Human Genetics Course Survey

Welcome to the Human Genetics Course Survey conducted by the University of Cincinnati and the American Society of Human Genetics. The information from this survey will be kept confidential and all demographic information will be used for statistical purposes only. Upon completion of the survey, we encourage you to request a summary of the results that are obtained. Thank you for your help.

A. Course Demographics

Thinking about the last time you taught your human genetics course for non-science majors, answer the following questions about course demographics.

1. When was the last time you taught a human genetics course for non-science majors?
   (Current semester/quarter, Fall 2003 semester/quarter, Summer 2003, Spring 2003 semester/quarter, Winter 2003 quarter, Fall 2002 semester/quarter, more than two years ago)

2. The last time you taught your human genetics course for non-science majors, not including withdrawals, how many students actually completed the course?
   (Fewer than 29, 30-59, 60-89, 90-119, 120-149, 150-179, 180-209, 210-239, 240 or more)

3. Including human genetics courses for non-science majors taught by other instructors and multiple sections, how many times is the course typically taught in an academic year?
   (1, 2, 3, 4, 5, more than 6)

4. Including human genetics courses for non-science majors taught by other instructors and multiple sections, not including withdrawals, approximately how many students completed the course(s)?
   (than 29, 30-59, 60-89, 90-119, 120-149, 150-179, 180-209, 210-239, 240-269, 270-299, 300-349, 350-399, 400-449, 450-499, 500 or more)

5. Is a human genetics course for non-science majors typically taught on an annual basis, every two years, or other?

   a. Annual b. Every two years c. Other

6. Does the human genetics course for non-science majors that you typically teach have a laboratory section?

   a. Yes b. No

7. Recitation is a time when activities, such as discussions or problem solving, are scheduled outside of lecture or lab on a regular basis. Does the human genetics course for non-science majors you teach typically have a recitation component?

   a. Yes b. No

8. Please indicate the number of **hours per week** the student is formally in lecture, lab, and recitation for the course you typically teach.

a. Lecture (1, 2, 3)
b. Lab (0, 1, 2, 3 or more)
c. Recitation (0, 1, 2, 3 or more)

B. Course Content

Thinking about the last time you taught the human genetics course for non-science majors, answer the following questions including **ALL** components of the course (lecture, lab, and recitation).

9. Throughout lecture, lab, and recitation, what **percentage of class time** do you typically spend describing/discussing the basic processes of mitosis and meiosis?
(5%, 5-10%, 10-15%, 15-20%, 20-25%, 25-30%, 30-35%, 35-40%, 40-45%, 45-50%, more than 50%)

10. The following is a list of concepts, with their descriptions, that may be taught in a human genetics course. Including lecture, lab, and recitation, what is the estimated **percentage of class time** you typically spend on each of the following content areas in your course?

Content Area & Description	Percentage of Total Course Time
The Nature of the Genetic Material Description: DNA is the universal information molecule; it allows for genetic variation within and genetic continuity between generations.	
Transmission Description: Mendelian patterns of inheritance are directly related to the mechanisms of meiosis.	
Gene Expression Description: The flow of information from gene to protein (transcription and translation of a gene), and how these proteins working alone or together in concert with the environment produce the phenotype.	
Gene Regulation Description: Modulation of the activity of genes through cellular processes and gene products, in combination with environmental influences.	
Evolution Description: An understanding of genetic variation is essential to an understanding of evolution.	
Genetics and Society Description: The growing ability to analyze and manipulate the genetic material of Homo sapiens and other species raises a variety of complex and sometimes controversial issues for individuals and society.	
Total	**100%**

11. The following is a list of sub-concepts that may be taught in a human genetics course. **Please rate each sub-concept in terms of the extent you believe the sub-concept is <u>important for students to understand</u> and the <u>actual emphasis you give</u> that particular sub-concept in your human genetics course for non-science majors.** We understand that there may be a considerable amount of discrepancy between what you consider important and what you have time to emphasize in a course. **On the scale below, 5 = extremely important and 1 = of minor importance; 5 = emphasized a great deal and 1 = emphasized a little.**

