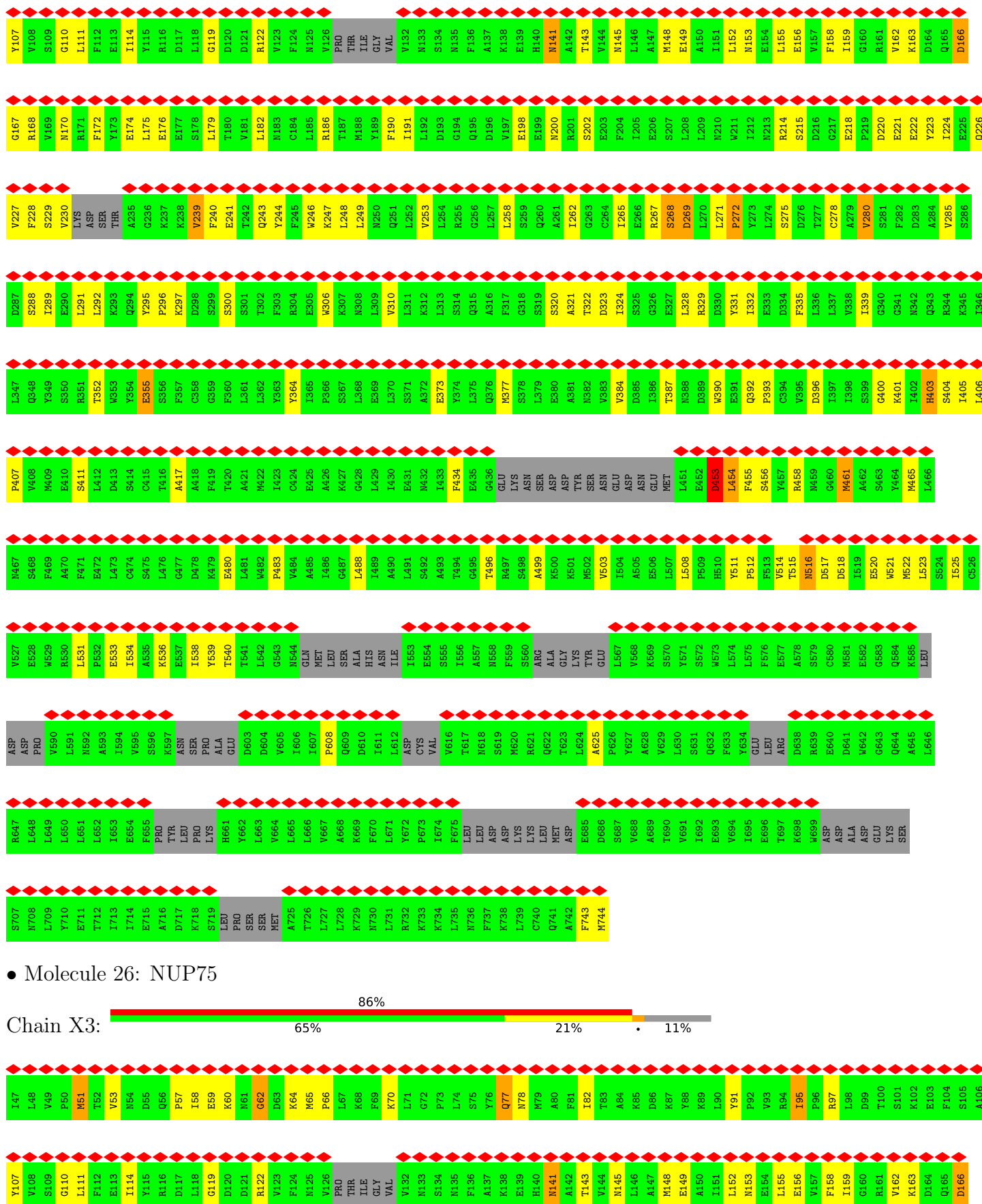


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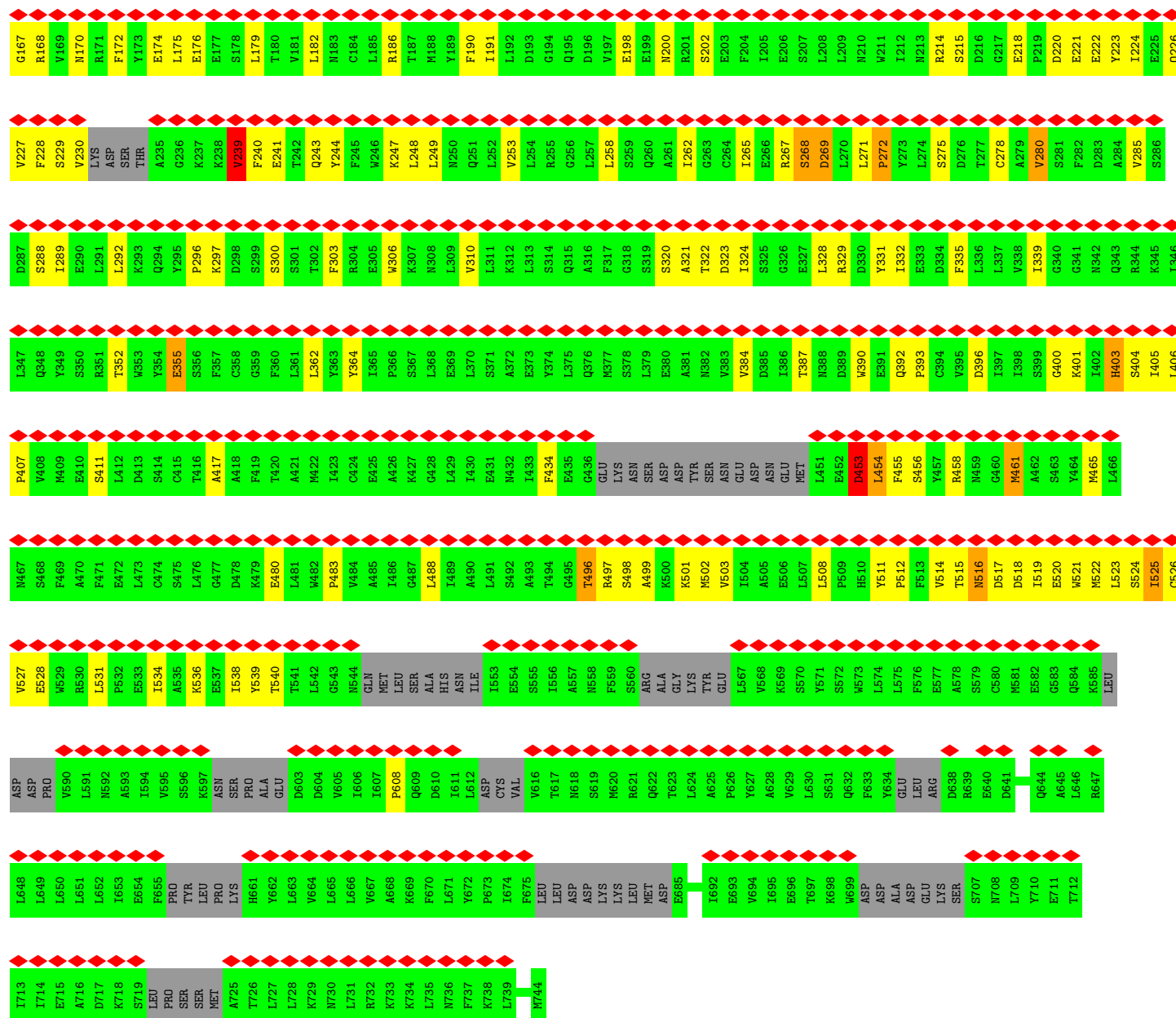
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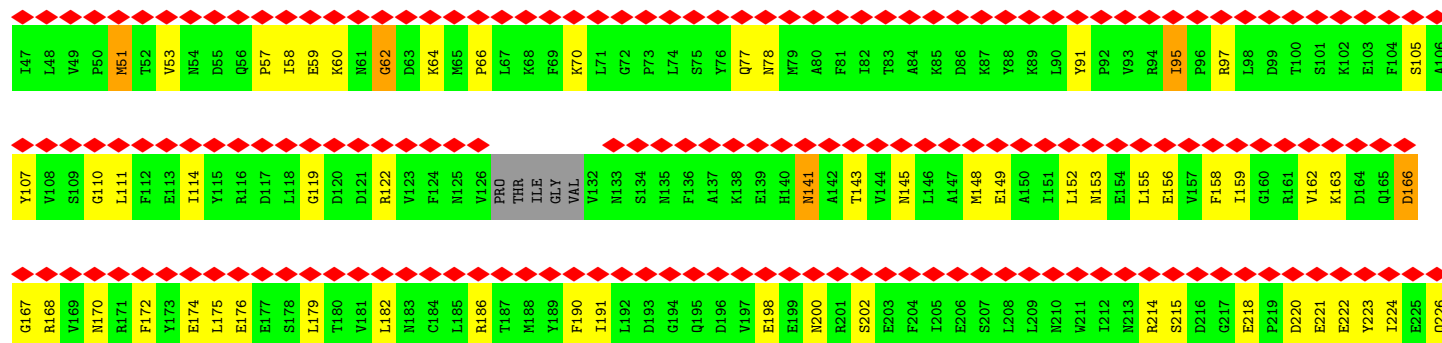


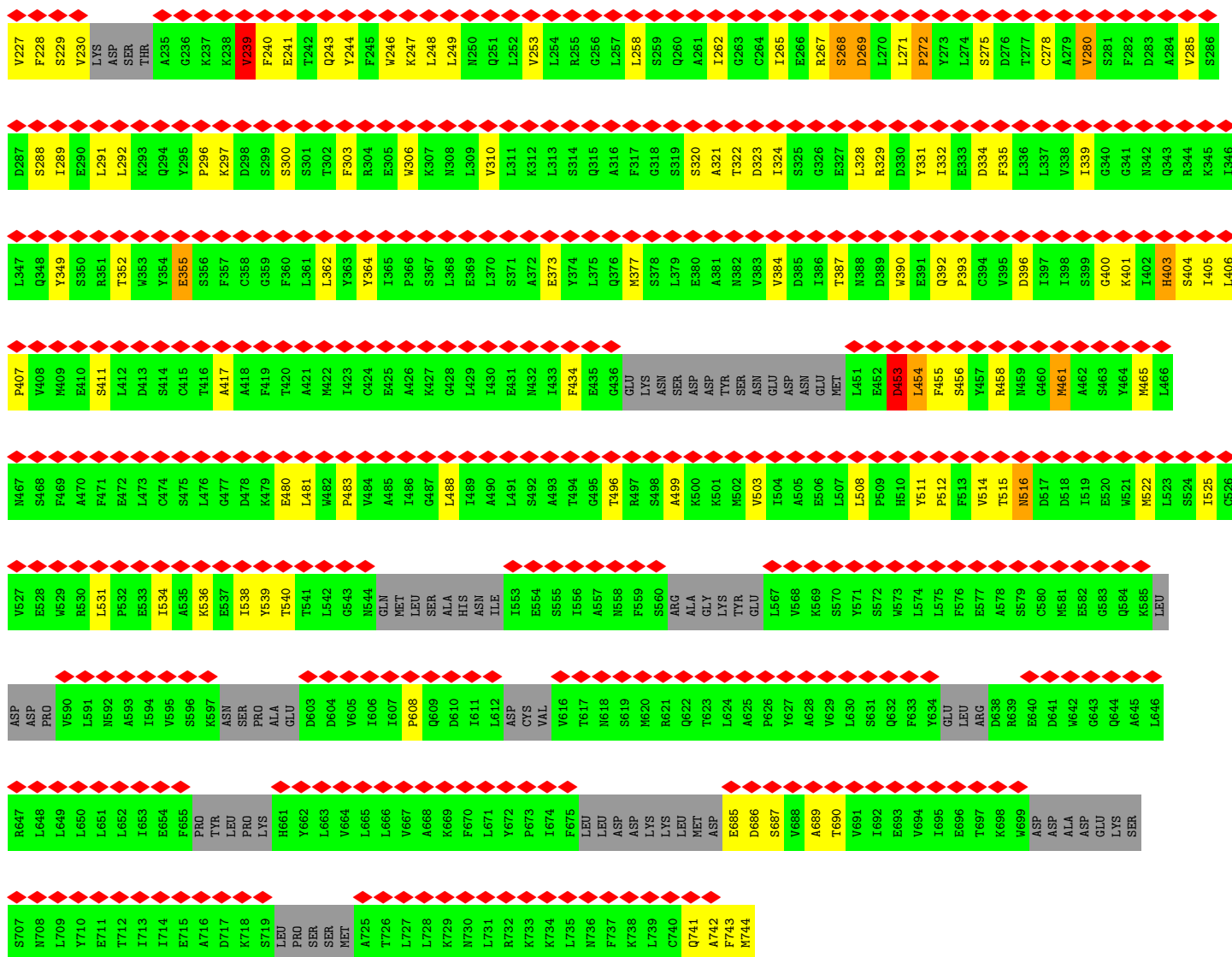


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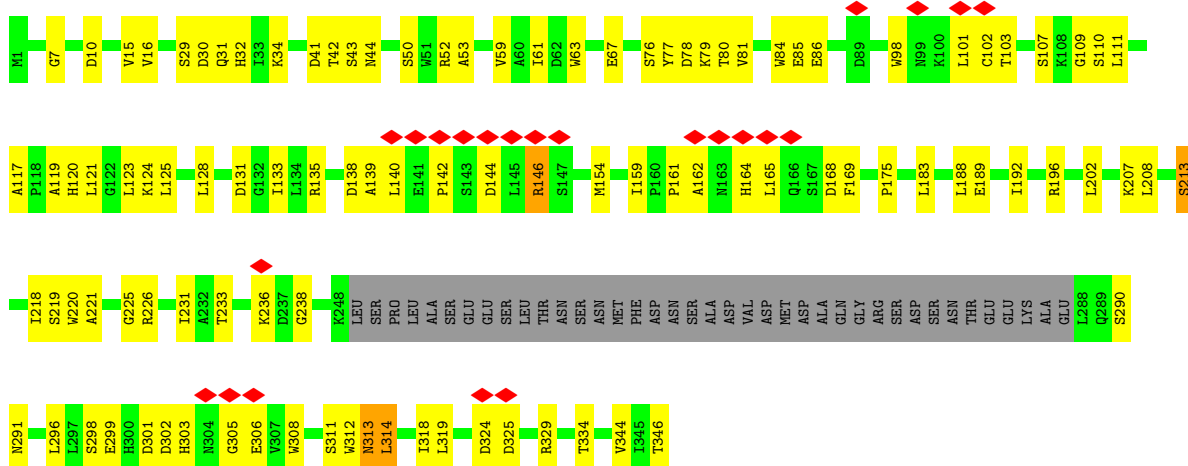


● Molecule 26: NUP75

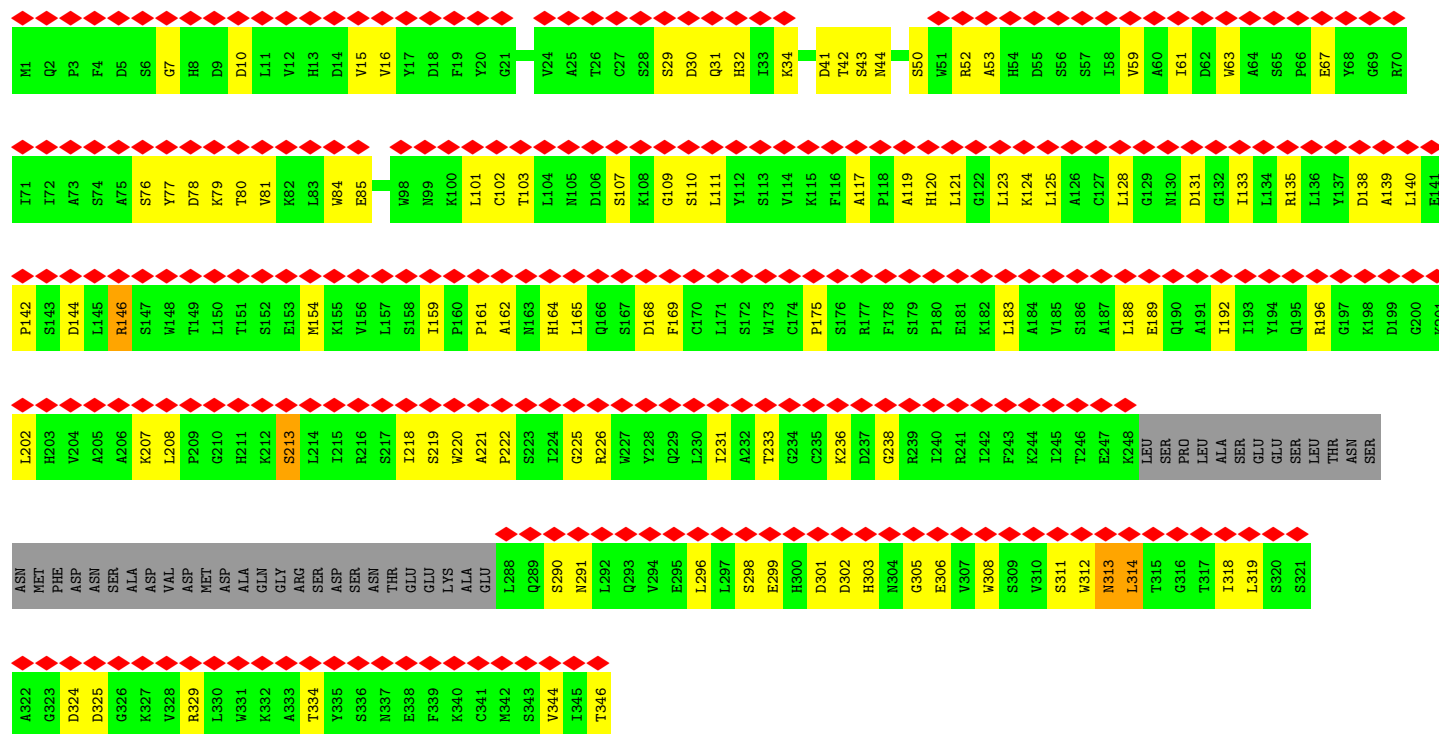
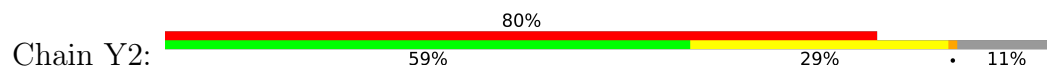




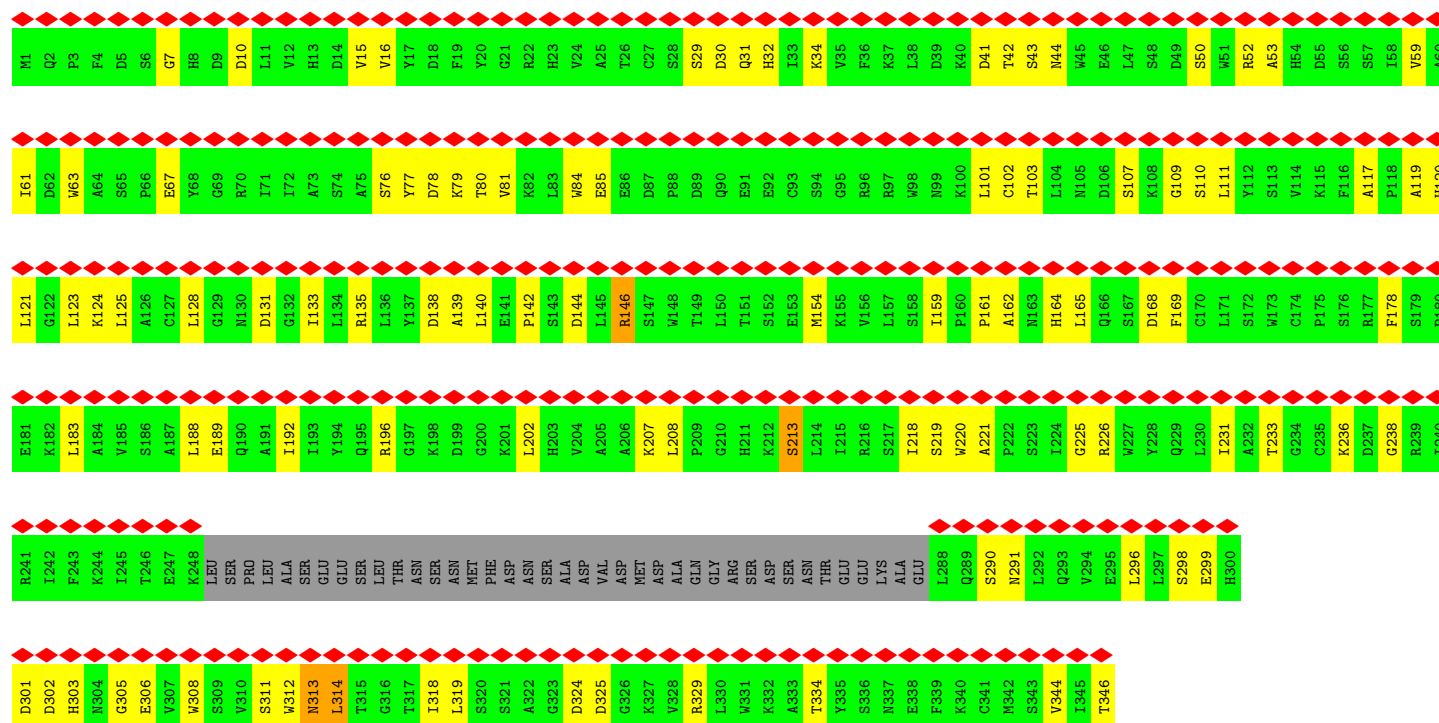
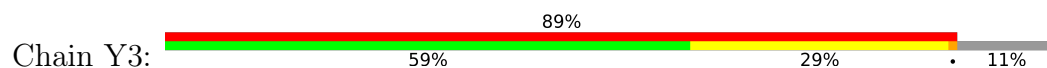
• Molecule 27: SEH1



