

## Evolution of Populations

## Modeling a Gene Pool

### Introduction

A population is a group of organisms of the same species that live together in a particular location. Each population is normally isolated from other populations of the same species. Populations can be observed for many characteristics.

Population genetics is the study of genes in a population of organisms. Biologists who study population genetics are interested in how frequently alleles of a gene appear in a population. Biologists are also interested in any changes in gene frequencies that may be occurring.

In this investigation beans will be used to represent individuals in a simulated population of organisms. Red beans will be symbols for homozygous dominant individuals  $RR$ . Pink (pinto) beans will be symbols for heterozygous individuals  $Rr$ . White beans will be symbols for homozygous recessive individuals  $rr$ . You will study various crosses using the beans and analyze frequencies and frequency changes as they appear in a simulated population in which a harmful phenotype occurs. In addition to this, you will be able to see how a potentially lethal genetic disorder affects allele frequency in the population over generations.

### Problem

How does gene frequency change in a population of organisms?

### Pre-Lab Discussion

Read the entire investigation. Then work with a partner to answer the following questions.

1. Why are you asked to set aside and not use some of the white beans at the start of the experiment?

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2. If the initial breeding population (the parent generation) is composed of 16  $RR$  individuals, 32  $Rr$  individuals, and 8  $rr$  individuals, how many  $R$  alleles are present in the parent generation? How many  $r$  alleles are present in the parent generation?

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3. For the individuals in this lab, can the genotype of each be determined from the phenotype? Explain your answer.

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# Modeling A Gene Pool Lab Answers

**Timothy J. Cleary**



## **Modeling A Gene Pool Lab Answers:**

**Miller Levine Biology 1e Lab Manual a (Average Advanced) Student Edition 2002c** Prentice Hall Direct Education Staff,2001-04 One program that ensures success for all students [Prentice Hall Miller Levine Biology Laboratory Manual a for Students Second Edition 2004](#) Kenneth Raymond Miller,Joseph S. Levine,Prentice-Hall Staff,2003-02 Authors Kenneth Miller and Joseph Levine continue to set the standard for clear accessible writing and up to date content that engages student interest Prentice Hall Biology utilizes a student friendly approach that provides a powerful framework for connecting the key concepts a biology Students explore concepts through engaging narrative frequent use of analogies familiar examples and clear and instructional graphics Whether using the text alone or in tandem with exceptional ancillaries and technology teachers can meet the needs of every student at every learning level **Annot Inst Edit Lab Man Biol 3e /Campbell** Benjamin-Cummings Publishing Company,Judith Giles Morgan,1994-02 *The Self-Regulated Learning Guide* Timothy J. Cleary,2018-02-01 The Self Regulated Learning Guide introduces K 12 teachers to the basics of self regulation Highly practical and supported by cutting edge research this book offers a variety of techniques for seamlessly infusing self regulated learning principles into the classroom and for nurturing students motivation to strategize reflect and succeed Featuring clear explanations of the psychology of self regulation these nine chapters provide teachers with core concepts realistic case scenarios reflection activities and more to apply SRL concepts to classroom activities with confidence **AP Biology** Deborah T. Goldberg,2020-06-19 Be prepared for exam day with Barron s Trusted content from AP experts Barron s AP Biology 2020 2021 includes in depth content review and practice It s the only book you ll need to be prepared for exam day Written by Experienced Educators Learn from Barron s all content is written and reviewed by AP experts Build your understanding with comprehensive review tailored to the most recent exam Get a leg up with tips strategies and study advice for exam day it s like having a trusted tutor by your side Be Confident on Exam Day Sharpen your test taking skills with 2 full length practice tests Strengthen your knowledge with in depth review covering all Units on the AP Biology Exam Reinforce your learning with practice questions at the end of each chapter [Biological Investigations Lab Manual](#) Warren Dolphin,David Vleck,Linda Westgate,James Colbert,2010-01-27 The lead author of eight successful previous editions has brought together a team that combined has well over 60 years experience in offering beginning biology labs to several thousand students each year at Iowa State University Their experience and diverse backgrounds ensure that this extensively revised edition will meet the needs of a new generation of students Designed to be used with all majors level general biology textbooks the included labs are investigative using both discovery and hypothesis based science methods Students experimentally investigate topics observe structure use critical thinking skills to predict and test ideas and engage in hands on learning Students are often asked what evidence do you have that in order to encourage them to think for themselves By emphasizing investigative quantitative and comparative approaches to the topics the authors continually emphasize how the

biological sciences are integrative yet unique An instructor s manual available through McGraw Hill Lab Central provides detailed advice based on the authors experience on how to prepare materials for each lab teachings tips and lesson plans and questions that can be used in quizzes and practical exams This manual is an excellent choice for colleges and universities that want their students to experience the breadth of modern biology

*Water Quality Models Used by the Corps of Engineers* ,1987

**Biological Science** Biological Sciences Curriculum Study,1996

**Research in Computational Molecular Biology** Jian Ma,2024-05-16 This book constitutes the proceedings of the 28th Annual International Conference on Research in Computational Molecular Biology RECOMB 2024 held in Cambridge MA USA during April 29 May 2 2024 The 57 full papers included in this book were carefully reviewed and selected from 352 submissions They were organized in topical sections as follows theoretical and foundational algorithm contributions and more applied directions that engage with new technologies and intriguing biological questions

**Annotated Instructor's Edition for Investigating Biology** Judith Giles Morgan,1999

Investing Biology Pearson Education,2002-11

**Investigating Biology** Judith Giles Morgan,M. Eloise Brown Carter,1999 An undergraduate lab manual containing 27 lab exercises designed to encourage students to ask questions pose hypotheses and make predications before they begin lab work Students are required to synthesize results from observations and experiments draw conclusions apply results to new problems and to design their own investigations Scientific writing is emphasized throughout Includes appendices on scientific writing chi square test and terminology and techniques for dissection as well as a section of color photos This edition contains a new lab on cellular respiration and several labs are modified based on new evidence in molecular biology Wire spiral binding Annotation copyrighted by Book News Inc Portland OR

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*I Am Life* Jay Marvin Templin,HarperCollins Publishers,1991

**New Scientist** ,2007

**New Scientist and Science Journal** ,2007

**Genetics Abstracts** ,1996

**Biology** Oram,1998 Biology text book that focus on the nature of biology energy and the cell The continuation of life Evolutionary relationships life functions of organisms controlling living systems and Interactions in the environment

Nature Sir Norman Lockyer,2004

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