
Preface

Cell culture methodologies have become standard procedures in most plant laboratories. Today, facilities for in vitro cell cultures are found in practically each plant biology laboratory, serving different purposes since tissue culture has turned into a basic asset for modern biotechnology, from the fundamental biochemical aspects to the massive propagation of selected individuals.

The subject of this book is taught around the world as part of undergraduate and graduate courses in agronomical and biological sciences. However, the apparent simplicity of cell culture technology should not lead to mistakenly consider it as trivial. It would be very difficult to understand modern plant biotechnology without in vitro cell cultures and even today, the application of recombinant DNA technology to important crops is hampered by the poor embryogenic or morphogenetic response of in vitro cultured tissues.

This third edition of *Plant Cell Culture Protocols* follows a similar plot as its predecessors. It also pursues similar goals, i.e., to provide an updated step-to-step guide to the most common and applicable techniques and methods for plant tissue and cell culture. A total of 29 chapters, divided into five major sections, have been included. Topics selected cover from general methodologies, such as culture induction, growth and viability evaluation, statistical analysis and contamination control, to highly specialized techniques, such as clonal propagation, haploid production, somatic embryogenesis, organelle transformation, passing through the laborious process to measure the epigenetic changes in tissue cultures. The protocols are currently used in the research programs of the authors or represent important parts of business projects aimed to generate improved plant materials. Two appendices have also been included; the first of them discusses common principles for the formulation of culture media and also lists the composition of the eight most commonly used media formulations. The second appendix compiles a list of useful Internet sites for cell culture scientists. A total of more than 100 sites have been selected, based on the quality of the information offered in them, as well as on their users' friendliness.

We hope that readers will find this version of *Plant Cell Culture Protocols*, which belongs to the *Methods in Molecular Biology* series, as a helpful source of information in their research projects, since this has been its real purpose.

We would like to thank the authors of each chapter for responding to our constant requests for the materials, despite their reckless work schedules. They made us possible to carry this job to its completion.

Finally, we should express our profound gratitude to Professor John Walker for his trust in our experience to complete this project. We have certainly enjoyed the opportunity to interact with colleagues from all over the world.

Mérida, Yucatán, México
Irapuato, Guanajuato, México

Víctor M. Loyola-Vargas
Neftalí Ochoa-Alejo