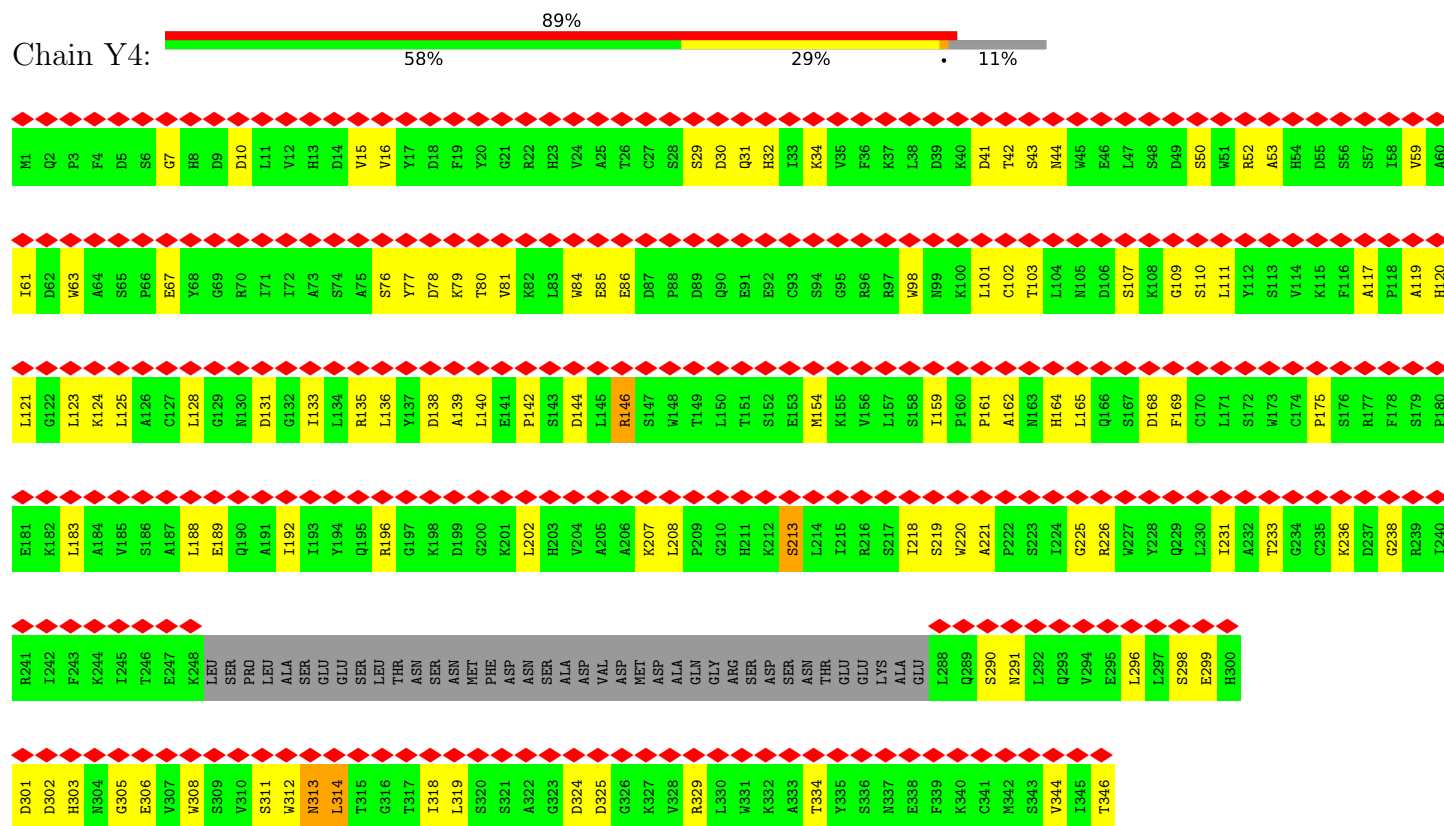
- Molecule 27: SEH1



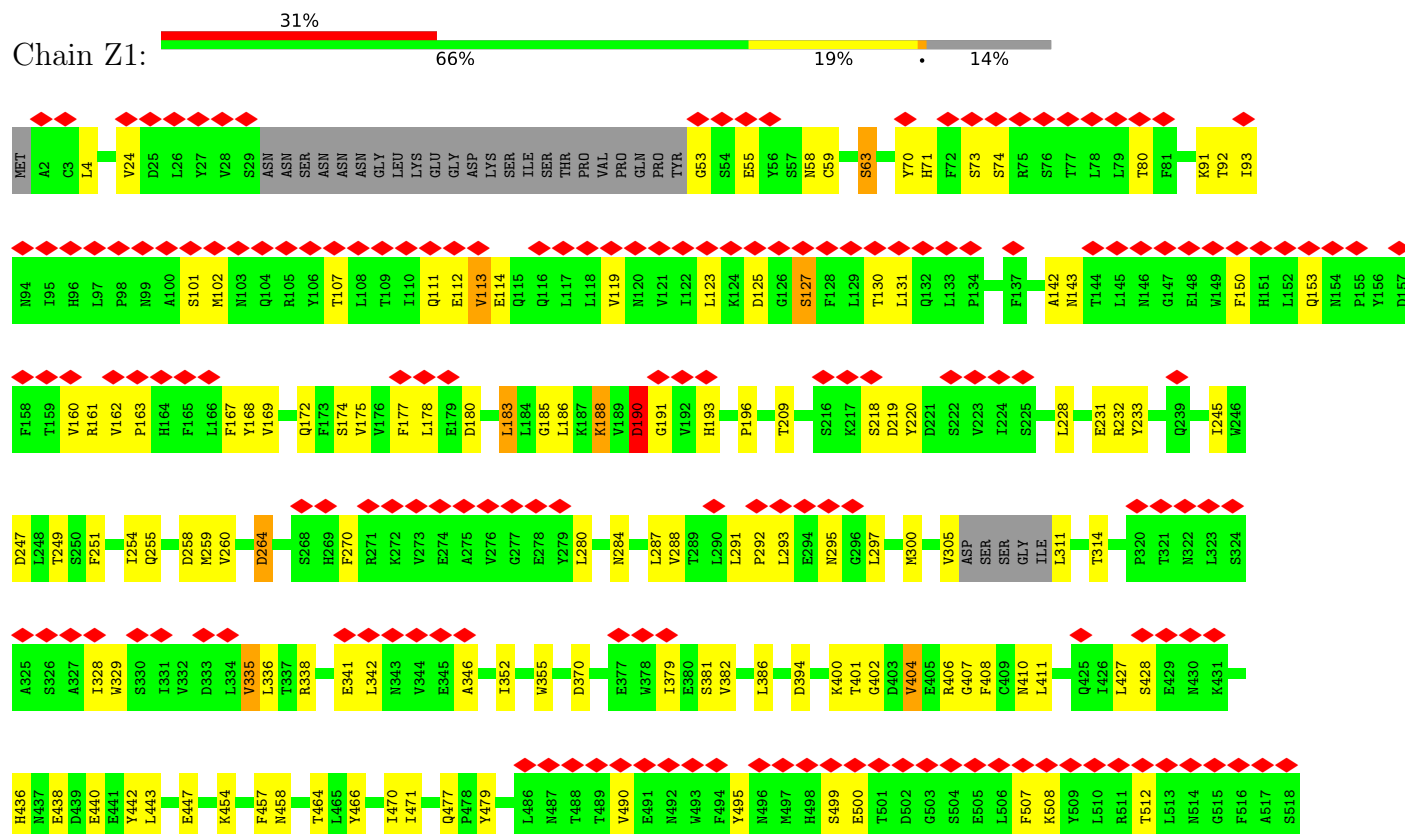
- Molecule 27: SEH1

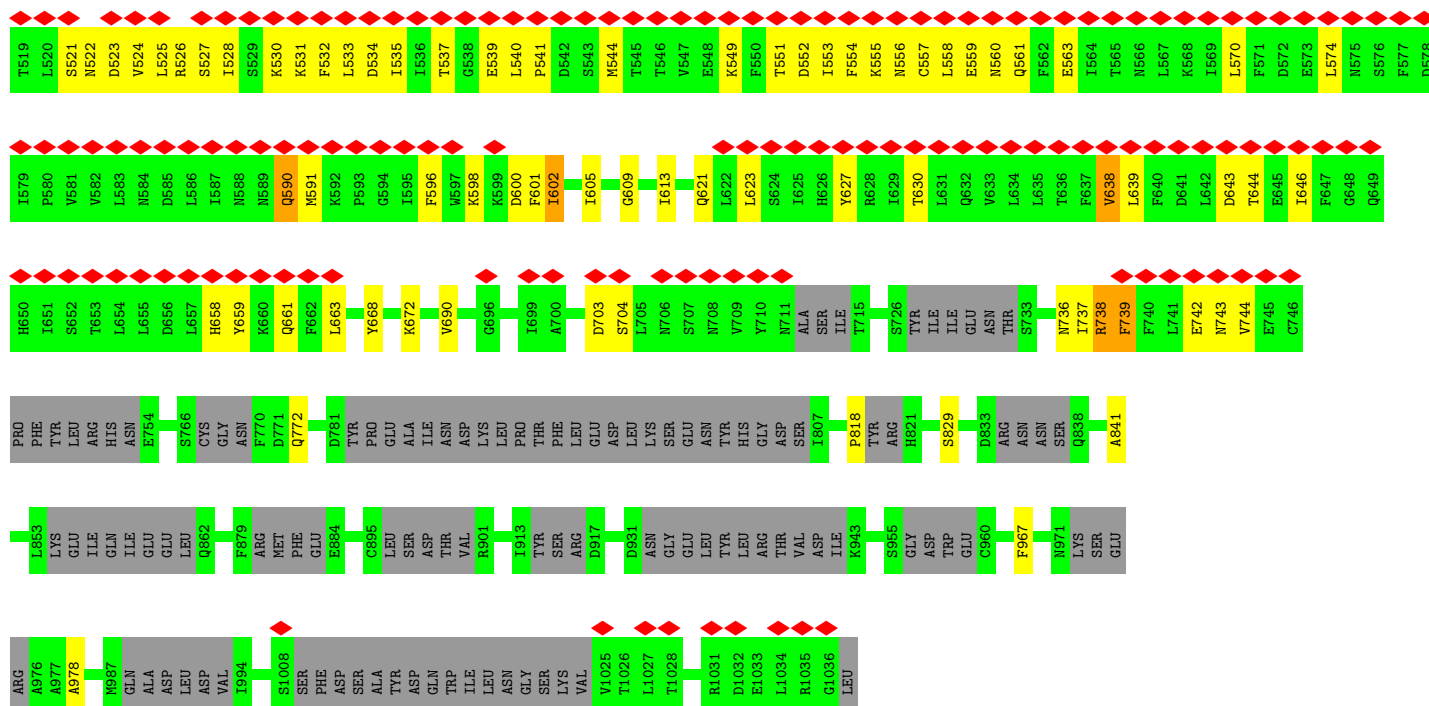


- Molecule 27: SEH1

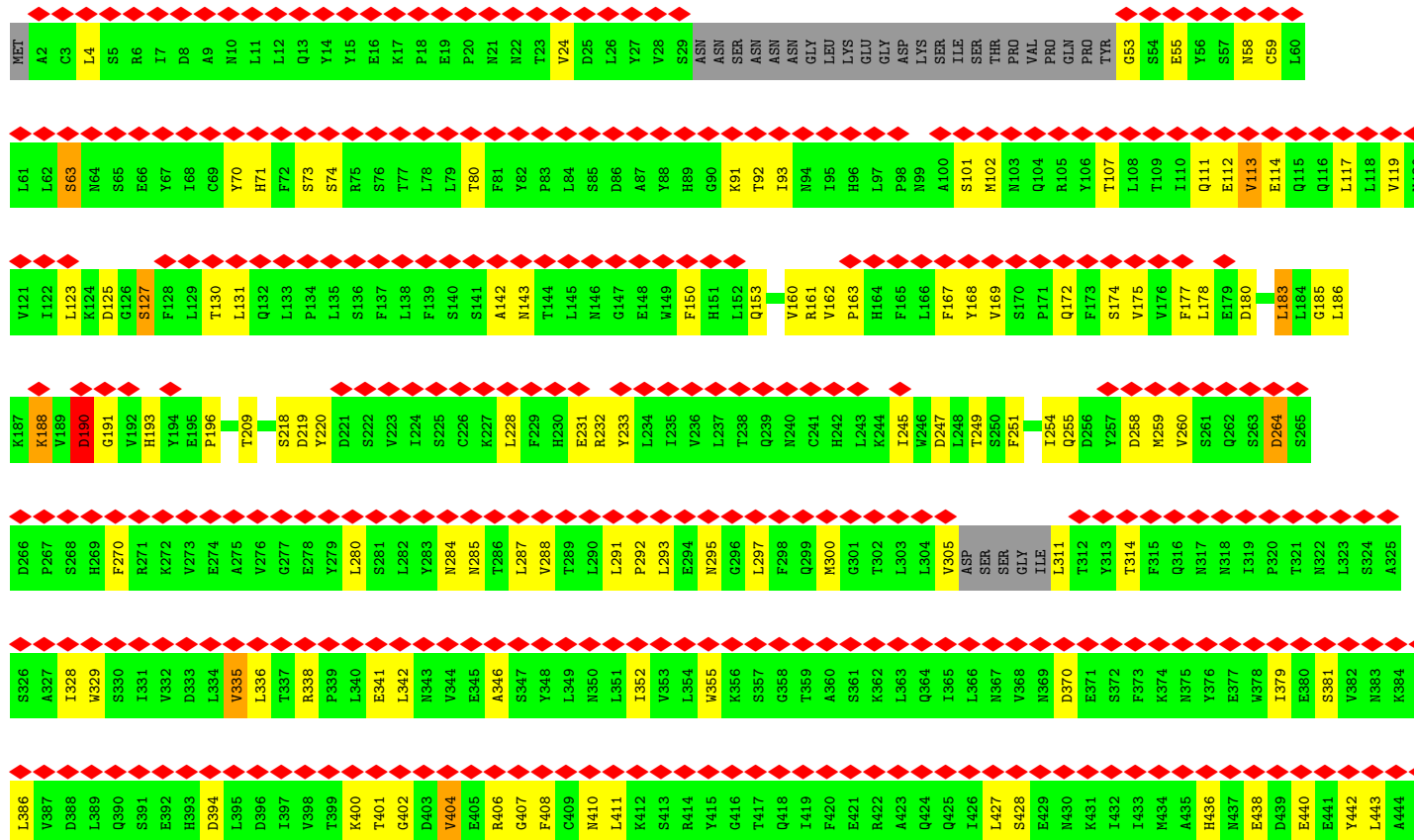
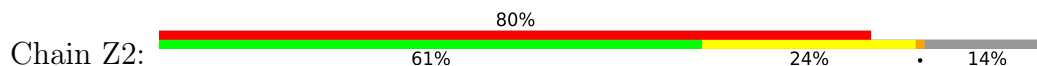


- Molecule 28: NUP160



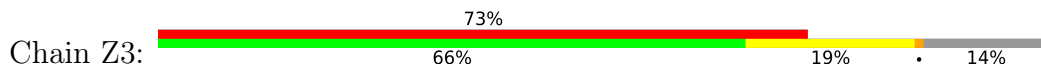


• Molecule 28: NUP160

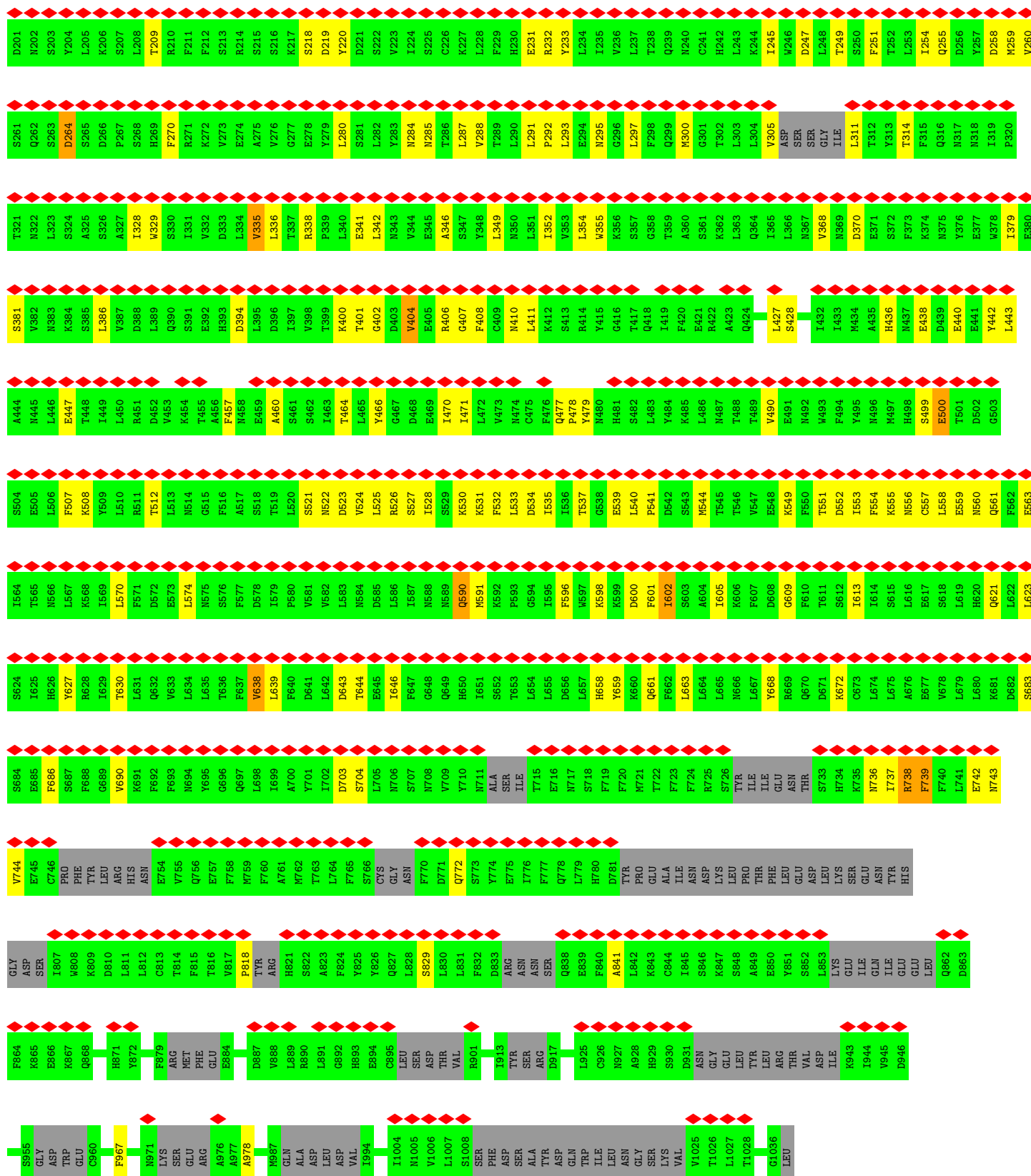


|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| L986 | M987 | GLN  | ALA  | ASP  | ASP  | VAL  |      |      |      |      |      |      |      |      |      |      | C926 | N927 | N927 | N927 | E866 | SER  |      |      |      |      |      |      |      |      |      |      | C746 | PRO  | PHE  | TYR  | LEU  | ARG  | HIS  | ASN  |      |      |      |      |      |      |      |      |      |      | F686 | S687 | F688 | G689 | V690 | K691 | F692 | F693 | N694 | Y695 | G696 | Q697 | L698 | I699 | ARG | A761 | A700 | D641 | D642 | D643 | T644 | E645 | L705 | N706 | S707 | N708 | V709 | Y710 | N711 | ALA | SER | ILE | T715 | E716 | N717 | S718 | F719 | F720 | PRO | GLU | ALA | GLU | ILE | ASN | ASP | ASN | LYS | LEU | PRO | THR | PHE | LEU | ASN | GLU | ASP | LEU | LYS | LYS | THR | S733 | H734 | K735 | N736 | I737 | R738 | F739 | F740 | L741 | E742 | N743 | V744 | E745 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| L446 | E447 | T448 | I449 | L450 | R451 | D452 | V453 | K454 | T455 | A456 | F457 | N458 | E459 | A460 | S461 | S462 | I463 | T464 | L465 | Y466 | G467 | D468 | E469 | I470 | I471 | L472 | V473 | N474 | C475 | F476 | Q477 | P478 | Y479 | N480 | H481 | S482 | L483 | Y484 | K485 | L486 | N487 | T488 | T489 | V490 | E491 | N492 | W493 | F494 | Y495 | N496 | M497 | H498 | S499 | E500 | T501 | D502 | G503 | S504 | E505 |      |      |      |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| L506 | F507 | K508 | Y509 | R511 | T512 | L513 | N514 | G515 | F516 | A517 | S518 | T519 | L520 | S521 | N522 | D523 | V524 | L525 | R526 | S527 | I528 | S529 | K530 | K531 | F532 | L533 | D534 | I535 | I536 | W597 | K598 | K599 | D600 | F601 | I602 | S603 | A604 | I605 | K606 | T607 | D608 | G609 | F610 | T611 | S612 | I613 | I614 | S615 | L616 | E617 | S618 | L619 | H620 | Q621 | L622 | L623 | S624 | I625 |      |      |      |      |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| N566 | L567 | K568 | I569 | L570 | F571 | D572 | E573 | L574 | N575 | S576 | F577 | D578 | I579 | P580 | V581 | V582 | L583 | N584 | D585 | L586 | I587 | N588 | N589 | Q590 | M591 | K592 | P593 | G594 | I595 | F596 | W597 | K598 | K599 | D600 | F601 | I602 | S603 | A604 | I605 | K606 | T607 | D608 | G609 | F610 | T611 | S612 | I613 | I614 | S615 | L616 | E617 | S618 | L619 | H620 | Q621 | L622 | L623 | S624 | I625 |      |      |      |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| H626 | Y627 | R628 | I629 | T630 | L631 | Q632 | V633 | L634 | L635 | T636 | F637 | N638 | L639 | F640 | D641 | V642 | D643 | T644 | E645 | I646 | F647 | G648 | Q649 | H650 | I651 | S652 | T653 | L654 | L655 | D656 | L657 | H658 | Y659 | K660 | Q661 | F662 | L663 | L664 | L665 | N666 | L667 | Y668 | R669 | Q670 | D671 | K672 | C673 | L674 | L675 | A676 | E677 | V678 | L679 | L680 | K681 | D682 | S683 | S684 | E685 |      |      |      |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| F686 | S687 | F688 | G689 | V690 | K691 | F692 | F693 | N694 | Y695 | G696 | Q697 | L698 | I699 | A700 | Y701 | I702 | D703 | S704 | L705 | N706 | S707 | N708 | V709 | Y710 | N711 | ALA  | SER  | ILE  | T715 | E716 | N717 | S718 | F719 | F720 | M721 | T722 | F723 | F724 | R725 | S726 | T727 | ILE  | GLU  | ASN  | THR  | S733 | H734 | K735 | N736 | I737 | R738 | F739 | F740 | L741 | E742 | N743 | V744 | E745 |      |      |      |      |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |      |      |      |      |      |      |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

