

Biology 9
Cell and DNA Extraction Lab

Objectives

- To identify some of the structures of the cell from microscopic examination.
- To understand the parts of the student microscope, its use, and care.
- To learn how to prepare slides of living cells for observation under the microscope.
- To accurately follow a protocol and become familiar with lab procedures for extracting DNA.

Part I: Microscopic examination of the cells using the micrographs listed below

Set 58: Cell Structure

1. Cork: The first thing ever viewed under a microscope by Monk Robert Hook in the 17th century.
2. Onion skin: Note the cell wall at A, the cytoplasm at B, the nucleus at C, and plasma membrane at D.
3. Skip.
4. Cheek cells: Note the cytoplasm, nucleus, and plasma membrane.
5. Blood cells: Note the absence of nuclei in the red blood cells (most predominant cell type) and the two types of white blood cells.
6. Nerve cell: Note the cell body, dendrites, and axons.

Name a structure observed in onion epidermal cells that is NOT present in human epithelial cells (e.g., cheek cells)?

Set 66: The Ultra-Structure of Animal Cells

1. Oil gland cells (400X): Even under “high” power our lab microscopes are unable to give us much detail on cytoplasmic organelles.
2. Plasma cell (37,000X): Crank up the magnification with an electron microscope and organelles become visible. Note ribosomes on the rough endoplasmic reticulum at O, the Golgi body at G, mitochondrion at I, and nuclear pore at P. These structures are also in the oil gland cell. You just could not see them at 400X.
3. Cell membrane (400,000X): Check out that bi-layer!
4. Skip.
5. Mitochondrion (124,000X): A close-up of half a mitochondrion. The cristae (inner folds) are readily visible. Note its double membrane.
6. Centriole (175,000X): Note the network of microtubules.

Sketch the membrane of a cell in the space below.

- Label the charged (polar) and uncharged (nonpolar) regions of the phospholipids within the lipid bilayer.

- Name a substance that can be found embedded in the cell membrane.
-

Lab Manual Fog Ccsf Edu

Mark A. Griep



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CHEM 111 Lab Manual General Chemistry Christofield, 2019-08-12 Lab Manual for Physical Science Bill W. Tillery, 2016-02-09 The laboratory manual written and classroom tested by the author presents a selection of laboratory exercises specifically written for the interests and abilities of nonscience majors There are laboratory exercises that require measurement data analysis and thinking in a more structured learning environment while alternative exercises that are open ended Invitations to Inquiry are provided for instructors who would like a less structured approach When the laboratory manual is used with Physical Science students will have an opportunity to master basic scientific principles and concepts learn new problem solving and thinking skills and understand the nature of scientific inquiry from the perspective of hands on experiences The laboratory manual is customizable via McGraw Hill Create The instructor s edition of the laboratory manual can be found under the Instructor Resources on the Physical Science Online Learning Center **Laboratory Manual for Principles of General Chemistry** J. A. Beran, Mark Lassiter, 2022-08-16 Laboratory Manual for Principles of General Chemistry 11th Edition covers two semesters of a general chemistry laboratory program The material focuses on the lab experiences that reinforce the concepts that not all experimental conclusions are the same and depend on identifying an appropriate experimental procedure selecting the proper apparatus employing the proper techniques systematically analyzing and interpreting the data and minimizing inherent variables As a result of good data a scientific and analytical conclusion is made which may or may not be right but is certainly consistent with the data Experiments write textbooks textbooks don t write experiments A student s scientific literacy grows when experiences and observations associated with the scientific method are encountered Further experimentation provides additional cause effect observations leading to an even better understanding of the experiment The 11th edition s experiments are informative and challenging while offering a solid foundation for technique safety and experimental procedure The reporting and analysis of the data and the pre and post lab questions focus on the intuitiveness of the experiment The experiments may accompany any general chemistry textbook and are compiled at the beginning of each curricular unit An Additional Notes column is included in each experiment s Report Sheet to provide a space for recording observations and data during the experiment Continued emphasis on handling data is supported by the Data Analysis section Cu in Lab General Chemistry Dennis L. Stevens, 2012-03-05 **General Chemistry Laboratory Manual** Petra Van-Koppen, 2003 Presents a lab manual for the two semester General Chemistry course This book contains experiments that cover the commonly assigned experiments found in a typical two semester course *Laboratory Manual for Principles of General Chemistry* Jo Allan Beran, 1999-11-17 This flexible lab manual appropriate for use with a wide range of general chemistry books offers a wealth of practical chemistry experiments It includes pertinent information on rules and safety in the lab Preparation of the new edition was guided by specific feedback from users *Ck-sf* Peter Jeschofnig, Ninette Lilienthal, Hands on Labs, 2010-10 *Lab Manual for Physics 122* James

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the components that are not connected in proper order and correct the circuit and also the circuit diagram

