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The Development of Modern Genetics: History of Unfolding the Mystery of Inheritance

| Sohini Chakrabarti[†]

ABSTRACT

The history of modern genetics dates back to the efforts of G. J. Mendel and his simple pea plant experiments in 1865-66. He was only able to theorize that traits were transmitted as discrete units and couldn't give any concrete idea about these units. Based on his findings, the terms 'genes' and 'genetics' were coined in the 1900s by W. Johanssen and W. Bateson respectively.

Today the meaning of the term genetics has changed hugely and mainly refers to a chemical substance DNA (Deoxyribo Nucleic Acid) and how it controls various processes taking place at the cellular level. The currently known double helical structure of DNA was first discovered by James D. Watson and Francis H.C. Crick in 1953, and it is considered to be one of the biggest breakthroughs not only in the field of genetics but all physical, chemical and biological sciences.

DNA is known to control hereditary processes and practically everything from cell signaling to protein synthesis. 'Genes' are nothing but fragments of DNA which code for hereditary information. Modern genetic techniques including Polymerase chain reaction (discovered by Kary Mullis in 1989) DNA fingerprinting (invented by Sir Alec Jeffreys in 1984) etc. have helped scientists in replicating cellular processes and even identify individuals from microscopic biological material. Sequencing techniques (first discovered in 1970s) have helped not only to attribute specific nucleotide sequences to specific traits but also explain faulty inheritance and the causes of many diseases. The development of all these techniques have not only gradually revealed what inheritance is but also opened newer and wider avenues of research for modern geneticists.

Keywords: Modern genetics, history, development, inheritance.

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