



## wwPDB EM Validation Summary Report ⓘ

Jan 21, 2026 – 01:31 AM EST

PDB ID : 9MOG / pdb\_00009mog  
EMDB ID : EMD-48459  
Title : Structure of the distal part of the bacteriophage T4 tail  
Authors : Fokine, A.; Zhu, J.; Klose, T.; Vago, F.; Arnaud, C.; Wang, Z.; Khare, B.;  
Rossmann, M.G.; Chen, Z.; Sun, L.; Fang, Q.; Kuhn, R.; Rao, V.B.  
Deposited on : 2024-12-26  
Resolution : 3.60 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.dev129  
MolProbity : 4-5-2 with Phenix2.0  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
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) : 2.47

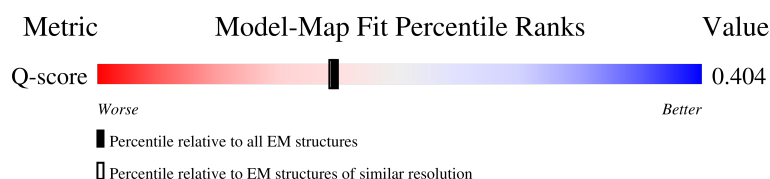
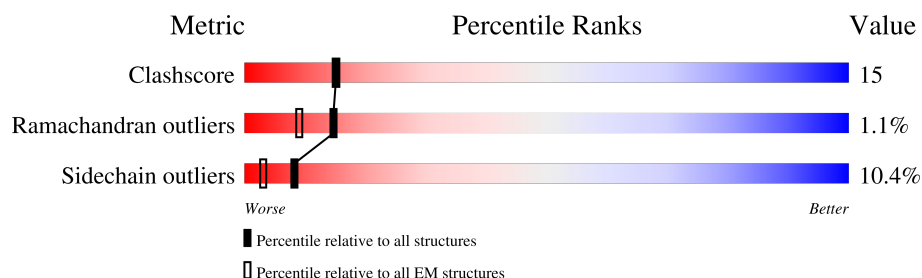
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.60 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) | Similar EM resolution<br>(#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|-----------------------------|----------------------------------------------------------|
| Clashscore            | 210492                      | 15764                       | -                                                        |
| Ramachandran outliers | 207382                      | 16835                       | -                                                        |
| Sidechain outliers    | 206894                      | 16415                       | -                                                        |
| Q-score               | -                           | 25397                       | 12797 ( 3.10 - 4.10 )                                    |

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   | S0    | 527    | <div> <div>99%</div> <div> <div></div> <div>57%</div> <div>40%</div> <div>.</div> </div> </div> |
| 1   | S1    | 527    | <div> <div>98%</div> <div> <div></div> <div>58%</div> <div>37%</div> <div>.</div> </div> </div> |
| 1   | S2    | 527    | <div> <div>98%</div> <div> <div></div> <div>59%</div> <div>38%</div> <div>.</div> </div> </div> |
| 1   | S3    | 527    | <div> <div>98%</div> <div> <div></div> <div>61%</div> <div>36%</div> <div>.</div> </div> </div> |

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| Mol | Chain | Length | Quality of chain |     |
|-----|-------|--------|------------------|-----|
| 1   | S4    | 527    | 99%              | 60% |
| 1   | S5    | 527    | 97%              | 61% |
| 1   | S6    | 527    | 98%              | 61% |
| 1   | S7    | 527    | 97%              | 63% |
| 1   | S8    | 527    | 97%              | 60% |
| 1   | SA    | 527    | 99%              | 60% |
| 1   | SO    | 527    | 98%              | 59% |
| 1   | SP    | 527    | 97%              | 60% |
| 1   | SQ    | 527    | 99%              | 60% |
| 1   | Sv    | 527    | 98%              | 60% |
| 1   | Sw    | 527    | 98%              | 64% |
| 1   | Sx    | 527    | 99%              | 61% |
| 1   | Sy    | 527    | 97%              | 63% |
| 1   | Sz    | 527    | 98%              | 60% |
| 2   | T1    | 288    | 100%             | 65% |
| 2   | T2    | 288    | 100%             | 68% |
| 2   | T3    | 288    | 100%             | 65% |
| 2   | T4    | 288    | 100%             | 67% |
| 2   | T5    | 288    | 100%             | 73% |
| 2   | T6    | 288    | 100%             | 69% |
| 2   | T7    | 288    | 100%             | 66% |
| 2   | T8    | 288    | 100%             | 72% |
| 2   | T9    | 288    | 100%             | 67% |
| 2   | TF    | 288    | 100%             | 66% |
| 2   | TG    | 288    | 100%             | 69% |

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| Mol | Chain | Length | Quality of chain |     |
|-----|-------|--------|------------------|-----|
| 2   | TH    | 288    | 99%              | 30% |
| 2   | Td    | 288    | 99%              | 37% |
| 2   | Te    | 288    | 99%              | 30% |
| 2   | Tf    | 288    | 100%             | 27% |
| 2   | Tg    | 288    | 100%             | 29% |
| 2   | Th    | 288    | 100%             | 27% |
| 2   | Ti    | 288    | 100%             | 33% |
| 3   | UL    | 219    | 99%              | 33% |
| 3   | UM    | 219    | 100%             | 35% |
| 3   | UN    | 219    | 99%              | 42% |
| 3   | Up    | 219    | 100%             | 35% |
| 3   | Uq    | 219    | 99%              | 35% |
| 3   | Ur    | 219    | 99%              | 36% |
| 3   | Us    | 219    | 100%             | 37% |
| 3   | Ut    | 219    | 99%              | 30% |
| 3   | Uu    | 219    | 100%             | 37% |
| 3   | VL    | 219    | 99%              | 36% |
| 3   | VM    | 219    | 100%             | 39% |
| 3   | VN    | 219    | 99%              | 31% |
| 3   | Vp    | 219    | 99%              | 33% |
| 3   | Vq    | 219    | 99%              | 34% |
| 3   | Vr    | 219    | 100%             | 38% |
| 3   | Vs    | 219    | 100%             | 35% |
| 3   | Vt    | 219    | 99%              | 34% |
| 3   | Vu    | 219    | 99%              | 39% |

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| Mol | Chain | Length | Quality of chain                         |
|-----|-------|--------|------------------------------------------|
| 4   | WI    | 602    | <div>91%</div> <div>56% 40% .</div>      |
| 4   | WJ    | 602    | <div>88%</div> <div>58% 38% .</div>      |
| 4   | WK    | 602    | <div>88%</div> <div>54% 41% 5% .</div>   |
| 4   | Wj    | 602    | <div>92%</div> <div>54% 41% .</div>      |
| 4   | Wk    | 602    | <div>90%</div> <div>57% 40% .</div>      |
| 4   | Wl    | 602    | <div>88%</div> <div>56% 39% . .</div>    |
| 4   | Wm    | 602    | <div>88%</div> <div>57% 37% 5%</div>     |
| 4   | Wn    | 602    | <div>89%</div> <div>56% 39% 5%</div>     |
| 4   | Wo    | 602    | <div>89%</div> <div>54% 41% . .</div>    |
| 4   | XI    | 602    | <div>91%</div> <div>54% 41% 5%</div>     |
| 4   | XJ    | 602    | <div>88%</div> <div>54% 40% 5% .</div>   |
| 4   | XK    | 602    | <div>90%</div> <div>59% 36% 5%</div>     |
| 4   | Xj    | 602    | <div>92%</div> <div>55% 40% .</div>      |
| 4   | Xk    | 602    | <div>90%</div> <div>57% 39% .</div>      |
| 4   | Xl    | 602    | <div>88%</div> <div>55% 40% .</div>      |
| 4   | Xm    | 602    | <div>86%</div> <div>57% 38% 5%</div>     |
| 4   | Xn    | 602    | <div>89%</div> <div>58% 37% 5%</div>     |
| 4   | Xo    | 602    | <div>90%</div> <div>55% 39% 5% .</div>   |
| 5   | YC    | 1032   | <div>33%</div> <div>50% 37% 9% .</div>   |
| 5   | YX    | 1032   | <div>30%</div> <div>50% 38% 9% . .</div> |
| 5   | YY    | 1032   | <div>32%</div> <div>50% 39% 8% .</div>   |
| 5   | Yc    | 1032   | <div>31%</div> <div>48% 41% 8% .</div>   |
| 5   | Yx    | 1032   | <div>32%</div> <div>50% 38% 8% . .</div> |
| 5   | Yy    | 1032   | <div>31%</div> <div>49% 40% 7% .</div>   |
| 6   | ZD    | 334    | <div>29%</div> <div>68% 29% . .</div>    |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 6   | ZE    | 334    |                  |
| 6   | ZZ    | 334    |                  |
| 6   | Za    | 334    |                  |
| 6   | Zb    | 334    |                  |
| 6   | Zc    | 334    |                  |
| 6   | aD    | 334    |                  |
| 6   | aE    | 334    |                  |
| 6   | aZ    | 334    |                  |
| 6   | aa    | 334    |                  |
| 6   | ab    | 334    |                  |
| 6   | ac    | 334    |                  |
| 7   | b0    | 659    |                  |
| 7   | b3    | 659    |                  |
| 7   | b4    | 659    |                  |
| 7   | b5    | 659    |                  |
| 7   | b6    | 659    |                  |
| 7   | b7    | 659    |                  |
| 7   | b8    | 659    |                  |
| 7   | b9    | 659    |                  |
| 7   | bN    | 659    |                  |
| 7   | bO    | 659    |                  |
| 7   | bP    | 659    |                  |
| 7   | bQ    | 659    |                  |
| 7   | bR    | 659    |                  |
| 7   | bY    | 659    |                  |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 7   | cA    | 659    |                  |
| 7   | cB    | 659    |                  |
| 7   | cC    | 659    |                  |
| 7   | cD    | 659    |                  |
| 7   | cE    | 659    |                  |
| 7   | cF    | 659    |                  |
| 7   | cG    | 659    |                  |
| 7   | cH    | 659    |                  |
| 7   | cI    | 659    |                  |
| 7   | cJ    | 659    |                  |
| 7   | cK    | 659    |                  |
| 7   | cL    | 659    |                  |
| 7   | cM    | 659    |                  |
| 7   | cN    | 659    |                  |
| 7   | cO    | 659    |                  |
| 7   | cP    | 659    |                  |
| 7   | dS    | 659    |                  |
| 7   | dT    | 659    |                  |
| 7   | dU    | 659    |                  |
| 7   | dV    | 659    |                  |
| 7   | dW    | 659    |                  |
| 7   | dZ    | 659    |                  |
| 8   | eB    | 660    |                  |
| 8   | eU    | 660    |                  |
| 8   | eW    | 660    |                  |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 8   | f9    | 660    |                  |
| 8   | fA    | 660    |                  |
| 8   | fB    | 660    |                  |
| 8   | fR    | 660    |                  |
| 8   | fS    | 660    |                  |
| 8   | fU    | 660    |                  |
| 8   | fW    | 660    |                  |
| 8   | fr    | 660    |                  |
| 8   | fs    | 660    |                  |
| 9   | gE    | 575    |                  |
| 9   | gG    | 575    |                  |
| 9   | gH    | 575    |                  |
| 10  | gd    | 97     |                  |
| 11  | h1    | 163    |                  |
| 11  | h2    | 163    |                  |
| 11  | hI    | 163    |                  |
| 11  | hJ    | 163    |                  |
| 11  | hK    | 163    |                  |
| 11  | hL    | 163    |                  |
| 11  | hM    | 163    |                  |
| 11  | hX    | 163    |                  |
| 11  | he    | 163    |                  |
| 11  | hf    | 163    |                  |
| 11  | hg    | 163    |                  |
| 11  | hh    | 163    |                  |

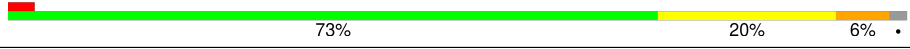
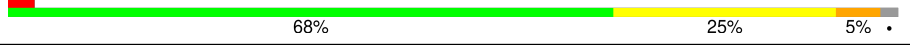
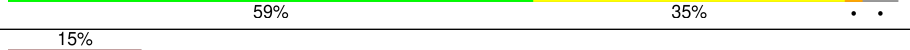
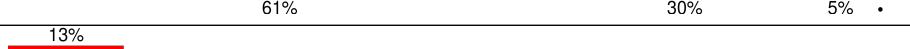
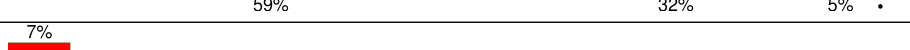
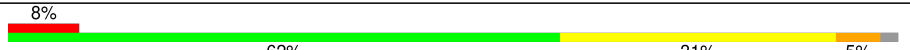
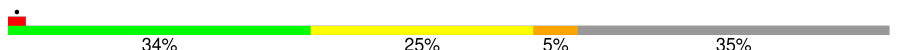
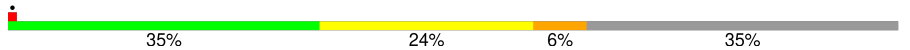
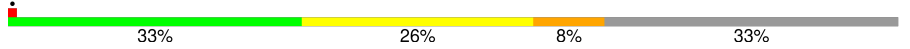
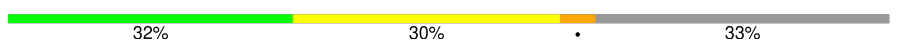
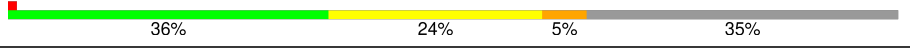
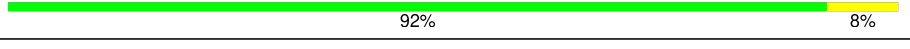
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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 11  | hi    | 163    |                  |
| 11  | hj    | 163    |                  |
| 11  | hk    | 163    |                  |
| 11  | hl    | 163    |                  |
| 11  | hm    | 163    |                  |
| 11  | hn    | 163    |                  |
| 11  | ho    | 163    |                  |
| 11  | hp    | 163    |                  |
| 11  | hq    | 163    |                  |
| 11  | hr    | 163    |                  |
| 11  | hs    | 163    |                  |
| 11  | ht    | 163    |                  |
| 11  | hu    | 163    |                  |
| 11  | hv    | 163    |                  |
| 11  | hw    | 163    |                  |
| 11  | hx    | 163    |                  |
| 11  | hy    | 163    |                  |
| 11  | hz    | 163    |                  |
| 12  | iC    | 391    |                  |
| 12  | iD    | 391    |                  |
| 12  | iF    | 391    |                  |
| 13  | ja    | 590    |                  |
| 13  | jb    | 590    |                  |
| 13  | jc    | 590    |                  |
| 14  | k3    | 196    |                  |

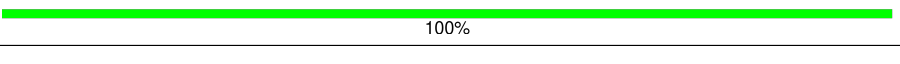
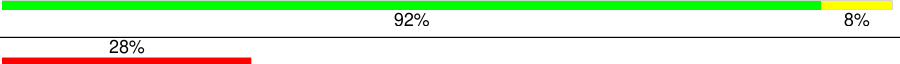
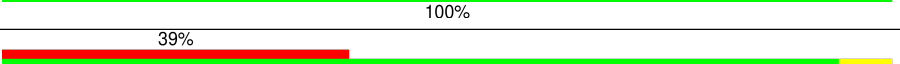
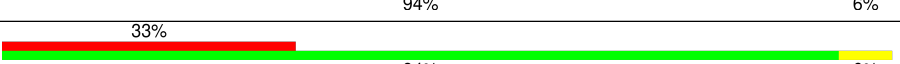
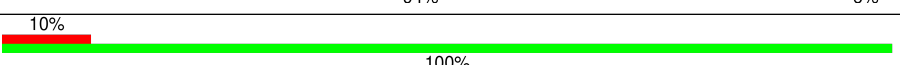
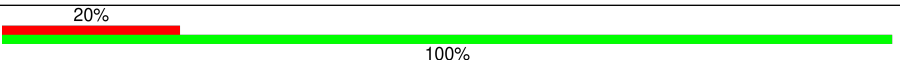
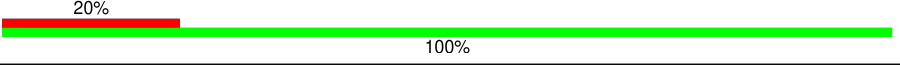
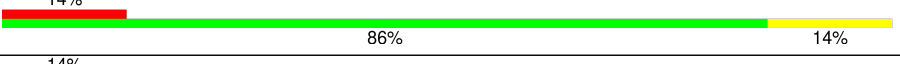
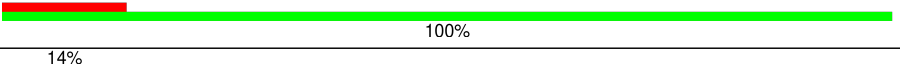
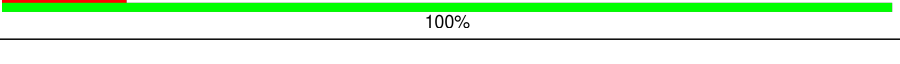
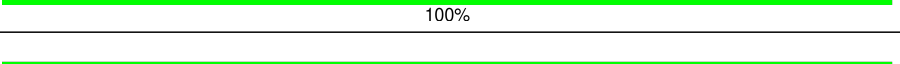
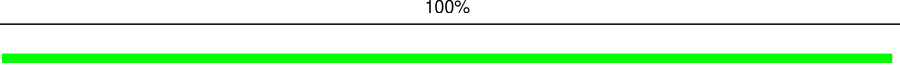
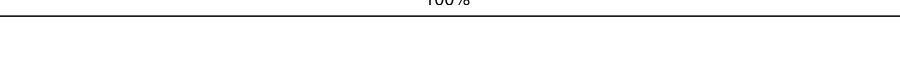
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| Mol | Chain | Length | Quality of chain                                                                     |
|-----|-------|--------|--------------------------------------------------------------------------------------|
| 14  | k4    | 196    |    |
| 14  | k7    | 196    |    |
| 14  | k8    | 196    |    |
| 14  | kV    | 196    |    |
| 14  | lV    | 196    |    |
| 15  | m1    | 132    |    |
| 15  | m2    | 132    |    |
| 15  | m5    | 132    |    |
| 15  | m6    | 132    |    |
| 15  | mT    | 132    |    |
| 15  | nT    | 132    |    |
| 16  | o0    | 364    |  |
| 16  | o1    | 364    |  |
| 16  | o2    | 364    |  |
| 16  | o6    | 364    |  |
| 16  | pA    | 364    |  |
| 16  | pB    | 364    |  |
| 17  | q3    | 320    |  |
| 17  | q4    | 320    |  |
| 17  | q5    | 320    |  |
| 17  | q7    | 320    |  |
| 17  | q8    | 320    |  |
| 17  | q9    | 320    |  |
| 18  | rc    | 25     |  |
| 18  | rd    | 25     |  |

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| Mol | Chain | Length | Quality of chain                                                                              |
|-----|-------|--------|-----------------------------------------------------------------------------------------------|
| 18  | re    | 25     |  84%16%     |
| 18  | rf    | 25     |  80%20%     |
| 18  | rg    | 25     |  100%       |
| 18  | rh    | 25     |  92%8%      |
| 19  | sQ    | 18     |  28%100%    |
| 19  | sT    | 18     |  39%94%6%   |
| 19  | sU    | 18     |  33%94%6%   |
| 20  | tS    | 10     |  10%100%    |
| 20  | tX    | 10     |  20%100%    |
| 20  | tY    | 10     |  20%100%    |
| 21  | uR    | 7      |  14%86%14% |
| 21  | uV    | 7      |  14%100%  |
| 21  | uW    | 7      |  14%100%  |
| 22  | vZ    | 9      |  100%     |
| 22  | va    | 9      |  100%     |
| 22  | vb    | 9      |  100%     |

## 2 Entry composition

There are 23 unique types of molecules in this entry. The entry contains 652117 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 gp12, short tail fiber protein.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 1   | S0    | 526      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3945  | 2429 | 702 | 803 | 11 |         |       |
| 1   | S1    | 526      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3945  | 2429 | 702 | 803 | 11 |         |       |
| 1   | S2    | 526      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3945  | 2429 | 702 | 803 | 11 |         |       |
| 1   | S3    | 526      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3945  | 2429 | 702 | 803 | 11 |         |       |
| 1   | S4    | 526      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3945  | 2429 | 702 | 803 | 11 |         |       |
| 1   | S5    | 526      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3945  | 2429 | 702 | 803 | 11 |         |       |
| 1   | S6    | 526      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3945  | 2429 | 702 | 803 | 11 |         |       |
| 1   | S7    | 526      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3945  | 2429 | 702 | 803 | 11 |         |       |
| 1   | S8    | 526      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3945  | 2429 | 702 | 803 | 11 |         |       |
| 1   | SA    | 526      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3945  | 2429 | 702 | 803 | 11 |         |       |
| 1   | SO    | 526      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3945  | 2429 | 702 | 803 | 11 |         |       |
| 1   | SP    | 526      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3945  | 2429 | 702 | 803 | 11 |         |       |
| 1   | SQ    | 526      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3945  | 2429 | 702 | 803 | 11 |         |       |
| 1   | Sv    | 526      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3945  | 2429 | 702 | 803 | 11 |         |       |
| 1   | Sw    | 526      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3945  | 2429 | 702 | 803 | 11 |         |       |
| 1   | Sx    | 526      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3945  | 2429 | 702 | 803 | 11 |         |       |
| 1   | Sy    | 526      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3945  | 2429 | 702 | 803 | 11 |         |       |

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| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 1   | Sz    | 526      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3945  | 2429 | 702 | 803 | 11 |         |       |

- Molecule 2 is a protein called gp9, baseplate wedge tail fiber connector.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 2   | T1    | 288      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2175  | 1354 | 366 | 446 | 9 |         |       |
| 2   | T2    | 288      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2175  | 1354 | 366 | 446 | 9 |         |       |
| 2   | T3    | 288      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2175  | 1354 | 366 | 446 | 9 |         |       |
| 2   | T4    | 288      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2175  | 1354 | 366 | 446 | 9 |         |       |
| 2   | T5    | 288      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2175  | 1354 | 366 | 446 | 9 |         |       |
| 2   | T6    | 288      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2175  | 1354 | 366 | 446 | 9 |         |       |
| 2   | T7    | 288      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2175  | 1354 | 366 | 446 | 9 |         |       |
| 2   | T8    | 288      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2175  | 1354 | 366 | 446 | 9 |         |       |
| 2   | T9    | 288      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2175  | 1354 | 366 | 446 | 9 |         |       |
| 2   | TF    | 288      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2175  | 1354 | 366 | 446 | 9 |         |       |
| 2   | TG    | 288      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2175  | 1354 | 366 | 446 | 9 |         |       |
| 2   | TH    | 288      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2175  | 1354 | 366 | 446 | 9 |         |       |
| 2   | Td    | 288      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2175  | 1354 | 366 | 446 | 9 |         |       |
| 2   | Te    | 288      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2175  | 1354 | 366 | 446 | 9 |         |       |
| 2   | Tf    | 288      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2175  | 1354 | 366 | 446 | 9 |         |       |
| 2   | Tg    | 288      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2175  | 1354 | 366 | 446 | 9 |         |       |
| 2   | Th    | 288      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2175  | 1354 | 366 | 446 | 9 |         |       |
| 2   | Ti    | 288      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2175  | 1354 | 366 | 446 | 9 |         |       |

- Molecule 3 is a protein called gp11, baseplate wedge protein.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 3   | UL    | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1665  | 1056 | 273 | 334 | 2 |         |       |
| 3   | UM    | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1665  | 1056 | 273 | 334 | 2 |         |       |
| 3   | UN    | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1665  | 1056 | 273 | 334 | 2 |         |       |
| 3   | Up    | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1665  | 1056 | 273 | 334 | 2 |         |       |
| 3   | Uq    | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1665  | 1056 | 273 | 334 | 2 |         |       |
| 3   | Ur    | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1665  | 1056 | 273 | 334 | 2 |         |       |
| 3   | Us    | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1665  | 1056 | 273 | 334 | 2 |         |       |
| 3   | Ut    | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1665  | 1056 | 273 | 334 | 2 |         |       |
| 3   | Uu    | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1665  | 1056 | 273 | 334 | 2 |         |       |
| 3   | VL    | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1665  | 1056 | 273 | 334 | 2 |         |       |
| 3   | VM    | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1665  | 1056 | 273 | 334 | 2 |         |       |
| 3   | VN    | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1665  | 1056 | 273 | 334 | 2 |         |       |
| 3   | Vp    | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1665  | 1056 | 273 | 334 | 2 |         |       |
| 3   | Vq    | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1665  | 1056 | 273 | 334 | 2 |         |       |
| 3   | Vr    | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1665  | 1056 | 273 | 334 | 2 |         |       |
| 3   | Vs    | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1665  | 1056 | 273 | 334 | 2 |         |       |
| 3   | Vt    | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1665  | 1056 | 273 | 334 | 2 |         |       |
| 3   | Vu    | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1665  | 1056 | 273 | 334 | 2 |         |       |

- Molecule 4 is a protein called gp10, baseplate wedge protein.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 4   | WI    | 602      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4675  | 2933 | 779 | 953 | 10 |         |       |

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| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 4   | WJ    | 602      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4675  | 2933 | 779 | 953 | 10 |         |       |
| 4   | WK    | 602      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4675  | 2933 | 779 | 953 | 10 |         |       |
| 4   | Wj    | 602      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4675  | 2933 | 779 | 953 | 10 |         |       |
| 4   | Wk    | 602      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4675  | 2933 | 779 | 953 | 10 |         |       |
| 4   | Wl    | 602      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4675  | 2933 | 779 | 953 | 10 |         |       |
| 4   | Wm    | 602      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4675  | 2933 | 779 | 953 | 10 |         |       |
| 4   | Wn    | 602      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4675  | 2933 | 779 | 953 | 10 |         |       |
| 4   | Wo    | 602      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4675  | 2933 | 779 | 953 | 10 |         |       |
| 4   | XI    | 602      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4675  | 2933 | 779 | 953 | 10 |         |       |
| 4   | XJ    | 602      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4675  | 2933 | 779 | 953 | 10 |         |       |
| 4   | XK    | 602      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4675  | 2933 | 779 | 953 | 10 |         |       |
| 4   | Xj    | 602      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4675  | 2933 | 779 | 953 | 10 |         |       |
| 4   | Xk    | 602      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4675  | 2933 | 779 | 953 | 10 |         |       |
| 4   | Xl    | 602      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4675  | 2933 | 779 | 953 | 10 |         |       |
| 4   | Xm    | 602      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4675  | 2933 | 779 | 953 | 10 |         |       |
| 4   | Xn    | 602      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4675  | 2933 | 779 | 953 | 10 |         |       |
| 4   | Xo    | 602      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4675  | 2933 | 779 | 953 | 10 |         |       |

- Molecule 5 is a protein called gp7, baseplate wedge protein.

| Mol | Chain | Residues | Atoms |      |      |      |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
| 5   | YC    | 1004     | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 8199  | 5247 | 1347 | 1578 | 27 |         |       |
| 5   | YX    | 1004     | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 8199  | 5247 | 1347 | 1578 | 27 |         |       |

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| Mol | Chain | Residues | Atoms |      |      |      |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
| 5   | YY    | 1004     | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 8199  | 5247 | 1347 | 1578 | 27 |         |       |
| 5   | Yc    | 1004     | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 8199  | 5247 | 1347 | 1578 | 27 |         |       |
| 5   | Yx    | 1004     | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 8199  | 5247 | 1347 | 1578 | 27 |         |       |
| 5   | Yy    | 1004     | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 8199  | 5247 | 1347 | 1578 | 27 |         |       |

- Molecule 6 is a protein called gp8, baseplate wedge protein.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 6   | ZD    | 328      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2631  | 1677 | 430 | 507 | 17 |         |       |
| 6   | ZE    | 332      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2658  | 1692 | 434 | 515 | 17 |         |       |
| 6   | ZZ    | 328      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2631  | 1677 | 430 | 507 | 17 |         |       |
| 6   | Za    | 328      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2631  | 1677 | 430 | 507 | 17 |         |       |
| 6   | Zb    | 332      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2658  | 1692 | 434 | 515 | 17 |         |       |
| 6   | Zc    | 332      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2658  | 1692 | 434 | 515 | 17 |         |       |
| 6   | aD    | 328      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2631  | 1677 | 430 | 507 | 17 |         |       |
| 6   | aE    | 332      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2658  | 1692 | 434 | 515 | 17 |         |       |
| 6   | aZ    | 328      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2631  | 1677 | 430 | 507 | 17 |         |       |
| 6   | aa    | 328      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2631  | 1677 | 430 | 507 | 17 |         |       |
| 6   | ab    | 332      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2658  | 1692 | 434 | 515 | 17 |         |       |
| 6   | ac    | 332      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2658  | 1692 | 434 | 515 | 17 |         |       |

- Molecule 7 is a protein called gp18, tail sheath protein.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 7   | b0    | 655      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 5000  | 3152 | 841 | 996 | 11 |         |       |

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| Mol | Chain | Residues | Atoms         |           |          |          |         | AltConf | Trace |
|-----|-------|----------|---------------|-----------|----------|----------|---------|---------|-------|
| 7   | b3    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | b4    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | b5    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | b6    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | b7    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | b8    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | b9    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | bN    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | bO    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | bP    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | bQ    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | bR    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | bY    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | cA    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | cB    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | cC    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | cD    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | cE    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | cF    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | cG    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |
| 7   | cH    | 655      | Total<br>5000 | C<br>3152 | N<br>841 | O<br>996 | S<br>11 | 0       | 0     |

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| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 7   | cI    | 655      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 5000  | 3152 | 841 | 996 | 11 |         |       |
| 7   | cJ    | 655      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 5000  | 3152 | 841 | 996 | 11 |         |       |
| 7   | cK    | 655      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 5000  | 3152 | 841 | 996 | 11 |         |       |
| 7   | cL    | 655      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 5000  | 3152 | 841 | 996 | 11 |         |       |
| 7   | cM    | 655      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 5000  | 3152 | 841 | 996 | 11 |         |       |
| 7   | cN    | 655      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 5000  | 3152 | 841 | 996 | 11 |         |       |
| 7   | cO    | 655      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 5000  | 3152 | 841 | 996 | 11 |         |       |
| 7   | cP    | 655      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 5000  | 3152 | 841 | 996 | 11 |         |       |
| 7   | dS    | 647      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4941  | 3115 | 833 | 982 | 11 |         |       |
| 7   | dT    | 647      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4941  | 3115 | 833 | 982 | 11 |         |       |
| 7   | dU    | 647      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4941  | 3115 | 833 | 982 | 11 |         |       |
| 7   | dV    | 647      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4941  | 3115 | 833 | 982 | 11 |         |       |
| 7   | dW    | 647      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4941  | 3115 | 833 | 982 | 11 |         |       |
| 7   | dZ    | 647      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4941  | 3115 | 833 | 982 | 11 |         |       |

There are 108 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference      |
|-------|---------|----------|--------|----------|----------------|
| b0    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| b0    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| b0    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| b3    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| b3    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| b3    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| b4    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| b4    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| b4    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| b5    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| b5    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |

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| Chain | Residue | Modelled | Actual | Comment  | Reference      |
|-------|---------|----------|--------|----------|----------------|
| b5    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| b6    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| b6    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| b6    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| b7    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| b7    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| b7    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| b8    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| b8    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| b8    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| b9    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| b9    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| b9    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| bN    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| bN    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| bN    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| bO    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| bO    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| bO    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| bP    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| bP    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| bP    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| bQ    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| bQ    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| bQ    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| bR    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| bR    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| bR    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| bY    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| bY    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| bY    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| cA    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| cA    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| cA    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| cB    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| cB    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| cB    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| cC    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| cC    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| cC    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| cD    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| cD    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |

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| Chain | Residue | Modelled | Actual | Comment  | Reference      |
|-------|---------|----------|--------|----------|----------------|
| cD    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| cE    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| cE    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| cE    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| cF    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| cF    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| cF    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| cG    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| cG    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| cG    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| cH    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| cH    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| cH    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| cI    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| cI    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| cI    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| cJ    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| cJ    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| cJ    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| cK    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| cK    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| cK    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| cL    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| cL    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| cL    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| cM    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| cM    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| cM    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| cN    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| cN    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| cN    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| cO    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| cO    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| cO    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| cP    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| cP    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| cP    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| dS    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| dS    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| dS    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| dT    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| dT    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |

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| Chain | Residue | Modelled | Actual | Comment  | Reference      |
|-------|---------|----------|--------|----------|----------------|
| dT    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| dU    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| dU    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| dU    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| dV    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| dV    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| dV    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| dW    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| dW    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| dW    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |
| dZ    | 109     | ASN      | SER    | conflict | UNP A0A7S9SVW9 |
| dZ    | 301     | GLY      | GLU    | conflict | UNP A0A7S9SVW9 |
| dZ    | 399     | VAL      | ALA    | conflict | UNP A0A7S9SVW9 |

- Molecule 8 is a protein called gp6, baseplate wedge protein.

| Mol | Chain | Residues | Atoms |      |     |      |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|------|----|---------|-------|
| 8   | eB    | 648      | Total | C    | N   | O    | S  | 0       | 0     |
|     |       |          | 5157  | 3259 | 854 | 1034 | 10 |         |       |
| 8   | eU    | 648      | Total | C    | N   | O    | S  | 0       | 0     |
|     |       |          | 5157  | 3259 | 854 | 1034 | 10 |         |       |
| 8   | eW    | 648      | Total | C    | N   | O    | S  | 0       | 0     |
|     |       |          | 5157  | 3259 | 854 | 1034 | 10 |         |       |
| 8   | f9    | 658      | Total | C    | N   | O    | S  | 0       | 0     |
|     |       |          | 5235  | 3308 | 867 | 1050 | 10 |         |       |
| 8   | fA    | 658      | Total | C    | N   | O    | S  | 0       | 0     |
|     |       |          | 5235  | 3308 | 867 | 1050 | 10 |         |       |
| 8   | fB    | 648      | Total | C    | N   | O    | S  | 0       | 0     |
|     |       |          | 5157  | 3259 | 854 | 1034 | 10 |         |       |
| 8   | fR    | 658      | Total | C    | N   | O    | S  | 0       | 0     |
|     |       |          | 5235  | 3308 | 867 | 1050 | 10 |         |       |
| 8   | fS    | 658      | Total | C    | N   | O    | S  | 0       | 0     |
|     |       |          | 5235  | 3308 | 867 | 1050 | 10 |         |       |
| 8   | fU    | 648      | Total | C    | N   | O    | S  | 0       | 0     |
|     |       |          | 5157  | 3259 | 854 | 1034 | 10 |         |       |
| 8   | fW    | 648      | Total | C    | N   | O    | S  | 0       | 0     |
|     |       |          | 5157  | 3259 | 854 | 1034 | 10 |         |       |
| 8   | fr    | 658      | Total | C    | N   | O    | S  | 0       | 0     |
|     |       |          | 5235  | 3308 | 867 | 1050 | 10 |         |       |
| 8   | fs    | 658      | Total | C    | N   | O    | S  | 0       | 0     |
|     |       |          | 5235  | 3308 | 867 | 1050 | 10 |         |       |

- Molecule 9 is a protein called gp5, baseplate central spike protein.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 9   | gE    | 559      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4321  | 2681 | 761 | 856 | 23 |         |       |
| 9   | gG    | 559      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4321  | 2681 | 761 | 856 | 23 |         |       |
| 9   | gH    | 559      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4321  | 2681 | 761 | 856 | 23 |         |       |

- Molecule 10 is a protein called gp5.4, tip of the central spike.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 10  | gd    | 96       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 709   | 447 | 120 | 139 | 3 |         |       |

- Molecule 11 is a protein called gp19, tail tube protein.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 11  | h1    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | h2    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hI    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hJ    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hK    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hL    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hM    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hX    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | he    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hf    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hg    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hh    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hi    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hj    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |

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| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 11  | hk    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hl    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hm    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hn    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | ho    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hp    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hq    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hr    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hs    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | ht    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hu    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hv    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hw    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hx    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hy    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |
| 11  | hz    | 163      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1304  | 828 | 219 | 253 | 4 |         |       |

- Molecule 12 is a protein called gp27, baseplate hub protein.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 12  | iC    | 375      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3000  | 1916 | 491 | 575 | 18 |         |       |
| 12  | iD    | 375      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3000  | 1916 | 491 | 575 | 18 |         |       |
| 12  | iF    | 375      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3000  | 1916 | 491 | 575 | 18 |         |       |

- Molecule 13 is a protein called gp29, tape measure protein.

| Mol | Chain | Residues | Atoms |    |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|----|----|----|---|---------|-------|
| 13  | ja    | 20       | Total | C  | N  | O  | S | 0       | 0     |
|     |       |          | 137   | 84 | 22 | 30 | 1 |         |       |
| 13  | jb    | 20       | Total | C  | N  | O  | S | 0       | 0     |
|     |       |          | 137   | 84 | 22 | 30 | 1 |         |       |
| 13  | jc    | 20       | Total | C  | N  | O  | S | 0       | 0     |
|     |       |          | 137   | 84 | 22 | 30 | 1 |         |       |

- Molecule 14 is a protein called gp53, baseplate wedge protein.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 14  | k3    | 193      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1599  | 1035 | 259 | 299 | 6 |         |       |
| 14  | k4    | 193      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1599  | 1035 | 259 | 299 | 6 |         |       |
| 14  | k7    | 193      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1599  | 1035 | 259 | 299 | 6 |         |       |
| 14  | k8    | 193      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1599  | 1035 | 259 | 299 | 6 |         |       |
| 14  | kV    | 193      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1599  | 1035 | 259 | 299 | 6 |         |       |
| 14  | lV    | 193      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1599  | 1035 | 259 | 299 | 6 |         |       |

- Molecule 15 is a protein called gp25, baseplate wedge protein.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 15  | m1    | 127      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1019  | 640 | 171 | 204 | 4 |         |       |
| 15  | m2    | 127      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1019  | 640 | 171 | 204 | 4 |         |       |
| 15  | m5    | 127      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1019  | 640 | 171 | 204 | 4 |         |       |
| 15  | m6    | 127      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1019  | 640 | 171 | 204 | 4 |         |       |
| 15  | mT    | 127      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1019  | 640 | 171 | 204 | 4 |         |       |
| 15  | nT    | 127      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1019  | 640 | 171 | 204 | 4 |         |       |

- Molecule 16 is a protein called gp48, baseplate protein.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 16  | o0    | 358      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2749  | 1714 | 467 | 559 | 9 |         |       |
| 16  | o1    | 314      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2436  | 1523 | 414 | 491 | 8 |         |       |
| 16  | o2    | 314      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2436  | 1523 | 414 | 491 | 8 |         |       |
| 16  | o6    | 314      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2436  | 1523 | 414 | 491 | 8 |         |       |
| 16  | pA    | 358      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2749  | 1714 | 467 | 559 | 9 |         |       |
| 16  | pB    | 358      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2749  | 1714 | 467 | 559 | 9 |         |       |

- Molecule 17 is a protein called gp54, baseplate protein.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 17  | q3    | 207      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 1650  | 1037 | 280 | 321 | 12 |         |       |
| 17  | q4    | 207      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 1650  | 1037 | 280 | 321 | 12 |         |       |
| 17  | q5    | 213      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 1693  | 1064 | 287 | 330 | 12 |         |       |
| 17  | q7    | 213      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 1693  | 1064 | 287 | 330 | 12 |         |       |
| 17  | q8    | 207      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 1650  | 1037 | 280 | 321 | 12 |         |       |
| 17  | q9    | 213      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 1693  | 1064 | 287 | 330 | 12 |         |       |

- Molecule 18 is a protein called unassigned peptide A.

| Mol | Chain | Residues | Atoms |    |    |    | AltConf | Trace |
|-----|-------|----------|-------|----|----|----|---------|-------|
| 18  | rc    | 25       | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 125   | 75 | 25 | 25 |         |       |
| 18  | rd    | 25       | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 125   | 75 | 25 | 25 |         |       |
| 18  | re    | 25       | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 125   | 75 | 25 | 25 |         |       |
| 18  | rf    | 25       | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 125   | 75 | 25 | 25 |         |       |
| 18  | rg    | 25       | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 125   | 75 | 25 | 25 |         |       |
| 18  | rh    | 25       | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 125   | 75 | 25 | 25 |         |       |

- Molecule 19 is a protein called unassigned peptide B.

| Mol | Chain | Residues | Atoms |    |    |    | AltConf | Trace |
|-----|-------|----------|-------|----|----|----|---------|-------|
| 19  | sQ    | 18       | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 90    | 54 | 18 | 18 |         |       |
| 19  | sT    | 18       | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 90    | 54 | 18 | 18 |         |       |
| 19  | sU    | 18       | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 90    | 54 | 18 | 18 |         |       |

- Molecule 20 is a protein called unassigned peptide C.

| Mol | Chain | Residues | Atoms |    |    |    | AltConf | Trace |
|-----|-------|----------|-------|----|----|----|---------|-------|
| 20  | tS    | 10       | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 50    | 30 | 10 | 10 |         |       |
| 20  | tX    | 10       | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 50    | 30 | 10 | 10 |         |       |
| 20  | tY    | 10       | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 50    | 30 | 10 | 10 |         |       |

- Molecule 21 is a protein called unassigned peptide D.

| Mol | Chain | Residues | Atoms |    |   |   | AltConf | Trace |
|-----|-------|----------|-------|----|---|---|---------|-------|
| 21  | uR    | 7        | Total | C  | N | O | 0       | 0     |
|     |       |          | 35    | 21 | 7 | 7 |         |       |
| 21  | uV    | 7        | Total | C  | N | O | 0       | 0     |
|     |       |          | 35    | 21 | 7 | 7 |         |       |
| 21  | uW    | 7        | Total | C  | N | O | 0       | 0     |
|     |       |          | 35    | 21 | 7 | 7 |         |       |

- Molecule 22 is a protein called unassigned peptide E.

| Mol | Chain | Residues | Atoms |    |   |   | AltConf | Trace |
|-----|-------|----------|-------|----|---|---|---------|-------|
| 22  | vZ    | 9        | Total | C  | N | O | 0       | 0     |
|     |       |          | 45    | 27 | 9 | 9 |         |       |
| 22  | va    | 9        | Total | C  | N | O | 0       | 0     |
|     |       |          | 45    | 27 | 9 | 9 |         |       |
| 22  | vb    | 9        | Total | C  | N | O | 0       | 0     |
|     |       |          | 45    | 27 | 9 | 9 |         |       |

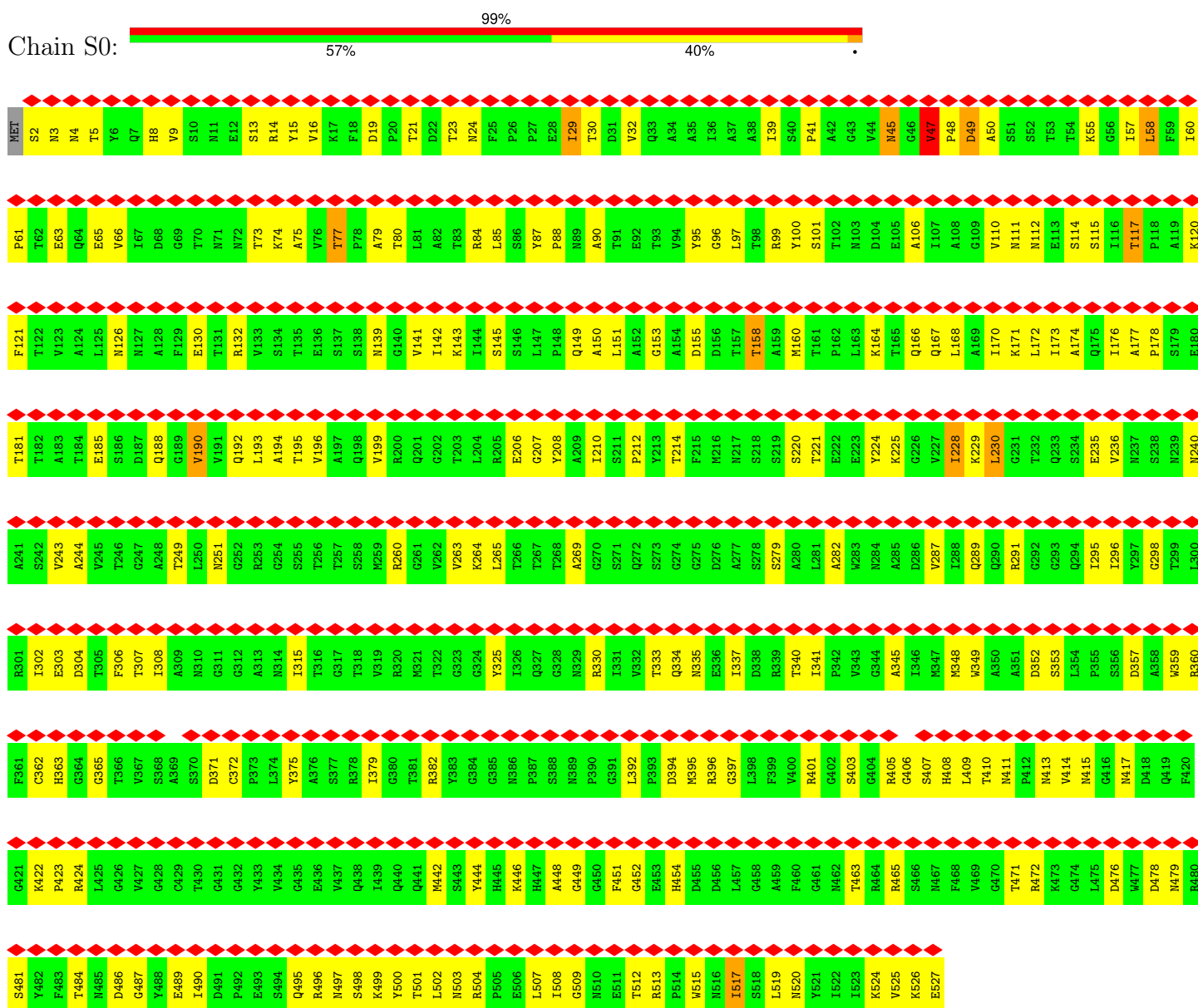
- Molecule 23 is ZINC ION (CCD ID: ZN) (formula: Zn).

| Mol | Chain | Residues | Atoms      |         | AltConf |
|-----|-------|----------|------------|---------|---------|
| 23  | S0    | 1        | Total<br>1 | Zn<br>1 | 0       |
| 23  | S1    | 1        | Total<br>1 | Zn<br>1 | 0       |
| 23  | S4    | 1        | Total<br>1 | Zn<br>1 | 0       |
| 23  | SA    | 1        | Total<br>1 | Zn<br>1 | 0       |
| 23  | SQ    | 1        | Total<br>1 | Zn<br>1 | 0       |
| 23  | Sv    | 1        | Total<br>1 | Zn<br>1 | 0       |

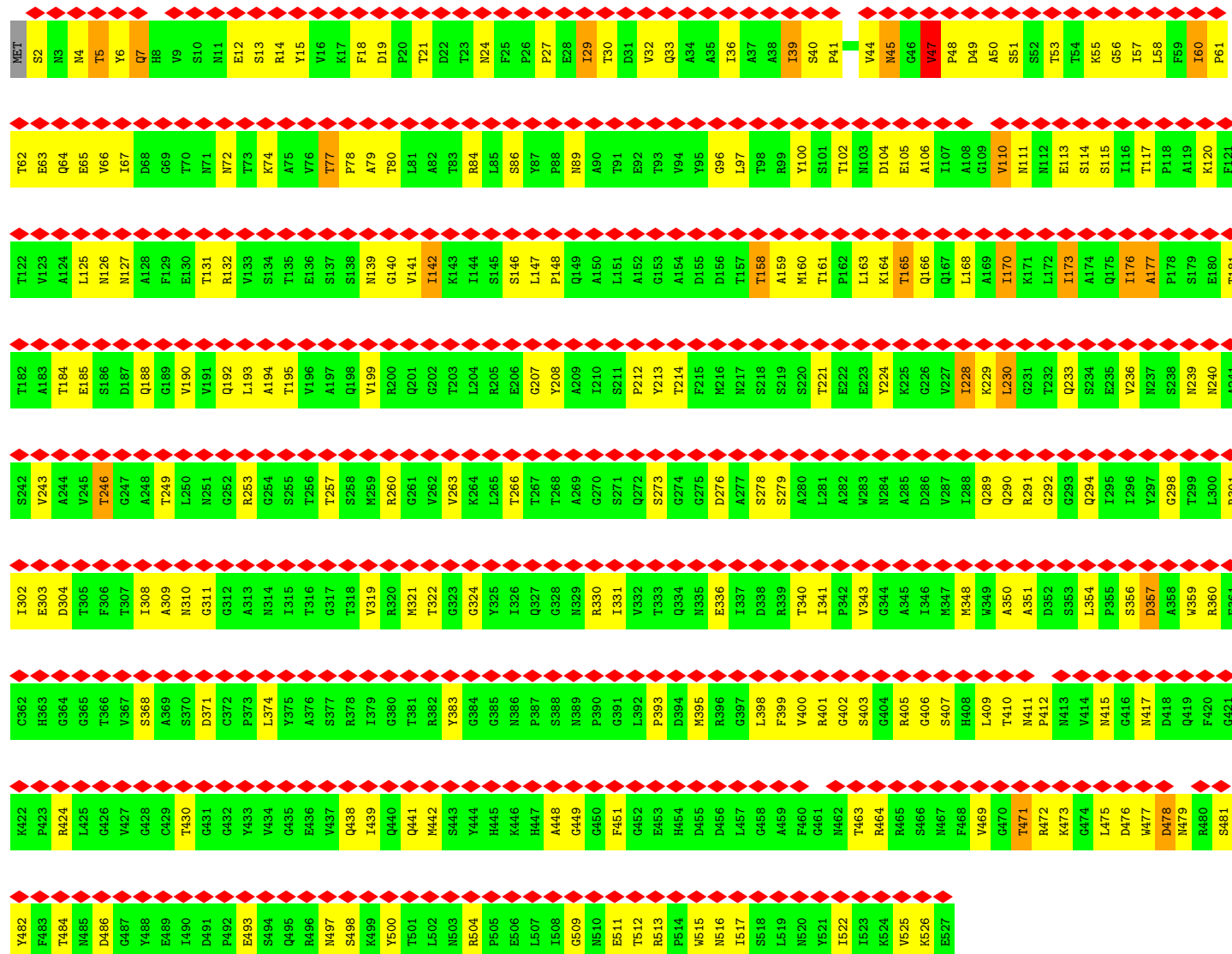
### 3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and 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: gp12, short tail fiber protein



- Molecule 1: gp12, short tail fiber protein



- Molecule 1: gp12, short tail fiber protein

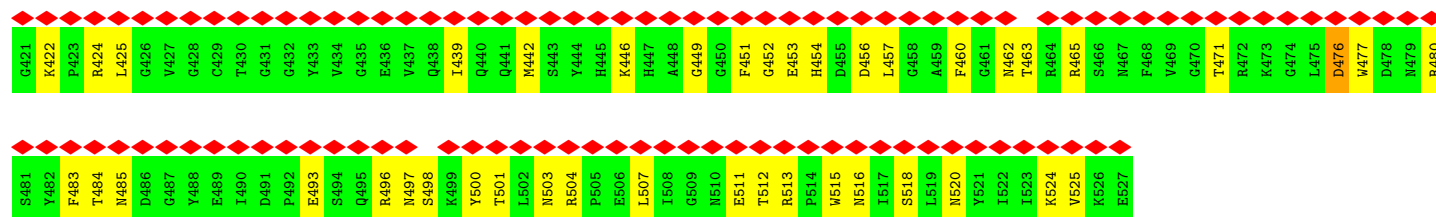


|      |      |      |      |      |      |
|------|------|------|------|------|------|
| T181 | A241 | R301 | F361 | G421 | S481 |
| T182 | S242 | I302 | C362 | K422 | Y482 |
| A183 | V243 | E303 | H363 | F423 | F483 |
| T184 | A244 | D304 | G364 | R424 | T484 |
| E185 | V245 | T305 | G365 | L425 | M485 |
| S186 | T246 | F306 | T366 | G426 | D486 |
| D187 | G247 | T307 | V367 | V427 | G487 |
| Q188 | A248 | I308 | S368 | G428 | Y488 |
| G189 | T249 | A309 | A369 | C429 | E489 |
| V190 | L250 | N310 | S370 | T430 | I490 |
| V191 | N251 | G311 | D371 | G431 | D491 |
| Q192 | G252 | G312 | C372 | G432 | P492 |
| L193 | R253 | A313 | P373 | Y433 | E493 |
| A194 | G254 | N314 | L374 | V434 | S494 |
| T195 | S255 | I315 | Y375 | G435 | Q495 |
| V196 | T256 | T316 | A376 | E436 | R496 |
| A197 | T257 | G317 | R377 | V437 | M497 |
| Q198 | S258 | T318 | R378 | Q438 | S498 |
| V199 | M259 | V319 | I379 | I439 | K499 |
| R200 | R260 | R320 | G380 | Q440 | Y500 |
| Q201 | G261 | M321 | T381 | Q441 | T501 |
| G202 | V262 | T322 | R382 | M442 | L502 |
| T203 | V263 | G323 | Y383 | S443 | N503 |
| L204 | K264 | G324 | G384 | Y444 | R504 |
| R205 | L265 | Y325 | G385 | H445 | P505 |
| E206 | T266 | I326 | N386 | K446 | E506 |
| G207 | T267 | Q327 | P387 | H447 | L507 |
| Y208 | T268 | G328 | S388 | A448 | I508 |
| A209 | A269 | N329 | N389 | G449 | G509 |
| I210 | G270 | R330 | P390 | G450 | N510 |
| S211 | S271 | I331 | G391 | F451 | E511 |
| P212 | Q272 | V332 | L392 | G452 | T512 |
| Y213 | S273 | T333 | P393 | E453 | R513 |
| T214 | G274 | Q334 | D394 | H454 | P514 |
| F215 | G275 | N335 | M395 | D455 | W515 |
| M216 | D276 | E336 | R396 | D456 | N516 |
| N217 | A277 | I337 | G397 | L457 | I517 |
| S218 | S278 | D338 | L398 | G458 | S518 |
| S219 | S279 | R339 | F399 | A459 | L519 |
| T220 | A280 | T340 | V400 | F460 | N520 |
| T221 | L281 | I341 | R401 | G461 | Y521 |
| E222 | A282 | P342 | G402 | M462 | I522 |
| E223 | W283 | V343 | S403 | T463 | I523 |
| Y224 | N284 | G344 | G404 | R464 | K524 |
| K225 | A285 | R405 | R405 | R465 | V525 |
| G226 | D286 | I346 | G406 | S466 | K526 |
| V227 | V287 | M347 | S407 | M467 | E527 |
| I228 | I288 | M348 | H408 | F468 |      |
| K229 | Q289 | W349 | L409 | V469 |      |
| L230 | Q290 | A350 | T410 | G470 |      |
| G231 | R291 | A351 | M411 | T471 |      |
| T232 | G292 | D352 | P412 | R472 |      |
| Q233 | G293 | M413 | M413 | K473 |      |
| S234 | Q294 | L354 | V414 | G474 |      |
| E235 | I295 | P355 | M415 | L475 |      |
| V236 | I296 | G356 | G416 | D476 |      |
| N237 | Y297 | D357 | M417 | W477 |      |
| S238 | G298 | A358 | D418 | D478 |      |
| N239 | T299 | W359 | Q419 | M479 |      |
| N240 | L300 | R360 | F420 | R480 |      |

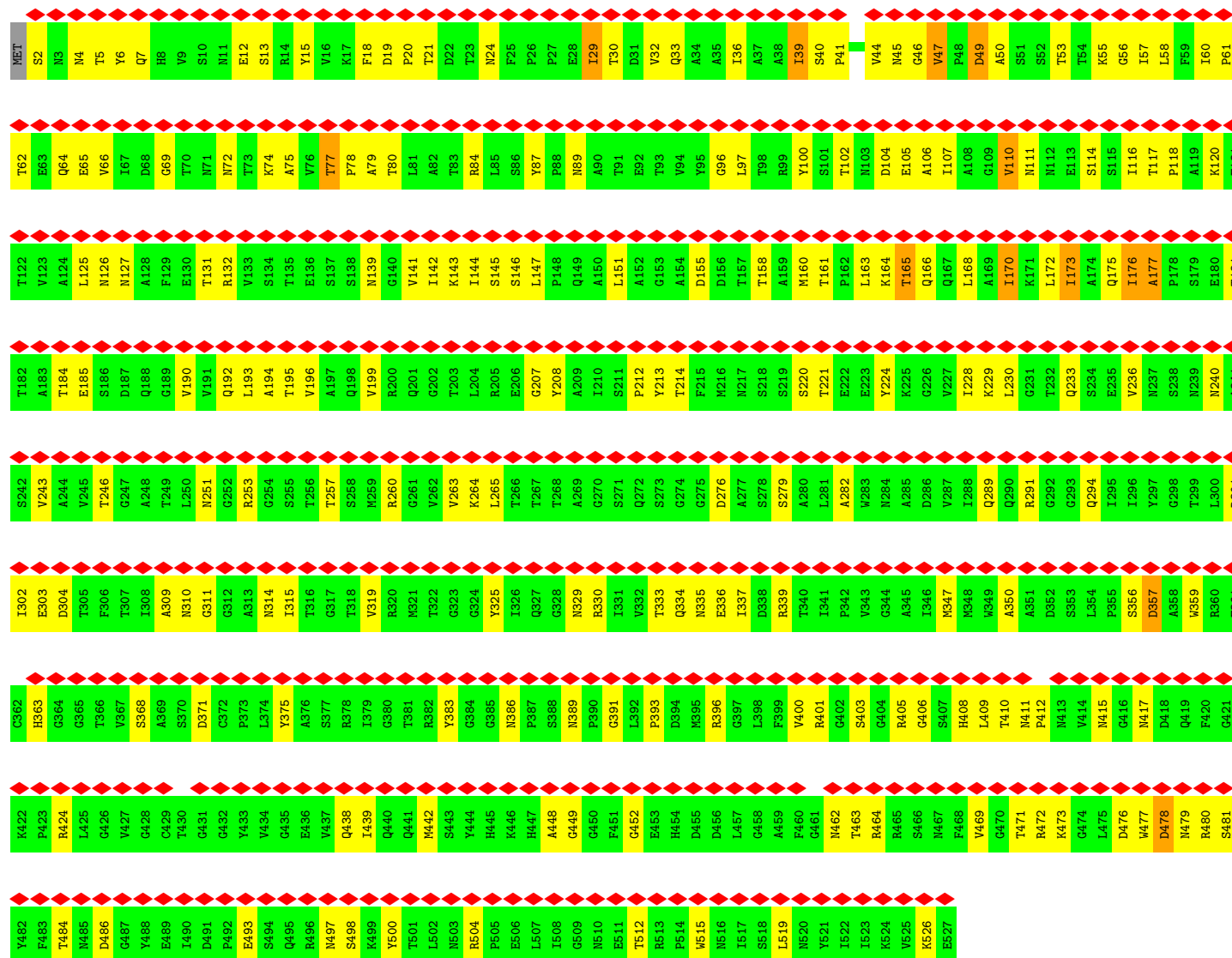
• Molecule 1: gp12, short tail fiber protein



|     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| MET | S2   | N3   | N4   | T5   | Y6   | Q7   | H8   | V9   | S10  | N11  | E12  | S13  | R14  | Y15  | V16  | K17  | F18  | D19  | P20  | T21  | D22  | T23  | N24  | F25  | P26  | P27  | E28  | I29  | T30  | D31  | V32  | Q33  | A34  | A35  | I36  | A37  | A38  | I39  | S40  | P41  | A42  | G43  | V44  | N45  | G46  | V47  | P48  | D49  | A50  | S51  | S52  | T53  | T54  | K55  | G56  | L57  | L58  | F59  | P60  |      |
|     | P61  | T62  | E63  | Q64  | E65  | V66  | L67  | D68  | G69  | T70  | M71  | N72  | T73  | K74  | A75  | V76  | T77  | P78  | A79  | T80  | L81  | A82  | T83  | R84  | L85  | S86  | Y87  | P88  | N89  | A90  | T91  | E92  | T93  | T94  | Y95  | G96  | L97  | T98  | R99  | Y100 | S101 | T102 | N103 | D104 | E105 | A106 | I107 | A108 | G109 | T110 | N111 | T112 | E113 | S114 | S115 | T116 | T117 | P118 | A119 | K120 |
|     | F121 | T122 | V123 | A124 | L125 | N126 | M127 | A128 | F129 | E130 | T131 | R132 | V133 | S134 | T135 | E136 | S138 | N139 | G140 | V141 | I142 | K143 | I144 | S145 | S146 | L147 | P148 | Q149 | A150 | L151 | A152 | G153 | A154 | D155 | D156 | T157 | T158 | A159 | M160 | T161 | P162 | L163 | K164 | T165 | Q166 | Q167 | L168 | A169 | I170 | K171 | L172 | I173 | A174 | Q175 | I176 | A177 | P178 | S179 | F180 |      |
|     | T181 | T182 | A183 | T184 | E185 | S186 | D187 | Q188 | G189 | V190 | V191 | Q192 | L193 | A194 | T195 | V196 | A197 | Q198 | V199 | R200 | Q201 | G202 | T203 | L204 | R205 | E206 | G207 | Y208 | A209 | I210 | S211 | P212 | Y213 | T214 | F215 | M216 | N217 | S218 | S219 | S220 | T221 | E222 | E223 | Y224 | G225 | G226 | V227 | I228 | K229 | L230 | G231 | T232 | Q233 | S234 | E235 | V236 | N237 | S238 | N239 | N240 |
|     | A241 | S242 | V243 | A244 | T245 | T246 | G247 | A248 | T249 | L250 | N251 | G252 | R253 | G254 | S255 | T256 | T257 | S258 | M259 | R260 | G261 | V262 | V263 | K264 | L265 | T266 | T267 | T268 | A269 | G270 | S271 | Q272 | S273 | G274 | D275 | D276 | A277 | S278 | S279 | A280 | L281 | W283 | N284 | A285 | D286 | V287 | I288 | Q289 | Q290 | R291 | G292 | G293 | Q294 | I295 | I296 | Y297 | G298 | T299 | L300 |      |
|     | R301 | I302 | E303 | D304 | T305 | F306 | T307 | I308 | A309 | M310 | G311 | G312 | A313 | N314 | I315 | T316 | G317 | T318 | V319 | R320 | M321 | T322 | G323 | G324 | Y325 | I326 | Q327 | G328 | N329 | R330 | I331 | V332 | T333 | Q334 | N335 | E336 | I337 | R338 | R339 | T340 | I341 | P342 | V343 | G344 | A345 | A346 | M347 | M348 | W349 | A350 | A351 | D352 | S353 | L354 | P355 | S356 | M357 | A358 | W359 | R360 |
|     | F361 | C362 | H363 | G364 | G365 | T366 | V367 | S368 | A369 | S370 | D371 | C372 | P373 | L374 | Y375 | A376 | S377 | R378 | I379 | G380 | T381 | R382 | Y383 | G384 | G385 | N386 | P387 | S388 | N389 | P390 | G391 | L392 | P393 | D394 | M395 | R396 | G397 | L398 | P399 | V400 | R401 | G402 | S403 | G404 | R405 | G406 | S407 | H408 | L409 | T410 | M411 | P412 | M413 | V414 | M415 | G416 | M417 | D418 | Q419 | F420 |



- Molecule 1: gp12, short tail fiber protein



- Molecule 1: gp12, short tail fiber protein

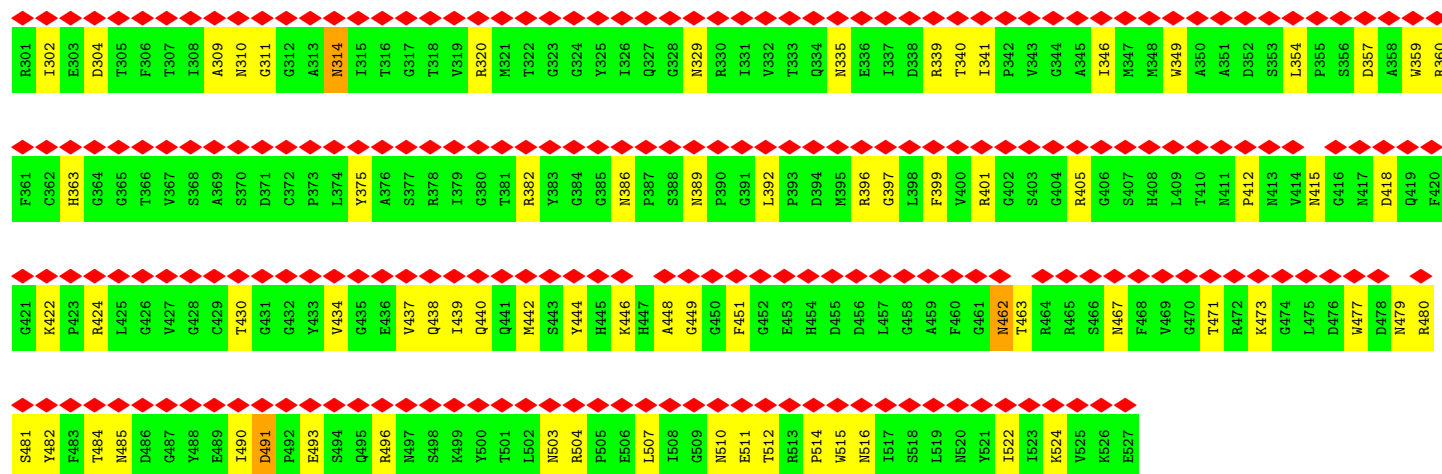


|      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|
| P61  | T181 | A241 | R301 | F361 | G421 | S481 |
| T62  | T182 | S242 | I302 | G362 | K422 | Y482 |
| E63  | T122 | V243 | E303 | H363 | P423 | F483 |
| Q64  | V123 |      |      | G364 | R424 | T484 |
| E65  | A124 | A244 | D304 | G365 | L425 | N485 |
| V66  | L125 | T245 | T305 | T366 | G426 | D486 |
| I67  | N126 | G247 | F306 | V367 | V427 | G487 |
| D68  | N127 | Q188 | T307 | S368 | G428 | Y488 |
| G69  | A128 | A248 | I308 | A369 | C429 | E489 |
| T70  | F129 | T249 | A309 | S370 | G430 | L490 |
| N71  | E130 | L250 | N310 | D371 | G431 | D491 |
| N72  | T131 | N251 | G311 | G372 | G432 | P492 |
| T73  | R132 | G252 | G312 | P373 | Y433 | E493 |
| K74  | V133 | A194 | A313 | L374 | Y434 | S494 |
| A75  | S134 | T195 | N314 | V375 | G435 | Q495 |
| V76  | T135 | T256 | I315 | A376 | E436 | R496 |
| T77  | E136 | V196 | T316 | S377 | V437 | N497 |
| P78  | S137 | G197 | G317 | R378 | A438 | S498 |
| A79  | S138 | Q198 | T318 | I379 | T439 | K499 |
| T80  | N139 | V199 | V319 | G380 | Q440 | Y500 |
| L81  | G140 | R200 | R320 | T381 | Q441 | T501 |
| A82  | V141 | Q201 | M321 | L382 | M442 | L502 |
| T83  | I142 | G202 | T322 | V383 | S443 | N503 |
| R84  | K143 | T203 | G323 | G384 | Y444 | R504 |
| L85  | I144 | L204 | G324 | G385 | H445 | P505 |
| S86  | S145 | R205 | Y325 | N386 | K446 | E506 |
| Y87  | S146 | E206 | T326 | P387 | L447 | L507 |
| P88  | L147 | G207 | Q327 | S388 | A448 | T508 |
| N89  | P148 | Y208 | G328 | N389 | G449 | G509 |
| A90  | Q149 | A209 | R329 | P390 | G450 | N510 |
| T91  | A150 | I210 | R330 | G391 | F451 | E511 |
| E92  | L151 | S211 | I331 | L392 | G452 | T512 |
| T93  | A152 | P212 | V332 | P393 | E453 | R513 |
| V94  | G153 | Y213 | T333 | D394 | H454 | P514 |
| Y95  | A154 | T214 | Q334 | K395 | D455 | W515 |
| G96  | D155 | F215 | N335 | R396 | D456 | N516 |
| L97  | D156 | M216 | E336 | G397 | L457 | T517 |
| T98  | T157 | N217 | I337 | L398 | G458 | S518 |
| R99  | T158 | S218 | D338 | F399 | A459 | L519 |
| Y100 | A159 | S219 | R339 | V400 | F460 | N520 |
| S101 | M160 | S220 | T340 | R401 | G461 | Y521 |
| T102 | T161 | T221 | I341 | G402 | N462 | T522 |
| N103 | P162 | E222 | P342 | S403 | T463 | I523 |
| D104 | L163 | E223 | V343 | G404 | R464 | K524 |
| E105 | K164 | Y224 | G344 | R405 | R465 | V525 |
| A106 | T165 | K225 | A345 | G406 | S466 | K526 |
| I107 | Q166 | G226 | I346 | S407 | N467 | E527 |
| A108 | Q167 | V227 | M347 | H408 | F468 |      |
| G109 | L168 | I228 | M348 | L409 | G470 |      |
| V110 | A169 | K229 | W349 | T410 | T471 |      |
| N111 | I170 | G231 | A350 | N411 | R472 |      |
| N112 | K171 | G232 | D352 | P412 | K473 |      |
| E113 | L172 | Q233 | S353 | M413 | G474 |      |
| S114 | I173 | S234 | L354 | V414 | L475 |      |
| S115 | A174 | E235 | P355 | M415 | D476 |      |
| I116 | Q175 | I295 | S356 | G416 | V477 |      |
| T117 | I176 | T296 | D357 | M417 | D478 |      |
| P118 | A177 | Y297 | A358 | D418 | N479 |      |
| A119 | P178 | G298 | W359 | Q419 | R480 |      |
| K120 | S179 | T299 | R360 | F420 |      |      |

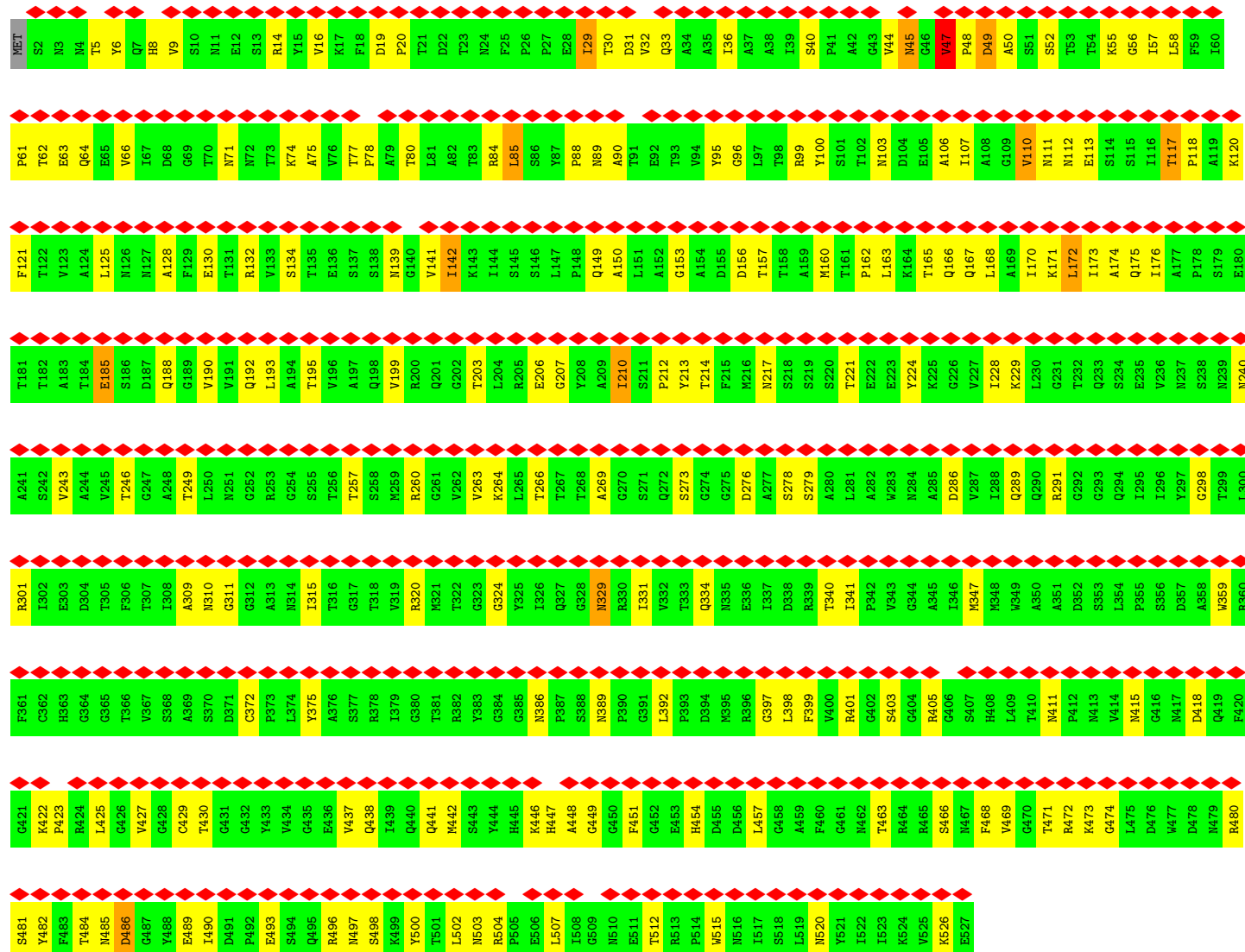
• Molecule 1: gp12, short tail fiber protein

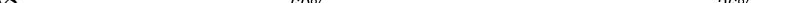


|     |      |      |      |      |
|-----|------|------|------|------|
| MET | P61  | F121 | T181 | A241 |
| S2  | T62  | T122 | T182 | S242 |
| H3  | E63  | V123 | A183 | V243 |
| N4  | Q64  | A124 | T184 | A244 |
| T5  | E65  | L125 | E185 | V245 |
| Y6  | V66  | N126 | S186 | T246 |
| Q7  | I67  | M127 | D187 | G247 |
| H8  | D68  | A128 | Q188 | A248 |
| V9  | G69  | F129 | G189 | T249 |
| S10 | T70  | E130 | V190 | L250 |
| M11 | N71  | T131 | V191 | N251 |
| E12 | N72  | R132 | Q192 | G252 |
| S13 | T73  | V133 | L193 | A194 |
| R14 | K74  | S134 | A194 | G254 |
| Y15 | A75  | T135 | T195 | S255 |
| V16 | V76  | E136 | V196 | T256 |
| K17 | T77  | S137 | A197 | T257 |
| F18 | P78  | N138 | Q198 | S258 |
| D19 | A79  | M139 | V199 | M259 |
| P20 | T80  | G140 | R200 | R260 |
| T21 | L81  | V141 | Q201 | G261 |
| D22 | A82  | I142 | G202 | V262 |
| T23 | T83  | K143 | T203 | V263 |
| N24 | R84  | I144 | L204 | K264 |
| F25 | L85  | S145 | R205 | L265 |
| P26 | S86  | S146 | E206 | T266 |
| P27 | Y87  | L147 | G207 | T267 |
| E28 | P88  | P148 | Y208 | T268 |
| I29 | N89  | Q149 | A209 | A269 |
| T30 | A90  | A150 | I210 | G270 |
| D31 | T91  | L151 | S211 | S271 |
| V32 | E92  | A152 | P212 | Q272 |
| Q33 | T93  | G153 | Y213 | Q273 |
| A34 | V94  | A154 | T214 | G274 |
| A35 | Y95  | D155 | F215 | G275 |
| I36 | G96  | D156 | M216 | D276 |
| A37 | L97  | T157 | N217 | A277 |
| A38 | T98  | T158 | S218 | S278 |
| I39 | R99  | A159 | S219 | S279 |
| S40 | Y100 | M160 | S220 | S279 |
| P41 | S101 | T161 | T221 | L281 |
| A42 | T102 | P162 | E222 |      |
| G43 | N103 | L163 | E223 |      |
| V44 | D104 | K164 | Y224 |      |
| N45 | E105 | T165 | K225 |      |
| G46 | A106 | Q166 | G226 |      |
| V47 | I107 | Q167 | V227 |      |
| P48 | A108 | L168 | I228 |      |
| D49 | G109 | A169 | K229 |      |
| A50 | V110 | I170 | L230 |      |
| S51 | M111 | K171 | G231 |      |
| S52 | N112 | L172 | T232 |      |
| T53 | E113 | I173 | Q233 |      |
| T54 | S114 | A174 | S234 |      |
| K55 | S115 | Q175 | E235 |      |
| I56 | T116 | I176 | V236 |      |
| T57 | T117 | A177 | N237 |      |
| L58 | P118 | P178 | S238 |      |
| F59 | A119 | S179 | T239 |      |
| T60 | K120 | E180 | L300 |      |



- Molecule 1: gp12, short tail fiber protein



- Chain S8: 

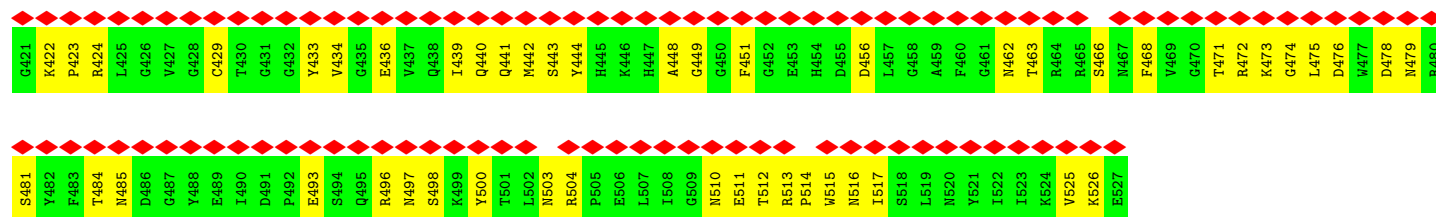


|      |      |      |      |      |      |
|------|------|------|------|------|------|
| T181 | A241 | R301 | F361 | G421 | S481 |
| T182 | S242 | I302 | C362 | K422 | Y482 |
| A183 | V243 | E303 | H363 | P423 | F483 |
| T184 | A244 | D304 | G364 | R424 | T484 |
| E185 | V245 | T305 | G365 | L425 | M485 |
| S186 | T246 | F306 | T366 | G426 | D486 |
| D187 | G247 | T307 | V367 | V427 | G487 |
| Q188 | A248 | I308 | S368 | G428 | Y488 |
| G189 | T249 | A309 | A369 | C429 | E489 |
| V190 | L250 | N310 | S370 | T430 | I490 |
| V191 | N251 | G311 | D371 | G431 | D491 |
| Q192 | G252 | G312 | C372 | G432 | P492 |
| L193 | R253 | A313 | F373 | G433 | E493 |
| A194 | G254 | N314 | L374 | Y434 | S494 |
| T195 | S255 | I315 | Y375 | G435 | Q495 |
| V196 | T256 | T316 | A376 | E436 | R496 |
| A197 | T257 | G317 | S377 | V437 | M497 |
| Q198 | S258 | T318 | R378 | Q438 | S498 |
| V199 | M259 | V319 | I379 | I439 | K499 |
| R200 | R260 | R320 | G380 | Q440 | Y500 |
| Q201 | G261 | M321 | T381 | Q441 | T501 |
| G202 | V262 | T322 | R382 | M442 | L502 |
| T203 | V263 | G323 | Y383 | S443 | N503 |
| L204 | K264 | G324 | G384 | Y444 | R504 |
| R205 | L265 | Y325 | G385 | H445 | P505 |
| E206 | T266 | I326 | N386 | K446 | E506 |
| G207 | T267 | Q327 | P387 | H447 | L507 |
| Y208 | T268 | G328 | S388 | A448 | I508 |
| A209 | A269 | N329 | N389 | G449 | G509 |
| I210 | G270 | R330 | P390 | G450 | N510 |
| S211 | S271 | I331 | G391 | F451 | E511 |
| P212 | Q272 | V332 | L392 | G452 | T512 |
| Y213 | S273 | T333 | P393 | E453 | R513 |
| T214 | G274 | Q334 | D394 | H454 | P514 |
| F215 | G275 | N335 | M395 | D455 | W515 |
| M216 | D276 | E336 | R396 | D456 | N516 |
| N217 | A277 | I337 | G397 | L457 | I517 |
| S218 | S278 | D338 | L398 | G458 | S518 |
| S219 | S279 | R339 | F399 | A459 | L519 |
| S220 | A280 | T340 | V400 | F460 | N520 |
| T221 | L281 | I341 | R401 | G461 | Y521 |
| E222 | A282 | P342 | G402 | M462 | I522 |
| E223 | W283 | V343 | S403 | T463 | I523 |
| Y224 | N284 | G344 | G404 | R464 | K524 |
| K225 | A285 | A345 | R405 | R465 | W525 |
| G226 | D286 | I346 | G406 | S466 | K526 |
| V227 | V287 | M347 | S407 | M467 | E527 |
| I228 | I288 | M348 | H408 | F468 |      |
| K229 | Q289 | W349 | L409 | V469 |      |
| L230 | Q290 | A350 | T410 | G470 |      |
| G231 | R291 | A351 | M411 | T471 |      |
| T232 | G292 | P352 | P412 | R472 |      |
| Q233 | G293 | S353 | M413 | K473 |      |
| S234 | Q294 | L354 | V414 | G474 |      |
| E235 | I295 | P355 | M415 | L475 |      |
| V236 | I296 | G356 | G416 | D476 |      |
| N237 | Y297 | D357 | M417 | H477 |      |
| S238 | Q298 | A358 | D418 | D478 |      |
| N239 | T299 | W359 | Q419 | M479 |      |
| N240 | L300 | R360 | F420 | R480 |      |

