In Vitro Cellular & Developmental Biology — Plant
A Journal of the Society for In Vitro Biology published by Springer
Volume 53 2017. First published 1965, ISSN 1054-5476

Aims and scope
In Vitro Cellular & Developmental Biology — Plant publishes peer-reviewed original research and reviews concerned with the latest developments and state-of-the-art research in plant cell and tissue culture and biotechnology from around the globe. Four issues are published by the SIVB Editorial Board and two issues are published by the IAPB Editorial Board. The two societies maintain independent Editorial Boards for review of submitted manuscripts. All articles are peer reviewed and should follow the format for regular original articles. Brief articles will be considered. Articles must have significant original content including: • Experimental design and data analysis procedures • Understanding of a scientific problem • Identification of genetic, physiological or biochemical impact on agriculture or the environment • Breadth applicability of knowledge to multiple species and environments.

Topics covered by the Journal include:
• biotechnology/genetic transformation
• functional genomics
• metabolic engineering
• secondary metabolism
• agricultural biotechnology
• Invited Reviews and Feature Articles
• somatic cell genetics
• developmental biology/morphogenesis
• micropropagation
• cell biology
• cell and plant physiology
• SIVB, IAPB, other Symposium Proceedings

SIVB Editor-in-Chief
David R. Duncan
Society for In Vitro Biology
514 Daniels St., Suite 411
Raleigh, NC 27605
duncanr@sivb.org

SIVB Editor-in-Chief Emeriti
John J. Fiser, 2012-2014
Dwight T. Tornes, 2008-2011

SIVB Reviews Editors
John J. Fiser
The Ohio State University
Columbus, OH, USA

SIVB Editorial Board Members
J. W. Adelberg
University of Nebraska
Lincoln, NE, USA

C. L. Armstrong
University of the Pacific
Stockton, CA, USA

P. Bregitzer
University of Minnesota
Minneapolis, MN, USA

C. A. Banfield
University of North Carolina
Chapel Hill, NC, USA

D. B. Benitez
University of California
Davis, CA, USA

E. Bentele
University of California
Davis, CA, USA

J. C. Brown
University of Georgia
Athens, GA, USA

R. Chauvendhi
Indian Institute of Technology
New Delhi, India

M. A. Lema-Weller
University of Arizona
Tucson, AZ, USA

N. Reisch
North Carolina State University
Raleigh, NC, USA

F. L. Trueman
University of California
Davis, CA, USA

IAPB Editor-in-Chief
Ewen Mullins
Teagasc Crops, Environment and Land Use Programme,
Oak Park Crops Research Centre, Carlow, Ireland
Ewen.Mullins@teagasc.ie

IAPB Editor-in-Chief Emeriti
John W. Forsier, 2012-2014
Nigel Taylor, 2007-2011
Eng-Chong Pua, 2003-2006
Trevor A. Thorpe, 1999-2002

IAPB Editorial Board Members
Tony Conner
AgResearch, Christchurch, New Zealand

Kartik M. Doshi
Prairie Plant Systems Inc., Saskatoon, Canada

Barbara Doyle
School of Biological, Earth and Environmental Sciences,
University College Cork, Ireland

Florent Englert
Centre BDI de Montpellier,
Montpellier, France

Manuel A. Lopez Varela
Department of Crop Science,
Teagasc Research Centre,
Carlow, Ireland

N. Reisch
University of Minnesota,
Minneapolis, MN, USA

P. E. Salamini
University of California
Davis, CA, USA

Gregory C. Phillips
University of Arizona
Tucson, AZ, USA

IAPB Editor-in-Chief Emeriti
John W. Forsier, 2012-2014
Nigel Taylor, 2007-2011
Eng-Chong Pua, 2003-2006
Trevor A. Thorpe, 1999-2002

IAPB Editor-in-Chief
Ewen Mullins
Teagasc Crops, Environment and Land Use Programme,
Oak Park Crops Research Centre, Carlow, Ireland
Ewen.Mullins@teagasc.ie

IAPB Editor-in-Chief Emeriti
John W. Forsier, 2012-2014
Nigel Taylor, 2007-2011
Eng-Chong Pua, 2003-2006
Trevor A. Thorpe, 1999-2002

IAPB Editor-in-Chief
Ewen Mullins
Teagasc Crops, Environment and Land Use Programme,
Oak Park Crops Research Centre, Carlow, Ireland
Ewen.Mullins@teagasc.ie

IAPB Editor-in-Chief Emeriti
John W. Forsier, 2012-2014
Nigel Taylor, 2007-2011
Eng-Chong Pua, 2003-2006
Trevor A. Thorpe, 1999-2002

IAPB Editor-in-Chief
Ewen Mullins
Teagasc Crops, Environment and Land Use Programme,
Oak Park Crops Research Centre, Carlow, Ireland
Ewen.Mullins@teagasc.ie

IAPB Editor-in-Chief Emeriti
John W. Forsier, 2012-2014
Nigel Taylor, 2007-2011
Eng-Chong Pua, 2003-2006
Trevor A. Thorpe, 1999-2002

IAPB Editor-in-Chief
Ewen Mullins
Teagasc Crops, Environment and Land Use Programme,
Oak Park Crops Research Centre, Carlow, Ireland
Ewen.Mullins@teagasc.ie
segments of CRIN TC5 cultured on medium with 0.005 mM 2, 4-D and 30 g/L sucrose. Many leaf segments of CRIN TC1 did not produce embryogenic callus and somatic embryos. Generally, leaf segments on 30 g/L sucrose produced significantly more somatic embryos than the non-sucrose control. Somatic embryos formed within 18 to 28 days and converted to quality plants on medium with activated charcoal. This is the first report on the production of plants from leaf-derived somatic embryos of T. cacao indicating that leaves could be an important source for micropropagation of T. cacao.

