

Module 0: Pre-Test

⚠ This is a preview of the published version of the quiz

Started: Mar 3 at 2:33pm

Quiz Instructions

This is a pre-test for the course, including several short questions and an external survey.

You must complete this pre-test before accessing any of the rest of the course materials.

You will receive points for completing this assignment, regardless of whether you answer the questions correctly or not, but please do your best on the questions with only your current knowledge (no open book) so that we can have a good idea about what you all know coming in to the course.



Question 1 1 pts

A cell line is used as a model system for laboratory research because they show some genetic similarities to the tumor type they were derived from.

☐

True

☐

False



Question 2 1 pts

The Cancer Cell Line Encyclopedia is a collection of cell lines derived from human tumors.

☐

True



False



Question 3 1 pts

Tumors produce all the oxygen and nutrients they need to grow larger.



True



False



Question 4 1 pts

Malignant tumors can develop the ability to spread into other regions of the body.



True



False



Question 5 1 pts

XY individuals can lose their Y chromosome in their cells over time as they age.



True



False



Question 6 1 pts

The Y chromosome is much shorter than the X chromosome.



True



False



Question 7 1 pts

Individuals with XX genotype will typically develop male reproductive organs.



True



False



Question 8 1 pts

Sex chromosomes do not have an effect on cancer susceptibility or progression.



True



False



Question 9 1 pts

RNA is reverse transcribed into cDNA prior to Illumina sequencing.



True



False



Question 10 1 pts

The sequencing reads of a gene in an RNA-seq experiment represent a proportion of the reads from that gene relative to all the RNA in the sample.

☐

True

☐

False



Question 11 1 pts

The sequencing reads of a gene in an RNA-seq experiment represent an absolute quantification of all the RNA expressed from that gene in the sample.

☐

True

☐

False



Question 12 1 pts

RNA sequencing results provide a snapshot of the genes expressed in specific cells in specific conditions.

☐

True

☐

False



Question 13 1 pts

Gene expression can vary with age, sex, growth factors, and environmental stimuli.

☐

True



False



Question 14 1 pts

There are several algorithms (software tools) available to align RNA sequencing reads to a reference genome or reference transcriptome.



True



False



Question 15 1 pts

All genes are encoded by DNA in chromosomes and are expressed in every cell of the body.



True



False



Question 16 1 pts

Gene expression is typically measured as the average number of reads mapping to a specific gene's coordinates in the genome.



True



False



Question 17 1 pts

XIST is a long non-coding RNA that blocks X chromosome inactivation in humans.



True



False



Question 18 1 pts

Inactive X chromosomes in XX female cells can be reactivated when forming a cell line.



True



False



Question 19 1 pts

Inactive X chromosomes in XX female cells can be reactivated in cancer.



True



False



Question 20 1 pts

Suppression of one X chromosome's gene expression in XX females is called X chromosome inactivation.



True



False



Question 21 1 pts

R Markdown is integrated into RStudio to make it easier to work with R code.

☐

True

☐

False



Question 22 1 pts

Code written in R is easy to read so you do not need to spend much time adding descriptive comments to your scripts.

☐

True

☐

False



Question 23 1 pts

You can print an R Markdown as a report with nicely formatted text, code, and plots.

☐

True

☐

False



Question 24 1 pts

Saving R scripts with the data you produced or analyzed allows you to easily reproduce, modify, and share your protocols for future work.

