# Preface

On February 6th, 1902 appeared Gottlieb Haberlandts publication on "Culturversuche mit isolierten Pflanzenzellen" by the Imperial Academy of Sciences in Vienna, Austria. This paper contains Haberlandt's vision on the totipotency of plant cells, an idea with worldwide dimensions representing the actual beginning of tissue culture. When Haberlandt started culturing isolated plant cells in artificial nutrient media, he was mainly interested in cell to cell relationships within a complex multicellular organism. Haberlandt had studied the physiology of the plant tissues for a long time, and such profound dedication allowed him to understand the connection between physiology and anatomy. On that basis he has been able to make such a daring vision.

In fact, it was only in 1912 that A. Carrel succeeded in establishing the first animal cell cultures – which was awarded a Nobel prize – and in 1934 and 1939 respectively, the first plant tissue cultures were achieved by P.A. White, R.J. Gautheret and P. Nobécourt. Commercial applications of plant tissue culture followed only in the seventies. We consider this an excellent example for the time frame required from a vision to its realisation and further to its development and broad range application.

We take this anniversary also as an opportunity to remind all of us, that for developing ideas time is needed together with right conditions and atmosphere. Universities in the past used to provide, what now we are risking to lose with our hectic life style and short-term planning.

This book pays homage to a great Austrian scientist, describing his life and his work and the further development, success and application of his idea. Most students and scientists relate the name Haberlandt with the first lectures of plant tissue culture. But only few are acquainted with the original pieces of work, which apart from their scientific interest are true artistic masterpieces. That is why the first part of the book contains a facsimile of the original paper and its first translation into English by A.D. Krikorian and D.L. Berquam in 1969. Furthermore we find it worthwhile to pay some closer attention to the way experiments were planned, carried out and evaluated by Haberlandt in his time.

It was also our intention to show the development which the initial idea has made in the past spreading into the various methods and fields of application. The second and third part of the book describe Haberlandt's life and work and historical aspects of the development of plant tissue culture in the beginnings. Who could give a better glance into the early days of plant tissue culture than R.J. Gautheret? It was from his laboratory in Paris that the senior editor brought this technique and knowledge to Vienna and established this field of

research here in Austria. The forth part of the book contains an overview of important topics of plant tissue culture representing the most promising areas of application at present time and giving an outlook into the future. The areas range from micropropagation of ornamentals and forest trees, production of pharmaceutically interesting compounds, plant breeding for improved nutritional value of staple crops and genetic engineering of crop plants, including trees to cryopreservation of valuable germplasm.

New ideas and technologies are frequently confronted with obstacles, which can be overcome only with persistence. Haberlandts ideas were no exception: F. Cohn locked up the book on "Physiological Plant Anatomy", so that his students should not fall prey to heretical ideas! Nevertheless later on this textbook became a best-seller, was translated into English and appeared in 6 editions.

The application of plant tissue culture has not lost its importance even in times of increasing molecular discoveries.

It is with much regret that we record the omission from our list of selections of a few topics, that we would have wished to include, but for which we were unable to solicit suitable contributions.

We are especially indebted to A.D. Krikorian and E. Höxtermann for the kind permission for reprinting their papers and to Mme Agnés Gautheret-Dejean for the permission to reprint Prof. Roger Gautheret's view on tissue culture in 1980.

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We wish to thank all contributors to this book and hope that its appearance will decisively renew the interest in plant tissue culture.

Wien, February 6th 2002 *Margit Laimer* and *Waltraud Rücker*