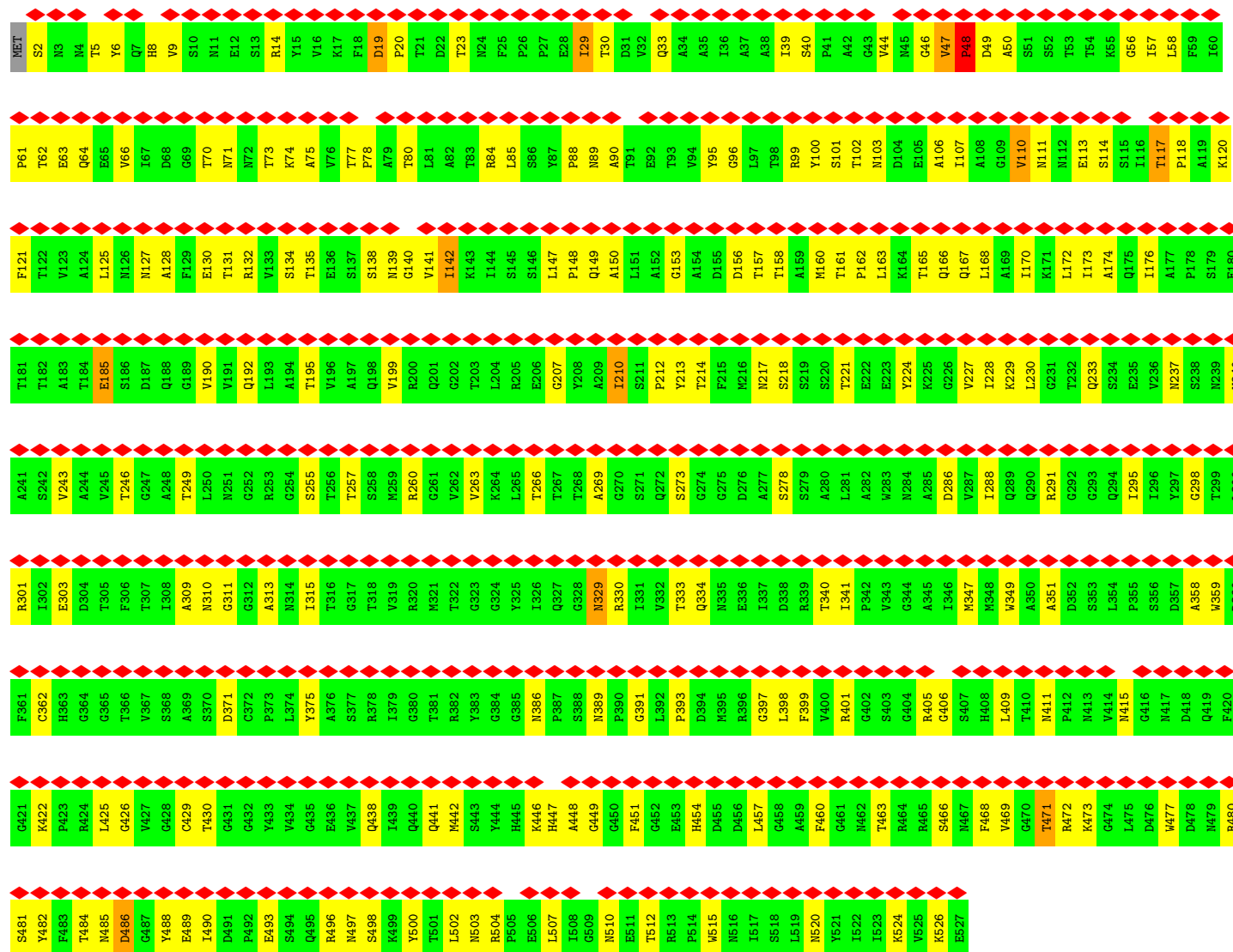
• Molecule 1: gp12, short tail fiber protein



|     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-----|-----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| RET |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | P61  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | S2  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | T62  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | R3  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | E63  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | N4  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Q64  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | T5  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | E65  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | Y6  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | V66  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | Q7  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | I67  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | H8  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | D68  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | V9  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | G69  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | S10 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | T70  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | N11 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M71  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | E12 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | N72  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | S13 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | T73  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | R14 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | K74  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | Y15 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | A75  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | V16 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | V76  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | K17 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | T77  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | F18 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | P78  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | D19 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | A79  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | P20 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | T80  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | T21 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | L81  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | D22 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | A82  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | T23 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | T83  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | N24 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | R84  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | F25 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | L85  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | P26 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | S86  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | T27 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Y87  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | E28 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | P88  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | T29 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | N89  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | T30 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | A90  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | D31 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | T91  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | V32 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | E92  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | Q33 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | T93  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | A34 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | V94  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | A35 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Y95  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | I36 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | D96  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | A37 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | L97  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | I38 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | T98  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | L39 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | R99  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | S40 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Y100 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | P41 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | S101 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | A42 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | T102 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | G43 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | N103 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | V44 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | D104 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | N45 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | E105 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | G46 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | A106 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | V47 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | I107 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | P48 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | T108 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | D49 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | G109 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | A50 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | V110 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | S51 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | N111 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | S52 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | M112 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | T53 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | E113 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | T54 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | S114 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | K55 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | S115 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | G56 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | I116 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | I57 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | T117 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | L58 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | P118 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | F59 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | A119 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|     | T60 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | K120 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

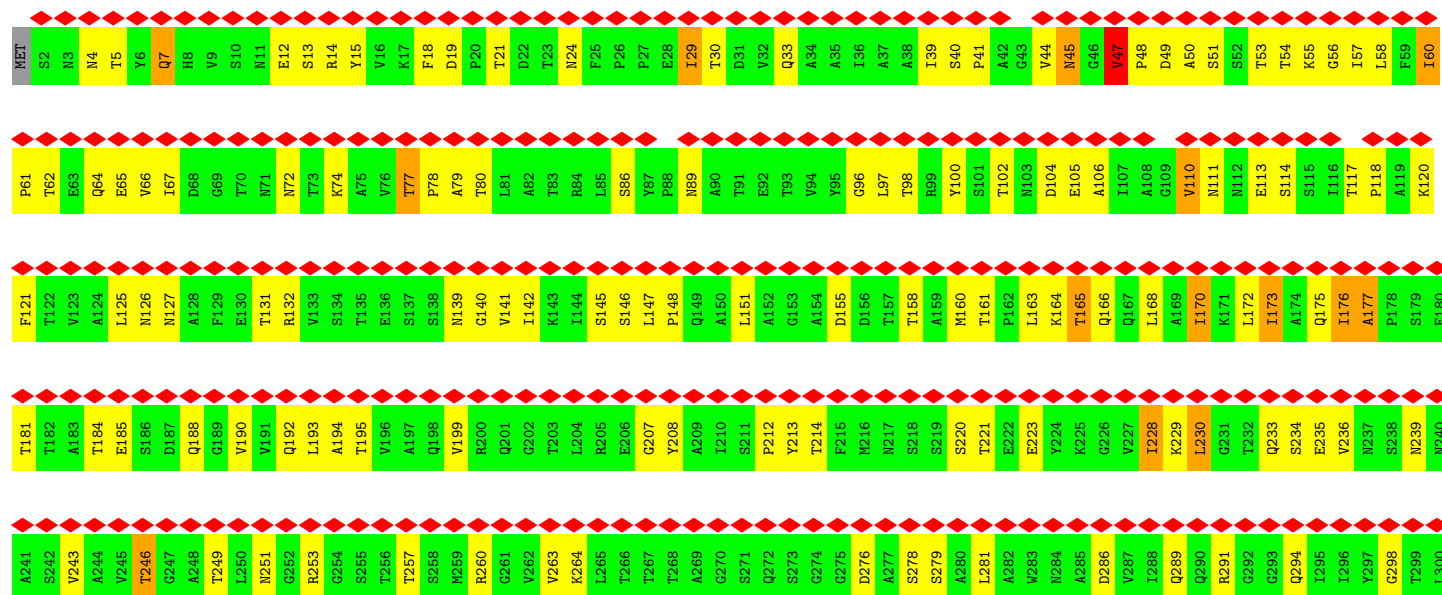


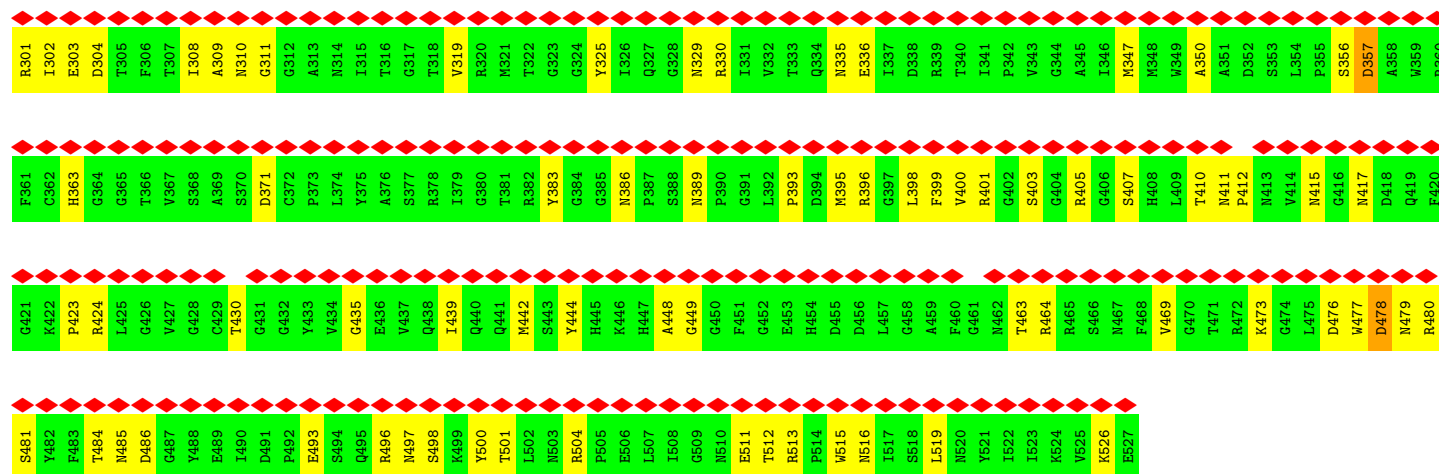
- Molecule 1: gp12, short tail fiber protein



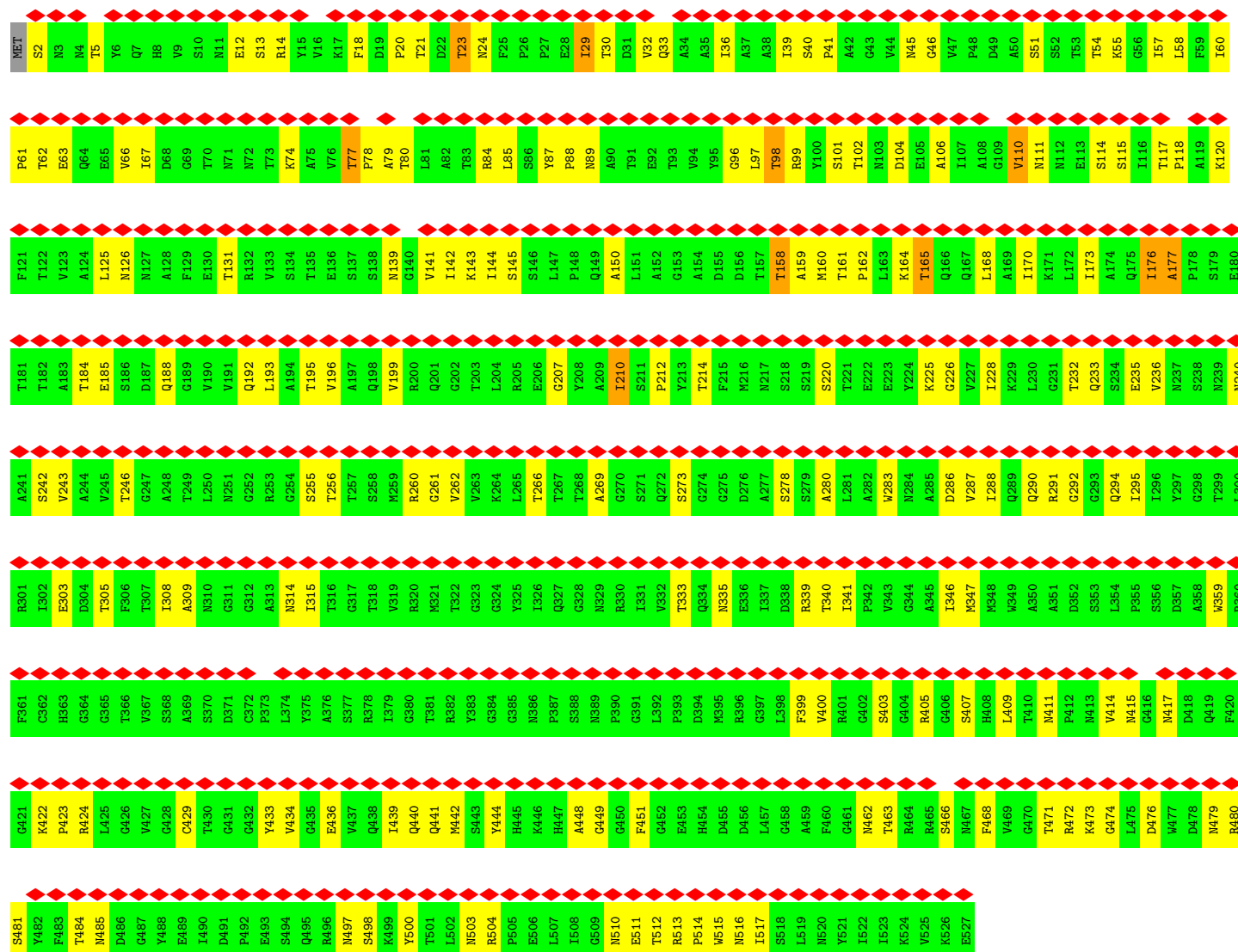
- Molecule 1: gp12, short tail fiber protein

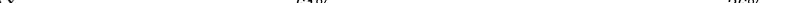




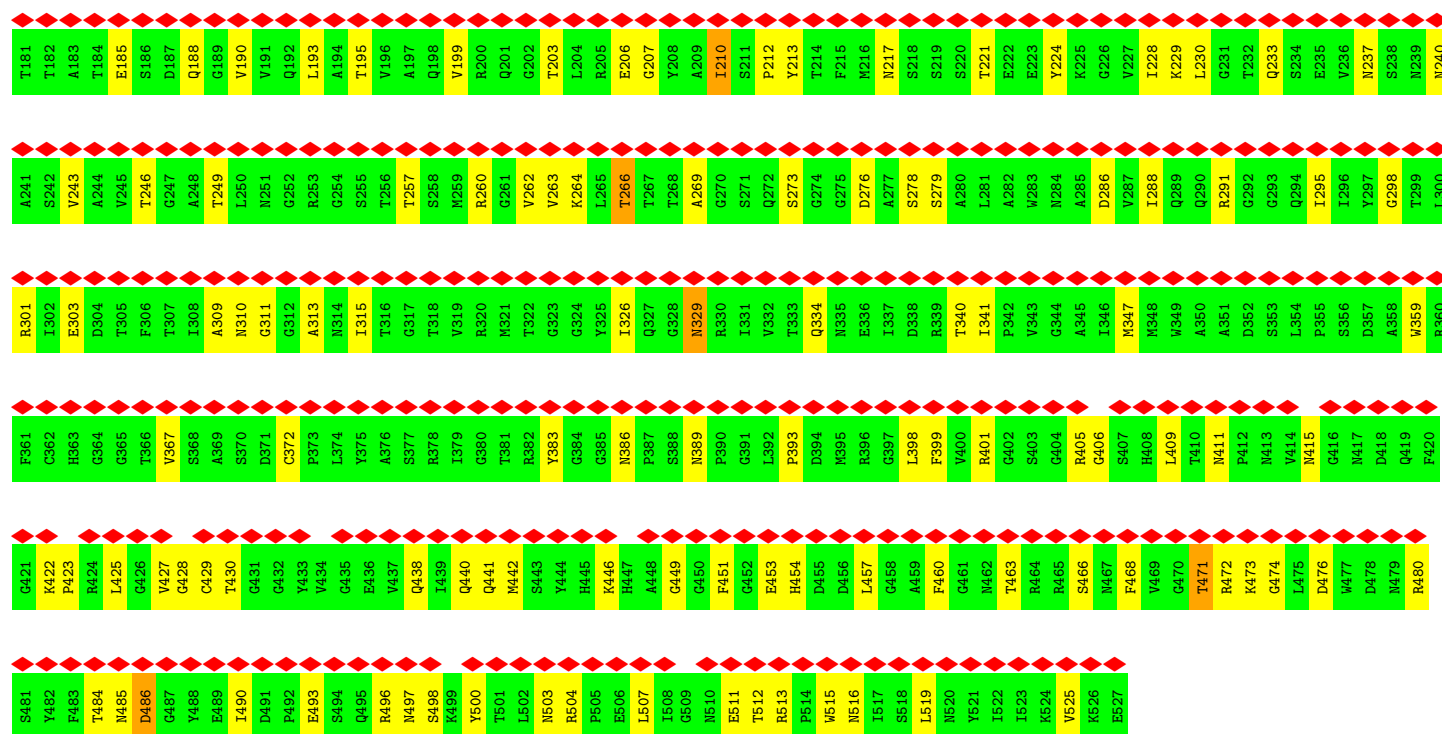


- Molecule 1: gp12, short tail fiber protein

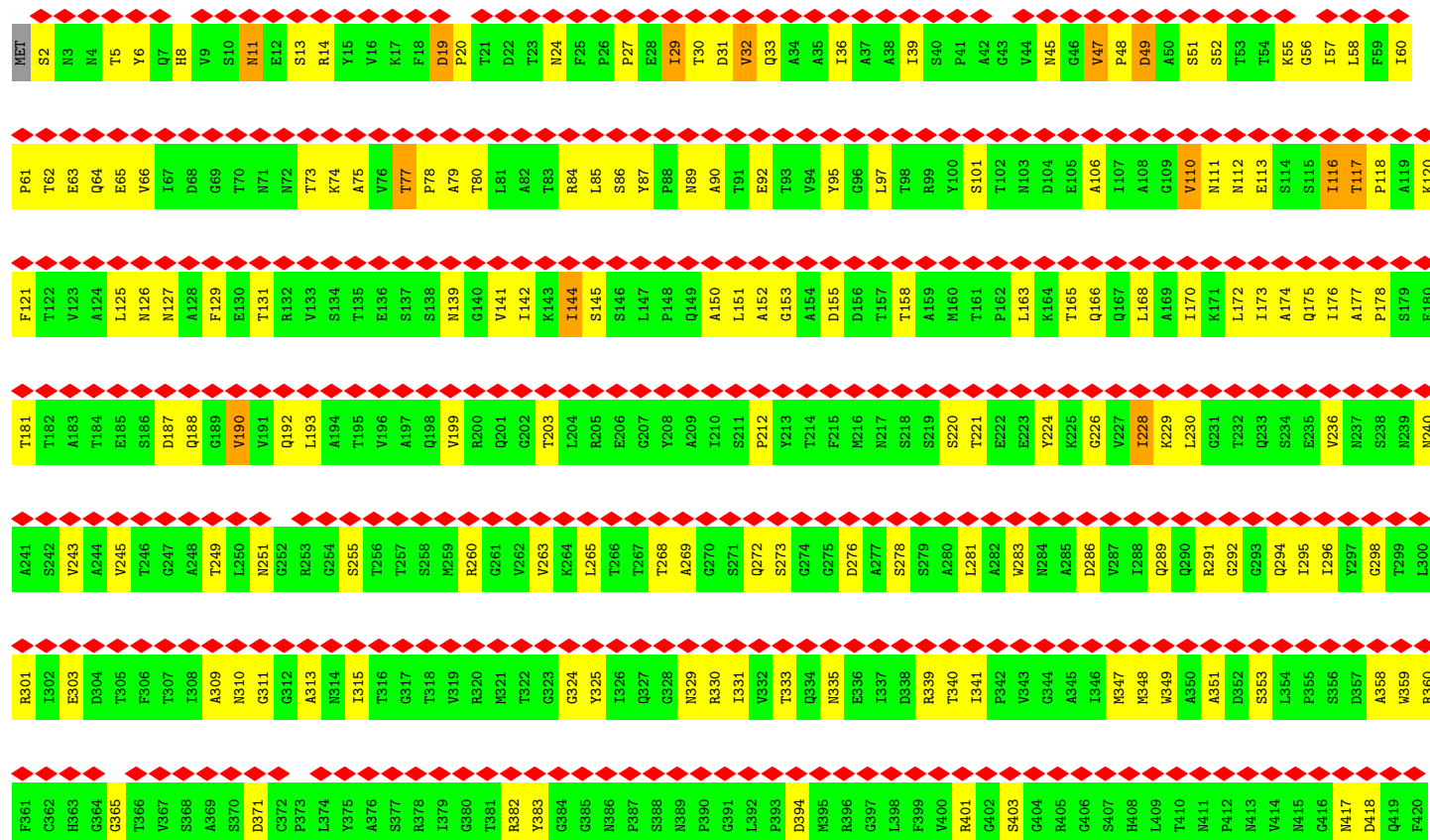


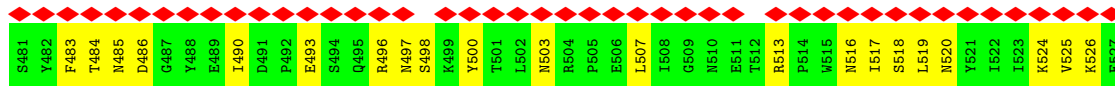
- Chain Sx: 



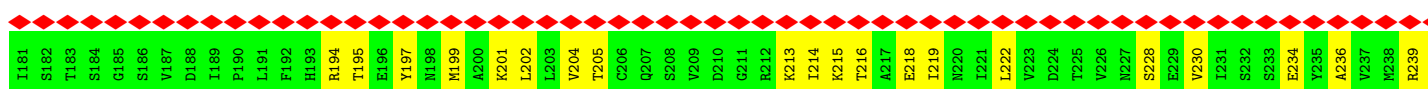
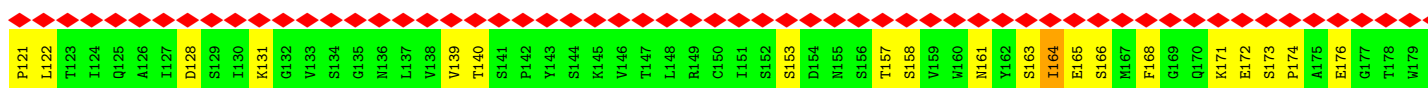
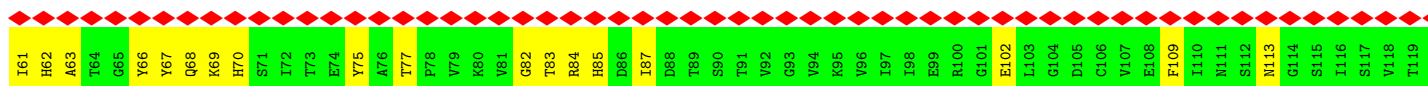
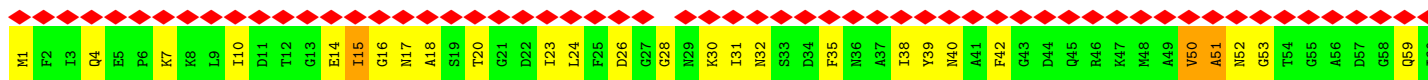


• Molecule 1: gp12, short tail fiber protein

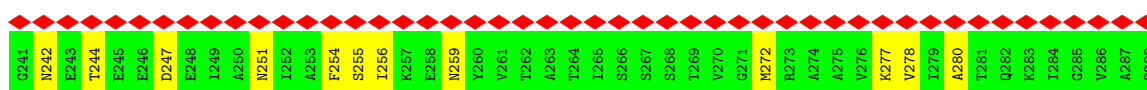
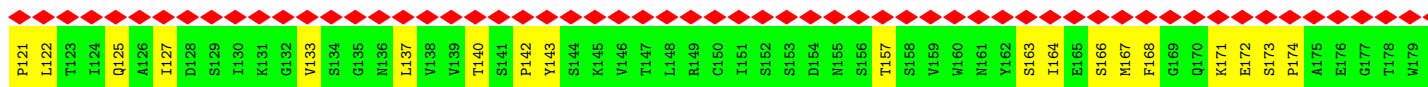
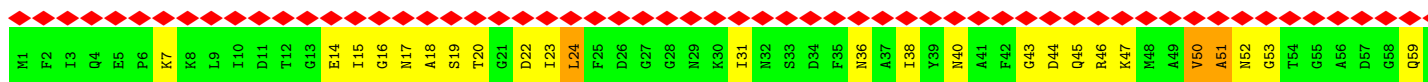




- Molecule 2: gp9, baseplate wedge tail fiber connector

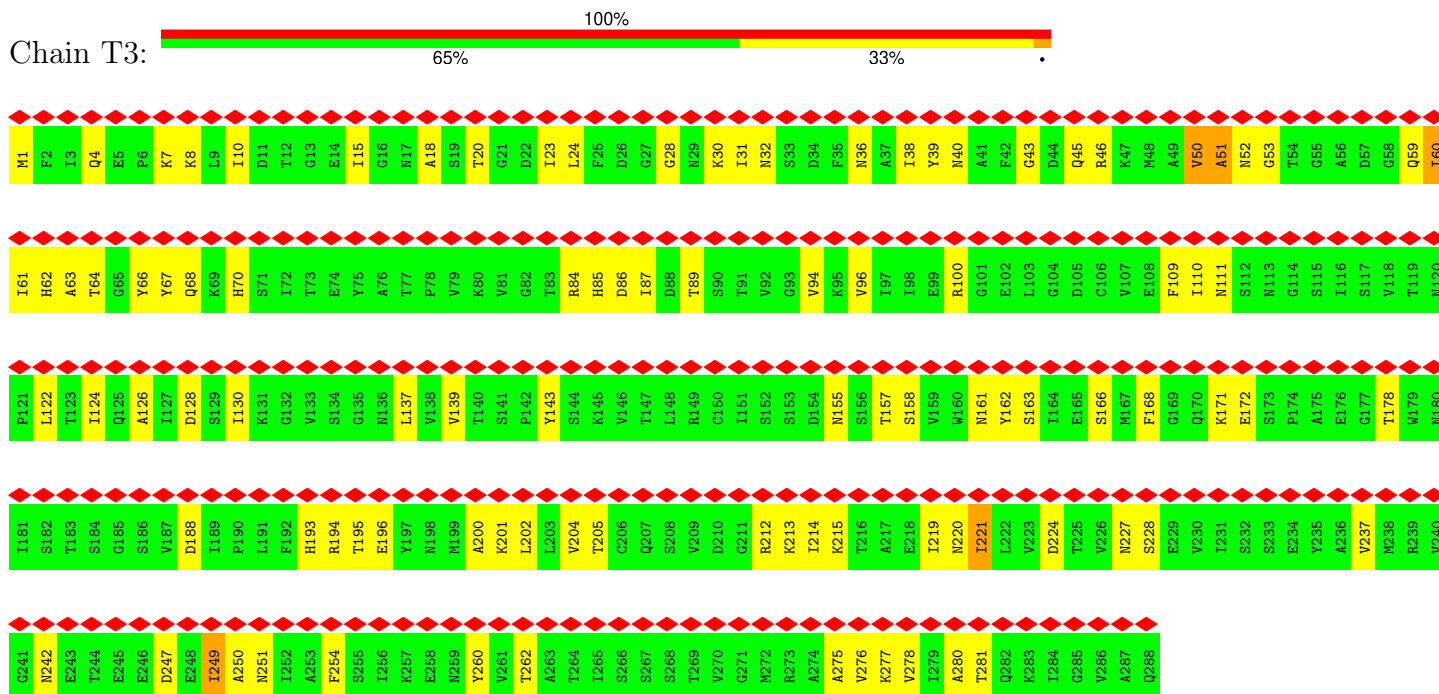


- Molecule 2: gp9, baseplate wedge tail fiber connector



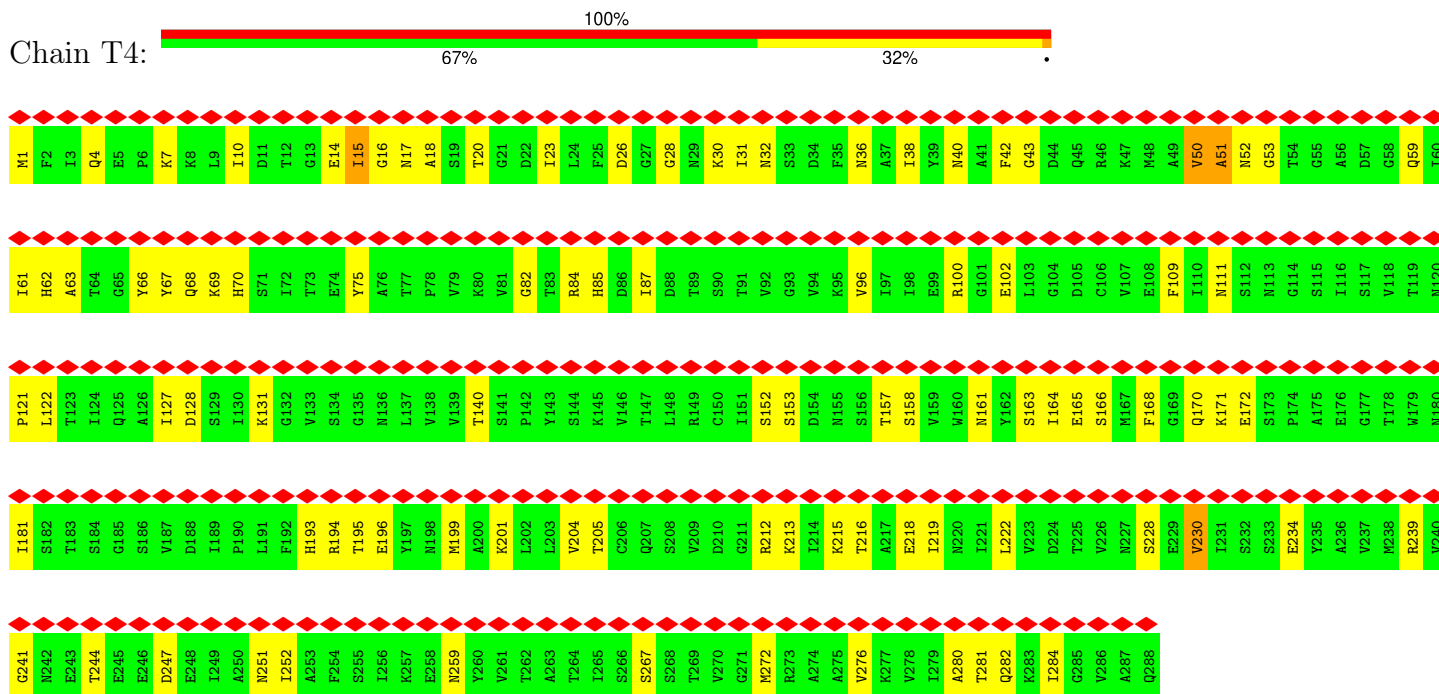
- Molecule 2: gp9, baseplate wedge tail fiber connector

Chain T3:



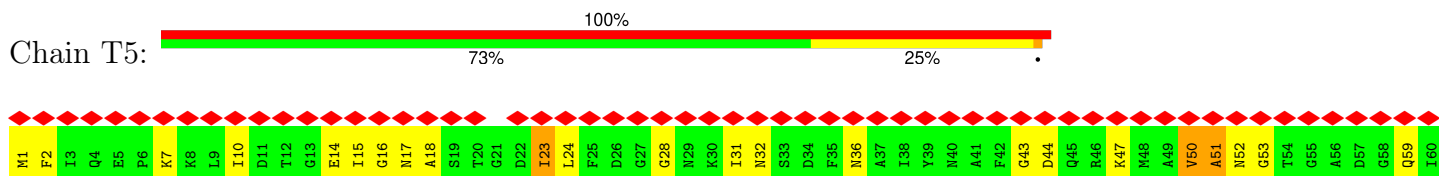
- Molecule 2: gp9, baseplate wedge tail fiber connector

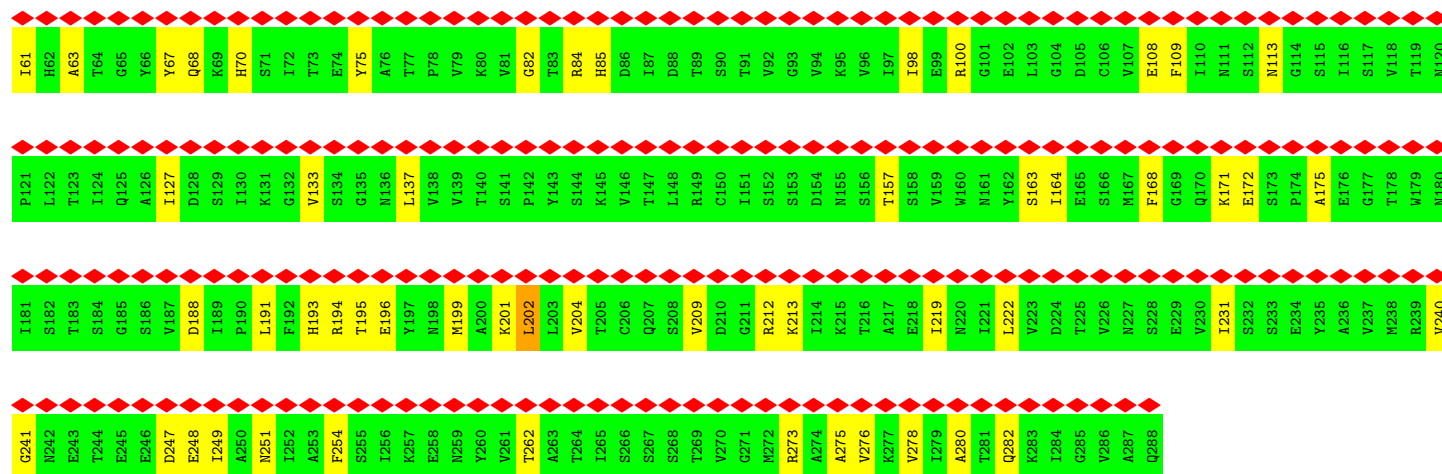
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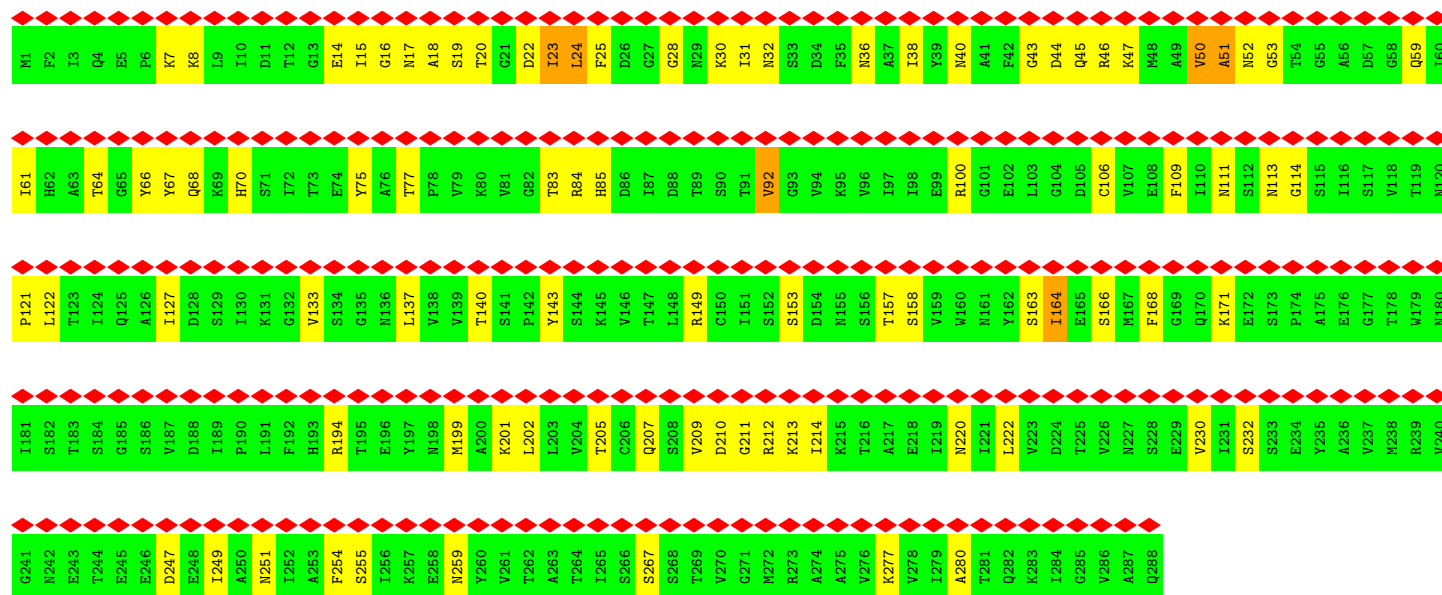
- Molecule 2: gp9, baseplate wedge tail fiber connector

Chain T5:

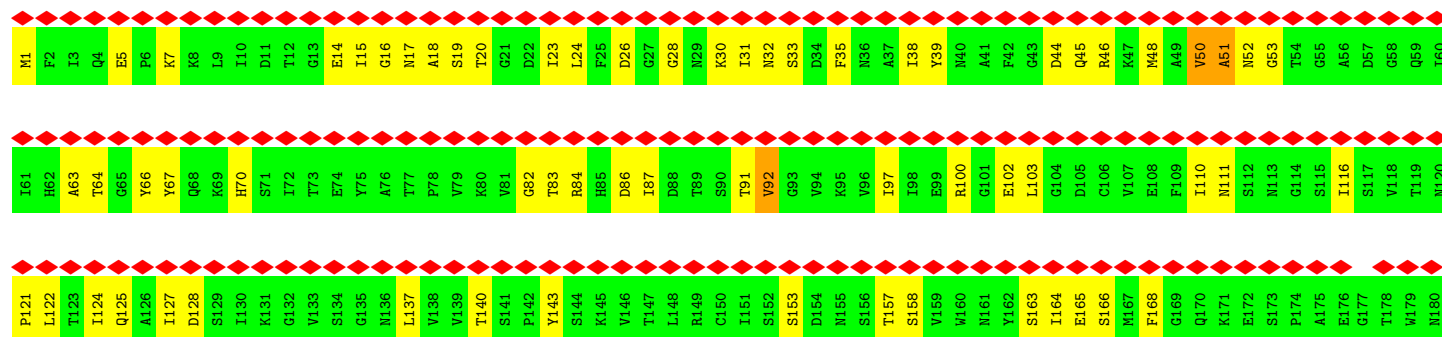


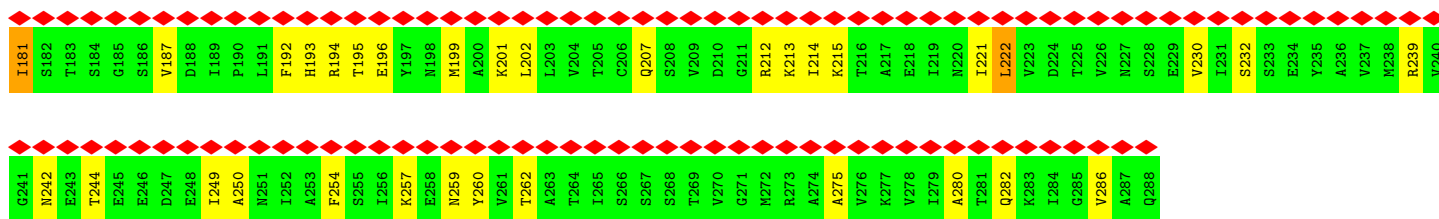


- Molecule 2: gp9, baseplate wedge tail fiber connector

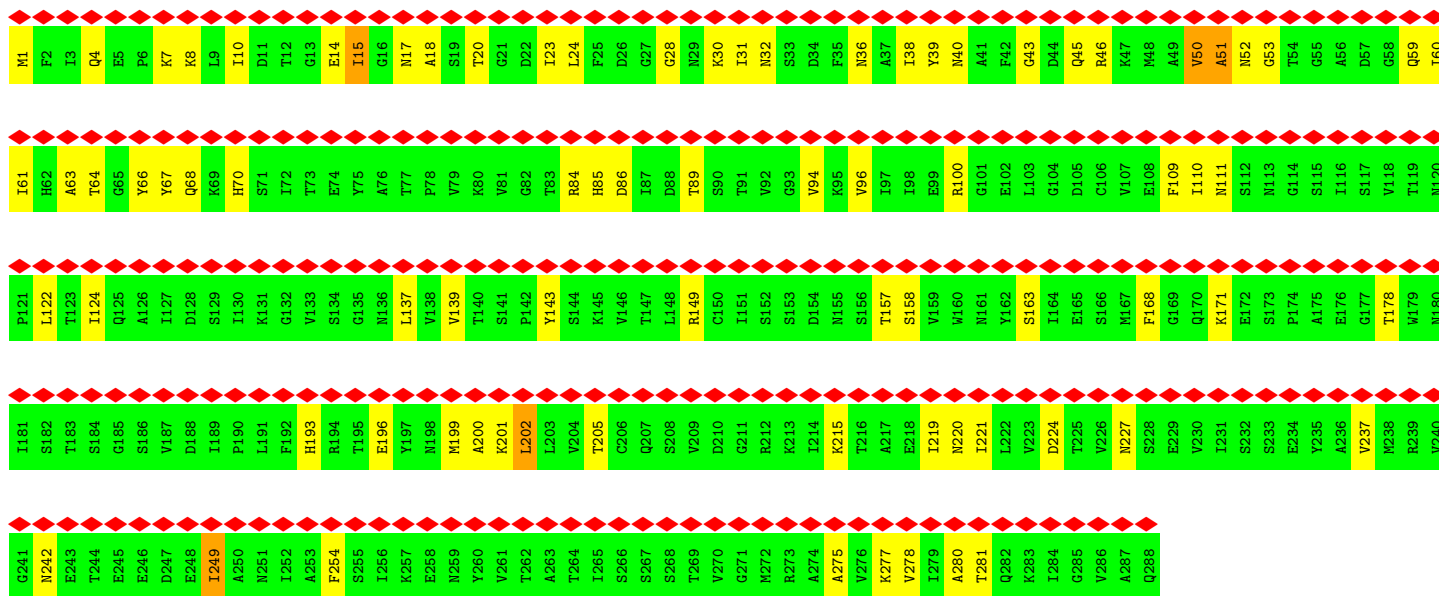
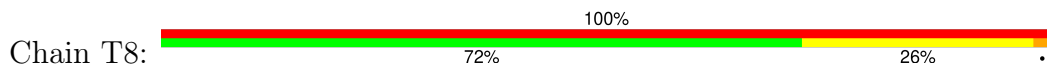


- Molecule 2: gp9, baseplate wedge tail fiber connector

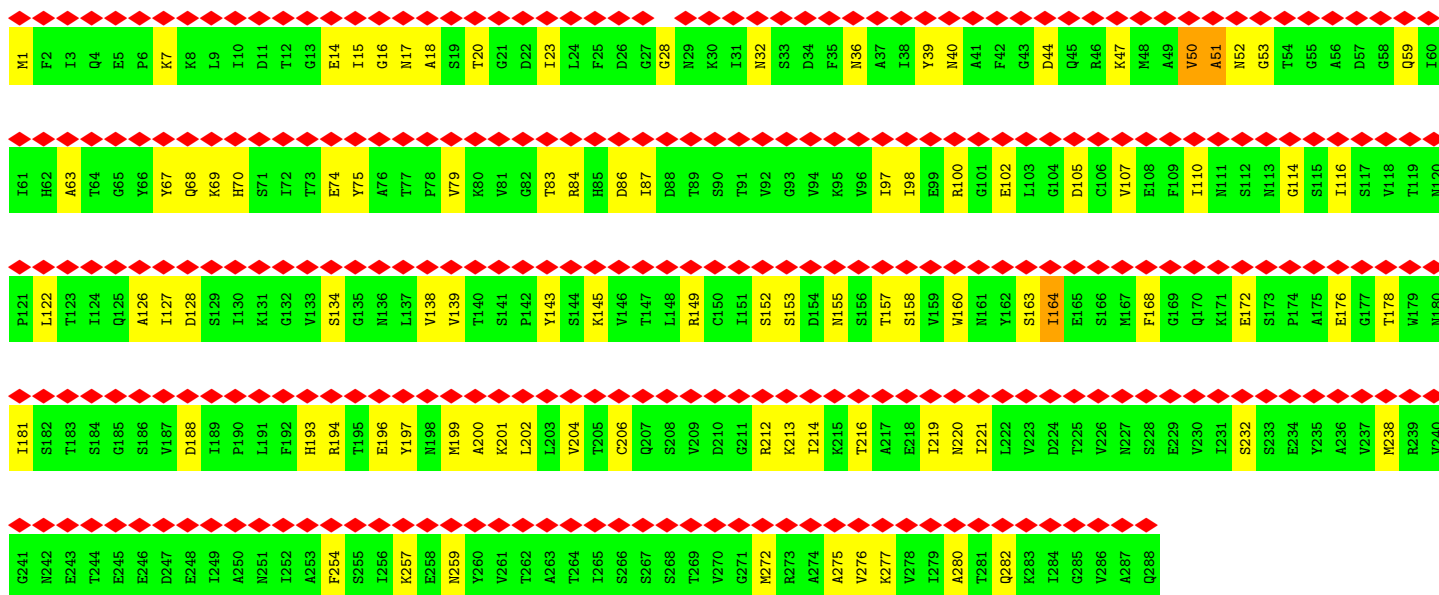




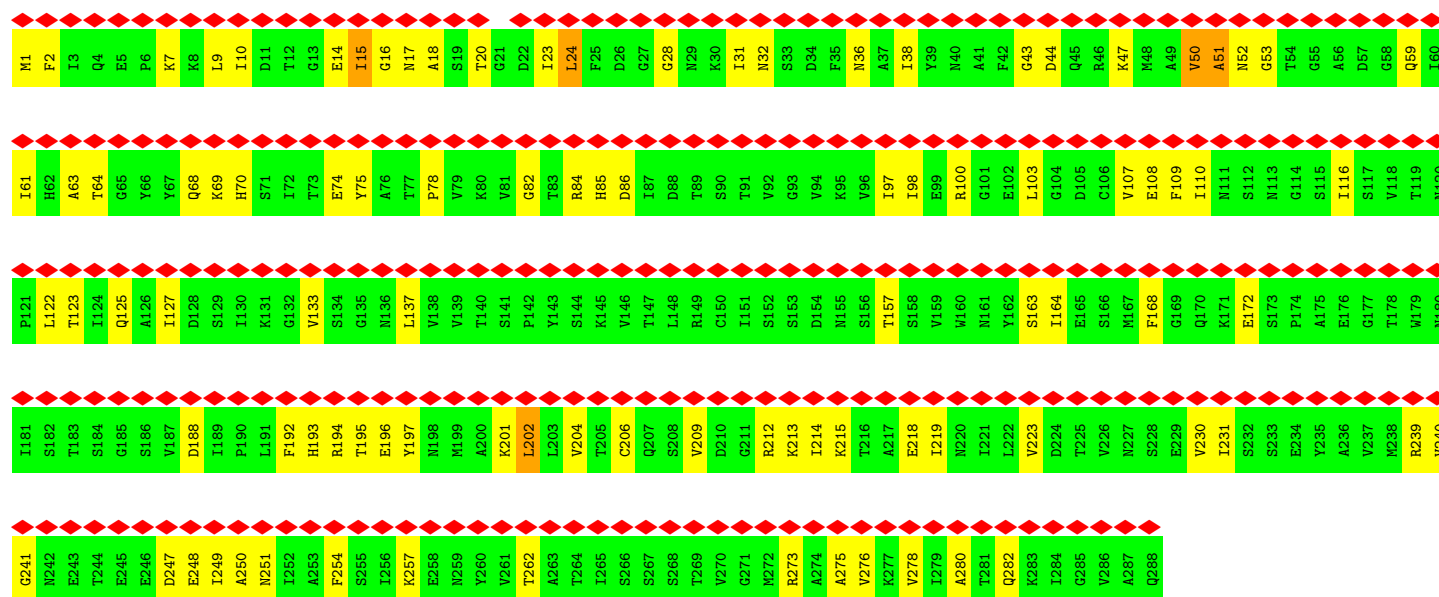
- Molecule 2: gp9, baseplate wedge tail fiber connector



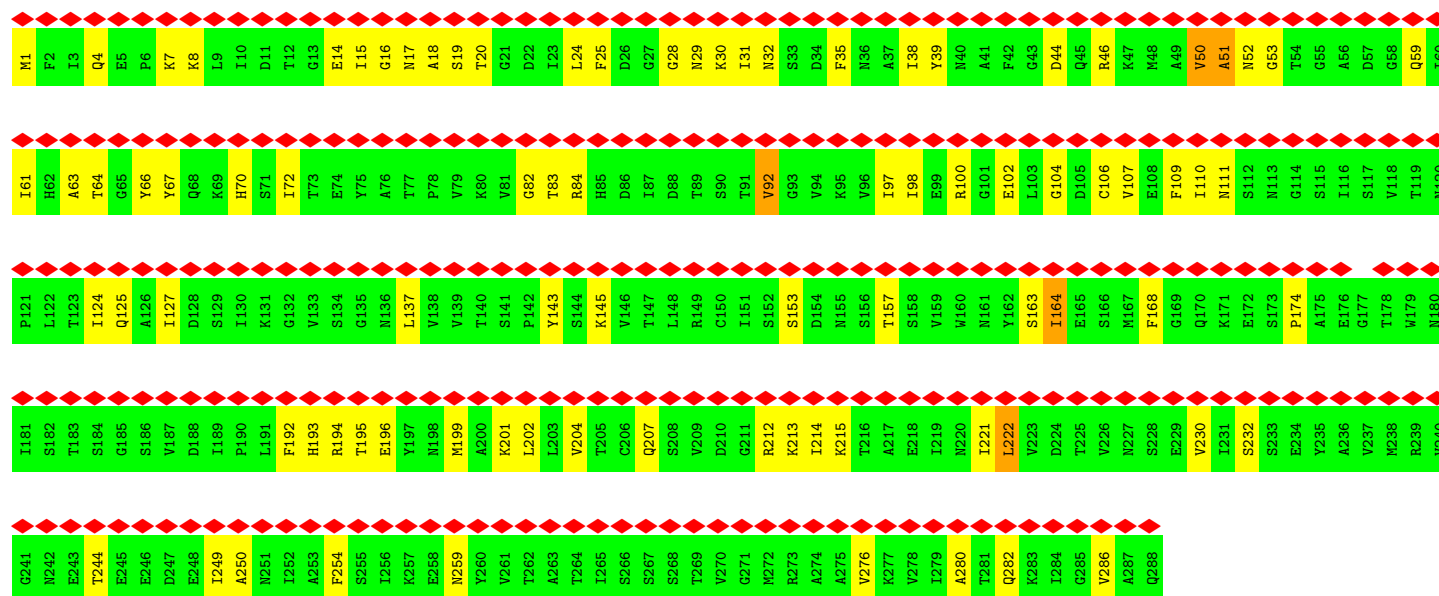
- Molecule 2: gp9, baseplate wedge tail fiber connector



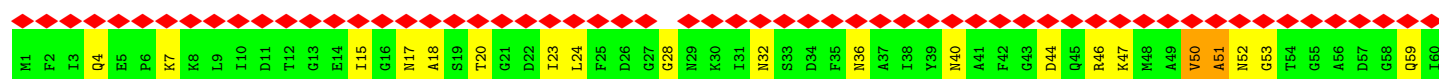
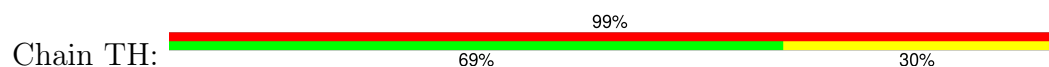
- Molecule 2: gp9, baseplate wedge tail fiber connector

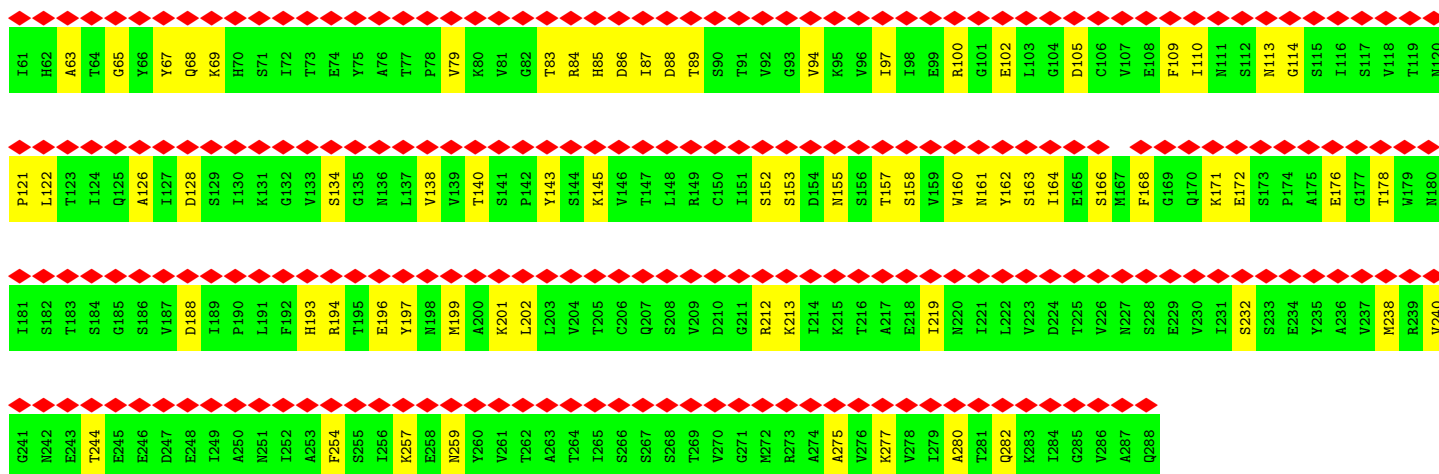


- Molecule 2: gp9, baseplate wedge tail fiber connector

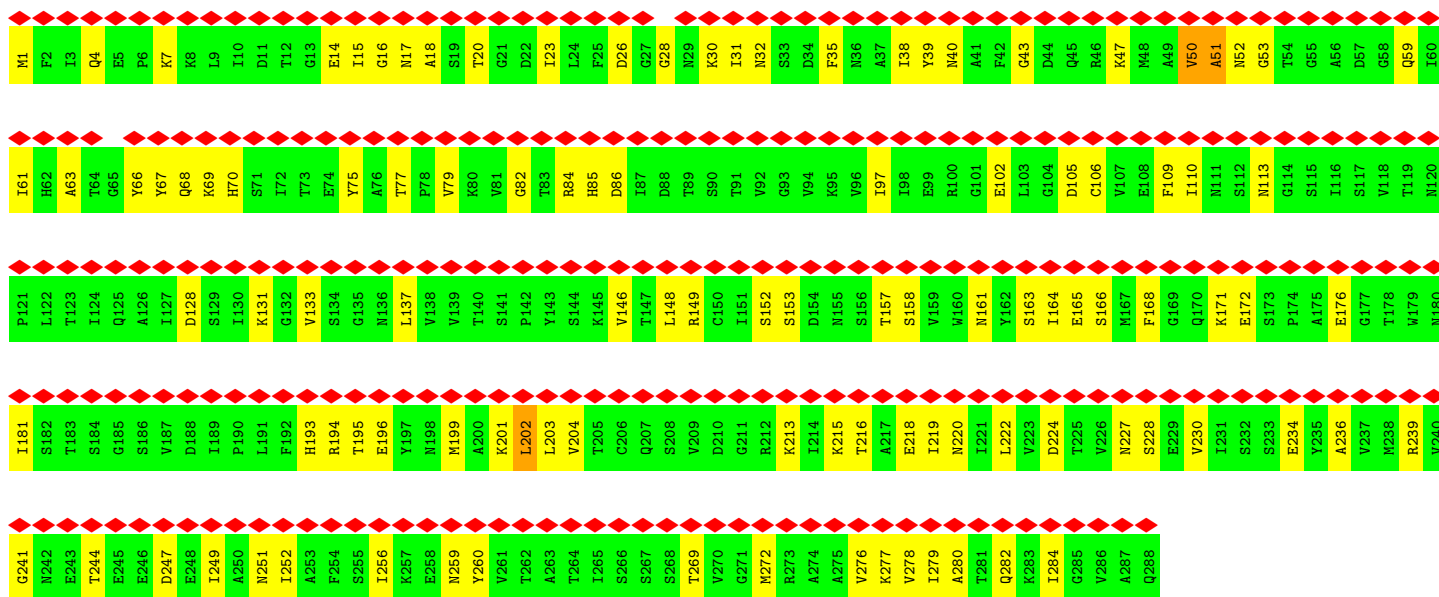


- Molecule 2: gp9, baseplate wedge tail fiber connector

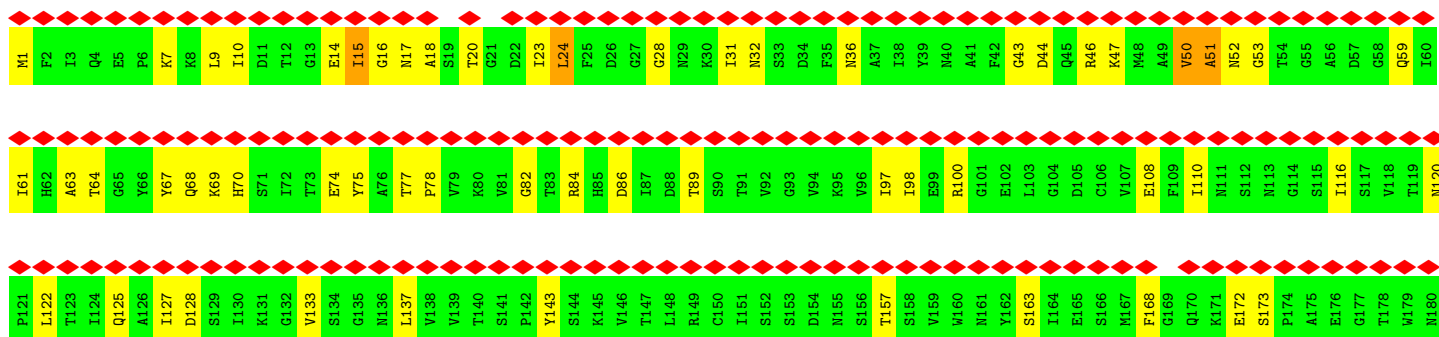




- Molecule 2: gp9, baseplate wedge tail fiber connector



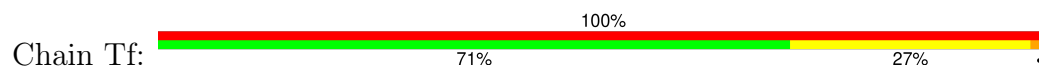
- Molecule 2: gp9, baseplate wedge tail fiber connector



|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| I181 | S182 | T183 | S184 | G185 | S186 | V187 | D188 | I189 | P190 | L191 | F192 | H193 | R194 | T195 | E196 | Y197 | N198 | M199 | A200 | K201 | L202 | L203 | V204 | T205 | C206 | Q207 | S208 | V209 | D210 | G211 | R212 | K213 | I214 | K215 | T216 | A217 | E218 | I219 | N220 | I221 | L222 | V223 | D224 | T225 | V226 | N227 | S228 | E229 | V230 | I231 | S232 | S233 | E234 | Y235 | A236 | V237 | M238 | R239 | V240 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|

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|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| G241 | N242 | E243 | T244 | E245 | E246 | D247 | E248 | I249 | A250 | N251 | I252 | A253 | F254 | S255 | I256 | K257 | E258 | N259 | Y260 | V261 | T262 | A263 | T264 | I265 | S266 | S267 | S268 | T269 | V270 | G271 | M272 | R273 | A274 | A275 | V276 | K277 | V278 | I279 | A280 | T281 | Q282 | K283 | I284 | G285 | V286 | A287 | Q288 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|

- Molecule 2: gp9, baseplate wedge tail fiber connector



|    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| M1 | F2 | I3 | Q4 | E5 | P6 | K7 | K8 | L9 | I10 | D11 | T12 | G13 | E14 | I15 | G16 | M17 | A18 | S19 | Y20 | G21 | D22 | I23 | L24 | F25 | D26 | G27 | G28 | M29 | K30 | I31 | N32 | S33 | D34 | F35 | N36 | A37 | I38 | Y39 | N40 | A41 | F42 | G43 | D44 | Q45 | R46 | K47 | M48 | A49 | V50 | A51 | N52 | G53 | T54 | G55 | A56 | D57 | G58 | Q59 | I60 |
|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

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|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| I61 | H62 | A63 | T64 | G65 | Y66 | Y67 | Q68 | K69 | H70 | S71 | I72 | T73 | E74 | Y75 | A76 | T77 | P78 | V79 | K80 | W81 | G82 | T83 | R84 | H85 | D86 | I87 | D88 | T89 | S90 | T91 | V92 | G93 | V94 | K95 | V96 | I97 | I98 | E99 | R100 | G101 | E102 | L103 | G104 | D105 | C106 | V107 | E108 | F109 | I110 | N111 | S112 | N113 | G114 | S115 | T116 | S117 | V118 | T119 | N120 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|

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|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| P121 | L122 | T123 | I124 | Q125 | A126 | I127 | D128 | S129 | I130 | K131 | G132 | V133 | S134 | G135 | N136 | L137 | V138 | V139 | T140 | S141 | P142 | Y143 | S144 | K145 | V146 | T147 | L148 | R149 | C150 | I151 | S152 | S153 | D154 | N155 | S156 | I157 | S158 | V159 | W160 | N161 | Y162 | S163 | I164 | E165 | S166 | M167 | F168 | G169 | Q170 | K171 | E172 | S173 | P174 | A175 | E176 | G177 | T178 | W179 | N180 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|

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|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| I181 | S182 | T183 | S184 | G185 | S186 | V187 | D188 | I189 | P190 | L191 | F192 | H193 | R194 | T195 | E196 | Y197 | N198 | M199 | A200 | K201 | L202 | L203 | V204 | T205 | C206 | Q207 | S208 | V209 | D210 | G211 | R212 | K213 | I214 | K215 | T216 | A217 | E218 | I219 | N220 | I221 | L222 | V223 | D224 | T225 | V226 | N227 | S228 | E229 | V230 | I231 | S232 | S233 | E234 | Y235 | A236 | V237 | M238 | R239 | V240 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|

|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| G241 | N242 | E243 | T244 | E245 | E246 | D247 | E248 | I249 | A250 | N251 | I252 | A253 | F254 | S255 | I256 | K257 | E258 | N259 | Y260 | V261 | T262 | A263 | T264 | I265 | S266 | S267 | S268 | T269 | V270 | G271 | M272 | R273 | A274 | A275 | V276 | K277 | V278 | I279 | A280 | T281 | Q282 | K283 | I284 | G285 | V286 | A287 | Q288 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|

- Molecule 2: gp9, baseplate wedge tail fiber connector



|    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
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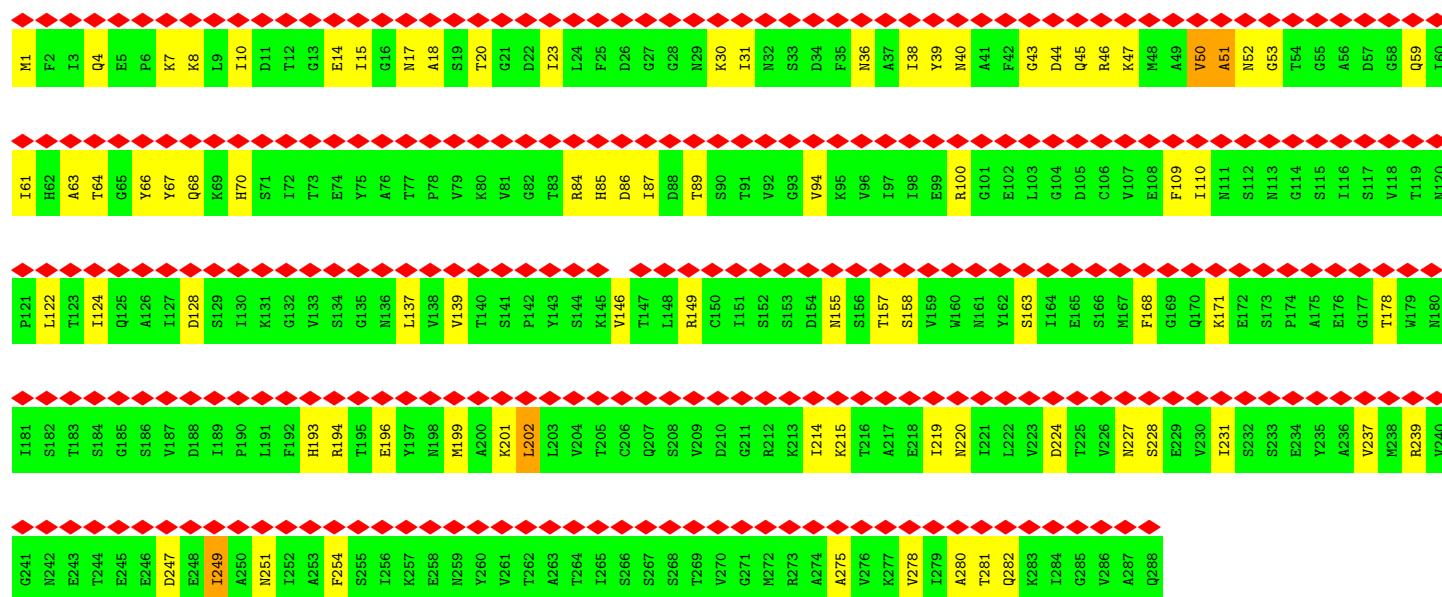
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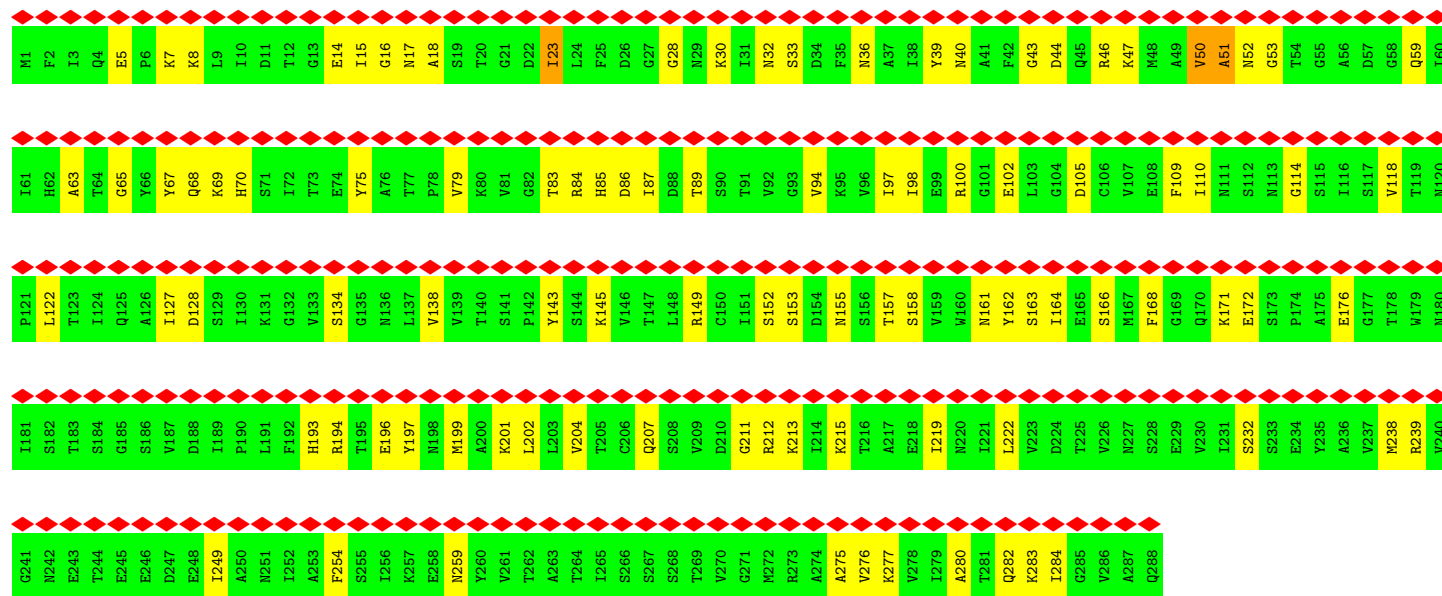
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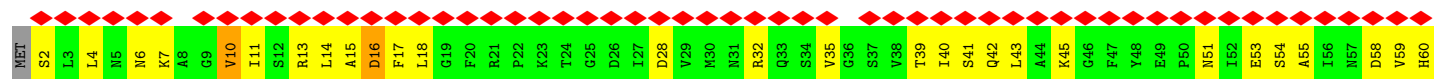
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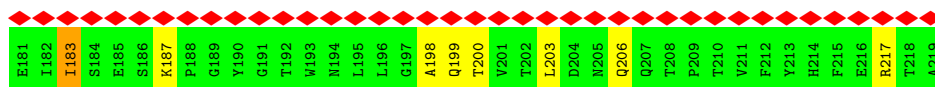
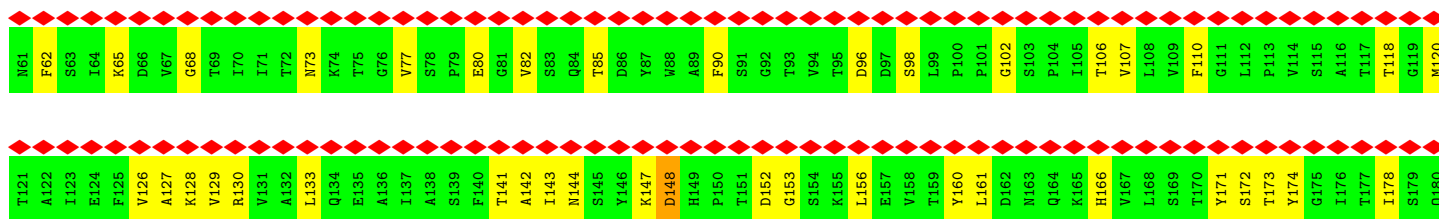


- Molecule 2: gp9, baseplate wedge tail fiber connector

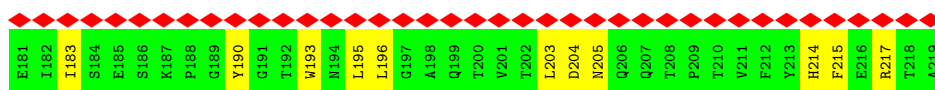
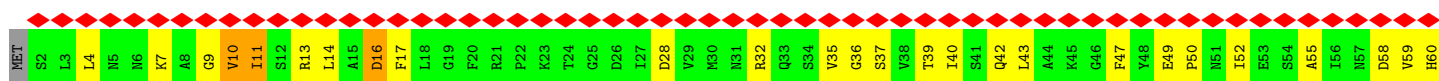


- Molecule 3: gp11, baseplate wedge protein

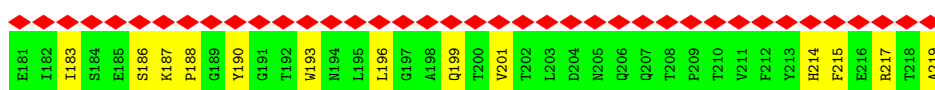




• Molecule 3: gp11, baseplate wedge protein

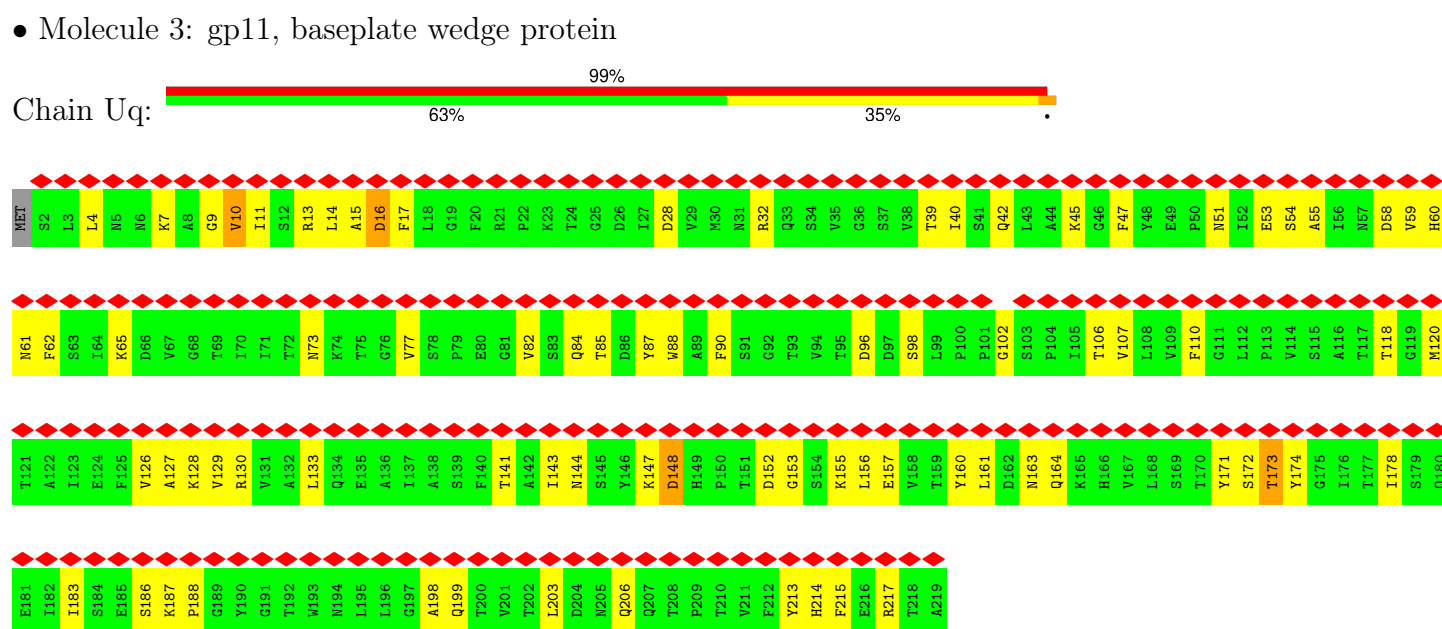
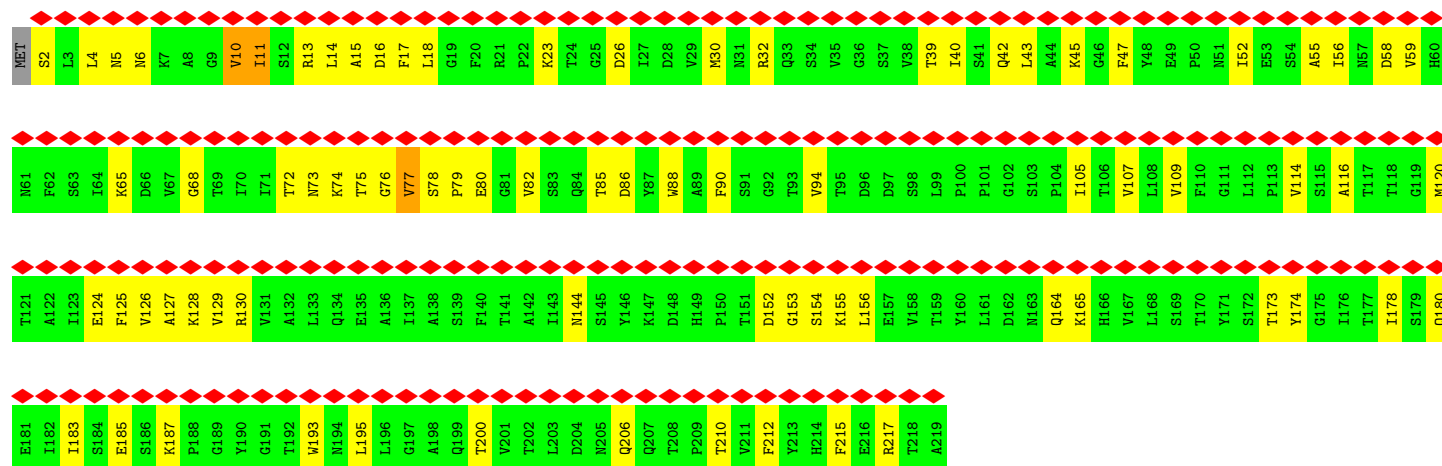


• Molecule 3: gp11, baseplate wedge protein



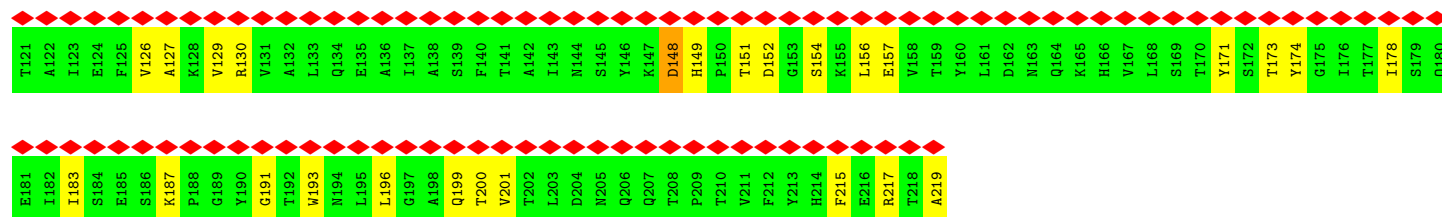
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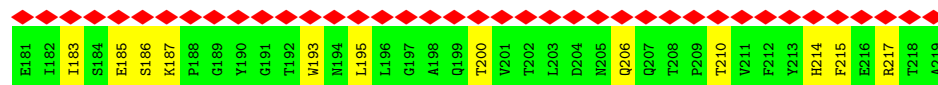
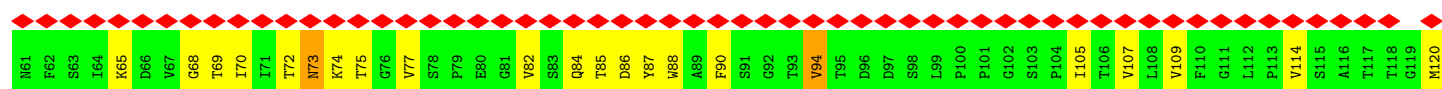




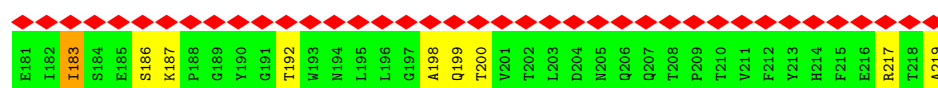
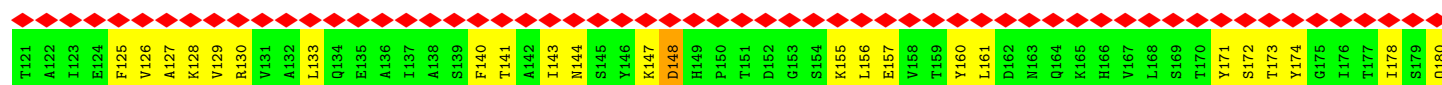
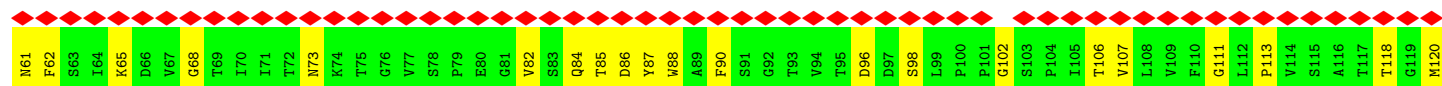
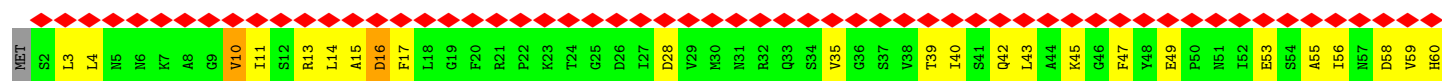




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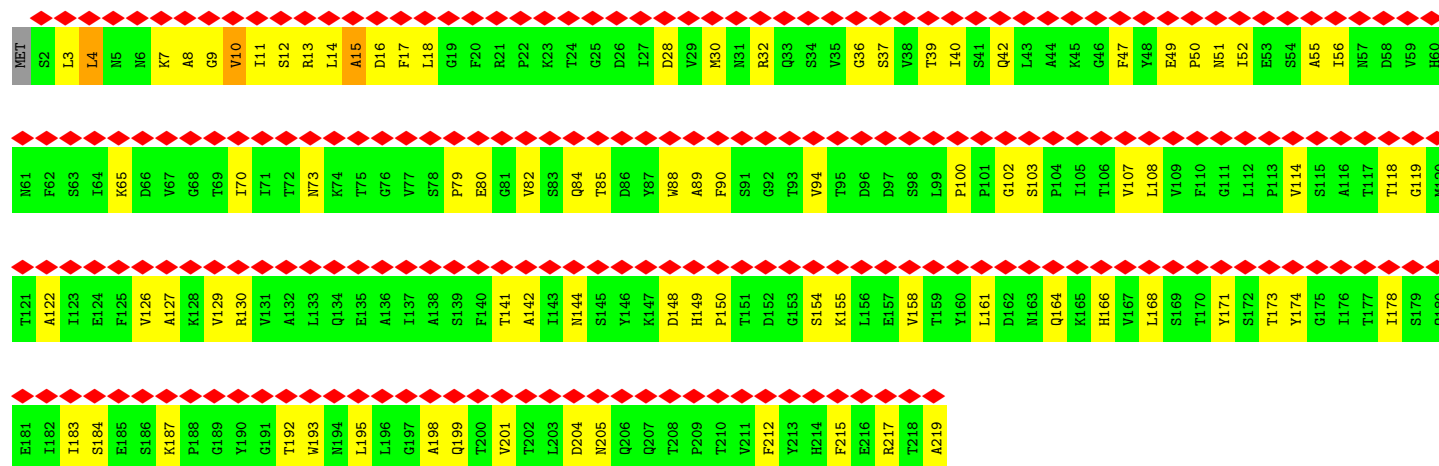


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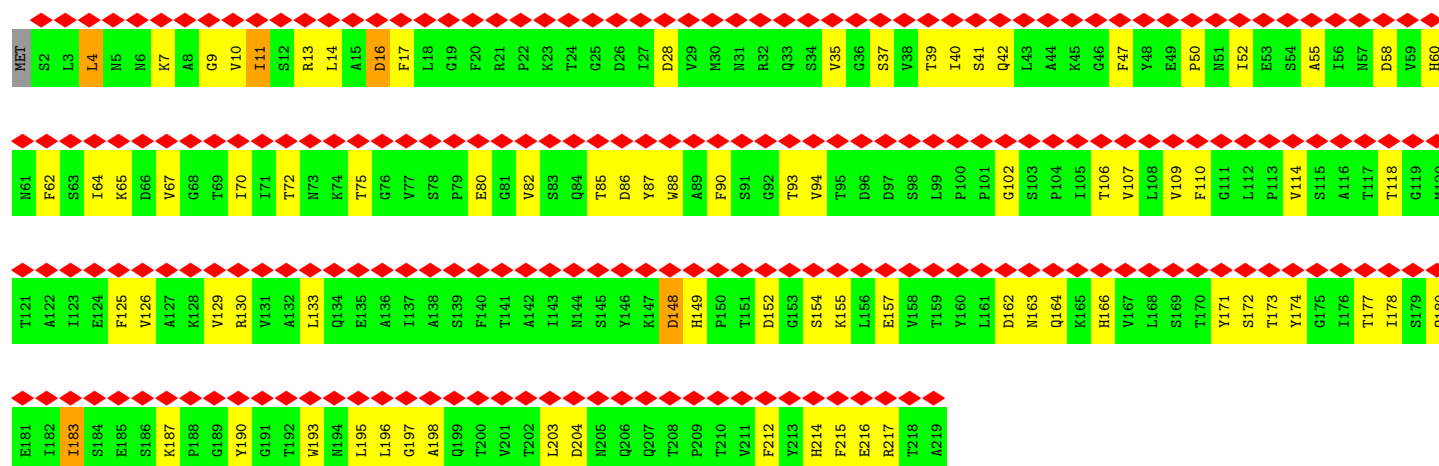


