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Current Progress in
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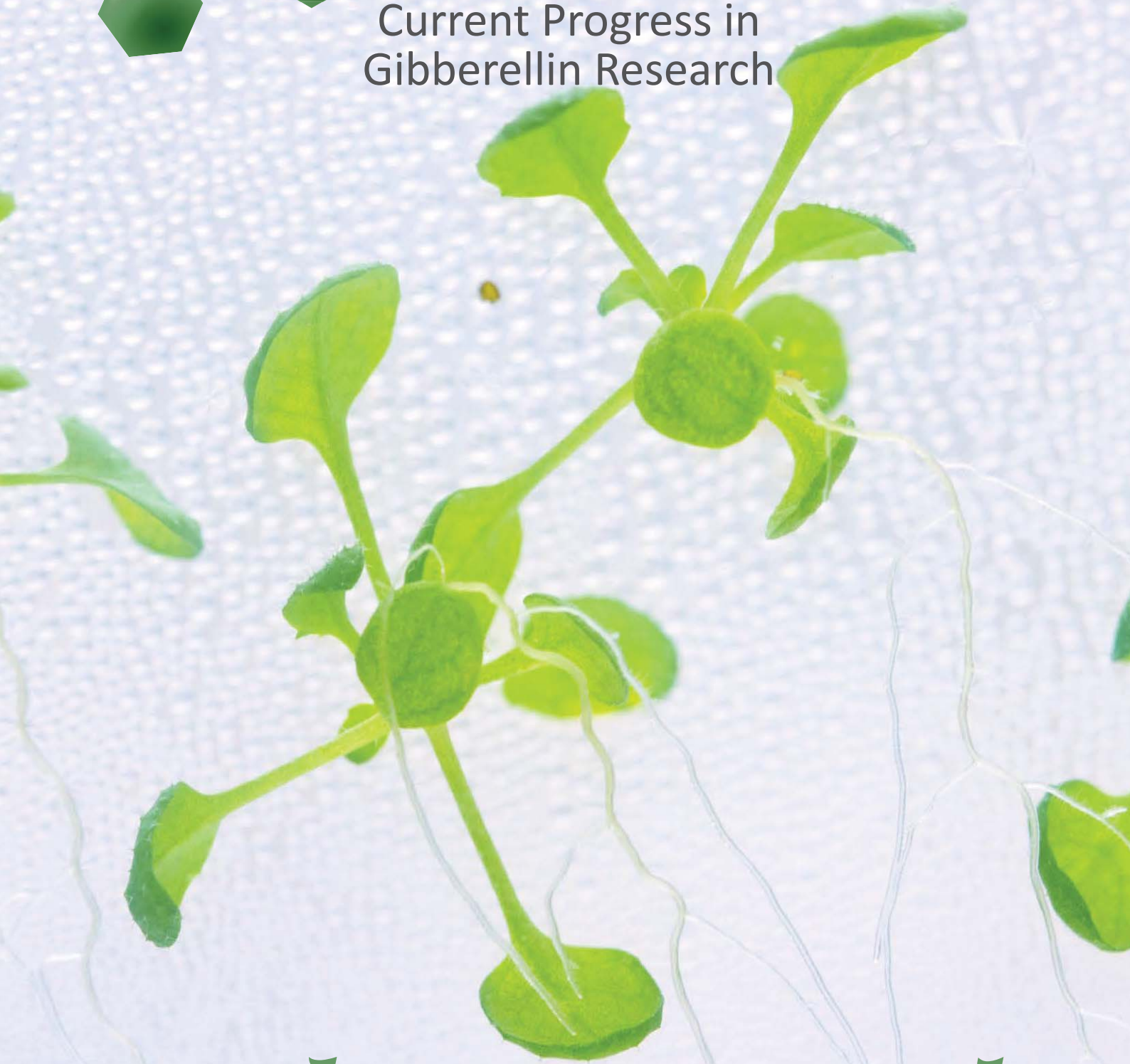

Abstract Book

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P-05

EXPRESSION PROFILES OF THE BIOACTIVE GIBBERELLIN METABOLISM KEY GENES IN THE SPINACH ROOT-TIPS DURING SOMATIC EMBRYO INDUCTION

Maja Milić, Snežana Zdravković-Korać, Jelena Milojević

Institute for Biological Research "Siniša Stanković", University of Belgrade, Despot Stefan Boulevard 142, 11060 Belgrade, Republic of Serbia, mmilic0905@gmail.com

Gibberellins (GA) play a pivotal role in the induction of somatic embryogenesis (SE) from the apical root sections of spinach seedlings. To study the role of GA in this process, expression of genes encoding the key enzymes that catalyze the final step of bioactive GA biosynthesis (GA20-ox and GA3-ox) and degradation (GA2-ox1, -ox2 and -ox3) was analysed in the explants cultivated on inductive medium (IM - supplemented with 20 µM NAA + 5 µM GA_3), noninductive medium (NM - containing 20 µM NAA), or plant growth regulator (PGR)-free medium. Expression of these genes was monitored by means of quantitative real-time PCR during 28 days SE-induction period. Root-tips isolated from seedlings and immediately frozen for RNA isolation were used as a control. In the IM-cultivated explants, expression of both GA20-ox and GA3-ox decreased over the whole induction period. On the other hand, in the explants cultivated on NM or PGR-free medium expression of these genes began to increase after 1 or 14 days, respectively, and remained higher than in the control steadily over time. Concerning the catabolic GA2-ox genes, particularly GA2-ox2, their expression was higher in the IM-cultivated explants over the whole SE-induction period comparing to the control. However, in the NM-cultivated explants, expression of GA2-ox2 and GA2-ox3 was mostly lower. The results indicate that continuous expression level decrease in GA20-ox and GA3-ox and increase in GA2-ox2 favor SE regeneration from root-tips of spinach. Understanding the role of GA in SE induction in spinach would not only provide a deeper insight into the mechanism of this process, but also enhance the improvement of this species through biotechnological approach.

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