☐

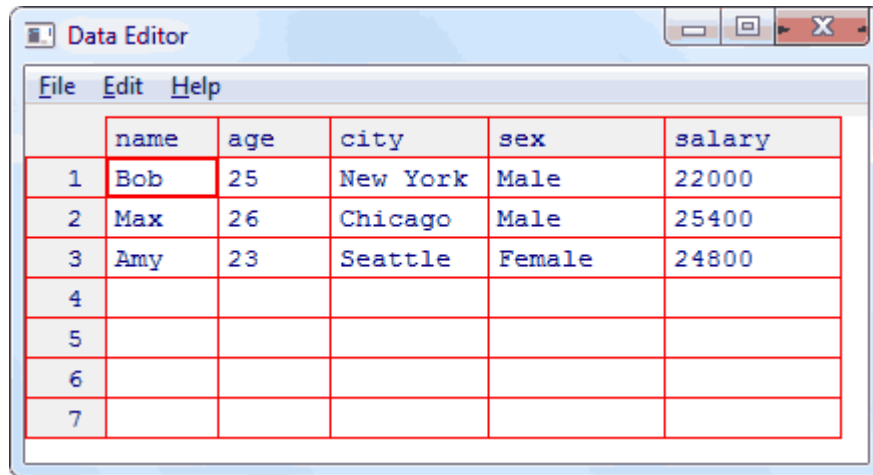
True

☐

False



Question 25 1 pts



	name	age	city	sex	salary
1	Bob	25	New York	Male	22000
2	Max	26	Chicago	Male	25400
3	Amy	23	Seattle	Female	24800
4					
5					
6					
7					

In the employees data frame above,

```
length(levels(factor(employees$city)))
```

would equal 3.



True



False



Question 26 1 pts

	name	age	city	sex	salary
1	Bob	25	New York	Male	22000
2	Max	26	Chicago	Male	25400
3	Amy	23	Seattle	Female	24800
4					
5					
6					
7					

In the

employees

data frame above,

employees\$Bob

would equal

["Bob",25,"New York","Male",22000]

☐

True

☐

False

⋮

Question 27 1 pts

	name	age	city	sex	salary
1	Bob	25	New York	Male	22000
2	Max	26	Chicago	Male	25400
3	Amy	23	Seattle	Female	24800
4					
5					
6					
7					

In the

employees

data frame above,

employees\$age

would be the same as

employees[2]

☐

True

☐

False

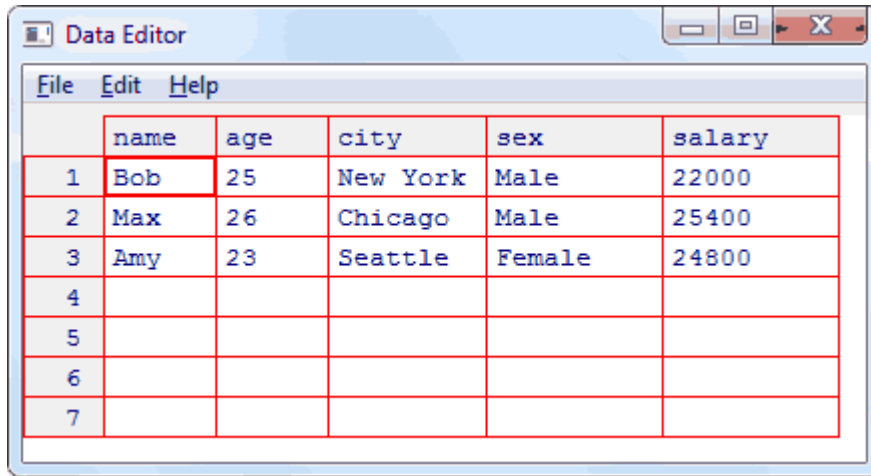
⋮

Question 28 1 pts

In the following R data frame called

employees, subset(employees, sex == "Male")

gives you a data frame with 2 rows and 5 columns.



	name	age	city	sex	salary
1	Bob	25	New York	Male	22000
2	Max	26	Chicago	Male	25400
3	Amy	23	Seattle	Female	24800
4					
5					
6					
7					

☐

True

☐

False

⋮

Question 29 1 pts

When a variable is created inside a function, it can and should be referenced outside of the body of that function.

☐

True

☐

False

⋮

Question 30 1 pts

```
for (i in 1:3){  
  squared = i ^ 2  
}
```

The value of 'squared' at the end of this loop is 6.



True



False



Question 31 1 pts

A for loop is used to iterate through a list of values performing some manipulation or function.



