### Week 3: Assignment

**Due on 2020-02-19, 23:09 IST.**

1. Which of the following pairs are matched INCORRECTLY with respect to PCR?
   - SYBR Green: fluorimetric DNA polymerase
   - Taq polymerase: single-stranded DNA
   - Prepolymerise: variable temperature
   - The answer is incorrect.  
     **Score: 1**

2. You were given four tubes containing purified molecules as mentioned below, and you have the ability to sequence each of these molecules and determine the sequences. Which one of these will NOT offer the precise sequence of the coding region of the gene?
   - Tube 1: DNA
   - Tube 2: mRNA
   - Tube 3: gDNA
   - Tube 4: Protein
   - The answer is incorrect.  
     **Score: 1**

3. A higher prevalence of a monogenic disorder could be due to
   - A founder effect
   - A non-silencing mutation event involving repair elements
   - Consequence: inactivation of all of the above
   - The answer is incorrect.  
     **Score: 1**

4. The term “non-silencing homologous recombination” refers to
   - recombination between two alleles of the same gene present on the homologous chromosomes
   - recombination between two segments that show high sequence similarity but are located on different chromosomes
   - recombination between two non-allelic loci on the homologous chromosomes
   - The answer is incorrect.  
     **Score: 1**

5. From the options given below, identify the combination that correctly joined the technique with its target

<table>
<thead>
<tr>
<th>Technique</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>M Southern Mot</td>
<td>i Chromosomes</td>
</tr>
<tr>
<td>N Northern Mot</td>
<td>ii Protein</td>
</tr>
<tr>
<td>O Western Mot</td>
<td>iii DNA</td>
</tr>
<tr>
<td>P FISH</td>
<td>iv RNA</td>
</tr>
</tbody>
</table>

6. A point referred to a clinical oligonucleotide for diagnostic is likely to have a balanced transcription between chromosomes 9 and
   - 21.
   - Which one of the following options correctly identifies the technique that the oligonucleotide use to confirm the transcription?
     - FISH fluorescent in situ hybridization
     - Chromosome autoradiography
     - Polymerase chain reaction
     - The answer is incorrect.  
     **Score: 1**

7. Mice (like mice-killer) and the Taiji by (Drosophila melanogaster) are among a few of the organisms often used to model human disease. Which one of the following options is DIRECT with regards to their disease as a model system?
   - They are amenable for genetic experiments
   - Their life cycle is relatively slow
   - They share all the genes that are known in the human genome
   - A single sex produces relatively many progeny
   - The answer is incorrect.  
     **Score: 1**

8. Embrionic stem cells are used to knock-out specific genes in the mouse. Which one of the following statements correctly describes the utility of embryonic stem cells in the knock-out approach?
   - Embryonic stem cells are easy to transfer with the DNA construct as compared to other embryonic cell types
   - DNA can be inserted only in embryonic stem cells
   - Embryonic stem cells open introduction into another embryo can differentiate into and form all cell types, including the germ cells
   - All of these
   - The answer is incorrect.  
     **Score: 1**

9. While studying the “loss of function” of a gene in the global knockout, sometimes, it may lead to a lethal phenotype. Which one of the following options correctly identifies the alternative strategy that might be used to overcome this challenge?
   - Using Cre-lox system
   - Using conditional knock-out
   - Using tissue-specific ablation of the gene
   - All of the above
   - The answer is incorrect.  
     **Score: 1**

10. Which one of the following statements distinguishes a conditional knockout mouse from a global knockout mouse?
    - At singletog8 construct is used to replace only a gene
    - The singletog8 construct is then transcribed from the gene
    - The gene is inactivated in a specific type of cell lineages
    - The gene is expressed in all cells of the organism
    - The answer is incorrect.  
      **Score: 1**