HINDU COLLEGE-GUNTUR

DEPARTMENT OF BIO MEDICAL SCIENCES

S No	ACADEMIC YEAR	EXPERIMENTAL LEARNING	PARTICIPATIVE LEARNING	PROBLEM SOLVING	TOTAL
1	2021 – 2022	9	24	39	72

EXPERIENTIAL LEARNING

Name of the Department : Biomedical Sciences

Date : 22-09-2021

Title of the event : Experimental Learning(Laboratory Sessions-Gram staining)

Venue : Microbiology laboratory, N-Block

Co-ordinator : G.Swarna Latha

No.of Staff Members Involved : 1

No.of students Involved :10

Objective of the event: To perform a stain on variety of bacterial cultures. To explain the principles of gram staining. Correct evaluation and interpretation of results.

Plan and execution: Actually the gram staining procedure is planned for nearly eight samples but pricedure is performed for only six samples.

Outcome of the event: Students have gained the knowledge of differentiating gram positive(purple colour) and gram negative bacteria (saffronin colour) under the microscope.They have also gained the knowledge of Focusing microscope.

Evidences:

Signature of HOD

G.Swarna

Name of the Department : Biomedical Sciences

Date : 27-09-2021

Title of the event : Experimental Learning(Laboratory Sessions-Microbial isolation from drainage sample)

Venue : Biotechnology laboratory, N-Block

Co-Ordinator : M. Kiranmayee

No. of Staff Members Involved : 1

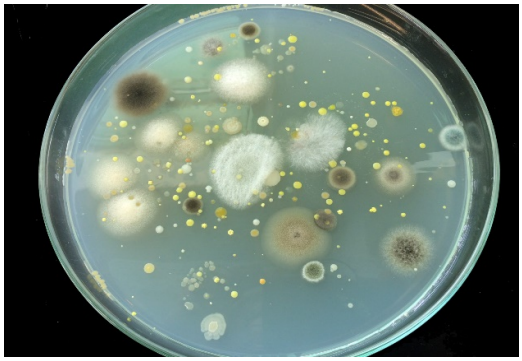
No. of students Involved : 12

Objective of the event: To make the students to identify and isolate different bacteria from drainage sample.

Plan and execution:collecting samples from different areas and preparing different culture media for microbial Isolation.

Outcome of the event:different microbial colonies are identified in petriplates after incubation

Evidences:



Signature of HOD

Name of the Department : Biomedical Sciences

Date : 19-11-2021

Title of the event : Experimental Learning(Laboratory Sessions-Media preparation and plating techniques)

Venue : Microbiology laboratory, N-Block

Co-ordinator : G Swarna Latha

No.of Staff Members Involved : 1

No.of students Involved : 15

Objective of the event: ToUnderstand how to make media, how to sterilize it, and how to distribute it in different formats. ToProduce TSA plates, TSA slants, and TSB which will be used in subsequent lab periods.ToUnderstand the basics of an autoclave and how it sterilizes, including parameters.

Plan and execution: Culture media preparation must be carried out accurately to ensure microbiological growth is correctly promoted. The individual ingredients of the culture media (powders, gels and liquids) must be carefully weighed out according to the culture media formulation recipe.

Outcome of the event: Students got intense knowledge on culture media preparation,types and plating techniques.

Evidences:

Signature of HOD

G S Latha

Name of the Department : Biomedical Sciences

Date : 13-12-2021

Title of the event : Experimental Learning (Laboratory Sessions-Chromatography)

Venue : Biotechnology laboratory, N-Block

Co-Ordinator : M. Kiranmayee

No. of Staff Members Involved : 1

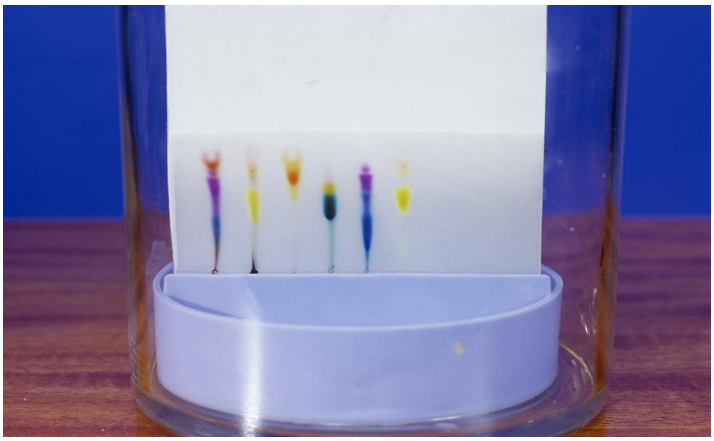
No. of students Involved : 12

Objective of the event: To make the students to identify different amino acids from given sample.

Plan and execution: preparing different protein samples for identification of their aminoacid composition

Outcome of the event: different aminoacids are identified.

Evidences:



Signature of HOD

Name of the Department : Biomedical Sciences

Date : 09-02-2022

Title of the event : Experimental Learning (field visit)

Venue : Rajasekhar Hospitals,Guntur

Co-Ordinator : G.Swarna Latha

No. of Staff Members Involved : 3

No. of students Involved : 30

Objective of the event: To enlightenthe students regarding different hospital Equipment and their working

Plan and execution: visual demonstration of different medical equipment

Outcome of the event: students had gained knowledge about hospital equipment

Evidences:

Signature of HOD

G.S Latha

Name of the department : Biomedical sciences

Date : 11/2/2022

Title of the Event : Experimental (Laboratory session)

Venue : Human Anatomy and Physiology lab

Co-ordinator : Dr.M.Priyanka

No.of Staff Members Involved : 1

No.of Students Involved : 22

Objective of the event: To estimate the haemoglobin levels among the students

Plan and Execution: Protocol was given, procedure was explained in detail.Suggestions were made

Outcome of the Event: Most of the adolescent girls were found to be anaemic.Guidelines of proper and planned diet was provided

Evidences :

Signature of HOD

Name of the department : Biomedical sciences

Date : 15/03/2022

Title of the Event : Experimental (Laboratory session)

Venue : Biochemistry lab

Co-ordinator : Dr.M.Priyanka

No.of Staff Members Involved : 1

No.of Students Involved : 18

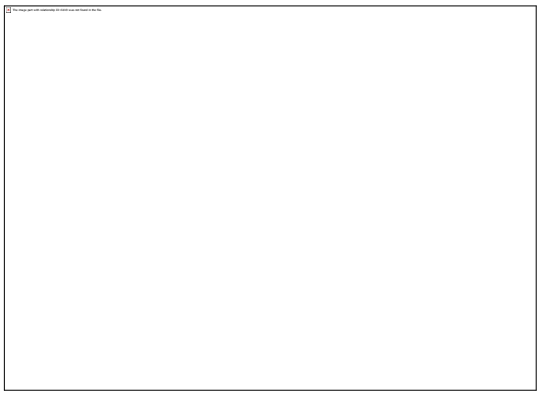
Objective of the event : To estimate the mohr' s salt by standardization

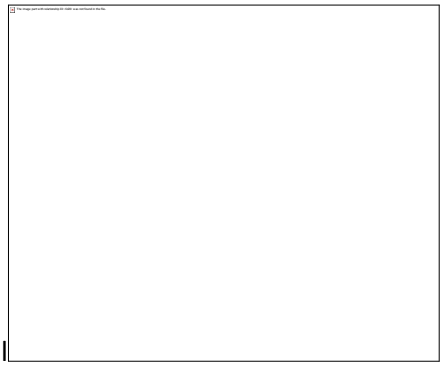
Plan and Execution : Protocol was given, procedure was explained in detail.Suggestions were made.

Outcome of the Event : Experiment was carried out carefully, correction estimation of given salt was made.

Evidences :

Signature of HOD





Name of the Department : Biomedical Sciences

Date : 28-06-2022

Title of the event : Experimental Learning (field visit)

Venue : WE CARE Diagnostics,Vaddamanu, Guntur

Co-Ordinator : G.Swarna Latha

No. of Staff Members Involved : 3

No. of students Involved : 30

Objective of the event: To make the students to perform different diagnostic tests.

Plan and execution: preparing and enlightening the students about disease diagnosis

Outcome of the event: students had gained knowledge about diagnostic tests

Evidences:

Signature of HOD

G.S Latha

Name of the Department : Biomedical Sciences

Date : 22-01-2022

Title of the event : Experimental Learning(community outreach programe Covid awareness campaign)

Venue : Bharatpet area, Guntur

Co-Ordinator : G.Swarna Latha

No. of Staff Members Involved : 3

No. of students Involved :30

Objective of the event: To create awareness and educate the students and local community regarding preventive intervention techniques that would help in reducing the transmission of the disease.

Plan and execution: Distribution of Pamphlets , masks, sanitizers amongst localcommunity in the vicinity**.**

Outcome of the event: students had gained knowledge about bringing Awareness regarding covid complications.

Evidences:

Signature of HOD

G.S Latha

PARTICIPATIVE LEARING

Name of the department **:** Biomedical sciences

Date **:** 17/12/2021

Title of the Event **:** Participative (Student seminar)

Venue **:** H block

Co-ordinator **:** Dr.M.Priyanka

No.of Staff Members Involved **: 1**

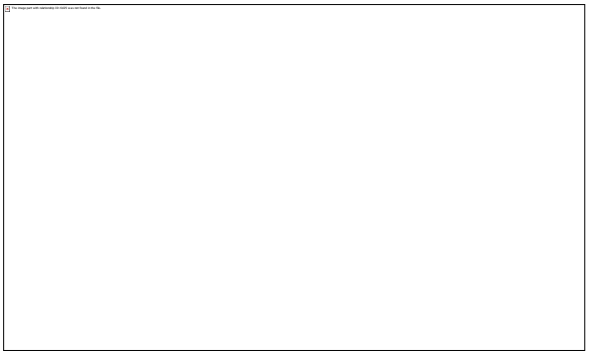
No.of Students Involved **:** 25

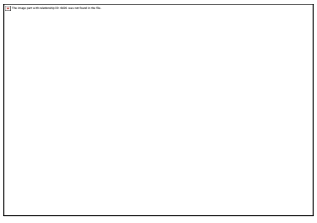
Objective of the event: To provide an in-depth understanding of the mechanisms of hemostasis, the process of blood clotting, and related disorders.

Plan and Execution: The theme of the seminar and what we hope to achieve through it. We Choose a date, time, and venue that are convenient for your target audience. considered factors such as holidays, exams, and other events.

Outcome of the Event: Students gained the knowledge about the fundamental concepts of hemostasis, including the roles of platelets, coagulation factors, and fibrinolysis in blood clotting and wound healing. different pathways of coagulation, such as the intrinsic and extrinsic pathways, and how they interact to form a clot.

Evidences:





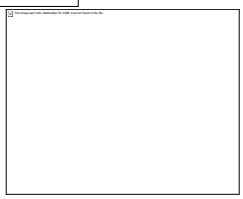
Name of the department	**: Biomedical sciences**
Date	**:** 8/01/2022
Title of the Event	**:**Participative (Student seminar)
Venue	**:** H Block
Co-ordinator	**:** G.Swarnalatha
No.of Staff Members Involved	**: 1**
No.of Students Involved	**:** 21

Objective of the event: To provide an opportunity for students to learn and present their research and knowledge about lymphoid tissue.

Plan and Execution: The theme of the seminar and what we hope to achieve through it. We Choose a date, time, and venue that are convenient for your target audience. considered factors such as holidays, exams, and other events.

Outcome of the Event: Comprehensive overview of the anatomy and physiology of lymphoid tissue, as well as its role in the immune system.also cover diseases and disorders related to lymphoid tissue, such as lymphoma, lymphadenopathy, and autoimmune disorders.

Evidences



Name of the department **: Biomedical sciences**

Date **:** 28/01/22

Title of the Event **:** Participative (Student seminar)

Venue **:** H Block

Co-ordinator **:** Dr.M.Priyanka

No.of Staff Members Involved **:** 1

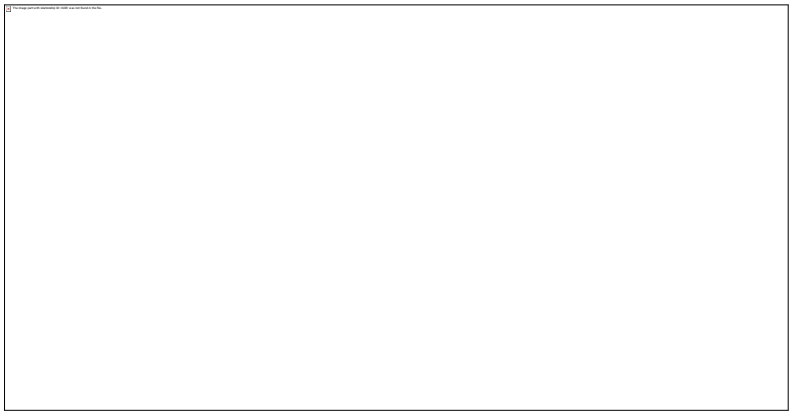
No.of Students Involved **:** 22

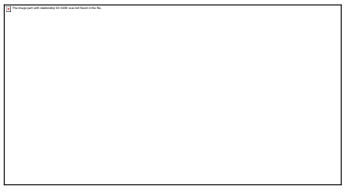
Objective of the event: To educate students about the anatomy and physiology of the kidneys, as well as the various functions they perform in the body.To raise awareness among students about the importance of kidney health and the risks associated with kidney disease.To provide information on the different types of kidney diseases,

Plan and Execution: The theme of the seminar and what we hope to achieve through it. We Choose a date, time, and venue that are convenient for your target audience. considered factors such as holidays, exams, and other events.

Outcome of the Event: To promote awareness and advocacy for kidney health, including the need for increased funding for research and treatment.To empower students to take action to protect and promote their own kidney health, as well as that of their communities.

Evidences





Name of the department **: Biomedical sciences**

Date **:** 19/02/2022

Title of the Event **:** Participative (Student seminar)

Venue **:** H – block

Co-ordinator **:** Dr.M.Priyanka

No.of Staff Members Involved **:** 1

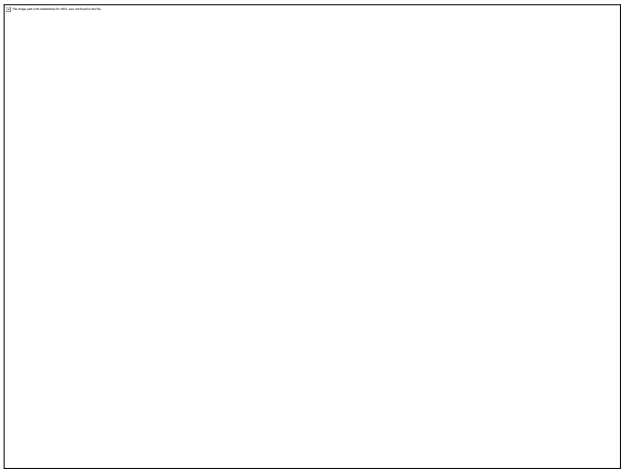
No.of Students Involved **:** 20

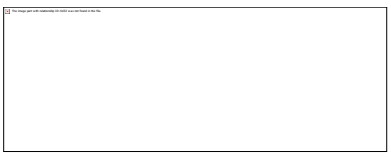
Objective of the event: Increasing awareness and understanding of diabetes mellitus among students.Provide an opportunity to learn about the causes, symptoms, diagnosis, treatment, and management of diabetes mellitus. To better understand the disease and its impact on individuals, families, and society.Encouraging healthy lifestyles and diabetes prevention

Plan and Execution: The theme of the seminar and what we hope to achieve through it. We Choose a date, time, and venue that are convenient for your target audience. considered factors such as holidays, exams, and other events.

Outcome of the Event: Learnt about the healthy lifestyles and diabetes prevention strategies such as regular physical activity, healthy eating habits, and maintaining a healthy weight. This can help people to adopt healthy behaviors that reduce their risk of developing diabetes mellitus

Evidences





Name of the department **: Biomedical sciences**

Date **:** 17/03/2022

Title of the Event **:** Participative (Student seminar)

Venue **:** H – Block

Co-ordinator **:** M.kiranmayee

No.of Staff Members Involved **: 1**

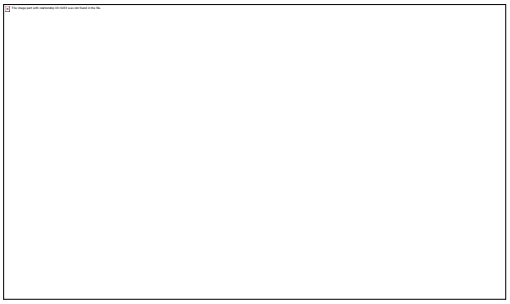
No.of Students Involved **:** 19

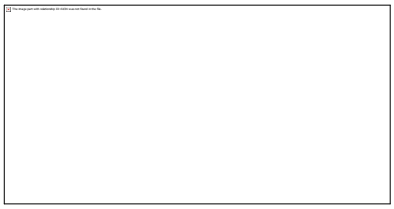
Objective of the event: To understand the intricate processes involved in DNA replication, including the roles of enzymes, proteins, and DNA polymerases.

Plan and Execution: The theme of the seminar and what we hope to achieve through it. We Choose a date, time, and venue that are convenient for your target audience. considered factors such as holidays, exams, and other events.

Outcome of the Event: Gained a great Knowledge on the various replication models, such as the semi-conservative model, the conservative model, and the dispersive model, and help them understand the differences and similarities between them.Explored on the diseases caused by defects in DNA replication, such as cancer and DNA repair disorders.