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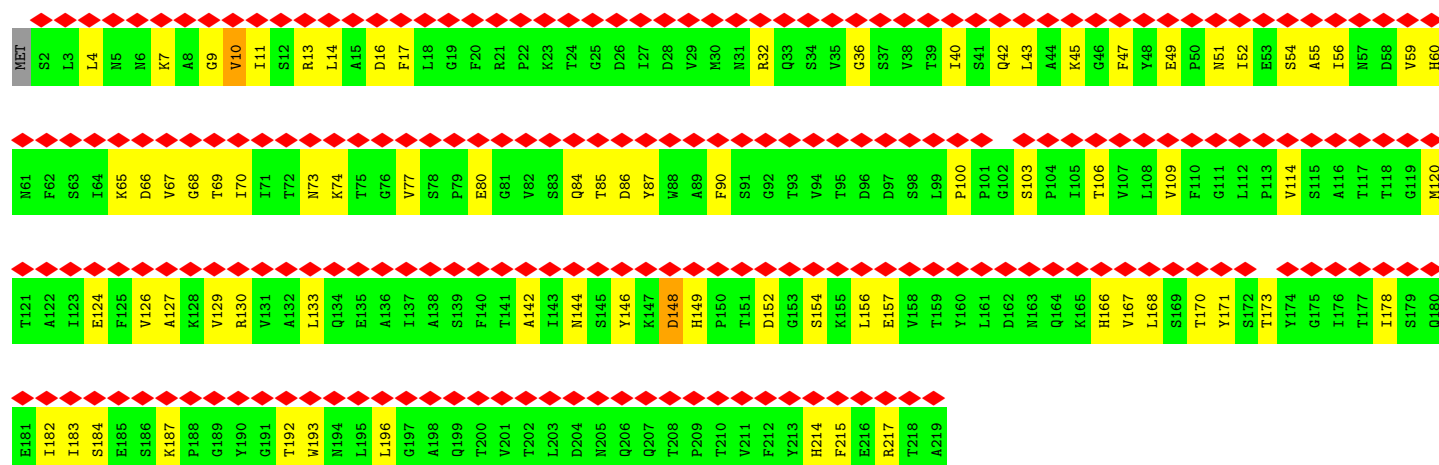




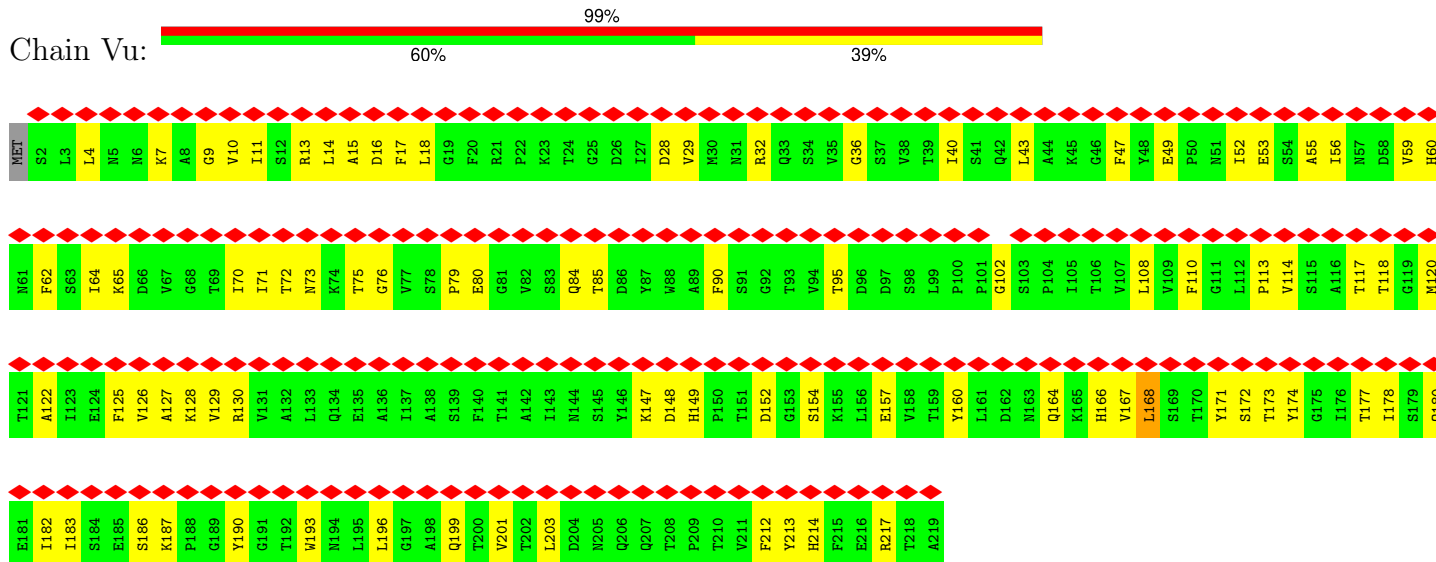
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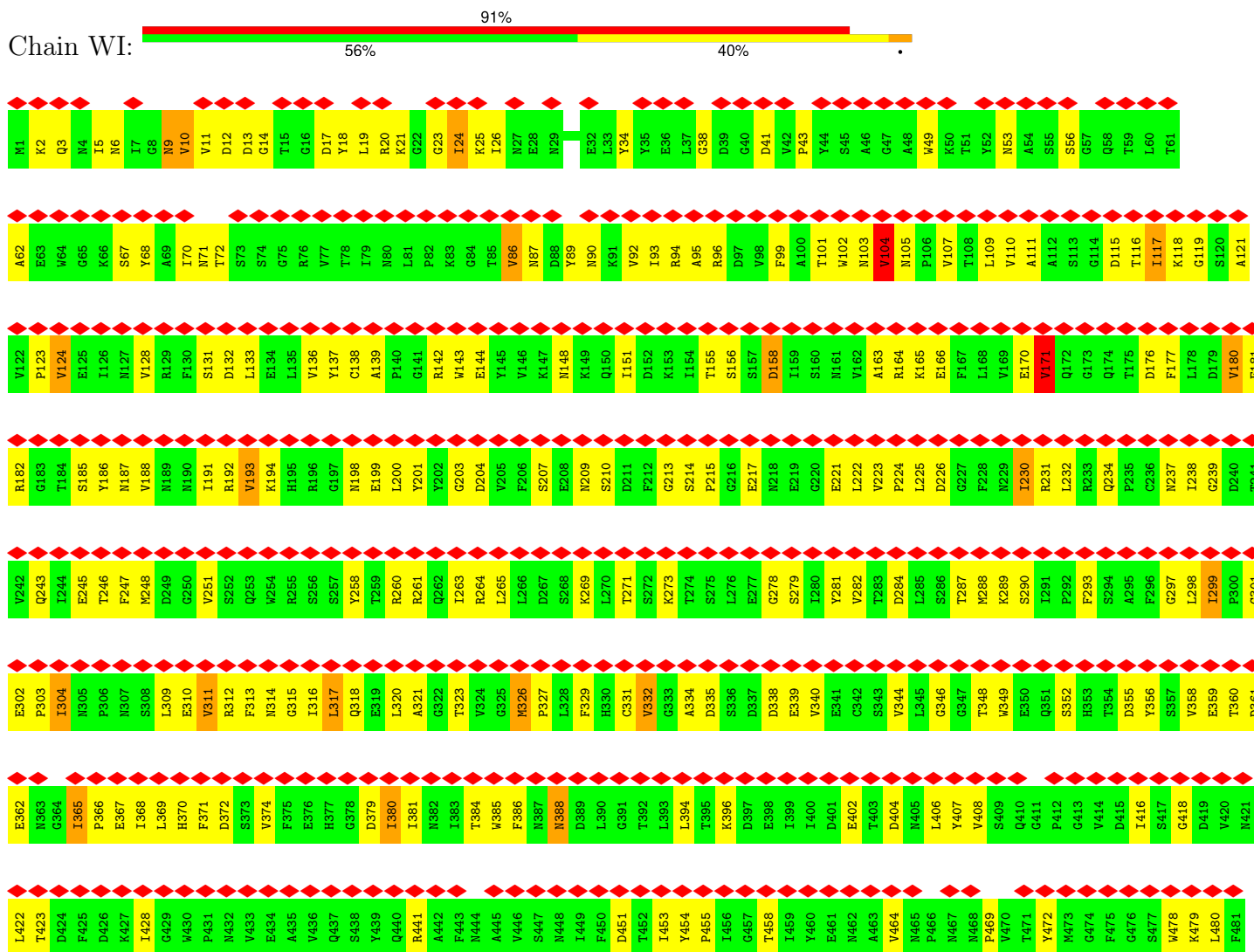
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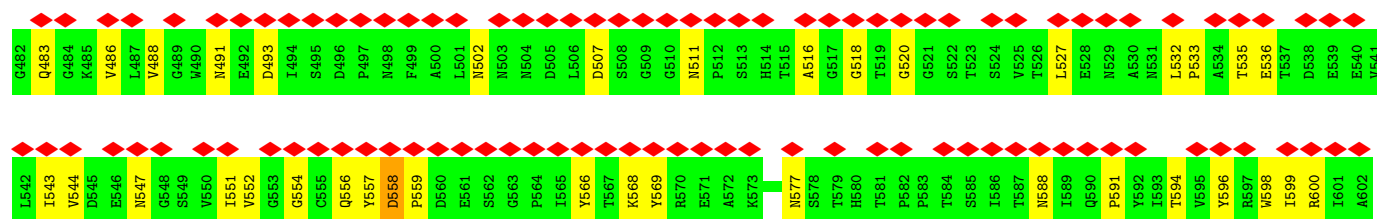


- Molecule 3: gp11, baseplate wedge protein

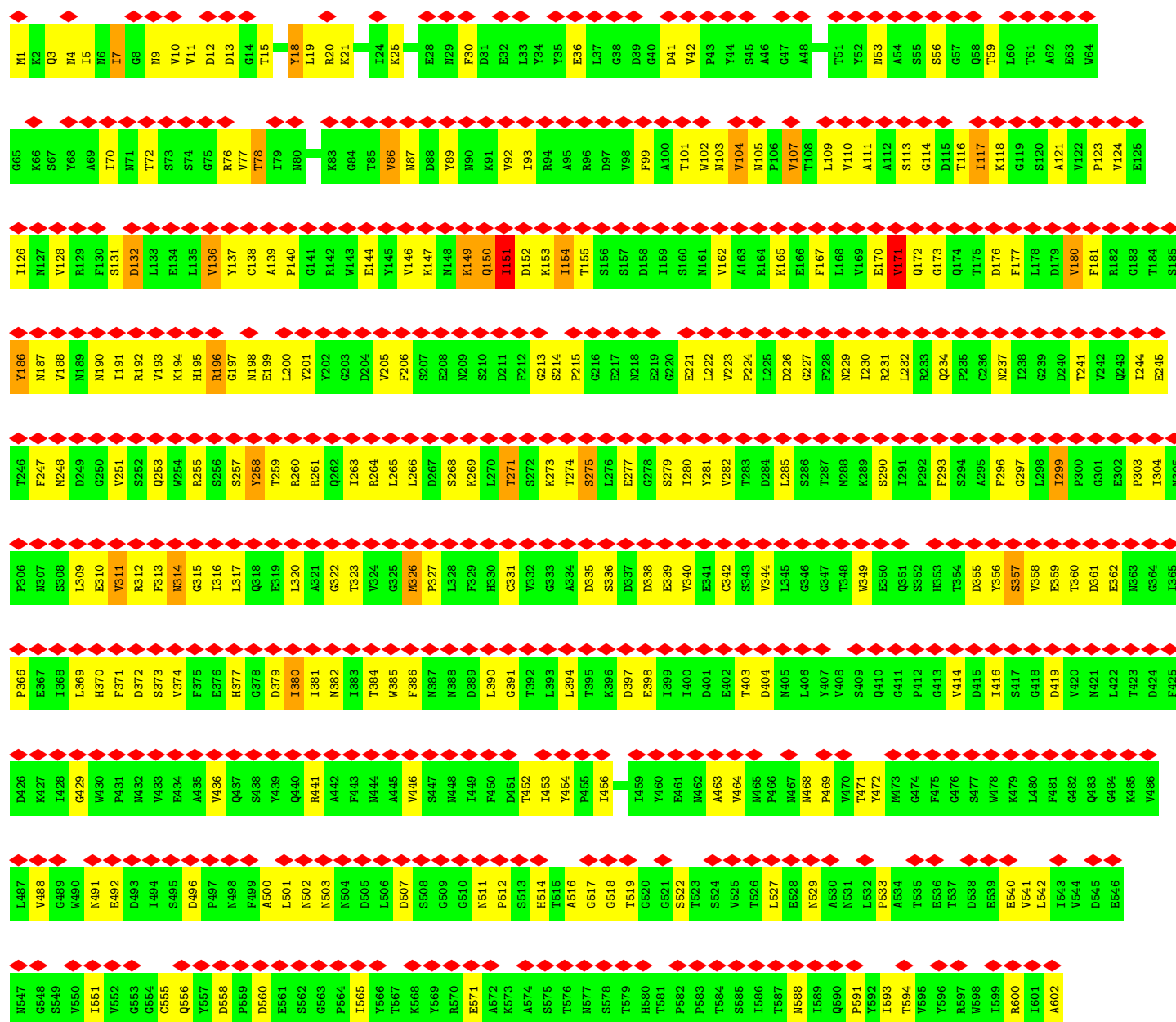
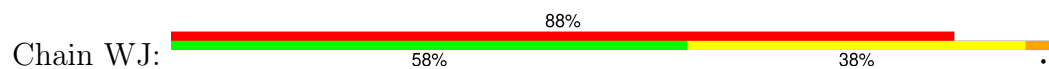


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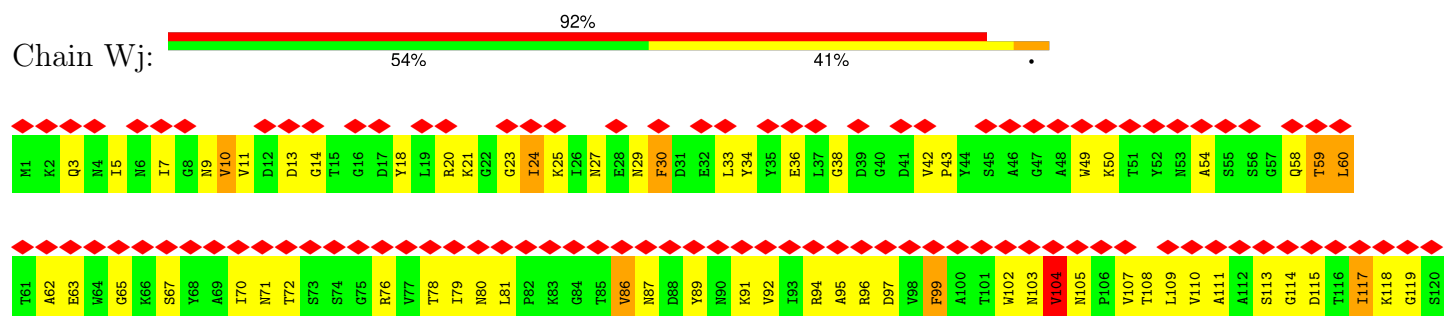


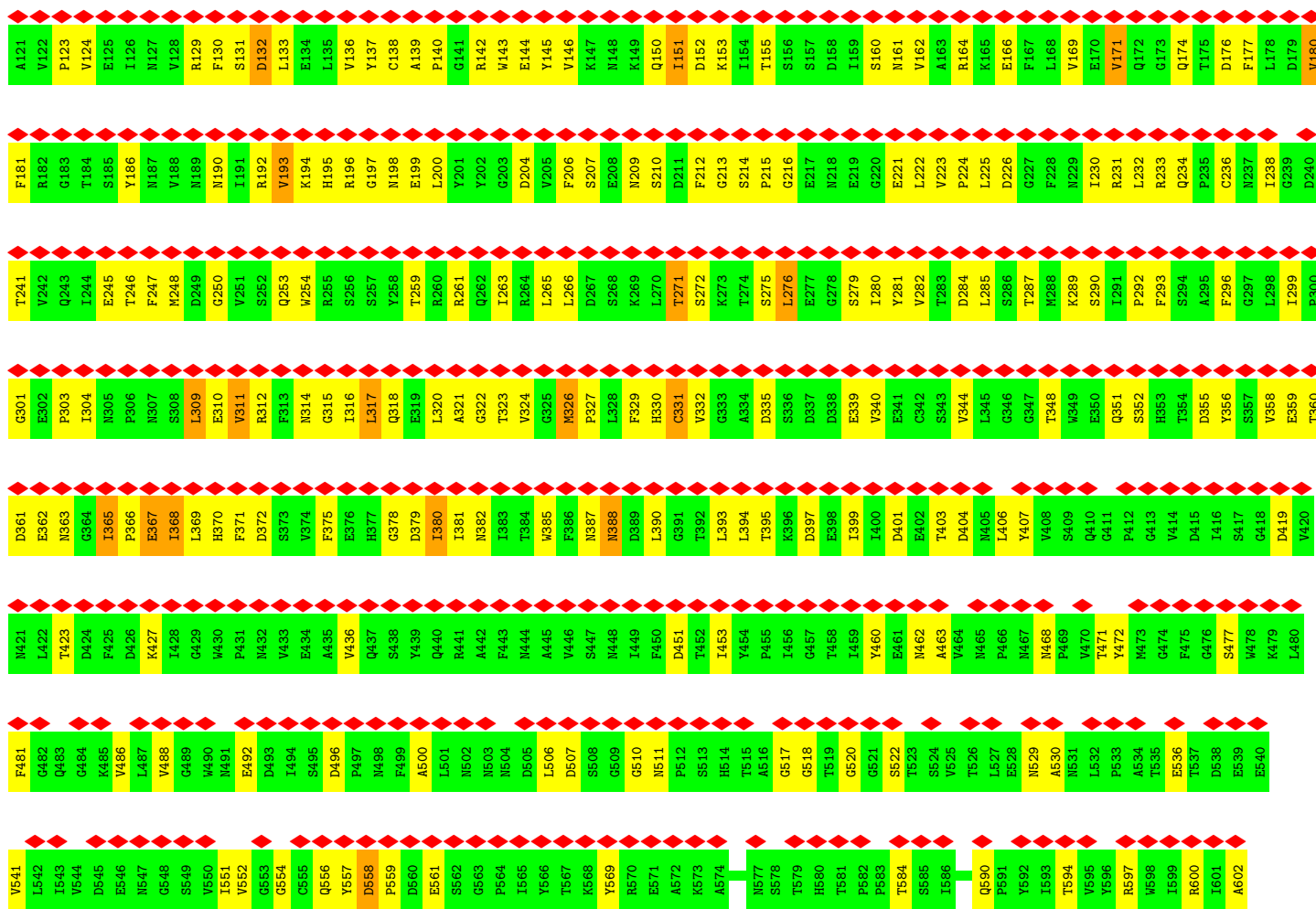


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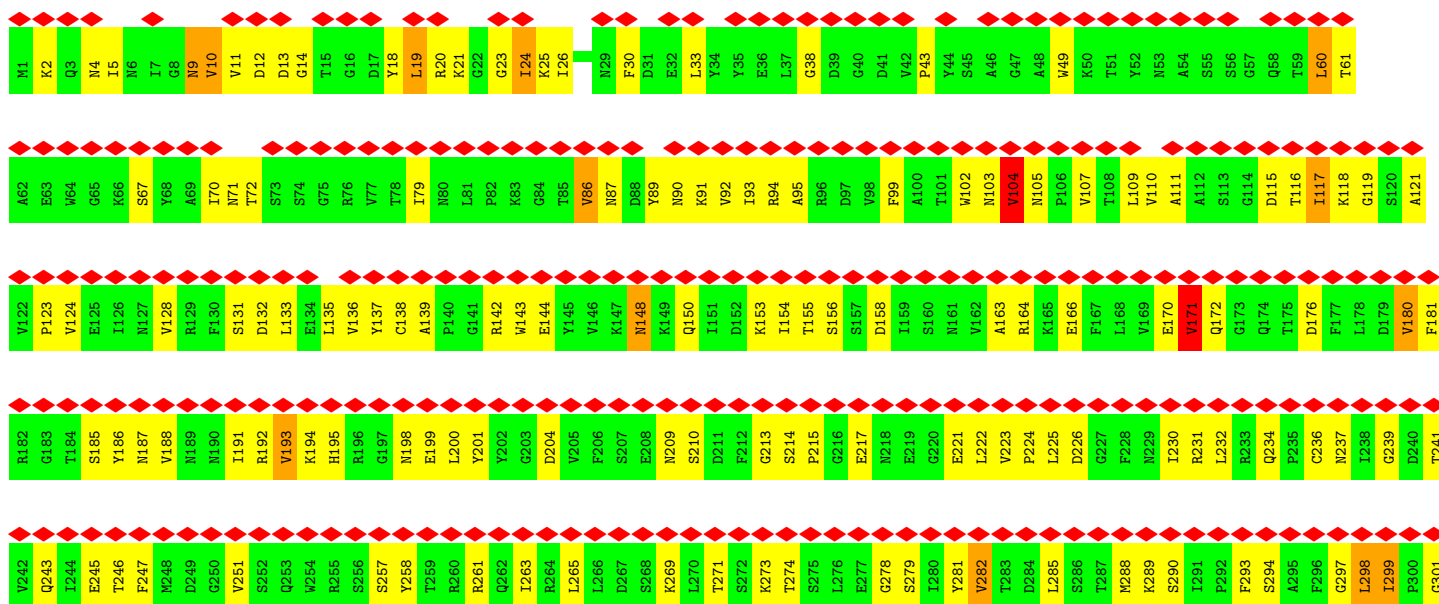


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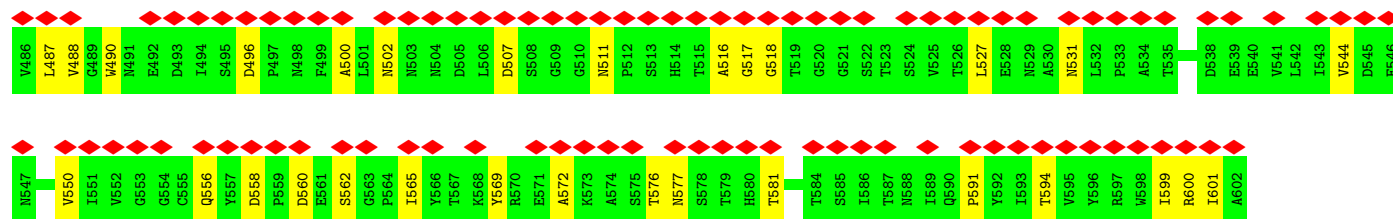




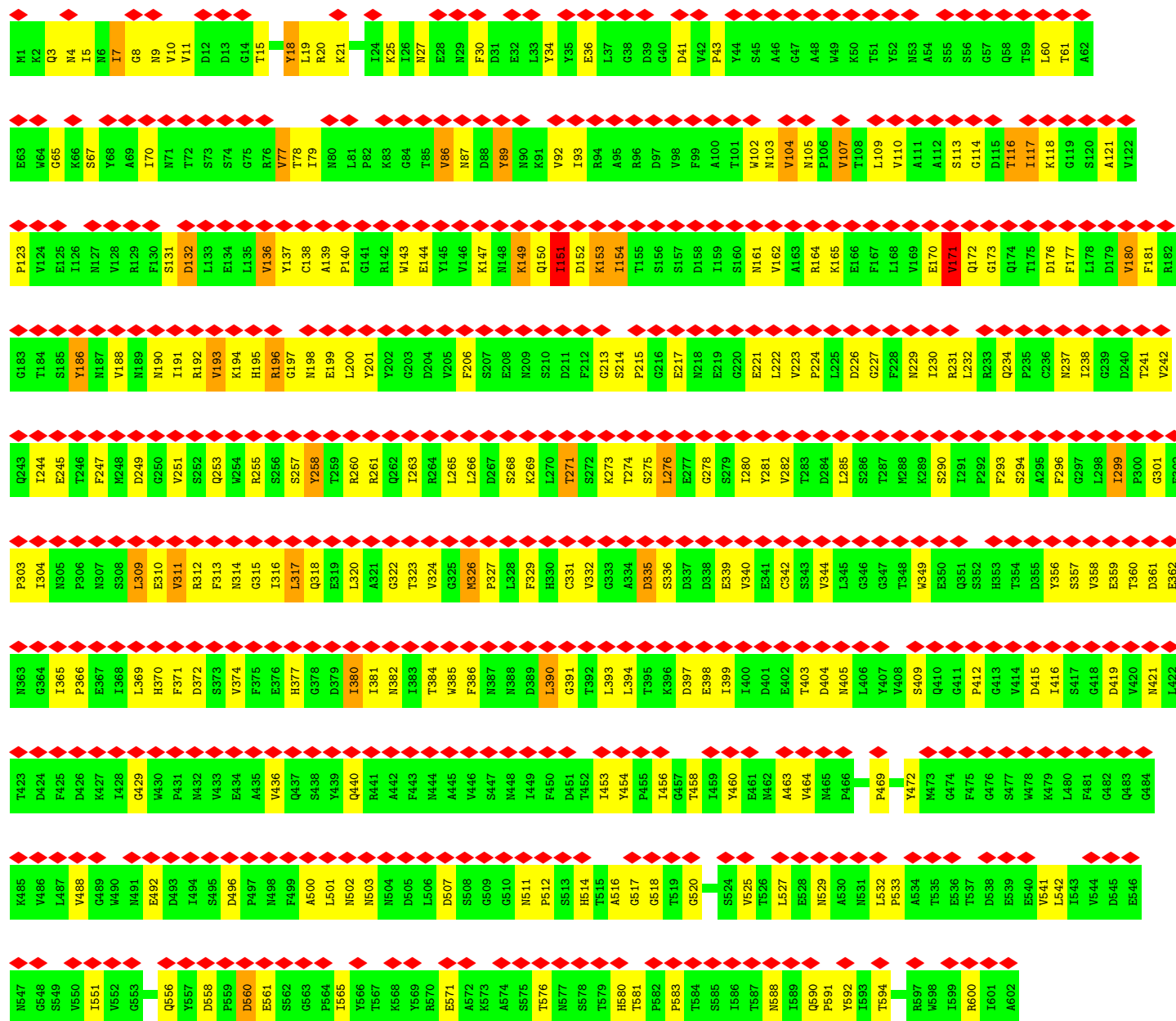
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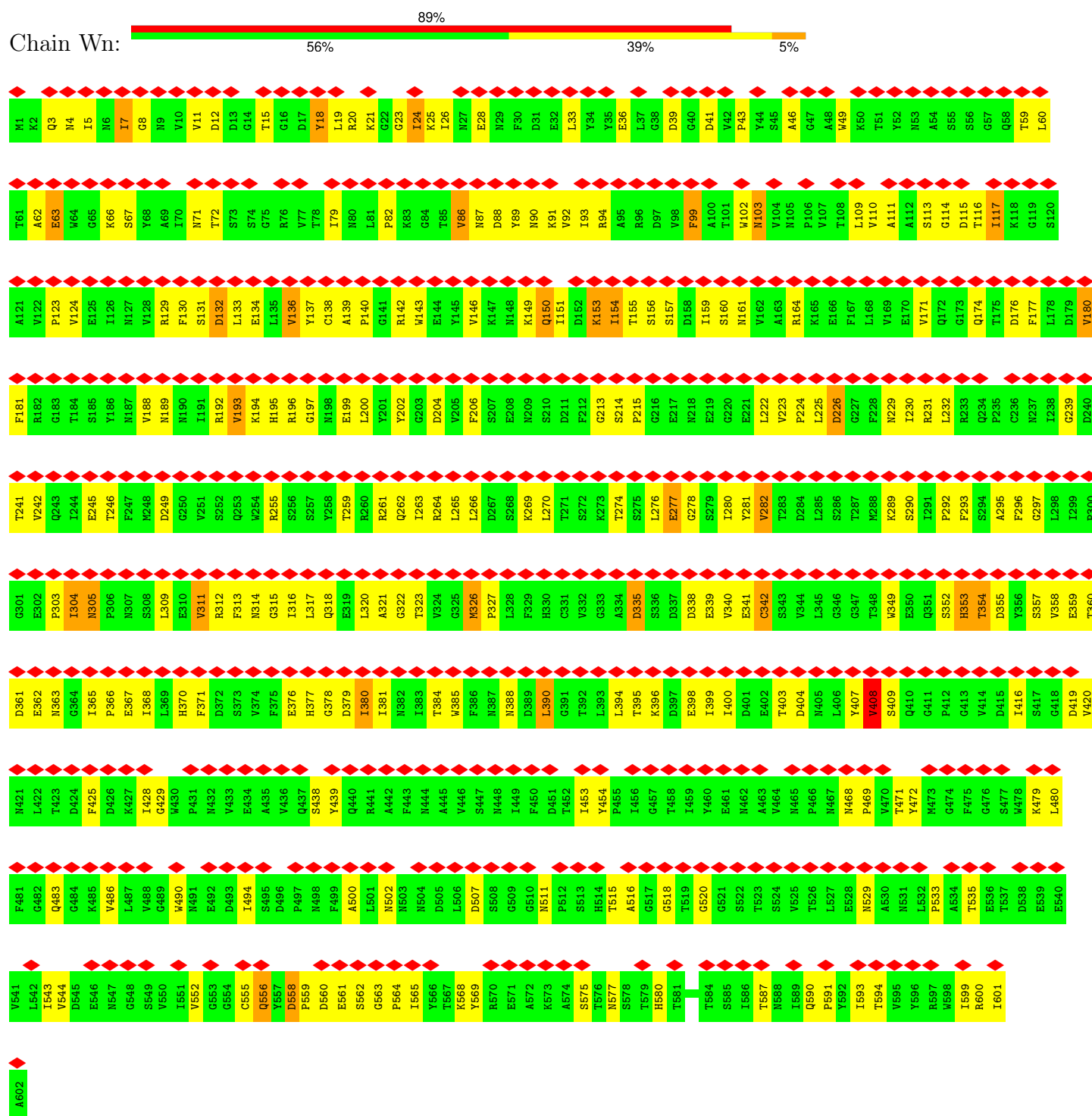




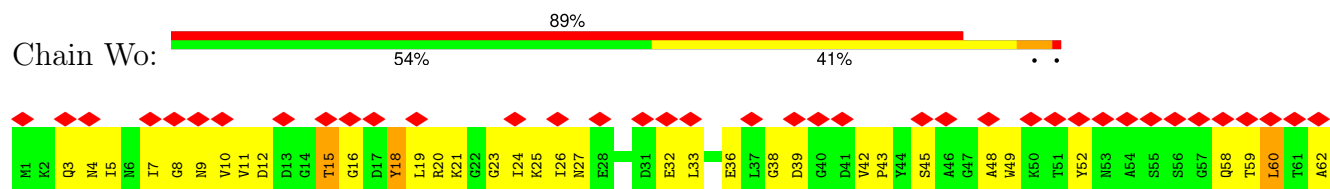
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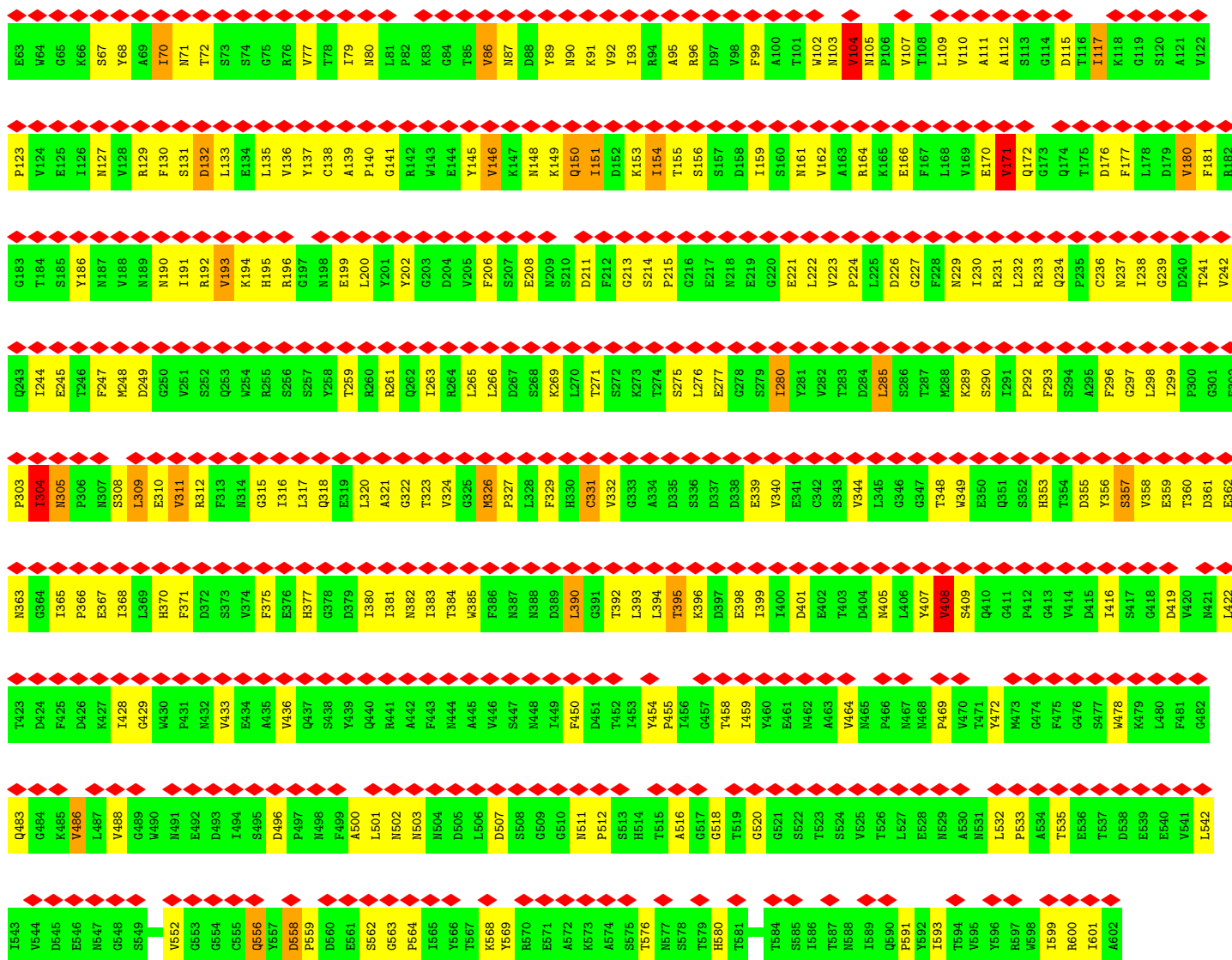


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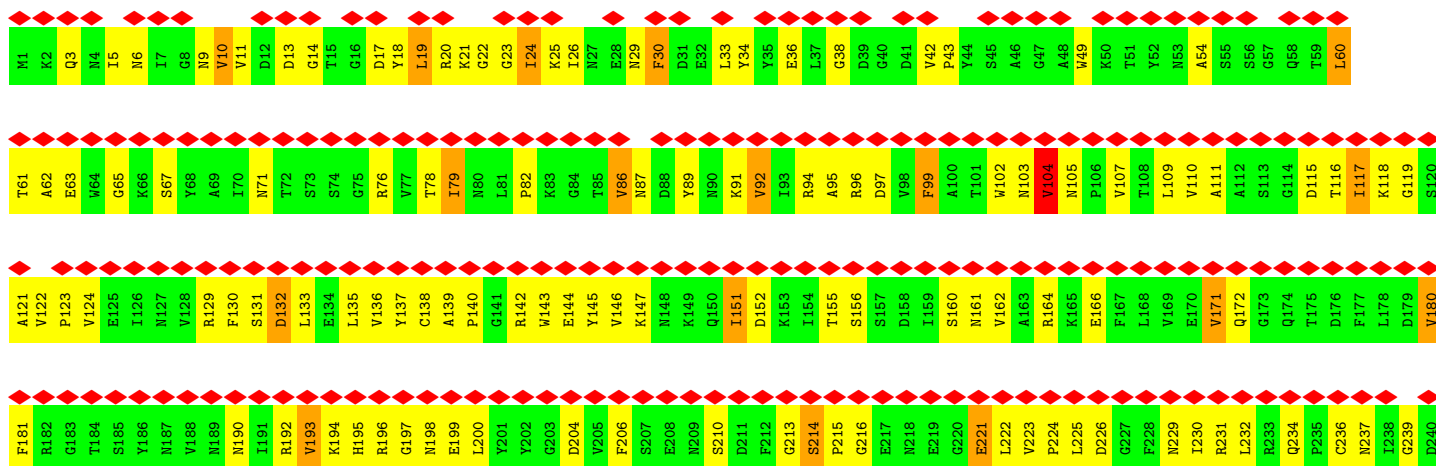


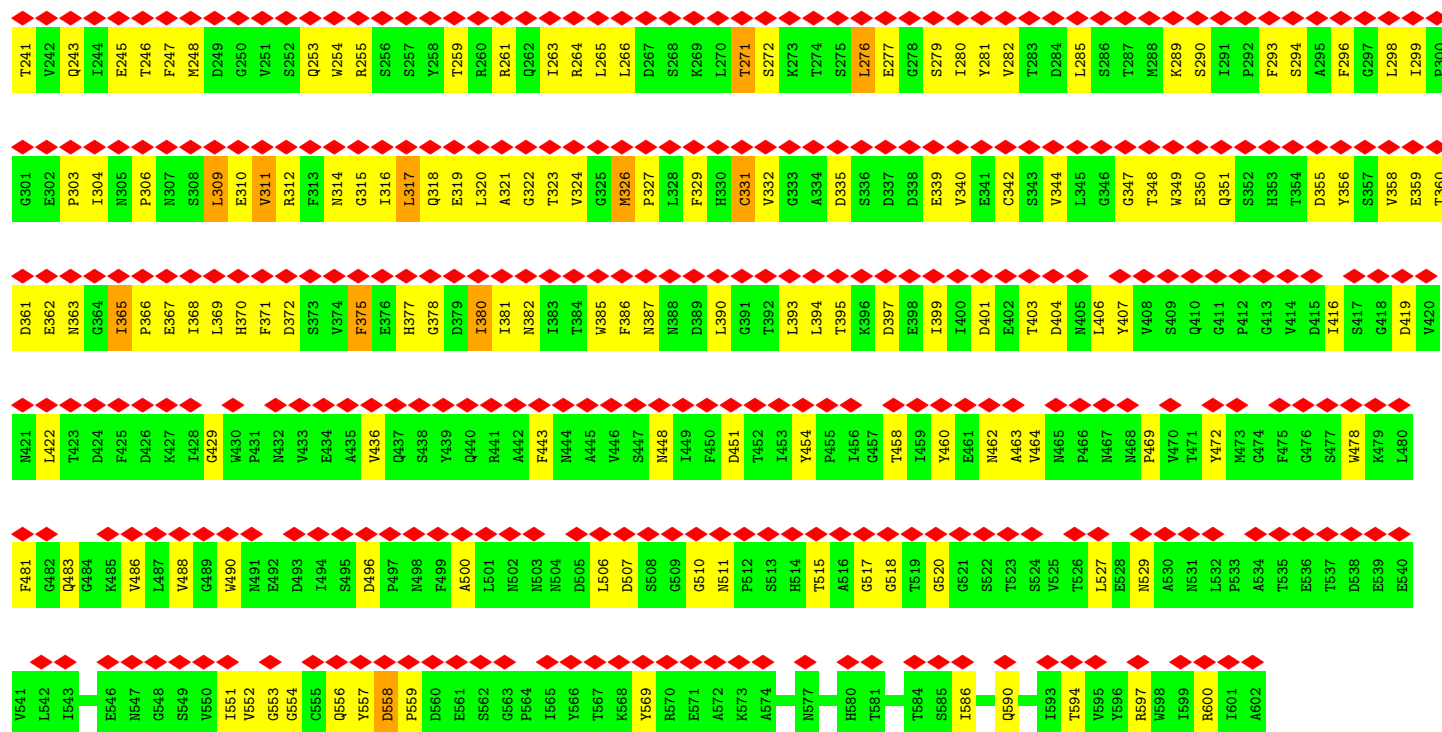
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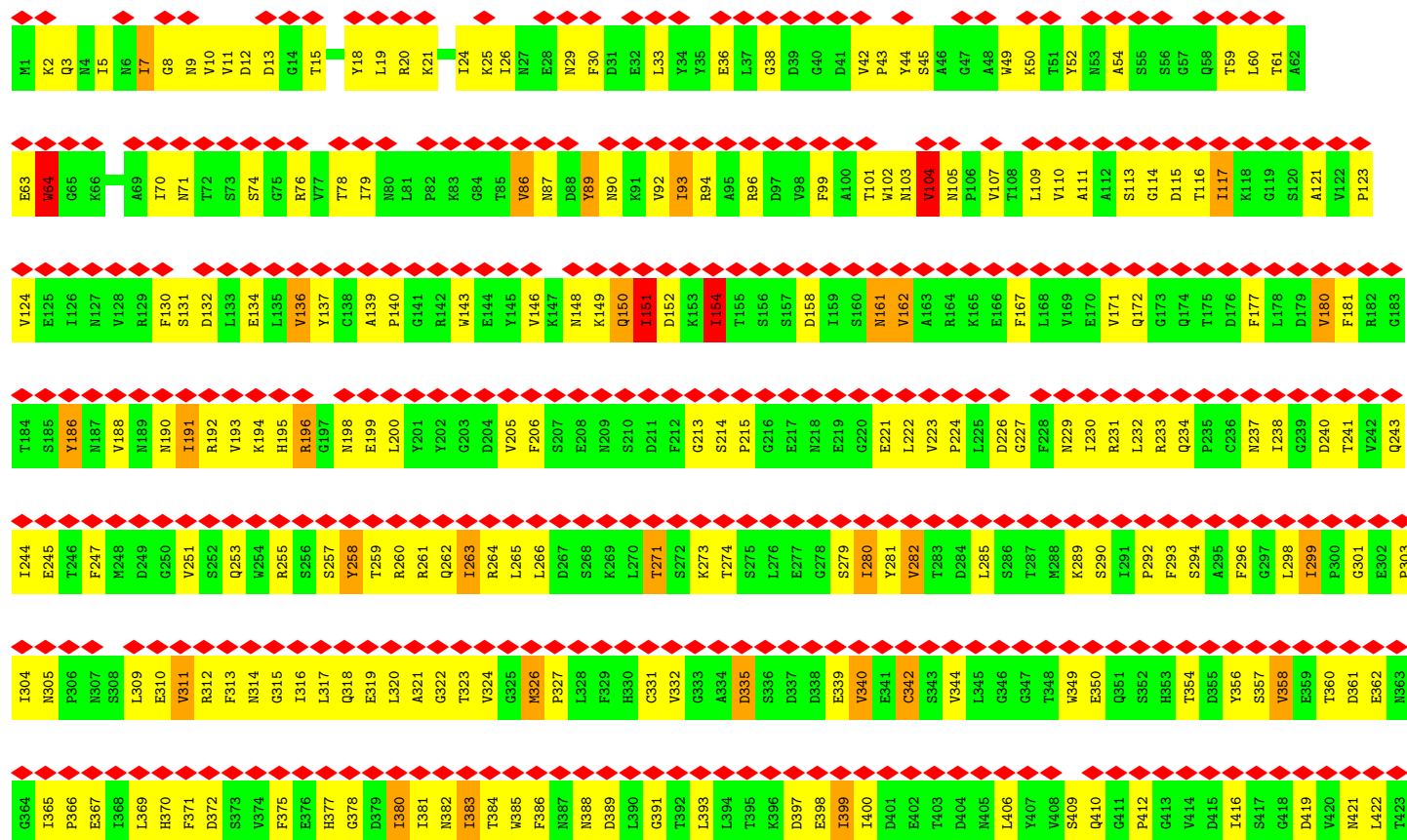
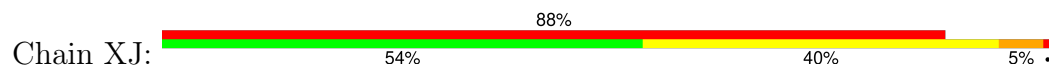


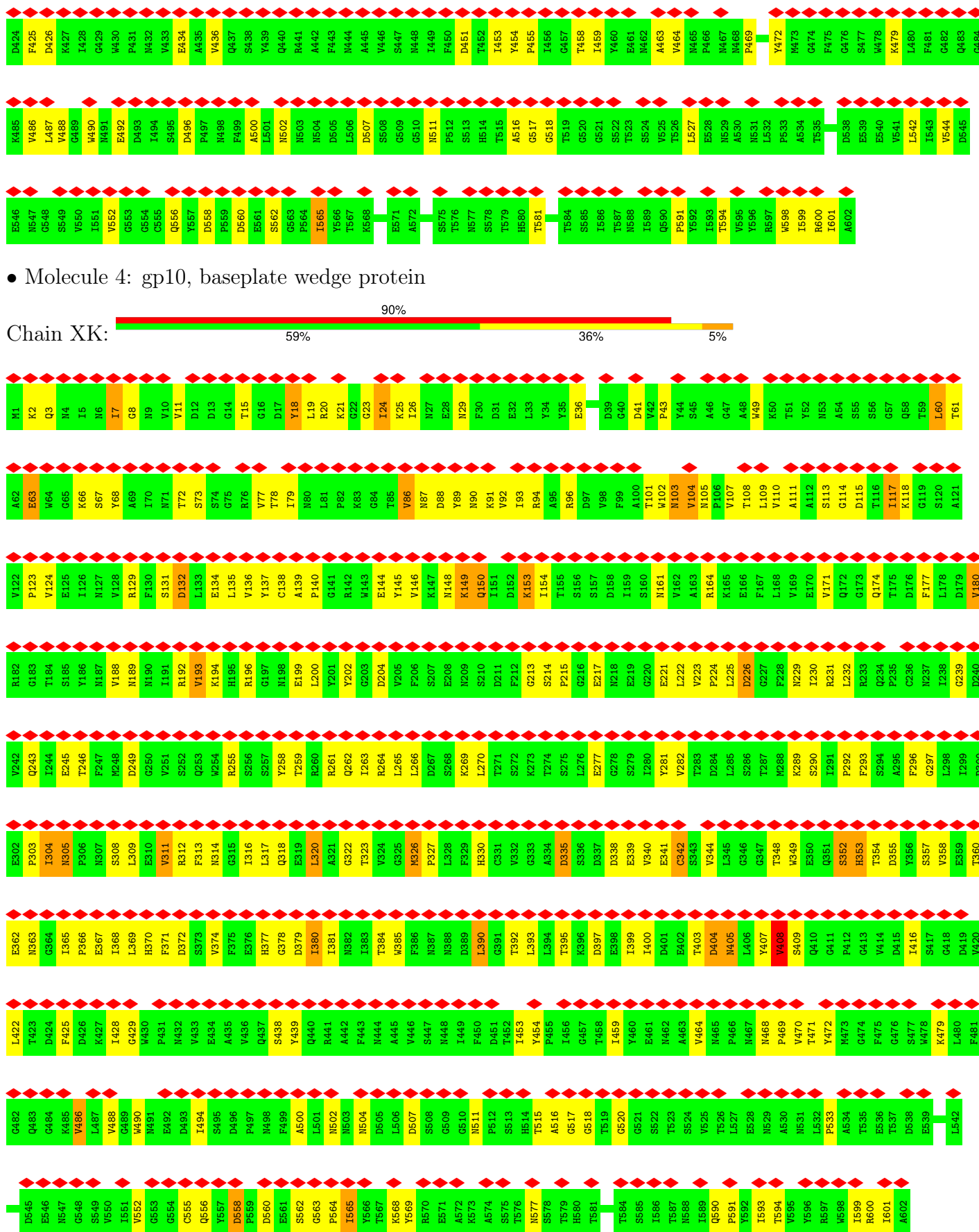
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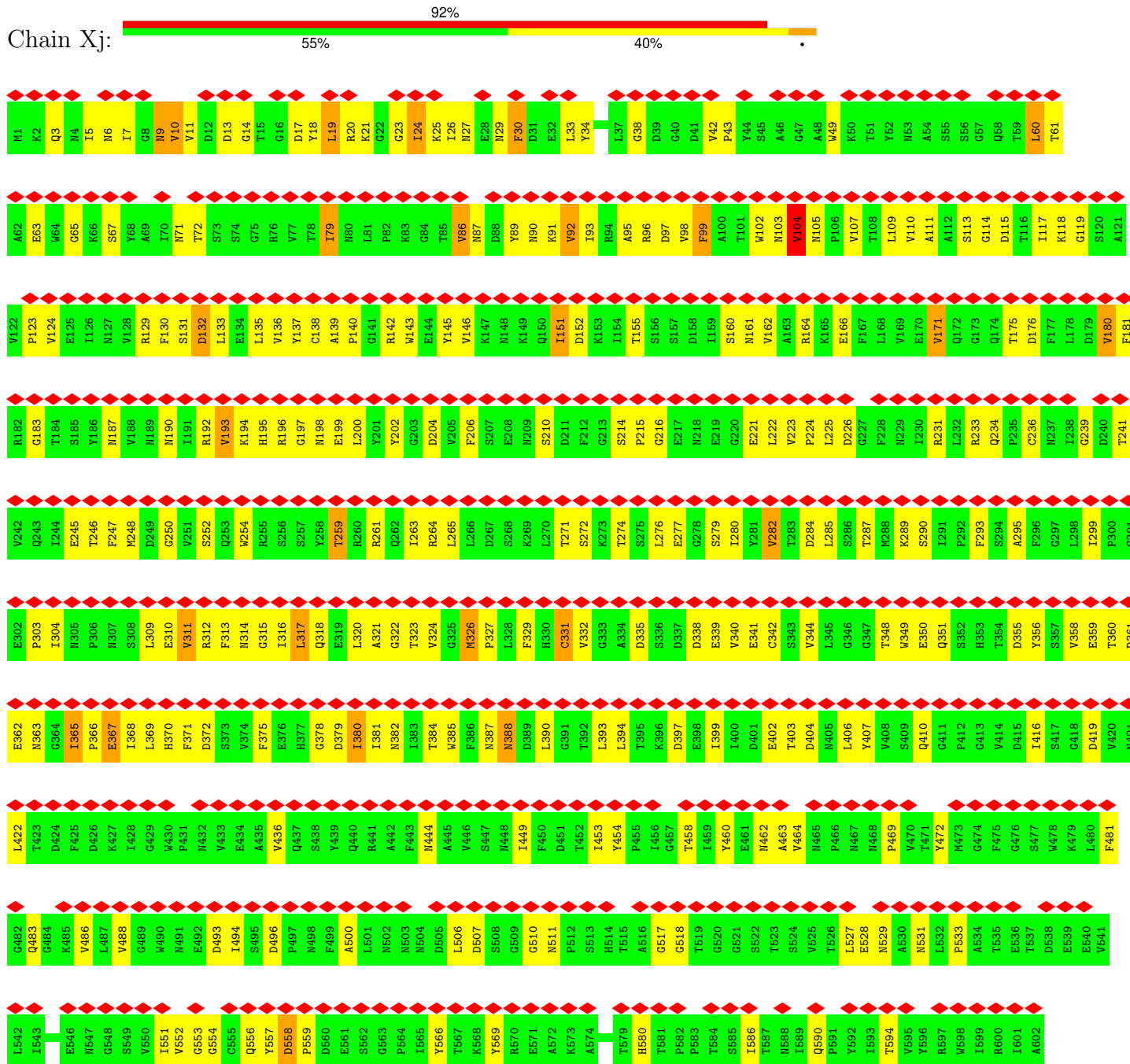


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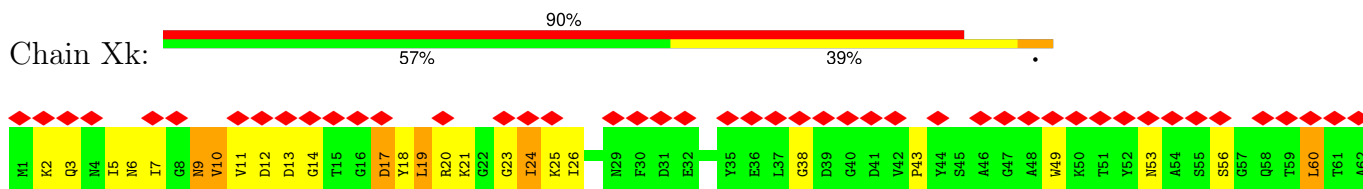


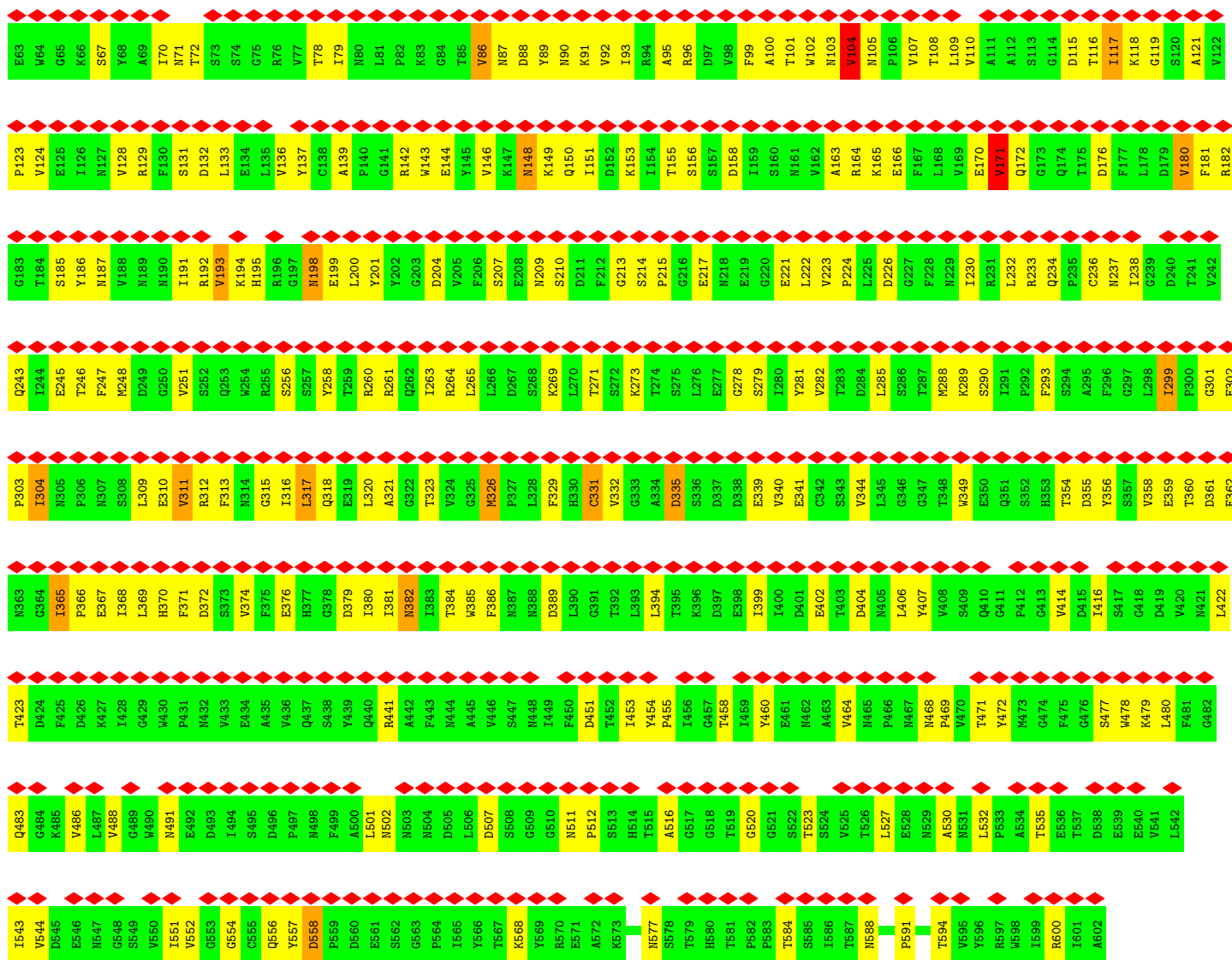


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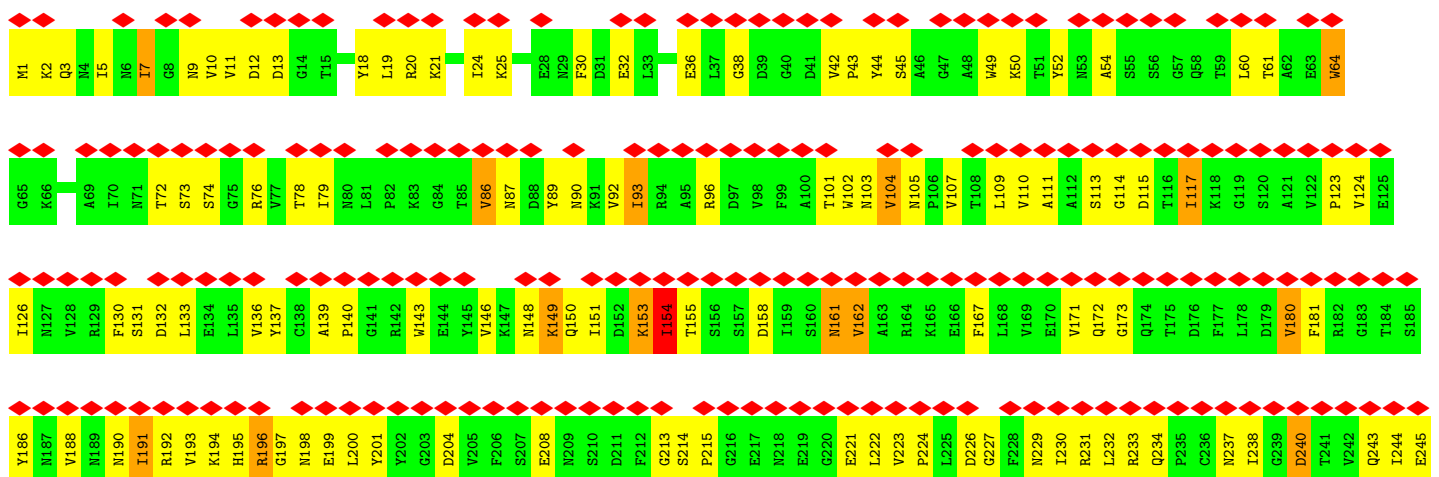
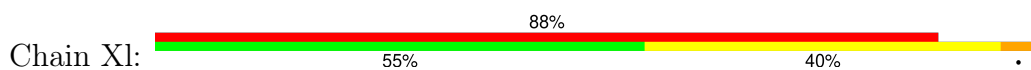


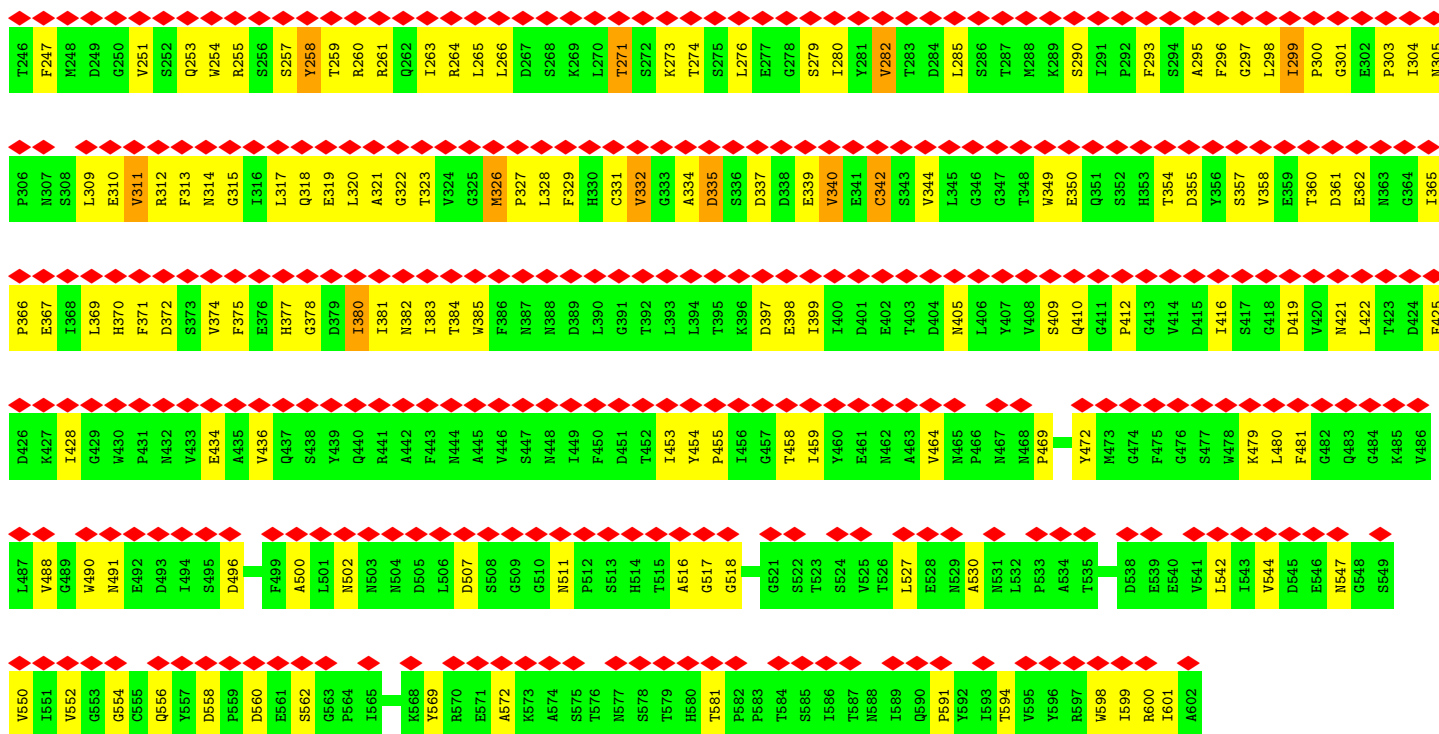
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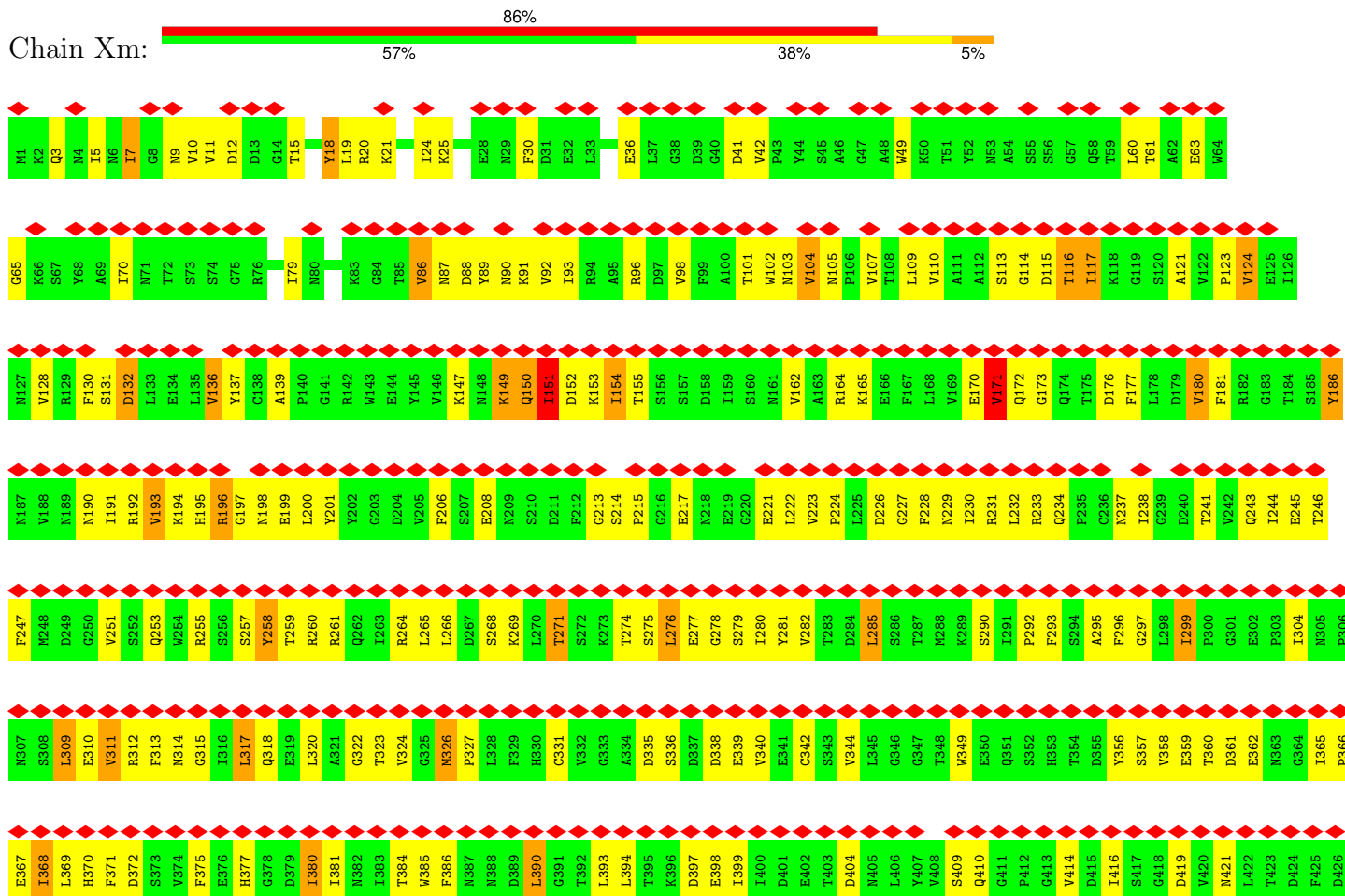


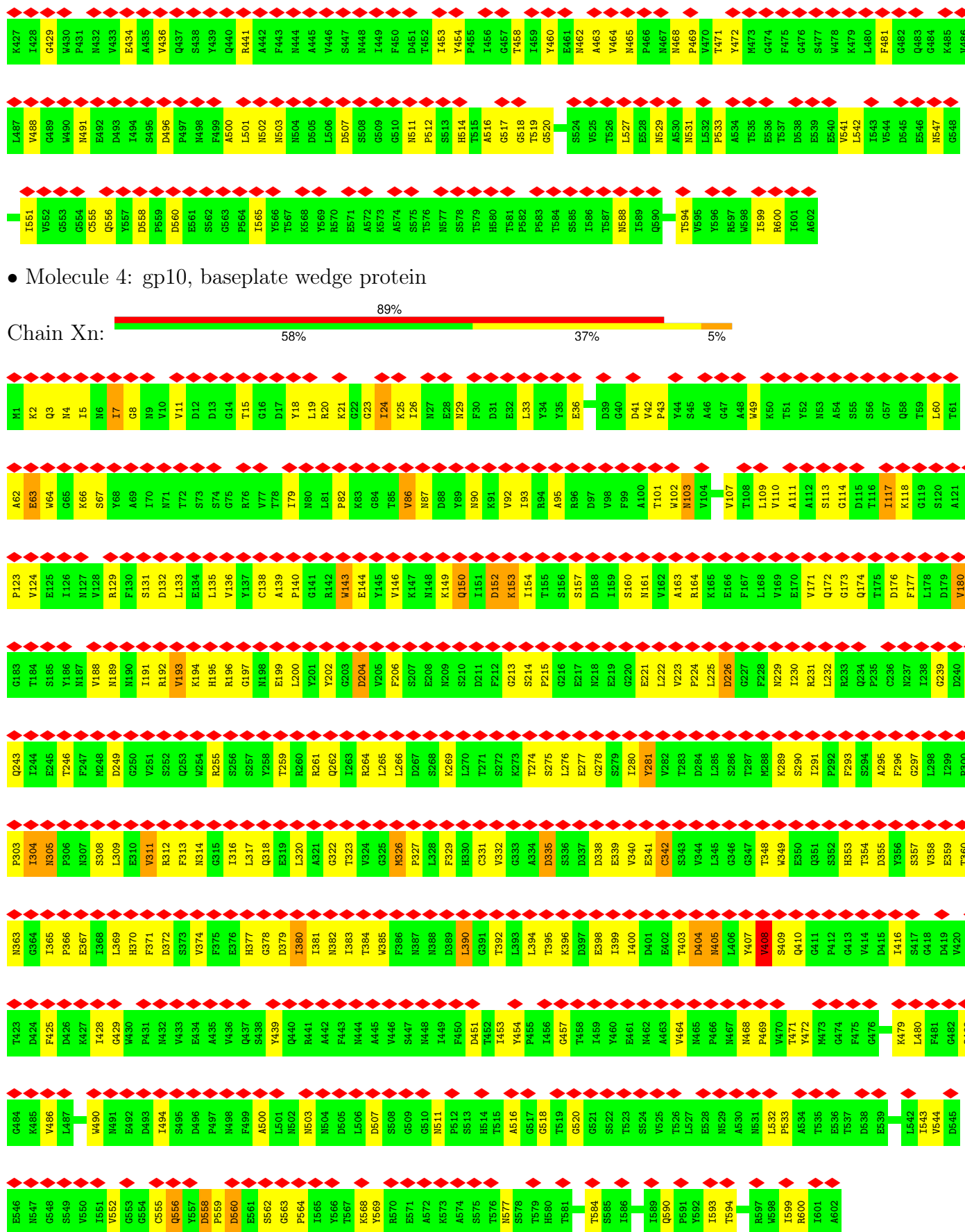
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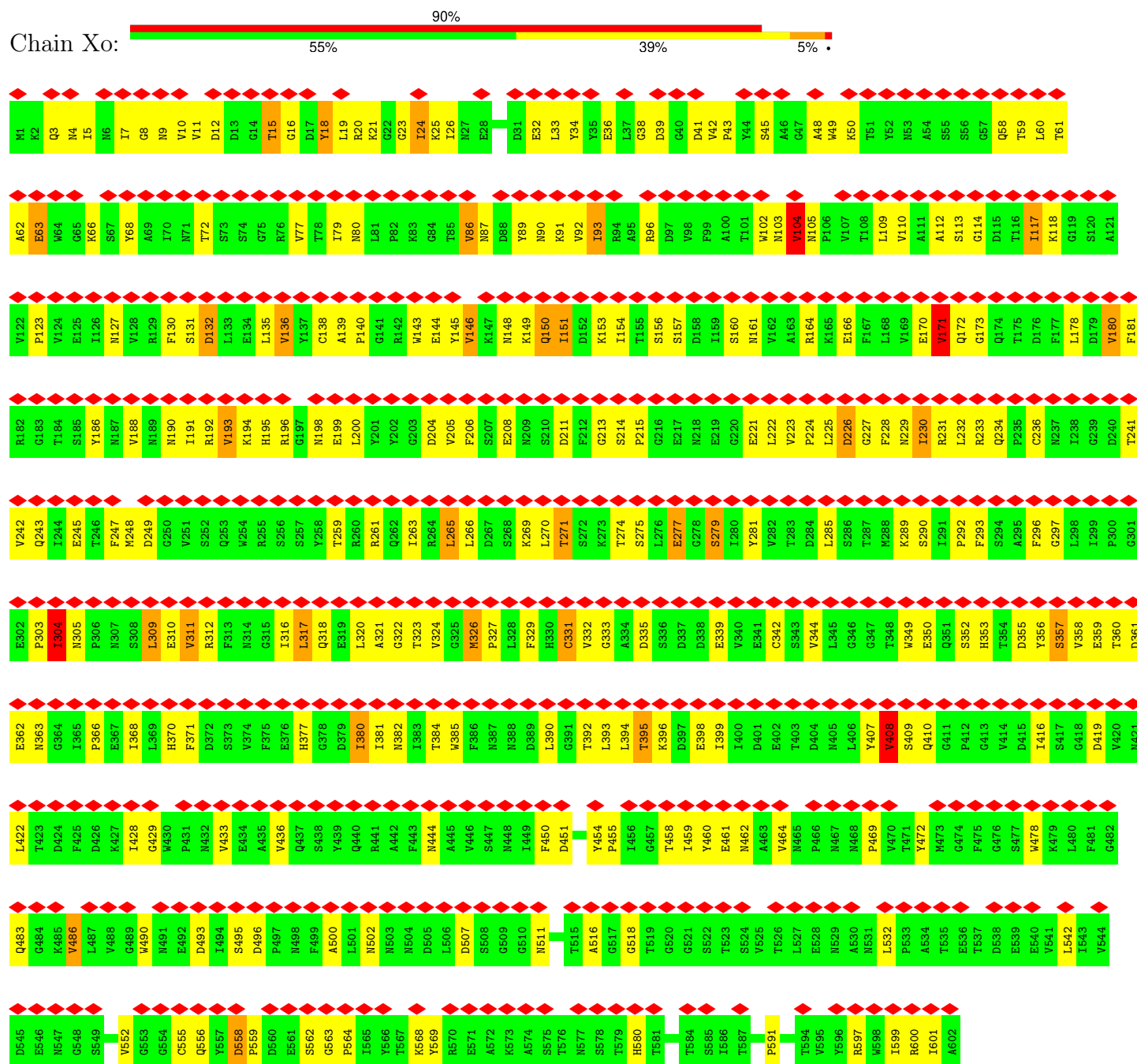


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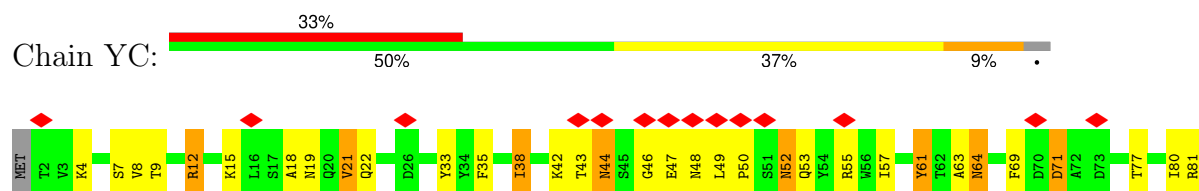




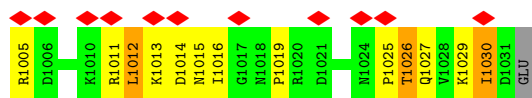
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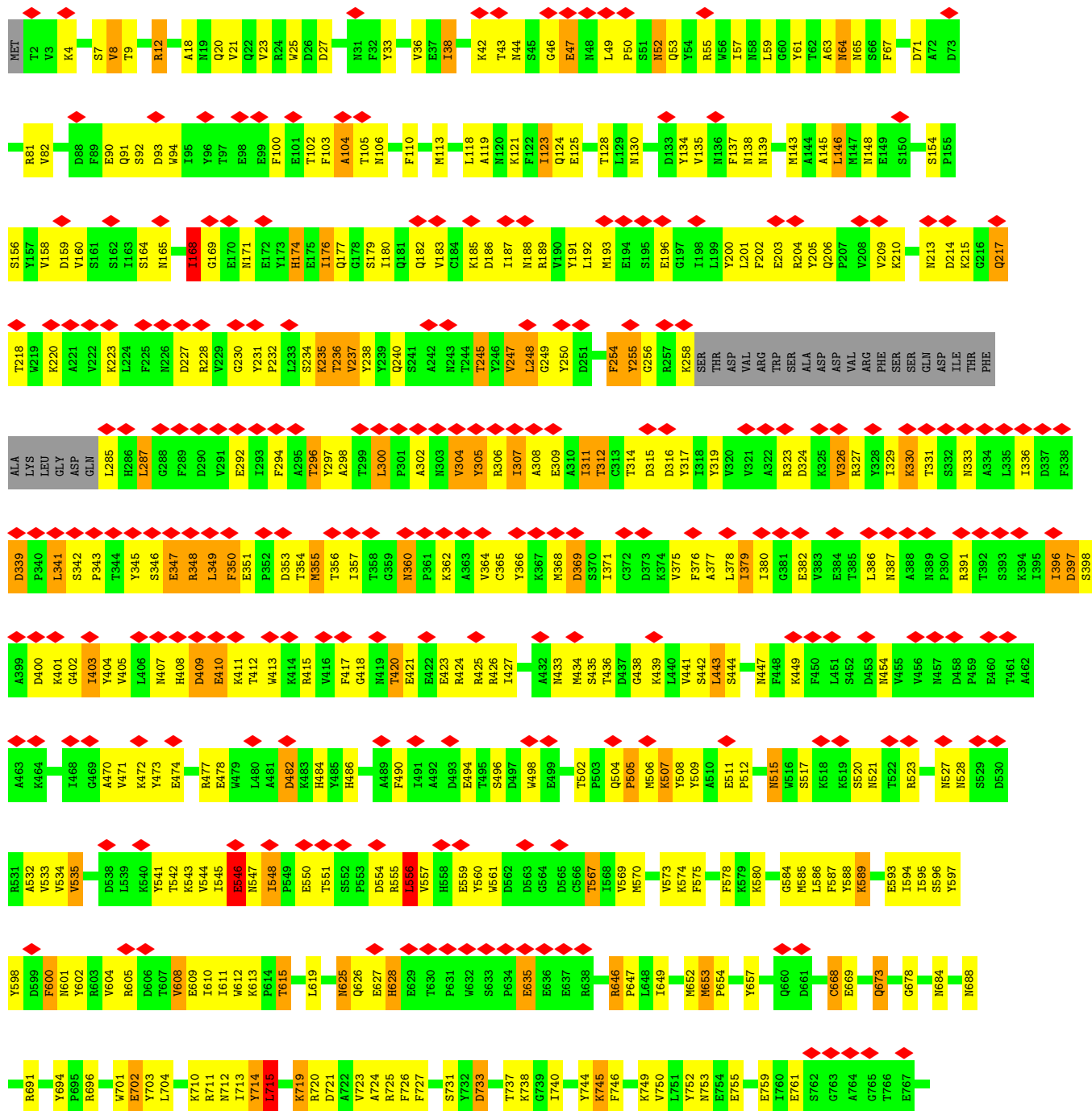
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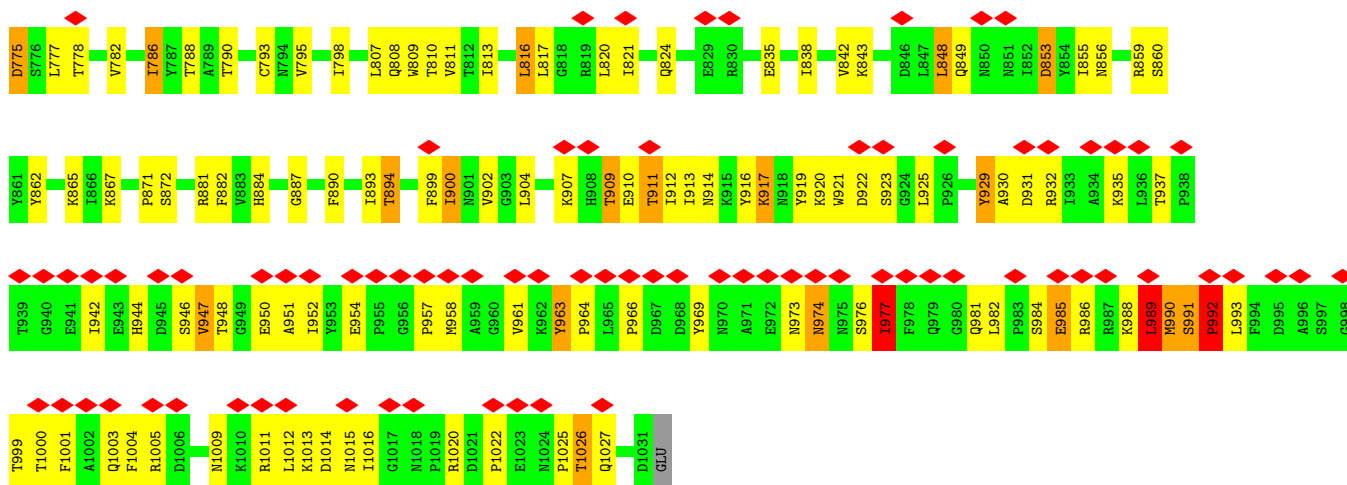