True



False



Question 32 1 pts

Once a function is written, any variable that contains data in the expected format can be passed in as input.



True



False



Question 33 1 pts

If

A = TRUE

and

B = FALSE,

then

A // B = FALSE

☐

True

☐

False



Question 34 1 pts

```
chrY_expression = 15
threshold = 10
if (chrY_expression > threshold) {
  sex = "male"
} else {
  sex = "female"
```

The value of

sex

after this code is executed is "male".

☐

True

☐

False



Question 35 1 pts

Multiple if statements can not be nested together; a separate if statement has to be written for each variable.

☐

True



False



Question 36 1 pts

An if statement can be used to make a choice based on the value of some variable.



True



False



Question 37 1 pts

These Linux commands will create a new subdirectory called 'project' inside the 'placenta' directory:

```
mkdir project/placenta
```



True



False



Question 38 1 pts

This Linux command will copy all text files to a 'code' directory from a project directory called 'RNA-seq' :

```
cp /home/user/code/*.txt /data/project/placenta/RNA-seq/
```



True



False



Question 39 1 pts

This Linux command will delete all text files in the 'CCLE_code' directory:

```
del CCLE_code/*.txt
```

☐

True

☐

False



Question 40 1 pts

This Linux command will rename 'cancer.txt' to 'CCLE_IDs.txt':

```
mv cancer.txt CCLE_IDs.txt
```

☐

True

☐

False



Question 41 1 pts

Authorship order when publishing a paper describing scientific research typically reflects the amount of creativity, work, and leadership given to the project.

☐

True

☐

False



Question 42 1 pts

The principal investigator of the laboratory where the work for a publication was done is typically listed last on the author list.

☐

True

☐

False



Question 43 1 pts

The first author of a publication is a coveted distinction that indicates that that author contributed to primary analysis, troubleshooting, writing, and finalizing of all components of the manuscript.

☐

True

☐

False



Question 44 1 pts

The status of corresponding author of a publication is important because it states who conducted all the correspondence with the journal's editorial team before publication.

☐

True

☐

False



Question 45 1 pts

The abstract of a scientific paper is a concise summary of the problem being addressed, the results attained, and the significance of the conclusions drawn.



True



False



Question 46 1 pts

The results and discussion sections of a paper must include a detailed background of previously published work that lead to the proposed experiments from which conclusions were drawn.



True



False



Question 47 1 pts

Figures in a scientific paper show the evidence used to make specific conclusions.



True



False



Question 48 1 pts

When reading a scientific paper, it is not important to read the methods of the paper since the results section details the conclusions that the authors reached.



True



False



Question 49 1 pts

When writing the discussion section of a scientific paper, it is important to state how the results of the paper are filling a gap in what is currently known about the topic.

☐

True

☐

False



Question 50 1 pts

The introduction of a scientific paper includes all of the learning you have done while working on the project being published.

☐

True

☐

False



Question 51 1 pts

When choosing figures to go into a publication, you should choose solely based on which ones look the most impressive and colorful to attract the reader's attention.

☐

True

☐

False



Question 52 1 pts

When writing the methods section of a scientific paper, you do not need to include the versions of any software used because one can expect a more recent version to give the same results as the versions available at the time of publication.



True



False



Question 53 1 pts

When tasked with a programming a solution to a specific data analysis problem, you should not look up solutions on the internet because no one else has had your exact problem.



True



False



Question 54 1 pts

To compose a search for how to solve a coding problem, we should include the programming language and the words to indicate the coding problem.



True



False



Question 55 1 pts

When interacting with other scientists in a scientific laboratory, it is best to only speak when spoken to.



True



False



Question 56 1 pts

If you find code online that seems to exactly address the problem you are trying to solve, you can expect it to work by copying and pasting it directly into your R script.