Evidences :





Name of the department **: Biomedical sciences**

Date **:** 11/04/2022

Title of the Event **:** Participative (Student seminar)

Venue **:** H- Block

Co-ordinator **:** M.kiranmayee

No.of Staff Members Involved **:** 1

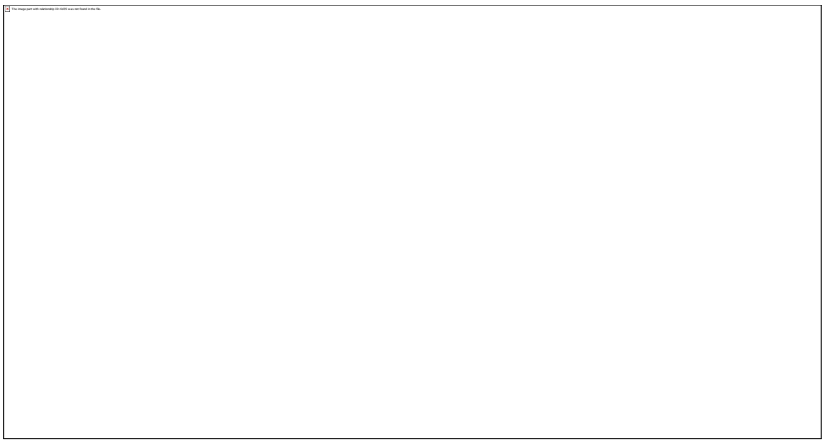
No.of Students Involved **:** 23

Objective of the event: To understand the fundamental concepts of transcription, including the roles of DNA, RNA polymerase, and transcription factors in the process.Exploring different types of transcription

Plan and Execution: The theme of the seminar and what we hope to achieve through it. We Choose a date, time, and venue that are convenient for your target audience. considered factors such as holidays, exams, and other events.

Outcome of the Event: The seminar provided students with a comprehensive understanding of transcription in genetics and its importance in various biological processes.

Evidences:



Name of the department	**: Biomedical sciences**
Date	**:** 25/4/2022
Title of the Event	**:** Participative (Student seminar
Venue	**:** H Block
Co-ordinator	**:** M.Kiranmayee
No.of Staff Members Involved	**:** 1
No.of Students Involved	**:** 23

Objective of the event: The basics of genetic translation: The seminar aim to provide students with a clear understanding of the process of genetic translation, including the role of mRNA, tRNA, ribosomes, and amino acids.

Plan and Execution: The theme of the seminar and what we hope to achieve through it. We Choose a date, time, and venue that are convenient for your target audience. considered factors such as holidays, exams, and other events.

Outcome of the Event: Students were made aware of the critical role that genetic translation plays in the proper functioning of cells and organisms, and how errors in translation can lead to disease.overview of the latest research and developments in genetic translation, including new technologies and techniques being used to study this process.

Evidences

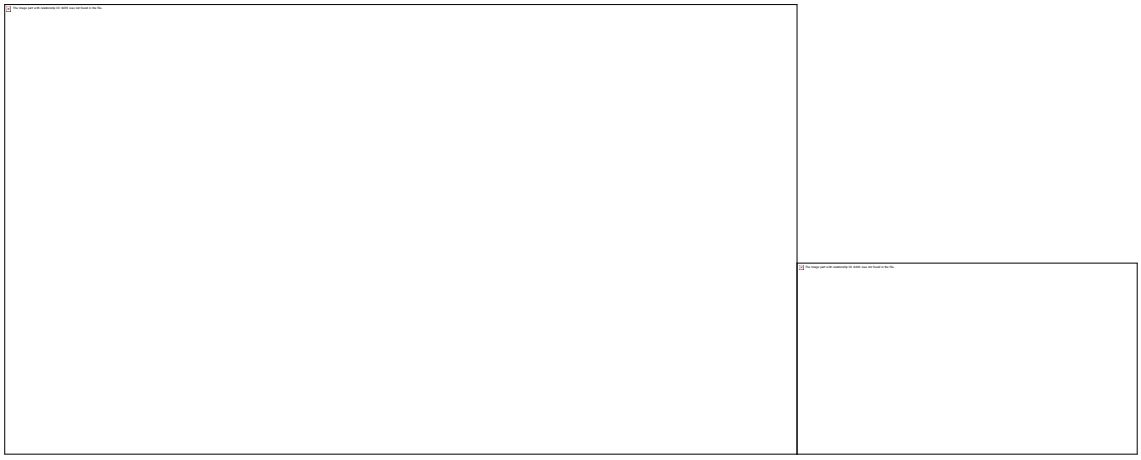
Name of the department	**: Biomedical sciences**
Date	**:** 16/06/2022
Title of the Event	**:** Participative (Student semina)
Venue	**:** H Block
Co-ordinator	**:** G. Swarnalatha
No.of Staff Members Involved	**:** 1
No.of Students Involved	**:** 24

Objective of the event: To Understand the history and importance of Bergey's manual in the field of microbiology: The seminar may cover the origin of Bergey's manual, its evolution over time, and its significance in the classification and identification of bacteria and characterize bacterial species based on their morphological, physiological, and biochemical properties.

Plan and Execution: The theme of the seminar and what we hope to achieve through it. We Choose a date, time, and venue that are convenient for your target audience. considered factors such as holidays, exams, and other events.

Outcome of the Event: Provided a comprehensive understanding of the principles and methods of bacterial taxonomy and classification, as well as the practical application of Bergey's manual in identifying and characterizing bacterial species.

Evidences



Name of the department **:** Biomedical sciences

Date **:** 30/12/2021

Title of the Event **: Participative (**Debating**)**

Venue **:** H block

Co-ordinator **:** G.Swarnalatha

No.of Staff Members Involved **:** 4

No.of Students Involved **:** 20

Objective of the event: To Identify the shortcomings of the pre-lockdown education system.Discussing the impact of the lockdown on education.Considering the role of technology in education.

Plan and Execution: We Choose a location that is quiet, comfortable, and allows everyone to see and hear each other easily.Prepared an agenda that outlines the topics to be done for debating and the order in which they will be addressed. Shared the agenda with all participants beforehand.

Outcome of the Event: The debate examined the need for educational reform in light of the COVID-19 pandemic. This could include exploring new models of education delivery, rethinking the role of teachers and students, and identifying ways to address the systemic inequalities that have been exacerbated by the pandemic.

Evidences:

Name of the department **:** Biomedical sciences

Date **:** 28/01/2022

Title of the Event **: Participative (** Group discussion)

Venue **:** H Block

Co-ordinator **:** G.Swarnalatha

No.of Staff Members Involved **:** 3

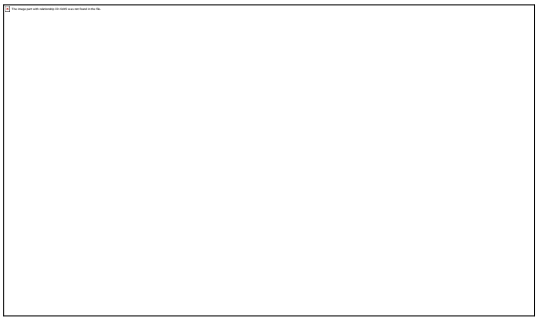
No.of Students Involved **:** 30

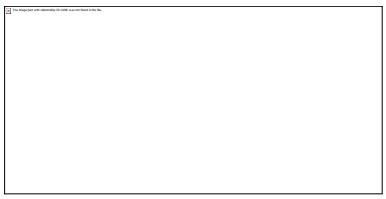
Objective of the event: To increase awareness and knowledge about the benefits of vaccination, address common misconceptions and concerns, and encourage individuals to get vaccinated.

Plan and Execution: We Choose a location that is quiet, comfortable, and allows everyone to see and hear each other easily.Prepared an agenda that outlines the topics to be discussed and the order in which they will be addressed. Shared the agenda with all participants beforehand.

Outcome of the Event: The benefits of vaccination far outweigh the limitations, and getting vaccinated is one of the most important things we can do to protect ourselves and our communities from infectious diseases.

Evidences:





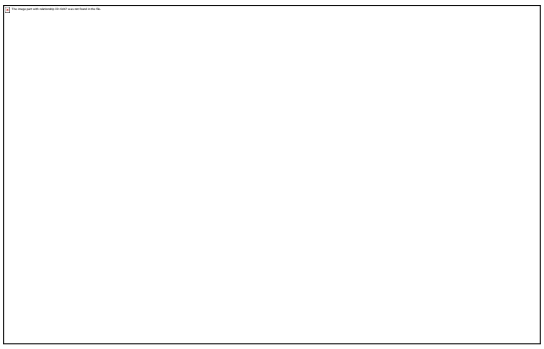
Name of the department	**:** Biomedical sciences
Date	**:** 27/11/2021
Title of the event	**: Participative (**Guest lecture)
Venue	**:** H – BLOCK
Co- Ordinator	**:** G.Swarnalatha
Number of Staff Members involved	**:** 2
Number of students involved	**:** 29

Objectives of the event: To know about nutritional information of food groups. To get knowledge on food pyramid showing how much of what to eat overall should come from each self to achieve a healthy, balanced diet. To inculcate some knowledge on shape of food pyramid showing the types of foods and drinks, people need to consume mostly for healthy eating.

Plan and Execution: We have planned to invite a dietitian from "Indira Gandhi National open University" to give a guest lecture to our students. As a part of it we have invited N.S.N.Lakshmi a dietitian to give a guest lecture on nutritional information.

Outcome of the event: Students got to know about the nutritional value of different food groups other than advertising or packaging. To procure knowledge on product contacting ingredients that commonly cause food allergic reaction and regarding the food labels.

Evidences:



Name of the department : Biomedical sciences

Date : 05/01/2022

Title of the event : **Participative (**Guest lecture)

Venue : H – BLOCK

Co- Ordinator : G. Swarnalatha

Number of Staff Members involved : 3

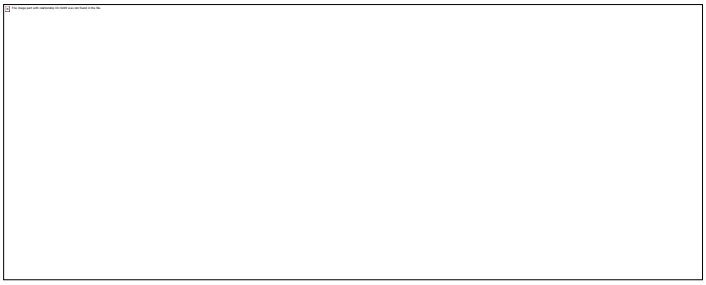
Number of students involved : 28

Objectives of the event: The topic on Enzymes involved in regulation of cell division in relation to cancer progression.The ultimate goal of understanding the role of enzymes in preventing the cancer progression.

Plan and Execution : We have planned to invite a guest lecturer from KBN College, Vijayawada to lecture to the students, as a part of it we have invited Dr. MD Rahamathulla, assistant professor, Department of botany to give a guest lecture on Enzymes involved in regulation of cell division in relation to cancer progression to the students of Biomedical sciences.

Outcome of the event: Students got to know about the role of enzymes GLUT 1, HK2, PGI, GAPDH in cancer progression.

Evidences:



Name of the department **: Biomedical sciences**

Date **:** 20/03/2022

Title of the event **: Participative (**Guest lecture)

Venue **:** H – BLOCK

Co- Ordinator **:** M.Kiranmayee

Number of Staff Members involved: 3

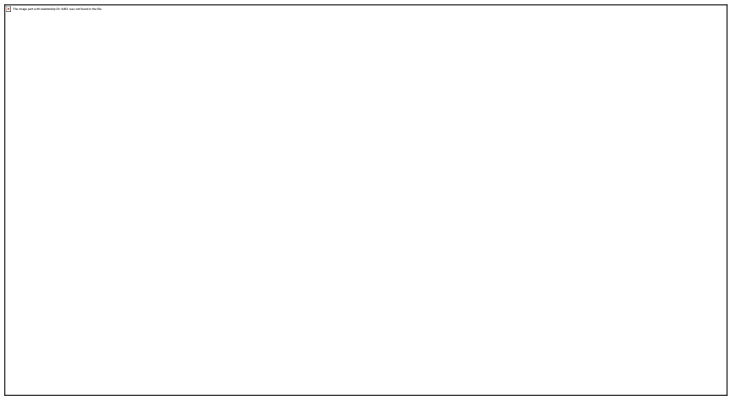
Number of students involved **:** 22

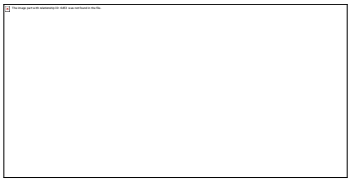
Objectives of the event: The topic on Nanoparticles and their applications.The ultimate goal of understanding the role of nanotechnology (Nanoparticles) in biomedical research

Plan and Execution: We have planned to invite a guest lecturer from Yogi vemana University to lecture to the students, as a part of it we have invited Dr.N.Rajesh, academic consultant, Department of boiotechnology to give a guest lecture on application of Nanotechnology in biomedical field to the students of Biomedical sciences.

Outcome of the event: Students got to know about the role of Nanoparticles in biomedical research.

Evidences:





Name of the department **: Biomedical sciences**

Date **:** 19/04/2022

Title of the event **: Participative (**Guest lecture)

Venue **:** H – BLOCK

Co- Ordinator **:** Dr. M.Priyanka

Number of Staff Members involved: 2

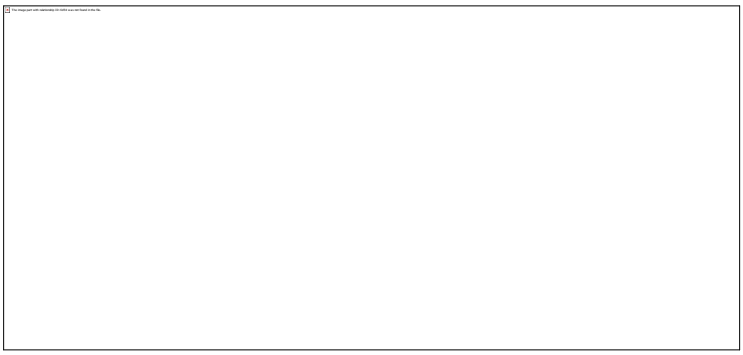
Number of students involved **:** 27

Objectives of the event: The topic on Recent advances in diabetic control and insulin resistance

Plan and Execution: We have planned to invite a guest lecturer from Government degree College, Naidupeta to lecture to the students, as a part of it we have invited ,Dr.M.Lakshmi Himabindu assistant professor, Department of Microbiology to give a guest lecture on Recent advances in diabetic control - pen devices such as Novopen, Jet injection, insulin patch their benefits and limitations to the students of Biomedical sciences.

Outcome of the event : Students got to know about the Advancements in the management of Diabetes, different insulin formulations.

Evidences:



Name of the department **:** Biomedical sciences

Date **:** 5/05/2022

Title of the Event **:** Participative (Peer teaching)

Venue **:** Biotechnology lab

Co-ordinator **:** M.Kiranmayee

No.of Staff Members Involved **:** 1

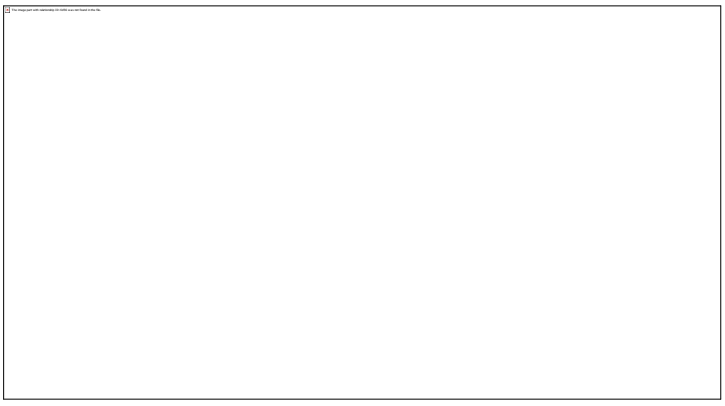
No.of Students Involved **:** 4

Objective of the event: The objective of peer teaching is to facilitate a collaborative learning process between individuals who share similar levels of knowledge or experience.

Plan and Execution: Identifying the learning objectives for the lesson or topic that will be taught.Developed the lesson planFollow up with the students to reinforce the material covered in the lesson.

Outcome of the Event: The opportunity to share their knowledge and skills with others. This can help them build confidence in their own abilities and feel more comfortable contributing to group discussions.

Evidences:



Name of the department **:** Biomedical sciences

Date **:** 16/06/2022

Title of the Event **:** Participative (Peer teaching)

Venue **:** Human Anatomy and Physiology lab

Co-ordinator **:** Dr M.Priyanka

No.of Staff Members Involved **:** 1

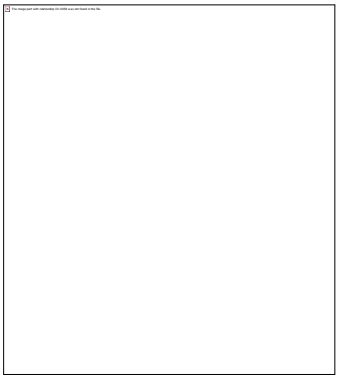
No.of Students Involved **:** 3

Objective of the event: The objective of peer learning is to facilitate a collaborative learning process between individuals who share similar levels of knowledge or experience.

Plan and Execution: Identifying the learning objectives for the lesson or topic that will be taught.Developed the lesson planFollow up with the students to reinforce the material covered in the lesson.

Outcome of the Event: Collaborating with peers can make the learning experience more enjoyable and interesting.learners developed their ability to express their thoughts and ideas clearly, listen actively to others, and provide constructive feedback.

Evidences:



ASSIGNMENTS

HINDU COLLEGE, GUNTUR

ACADEMIC YEAR: **2021-2022**

DEPARTMENT: **BIOMEDICAL SCIENCE**

1st B.sc 2nd semester

. . .

NAME OF THE ASSIGNMENT:

GENETIC MATERIAL(DNA)

Submitted by :
Name of the Student: **B.KEERTHANA**
Hall Ticket No: **: Y21S028004**
PAPER-I **: MOLECULAR BIOLOGY**

Date of submission: 16-07-2022

SUBMITTED TO
M.KIRANMAYEE MADAM

SIGNATURE

Head
Department of Biomedical Sciences
Hindu College, Guntur.

