CC 3.1.1: Introduction to DNA Translation

Introduction to DNA Translation: Question 1

1/1 point (graded)

Which of the following is NOT a nucleotide?

Adenine

Cytosine

Guanine

Lysine
correct

Thymine
correct

Explanation

Lysine is an amino acid, not a nucleic acid.

Introduction to DNA Translation: Question 2

1/1 point (graded)

What is the central dogma of molecular biology that describes the basic flow of genetic information?

DNA -> RNA -> Protein
correct

RNA -> DNA -> Protein

RNA -> RNA -> Protein

DNA -> Protein -> RNA

Explanation
While there are some additions/exceptions/variations to this, the basic flow of genetic information goes DNA to RNA to protein.

CC 3.1.2: Downloading DNA Data

Downloading DNA Data: Question 1

1/1 point (graded)

According to NCBI, what are the first 10 nucleotides of the gene with accession number NM_201917.1?

`taagtacgca`

`tacaacaacg`

`acatacaacg`

`gtaacaacca`

correct

`taaacgtact`

Explanation
Searching NCBI for NM_201917.1 will give you the gene sequence. You can look at the FASTA or the GenBank entry to view the sequence - the GenBank entry will give you additional information about the gene.

CC 3.1.3: Importing DNA Data Into Python

mporting DNA Data Into Python: Question 1

0/1 point (graded)

For a string `text`, what does the string method `text.replace("X","Y")` do?

It is a method that modifies the string by replacing all instances of `"X"` in the string with `"Y"`.

It is a method that creates a new string by replacing all instances of `"X"` in the string with `"Y"`.

correct

Explanation

Because strings are immutable objects, string methods do not modify the existing string but rather create a new object with the appropriate modifications.

CC 3.1.4: Translating the DNA Sequence

Translating the DNA Sequence: Question 1

1/1 point (graded)

Use `table` as defined as in Video 3.1.4. The file `table.py` is available for download here

External link

as well as below the video.

What is `table[“GCC"]`?

`A`
correct

`C`

`L`

`Y`
correct
Explanation
`table` translates codons into amino acids. GCC is the codon for alanine (A).

Translating the DNA Sequence: Question 2

1/1 point (graded)
What is `138 % 13`?

`138`

`18`

`13`

`8`
correct

`3`
Explanation
After dividing 138 by 13, the remainder is 8.

Translating the DNA Sequence: Question 3

1/1 point (graded)

Open a session of Python and follow the instructions in Video 3.1.2 to read in the NCBI DNA sequence with the accession number `NM_207618.2` and store as `seq`.

What does `seq[40:50]` return?

`GAACCTGACC`

`CAACCTGACA`

`CCTGAAAACC`

correct

`TGACCAACAC`

Translating the DNA Sequence: Question 4

1/1 point (graded)

What is a docstring?

A string containing documentation for core Python, available at python.org

A string that describes details about a module, function, class, or method accessed by `help()`

correct

An object type from the `docstring` library that contains useful functions for annotating strings

CC 3.1.5: Comparing Your Translation

Comparing Your Translation: Question 1

1/1 point (graded)

What does the `with` statement do?

It takes two files as arguments and returns a single joined file.

It opens a file and uses it for the subsequent block of code only, and then closes the file.

correct

It opens a library for use for the subsequent block of code only, and then detaches the libraries.

Comparing Your Translation: Question 2

1/1 point (graded)

Recall the final part of Video 3.1.5 regarding slicing. `translate` and `dna` are both as defined in that video.

What does `translate(dna[20:938])[:-1] == translate(dna[20:935])` return?

`True`

correct

`False`