

Lecture 5

INTRODUCTION TO ANIMAL BREEDING

Who Is A Geneticist?

- A scientist who studies genetics, the science of heredity and variation of organisms and employed as a researcher or lecturer.
- Some geneticists perform experiments and analyze data to interpret the inheritance of traits and can also be a Consultant or Medical Doctor who has been trained in genetics as specialization to evaluate, diagnose and manage patients with hereditary conditions or congenital malformations, genetic risk calculation, mutation analysis and referral to other medical specialties. Geneticists participate in courses from many areas, such as biology, chemistry, physics, microbiology, cell biology, English, and mathematics. They also participate in more specific genetics courses such as molecular genetics, transmission genetics, population genetics, quantitative genetics, ecological genetics, and genomics. Geneticists can work in many different fields, doing a variety of jobs such as in medicine, agriculture, wildlife, general sciences or many other fields. Others are:
 - Genetic counseling
 - Medical genetics
 - Gene therapy
 - Pharmacogenomics
 - Molecular ecology
 - Animal breeding
 - Genomics
 - Biotechnology
 - Proteomics
 - Microbial genetics
 - Teaching

- Management of a Lab
- Sales and Marketing of science products
- Publishing of scientific material
- Patenting procedures
- Paternity testing
- Forensic DNA

A Day in the life of a Geneticist

- Geneticists are the leaders of the last frontier of biology.
- They are involved in unlocking the last few secrets of life.
- There they are expected to juggle a number of abstract problems as they put together the puzzles of DNA and heredity.
- Long hours are typical, They are closely tied to their work, and can spend years answering only one question about the genome. It is this dedication that classifies most people in the profession.
- Genetics has application in several fields and more can be expected as technology catches up with research.
- The major fields for geneticists are in medicine, agriculture and crime.
- Geneticists work at pharmaceutical companies to uncover the origins of disease, birth defects and the like, and then in turn develop ways to prevent or treat them.
- Geneticists that work in this field are involved in their work from beginning to end, although this could sometimes mean a lifetime of work literally. Since there are more mouths to feed in the world it is important that the supply meets the demand. Therefore, geneticists in agricultural research:
 - develop crops that can grow in atypical conditions, or to abnormal sizes.
 - understand the study of DNA, and with this they can apply their knowledge to solving crimes.
- Geneticists have the opportunity to be laboratory detectives and use DNA sampling to insure that the right person is convicted of the crime.

- With medicine, agriculture and crime the three biggest draws of the profession, most geneticists then find employment either in universities, the government or major pharmaceutical companies.
- There are two types of geneticists:
- Laboratory Geneticist – This is the field that most geneticists choose to enter. Being a laboratory geneticist involves application of genetic technologies.
- Genetic Counselor – Being a genetic counselor means working in the role of a nurse or consultant. They work directly with parents that could be at risk for children with birth defects. It is also common for counselors to consult with insurance and health care companies about new medical technologies and conditions.

Associated Careers

Apart from spending everyday in a laboratory:

- Many geneticists with their M.D. often leave to practice medicine instead of developing genetics.
- There are also several positions within the government where a geneticist can work as a consultant, especially in agriculture and crime prevention.

Geneticist's work schedule

- Study the science of heredity and variation within organisms.
- Work as researchers or fill academic positions as professors and lecturers at a university.
- Work in the research field ranging from performing experiments and evaluating data as well as interpreting traits from inheritance.

Overall, the job boasts a higher than average salary but requires extensive education. Biological Scientist employment is expected to grow by nine percent between 2006 and 2016