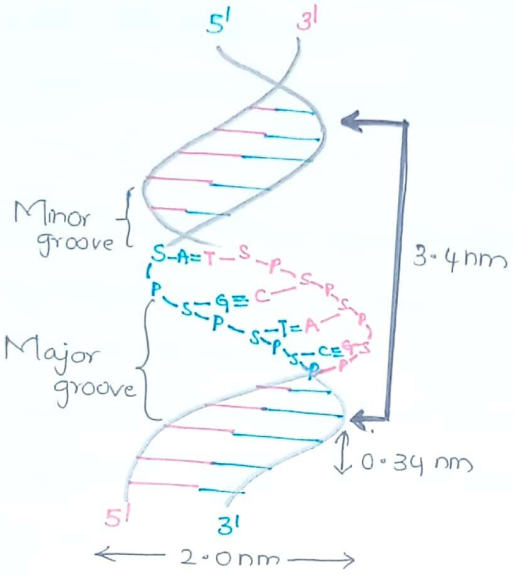
Index

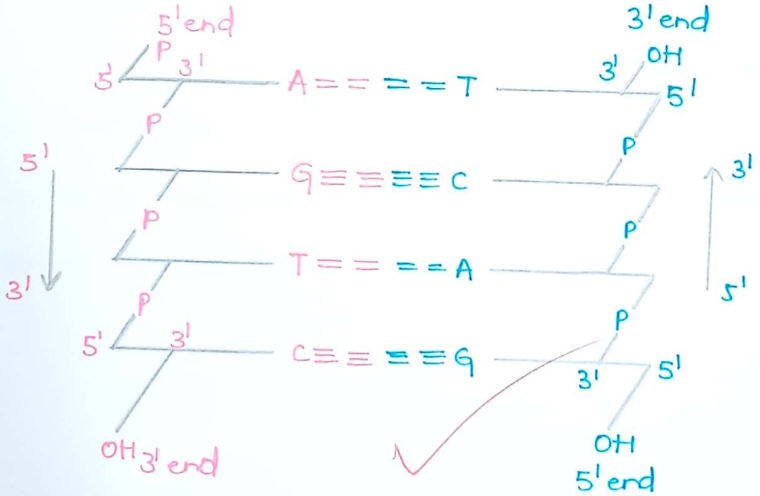
Introduction

* DNA is a longer polymer of deoxyribonucleotides.
* The length of DNA is usually defined in terms of no. of base pairs present in it.
* This is also characterstic an organism.
* DNA acts as genetic material in most of organisms.
* Through RNA acts as the genetic material in Some "Viruses" It's mostly functions as a messenger and has additional roles as well.
* During mendel's time, the nature of those factors regulating the pattern of inheritance was not clear.
* Over the next hundred years the nature of the putative genetic material was investigated, Culminating, In the realisation that DNA.
* DNA - deoxyribonucleic acid - is the genetic material ~~at~~least for the majority of organisms

A) Watson & Crick model of DNA helix

B) Complementary base pairing of DNA helix





Structure of DNA

* DNA is polymer of deoxyribo nucleotides.
* It is composed of monomeric units namely deoxyadenylate (dAMP), deoxyguanylate (dGMP), deoxycytidylate (dCMP) and deoxythymidylate (dTMP)

Chargaff's rule of DNA Composition

* "Erwin chargaff" in late 1940s quantitatively analysed the DNA hydrolysates from different species.
* He observed that in all the species he studied DNA had equal no. of adenine & thymine residues (A = T) and equal no. of guanine & Cytosine residues (G ≡ C).
* This is known as chargaff's rule of molar equivalence blw the purines and pyrimidines in DNA structure.

SS-DNA and RNA's which are usually Single Stranded, donot obey chargaff's rule.

* However ds-RNA which is the genetic material in Certain Viruses satisfies chargaff's rule.

DNA Double helix

* The double helical structure of DNA was proposed by James Watson and Francis Crick in 1953. (Noble prize in 1962)
* The elucidination of DNA structure is considered as a milestone in the era of modren biology.
* The structure of DNA double helix is comparable to a twistted leger ladder.
* The salient features of Watson-Crick model of DNA (now known as B-DNA) are given below.

1) The DNA is right handed double helix. It consists of two polydeoxyribonucleotide chains, twisted around each other on a common axis.
2) The 2 strands are antiparallel i.e., one strand runs in the 5^1-3^1 direction while the other in 3^1-5^1 direction. This is comparable to two parallel adjacent roads carrying traffic in opposite direction.
3) The width of double helix is 20A° (2nm)
4) Each turn(pitch) of the helix is 34A° (3.4nm) with 10 pairs of nucleotides each pair placed at a distance of about 3.4A°.

Types of DNA

* The DNA can be occurs in 3 different forms

1) A - DNA
2) B - DNA
3) Z - DNA.

1) A-DNA :-

* A form of DNA mostly found in Solutions under dehydrating Conditions.
* B-DNA undergoes reversible Conformations to form A-DNA.
* It is right handed double helical structure diameter of each helix is 26 A°
* Each turn of double helix Contain 11 base pairs 28 A°. and each base pair is occupied by 0.26 nm or 26 A°.
* A-DNA is shorter & have greater diameter than B-DNA.
* Mostly the DNA is Crystalised in A-form.

2) Z-DNA

* The Z-DNA has ~~d~~ left handed double helix structure the diameter of each helix is 18 A°.
* Each turn of helix Contains 12 base pairs 45 A° & each pair occupies 0.38 nm / 38 A°.

Bibilography

Reference :- Essentials of biochemistry.

Edition :- Third edition.

Authors :- U. Satyanarayana

U. Chakrapani

Page no :- 31 - 39

HINDU COLLEGE, GUNTUR

ACADEMIC YEAR: 2021-2022

DEPARTMENT: BIOMEDICAL SCIENCE

1st B.sc 2nd semester

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NAME OF THE ASSIGNMENT:

DNA LIGASES

Submitted by :
Name of the Student: POTHABATHULA.YAMINI
Hall Ticket No: : Y21SO28020
PAPER-II : Molecular Biology

SUBMITTED To.
M.Kiranmayee mam

Date of submission: 16-07-2021

M.Kiranmayee
SIGNATURE

Head
Department of Biomedical Sciences
Hindu College, Guntur.

DNA LIGASE

- The word ligase came from the Latin word "ligare", which means "-to bind."

DEFINITION

- DNA ligase is a DNA-joining enzyme. If two pieces of DNA have matching ends, it can link them to form a single, unbroken molecule of DNA.

In DNA cloning, restriction enzymes and DNA ligase are used to insert genes and other pieces of DNA into plasmids.

ORIGINATION

The discovery of DNA ligases in 1967 by the Gellert, Lehman, Richardson and Hurwitz laboratories was a watershed event in molecular biology.

By joining 3'-OH and 5'-PO_4 termini to form a phosphodiester, DNA ligases are the sine qua non of genome integrity.

HISTORY

It was first purified and characterized by Weiss and Richardson using a six-step chromatographic fractionation. Beginning with the elimination of cell debris and addition of streptomycin, followed by several Diethylaminoethyl (DEAE) cellulose column washes and a final phosphocellulose fractionation.

The gene encoding T_4 DNA ligase was cloned by Wilson & Murry in 1979.

The primary structure & genetic organization of T_4 DNA ligase was investigated by Armstrong in 1983.

DNA LIGASE IN BIOLOGY

An enzyme that uses ATP to form bonds, is used in recombinant DNA cloning to join restriction endonuclease fragments that have annealed.

It is commonly used in is T4 DNA ligase, which was first isolated from E. coli that were infected with the lytic bacteriophage T4.

The common names of ligases often include the word ligase. such as DNA ligase, an enzyme commonly used in molecular Biology laboratories to join together DNA fragments.

Other common name for ligases include the word "synthetase", because they are used to synthesize new molecules.

They belong to the enzyme commision number 6 class of enzymes. It includes synthases and carboxylases.

TYPES

E. COLI

The Ecoli DNA ligase is encoded by the ligase gene.

DNA ligase in Ecoli, as well as most prokaryotes, uses energy gained by cleaving nicotinomide adenine dinucleotide (NAD) to create phosphodiester bond.

The activity of E.coli DNA ligase can be enhanced by "DNA polymerase" at the right concentrations.

When the concentration of pol I DNA polymerases are higher, it has an adverse effect on E-coli DNA ligase.

T_4

- The ligase from bacteriophage (T_4). it is the most commonly used in laboratory research.
- It can ligate blunt-ended DNA with much greater efficiency the ecoli ligase.
- T_4 ligase cannot utilize NAD and it has an absolute requirment for ATP as a co factor.
- The optimal incubation temperature for T_4 DNA ligase is 16°C.
- it mutants have increased sensitivity to both ultra violet ir radiation and the alkylating-Agent methyl methanesul-fonate indicating that its employed in the repair of the DNA damages caused by the agents.

MAMMALIAN DNA LIGASE

- mammalian DNA ligase has 4 specific types.

DNA LIGASE I

It ligates the nascent DNA of the lagging strand after the ribonuclease H has removed the DNA primer from the okozaki fragments.

DNA LIGASE II

A purification artifact resulting from proteolytic degradation of DNA ligase III. it has been recognized as another ligase and it the reason for the unusual nomenclature of DNA ligases.

DNA Ligase-III

mitochondria of the all known mammalian DNA ligases, only ligase III has been found to be present.

DNA ligase IV - complexes with XRCC4. It catalyzes the final step in the non-homologous end joining DNA double strand breaks repair pathway.

DNA LIGASE IV

Complexes with XRCC4. It catalyzes the final step. The process that generates diversity in immunoglobulin and T-cell.

REASEARCH APPLICATIONS

DNA ligases have become indispensable tools in modern molecular Biology research for generating recombinant DNA sequence.

Ex:- Ligases are used with restriction enzymes to insert DNA fragments, often goes into plasmids.

It controlling the optimal temperature is vital role in recombination experiments.

T4 DNA ligase - most active at 37°C.

AS A DRUG TARGET

In recent studies, human DNA ligase I was used in computer-aided drug design to identify DNA ligase inhibitors. as possible therapeutic agents to treat cancer.

FUNCTIONS

It play an important role in maintain genomic integrity by joining breaks in the phosphodiester backbone of DNA that occur during replication and recombination and as a consequence of DNA damage and its repair.

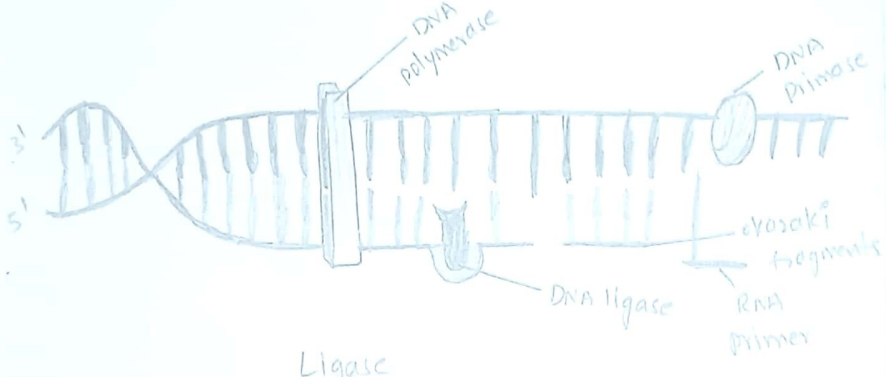
Three human genes such as LIG1, LIG3, LIG4 encode ATP dependent DNA ligases.

cells for the body to work normally.

- Sometimes caused by secrection of faulty blood cells in bone marrow. It leads to leukemia.

Bloom syndrome

- Skin that is sensitive to sun exposure and usually the development of a butterfly shaped patch of reddened skin across the nose and cheeks.



Ligase

Lagases are "molecular glues".

Reference

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www . biology online . com.
www. en. m. wikipedia . com.
www . science direct . com.
www. khanacad emy . org. com.

Nikisanmayee

Assignment - I.

Human Anatomy and Physiology.

Presented by :-

M. Hemachandra chari

B.S.C Bio-medical

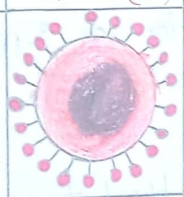
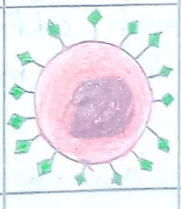
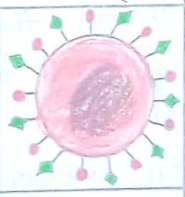
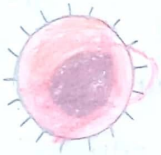
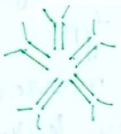
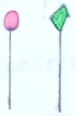
I^st year., I^st Semester.

Presented to :-

Dr. M. Priyanka mam

Blood grouping.

A blood type [also known as a blood group] is a classification of blood, based on the presence and absence of antibodies and inherited antigenic substances on the surface of red blood cells [RBCs]. These antigens may be proteins, carbohydrates, glycoproteins or glycolipids, depending on the blood group system. Some of these antigens are also present on the surface of other types of cells of various tissues. Several of these red blood cell surface antigens can stem from allele (or an alternative version of a gene) and collectively form a blood group system.

	Group (A)	Group (B)	Group (AB)	Group (O)
Red blood cell type.				
Antibodies in plasma.	 Anti – B	 Anti – A	None	 Anti-A and Anti-B
Antigens in red blood cells	 A antigen	B antigen	 A and B antigens	None

Blood types are inherited and represent contributions from both parents. As of 2019, a total of 41 human blood group systems are recognized by the international society of blood transfusion [ISBT].

The two most important blood group systems are ABO and Rh; they determine someone's blood type (A, B, AB, and O with +, − or null denoting Rhd status) for suitability in blood transfusion.

Blood group systems :-

A complete blood type would describe each of the 38 blood groups, and an active individuals blood type is one of my possible combinations of blood-group antigens.

Almost always, an individual has the same blood group for life, but very rarely an individual's blood type changes through addition or suppression of an antigen in infection, malignancy, or autoimmune disease.

Another more common cause of blood type change is a bone marrow cause of blood type change is a bone marrow transplant. Bone marrow transplants are performed for many leukemias and lymphomas, among other diseases. If a person receives a type bone marrow from someone of a different ABO type (e.g., a type A patient recives a type O

bone marrow), the patient's blood type should eventually becomes the donor's type, as the patient's hematopoietic stem cells (HSCs). are destroyed, either by ablation of the bone marrow or by the donor's T-cells. Once all the patient's original blood cells have divided, they will have been fully replaced by new cells derived from the donor HSCs. Provided the donor had a different ABO type, the new cell's surface antigens will be different from those on the surface of the patient's original red blood cells.

Some blood types are associated with inheritance of other diseases; for Example, the Kell antigen is sometimes associated with McLeod Syndrome. Certain blood types that may affect susceptibility to infections, an Example being the resistance to specific malaria species seen in individuals lacking the duffy antigen. The duffy antigen, Presumably as a result of natural selection, is less common in Population groups from areas having a high incidence of malaria.

ABO blood group System :-

The ABO blood group System involves two antigens and two antibodies found in human blood. The

two antigens are antigen A and antigen B. The two antibodies are antibody A and antibody B. The antigens are present on the red blood cells and the antibodies in the serum. Regarding the antigen property of blood all human beings can be classified into 4 groups. those with antigen A (group A), those with antigen B (group B) those with antigen A and B (group AB) and those with neither antigen (group O). The antibodies present together with ~~antibodies~~ antigens are found as follows.

1. Antigen A with antibody B
2. Antigen B with antibody A
3. Antigen AB has no antibodies
4. Antigen nil (group O) with antibody A and B.

Rh blood group system:-

The Rh system (Rh meaning Rhesus) is the second most significant blood-group system in human-blood transfusion with currently 50 antigens. The most significant Rh antigen is the D antigen, because it is the most likely to provoke an immune system response of the five main Rh antigens. It is common for D-negative individuals not to have any anti-D IgG or IgM antibodies, because anti-D antibodies are not usually produced by sensitization against environmental substances. However, D-negative individuals can produce IgG anti-D antibodies following a sensitizing event: possibly a fetomaternal transfusion of blood from a fetus in pregnancy or occasionally a blood transfusion with D positive RBCs. Rh disease can develop in these cases. Rh negative blood types are much less common in Asian populations (0.3%) than they are in European populations (15%). The presence or absence of the Rh (D) antigen is signified by the + or - sign, so that, for an example, the A- group is ABO type A and does not have the Rh (D) antigen.

Other blood group systems:-

As of 2019, 26 blood-group systems have been identified by the international Society for Blood transfusion in addition to the ABO and Rh systems. Thus, in addition to the ABO antigens and Rh antigens, many

Human

* Anatomy & physiology

Topic :- Haemopoiesis

Assignment.... 2

Presented to :- Priyanka Mam

Presented by :- B.V. Sirisha

HAEMOPOIESIS

* Haemopoiesis (or) hematopoiesis is the formation of blood cells.
* Haemopoietic organs are bone marrow, thymus, lymph nodes and lymph follicles, spleen and liver.

Prenatal and neonatal haemopoiesis.

* Haemopoietic cells in mammalian and avian embryos first appear in yolk sac wall.
* Later the liver and spleen are seeded.
* Towards term and post-natally bone marrow become major site of haemopoiesis.
* progressive haemopoiesis in these organs results from in-situ differentiation of circulating stem cells.
* Stem cells in the bursa of fabricius in birds and thymus in mammals and birds are supplied through circulation.
* post-natally haemopoiesis is restricted to bone marrow.
* The liver and spleen are inactive but retain potential to revert to haemopoiesis in diseases of bone marrow.

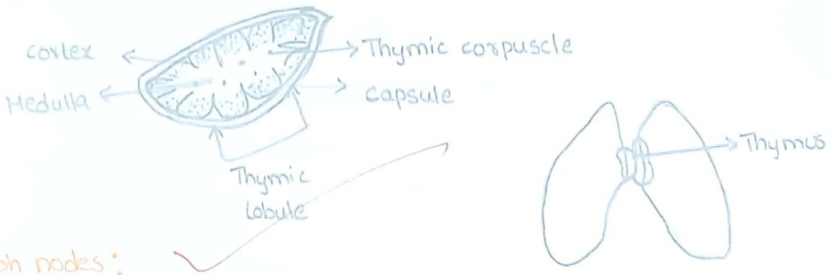
functions of haemopoietic organs and related tissues.

