

# Mouse Coat Colour

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## Description:

In this multiple-class activity, students review and link the molecular, cellular, and genetics knowledge to evolution. It is an interrupted case study where students learn to apply aforementioned concepts, link them to the big context and appreciate the effects genetics and molecular mechanics have on the phenotype. See a full description [here](#).



Out of Class (Instructor)



Out of Class (Students)



In Class (Instructor)



In Class (Students)

Module 1

**Prepare for Module 1**

Review chapters related to module 1 ("Biological Chemistry").

**Introduce Activity**

Class 1

Present the "Mouse Coat Colour - Biological Chemistry" review questions.

Note: This takes place during week 5 of the semester.

**Answer Review Questions**

Discuss and answer the questions in groups (3-4 students).

**Clarify Doubts and Discuss Answers**

- Along with TAs, clear doubts and misconceptions raised by the groups
- Discuss the answers with the entire class (if needed) and explain concepts using just-in-time teaching (JITT) strategy. Also, provide answers to the questions left unanswered in-class due to time constraints.

**Solve Questions and Discuss in Class**

Solve the unanswered questions and discuss the answers with the peers or ask the instructor for explanation if needed.

Module 2

**Prepare for Module 2**

Review chapters related to module 2 ("Cells and Cell Division").

**Present Module 2 Questions**

Class 2

Present the "Cells and Cell Division" review questions.

Note: This takes place during week 6.

**Answer Module 2 Questions**

Discuss and answer the questions in groups (3-4 students)

### Legend

#### Context Icons:

- Individual Work
- Work in Groups

#### Task Icons:

- Gather Information
- Discuss
- Problem Solve
- Read
- Quiz/Test
- Instructor Orchestration

**Clarify Doubts and Discuss Answers**

- Along with TAs, clear doubts and misconceptions raised by the groups
- Discuss the answers with the entire class (if needed) and explain concepts using JITT strategy. Also, provide answers to the questions left unanswered in-class due to time constraints.

**Solve Questions and Discuss in Class**

Solve the unanswered questions and discuss the answers with the peers or ask the instructor for explanation if needed.

**Module 3**

**Prepare for Module 3**

Review chapters related to module 3 ("Genetics").

**Watch Documentary**

Class 3

Watch a truncated version of a [documentary](#) on "Mouse Coat Colour" at the beginning of the class.

Note: This takes place during week 7.

**Present Module 3 Questions**

Present the "Genetics" review questions.

**Answer Module 3 Questions**

Discuss and answer the questions in groups (3-4 students).

**Clarify Doubts and Discuss Answers**

- Along with TAs, clear doubts and misconceptions raised by the groups
- Discuss the answers with the entire class (if needed) and explain concepts using JITT strategy. Also, provide answers to the questions left unanswered in-class due to time constraints.

**Solve Questions and Discuss in Class**

Solve the unanswered questions and discuss the answers with the peers or ask the instructor for explanation if needed.

**Module 4**

**Prepare for Module 4 - Part A**

Prepare for Module 4 - part A ("Evolution - Natural Selection") by:

- Reading the assigned pages from the textbook
- Examining the lecture slides, YouTube videos, Moodle videos and concept maps (Flipped-classroom teaching strategy)

**Take Moodle Quiz**

Answer 10 multiple-choice questions (MCQs) available on Moodle to test understanding of the pre-class material.

**Present Module 4 - Part A Concepts**

Class 4

Present and explain key concepts on Natural Selection, placing great emphasis on the areas students struggle with the most using the pre-class MCQs as examples (JITT).

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**Answer iClicker Questions**

Discuss and answer iClicker questions (presented during the lecture time).

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**Present Module 4 - Part A Questions**

Present the "Natural Selection" in-class activity questions.

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**Answer Module 4 - Part A Questions**

Discuss and answer the questions in groups.

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**Discuss Answers**

Discuss the answers with the entire class (if needed) and explain concepts using JITT strategy.

Note: Provide answers to the questions left unanswered in-class due to time constraints.

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**Solve Questions and Discuss in Class**

Solve the unanswered questions and discuss the answers with the peers or ask the instructor for explanation if needed.

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**Prepare for Module 4 - Part B**

- Watch the full version of the Mouse Coat Colour [video](#).
- Prepare for Module 4 - Part B ("Evolution - Population Genetics") by: a) reading the assigned pages from the textbook and b) examining the lecture slides. You Tube videos, Moodle videos and concept maps (Flipped classroom teaching strategy).

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**Take Moodle Quiz**

Answer 10 MCQs available on Moodle to test understanding of the pre-class material.

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**Present Module 4 - Part B Concepts**

Class 5

Present and explain key concepts on "Population Genetics", placing great emphasis on the areas students struggle with the most using the pre-class MCQs as examples (JITT).

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**Answer iClicker Questions**

Discuss and answer iClicker questions (presented during the lecture) in groups.

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**Present Module 4 - Part B Questions**

Present the "Population Genetics" in-class activity questions.

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**Answer Module 4 - Part B Questions**

Discuss and answer the questions in groups.

**Discuss Answers**

Discuss the answers with the entire class (if needed) and explain concepts using JITT strategy.

Note: Provide answers to the questions left unanswered in-class due to time constraints.

**Solve Questions and Discuss in Class**

Solve the unanswered questions and discuss the answers with the peers or ask the instructor for explanation if needed.

**Prepare for Module 4 - Part C**

Prepare for Module 4 - Part C ("Evolution - Speciation") by:

- Reading the assigned pages from the textbook
- Examining the lecture slides, YouTube videos, Moodle videos and concept maps (Flipped classroom teaching strategy)

**Take Moodle Quiz**

Answer 10 MCQs available on Moodle to test their understanding of the pre-class material.

**Present Module 4 - Part C Concepts**

Present and explain key concepts on "Speciation", placing great emphasis on the areas students struggle with the most using the pre-class MCQs as examples (JITT).

**Answer iClicker Questions**

Discuss and answer iClicker questions (presented during the lecture) in groups.

**Present Module 4 - Part C Questions**

Present the "Speciation" in-class activity questions.

**Answer Module 4 - Part C Questions**

Discuss and answer the questions in groups.

**Discuss Answers**

Discuss the answers with the entire class (if needed) and explain concepts using JITT.

Note: Provide answers to the questions left unanswered in-class due to time constraints.

**Solve Questions and Discuss in Class**

Solve the unanswered questions and discuss the answers with the peers or ask the instructor for explanation if needed.