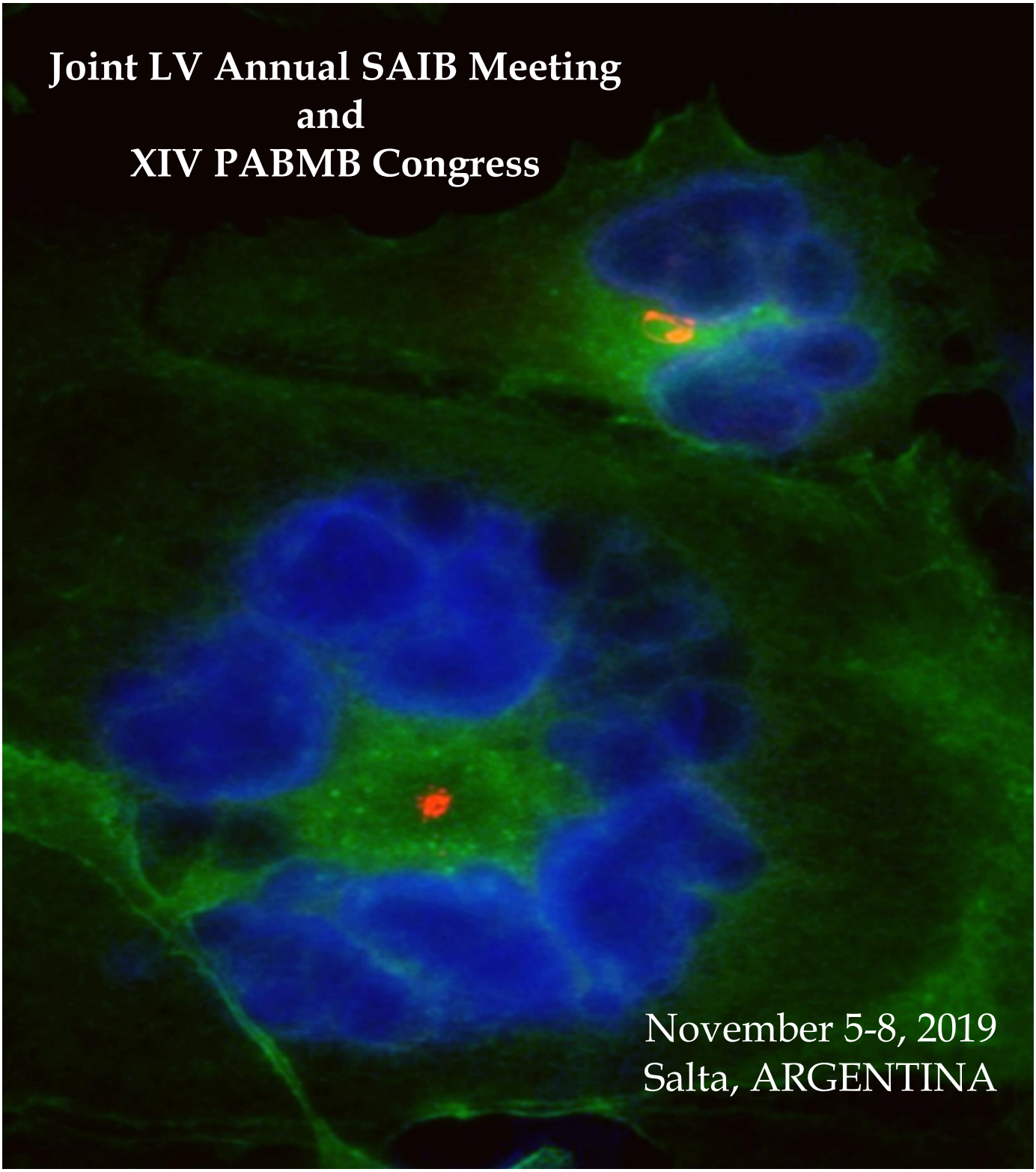

Joint LV Annual SAIB Meeting and XIV PABMB Congress

November 5-8, 2019
Salta, ARGENTINA

Cover page: The Synthetic Lethal Rosette

Aberrant mitotic phenotype found in BRCA1-deficient cells treated with the PLK1 inhibitor Volasertib. Cells become giant and multinucleated and acquire a flower shape, with nuclei arranging in a circular disposition around a cluster of centrosomes. Blue (DAPI: nuclei), Green (FITC-phalloidin: actin cytoskeleton), Red (γ-Tubulin: centrosomes).

