

Lab: Peppered Moth Simulation

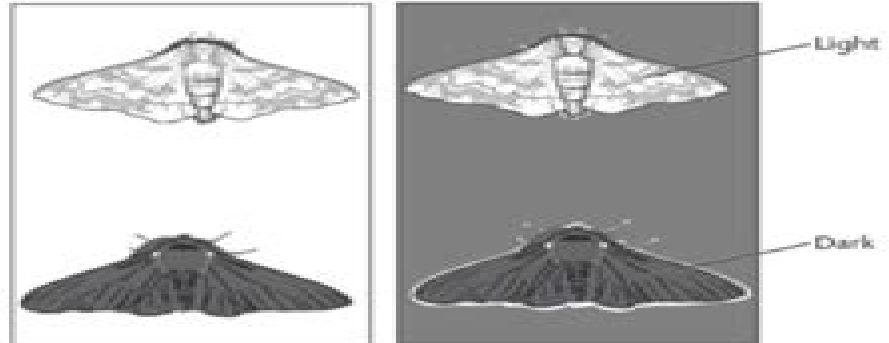
BIOLOGY: CHAPTER 10-PRINCIPLES OF EVOLUTION

Objectives:

- Describe the importance of coloration in avoiding predation
- Relate environmental change to changes in organisms
- Explain how natural selection causes populations to change

Materials

- 8½" x 11" sheet dark background
- 8½" x 11" sheet light background
- Forceps
- Clock with second hand
- 30 light circles (made with hole punch)
- 30 dark circles (made with hole punch)



Purpose: In this lab, you will simulate how predators locate prey in different environments. You will analyze how color affects and organism's ability to survive in certain environments.

Background: The usual form of the peppered moth *Biston betularia* in northern Europe has a light "peppered" pattern of coloration. The moth rests on tree branches and its color pattern **camouflages** it against predatory attack. The camouflage only works against the right background: birds are more likely to eat poorly camouflaged moths, which therefore have a lower **fitness**.

The light coloration of tree branches is mainly caused by lichens that grow there. Smoke pollution in the industrial revolution in the UK killed these lichens near to industrial areas, leaving tree branches black. At about this time, around 1830, a '**melanic**' form of the peppered moth becomes increasingly common in contemporary moth collections. The melanic form is camouflaged on dark tree branches. Through the 19th century, the melanic form increased in frequency until, near industrial regions, it was the normal type of the moth. The increase was almost certainly driven by natural selection.

The moths satisfy all four conditions for natural selection:

- they reproduce;
- their color pattern is inherited;
- there is variation in their color patterns;
- the different forms have different fitnesses.

Before you begin the lab, complete the hypothesis below:

Hypothesis: If the color of the prey matches the background color then

Peppered Moth Virtual Lab

L Darling-Hammond



Peppered Moth Virtual Lab:

The Hundred Years' Trial Alexander Gouzoules, Harold Gouzoules, 2025-07-01 A new account of the enduring cultural legal and scientific legacy of the 1925 Scopes Trial In *The Hundred Years Trial* Alexander and Harold Gouzoules explore the century long impacts of the historic 1925 Scopes Monkey Trial starting with the development of evolutionary theory and charting the resulting cultural and legal conflicts over evolution in the United States Through a blend of legal history scientific exploration and cultural analysis the authors reexamine how this landmark trial remains a pivotal moment in shaping modern debates on science religion and education The Scopes Trial became a symbol of a larger culture clash where questions of academic freedom the role of religion in public life and the boundaries of state intervention are fiercely debated This book uncovers the complex layers of this conflict offering readers a broader perspective that extends beyond the courtroom drama In tracing the legacies of Clarence Darrow and William Jennings Bryan the authors analyze how the trial's outcomes reverberated through later Supreme Court cases and shaped public policies and educational standards well into the twenty first century The authors further illustrate how the dialogue surrounding evolution has contributed to contentious debates not merely over the acceptance of evolutionary theory itself but regarding emergent claims and interpretations that continue to generate public and legal scrutiny One hundred years later the tensions between science and religious belief that were so brightly illuminated by Scopes are not only still with us but also increasingly relevant to the perpetual cultural issues in the American political consciousness abortion climate change and vaccines *The Hundred Years Trial* is vital for understanding not only how we arrived at our current political moment but also where we go next in communicating science to a skeptical public

Genetics A. Jamie Cuticchia, 2009 As science has discovered more and more about genetics the legal implications have also grown *Genetics A Handbook for Lawyers* the third book in the ABA Fundamentals series explores these implications with easy to understand discussions of the science and its application in real cases This book is a must for any lawyer whose practice touches upon the field of genetics

Biology, 1999 *Inquiry Skills Development* Holt Rinehart & Winston, 1998-01-27

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Report of the Annual Meeting British Association for the Advancement of Science. Meeting, 1925

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Genetics Abstracts, 1989

Current Bibliography of Epidemiology, 1970

Entomology Abstracts, 1994 Monthly with annual author and subject indexes Abstracts from about 2750 primary journals dealing with the subject of insects Arranged in classified order Entries include titles given or translated into English authors addresses offirst authors and abstracts all insects cited in the abstracts are identified by scientific family names Each monthly issue has Index to classes and orders Author index

Bibliography of Agriculture, 1971

Introduction to Population Genetics Richard Halliburton, 2004 Making the theory of population genetics relevant to readers this book explains the related mathematics with a logical organization It presents the quantitative aspects of population genetics and employs examples of human genetics medical

evolution human evolution and endangered species For an introduction to and understanding of population genetics The
Zoological Record ,1870 **El-Hi Textbooks in Print** ,1984 New York ,2002 The Guardian Index ,2002 **Journal**
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Deutsche Gesundheitswesen ,1969-04 **Current Advances in Ecological & Environmental Sciences** ,1993-05
International Abstracts of Biological Sciences ,1957

Adopting the Beat of Appearance: An Mental Symphony within **Peppered Moth Virtual Lab**

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