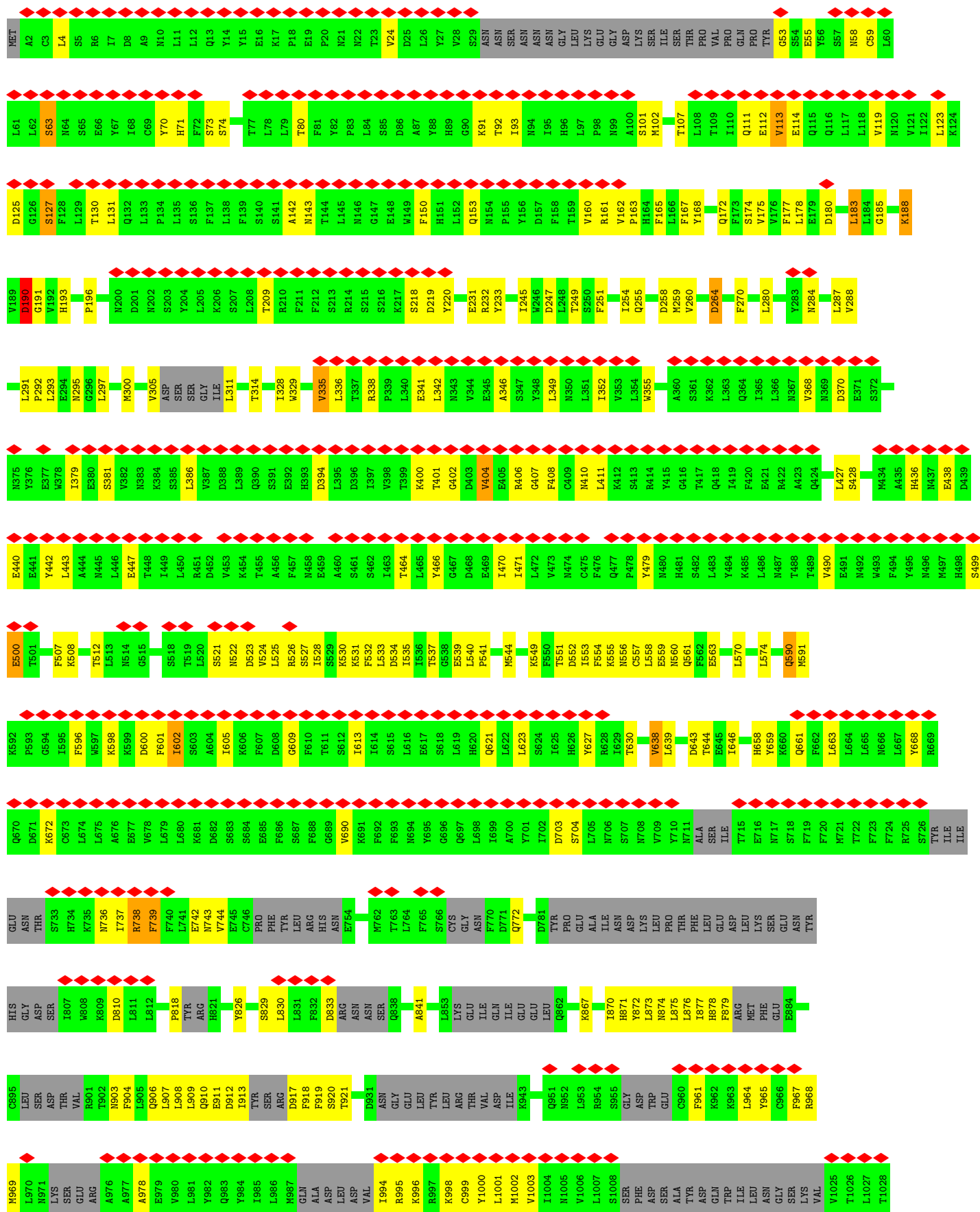
• Molecule 28: NUP160

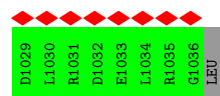


|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |     |     |     |     |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|
| L135 | F139 | A142 | N143 | E148 | W149 | F150 | H151 | L152 | Q153 | N154 | P155 | Y156 | D157 | F158 | T159 | V160 | R161 | V162 | P163 | H164 | F165 | L166 | F167 | Y168 | V169 | S170 | P171 | Q172 | F173 | S174 | T175 | V176 | F177 | L178 | E179 | D180 | G181 | G182 | L183 | L184 | G185 | L186 | K187 | K188 | D190 | G191 | V192 | H193 | Y194 | E195 | P196 | L197 | L198 | F199 | N200 |     |     |     |     |     |
| I68  | C69  | Y70  | H71  | F72  | S73  | S74  | R75  | S76  | T80  | L84  | S85  | D86  | A87  | Y88  | H89  | G90  | K91  | T92  | I93  | L97  | P98  | N99  | A100 | S101 | M102 | M103 | Q104 | R105 | Y106 | T107 | L108 | T109 | I110 | Q111 | E112 | V113 | E114 | Q115 | Q116 | L117 | L118 | Y119 | N120 | V121 | I122 | L123 | K124 | D125 | G126 | S127 | F128 | L129 | T130 | L131 | Q132 |     |     |     |     |     |
| MET  | A2   | C3   | L4   | S5   | R6   | I7   | D8   | A9   | N10  | L11  | L12  | Q13  | Y14  | Y15  | E16  | K17  | P18  | V24  | S29  | ASN  | ASN  | SER  | ASN  | ASN  | ASN  | GLY  | LEU  | LYS  | GLU  | GLY  | ASP  | LYS  | SER  | ILE  | SER  | LYS  | VAL  | PRO  | VAL  | PRO  | GLN  | PRO  | PRO  | PRO  | TYR  | G53  | S54  | E55  | Y56  | S57  | N58  | C59  | L60  | L61  | L62  | S63 | N64 | S65 | E66 | Y67 |

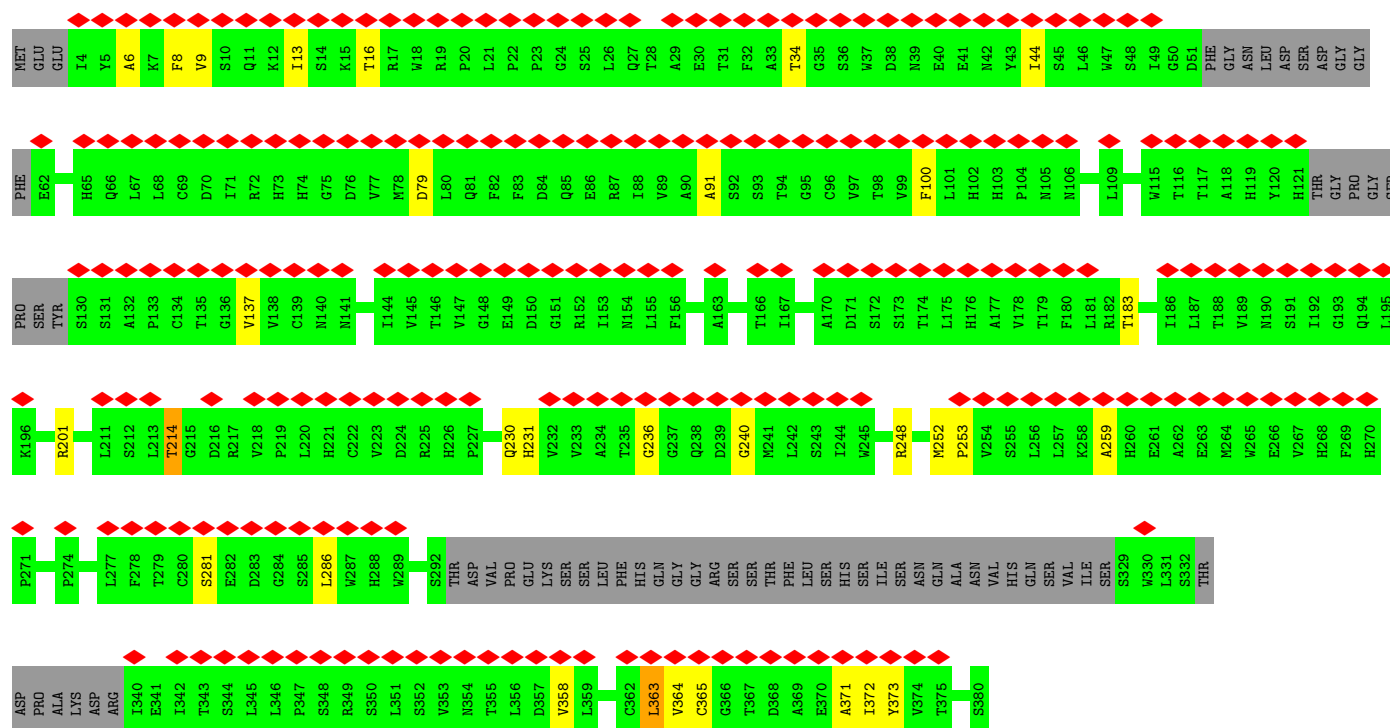
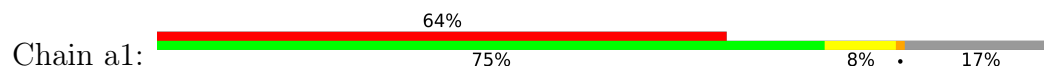




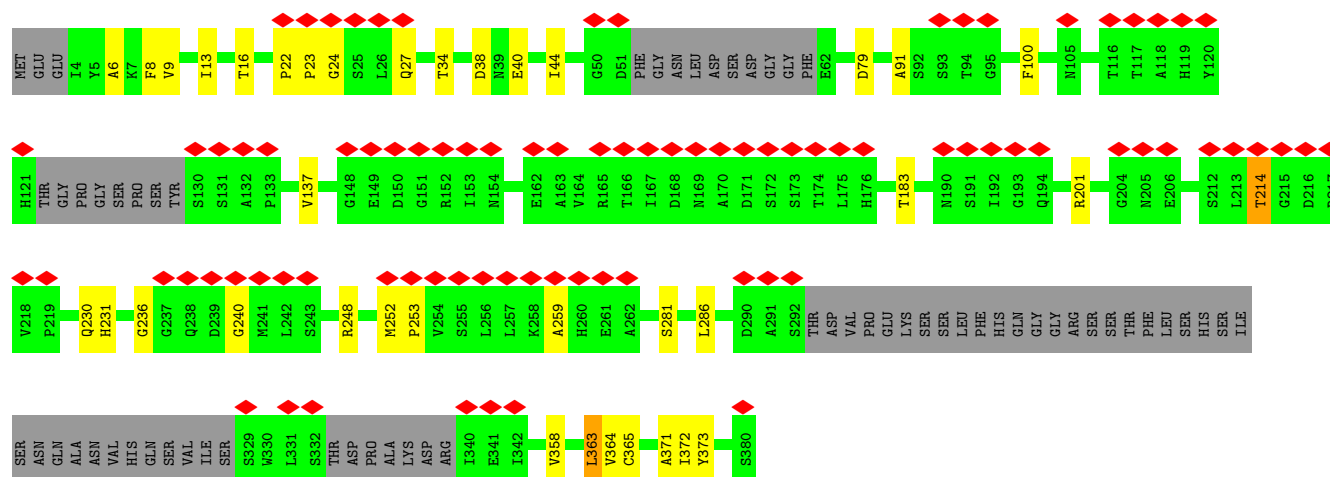
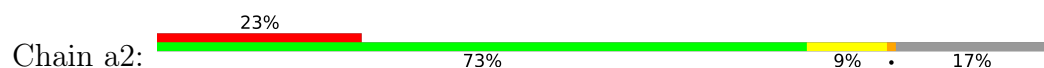




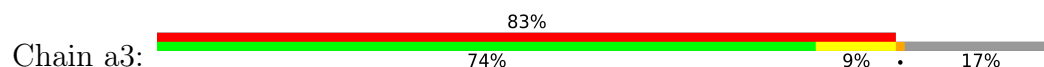
• Molecule 29: NUP43

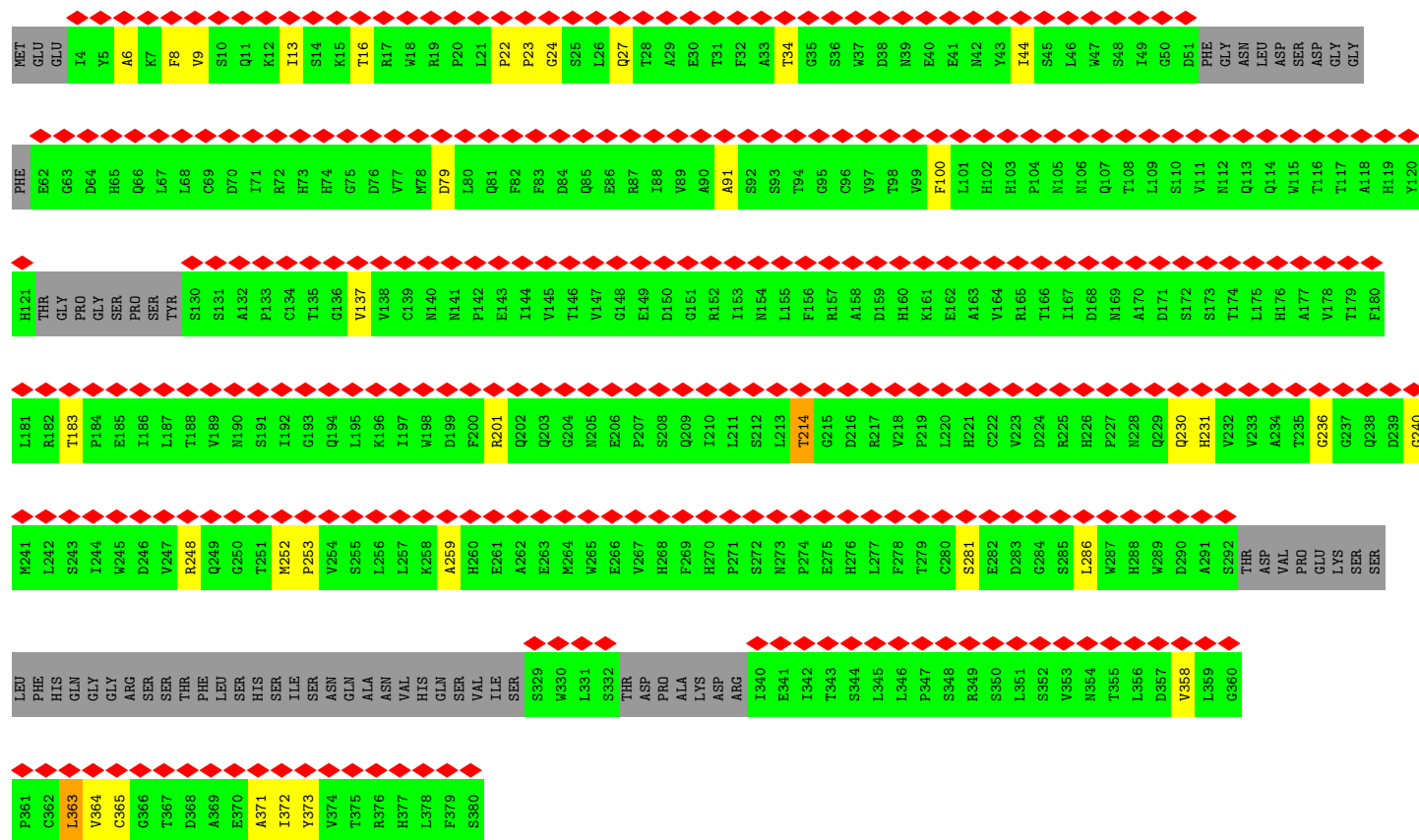


• Molecule 29: NUP43

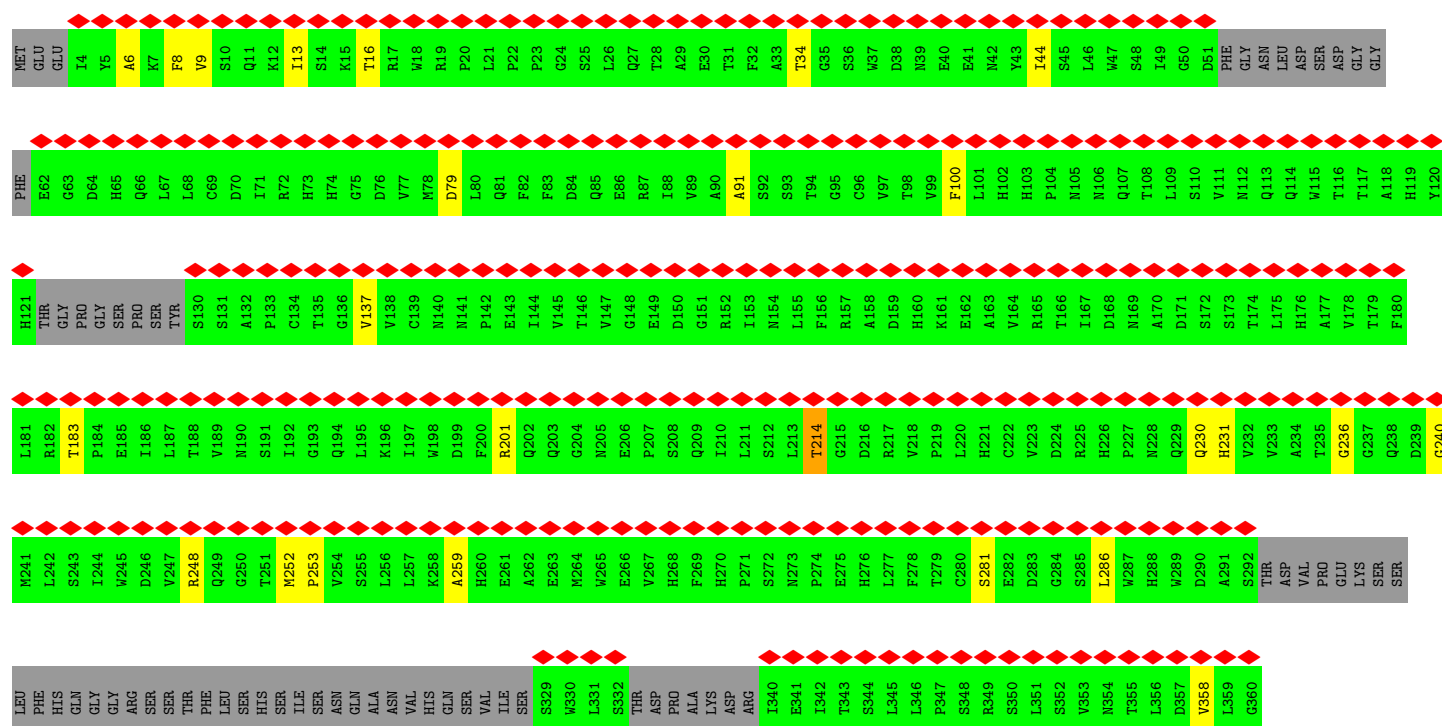
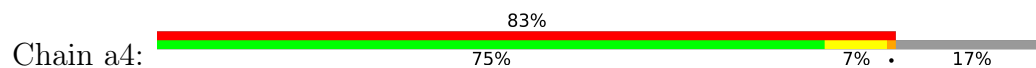


