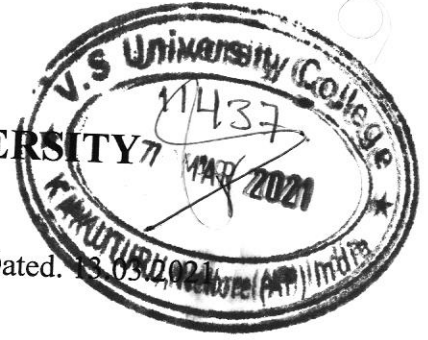




**VIKRAMA SIMHAPURI UNIVERSITY**  
**NELLORE-524 320**



No.VSU/Est/Class Work /2021

Dated. 11/4/2021

From  
The Registrar  
VikramaSimhapuri University  
Nellore

To  
1. The Principal (i/c), V.S. University College,  
Nellore  
2. The Special Officer, V.S.U.P.G.Centre,  
Kavali

Sir/Madam,

Sub: V.S. University, Nellore – Submission of Online and Offline Class  
weekly Report -Reg.

Ref: 1. Letter received from Special Chief Secretary, Higher  
Education, and Govt.of. A.P  
2. Vice-Chancellor orders dated. 08.03.2021.

-oOo-

With reference cited, I am to inform that, the Department of Higher Education requested to submit a weekly report with regard to status of online and offline classes that are being conducted by the regular teaching staff in the Universities in the prescribed pro-forma given under:-

Name of the University:									
Week No: (Please mention the dates)									
Name of Department	Name of the Teacher	Designation	Contact Hours required to be taught as per UGC norms	Subject Allotted (List the subjects)	Weekly contract hours against the subject	No of classes taken by him/her ONLINE	No .of classes taken by him/her OFFLINE	Total no. of hours taught during the week	Difference between UGC norms actual classes taken
1	2	3	4	5	6	7	8	9	10=4-9

In this connection, a weekly report shall be submitted to the Department of Higher Education every Tuesday starting from 2<sup>nd</sup> November 2020.

It is informed that the regular teachers are given weekly work load as per UGC norms and should take classes assigned to them without deputing any research scholar or contract faculty on their behalf. Serious disciplinary action will be taken for non compliance of these instructions by any individual and all such cases should put up in EC meeting as agenda item for initiating disciplinary action.

[p.t.o]

It is further informed that a proof should be furnished for online classes and also necessary steps should be taken to record offline classes and ensure that it is circulated to the students who are unable to come to the University/College.

Thanking you,

Yours faithfully  
Sd/- Dr. L.V. Krishna Reddy  
REGISTRAR

Copy to the Heads / Heads (i/c) of the Departments, V.S. University College, Nellore.  
Copy to AR (GAD) VSU, Nellore for information  
Copy to P.A. to Rector / Registrar, V.S. University, Nellore.  
Copy to file

//t.c.f.b.o//

  
ASSISTANT REGISTRAR



**VIKRAMA SIMHAPURI UNIVERSITY**  
**NELLORE-524 320, AP, INDIA**  
**DEPARTMENT OF BIOTECHNOLOGY**

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**Semester: III;          Paper: 303;          Course Name: Animal Biotechnology**

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*Unit-I: lesson Plan at a glance*

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I	Topics layout	<ol style="list-style-type: none"><li>1. History and development of animal tissue culture</li><li>2. Equipment and materials</li><li>3. Principles of sterile techniques</li><li>4. Sources of tissues and types of tissues</li><li>5. Introduction to balanced salt solutions</li><li>6. Cell culture media and role of serum</li><li>7. Role of antibiotics in media</li><li>8. Cell count</li><li>9. Cell viability and cytotoxicity</li><li>10. Measuring growth</li></ol>
II	Objective(s)	To enumerate the basic concepts of animal tissue culture
III	Teaching methodology	<ol style="list-style-type: none"><li>1) Online teaching/lectures using software's available publicly in accordance to the University regulations;</li><li>2) Moodle;</li><li>3) Power point presentation;</li><li>4) Providing E-content to the students;</li><li>4) Conducting online assignments/discussions etc.</li></ol>
IV	Teleological view	The objective proposed in the lesson plan encompasses the basic knowledge on the components of animal cell culture such as developmental milestones, types of cells and their sources, prerequisite factors such as equipments, media and methods required for the propagation, growth and analysis of animal cells.
V	Major Outcome	The primary goal is to guide students through the basic concepts linked to animal cell culture such as cell types, cell culture media and growth and viability assays.
VI	Key questions	<ol style="list-style-type: none"><li>1. Discuss about the components of culture media used in animal cell culture?</li><li>2. Explain in detail about the muscle tissue, epithelial tissue, blood and nervous tissue?</li><li>3. What is cytotoxicity? Write a note on the cell viability tests</li><li>4. Balanced salt solution</li><li>5. Plating efficiency</li></ol>
VII	Bottom line	The contents discussed in Unit I will provide basic knowledge with regards to sources of cells and different cell types, cell culture media used for specific cell types and also illuminate the analysis of growth related parameters.
VIII	References/links	<ol style="list-style-type: none"><li>1. Cell Culture. Yadav, P.R and R. Tyagi. 2005. Discovery Publishing House, New Delhi.</li><li>2. Cell Growth and Division: A Practical Approach . Basega, R. IRL Press, New Delhi.</li><li>3. Cell Culture Lab Fax. Butler, M. and M. Dawson. Bios Scientific Publications Ltd. 5. Animal Cell culture and Technology. Butler, M.2004. Bios Scientific Publishers, New York.</li><li>4. Culture of Animal Cells A Manual of Basic Technique. Freshney, R .I. 2006. 5th Edn. John Wiley and Sons, USA</li></ol>

