BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI, PILANI CAMPUS
MID TERM EXAMINATION: I SEMESTER: 2023-24
ANIMAL CELL TECHNOLOGY
CLOSED BOOK

Maximum Marks: 30
Maximum Time: 90min **Date: 13/10/2023**

Part-A

Q1. (1) Suppose you have to test a drug for its (i) tumorigenic property(ii) and mitogenic property. Draw a flow diagram to outlines of how you would conduct each of these tests. [2M]

(ii) Is the procedure suggested by you *in Vitro/ in Vivo/ Ex Vivo/ In Situ/ Ex Situ* or a combination of these. Justify your answer. 2M]

Q2. There is frequently a discrepancy between outcome of an *in vivo* studied as compared to a similar *in vitro* study. Site 4 reasons with brief explanation. [2M]

Q3. (i) How can you achieve radiation protection if you have to work with Radioactive compounds. [2M]

(ii) How is radiation monitoring done in our country. [1M]

(iii) How should radiation containing material be managed after its use. [1M]

Q4. Enumerate 8 important matters to be considered if you have to work with human biopsy material. [2M]

Q5. Differentiate between disinfectant, antiseptic chemical, Antibiotic and sterilization, with example. [2M]

Q6. List 8 chief features associated with BSL4 facility [2M]

Q7. Enumerate 8 functions of cytoskeletal proteins. [2M]

Q8. How are NK cells and platelets obtained from hematopoetic stem cells (HSC). Show by drawing an appropriate flow diagram. [2M]

Part-B

Q1. Smita used MEF's as a feeder layer to culture liver epithelial cells. But after certain passages she found that her epithelial cells are replaced by fibroblast cells. Troubleshoot her problem with justification? [2M]

Q2. Your friend is culturing 2 types of cells Cell A: Colon cancer cells B: Fibroblast cells.

One day while monitoring her cells under the microscope she found the cell images as shown below in Fig.1 and 2. He was a little confused and showed you the images. Being a student of ACT you immediately knew that there is some kind of problem in both the cell lines. What will be your steps/suggestions to your friend to tackle the problems associated with both the cell lines? [2+2=4M]

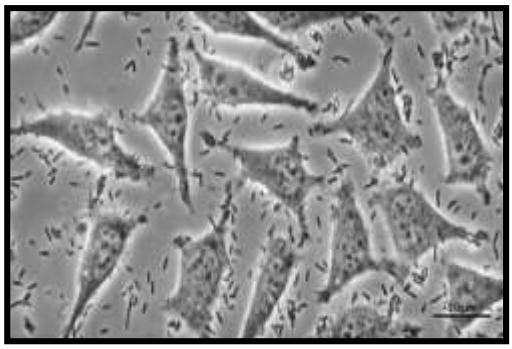


Fig.1: Fibroblast cells

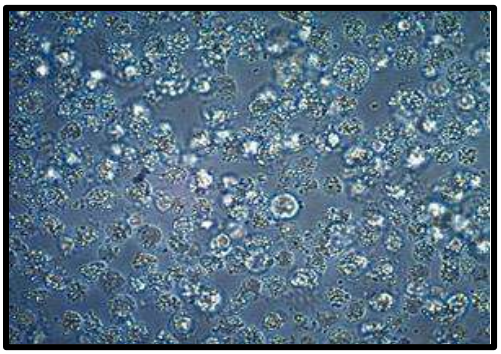
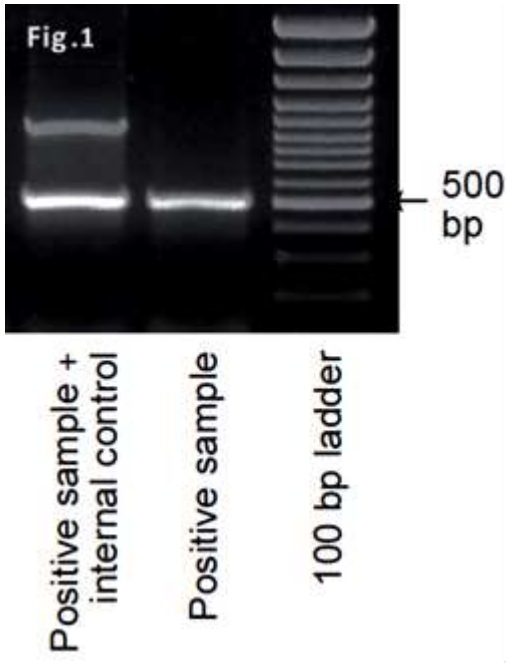


Fig.2: Colon Cancer Cells

Q3. Your friend while culturing cells suspected that her cells got contaminated with Mycoplasma. Taking your suggestions, she did a PCR and came up with a result and a gel image as shown in Fig.1. So is she right? What is your take on the image and further analysis to solve the issue if any? [2M]



Q4. Julia was culturing HELA cells (cervical cells) but while checking for cell surface proteins she found high levels of expression of mesenchymal markers like N- cadherin. As a student of ACT you immediately knew what is the issue? Troubleshoot her problem with proper reasoning? [2M]

GOOD LUCK