Section B

Experiments

- 1 To find the value of v for different values of u in case of a concave mirror and to find the focal length
- 2 To find the focal length of a convex lens by plotting graphs between u and v or between $1/u$ and $1/v$
- 3 To find the focal length of a convex mirror using a convex lens
- 4 To find the focal length of a concave lens using a convex lens
- 5 To determine angle of minimum deviation for a given prism by plotting a graph between angle of incidence and angle of deviation
- 6 To determine refractive index of a glass slab using a travelling microscope
- 7 To find refractive index of a liquid by using i concave mirror ii convex lens and plane mirror
- 8 To draw the $I-V$ characteristic curve of a p-n junction in forward bias and reverse bias
- 9 To draw the characteristic curve of a zener diode and to determine its reverse break down voltage
- 10 To study the characteristics of a common emitter npn or pnp transistor and to find out the values of current and voltage gains

Activities

- 1 To study effect of intensity of light by varying distance of the source on a LDR
- 2 To identify a diode a LED a transistor and IC a resistor and a capacitor from mixed collection of such items
- 3 Use of multimeter to i identify base of transistor ii distinguish between npn and pnp type transistors iii see the unidirectional flow of current in case of a diode and a LED iv check whether a given electronic component e.g diode transistor or IC is in working order
- 4 To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab
- 5 To observe polarization of light using two Polaroids
- 6 To observe diffraction of light due to a thin slit
- 7 To study the nature and size of the image formed by i convex lens ii concave mirror on a screen by using a candle and a screen for different distances of the candle from the lens/mirror
- 8 To obtain a lens combination with the specified focal length by using two lenses from the given set of lenses

Suggested Investigatory Projects

- 1 To investigate whether the energy of a simple pendulum is conserved
- 2 To determine the radius of gyration about the centre of mass of a metre scale as a bar pendulum
- 3 To investigate changes in the velocity of a body under the action of a constant force and determine its acceleration
- 4 To compare effectiveness of different materials as insulators of heat
- 5 To determine the wavelengths of laser beam by diffraction
- 6 To study various factors on which the internal resistance/emf of a cell depends
- 7 To construct a time switch and study dependence of its time constant on various factors
- 8 To study infrared radiations emitted by different sources using photo transistor
- 9 To compare effectiveness of different materials as absorbers of sound
- 10 To design an automatic traffic signal system using suitable combination of logic gates
- 11 To study luminosity of various electric lamps of different powers and make
- 12 To compare the Young's modulus of elasticity of different specimens of rubber and also draw their elastic hysteresis curve
- 13 To study collision of two balls in two dimensions
- 14 To study frequency response of i a resistor an inductor and a capacitor ii RL circuit iii RC circuit iv LCR series circuit

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Table of Contents Lab Manual Fog Ccsf Edu

1. Understanding the eBook Lab Manual Fog Ccsf Edu
 - The Rise of Digital Reading Lab Manual Fog Ccsf Edu
 - Advantages of eBooks Over Traditional Books
2. Identifying Lab Manual Fog Ccsf Edu
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Lab Manual Fog Ccsf Edu
 - User-Friendly Interface
4. Exploring eBook Recommendations from Lab Manual Fog Ccsf Edu
 - Personalized Recommendations
 - Lab Manual Fog Ccsf Edu User Reviews and Ratings
 - Lab Manual Fog Ccsf Edu and Bestseller Lists
5. Accessing Lab Manual Fog Ccsf Edu Free and Paid eBooks

- Lab Manual Fog Ccsf Edu Public Domain eBooks
- Lab Manual Fog Ccsf Edu eBook Subscription Services
- Lab Manual Fog Ccsf Edu Budget-Friendly Options
- 6. Navigating Lab Manual Fog Ccsf Edu eBook Formats
 - ePub, PDF, MOBI, and More
 - Lab Manual Fog Ccsf Edu Compatibility with Devices
 - Lab Manual Fog Ccsf Edu Enhanced eBook Features
- 7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Lab Manual Fog Ccsf Edu
 - Highlighting and Note-Taking Lab Manual Fog Ccsf Edu
 - Interactive Elements Lab Manual Fog Ccsf Edu
- 8. Staying Engaged with Lab Manual Fog Ccsf Edu
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Lab Manual Fog Ccsf Edu
- 9. Balancing eBooks and Physical Books Lab Manual Fog Ccsf Edu
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Lab Manual Fog Ccsf Edu
- 10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
- 11. Cultivating a Reading Routine Lab Manual Fog Ccsf Edu
 - Setting Reading Goals Lab Manual Fog Ccsf Edu
 - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Lab Manual Fog Ccsf Edu
 - Fact-Checking eBook Content of Lab Manual Fog Ccsf Edu
 - Distinguishing Credible Sources
- 13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development

- Exploring Educational eBooks

14. Embracing eBook Trends

- Integration of Multimedia Elements
- Interactive and Gamified eBooks

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