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**VIKRAMA SIMHAPURI UNIVERSITY**  
**NELLORE-524 320, AP, INDIA**

**DEPARTMENT OF BIOTECHNOLOGY**



**Semester: III; Paper: 303**

**Course name: Animal Biotechnology**

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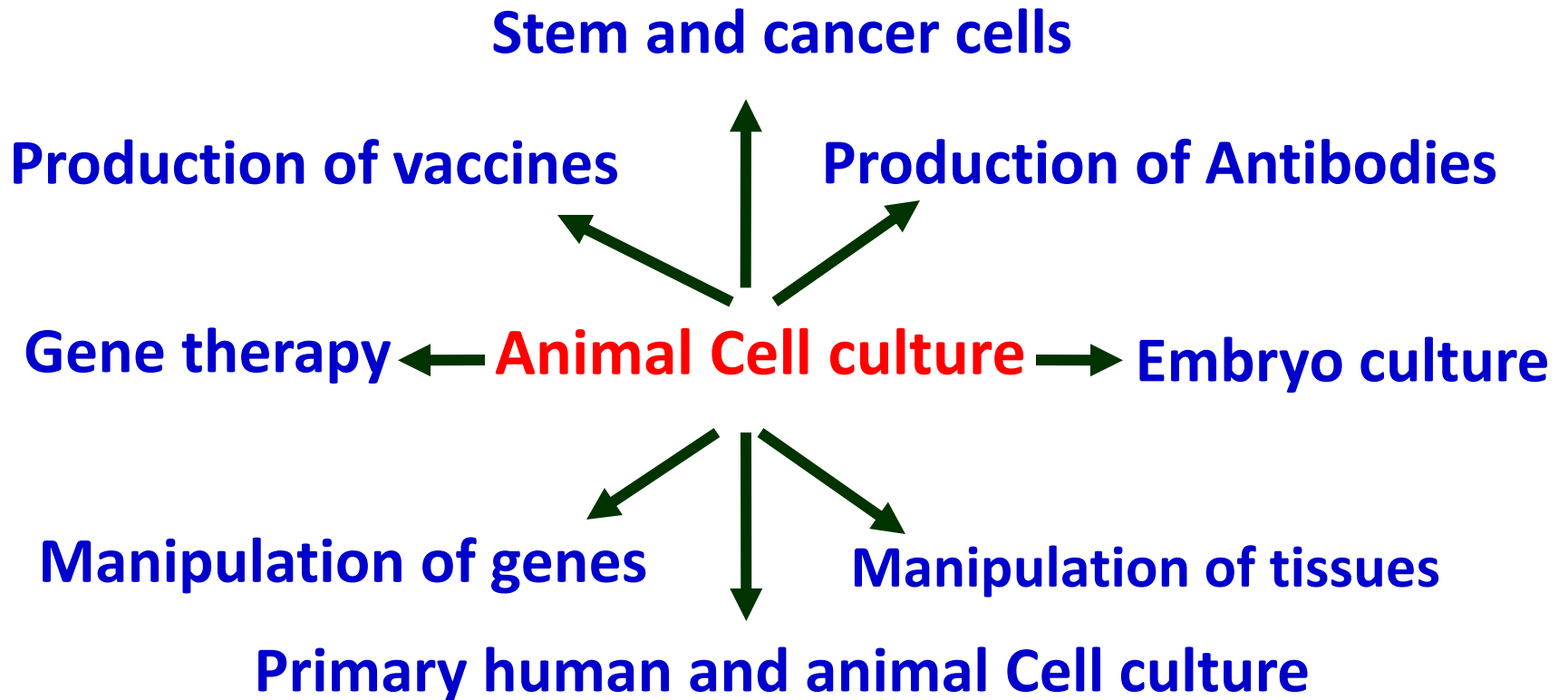
## **What is animal biotechnology**

**BIOTECHNOLOGY** is defined as the application of genetic engineering principles or biotechnological principles to living organisms for the welfare of human beings.