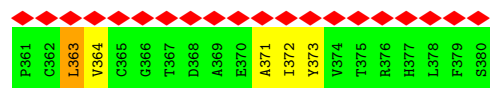
• Molecule 29: NUP43



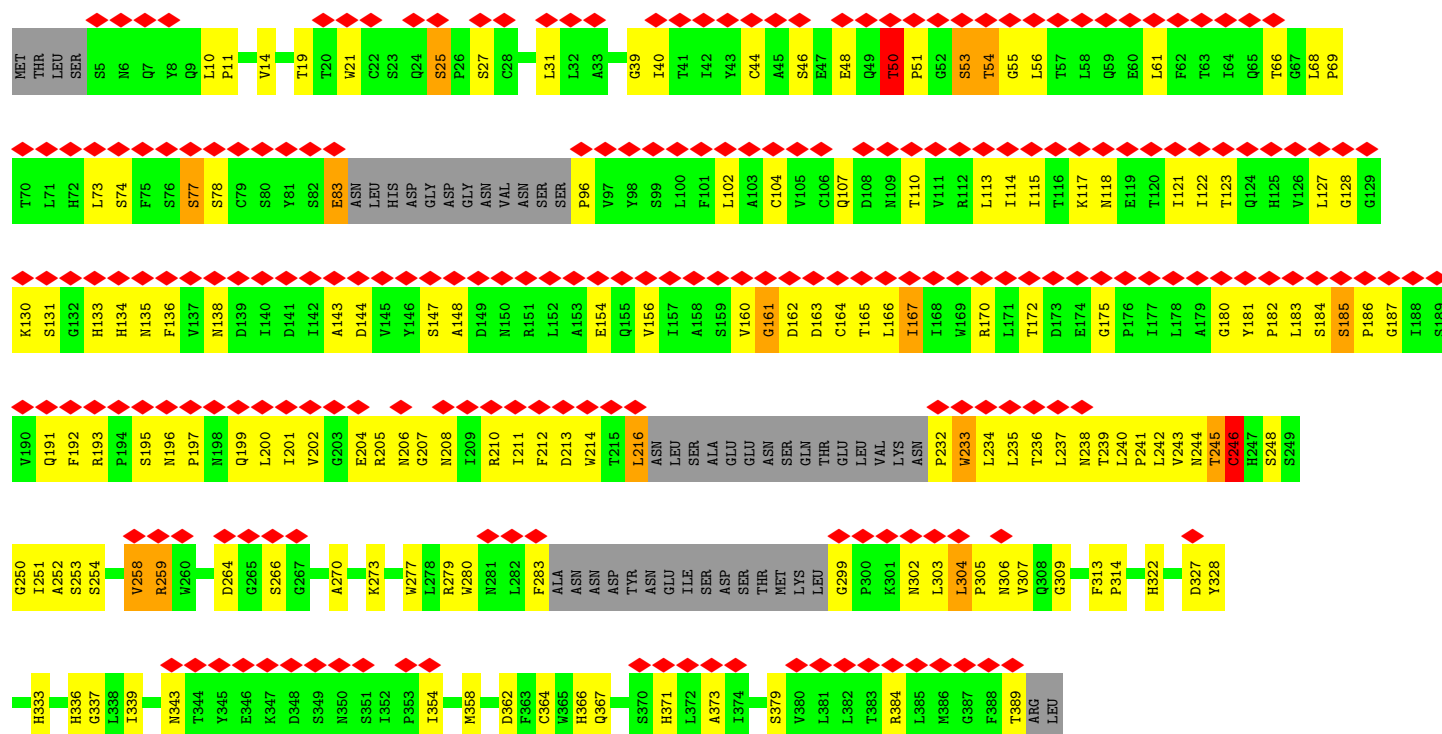


### • Molecule 29: NUP43

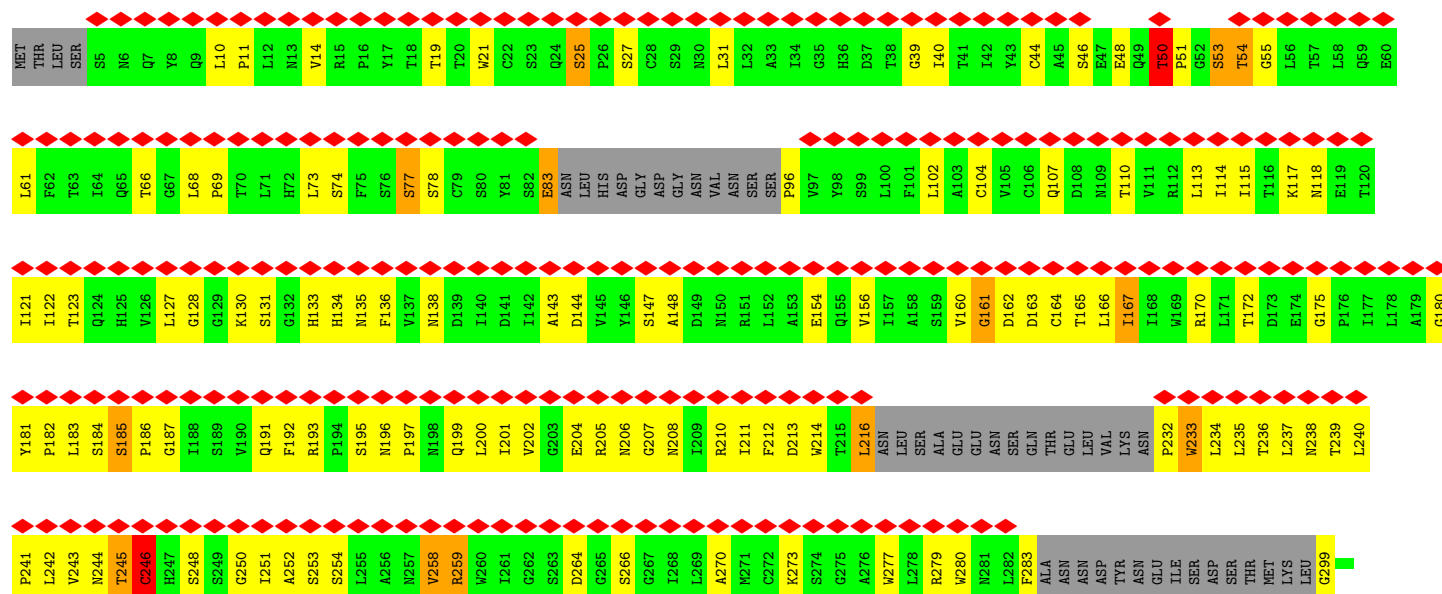
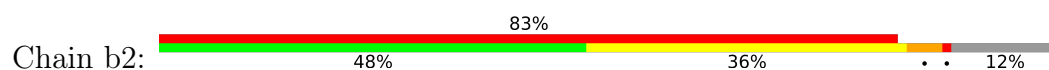


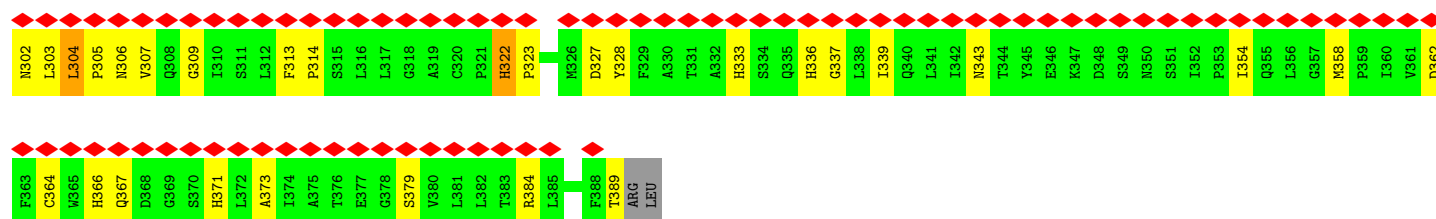


• Molecule 30: NUP37

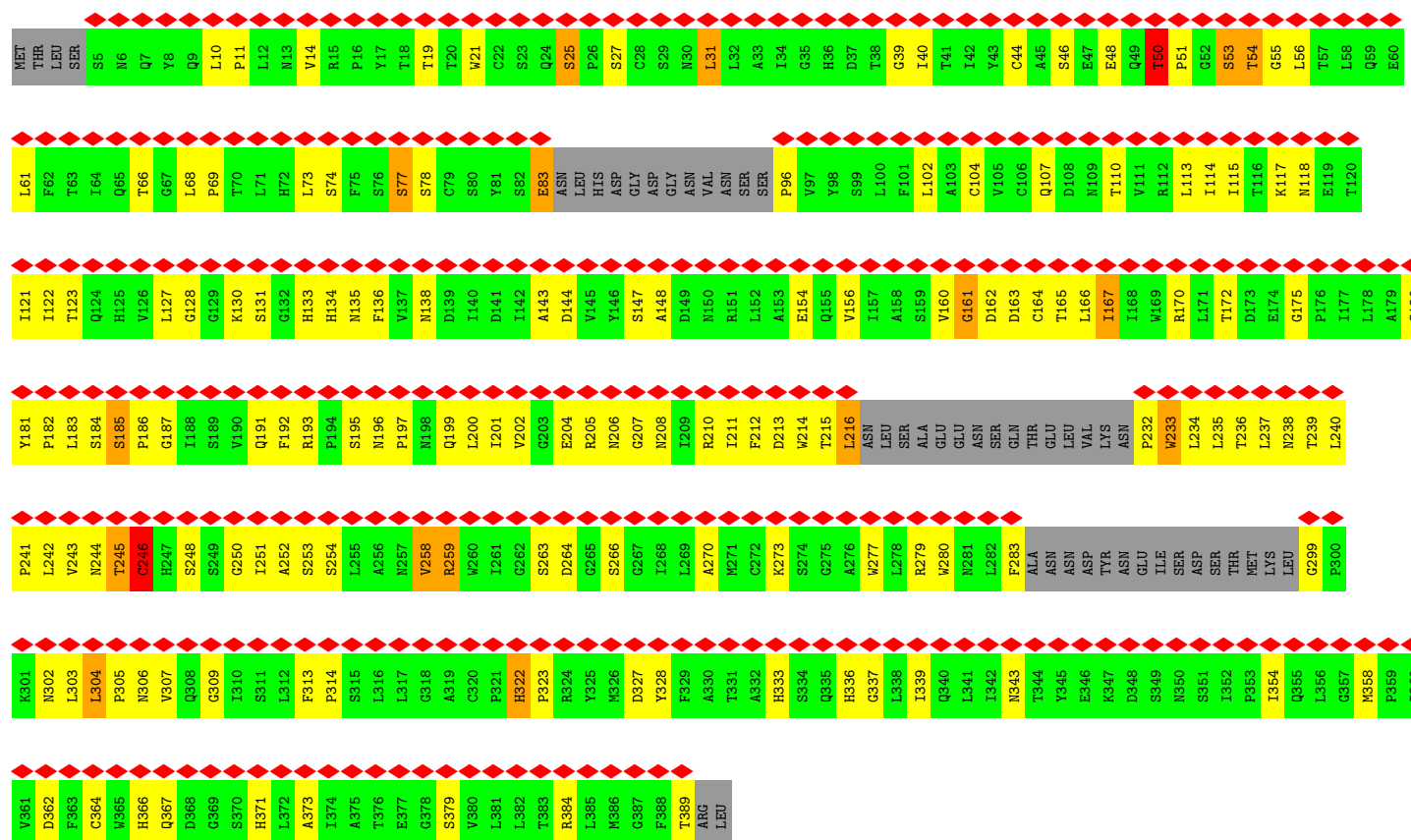
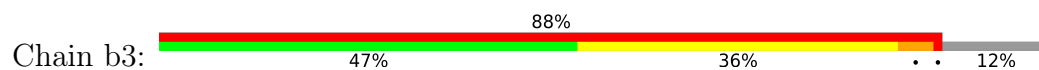


• Molecule 30: NUP37

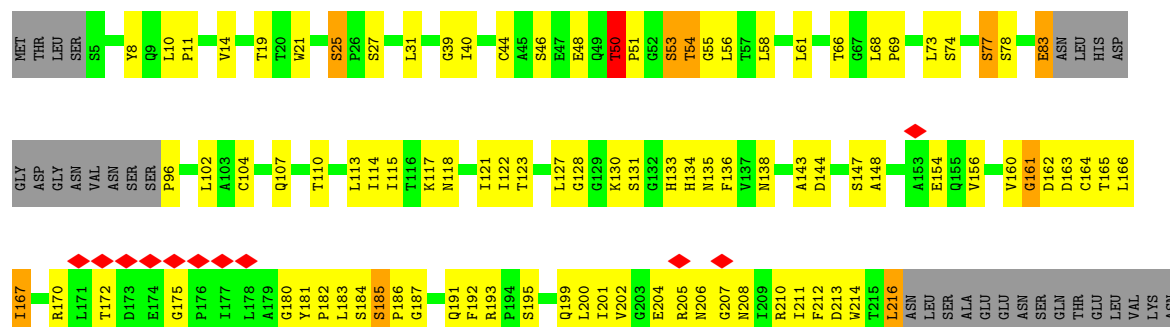


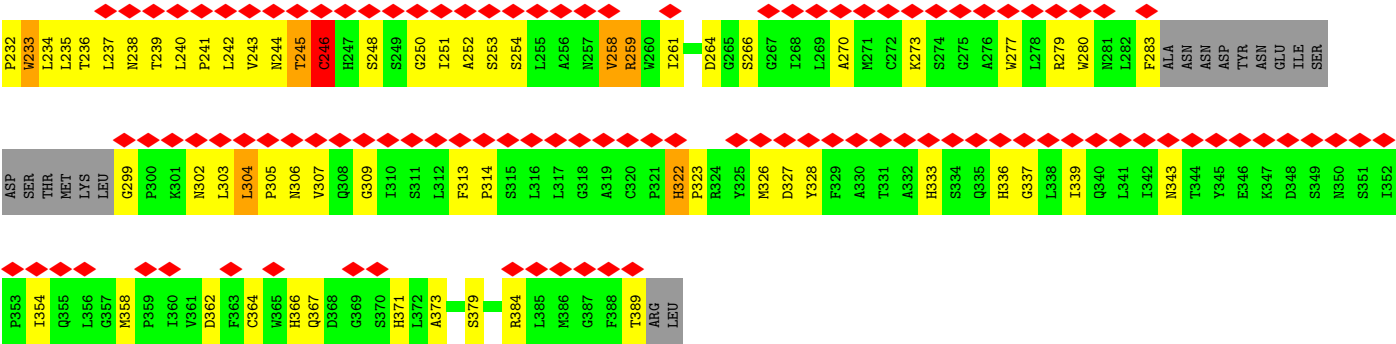


• Molecule 30: NUP37



• Molecule 30: NUP37





## 4 Experimental information

| Property                             | Value                                   | Source    |
|--------------------------------------|-----------------------------------------|-----------|
| EM reconstruction method             | SUBTOMOGRAM AVERAGING                   | Depositor |
| Imposed symmetry                     | POINT, Not provided                     |           |
| Number of subtomograms used          | 792                                     | Depositor |
| Resolution determination method      | FSC 0.143 CUT-OFF                       | Depositor |
| CTF correction method                | PHASE FLIPPING AND AMPLITUDE CORRECTION | Depositor |
| Microscope                           | FEI TITAN KRIOS                         | Depositor |
| Voltage (kV)                         | 300                                     | Depositor |
| Electron dose ( $e^-/\text{\AA}^2$ ) | 140                                     | Depositor |
| Minimum defocus (nm)                 | 2000                                    | Depositor |
| Maximum defocus (nm)                 | 4500                                    | Depositor |
| Magnification                        | Not provided                            |           |
| Image detector                       | GATAN K2 QUANTUM (4k x 4k)              | Depositor |
| Maximum map value                    | 0.524                                   | Depositor |
| Minimum map value                    | -0.301                                  | Depositor |
| Average map value                    | 0.002                                   | Depositor |
| Map value standard deviation         | 0.036                                   | Depositor |
| Recommended contour level            | 0.07                                    | Depositor |
| Map size (Å)                         | 1987.2001, 1987.2001, 1987.2001         | wwPDB     |
| Map dimensions                       | 144, 144, 144                           | wwPDB     |
| Map angles (°)                       | 90.0, 90.0, 90.0                        | wwPDB     |
| Pixel spacing (Å)                    | 13.8, 13.8, 13.8                        | 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  >5        | RMSZ        | # Z  >5        |
| 1   | A1    | 0.21         | 2/9926 (0.0%)  | 0.36        | 0/13474        |
| 1   | A3    | 0.21         | 2/9926 (0.0%)  | 0.36        | 0/13474        |
| 2   | A2    | 0.34         | 0/10133        | 0.67        | 3/13731 (0.0%) |
| 2   | A4    | 0.34         | 0/10133        | 0.67        | 3/13731 (0.0%) |
| 3   | A5    | 0.19         | 2/10216 (0.0%) | 0.33        | 0/13838        |
| 3   | A6    | 0.19         | 2/10216 (0.0%) | 0.33        | 0/13838        |
| 4   | B1    | 0.18         | 0/112          | 0.52        | 0/149          |
| 4   | B2    | 0.18         | 0/112          | 0.52        | 0/149          |
| 4   | B3    | 0.18         | 0/112          | 0.51        | 0/149          |
| 4   | B4    | 0.18         | 0/112          | 0.51        | 0/149          |
| 4   | B5    | 0.19         | 0/112          | 0.51        | 0/149          |
| 4   | B6    | 0.19         | 0/112          | 0.52        | 0/149          |
| 5   | C1    | 0.28         | 0/140          | 0.40        | 0/188          |
| 5   | C2    | 0.24         | 0/160          | 0.48        | 0/214          |
| 5   | C3    | 0.28         | 0/140          | 0.40        | 0/188          |
| 5   | C4    | 0.24         | 0/160          | 0.48        | 0/214          |
| 5   | C5    | 0.28         | 0/140          | 0.40        | 0/188          |
| 5   | C6    | 0.28         | 0/140          | 0.40        | 0/188          |
| 6   | D1    | 0.17         | 0/5130         | 0.34        | 0/6930         |
| 6   | D2    | 0.17         | 0/5130         | 0.35        | 0/6930         |
| 6   | D3    | 0.17         | 0/5130         | 0.35        | 0/6930         |
| 6   | D4    | 0.17         | 0/5130         | 0.35        | 0/6930         |
| 6   | D5    | 0.17         | 0/5130         | 0.34        | 0/6930         |
| 6   | D6    | 0.18         | 0/5130         | 0.35        | 0/6930         |
| 6   | D7    | 0.17         | 0/5130         | 0.34        | 0/6930         |
| 7   | E1    | 0.17         | 0/65           | 0.41        | 0/89           |
| 7   | E2    | 0.19         | 0/65           | 0.41        | 0/89           |
| 7   | E3    | 0.20         | 0/65           | 0.41        | 0/89           |
| 7   | E4    | 0.18         | 0/65           | 0.41        | 0/89           |
| 7   | E5    | 0.18         | 0/65           | 0.41        | 0/89           |
| 7   | E6    | 0.18         | 0/65           | 0.40        | 0/89           |
| 7   | E7    | 0.19         | 0/65           | 0.41        | 0/89           |
| 8   | F1    | 0.10         | 0/13031        | 0.25        | 0/17717        |
| 8   | F2    | 0.10         | 0/13031        | 0.25        | 0/17717        |



