

**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 17<sup>th</sup> 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)?

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**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.
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# Lab Manual Fog Ccsf Edu

**Peter Jeschofnig, Ninette  
Lilienthal, Hands on Labs**



## Lab Manual Fog Ccsf Edu:

**Ck-sf** Peter Jeschofnig, Ninette Lilienthal, Hands on Labs, 2010-10      **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      **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      **Lab Manual for Physics 122** James Degraffenreid, Lavinia Sebastian, 2018-12-12      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      **General Physics A & M University**,2015-01-21      **Lab Manual** Azimuth Interactive,2005-04-01      **Lab Manual for Shipman/Wilson/Todd's an Introduction to Physical Science** James Shipman,Clyde D. Barker,2007-12 This Laboratory Guide contains 55 experiments in the five major divisions of physical science physics chemistry astronomy geology and meteorology Each experiment includes an introduction learning objectives a list of apparatus procedures for taking data and questions In addition many experiments call for calculations and the plotting of graphs and this guide provides space and graph paper for those purposes      *Physics 122 - University Physics I* James Degraffenreid,2018-07-31      **Laboratory Manual for Principles of General Chemistry** Jo A. Beran,Northern Virginia Community College. Annandale Campus. Department of Chemistry,2001      **General Physics Lab Manual Volume One 14e** Lowell Wood,Marie Sladjana,2017-07      *Laboratory Manual for Principles of General Chemistry* Jo Allan Beran,2010-11      General Physics Lab Manual Volume One Lowell T. Wood,R. A. Y. Rottmann,Angel Alejandro,2009-08

**Lab Manual for Chem 106 Chemistry in Context 2** Mark A. Griep,2019-11-11      *Lab Manual Latest Edition* Dr. J. P. Goel,2016-12-17 Lab E Manual Physics For XIIth Practicals A Every student will perform 10 experiments 5 from each section 8 activities 4 from each section during the academic year Two demonstration experiments must be performed by the teacher with participation of students The students will maintain a record of these demonstration experiments B Evaluation Scheme for Practical Examination One experiment from any one section 8 Marks Two activities one from each section 4 4 8 Marks Practical record experiments activities 6 Marks Record of demonstration experiments Viva based on these experiments 3 Marks Viva on experiments activities 5 Marks Total 30 Marks Section A Experiments 1 To determine resistance per cm of a given wire by plotting a graph of potential difference versus current 2 To find resistance of a given wire using metre bridge and hence determine the specific resistance of its material 3 To verify the laws of combination series parallel of resistances using a metre bridge 4 To compare the emf of two given primary cells using potentiometer 5 To determine the internal resistance of given primary cells using potentiometer 6 To determine resistance of a galvanometer by half deflection method and to find its figure of merit 7 To convert the given galvanometer of known resistance and figure of merit into an ammeter and voltmeter of desired range and to verify the same 8 To find the frequency of the a c mains with a sonometer Activities 1 To measure the resistance and impedance of an inductor with or without iron core 2 To measure resistance voltage AC DC current AC and check continuity of a given circuit using multimeter 3 To assemble a household circuit comprising three bulbs three on off switches a fuse and a power source 4 To assemble the components of a given electrical circuit 5 To study the variation in potential drop with length of a wire for a steady current 6 To draw the diagram of a given open circuit comprising at least a battery resistor rheostat key ammeter and voltmeter Mark 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

**Glencoe Physics: Principles & Problems, Forensics Laboratory Manual, Student Edition** McGraw-Hill Education, 2004-08-10  
**Glencoe Physics Principles and Problems Forensics Laboratory Manual** Acp Chem 1171 **General Chemistry Lab Manual** Brooks/Cole, 2014-04-25

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