**Animal biotechnology** is a broad field encompassing the divergence of fundamental and applied research, including development of diagnostics, production of vaccines, manipulation of genes and tissues.

**Animal biotechnology** includes all animals: livestock, poultry, fish, insects, companion animals and laboratory animals.

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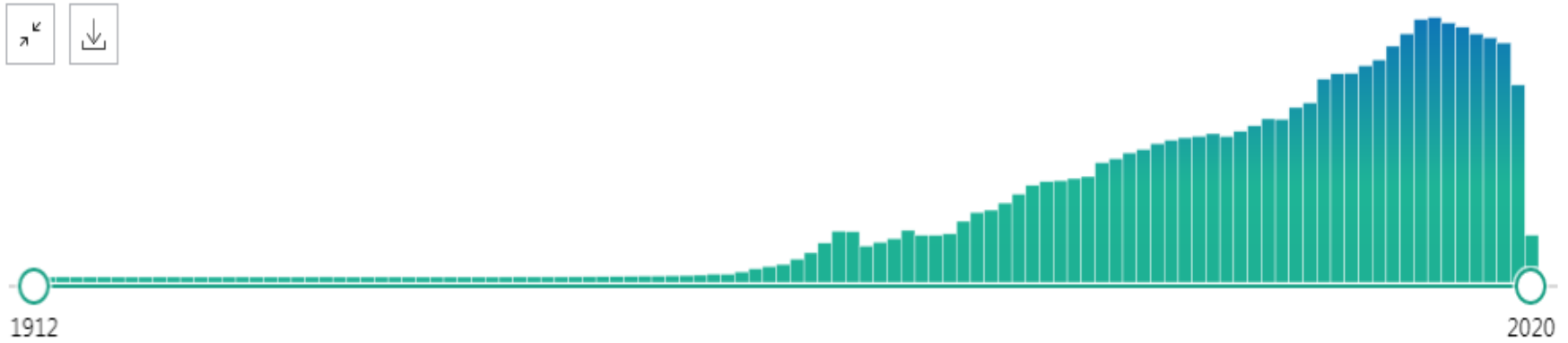
## Unit I: Topics layout

- ✓ **History and development of animal tissue culture**
  - ✓ **Equipment and materials**
  - ✓ **Principles of sterile techniques**
  - ✓ **Sources of tissues and types of tissues**
  - ✓ **Cell culture media and role of serum**
  - ✓ **Cell viability and cytotoxicity**
  - ✓ **Measuring growth**
-

# Developments in the area of animal cell culture

RESULTS BY YEAR

231,912 results



**This figure illustrates the research articles that has been deposited in the PUBMED database with respect to the term animal cell culture**

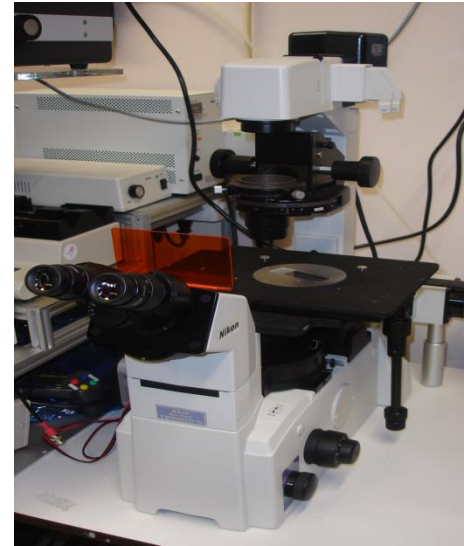


- 
- Experiments of Harrison in the year 1907 fueled the animal cell culture.
  - Major breakthroughs of his experiments include:  
Lymph clots to cultivate frog nerve cells  
and Hanging drop experiment to observe the growth of nerve fibers *in vitro*.