| Mol | Chain | Bond lengths |         | Bond angles |               |
|-----|-------|--------------|---------|-------------|---------------|
|     |       | RMSZ         | # Z  >5 | RMSZ        | # Z  >5       |
| 9   | G1    | 0.12         | 0/445   | 0.33        | 0/600         |
| 9   | G2    | 0.12         | 0/445   | 0.32        | 0/600         |
| 10  | H1    | 0.12         | 0/95    | 0.23        | 0/128         |
| 10  | H2    | 0.12         | 0/95    | 0.23        | 0/128         |
| 11  | I1    | 0.09         | 0/12541 | 0.20        | 0/16980       |
| 11  | I2    | 0.09         | 0/12541 | 0.20        | 0/16980       |
| 11  | I3    | 0.09         | 0/12541 | 0.20        | 0/16980       |
| 11  | I4    | 0.09         | 0/12541 | 0.20        | 0/16980       |
| 11  | I5    | 0.09         | 0/12541 | 0.20        | 0/16980       |
| 12  | J1    | 0.10         | 0/511   | 0.18        | 0/688         |
| 12  | J2    | 0.09         | 0/511   | 0.18        | 0/688         |
| 12  | J3    | 0.09         | 0/511   | 0.18        | 0/688         |
| 12  | J4    | 0.10         | 0/511   | 0.18        | 0/688         |
| 12  | J5    | 0.10         | 0/511   | 0.18        | 0/688         |
| 13  | K1    | 0.08         | 0/75    | 0.23        | 0/101         |
| 13  | K2    | 0.08         | 0/75    | 0.23        | 0/101         |
| 13  | K3    | 0.09         | 0/75    | 0.23        | 0/101         |
| 13  | K4    | 0.08         | 0/75    | 0.23        | 0/101         |
| 13  | K5    | 0.08         | 0/75    | 0.23        | 0/101         |
| 14  | L1    | 0.04         | 0/15    | 0.06        | 0/18          |
| 14  | L2    | 0.04         | 0/15    | 0.07        | 0/18          |
| 14  | L3    | 0.05         | 0/15    | 0.07        | 0/18          |
| 14  | L4    | 0.04         | 0/15    | 0.07        | 0/18          |
| 14  | L5    | 0.04         | 0/15    | 0.06        | 0/18          |
| 15  | M1    | 0.31         | 0/1388  | 0.66        | 0/1866        |
| 15  | M2    | 0.31         | 0/1388  | 0.66        | 0/1866        |
| 15  | M3    | 0.31         | 0/1388  | 0.66        | 0/1866        |
| 15  | M4    | 0.31         | 0/1388  | 0.66        | 0/1866        |
| 16  | N1    | 0.31         | 0/1413  | 0.67        | 0/1898        |
| 16  | N2    | 0.30         | 0/1413  | 0.67        | 0/1898        |
| 16  | N3    | 0.31         | 0/1413  | 0.67        | 0/1898        |
| 16  | N4    | 0.31         | 0/1413  | 0.67        | 0/1898        |
| 17  | O1    | 0.34         | 0/2011  | 0.68        | 1/2715 (0.0%) |
| 17  | O2    | 0.34         | 0/2011  | 0.68        | 1/2715 (0.0%) |
| 17  | O3    | 0.34         | 0/2011  | 0.68        | 1/2715 (0.0%) |
| 17  | O4    | 0.34         | 0/2011  | 0.68        | 1/2715 (0.0%) |
| 18  | P1    | 0.49         | 0/910   | 0.62        | 0/1228        |
| 18  | P2    | 0.49         | 0/910   | 0.62        | 0/1228        |
| 18  | P3    | 0.49         | 0/910   | 0.62        | 0/1228        |
| 18  | P4    | 0.49         | 0/910   | 0.62        | 0/1228        |
| 19  | Q1    | 0.84         | 0/672   | 1.13        | 1/898 (0.1%)  |
| 19  | Q2    | 0.82         | 0/629   | 1.16        | 2/842 (0.2%)  |
| 19  | Q3    | 0.84         | 0/672   | 1.13        | 1/898 (0.1%)  |

| Mol | Chain | Bond lengths |                | Bond angles |                |
|-----|-------|--------------|----------------|-------------|----------------|
|     |       | RMSZ         | # Z  >5        | RMSZ        | # Z  >5        |
| 19  | Q4    | 0.82         | 0/629          | 1.16        | 2/842 (0.2%)   |
| 20  | R1    | 0.30         | 0/312          | 0.63        | 0/416          |
| 20  | R2    | 0.30         | 0/312          | 0.63        | 0/416          |
| 20  | R3    | 0.29         | 0/312          | 0.63        | 0/416          |
| 20  | R4    | 0.30         | 0/312          | 0.63        | 0/416          |
| 21  | S1    | 1.00         | 11/6081 (0.2%) | 1.17        | 30/8304 (0.4%) |
| 21  | S2    | 1.00         | 10/6081 (0.2%) | 1.17        | 30/8304 (0.4%) |
| 21  | S3    | 1.00         | 9/6081 (0.1%)  | 1.17        | 30/8304 (0.4%) |
| 21  | S4    | 1.00         | 11/6081 (0.2%) | 1.17        | 30/8304 (0.4%) |
| 22  | T1    | 0.30         | 0/2037         | 0.71        | 0/2749         |
| 22  | T2    | 0.31         | 0/2037         | 0.72        | 0/2749         |
| 22  | T3    | 0.31         | 0/2037         | 0.71        | 0/2749         |
| 22  | T4    | 0.31         | 0/2037         | 0.71        | 0/2749         |
| 23  | U1    | 0.49         | 0/3472         | 0.99        | 5/4714 (0.1%)  |
| 23  | U2    | 0.48         | 0/3472         | 0.99        | 5/4714 (0.1%)  |
| 23  | U3    | 0.49         | 0/3472         | 0.99        | 5/4714 (0.1%)  |
| 23  | U4    | 0.49         | 0/3472         | 0.99        | 5/4714 (0.1%)  |
| 24  | V1    | 0.49         | 0/3860         | 1.01        | 15/5224 (0.3%) |
| 24  | V2    | 0.49         | 0/3860         | 1.01        | 15/5224 (0.3%) |
| 24  | V3    | 0.49         | 0/3860         | 1.01        | 15/5224 (0.3%) |
| 24  | V4    | 0.49         | 0/3860         | 1.01        | 15/5224 (0.3%) |
| 25  | W1    | 0.41         | 0/2220         | 0.90        | 4/3028 (0.1%)  |
| 25  | W2    | 0.41         | 0/2220         | 0.90        | 4/3028 (0.1%)  |
| 25  | W3    | 0.41         | 0/2220         | 0.90        | 4/3028 (0.1%)  |
| 25  | W4    | 0.41         | 0/2220         | 0.89        | 4/3028 (0.1%)  |
| 26  | X1    | 0.42         | 0/4602         | 1.00        | 17/6246 (0.3%) |
| 26  | X2    | 0.42         | 0/4602         | 1.00        | 16/6246 (0.3%) |
| 26  | X3    | 0.42         | 0/4602         | 1.00        | 15/6246 (0.2%) |
| 26  | X4    | 0.42         | 0/4602         | 1.00        | 15/6246 (0.2%) |
| 27  | Y1    | 0.35         | 0/2499         | 0.95        | 7/3388 (0.2%)  |
| 27  | Y2    | 0.35         | 0/2499         | 0.95        | 7/3388 (0.2%)  |
| 27  | Y3    | 0.35         | 0/2499         | 0.95        | 7/3388 (0.2%)  |
| 27  | Y4    | 0.35         | 0/2499         | 0.95        | 7/3388 (0.2%)  |
| 28  | Z1    | 0.41         | 0/6730         | 0.86        | 3/9158 (0.0%)  |
| 28  | Z2    | 0.41         | 0/6730         | 0.86        | 3/9158 (0.0%)  |
| 28  | Z3    | 0.41         | 0/6730         | 0.86        | 3/9158 (0.0%)  |
| 28  | Z4    | 0.41         | 0/6730         | 0.86        | 3/9158 (0.0%)  |
| 29  | a1    | 0.98         | 3/2723 (0.1%)  | 0.84        | 1/3715 (0.0%)  |
| 29  | a2    | 0.98         | 3/2723 (0.1%)  | 0.84        | 1/3715 (0.0%)  |
| 29  | a3    | 0.98         | 3/2723 (0.1%)  | 0.84        | 1/3715 (0.0%)  |
| 29  | a4    | 0.98         | 3/2723 (0.1%)  | 0.84        | 1/3715 (0.0%)  |
| 30  | b1    | 0.46         | 0/2702         | 1.01        | 13/3689 (0.4%) |
| 30  | b2    | 0.46         | 0/2702         | 1.01        | 13/3689 (0.4%) |

| Mol | Chain | Bond lengths |                  | Bond angles |                   |
|-----|-------|--------------|------------------|-------------|-------------------|
|     |       | RMSZ         | # Z  >5          | RMSZ        | # Z  >5           |
| 30  | b3    | 0.46         | 0/2702           | 1.01        | 13/3689 (0.4%)    |
| 30  | b4    | 0.46         | 0/2702           | 1.01        | 13/3689 (0.4%)    |
| All | All   | 0.42         | 61/365761 (0.0%) | 0.70        | 391/495950 (0.1%) |

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|-----|-------|---------------------|---------------------|
| 1   | A1    | 0                   | 2                   |
| 1   | A3    | 0                   | 2                   |
| 2   | A2    | 0                   | 1                   |
| 2   | A4    | 0                   | 1                   |
| 23  | U1    | 0                   | 1                   |
| 23  | U2    | 0                   | 1                   |
| 23  | U3    | 0                   | 1                   |
| 23  | U4    | 0                   | 1                   |
| 24  | V1    | 0                   | 2                   |
| 24  | V2    | 0                   | 2                   |
| 24  | V3    | 0                   | 2                   |
| 24  | V4    | 0                   | 2                   |
| 28  | Z1    | 0                   | 2                   |
| 28  | Z2    | 0                   | 2                   |
| 28  | Z3    | 0                   | 2                   |
| 28  | Z4    | 0                   | 2                   |
| 30  | b1    | 0                   | 3                   |
| 30  | b2    | 0                   | 3                   |
| 30  | b3    | 0                   | 3                   |
| 30  | b4    | 0                   | 3                   |
| All | All   | 0                   | 38                  |

The worst 5 of 61 bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|-------|-------------|----------|
| 1   | A1    | 891 | GLY  | C-N   | 9.04  | 1.50        | 1.34     |
| 1   | A3    | 891 | GLY  | C-N   | 8.99  | 1.50        | 1.34     |
| 3   | A6    | 891 | GLY  | C-N   | 8.45  | 1.47        | 1.33     |
| 3   | A5    | 891 | GLY  | C-N   | 8.42  | 1.47        | 1.33     |
| 21  | S3    | 214 | ALA  | C-O   | -7.43 | 1.15        | 1.24     |

The worst 5 of 391 bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms  | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|--------|-------|-------------|----------|
| 21  | S4    | 131 | SER  | CA-C-N | 10.39 | 130.67      | 119.87   |
| 21  | S4    | 131 | SER  | C-N-CA | 10.39 | 130.67      | 119.87   |
| 21  | S2    | 131 | SER  | CA-C-N | 10.34 | 130.62      | 119.87   |
| 21  | S2    | 131 | SER  | C-N-CA | 10.34 | 130.62      | 119.87   |
| 21  | S1    | 131 | SER  | CA-C-N | 10.31 | 130.59      | 119.87   |

There are no chirality outliers.

5 of 38 planarity outliers are listed below:

| Mol | Chain | Res | Type | Group     |
|-----|-------|-----|------|-----------|
| 1   | A1    | 891 | GLY  | Mainchain |
| 1   | A1    | 976 | LEU  | Peptide   |
| 2   | A2    | 699 | SER  | Peptide   |
| 1   | A3    | 891 | GLY  | Mainchain |
| 1   | A3    | 976 | LEU  | 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   | A1    | 9730  | 0        | 9629     | 542     | 0            |
| 1   | A3    | 9730  | 0        | 9573     | 2342    | 0            |
| 2   | A2    | 9946  | 0        | 9774     | 1876    | 0            |
| 2   | A4    | 9946  | 0        | 9656     | 5076    | 0            |
| 3   | A5    | 10030 | 0        | 9892     | 1575    | 0            |
| 3   | A6    | 10030 | 0        | 9732     | 6093    | 0            |
| 4   | B1    | 111   | 0        | 127      | 2       | 0            |
| 4   | B2    | 111   | 0        | 127      | 26      | 0            |
| 4   | B3    | 111   | 0        | 127      | 2       | 0            |
| 4   | B4    | 111   | 0        | 127      | 27      | 0            |
| 4   | B5    | 111   | 0        | 122      | 39      | 0            |
| 4   | B6    | 111   | 0        | 118      | 191     | 0            |
| 5   | C1    | 138   | 0        | 144      | 27      | 0            |
| 5   | C2    | 157   | 0        | 157      | 354     | 0            |
| 5   | C3    | 138   | 0        | 144      | 8       | 0            |
| 5   | C4    | 157   | 0        | 164      | 63      | 0            |
| 5   | C5    | 138   | 0        | 144      | 23      | 0            |
| 5   | C6    | 138   | 0        | 144      | 22      | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 6   | D1    | 5034  | 0        | 4999     | 1044    | 0            |
| 6   | D2    | 5034  | 0        | 5029     | 85      | 0            |
| 6   | D3    | 5034  | 0        | 4965     | 1798    | 0            |
| 6   | D4    | 5034  | 0        | 5030     | 96      | 0            |
| 6   | D5    | 5034  | 0        | 5030     | 59      | 0            |
| 6   | D6    | 5034  | 0        | 5027     | 88      | 0            |
| 6   | D7    | 5034  | 0        | 5027     | 131     | 0            |
| 7   | E1    | 63    | 0        | 65       | 2       | 0            |
| 7   | E2    | 63    | 0        | 65       | 2       | 0            |
| 7   | E3    | 63    | 0        | 65       | 2       | 0            |
| 7   | E4    | 63    | 0        | 65       | 2       | 0            |
| 7   | E5    | 63    | 0        | 65       | 2       | 0            |
| 7   | E6    | 63    | 0        | 65       | 2       | 0            |
| 7   | E7    | 63    | 0        | 65       | 2       | 0            |
| 8   | F1    | 12779 | 0        | 12916    | 382     | 0            |
| 8   | F2    | 12779 | 0        | 12917    | 133     | 0            |
| 9   | G1    | 438   | 0        | 404      | 212     | 0            |
| 9   | G2    | 438   | 0        | 412      | 74      | 0            |
| 10  | H1    | 94    | 0        | 84       | 0       | 0            |
| 10  | H2    | 94    | 0        | 84       | 0       | 0            |
| 11  | I1    | 12307 | 0        | 12271    | 3218    | 0            |
| 11  | I2    | 12307 | 0        | 12280    | 3272    | 0            |
| 11  | I3    | 12307 | 0        | 12354    | 477     | 0            |
| 11  | I4    | 12307 | 0        | 12360    | 283     | 0            |
| 11  | I5    | 12307 | 0        | 12347    | 554     | 0            |
| 12  | J1    | 504   | 0        | 485      | 55      | 0            |
| 12  | J2    | 504   | 0        | 485      | 54      | 0            |
| 12  | J3    | 504   | 0        | 487      | 32      | 0            |
| 12  | J4    | 504   | 0        | 487      | 30      | 0            |
| 12  | J5    | 504   | 0        | 487      | 31      | 0            |
| 13  | K1    | 73    | 0        | 82       | 0       | 0            |
| 13  | K2    | 73    | 0        | 82       | 0       | 0            |
| 13  | K3    | 73    | 0        | 82       | 0       | 0            |
| 13  | K4    | 73    | 0        | 82       | 0       | 0            |
| 13  | K5    | 73    | 0        | 82       | 0       | 0            |
| 14  | L1    | 15    | 0        | 11       | 0       | 0            |
| 14  | L2    | 15    | 0        | 11       | 0       | 0            |
| 14  | L3    | 15    | 0        | 11       | 0       | 0            |
| 14  | L4    | 15    | 0        | 11       | 0       | 0            |
| 14  | L5    | 15    | 0        | 11       | 0       | 0            |
| 15  | M1    | 1372  | 0        | 1333     | 733     | 0            |
| 15  | M2    | 1372  | 0        | 1361     | 52      | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 15  | M3    | 1372  | 0        | 1333     | 577     | 0            |
| 15  | M4    | 1372  | 0        | 1363     | 4       | 0            |
| 16  | N1    | 1401  | 0        | 1375     | 720     | 0            |
| 16  | N2    | 1401  | 0        | 1397     | 77      | 0            |
| 16  | N3    | 1401  | 0        | 1383     | 617     | 0            |
| 16  | N4    | 1401  | 0        | 1398     | 10      | 0            |
| 17  | O1    | 1971  | 0        | 1943     | 923     | 0            |
| 17  | O2    | 1971  | 0        | 1962     | 421     | 0            |
| 17  | O3    | 1971  | 0        | 1935     | 1245    | 0            |
| 17  | O4    | 1971  | 0        | 1961     | 237     | 0            |
| 18  | P1    | 900   | 0        | 910      | 61      | 0            |
| 18  | P2    | 900   | 0        | 910      | 43      | 0            |
| 18  | P3    | 900   | 0        | 908      | 150     | 0            |
| 18  | P4    | 900   | 0        | 907      | 120     | 0            |
| 19  | Q1    | 658   | 0        | 645      | 3       | 0            |
| 19  | Q2    | 616   | 0        | 600      | 3       | 0            |
| 19  | Q3    | 658   | 0        | 645      | 3       | 0            |
| 19  | Q4    | 616   | 0        | 600      | 3       | 0            |
| 20  | R1    | 311   | 0        | 315      | 351     | 0            |
| 20  | R2    | 311   | 0        | 334      | 2       | 0            |
| 20  | R3    | 311   | 0        | 313      | 469     | 0            |
| 20  | R4    | 311   | 0        | 334      | 2       | 0            |
| 21  | S1    | 6013  | 0        | 4979     | 331     | 0            |
| 21  | S2    | 6013  | 0        | 4980     | 341     | 0            |
| 21  | S3    | 6013  | 0        | 4983     | 251     | 0            |
| 21  | S4    | 6013  | 0        | 4979     | 247     | 0            |
| 22  | T1    | 1993  | 0        | 1981     | 70      | 0            |
| 22  | T2    | 1993  | 0        | 1981     | 75      | 0            |
| 22  | T3    | 1993  | 0        | 1981     | 106     | 0            |
| 22  | T4    | 1993  | 0        | 1981     | 75      | 0            |
| 23  | U1    | 3404  | 0        | 3378     | 87      | 0            |
| 23  | U2    | 3404  | 0        | 3378     | 86      | 0            |
| 23  | U3    | 3404  | 0        | 3377     | 140     | 0            |
| 23  | U4    | 3404  | 0        | 3378     | 83      | 0            |
| 24  | V1    | 3805  | 0        | 3499     | 110     | 0            |
| 24  | V2    | 3805  | 0        | 3499     | 111     | 0            |
| 24  | V3    | 3805  | 0        | 3499     | 110     | 0            |
| 24  | V4    | 3805  | 0        | 3499     | 115     | 0            |
| 25  | W1    | 2160  | 0        | 2096     | 65      | 0            |
| 25  | W2    | 2160  | 0        | 2096     | 76      | 0            |
| 25  | W3    | 2160  | 0        | 2096     | 62      | 0            |
| 25  | W4    | 2160  | 0        | 2096     | 129     | 0            |

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| Mol | Chain | Non-H  | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|--------|----------|----------|---------|--------------|
| 26  | X1    | 4535   | 0        | 4064     | 375     | 0            |
| 26  | X2    | 4535   | 0        | 4071     | 162     | 0            |
| 26  | X3    | 4535   | 0        | 4068     | 239     | 0            |
| 26  | X4    | 4535   | 0        | 4071     | 154     | 0            |
| 27  | Y1    | 2438   | 0        | 2378     | 75      | 0            |
| 27  | Y2    | 2438   | 0        | 2378     | 73      | 0            |
| 27  | Y3    | 2438   | 0        | 2378     | 82      | 0            |
| 27  | Y4    | 2438   | 0        | 2378     | 74      | 0            |
| 28  | Z1    | 6622   | 0        | 5893     | 609     | 0            |
| 28  | Z2    | 6622   | 0        | 5883     | 1038    | 0            |
| 28  | Z3    | 6622   | 0        | 5893     | 616     | 0            |
| 28  | Z4    | 6622   | 0        | 5885     | 853     | 0            |
| 29  | a1    | 2587   | 0        | 2488     | 38      | 0            |
| 29  | a2    | 2587   | 0        | 2488     | 85      | 0            |
| 29  | a3    | 2587   | 0        | 2486     | 74      | 0            |
| 29  | a4    | 2587   | 0        | 2488     | 38      | 0            |
| 30  | b1    | 2638   | 0        | 2573     | 597     | 0            |
| 30  | b2    | 2638   | 0        | 2573     | 606     | 0            |
| 30  | b3    | 2638   | 0        | 2573     | 604     | 0            |
| 30  | b4    | 2638   | 0        | 2573     | 612     | 0            |
| All | All   | 358888 | 0        | 346271   | 25637   | 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 36.