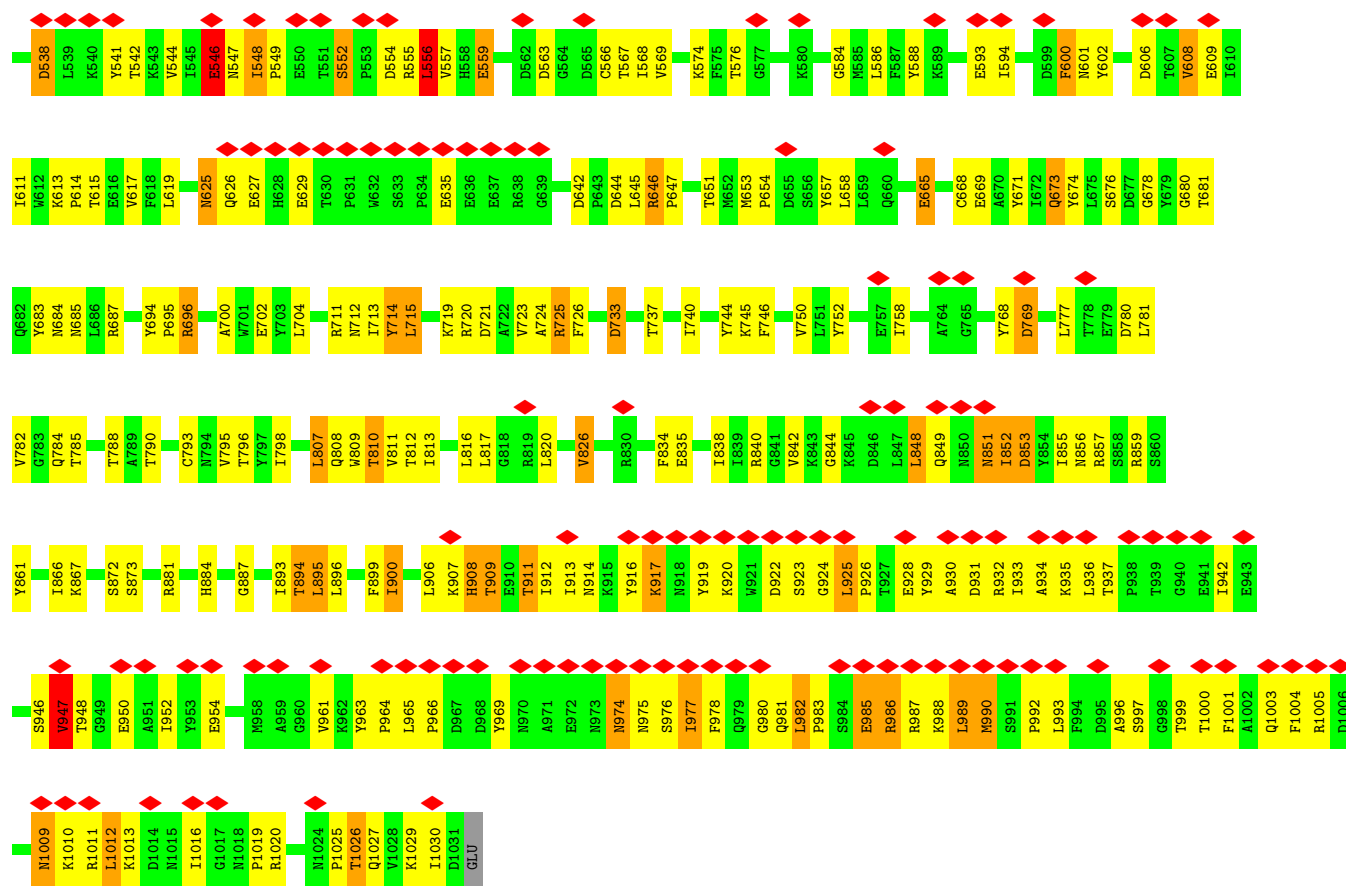
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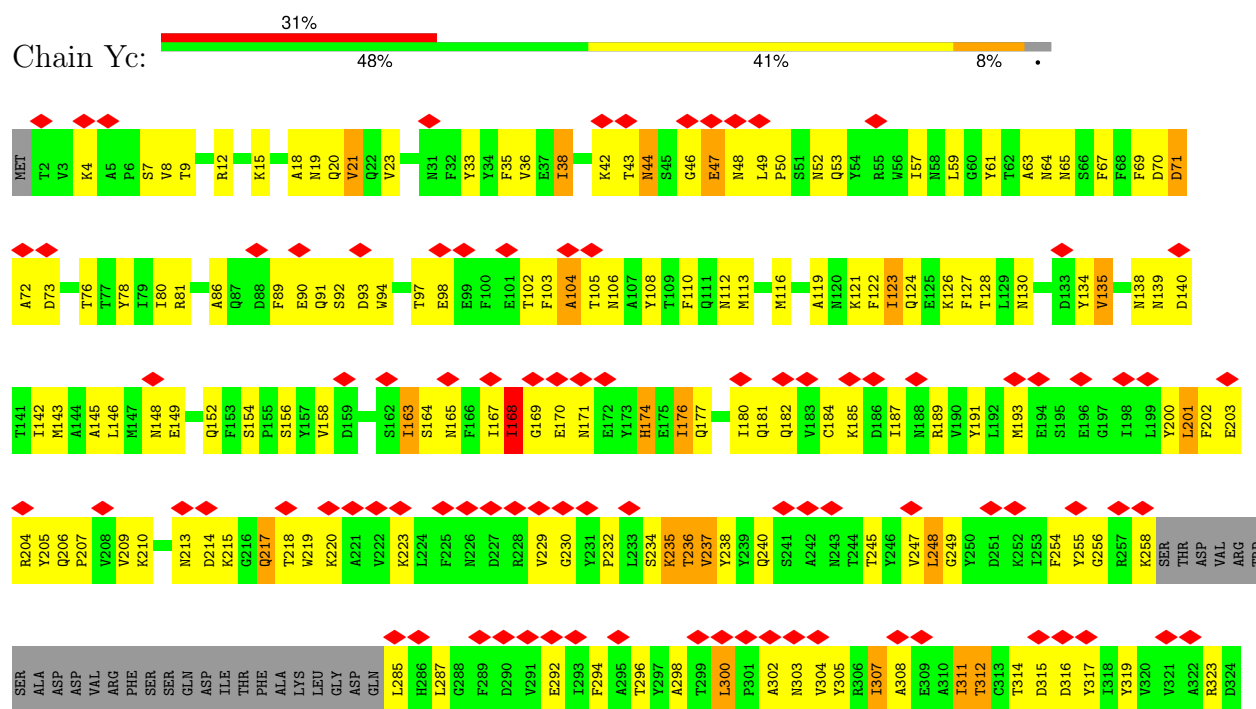


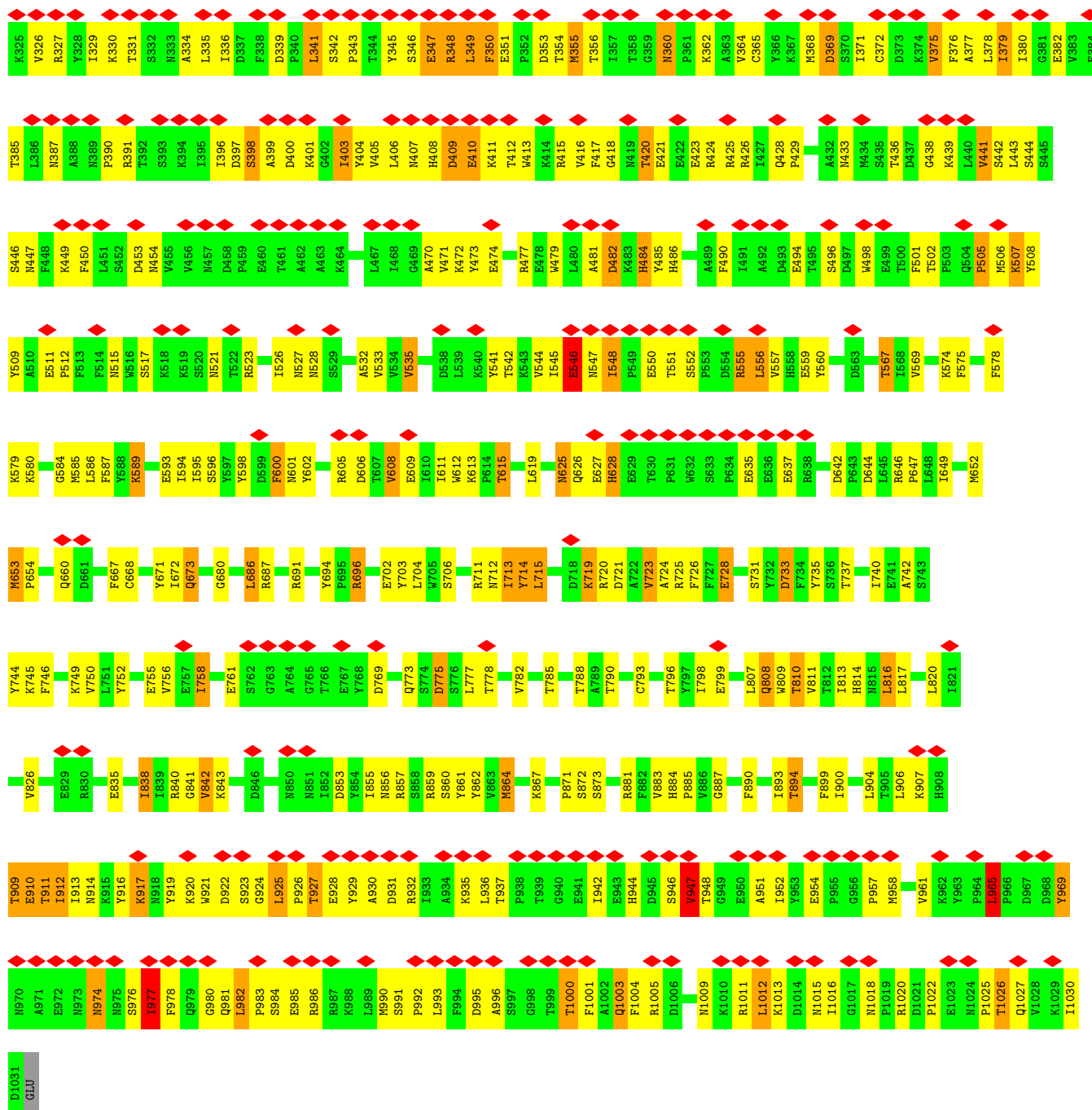
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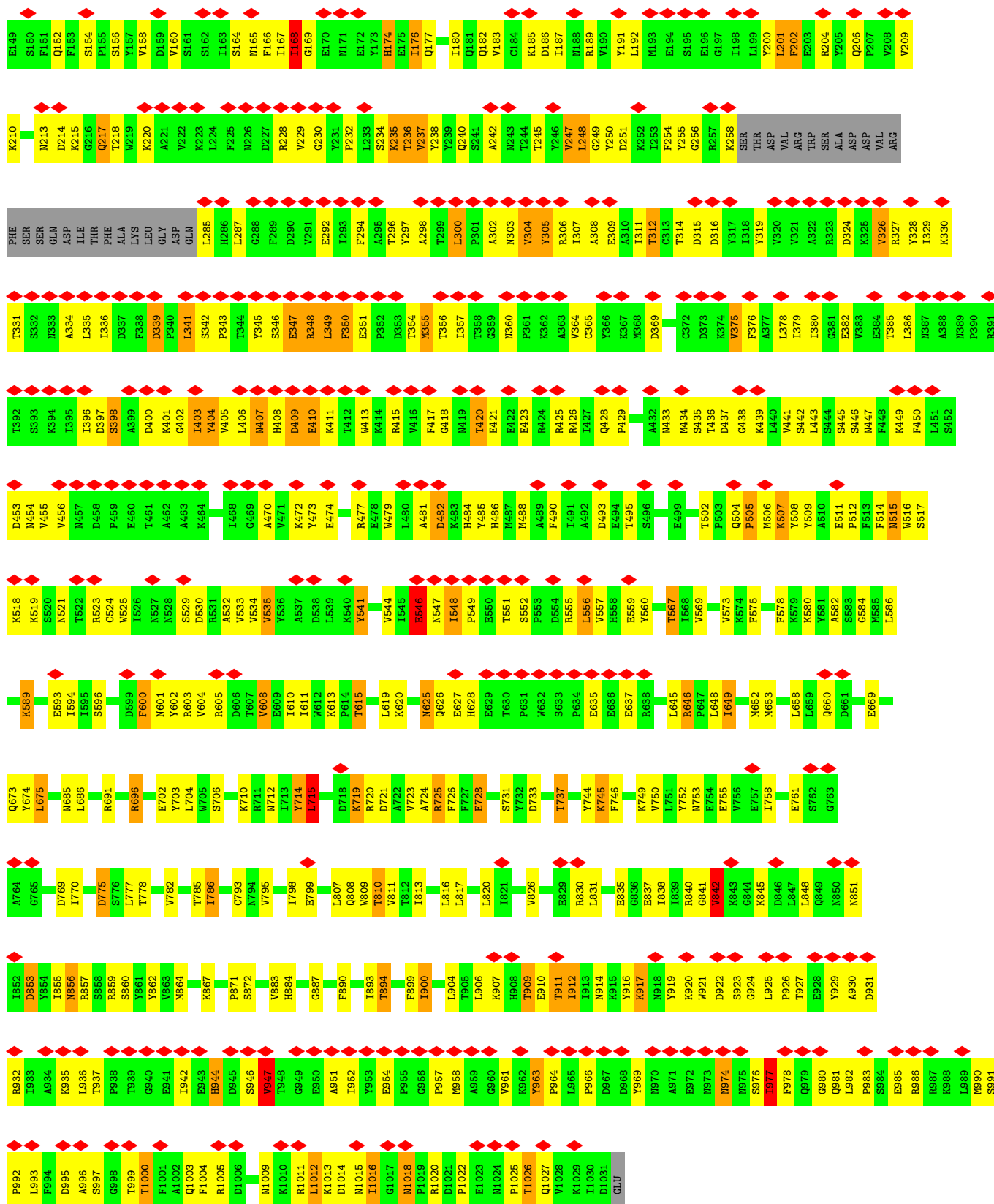
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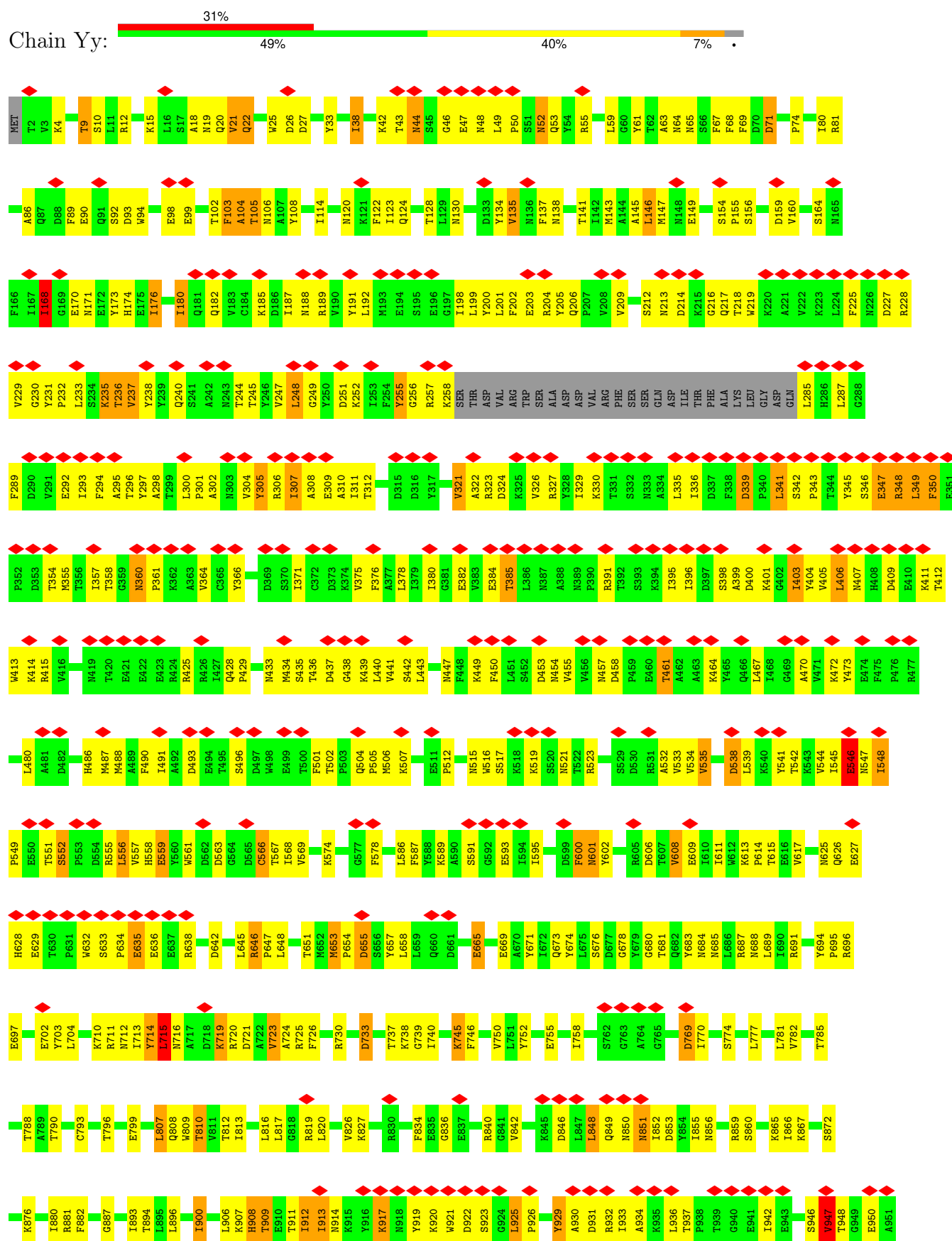


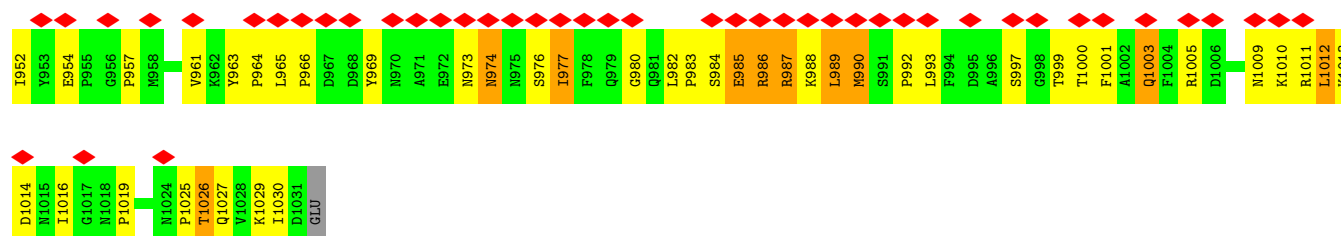


• Molecule 5: gp7, baseplate wedge protein

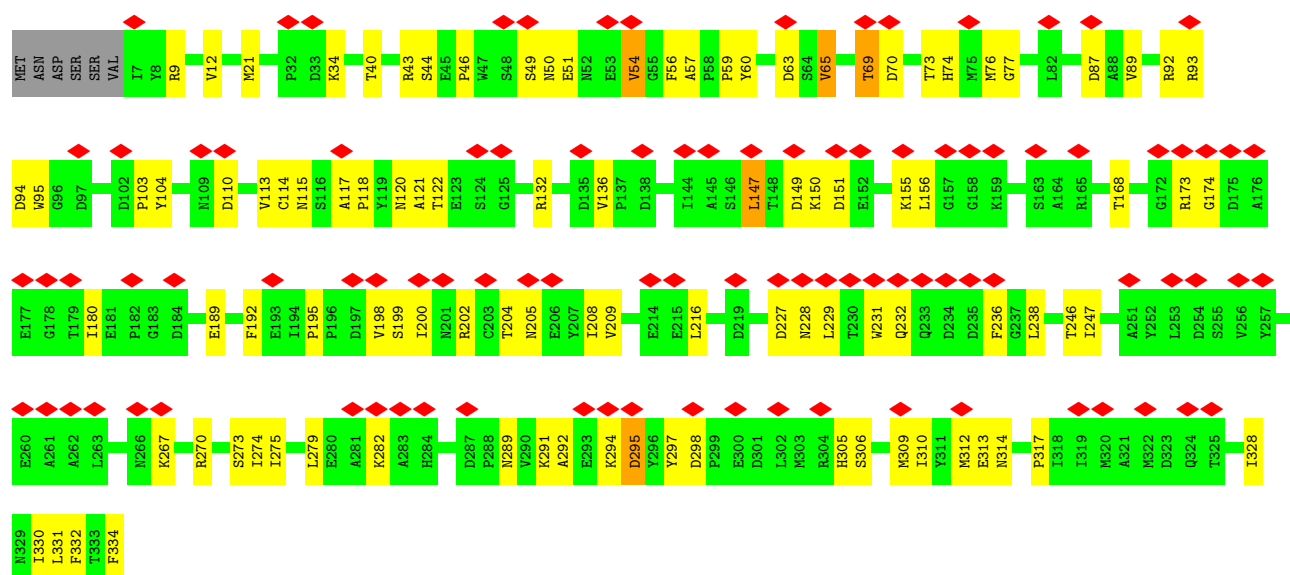




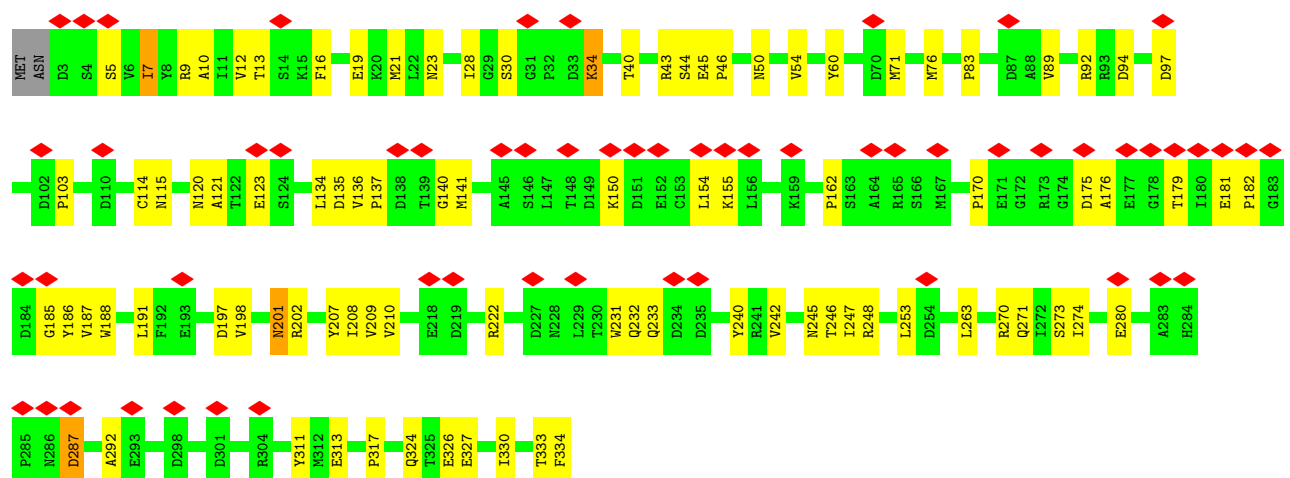
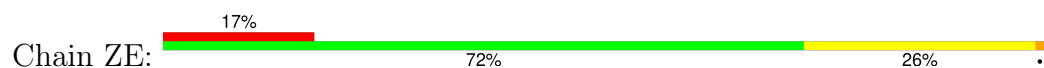




- Molecule 6: gp8, baseplate wedge protein

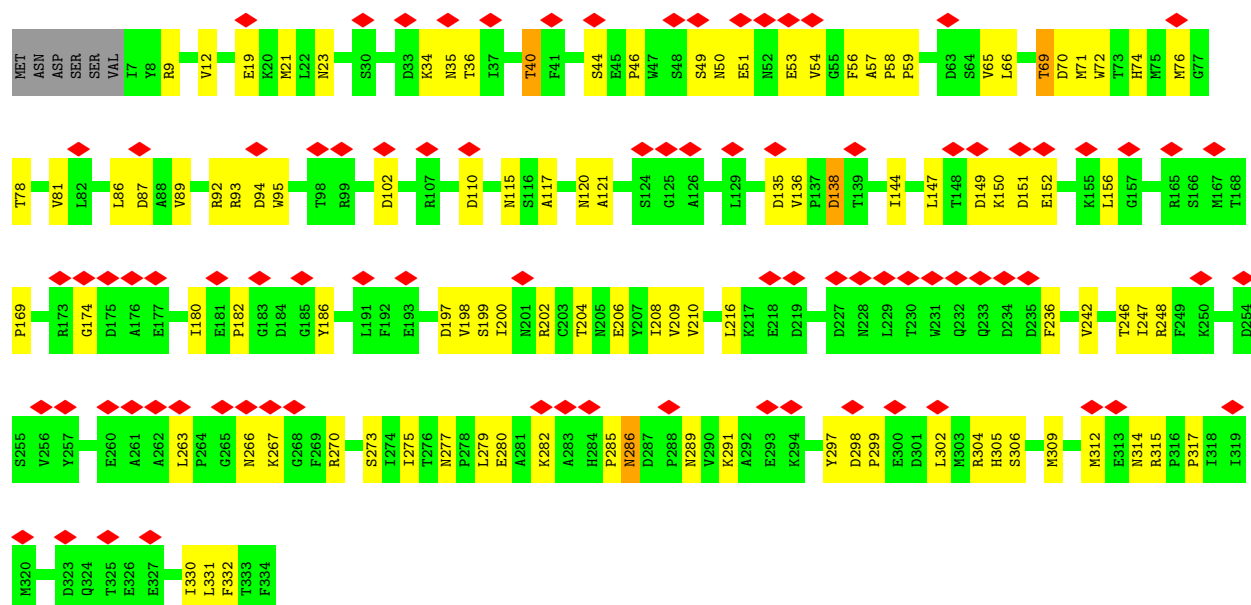


- Molecule 6: gp8, baseplate wedge protein



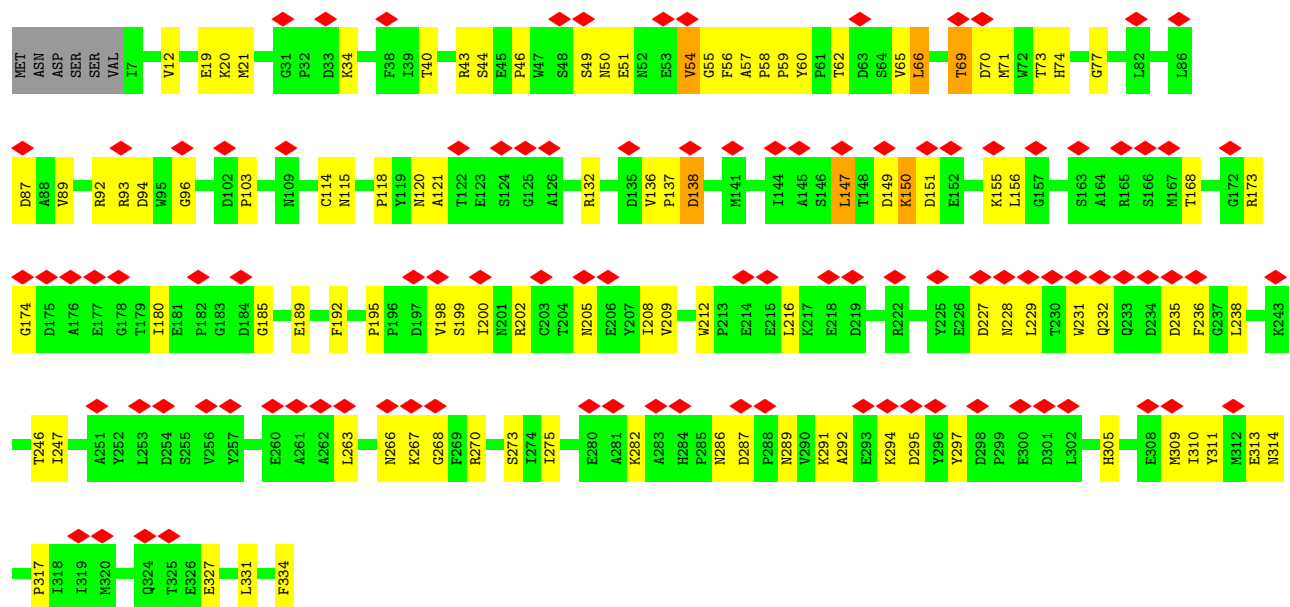
- Molecule 6: gp8, baseplate wedge protein





- Molecule 6: gp8, baseplate wedge protein

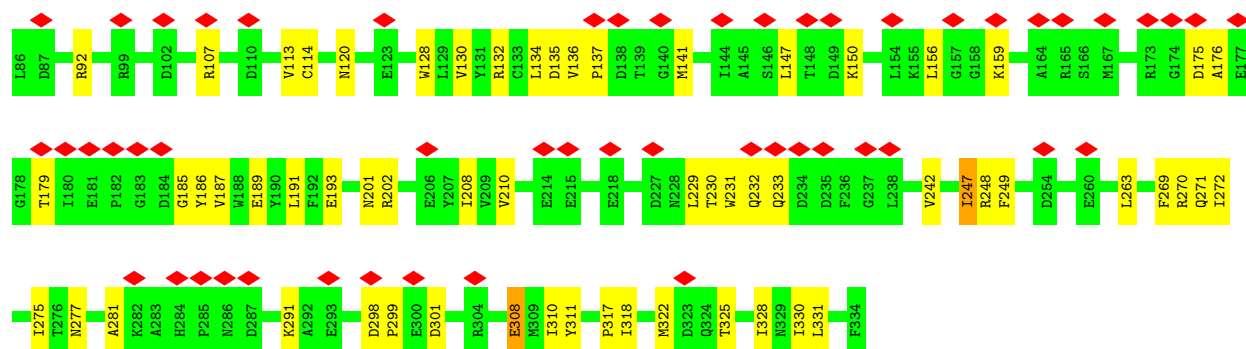
Chain Za: 30% 67% 29%



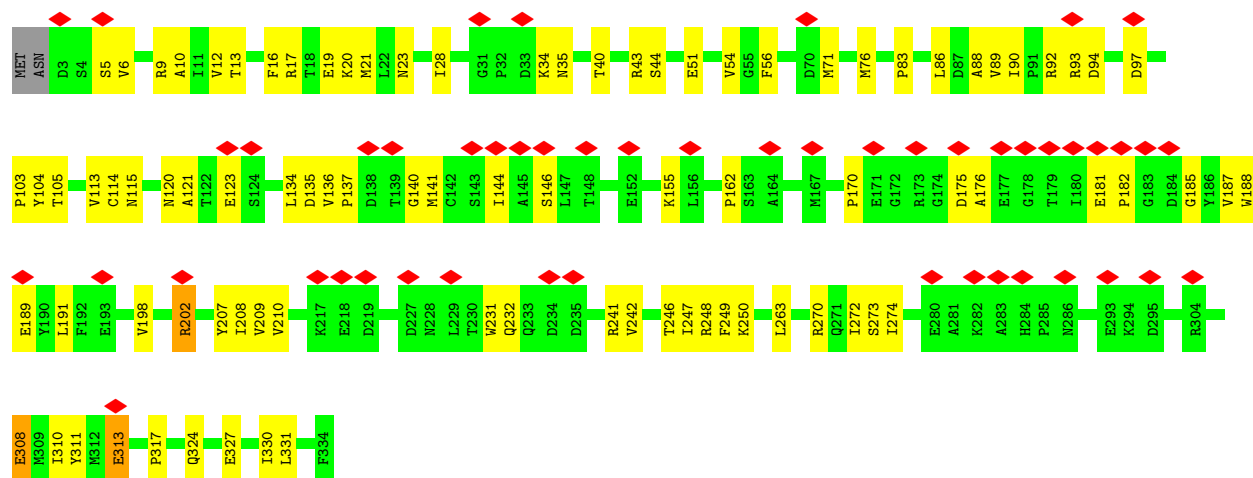
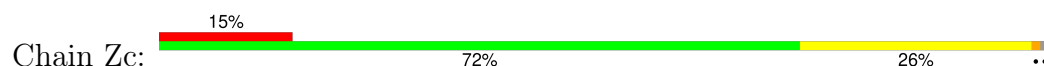
- Molecule 6: gp8, baseplate wedge protein

Chain Zb: 18% 73% 25%

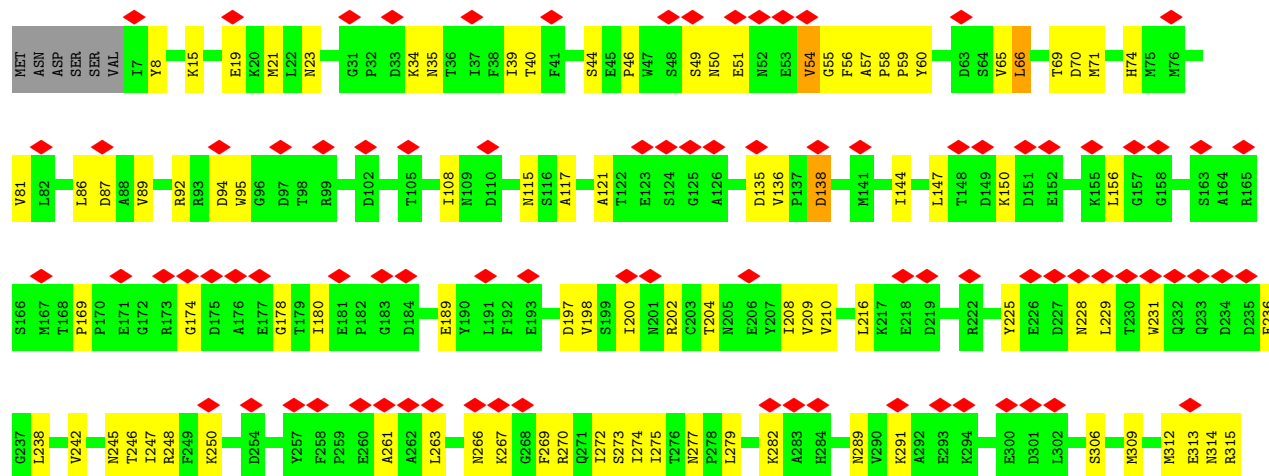


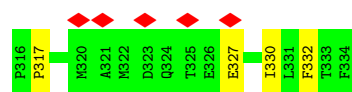


• Molecule 6: gp8, baseplate wedge protein

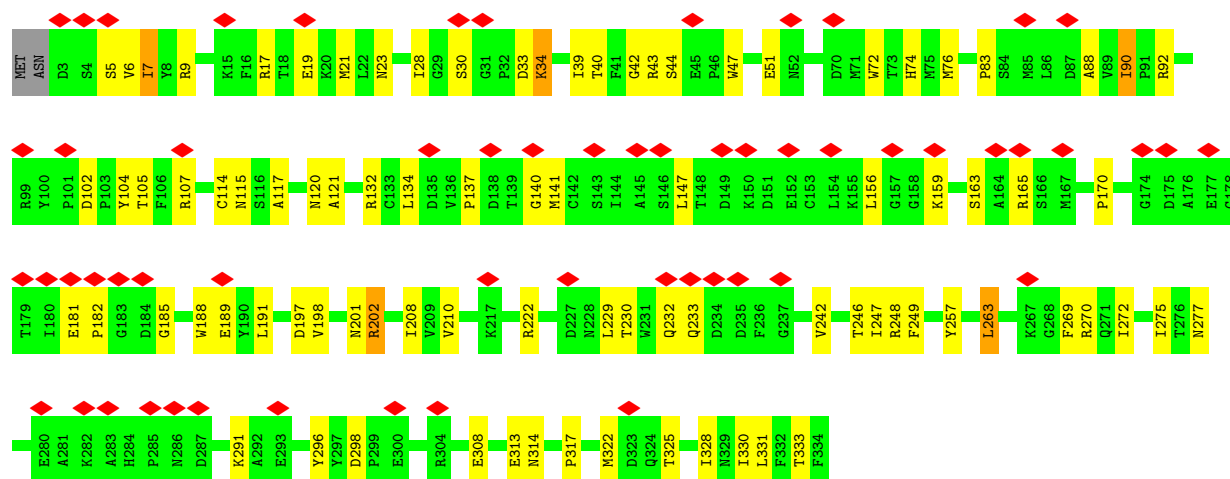
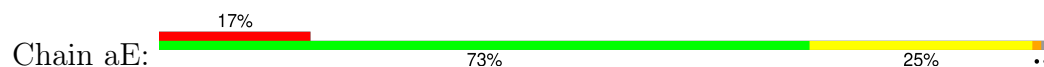


• Molecule 6: gp8, baseplate wedge protein

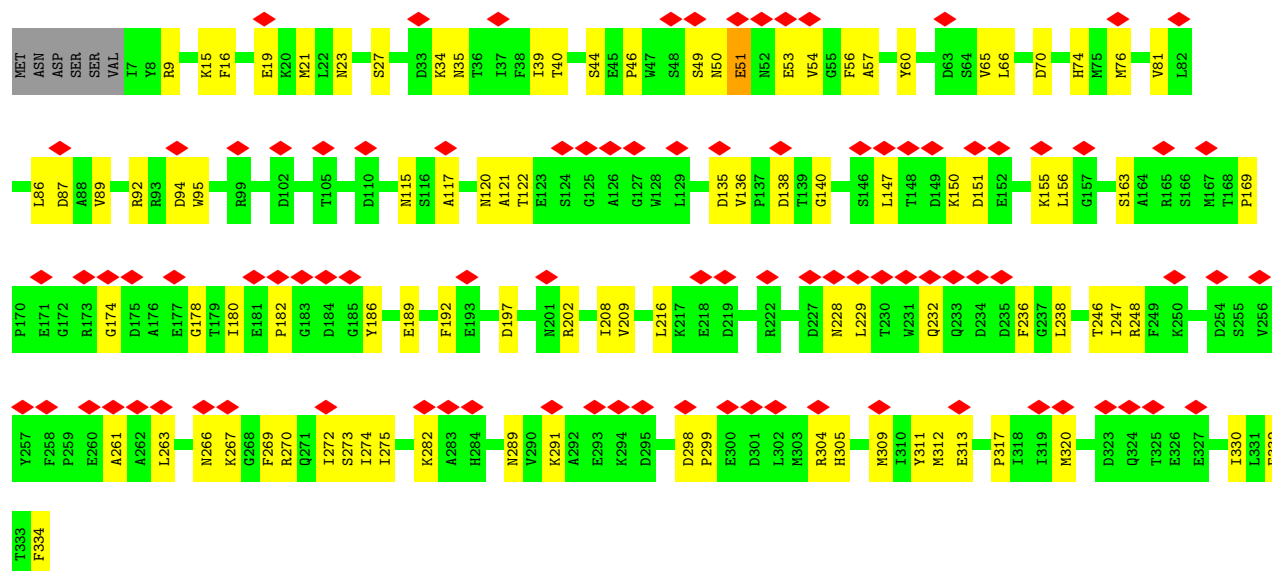




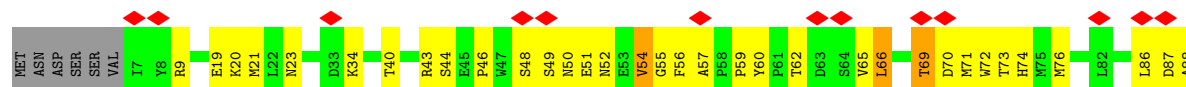
• Molecule 6: gp8, baseplate wedge protein

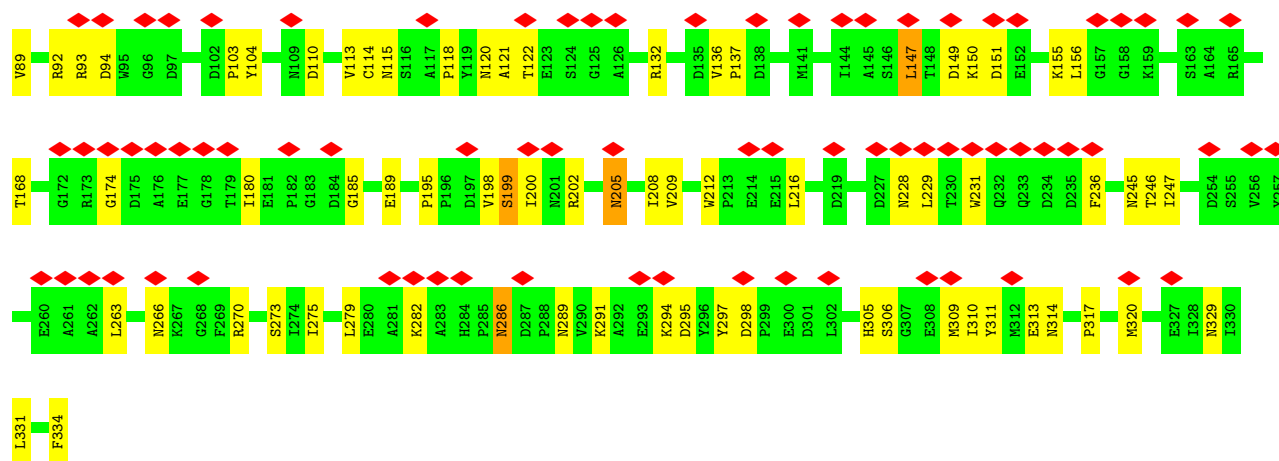


• Molecule 6: gp8, baseplate wedge protein

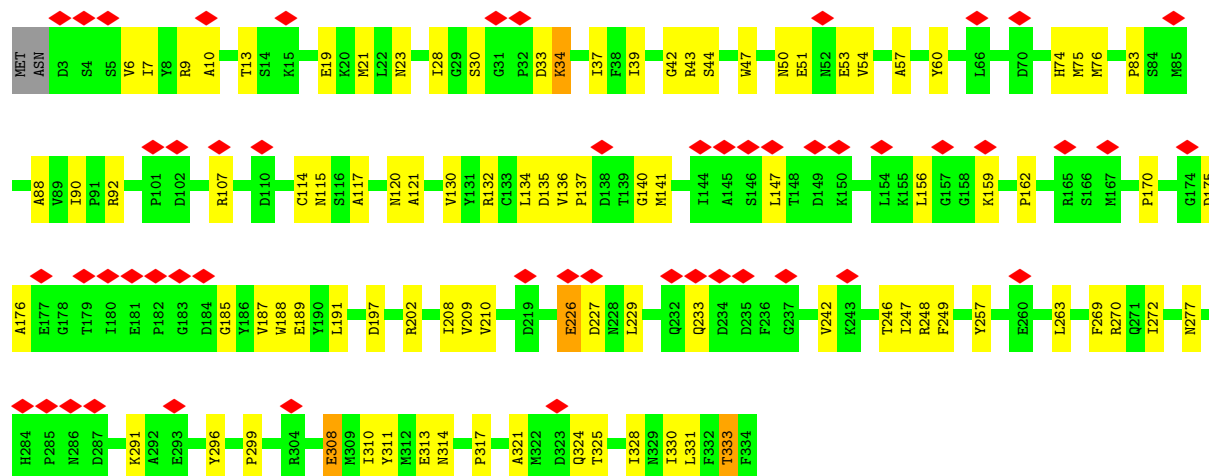


• Molecule 6: gp8, baseplate wedge protein

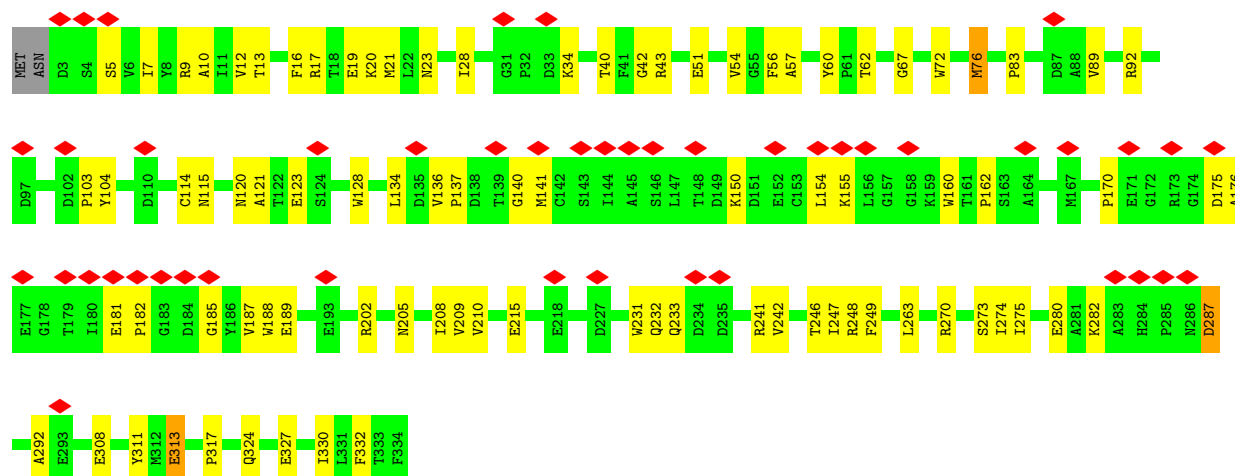
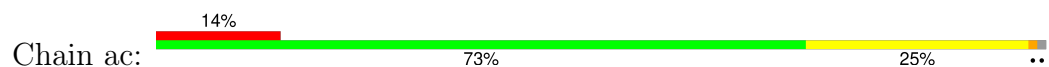




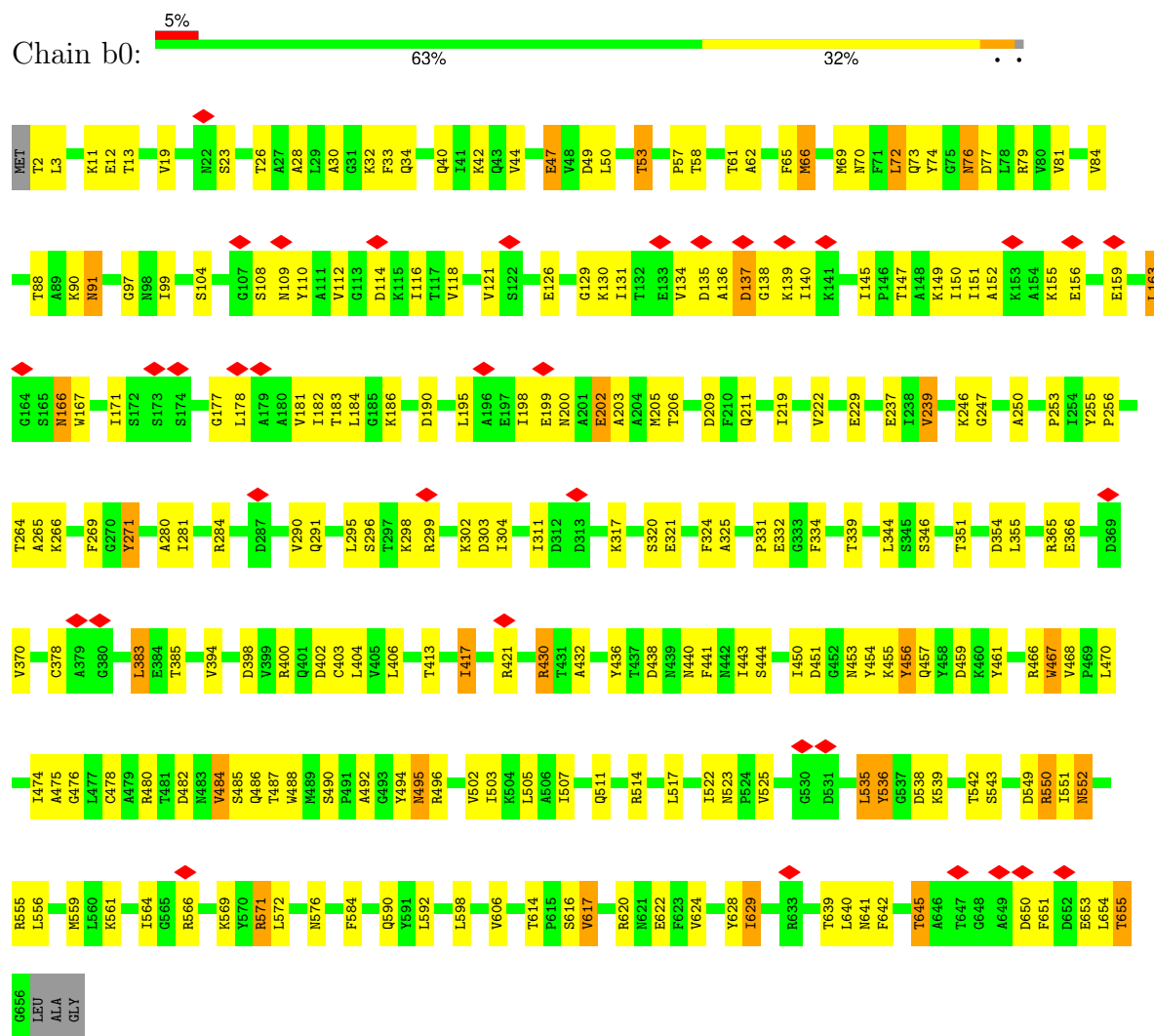
• Molecule 6: gp8, baseplate wedge protein



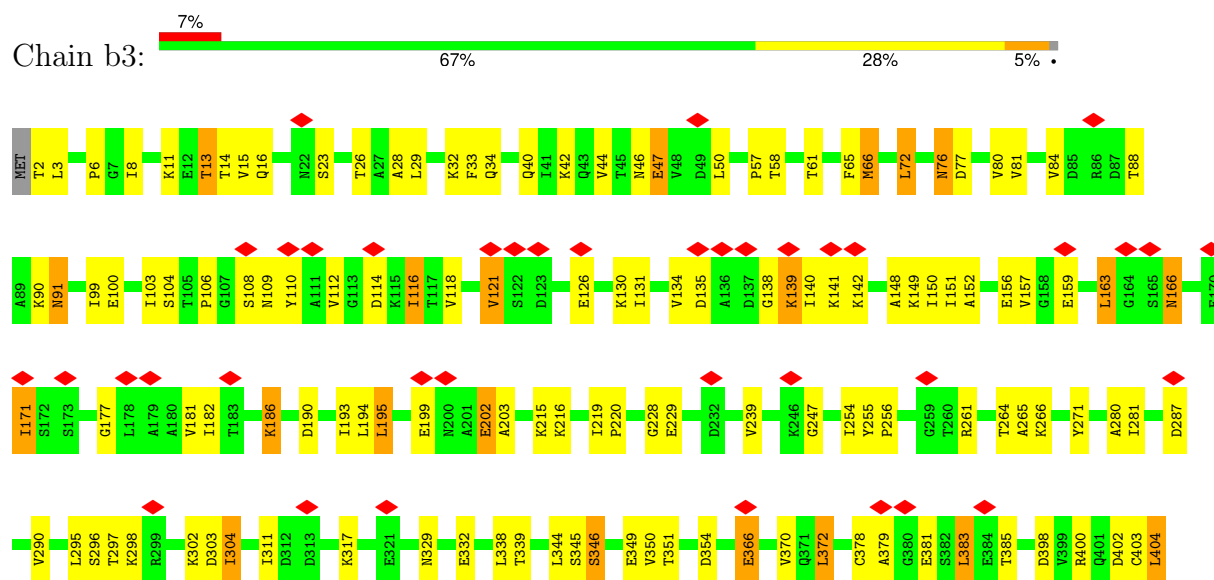
• Molecule 6: gp8, baseplate wedge protein

