

Editorial

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The history of science is often a reflection of the evolution of scientific ideas. Once in a while, one encounters a discovery that drastically alters the rate of this evolution. The discovery of the laws of heredity by Gregor Mendel is one such event in the history of biology. Unfortunately, being far ahead of time, the laws had very little impact on biology at the time of their proposal in 1865 and were consigned to obscurity. Their rediscovery three and a half decades later in 1900 was a different matter altogether. The 20th century was better prepared for receiving Mendel's laws. The rediscovery was the key element that nucleated the growth of several new disciplines.



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The laws of heredity for the first time provided the basis for understanding the behaviour of structures known as chromosomes in the cell nucleus, well-studied by cytologists. The realization that chromosomes are the carriers of heredity and their behaviour is correlated with the behaviour of the abstract Mendelian factors of heredity ushered in the new discipline of cytogenetics. One person who contributed more than anyone else in this synthesis was Walter Sutton, who is featured in this issue of *Resonance*. The laws of heredity also provided the missing link in the theory of evolution by natural selection proposed by Darwin and Wallace in 1858. The evolutionary theory of the 20th century, known as the neo-Darwinian synthesis, is a 'value-added' version obtained by combining the ideas of Darwin and Wallace and that of Mendel. Similarly, the establishment of the link between the Mendelian factors and inherited metabolic disorders such as alkaptonurea and phenylketoneurea by Archibald Garrod initiated the new discipline of biochemical genetics one hundred years ago. This was the harbinger of the famous 'one-gene-one-enzyme' concept that ultimately resulted in the birth of molecular biology, ushered in by the quest to understand the information transfer process from genes to enzymes. The impetus for the work of Avery and colleagues to understand the chemical basis of the gene and that of Watson and Crick to understand the structure of the gene can be traced back to the rediscovery of Mendel's laws.

The impact of any scientific contribution in terms of stimulating further discoveries is often an excellent means of assessing its merit and Mendel's laws score overwhelmingly in terms of their impact factor.