The worst 5 of 25637 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) |
|--------------------|----------------------|--------------------------|-------------------|
| 11:I2:950:LEU:HD11 | 16:N3:410:MET:SD     | 1.20                     | 1.72              |
| 3:A6:444:ARG:HG2   | 6:D3:737:PHE:CZ      | 1.21                     | 1.69              |
| 27:Y1:41:ASP:HB3   | 29:a1:231[B]:HIS:CE1 | 1.17                     | 1.69              |
| 2:A4:886:PHE:CZ    | 3:A6:176:LEU:HG      | 1.26                     | 1.68              |
| 11:I1:833:PHE:CD2  | 17:O1:238:ALA:HA     | 1.27                     | 1.68              |

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   | A1    | 1211/1316 (92%) | 1172 (97%) | 39 (3%) | 0        | 100         | 100 |
| 1   | A3    | 1211/1316 (92%) | 1172 (97%) | 39 (3%) | 0        | 100         | 100 |
| 2   | A2    | 1255/1328 (94%) | 1183 (94%) | 54 (4%) | 18 (1%)  | 9           | 40  |
| 2   | A4    | 1255/1328 (94%) | 1182 (94%) | 55 (4%) | 18 (1%)  | 9           | 40  |
| 3   | A5    | 1258/1330 (95%) | 1224 (97%) | 34 (3%) | 0        | 100         | 100 |
| 3   | A6    | 1258/1330 (95%) | 1224 (97%) | 34 (3%) | 0        | 100         | 100 |
| 4   | B1    | 12/14 (86%)     | 11 (92%)   | 1 (8%)  | 0        | 100         | 100 |
| 4   | B2    | 12/14 (86%)     | 11 (92%)   | 1 (8%)  | 0        | 100         | 100 |
| 4   | B3    | 12/14 (86%)     | 11 (92%)   | 1 (8%)  | 0        | 100         | 100 |
| 4   | B4    | 12/14 (86%)     | 11 (92%)   | 1 (8%)  | 0        | 100         | 100 |
| 4   | B5    | 12/14 (86%)     | 11 (92%)   | 1 (8%)  | 0        | 100         | 100 |
| 4   | B6    | 12/14 (86%)     | 11 (92%)   | 1 (8%)  | 0        | 100         | 100 |
| 5   | C1    | 15/19 (79%)     | 11 (73%)   | 4 (27%) | 0        | 100         | 100 |
| 5   | C2    | 17/19 (90%)     | 12 (71%)   | 5 (29%) | 0        | 100         | 100 |
| 5   | C3    | 15/19 (79%)     | 11 (73%)   | 4 (27%) | 0        | 100         | 100 |
| 5   | C4    | 17/19 (90%)     | 12 (71%)   | 5 (29%) | 0        | 100         | 100 |
| 5   | C5    | 15/19 (79%)     | 11 (73%)   | 4 (27%) | 0        | 100         | 100 |
| 5   | C6    | 15/19 (79%)     | 11 (73%)   | 4 (27%) | 0        | 100         | 100 |
| 6   | D1    | 615/644 (96%)   | 604 (98%)  | 11 (2%) | 0        | 100         | 100 |
| 6   | D2    | 615/644 (96%)   | 604 (98%)  | 11 (2%) | 0        | 100         | 100 |
| 6   | D3    | 615/644 (96%)   | 604 (98%)  | 11 (2%) | 0        | 100         | 100 |
| 6   | D4    | 615/644 (96%)   | 604 (98%)  | 11 (2%) | 0        | 100         | 100 |
| 6   | D5    | 615/644 (96%)   | 604 (98%)  | 11 (2%) | 0        | 100         | 100 |
| 6   | D6    | 615/644 (96%)   | 604 (98%)  | 11 (2%) | 0        | 100         | 100 |
| 6   | D7    | 615/644 (96%)   | 604 (98%)  | 11 (2%) | 0        | 100         | 100 |

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| Mol | Chain | Analysed        | Favoured   | Allowed | Outliers | Percentiles |     |
|-----|-------|-----------------|------------|---------|----------|-------------|-----|
| 7   | E1    | 6/8 (75%)       | 6 (100%)   | 0       | 0        | 100         | 100 |
| 7   | E2    | 6/8 (75%)       | 6 (100%)   | 0       | 0        | 100         | 100 |
| 7   | E3    | 6/8 (75%)       | 6 (100%)   | 0       | 0        | 100         | 100 |
| 7   | E4    | 6/8 (75%)       | 6 (100%)   | 0       | 0        | 100         | 100 |
| 7   | E5    | 6/8 (75%)       | 6 (100%)   | 0       | 0        | 100         | 100 |
| 7   | E6    | 6/8 (75%)       | 6 (100%)   | 0       | 0        | 100         | 100 |
| 7   | E7    | 6/8 (75%)       | 6 (100%)   | 0       | 0        | 100         | 100 |
| 8   | F1    | 1611/1858 (87%) | 1589 (99%) | 22 (1%) | 0        | 100         | 100 |
| 8   | F2    | 1611/1858 (87%) | 1589 (99%) | 22 (1%) | 0        | 100         | 100 |
| 9   | G1    | 51/53 (96%)     | 51 (100%)  | 0       | 0        | 100         | 100 |
| 9   | G2    | 51/53 (96%)     | 51 (100%)  | 0       | 0        | 100         | 100 |
| 10  | H1    | 11/13 (85%)     | 7 (64%)    | 4 (36%) | 0        | 100         | 100 |
| 10  | H2    | 11/13 (85%)     | 7 (64%)    | 4 (36%) | 0        | 100         | 100 |
| 11  | I1    | 1508/1756 (86%) | 1491 (99%) | 17 (1%) | 0        | 100         | 100 |
| 11  | I2    | 1508/1756 (86%) | 1491 (99%) | 17 (1%) | 0        | 100         | 100 |
| 11  | I3    | 1508/1756 (86%) | 1491 (99%) | 17 (1%) | 0        | 100         | 100 |
| 11  | I4    | 1508/1756 (86%) | 1491 (99%) | 17 (1%) | 0        | 100         | 100 |
| 11  | I5    | 1508/1756 (86%) | 1491 (99%) | 17 (1%) | 0        | 100         | 100 |
| 12  | J1    | 61/63 (97%)     | 61 (100%)  | 0       | 0        | 100         | 100 |
| 12  | J2    | 61/63 (97%)     | 61 (100%)  | 0       | 0        | 100         | 100 |
| 12  | J3    | 61/63 (97%)     | 61 (100%)  | 0       | 0        | 100         | 100 |
| 12  | J4    | 61/63 (97%)     | 61 (100%)  | 0       | 0        | 100         | 100 |
| 12  | J5    | 61/63 (97%)     | 61 (100%)  | 0       | 0        | 100         | 100 |
| 13  | K1    | 7/9 (78%)       | 5 (71%)    | 2 (29%) | 0        | 100         | 100 |
| 13  | K2    | 7/9 (78%)       | 5 (71%)    | 2 (29%) | 0        | 100         | 100 |
| 13  | K3    | 7/9 (78%)       | 5 (71%)    | 2 (29%) | 0        | 100         | 100 |
| 13  | K4    | 7/9 (78%)       | 5 (71%)    | 2 (29%) | 0        | 100         | 100 |
| 13  | K5    | 7/9 (78%)       | 5 (71%)    | 2 (29%) | 0        | 100         | 100 |
| 15  | M1    | 165/183 (90%)   | 158 (96%)  | 7 (4%)  | 0        | 100         | 100 |
| 15  | M2    | 165/183 (90%)   | 158 (96%)  | 7 (4%)  | 0        | 100         | 100 |
| 15  | M3    | 165/183 (90%)   | 158 (96%)  | 7 (4%)  | 0        | 100         | 100 |

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| Mol | Chain | Analysed       | Favoured  | Allowed  | Outliers | Percentiles |     |
|-----|-------|----------------|-----------|----------|----------|-------------|-----|
| 15  | M4    | 165/183 (90%)  | 158 (96%) | 7 (4%)   | 0        | 100         | 100 |
| 16  | N1    | 174/222 (78%)  | 172 (99%) | 2 (1%)   | 0        | 100         | 100 |
| 16  | N2    | 174/222 (78%)  | 172 (99%) | 2 (1%)   | 0        | 100         | 100 |
| 16  | N3    | 174/222 (78%)  | 172 (99%) | 2 (1%)   | 0        | 100         | 100 |
| 16  | N4    | 174/222 (78%)  | 172 (99%) | 2 (1%)   | 0        | 100         | 100 |
| 17  | O1    | 239/241 (99%)  | 213 (89%) | 26 (11%) | 0        | 100         | 100 |
| 17  | O2    | 239/241 (99%)  | 212 (89%) | 27 (11%) | 0        | 100         | 100 |
| 17  | O3    | 239/241 (99%)  | 213 (89%) | 26 (11%) | 0        | 100         | 100 |
| 17  | O4    | 239/241 (99%)  | 213 (89%) | 26 (11%) | 0        | 100         | 100 |
| 18  | P1    | 115/116 (99%)  | 114 (99%) | 1 (1%)   | 0        | 100         | 100 |
| 18  | P2    | 115/116 (99%)  | 114 (99%) | 1 (1%)   | 0        | 100         | 100 |
| 18  | P3    | 115/116 (99%)  | 114 (99%) | 1 (1%)   | 0        | 100         | 100 |
| 18  | P4    | 115/116 (99%)  | 114 (99%) | 1 (1%)   | 0        | 100         | 100 |
| 19  | Q1    | 83/84 (99%)    | 81 (98%)  | 2 (2%)   | 0        | 100         | 100 |
| 19  | Q2    | 79/84 (94%)    | 77 (98%)  | 2 (2%)   | 0        | 100         | 100 |
| 19  | Q3    | 83/84 (99%)    | 81 (98%)  | 2 (2%)   | 0        | 100         | 100 |
| 19  | Q4    | 79/84 (94%)    | 77 (98%)  | 2 (2%)   | 0        | 100         | 100 |
| 20  | R1    | 38/40 (95%)    | 31 (82%)  | 7 (18%)  | 0        | 100         | 100 |
| 20  | R2    | 38/40 (95%)    | 31 (82%)  | 7 (18%)  | 0        | 100         | 100 |
| 20  | R3    | 38/40 (95%)    | 31 (82%)  | 7 (18%)  | 0        | 100         | 100 |
| 20  | R4    | 38/40 (95%)    | 31 (82%)  | 7 (18%)  | 0        | 100         | 100 |
| 21  | S1    | 874/1156 (76%) | 784 (90%) | 74 (8%)  | 16 (2%)  | 6           | 34  |
| 21  | S2    | 874/1156 (76%) | 784 (90%) | 74 (8%)  | 16 (2%)  | 6           | 34  |
| 21  | S3    | 874/1156 (76%) | 784 (90%) | 74 (8%)  | 16 (2%)  | 6           | 34  |
| 21  | S4    | 874/1156 (76%) | 784 (90%) | 74 (8%)  | 16 (2%)  | 6           | 34  |
| 22  | T1    | 243/258 (94%)  | 235 (97%) | 8 (3%)   | 0        | 100         | 100 |
| 22  | T2    | 243/258 (94%)  | 234 (96%) | 9 (4%)   | 0        | 100         | 100 |
| 22  | T3    | 243/258 (94%)  | 234 (96%) | 9 (4%)   | 0        | 100         | 100 |
| 22  | T4    | 243/258 (94%)  | 234 (96%) | 9 (4%)   | 0        | 100         | 100 |
| 23  | U1    | 413/436 (95%)  | 368 (89%) | 34 (8%)  | 11 (3%)  | 4           | 25  |
| 23  | U2    | 413/436 (95%)  | 368 (89%) | 34 (8%)  | 11 (3%)  | 4           | 25  |

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| Mol | Chain | Analysed          | Favoured    | Allowed   | Outliers | Percentiles |     |
|-----|-------|-------------------|-------------|-----------|----------|-------------|-----|
| 23  | U3    | 413/436 (95%)     | 368 (89%)   | 34 (8%)   | 11 (3%)  | 4           | 25  |
| 23  | U4    | 413/436 (95%)     | 368 (89%)   | 34 (8%)   | 11 (3%)  | 4           | 25  |
| 24  | V1    | 491/621 (79%)     | 451 (92%)   | 30 (6%)   | 10 (2%)  | 6           | 31  |
| 24  | V2    | 491/621 (79%)     | 451 (92%)   | 30 (6%)   | 10 (2%)  | 6           | 31  |
| 24  | V3    | 491/621 (79%)     | 451 (92%)   | 30 (6%)   | 10 (2%)  | 6           | 31  |
| 24  | V4    | 491/621 (79%)     | 451 (92%)   | 30 (6%)   | 10 (2%)  | 6           | 31  |
| 25  | W1    | 270/286 (94%)     | 228 (84%)   | 36 (13%)  | 6 (2%)   | 5           | 29  |
| 25  | W2    | 270/286 (94%)     | 228 (84%)   | 36 (13%)  | 6 (2%)   | 5           | 29  |
| 25  | W3    | 270/286 (94%)     | 228 (84%)   | 36 (13%)  | 6 (2%)   | 5           | 29  |
| 25  | W4    | 270/286 (94%)     | 228 (84%)   | 36 (13%)  | 6 (2%)   | 5           | 29  |
| 26  | X1    | 592/698 (85%)     | 531 (90%)   | 51 (9%)   | 10 (2%)  | 7           | 36  |
| 26  | X2    | 592/698 (85%)     | 531 (90%)   | 51 (9%)   | 10 (2%)  | 7           | 36  |
| 26  | X3    | 592/698 (85%)     | 532 (90%)   | 50 (8%)   | 10 (2%)  | 7           | 36  |
| 26  | X4    | 592/698 (85%)     | 532 (90%)   | 50 (8%)   | 10 (2%)  | 7           | 36  |
| 27  | Y1    | 303/346 (88%)     | 266 (88%)   | 31 (10%)  | 6 (2%)   | 6           | 31  |
| 27  | Y2    | 303/346 (88%)     | 266 (88%)   | 31 (10%)  | 6 (2%)   | 6           | 31  |
| 27  | Y3    | 303/346 (88%)     | 266 (88%)   | 31 (10%)  | 6 (2%)   | 6           | 31  |
| 27  | Y4    | 303/346 (88%)     | 266 (88%)   | 31 (10%)  | 6 (2%)   | 6           | 31  |
| 28  | Z1    | 858/1037 (83%)    | 798 (93%)   | 50 (6%)   | 10 (1%)  | 10          | 44  |
| 28  | Z2    | 858/1037 (83%)    | 798 (93%)   | 49 (6%)   | 11 (1%)  | 9           | 42  |
| 28  | Z3    | 858/1037 (83%)    | 798 (93%)   | 49 (6%)   | 11 (1%)  | 9           | 42  |
| 28  | Z4    | 858/1037 (83%)    | 798 (93%)   | 49 (6%)   | 11 (1%)  | 9           | 42  |
| 29  | a1    | 334/380 (88%)     | 325 (97%)   | 9 (3%)    | 0        | 100         | 100 |
| 29  | a2    | 334/380 (88%)     | 325 (97%)   | 9 (3%)    | 0        | 100         | 100 |
| 29  | a3    | 334/380 (88%)     | 325 (97%)   | 9 (3%)    | 0        | 100         | 100 |
| 29  | a4    | 334/380 (88%)     | 325 (97%)   | 9 (3%)    | 0        | 100         | 100 |
| 30  | b1    | 335/391 (86%)     | 315 (94%)   | 19 (6%)   | 1 (0%)   | 36          | 72  |
| 30  | b2    | 335/391 (86%)     | 315 (94%)   | 19 (6%)   | 1 (0%)   | 36          | 72  |
| 30  | b3    | 335/391 (86%)     | 315 (94%)   | 19 (6%)   | 1 (0%)   | 36          | 72  |
| 30  | b4    | 335/391 (86%)     | 315 (94%)   | 19 (6%)   | 1 (0%)   | 36          | 72  |
| All | All   | 45287/51678 (88%) | 42910 (95%) | 2058 (4%) | 319 (1%) | 20          | 56  |

5 of 319 Ramachandran outliers are listed below:

| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 2   | A2    | 521  | ASN  |
| 2   | A2    | 1024 | ASP  |
| 2   | A2    | 1305 | ALA  |
| 2   | A2    | 1342 | SER  |
| 2   | A2    | 1345 | SER  |

### 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   | A1    | 1061/1111 (96%) | 1048 (99%) | 13 (1%)  | 63          | 75  |
| 1   | A3    | 1061/1111 (96%) | 1048 (99%) | 13 (1%)  | 63          | 75  |
| 2   | A2    | 1073/1107 (97%) | 978 (91%)  | 95 (9%)  | 9           | 28  |
| 2   | A4    | 1073/1107 (97%) | 978 (91%)  | 95 (9%)  | 9           | 28  |
| 3   | A5    | 1087/1111 (98%) | 1064 (98%) | 23 (2%)  | 47          | 65  |
| 3   | A6    | 1087/1111 (98%) | 1064 (98%) | 23 (2%)  | 47          | 65  |
| 4   | B1    | 12/12 (100%)    | 12 (100%)  | 0        | 100         | 100 |
| 4   | B2    | 12/12 (100%)    | 12 (100%)  | 0        | 100         | 100 |
| 4   | B3    | 12/12 (100%)    | 12 (100%)  | 0        | 100         | 100 |
| 4   | B4    | 12/12 (100%)    | 12 (100%)  | 0        | 100         | 100 |
| 4   | B5    | 12/12 (100%)    | 12 (100%)  | 0        | 100         | 100 |
| 4   | B6    | 12/12 (100%)    | 12 (100%)  | 0        | 100         | 100 |
| 5   | C1    | 17/19 (90%)     | 17 (100%)  | 0        | 100         | 100 |
| 5   | C2    | 19/19 (100%)    | 18 (95%)   | 1 (5%)   | 20          | 41  |
| 5   | C3    | 17/19 (90%)     | 17 (100%)  | 0        | 100         | 100 |
| 5   | C4    | 19/19 (100%)    | 18 (95%)   | 1 (5%)   | 20          | 41  |
| 5   | C5    | 17/19 (90%)     | 17 (100%)  | 0        | 100         | 100 |
| 5   | C6    | 17/19 (90%)     | 17 (100%)  | 0        | 100         | 100 |
| 6   | D1    | 554/575 (96%)   | 554 (100%) | 0        | 100         | 100 |

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| Mol | Chain | Analysed        | Rotameric   | Outliers | Percentiles |     |
|-----|-------|-----------------|-------------|----------|-------------|-----|
| 6   | D2    | 554/575 (96%)   | 554 (100%)  | 0        | 100         | 100 |
| 6   | D3    | 554/575 (96%)   | 554 (100%)  | 0        | 100         | 100 |
| 6   | D4    | 554/575 (96%)   | 554 (100%)  | 0        | 100         | 100 |
| 6   | D5    | 554/575 (96%)   | 554 (100%)  | 0        | 100         | 100 |
| 6   | D6    | 554/575 (96%)   | 554 (100%)  | 0        | 100         | 100 |
| 6   | D7    | 554/575 (96%)   | 554 (100%)  | 0        | 100         | 100 |
| 7   | E1    | 7/7 (100%)      | 7 (100%)    | 0        | 100         | 100 |
| 7   | E2    | 7/7 (100%)      | 7 (100%)    | 0        | 100         | 100 |
| 7   | E3    | 7/7 (100%)      | 7 (100%)    | 0        | 100         | 100 |
| 7   | E4    | 7/7 (100%)      | 7 (100%)    | 0        | 100         | 100 |
| 7   | E5    | 7/7 (100%)      | 7 (100%)    | 0        | 100         | 100 |
| 7   | E6    | 7/7 (100%)      | 7 (100%)    | 0        | 100         | 100 |
| 7   | E7    | 7/7 (100%)      | 7 (100%)    | 0        | 100         | 100 |
| 8   | F1    | 1350/1512 (89%) | 1350 (100%) | 0        | 100         | 100 |
| 8   | F2    | 1350/1512 (89%) | 1350 (100%) | 0        | 100         | 100 |
| 9   | G1    | 47/47 (100%)    | 47 (100%)   | 0        | 100         | 100 |
| 9   | G2    | 47/47 (100%)    | 47 (100%)   | 0        | 100         | 100 |
| 10  | H1    | 10/10 (100%)    | 10 (100%)   | 0        | 100         | 100 |
| 10  | H2    | 10/10 (100%)    | 10 (100%)   | 0        | 100         | 100 |
| 11  | I1    | 1340/1509 (89%) | 1339 (100%) | 1 (0%)   | 88          | 89  |
| 11  | I2    | 1340/1509 (89%) | 1339 (100%) | 1 (0%)   | 88          | 89  |
| 11  | I3    | 1340/1509 (89%) | 1339 (100%) | 1 (0%)   | 88          | 89  |
| 11  | I4    | 1340/1509 (89%) | 1339 (100%) | 1 (0%)   | 88          | 89  |
| 11  | I5    | 1340/1509 (89%) | 1339 (100%) | 1 (0%)   | 88          | 89  |
| 12  | J1    | 54/54 (100%)    | 54 (100%)   | 0        | 100         | 100 |
| 12  | J2    | 54/54 (100%)    | 54 (100%)   | 0        | 100         | 100 |
| 12  | J3    | 54/54 (100%)    | 54 (100%)   | 0        | 100         | 100 |
| 12  | J4    | 54/54 (100%)    | 54 (100%)   | 0        | 100         | 100 |
| 12  | J5    | 54/54 (100%)    | 54 (100%)   | 0        | 100         | 100 |
| 13  | K1    | 9/9 (100%)      | 9 (100%)    | 0        | 100         | 100 |
| 13  | K2    | 9/9 (100%)      | 9 (100%)    | 0        | 100         | 100 |

