

PREFACE

In recent years, genetically transformed roots, the also called “hairy roots”, have seen increased interest in biotechnological research. Applications have expanded from the basic establishment of hairy root cultures, to phytoremediation studies, and to novel metabolic engineering strategies to enhance the biosynthesis of specialized metabolites or to produce bioactive therapeutic proteins. Parallel to this, advances in the design of various types of bioreactors for large-scale production of hairy roots and new elicitation strategies for the production of specialty high-value phytochemicals have been observed.

This special issue on hairy roots of the *Electronic Journal of Integrative Biosciences (EJIB)* was developed after the success of our “First International Workshop on Hairy Roots”. This event, which was held at the Arkansas Biosciences Institute at Arkansas State University (Jonesboro, AR) during the summer of 2006 provided lectures and hands-on activities to the participants, which included scientists from academia and industry as well as undergraduate and graduate students from the US and abroad. Lectures in this workshop were presented by highly recognized experts from different countries in the field of hairy root technology.

The peer-reviewed manuscripts in this issue include reviews and research papers highlighting current applications of hairy roots. The reviews describe the state of the art on the research at laboratory scale as well as large scale culture approaches. These reviews are further complemented with applied research papers that focus on novel elicitation strategies using electrical stimulus and the use of hairy roots to produce antigenic peptides that can be used as vaccine components.

We expect that this special issue on hairy roots will show the enthusiasm of scientists around the world in applying this very valuable biological system in their research. We greatly thank all the experts that accepted to contribute to this effort, as well as to the high-caliber reviewers that generously donated their time to the crucial peer-review process. We would like to recognize Dr. Aldemaro Romero, editor in chief of the *EJIB*, for encouraging us to work on this project. We would like to specially thank Jessica Yactayo-Chang and Luis Nopo-Olazabal who diligently worked on the final formatting of these original manuscripts.

We anticipate that novel applications of the hairy root system will continue to emerge and advance the use of this technology at the industrial level for the production of high-value small molecules and proteins.

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