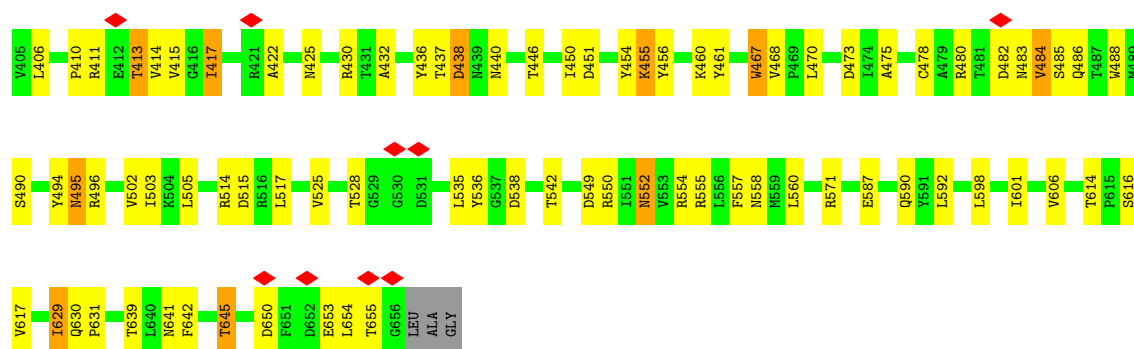


- Molecule 7: gp18, tail sheath protein

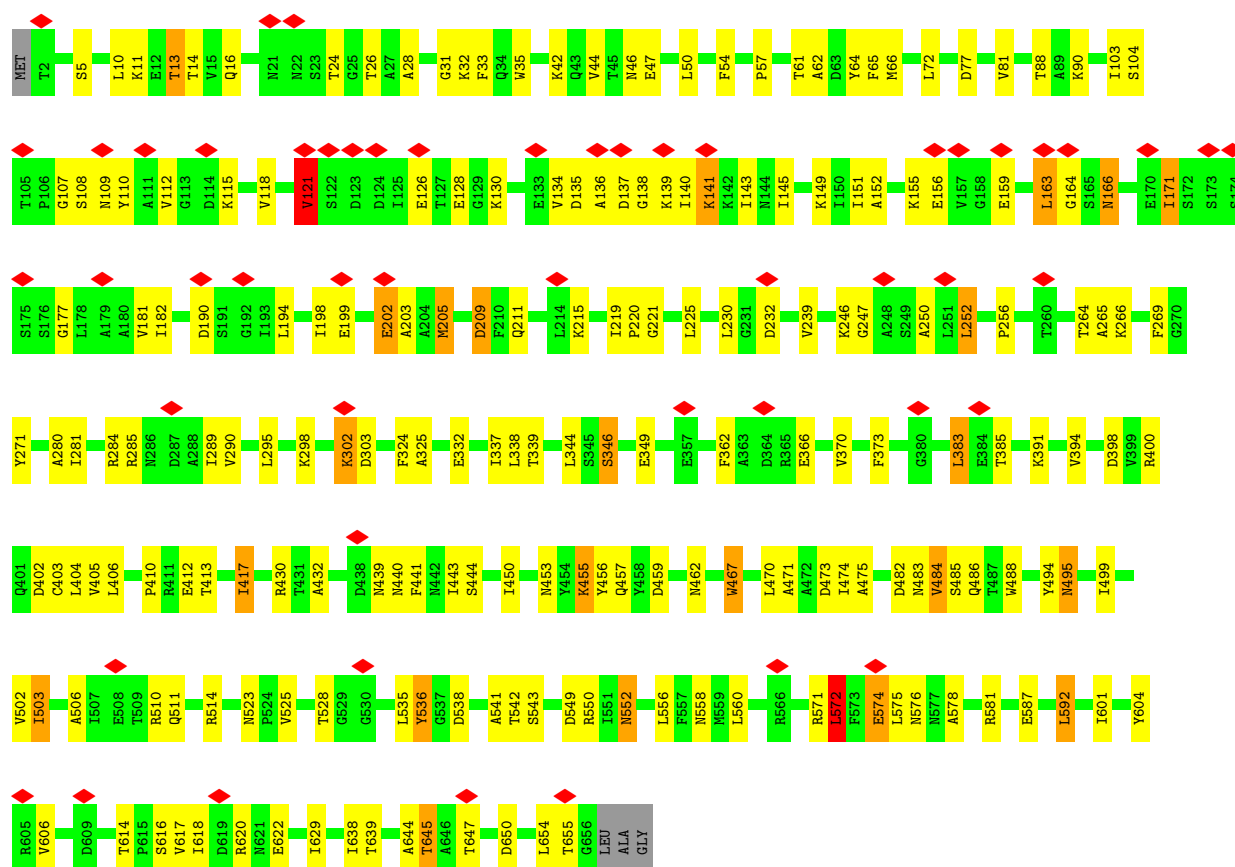


- Molecule 7: gp18, tail sheath protein

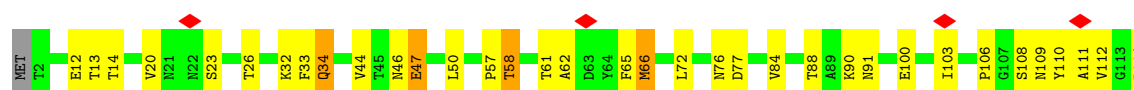


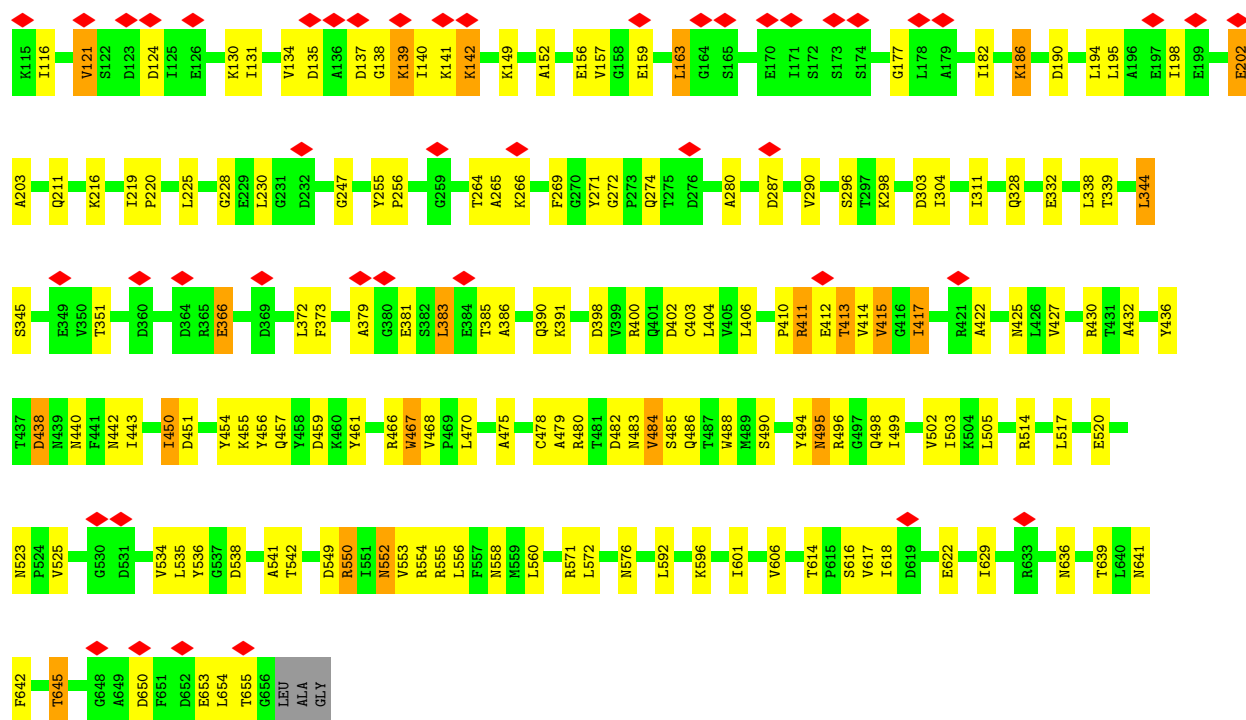


- Molecule 7: gp18, tail sheath protein

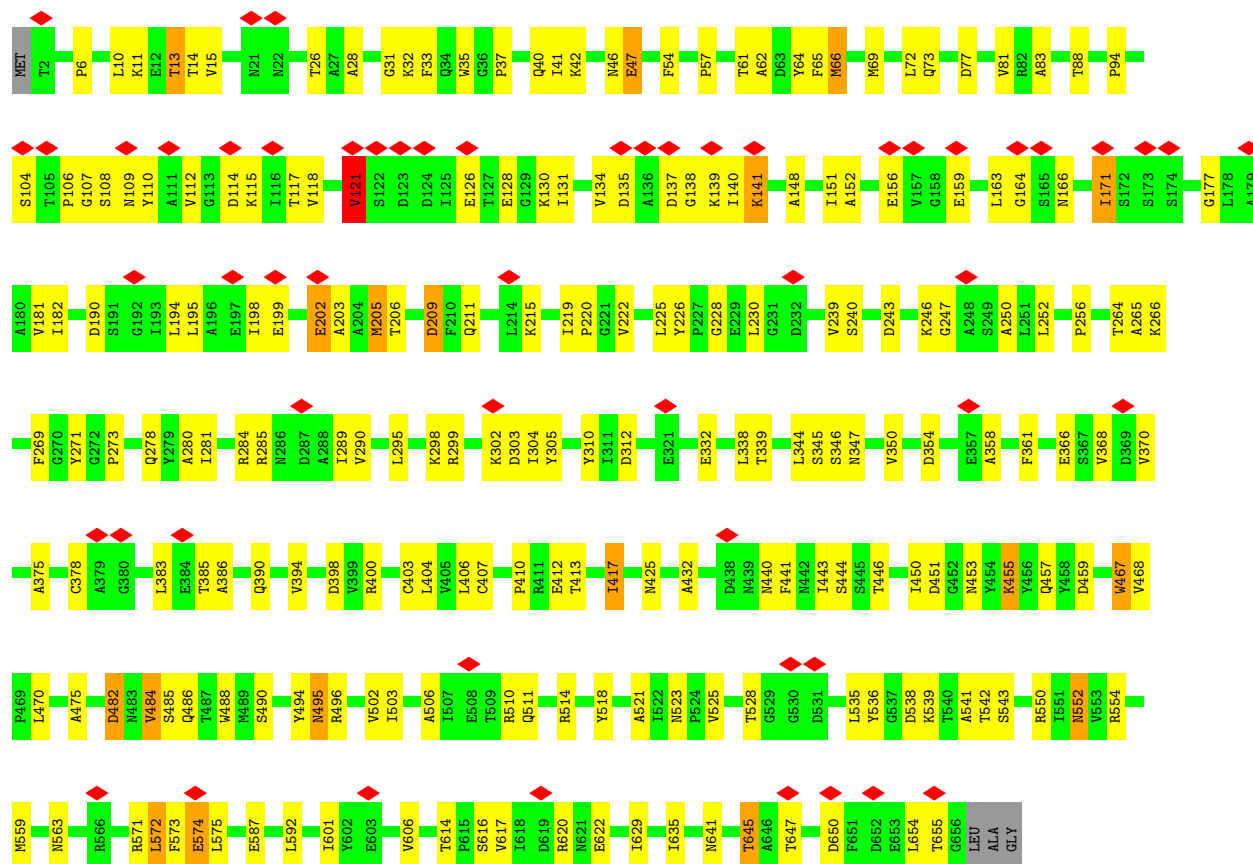


- Molecule 7: gp18, tail sheath protein

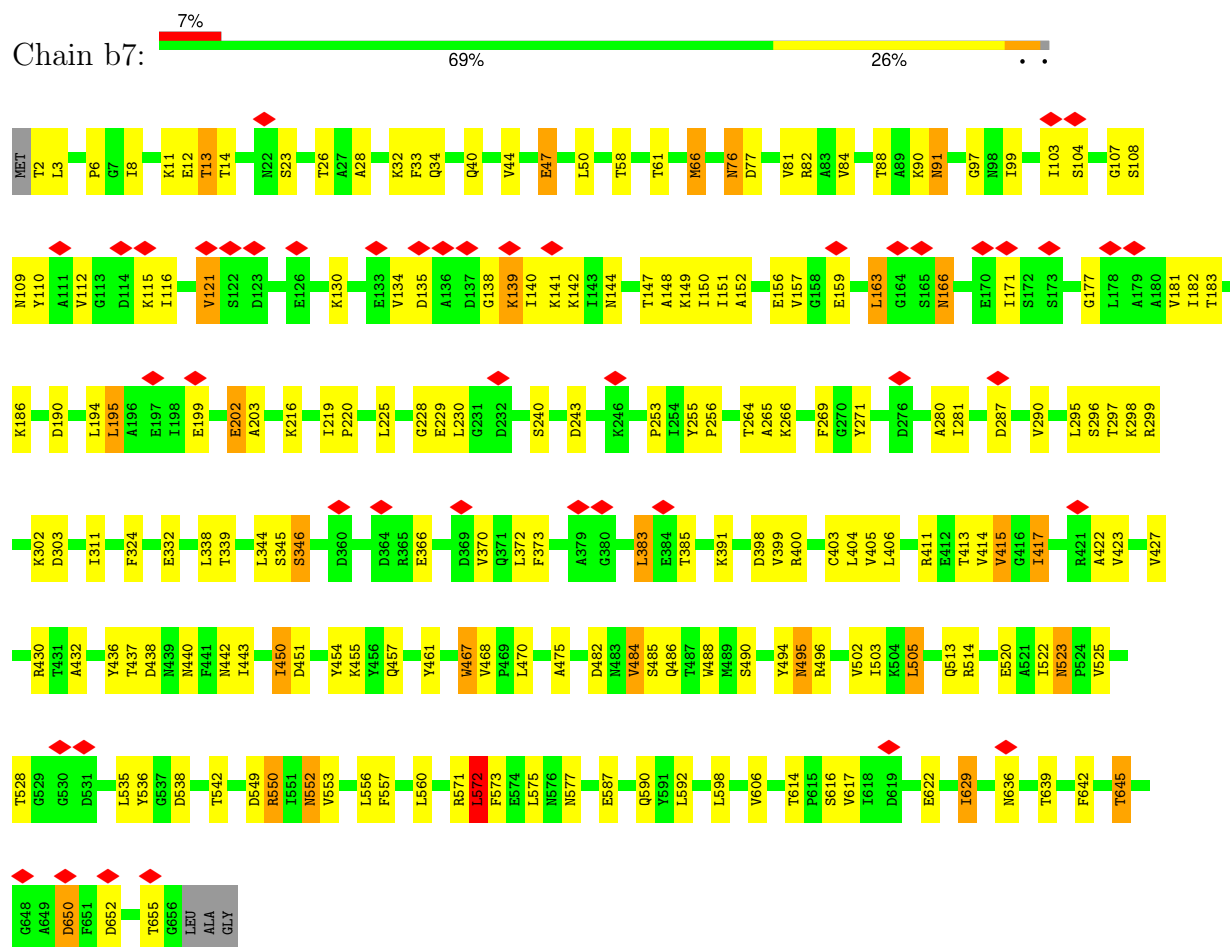




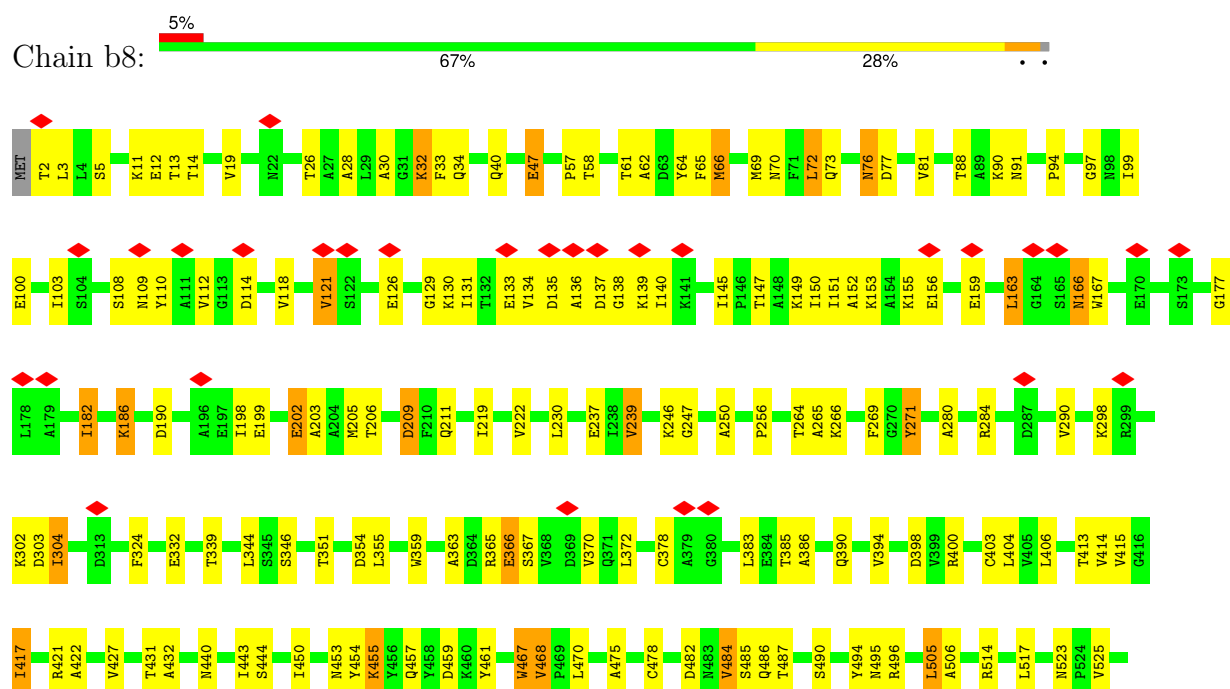
• Molecule 7: gp18, tail sheath protein



- Molecule 7: gp18, tail sheath protein

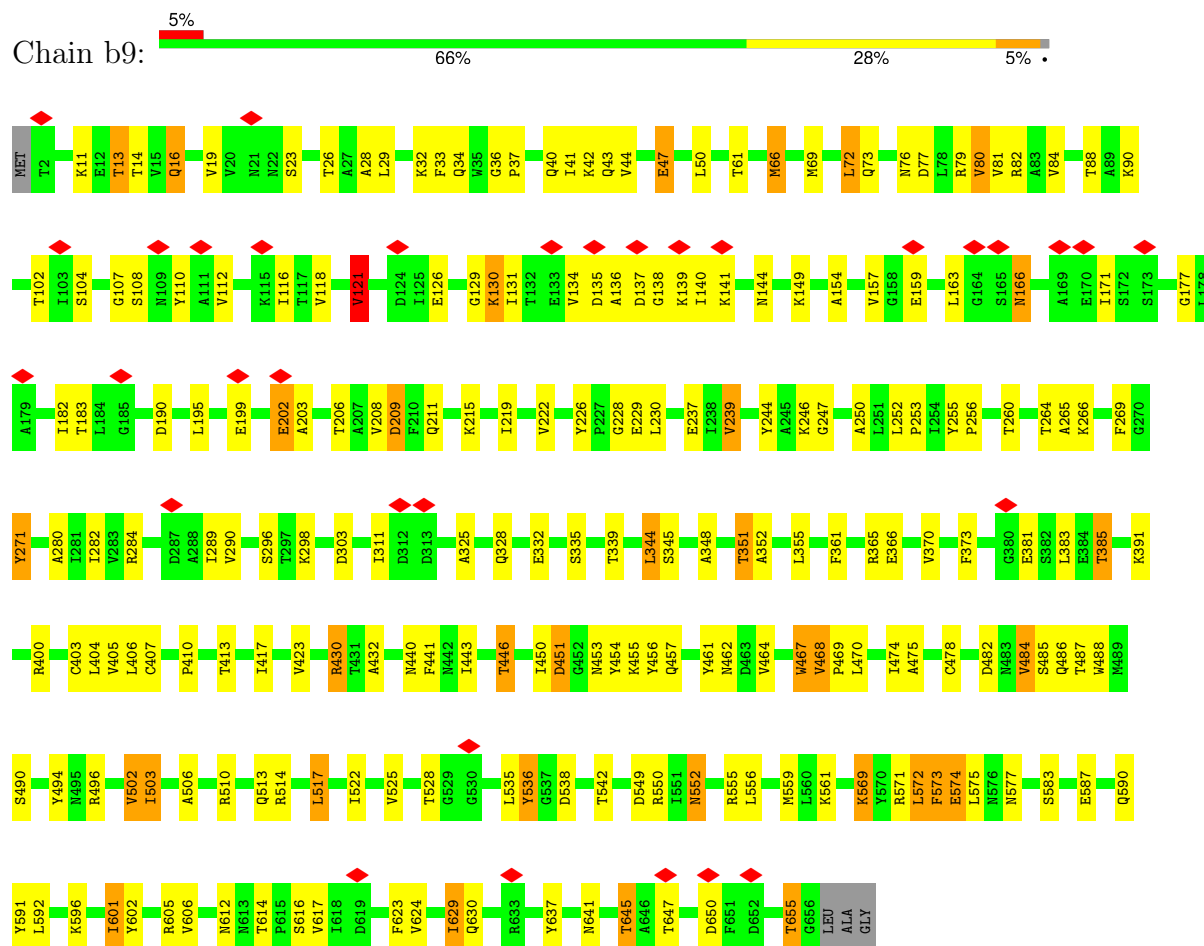


- Molecule 7: gp18, tail sheath protein

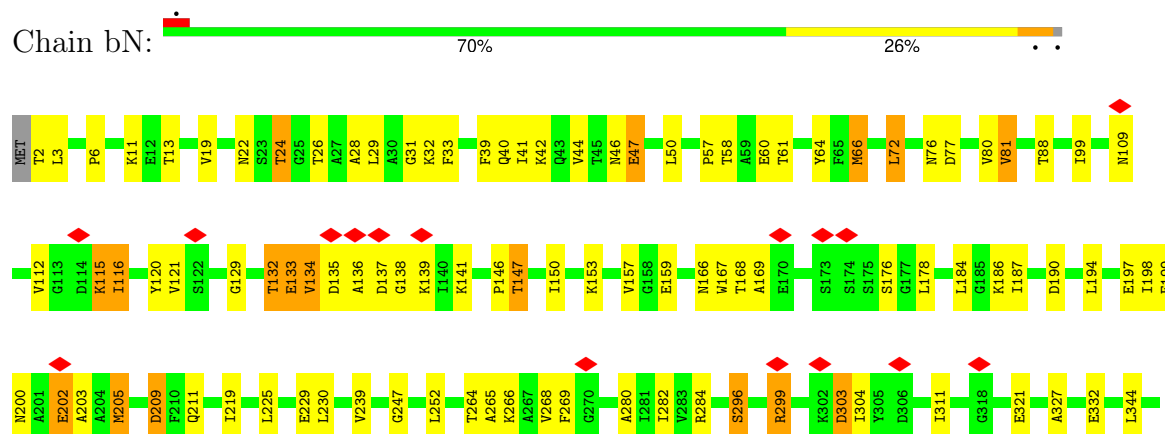


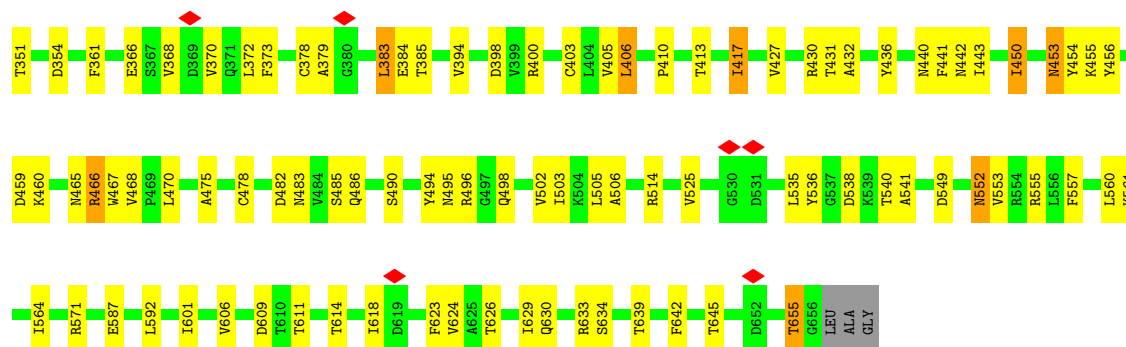


• Molecule 7: gp18, tail sheath protein



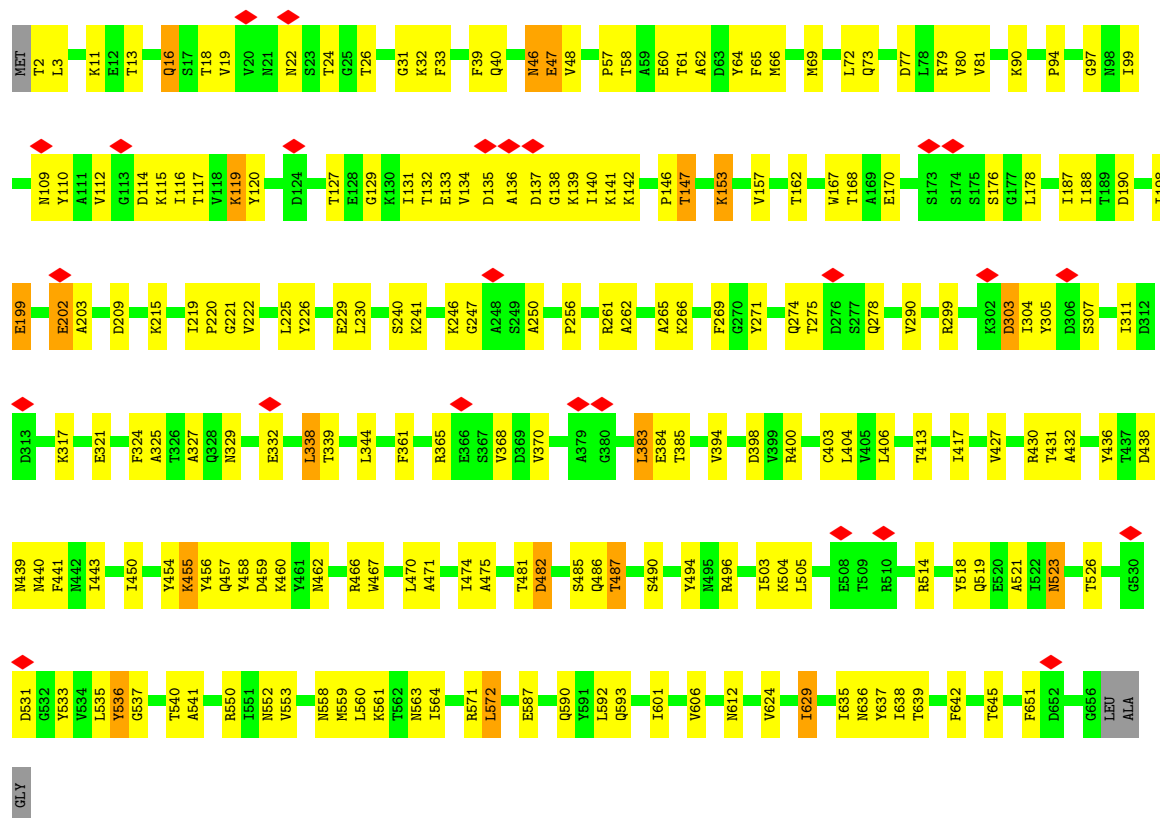
• Molecule 7: gp18, tail sheath protein





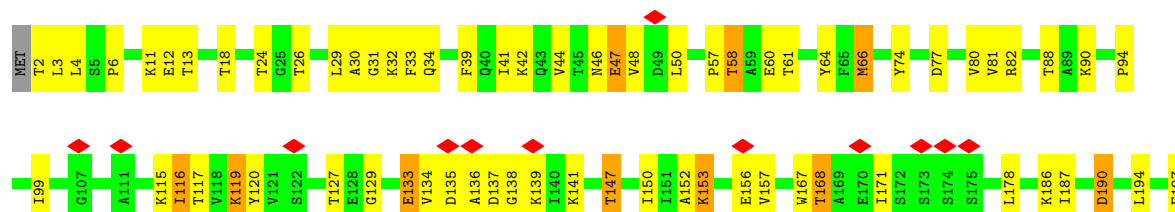
- Molecule 7: gp18, tail sheath protein

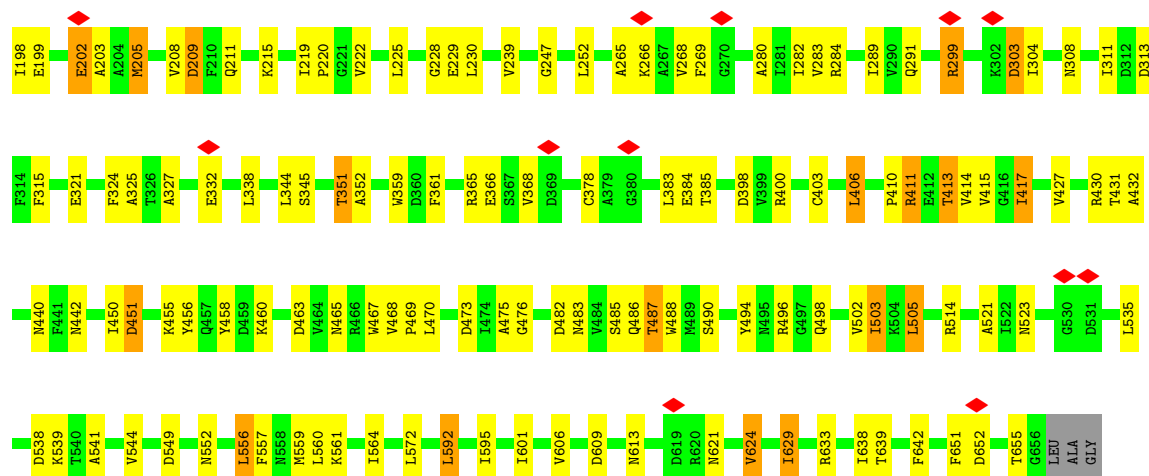
Chain bO: 67% 29%



- Molecule 7: gp18, tail sheath protein

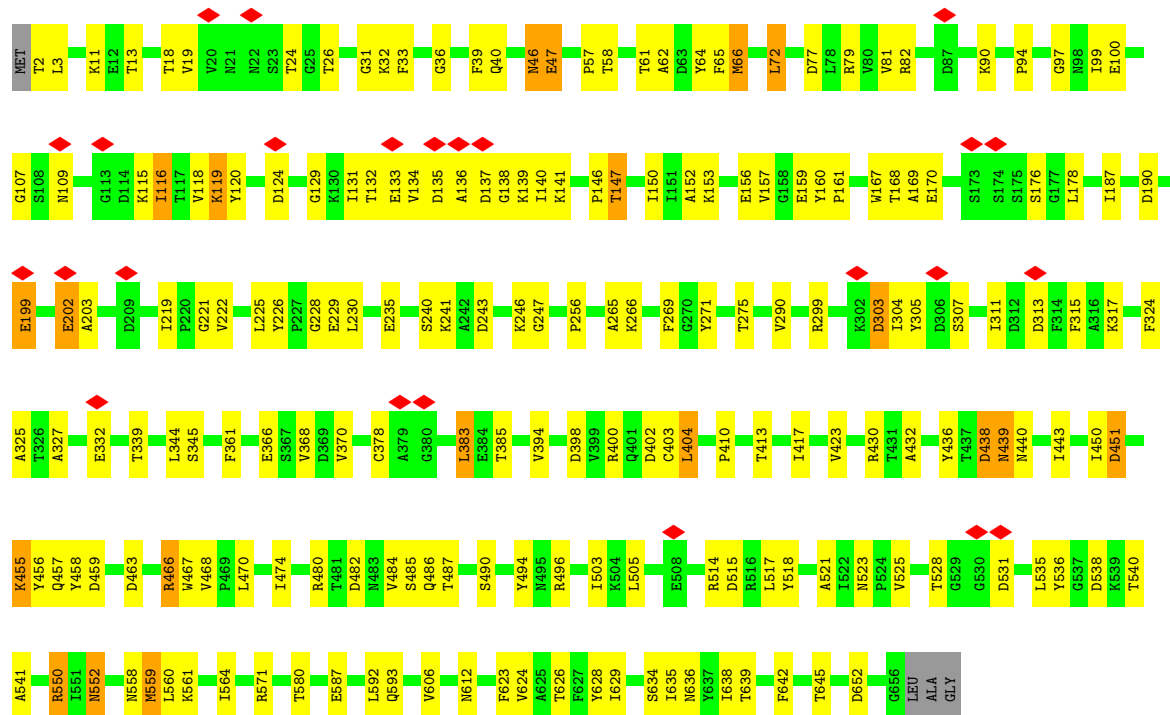
Chain bP: 69% 26%





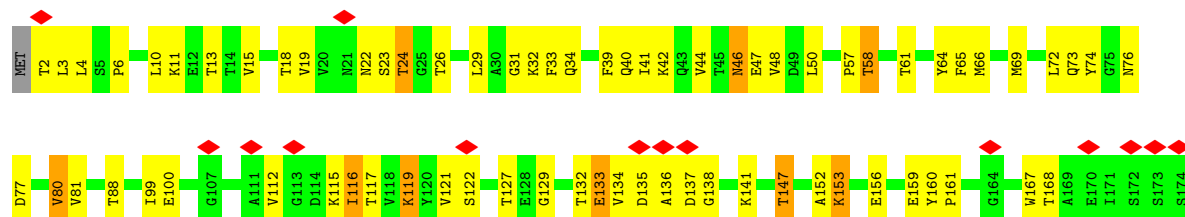
- Molecule 7: gp18, tail sheath protein

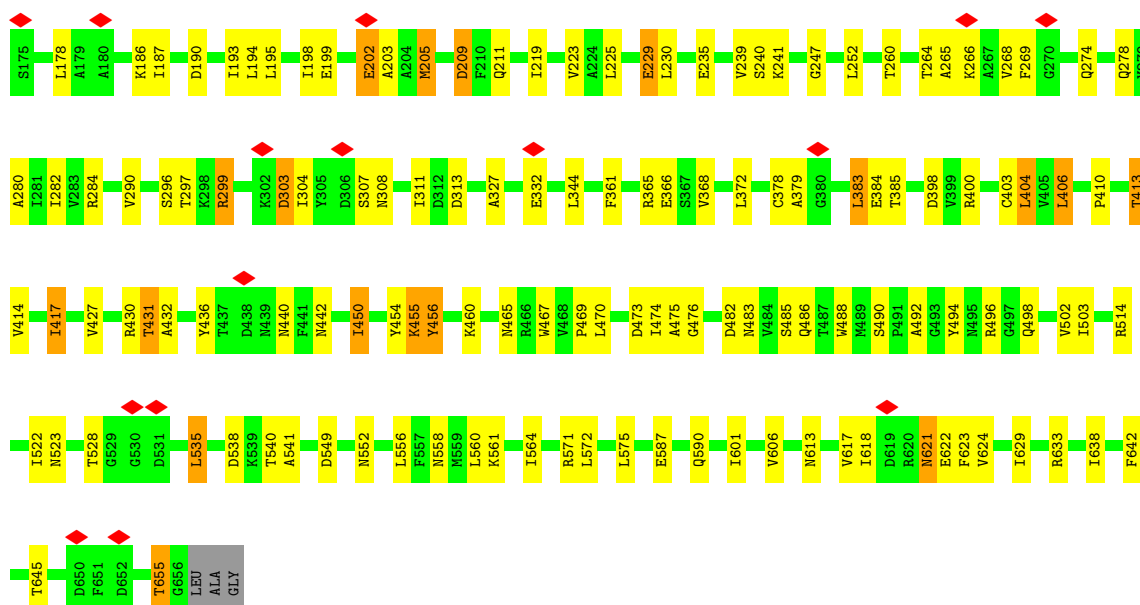
Chain bQ: 69% 27%



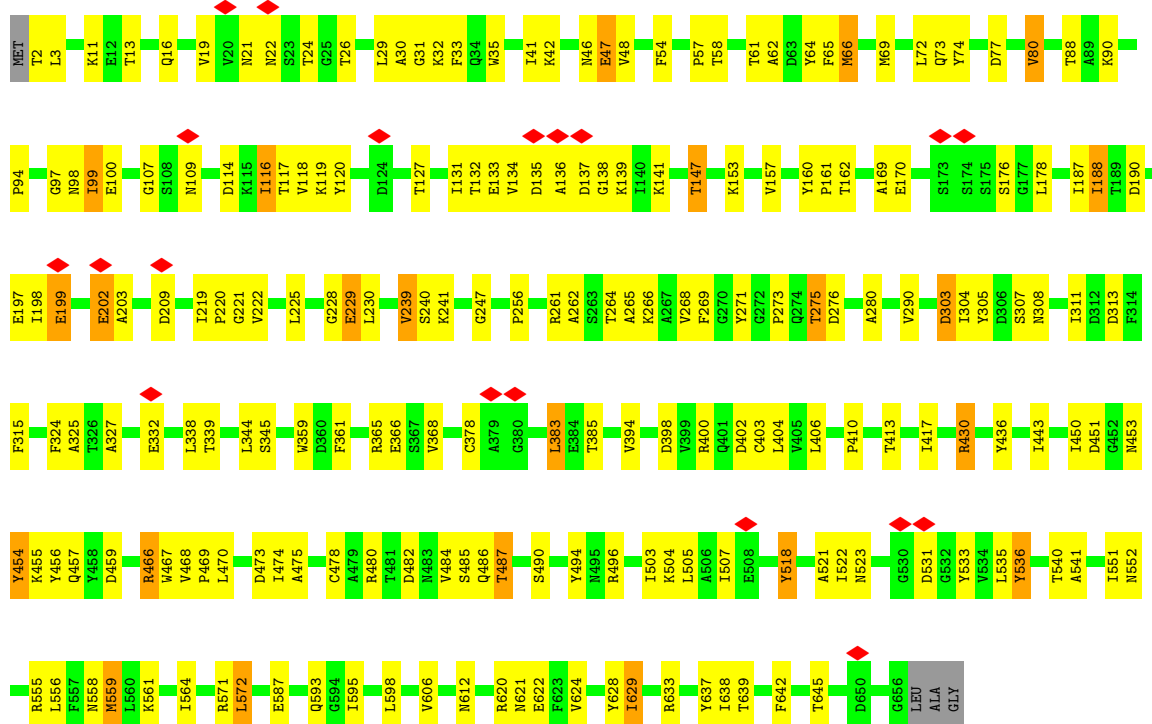
- Molecule 7: gp18, tail sheath protein

Chain bR: 68% 27%



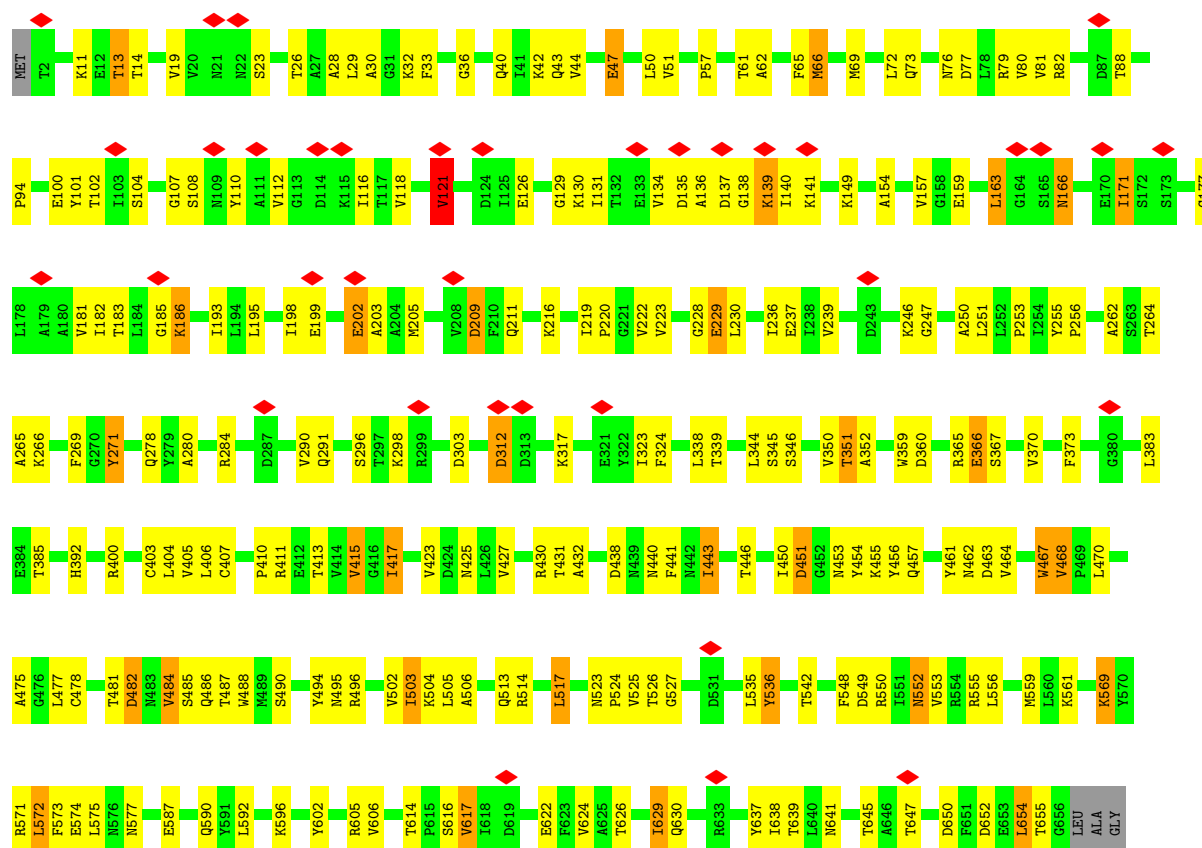


• Molecule 7: gp18, tail sheath protein

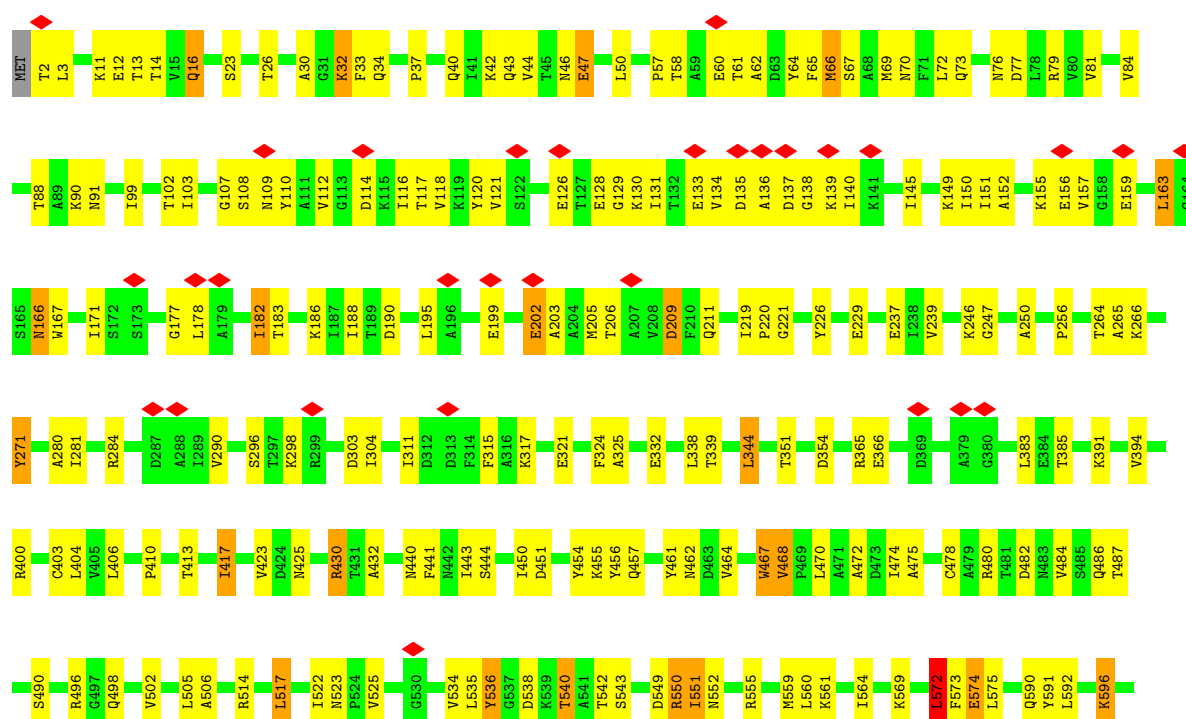


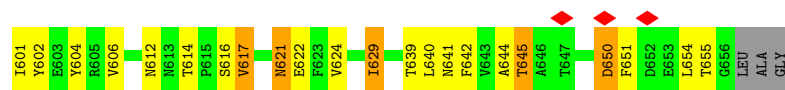
• Molecule 7: gp18, tail sheath protein



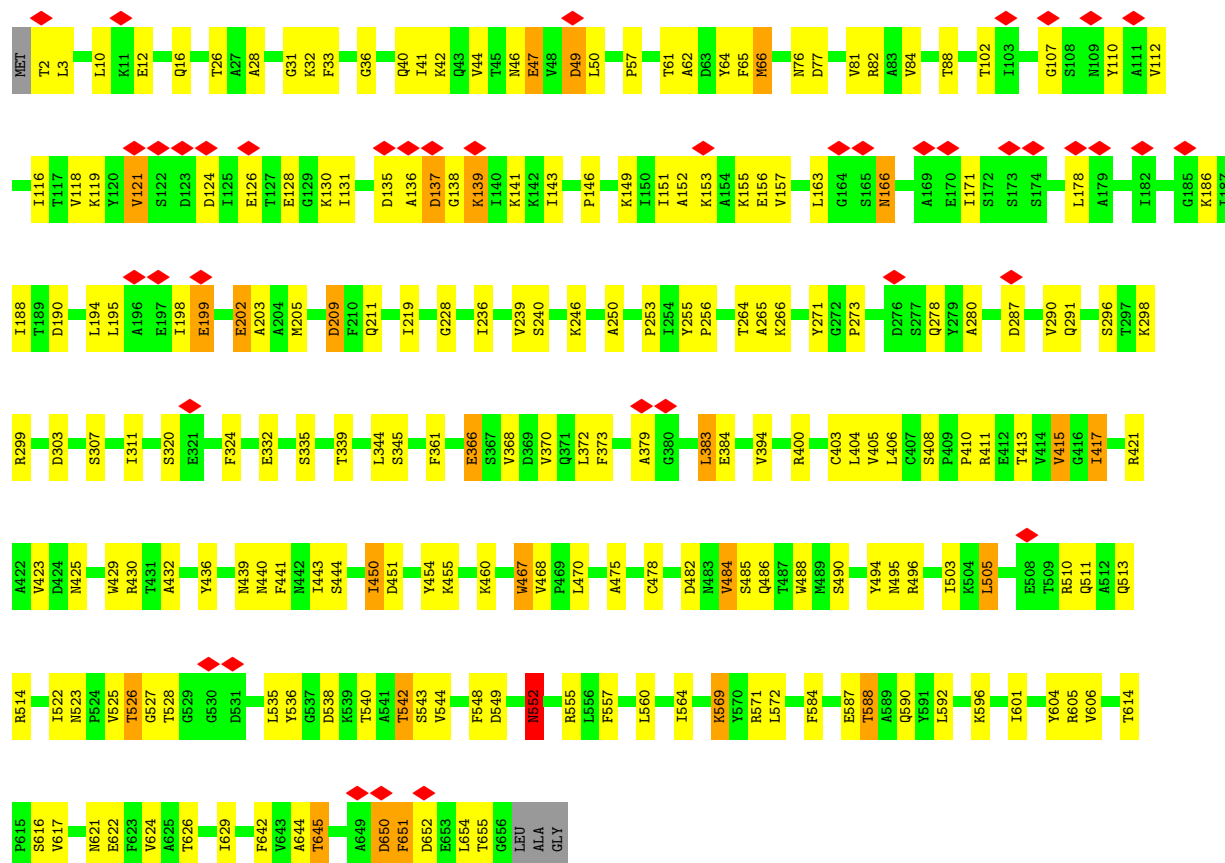


• Molecule 7: gp18, tail sheath protein

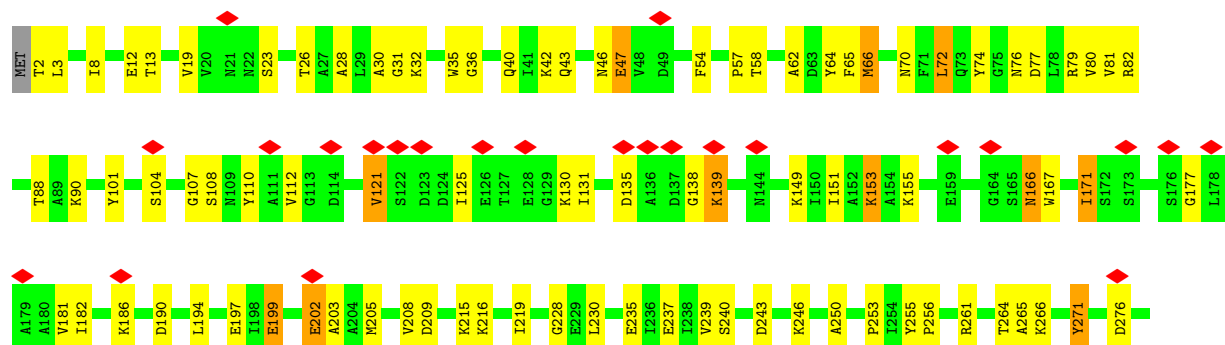


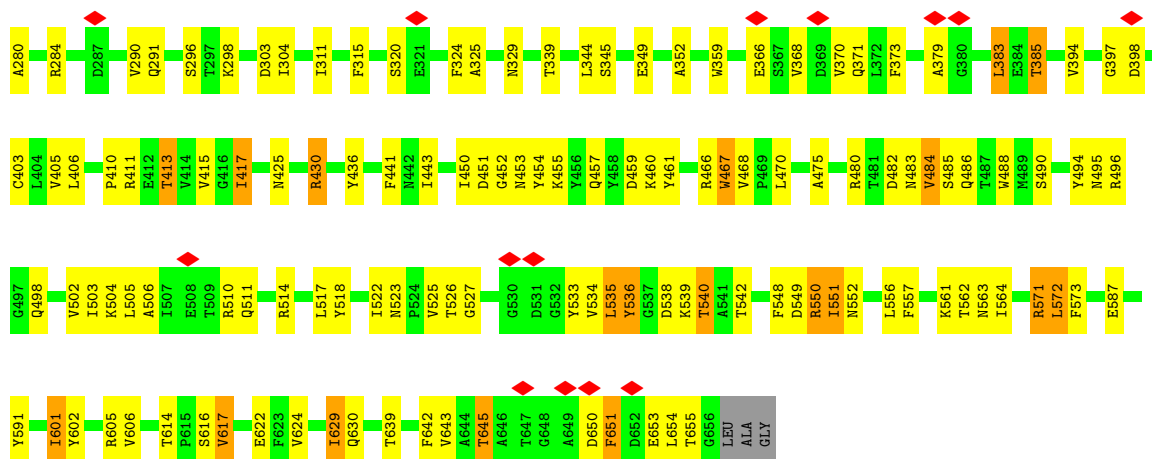


• Molecule 7: gp18, tail sheath protein

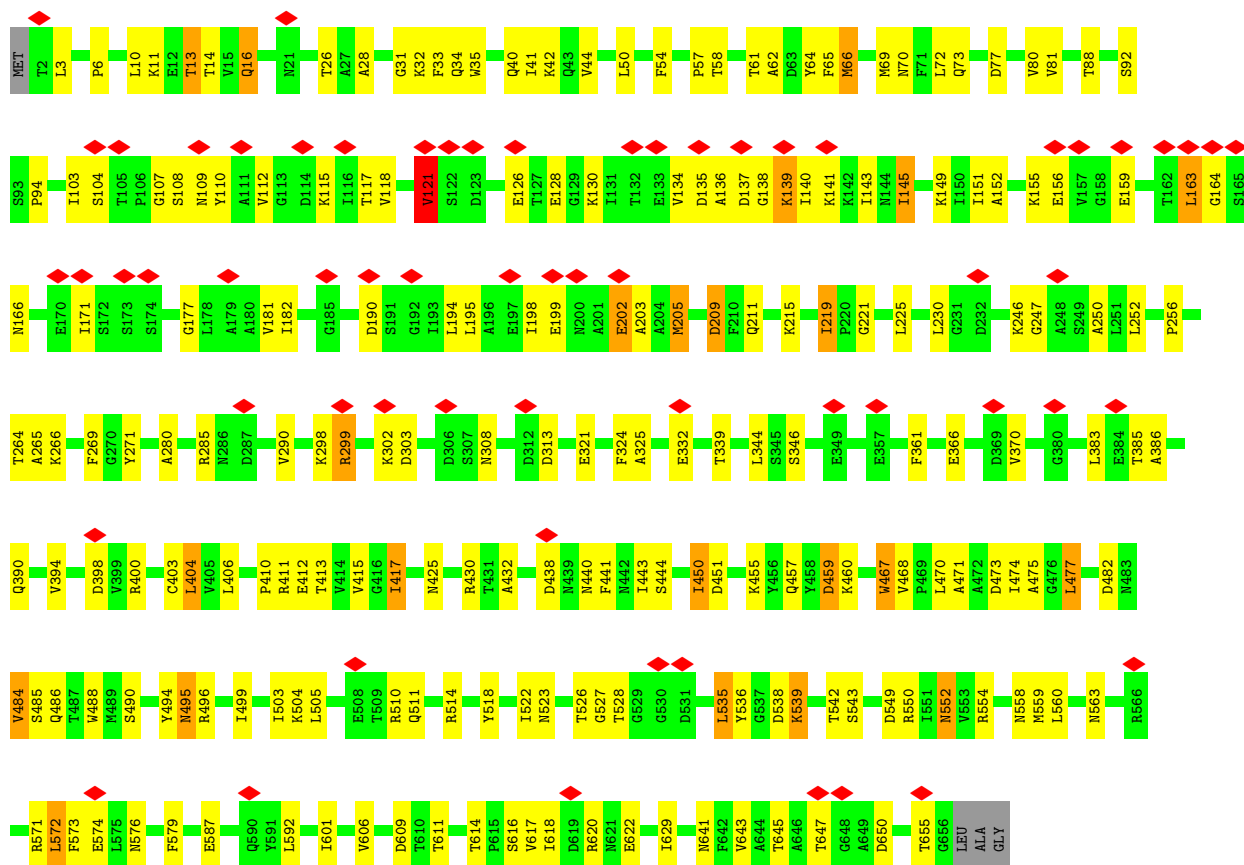


• Molecule 7: gp18, tail sheath protein

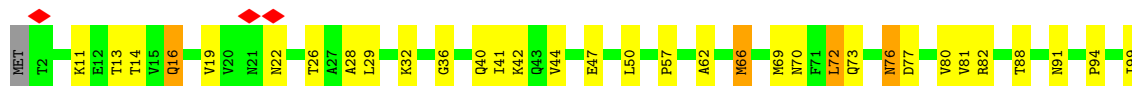


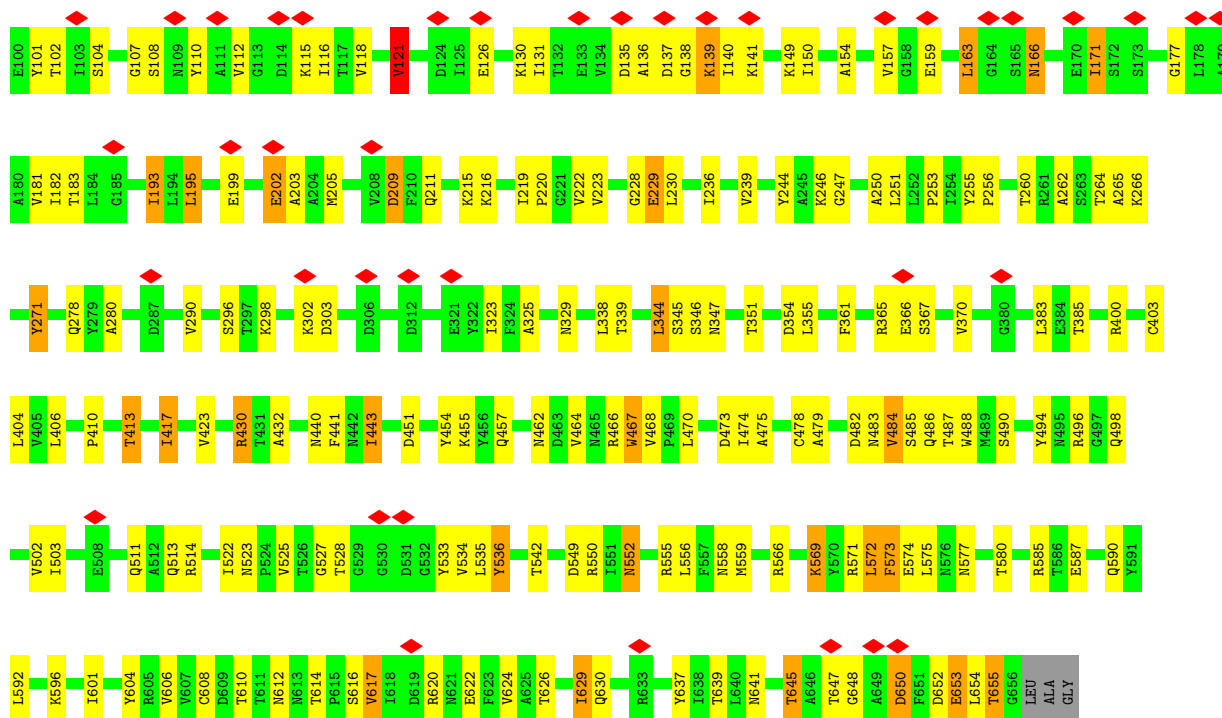


• Molecule 7: gp18, tail sheath protein

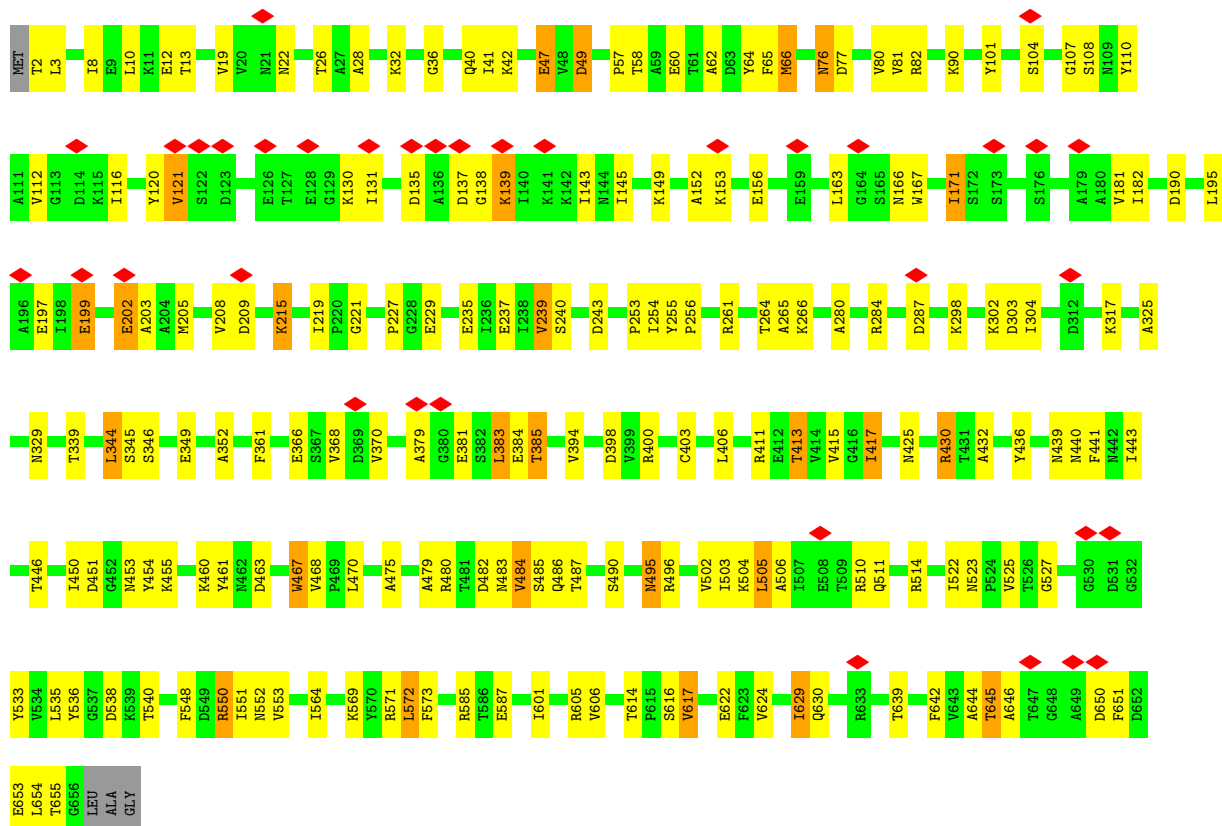


• Molecule 7: gp18, tail sheath protein

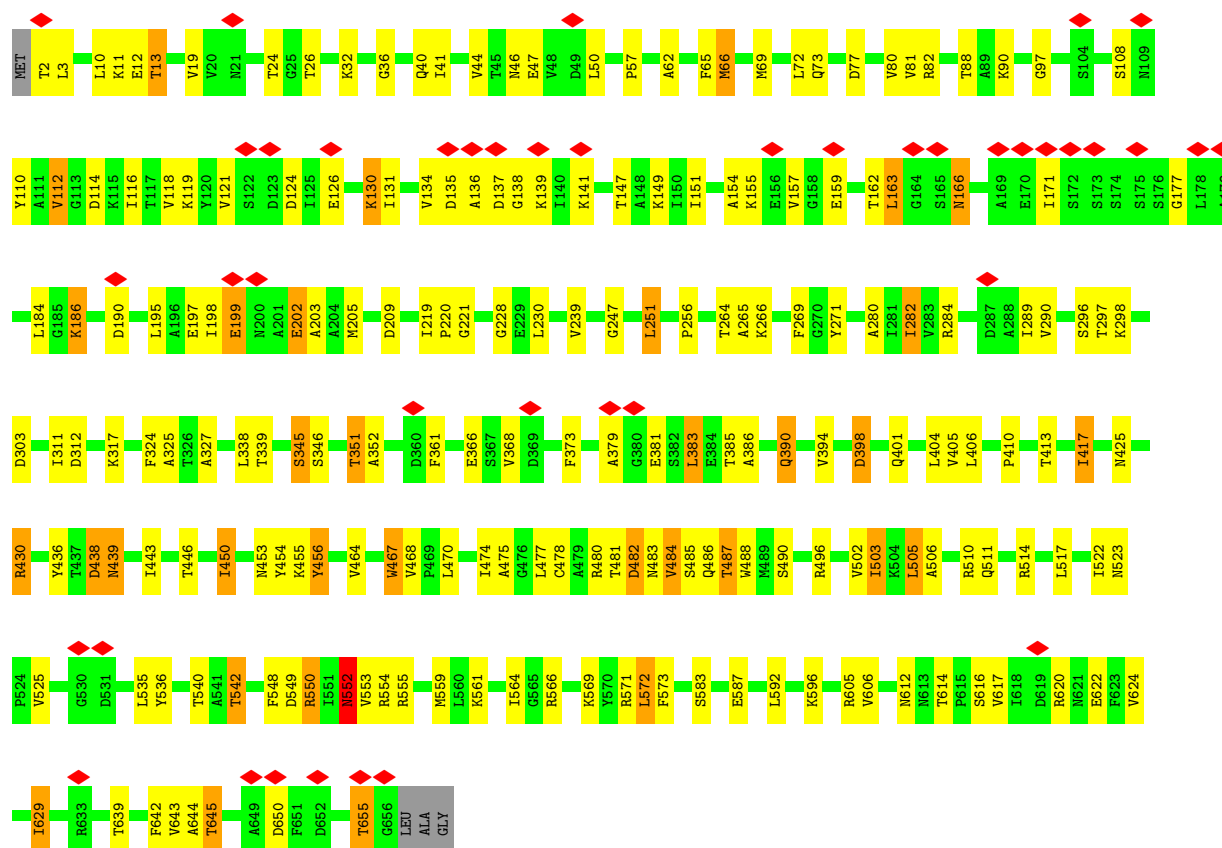




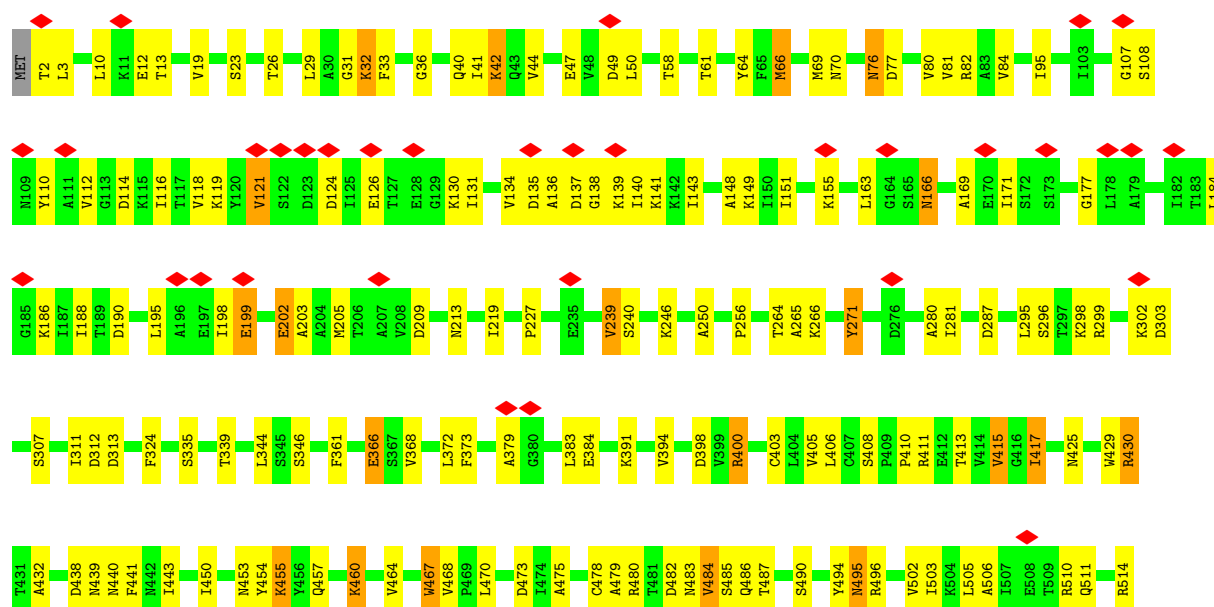
• Molecule 7: gp18, tail sheath protein

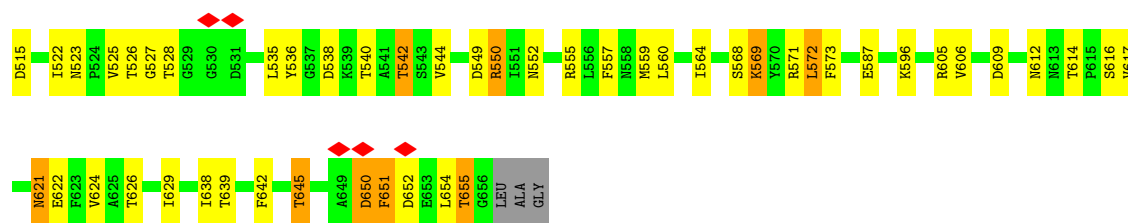


• Molecule 7: gp18, tail sheath protein

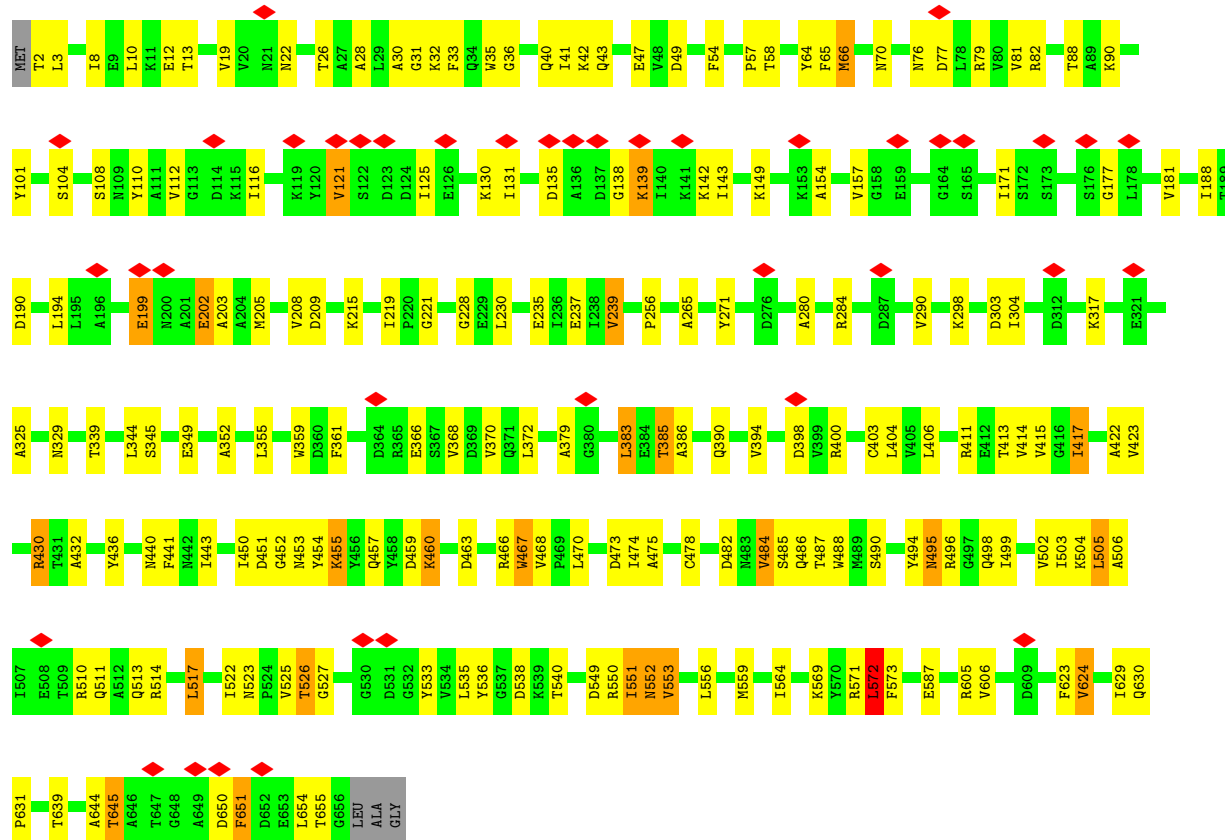


• Molecule 7: gp18, tail sheath protein

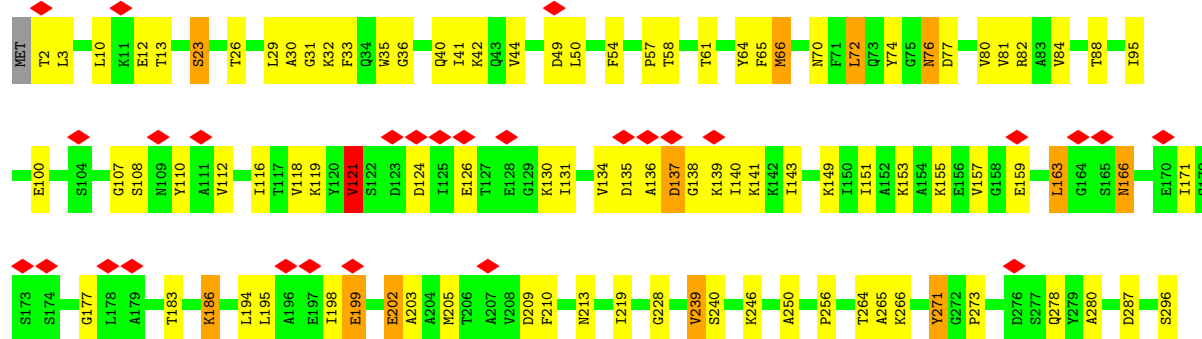


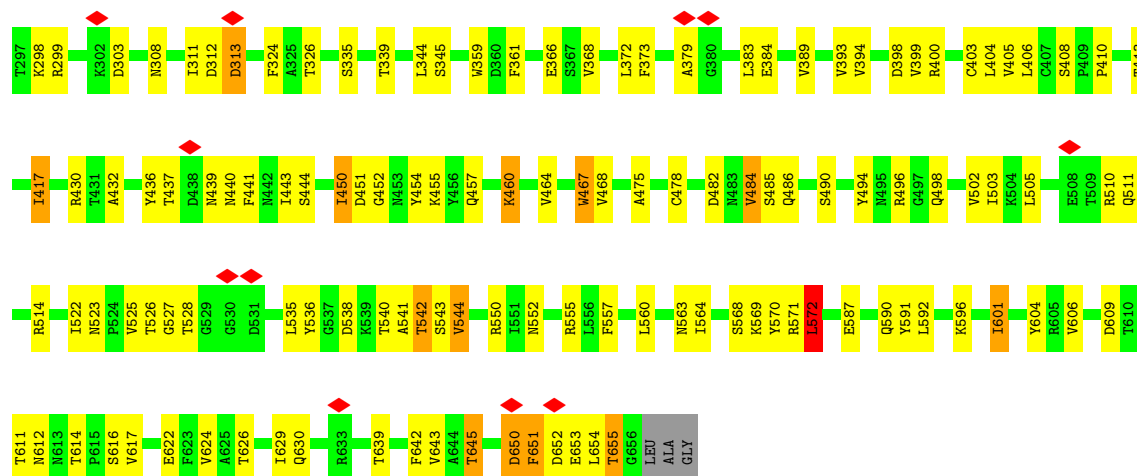


• Molecule 7: gp18, tail sheath protein

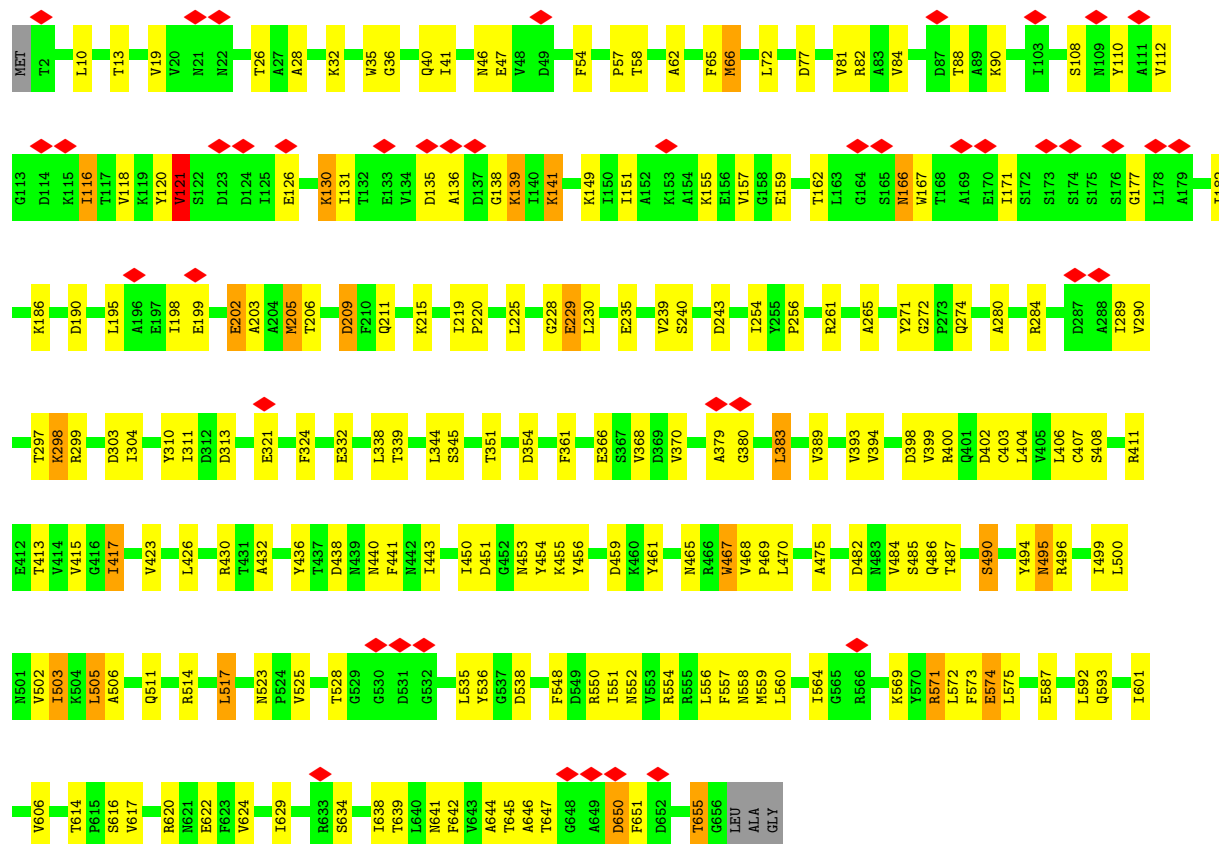


• Molecule 7: gp18, tail sheath protein



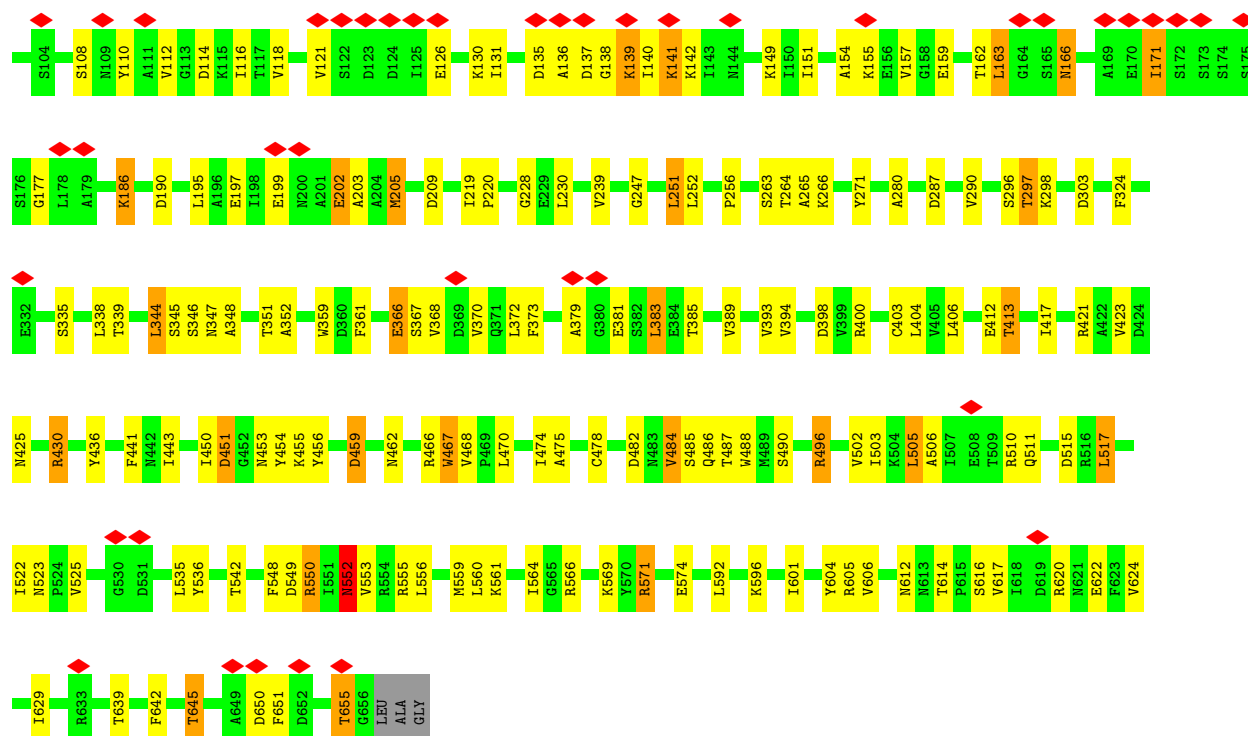


• Molecule 7: gp18, tail sheath protein

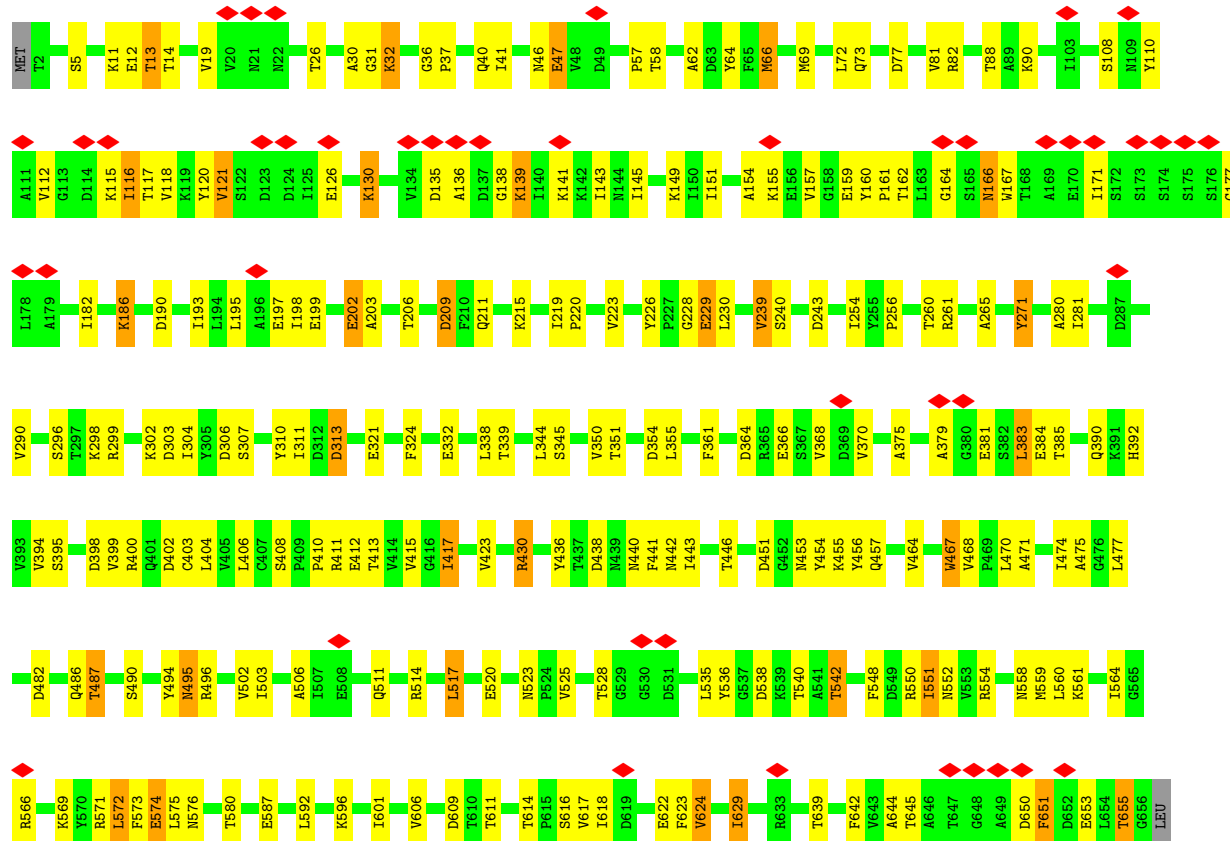


• Molecule 7: gp18, tail sheath protein



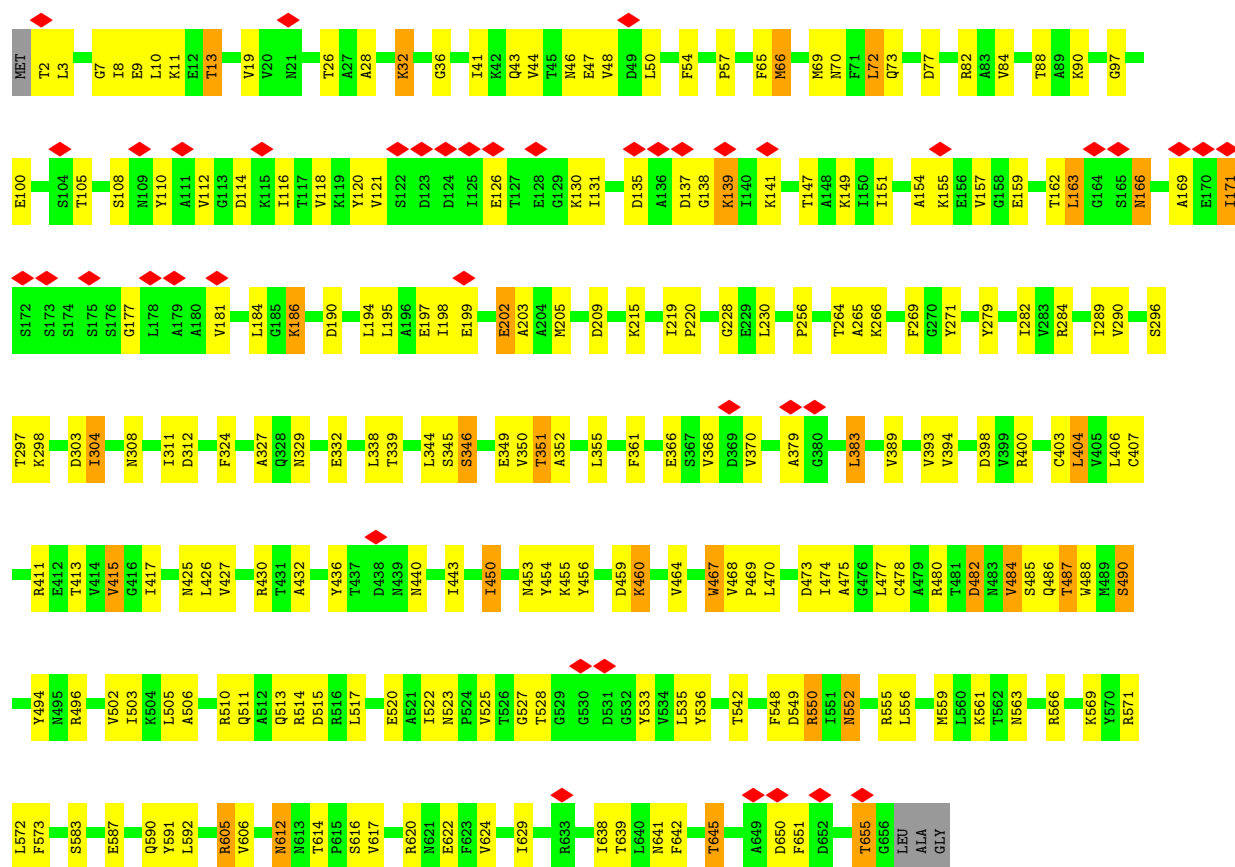


• Molecule 7: gp18, tail sheath protein

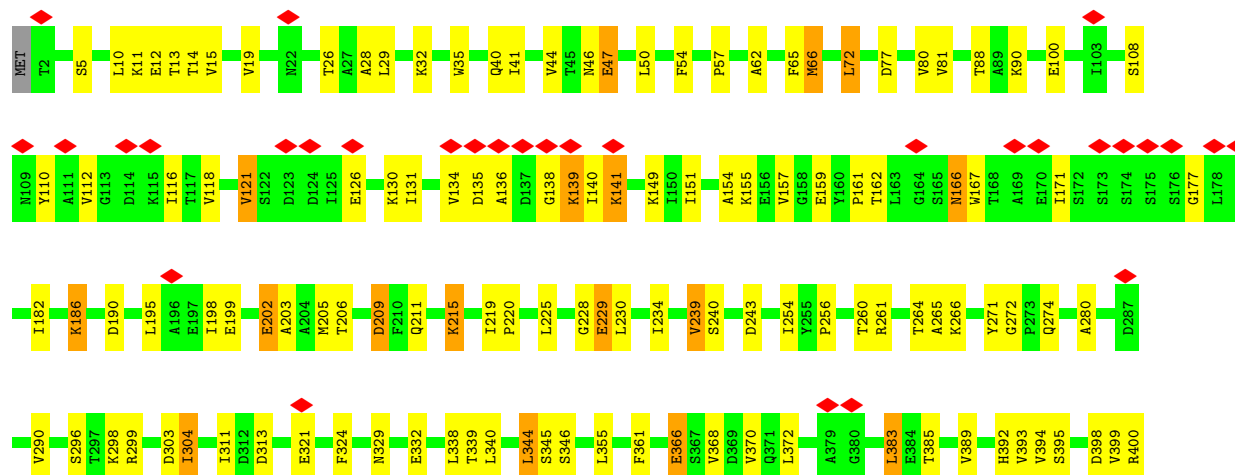


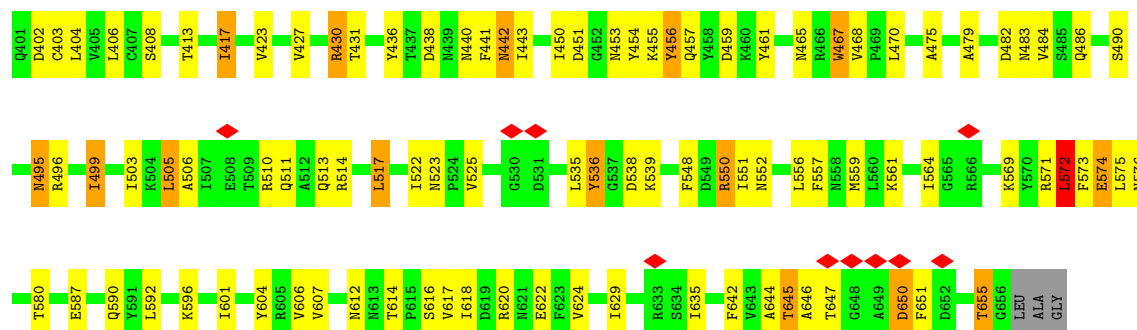
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- Molecule 7: gp18, tail sheath protein

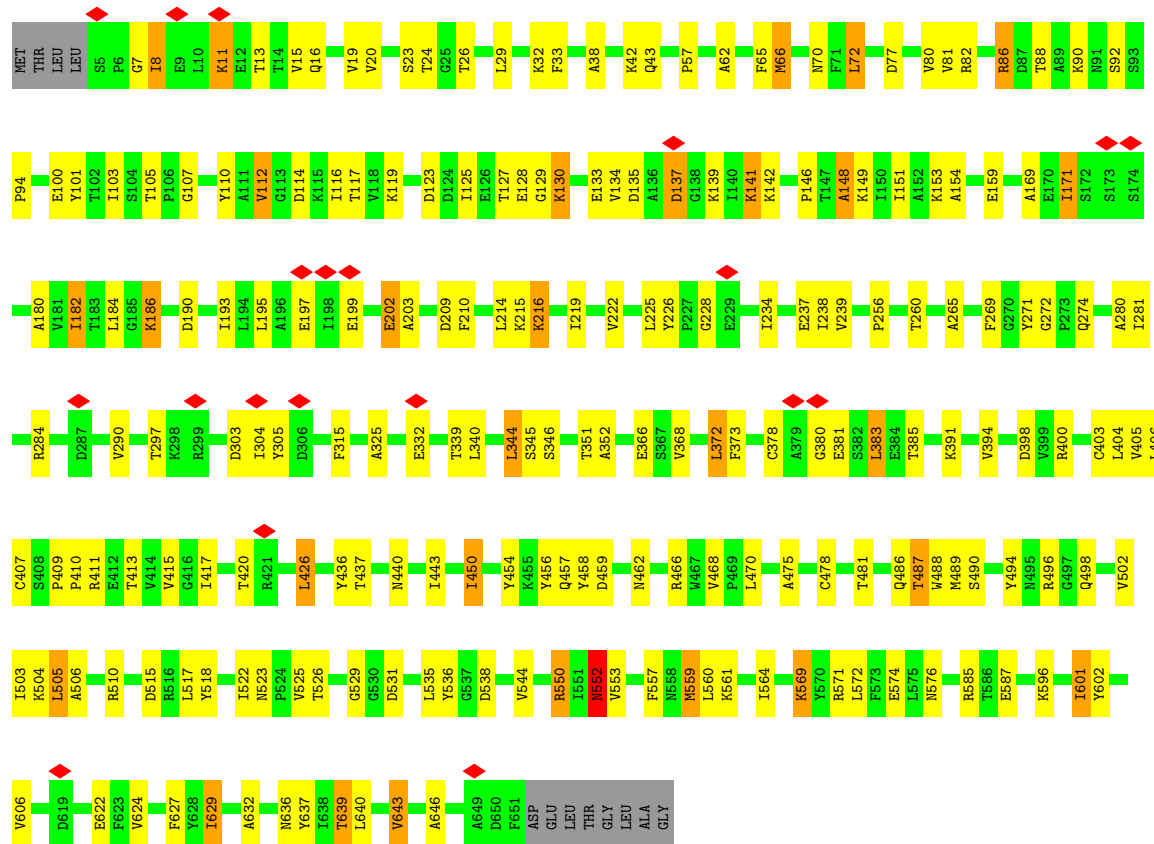


- Molecule 7: gp18, tail sheath protein

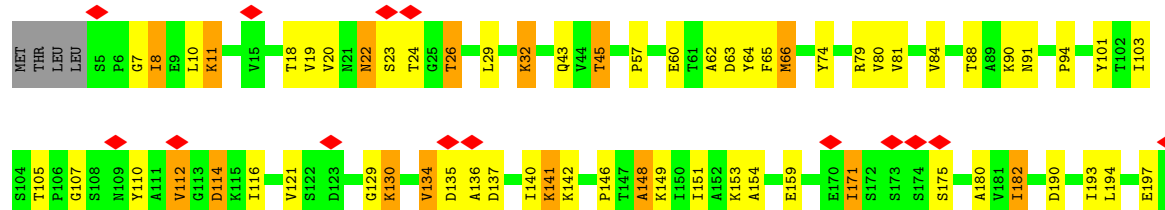


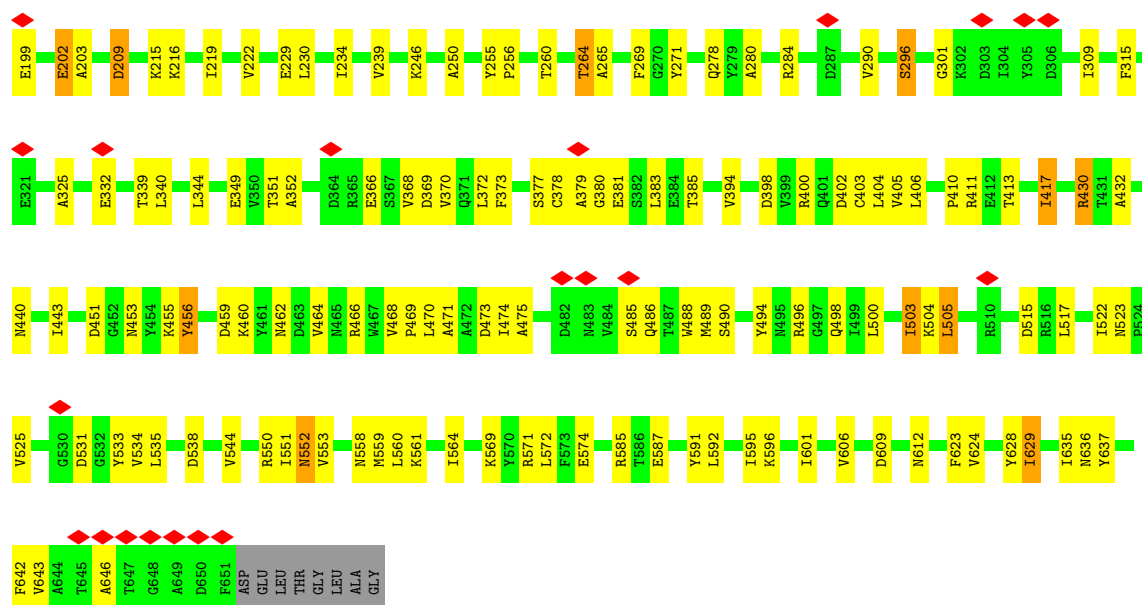


• Molecule 7: gp18, tail sheath protein

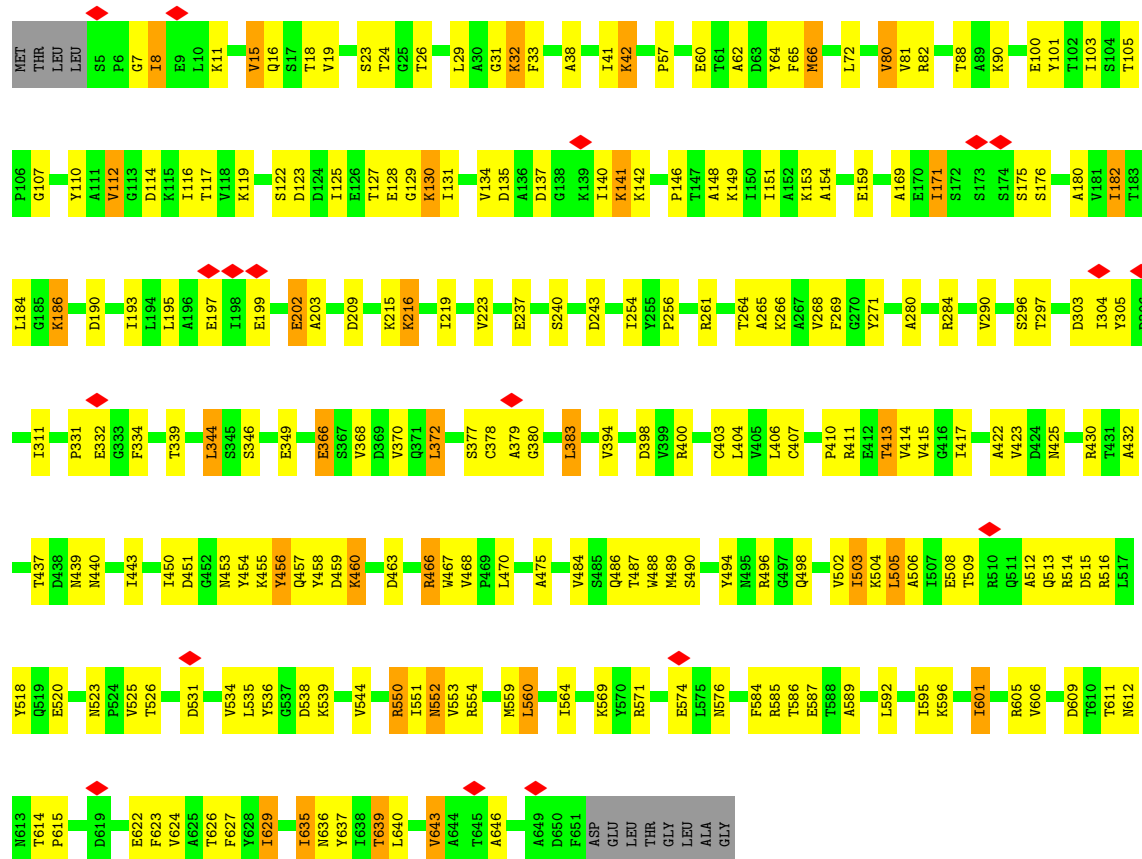


• Molecule 7: gp18, tail sheath protein

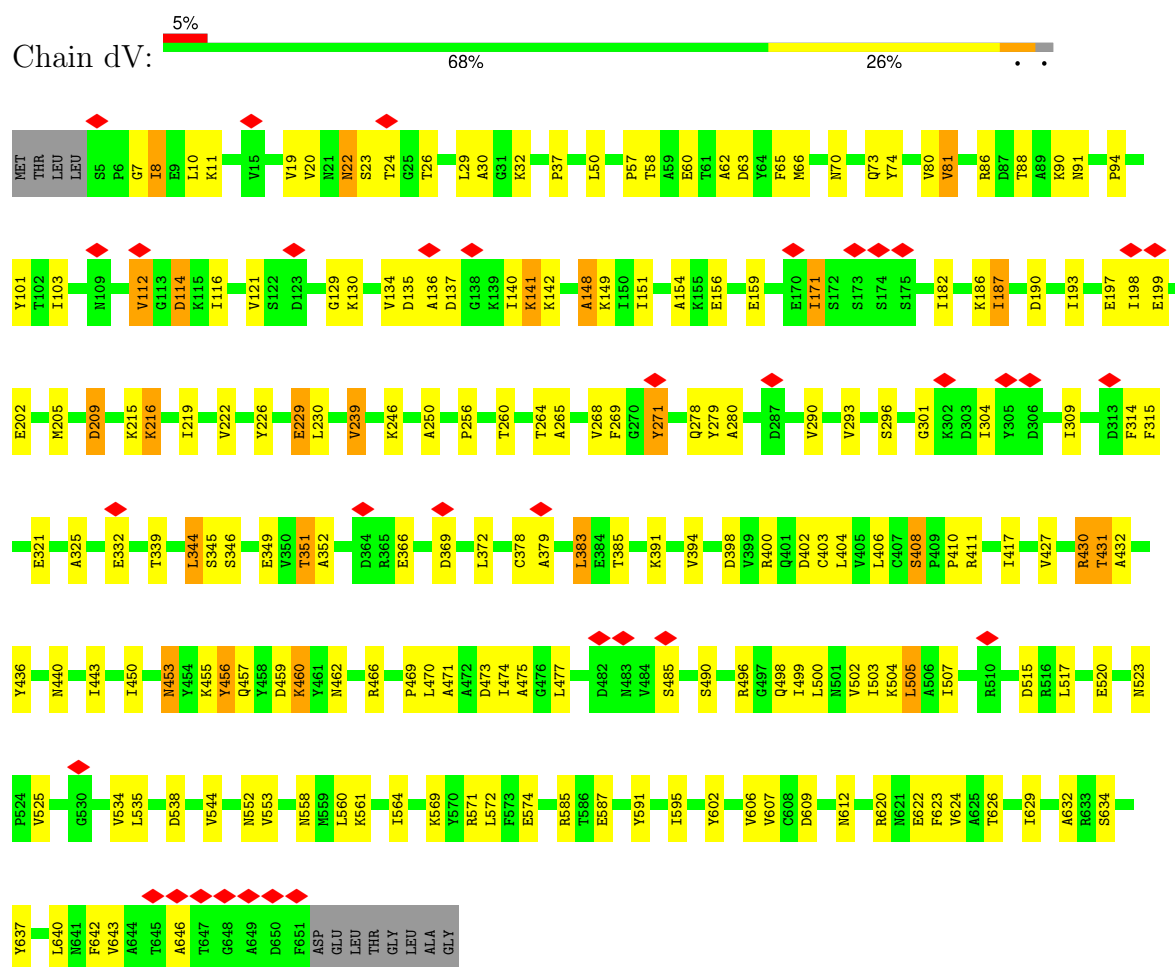




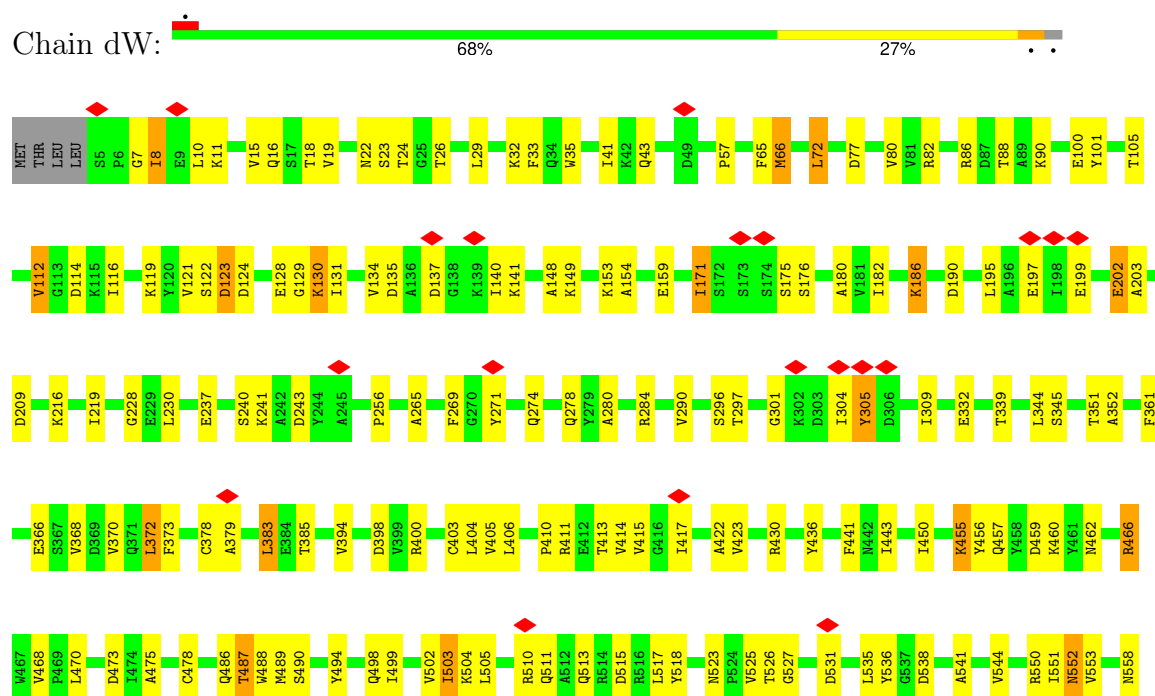
• Molecule 7: gp18, tail sheath protein



• Molecule 7: gp18, tail sheath protein

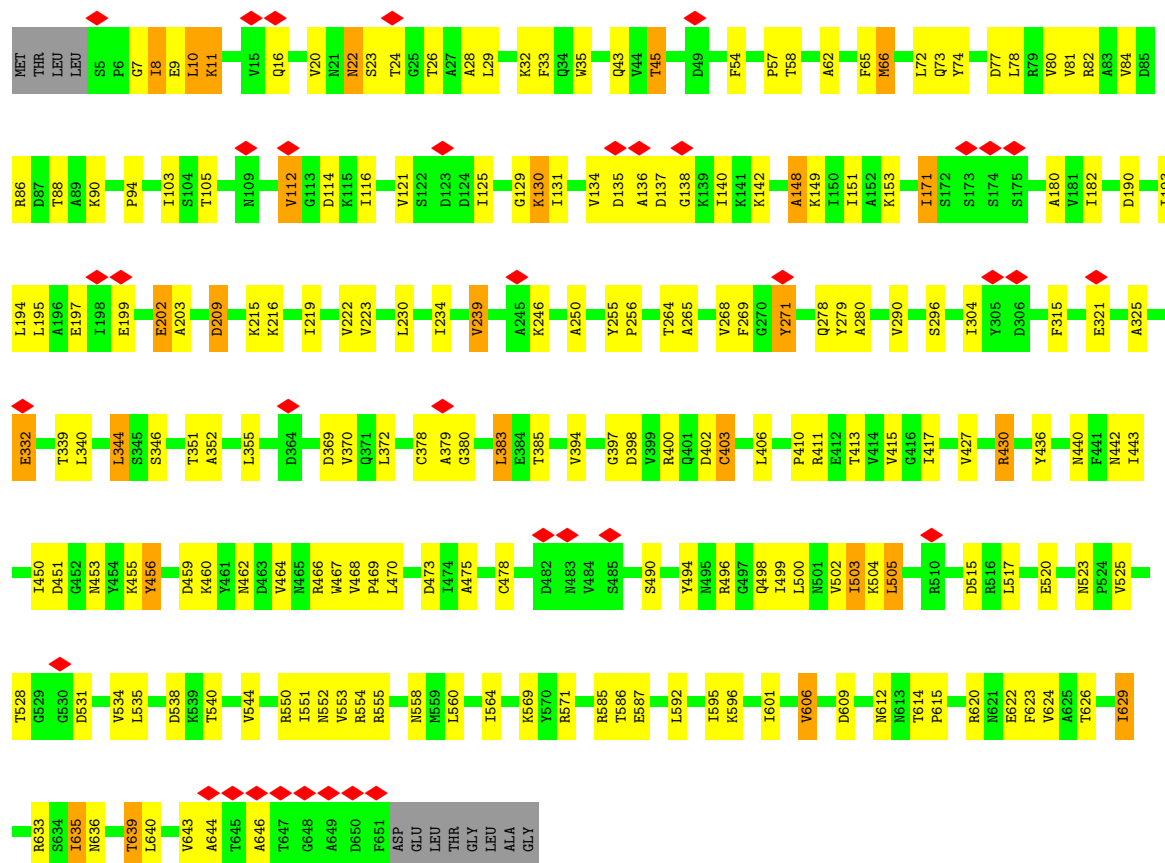


- Molecule 7: gp18, tail sheath protein

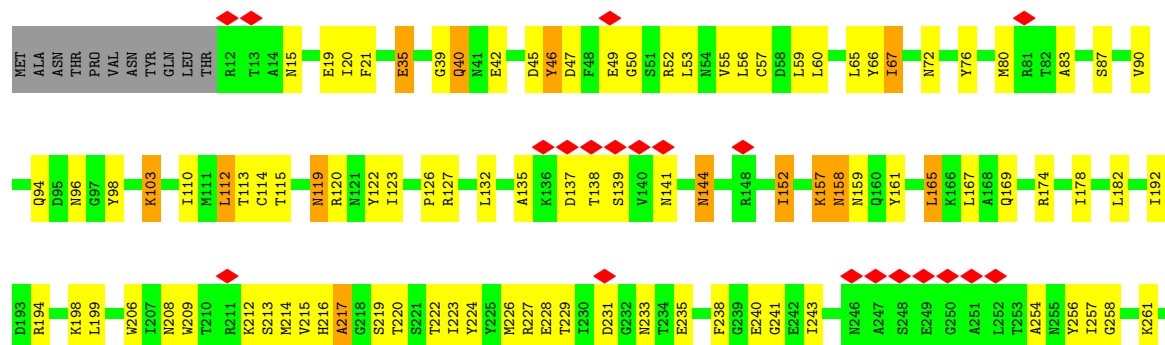


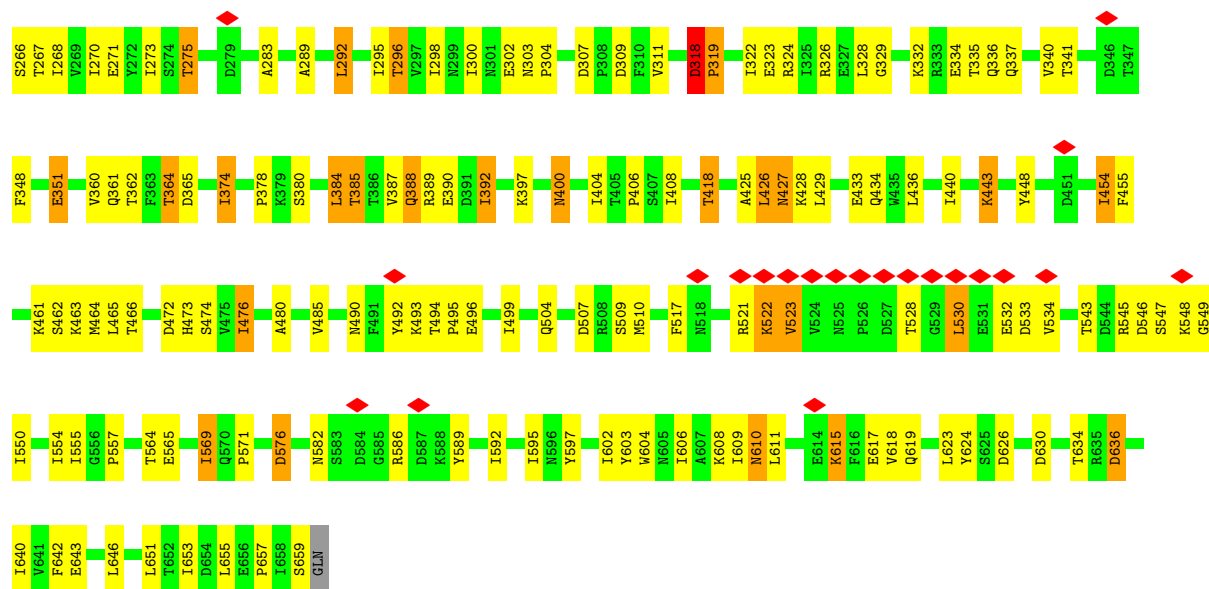


- Molecule 7: gp18, tail sheath protein

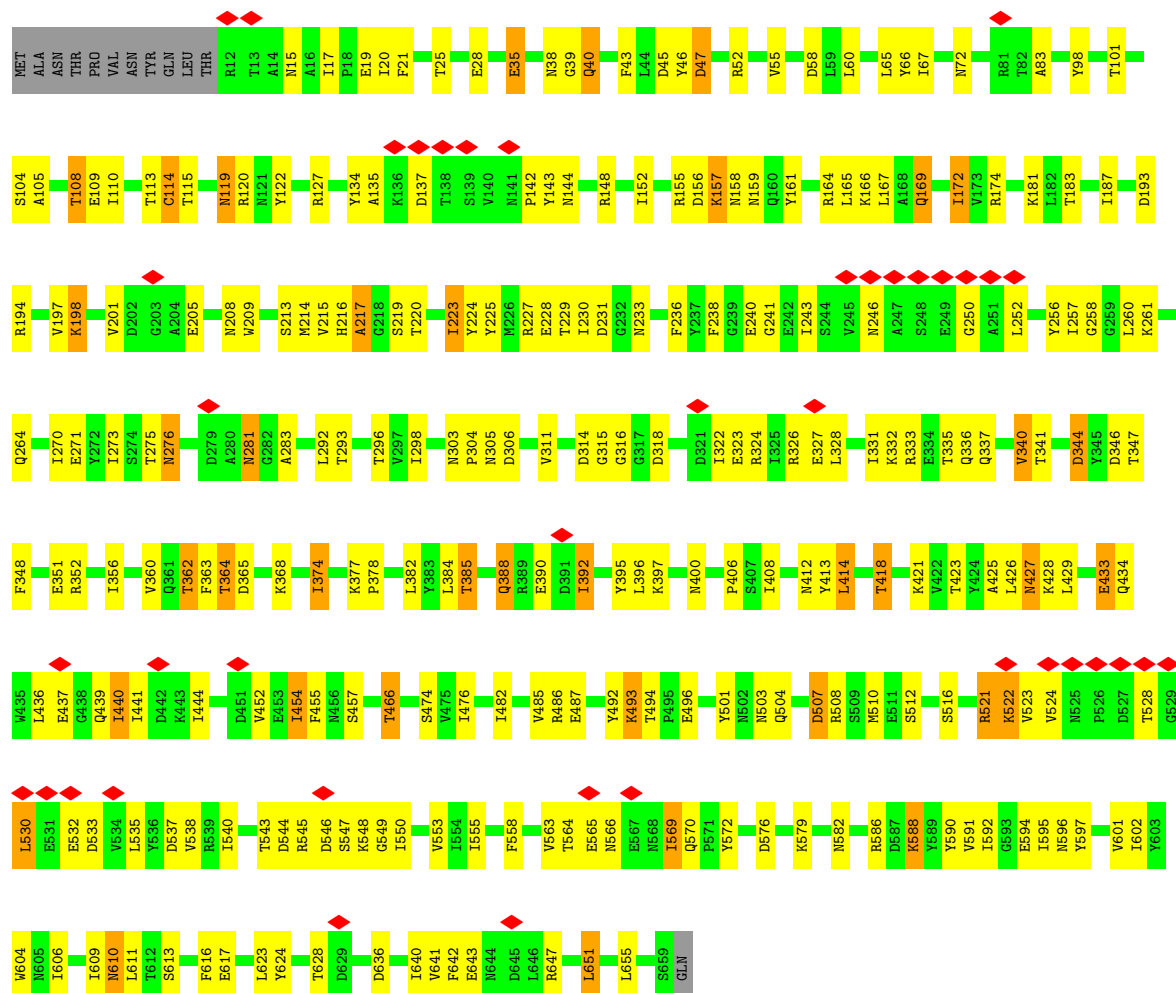


- Molecule 8: gp6, baseplate wedge protein

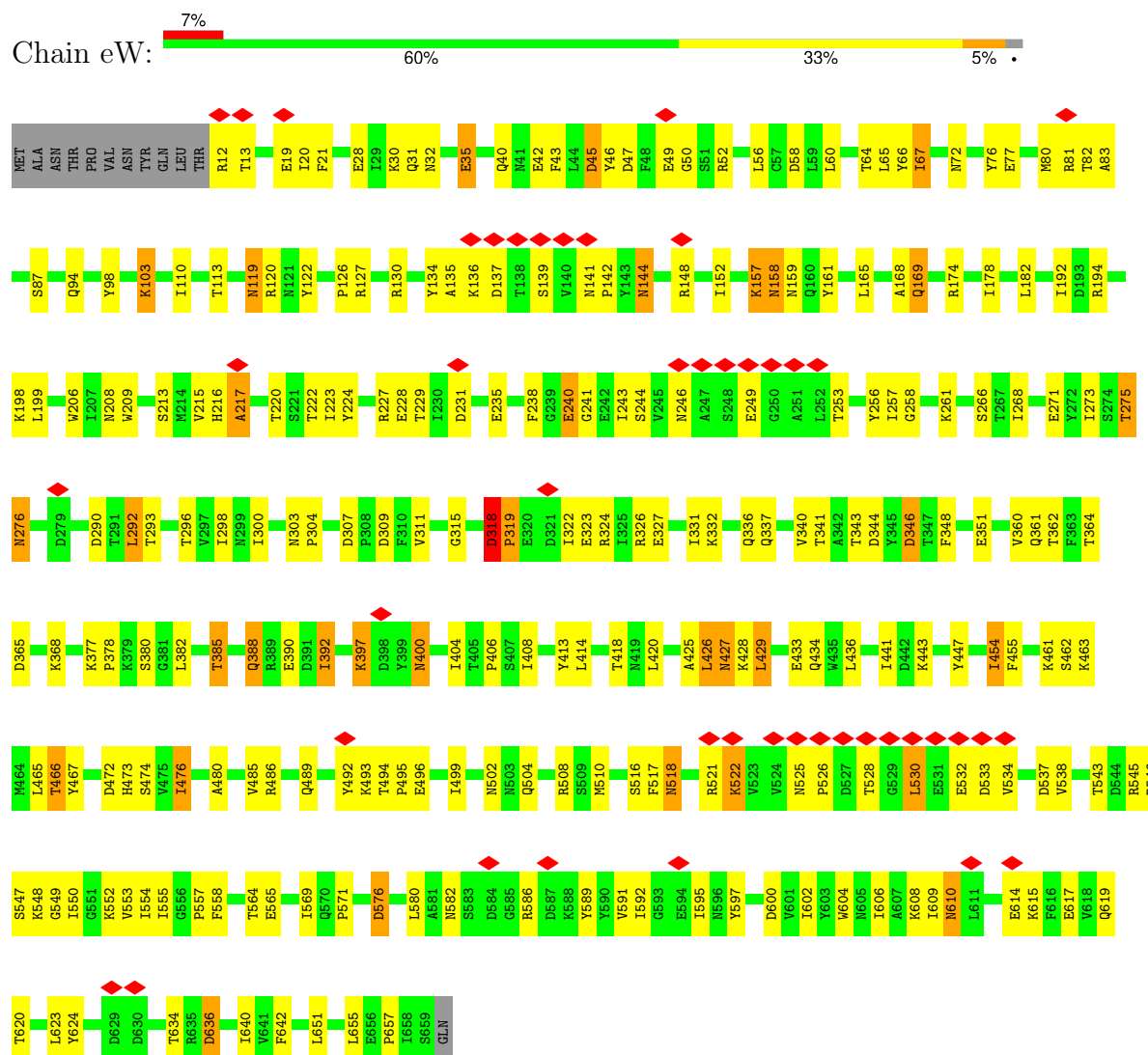




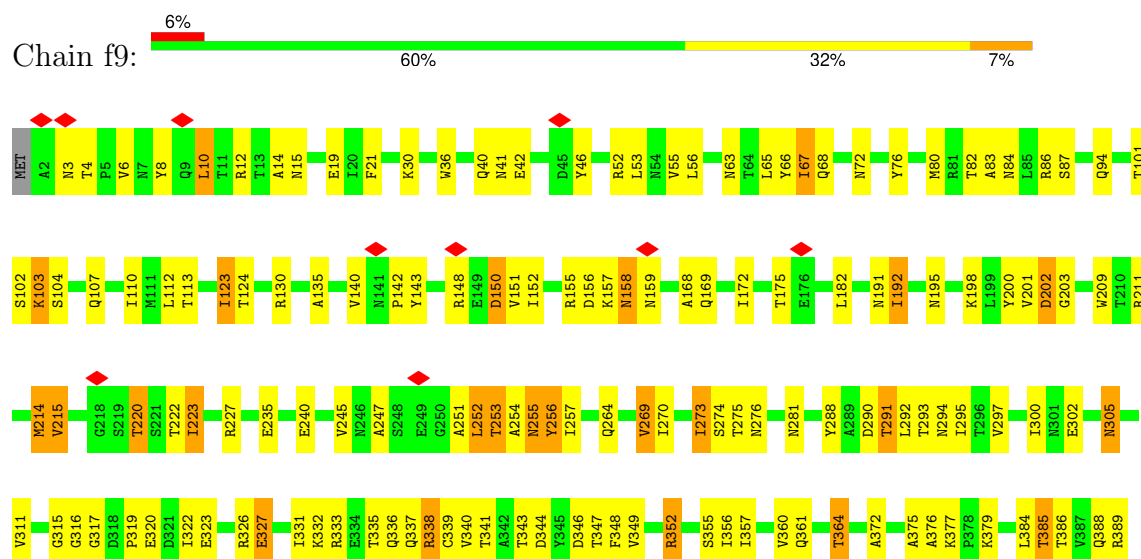
• Molecule 8: gp6, baseplate wedge protein