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| Mol | Chain | Analysed       | Rotameric  | Outliers | Percentiles |     |
|-----|-------|----------------|------------|----------|-------------|-----|
| 13  | K3    | 9/9 (100%)     | 9 (100%)   | 0        | 100         | 100 |
| 13  | K4    | 9/9 (100%)     | 9 (100%)   | 0        | 100         | 100 |
| 13  | K5    | 9/9 (100%)     | 9 (100%)   | 0        | 100         | 100 |
| 14  | L1    | 1/1 (100%)     | 1 (100%)   | 0        | 100         | 100 |
| 14  | L2    | 1/1 (100%)     | 1 (100%)   | 0        | 100         | 100 |
| 14  | L3    | 1/1 (100%)     | 1 (100%)   | 0        | 100         | 100 |
| 14  | L4    | 1/1 (100%)     | 1 (100%)   | 0        | 100         | 100 |
| 14  | L5    | 1/1 (100%)     | 1 (100%)   | 0        | 100         | 100 |
| 15  | M1    | 146/154 (95%)  | 146 (100%) | 0        | 100         | 100 |
| 15  | M2    | 146/154 (95%)  | 146 (100%) | 0        | 100         | 100 |
| 15  | M3    | 146/154 (95%)  | 146 (100%) | 0        | 100         | 100 |
| 15  | M4    | 146/154 (95%)  | 146 (100%) | 0        | 100         | 100 |
| 16  | N1    | 150/173 (87%)  | 150 (100%) | 0        | 100         | 100 |
| 16  | N2    | 150/173 (87%)  | 150 (100%) | 0        | 100         | 100 |
| 16  | N3    | 150/173 (87%)  | 150 (100%) | 0        | 100         | 100 |
| 16  | N4    | 150/173 (87%)  | 150 (100%) | 0        | 100         | 100 |
| 17  | O1    | 213/213 (100%) | 208 (98%)  | 5 (2%)   | 44          | 64  |
| 17  | O2    | 213/213 (100%) | 208 (98%)  | 5 (2%)   | 44          | 64  |
| 17  | O3    | 213/213 (100%) | 208 (98%)  | 5 (2%)   | 44          | 64  |
| 17  | O4    | 213/213 (100%) | 208 (98%)  | 5 (2%)   | 44          | 64  |
| 18  | P1    | 101/100 (101%) | 101 (100%) | 0        | 100         | 100 |
| 18  | P2    | 101/100 (101%) | 101 (100%) | 0        | 100         | 100 |
| 18  | P3    | 101/100 (101%) | 101 (100%) | 0        | 100         | 100 |
| 18  | P4    | 101/100 (101%) | 101 (100%) | 0        | 100         | 100 |
| 19  | Q1    | 70/69 (101%)   | 66 (94%)   | 4 (6%)   | 18          | 40  |
| 19  | Q2    | 63/69 (91%)    | 62 (98%)   | 1 (2%)   | 55          | 70  |
| 19  | Q3    | 70/69 (101%)   | 66 (94%)   | 4 (6%)   | 18          | 40  |
| 19  | Q4    | 63/69 (91%)    | 62 (98%)   | 1 (2%)   | 55          | 70  |
| 20  | R1    | 32/32 (100%)   | 32 (100%)  | 0        | 100         | 100 |
| 20  | R2    | 32/32 (100%)   | 32 (100%)  | 0        | 100         | 100 |
| 20  | R3    | 32/32 (100%)   | 32 (100%)  | 0        | 100         | 100 |

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| Mol | Chain | Analysed       | Rotameric | Outliers | Percentiles |     |
|-----|-------|----------------|-----------|----------|-------------|-----|
| 20  | R4    | 32/32 (100%)   | 32 (100%) | 0        | 100         | 100 |
| 21  | S1    | 488/1013 (48%) | 457 (94%) | 31 (6%)  | 16          | 37  |
| 21  | S2    | 488/1013 (48%) | 457 (94%) | 31 (6%)  | 16          | 37  |
| 21  | S3    | 488/1013 (48%) | 457 (94%) | 31 (6%)  | 16          | 37  |
| 21  | S4    | 488/1013 (48%) | 457 (94%) | 31 (6%)  | 16          | 37  |
| 22  | T1    | 211/231 (91%)  | 205 (97%) | 6 (3%)   | 38          | 60  |
| 22  | T2    | 211/231 (91%)  | 205 (97%) | 6 (3%)   | 38          | 60  |
| 22  | T3    | 211/231 (91%)  | 205 (97%) | 6 (3%)   | 38          | 60  |
| 22  | T4    | 211/231 (91%)  | 205 (97%) | 6 (3%)   | 38          | 60  |
| 23  | U1    | 387/402 (96%)  | 363 (94%) | 24 (6%)  | 16          | 38  |
| 23  | U2    | 387/402 (96%)  | 363 (94%) | 24 (6%)  | 16          | 38  |
| 23  | U3    | 387/402 (96%)  | 363 (94%) | 24 (6%)  | 16          | 38  |
| 23  | U4    | 387/402 (96%)  | 363 (94%) | 24 (6%)  | 16          | 38  |
| 24  | V1    | 367/567 (65%)  | 321 (88%) | 46 (12%) | 4           | 16  |
| 24  | V2    | 367/567 (65%)  | 321 (88%) | 46 (12%) | 4           | 16  |
| 24  | V3    | 367/567 (65%)  | 321 (88%) | 46 (12%) | 4           | 16  |
| 24  | V4    | 367/567 (65%)  | 321 (88%) | 46 (12%) | 4           | 16  |
| 25  | W1    | 233/243 (96%)  | 223 (96%) | 10 (4%)  | 26          | 47  |
| 25  | W2    | 233/243 (96%)  | 223 (96%) | 10 (4%)  | 26          | 47  |
| 25  | W3    | 233/243 (96%)  | 223 (96%) | 10 (4%)  | 26          | 47  |
| 25  | W4    | 233/243 (96%)  | 223 (96%) | 10 (4%)  | 26          | 47  |
| 26  | X1    | 424/628 (68%)  | 408 (96%) | 16 (4%)  | 29          | 50  |
| 26  | X2    | 424/628 (68%)  | 408 (96%) | 16 (4%)  | 29          | 50  |
| 26  | X3    | 424/628 (68%)  | 408 (96%) | 16 (4%)  | 29          | 50  |
| 26  | X4    | 424/628 (68%)  | 408 (96%) | 16 (4%)  | 29          | 50  |
| 27  | Y1    | 269/303 (89%)  | 258 (96%) | 11 (4%)  | 27          | 49  |
| 27  | Y2    | 269/303 (89%)  | 258 (96%) | 11 (4%)  | 27          | 49  |
| 27  | Y3    | 269/303 (89%)  | 258 (96%) | 11 (4%)  | 27          | 49  |
| 27  | Y4    | 269/303 (89%)  | 258 (96%) | 11 (4%)  | 27          | 49  |
| 28  | Z1    | 639/972 (66%)  | 611 (96%) | 28 (4%)  | 25          | 47  |
| 28  | Z2    | 639/972 (66%)  | 611 (96%) | 28 (4%)  | 25          | 47  |

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| Mol | Chain | Analysed          | Rotameric   | Outliers  | Percentiles |    |
|-----|-------|-------------------|-------------|-----------|-------------|----|
| 28  | Z3    | 639/972 (66%)     | 611 (96%)   | 28 (4%)   | 25          | 47 |
| 28  | Z4    | 639/972 (66%)     | 611 (96%)   | 28 (4%)   | 25          | 47 |
| 29  | a1    | 293/335 (88%)     | 289 (99%)   | 4 (1%)    | 59          | 72 |
| 29  | a2    | 293/335 (88%)     | 289 (99%)   | 4 (1%)    | 59          | 72 |
| 29  | a3    | 293/335 (88%)     | 289 (99%)   | 4 (1%)    | 59          | 72 |
| 29  | a4    | 293/335 (88%)     | 289 (99%)   | 4 (1%)    | 59          | 72 |
| 30  | b1    | 299/343 (87%)     | 278 (93%)   | 21 (7%)   | 14          | 35 |
| 30  | b2    | 299/343 (87%)     | 278 (93%)   | 21 (7%)   | 14          | 35 |
| 30  | b3    | 299/343 (87%)     | 278 (93%)   | 21 (7%)   | 14          | 35 |
| 30  | b4    | 299/343 (87%)     | 278 (93%)   | 21 (7%)   | 14          | 35 |
| All | All   | 37655/45033 (84%) | 36568 (97%) | 1087 (3%) | 38          | 58 |

5 of 1087 residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 28  | Z2    | 638  | VAL  |
| 28  | Z3    | 605  | ILE  |
| 28  | Z2    | 605  | ILE  |
| 30  | b2    | 258  | VAL  |
| 21  | S3    | 1066 | ILE  |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 560 such sidechains are listed below:

| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 28  | Z1    | 255  | GLN  |
| 28  | Z2    | 295  | ASN  |
| 28  | Z1    | 154  | ASN  |
| 29  | a3    | 66   | GLN  |
| 11  | I1    | 1182 | GLN  |

### 5.3.3 RNA ⓘ

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 oligosaccharides 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.

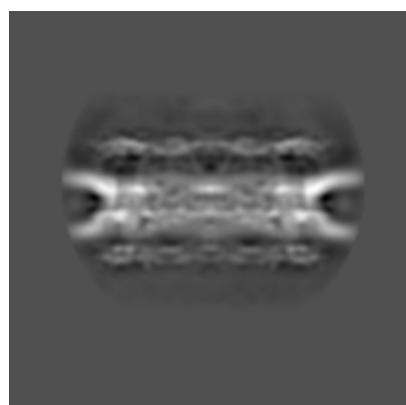
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-11967. These allow visual inspection of the internal detail of the map and identification of artifacts.

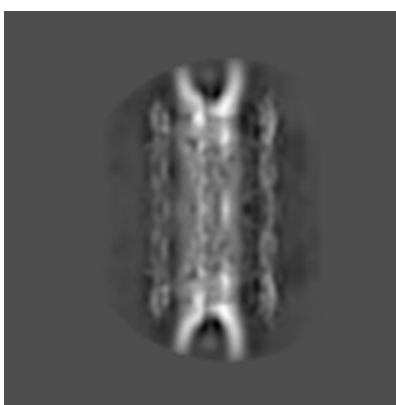
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

### 6.1 Orthogonal projections [i](#)

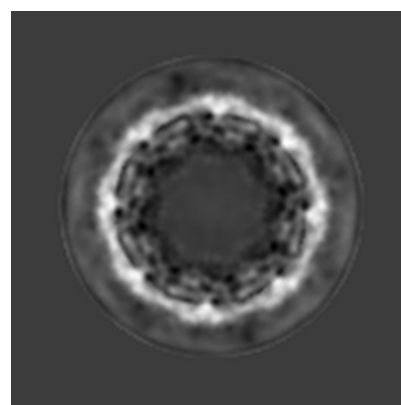
#### 6.1.1 Primary map



X



Y



Z

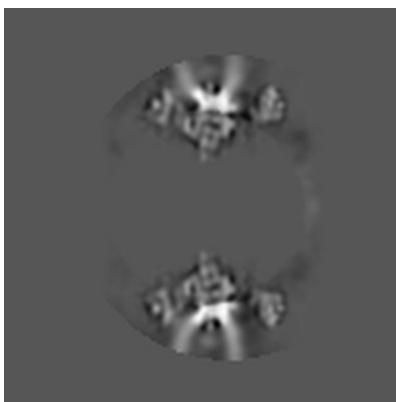
The images above show the map projected in three orthogonal directions.

### 6.2 Central slices [i](#)

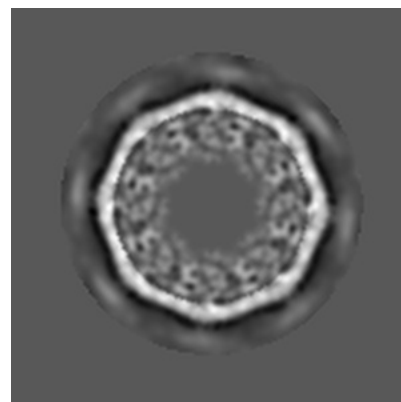
#### 6.2.1 Primary map



X Index: 72



Y Index: 72



Z Index: 72

The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

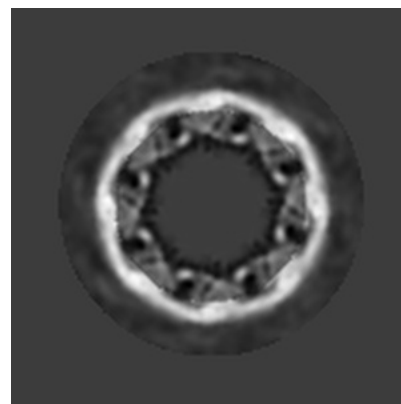
### 6.3.1 Primary map



X Index: 36



Y Index: 108

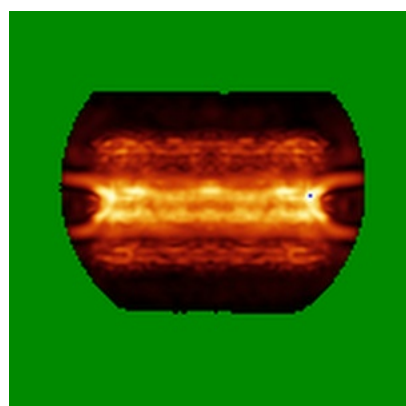


Z Index: 78

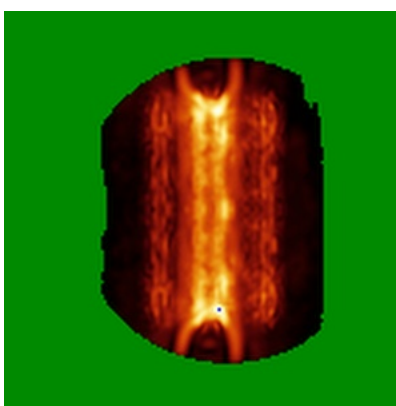
The images above show the largest variance slices of the map in three orthogonal directions.

## 6.4 Orthogonal standard-deviation projections (False-color) [i](#)

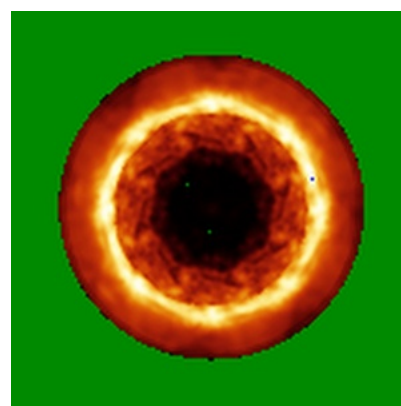
### 6.4.1 Primary map



X



Y



Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.07. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

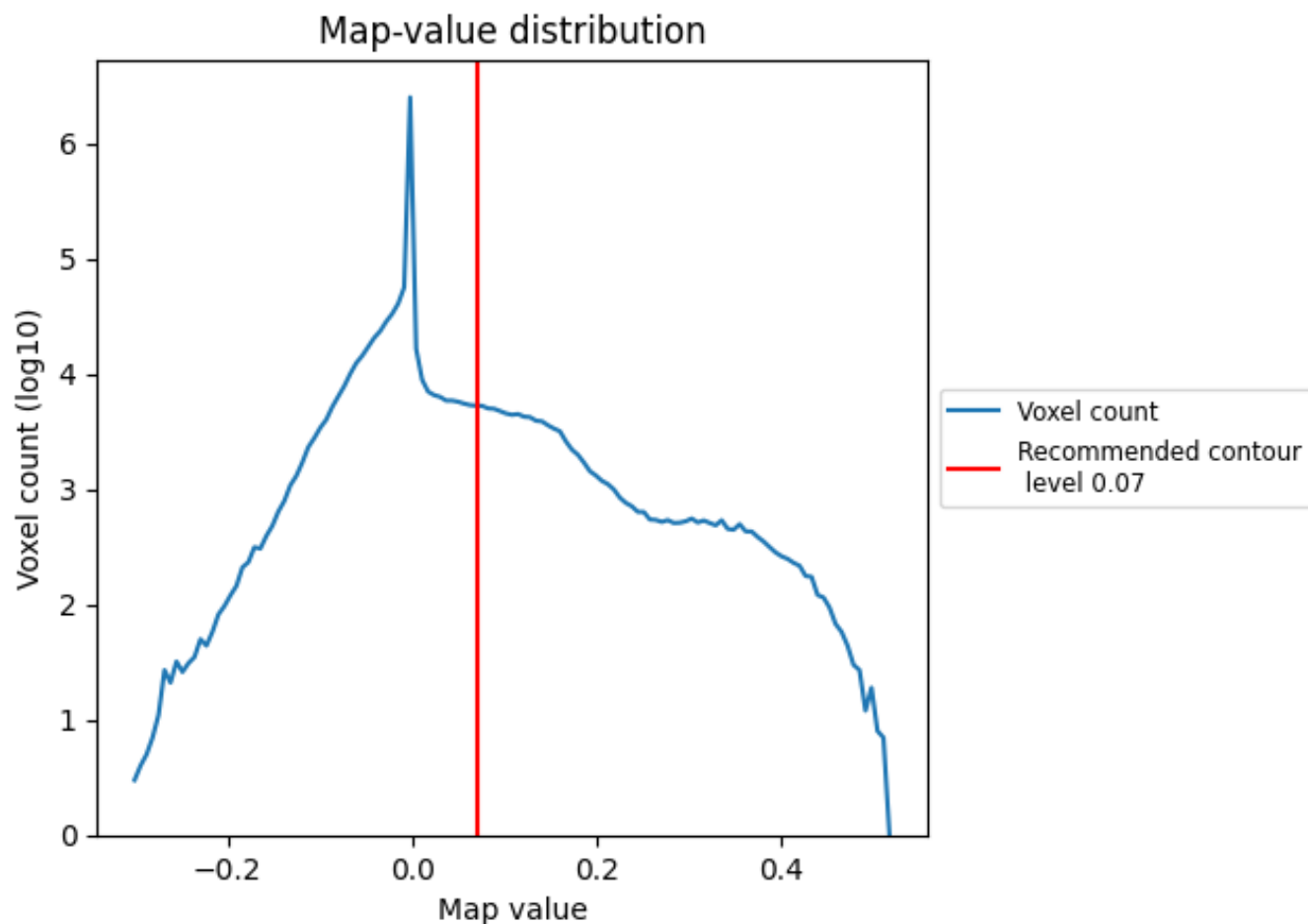
## 6.6 Mask visualisation [i](#)

This section was not generated. No masks/segmentation were deposited.

## 7 Map analysis [i](#)

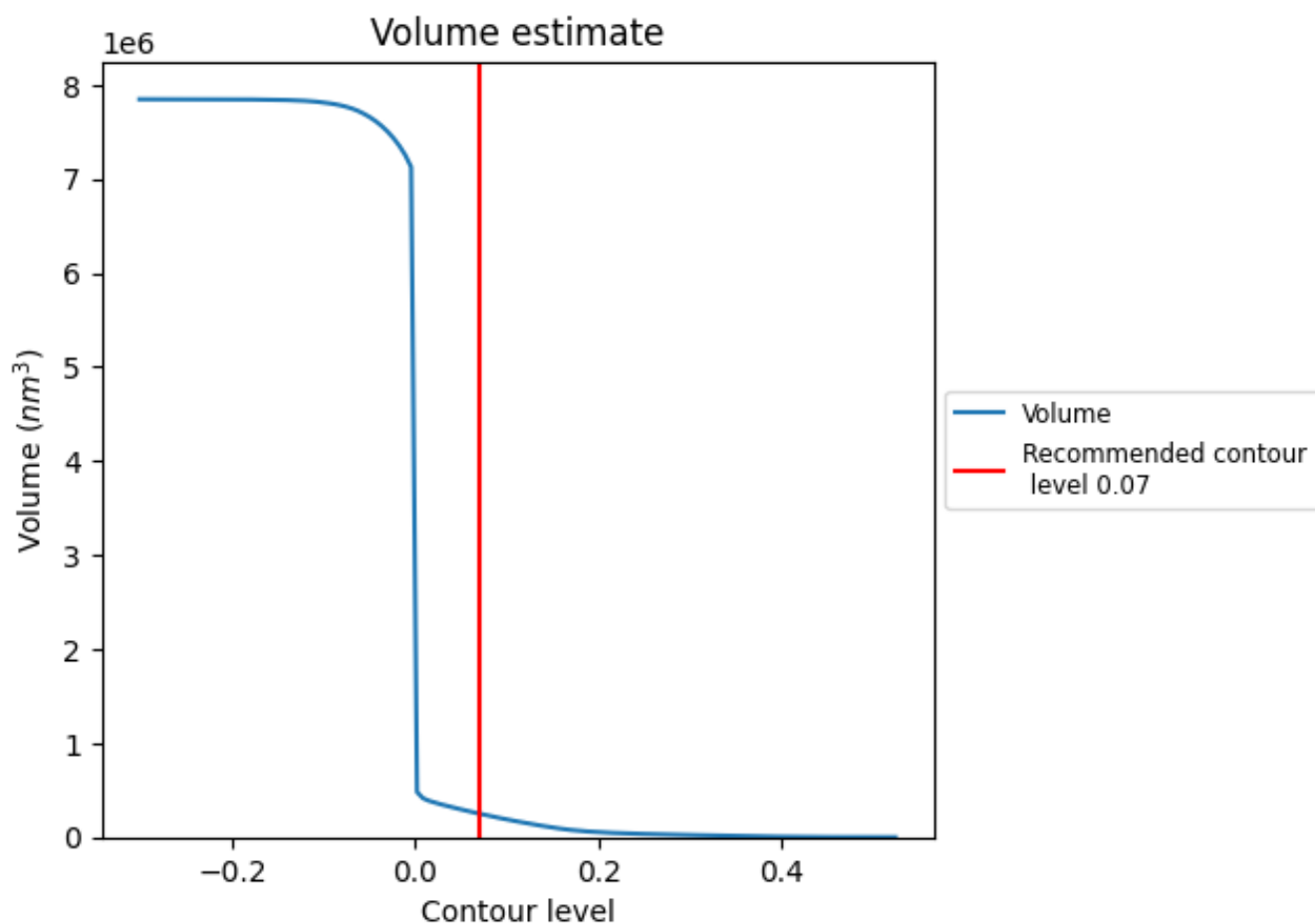
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