**P-2005**

Improving Resistance to Potato Common Scab by the Production of Somaclones Habituuated to Thaxtomin A. SAFA LABIDI and Nathalie Beaudoin. Department of Biology, University of Sherbrooke, QC J1K 2R1, CANADA. Email: safalabidi@usherbrooke.ca

Potato (*Solanum tuberosum* L.) is the fourth most important food crop in the world and one of the most consumed vegetable in North America. It has a very high nutritional and economic importance, occupying the third row of horticultural products cultivated in the province of Quebec (Canada). Common scab is a disease that affects the surface of potato tubers, reducing their commercial value. This disease is caused by the actinobacteria *Streptomyces scabies* which produce thaxtomin A (TA), a phytotoxin essential for the appearance of corky lesions that alter the esthetic quality of tubers. Currently, cultural and varietal approaches are the most efficient ways to control this disease, but there is no potato variety completely resistant to common scab. In our laboratory, we have developed a method to increase resistance to common scab in various potato varieties using TA-habituation of somatic cells. This method consists in producing calli from potato stem internodes, which are then transferred to medium containing increasing concentrations of TA. Somatic embryos are regenerated from TA-habituated calli and regenerants are tested for sensitivity to common scab. Using this method, we have obtained somaclones from Russet Burbank and Yukon Gold varieties that are more resistant to common scab. This technique is currently being validated in other potato varieties. To investigate how resistance to common scab is induced by TA-habituation, we have used a proteomic approach. We have found that several stress-related proteins (e.g., ferritin, stress-inducible TASI14) were more abundant in TA-habituated somaclones compared to the original variety. Further characterization of these somaclones should give us some information on the mechanisms of resistance to common scab.

**P-2006**

Establishment of Callus Cultures from Different Axenic Leaf Explant Types of Lentisk (*P. lentiscus* L.). Elif Demir¹, Ayşe Hoşer², Hilal Surmuş Aşan³, Engin Tilkat¹, VEYSEL SÜZERER¹,²,³,⁴,哑, Abdulselam Ertaş⁵, and Ahmet Onay⁶.

¹Department of Biology, Batman University, Batman, TURKEY; ²Department of Biology, Dicle University, Diyarbakir, TURKEY; ³Department of Medical Services and Techniques, Bingöl University, Bingöl, TURKEY; ⁴Department of Biology, Division of Botany, Istanbul University, Istanbul, TURKEY; ⁵Department of Molecular Biology and Genetics, Gebze Technical University, Kocaeli, TURKEY; and ⁶Department of Pharmacognosy, Dicle University, Diyarbakir, TURKEY. Email: beyso1985@gmail.com

Mastic gum, obtained from the mastic tree of family *Anacardiaceae* is well-known as a spice in the most Mediterranean countries, also used for medicinal purposes. Pharmacological studies reveal that it also contains bicyclic terpenoids, volatile oils, fatty acids, saponins, flavonoids. These metabolites have been used many medical therapies such as wound healing, liver protective, proapoptotic, antihypertensive and anticancer. The aim of this study is to establish an effective callus establishment protocol of *P. lentiscus* L. as a strategy to obtain an *in vitro* triterpene producing cell line because in vitro cultures represent a potential source for producing valuable chemical instead of using wild plants. Mature seeds of *P. lentiscus* L. plants were collected in November 2015 from the Çiftlikköy district around the Çeşme county of the İzmir province of western Turkey. Surface sterilized seed germinated in 1 mg/l IBA supplemented MS. *In vitro* germinated seeds origin axenic shoots buds and nodal buds have proliferated in 1 mg/l BAP+0.5 mg/l GA3. The axenic leaves from proliferation cultures were used as explant for callus induction. Four types of leaf explants were tested for the establishment of granular cultures: (1) Petiole leaf, (2) Petiole-free leaf, (3) Petiole leaf cut from middle vein and (4) Petiole-free leaf cut from middle vein. The explants were cultured in MS medium supplemented with 1 mg/l 2,4-D+1 mg/l KIN supplement to test the effect of leaf explant type on callus development. As a result of the study, the highest callus formation rate (84%) was obtained by culture with petiole leaves. Callus formation rate of petiole-free leaves (80%) was lower. Petiole leaf type had the highest fresh and dry weight. No callus formation has been observed due to excessive phenolic secretion in both with petiole and petiole-free leaf cut from middle vein. This study provided an efficient way to further production of valuable triterpenoids, on scale-up for the establishment of callus cultures of lentisk.