n-gram analysis of biological sequences in R

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Introduction

Biological sequences

Long chains of amino acids (proteins) or nucleotides (RNA or DNA).

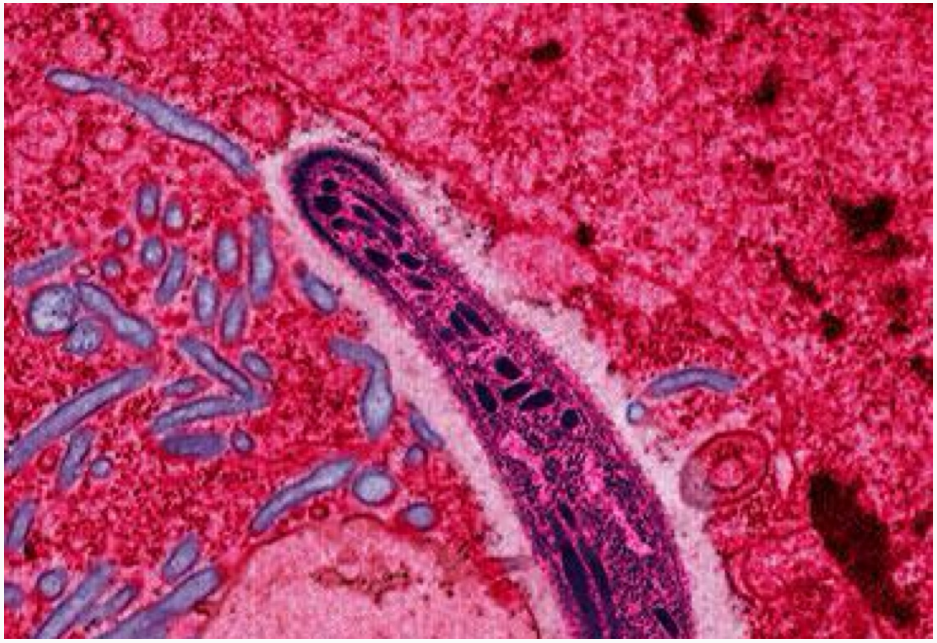
Sample protein sequence:

```
MRKLYCVLLLSAFEFTYMINFGRGQNYWEHPYQKSDVYHP

INEHREHPKEYQYPLHQEHTYQQEDSGEDENTLQHAYPID

HEGAEPAPQEQNLFSSIEIV...
```

Biological sequences



Plasmodium falciparum. Source: `http://www.protists.ensembl.org`

Protein of *Plasmodium falciparum*:

```
MRKLYCVLLLSAFEFTYMINFGRGQNYWEHPYQKSDVYHP

INEHREHPKEYQYPLHQEHTYQQEDSGEDENTLQHAYPID

HEGAEPAPQEQNLFSSIEIV...
```

Biological sequences

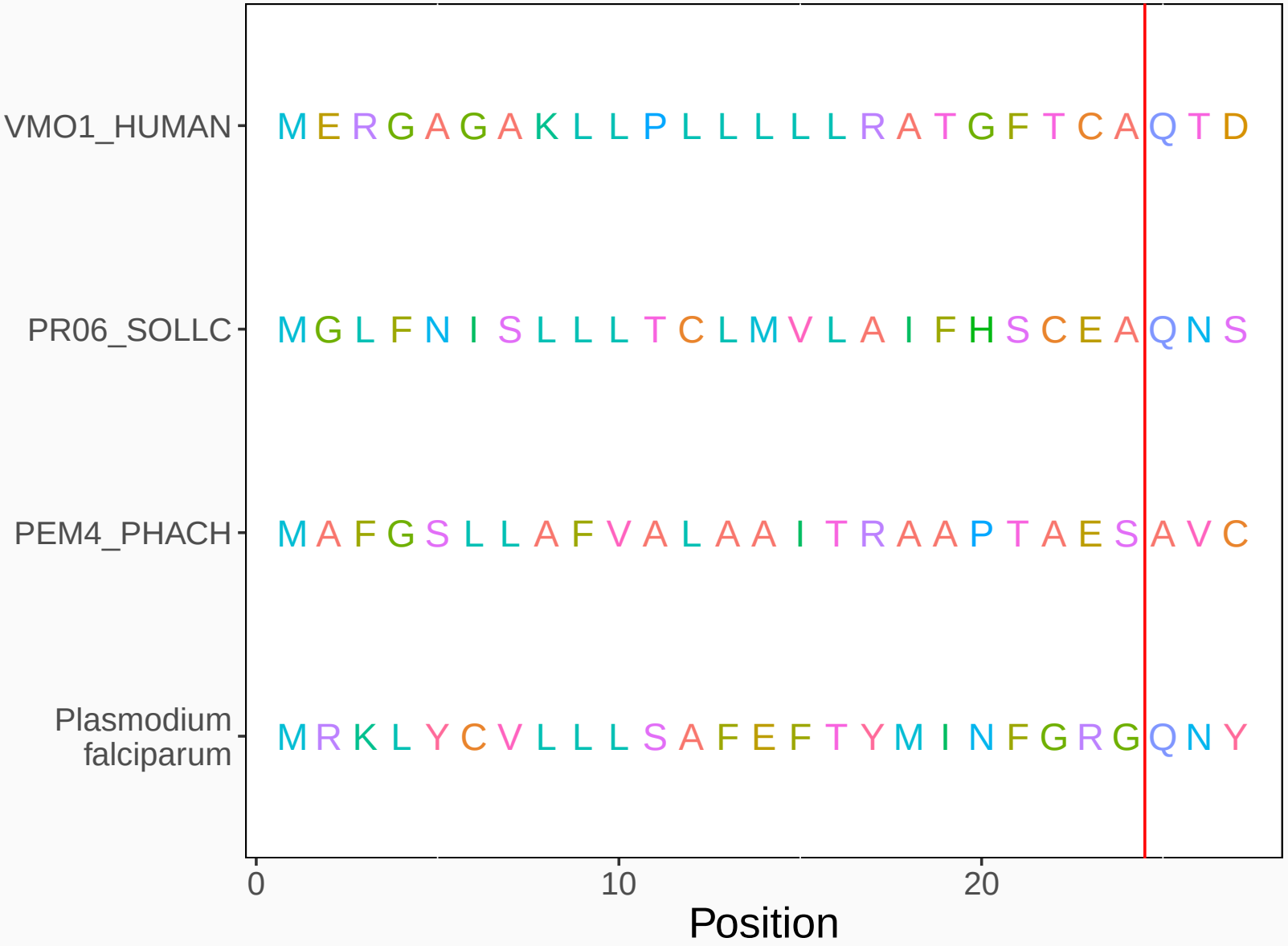
Signal peptide (red): n-terminal amino acid sequence directing proteins to the endomembrane system and next to extracellular localizations.