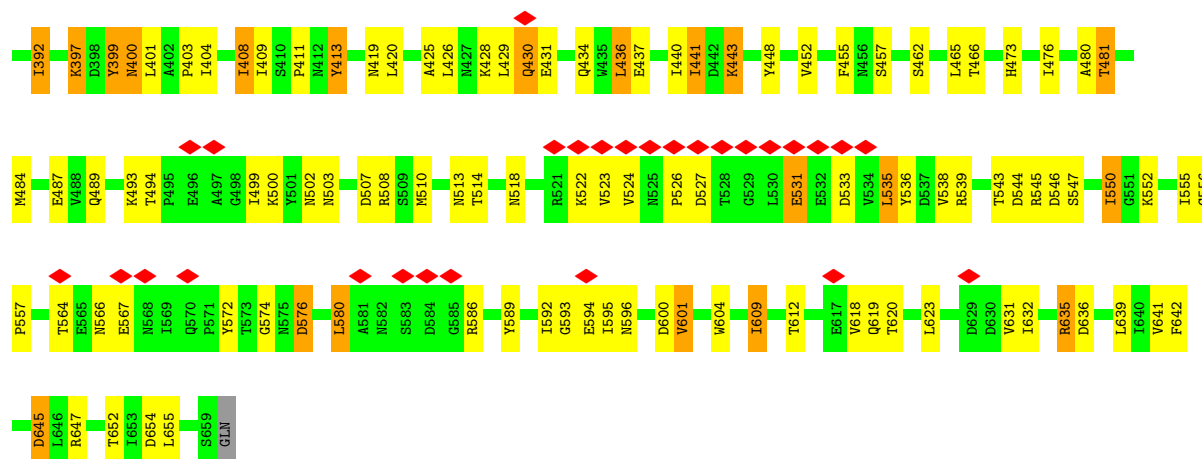


- Molecule 8: gp6, baseplate wedge protein

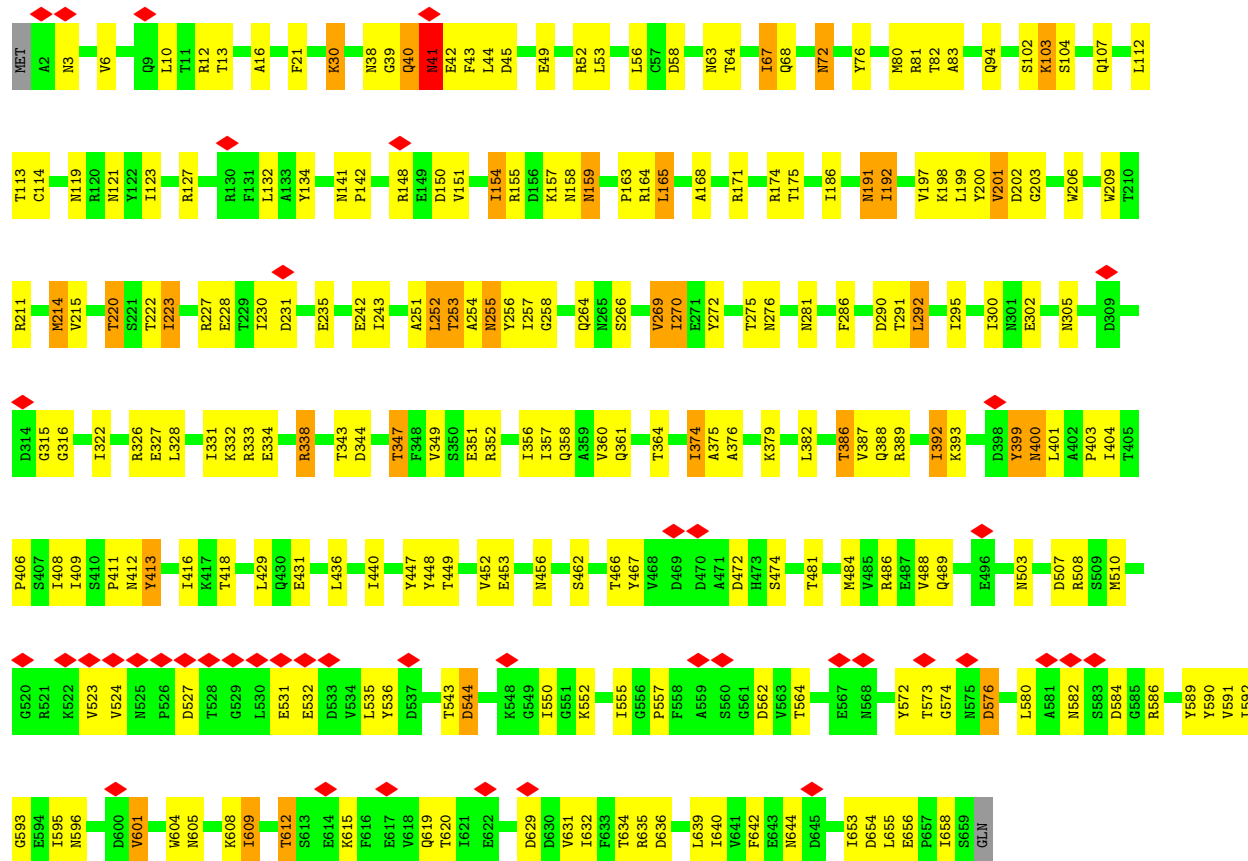


- Molecule 8: gp6, baseplate wedge protein



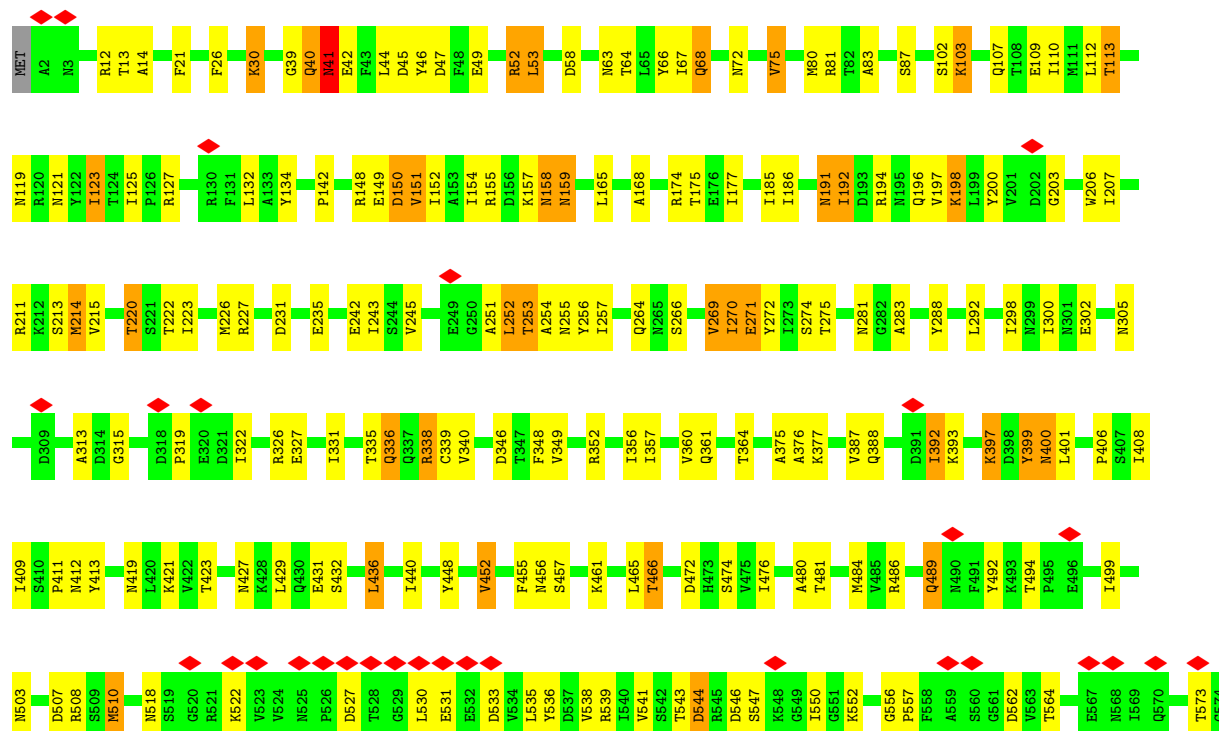
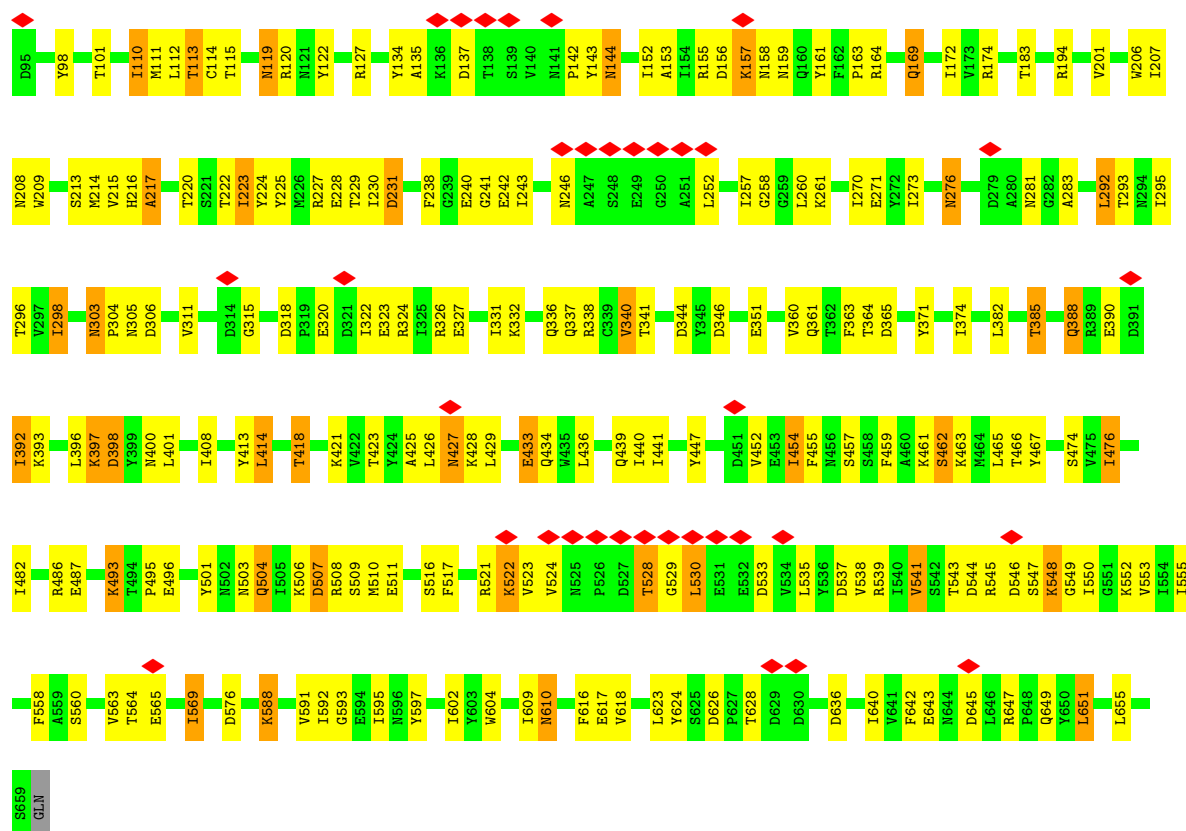


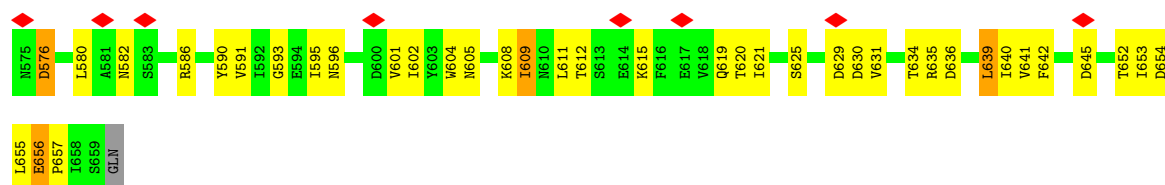
• Molecule 8: gp6, baseplate wedge protein



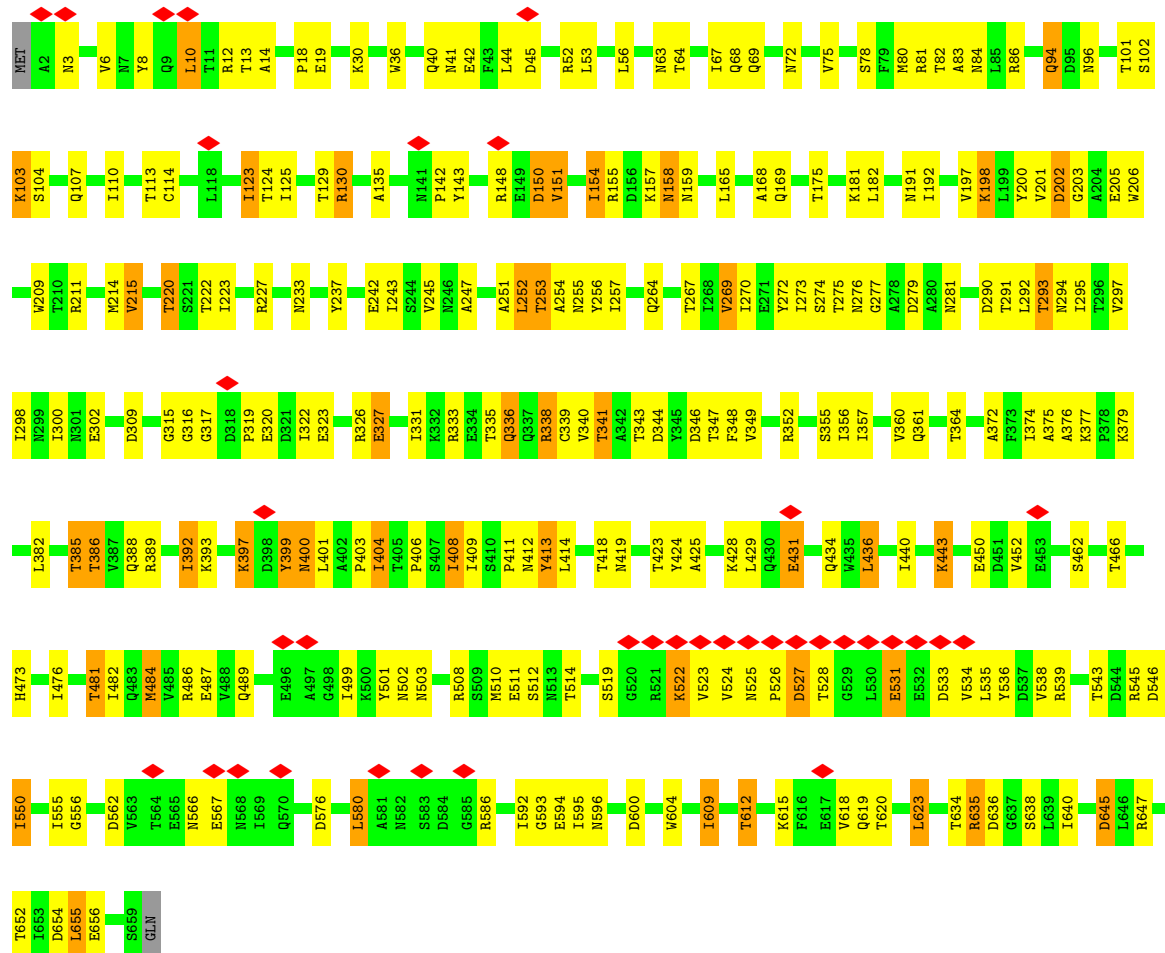
• Molecule 8: gp6, baseplate wedge protein



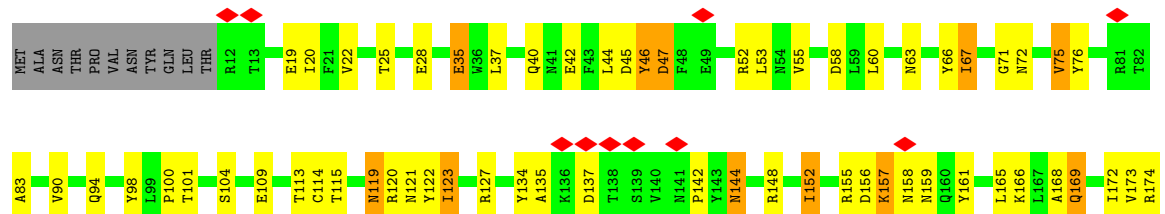


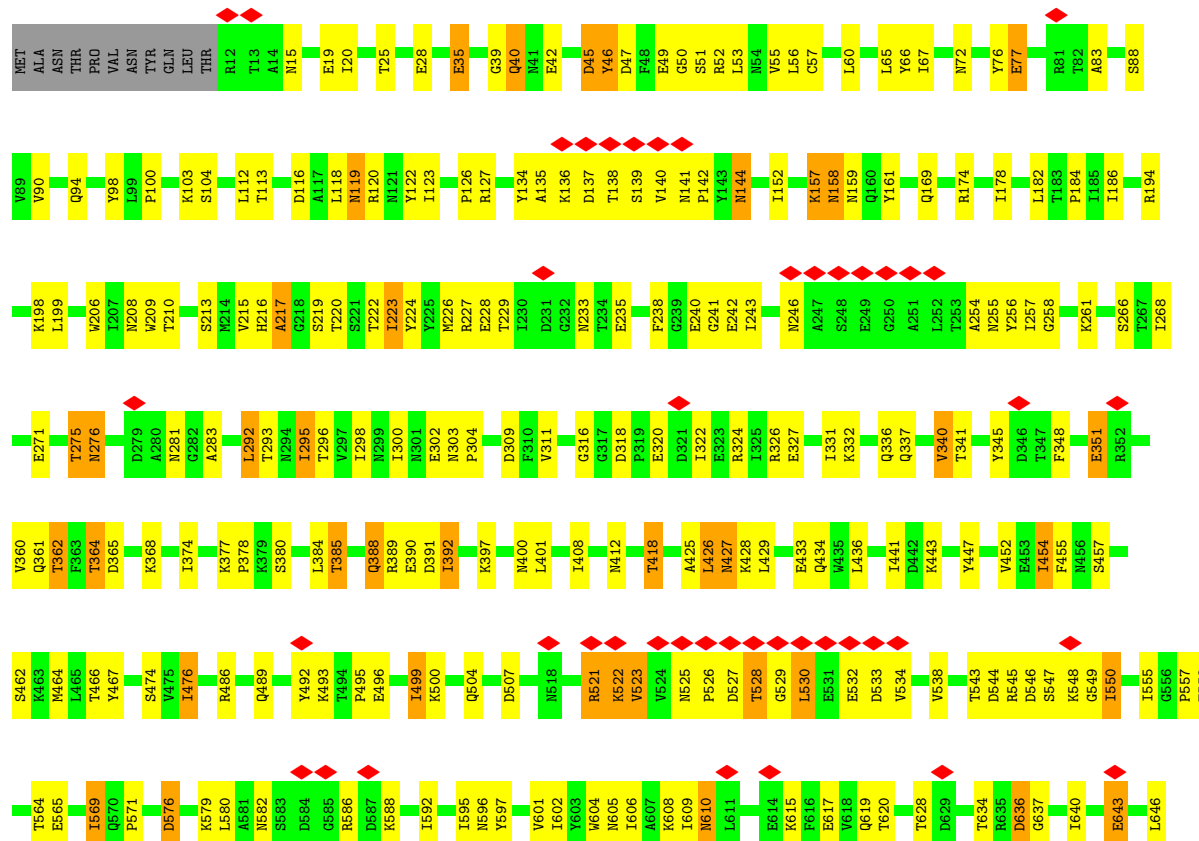


• Molecule 8: gp6, baseplate wedge protein



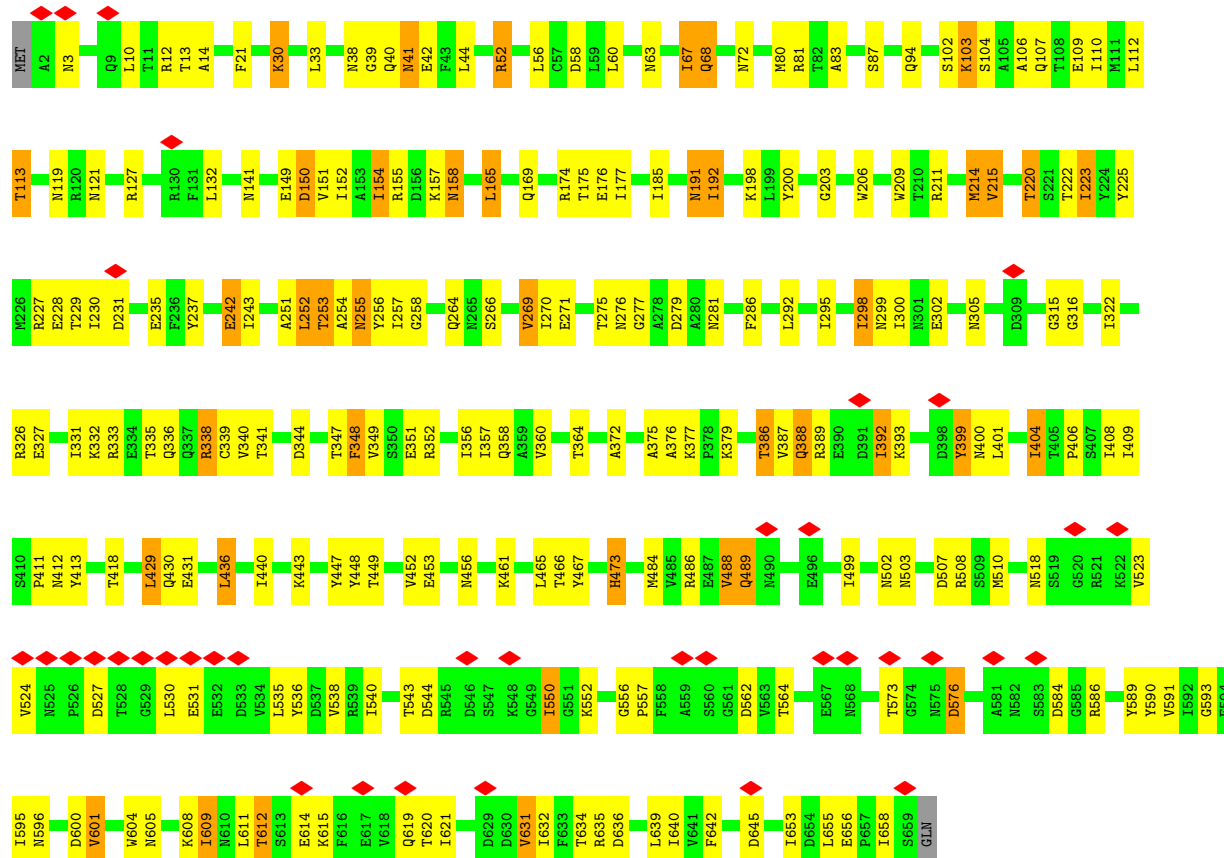
• Molecule 8: gp6, baseplate wedge protein



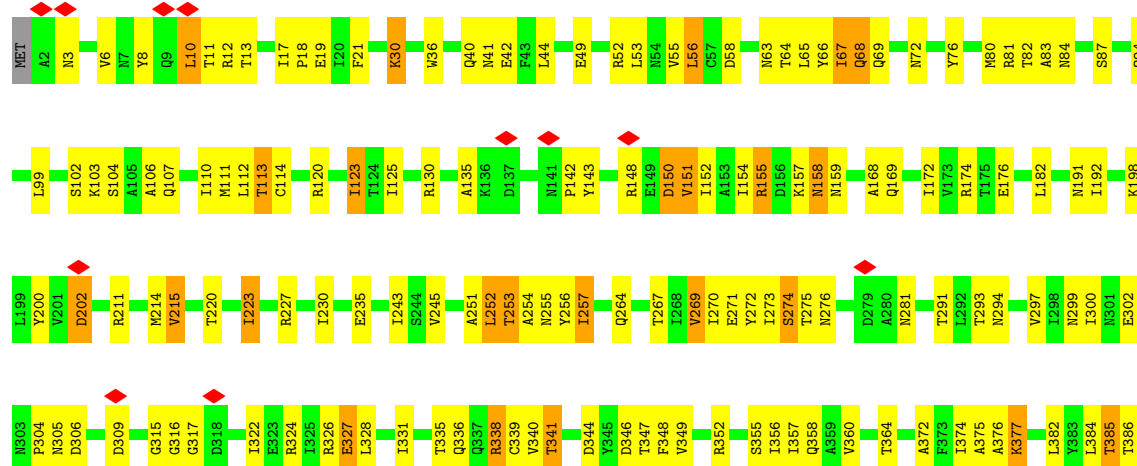


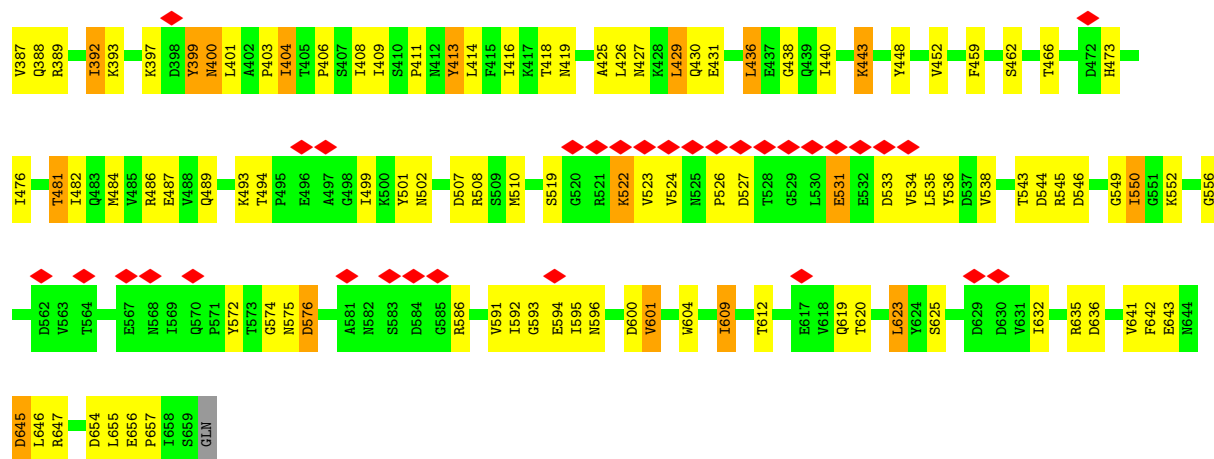


• Molecule 8: gp6, baseplate wedge protein

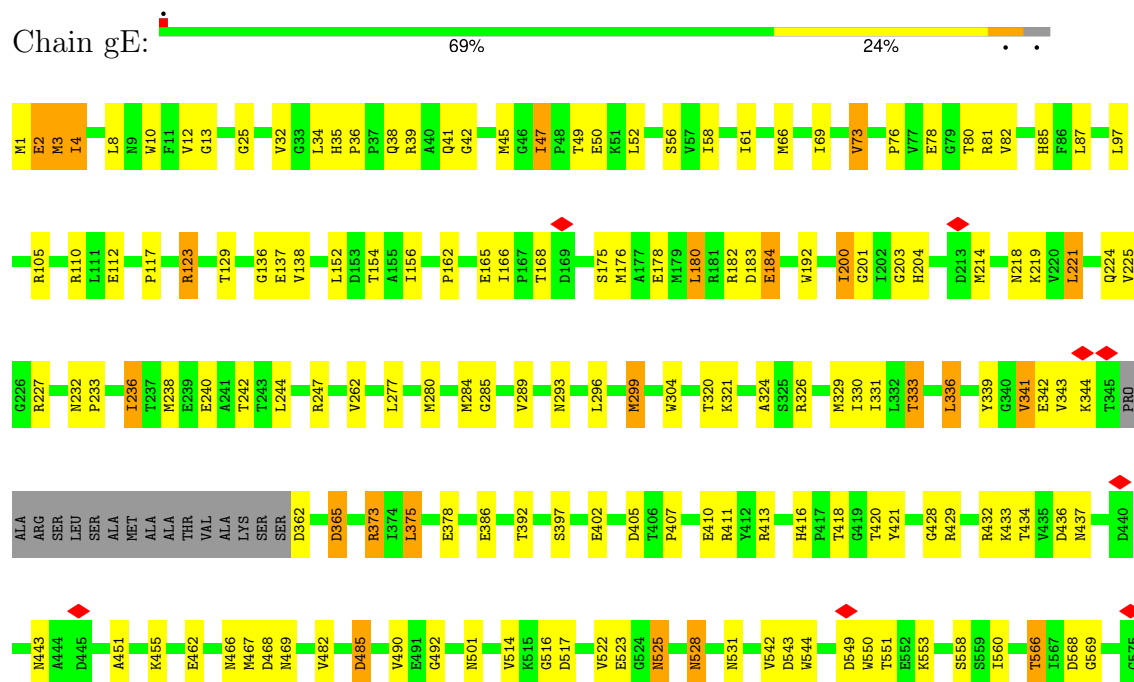


• Molecule 8: gp6, baseplate wedge protein

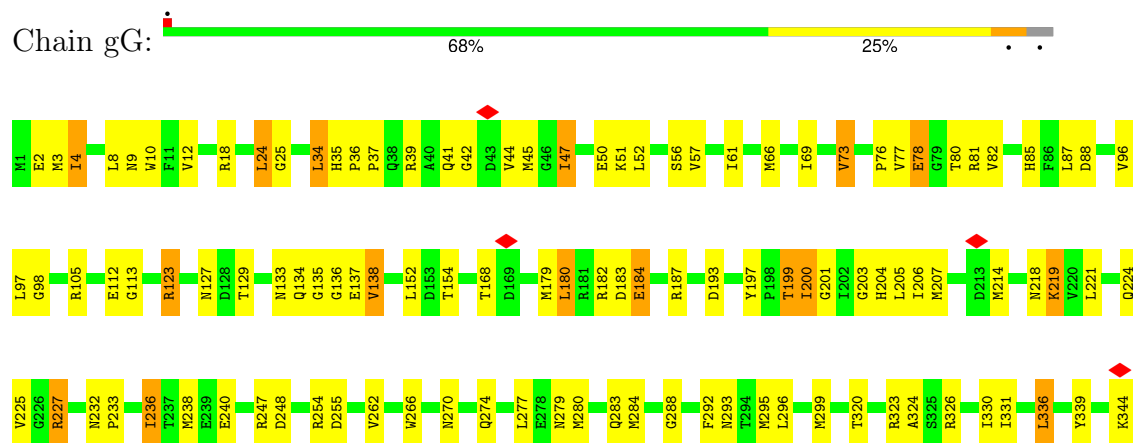


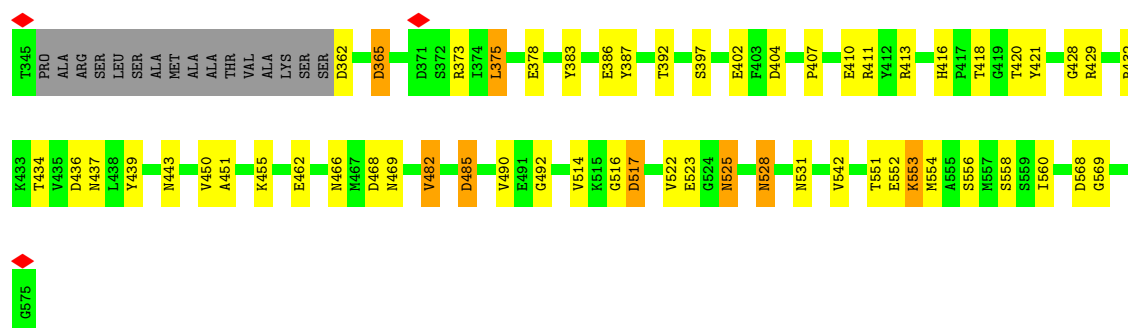


- Molecule 9: gp5, baseplate central spike protein

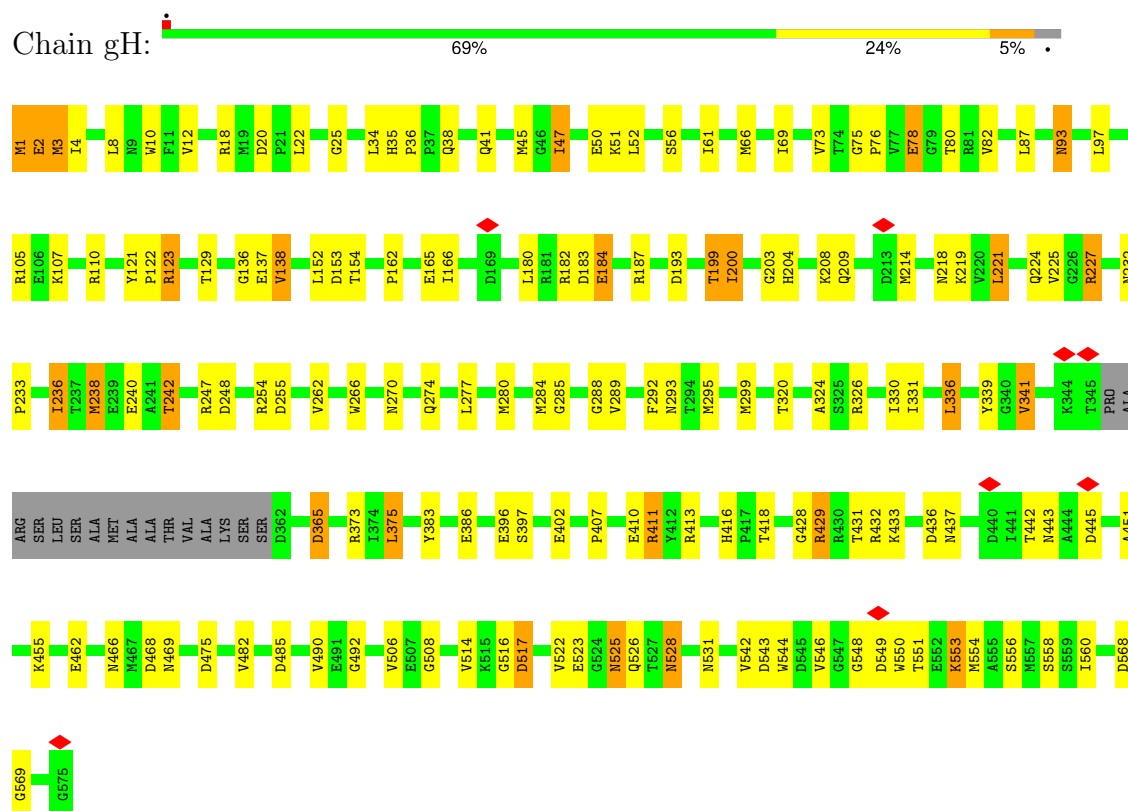


- Molecule 9: gp5, baseplate central spike protein

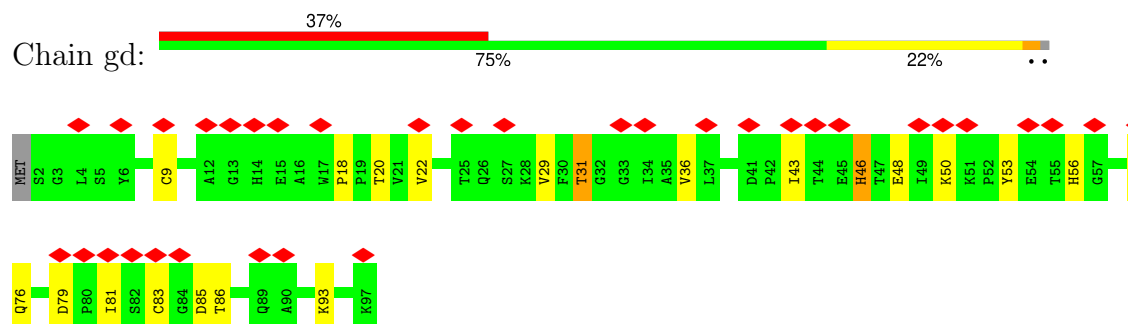




- Molecule 9: gp5, baseplate central spike protein

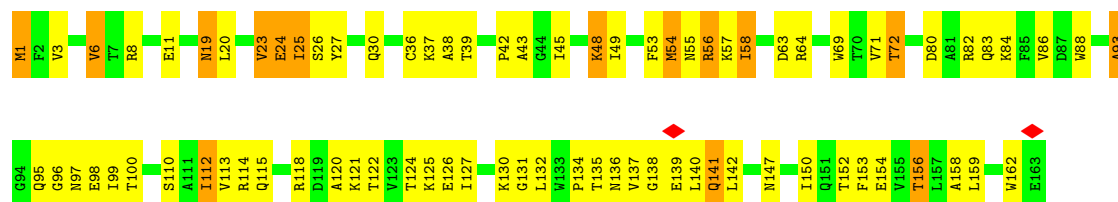


- Molecule 10: gp5.4, tip of the central spike

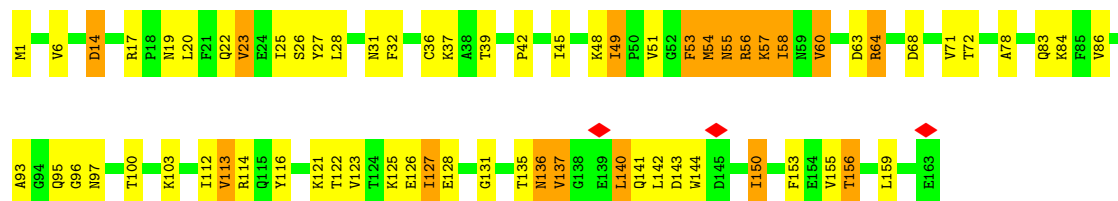


- Molecule 11: gp19, tail tube protein

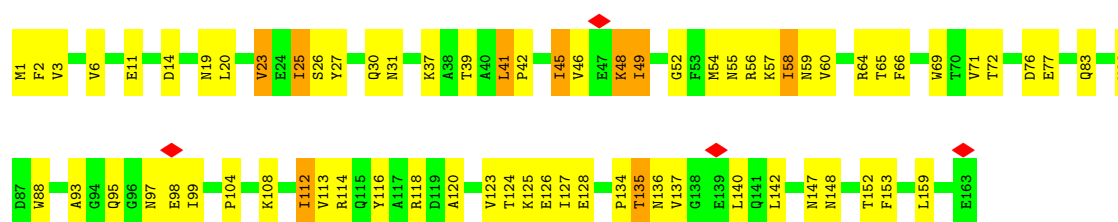




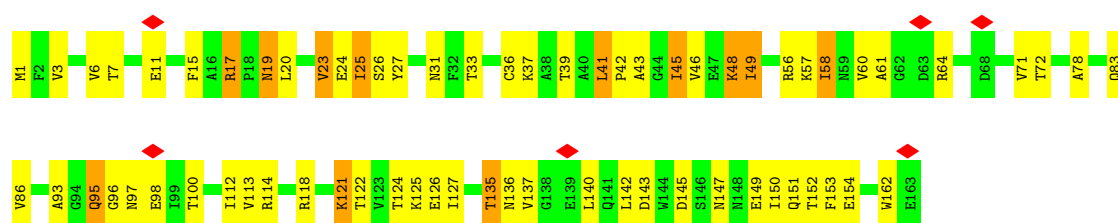
- Molecule 11: gp19, tail tube protein



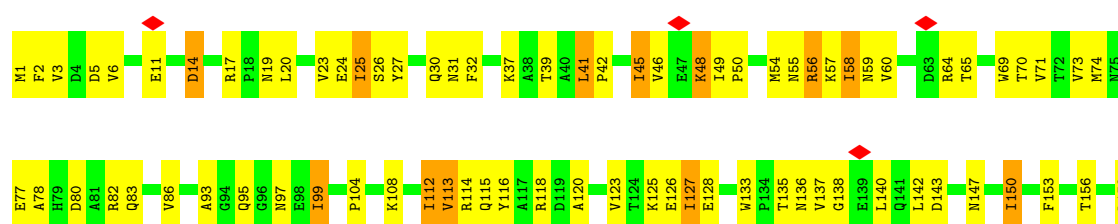
- Molecule 11: gp19, tail tube protein



- Molecule 11: gp19, tail tube protein

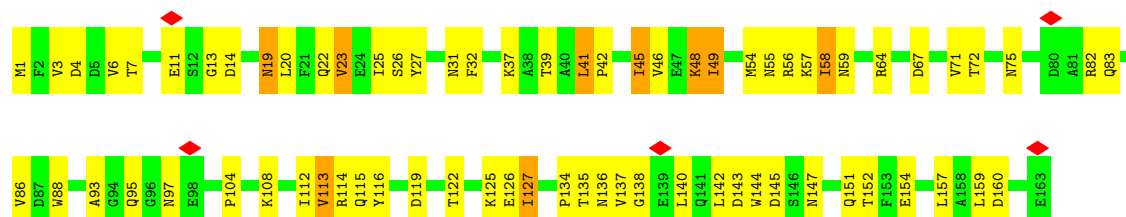


- Molecule 11: gp19, tail tube protein

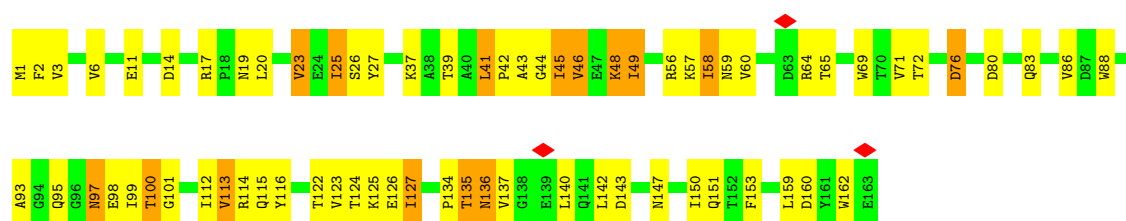




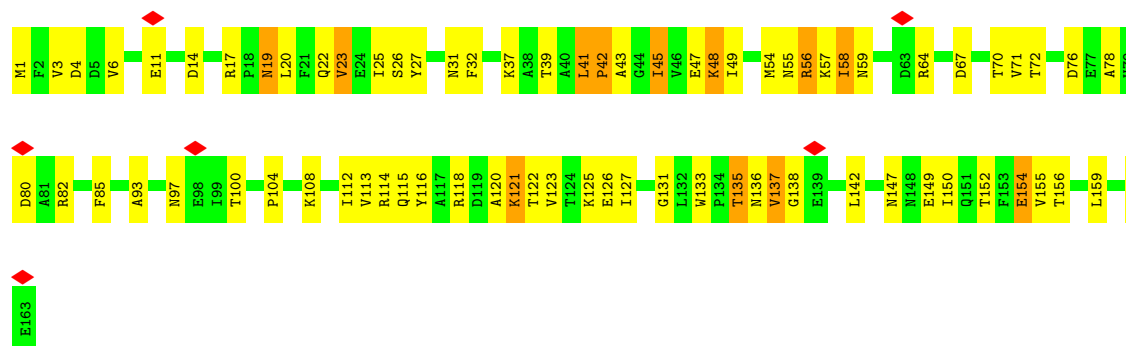
- Molecule 11: gp19, tail tube protein



- Molecule 11: gp19, tail tube protein

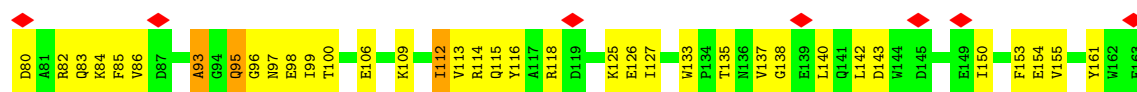


- Molecule 11: gp19, tail tube protein



- Molecule 11: gp19, tail tube protein

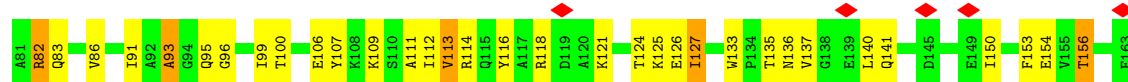
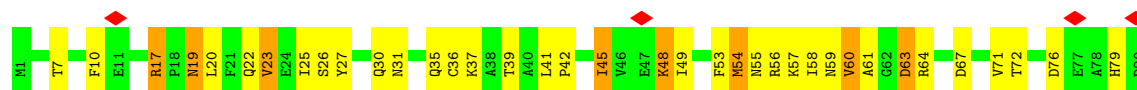




- Molecule 11: gp19, tail tube protein



- Molecule 11: gp19, tail tube protein



- Molecule 11: gp19, tail tube protein

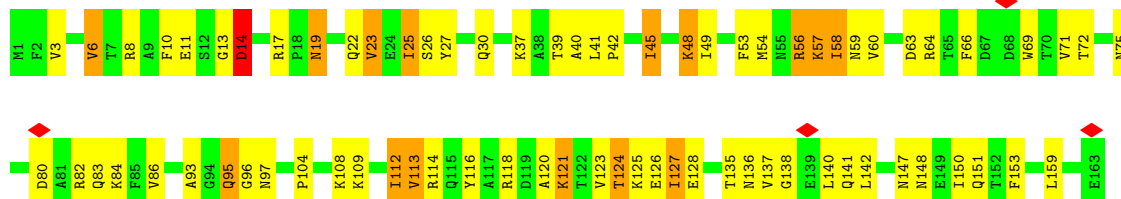


- Molecule 11: gp19, tail tube protein

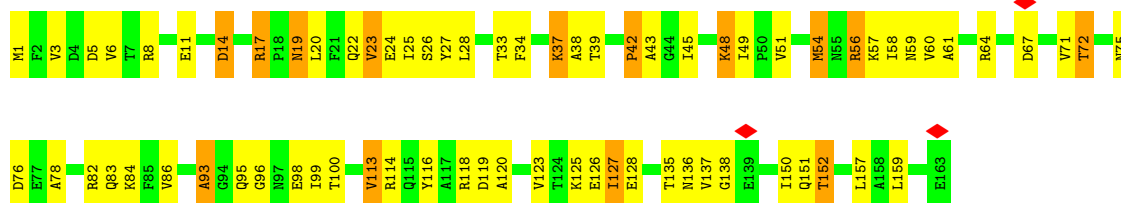




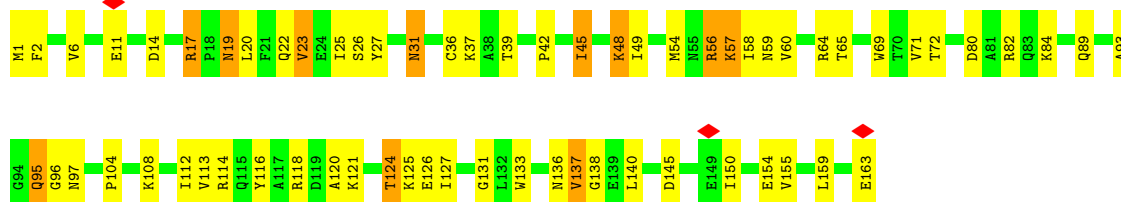
- Molecule 11: gp19, tail tube protein



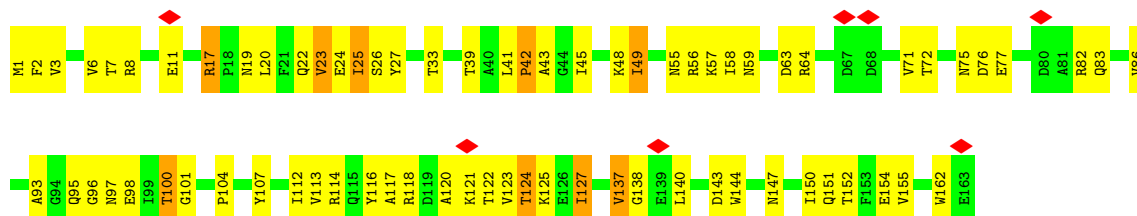
- Molecule 11: gp19, tail tube protein



- Molecule 11: gp19, tail tube protein

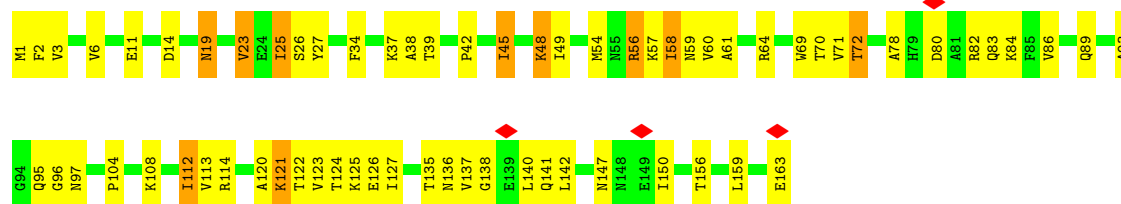


- Molecule 11: gp19, tail tube protein



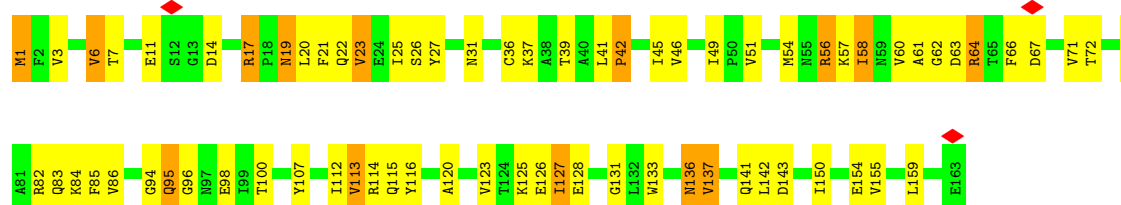
- Molecule 11: gp19, tail tube protein

Chain hn: 



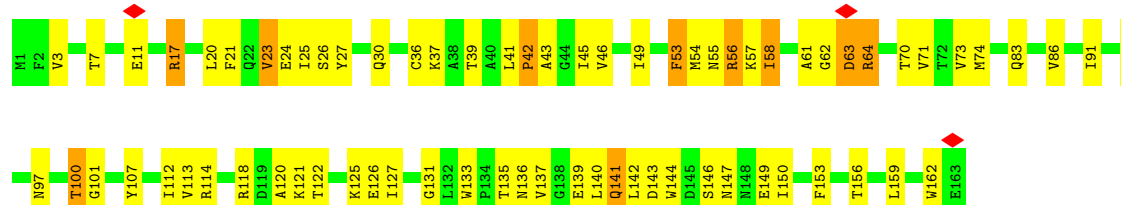
• Molecule 11: gp19, tail tube protein

Chain ho: 



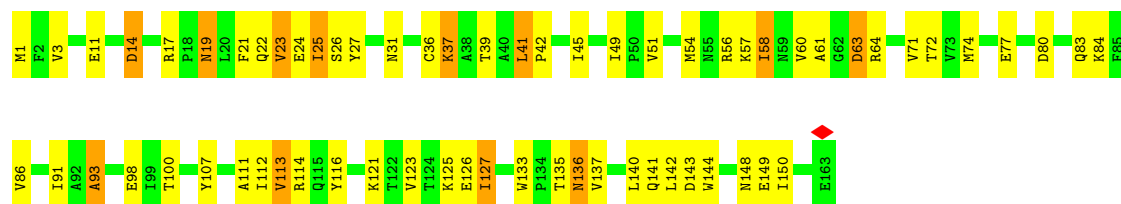
• Molecule 11: gp19, tail tube protein

Chain hp: 



• Molecule 11: gp19, tail tube protein

Chain hq: 



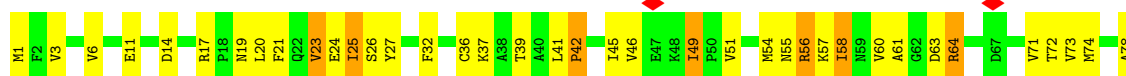
• Molecule 11: gp19, tail tube protein

Chain hr: 

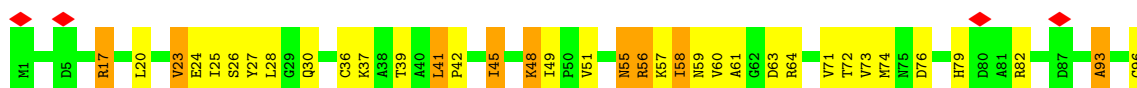




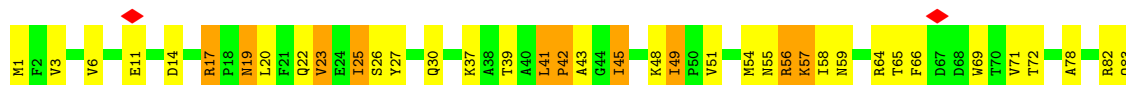
- Molecule 11: gp19, tail tube protein



- Molecule 11: gp19, tail tube protein



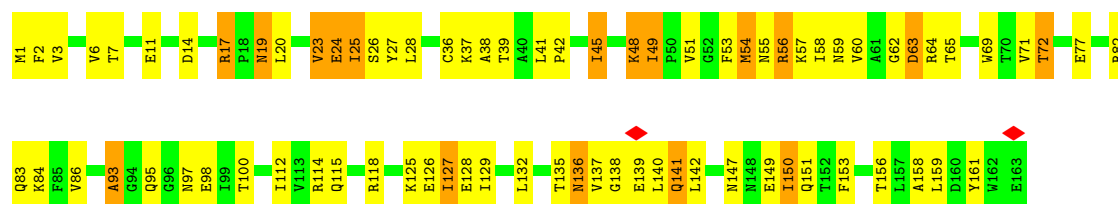
- Molecule 11: gp19, tail tube protein



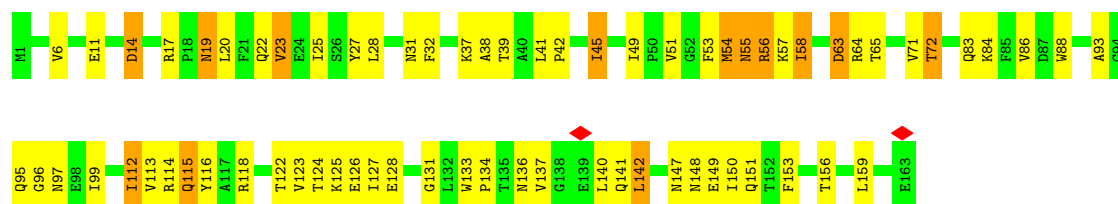
- Molecule 11: gp19, tail tube protein



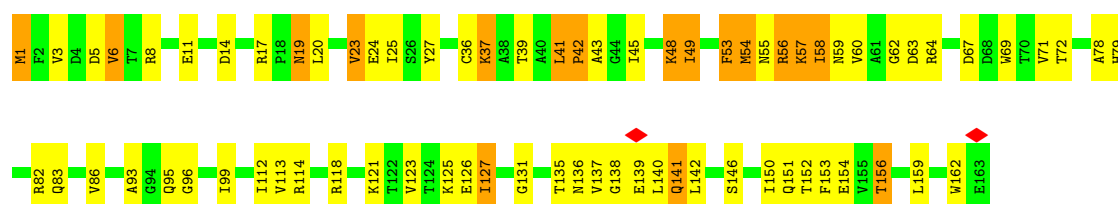
- Molecule 11: gp19, tail tube protein



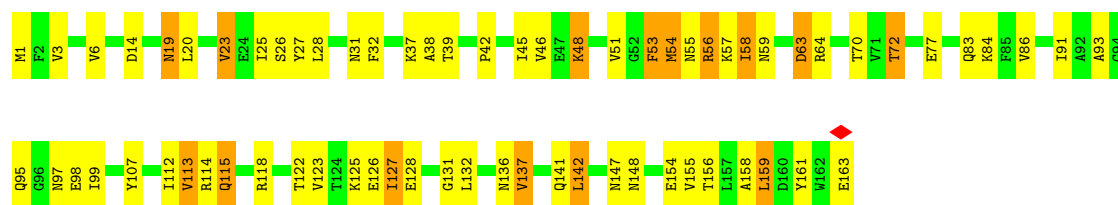
- Molecule 11: gp19, tail tube protein



- Molecule 11: gp19, tail tube protein

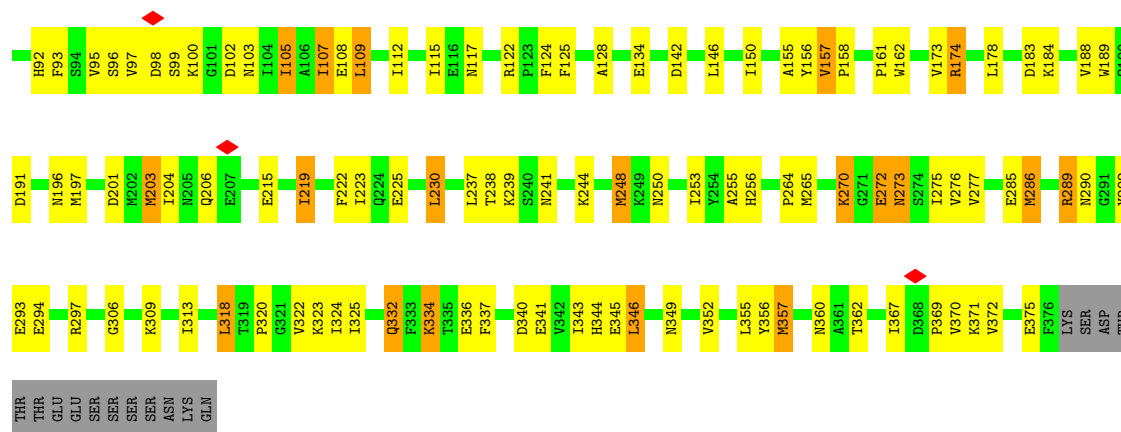


- Molecule 11: gp19, tail tube protein

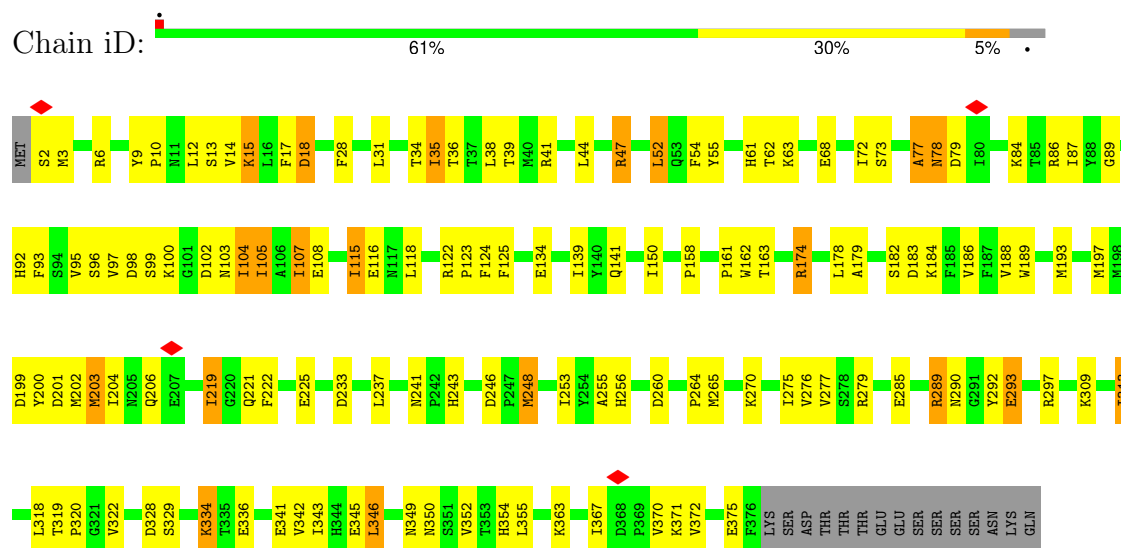


- Molecule 12: gp27, baseplate hub protein

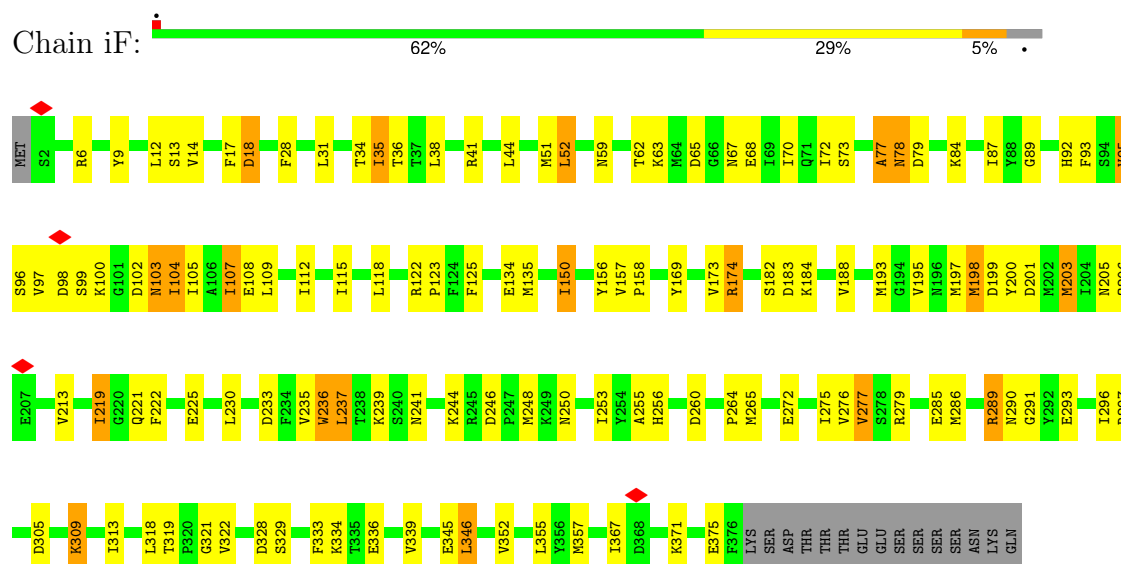




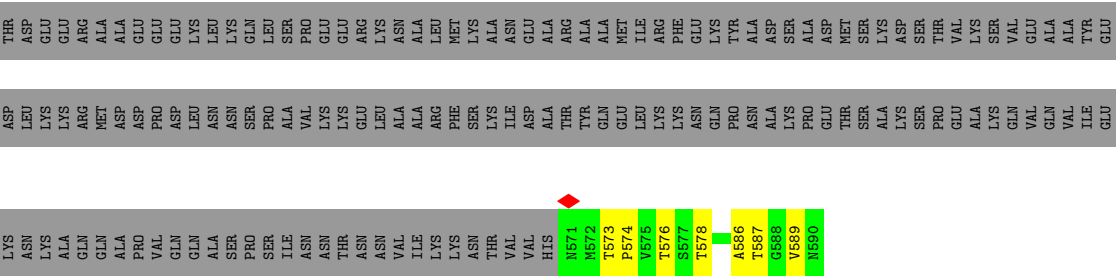
• Molecule 12: gp27, baseplate hub protein



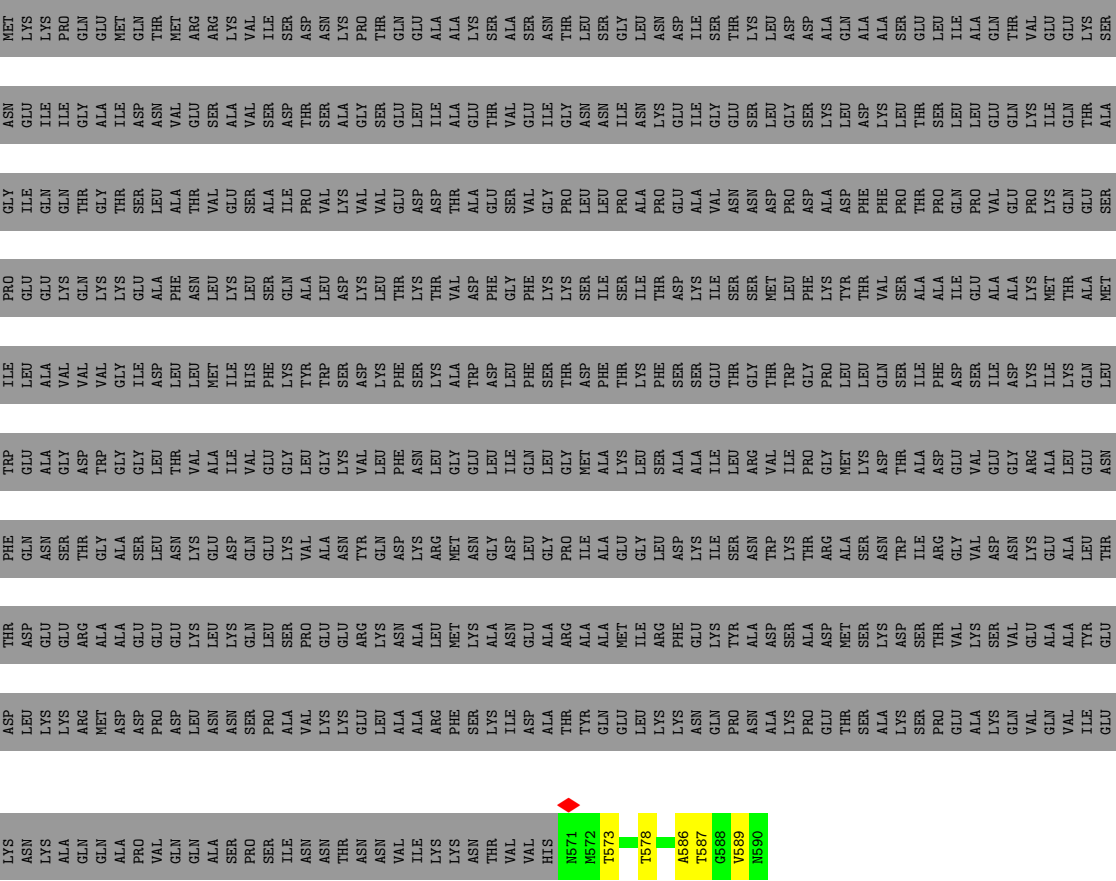
• Molecule 12: gp27, baseplate hub protein



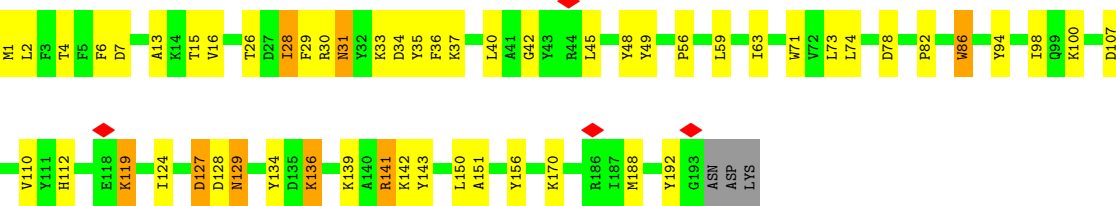
- [illegible]



• Molecule 13: gp29, tape measure protein

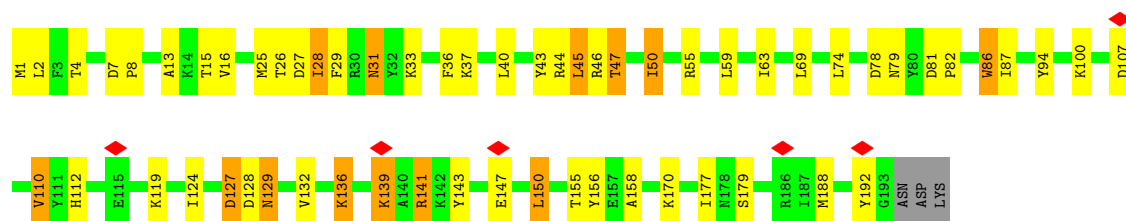


• Molecule 14: gp53, baseplate wedge protein



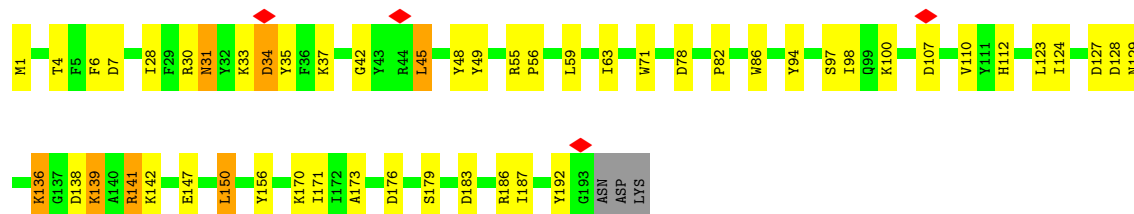
• Molecule 14: gp53, baseplate wedge protein

Chain k4:  68% 24% 7% .



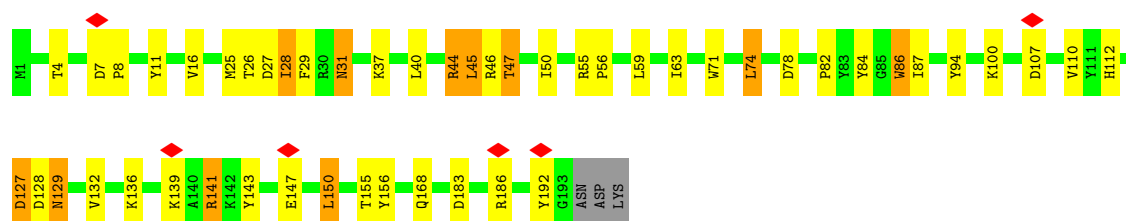
- Molecule 14: gp53, baseplate wedge protein

Chain k7:  72% 23% . .



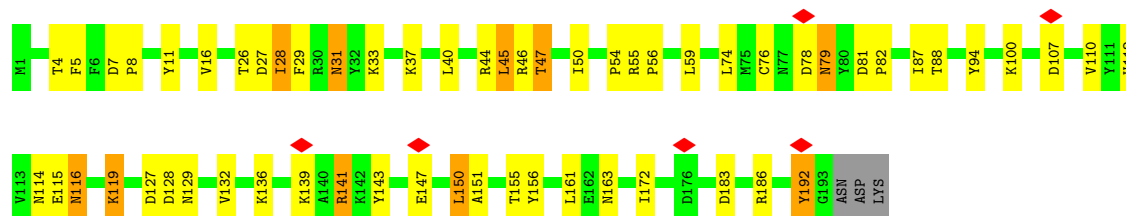
- Molecule 14: gp53, baseplate wedge protein

Chain k8:  73% 20% 6% .



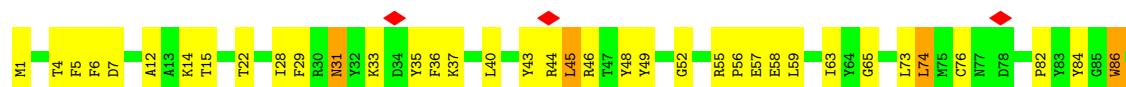
- Molecule 14: gp53, baseplate wedge protein

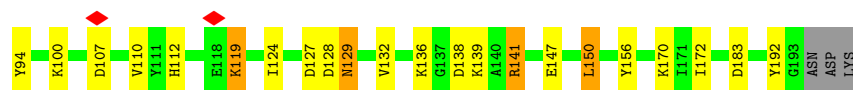
Chain kV:  68% 25% 5% .



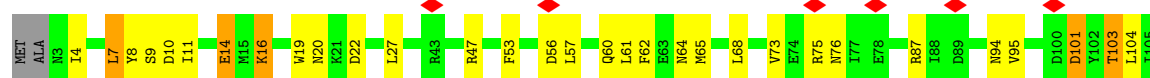
- Molecule 14: gp53, baseplate wedge protein

Chain IV:  68% 26% . .

