Genetics, Evolution, and Ecology

Assignment | LESSON 7 - PMED

Start Date: Friday, 22 April 2022, 11:00 PM PDT
Due Date: Sunday, 1 May 2022, 11:00 PM PDT
Completed On: Friday, 22 April 2022, 3:46 PM PDT
Time taken: Hour 0 Min 0 Sec
Grade: 96.00 out of 100.00 (**96**%)

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Finish review

Information
Question **1**
Incorrect
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(Questions 1-5) Imagine an autosomal co-dominant trait with three different alleles, A, B, and C. For each of the following families, identify the possible genotypes (genotypes cross between families starting material that could sustain the genotype of the offspring. Assume no recombination crosses.

Parent 1 has genotype AB and Parent 2 has genotype BC. They have a child offspring that has genotype BBC.
This could have occurred through non-disjunction in meiosis I or Meiosis II.

Select one:
True ✓
False

Distinguish between sister chromatids and homologous chromosomes
Visualize how meiosis produces four haploid gametes
Create a pedigree from a scenario
Week 7 extra and other questions
Week 7 other questions

Question **2**
Incorrect
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Parent 1 has genotype AC and Parent 2 has genotype BC. They have a triploid offspring that has genotype ACC.
This could have occurred through non-disjunction in meiosis I or Meiosis II.

Select one:
True ✓
False

Distinguish between sister chromatids and homologous chromosomes
Visualize how meiosis produces four haploid gametes
Create a pedigree from a scenario
Week 7 extra and other questions
Week 7 other questions

Question **3**
Incorrect
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View history

Parent 1 has genotype AC and Parent 2 has genotype BC. They have a triploid offspring that has genotype ABC.
This could have occurred through non-disjunction in meiosis I or Meiosis II.

Select one:
True ✓
False

Distinguish between sister chromatids and homologous chromosomes
Visualize how meiosis produces four haploid gametes
Create a pedigree from a scenario
Week 7 extra and other questions
Week 7 other questions

Question **4**
Incorrect
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Parent 1 has genotype AC and Parent 2 has genotype BC. They have a triploid offspring that has genotype ABC.
This could have occurred through non-disjunction in meiosis I or Meiosis II.

Select one:
True ✓
False

Distinguish between sister chromatids and homologous chromosomes
Visualize how meiosis produces four haploid gametes
Create a pedigree from a scenario
Week 7 extra and other questions
Week 7 other questions

Information
Question **5**
Incorrect
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(Questions 5 - 7) You are a genetic counselor and are meeting with a couple where both individuals are heterozygous for primary cilium dyskinesia (a recessive condition) and are planning on having a family and are interested in knowing the probability that their children may or may not have primary cilia. Questions

If they have two children, what is the probability that any their second child have primary cilia (dyskinesia)?

- 3/16
- 9/16
- 6/16
- 10/16
- None of the other answer choices are correct ✓

Calculate the probability of a particular gamete being produced from an individual, assuming independent segregation of alleles
Use pedigree analysis to calculate the likelihood an individual will have a particular genotype or phenotype
Use the multiplication and sum rule
Week 7 and 7 Other questions
Lab Week 3 and 4

Question **6**
Incorrect
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Edit question
View history

If they have two children, what is the probability that both children will be affected?

- 3/16
- 1/16
- 9/16
- 10/16
- None of the other answer choices are correct

Calculate the probability of a particular gamete being produced from an individual, assuming independent segregation of alleles
Use pedigree analysis to calculate the likelihood an individual will have a particular genotype or phenotype
Use the multiplication and sum rule
Week 7 and 7 Other questions
Lab Week 3 and 4

Question **7**
Incorrect
0.00 out of 2.00
Flag question
Edit question
View history

If they have two children, what is the probability that both children will have the same genotype?