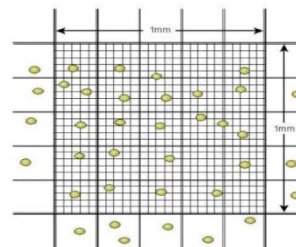
*\*the historical and developmental aspects will be discussed at the time of lecture.*

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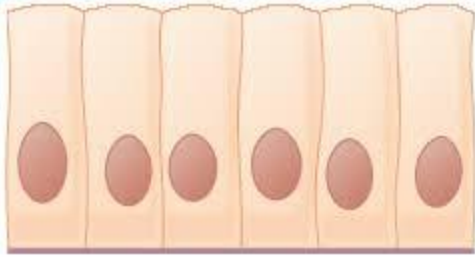
# Equipments and Materials



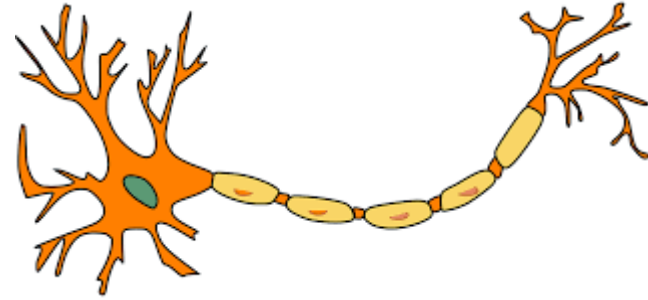
Close up view of a grid with cells



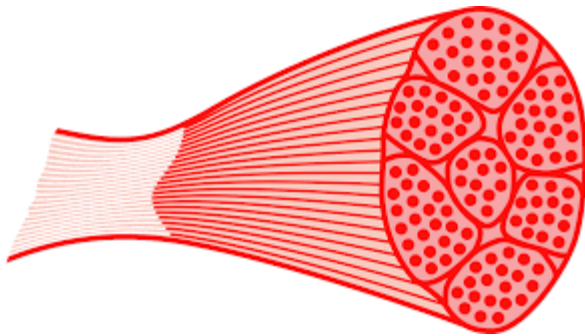
# Tissues



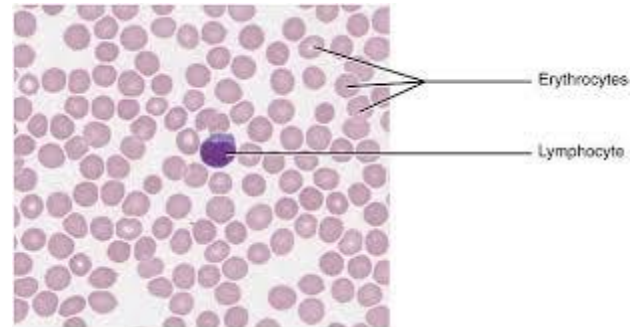
**Epithelial**



**Nervous**



**Muscle**



**Blood**

Erythrocytes

Lymphocyte

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# Media

**Cell culture media is a key for the cell growth, and its functions.**

**Media types**

- a. Natural media**
- b. Artificial media**

*This topic will covers the physical, chemical and metabolic fuctions of media and also different types of media. Further this topic covers the composition of media and role of antibiotics.*

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# Cell viability and cytotoxicity

**In animal cell culture studies assessing cell viability and cytotoxicity is a key step in daily cell manipulation and also helpful for subsequent processing steps.**

*This topic will focus on the methods used to determine the cell viability and cytotoxicity.*

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## Measuring growth

The growth of cell lines occur via either attached to a surface (anchorage dependent) or in suspension (anchorage independent) and they follow a characteristic growth pattern comprised of four stages: Lag, log or exponential, stationary or plateau and decline.

It is important to maintain the cell lines always in the exponential phase to ensure viability, genetic stability, and phenotypic stability. Therefore, determination of growth curves of each cell line is considered is useful to understand the growth characteristics of the cell line

*This topic will focus on the growth curves, plating efficiency and factors influencing growth.*

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## References/links

1. **Cell Culture. Yadav, P.R and R. Tyagi. 2005. Discoery Publishing House, New Delhi.**
  2. **Cell Growth and Division: A Practical Approach . Basega, R. IRL Press, New Delhi.**
  3. **Cell Culture Lab Fax. Butler, M. and M. Dawson. Bios Scientific Publications Ltd. 5. Animal Cell culture and Technology. Butler, M.2004. Bios Scientific Publishers, New York.**
  4. **Culture of Animal Cells A Manual of Basic Technique. Freshney, R .I. 2006. 5th Edn. John Wiley and Sons, USA**
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