The Nature of the Genetic Material

Sub-concepts	**Importance**	**Emphasis**
Genetics is the study of biological variation, its sources, its nature, and its implications.	5 4 3 2 1	5 4 3 2 1
DNA is the genetic material of virtually all organisms.	5 4 3 2 1	5 4 3 2 1
The structure of DNA is directly related to its function.	5 4 3 2 1	5 4 3 2 1
The replication of DNA generally is highly accurate.	5 4 3 2 1	5 4 3 2 1
Occasional errors in DNA structure and replication result in genetic variation.	5 4 3 2 1	5 4 3 2 1
DNA is organized into cellular structure called chromosomes.	5 4 3 2 1	5 4 3 2 1
Mitochondria contain their own DNA, which is transmitted, along with the mitochondria, exclusively by the maternal gametes.	5 4 3 2 1	5 4 3 2 1

Transmission

Sub-concepts	**Importance**	**Emphasis**
Sexual reproduction and meiosis increase genetic variation by providing the physical basis for genetic recombination.	5 4 3 2 1	5 4 3 2 1
Chromosome number is reduced by half during meiosis, which results in the formation of genetically different gametes.	5 4 3 2 1	5 4 3 2 1
Understanding Mendelian patterns of inheritance, and their biological basis, allows probability statements about the occurrence of traits in offspring.	5 4 3 2 1	5 4 3 2 1
Most human traits do not result from the influence of a single pair of genes, but from multiple gene pairs.	5 4 3 2 1	5 4 3 2 1
The products of multiple genes interact, but each individual gene follows Mendelian patterns of inheritance.	5 4 3 2 1	5 4 3 2 1
In complex traits, alleles segregate along Mendelian lines, but phenotypes do not.	5 4 3 2 1	5 4 3 2 1

Gene Expression

Subconcepts	**Importance**	**Emphasis**
The flow of genetic information is from DNA to RNA to protein.	5 4 3 2 1	5 4 3 2 1
A gene carries the primary code for a protein in the form of a sequence of DNA bases.	5 4 3 2 1	5 4 3 2 1
The DNA code is transcribed into a more mobile and modified code.	5 4 3 2 1	5 4 3 2 1
This mobile and modified code is translated into a protein.	5 4 3 2 1	5 4 3 2 1
The environment in which a gene and its protein product function can affect one or many of the steps involved in producing a given trait.	5 4 3 2 1	5 4 3 2 1
The environment includes internal and external effects, beginning with conception, and the experiences of the individual throughout his or her lifetime.	5 4 3 2 1	5 4 3 2 1
Most human traits result from the products of multiple genes and the environment working in concert.	5 4 3 2 1	5 4 3 2 1

Gene Regulation

Subconcepts	Importance	Emphasis
Genes code for proteins, which are responsible for normal regulation of body functions.	5 4 3 2 1	5 4 3 2 1
Much of gene regulation involves turning genes on and off at the right time.	5 4 3 2 1	5 4 3 2 1
Some genetic variation results in disease in virtually every environment, for example, the mutations associated with Huntington disease, Tay-Sachs disease, and cystic fibrosis.	5 4 3 2 1	5 4 3 2 1
Other genetic variations result in disease less consistently, for example, the BRAC1 mutation associated with breast cancer.	5 4 3 2 1	5 4 3 2 1
Most diseases result from the products of multiple genes interacting with environmental variables; examples include heart disease, diabetes, cancer, and bipolar disorder.	5 4 3 2 1	5 4 3 2 1
Cancer arises as a result of malfunctioning gene regulation, which results in loss of regulation of cell cycle.	5 4 3 2 1	5 4 3 2 1

Evolution

Subconcepts	Importance	Emphasis
Genetic variation is the rule rather than the exception in the living world; it is essential for the survival of any species.	5 4 3 2 1	5 4 3 2 1
Genetic variation is the basis for evolution by natural selection; without variation there can be no differential selection.	5 4 3 2 1	5 4 3 2 1
Evolution occurs in populations, not in individuals, as a result of changes in allelic frequencies.	5 4 3 2 1	5 4 3 2 1
The basic tenets of Darwinian evolution apply today.	5 4 3 2 1	5 4 3 2 1
Some genetic variation is non-adaptive, producing gene products that interfere with normal regulatory processes in certain environments. Such non-adaptive variation comes to our attention as disease.	5 4 3 2 1	5 4 3 2 1
Genetic variation is much greater within traditional human racial groups than between them.	5 4 3 2 1	5 4 3 2 1
Superficial phenotypic differences do not reflect the high degree of genetic relatedness among traditional races.	5 4 3 2 1	5 4 3 2 1
Homo sapiens has been produced by the same evolutionary processes that have produced all other species.	5 4 3 2 1	5 4 3 2 1
Many genes found in humans are found in other taxa, indicating that those genes have been conserved throughout evolutionary history.	5 4 3 2 1	5 4 3 2 1
Substantial evidence indicates that the earth is about 4.5 billion years old and that there has been life on earth for about 3.5 billion years. Modern Homo sapiens is a recent addition, having arisen from hominid ancestors only about 140,000 years ago.	5 4 3 2 1	5 4 3 2 1
Human cultural evolution, the transmission of knowledge, proceeds at a more rapid pace than does biological evolution and has a greater impact on our species and others.	5 4 3 2 1	5 4 3 2 1