- 4/16
- 1/16
- 9/16
- 10/16
- None of the other answer choices are correct ✓

Calculate the probability of a particular gamete being produced from an individual, assuming independent segregation of alleles
Use pedigree analysis to calculate the likelihood an individual will have a particular genotype or phenotype
Use the multiplication and sum rule
Week 7 and 7 Other questions
Lab Week 3 and 4

Information
Question **8**
Incorrect
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View history

(Questions 8-10) Natalie (an XX individual) and Daniel (an XY individual) are concerned about having a child with polycystic kidney disease (a recessive condition). Natalie's brother, Zarek's parents are both heterozygous for polycystic kidney disease. Zarek's sister, Zoriah's parents are both affected both Natalie's uncle (her mother's brother) and younger brother and Zarek's father and sister's father. He also has a other family has the condition.

Polycystic kidney disease is trait likely an X-linked dominant trait.

Select one:
True
False ✓

Distinguish between dominant, recessive, autosomal, X-linked patterns of inheritance using pedigrees
Create a pedigree from a scenario
Citizen questions Weeks 2 and 3
Lab Week 1

Question **9**
Incorrect
0.00 out of 2.00
Flag question
Edit question
View history

Based on their family history, what is the probability Natalie and Zarek's first child will be affected by polycystic kidney disease?

- 1/4
- 1/8
- 1/6
- 1/16
- 1/12
- 1/32
- None of the other answer choices are correct ✓

Distinguish between dominant, recessive, autosomal, X-linked patterns of inheritance using pedigrees
Create a pedigree from a scenario
Citizen questions Weeks 2 and 3
Lab Week 1

Question **10**
Incorrect
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Edit question
View history

The couple is also concerned about their child inheriting hemophilia, another rare disease, which is X-linked. Natalie's brother, Zarek's sister, Zoriah and Zarek's father have hemophilia. Natalie's father, Zarek's father, Zoriah's father have hemophilia.
The probability that Natalie and Zarek's first child will be a girl affected by both diseases is 1/16.

Select one:
True
False ✓

Distinguish between dominant, recessive, autosomal, X-linked patterns of inheritance using pedigrees
Create a pedigree from a scenario
Citizen questions Weeks 2 and 3
Lab Week 1

Question **11**
Incorrect
0.00 out of 2.00
Flag question
Edit question
View history

The couple is also concerned about their child inheriting hemophilia, another rare disease, which is X-linked. Natalie's brother, Zarek's sister, Zoriah and Zarek's father have hemophilia. Natalie's father, Zarek's father, Zoriah's father have hemophilia.
The probability that Natalie and Zarek's first child will be a girl affected by both diseases is 1/256.

Select one:
True
False ✓

Distinguish between dominant, recessive, autosomal, X-linked patterns of inheritance using pedigrees
Create a pedigree from a scenario
Citizen questions Weeks 2 and 3
Lab Week 1

Information
Question **12**
Incorrect
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View history

(Questions 12-15) You are working with a plant breeding program and cross breed a true breeding plant with white flowers with another true breeding plant with red flowers. The offspring are all pink. Crossing the F1 generation with itself, you obtain white, pink, and red flowers in a ratio of 1:2:1. Pink is a dominant trait, and white flowers homozygous with a phenotypic ratio of 3 red: 1 white.

Flower colors are determined by one gene.

Select one:
True ✓
False

Calculate the probability of a particular gamete being produced from an individual, assuming independent segregation of alleles
Interpret the results of crosses and pedigrees whose results differ from Mendelian expectations because of incomplete dominance, epistasis, or linkage to of dominance
Week 3 Other questions
Week 3 Lab

Question **13**
Incorrect
0.00 out of 2.00
Flag question
Edit question
View history

Extra red flowered plants from the F1 generation must be heterozygous for color genes.

Select one:
True ✓
False

Calculate the probability of a particular gamete being produced from an individual, assuming independent segregation of alleles
Interpret the results of crosses and pedigrees whose results differ from Mendelian expectations because of incomplete dominance, epistasis, or linkage to of dominance
Week 3 Other questions
Week 3 Lab

Question **14**
Incorrect
0.00 out of 2.00
Flag question
Edit question
View history

All red flowered plants from the F2 generation will have the same genotype.