Bone marrow:-

* produces erythrocytes, granulocytes, monocytes, platelets and B-lymphocytes.
* Supplies stem cells for lymphocyte production in thymus and spleen.
* Stores iron.

Thymus

* central lymphoid organ where bone marrow derived precursor cells differentiate into immunologically competent T-lymphocytes.
* The thymus is located in the upper front part of the chest in the anterior superior mediastinum, behind the sternum, and infront of the heart.
* It is made up of two lobes, each consisting of a central medulla and an outer cortex, surrounded by a capsule.



Lymph nodes:

* produce lymphocytes and plasma cells
* Produce antibodies.

Spleen:

* produces lymphocytes and plasma cells.
* synthesizes antibodies.
* Reservoir of erythrocytes and thrombocytes.
* Destroys senescent and abnormal erythrocytes.
* Degrades haemoglobin
* stores iron.
* pitting function; removes howel - jolly bodies, Heinz bodies, nuclei and parasites from erythrocytes.
* potential of haemopoiesis.

Thymus

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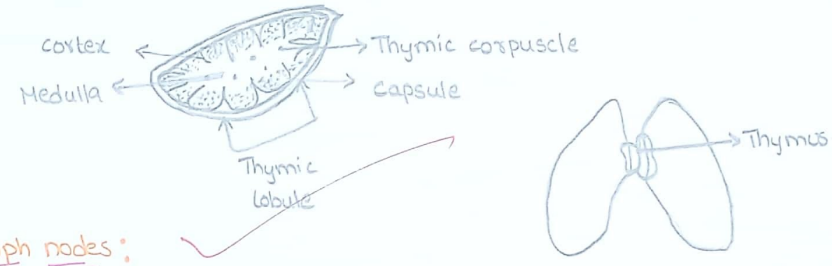

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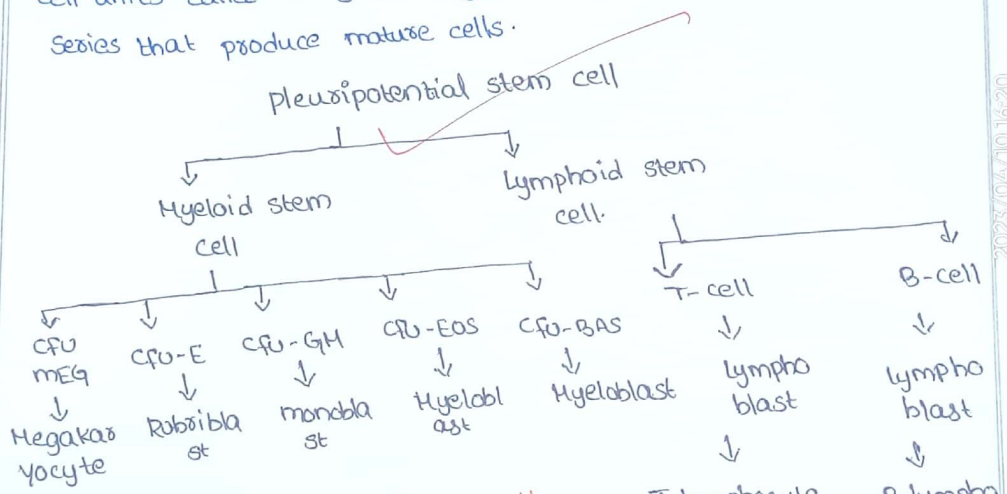
* potential of haemopoiesis.

LIVER

* stores vit. B12, foliate and iron.
* produces coagulation factors, albumin, and some globulins.
* converts free bilirubin to bilirubin glucoronide for excretion into bile.
* participates into entero-hepatic circulation of urobilinogen.
  produces α-globulin, a precursor of erythropoietin.
* produces erythropietin.
* Embryonic potential of haemopoiesis.
  - Hyebid any lymphoid stem cells in turn give rise to committed cell units called colony forming units (CFU) leading to specific series that produce mature cells.



plusipotential stem cell

* primitive mesenchymal cell from yolk sac endoderm.
* seeds liver spleen, bone marrow.
* In adults plusipotential haemopoietic stem cells found in bone marrow.
* Mobilised by dextran sulphate injection.
* Both multipotential and unipotential stem cell compartments are self perpetuating.

Factors regulating hemopoiesis

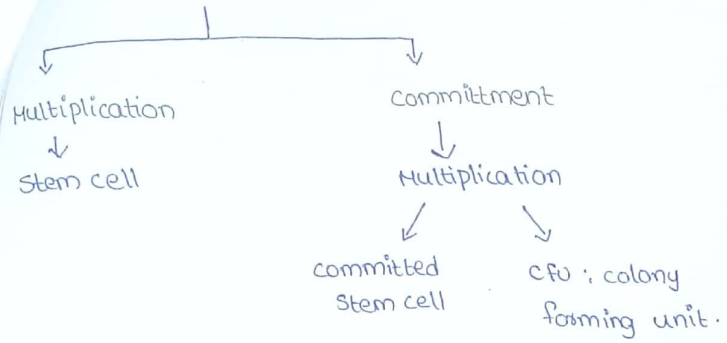
* Both endogenous and exogenous.
* Microenvironment and humoral substances that stimulate (or) supress proliferation of single (or) multiple cell lineages.
* Interleukin 3 (IL-3) is multispecific growth factor that stimulates easly progenitors cells.
* Erythropoietin acts on differentiated cell lineage of erythropoietic series.
* Stem cell differentiation is stimulated by hamopoietic inductive microenvironment.
* prostaglandin E (PGE_1) and PGE_2, PGI_2.

A - yolk sac
B - liver
C - spleen
D - Bone marrow.

Haemopoetic stem cells

1) Haemopoietic stem cells reside in the medulla of the bone.
2) They are very unique as they have the ability to mature into all the different blood cell types and tissues.
3) They are self renewing cells.
4) Daughter cells are cells that are the result from the division of a single parent cell. A single parent cell divides forming two daughter cells.

Clonal hemopoiesis.



* Pluripotent cells capable of asymmetric division and self-renewal
* Some of their daughter cells form specific, irreversibly committed progenitor cells, and other daughter cells remain as a small pool of slowly dividing stem cells.
* Hemopoietic stem cells can be isolated by using fluorescence-labelled antibodies to mask specific cell surface antigens and passing the cell population through a fluorescence-activated cell sorting (FACS) instrument.
* Stem cells are studied using experimental techniques that permit analysis of hemopoiesis in vivo and in vitro.
* In vivo techniques using semisolid tissue culture media containing substances produced.
* Simply, hematopoiesis is the process through which the body manufactures blood cells.
* It begins early in the development of an embryo. well before birth, and continues for the life of an individual.
* All blood cells and plasma develop from a stem cell that can develop into any other cell.

Reference: Text book of Anatomy.

9/10

12/2/23

ASSIGNMENT - 01

TOPIC : ELECTRON MICROSCOPE

Subject : FUNDAMENTALS OF CELL BIOLOGY

COURSE : B.Sc Biomedical [1st year]

ROLL NO : 565

Submitted by :

CHINKA DIVYA SAI MANIKANTA

Submitted to :

G. SWARNA LATHA MAM

ELECTRON MICROSCOPE

In the following year, 1933, RUSKA built the first electron microscope that exceeded the resolution attainable with an optical (light) microscope four years later, in 1937, Siemens financed the work of ERNST Ruska and Bodo von Borries and empolyed Helmet Ruska · Ernst's Brother to develop applications for the microspoe, Especially with Biological Specimens also in 1934, manfred von Ardenne poineered the Scanning electron microscope (7) Siemens. Also in 1934, manfeed von Ardenne pioneered the Scanning electron microscope were constructed in the 1930, at the washington state university in the Adelson and Ritzsimmers (9) and the University of Toronto, by fii frankiin Burton and students Cecil Hall, James Hillier, and Albert Reebus. Siemens produced a transmission eletron microscope [TEM] in 1939.

Although current transsmission electron microscope are capable of two millions-power magnification as scientific Instruments, they remains based upon Ruskas prototype

An electron microscope is a micro

that uses a Beam of accelated electrons as a source of illumination As the wavelength of an elctron can be up on to 100,000 times shorter that of visible light photons electrons microscope have a higher resolving power than light microsoope. and can reveal the structure. of smaller objects. A Scanning transsimision eletron microscope has achived better than 50 per resolution in annular dark - feild filled imaging mode and magnification of up to about 10,000,000 X where as most light microscopes are limited by differaction to about 200nm resolution and useful magnification

Below 2000X electron microscope use shaped magnetic fields to form eletron offically lens system that are analogous to the glass lenses of an offical light microscope.

eletron microscope are used to investigate the ultra structure of a wide range of Biological and inorganic speimens including microorgani cells large molecules Biopy samples metals, and crystals. Industrially, electron microscope are often digital cameras and frame grabers to capture the images

Types

1. [TEM]

TEM - Transmission electron microsope are often used in electron diffraction mode the advantages of electron diffraction over X-ray Crystallography are that the Specime need not be a single Crystal(or) even a polycrystaine powder and also that the Fourier transform reconstry stream of the object magnified structure occurs physially and thus avoids the need for solving the phase problem faced by the x ray crystallographer after Obtaining their x-ray diffraction patterns. are major disadvantages of the transmission electron microscope is the need for extremely thin sections of the specimens (typically about 100 nanometer creating these thin sections for Biological and meterials specimens is technically very challengin Semiconductor thin sections can be made using a focused ion Beas Biological tissue specimens are chemically fixed dehydrated and oft embedded in a polymer resin to stabilized and Similar material may require staining with heavy atom labels in order to achive the required image contract.

II [SEM]

the sem produces image by probing the specimen with a focused eletron beam that is scanned across a rectangular area of the specimen

When the electron beam interacts with the specimen, it loses energy by a variety of mechanisms the loses energy by a variety of mechanisms the lost energy by a variety of forms such as heat, Emission of low-energy secondary eletrons and high-energy Back-Scattered eletrons, light emission, all of which provide signals carrying informations about the properties of the specimens surface, such as it topography and composition.

The image displayed by an SEM mais the varying intensity of any of these singals into the image in a position corresponding to the position of the beam on the specimen when the signal was generated In the SEM image are constructed from signals produced by a Secondary electron detector, the normal (or) convential Imaging mode is most SEM's.

* FUNDAMENTALS OF CELL BIOLOGY *

ASSIGNMENT-1

Topics :-

1. MITOSIS.

Presented by :-

Name : challa.pujambica.
Group : Bsc. Biomedical Science.
Date :

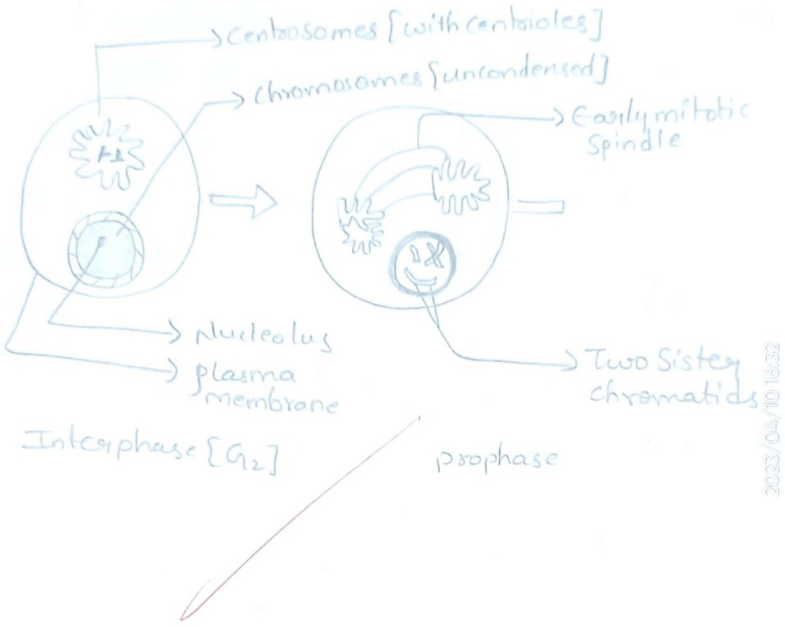
Presented to :-

Gudapati. Swarnalatha ma'am

* MITOSIS *

The term mitosis coined by walther flemming in 1882, is derived from the Greek Word [Mitos, "wap-thread"] there are some alternative names for the process eg:- karyokinesis [Nuclear division], a term introduced by Schleicher in 1878, or equational division proposed by August weismann in 1887. However, the term "mitosis" is also used in a broad Sense by some authors to refer to karyokinesis and Cytokinesis together presently 'equational division' is more commonly used to refer to meiosis, the part of meiosis most like mitosis.

During mitotic progression, typically after the anaphase onset, the cell may undergo Cytokinesis In animal cells, a cell membrane pinches inward between the two developing nuclei to produce two new cells. In plant cells, a cell plate forms b/w two nuclei Cytokinesis does not always occur; Coenocytic [a type of multinucleate Condition] cells undergo mitosis with at Cytokinesis.



Interphase:-

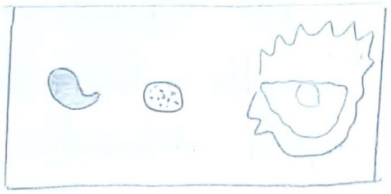
The mitotic phase is a relatively short period of the cell cycle. Interphase is divided into three phases:- G_1 : [first Gap], S [synthesis] and G_2 [Second gap]. During all three parts of interphase, the cell grows by providing proteins and Cytoplasmic organelles. However, chromosomes are replicated only during the S phase. All these phases in the cell cycle are highly regulated by Cycins, Cycin proteins the phases follow are one another is strict order and there are "checkpoints" that give the cell uses to proceed from one phase to another in strict order and there are proceed from one phase to another cells may also temporarily or permanently leave the cell cycle and center G_0 phase to dividing this can occur when cells become over Crowded [density dependent inhibition] or when they differentiate to carry out Specific functions for the differentiate to

human heart muscle cells and neurons. Some G_0 cells have the ability to re-enter the Cell cycle.

During prophase, which occurs after G_2 interphase the Cell-prepares to divide by tightly Condensing. Its chromosome and initiating mitotic Spindle formation. During interphase the packed chromatin. At the onset of prophase, chromatin fibres Condense into disecrete chromosomes that are typically visible at high magnification through a light microscope. In this stage, chromosome has two chromatids are joined at the Centromere gene transcription Ceases during prophase the neucleolus also disappears during early prophase.

close to the nucleus of animal cells are structures Called Centrosomes Consisting of a pair of Centrioles Surrounded by a loose Collection of proteins. The Centrosome is the Cording of proteins. The centrosome in the Cells of microtubules. A cell inherits a duplicated by the cells before a new round of mitosis begins giving a.

Prophase




Nuclear membrane
Spindle fibres form attach to the Centromere of the chromosome.

Pair of Centrosomes, the two Centrosome polymerize tubulin to help form a microtubule Spindle apparatus motor proteins then push the Centrosome along these microtubules to opposite Sides of the Cell. Although Centrosome help organize microtubule assembly, they are not essential for the formation.

Prophase :-

Condensing chromosomes.

Interphase Nucleus [left], Condensing chromosomes [middle] and Condensed chromosome [Right].

Prometaphase:-

At the begining of prometaphase in animal cells. Phosphorylation of Nuclear lamins Causes the nuclear envelop to disentigrate into Small membrane vesicles. As this happens, microtubules invade the nuclear Space.

In late prometaphase, kinetochore microtubule begin to Search for and attach to chromosomal kinetochores. A kinetochore is a protein accous microtubule binding Structure that forms on the chromosomal.

Centeore during late prophase. A number of polar microtubules fined that interact with Corresponding polar microtubules from the opposite Centrosome to form the mitotic Spindle. Although the kinetochore Structure and function not fully understood, it is known that it Contains Some form of molecular motor.

Metaphase :-

After the microtubules have located and attached to the kinetochores in prometaphase the two Centrosome begin the chromasomes towards opposite ends of the Cell the resulting tension Causes the chromosomes to align along the metaphase plate or equatorial plane, an imaginary line that is Centrally located between the two Centrosomes [at approximately the midline of the cell. To ensure equitable distribution of chromosomes at the end of mitosis, the metaphase checkpoint gurantes that kinetochores are properly attached to the mitotic Spindle and that the

chromosomes are aligned along the metaphase plate. If the cell successfully passes through the metaphase checkpoint. It proceeds to anaphase.

Anaphase:-

During anaphase A, the cohesins that bind sister chromatids together are cleaved, forming two identical daughter chromosome. Shortening of the cell during anaphase polar microtubules push against each other, causing the cell to elongate. In late anaphase chromosome also reach their overall maximal condensation level, to help chromosome segregation and the reformation of the nucleus. In most animal cells, anaphase. A precedes anaphase. But some Vertebrate egg cells demonstrate the opposite order of events.

Mitosis Occurs in the following Circumstances:-

⇒ Development and growth:

The number of cells within an organism increases by mitosis this is the basis of the development of a multicellular body from a single cell i.e., zygote and also the basis of

Reproduction or vegitative propogation in plants.

Telophase :-

Telophase [from the greek word] og meaning is a reversal of prophase and prometaphase events. At telophase the polar microtubules Continue to lengthen, elongating the cell even more. If the nuclear envelop has broken down, a new nuclear envelop forms using the membrane vesicles of the parent cells old nuclear envelop.

The new envelop forms around each Set of seperated daughter chromosomes [though and the membrane does not enclose the Centrosomes] and the nucleolus reappears. Both Sets of chromosomes now Surrounded by the new nuclear membrane, begin to relax or decondense.

Mitosis is Complete. Each daughter nucleus has an identical Set of chromosomes, Cell division may or may not occur at this time depending on the organism.

