Plant genetics and genomics in practice

Kornelia Polok

This is an exciting time to be a geneticist. Genetics is the future and the past. The history and the future of every organism are written in DNA. Owing to advances in genetics and evolutionary biology, vigorous research and new ideas, we are witnessing one of the major scientific revolutions delving into the distant past and providing an unprecedented understanding of the natural world. However, molecular approaches, so popular today, are just one of many ways toward understanding the complexity of life. They are useless without prior identification and classification of phenotypes. Biologists sometimes are unaware of the arguments against and for various methodologies, having tendency to rush into novel techniques. None can suppose that direct DNA sequence information answers all biological questions. Studying Mendelian inheritance or variation of quantitative characters has been shaping the great majority of scientific perceptions about our heritage, and one goal of this book is to clarify these issues.

The book arose from twenty years of experience in teaching different aspects of genetics, establishment of completely new courses for biology and biotechnology students at the University of Warmia and Mazury as well as fruitful discussion with researchers from European Union visiting our lab and those I met during fellowships in EU countries. This experience enables to prepare a selection of topics useful for everyone interested in genetics irrespective of university and country. This edition is not intended to be detailed "how to do" an experiment although the background is provided for the beginners. The focus is on understanding the principles and developing the ability critically evaluating data, rather than just memorising facts. I hope the book will "stimulate ideas" for people willing to continue their adventure with plant genetics, people who will drive "*the next major explosion when genetics and computers come together*" (Alvin Toffler).

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