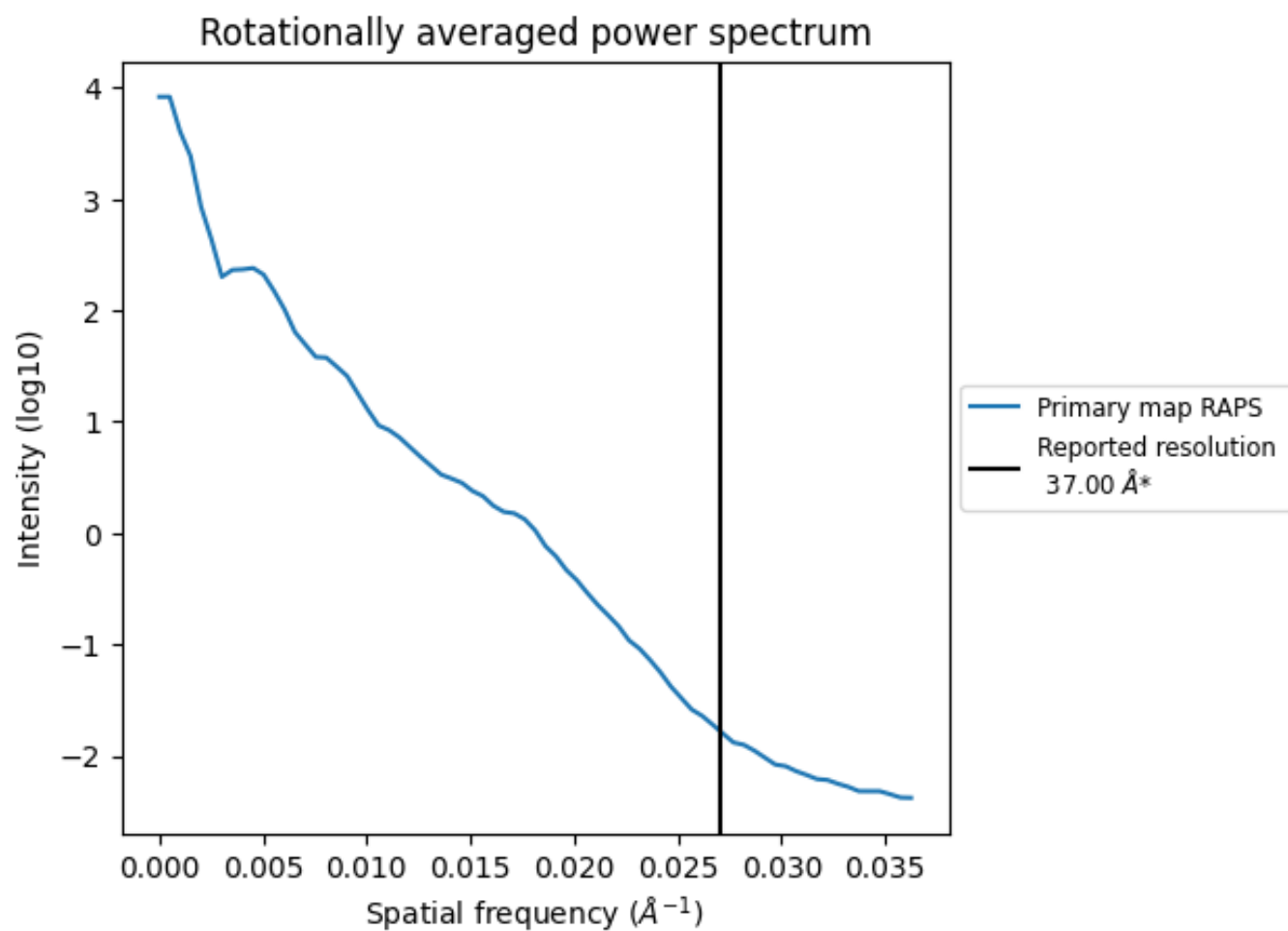
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 250411 nm<sup>3</sup>; this corresponds to an approximate mass of 226203 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

### 7.3 Rotationally averaged power spectrum ⓘ



\*Reported resolution corresponds to spatial frequency of 0.027 Å<sup>-1</sup>

## 8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

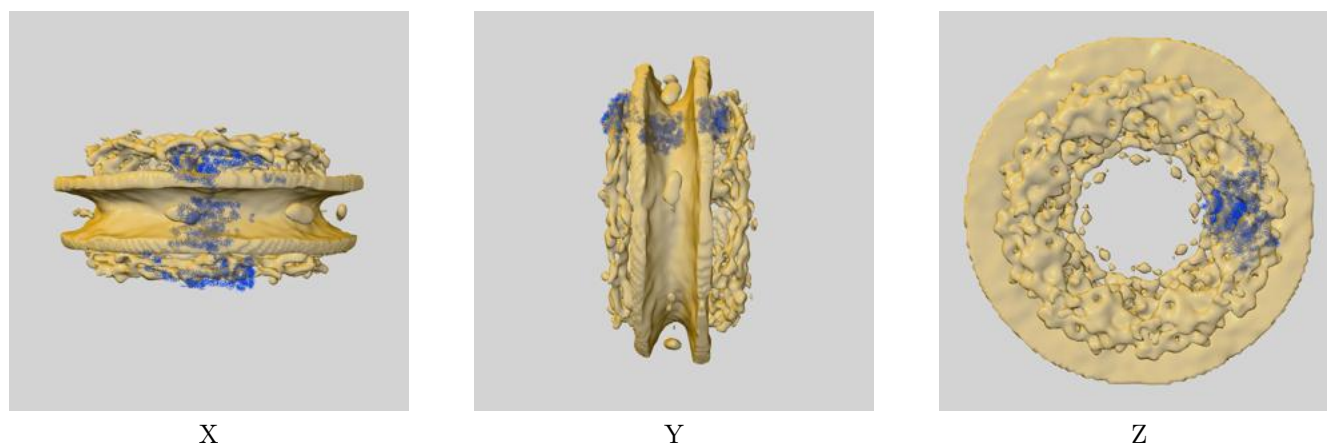


## 9 Map-model fit [i](#)

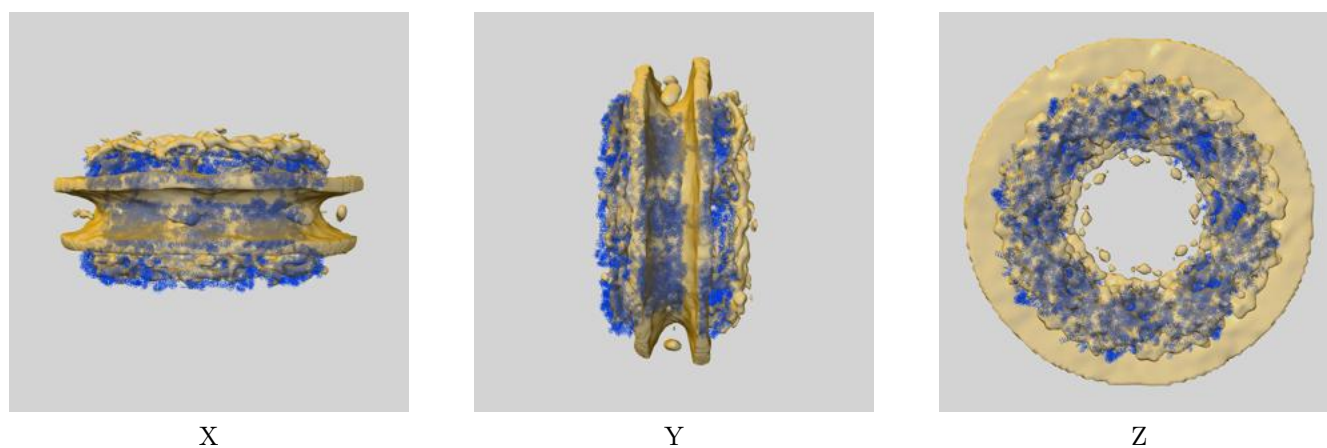
This section contains information regarding the fit between EMDB map EMD-11967 and PDB model 7TBK. Per-residue inclusion information can be found in section 3 on page 17.

### 9.1 Map-model overlays

#### 9.1.1 Map-model overlay [i](#)

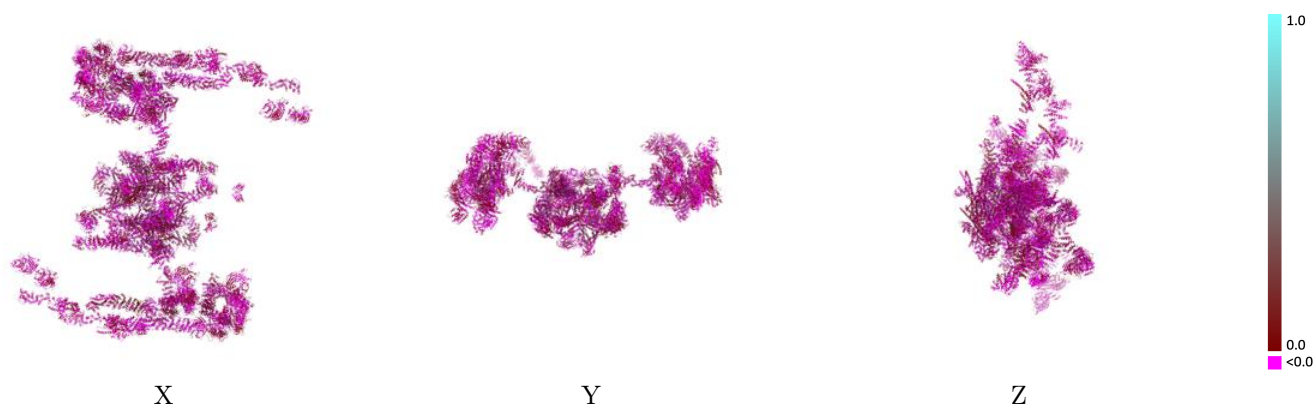


#### 9.1.2 Map-model assembly overlay [i](#)



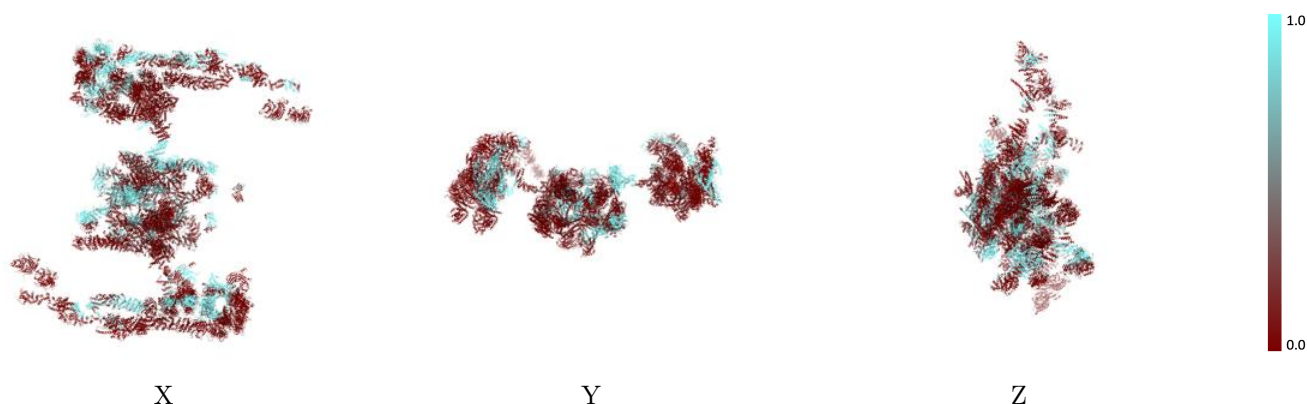
The images above show the 3D surface view of the map at the recommended contour level 0.07 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 9.2 Q-score mapped to coordinate model [i](#)



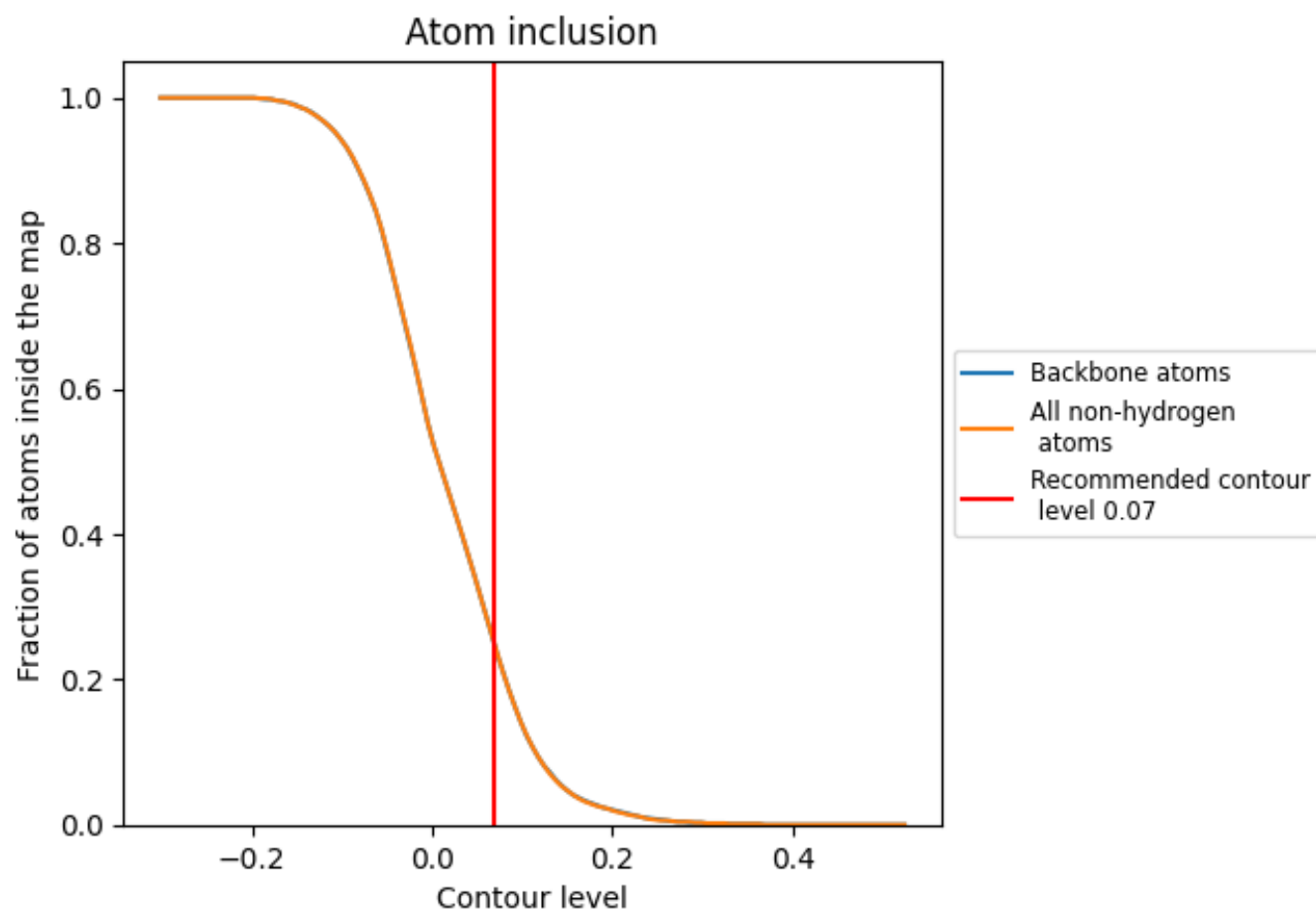
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

## 9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.07).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 24% of all backbone atoms, 25% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.07) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion | Q-score |
|-------|----------------|---------|
| All   | 0.2460         | -0.0040 |
| A1    | 0.6040         | 0.0060  |
| A2    | 0.4360         | -0.0060 |
| A3    | 0.1580         | -0.0070 |
| A4    | 0.0940         | -0.0080 |
| A5    | 0.4660         | -0.0130 |
| A6    | 0.1090         | 0.0020  |
| B1    | 0.2110         | -0.0340 |
| B2    | 1.0000         | 0.0600  |
| B3    | 0.0000         | -0.0480 |
| B4    | 0.0000         | -0.0250 |
| B5    | 0.9820         | 0.0030  |
| B6    | 0.0000         | 0.0230  |
| C1    | 1.0000         | 0.0130  |
| C2    | 0.7230         | -0.0560 |
| C3    | 0.0000         | 0.0310  |
| C4    | 0.8260         | 0.0830  |
| C5    | 0.7350         | 0.0160  |
| C6    | 0.0000         | -0.0060 |
| D1    | 0.3740         | 0.0130  |
| D2    | 0.4240         | 0.0040  |
| D3    | 0.2120         | -0.0180 |
| D4    | 0.0000         | 0.0010  |
| D5    | 0.5660         | 0.0120  |
| D6    | 0.1530         | -0.0060 |
| D7    | 0.0090         | -0.0410 |
| E1    | 0.7500         | 0.0310  |
| E2    | 0.7000         | 0.0010  |
| E3    | 0.0000         | -0.0090 |
| E4    | 0.0000         | 0.0130  |
| E5    | 0.8170         | 0.0230  |
| E6    | 0.0000         | -0.0450 |
| E7    | 0.0000         | -0.0300 |
| F1    | 0.2340         | -0.0000 |
| F2    | 0.0390         | -0.0200 |



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| Chain | Atom inclusion                                                                             | Q-score                                                                                     |
|-------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| G1    |  0.1100   |  -0.0010   |
| G2    |  0.0000   |  -0.0520   |
| H1    |  0.0640   |  -0.0260   |
| H2    |  0.0000   |  -0.0020   |
| I1    |  0.4410   |  0.0030    |
| I2    |  0.1600   |  0.0050    |
| I3    |  0.2320   |  -0.0020   |
| I4    |  0.6060   |  0.0080    |
| I5    |  0.0000   |  -0.0090   |
| J1    |  0.3230   |  -0.0120   |
| J2    |  0.3210   |  -0.0080   |
| J3    |  0.5030   |  0.0220    |
| J4    |  0.2210   |  -0.0060   |
| J5    |  0.0000   |  0.0420    |
| K1    |  0.0000   |  -0.0460   |
| K2    |  0.0000   |  -0.0150   |
| K3    |  0.0420   |  -0.0040   |
| K4    |  1.0000  |  0.0160   |
| K5    |  0.0000 |  -0.0190 |
| L1    |  1.0000 |  -0.0560 |
| L2    |  0.0000 |  -0.0040 |
| L3    |  0.0000 |  0.0010  |
| L4    |  1.0000 |  0.0020  |
| L5    |  0.0000 |  -0.0120 |
| M1    |  0.5520 |  0.0270  |
| M2    |  0.3890 |  0.0090  |
| M3    |  0.1730 |  -0.0070 |
| M4    |  0.0970 |  -0.0020 |
| N1    |  0.5490 |  0.0300  |
| N2    |  0.4510 |  -0.0000 |
| N3    |  0.3240 |  -0.0000 |
| N4    |  0.2380 |  0.0000  |
| O1    |  0.4370 |  0.0200  |
| O2    |  0.3110 |  -0.0040 |
| O3    |  0.1660 |  -0.0060 |
| O4    |  0.0170 |  -0.0250 |
| P1    |  0.2000 |  -0.0060 |
| P2    |  0.0030 |  -0.0140 |
| P3    |  0.0000 |  -0.0070 |
| P4    |  0.0000 |  -0.0010 |
| Q1    |  0.0340 |  -0.0260 |
| Q2    |  0.3240 |  -0.0100 |

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| Chain | Atom inclusion                                                                             | Q-score                                                                                     |
|-------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Q3    |  0.4780   |  0.0110    |
| Q4    |  0.7610   |  0.0450    |
| R1    |  0.2410   |  -0.0060   |
| R2    |  0.4420   |  -0.0130   |
| R3    |  0.4120   |  0.0460    |
| R4    |  0.3860   |  0.0200    |
| S1    |  0.1020   |  -0.0130   |
| S2    |  0.2030   |  -0.0010   |
| S3    |  0.1140   |  -0.0060   |
| S4    |  0.0030   |  -0.0200   |
| T1    |  0.5170   |  0.0000    |
| T2    |  0.2740   |  0.0140    |
| T3    |  0.2010   |  -0.0070   |
| T4    |  0.2240   |  -0.0020   |
| U1    |  0.3670   |  0.0040    |
| U2    |  0.0000   |  -0.0220   |
| U3    |  0.0000   |  -0.0270   |
| U4    |  0.3640   |  0.0110    |
| V1    |  0.5810  |  0.0200   |
| V2    |  0.0000 |  -0.0260 |
| V3    |  0.0190 |  -0.0340 |
| V4    |  0.6610 |  0.0360  |
| W1    |  0.3290 |  -0.0120 |
| W2    |  0.0000 |  -0.0310 |
| W3    |  0.0890 |  -0.0130 |
| W4    |  0.0650 |  -0.0150 |
| X1    |  0.3160 |  -0.0060 |
| X2    |  0.0030 |  -0.0240 |
| X3    |  0.0190 |  -0.0090 |
| X4    |  0.0070 |  -0.0370 |
| Y1    |  0.9160 |  0.0300  |
| Y2    |  0.1020 |  0.0060  |
| Y3    |  0.0000 |  0.0010  |
| Y4    |  0.0000 |  0.0210  |
| Z1    |  0.5980 |  0.0080  |
| Z2    |  0.0750 |  -0.0150 |
| Z3    |  0.1360 |  -0.0090 |
| Z4    |  0.4500 |  0.0080  |
| a1    |  0.2030 |  -0.0150 |
| a2    |  0.7300 |  0.0350  |
| a3    |  0.0000 |  -0.0130 |
| a4    |  0.0020 |  -0.0330 |

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| Chain | Atom inclusion                                                                           | Q-score                                                                                   |
|-------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| b1    |  0.3270 |  0.0130  |
| b2    |  0.0480 |  -0.0230 |
| b3    |  0.0000 |  -0.0360 |
| b4    |  0.6490 |  0.0080  |