ITBC BIOINFORMATICA

Bioinformatica course 1

Week 1:
Databases en sequenties

Onderwerpen

- Wat is bioinformatica?
- Sequenties
- FASTA files
- Databases

Wat is bioinformatica?

"Bioinformatics /ˌbaɪ.oʊ ˌɪnfərˈmætɪks/ is an interdisciplinary field that develops methods and software tools for understanding biological data. As an interdisciplinary field of science, bioinformatics combines computer science, statistics, mathematics, and engineering to analyze and interpret biological data. Bioinformatics has been used for *in silico* analyses of biological queries using mathematical and statistical techniques. Bioinformatics is both an umbrella term for the body of biological studies that use computer programming as part of their methodology, as well as a reference to specific analysis "pipelines."[1]

"Bioinformatics, a hybrid science that links biological data with techniques for information storage, distribution, and analysis to support multiple areas of scientific research."[2]

1"Bioinformatics". Wikipedia https://en.wikipedia.org/wiki/Bioinformatics. Geraadpleegd op 30-5-2017.

2"Bioinformatics". Encyclopaedia Brittanica https://www.britannica.com/science/bioinformatics. . Geraadpleegd op 30-5-2017.

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Databases

- Nucleotide database
- Protein database
- Structure database
- Gene database
- Literature database
- Pathway database
- Others

Sequenties

DNA sequenties	nucleotiden
mRNA sequenties	nucleotiden
Eiwit sequenties	aminozuren

FASTA files

Opslag van sequenties
Gestandaardiseerd format

>Header
Sequentie (in nucleotiden of aminozuren)

>NC_003071.7:c6983777-6982531 Arabidopsis thaliana chromosome 2 sequence
CTTTTCTTTAGTGTTTTGACTAATAATTGGTCAAGCCTACCATTACAAACTATGTTCCATTA
CCAGTACAAGCACATGGTTTCACTTTTTAACCAAGCAACT

>sp|P01542|CRAM_CRAAB Crambin OS=Crambe hispanica sub.
TTCCPSIVARSNFNVCRLPGTPEALCATYTGCIIIPGATCPGDYAN

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Databases

Uniprot: http://www.uniprot.org/
    Eiwitsequenties

GENE: https://www.ncbi.nlm.nih.gov/gene
    referentie sequenties voor protein, mRNA, genoom

NCBI-nucleotide: https://www.ncbi.nlm.nih.gov/nucleotide/
    mRNA, genome

Database demo

Gene database

zelf sequenties downloaden

VRAGEN?

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