PROBLEM SOLVING

Name of the Department : **Department of Biomedical Sciences**

Date : 08-09-2021

Title of the Event : Problem solving(Nervous system model)

Venue : Anatomy and Bio-chemistry laboratory.

Co-Ordinator : G. Swarna latha

No. of Staff Members Involved : 3

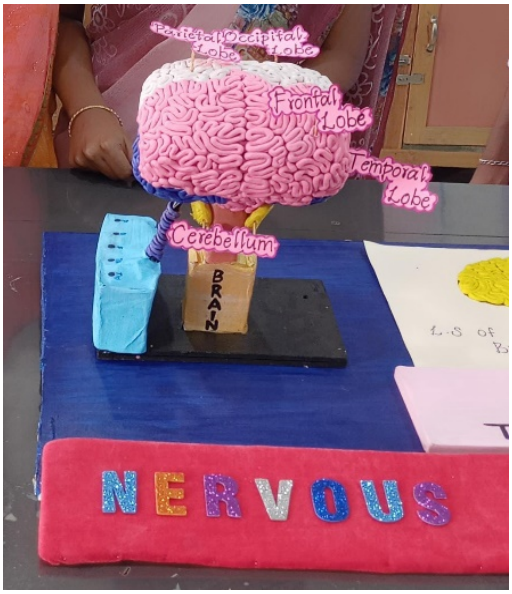
No. of Students Involved : 5

Objective of the event: To make the students to identify the features of the nervous system. To make students explain the parts of the brain: cerebrum, cerebellum, brain stem, pituitary, gland, and hypothalamus.

Plan and Execution: By using this model students get knowledge of nervous system, functions and its disorders.

Outcome of the Event: Studying the nervous system advances understanding of our basic biology and body function. Knowing how things typically work can help shed light on what may happen when there are problems. It can help researchers find ways to prevent or treat problems that affect the brain, nervous system, and body.

Evidence:



Signature of H.O.D

Name of the Department **: Department of Biomedical Sciences**

Date **:** 22-09-2021

Title of the Event **:** Problem solving (Respiratory system model)

Venue **:** Anatomy and Bio-chemistry laboratory.

Co-Ordinator **:** G. Swarna latha

No. of Staff Members Involved **:** 3

No. of Students Involved **:** 5

Objective of the event: To make the students to identify the features of the respiratory. To make students explain the parts of the respiratory system lungs rib cage.

Plan and Execution: By using this model students get knowledge of respiratory system, functions and its disorders.

Outcome of the Event: Studying the respiratory system advances understanding of our basic biology. Knowing to Identify the major components of the respiratory system and describe their functions. Describe pulmonary ventilation and identify the structures involved. Describe external respiration and identify the structures involved.

Evidence:

Signature of H.O.D

Name of the Department : **Department of Biomedical Sciences**

Date : 05-10-2021

Title of the Event : Problem solving(Heart - circulatory system model)

Venue : Anatomy and Bio-chemistry laboratory.

Co-Ordinator : G. Swarna latha

No. of Staff Members Involved : 3

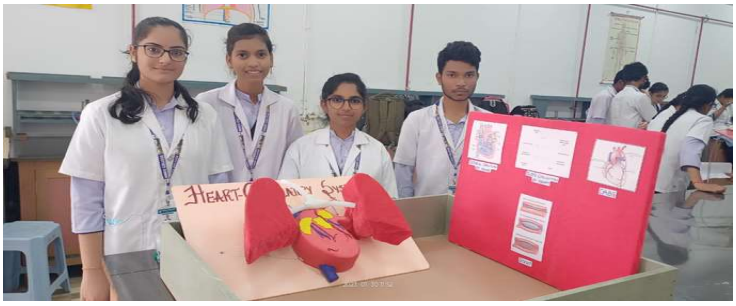
No. of Students Involved : 4

Objective of the event: To make the students to identify the features of the heart-circulatory system. To make students explain the parts of the heart-circulatory system arteries, veins. capillaries,blood.

Plan and Execution: By using this model students get knowledge of heart-circulatory system, functions and its disorders.

Outcome of the Event: Studying the heart-circulatory system advances understanding of our basic biology. Knowing to Identify the major components of the heart-circulatory system and describe their functions. Describesdelivers oxygen and nutrients to cells and takes away wastes. The heart pumps oxygenated and deoxygenated blood on different sides. The types of blood vessels include arteries, capillaries and veins.

Evidence:



Signature of H.O.D

Name of the Department **: Department of Biomedical Sciences**

Date **:** 21-10-2021

Title of the Event **:** Problem solving(Pregnancy stages)

Venue **:** Anatomy and Bio-chemistry laboratory.

Co-Ordinator **:** M.Priyanka

No. of Staff Members Involved **:** 3

No. of Students Involved **:** 5

Objective of the event: To make the students to know about how human life begins, summarizes baby growth, describes problems can occur during pregnancy.

Plan and Execution: By using this model students get knowledge of human development and different stages of pregnancy.

Outcome of the Event: Studying the pregnancy stages advances understanding of our basic biology. Defines fertilization, three stages of pregnancy.

Evidence:

Signature of H.O.D

Name of the Department : **Department of Biomedical Sciences**

Date : 09-11-2021

Title of the Event : Problem solving(first aid)

Venue : Anatomy and Bio-chemistry laboratory.

Co-Ordinator : M.Kiranmayee

No. of Staff Members Involved : 3

No. of Students Involved : 5

Objective of the event: To make the students to know about how to save life before hospital.

Plan and Execution: By using this model students get knowledge of saving life.

Outcome of the Event: Studying the first aid advances to understand how and when to administer first aid. Able to provide appropriate treatment for the purpose of preserving life.Able to minimise the consequences of injury until the arrival of medical assistance

Evidence

Signature of H.O.D

Name of the Department : **Department of Biomedical Sciences**

Date : 30-11-2021

Title of the Event : Problem solving(Renal system)

Venue : Microbiology and Biotechnology laboratory

Co-Ordinator : M.Priyanka

No. of Staff Members Involved : 3

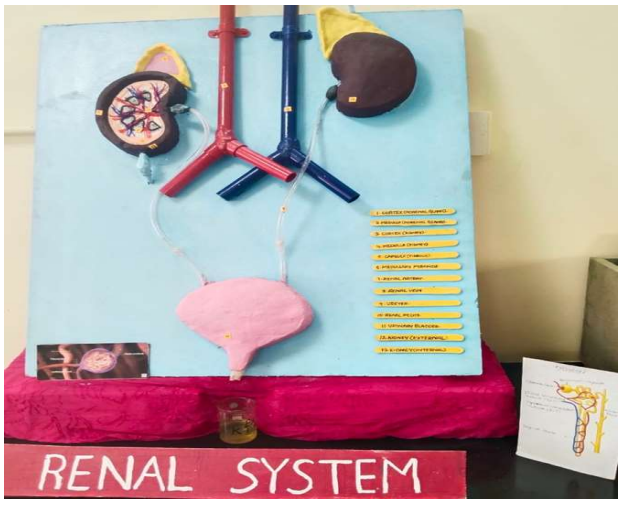
No. of Students Involved : 5

Objective of the event: To make the students to know about how Renal system functions. Identification of the urinary system particularly kidneys. Describes the functions of nephrons.

Plan and Execution: By using this model students get knowledge of Renal system.

Outcome of the Event: Studying the Renal system advances to understand how kidneys functions. Able to provide information about filtration and urine formation.

Evidence



Signature of H.O.D

Name of the Department : **Department of Biomedical Sciences**

Date : 08-12-2021

Title of the Event : Problem solving(Kidney disorder)

Venue : Microbiology and Biotechnology laboratory.

Co-Ordinator : M.Priyanka

No. of Staff Members Involved : 3

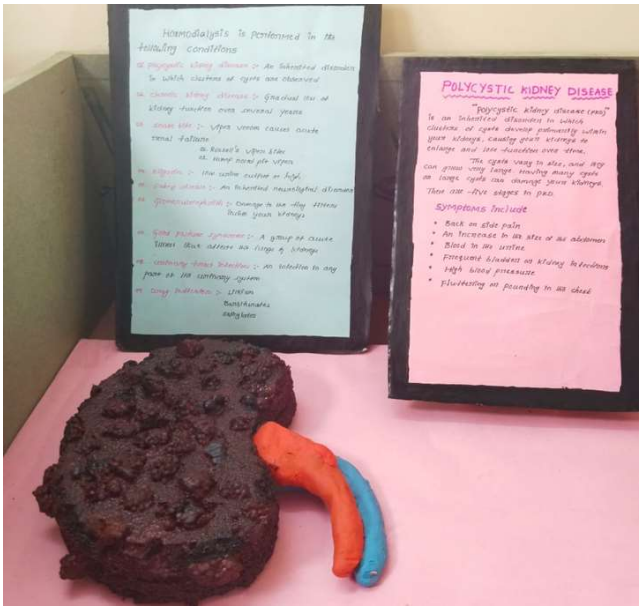
No. of Students Involved : 5

Objective of the event: To make the students to know how kidney are infected.

Plan and Execution: By using this model students get knowledge of kidney disorders.

Outcome of the Event: Studying the kidney disorders helps to gain knowledge about the kidney functions importance.

Evidence:



Signature of H.O.D

Name of the Department **: Department of Biomedical Sciences**

Date **:**14-12-2021

Title of the Event **:** Problem solving(Haemodialysis)

Venue **:** Microbiology and Biotechnology laboratory

Co-Ordinator **:** M.Priyanka

No. of Staff Members Involved **:** 3

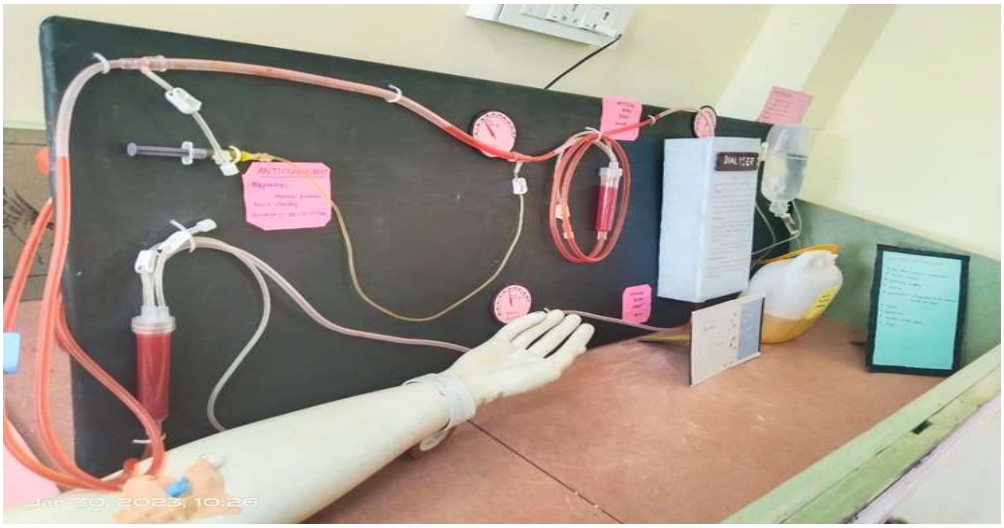
No. of Students Involved **:** 5

Objective of the event: To make the students to know about how artificially blood filtered.

Plan and Execution: By using this model students get knowledge of Haemodialysis.

Outcome of the Event: Studying the Haemodialysis advances to understand how kidneys functions. Able to provide information about filtration.: Severe forms of kidney disease which requires dialysis are curable in some instances. Even if it is not curable, the patient can still lead a meaningful life while on dialysis.

Evidence:



Signature of H.O.D

Name of the Department **: Department of Biomedical Sciences**

Date **:** 22-12-2021

Title of the Event **:** Problem solving(Structure of DNA)

Venue **:** Microbiology and Biotechnology laboratory

Co-Ordinator **:** M.Kiranmayee

No. of Staff Members Involved **:** 3

No. of Students Involved **:** 5

Objective of the event: To make the students to know about structure of DNA and its function.

Plan and Execution: By using this model students get knowledge of double helical structure of DNA.

Outcome of the Event: Studying the DNA structure advances to understand howDNA is constructed.The secondary structure of DNA is important in many events in cellular life.

Evidence:

Signature of H.O.D

Name of the Department : **Department of Biomedical Sciences**

Date : 30-12-2021

Title of the Event : Problem solving(Replication of DNA)

Venue : Microbiology and Biotechnology laboratory

Co-Ordinator : M. Kiranmayee

No. of Staff Members Involved : 3

No. of Students Involved : 5

Objective of the event: To make the students to know about DNA replication.

Plan and Execution: By using this model students get knowledge of replication of DNA.

Outcome of the Event: Studying the DNA replication helps to know how genetic matter is replicated and transferred from one generation to another generation.

Evidence:

Signature of H.O.D

Name of the Department : **Department of Biomedical Sciences**

Date : 04-01-2022

Title of the Event : Problem solving(Transcription of DNA to RNA)

Venue : Microbiology and Biotechnology laboratory

Co-Ordinator : M. Kiranmayee

No. of Staff Members Involved : 3

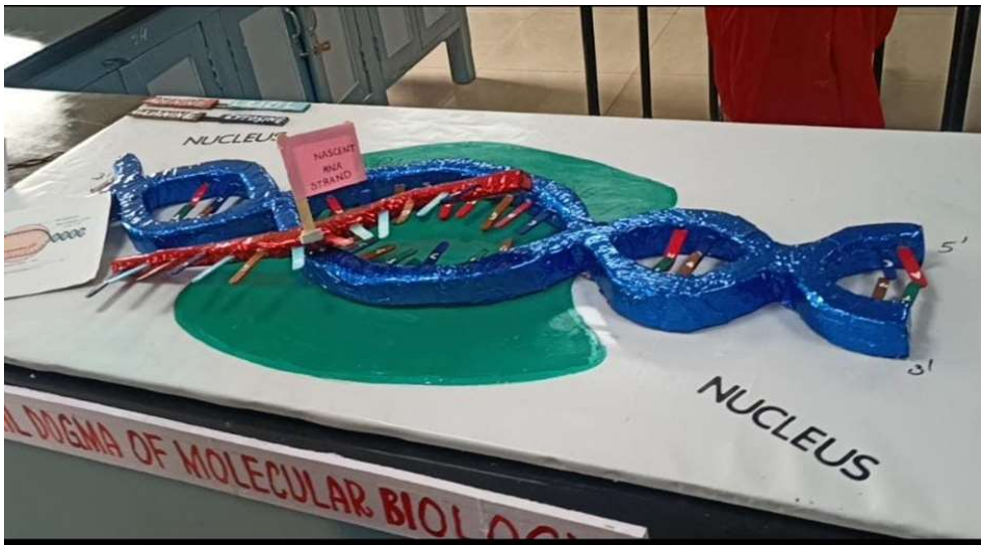
No. of Students Involved : 5

Objective of the event: To make the students to know about how DNA is transcribed into RNA.

Plan and Execution: By using this model students get knowledge abouttranscription of DNA to RNA.

Outcome of the Event: Studying the DNA transcription helps to know the different types of RNA produced by transcription. Be able to define promoter region. Be able to describe the three stages of transcription.

Evidence:



Signature of H.O.D

Name of the Department : **Department of Biomedical Sciences**

Date : 05-01-2022

Title of the Event : Problem solving(Translation of RNA to protein)

Venue : Microbiology and Biotechnology laboratory

Co-Ordinator : M. Kiranmayee

No. of Staff Members Involved : 3

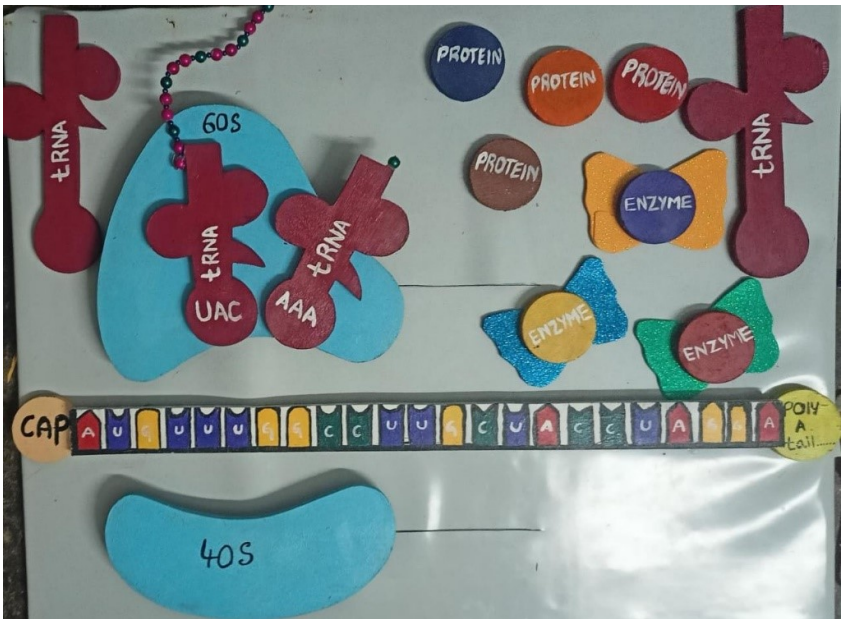
No. of Students Involved : 5

Objective of the event: To make the students to know about how protein is synthesized

Plan and Execution: By using this model students get knowledge abouttranslation.

Outcome of the Event: Studying the translation helps students to gain knowledge about how proteins synthesized and structural organization.

Evidence:



Signature of H.O.D

Name of the Department **: Department of Biomedical Sciences**

Date **:** 18-01-2022

Title of the Event **:** Problem solving(Translation of RNA to protein)

Venue **:** Microbiology and Biotechnology laboratory

Co-Ordinator **:** G.Swarna Latha

No. of Staff Members Involved **:** 3

No. of Students Involved **: 3**

Objective of the event: To make the students to know about how corona virus effects lungs.

Plan and Execution: By using this model students get knowledge about viral effect on lungs .

Outcome of the Event: Studying the infected lungs helps to get clear knowledge on viral infection.