Select one:
True ✓
False

Calculate the probability of a particular gamete being produced from an individual, assuming independent segregation of alleles
Interpret the results of crosses and pedigrees whose results differ from Mendelian expectations because of incomplete dominance, epistasis, or linkage to of dominance
Week 3 Other questions
Week 3 Lab

Question **15**
Incorrect
0.00 out of 2.00
Flag question
Edit question
View history

All red flowered plants must have at least one dominant allele for each gene.

Select one:
True ✓
False

Calculate the probability of a particular gamete being produced from an individual, assuming independent segregation of alleles
Interpret the results of crosses and pedigrees whose results differ from Mendelian expectations because of incomplete dominance, epistasis, or linkage to of dominance
Week 3 Other questions
Week 3 Lab

Question **16**
Incorrect
0.00 out of 2.00
Flag question
Edit question
View history

(Questions 16-18) Brian has a maternal grandmother (i.e. his mother's mother) who is affected by Gaucher disease. Amber has a paternal grandfather (i.e. his father's father) that is affected by Gaucher disease. Gaucher disease is a rare disorder and no one else in either family has the condition.

The probability that Amber is a carrier of Gaucher's disease is greater than the probability that Brian is a carrier of Gaucher's disease.

Select one:
True
False ✓

Distinguish between dominant, recessive, autosomal, X-linked patterns of inheritance using pedigrees
Create a pedigree from a scenario
Citizen questions Weeks 2 and 3
Lab Week 1

Question **17**
Incorrect
0.00 out of 2.00
Flag question
Edit question
View history

The probability that Brian and Amber's first child would be affected is 1/4.

Select one:
True
False ✓

Distinguish between dominant, recessive, autosomal, X-linked patterns of inheritance using pedigrees
Create a pedigree from a scenario
Citizen questions Weeks 2 and 3
Lab Week 1

Information
Question **18**
Incorrect
0.00 out of 2.00
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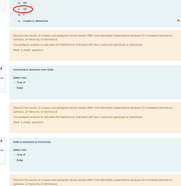
Edit question
View history

(Questions 18-20) In Cat Pan magical forest, there is an exotic nocturnal nightjar. The leather pattern of the bird tail is determined by a **single autosomal gene** with three alleles: Vertical, Horizontal, and Solid. Genotypes are given below (from the individuals I-1 and II-2 as well as the individuals III-1 and III-2 are the parents of the following questions.



V, H, S, S, and V-H siblings have not only the same phenotype but the same genotype.

Select one:
True ✓
False

Interpret the results of crosses and pedigrees whose results differ from Mendelian expectations because of incomplete dominance, epistasis, or linkage to of dominance
Use pedigree analysis to calculate the likelihood an individual will have a particular genotype or phenotype
Week 3 Other questions

Question **19**
Incorrect
0.00 out of 2.00
Flag question
Edit question
View history

V-H is heterozygous

Select one:
True ✓
False

Interpret the results of crosses and pedigrees whose results differ from Mendelian expectations because of incomplete dominance, epistasis, or linkage to of dominance
Use pedigree analysis to calculate the likelihood an individual will have a particular genotype or phenotype
Week 3 Other questions

Question **20**
Incorrect
0.00 out of 2.00
Flag question
Edit question
View history

The probability that V-S is heterozygous is

- 1/2
- 1/4
- 1/8
- Unable to determine ✗

Interpret the results of crosses and pedigrees whose results differ from Mendelian expectations because of incomplete dominance, epistasis, or linkage to of dominance
Use pedigree analysis to calculate the likelihood an individual will have a particular genotype or phenotype
Week 3 Other questions

Question **21**
Incorrect
0.00 out of 2.00
Flag question
Edit question
View history

Horizontal is dominant over Solid.

Select one:
True ✓
False

Interpret the results of crosses and pedigrees whose results differ from Mendelian expectations because of incomplete dominance, epistasis, or linkage to of dominance
Use pedigree analysis to calculate the likelihood an individual will have a particular genotype or phenotype
Week 3 Other questions

Question **22**
Incorrect
0.00 out of 2.00
Flag question
Edit question
View history

Solid is recessive to Horizontal.