True

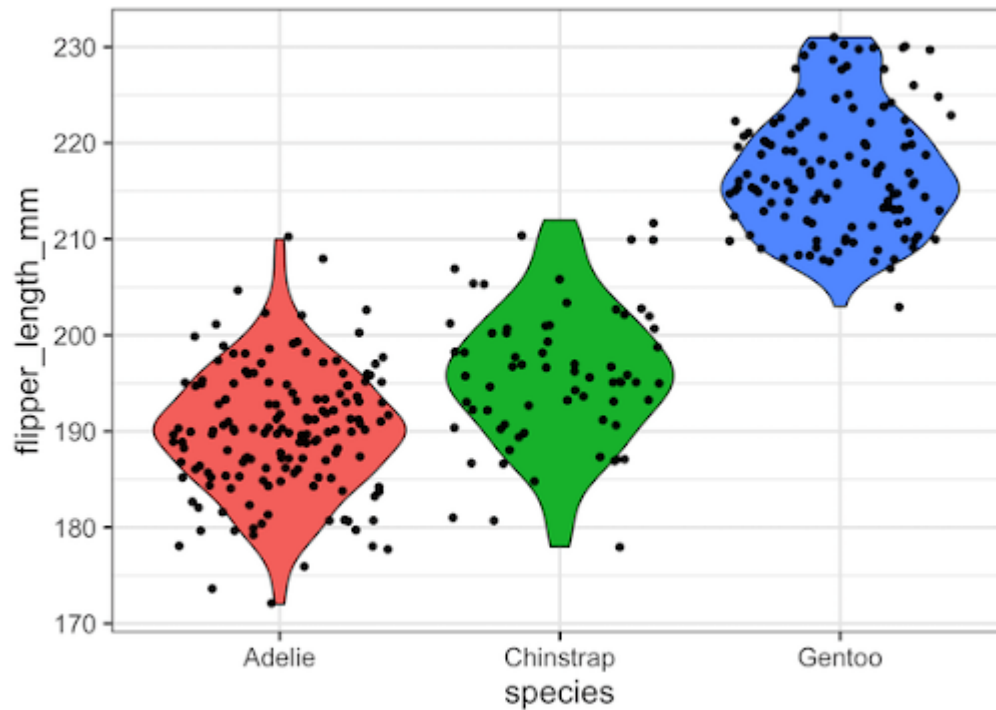


False



Question 57 1 pts

The following questions will refer to this plot which shows the expression of a specific gene *PNG* in skin samples taken from three types of penguins:



PNG expression is distinctly higher in Gentoo penguins.