Genetics and Society

Subconcepts	Importance	Emphasis
Human alterations of the genetic material often expand upon naturally occurring phenomena; for example, recombinant DNA technology builds upon our understanding of the naturally occurring transfer of DNA among species.	5 4 3 2 1	5 4 3 2 1
The application of genetics and genetic technology to health care holds great potential for improving personal and public health by allowing identification of individuals and groups whose genes increase their risk of disease.	5 4 3 2 1	5 4 3 2 1
Like all technologies, genetic technologies are fallible and have unintended consequences, some of which can be harmful to individuals, families, or groups.	5 4 3 2 1	5 4 3 2 1
The scientific community, the general public, and policymaker should be aware of the implications of genetic technology and should be able to participate knowledgeably in deliberations about those implications.	5 4 3 2 1	5 4 3 2 1
Scientific attempts to provide naturalistic explanations for natural phenomena.	5 4 3 2 1	5 4 3 2 1
Science often can tell us what we can or cannot do, but it does not always indicate clearly what we should do. Those decisions involve the intersection of science with ethics, the law, and public policy.	5 4 3 2 1	5 4 3 2 1

C. Instructional Materials and Teaching Approaches

The following questions ask about different materials and teaching approaches (ways of teaching, e.g. lecture/presentations, group activities, class discussion, etc.) used in your course.

12. During the last time you taught the human genetics course for non-science majors, did you require students to use a specific textbook?

a. Yes (go to question #12)   b. No (skip to question #13)

13. Please indicate the textbook that you required the students to use the last time you taught the course.

a. *Human Heredity: Principles and Issues* by Michael R. Cummings
b. *Human Genetics: Concepts and Applications* by Ricki Lewis
c. *Basic Human Genetics* by Elaine Johansen Mange and Arthur P. Mange
d. Other ____

(Please type in the name of text and author)

14. We are also interested in how class time throughout the semester/quarter is utilized in your human genetics course for non-science majors. Thinking about the last time you taught this course; including lecture, lab, and recitation, approximately **how many hours** did you spend on the following items during the semester/quarter?

Item	**Hours of Class Time**
Lecturing/Presentations	
Exams (quizzes, midterm, final, any other tests)	
Class Discussion	
Group Work	
Videos	
Genetics in the News (presentation/discussion of latest discoveries)	
Other	

15. Please indicate the frequency at which you typically use the following methods to assess student learning in your human genetics course.

a. Exams	Always	Frequently	Rarely	Never
b. Writing Assignments	Always	Frequently	Rarely	Never
c. Group activities/projects	Always	Frequently	Rarely	Never
d. Class discussion	Always	Frequently	Rarely	Never
e. Problem Sets	Always	Frequently	Rarely	Never

16. Please list any other ways that you assess student learning that are not listed above.

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17. In the human genetics course for non-science majors that you teach, what is the typical **percentage** of a student's grade that is based on **exams** (quizzes, midterm, final, and other tests throughout the course)?
(0-10%, 11-20%, 21-30%, 31-40%, 41-50%, 51-60%, 61-70%, 71-80%, 81-90%, 91-100%)

D. Instructor Demographics

18. What is your current position at your college/university?

    a. Adjunct
    b. Instructor
    c. Assistant Professor
    d. Associate Professor
    e. Full Professor
    f. Other

19. At present, what is the highest degree that you have received?

    a. BS/BA
    b. MS/MA
    c. PhD
    d. EdD
    e. Other

20. Please indicate in which discipline you are professionally trained.
    a. Botany
    b. Ecology
    c. Evolution
    d. Genetics
    e. Microbiology
    f. Molecular/Cellular Biology
    g. Science Education
    h. Zoology
    i. Other

21. Please type in the name of the college/university at which you are currently teaching.
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22. In which state is the college/university located? ________

We understand that this survey is not comprehensive. If there is anything else you would like to say about your human genetics course, including unique teaching methods or materials or anything else, please let us know in the space below.

We are most grateful for the time you have given to fill out this survey. Should you desire a copy of the results, please enter your email address below. Thank You.