



LESSON PLAN 2

FRM/FMIPA/062-01
18 February 2012

1. Faculty /Study Program : Mathematics and Science / Biology Education
2. Course / Code : BIC 223
3. Credits : 2
4. Semester and Duration : IV , 100 minutes
5. Basic competence : Describe the pattern of inheritance in Mendelian genetics
6. Achievement indicator : Students are able to explain Mendels' experiment, Mendel I and II Law, and analyze the inheritance of different traits according to Mendels' findings.
7. Topics / Sub-topics : Mendelian Genetics : Mendel postulate and monohybrid, dihybrid, trihybrid crosses
8. Lecture activity :

Activity	Details of activity	Duration	Method	Media	References
Introduction	<ul style="list-style-type: none"> • Discussion on why Mendel has become an important figure in genetics • A brief explanation on the method used by Mendel in his experiment and the effect it has in the study of genetics 	10 minutes	Discussion and lecture	PPT, boardmarker	Klug <i>et al.</i> , 2006. Concepts of Genetics and Brooker.2009.Genetics Analysis and Principles

Main Presentation	<ul style="list-style-type: none"> • Explanation about Mendel's experiment, his postulates, and also on his monohybrid cross 	30 minutes	Lecture	PPT, animasi, boardmarker	Klug <i>et al.</i> , 2006. Concepts of Genetics and Brooker.2009.Genetics Analysis and Principles
	<ul style="list-style-type: none"> • Students are asked to analyze the method used by Mendel and use it to solve several problems of monohybrid cross 	10 minutes	Discussion		
	<ul style="list-style-type: none"> • Explanation on dihybrid cross, Mendel II law, trihybrid cross, reciprocal cross, and test cross 	30 minutes	Lecture	PPT, animasi, boardmarker	
	<ul style="list-style-type: none"> • Students are asked to analyze several examples of dihybrid and trihybrid cross 	10 minutes	Discussion		
Closing	<ul style="list-style-type: none"> • Students are asked to make a conclusion of the topic and a quiz is given to test students' understanding on the topic 	10 minutes	Discussion		

Follow up	<ul style="list-style-type: none"> An assignment is given in relation to this topic (a trihybrid cross) 				

9. Evaluation

Questions :

- 1) In a cross between black and white guinea pigs, all of the F1 were black. In the F2 generation there were $\frac{3}{4}$ black and $\frac{1}{4}$ white. Draw a diagram of the cross and write all of the genotype and phenotype in each generation !
- 2) Why is the pea plant (*Pisum sativum*) a good model organism for Mendels' experiment ?

Answers :

- 1) Parent : BB x bb (black x white)
F1 : Bb (all black)
F2 : BB, Bb, bb ($\frac{3}{4}$ black, $\frac{1}{4}$ white)
- 2) Peas :
 - easy to grow in Mendels' environment
 - Have many offsprings (1 pod, many seeds)
 - A short life cycle
 - Can be crossed artificially
 - Simple genetic analysis

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