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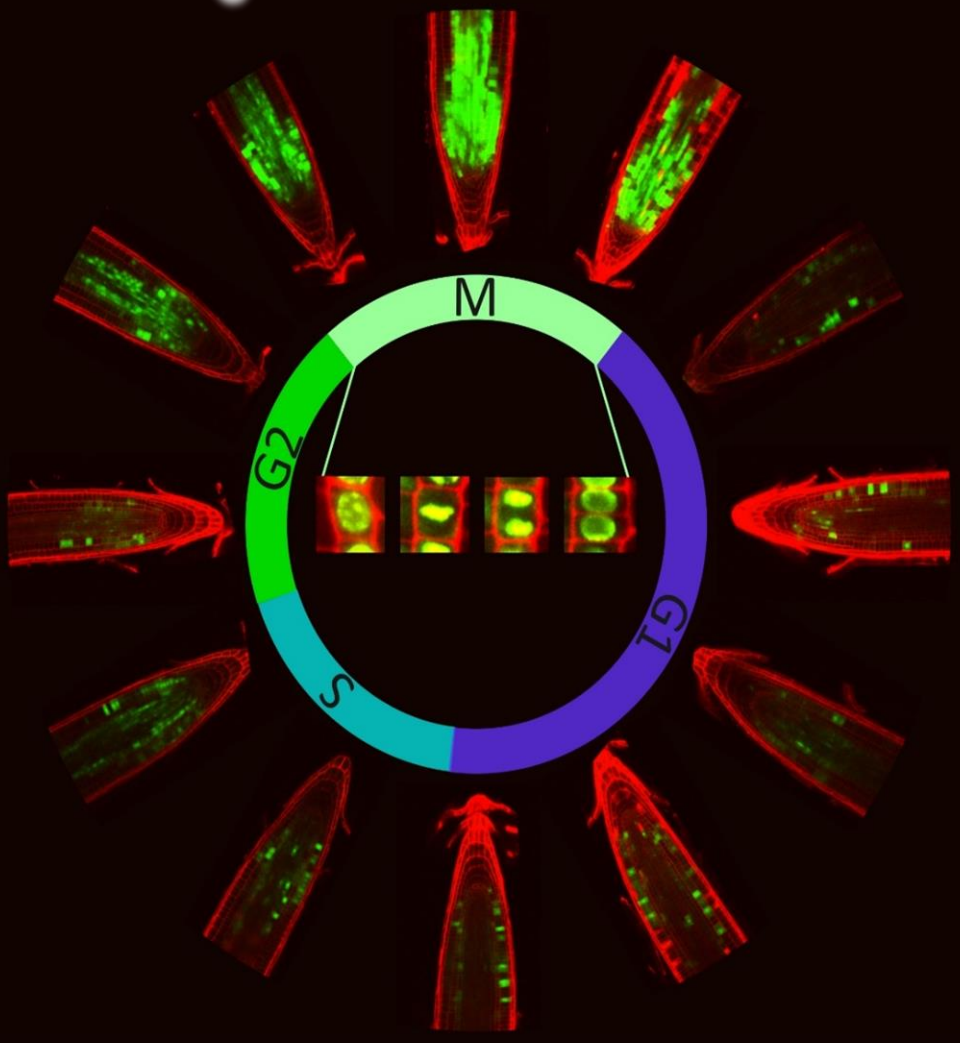

52TH ANNUAL MEETING

ARGENTINE SOCIETY FOR BIOCHEMISTRY AND MOLECULAR BIOLOGY

LII REUNIÓN ANUAL

Sociedad Argentina de Investigación en Bioquímica y Biología Molecular

Pabellón Argentina. Universidad Nacional de Córdoba

November 7-10, 2016

- SAIB -
52th Annual Meeting
Argentine Society for Biochemistry and Molecular Biology

LII Reunión Anual
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Córdoba, República Argentina
Pabellón Argentina
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Cover Page:

Confocal microscopy images of Arabidopsis thaliana *root are displayed in the cover. The selected roots are expressing a GFP reporter of a mitotic cyclin (CYCB1;1-GFP, green), also they are counterstained with propidium iodide (IP, red) to display the cell structure. In order to follow the progression through the cell cycle phases, the root cells were synchronized in S phase using HU, and after pictures were taken every 2 hours. This type of experiment was also used to generate RNA samples to analyze the dynamics of different gene expression during the cell cycle. Inside the circle, which shows the cell cycle phases, images of cells expressing a histone fused to the fluorescent protein VENUS and stained with IP, are displayed. Those images allow following the steps of mitosis in vivo inside the root (PL-P56: Identification of cell cycle regulators inplants, by Goldy, C; Ercoli, MF; Vena, R; Palatnik, J, Rodriguez, Ramiro E.)*