Evidence:

G.S.latha

Signature of H.O.D

Name of the Department : **Department of Biomedical Sciences**

Date : 20-04-2022

Title of the Event : Problem solving(A survey on hemoglobin levels of adultsant girls of Hindu college Guntur)

Venue : Anatomy and Biochemistry laboratory

Co-Ordinator : M.Priyanka

No. of Staff Members Involved : 1

No. of Students Involved : **4**

Objective of the event: To makea survey on hemoglobin levels of adultsant girls of Hindu college Guntur.

Plan and Execution: By using this survey students can know importance hemoglobin.

Outcome of the Event: survey has a outcome that 35 out of 40 students were suffering with anemic conditions and they are guided to take proper diet.

Evidence:

Signature of H.O.D

Name of the Department **: Department of Biomedical Sciences**

Date **:** 25-04-2022

Title of the Event **:** Problem solving(Isolation and identification of penicillium species from soil sample, Hindu college, Guntur)

Venue **:** microbiology and biotechnology laboratory

Co-Ordinator **:** G.Swarna latha

No. of Staff Members Involved **: 2**

No. of Students Involved **: 4**

Objective of the event: To isolate and identify industrially useful bacteria present in soil.

Plan and Execution: By isolating industrial microbes students will be able to produce some antibiotics.

Outcome of the Event: by isolating and culturing of soil sample has shown the presences of penicillium which produces the antibiotic penicillin.

Evidence:

G.S.latha

Signature of H.O.D

Name of the Department **: Department of Biomedical Sciences**

Date **:** 30-04-2022

Title of the Event **:** Problem solving(Isolation and identification of aspergillus species from soil sample, Hindu college, Guntur)

Venue **:** Microbiology and biotechnology laboratory

Co-Ordinator **:** G.Swarna latha

No. of Staff Members Involved **:** 1

No. of Students Involved **: 4**

Objective of the event: To isolate and identify industrially useful bacteria present in soil.

Plan and Execution: By isolating industrial microbes students will be able to produce some antibiotics and industrial products.

Outcome of the Event: by isolating and culturing of soil sample has shown the presences of aspergillus.

Evidence:

G.S.latha

Signature of H.O.D

Name of the Department: Department of Biomedical Sciences

Date: 10-03-2022

Title of the Event: Problem solving(quiz)

Venue: H-BLOCK

Co-Ordinator: G.Swarna latha

No. of Staff Members Involved: 3

No. of Students Involved: 25

Objective of the event: To makestudents to gain general and sceintifical knowledge

Plan and Execution: By conducting quiz students will know recent happenings.

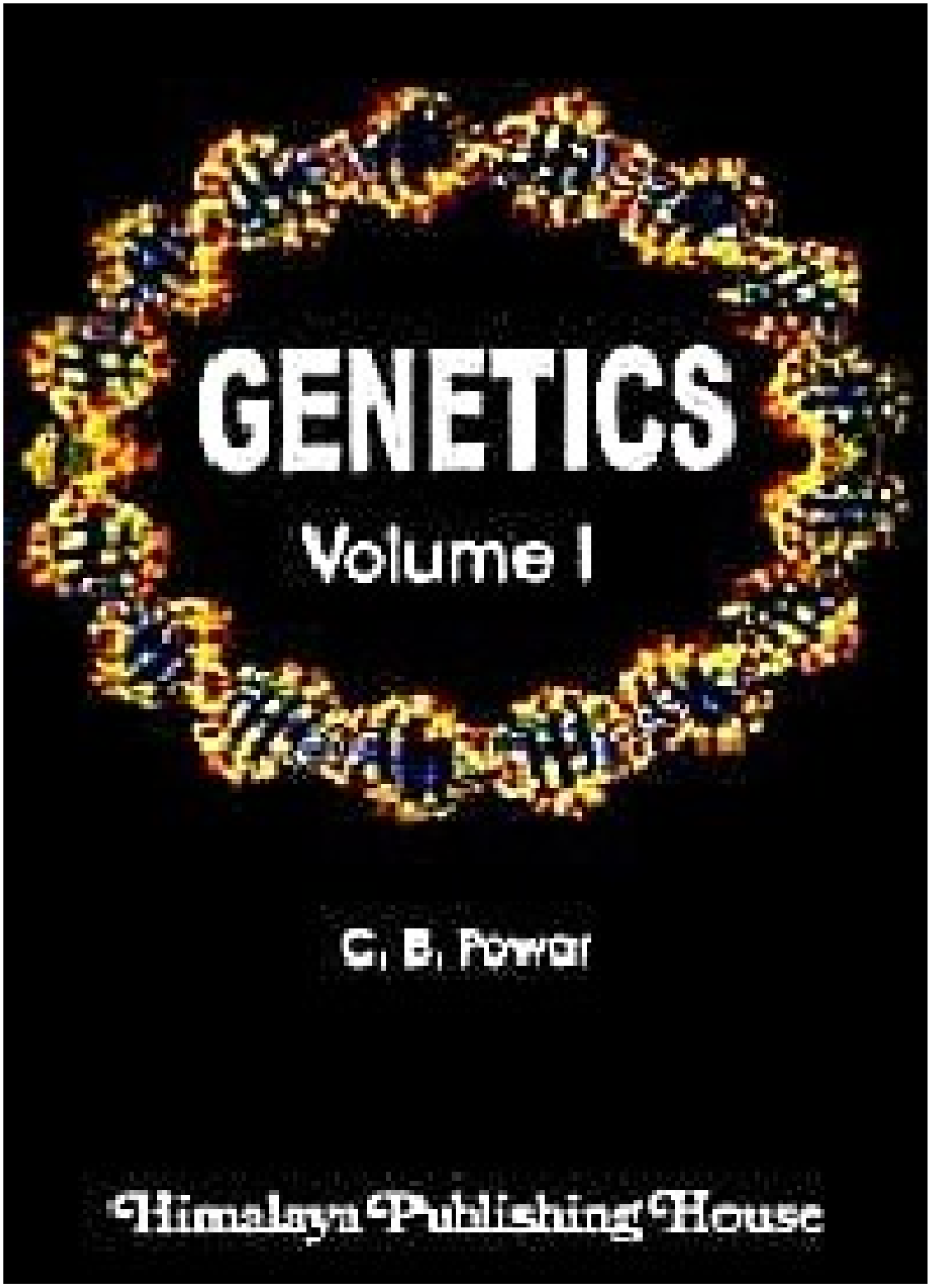
Outcome of the Event: Quizzes help one gain a broad or specialized understanding of a subject. Quizzes are intended to encourage fun learning methods while also enhancing general knowledge

Evidence:

G.S.latha

Signature of H.O.D

STUDENT BOOKRE VIEWS


GENETICS
Volume I
C. B. Powar
Himalaya Publishing House

T. Sravani
MBC

Book Review:

Referred Book : Genetics

Publications : Himalaya publishing House

Professor : C.B Powar M.sc, ph.D.

Former Principal,
sindhu Mahavidyalaya,
Nagpur,
Maharastra.

In this book the writer had given detailed description of genetics. The author had explained about the sex determination mechanisms. First of all he had given a small introduction about the determination of sex in animals and plants. Most of the plant species are monoecious. Only about 2-4% of angiosperms are dioecious.

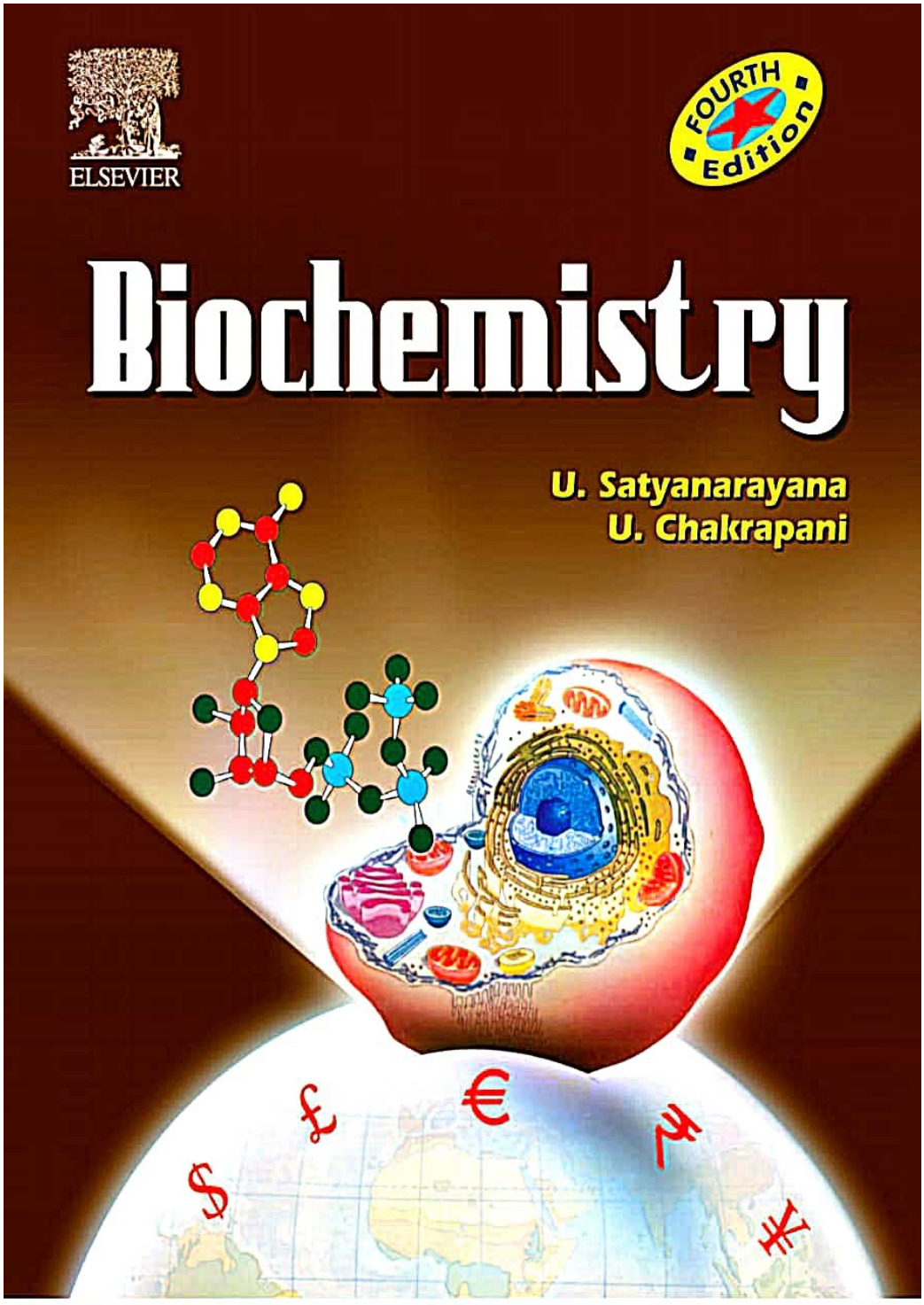
Sex determination mechanisms can be grouped into two classes. They are evnvironmenta and genotypic sex determination. In environmental sex determination sex is mainly determined by environmental conditions. The larval form of Bonelli

ELSEVIER

FOURTH Edition

Biochemistry

U. Satyanarayana
U. Chakrapani



Book Review

Book name : Biochemistry

Author : Dr. U. Satyanarayan

Publisher : Dr. U. Chakrapani
Arunabha Sen.
Books and allied (p) LTD.

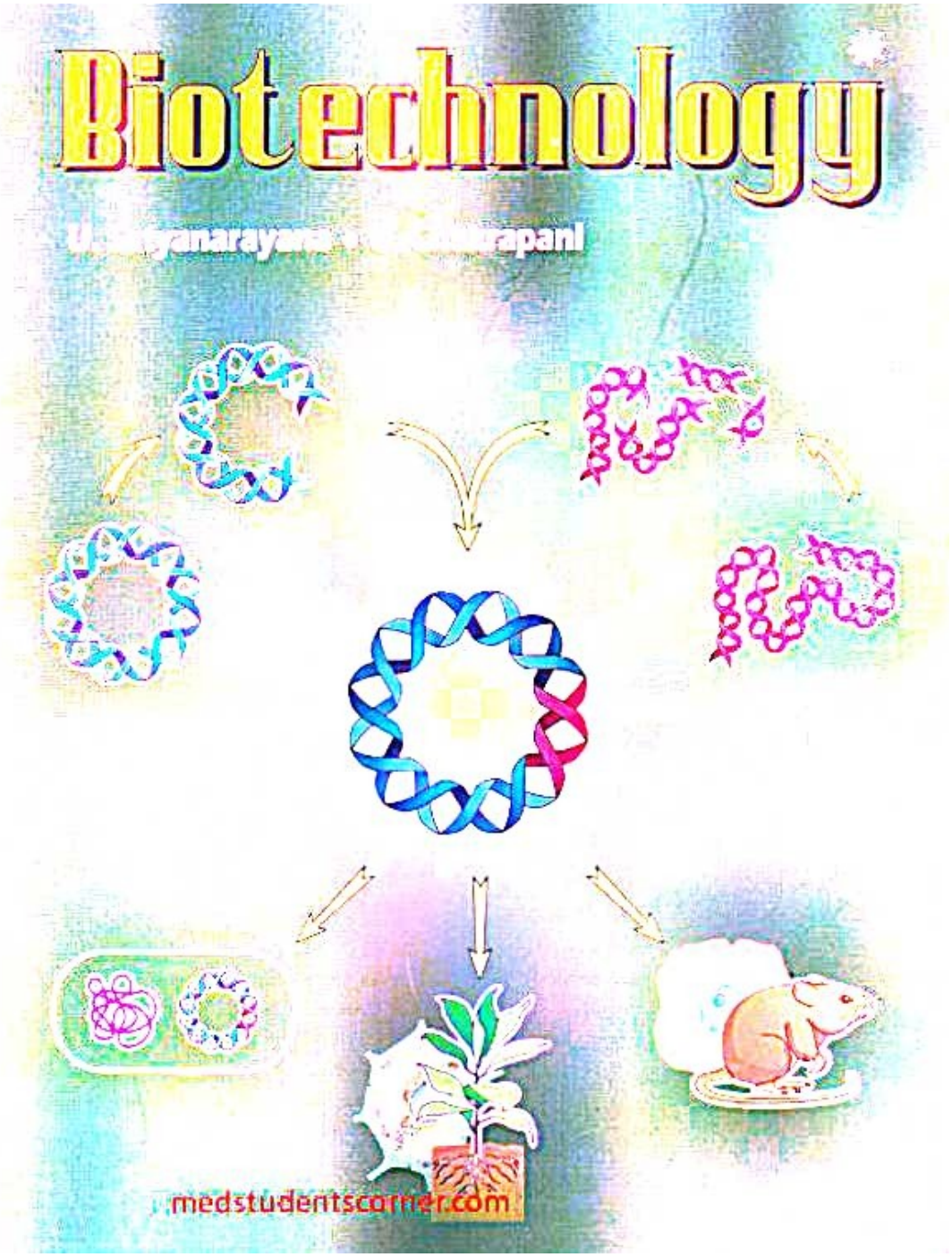
First published : March 1999.

Second revision edition : June 2002

Third revision edition : 2006.

In this book Satyanarayan had explained every topic clearly. In this book he explained about Carbohydrates. vitamins and lipids. Enzymes and explained about DNA and RNA had explained clearly Carbohydrates are defined as the poly hydroxy aldehyde or ketone compounds which gives on hydrolysis. vitamins: vitamins are regarded as organic compound required in the diet. There are different types of vitamins there are vitamin A, B, D and E and K had explained very clearly with some

Biotechnology



E. Hema keerthiSri
Group - MBc 1st year.

Chapter Review

BIO-TECHNOLOGY

Reffered book : Bio-technology

Reffered Topic : The scope biotechnology

Pubilication : Book and Allied P(Ltd)

Edition : 2005

Professor : U. satyanarayan
Professor of Biological
science gradutaes of
Indian universities
and colleges.

A comprehensive book of biotechnology by prof. U satyanarayan for Biological science graduates of Indian universities and collages.

This is most recommended book for exams point of view as it covers almost all the required topics of the subject.