☐

True

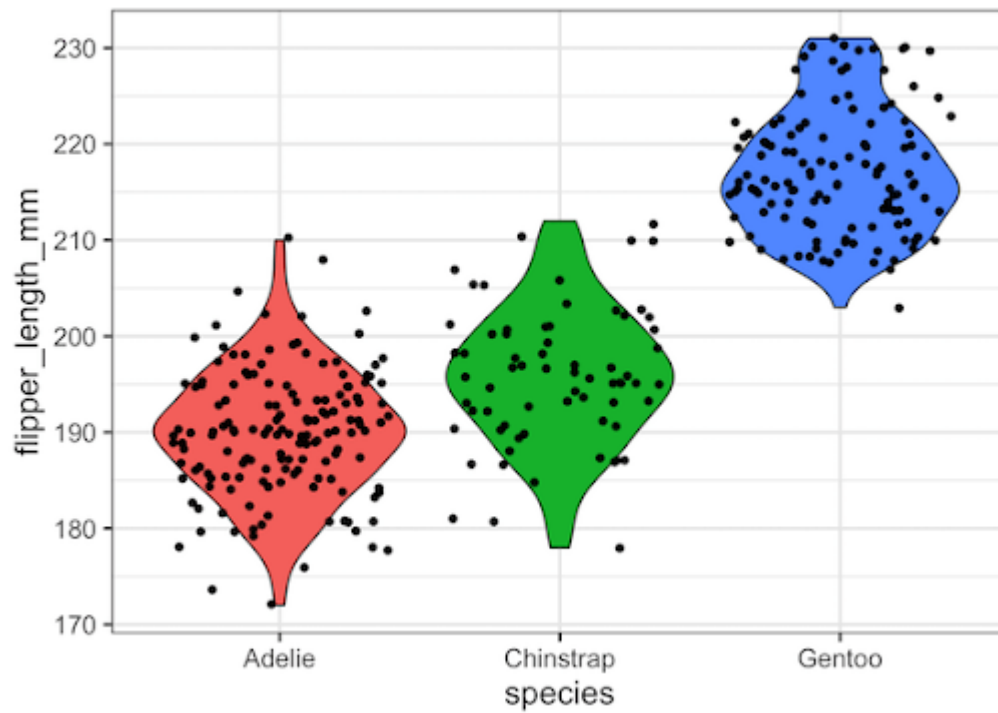
☐

False

⋮

Question 58 1 pts

The following questions will refer to this plot which shows the expression of a specific gene *PNG* in skin samples taken from three types of penguins:



More measurements of *PNG* were taken for Adelie and Gentoo penguins than for Chinstrap penguins.

☐

True

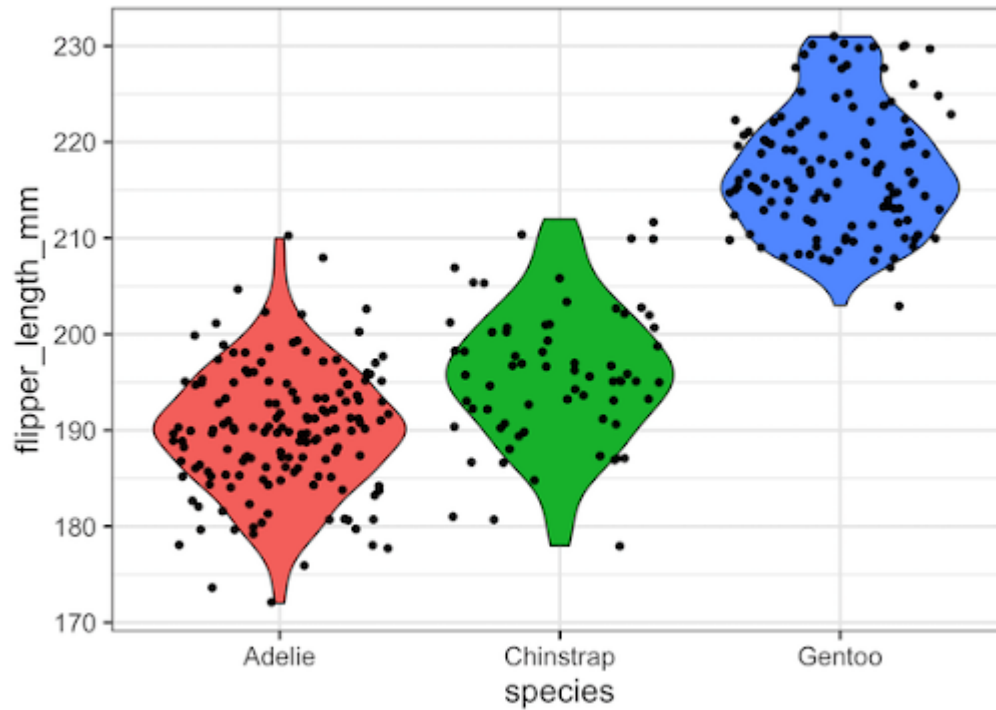
☐

False



Question 59 1 pts

The following questions will refer to this plot which shows the expression of a specific gene *PNG* in skin samples taken from three types of penguins:



The high end of *PNG* expression observed in Adelie penguins is the low end of *PNG* expression observed in Gentoo penguins.



