



*Special Issue Reprint*

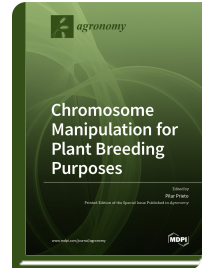
## **Chromosome Manipulation for Plant Breeding Purposes**

[www.mdpi.com/books/reprint/3368](http://www.mdpi.com/books/reprint/3368)

Edited by  
Pilar Prieto

ISBN 978-3-0365-0024-9 (Hardback)

ISBN 978-3-0365-0025-6 (PDF)



The ability to exploit the potential of wild relatives carrying beneficial traits is a major goal in breeding programs. However, it relies on the possibility of the chromosomes from the crop and wild species in interspecific crosses to recognize, associate, and undergo crossover formation during meiosis, the cellular process responsible for producing gametes with half the genetic content of their parent cells. Unfortunately, in most cases, a barrier exists preventing successful hybridization between the wild and crop chromosomes. Understanding the mechanisms controlling chromosome associations during meiosis are of great interest in plant breeding and will allow chromosome manipulation to introduce genetic variability from related species into a crop. In addition to interspecific hybrids, other materials, such as natural and synthetic polyploids and introgression lines derived from allopolyploids, among others, are powerful tools in the framework of plant breeding. For example, an extra pair of alien chromosomes in the full genome complement of a crop species has been frequently used as a first step to access genetic variation from the secondary gene pool in breeding programs. In addition, such introgression lines are also pivotal in the study of interspecific genetic interactions, in the chromosomal location of genetic markers, and in the study of chromosome structure and behavior in somatic and meiotic cells. Contained in this Special Issue are accounts of original research, including new tools to identify chromosome introgressions and the development and characterization of introgression lines and interspecific hybrids carrying desirable agronomic traits for plant breeding purposes. Also included are reviews about the chromosome engineering of tropical cash crops and the effect of chromosome structure on chromosome associations and



Order Your Print Copy  
You can order print copies at

[www.mdpi.com/books/reprint/3368](http://www.mdpi.com/books/reprint/3368)

MDPI Books offers quality open access book publishing to promote the exchange of ideas and knowledge in a globalized world. MDPI Books encompasses all the benefits of open access – high availability and visibility, as well as wide and rapid dissemination. With MDPI Books, you can complement the digital version of your work with a high quality printed counterpart.



### **Open Access**

Your scholarly work is accessible worldwide without any restrictions. All authors retain the copyright for their work distributed under the terms of the Creative Commons Attribution License.



### **Author Focus**

Authors and editors profit from MDPI's over two decades of experience in open access publishing, our customized personal support throughout the entire publication process, and competitive processing charges as well as unique contributor discounts on book purchases.



### **High Quality & Rapid Publication**

MDPI ensures a thorough review for all published items and provides a fast publication procedure. State-of-the-art research and time-sensitive topics are released with a minimum amount of delay.



### **High Visibility**

Due to our global network and well-known channel partners, we ensure maximum visibility and broad dissemination. Title information of books is sent to international indexing databases and archives, such as the Directory of Open Access Books (DOAB), and the Verzeichnis Lieferbarer Bücher (VLB).



### **Print on Demand and Multiple Formats**

MDPI Books are available for purchase and to read online at any time. Our print-on-demand service offers a sustainable, cost-effective and fast way to publish MDPI Books printed versions.