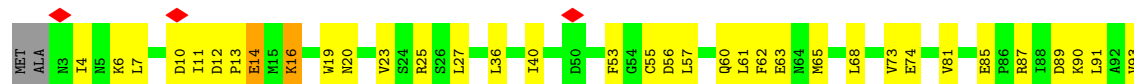




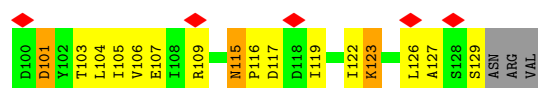
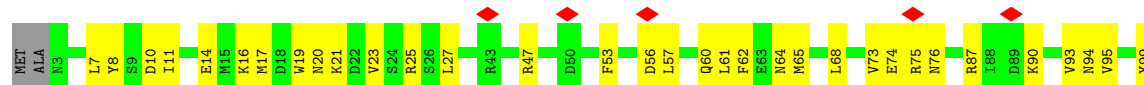
- Molecule 15: gp25, baseplate wedge protein



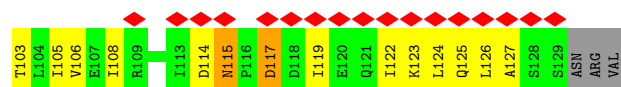
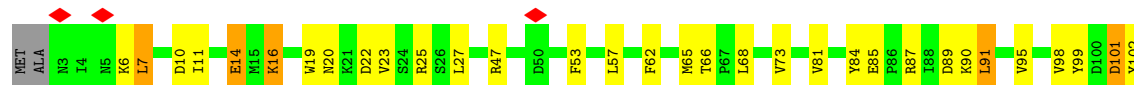
- Molecule 15: gp25, baseplate wedge protein



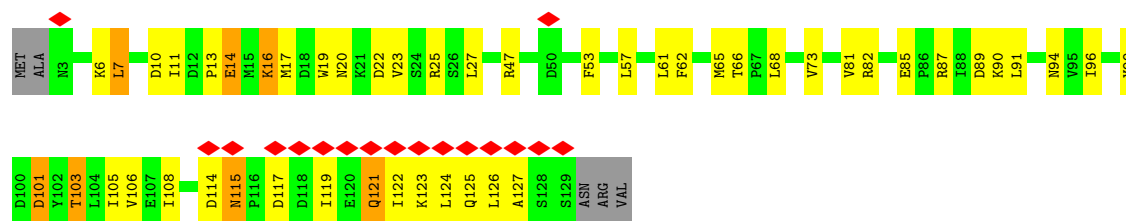
- Molecule 15: gp25, baseplate wedge protein



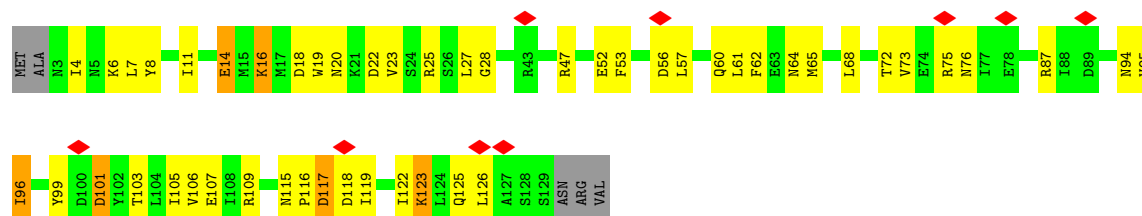
- Molecule 15: gp25, baseplate wedge protein



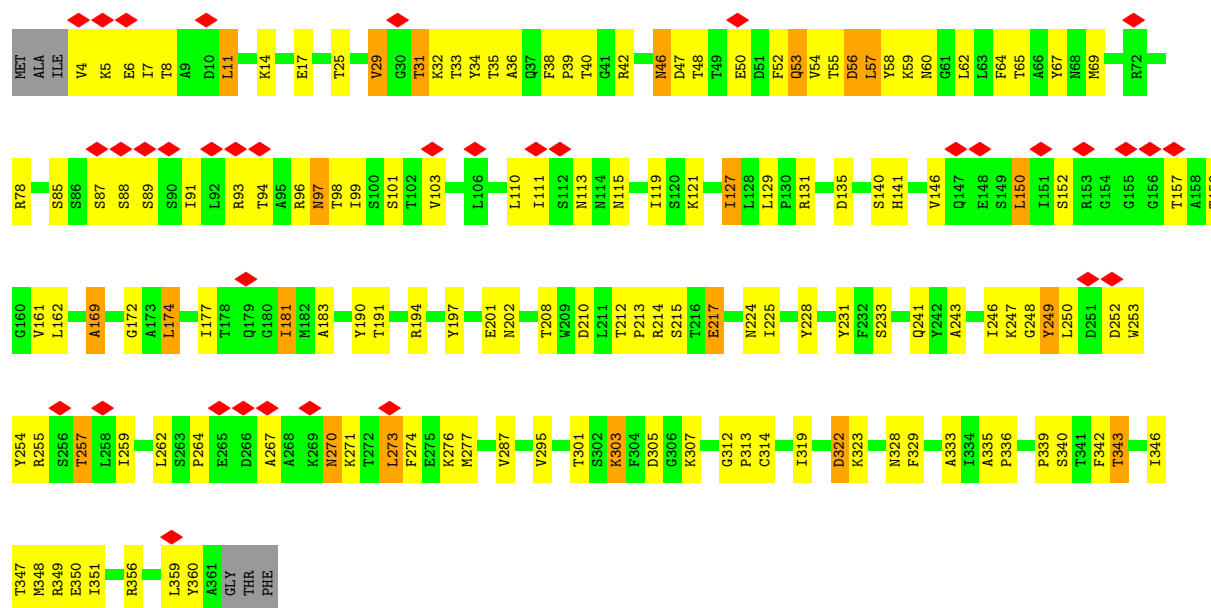
- Molecule 15: gp25, baseplate wedge protein



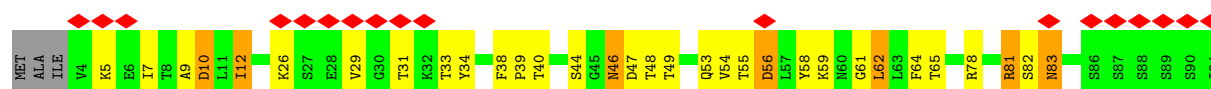
- Molecule 15: gp25, baseplate wedge protein

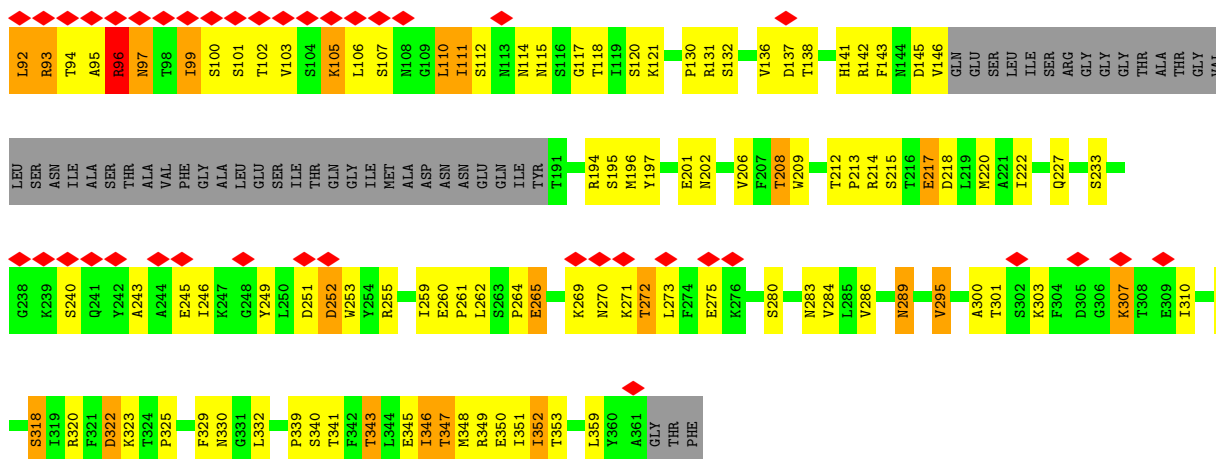


- Molecule 16: gp48, baseplate protein

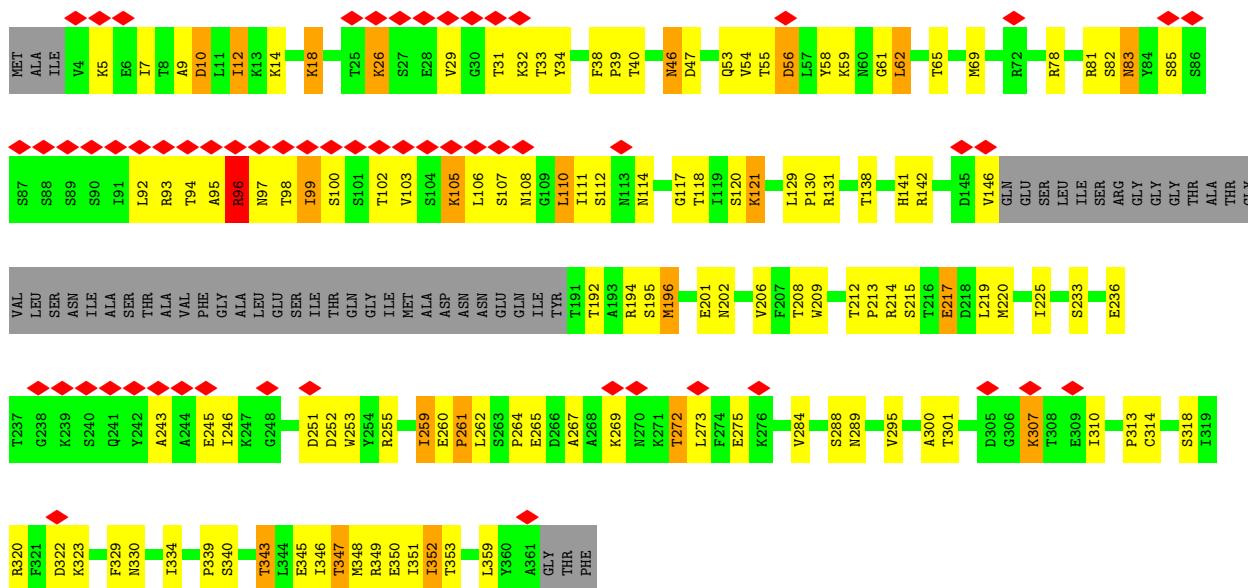


- Molecule 16: gp48, baseplate protein

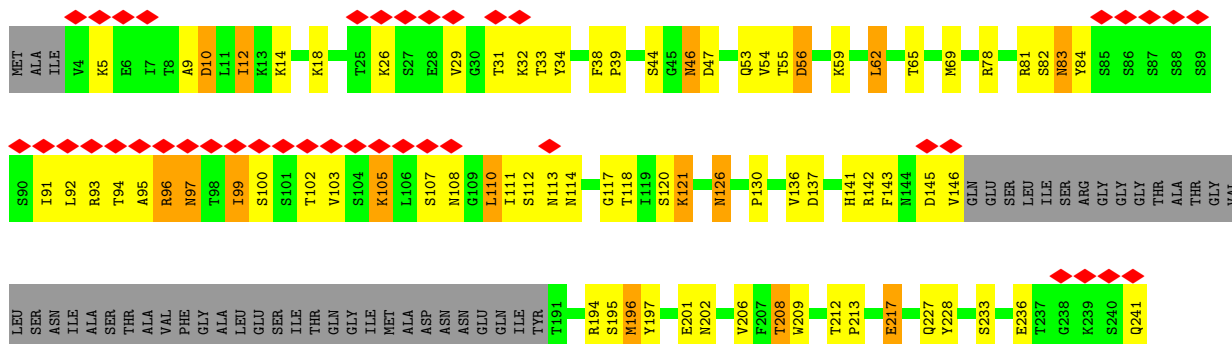


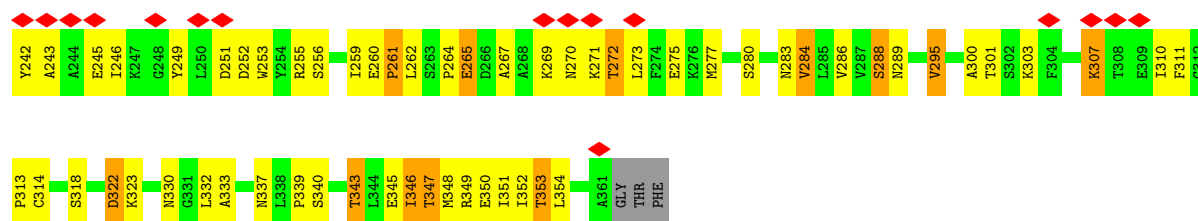


• Molecule 16: gp48, baseplate protein

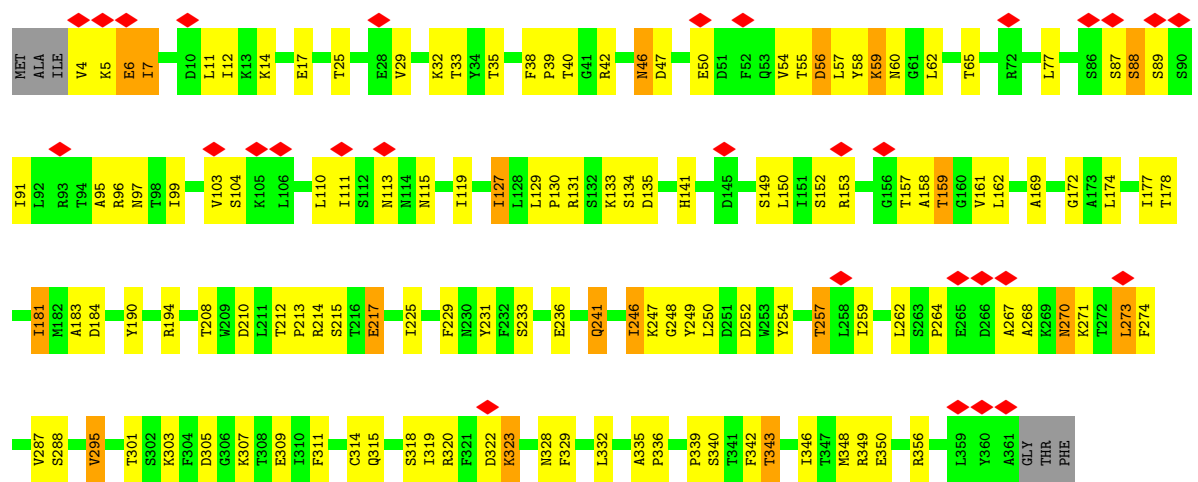


• Molecule 16: gp48, baseplate protein

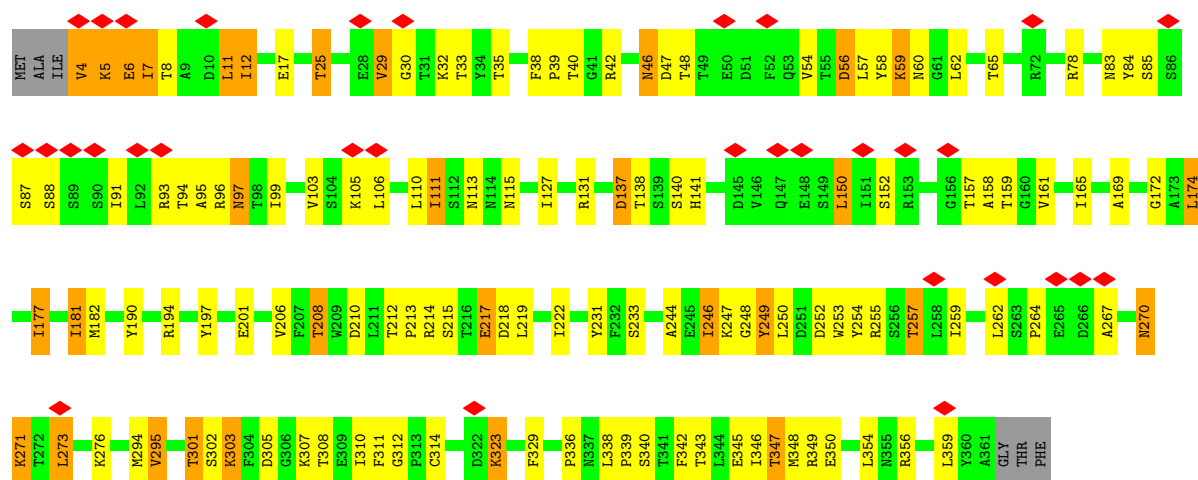




• Molecule 16: gp48, baseplate protein

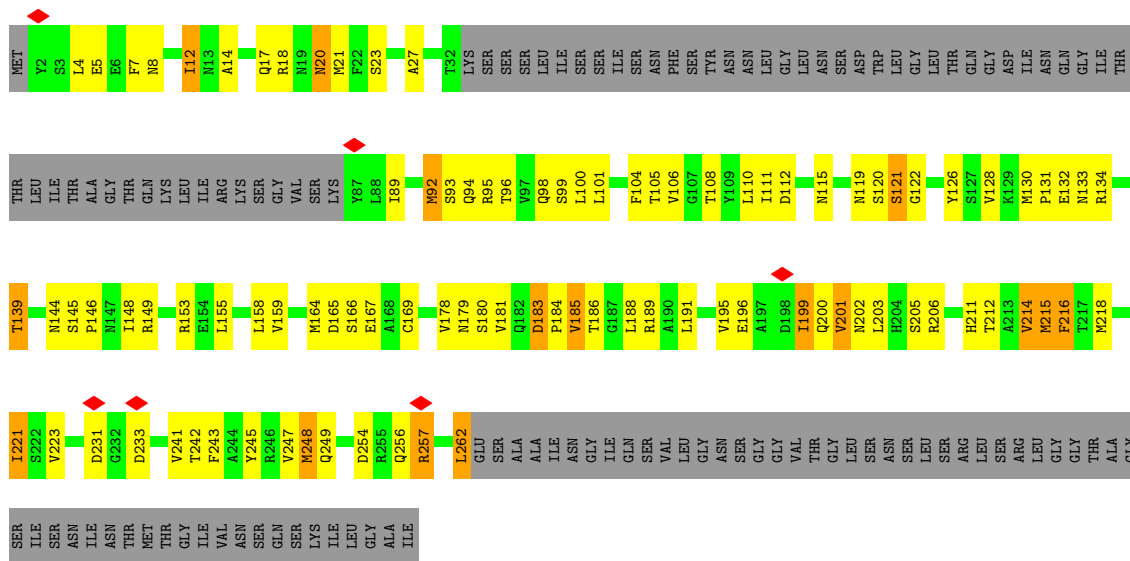


• Molecule 16: gp48, baseplate protein

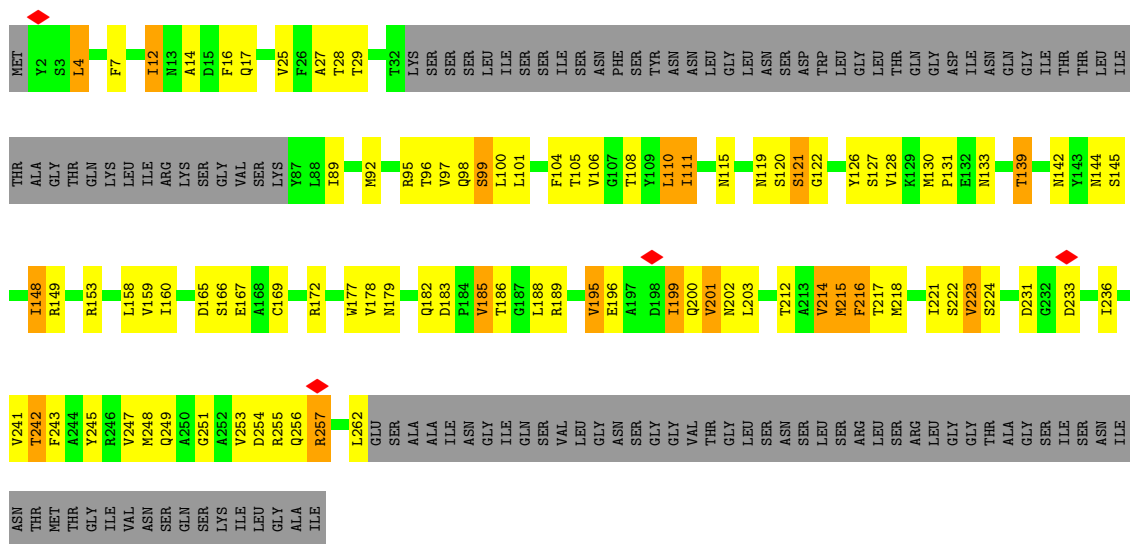


• Molecule 17: gp54, baseplate protein

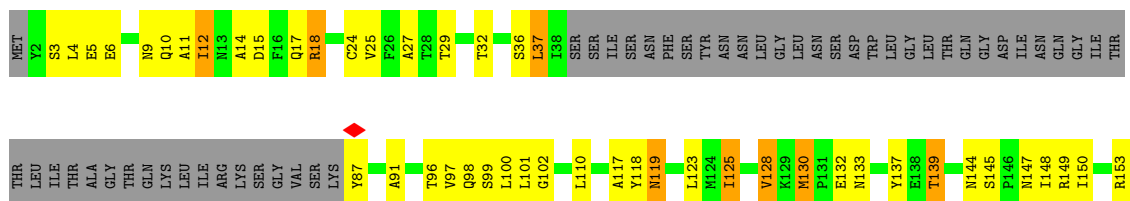
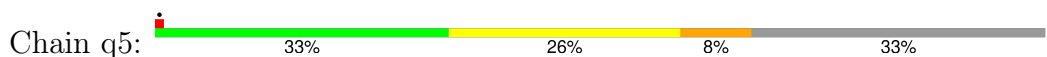




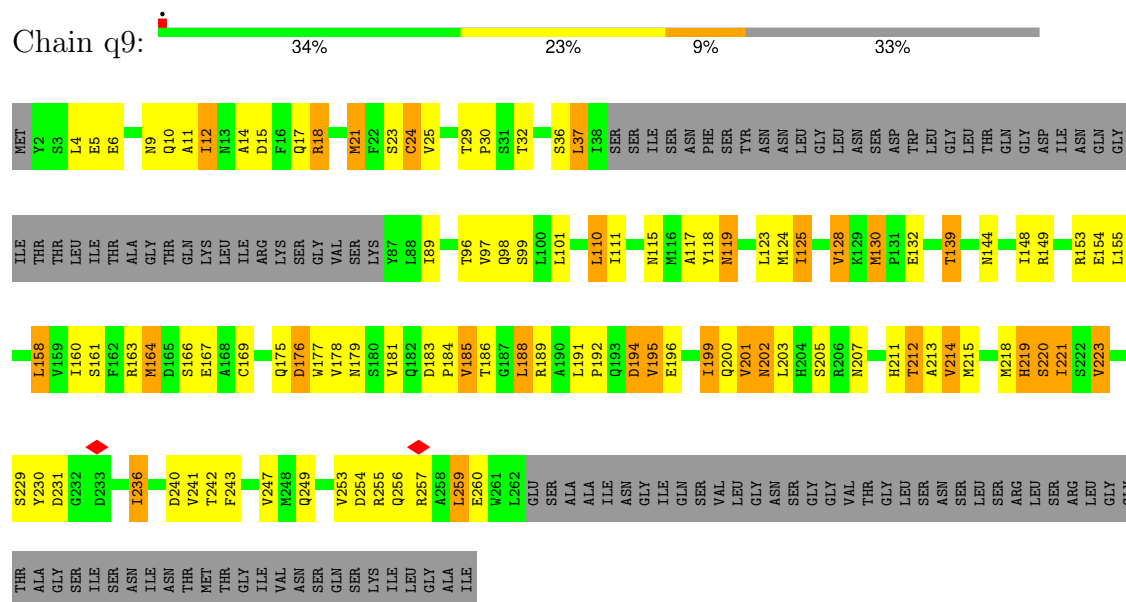
- Molecule 17: gp54, baseplate protein



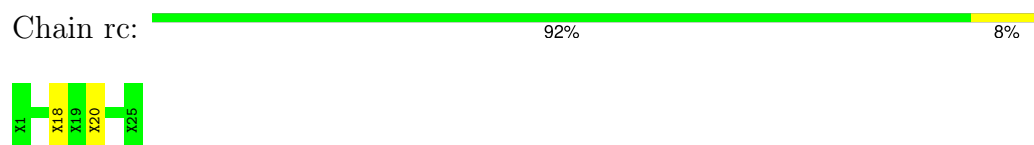
- Molecule 17: gp54, baseplate protein



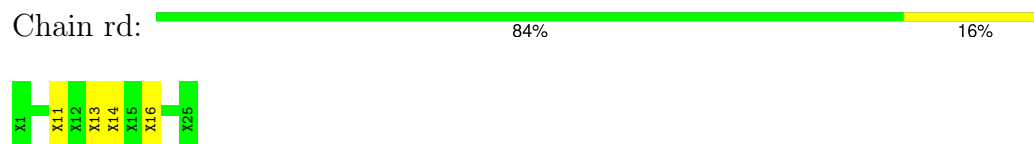




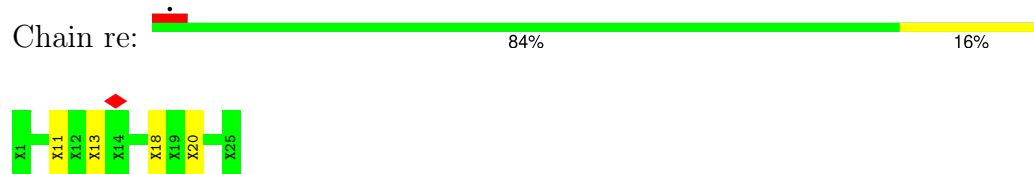
- Molecule 18: unassigned peptide A



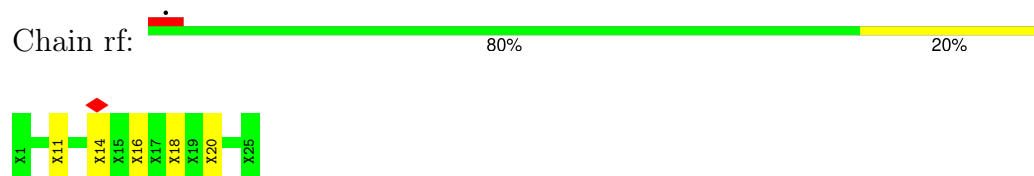
- Molecule 18: unassigned peptide A



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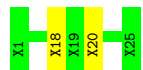
- Molecule 18: unassigned peptide A



There are no outlier residues recorded for this chain.

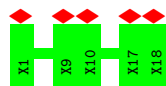
- Molecule 18: unassigned peptide A

Chain rh:  92% 8%



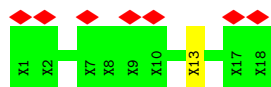
- Molecule 19: unassigned peptide B

Chain sQ:  28% 100%



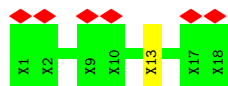
- Molecule 19: unassigned peptide B

Chain sT:  39% 94% 6%



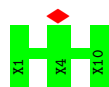
- Molecule 19: unassigned peptide B

Chain sU:  33% 94% 6%



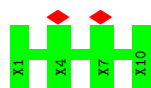
- Molecule 20: unassigned peptide C

Chain tS:  10% 100%



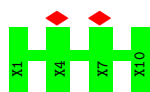
- Molecule 20: unassigned peptide C

Chain tX:  20% 100%

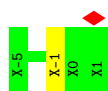
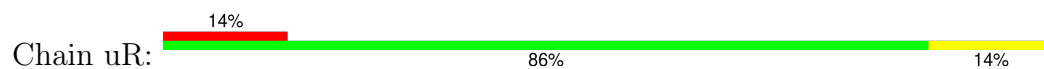


- Molecule 20: unassigned peptide C

Chain tY:  20% 100%



- Molecule 21: unassigned peptide D



- Molecule 21: unassigned peptide D



- Molecule 21: unassigned peptide D



- Molecule 22: unassigned peptide E



There are no outlier residues recorded for this chain.

- Molecule 22: unassigned peptide E



There are no outlier residues recorded for this chain.

- Molecule 22: unassigned peptide E



There are no outlier residues recorded for this chain.

## 4 Experimental information

| Property                             | Value                                   | Source    |
|--------------------------------------|-----------------------------------------|-----------|
| EM reconstruction method             | SINGLE PARTICLE                         | Depositor |
| Imposed symmetry                     | POINT, C3                               | Depositor |
| Number of particles used             | 113800                                  | Depositor |
| Resolution determination method      | FSC 0.143 CUT-OFF                       | Depositor |
| CTF correction method                | PHASE FLIPPING AND AMPLITUDE CORRECTION | Depositor |
| Microscope                           | TFS KRIOS                               | Depositor |
| Voltage (kV)                         | 300                                     | Depositor |
| Electron dose ( $e^-/\text{\AA}^2$ ) | 38                                      | Depositor |
| Minimum defocus (nm)                 | 600                                     | Depositor |
| Maximum defocus (nm)                 | 2000                                    | Depositor |
| Magnification                        | Not provided                            |           |
| Image detector                       | GATAN K3 (6k x 4k)                      | Depositor |
| Maximum map value                    | 0.101                                   | Depositor |
| Minimum map value                    | -0.072                                  | Depositor |
| Average map value                    | 0.000                                   | Depositor |
| Map value standard deviation         | 0.005                                   | Depositor |
| Recommended contour level            | 0.015                                   | Depositor |
| Map size (Å)                         | 646.4, 646.4, 646.4                     | wwPDB     |
| Map dimensions                       | 400, 400, 400                           | wwPDB     |
| Map angles (°)                       | 90.0, 90.0, 90.0                        | wwPDB     |
| Pixel spacing (Å)                    | 1.616, 1.616, 1.616                     | Depositor |

## 5 Model quality

### 5.1 Standard geometry

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

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   | S0    | 0.11         | 0/4016      | 0.31        | 0/5464        |
| 1   | S1    | 0.12         | 0/4016      | 0.31        | 0/5464        |
| 1   | S2    | 0.11         | 0/4016      | 0.32        | 0/5464        |
| 1   | S3    | 0.12         | 0/4016      | 0.31        | 0/5464        |
| 1   | S4    | 0.12         | 0/4016      | 0.32        | 0/5464        |
| 1   | S5    | 0.11         | 0/4016      | 0.31        | 0/5464        |
| 1   | S6    | 0.11         | 0/4016      | 0.29        | 0/5464        |
| 1   | S7    | 0.11         | 0/4016      | 0.30        | 0/5464        |
| 1   | S8    | 0.13         | 0/4016      | 0.32        | 0/5464        |
| 1   | SA    | 0.11         | 0/4016      | 0.30        | 0/5464        |
| 1   | SO    | 0.12         | 0/4016      | 0.35        | 2/5464 (0.0%) |
| 1   | SP    | 0.12         | 0/4016      | 0.32        | 0/5464        |
| 1   | SQ    | 0.11         | 0/4016      | 0.32        | 0/5464        |
| 1   | Sv    | 0.12         | 0/4016      | 0.31        | 0/5464        |
| 1   | Sw    | 0.11         | 0/4016      | 0.30        | 0/5464        |
| 1   | Sx    | 0.11         | 0/4016      | 0.30        | 0/5464        |
| 1   | Sy    | 0.12         | 0/4016      | 0.31        | 0/5464        |
| 1   | Sz    | 0.11         | 0/4016      | 0.31        | 0/5464        |
| 2   | T1    | 0.11         | 0/2205      | 0.32        | 0/2988        |
| 2   | T2    | 0.11         | 0/2205      | 0.30        | 0/2988        |
| 2   | T3    | 0.11         | 0/2205      | 0.31        | 0/2988        |
| 2   | T4    | 0.12         | 0/2205      | 0.32        | 0/2988        |
| 2   | T5    | 0.12         | 0/2205      | 0.31        | 0/2988        |
| 2   | T6    | 0.11         | 0/2205      | 0.30        | 0/2988        |
| 2   | T7    | 0.11         | 0/2205      | 0.29        | 0/2988        |
| 2   | T8    | 0.11         | 0/2205      | 0.29        | 0/2988        |
| 2   | T9    | 0.12         | 0/2205      | 0.31        | 0/2988        |
| 2   | TF    | 0.11         | 0/2205      | 0.29        | 0/2988        |
| 2   | TG    | 0.11         | 0/2205      | 0.30        | 0/2988        |
| 2   | TH    | 0.11         | 0/2205      | 0.30        | 0/2988        |
| 2   | Td    | 0.11         | 0/2205      | 0.30        | 0/2988        |
| 2   | Te    | 0.11         | 0/2205      | 0.31        | 0/2988        |

| Mol | Chain | Bond lengths |         | Bond angles |                |
|-----|-------|--------------|---------|-------------|----------------|
|     |       | RMSZ         | # Z  >5 | RMSZ        | # Z  >5        |
| 2   | Tf    | 0.11         | 0/2205  | 0.31        | 0/2988         |
| 2   | Tg    | 0.12         | 0/2205  | 0.32        | 0/2988         |
| 2   | Th    | 0.12         | 0/2205  | 0.32        | 1/2988 (0.0%)  |
| 2   | Ti    | 0.12         | 0/2205  | 0.33        | 0/2988         |
| 3   | UL    | 0.11         | 0/1700  | 0.28        | 0/2318         |
| 3   | UM    | 0.11         | 0/1700  | 0.29        | 0/2318         |
| 3   | UN    | 0.11         | 0/1700  | 0.29        | 0/2318         |
| 3   | Up    | 0.12         | 0/1700  | 0.31        | 0/2318         |
| 3   | Uq    | 0.11         | 0/1700  | 0.29        | 0/2318         |
| 3   | Ur    | 0.11         | 0/1700  | 0.31        | 0/2318         |
| 3   | Us    | 0.12         | 0/1700  | 0.31        | 0/2318         |
| 3   | Ut    | 0.10         | 0/1700  | 0.29        | 0/2318         |
| 3   | Uu    | 0.11         | 0/1700  | 0.28        | 0/2318         |
| 3   | VL    | 0.12         | 0/1700  | 0.31        | 0/2318         |
| 3   | VM    | 0.12         | 0/1700  | 0.31        | 0/2318         |
| 3   | VN    | 0.10         | 0/1700  | 0.29        | 0/2318         |
| 3   | Vp    | 0.11         | 0/1700  | 0.28        | 0/2318         |
| 3   | Vq    | 0.11         | 0/1700  | 0.29        | 0/2318         |
| 3   | Vr    | 0.11         | 0/1700  | 0.30        | 0/2318         |
| 3   | Vs    | 0.11         | 0/1700  | 0.29        | 0/2318         |
| 3   | Vt    | 0.11         | 0/1700  | 0.29        | 0/2318         |
| 3   | Vu    | 0.11         | 0/1700  | 0.29        | 0/2318         |
| 4   | WI    | 0.13         | 0/4778  | 0.38        | 0/6513         |
| 4   | WJ    | 0.14         | 0/4778  | 0.39        | 1/6513 (0.0%)  |
| 4   | WK    | 0.14         | 0/4778  | 0.39        | 1/6513 (0.0%)  |
| 4   | Wj    | 0.13         | 0/4778  | 0.38        | 0/6513         |
| 4   | Wk    | 0.13         | 0/4778  | 0.39        | 0/6513         |
| 4   | Wl    | 0.13         | 0/4778  | 0.39        | 0/6513         |
| 4   | Wm    | 0.13         | 0/4778  | 0.39        | 0/6513         |
| 4   | Wn    | 0.13         | 0/4778  | 0.40        | 0/6513         |
| 4   | Wo    | 0.14         | 0/4778  | 0.39        | 1/6513 (0.0%)  |
| 4   | XI    | 0.13         | 0/4778  | 0.38        | 0/6513         |
| 4   | XJ    | 0.13         | 0/4778  | 0.39        | 0/6513         |
| 4   | XK    | 0.14         | 0/4778  | 0.39        | 0/6513         |
| 4   | Xj    | 0.13         | 0/4778  | 0.36        | 0/6513         |
| 4   | Xk    | 0.13         | 0/4778  | 0.38        | 0/6513         |
| 4   | Xl    | 0.13         | 0/4778  | 0.40        | 0/6513         |
| 4   | Xm    | 0.13         | 0/4778  | 0.39        | 0/6513         |
| 4   | Xn    | 0.13         | 0/4778  | 0.39        | 0/6513         |
| 4   | Xo    | 0.14         | 0/4778  | 0.41        | 1/6513 (0.0%)  |
| 5   | YC    | 0.19         | 0/8405  | 0.46        | 1/11412 (0.0%) |
| 5   | YX    | 0.19         | 0/8405  | 0.46        | 0/11412        |
| 5   | YY    | 0.18         | 0/8405  | 0.45        | 0/11412        |

| Mol | Chain | Bond lengths |         | Bond angles |                |
|-----|-------|--------------|---------|-------------|----------------|
|     |       | RMSZ         | # Z  >5 | RMSZ        | # Z  >5        |
| 5   | Yc    | 0.19         | 0/8405  | 0.46        | 0/11412        |
| 5   | Yx    | 0.19         | 0/8405  | 0.46        | 0/11412        |
| 5   | Yy    | 0.19         | 0/8405  | 0.45        | 2/11412 (0.0%) |
| 6   | ZD    | 0.14         | 0/2709  | 0.30        | 0/3694         |
| 6   | ZE    | 0.16         | 0/2736  | 0.32        | 0/3731         |
| 6   | ZZ    | 0.14         | 0/2709  | 0.29        | 0/3694         |
| 6   | Za    | 0.14         | 0/2709  | 0.29        | 0/3694         |
| 6   | Zb    | 0.17         | 0/2736  | 0.31        | 0/3731         |
| 6   | Zc    | 0.16         | 0/2736  | 0.32        | 0/3731         |
| 6   | aD    | 0.14         | 0/2709  | 0.29        | 0/3694         |
| 6   | aE    | 0.17         | 0/2736  | 0.31        | 0/3731         |
| 6   | aZ    | 0.14         | 0/2709  | 0.29        | 0/3694         |
| 6   | aa    | 0.14         | 0/2709  | 0.29        | 0/3694         |
| 6   | ab    | 0.17         | 0/2736  | 0.31        | 0/3731         |
| 6   | ac    | 0.17         | 0/2736  | 0.30        | 0/3731         |
| 7   | b0    | 0.21         | 0/5092  | 0.38        | 0/6928         |
| 7   | b3    | 0.19         | 0/5092  | 0.37        | 0/6928         |
| 7   | b4    | 0.19         | 0/5092  | 0.36        | 0/6928         |
| 7   | b5    | 0.20         | 0/5092  | 0.37        | 0/6928         |
| 7   | b6    | 0.20         | 0/5092  | 0.37        | 0/6928         |
| 7   | b7    | 0.20         | 0/5092  | 0.38        | 0/6928         |
| 7   | b8    | 0.21         | 0/5092  | 0.38        | 0/6928         |
| 7   | b9    | 0.21         | 0/5092  | 0.39        | 1/6928 (0.0%)  |
| 7   | bN    | 0.22         | 0/5092  | 0.36        | 0/6928         |
| 7   | bO    | 0.22         | 0/5092  | 0.37        | 0/6928         |
| 7   | bP    | 0.22         | 0/5092  | 0.36        | 0/6928         |
| 7   | bQ    | 0.22         | 0/5092  | 0.37        | 0/6928         |
| 7   | bR    | 0.22         | 0/5092  | 0.37        | 0/6928         |
| 7   | bY    | 0.22         | 0/5092  | 0.38        | 0/6928         |
| 7   | cA    | 0.21         | 0/5092  | 0.38        | 0/6928         |
| 7   | cB    | 0.21         | 0/5092  | 0.37        | 0/6928         |
| 7   | cC    | 0.21         | 0/5092  | 0.37        | 0/6928         |
| 7   | cD    | 0.22         | 0/5092  | 0.37        | 0/6928         |
| 7   | cE    | 0.19         | 0/5092  | 0.36        | 0/6928         |
| 7   | cF    | 0.21         | 0/5092  | 0.39        | 0/6928         |
| 7   | cG    | 0.22         | 0/5092  | 0.38        | 0/6928         |
| 7   | cH    | 0.22         | 0/5092  | 0.38        | 0/6928         |
| 7   | cI    | 0.22         | 0/5092  | 0.38        | 0/6928         |
| 7   | cJ    | 0.21         | 0/5092  | 0.38        | 0/6928         |
| 7   | cK    | 0.22         | 0/5092  | 0.37        | 0/6928         |
| 7   | cL    | 0.22         | 0/5092  | 0.38        | 0/6928         |
| 7   | cM    | 0.22         | 0/5092  | 0.37        | 0/6928         |
| 7   | cN    | 0.22         | 0/5092  | 0.38        | 0/6928         |

| Mol | Chain | Bond lengths |               | Bond angles |               |
|-----|-------|--------------|---------------|-------------|---------------|
|     |       | RMSZ         | # Z  >5       | RMSZ        | # Z  >5       |
| 7   | cO    | 0.22         | 0/5092        | 0.37        | 0/6928        |
| 7   | cP    | 0.22         | 0/5092        | 0.38        | 0/6928        |
| 7   | dS    | 0.23         | 0/5033        | 0.39        | 0/6847        |
| 7   | dT    | 0.23         | 0/5033        | 0.38        | 0/6847        |
| 7   | dU    | 0.23         | 0/5033        | 0.39        | 0/6847        |
| 7   | dV    | 0.22         | 0/5033        | 0.38        | 0/6847        |
| 7   | dW    | 0.23         | 0/5033        | 0.39        | 0/6847        |
| 7   | dZ    | 0.22         | 0/5033        | 0.38        | 0/6847        |
| 8   | eB    | 0.22         | 0/5257        | 0.39        | 0/7144        |
| 8   | eU    | 0.23         | 0/5257        | 0.40        | 0/7144        |
| 8   | eW    | 0.22         | 0/5257        | 0.38        | 0/7144        |
| 8   | f9    | 0.23         | 0/5337        | 0.40        | 0/7256        |
| 8   | fA    | 0.22         | 0/5337        | 0.39        | 1/7256 (0.0%) |
| 8   | fB    | 0.24         | 1/5257 (0.0%) | 0.39        | 0/7144        |
| 8   | fR    | 0.22         | 0/5337        | 0.39        | 1/7256 (0.0%) |
| 8   | fS    | 0.23         | 0/5337        | 0.41        | 1/7256 (0.0%) |
| 8   | fU    | 0.23         | 0/5257        | 0.38        | 0/7144        |
| 8   | fW    | 0.22         | 0/5257        | 0.38        | 0/7144        |
| 8   | fr    | 0.22         | 0/5337        | 0.38        | 0/7256        |
| 8   | fs    | 0.23         | 0/5337        | 0.40        | 1/7256 (0.0%) |
| 9   | gE    | 0.21         | 0/4402        | 0.32        | 0/5966        |
| 9   | gG    | 0.21         | 0/4402        | 0.33        | 0/5966        |
| 9   | gH    | 0.21         | 0/4402        | 0.33        | 0/5966        |
| 10  | gd    | 0.11         | 0/724         | 0.25        | 0/984         |
| 11  | h1    | 0.28         | 0/1333        | 0.42        | 0/1807        |
| 11  | h2    | 0.27         | 0/1333        | 0.41        | 0/1807        |
| 11  | hI    | 0.27         | 0/1333        | 0.43        | 0/1807        |
| 11  | hJ    | 0.27         | 0/1333        | 0.43        | 0/1807        |
| 11  | hK    | 0.27         | 0/1333        | 0.41        | 0/1807        |
| 11  | hL    | 0.28         | 0/1333        | 0.43        | 0/1807        |
| 11  | hM    | 0.27         | 0/1333        | 0.42        | 0/1807        |
| 11  | hX    | 0.27         | 0/1333        | 0.41        | 0/1807        |
| 11  | he    | 0.22         | 0/1333        | 0.40        | 0/1807        |
| 11  | hf    | 0.22         | 0/1333        | 0.40        | 0/1807        |
| 11  | hg    | 0.22         | 0/1333        | 0.39        | 0/1807        |
| 11  | hh    | 0.22         | 0/1333        | 0.40        | 0/1807        |
| 11  | hi    | 0.22         | 0/1333        | 0.40        | 0/1807        |
| 11  | hj    | 0.26         | 0/1333        | 0.42        | 0/1807        |
| 11  | hk    | 0.27         | 0/1333        | 0.43        | 0/1807        |
| 11  | hl    | 0.26         | 0/1333        | 0.43        | 0/1807        |
| 11  | hm    | 0.26         | 0/1333        | 0.42        | 0/1807        |
| 11  | hn    | 0.26         | 0/1333        | 0.42        | 0/1807        |
| 11  | ho    | 0.27         | 0/1333        | 0.43        | 0/1807        |

| Mol | Chain | Bond lengths |                 | Bond angles |                  |
|-----|-------|--------------|-----------------|-------------|------------------|
|     |       | RMSZ         | # Z  >5         | RMSZ        | # Z  >5          |
| 11  | hp    | 0.27         | 0/1333          | 0.42        | 0/1807           |
| 11  | hq    | 0.27         | 0/1333          | 0.39        | 0/1807           |
| 11  | hr    | 0.27         | 0/1333          | 0.44        | 0/1807           |
| 11  | hs    | 0.27         | 0/1333          | 0.43        | 0/1807           |
| 11  | ht    | 0.22         | 0/1333          | 0.39        | 0/1807           |
| 11  | hu    | 0.26         | 0/1333          | 0.42        | 0/1807           |
| 11  | hv    | 0.27         | 0/1333          | 0.41        | 0/1807           |
| 11  | hw    | 0.28         | 0/1333          | 0.43        | 0/1807           |
| 11  | hx    | 0.28         | 0/1333          | 0.41        | 0/1807           |
| 11  | hy    | 0.28         | 0/1333          | 0.42        | 0/1807           |
| 11  | hz    | 0.28         | 0/1333          | 0.43        | 0/1807           |
| 12  | iC    | 0.27         | 0/3070          | 0.41        | 0/4164           |
| 12  | iD    | 0.26         | 0/3070          | 0.40        | 0/4164           |
| 12  | iF    | 0.27         | 0/3070          | 0.41        | 0/4164           |
| 13  | ja    | 0.22         | 0/139           | 0.43        | 0/192            |
| 13  | jb    | 0.23         | 0/139           | 0.57        | 0/192            |
| 13  | jc    | 0.23         | 0/139           | 0.55        | 0/192            |
| 14  | k3    | 0.24         | 0/1643          | 0.38        | 0/2228           |
| 14  | k4    | 0.24         | 0/1643          | 0.36        | 0/2228           |
| 14  | k7    | 0.25         | 0/1643          | 0.39        | 0/2228           |
| 14  | k8    | 0.24         | 0/1643          | 0.35        | 0/2228           |
| 14  | kV    | 0.24         | 0/1643          | 0.36        | 0/2228           |
| 14  | lV    | 0.24         | 0/1643          | 0.38        | 0/2228           |
| 15  | m1    | 0.24         | 0/1035          | 0.41        | 1/1403 (0.1%)    |
| 15  | m2    | 0.24         | 0/1035          | 0.38        | 0/1403           |
| 15  | m5    | 0.25         | 0/1035          | 0.39        | 0/1403           |
| 15  | m6    | 0.23         | 0/1035          | 0.40        | 0/1403           |
| 15  | mT    | 0.24         | 0/1035          | 0.40        | 0/1403           |
| 15  | nT    | 0.25         | 0/1035          | 0.39        | 0/1403           |
| 16  | o0    | 0.24         | 0/2795          | 0.45        | 0/3784           |
| 16  | o1    | 0.24         | 0/2479          | 0.50        | 0/3354           |
| 16  | o2    | 0.25         | 0/2479          | 0.50        | 0/3354           |
| 16  | o6    | 0.24         | 0/2479          | 0.50        | 0/3354           |
| 16  | pA    | 0.25         | 0/2795          | 0.46        | 0/3784           |
| 16  | pB    | 0.25         | 0/2795          | 0.45        | 0/3784           |
| 17  | q3    | 0.28         | 0/1686          | 0.44        | 0/2292           |
| 17  | q4    | 0.28         | 0/1686          | 0.44        | 0/2292           |
| 17  | q5    | 0.30         | 0/1729          | 0.50        | 0/2349           |
| 17  | q7    | 0.29         | 0/1729          | 0.50        | 2/2349 (0.1%)    |
| 17  | q8    | 0.28         | 0/1686          | 0.48        | 0/2292           |
| 17  | q9    | 0.29         | 0/1729          | 0.50        | 0/2349           |
| All | All   | 0.19         | 1/663886 (0.0%) | 0.38        | 18/902721 (0.0%) |

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   | S2    | 0                   | 1                   |
| 1   | Sx    | 0                   | 1                   |
| 5   | Yc    | 0                   | 1                   |
| 5   | Yx    | 0                   | 1                   |
| 7   | b4    | 0                   | 1                   |
| 7   | b7    | 0                   | 1                   |
| 7   | cB    | 0                   | 1                   |
| 7   | cJ    | 0                   | 1                   |
| 7   | cK    | 0                   | 1                   |
| 7   | cP    | 0                   | 1                   |
| 7   | dV    | 0                   | 1                   |
| 16  | o1    | 0                   | 1                   |
| 16  | o2    | 0                   | 1                   |
| All | All   | 0                   | 13                  |

All (1) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z    | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|------|-------------|----------|
| 8   | fB    | 303 | ASN  | C-O   | 6.32 | 1.26        | 1.23     |

The worst 5 of 18 bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms   | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|---------|-------|-------------|----------|
| 1   | SO    | 46  | GLY  | CA-C-N  | 7.10  | 124.71      | 120.24   |
| 1   | SO    | 46  | GLY  | C-N-CA  | 7.10  | 124.71      | 120.24   |
| 8   | fS    | 64  | THR  | N-CA-C  | -6.66 | 105.78      | 114.04   |
| 5   | Yy    | 985 | GLU  | N-CA-CB | -6.19 | 107.11      | 114.17   |
| 8   | fs    | 64  | THR  | N-CA-C  | -5.83 | 106.81      | 114.04   |

There are no chirality outliers.

5 of 13 planarity outliers are listed below:

| Mol | Chain | Res | Type | Group   |
|-----|-------|-----|------|---------|
| 1   | S2    | 87  | TYR  | Peptide |
| 1   | Sx    | 87  | TYR  | Peptide |
| 5   | Yc    | 398 | SER  | Peptide |
| 5   | Yx    | 398 | SER  | Peptide |
| 7   | b4    | 572 | 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   | S0    | 3945  | 0        | 3828     | 211     | 0            |
| 1   | S1    | 3945  | 0        | 3828     | 211     | 0            |
| 1   | S2    | 3945  | 0        | 3828     | 206     | 0            |
| 1   | S3    | 3945  | 0        | 3828     | 187     | 0            |
| 1   | S4    | 3945  | 0        | 3828     | 209     | 0            |
| 1   | S5    | 3945  | 0        | 3828     | 190     | 0            |
| 1   | S6    | 3945  | 0        | 3828     | 211     | 0            |
| 1   | S7    | 3945  | 0        | 3828     | 196     | 0            |
| 1   | S8    | 3945  | 0        | 3828     | 198     | 0            |
| 1   | SA    | 3945  | 0        | 3828     | 190     | 0            |
| 1   | SO    | 3945  | 0        | 3828     | 191     | 0            |
| 1   | SP    | 3945  | 0        | 3828     | 195     | 0            |
| 1   | SQ    | 3945  | 0        | 3828     | 197     | 0            |
| 1   | Sv    | 3945  | 0        | 3828     | 203     | 0            |
| 1   | Sw    | 3945  | 0        | 3828     | 185     | 0            |
| 1   | Sx    | 3945  | 0        | 3828     | 206     | 0            |
| 1   | Sy    | 3945  | 0        | 3828     | 196     | 0            |
| 1   | Sz    | 3945  | 0        | 3828     | 202     | 0            |
| 2   | T1    | 2175  | 0        | 2157     | 77      | 0            |
| 2   | T2    | 2175  | 0        | 2157     | 66      | 0            |
| 2   | T3    | 2175  | 0        | 2157     | 74      | 0            |
| 2   | T4    | 2175  | 0        | 2157     | 73      | 0            |
| 2   | T5    | 2175  | 0        | 2157     | 54      | 0            |
| 2   | T6    | 2175  | 0        | 2157     | 66      | 0            |
| 2   | T7    | 2175  | 0        | 2157     | 65      | 0            |
| 2   | T8    | 2175  | 0        | 2157     | 61      | 0            |
| 2   | T9    | 2175  | 0        | 2157     | 61      | 0            |
| 2   | TF    | 2175  | 0        | 2157     | 70      | 0            |
| 2   | TG    | 2175  | 0        | 2157     | 62      | 0            |
| 2   | TH    | 2175  | 0        | 2157     | 64      | 0            |
| 2   | Td    | 2175  | 0        | 2157     | 77      | 0            |
| 2   | Te    | 2175  | 0        | 2157     | 66      | 0            |
| 2   | Tf    | 2175  | 0        | 2157     | 62      | 0            |
| 2   | Tg    | 2175  | 0        | 2157     | 61      | 0            |
| 2   | Th    | 2175  | 0        | 2157     | 65      | 0            |
| 2   | Ti    | 2175  | 0        | 2157     | 68      | 0            |
| 3   | UL    | 1665  | 0        | 1638     | 73      | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 3   | UM    | 1665  | 0        | 1638     | 78      | 0            |
| 3   | UN    | 1665  | 0        | 1638     | 80      | 0            |
| 3   | Up    | 1665  | 0        | 1638     | 64      | 0            |
| 3   | Uq    | 1665  | 0        | 1638     | 77      | 0            |
| 3   | Ur    | 1665  | 0        | 1638     | 71      | 0            |
| 3   | Us    | 1665  | 0        | 1638     | 74      | 0            |
| 3   | Ut    | 1665  | 0        | 1638     | 57      | 0            |
| 3   | Uu    | 1665  | 0        | 1638     | 65      | 0            |
| 3   | VL    | 1665  | 0        | 1638     | 75      | 0            |
| 3   | VM    | 1665  | 0        | 1638     | 76      | 0            |
| 3   | VN    | 1665  | 0        | 1638     | 63      | 0            |
| 3   | Vp    | 1665  | 0        | 1638     | 69      | 0            |
| 3   | Vq    | 1665  | 0        | 1638     | 72      | 0            |
| 3   | Vr    | 1665  | 0        | 1638     | 74      | 0            |
| 3   | Vs    | 1665  | 0        | 1638     | 79      | 0            |
| 3   | Vt    | 1665  | 0        | 1638     | 70      | 0            |
| 3   | Vu    | 1665  | 0        | 1638     | 77      | 0            |
| 4   | WI    | 4675  | 0        | 4446     | 222     | 0            |
| 4   | WJ    | 4675  | 0        | 4447     | 222     | 0            |
| 4   | WK    | 4675  | 0        | 4446     | 240     | 0            |
| 4   | Wj    | 4675  | 0        | 4446     | 236     | 0            |
| 4   | Wk    | 4675  | 0        | 4446     | 215     | 0            |
| 4   | Wl    | 4675  | 0        | 4447     | 226     | 0            |
| 4   | Wm    | 4675  | 0        | 4447     | 222     | 0            |
| 4   | Wn    | 4675  | 0        | 4446     | 247     | 0            |
| 4   | Wo    | 4675  | 0        | 4446     | 234     | 0            |
| 4   | XI    | 4675  | 0        | 4446     | 239     | 0            |
| 4   | XJ    | 4675  | 0        | 4447     | 244     | 0            |
| 4   | XK    | 4675  | 0        | 4446     | 250     | 0            |
| 4   | Xj    | 4675  | 0        | 4446     | 250     | 0            |
| 4   | Xk    | 4675  | 0        | 4446     | 223     | 0            |
| 4   | Xl    | 4675  | 0        | 4447     | 233     | 0            |
| 4   | Xm    | 4675  | 0        | 4447     | 229     | 0            |
| 4   | Xn    | 4675  | 0        | 4446     | 240     | 0            |
| 4   | Xo    | 4675  | 0        | 4446     | 230     | 0            |
| 5   | YC    | 8199  | 0        | 7914     | 358     | 0            |
| 5   | YX    | 8199  | 0        | 7914     | 358     | 0            |
| 5   | YY    | 8199  | 0        | 7914     | 340     | 0            |
| 5   | Yc    | 8199  | 0        | 7914     | 376     | 0            |
| 5   | Yx    | 8199  | 0        | 7914     | 343     | 0            |
| 5   | Yy    | 8199  | 0        | 7914     | 347     | 0            |
| 6   | ZD    | 2631  | 0        | 2509     | 82      | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 6   | ZE    | 2658  | 0        | 2532     | 64      | 0            |
| 6   | ZZ    | 2631  | 0        | 2509     | 72      | 0            |
| 6   | Za    | 2631  | 0        | 2509     | 80      | 0            |
| 6   | Zb    | 2658  | 0        | 2532     | 60      | 0            |
| 6   | Zc    | 2658  | 0        | 2532     | 59      | 0            |
| 6   | aD    | 2631  | 0        | 2509     | 68      | 0            |
| 6   | aE    | 2658  | 0        | 2532     | 59      | 0            |
| 6   | aZ    | 2631  | 0        | 2509     | 66      | 0            |
| 6   | aa    | 2631  | 0        | 2509     | 77      | 0            |
| 6   | ab    | 2658  | 0        | 2532     | 59      | 0            |
| 6   | ac    | 2658  | 0        | 2532     | 57      | 0            |
| 7   | b0    | 5000  | 0        | 4918     | 149     | 0            |
| 7   | b3    | 5000  | 0        | 4918     | 114     | 0            |
| 7   | b4    | 5000  | 0        | 4918     | 121     | 0            |
| 7   | b5    | 5000  | 0        | 4918     | 113     | 0            |
| 7   | b6    | 5000  | 0        | 4918     | 119     | 0            |
| 7   | b7    | 5000  | 0        | 4918     | 106     | 0            |
| 7   | b8    | 5000  | 0        | 4918     | 123     | 0            |
| 7   | b9    | 5000  | 0        | 4918     | 128     | 0            |
| 7   | bN    | 5000  | 0        | 4918     | 111     | 0            |
| 7   | bO    | 5000  | 0        | 4918     | 121     | 0            |
| 7   | bP    | 5000  | 0        | 4918     | 118     | 0            |
| 7   | bQ    | 5000  | 0        | 4918     | 120     | 0            |
| 7   | bR    | 5000  | 0        | 4918     | 126     | 0            |
| 7   | bY    | 5000  | 0        | 4918     | 118     | 0            |
| 7   | cA    | 5000  | 0        | 4918     | 143     | 0            |
| 7   | cB    | 5000  | 0        | 4918     | 143     | 0            |
| 7   | cC    | 5000  | 0        | 4918     | 118     | 0            |
| 7   | cD    | 5000  | 0        | 4918     | 126     | 0            |
| 7   | cE    | 5000  | 0        | 4918     | 116     | 0            |
| 7   | cF    | 5000  | 0        | 4918     | 138     | 0            |
| 7   | cG    | 5000  | 0        | 4918     | 118     | 0            |
| 7   | cH    | 5000  | 0        | 4918     | 127     | 0            |
| 7   | cI    | 5000  | 0        | 4918     | 134     | 0            |
| 7   | cJ    | 5000  | 0        | 4918     | 122     | 0            |
| 7   | cK    | 5000  | 0        | 4918     | 123     | 0            |
| 7   | cL    | 5000  | 0        | 4918     | 130     | 0            |
| 7   | cM    | 5000  | 0        | 4918     | 122     | 0            |
| 7   | cN    | 5000  | 0        | 4918     | 137     | 0            |
| 7   | cO    | 5000  | 0        | 4918     | 135     | 0            |
| 7   | cP    | 5000  | 0        | 4918     | 135     | 0            |
| 7   | dS    | 4941  | 0        | 4858     | 118     | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 7   | dT    | 4941  | 0        | 4858     | 110     | 0            |
| 7   | dU    | 4941  | 0        | 4858     | 138     | 0            |
| 7   | dV    | 4941  | 0        | 4858     | 102     | 0            |
| 7   | dW    | 4941  | 0        | 4858     | 107     | 0            |
| 7   | dZ    | 4941  | 0        | 4858     | 116     | 0            |
| 8   | eB    | 5157  | 0        | 5011     | 172     | 0            |
| 8   | eU    | 5157  | 0        | 5011     | 172     | 0            |
| 8   | eW    | 5157  | 0        | 5011     | 155     | 0            |
| 8   | f9    | 5235  | 0        | 5086     | 151     | 0            |
| 8   | fA    | 5235  | 0        | 5086     | 144     | 0            |
| 8   | fB    | 5157  | 0        | 5011     | 158     | 0            |
| 8   | fR    | 5235  | 0        | 5086     | 132     | 0            |
| 8   | fS    | 5235  | 0        | 5086     | 148     | 0            |
| 8   | fU    | 5157  | 0        | 5011     | 182     | 0            |
| 8   | fW    | 5157  | 0        | 5011     | 154     | 0            |
| 8   | fr    | 5235  | 0        | 5086     | 137     | 0            |
| 8   | fs    | 5235  | 0        | 5086     | 146     | 0            |
| 9   | gE    | 4321  | 0        | 4227     | 107     | 0            |
| 9   | gG    | 4321  | 0        | 4227     | 121     | 0            |
| 9   | gH    | 4321  | 0        | 4227     | 115     | 0            |
| 10  | gd    | 709   | 0        | 713      | 14      | 0            |
| 11  | h1    | 1304  | 0        | 1255     | 50      | 0            |
| 11  | h2    | 1304  | 0        | 1255     | 42      | 0            |
| 11  | hI    | 1304  | 0        | 1255     | 41      | 0            |
| 11  | hJ    | 1304  | 0        | 1255     | 45      | 0            |
| 11  | hK    | 1304  | 0        | 1255     | 53      | 0            |
| 11  | hL    | 1304  | 0        | 1255     | 49      | 0            |
| 11  | hM    | 1304  | 0        | 1255     | 45      | 0            |
| 11  | hX    | 1304  | 0        | 1255     | 51      | 0            |
| 11  | he    | 1304  | 0        | 1255     | 43      | 0            |
| 11  | hf    | 1304  | 0        | 1255     | 45      | 0            |
| 11  | hg    | 1304  | 0        | 1255     | 42      | 0            |
| 11  | hh    | 1304  | 0        | 1255     | 38      | 0            |
| 11  | hi    | 1304  | 0        | 1255     | 45      | 0            |
| 11  | hj    | 1304  | 0        | 1255     | 48      | 0            |
| 11  | hk    | 1304  | 0        | 1255     | 55      | 0            |
| 11  | hl    | 1304  | 0        | 1255     | 42      | 0            |
| 11  | hm    | 1304  | 0        | 1255     | 49      | 0            |
| 11  | hn    | 1304  | 0        | 1255     | 44      | 0            |
| 11  | ho    | 1304  | 0        | 1255     | 42      | 0            |
| 11  | hp    | 1304  | 0        | 1255     | 48      | 0            |
| 11  | hq    | 1304  | 0        | 1255     | 40      | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 11  | hr    | 1304  | 0        | 1255     | 37      | 0            |
| 11  | hs    | 1304  | 0        | 1255     | 55      | 0            |
| 11  | ht    | 1304  | 0        | 1255     | 38      | 0            |
| 11  | hu    | 1304  | 0        | 1255     | 46      | 0            |
| 11  | hv    | 1304  | 0        | 1255     | 39      | 0            |
| 11  | hw    | 1304  | 0        | 1255     | 50      | 0            |
| 11  | hx    | 1304  | 0        | 1255     | 49      | 0            |
| 11  | hy    | 1304  | 0        | 1255     | 49      | 0            |
| 11  | hz    | 1304  | 0        | 1255     | 44      | 0            |
| 12  | iC    | 3000  | 0        | 2928     | 100     | 0            |
| 12  | iD    | 3000  | 0        | 2928     | 100     | 0            |
| 12  | iF    | 3000  | 0        | 2928     | 79      | 0            |
| 13  | ja    | 137   | 0        | 130      | 4       | 0            |
| 13  | jb    | 137   | 0        | 130      | 4       | 0            |
| 13  | jc    | 137   | 0        | 130      | 2       | 0            |
| 14  | k3    | 1599  | 0        | 1544     | 35      | 0            |
| 14  | k4    | 1599  | 0        | 1544     | 33      | 0            |
| 14  | k7    | 1599  | 0        | 1544     | 31      | 0            |
| 14  | k8    | 1599  | 0        | 1544     | 27      | 0            |
| 14  | kV    | 1599  | 0        | 1544     | 27      | 0            |
| 14  | lV    | 1599  | 0        | 1544     | 36      | 0            |
| 15  | m1    | 1019  | 0        | 1015     | 36      | 0            |
| 15  | m2    | 1019  | 0        | 1015     | 35      | 0            |
| 15  | m5    | 1019  | 0        | 1015     | 38      | 0            |
| 15  | m6    | 1019  | 0        | 1015     | 36      | 0            |
| 15  | mT    | 1019  | 0        | 1015     | 37      | 0            |
| 15  | nT    | 1019  | 0        | 1015     | 36      | 0            |
| 16  | o0    | 2749  | 0        | 2715     | 105     | 0            |
| 16  | o1    | 2436  | 0        | 2408     | 90      | 0            |
| 16  | o2    | 2436  | 0        | 2408     | 85      | 0            |
| 16  | o6    | 2436  | 0        | 2408     | 91      | 0            |
| 16  | pA    | 2749  | 0        | 2715     | 96      | 0            |
| 16  | pB    | 2749  | 0        | 2715     | 100     | 0            |
| 17  | q3    | 1650  | 0        | 1569     | 77      | 0            |
| 17  | q4    | 1650  | 0        | 1569     | 72      | 0            |
| 17  | q5    | 1693  | 0        | 1619     | 82      | 0            |
| 17  | q7    | 1693  | 0        | 1619     | 74      | 0            |
| 17  | q8    | 1650  | 0        | 1569     | 71      | 0            |
| 17  | q9    | 1693  | 0        | 1619     | 84      | 0            |
| 18  | rc    | 125   | 0        | 27       | 1       | 0            |
| 18  | rd    | 125   | 0        | 27       | 3       | 0            |
| 18  | re    | 125   | 0        | 27       | 2       | 0            |

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| Mol | Chain | Non-H  | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|--------|----------|----------|---------|--------------|
| 18  | rf    | 125    | 0        | 27       | 3       | 0            |
| 18  | rg    | 125    | 0        | 27       | 0       | 0            |
| 18  | rh    | 125    | 0        | 27       | 1       | 0            |
| 19  | sQ    | 90     | 0        | 22       | 0       | 0            |
| 19  | sT    | 90     | 0        | 22       | 1       | 0            |
| 19  | sU    | 90     | 0        | 22       | 1       | 0            |
| 20  | tS    | 50     | 0        | 12       | 0       | 0            |
| 20  | tX    | 50     | 0        | 12       | 0       | 0            |
| 20  | tY    | 50     | 0        | 12       | 0       | 0            |
| 21  | uR    | 35     | 0        | 10       | 1       | 0            |
| 21  | uV    | 35     | 0        | 10       | 0       | 0            |
| 21  | uW    | 35     | 0        | 10       | 0       | 0            |
| 22  | vZ    | 45     | 0        | 11       | 0       | 0            |
| 22  | va    | 45     | 0        | 11       | 0       | 0            |
| 22  | vb    | 45     | 0        | 11       | 0       | 0            |
| 23  | S0    | 1      | 0        | 0        | 0       | 0            |
| 23  | S1    | 1      | 0        | 0        | 0       | 0            |
| 23  | S4    | 1      | 0        | 0        | 0       | 0            |
| 23  | SA    | 1      | 0        | 0        | 0       | 0            |
| 23  | SQ    | 1      | 0        | 0        | 0       | 0            |
| 23  | Sv    | 1      | 0        | 0        | 0       | 0            |
| All | All   | 652117 | 0        | 633080   | 18930   | 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 15.

The worst 5 of 18930 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:hi:82:ARG:HH12 | 11:hi:138:GLY:HA2 | 1.34                     | 0.91              |
| 1:Sz:2:SER:N      | 1:Sz:5:THR:HG1    | 1.70                     | 0.90              |
| 1:Sv:173:ILE:HD11 | 1:Sz:174:ALA:HB2  | 1.54                     | 0.89              |
| 1:S1:173:ILE:HD11 | 1:S3:174:ALA:HB2  | 1.55                     | 0.88              |
| 2:Te:168:PHE:HA   | 2:Tg:163:SER:HB3  | 1.55                     | 0.87              |

There are no symmetry-related clashes.

## 5.3 Torsion angles ⓘ

### 5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all 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   | S0    | 524/527 (99%) | 488 (93%) | 34 (6%) | 2 (0%)   | 30          | 63 |
| 1   | S1    | 524/527 (99%) | 498 (95%) | 22 (4%) | 4 (1%)   | 16          | 51 |
| 1   | S2    | 524/527 (99%) | 492 (94%) | 31 (6%) | 1 (0%)   | 44          | 73 |
| 1   | S3    | 524/527 (99%) | 488 (93%) | 33 (6%) | 3 (1%)   | 22          | 55 |
| 1   | S4    | 524/527 (99%) | 498 (95%) | 22 (4%) | 4 (1%)   | 16          | 51 |
| 1   | S5    | 524/527 (99%) | 493 (94%) | 27 (5%) | 4 (1%)   | 16          | 51 |
| 1   | S6    | 524/527 (99%) | 497 (95%) | 25 (5%) | 2 (0%)   | 30          | 63 |
| 1   | S7    | 524/527 (99%) | 495 (94%) | 27 (5%) | 2 (0%)   | 30          | 63 |
| 1   | S8    | 524/527 (99%) | 491 (94%) | 30 (6%) | 3 (1%)   | 22          | 55 |
| 1   | SA    | 524/527 (99%) | 486 (93%) | 36 (7%) | 2 (0%)   | 30          | 63 |
| 1   | SO    | 524/527 (99%) | 490 (94%) | 31 (6%) | 3 (1%)   | 22          | 55 |
| 1   | SP    | 524/527 (99%) | 485 (93%) | 36 (7%) | 3 (1%)   | 22          | 55 |
| 1   | SQ    | 524/527 (99%) | 485 (93%) | 36 (7%) | 3 (1%)   | 22          | 55 |
| 1   | Sv    | 524/527 (99%) | 497 (95%) | 23 (4%) | 4 (1%)   | 16          | 51 |
| 1   | Sw    | 524/527 (99%) | 491 (94%) | 31 (6%) | 2 (0%)   | 30          | 63 |
| 1   | Sx    | 524/527 (99%) | 498 (95%) | 25 (5%) | 1 (0%)   | 44          | 73 |
| 1   | Sy    | 524/527 (99%) | 491 (94%) | 31 (6%) | 2 (0%)   | 30          | 63 |
| 1   | Sz    | 524/527 (99%) | 489 (93%) | 32 (6%) | 3 (1%)   | 22          | 55 |
| 2   | T1    | 286/288 (99%) | 271 (95%) | 13 (4%) | 2 (1%)   | 19          | 53 |
| 2   | T2    | 286/288 (99%) | 272 (95%) | 12 (4%) | 2 (1%)   | 19          | 53 |
| 2   | T3    | 286/288 (99%) | 271 (95%) | 12 (4%) | 3 (1%)   | 13          | 46 |
| 2   | T4    | 286/288 (99%) | 269 (94%) | 15 (5%) | 2 (1%)   | 19          | 53 |
| 2   | T5    | 286/288 (99%) | 270 (94%) | 14 (5%) | 2 (1%)   | 19          | 53 |
| 2   | T6    | 286/288 (99%) | 273 (96%) | 11 (4%) | 2 (1%)   | 19          | 53 |
| 2   | T7    | 286/288 (99%) | 268 (94%) | 16 (6%) | 2 (1%)   | 19          | 53 |

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| Mol | Chain | Analysed       | Favoured  | Allowed  | Outliers | Percentiles |    |
|-----|-------|----------------|-----------|----------|----------|-------------|----|
| 2   | T8    | 286/288 (99%)  | 274 (96%) | 9 (3%)   | 3 (1%)   | 13          | 46 |
| 2   | T9    | 286/288 (99%)  | 272 (95%) | 12 (4%)  | 2 (1%)   | 19          | 53 |
| 2   | TF    | 286/288 (99%)  | 271 (95%) | 13 (4%)  | 2 (1%)   | 19          | 53 |
| 2   | TG    | 286/288 (99%)  | 268 (94%) | 16 (6%)  | 2 (1%)   | 19          | 53 |
| 2   | TH    | 286/288 (99%)  | 271 (95%) | 13 (4%)  | 2 (1%)   | 19          | 53 |
| 2   | Td    | 286/288 (99%)  | 272 (95%) | 12 (4%)  | 2 (1%)   | 19          | 53 |
| 2   | Te    | 286/288 (99%)  | 271 (95%) | 13 (4%)  | 2 (1%)   | 19          | 53 |
| 2   | Tf    | 286/288 (99%)  | 272 (95%) | 12 (4%)  | 2 (1%)   | 19          | 53 |
| 2   | Tg    | 286/288 (99%)  | 269 (94%) | 14 (5%)  | 3 (1%)   | 13          | 46 |
| 2   | Th    | 286/288 (99%)  | 271 (95%) | 12 (4%)  | 3 (1%)   | 13          | 46 |
| 2   | Ti    | 286/288 (99%)  | 272 (95%) | 12 (4%)  | 2 (1%)   | 19          | 53 |
| 3   | UL    | 216/219 (99%)  | 208 (96%) | 7 (3%)   | 1 (0%)   | 25          | 59 |
| 3   | UM    | 216/219 (99%)  | 206 (95%) | 9 (4%)   | 1 (0%)   | 25          | 59 |
| 3   | UN    | 216/219 (99%)  | 207 (96%) | 8 (4%)   | 1 (0%)   | 25          | 59 |
| 3   | Up    | 216/219 (99%)  | 206 (95%) | 8 (4%)   | 2 (1%)   | 14          | 48 |
| 3   | Uq    | 216/219 (99%)  | 208 (96%) | 7 (3%)   | 1 (0%)   | 25          | 59 |
| 3   | Ur    | 216/219 (99%)  | 204 (94%) | 11 (5%)  | 1 (0%)   | 25          | 59 |
| 3   | Us    | 216/219 (99%)  | 205 (95%) | 10 (5%)  | 1 (0%)   | 25          | 59 |
| 3   | Ut    | 216/219 (99%)  | 203 (94%) | 12 (6%)  | 1 (0%)   | 25          | 59 |
| 3   | Uu    | 216/219 (99%)  | 206 (95%) | 9 (4%)   | 1 (0%)   | 25          | 59 |
| 3   | VL    | 216/219 (99%)  | 205 (95%) | 10 (5%)  | 1 (0%)   | 25          | 59 |
| 3   | VM    | 216/219 (99%)  | 208 (96%) | 7 (3%)   | 1 (0%)   | 25          | 59 |
| 3   | VN    | 216/219 (99%)  | 205 (95%) | 10 (5%)  | 1 (0%)   | 25          | 59 |
| 3   | Vp    | 216/219 (99%)  | 205 (95%) | 9 (4%)   | 2 (1%)   | 14          | 48 |
| 3   | Vq    | 216/219 (99%)  | 206 (95%) | 9 (4%)   | 1 (0%)   | 25          | 59 |
| 3   | Vr    | 216/219 (99%)  | 204 (94%) | 10 (5%)  | 2 (1%)   | 14          | 48 |
| 3   | Vs    | 216/219 (99%)  | 206 (95%) | 9 (4%)   | 1 (0%)   | 25          | 59 |
| 3   | Vt    | 216/219 (99%)  | 207 (96%) | 8 (4%)   | 1 (0%)   | 25          | 59 |
| 3   | Vu    | 216/219 (99%)  | 208 (96%) | 7 (3%)   | 1 (0%)   | 25          | 59 |
| 4   | WI    | 600/602 (100%) | 529 (88%) | 64 (11%) | 7 (1%)   | 11          | 43 |
| 4   | WJ    | 600/602 (100%) | 526 (88%) | 66 (11%) | 8 (1%)   | 10          | 41 |

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| Mol | Chain | Analysed        | Favoured  | Allowed   | Outliers | Percentiles |     |
|-----|-------|-----------------|-----------|-----------|----------|-------------|-----|
| 4   | WK    | 600/602 (100%)  | 520 (87%) | 74 (12%)  | 6 (1%)   | 13          | 46  |
| 4   | Wj    | 600/602 (100%)  | 528 (88%) | 64 (11%)  | 8 (1%)   | 10          | 41  |
| 4   | Wk    | 600/602 (100%)  | 530 (88%) | 63 (10%)  | 7 (1%)   | 11          | 43  |
| 4   | Wl    | 600/602 (100%)  | 512 (85%) | 80 (13%)  | 8 (1%)   | 10          | 41  |
| 4   | Wm    | 600/602 (100%)  | 523 (87%) | 67 (11%)  | 10 (2%)  | 7           | 37  |
| 4   | Wn    | 600/602 (100%)  | 523 (87%) | 71 (12%)  | 6 (1%)   | 13          | 46  |
| 4   | Wo    | 600/602 (100%)  | 515 (86%) | 79 (13%)  | 6 (1%)   | 13          | 46  |
| 4   | XI    | 600/602 (100%)  | 536 (89%) | 57 (10%)  | 7 (1%)   | 11          | 43  |
| 4   | XJ    | 600/602 (100%)  | 511 (85%) | 79 (13%)  | 10 (2%)  | 7           | 37  |
| 4   | XK    | 600/602 (100%)  | 520 (87%) | 73 (12%)  | 7 (1%)   | 11          | 43  |
| 4   | Xj    | 600/602 (100%)  | 533 (89%) | 61 (10%)  | 6 (1%)   | 13          | 46  |
| 4   | Xk    | 600/602 (100%)  | 527 (88%) | 66 (11%)  | 7 (1%)   | 11          | 43  |
| 4   | Xl    | 600/602 (100%)  | 515 (86%) | 78 (13%)  | 7 (1%)   | 11          | 43  |
| 4   | Xm    | 600/602 (100%)  | 526 (88%) | 65 (11%)  | 9 (2%)   | 8           | 39  |
| 4   | Xn    | 600/602 (100%)  | 519 (86%) | 75 (12%)  | 6 (1%)   | 13          | 46  |
| 4   | Xo    | 600/602 (100%)  | 523 (87%) | 70 (12%)  | 7 (1%)   | 11          | 43  |
| 5   | YC    | 1000/1032 (97%) | 785 (78%) | 191 (19%) | 24 (2%)  | 5           | 30  |
| 5   | YX    | 1000/1032 (97%) | 789 (79%) | 189 (19%) | 22 (2%)  | 5           | 32  |
| 5   | YY    | 1000/1032 (97%) | 787 (79%) | 191 (19%) | 22 (2%)  | 5           | 32  |
| 5   | Yc    | 1000/1032 (97%) | 795 (80%) | 186 (19%) | 19 (2%)  | 6           | 35  |
| 5   | Yx    | 1000/1032 (97%) | 792 (79%) | 187 (19%) | 21 (2%)  | 5           | 33  |
| 5   | Yy    | 1000/1032 (97%) | 785 (78%) | 192 (19%) | 23 (2%)  | 5           | 31  |
| 6   | ZD    | 326/334 (98%)   | 309 (95%) | 16 (5%)   | 1 (0%)   | 37          | 67  |
| 6   | ZE    | 330/334 (99%)   | 314 (95%) | 16 (5%)   | 0        | 100         | 100 |
| 6   | ZZ    | 326/334 (98%)   | 314 (96%) | 10 (3%)   | 2 (1%)   | 22          | 55  |
| 6   | Za    | 326/334 (98%)   | 315 (97%) | 10 (3%)   | 1 (0%)   | 37          | 67  |
| 6   | Zb    | 330/334 (99%)   | 311 (94%) | 19 (6%)   | 0        | 100         | 100 |
| 6   | Zc    | 330/334 (99%)   | 313 (95%) | 17 (5%)   | 0        | 100         | 100 |
| 6   | aD    | 326/334 (98%)   | 314 (96%) | 11 (3%)   | 1 (0%)   | 37          | 67  |
| 6   | aE    | 330/334 (99%)   | 311 (94%) | 19 (6%)   | 0        | 100         | 100 |
| 6   | aZ    | 326/334 (98%)   | 314 (96%) | 11 (3%)   | 1 (0%)   | 37          | 67  |

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| Mol | Chain | Analysed      | Favoured  | Allowed  | Outliers | Percentiles |     |
|-----|-------|---------------|-----------|----------|----------|-------------|-----|
| 6   | aa    | 326/334 (98%) | 312 (96%) | 13 (4%)  | 1 (0%)   | 37          | 67  |
| 6   | ab    | 330/334 (99%) | 311 (94%) | 19 (6%)  | 0        | 100         | 100 |
| 6   | ac    | 330/334 (99%) | 311 (94%) | 19 (6%)  | 0        | 100         | 100 |
| 7   | b0    | 653/659 (99%) | 579 (89%) | 67 (10%) | 7 (1%)   | 12          | 45  |
| 7   | b3    | 653/659 (99%) | 581 (89%) | 64 (10%) | 8 (1%)   | 11          | 43  |
| 7   | b4    | 653/659 (99%) | 569 (87%) | 76 (12%) | 8 (1%)   | 11          | 43  |
| 7   | b5    | 653/659 (99%) | 578 (88%) | 68 (10%) | 7 (1%)   | 12          | 45  |
| 7   | b6    | 653/659 (99%) | 568 (87%) | 76 (12%) | 9 (1%)   | 9           | 40  |
| 7   | b7    | 653/659 (99%) | 576 (88%) | 69 (11%) | 8 (1%)   | 11          | 43  |
| 7   | b8    | 653/659 (99%) | 577 (88%) | 70 (11%) | 6 (1%)   | 14          | 48  |
| 7   | b9    | 653/659 (99%) | 574 (88%) | 72 (11%) | 7 (1%)   | 12          | 45  |
| 7   | bN    | 653/659 (99%) | 582 (89%) | 68 (10%) | 3 (0%)   | 25          | 59  |
| 7   | bO    | 653/659 (99%) | 582 (89%) | 68 (10%) | 3 (0%)   | 25          | 59  |
| 7   | bP    | 653/659 (99%) | 575 (88%) | 75 (12%) | 3 (0%)   | 25          | 59  |
| 7   | bQ    | 653/659 (99%) | 578 (88%) | 71 (11%) | 4 (1%)   | 22          | 55  |
| 7   | bR    | 653/659 (99%) | 582 (89%) | 67 (10%) | 4 (1%)   | 22          | 55  |
| 7   | bY    | 653/659 (99%) | 578 (88%) | 71 (11%) | 4 (1%)   | 22          | 55  |
| 7   | cA    | 653/659 (99%) | 582 (89%) | 64 (10%) | 7 (1%)   | 12          | 45  |
| 7   | cB    | 653/659 (99%) | 584 (89%) | 63 (10%) | 6 (1%)   | 14          | 48  |
| 7   | cC    | 653/659 (99%) | 585 (90%) | 62 (10%) | 6 (1%)   | 14          | 48  |
| 7   | cD    | 653/659 (99%) | 567 (87%) | 80 (12%) | 6 (1%)   | 14          | 48  |
| 7   | cE    | 653/659 (99%) | 574 (88%) | 71 (11%) | 8 (1%)   | 11          | 43  |
| 7   | cF    | 653/659 (99%) | 567 (87%) | 78 (12%) | 8 (1%)   | 11          | 43  |
| 7   | cG    | 653/659 (99%) | 572 (88%) | 75 (12%) | 6 (1%)   | 14          | 48  |
| 7   | cH    | 653/659 (99%) | 574 (88%) | 71 (11%) | 8 (1%)   | 11          | 43  |
| 7   | cI    | 653/659 (99%) | 577 (88%) | 68 (10%) | 8 (1%)   | 11          | 43  |
| 7   | cJ    | 653/659 (99%) | 577 (88%) | 70 (11%) | 6 (1%)   | 14          | 48  |
| 7   | cK    | 653/659 (99%) | 576 (88%) | 70 (11%) | 7 (1%)   | 12          | 45  |
| 7   | cL    | 653/659 (99%) | 580 (89%) | 68 (10%) | 5 (1%)   | 16          | 51  |
| 7   | cM    | 653/659 (99%) | 585 (90%) | 61 (9%)  | 7 (1%)   | 12          | 45  |
| 7   | cN    | 653/659 (99%) | 582 (89%) | 66 (10%) | 5 (1%)   | 16          | 51  |

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| Mol | Chain | Analysed      | Favoured  | Allowed  | Outliers | Percentiles |     |
|-----|-------|---------------|-----------|----------|----------|-------------|-----|
| 7   | cO    | 653/659 (99%) | 575 (88%) | 70 (11%) | 8 (1%)   | 11          | 43  |
| 7   | cP    | 653/659 (99%) | 582 (89%) | 65 (10%) | 6 (1%)   | 14          | 48  |
| 7   | dS    | 645/659 (98%) | 579 (90%) | 61 (10%) | 5 (1%)   | 16          | 51  |
| 7   | dT    | 645/659 (98%) | 581 (90%) | 57 (9%)  | 7 (1%)   | 12          | 45  |
| 7   | dU    | 645/659 (98%) | 580 (90%) | 60 (9%)  | 5 (1%)   | 16          | 51  |
| 7   | dV    | 645/659 (98%) | 579 (90%) | 58 (9%)  | 8 (1%)   | 11          | 43  |
| 7   | dW    | 645/659 (98%) | 571 (88%) | 68 (10%) | 6 (1%)   | 14          | 48  |
| 7   | dZ    | 645/659 (98%) | 585 (91%) | 53 (8%)  | 7 (1%)   | 12          | 45  |
| 8   | eB    | 646/660 (98%) | 564 (87%) | 74 (12%) | 8 (1%)   | 11          | 43  |
| 8   | eU    | 646/660 (98%) | 572 (88%) | 68 (10%) | 6 (1%)   | 14          | 48  |
| 8   | eW    | 646/660 (98%) | 573 (89%) | 65 (10%) | 8 (1%)   | 11          | 43  |
| 8   | f9    | 656/660 (99%) | 597 (91%) | 52 (8%)  | 7 (1%)   | 12          | 45  |
| 8   | fA    | 656/660 (99%) | 589 (90%) | 60 (9%)  | 7 (1%)   | 12          | 45  |
| 8   | fB    | 646/660 (98%) | 575 (89%) | 65 (10%) | 6 (1%)   | 14          | 48  |
| 8   | fR    | 656/660 (99%) | 594 (90%) | 56 (8%)  | 6 (1%)   | 14          | 48  |
| 8   | fS    | 656/660 (99%) | 584 (89%) | 65 (10%) | 7 (1%)   | 12          | 45  |
| 8   | fU    | 646/660 (98%) | 578 (90%) | 62 (10%) | 6 (1%)   | 14          | 48  |
| 8   | fW    | 646/660 (98%) | 570 (88%) | 70 (11%) | 6 (1%)   | 14          | 48  |
| 8   | fr    | 656/660 (99%) | 598 (91%) | 52 (8%)  | 6 (1%)   | 14          | 48  |
| 8   | fs    | 656/660 (99%) | 591 (90%) | 59 (9%)  | 6 (1%)   | 14          | 48  |
| 9   | gE    | 555/575 (96%) | 521 (94%) | 33 (6%)  | 1 (0%)   | 44          | 73  |
| 9   | gG    | 555/575 (96%) | 525 (95%) | 29 (5%)  | 1 (0%)   | 44          | 73  |
| 9   | gH    | 555/575 (96%) | 526 (95%) | 28 (5%)  | 1 (0%)   | 44          | 73  |
| 10  | gd    | 94/97 (97%)   | 91 (97%)  | 3 (3%)   | 0        | 100         | 100 |
| 11  | h1    | 161/163 (99%) | 137 (85%) | 19 (12%) | 5 (3%)   | 3           | 26  |
| 11  | h2    | 161/163 (99%) | 137 (85%) | 19 (12%) | 5 (3%)   | 3           | 26  |
| 11  | hI    | 161/163 (99%) | 134 (83%) | 21 (13%) | 6 (4%)   | 2           | 22  |
| 11  | hJ    | 161/163 (99%) | 139 (86%) | 18 (11%) | 4 (2%)   | 4           | 29  |
| 11  | hK    | 161/163 (99%) | 137 (85%) | 19 (12%) | 5 (3%)   | 3           | 26  |
| 11  | hL    | 161/163 (99%) | 140 (87%) | 16 (10%) | 5 (3%)   | 3           | 26  |
| 11  | hM    | 161/163 (99%) | 137 (85%) | 20 (12%) | 4 (2%)   | 4           | 29  |

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| Mol | Chain | Analysed      | Favoured  | Allowed  | Outliers | Percentiles |    |
|-----|-------|---------------|-----------|----------|----------|-------------|----|
| 11  | hX    | 161/163 (99%) | 137 (85%) | 18 (11%) | 6 (4%)   | 2           | 22 |
| 11  | he    | 161/163 (99%) | 133 (83%) | 24 (15%) | 4 (2%)   | 4           | 29 |
| 11  | hf    | 161/163 (99%) | 139 (86%) | 18 (11%) | 4 (2%)   | 4           | 29 |
| 11  | hg    | 161/163 (99%) | 135 (84%) | 21 (13%) | 5 (3%)   | 3           | 26 |
| 11  | hh    | 161/163 (99%) | 139 (86%) | 17 (11%) | 5 (3%)   | 3           | 26 |
| 11  | hi    | 161/163 (99%) | 133 (83%) | 22 (14%) | 6 (4%)   | 2           | 22 |
| 11  | hj    | 161/163 (99%) | 132 (82%) | 24 (15%) | 5 (3%)   | 3           | 26 |
| 11  | hk    | 161/163 (99%) | 135 (84%) | 22 (14%) | 4 (2%)   | 4           | 29 |
| 11  | hl    | 161/163 (99%) | 133 (83%) | 23 (14%) | 5 (3%)   | 3           | 26 |
| 11  | hm    | 161/163 (99%) | 135 (84%) | 22 (14%) | 4 (2%)   | 4           | 29 |
| 11  | hn    | 161/163 (99%) | 135 (84%) | 21 (13%) | 5 (3%)   | 3           | 26 |
| 11  | ho    | 161/163 (99%) | 133 (83%) | 25 (16%) | 3 (2%)   | 6           | 35 |
| 11  | hp    | 161/163 (99%) | 139 (86%) | 18 (11%) | 4 (2%)   | 4           | 29 |
| 11  | hq    | 161/163 (99%) | 134 (83%) | 23 (14%) | 4 (2%)   | 4           | 29 |
| 11  | hr    | 161/163 (99%) | 132 (82%) | 25 (16%) | 4 (2%)   | 4           | 29 |
| 11  | hs    | 161/163 (99%) | 136 (84%) | 21 (13%) | 4 (2%)   | 4           | 29 |
| 11  | ht    | 161/163 (99%) | 139 (86%) | 17 (11%) | 5 (3%)   | 3           | 26 |
| 11  | hu    | 161/163 (99%) | 133 (83%) | 23 (14%) | 5 (3%)   | 3           | 26 |
| 11  | hv    | 161/163 (99%) | 139 (86%) | 18 (11%) | 4 (2%)   | 4           | 29 |
| 11  | hw    | 161/163 (99%) | 135 (84%) | 20 (12%) | 6 (4%)   | 2           | 22 |
| 11  | hx    | 161/163 (99%) | 136 (84%) | 21 (13%) | 4 (2%)   | 4           | 29 |
| 11  | hy    | 161/163 (99%) | 133 (83%) | 23 (14%) | 5 (3%)   | 3           | 26 |
| 11  | hz    | 161/163 (99%) | 135 (84%) | 21 (13%) | 5 (3%)   | 3           | 26 |
| 12  | iC    | 373/391 (95%) | 343 (92%) | 28 (8%)  | 2 (0%)   | 25          | 59 |
| 12  | iD    | 373/391 (95%) | 347 (93%) | 23 (6%)  | 3 (1%)   | 16          | 51 |
| 12  | iF    | 373/391 (95%) | 344 (92%) | 26 (7%)  | 3 (1%)   | 16          | 51 |
| 13  | ja    | 18/590 (3%)   | 13 (72%)  | 3 (17%)  | 2 (11%)  | 0           | 5  |
| 13  | jb    | 18/590 (3%)   | 12 (67%)  | 5 (28%)  | 1 (6%)   | 1           | 15 |
| 13  | jc    | 18/590 (3%)   | 12 (67%)  | 5 (28%)  | 1 (6%)   | 1           | 15 |
| 14  | k3    | 191/196 (97%) | 166 (87%) | 23 (12%) | 2 (1%)   | 13          | 46 |
| 14  | k4    | 191/196 (97%) | 166 (87%) | 23 (12%) | 2 (1%)   | 13          | 46 |

