

BB101 - Biology Quiz 2

1. Please go to the link <https://www.ncbi.nlm.nih.gov/gene/> and fill in the details in the table.

Gene ID	1956
Official Symbol	
Gene Location	
Exon Count	
Gene Type	
Expression in Skin (RPKM)	

a.

Official Symbol	TP53
Gene Location	7p 11.2
Exon Count	32
Gene Type	Non Coding
Expression in Skin (RPKM)	36.6

b.

Official Symbol	EGFR
Gene Location	7p 11.2
Exon Count	32
Gene Type	Non Coding
Expression in Skin (RPKM)	15.6

c.

Official Symbol	EGFR
Gene Location	7p 11.2
Exon Count	32
Gene Type	Protein Coding

Expression in Skin (RPKM)	15.6
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- Correct

d.

Official Symbol	EGFR
Gene Location	7p 11.2
Exon Count	36
Gene Type	Protein Expression
Expression in Skin (RPKM)	15.6

Passage:

Paste the following link for the nucleotide search using blastn:

https://blast.ncbi.nlm.nih.gov/Blast.cgi?PROGRAM=blastn&PAGE_TYPE=BlastSearch&LINK_LOC=blasthome

Copy and paste the following nucleotide sequence as a query:

ATGCGTACTTTAAAGCATCGGGGGGA

Keep all the parameters as default as you click on the “BLAST”.

2. Which of the following species has the maximum query coverage?
 - a. *Gobius niger* (Black goby)
 - b. *Andrena bicolor* (Gwynne’s mining bee) - Correct
 - c. *Arabidopsis thaliana* (Thale cress) - Correct
 - d. *Petrosia ficiformis* (Stony sponge)
3. Which of the following species has the highest total score?
 - a. *Andrena bicolor* (Gwynne’s mining bee) - Correct
 - b. *Stenoptilia bipunctidactyla* (Twin-spot plume)
 - c. *Herminia tarsipennalis* (Fan-foot)
 - d. *Petrosia ficiformis* (Stony sponge)

Passage:

Paste the following link for the multiple search alignment using Muscle:

<https://www.ebi.ac.uk/Tools/msa/muscle/>

Copy and paste the following FASTA sequences in the query:

- I. >sp|P01308|INS_HUMAN Insulin OS=Homo sapiens OX=9606 GN=INS PE=1 SV=1
MALWMRLLPLLALLALWGPDPAAAFVNQHLCGSHLVEALYLVCGERGFFYTPKTRR
EAED LQVGQVELGGGPGAGSLQPLALEGSLQKRGIVEQCCTSICSLYQLENYCN
- II. >sp|P01315|INS_PIG Insulin OS=Sus scrofa OX=9823 GN=INS PE=1 SV=2
MALWTRLLPLLALLALWAPAPAAAFVNQHLCGSHLVEALYLVCGERGFFYTPKARRE
AEN PQAGAVELGGGLGGLQALALEGPPQKRGIVEQCCTSICSLYQLENYCN
- III. >sp|P01318|INS_SHEEP Insulin OS=Ovis aries OX=9940 GN=INS PE=1 SV=2
MALWTRLVPLLALLALWAPAPAAAFVNQHLCGSHLVEALYLVCGERGFFYTPKARRE
VEG PQVGALELAGGPGAGGLEGPPQKRGIVEQCCAGVCSLYQLENYCN
- IV. >sp|Q6YK33|INS_GORGO Insulin OS=Gorilla gorilla gorilla OX=9595 GN=INS PE=3
SV=1
MALWMRLLPLLALLALWGPDPAAAFVNQHLCGSHLVEALYLVCGERGFFYTPKTRR
EAED LQVGQVELGGGPGAGSLQPLALEGSLQKRGIVEQCCTSICSLYQLENYCN
- V. >sp|P01322|INS1_RAT Insulin-1 OS=Rattus norvegicus OX=10116 GN=Ins1 PE=1
SV=1
MALWMRFLPLLALLVLWEPKPAQAFVKQHLCGPHLVEALYLVCGERGFFYTPKSRR
EVED PQVPQLELGGGPEAGDLQTLALEVARQKRGIVDQCCTSICSLYQLENYCN

Set the output format as ClustalW, keep all the parameters as Default, and then submit the job. Click on the tab Phylogenetic tree.

