applications and their limitations for bio-sensing at the conference.

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Poster 5.0.41

Particle bombardment transformation of some Turkish wheat cultivars with TaNAC69-1 and TtNAMB2 genes

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Wheat is one of the most important crop plants in the world. The production of wheat is seriously affected by biotic (pests, bacterial and fungal diseases) and abiotic (drought, salinity and freezing) stresses. NAC family proteins (NAM/ATAF1-2/CUC2) are plant specific transcription factors and related with development, defense and abiotic stress responses. *TaNAC69-1* and *TtNAMB2* genes are the transcription factors from this protein family. The aim of this study was to transform of some Turkish wheat cultivars with *TaNAC69-1* and *TtNAMB2* using particle bombardment. After isolation of *TaNAC69-1* from *Triticum aestivum* and *TtNAMB2* from *Triticum turgidum*, these genes were cloned into *pAHC25*, an overexpression vector for monocots. *pAHC25* includes *bar* gene as a plant selectable marker gene. Plasmids including *TaNAC69-1* and *TtNAMB2* were introduced into immature inflorescences based calli of Yureğir-89 (*T. aestivum*) and Kızıltan-91 (*T. turgidum*) cultivars and mature embryo based calli of Mirzabey-2000 (*T. turgidum*) cultivar via particle bombardment. The bombarded calli were regenerated previously optimized tissue culture and regeneration conditions. After transformation of immature inflorescence based callus, the regeneration rate was about 16.2% for Yureğir-89 and Kızıltan-91. The rooting rate for these two cultivars was 3.1%. The regeneration rate was 15.6% for Mirzabey-2000, with a 2.7% rooting rate. Putative transgenic plants were transferred to the greenhouse for maturation. The studies on the molecular characterization of putative transgenic plants have been continued.

Keywords: NAC protein family; Transformation; Wheat; Particle bombardment

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Poster 5.0.42

Influence of hairy root ecotype and *rolC* expression in the biotechnological production of bioactive compounds

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Brugmansia candida is a South American native plant that produces tropane alkaloids, including hyoscyamine and scopolamine which were traditionally used in medicine. Hyoscyamine 6β-hydroxylase and Putrescine N-methyltransferase are key enzymes of the tropane alkaloid pathway. It is proposed that the last one is a flux-limiting of the tropane alkaloid pathway. We have previously reported differences in the alkaloid production and growth kinetics between hairy roots of *B. candida* ecotypes. The aim of this work was to analyze putrescine and m-putrescine production in Argentinean and Colombian ecotypes in order to determine whether or not are differences at other levels of the biosynthetic pathway. Additionally, *rolC* gen expression was analyzed to determine its correlation with hairy root growth. It is proposed that *rol* genes, transferred from *Agrobacterium rhizogenes* to the plant can stimulate the secondary metabolism besides affecting plant development. The results revealed that the tropane alkaloids biosynthetic pathway of the ecotypes has differences not only at the last steps as was previously reported. A higher accumulation of polyamines measured in Colombian hairy roots suggest that may be a limitation in the enzymatic steps that conducts to the formation of hyoscyamine. Additionally, *rolC* gene expression was correlated with an improvement hairy root growth supporting the involvement of *rol* genes as growth modulators. These findings suggest that metabolic engineering via *rolC* manipulation may be useful for the development of more efficient *B. candida* hairy root cultures for biotechnological applications according to the improvement on hairy root growth.

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Poster 5.0.43

Effect of antimicrobial agents on the adhesiveness of microbial cell envelopes

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Adhesion of microorganisms and biofilm formation depends on the surface properties of cells and colonized carriers and on the environment conditions. Generally, microorganisms in biofilms have greater resistance to toxic substances. Physico-chemical properties of microbial cell surfaces are very important factors in adhesive process. Van der Waals forces, electrostatic forces and hydrophobic interactions are crucial for the initial attachment of cells on the surface of the carrier/tissue. The presence of antimicrobial agents can cause changes in chemical composition, physico-chemical properties and structure (morphology) of microbial cell envelopes and thus promote or suppress biofilm formation. Effectiveness of the applied antibiotic can be significantly affected. In this context, research was focused on compounds with antimicrobial activity, commonly used in medicine. Cephalosporin C, bacitracin, polymyxin B and chlorhexidine were used as representatives of antimicrobial agents whose targets of action are some structures in the microbial cell envelopes. *Rhodococcus erythropolis* (G^+) and *Pseudomonas fluorescens* (G^-) were used as experimental microorganisms. Antimicrobial agents were applied in the concentration