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| Mol | Chain | Analysed          | Favoured    | Allowed    | Outliers | Percentiles |     |
|-----|-------|-------------------|-------------|------------|----------|-------------|-----|
| 14  | k7    | 191/196 (97%)     | 162 (85%)   | 27 (14%)   | 2 (1%)   | 13          | 46  |
| 14  | k8    | 191/196 (97%)     | 168 (88%)   | 21 (11%)   | 2 (1%)   | 13          | 46  |
| 14  | kV    | 191/196 (97%)     | 166 (87%)   | 23 (12%)   | 2 (1%)   | 13          | 46  |
| 14  | IV    | 191/196 (97%)     | 165 (86%)   | 24 (13%)   | 2 (1%)   | 13          | 46  |
| 15  | m1    | 125/132 (95%)     | 106 (85%)   | 19 (15%)   | 0        | 100         | 100 |
| 15  | m2    | 125/132 (95%)     | 108 (86%)   | 17 (14%)   | 0        | 100         | 100 |
| 15  | m5    | 125/132 (95%)     | 107 (86%)   | 18 (14%)   | 0        | 100         | 100 |
| 15  | m6    | 125/132 (95%)     | 112 (90%)   | 13 (10%)   | 0        | 100         | 100 |
| 15  | mT    | 125/132 (95%)     | 114 (91%)   | 11 (9%)    | 0        | 100         | 100 |
| 15  | nT    | 125/132 (95%)     | 108 (86%)   | 17 (14%)   | 0        | 100         | 100 |
| 16  | o0    | 356/364 (98%)     | 279 (78%)   | 71 (20%)   | 6 (2%)   | 7           | 37  |
| 16  | o1    | 310/364 (85%)     | 248 (80%)   | 55 (18%)   | 7 (2%)   | 5           | 31  |
| 16  | o2    | 310/364 (85%)     | 242 (78%)   | 59 (19%)   | 9 (3%)   | 3           | 27  |
| 16  | o6    | 310/364 (85%)     | 243 (78%)   | 58 (19%)   | 9 (3%)   | 3           | 27  |
| 16  | pA    | 356/364 (98%)     | 274 (77%)   | 74 (21%)   | 8 (2%)   | 5           | 32  |
| 16  | pB    | 356/364 (98%)     | 275 (77%)   | 74 (21%)   | 7 (2%)   | 6           | 34  |
| 17  | q3    | 203/320 (63%)     | 170 (84%)   | 30 (15%)   | 3 (2%)   | 8           | 39  |
| 17  | q4    | 203/320 (63%)     | 175 (86%)   | 26 (13%)   | 2 (1%)   | 13          | 46  |
| 17  | q5    | 209/320 (65%)     | 179 (86%)   | 28 (13%)   | 2 (1%)   | 13          | 46  |
| 17  | q7    | 209/320 (65%)     | 178 (85%)   | 29 (14%)   | 2 (1%)   | 13          | 46  |
| 17  | q8    | 203/320 (63%)     | 168 (83%)   | 33 (16%)   | 2 (1%)   | 13          | 46  |
| 17  | q9    | 209/320 (65%)     | 178 (85%)   | 29 (14%)   | 2 (1%)   | 13          | 46  |
| All | All   | 83368/87019 (96%) | 74174 (89%) | 8284 (10%) | 910 (1%) | 15          | 45  |

5 of 910 Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | S1    | 47  | VAL  |
| 1   | S2    | 47  | VAL  |
| 1   | S3    | 47  | VAL  |
| 1   | S4    | 47  | VAL  |
| 1   | S5    | 47  | VAL  |

### 5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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

| Mol | Chain | Analysed       | Rotameric | Outliers | Percentiles |    |
|-----|-------|----------------|-----------|----------|-------------|----|
| 1   | S0    | 426/427 (100%) | 404 (95%) | 22 (5%)  | 19          | 49 |
| 1   | S1    | 426/427 (100%) | 400 (94%) | 26 (6%)  | 15          | 44 |
| 1   | S2    | 426/427 (100%) | 408 (96%) | 18 (4%)  | 25          | 54 |
| 1   | S3    | 426/427 (100%) | 404 (95%) | 22 (5%)  | 19          | 49 |
| 1   | S4    | 426/427 (100%) | 407 (96%) | 19 (4%)  | 23          | 53 |
| 1   | S5    | 426/427 (100%) | 405 (95%) | 21 (5%)  | 21          | 50 |
| 1   | S6    | 426/427 (100%) | 407 (96%) | 19 (4%)  | 23          | 53 |
| 1   | S7    | 426/427 (100%) | 410 (96%) | 16 (4%)  | 28          | 57 |
| 1   | S8    | 426/427 (100%) | 404 (95%) | 22 (5%)  | 19          | 49 |
| 1   | SA    | 426/427 (100%) | 406 (95%) | 20 (5%)  | 22          | 51 |
| 1   | SO    | 426/427 (100%) | 402 (94%) | 24 (6%)  | 17          | 47 |
| 1   | SP    | 426/427 (100%) | 407 (96%) | 19 (4%)  | 23          | 53 |
| 1   | SQ    | 426/427 (100%) | 404 (95%) | 22 (5%)  | 19          | 49 |
| 1   | Sv    | 426/427 (100%) | 402 (94%) | 24 (6%)  | 17          | 47 |
| 1   | Sw    | 426/427 (100%) | 406 (95%) | 20 (5%)  | 22          | 51 |
| 1   | Sx    | 426/427 (100%) | 409 (96%) | 17 (4%)  | 27          | 56 |
| 1   | Sy    | 426/427 (100%) | 411 (96%) | 15 (4%)  | 31          | 60 |
| 1   | Sz    | 426/427 (100%) | 406 (95%) | 20 (5%)  | 22          | 51 |
| 2   | T1    | 244/244 (100%) | 237 (97%) | 7 (3%)   | 37          | 63 |
| 2   | T2    | 244/244 (100%) | 232 (95%) | 12 (5%)  | 21          | 50 |
| 2   | T3    | 244/244 (100%) | 239 (98%) | 5 (2%)   | 50          | 72 |
| 2   | T4    | 244/244 (100%) | 238 (98%) | 6 (2%)   | 42          | 66 |
| 2   | T5    | 244/244 (100%) | 238 (98%) | 6 (2%)   | 42          | 66 |
| 2   | T6    | 244/244 (100%) | 232 (95%) | 12 (5%)  | 21          | 50 |
| 2   | T7    | 244/244 (100%) | 232 (95%) | 12 (5%)  | 21          | 50 |
| 2   | T8    | 244/244 (100%) | 239 (98%) | 5 (2%)   | 50          | 72 |

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| Mol | Chain | Analysed       | Rotameric | Outliers | Percentiles |    |
|-----|-------|----------------|-----------|----------|-------------|----|
| 2   | T9    | 244/244 (100%) | 237 (97%) | 7 (3%)   | 37          | 63 |
| 2   | TF    | 244/244 (100%) | 237 (97%) | 7 (3%)   | 37          | 63 |
| 2   | TG    | 244/244 (100%) | 233 (96%) | 11 (4%)  | 23          | 53 |
| 2   | TH    | 244/244 (100%) | 237 (97%) | 7 (3%)   | 37          | 63 |
| 2   | Td    | 244/244 (100%) | 234 (96%) | 10 (4%)  | 26          | 55 |
| 2   | Te    | 244/244 (100%) | 239 (98%) | 5 (2%)   | 50          | 72 |
| 2   | Tf    | 244/244 (100%) | 233 (96%) | 11 (4%)  | 23          | 53 |
| 2   | Tg    | 244/244 (100%) | 233 (96%) | 11 (4%)  | 23          | 53 |
| 2   | Th    | 244/244 (100%) | 240 (98%) | 4 (2%)   | 58          | 76 |
| 2   | Ti    | 244/244 (100%) | 236 (97%) | 8 (3%)   | 33          | 61 |
| 3   | UL    | 187/188 (100%) | 182 (97%) | 5 (3%)   | 40          | 65 |
| 3   | UM    | 187/188 (100%) | 184 (98%) | 3 (2%)   | 58          | 76 |
| 3   | UN    | 187/188 (100%) | 185 (99%) | 2 (1%)   | 70          | 83 |
| 3   | Up    | 187/188 (100%) | 184 (98%) | 3 (2%)   | 58          | 76 |
| 3   | Uq    | 187/188 (100%) | 183 (98%) | 4 (2%)   | 48          | 71 |
| 3   | Ur    | 187/188 (100%) | 183 (98%) | 4 (2%)   | 48          | 71 |
| 3   | Us    | 187/188 (100%) | 181 (97%) | 6 (3%)   | 34          | 61 |
| 3   | Ut    | 187/188 (100%) | 184 (98%) | 3 (2%)   | 58          | 76 |
| 3   | Uu    | 187/188 (100%) | 185 (99%) | 2 (1%)   | 70          | 83 |
| 3   | VL    | 187/188 (100%) | 185 (99%) | 2 (1%)   | 70          | 83 |
| 3   | VM    | 187/188 (100%) | 184 (98%) | 3 (2%)   | 58          | 76 |
| 3   | VN    | 187/188 (100%) | 182 (97%) | 5 (3%)   | 40          | 65 |
| 3   | Vp    | 187/188 (100%) | 182 (97%) | 5 (3%)   | 40          | 65 |
| 3   | Vq    | 187/188 (100%) | 182 (97%) | 5 (3%)   | 40          | 65 |
| 3   | Vr    | 187/188 (100%) | 182 (97%) | 5 (3%)   | 40          | 65 |
| 3   | Vs    | 187/188 (100%) | 180 (96%) | 7 (4%)   | 29          | 58 |
| 3   | Vt    | 187/188 (100%) | 184 (98%) | 3 (2%)   | 58          | 76 |
| 3   | Vu    | 187/188 (100%) | 184 (98%) | 3 (2%)   | 58          | 76 |
| 4   | WI    | 519/519 (100%) | 485 (93%) | 34 (7%)  | 14          | 42 |
| 4   | WJ    | 519/519 (100%) | 483 (93%) | 36 (7%)  | 13          | 40 |
| 4   | WK    | 519/519 (100%) | 476 (92%) | 43 (8%)  | 9           | 34 |

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| Mol | Chain | Analysed       | Rotameric | Outliers  | Percentiles |    |
|-----|-------|----------------|-----------|-----------|-------------|----|
| 4   | Wj    | 519/519 (100%) | 484 (93%) | 35 (7%)   | 13          | 41 |
| 4   | Wk    | 519/519 (100%) | 485 (93%) | 34 (7%)   | 14          | 42 |
| 4   | Wl    | 519/519 (100%) | 485 (93%) | 34 (7%)   | 14          | 42 |
| 4   | Wm    | 519/519 (100%) | 478 (92%) | 41 (8%)   | 10          | 35 |
| 4   | Wn    | 519/519 (100%) | 481 (93%) | 38 (7%)   | 11          | 38 |
| 4   | Wo    | 519/519 (100%) | 471 (91%) | 48 (9%)   | 7           | 31 |
| 4   | XI    | 519/519 (100%) | 479 (92%) | 40 (8%)   | 10          | 36 |
| 4   | XJ    | 519/519 (100%) | 475 (92%) | 44 (8%)   | 8           | 33 |
| 4   | XK    | 519/519 (100%) | 476 (92%) | 43 (8%)   | 9           | 34 |
| 4   | Xj    | 519/519 (100%) | 479 (92%) | 40 (8%)   | 10          | 36 |
| 4   | Xk    | 519/519 (100%) | 480 (92%) | 39 (8%)   | 11          | 37 |
| 4   | Xl    | 519/519 (100%) | 485 (93%) | 34 (7%)   | 14          | 42 |
| 4   | Xm    | 519/519 (100%) | 479 (92%) | 40 (8%)   | 10          | 36 |
| 4   | Xn    | 519/519 (100%) | 475 (92%) | 44 (8%)   | 8           | 33 |
| 4   | Xo    | 519/519 (100%) | 475 (92%) | 44 (8%)   | 8           | 33 |
| 5   | YC    | 896/921 (97%)  | 750 (84%) | 146 (16%) | 2           | 12 |
| 5   | YX    | 896/921 (97%)  | 756 (84%) | 140 (16%) | 2           | 14 |
| 5   | YY    | 896/921 (97%)  | 748 (84%) | 148 (16%) | 2           | 12 |
| 5   | Yc    | 896/921 (97%)  | 748 (84%) | 148 (16%) | 2           | 12 |
| 5   | Yx    | 896/921 (97%)  | 745 (83%) | 151 (17%) | 1           | 11 |
| 5   | Yy    | 896/921 (97%)  | 759 (85%) | 137 (15%) | 2           | 14 |
| 6   | ZD    | 289/295 (98%)  | 277 (96%) | 12 (4%)   | 25          | 54 |
| 6   | ZE    | 293/295 (99%)  | 283 (97%) | 10 (3%)   | 32          | 60 |
| 6   | ZZ    | 289/295 (98%)  | 278 (96%) | 11 (4%)   | 28          | 57 |
| 6   | Za    | 289/295 (98%)  | 275 (95%) | 14 (5%)   | 21          | 51 |
| 6   | Zb    | 293/295 (99%)  | 279 (95%) | 14 (5%)   | 21          | 51 |
| 6   | Zc    | 293/295 (99%)  | 281 (96%) | 12 (4%)   | 26          | 55 |
| 6   | aD    | 289/295 (98%)  | 278 (96%) | 11 (4%)   | 28          | 57 |
| 6   | aE    | 293/295 (99%)  | 282 (96%) | 11 (4%)   | 28          | 57 |
| 6   | aZ    | 289/295 (98%)  | 280 (97%) | 9 (3%)    | 35          | 62 |
| 6   | aa    | 289/295 (98%)  | 272 (94%) | 17 (6%)   | 16          | 45 |

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| Mol | Chain | Analysed       | Rotameric | Outliers | Percentiles |    |
|-----|-------|----------------|-----------|----------|-------------|----|
| 6   | ab    | 293/295 (99%)  | 279 (95%) | 14 (5%)  | 21          | 51 |
| 6   | ac    | 293/295 (99%)  | 281 (96%) | 12 (4%)  | 26          | 55 |
| 7   | b0    | 534/536 (100%) | 469 (88%) | 65 (12%) | 4           | 21 |
| 7   | b3    | 534/536 (100%) | 467 (88%) | 67 (12%) | 3           | 20 |
| 7   | b4    | 534/536 (100%) | 481 (90%) | 53 (10%) | 6           | 28 |
| 7   | b5    | 534/536 (100%) | 476 (89%) | 58 (11%) | 5           | 25 |
| 7   | b6    | 534/536 (100%) | 478 (90%) | 56 (10%) | 5           | 26 |
| 7   | b7    | 534/536 (100%) | 475 (89%) | 59 (11%) | 5           | 25 |
| 7   | b8    | 534/536 (100%) | 472 (88%) | 62 (12%) | 4           | 23 |
| 7   | b9    | 534/536 (100%) | 468 (88%) | 66 (12%) | 4           | 20 |
| 7   | bN    | 534/536 (100%) | 476 (89%) | 58 (11%) | 5           | 25 |
| 7   | bO    | 534/536 (100%) | 477 (89%) | 57 (11%) | 5           | 26 |
| 7   | bP    | 534/536 (100%) | 471 (88%) | 63 (12%) | 4           | 22 |
| 7   | bQ    | 534/536 (100%) | 483 (90%) | 51 (10%) | 7           | 29 |
| 7   | bR    | 534/536 (100%) | 474 (89%) | 60 (11%) | 5           | 24 |
| 7   | bY    | 534/536 (100%) | 475 (89%) | 59 (11%) | 5           | 25 |
| 7   | cA    | 534/536 (100%) | 465 (87%) | 69 (13%) | 3           | 19 |
| 7   | cB    | 534/536 (100%) | 472 (88%) | 62 (12%) | 4           | 23 |
| 7   | cC    | 534/536 (100%) | 470 (88%) | 64 (12%) | 4           | 21 |
| 7   | cD    | 534/536 (100%) | 470 (88%) | 64 (12%) | 4           | 21 |
| 7   | cE    | 534/536 (100%) | 474 (89%) | 60 (11%) | 5           | 24 |
| 7   | cF    | 534/536 (100%) | 468 (88%) | 66 (12%) | 4           | 20 |
| 7   | cG    | 534/536 (100%) | 472 (88%) | 62 (12%) | 4           | 23 |
| 7   | cH    | 534/536 (100%) | 474 (89%) | 60 (11%) | 5           | 24 |
| 7   | cI    | 534/536 (100%) | 472 (88%) | 62 (12%) | 4           | 23 |
| 7   | cJ    | 534/536 (100%) | 479 (90%) | 55 (10%) | 6           | 27 |
| 7   | cK    | 534/536 (100%) | 469 (88%) | 65 (12%) | 4           | 21 |
| 7   | cL    | 534/536 (100%) | 472 (88%) | 62 (12%) | 4           | 23 |
| 7   | cM    | 534/536 (100%) | 469 (88%) | 65 (12%) | 4           | 21 |
| 7   | cN    | 534/536 (100%) | 463 (87%) | 71 (13%) | 3           | 18 |
| 7   | cO    | 534/536 (100%) | 472 (88%) | 62 (12%) | 4           | 23 |

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| Mol | Chain | Analysed       | Rotameric | Outliers | Percentiles |    |
|-----|-------|----------------|-----------|----------|-------------|----|
| 7   | cP    | 534/536 (100%) | 462 (86%) | 72 (14%) | 3           | 18 |
| 7   | dS    | 527/536 (98%)  | 458 (87%) | 69 (13%) | 3           | 19 |
| 7   | dT    | 527/536 (98%)  | 460 (87%) | 67 (13%) | 3           | 19 |
| 7   | dU    | 527/536 (98%)  | 457 (87%) | 70 (13%) | 3           | 18 |
| 7   | dV    | 527/536 (98%)  | 463 (88%) | 64 (12%) | 4           | 21 |
| 7   | dW    | 527/536 (98%)  | 462 (88%) | 65 (12%) | 4           | 20 |
| 7   | dZ    | 527/536 (98%)  | 455 (86%) | 72 (14%) | 3           | 17 |
| 8   | eB    | 567/578 (98%)  | 495 (87%) | 72 (13%) | 3           | 19 |
| 8   | eU    | 567/578 (98%)  | 482 (85%) | 85 (15%) | 2           | 15 |
| 8   | eW    | 567/578 (98%)  | 488 (86%) | 79 (14%) | 3           | 17 |
| 8   | f9    | 576/578 (100%) | 487 (84%) | 89 (16%) | 2           | 14 |
| 8   | fA    | 576/578 (100%) | 496 (86%) | 80 (14%) | 3           | 17 |
| 8   | fB    | 567/578 (98%)  | 486 (86%) | 81 (14%) | 2           | 17 |
| 8   | fR    | 576/578 (100%) | 489 (85%) | 87 (15%) | 2           | 15 |
| 8   | fS    | 576/578 (100%) | 491 (85%) | 85 (15%) | 2           | 15 |
| 8   | fU    | 567/578 (98%)  | 496 (88%) | 71 (12%) | 3           | 20 |
| 8   | fW    | 567/578 (98%)  | 489 (86%) | 78 (14%) | 3           | 17 |
| 8   | fr    | 576/578 (100%) | 489 (85%) | 87 (15%) | 2           | 15 |
| 8   | fs    | 576/578 (100%) | 490 (85%) | 86 (15%) | 2           | 15 |
| 9   | gE    | 474/485 (98%)  | 417 (88%) | 57 (12%) | 4           | 21 |
| 9   | gG    | 474/485 (98%)  | 426 (90%) | 48 (10%) | 6           | 27 |
| 9   | gH    | 474/485 (98%)  | 422 (89%) | 52 (11%) | 5           | 25 |
| 10  | gd    | 78/79 (99%)    | 75 (96%)  | 3 (4%)   | 28          | 57 |
| 11  | h1    | 137/137 (100%) | 107 (78%) | 30 (22%) | 1           | 5  |
| 11  | h2    | 137/137 (100%) | 106 (77%) | 31 (23%) | 1           | 5  |
| 11  | hI    | 137/137 (100%) | 112 (82%) | 25 (18%) | 1           | 8  |
| 11  | hJ    | 137/137 (100%) | 107 (78%) | 30 (22%) | 1           | 5  |
| 11  | hK    | 137/137 (100%) | 110 (80%) | 27 (20%) | 1           | 7  |
| 11  | hL    | 137/137 (100%) | 114 (83%) | 23 (17%) | 1           | 11 |
| 11  | hM    | 137/137 (100%) | 110 (80%) | 27 (20%) | 1           | 7  |
| 11  | hX    | 137/137 (100%) | 109 (80%) | 28 (20%) | 1           | 6  |

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| Mol | Chain | Analysed       | Rotameric | Outliers | Percentiles |    |
|-----|-------|----------------|-----------|----------|-------------|----|
| 11  | he    | 137/137 (100%) | 115 (84%) | 22 (16%) | 2           | 13 |
| 11  | hf    | 137/137 (100%) | 113 (82%) | 24 (18%) | 1           | 9  |
| 11  | hg    | 137/137 (100%) | 113 (82%) | 24 (18%) | 1           | 9  |
| 11  | hh    | 137/137 (100%) | 114 (83%) | 23 (17%) | 1           | 11 |
| 11  | hi    | 137/137 (100%) | 112 (82%) | 25 (18%) | 1           | 8  |
| 11  | hj    | 137/137 (100%) | 109 (80%) | 28 (20%) | 1           | 6  |
| 11  | hk    | 137/137 (100%) | 115 (84%) | 22 (16%) | 2           | 13 |
| 11  | hl    | 137/137 (100%) | 115 (84%) | 22 (16%) | 2           | 13 |
| 11  | hm    | 137/137 (100%) | 117 (85%) | 20 (15%) | 2           | 16 |
| 11  | hn    | 137/137 (100%) | 115 (84%) | 22 (16%) | 2           | 13 |
| 11  | ho    | 137/137 (100%) | 106 (77%) | 31 (23%) | 1           | 5  |
| 11  | hp    | 137/137 (100%) | 114 (83%) | 23 (17%) | 1           | 11 |
| 11  | hq    | 137/137 (100%) | 111 (81%) | 26 (19%) | 1           | 7  |
| 11  | hr    | 137/137 (100%) | 109 (80%) | 28 (20%) | 1           | 6  |
| 11  | hs    | 137/137 (100%) | 114 (83%) | 23 (17%) | 1           | 11 |
| 11  | ht    | 137/137 (100%) | 115 (84%) | 22 (16%) | 2           | 13 |
| 11  | hu    | 137/137 (100%) | 113 (82%) | 24 (18%) | 1           | 9  |
| 11  | hv    | 137/137 (100%) | 108 (79%) | 29 (21%) | 1           | 5  |
| 11  | hw    | 137/137 (100%) | 105 (77%) | 32 (23%) | 0           | 4  |
| 11  | hx    | 137/137 (100%) | 110 (80%) | 27 (20%) | 1           | 7  |
| 11  | hy    | 137/137 (100%) | 109 (80%) | 28 (20%) | 1           | 6  |
| 11  | hz    | 137/137 (100%) | 110 (80%) | 27 (20%) | 1           | 7  |
| 12  | iC    | 334/350 (95%)  | 286 (86%) | 48 (14%) | 2           | 16 |
| 12  | iD    | 334/350 (95%)  | 294 (88%) | 40 (12%) | 4           | 21 |
| 12  | iF    | 334/350 (95%)  | 290 (87%) | 44 (13%) | 3           | 18 |
| 13  | ja    | 16/499 (3%)    | 13 (81%)  | 3 (19%)  | 1           | 8  |
| 13  | jb    | 16/499 (3%)    | 14 (88%)  | 2 (12%)  | 3           | 20 |
| 13  | jc    | 16/499 (3%)    | 14 (88%)  | 2 (12%)  | 3           | 20 |
| 14  | k3    | 166/169 (98%)  | 148 (89%) | 18 (11%) | 5           | 25 |
| 14  | k4    | 166/169 (98%)  | 138 (83%) | 28 (17%) | 1           | 11 |
| 14  | k7    | 166/169 (98%)  | 148 (89%) | 18 (11%) | 5           | 25 |

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| Mol | Chain | Analysed          | Rotameric   | Outliers   | Percentiles |    |
|-----|-------|-------------------|-------------|------------|-------------|----|
| 14  | k8    | 166/169 (98%)     | 139 (84%)   | 27 (16%)   | 2           | 12 |
| 14  | kV    | 166/169 (98%)     | 137 (82%)   | 29 (18%)   | 1           | 9  |
| 14  | lV    | 166/169 (98%)     | 149 (90%)   | 17 (10%)   | 6           | 27 |
| 15  | m1    | 119/123 (97%)     | 104 (87%)   | 15 (13%)   | 3           | 19 |
| 15  | m2    | 119/123 (97%)     | 102 (86%)   | 17 (14%)   | 2           | 17 |
| 15  | m5    | 119/123 (97%)     | 108 (91%)   | 11 (9%)    | 7           | 31 |
| 15  | m6    | 119/123 (97%)     | 106 (89%)   | 13 (11%)   | 5           | 25 |
| 15  | mT    | 119/123 (97%)     | 102 (86%)   | 17 (14%)   | 2           | 17 |
| 15  | nT    | 119/123 (97%)     | 103 (87%)   | 16 (13%)   | 3           | 18 |
| 16  | o0    | 309/313 (99%)     | 267 (86%)   | 42 (14%)   | 3           | 18 |
| 16  | o1    | 276/313 (88%)     | 228 (83%)   | 48 (17%)   | 1           | 10 |
| 16  | o2    | 276/313 (88%)     | 237 (86%)   | 39 (14%)   | 3           | 17 |
| 16  | o6    | 276/313 (88%)     | 228 (83%)   | 48 (17%)   | 1           | 10 |
| 16  | pA    | 309/313 (99%)     | 272 (88%)   | 37 (12%)   | 4           | 21 |
| 16  | pB    | 309/313 (99%)     | 267 (86%)   | 42 (14%)   | 3           | 18 |
| 17  | q3    | 183/275 (66%)     | 148 (81%)   | 35 (19%)   | 1           | 7  |
| 17  | q4    | 183/275 (66%)     | 145 (79%)   | 38 (21%)   | 1           | 6  |
| 17  | q5    | 189/275 (69%)     | 146 (77%)   | 43 (23%)   | 0           | 4  |
| 17  | q7    | 189/275 (69%)     | 147 (78%)   | 42 (22%)   | 1           | 5  |
| 17  | q8    | 183/275 (66%)     | 145 (79%)   | 38 (21%)   | 1           | 6  |
| 17  | q9    | 189/275 (69%)     | 149 (79%)   | 40 (21%)   | 1           | 5  |
| All | All   | 70917/73573 (96%) | 63575 (90%) | 7342 (10%) | 8           | 26 |

5 of 7342 residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 7   | cI    | 572 | LEU  |
| 16  | pB    | 217 | GLU  |
| 8   | eB    | 138 | THR  |
| 16  | o6    | 337 | ASN  |
| 11  | hw    | 149 | GLU  |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 709 such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 7   | dV    | 501 | ASN  |
| 9   | gG    | 526 | GLN  |
| 8   | eB    | 394 | ASN  |
| 7   | dV    | 495 | ASN  |
| 8   | fR    | 336 | GLN  |

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

Of 6 ligands modelled in this entry, 6 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

### 5.7 Other polymers [i](#)

There are no such residues in this entry.

### 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

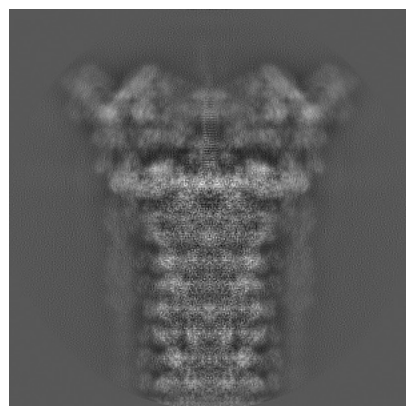
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-48459. These allow visual inspection of the internal detail of the map and identification of artifacts.

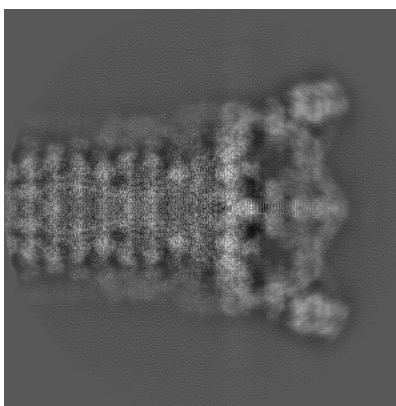
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

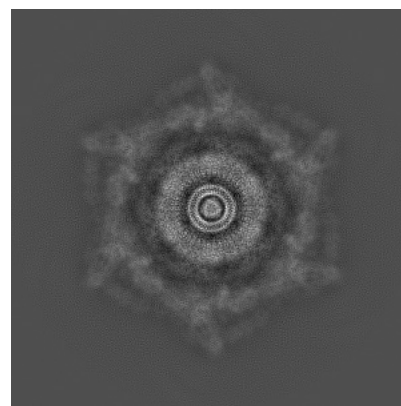
#### 6.1.1 Primary map



X

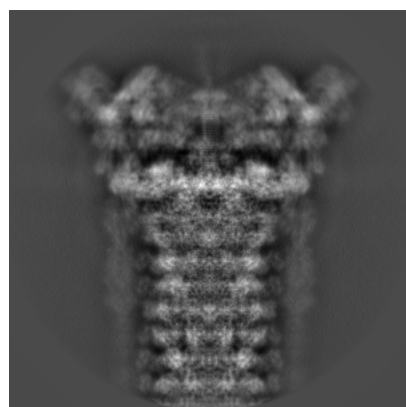


Y

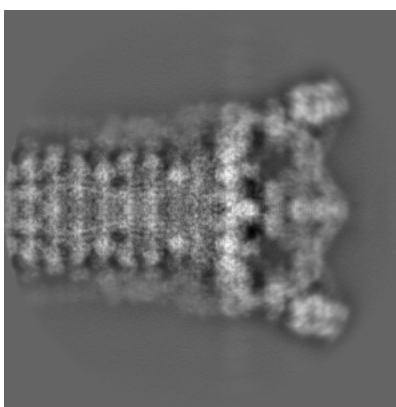


Z

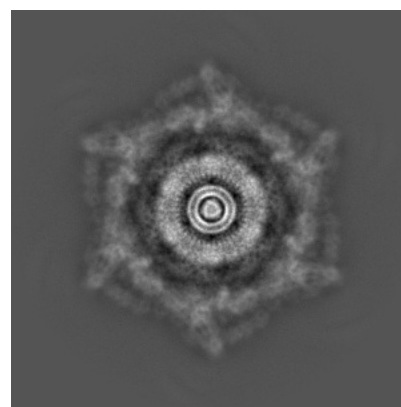
#### 6.1.2 Raw map



X



Y



Z

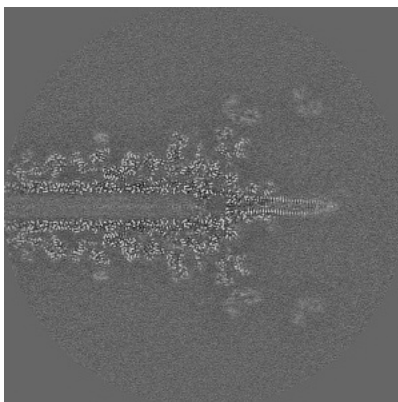
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

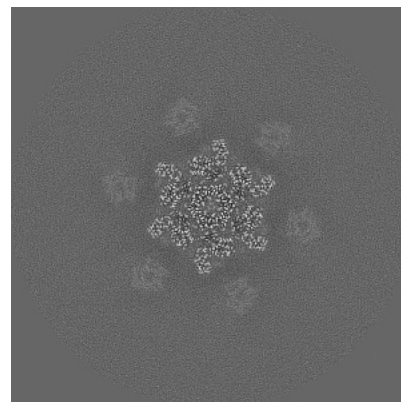
### 6.2.1 Primary map



X Index: 200

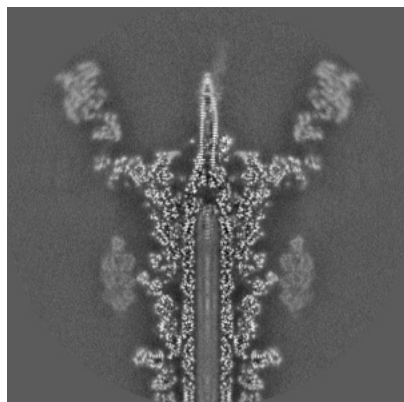


Y Index: 200

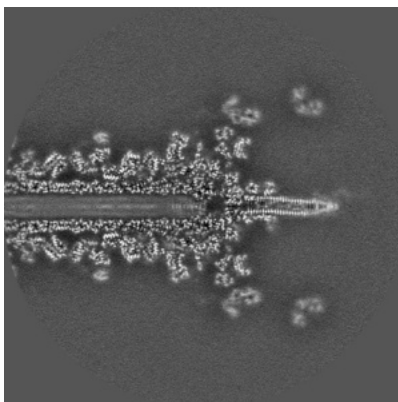


Z Index: 200

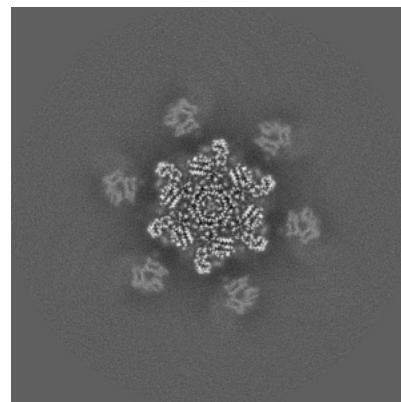
### 6.2.2 Raw map



X Index: 200



Y Index: 200

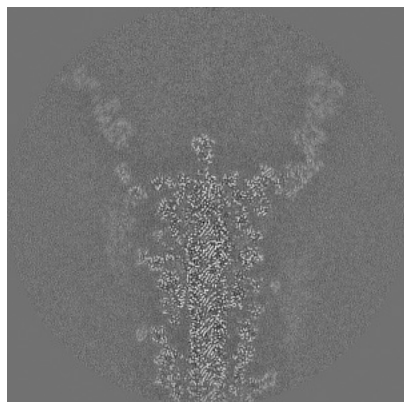


Z Index: 200

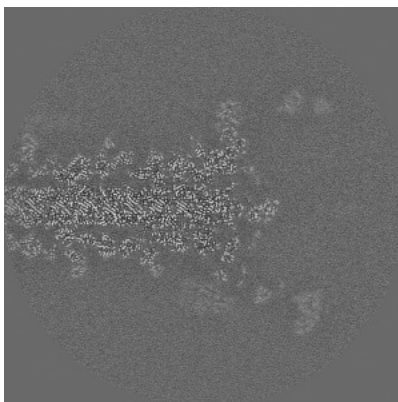
The images above show central slices of the map in three orthogonal directions.

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

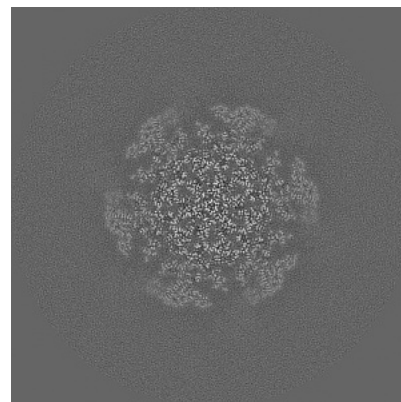
### 6.3.1 Primary map



X Index: 215

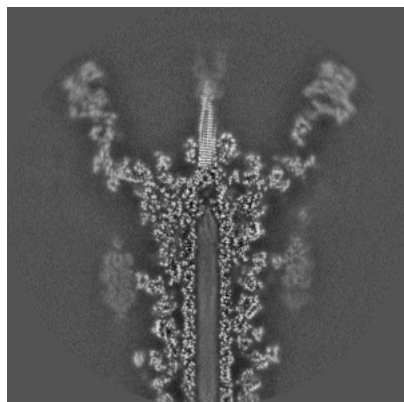


Y Index: 215

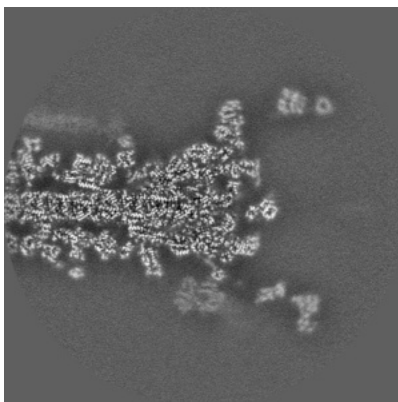


Z Index: 224

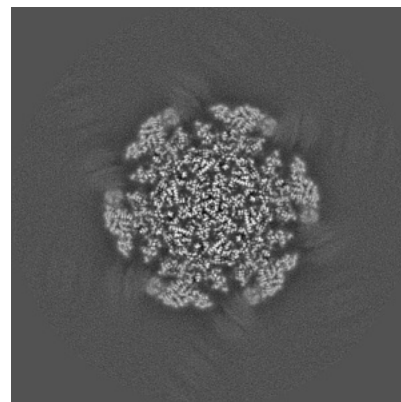
### 6.3.2 Raw map



X Index: 195



Y Index: 220

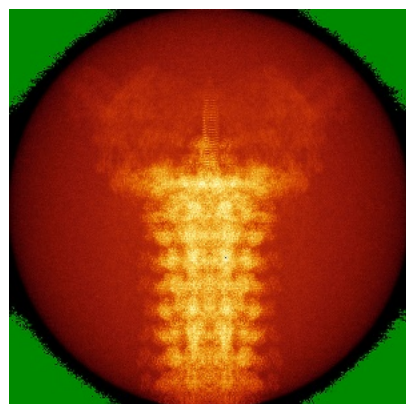


Z Index: 224

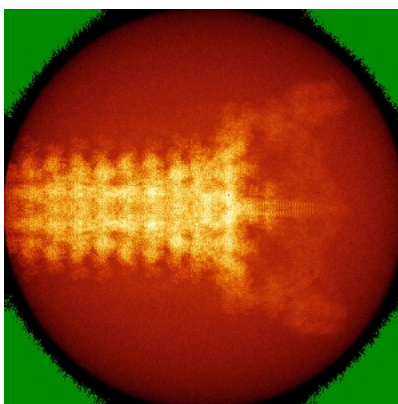
The images above show the largest variance slices of the map in three orthogonal directions.

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

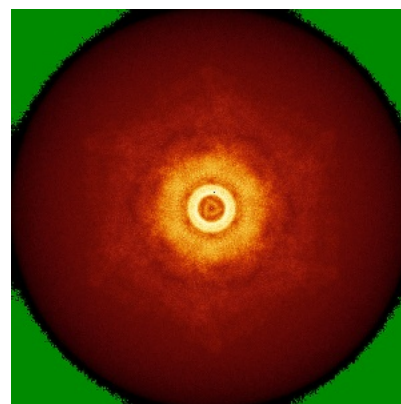
### 6.4.1 Primary map



X

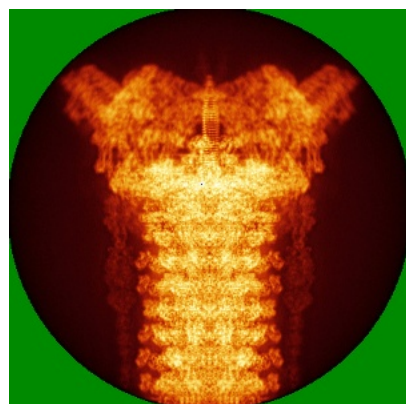


Y

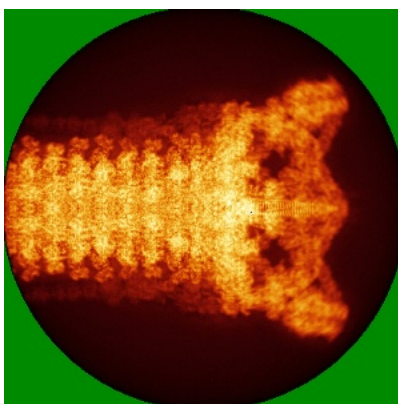


Z

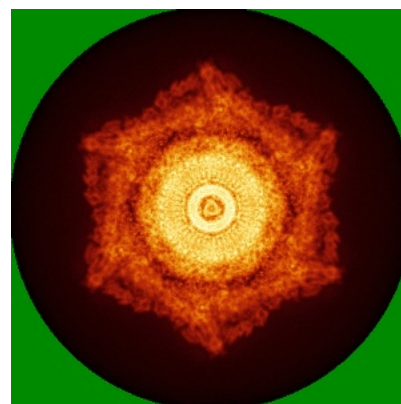
### 6.4.2 Raw map



X



Y

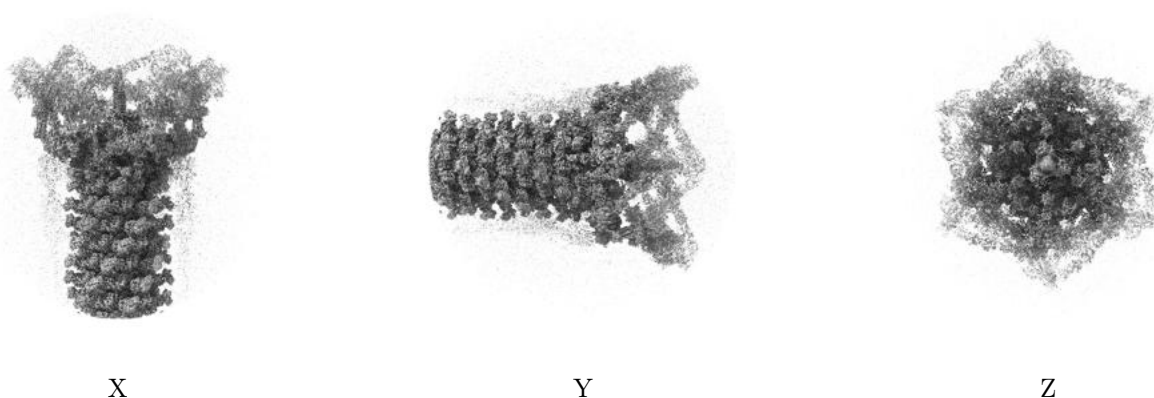


Z

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.

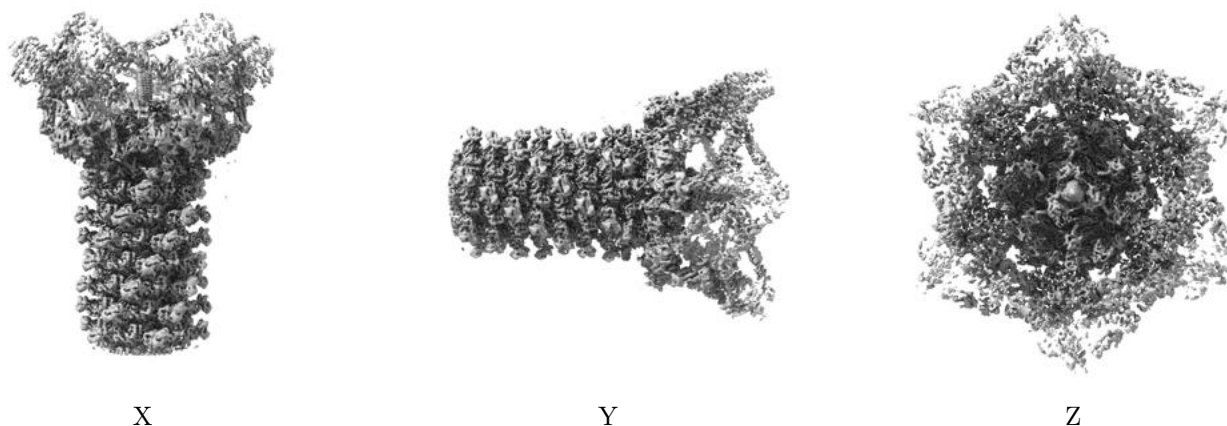
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.015. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

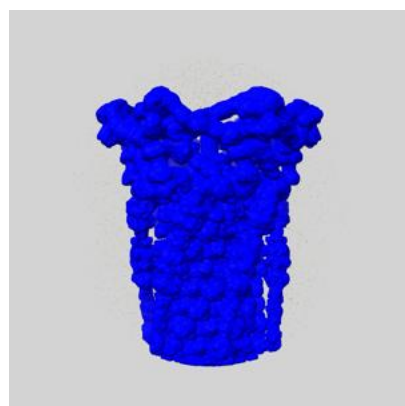
## 6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

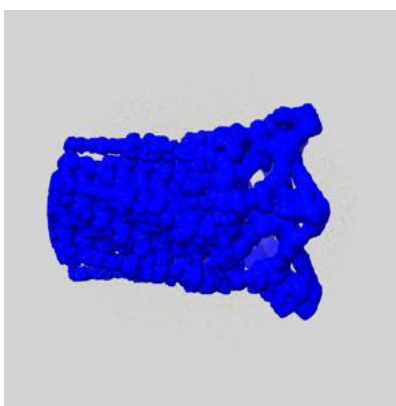
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

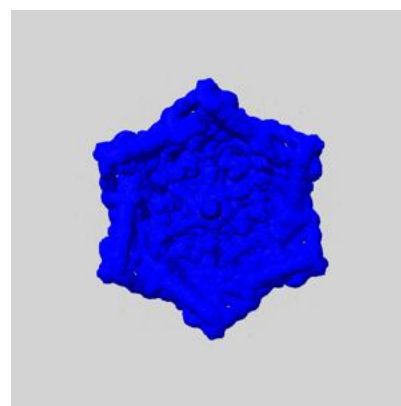
### 6.6.1 emd\_48459\_msk\_1.map [i](#)



X



Y

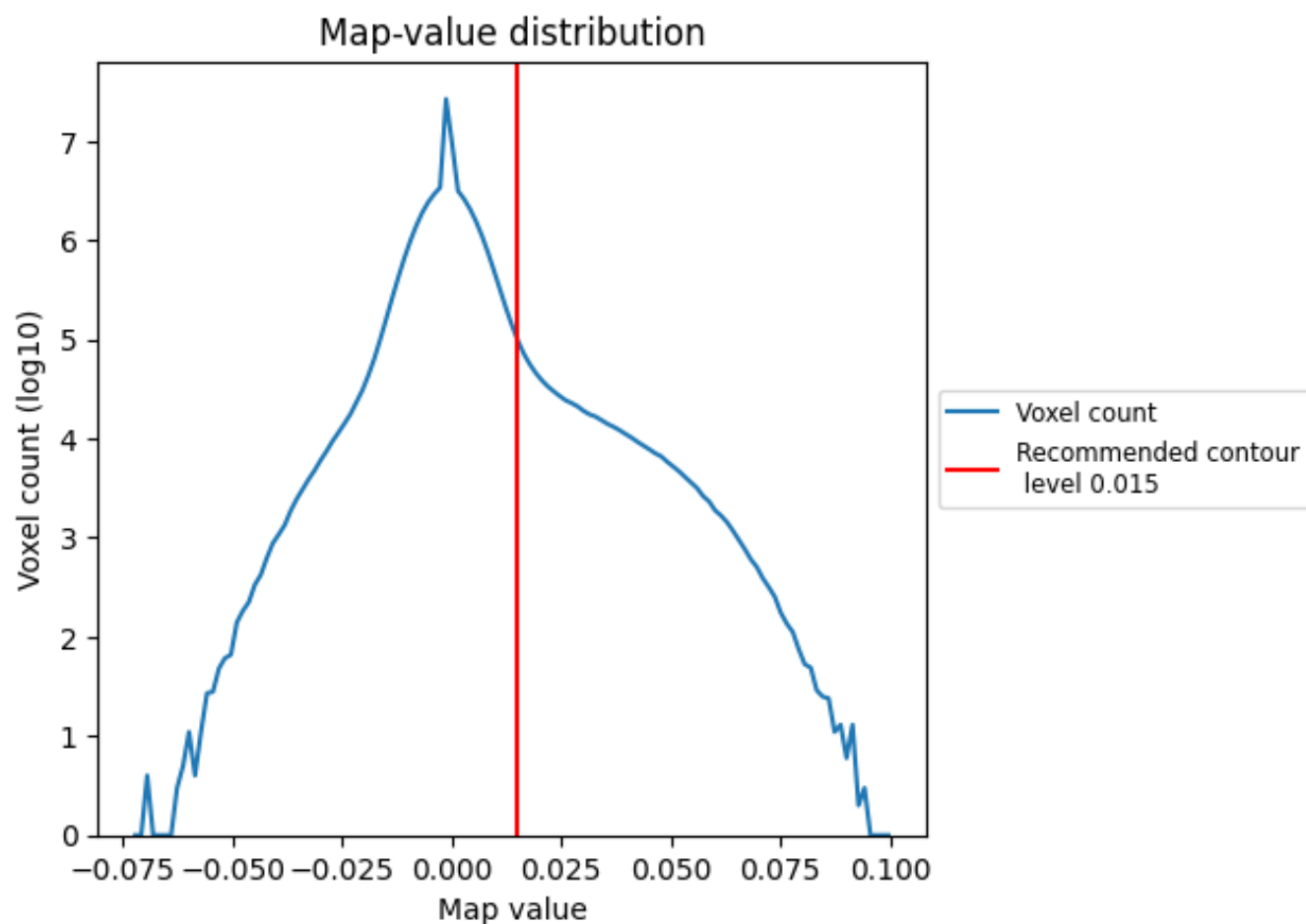


Z

## 7 Map analysis [i](#)

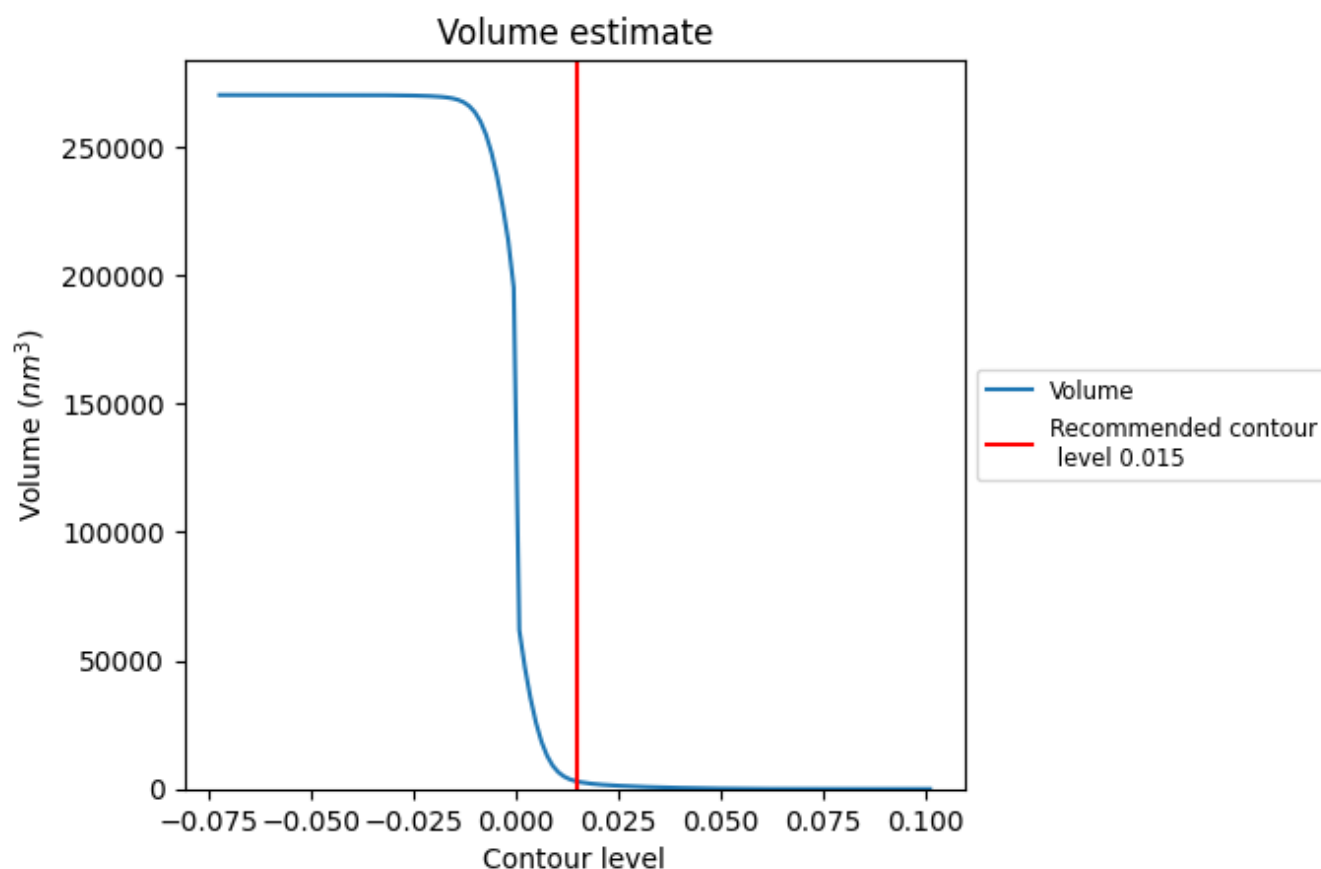
This section contains the results of statistical analysis of the map.

### 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.

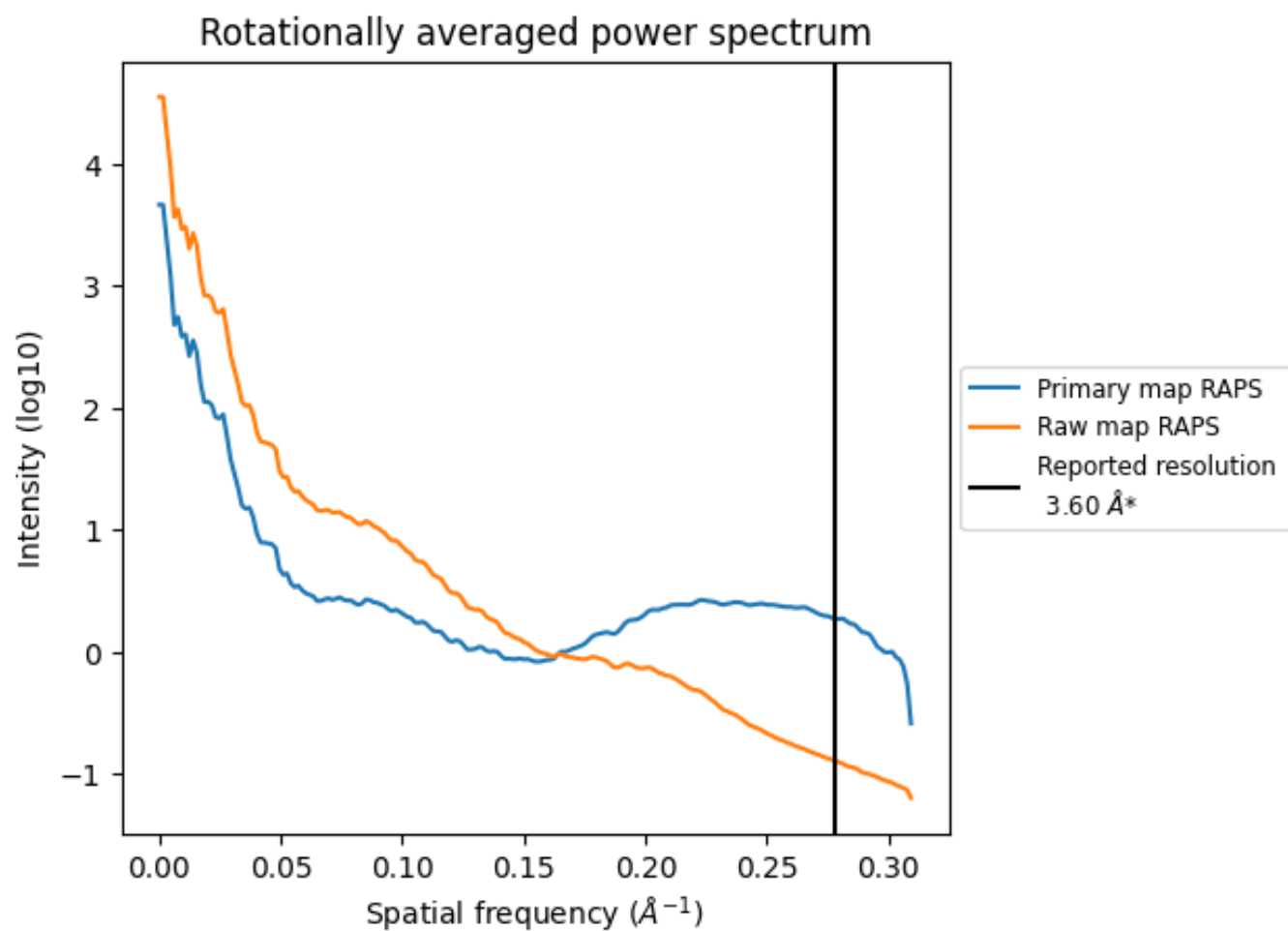
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 2938 nm<sup>3</sup>; this corresponds to an approximate mass of 2654 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 ⓘ

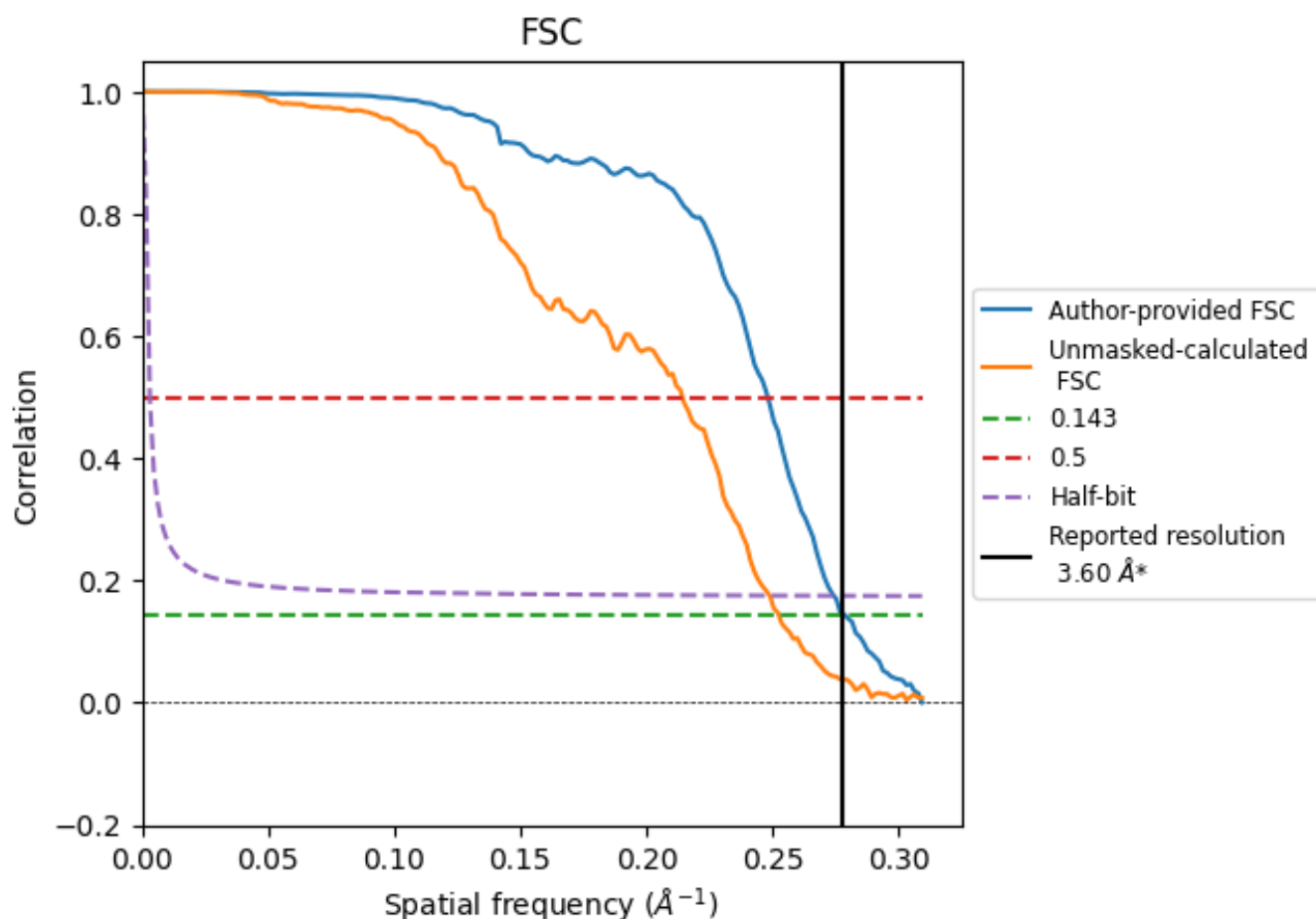


\*Reported resolution corresponds to spatial frequency of 0.278 Å<sup>-1</sup>

## 8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of 0.278  $\text{\AA}^{-1}$

## 8.2 Resolution estimates [i](#)

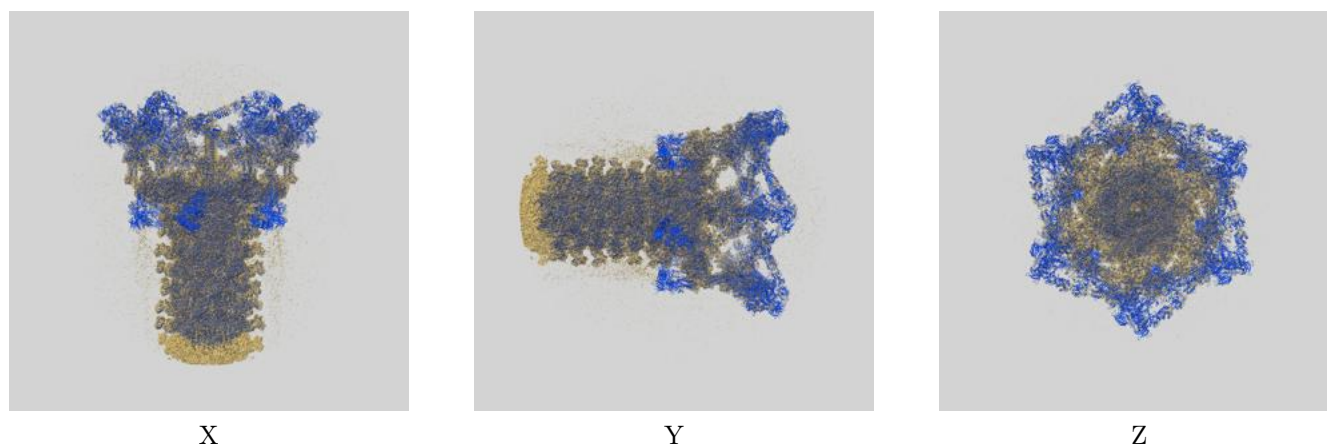
| Resolution estimate (Å)   | Estimation criterion (FSC cut-off) |      |          |
|---------------------------|------------------------------------|------|----------|
|                           | 0.143                              | 0.5  | Half-bit |
| Reported by author        | 3.60                               | -    | -        |
| Author-provided FSC curve | 3.59                               | 4.03 | 3.64     |
| Unmasked-calculated*      | 3.96                               | 4.67 | 4.02     |

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

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

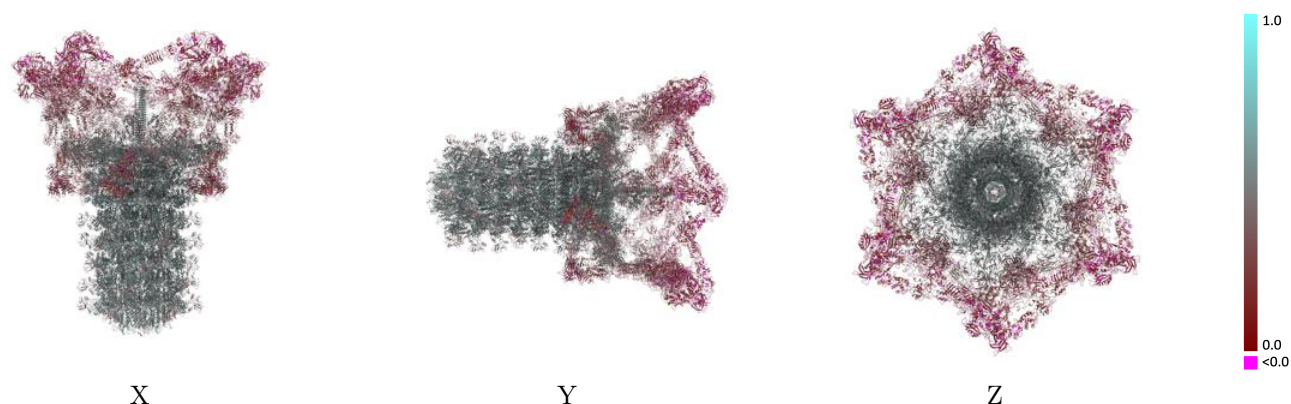
This section contains information regarding the fit between EMDB map EMD-48459 and PDB model 9MOG. Per-residue inclusion information can be found in [section 3](#) on [page 28](#).

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



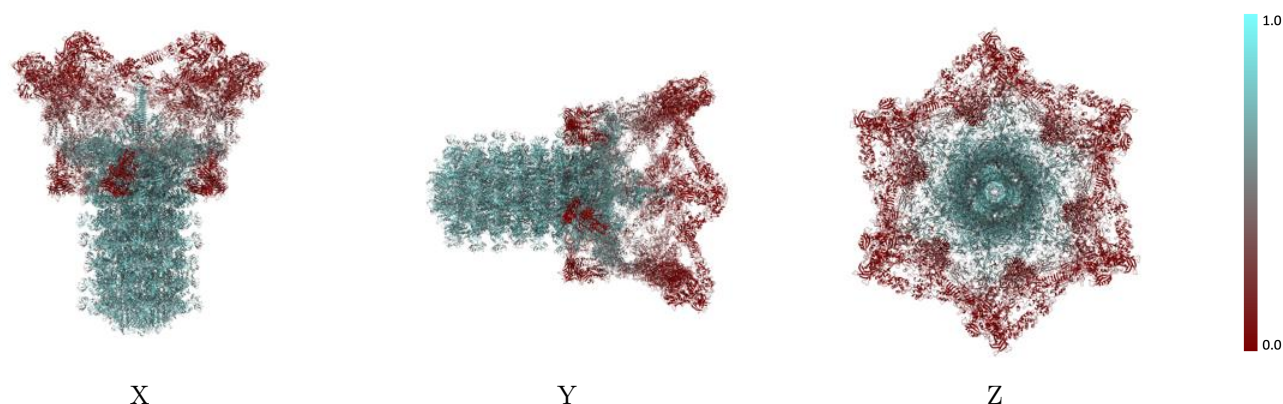
The images above show the 3D surface view of the map at the recommended contour level 0.015 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



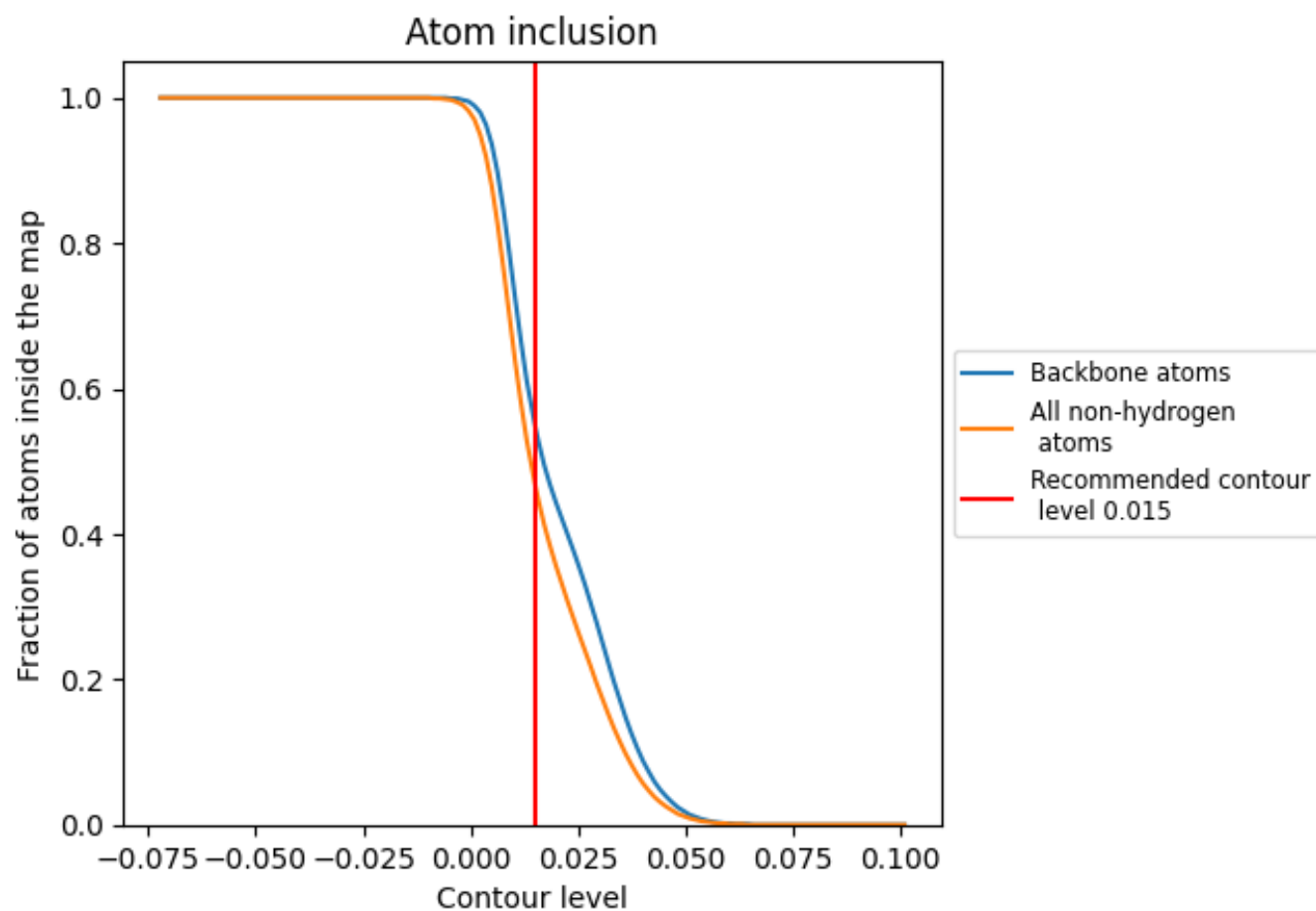
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.015).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 55% of all backbone atoms, 47% 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 (0.015) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion                                                                             | Q-score                                                                                    |
|-------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| All   |  0.4690   |  0.4040   |
| S0    |  0.0420   |  0.1890   |
| S1    |  0.0590   |  0.2030   |
| S2    |  0.0580   |  0.1830   |
| S3    |  0.0560   |  0.1970   |
| S4    |  0.0570   |  0.2040   |
| S5    |  0.0580   |  0.1910   |
| S6    |  0.0600   |  0.1860   |
| S7    |  0.0590   |  0.1820   |
| S8    |  0.0600   |  0.1920   |
| SA    |  0.0550   |  0.1920   |
| SO    |  0.0640   |  0.1960   |
| SP    |  0.0600   |  0.1830   |
| SQ    |  0.0500   |  0.1960   |
| Sv    |  0.0570  |  0.2010  |
| Sw    |  0.0590 |  0.1960 |
| Sx    |  0.0590 |  0.1860 |
| Sy    |  0.0630 |  0.1790 |
| Sz    |  0.0570 |  0.1960 |
| T1    |  0.0190 |  0.2460 |
| T2    |  0.0190 |  0.2560 |
| T3    |  0.0180 |  0.2570 |
| T4    |  0.0200 |  0.2460 |
| T5    |  0.0200 |  0.2430 |
| T6    |  0.0230 |  0.2630 |
| T7    |  0.0320 |  0.2640 |
| T8    |  0.0220 |  0.2580 |
| T9    |  0.0310 |  0.2790 |
| TF    |  0.0170 |  0.2440 |
| TG    |  0.0260 |  0.2610 |
| TH    |  0.0270 |  0.2780 |
| Td    |  0.0220 |  0.2400 |
| Te    |  0.0240 |  0.2420 |
| Tf    |  0.0230 |  0.2580 |
| Tg    |  0.0330 |  0.2620 |



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| Chain | Atom inclusion                                                                             | Q-score                                                                                    |
|-------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Th    |  0.0230   |  0.2640   |
| Ti    |  0.0280   |  0.2760   |
| UL    |  0.0270   |  0.1850   |
| UM    |  0.0190   |  0.1690   |
| UN    |  0.0260   |  0.1630   |
| Up    |  0.0220   |  0.1830   |
| Uq    |  0.0230   |  0.1750   |
| Ur    |  0.0250   |  0.1580   |
| Us    |  0.0210   |  0.1640   |
| Ut    |  0.0360   |  0.1680   |
| Uu    |  0.0290   |  0.1560   |
| VL    |  0.0220   |  0.1790   |
| VM    |  0.0240   |  0.1590   |
| VN    |  0.0300   |  0.1690   |
| Vp    |  0.0210   |  0.1850   |
| Vq    |  0.0300   |  0.1800   |
| Vr    |  0.0240   |  0.1550   |
| Vs    |  0.0160  |  0.1640  |
| Vt    |  0.0330 |  0.1680 |
| Vu    |  0.0330 |  0.1610 |
| WI    |  0.1340 |  0.2510 |
| WJ    |  0.1610 |  0.2510 |
| WK    |  0.1630 |  0.2650 |
| Wj    |  0.1360 |  0.2540 |
| Wk    |  0.1340 |  0.2500 |
| Wl    |  0.1580 |  0.2640 |
| Wm    |  0.1580 |  0.2510 |
| Wn    |  0.1520 |  0.2590 |
| Wo    |  0.1610 |  0.2640 |
| XI    |  0.1370 |  0.2480 |
| XJ    |  0.1540 |  0.2600 |
| XK    |  0.1560 |  0.2600 |
| Xj    |  0.1370 |  0.2510 |
| Xk    |  0.1360 |  0.2490 |
| Xl    |  0.1550 |  0.2610 |
| Xm    |  0.1650 |  0.2500 |
| Xn    |  0.1560 |  0.2600 |
| Xo    |  0.1630 |  0.2610 |
| YC    |  0.5110 |  0.4190 |
| YX    |  0.5230 |  0.4210 |
| YY    |  0.5130 |  0.4190 |
| Yc    |  0.5180 |  0.4190 |

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| Chain | Atom inclusion                                                                             | Q-score                                                                                    |
|-------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Yx    |  0.5130   |  0.4190   |
| Yy    |  0.5160   |  0.4180   |
| ZD    |  0.5180   |  0.4190   |
| ZE    |  0.6070   |  0.4770   |
| ZZ    |  0.5250   |  0.4250   |
| Za    |  0.5040   |  0.4170   |
| Zb    |  0.6070   |  0.4740   |
| Zc    |  0.6030   |  0.4770   |
| aD    |  0.5220   |  0.4270   |
| aE    |  0.6080   |  0.4720   |
| aZ    |  0.5270   |  0.4290   |
| aa    |  0.5210   |  0.4210   |
| ab    |  0.6120   |  0.4730   |
| ac    |  0.6140   |  0.4750   |
| b0    |  0.6990   |  0.5000   |
| b3    |  0.6620   |  0.4880   |
| b4    |  0.6540   |  0.4830   |
| b5    |  0.6660   |  0.4880   |
| b6    |  0.6580   |  0.4820   |
| b7    |  0.6650  |  0.4860  |
| b8    |  0.7020 |  0.5000 |
| b9    |  0.7030 |  0.4990 |
| bN    |  0.7160 |  0.5180 |
| bO    |  0.7150 |  0.5190 |
| bP    |  0.7180 |  0.5220 |
| bQ    |  0.7140 |  0.5170 |
| bR    |  0.7150 |  0.5170 |
| bY    |  0.7150 |  0.5200 |
| cA    |  0.7000 |  0.4970 |
| cB    |  0.6960 |  0.5000 |
| cC    |  0.7110 |  0.5050 |
| cD    |  0.7100 |  0.5060 |
| cE    |  0.6580 |  0.4850 |
| cF    |  0.6990 |  0.4970 |
| cG    |  0.7070 |  0.5060 |
| cH    |  0.7010 |  0.5040 |
| cI    |  0.7090 |  0.5030 |
| cJ    |  0.7120 |  0.5070 |
| cK    |  0.7090 |  0.5060 |
| cL    |  0.7030 |  0.5020 |
| cM    |  0.7000 |  0.5040 |
| cN    |  0.7030 |  0.5020 |

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| Chain | Atom inclusion                                                                             | Q-score                                                                                    |
|-------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| cO    |  0.6970   |  0.5030   |
| cP    |  0.7050   |  0.5040   |
| dS    |  0.7200   |  0.5230   |
| dT    |  0.7080   |  0.5160   |
| dU    |  0.7230   |  0.5230   |
| dV    |  0.7070   |  0.5180   |
| dW    |  0.7250   |  0.5210   |
| dZ    |  0.7060   |  0.5170   |
| eB    |  0.6930   |  0.5040   |
| eU    |  0.6930   |  0.5080   |
| eW    |  0.6870   |  0.5030   |
| f9    |  0.6960   |  0.5080   |
| fA    |  0.6930   |  0.5020   |
| fB    |  0.6890   |  0.5050   |
| fR    |  0.6950   |  0.5080   |
| fS    |  0.6970   |  0.5090   |
| fU    |  0.6870   |  0.5070   |
| fW    |  0.6920   |  0.5030   |
| fr    |  0.6970  |  0.5070  |
| fs    |  0.6890 |  0.5050 |
| gE    |  0.7630 |  0.5270 |
| gG    |  0.7660 |  0.5280 |
| gH    |  0.7660 |  0.5320 |
| gd    |  0.4620 |  0.3220 |
| h1    |  0.7530 |  0.5420 |
| h2    |  0.7560 |  0.5430 |
| hI    |  0.7500 |  0.5450 |
| hJ    |  0.7370 |  0.5400 |
| hK    |  0.7510 |  0.5440 |
| hL    |  0.7520 |  0.5430 |
| hM    |  0.7590 |  0.5430 |
| hX    |  0.7400 |  0.5400 |
| he    |  0.6810 |  0.5200 |
| hf    |  0.6890 |  0.5250 |
| hg    |  0.6850 |  0.5200 |
| hh    |  0.6790 |  0.5200 |
| hi    |  0.6870 |  0.5220 |
| hj    |  0.7290 |  0.5300 |
| hk    |  0.7330 |  0.5280 |
| hl    |  0.7330 |  0.5350 |
| hm    |  0.7180 |  0.5280 |
| hn    |  0.7370 |  0.5310 |

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| Chain | Atom inclusion                                                                             | Q-score                                                                                    |
|-------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| ho    |  0.7630   |  0.5460   |
| hp    |  0.7490   |  0.5380   |
| hq    |  0.7610   |  0.5420   |
| hr    |  0.7600   |  0.5410   |
| hs    |  0.7610   |  0.5400   |
| ht    |  0.6810   |  0.5190   |
| hu    |  0.7260   |  0.5290   |
| hv    |  0.7560   |  0.5430   |
| hw    |  0.7590   |  0.5410   |
| hx    |  0.7640   |  0.5460   |
| hy    |  0.7540   |  0.5380   |
| hz    |  0.7560   |  0.5450   |
| iC    |  0.7410   |  0.5500   |
| iD    |  0.7460   |  0.5490   |
| iF    |  0.7460   |  0.5510   |
| ja    |  0.6930   |  0.5360   |
| jb    |  0.6790   |  0.5300   |
| jc    |  0.6930   |  0.5190   |
| k3    |  0.7310  |  0.5280  |
| k4    |  0.7290 |  0.5290 |
| k7    |  0.7290 |  0.5310 |
| k8    |  0.7320 |  0.5280 |
| kV    |  0.7280 |  0.5310 |
| lV    |  0.7360 |  0.5290 |
| m1    |  0.6870 |  0.5190 |
| m2    |  0.6120 |  0.5020 |
| m5    |  0.6800 |  0.5200 |
| m6    |  0.6040 |  0.5030 |
| mT    |  0.6070 |  0.5010 |
| nT    |  0.6790 |  0.5160 |
| o0    |  0.6560 |  0.5310 |
| o1    |  0.6070 |  0.5080 |
| o2    |  0.6150 |  0.5110 |
| o6    |  0.6080 |  0.5110 |
| pA    |  0.6700 |  0.5370 |
| pB    |  0.6660 |  0.5300 |
| q3    |  0.7390 |  0.5420 |
| q4    |  0.7450 |  0.5420 |
| q5    |  0.7400 |  0.5450 |
| q7    |  0.7430 |  0.5460 |
| q8    |  0.7440 |  0.5470 |
| q9    |  0.7430 |  0.5450 |

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| Chain | Atom inclusion                                                                           | Q-score                                                                                  |
|-------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| rc    |  0.8000 |  0.5480 |
| rd    |  0.8240 |  0.5430 |
| re    |  0.7920 |  0.5290 |
| rf    |  0.8000 |  0.5480 |
| rg    |  0.8080 |  0.5310 |
| rh    |  0.8080 |  0.5370 |
| sQ    |  0.6220 |  0.5320 |
| sT    |  0.5890 |  0.5290 |
| sU    |  0.6000 |  0.5100 |
| tS    |  0.7600 |  0.5060 |
| tX    |  0.6600 |  0.4860 |
| tY    |  0.7000 |  0.5000 |
| uR    |  0.6290 |  0.5540 |
| uV    |  0.7140 |  0.5230 |
| uW    |  0.6860 |  0.5260 |
| vZ    |  0.8440 |  0.5900 |
| va    |  0.8440 |  0.5800 |
| vb    |  0.8000 |  0.5640 |