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## Unit 3 - Week 1: Introduction to Functional Genomics

### Course outline

#### How to access the portal

#### Pre-requisite Assignment

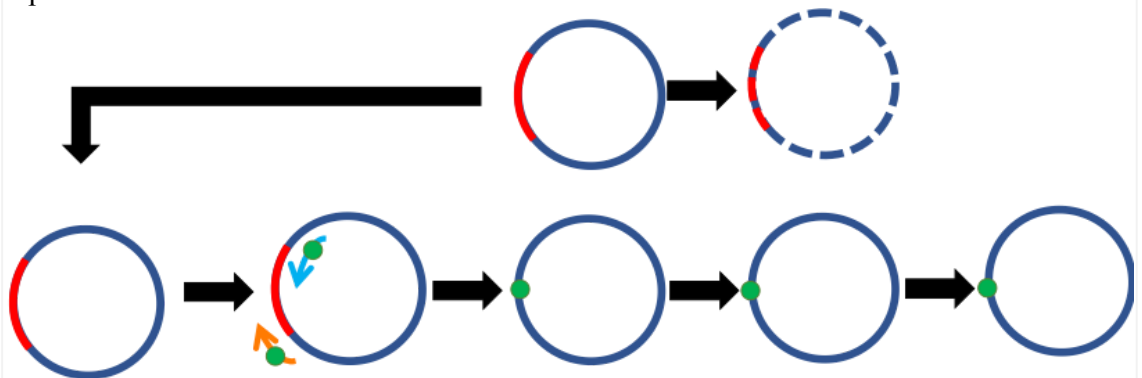
#### Week 1: Introduction to Functional Genomics

- Lecture 01: Introduction to Functional Genomics (unit? unit=7&lesson=8)
- Lecture 02: The Genomics Era (unit? unit=7&lesson=9)
- Lecture 03: Epigenetics (unit? unit=7&lesson=10)
- Lecture 04: Forward Genetics vs Reverse Genetics (unit? unit=7&lesson=11)

## Assignment week 1

The due date for submitting this assignment has passed. **Due on 2019-09-11, 23:59 IST.**  
As per our records you have not submitted this assignment.

1) Review the schematic of a method and identify the correct option that it represents **1 point**



- Homologous Recombination | gene knockout
- Site-specific recombination | Point mutation
- Site-directed mutagenesis | Point mutation
- PCR | Recombinant DNA

No, the answer is incorrect.  
Score: 0

Accepted Answers:

*Site-directed mutagenesis | Point mutation*

2) Researchers use animal models to study genetics, development, and physiology. **1 point**  
Which one of the following animal models is good for studying embryonic development?

- Zebra fish
- Mouse

Quiz :  
Assignment  
week 1  
(assessment?  
name=44)

Assignment  
solution - week  
1 (unit?  
unit=7&lesson=52)

Feedback For  
Week 1 (unit?  
unit=7&lesson=55)

**Week 2: Genome  
Analysis (Part 1)**

**Week 3: Genome  
Analysis (Part 2)**

**Week 4:  
Comparative  
Genomics**

**Text Transcripts**

**Live Session**

- Rat  
 None of these

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*Zebra fish*

3) The term “forward genetics” refers to study from phenotype to genotype. Which **1 point** one of the following options correctly identifies the LIMITATIONS of forward genetics?

- Identification of lethal mutations  
 Creation of desired gene mutation  
 Redundant gene function  
 All of these

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*All of these*

4) The 35 years period, from 1954 to 1990, is known as “Molecular Biology Era,” **1 point** for the discoveries/ inventions listed below, which one of the options represent the correct chronological order?

- i. Reverse Transcriptase  
ii. DNA sequencing  
iii. DNA polymerase  
iv. PCR

- i > ii > iii > iv  
 iii > ii > iv > i  
 ii > i > iii > iv  
 iii > i > ii > iv

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*iii > i > ii > iv*

5) Which one among the following sentences is TRUE? **1 point**

- i. Gut microbiome consists of 10% of total genome  
ii. As the age progresses, gut microbiota changes  
iii. Two different organisms may have similar microbiota  
iv. Gut microbiota symbiosis increases as we shift towards the Mediterranean diet

- i, ii and iii  
 ii and iv  
 i and iii  
 i, ii, iii and iv

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*ii and iv*

6) Which of the following statements is TRUE? **1 point**

- i. Reverse genetics approach is a more appropriate approach than forward genetics for modelling a human disease
- ii. Forward genetics is an approach to find the genes for mutant phenotype
- iii. Reverse genetics can link a gene with unknown function to a phenotype
- iv. Suppressor or enhancer screens are easy with forward genetics

- i, ii and iii
- ii, iii and iv
- i and iv
- i, ii, iii, and iv

No, the answer is incorrect.

Score: 0

Accepted Answers:

*i, ii, iii, and iv*

7) Puffer fish is considered to be a good model system to understand the genome function because **1 point**

- It has a very small genome as compared to human yet closer to human in evolutionary scale
- It is easier to manipulate the genome of the puffer fish as compared to mouse or rat
- The body of the puffer fish is transparent, and hence the genome dynamics can be easily studied
- Maintenance of puffer fish is easier and cheaper as compared to models like *Drosophila*

No, the answer is incorrect.

Score: 0

Accepted Answers:

*It has a very small genome as compared to human yet closer to human in evolutionary scale*

8) The term “epigenetics” refers to **1 point**

- Changes in the expression patterns of a gene due to changes in the DNA sequence
- Changes in the DNA sequences that do not affect the expression of genes
- Changes in the expression patterns of genes in an organism during embryonic development
- Changes in the expression patterns of genes not resulting from the changes in the DNA sequence per se

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Changes in the expression patterns of genes not resulting from the changes in the DNA sequence per se*

9) *Drosophila* is considered a good model organism to study genetics. The mutant phenotype can be easily visualised. The table shown below lists gene markers in “Column I” and the possible phenotypes in “Column II”. Identify the option that correctly matches **1 point**

the content in “*Column I*” with that of “*Column II*”

<b>Column I</b>		<b>Column II</b>	
<b>a</b>	<b>Cy1: Curly</b>	<b>i</b>	<b>bristles are shorter and thicker than wild type</b>
<b>b</b>	<b>e1: ebony</b>	<b>ii</b>	<b>the wings curve away from the body, flight may be somewhat impaired</b>
<b>c</b>	<b>Sb1: stubble</b>	<b>iii</b>	<b>eyes lack pigmentation</b>
<b>d</b>	<b>w1: white</b>	<b>iv</b>	<b>black body and wings</b>

- a-ii, b-iii, c-iv, d-i
- a-ii, b-iv, c-i, d-iii
- a-iii, b-iv, c-ii, d-i
- a-ii, b-i, c-iv, d-iii

No, the answer is incorrect.

Score: 0

Accepted Answers:

*a-ii, b-iv, c-i, d-iii*

10) Which one of the options listed below, which is "external" in origin, can affect the **1 point** gene expression in a human body?

- Food
- Gut microbiome
- Exposure to an allergen
- All of these

No, the answer is incorrect.

Score: 0

Accepted Answers:

*All of these*