1. Which of the given sequence is shown to exhibit maximal similarity with human insulin?
 - a. sp|P01322|INS1_RAT
 - b. sp|P01315|INS_PIG
 - c. sp|P01318|INS_SHEEP
 - d. sp|Q6YK33|INS_GORGO - **Correct**
2. Which of the following algorithms is used for the construction of the phylogenetic tree?
 - a. Neighbour-Joining method - **Correct**
 - b. Fitch-Margoliash method
 - c. Unweighted Pair Group Method with Arithmetic Mean (UPGMA)
 - d. Maximum Parsimony

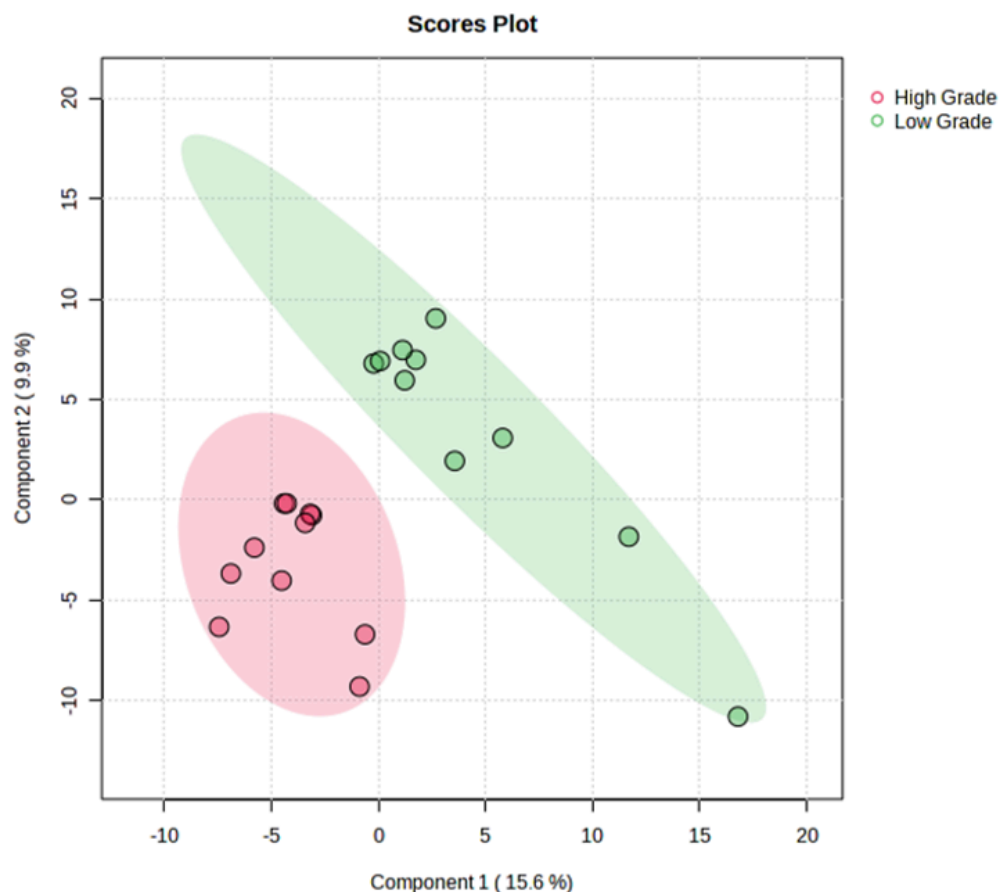
Passage:

Navigate to BDMC of BrainProt:

<https://www.brainprot.org/bdmc>

Select the disease “Meningioma”.

3. Which of the following gene is coming up as the top marker with respect to the BDMC score?
 - a. NF2 - **Correct**
 - b. TP53
 - c. EGFR - **Correct**
 - d. VIM
4. What is the score of NF2 gene in PubPular?
 - a. 1 - **Correct**
 - b. 0.467
 - c. 0.497
 - d. 0.397
5. Look at the following plot. Reema has performed a classification analysis taking high grade meningioma and low meningioma samples. Which of the following is true regarding the plot?



- a. The total cumulative variance is 25.5% - **Correct**
- b. The total cumulative variance is 25.6%
- c. The total cumulative variance is 5.6%

- d. The total cumulative variance is 5.7%
6. Which of the following plots have similar interpretation?
- a. Violin plot and Box plot - **Correct**
 - b. Bar chart and Pie chart
 - c. Violin plot and Bar chart
 - d. Bar chart and Box plot
7. Navigate to <https://www.brainprot.org/bddf> and clinical trial information and go to the disease "Amyotrophic Lateral Sclerosis".
- How many of the compounds are present in clinical trial phase 4.0?
- a. 1
 - b. 2 - **Correct**
 - c. 3
 - d. 4