Select one:
True ✓
False

Interpret the results of crosses and pedigrees whose results differ from Mendelian expectations because of incomplete dominance, epistasis, or linkage to of dominance
Use pedigree analysis to calculate the likelihood an individual will have a particular genotype or phenotype
Week 3 Other questions

Question **23**
Incorrect
0.00 out of 2.00
Flag question
Edit question
View history

What is the probability that the first offspring of V-S and V-H is checkered?

- 1/2
- 1/4
- 1/8
- Unable to determine ✗

Interpret the results of crosses and pedigrees whose results differ from Mendelian expectations because of incomplete dominance, epistasis, or linkage to of dominance
Use pedigree analysis to calculate the likelihood an individual will have a particular genotype or phenotype
Week 3 Other questions

Information
Question **24**
Incorrect
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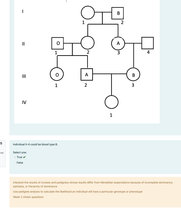
Edit question
View history

(Questions 24-26) Recall that ABO blood groups exhibit a co-dominant pattern of inheritance. I^A and I^B are codominant and is recessive to both I^A and I^B. A unique pedigree and the ABO blood type of some of the members of the family are shown in the figure below.



Individual IV-1 has an equal probability of being blood type O or blood type AB.

Select one:
True ✓
False

Interpret the results of crosses and pedigrees whose results differ from Mendelian expectations because of incomplete dominance, epistasis, or linkage to of dominance
Use pedigree analysis to calculate the likelihood an individual will have a particular genotype or phenotype
Week 3 Other questions

Question **25**
Incorrect
0.00 out of 2.00
Flag question
Edit question
View history

Individual IV-1 is equal to blood type A.

Select one:
True ✓
False

Interpret the results of crosses and pedigrees whose results differ from Mendelian expectations because of incomplete dominance, epistasis, or linkage to of dominance
Use pedigree analysis to calculate the likelihood an individual will have a particular genotype or phenotype
Week 3 Other questions

Question **26**
Incorrect
0.00 out of 2.00
Flag question
Edit question
View history

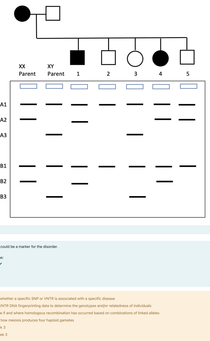
Individual IV-1 has an equal probability of being blood type O or blood type AB.

Select one:
True ✓
False

Interpret the results of crosses and pedigrees whose results differ from Mendelian expectations because of incomplete dominance, epistasis, or linkage to of dominance
Use pedigree analysis to calculate the likelihood an individual will have a particular genotype or phenotype
Week 3 Other questions

Information
Flag question

[Questions 27 - 30] Two generations of a family are depicted in this pedigree . The gel below shows the banding pattern for two SNPs(A and B, each with three alleles (denoted A1, A2, A3 and B1, B2, B3, respectively). Some individuals in the pedigree are also affected with an autosomal dominant disorder, and their symbols in the pedigree are filled.



Question 27
Correct
5.00 points out of 5.00
Flag question

Allele B2 could be a marker for the disorder.

Select one:
- True ✔
- False

Evaluate whether a specific SNP or VNTR is associated with a specific disease
Analyze VNTR DNA fingerprinting data to determine the genotypes and/or relatedness of individuals
Determine if and where homologous recombination has occurred based on combinations of linked alleles
Visualize how meiosis produces four haploid gametes
CQs Week 3
PEQs Week 3

Question 28
Incorrect
0.00 points out of 5.00
Flag question

The genotype of individual 3 is:

- a. A1A3B1B3
- b. A1B3A3B3
- c. A2B1A3B2
- d. A1A3B1B2

Evaluate whether a specific SNP or VNTR is associated with a specific disease
Analyze VNTR DNA fingerprinting data to determine the genotypes and/or relatedness of individuals
Determine if and where homologous recombination has occurred based on combinations of linked alleles
Visualize how meiosis produces four haploid gametes
CQs Week 3
PEQs Week 3

Question 29
Correct
5.00 points out of 5.00
Flag question

Individual 5 inherited a recombinant chromosome from their XY parent.