True

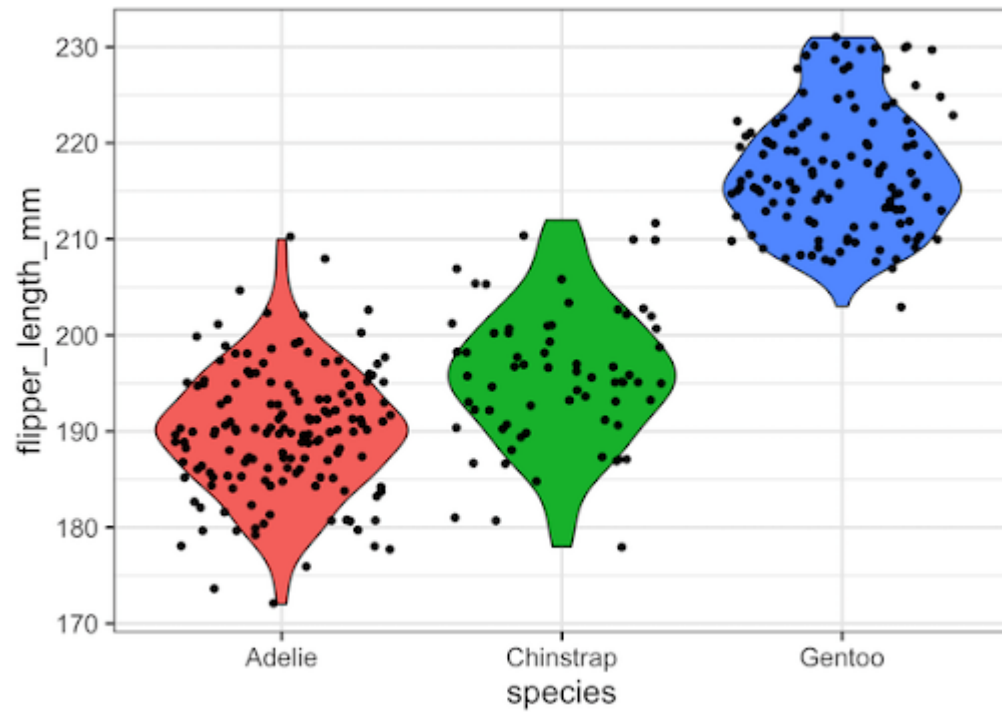


False



Question 60 1 pts

The following questions will refer to this plot which shows the expression of a specific gene *PNG* in skin samples taken from three types of penguins:



Average expression of *PNG* in Chinstrap penguins is 215.



True



False



Question 61 1 pts

How comfortable are you in writing a scientific paper?



Very uncomfortable



Uncomfortable

☐

Slightly uncomfortable

☐

Slightly comfortable

☐

Comfortable

☐

Very comfortable



Question 62 1 pts

How would you describe your level of coding expertise using any programming language?

☐

No experience

☐

Beginner

☐

Advanced beginner

☐

Competent

☐

Proficient

☐

Expert



Question 63 1 pts

How would you describe your comfort level with programming in R?

☐

Very uncomfortable

☐

Uncomfortable

☐

Slightly uncomfortable

☐

Slightly comfortable

☐

Comfortable

☐

Very comfortable



Question 64 1 pts

How would you describe your comfort level with using a command line interface to interact with a Linux/Unix command-line style environment?

☐

Very uncomfortable

☐

Uncomfortable

☐

Slightly uncomfortable

☐

Slightly comfortable

☐

Comfortable

☐

Very comfortable



Question 65 1 pts

How comfortable are you reading and interpreting a scientific paper?

☐

Very uncomfortable

☐

Uncomfortable

☐

Slightly uncomfortable

☐

Slightly comfortable

☐

Comfortable

☐

Very comfortable



Question 66 1 pts

How comfortable are you asking your peers coding questions in an open class forum?

☐

Very uncomfortable

☐

Uncomfortable

☐

Slightly uncomfortable

☐

Slightly comfortable

☐

Comfortable

☐

Very comfortable



Question 67 14 pts

Please go to this link and complete the survey. When you have completed the survey, return here and enter "True".

https://asucas.qualtrics.com/jfe/form/SV_3VDJK7TrHL1YOZo  (https://asucas.qualtrics.com/jfe/form/SV_3VDJK7TrHL1YOZo)

☐

True

☐

False

Not saved

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