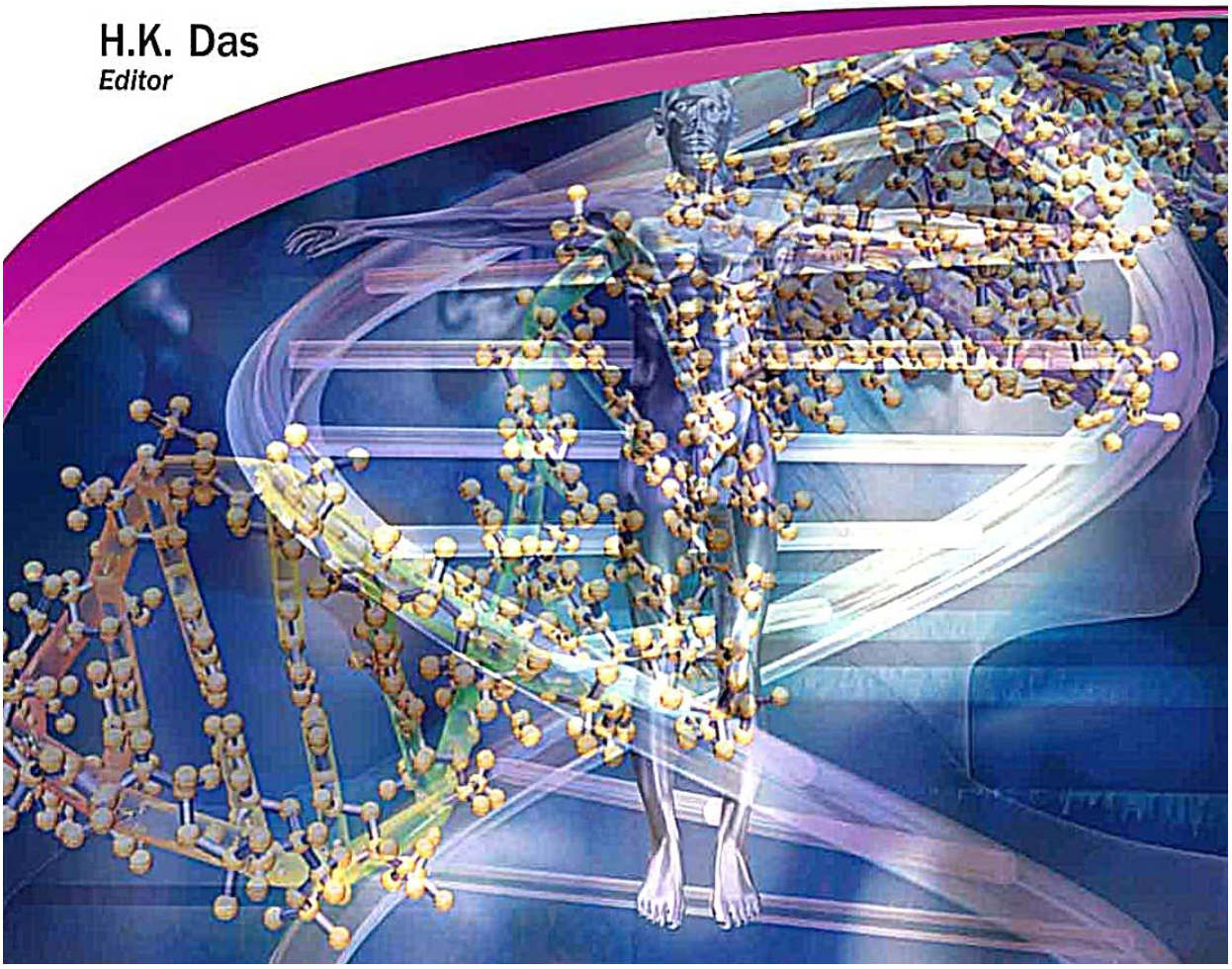
First he had explained about biotechnology and definition of biotechnology and given the detail about the history of biotechnology

WILEY PRECISE TEXT BOOK

Textbook of Biotechnology

Third Edition

H.K. Das
Editor



E. Hema keerthisri
Group - MBC 1st year.

Book Review

Referred Book : Textbook of Biotechnology

Referred Topics : Biomolecules, Macro. molecules, Biophysical Chemistry.

Publications : Wiley Indian pvt. ltd.

edition : First edition - october 2004
second edition - July 2005
third edition - June 2006

Professor. : HK Das Formerly professor and chairman centre of Biotechnology Director, Genetic engineering unit, Jawaharlal Nehru university New Delhi

In this book named as Textbook of Biotechnology By Professor. HK Das professor and chairman for Biotechnology Director, Genetic engineering unit, Jawaharlal Nehru University New Delhi.

This is most recommended Book for exampoint of view as it cover almost all the required topics of the subject.

8TH EDITION

Ananthanarayan and Paniker's

Textbook of Microbiology

Universities Press

Bacteriophages:

Chapter Review:

Referred Book : Textbook of Microbiology

Professor : 1) R. Ananthanarayan
Formely, Professor of Microbiology,
Medical colleges, calicut
Kerala.

2) C.K JayaRam Panikesr
Formely, Director Professor of
Microbiology and Principal of
Medical college,
Calicut, Kerala.

Publications : Universities Press

1st Edition : 1978

2nd Edition : 1981

8th Edition : 2009.

T. Sravani
Group: MBC 1st year

ENZYMES

Biochemistry, Biotechnology, Clinical Chemistry

TREVOR PALMER

Chapter Review

Introduction :-

Book name :- Enzymes
Biochemistry, Biotechnology and Clinical Chemistry

Author :- Trevor Palmer, BA, PhD, CBiol, FIBiol, FIBMS
Professor and head of Department of Life sciences, Dean of the faculty of science and Mathematics and Senior Dean - Nottinghan Trent University.

Publications :- Affiliated East-West Press Pvt. Ltd.
New Delhi

Review :-

In this book author has explained about the enzymes, their history, Classification, functions and applications. In chapter-I — "Structure and Functions of Enzyme", the author had given the information of the enzymes like how the enzymes were discovered, naming, definition. He also explained the classification of enzyme in a simple manner.

microbiology

DeMYSTiFieD

A SELF-TEACHING GUIDE

- Perfect for all MEDICAL professional trainees
- Complex TERMS and CONCEPTS made EASY
- Practical teacher/student writing format makes it EASY TO LEARN
- Chapter-ending QUIZZES, and a final EXAM

Dr. Tom Betsy
Jim Keogh

THE WORLD OF MICRO ORGANISMS

Referred Book: Text Book of Micro Biology
Professor : Dr. Tom Betsyand Jimkeogh
Publication : Tata Mc Grawhill
Edition : 2005

In this book the author had explained how the micro-organisms are grown and types. Microbiology is the study of micro organisms which are they tiny organism that live around us and inside our body. A micro organism is simply a very very small organism that you cannot see with your naked eye. There are different types of micro organisms such as pathogen and non pathogenic microorganisms. Carl linnaeus developed the system for naming organisms in 1735. This system referred to as binomial nomenclature. Each organism is assigned two latinized names. The first name is called Genus. The second name is called the specific epithet. When a micro organisms are entered into our body. to fight against that microorganism our immune system plays a crucial role. When a microorganisms such as bacterium Streptococcus pyogenes, which can cause Streptbroat, invade your body white blood cells engulf the bacterial cells and digest it an immune response called phagocytosis. Phagocytosis was discovered in 1880 by Russian zoologist Elie Metchnikoff's. He studied the body's defence against disease causing agent. To prevent from a micro organisms attack our bodies have a wide range of body response to fight against pathogen. Generally our first line of defense is to use

BIOTECHNOLOGY

V. KUMARESAN

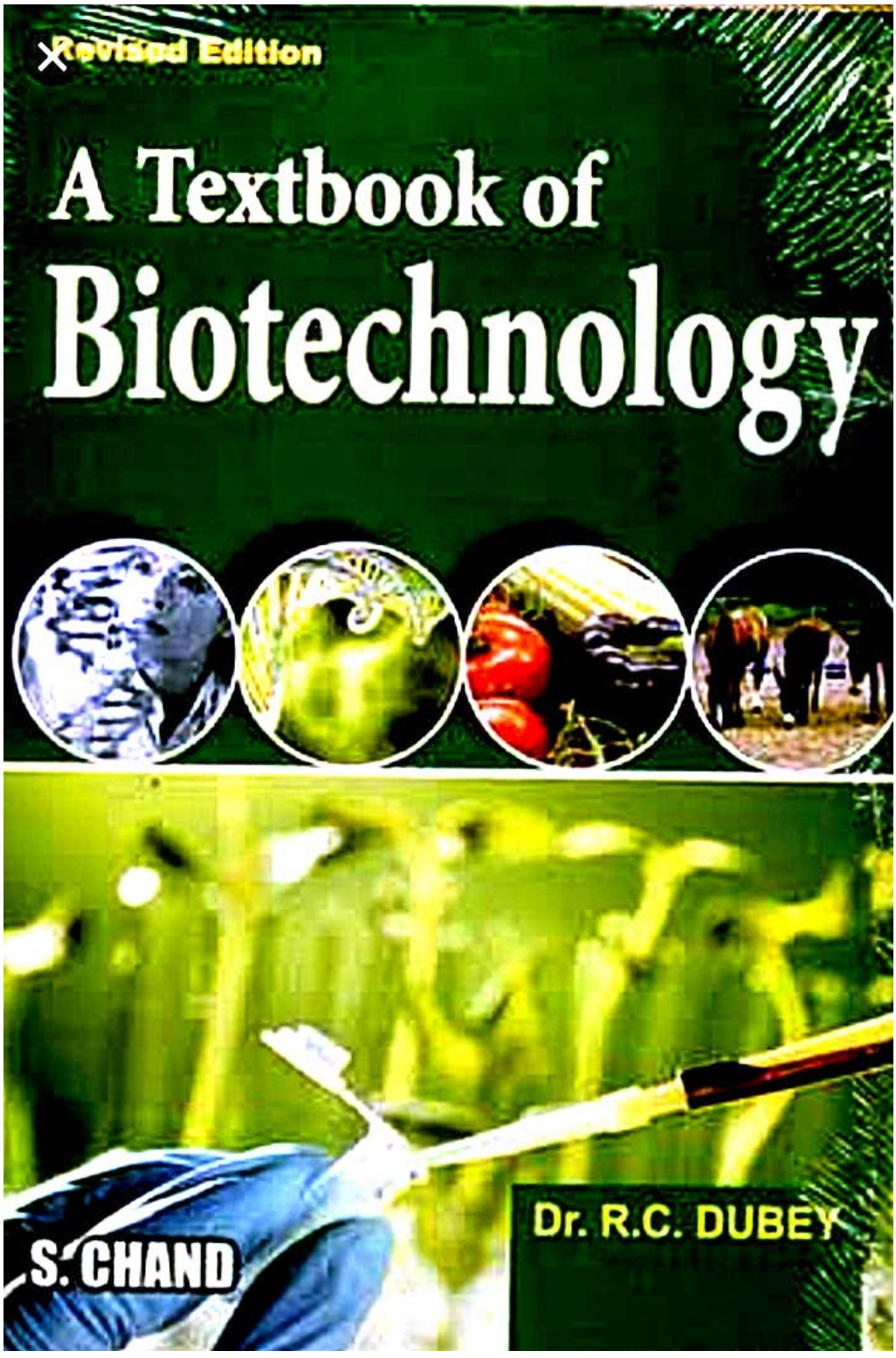
SARAS PUBLICATION

Book Review

Name of the book :- Biotechnology
Name of the writer :- V. Kumaresan
First edition :- 1986
Pages :- 169
Published by :- Saras publication
A.R.P. camp road, Periavilai,
Kottaar P.O., Nagercoil,
Kanyakumari District,
Tamilnadu.

Review:-

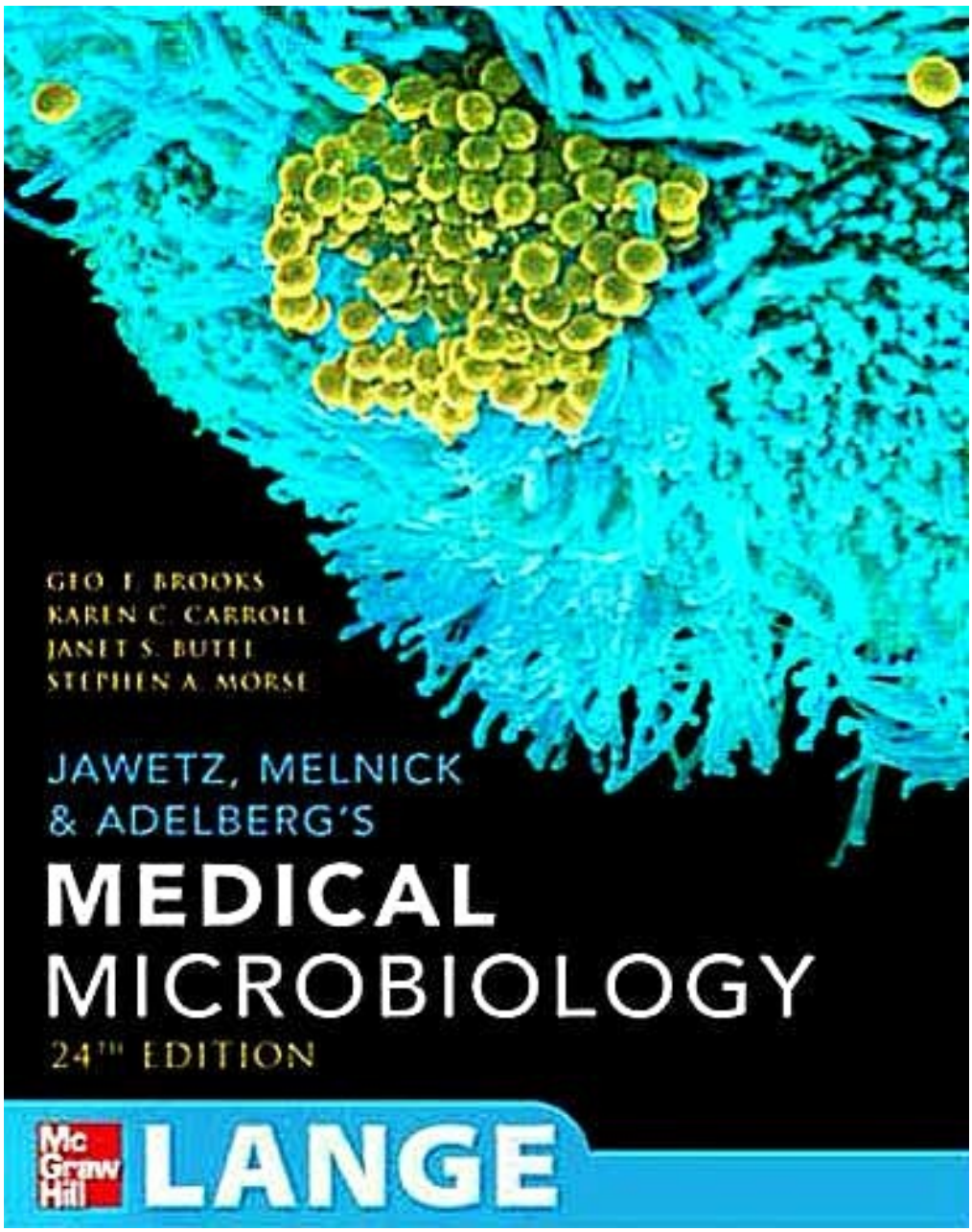
Biotechnology is an advanced branch of biology having many applications in different fields of biology such as agriculture, medicine, forestry, food sciences, environmental science and plant/animal sciences. This book written by V. Kumaresan


Revised Edition
A Textbook of
Biotechnology
Dr. R.C. DUBEY
S. CHAND

BOOK REVIEW

Reffered Book: Text Book of BioTechndogy
Professor: R.C DUBEY
Publication: S. CHAND and COMPANY
EDition : 2006

In this book named The textbook of biotechndogy the author had explained about the scope and importance of biotechnology and he also explained about the Genes, DNA and genetic engineering. The term biotechnology was coined in 1917 by a Hungarian engineer, karl Ereky. Biotechnology is defined as different organisms or organisations in different ways. It has been broadly defined as the development and utilization of biological processes, forms and systems for obtaining maximum benefits to man and other forms of life. There are two types of biotechnology they are traditional and modern. Traditional biotechnology ase totally like kitchen purpose. Modern biotechnology includes gene explanation and others. In 1978, a US company Genetech used genetic engineering technique to produce human insulin in E. coli. The DNA is found in all plants, animals, prokaryotes and some viruses. In plants, animals and prokaryote the genetic material is double stranded DNA molecule except some virus such as ϕX174 Genes are the structure of the blue prints called proteins which control the infinite Variety of life. The complex form of polymeric compounds containing four monomers known as deoxyribonucleotide. Each deoxyribonucleotide consists of pentose sugar and phosphate group and nitrogenous base. There are two nitrogenous bases they are


GEO F. BROOKS
KAREN C. CARROLL
JANET S. BUTEL
STEPHEN A. MORSE
JAWETZ, MELNICK
& ADELBERG'S
MEDICAL
MICROBIOLOGY
24TH EDITION
Mc Graw Hill
LANGE

Name of the book :- Medical Microbiology

EDITION :- 24th

Author :- Jawetz, Melnick, Adelebeng

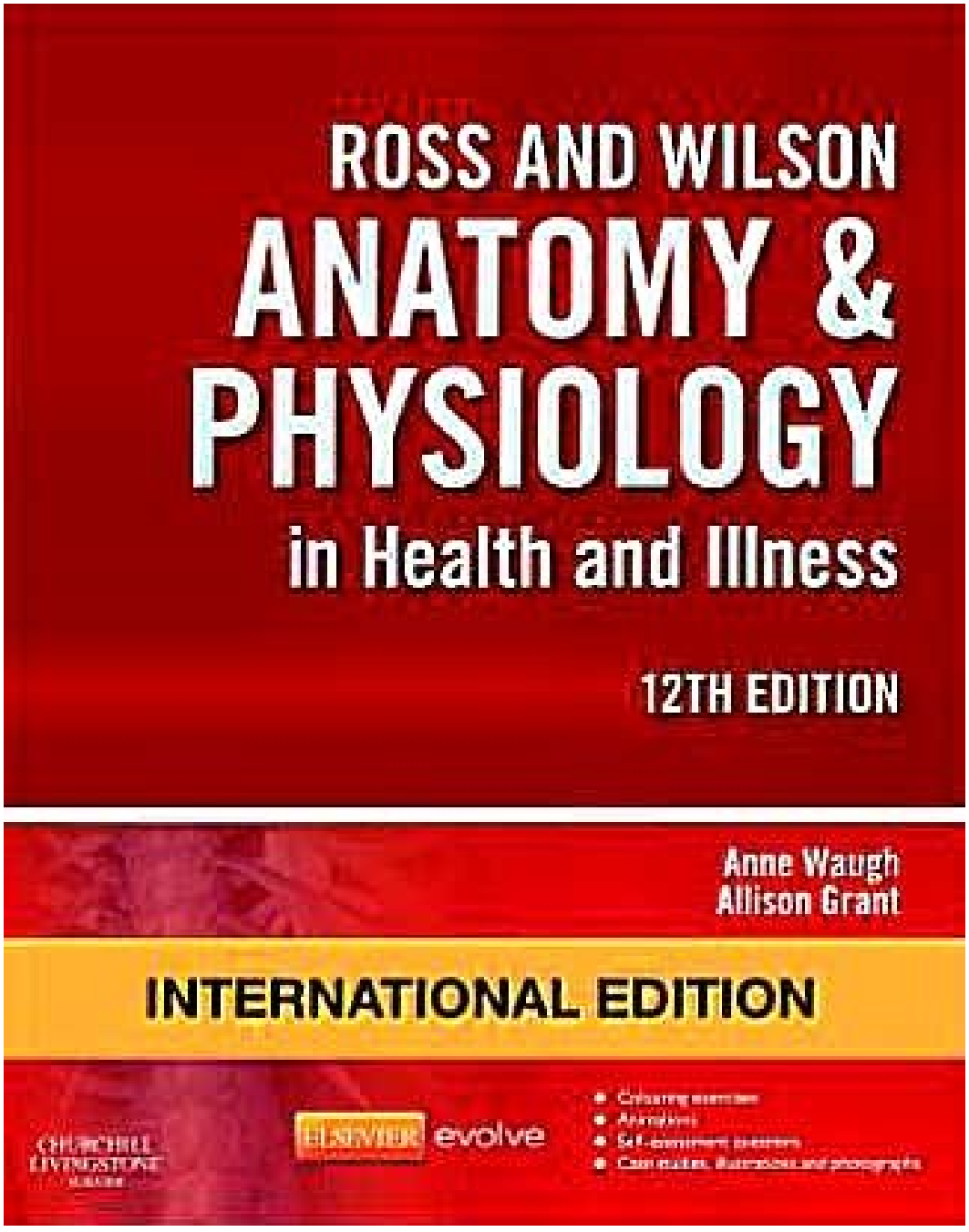
Publications :- Mc graw hill lange

Topic :- Cultivation of Micro organisms.