Select one:
- True
- False ✔

Evaluate whether a specific SNP or VNTR is associated with a specific disease
Analyze VNTR DNA fingerprinting data to determine the genotypes and/or relatedness of individuals
Determine if and where homologous recombination has occurred based on combinations of linked alleles
Visualize how meiosis produces four haploid gametes
CQs Week 3
PEQs Week 3

Question 30
Correct
5.00 points out of 5.00
Flag question

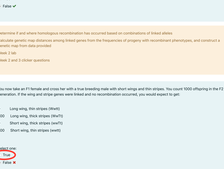
Which chromosome did individual 1 inherit from their XX parent?

- a. A1B2
- b. A2B3
- c. A1B3
- d. A2B2 ✔

Evaluate whether a specific SNP or VNTR is associated with a specific disease
Analyze VNTR DNA fingerprinting data to determine the genotypes and/or relatedness of individuals
Determine if and where homologous recombination has occurred based on combinations of linked alleles
Visualize how meiosis produces four haploid gametes
CQs Week 3
PEQs Week 3

Information
Flag question

[Questions 31-32] You are studying how seaweed (marine algae) could respond to increased nitrogen that can enter the ocean during a downpour. You collect seawater samples from three species of seaweed (1, 2, and 3) and bring them back to the lab to perform the following experiment. You separate each species of seaweed into multiple small individual seawater tanks, where all of the tanks have the same temperature and access to sunlight. For each species, half of the tanks you give the seaweed ambient seawater (no added nutrients) and half of the tanks you give the seaweed nutrient enriched water (added nitrogen). The results of your experiment are shown in Figure I below.



Question 31
Correct
5.00 points out of 5.00
Flag question

The environmental response to nitrogen is strongest in seaweed species 3.

Select one:
- True ✔
- False

Interpret experiments to determine the relative influences of genes versus the environment on a given phenotype
Evaluate how genes and the environment can interact to influence a phenotype
Week 3 clicker questions

Question 32
Correct
5.00 points out of 5.00
Flag question

Based on these results, which line (A, B, or C) from Figure II (the right panel above) best illustrates environmental influence on growth for seaweed species 3?

- a. Line A ✔
- b. Line B
- c. Line C

Interpret experiments to determine the relative influences of genes versus the environment on a given phenotype
Evaluate how genes and the environment can interact to influence a phenotype
Week 3 clicker questions

Information
Flag question

[Questions 33 and 34] You are doing a breeding experiment with bees. In your initial cross, the parents are true breeding. The female parent has long wings and thick stripes (WWTT), the male parent has short wings and thin stripes (sswt). All the flies in the F1 generation have long wings and thick stripes.

Question 33
Correct
5.00 points out of 5.00
Flag question

The genotypes of the flies in the F1 generation are SA WWTT, S3 WwTt, and S4 wwtt.

Select one:
- True
- False ✔

Determine if and where homologous recombination has occurred based on combinations of linked alleles
Calculate genetic map distances among linked genes from the frequencies of progeny with recombinant phenotypes, and construct a genetic map from data provided
Week 3 lab
Week 3 and 3 clicker questions

Question 34
Incorrect
0.00 points out of 5.00
Flag question

You now take an F1 female and cross her with a true breeding male with short wings and thin stripes. You count 1000 offspring in the F2 generation. If the wing and stripe genes were linked and no recombination occurred, you would expect to get:

0 Long wing, thin stripes (WwtT)
500 Long wing, thick stripes (WwTt)
0 Short wing, thick stripes (wwTt)
500 Short wing, thin stripes (wwtt)

Select one:
- True
- False ✘

Determine if and where homologous recombination has occurred based on combinations of linked alleles
Calculate genetic map distances among linked genes from the frequencies of progeny with recombinant phenotypes, and construct a genetic map from data provided
Week 3 lab
Week 3 and 3 clicker questions

Question 35
Incorrect
0.00 points out of 5.00
Flag question

When you count the F2 generation, you really get:

69 Long wing, thin stripes (WwtT)
407 Long wing, thick stripes (WwTt)
91 Short wing, thick stripes (wwTt)
443 Short wing, thin stripes (wwtt)

Based on this result, you can determine the recombination frequency between the wing and stripe gene is 15%

Select one:
- True
- False ✘

Determine if and where homologous recombination has occurred based on combinations of linked alleles
Calculate genetic map distances among linked genes from the frequencies of progeny with recombinant phenotypes, and construct a genetic map from data provided
Week 3 lab
Week 3 and 3 clicker questions

Question 36
Correct
5.00 points out of 5.00
Flag question

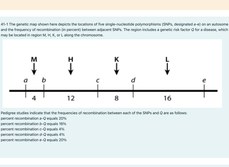
A series of bee matings shows that the recombination frequency between the gene for wing length and the gene for antenna length is 10% (i.e. the genetic distance between them is 10 map units). The figure shows a correct genetic map for the three genes:

Select one:
- True
- False ✔

Determine if and where homologous recombination has occurred based on combinations of linked alleles
Calculate genetic map distances among linked genes from the frequencies of progeny with recombinant phenotypes, and construct a genetic map from data provided
Week 3 lab
Week 3 and 3 clicker questions

Information
Flag question

[Questions 37-38] Use the figure below to answer questions 37 and 38.
The graphs shown depict the relative proportions of individuals affected with a certain condition (darker shaded bar) and individuals not affected (lighter bar) for individuals carrying only A-T, only G-C, or both A-T and G-C alleles of a single nucleotide polymorphism (SNP).



Question 37
Correct
5.00 points out of 5.00
Flag question

Which graph shows a pattern that suggests that the G - C allele is a risk factor for a dominant disease?

- a. Graph A
- b. Graph B
- c. Graph C
- d. Graph D ✔
- e. Graph E

Evaluate whether a specific SNP or VNTR is associated with a specific disease
Week 3 Clicker questions

Question 38
Correct
5.00 points out of 5.00
Flag question

Which graph shows a pattern that suggests that neither SNP is a risk factor for the disease?

- a. Graph A
- b. Graph B
- c. Graph C
- d. Graph D
- e. Graph E ✔

Evaluate whether a specific SNP or VNTR is associated with a specific disease
Week 3 Clicker questions

Question 39
Correct
5.00 points out of 5.00
Flag question

Individuals with genotypes AaBbCcDD and AaBbCcDD are crossed. Assuming independent segregation and complete dominance for each trait, the expected proportion of the progeny that will have at least one recessive allele at each locus is:

- a. 81/256
- b. 12/16
- c. 27/64
- d. 9/16
- e. None of the other answer choices are correct ✔

Visualize how meiosis produces four haploid gametes
Calculate the probability of a particular gamete being produced from an individual, assuming independent segregation of alleles
Week 2 clicker questions

Question 40
Correct
5.00 points out of 5.00
Flag question

Individuals with the genotypes AaBbCcddeeff and AaBbccDDEEeff are crossed. Assuming independent segregation and complete dominance for each trait, the expected proportion of the progeny that will be homozygous for all of the genes is 0.

Select one:
- True ✔
- False

Visualize how meiosis produces four haploid gametes
Calculate the probability of a particular gamete being produced from an individual, assuming independent segregation of alleles
Week 2 Clicker questions

Information
Flag question

M-1 Fine genetic map shown here depicts the locations of five single-nucleotide polymorphisms (SNPs), designated a-e) on an autosome and the frequency of recombination (in percent) between adjacent SNPs. The region includes a genetic risk factor Q for a disease, which may be located in region M, K, H, or L along the chromosome.

Pedigree studies indicate that the frequencies of recombination between each of the SNPs and Q are as follows:
percent recombination a-Q equals 25%
percent recombination b-Q equals 16%
percent recombination c-Q equals 8%
percent recombination d-Q equals 4%
percent recombination e-Q equals 20%

Question 41
Correct
5.00 points out of 5.00
Flag question

What is the most likely position of Q in the genetic map?

- a. position H
- b. position M
- c. position K ✔
- d. position L
- e. None of the other answer choices are correct

Finish review

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