Diseño de tapa: Natalia Monjes

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increase in neutral lipid and fatty acid content (SAIB 2014-2015) in dopaminergic neurons. In this work, we investigated the state of phosphatidic acid (PA) signaling in human neurons overexpressing α-syn. Specifically, we studied the state of phospholipase D (PLD) pathway that catalyzes PA generation by phosphatidylcholine hydrolysis. We detected diminished PLD1 expression and ERK phosphorylation in α-syn neurons. Overexpression of α-syn inhibited ERK nuclear localization and the expression of the neuronal marker neurofilament (NF). PLD1 pharmacological inhibition (EVJ) demonstrated that both ERK nuclear localization and NF expression were dependent on this pathway. Enhancers of α-syn toxicity such as copper overload and 6-hydroxydopamine also displayed differential regulation of PLD1 expression. Our results demonstrate that α-syn accumulation promotes neurodegeneration through the inhibition of PLD1 pathway, thus affecting ERK signaling and NF expression. Sponsored by FONCyT-CONICET-UNS

LI-P31
Halamphora coffeaeformis: A SOURCE OF LIPIDS FOR BIODIESEL AND VALUE-ADDED CO-PRODUCTS

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Recent studies have indicated that the sustainable production of biodiesel from microalgae requires the use of a biorefinery approach. In the present work, *Halamphora coffeaeformis*, a marine benthic diatom native from Bahía Blanca Estuary, was cultured in order to evaluate the simultaneous production of triacylglycerols (TAG) for biodiesel and value-added co-products. For this end, the species was grown in a raceway pond in f/2 medium without the addition of vitamins. Total lipid content was 25.2% (dry weight (dw)) and neutral lipids represented the 86%. Coincidently, TAG content was 17% (dw). Palmitoleic (26%), eicosapentanoic (23.6%) and palmitic (16.9%) fatty acids were the main components of the neutral lipid fraction, suggesting that *H. coffeaeformis* oil meets biodiesel standards. In addition, phytosterols were present at 0.22% (dw) while proteins represented 18.5% (dw). Finally, as the cell wall of *H. coffeaeformis* contains mainly silica, its amount was analyzed in the residue obtained after the lipid extraction. Results revealed that *H. coffeaeformis* contains 25% (dw) of silica. These findings provide baseline information and are the starting point for future scaling-up of this species under a biorefinery approach.

LI-P032
HYDROCARBON ASSIMILATION IN EUROTIALEAN AND HYPOCREALEAN FUNGI: ROLES FOR CYP52 AND CYP53 GENES

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Several filamentous fungi are able to concomitantly assimilate both aliphatic and polycyclic aromatic hydrocarbons. Cytochrome P450 monooxygenases catalyze the first oxidation reaction for both types of substrate. Among the cytochrome P450 (CYP) genes, the family CYP52 has been regarded as the first hydroxylation step in alkane-assimilation processes, while genes belonging to the family CYP53 have been linked with oxidation of aromatic hydrocarbons. We performed a comparative analysis of CYP genes belonging to CYP52 and CYP53 families in *Aspergillus niger*, *Penicillium chrysogenum*,*Beauveria bassiana* and *Metarhizium anisopliae*. These species were able to assimilate both types of hydrocarbons, exhibiting a species-dependent modification in pH during this process. By modeling the molecular docking to the active site, we showed that both types of substrates are energetically favored for their binding to enzymes codified by fungal genes belonging to both CYP52 and CYP53 families. Gene expression analyses revealed that CYP53 members are highly induced by phenanthrene, but no induction was observed with *n*-alkanes. These findings suggest that the set of P450 enzymes involved is dependent on phylogeny, and reveal overlapping role but distinct substrate and expression specificities.

LI-P33
GANGLIOSIDE SYNTHESIS BY PLASMA MEMBRANE-ASSOCIATED ECTOSIALYLTRANSFERASE IN MACROPHAGES

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A number of enzymes of ganglioside metabolism have been shown to be associated with the PM. In particular, it was observed in epithelial and melanoma cells that ecto-ST8Sia-I synthetize GD3 at the PM (cis-catalytic activity) and displayed enzymatic activity in PM of neighboring cells (trans-catalytic activity). Here, by biochemical and fluorescent microscopy approaches we extended these investigations to MØ and found that endogenous ecto-ST8Sia-I is present in Golgi complex as well as in PM. In addition, ecto-ST8Sia-I displayed cis-catalytic activity both in LPS-stimulated MØ and unstimulated conditions. Interestingly, LPS stimulation also reduced the ST8Sia-I levels at the PM. Besides, co-treatment of LPS with a NOs inhibitor recovered the ST8Sia-I levels, suggesting that NO formation is involved in the expression/localization of this enzyme at the PM. The enzyme levels correlated with a reduction of GD3 and GM1 and with an increment of GD1a. Moreover, the NO levels from LPS-stimulated MØ were higher in cells previously treated than in cells untreated with an inhibitor of glycolipid synthesis. The data further support the presence and activity of ecto-sialyltransferases at the PM. The variations of ecto-ST8Sia-I and gangliosides in stimulated macrophages provide a promissory information to further explore the role of this and others ganglioside metabolism-related enzymes at the PM.