Cultivation of Microorganisms, the introduction of this topic is very understandable. It tells us about the meaning of cultivation, what are the components it required for growth. Also it tells about the conditions which are suitable for the growth of Microorganisms.

This book gives the information about the requirements for growth, Sources of Metabolic Energy, Nutrition, Environmental factors, cultivation Methods.

By this book I Can understand the Carbon is the main nutrient source for the growth of a microorganisms & they are named as autotrophs & heterotrophs. There are some Organisms which Can us photosynthetic Energy. This section also tells nitrogen is a major Component of Proteins,


ROSS AND WILSON
ANATOMY &
PHYSIOLOGY
in Health and Illness
12TH EDITION
Anne Waugh
Allison Grant
INTERNATIONAL EDITION
CHURCHILL LIVINGSTONE
ELSEVIER evolve

BOOK REVIEW

BOOK NAME : ANATOMY AND PHYSIOLOGY IN HEALTH AND ILLNESS

AUTHOR : ROSS AND WILSON

EDITION : 12TH EDITION [2014]

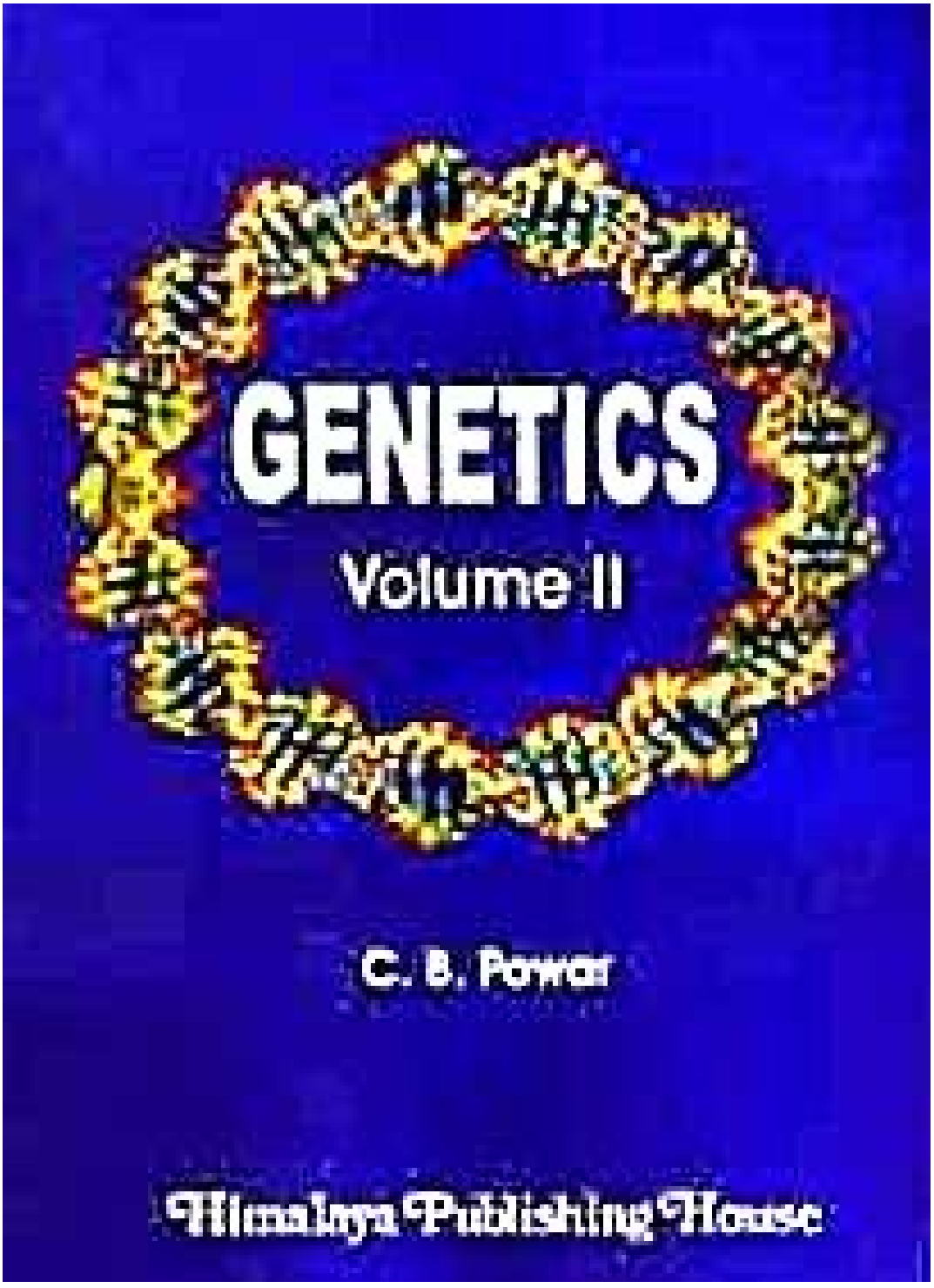
PUBLICATIONS : ELSEVIER PUBLICATIONS

Contents of the book includes :

1) Section 1 is THE BODY AND ITS CONSTITUENTS
2) Section 2 is COMMUNICATION
3) Section 3 is INTAKE OF RAW MATERIAL AND ELIMINATION OF WASTE
4) Section 4 is PROTECTION AND SURVIVAL

ANATOMY AND PHYSIOLOGY IN HEALTH AND ILLNESS is a beautifully oil printed book illustrated with appropriate diagrams. The author included most of the human organ systems in the book. In every chapter, Concept of Disorders were discussed post the chapter so that the reader can have a clear idea. Common prefixes, suffixes and roots were given for better understanding of the terminology. Planes (proximal, medial, etc.) were indicated clearly in the starting of the book which is very useful for readers. Each topic and sub topic are highlighted and a number of flowcharts, tables were given to simplify the concept. Different types of micrographs and maximized tissue images were also included in this book. Book comprises of mainly four sections having different chapters under them. Introduction to human body, Introduction to the chemistry of life and The cells, tissues and organisation of the body are chapters in section 1. The blood, The cardio vascular system, The lymphatic system, The nervous system, The special senses, The endocrine system are the chapters included in section 2. The respiratory system, Introduction to nutrition, The digestive system, The urinary system are the chapters in section 3. The skin, Resistance and immunity, The musculoskeletal system, Introduction to genetics, The reproductive system are the chapters included in section 4.

Section one which is THE BODY AND ITS CONSTITUTENTS comprises of basics of human body. Chapter one (Introduction to human body) discusses the concepts homeostasis and role of different organ systems in human body, this reflected as a gist for human anatomy and physiology. Chapter two (Introduction to the chemistry of life) covers the concepts like atoms, molecules, compounds, acid - base balance and biological molecules. This chapter discusses life at chemical levels. Whereas concepts like different types of buffer systems, evaluating values of acid – base balance could be added. Chapter three (The cells, tissues and organization of the body) the last chapter of section 1 deals with the idea of cells, tissues,


GENETICS
Volume II
C. B. Powar
Himalaya Publishing House

BOOK REVIEW

NAME OF THE BOOK :- Genetics

VOLUME :- II

AUTHOR :- C.B. Powar

PUBLICATIONS :- Himalaya Publishing House

Genetics, the book by C.B.Powar volume II is understamble. The content in this book is divided into five units for Easy understanding. By this book we can learn about Genetic Recombination, Protein Synthesis, Gene Regulation, Genetic Engineering and Somatic cell genetics, chromosome mapping, Developmental genetics, Genetics of Cancer.

The very first unit in this book tells about the Genetic Recombination. It is divided into five topics. The first topic is about Genetic Recombination I: Types of Mechanisms. The types of Mechanism is the introduction part for recombination in Eukaryotes & Prokaryotes and in Viruses, Types of genetic recombination. section 1 tells about the General (or) Homologus Recombination in which we can learn about homologous recombination in E.coli by different steps like initiation, Presynapsis, Synapsis, Strand Exchange leading to heteroduplex DNA formation, Holliday Junction formation & branch migration, Resolution of the Holliday Junction intermediate. In this, Enzymes & Proteins are involved. We can also learn about Mechanism of Recombination. It involves Breakage & reunion and Copy choice. We can

CELL BIOLOGY

C. B. POWAR

Himalaya Publishing House
ISO 9001:2008 CERTIFIED

Book : Cell Biology
Author : Mrs. Meenapandey
Published by : Mrs. Meenapandey for "Himalaya publishing House", Ramdoot, Dr. Bhalerao Marg, Girgaon.
Topic : CYTOLOGY CANCER

Introduction:-

The purpose of this topic is tells us about Cancer, types of cancer, characterstics of cancer cells, Hypotheses about cancer, oncogenic viruses, papoviruses, Retroviruses, types of tumour virus infection, Defective and helper viruses, Transmission of oncoviruses.

Review of CYTOLOGY CANCER:-

→ At first, in this topic began by what is cancer. It seems like a simple defined of Cancer and tumors in simple words. It is better to define Cancer in otherway with examples. It will be like creativity if they present about Cancer in other ways & with deep meaningful words.

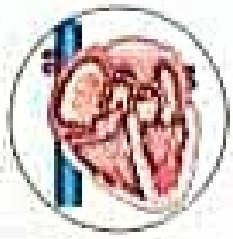
→ Then, it explained about types of cancer. In this, it presented the main types of Cancers like Carcinomas, Sarcomas, Lymphomas, Leukemias. In this, just mentioned the names of breast, skin, bone, muscle cancers which comes under that types of Cancer. But it was better to explain briefly about the breast Cancer, Skin Cancer, brain Cancer, bone Cancer etc.. under the types of Cancer.

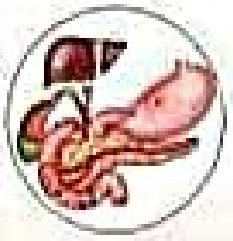
Volume 1

CC Chatterjee's

Human Physiology

Thirteenth Edition





Editor
Nitin Ashok John

CBS Publishers & Distributors Pvt. Ltd.

BOOK REVIEW

Book NAME

Human physiology volume -1

Author

Chandi charan chatterjee B.sc. M.D (cal)
formerly of the Department of physiology, medical college, calcutta.

About Book

It is eleventh reprint edition of volume 1. in published by 1st may, 1987. it is explained fundamental principles of physiology, to know affections, causes of our body, treat diseases on proper has been disscussed.

The book is explained very clearly and detailed manner to understand everyone. In this book the body systems and cells information is separated and given in a chapter wise. It contain 11 chapters.

Introduction part is basic to every system. Every system, cells, functions mentioned in easy and understanding manner.

Chapter -1 - CELL

In this chapter, structure of cell, cell organells, cell division, formation of tissue, organ and systems, tissues and their types, ciliary movement mechanism, glands, bone development, controlling factors, tooth, fibres and their types, cancer cells information is explained in depth. The diagrams also clear to understand information of a particular topic.

Industrial Biotechnology

Problems and Remedies

Indu Shekhar Thakur

I.K. International

Y. Anupriya
BioMedical Sciences

Book Name : Industrial Biotechnology; problems and Remedies.

Author : Indu Shekhar Thakur.

publications : I.K. International pvt. Ltd.

Selected topic : pharmaceutical Industry.

The pharmaceutical industry is one of the most regulated industries world wide because the drugs Produced must be Safe & effective. In this book, the author discusses about the problems and remedies of industrial biotechnology like pulp and paper Industry, Distillery Industry, leather Tanning Industry, petroleum Industry, Food and Beverages Industry, pesticide Industry, Dye Industry, Heavy metal Industry and Thermal power plants.

In the Selected topic, pharmaceutical Industry; the author discusses about how the improper disposal, industrial waste and metabolic excretion can Contaminate the environment. He also discusses about the need and importance of usage of drugs to humans and animals.

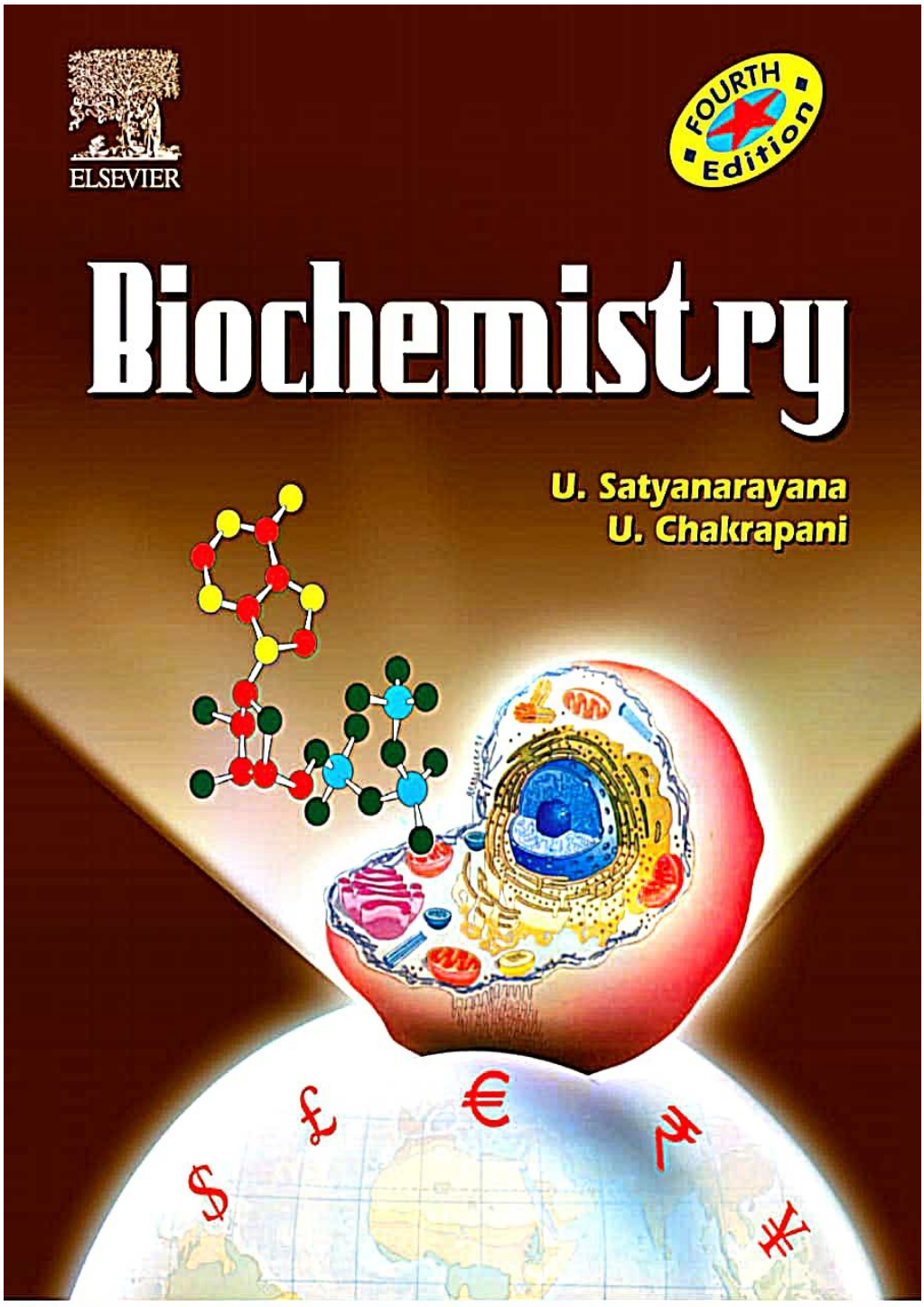
Some information is shared in the form of pie charts and Bar graphs so that we can easily understand and get clarity about it. In this, the production of pharmaceutical products are divided to understand the steps in a Sequencial process. The drugs also Should undergo Some steps for its research and development.

ELSEVIER

FOURTH Edition

Biochemistry

U. Satyanarayana
U. Chakrapani



Name of the Author : Dr. U. Satyanarayana
Dr. U. Chakrapani

Name of the Book: Biochemistry - Third Edition

Name of the publications: Books and allied (P) Ltd.

Introduction: Here in this book, the author mainly discussed about Seven topics. They are chemical Constituents of life, physiological biochemistry, metabolisms, Clinical Biochemistry and Nutrition, Molecular biology and Biotechnology, Current topics and Basics to learn Biochemistry.

The chemical constituents of life includes Sub topics like biomolecules and the cell; Carbohydrates; Lipids; Proteins and amino acids; nucleic acids and nucleotides; Enzymes & Vitamins.

The physiological biochemistry includes Sub topics like digestion and absorption; plasma proteins; Haemoglobin and porphyrins & Biological Oxidation.

The metabolisms includes Sub-topics like introduction to metabolism; metabolism of carbohydrates; metabolism of Lipids; metabolism of amino acids; integration of metabolism; metabolism of nucleotides & mineral metabolism.