

安徽师范大学

2018 年硕士研究生招生考试初试试题

科目代码： 939

科目名称： 普通遗传学

一、名词解释（共 10 题，每题 4 分，共 40 分）

1. 基因组
2. 共显性
3. 中心法则
4. 伴性遗传
5. 非同义突变
6. 顺反子
7. 数量性状
8. 基因型频率
9. 分子钟
10. 分子进化的中性学说

二、简答题：（共 4 题，每题 15 分，共 60 分）

1. 你如何理解“遗传是相对的，变异是绝对的”？并就其对生物进化及育种的作用谈谈你的观点。
2. 试述物种的概念以及物种形成的基本过程。
3. 染色体结构变异主要有哪些类型？请分别介绍其细胞学特征和遗传学效应。
4. 什么是生物发生律？试述系统发育和个体发育二者之间的关系。

三、论述题：（20 分）

1. 什么是生物的进化？谈谈你对进化和遗传之间关系的认识。

四、英译汉：（30 分）

Evolutionary genetics is the broad field of studies that resulted from the integration of genetics and Darwinian evolution, called the 'modern synthesis'. This field attempts to

account for evolution in terms of changes in gene and genotype frequencies within populations and the processes that convert the variation within populations into more or less permanent variation between species. In this view, four evolutionary forces (mutation, random genetic drift, natural selection, and gene flow) acting within and among populations cause micro-evolutionary change and these processes are sufficient to account for macro-evolutionary patterns, which arise in the longer term from the collective action of these forces. That is, given very long periods of time, the micro-evolutionary forces will eventually give rise to the macro-evolutionary patterns that characterize the higher taxonomic groups.

The force of mutation is the ultimate source of new genetic variation within populations. Although most mutations are neutral with no effect on fitness or harmful, some mutations have a small, positive effect on fitness and these variants are the raw materials for gradualistic adaptive evolution. Within finite populations, random genetic drift and natural selection affect the mutational variation. Natural selection is the only evolutionary force which can produce adaptation, the fit between organism and environment, or conserve genetic states over very long periods of time in the face of the dispersive forces of mutation and drift. The force of migration or gene flow has effects on genetic variation that are the opposite of those caused by random genetic drift. Migration limits the genetic divergence of populations and so impedes the process of speciation. The effect of each of these evolutionary forces on genetic variation within and among populations has been developed in great detail in the mathematical theory of population genetics.

答案：略。