MRKLYCVLLLSAFEFTYMINFGRGQNYWEHPYQKSDVYHP

INEHREHPKEYQYPLHQEHTYQQEDSGEDENTLQHAYPID

HEGAEPAPQEQNLFSSIEIV...

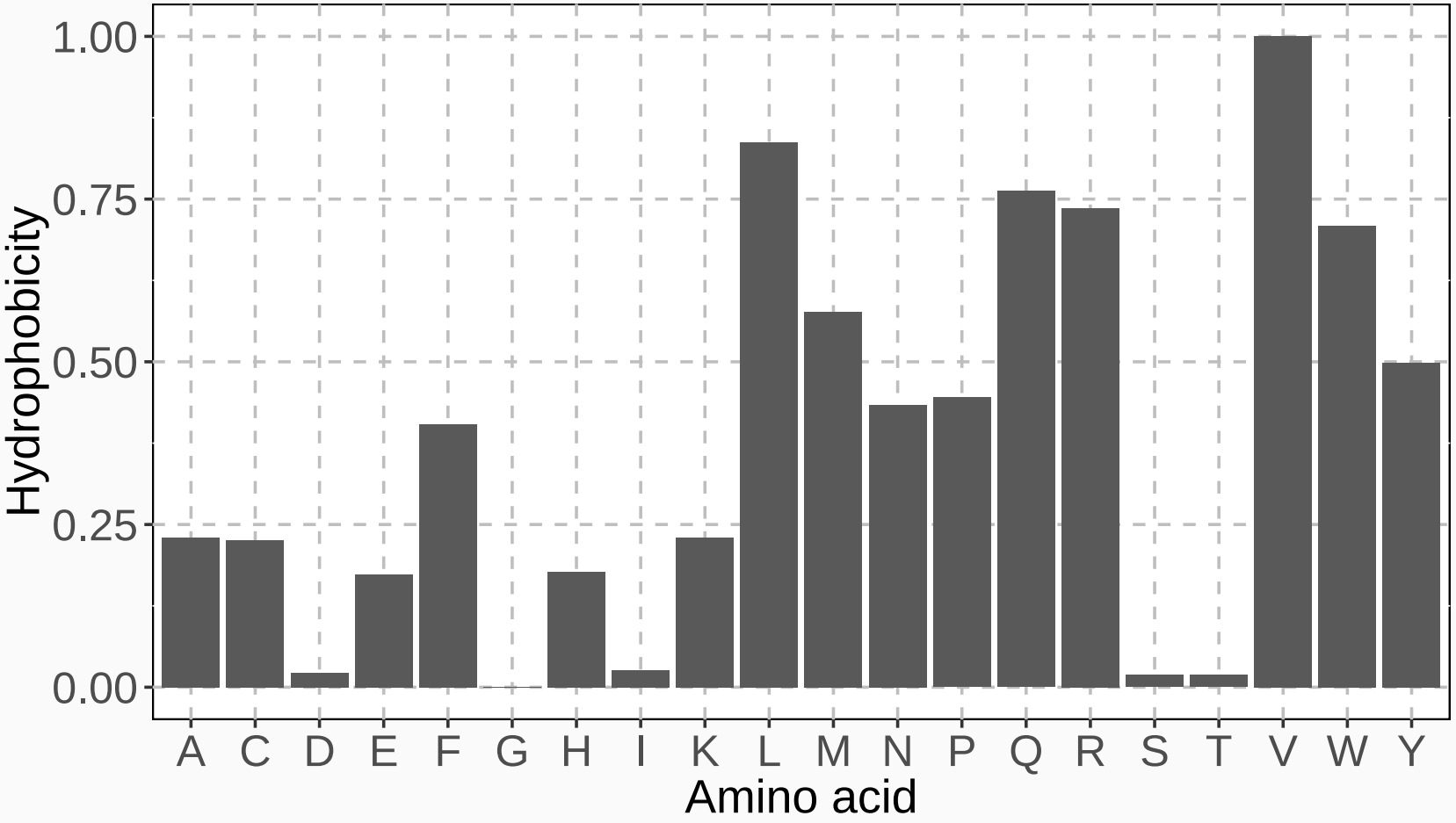
Biological sequences



n-grams

n-grams (k-tuples) are vectors of n characters derived from input sequence(s).

Properites of amino acids



Amino acids may be described using their physicochemical properites.

Biological sequences