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CONSTRUCTION OF A *SACCHAROMYCES CEREVISIAE* STRAIN FOR THE BIOREMEDIATION OF DAIRY INDUSTRY WASTE COUPLED WITH ETHANOL PRODUCTION

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The dairy industry is an integral part of the food industry, being one of the largest, most important and dynamic agro-food complexes within the national economy. This industrial segment produces considerable amounts of liquid waste with a high content of organic matter. Whey is the remaining liquid from the precipitation and removal of casein from milk during the cheese manufacturing process. It is made up of several components, with lactose being the most abundant (4.5 - 5% w/v). This sugar contributes to the high chemical oxygen demand and biochemical oxygen demand of whey. Bioethanol may be obtained from various compounds by microorganisms as yeasts, which have the ability to ferment a wide variety of sugars to alcohols. Yeasts are used in industrial plants because of their great fermentation yield, ethanol tolerance, productivity and their efficient growth in simple and economical media. Thus, the use of whey for the production of ethanol from the fermentation of lactose would be a beneficial process due to the reuse and bioremediation of this highly polluting by-product. By integrating the genes LAC4 and LAC12 from *Kluyveromyces marxinau*s to the genome of the *Saccharomyces cerevisiae* laboratory strain BY4742, we have developed several transgenic strains capable of using lactose as a sole carbon source. Using a spectroscopy technique we determined the ability of these strains to produce bioethanol both from sucrose and lactose and compared it to a wild type *Saccharomyces cerevisiae* strain. Our results show that while wild type *S. cerevisiae* strain is not capable of growing even in rich mediums if they contain lactose as the sole carbon source, the engineered strains are able to efficiently catabolize lactose into bioethanol in anaerobic conditions. Two of the strains obtained, BY4742-11F and BY4742-51, were able to produce a final concentration of 1.1% and 0.74% ethanol from a 2% lactose rich medium, values close to the maximum theoretical yield. These promising results justify further studies leading to an optimization in the production of bioethanol from this food processing waste using the strains obtained.

BT-P12

GLYPHOSATE REMOVAL BY RIPARIAN VEGETABLE SPECIES AND ISOLATION OF ASSOCIATED BACTERIA

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Glyphosate (Gly) is the most used herbicide in Argentina. Consequently, higher occurrence of Gly and its major metabolite (AMPA) in different environmental compartments are currently found. Plants growing on such environments can reduce pollutants loads. Contaminated soils and vegetation represents a source of potentially beneficial plant associated-bacteria which could be used within microbial-assisted remediation strategies. The objectives of this study were (1)to isolate bacterial strains from Gly contaminated soil and rhizosphere of *Salix fragilis* (*Sf*) and *Festuca arundinacea* (*Fa*) spontaneously grown on soils contaminated, (2)to evaluate Gly and AMPA content in soil and plant tissue of *Sf* and *Fa* grown in a greenhouse experiment. Samples of top soils contaminated with Gly and samples of *Sf* and *Fa* growing in the surroundings of the Claromecó stream (Tres Arroyos) were collected. For the bacterial isolation, one g of bulk soil (S) and rhizosphere soil (R) was suspended in sterile solution. Soil suspensions were diluted and plated. After 7 days of incubation, distinct colony morphotypes isolated were screened according to use Gly (0.5 gL^{-1}) as only carbon source (minimal medium+Gly) and to use Gly as only P source (mineral salt medium+sodium glutamate+Gly). For the greenhouse experiment, pots were filled with 2 kg of contaminated soil and one *Sf* cutting and 6 *Fa* seedlings were planted per pot, during 3 months. Four pot replicates were prepared for each treatment, including control pots. At the end of the experiment, plants were harvested and soils samples were taken for Gly and AMPA analysis by UPLC-MS/MS. Sixty-nine different colonies morphotypes, 23 from S and 46 from R (26 from *Fa* and 20 from *Sf*) were isolated. Seventeen of the isolates were able to grow on Gly as source of P and 14 were able to grow using Gly as source of C. Five of different bacterial morphotypes were able to grow using Gly as source of P and C. In the greenhouse experiment, Gly and AMPA initial content in soils were 5512 ± 1369 μg Kg^{-1} and 2353 ± 181 μg Kg^{-1}, (respectively). At the end of the assay, Gly final content was 325 ± 23 μg Kg^{-1} (*Sf*) and 25 ± 2 μg Kg^{-1} (*Fa*) showing both a noticeable decrease in planted soils. AMPA final content was also decreased in *Fa* (822 ± 104 μg Kg^{-1}) while for *Sf* AMPA was enhanced (3853 ± 207 μg Kg^{-1}). Gly detected in plant biomass was 513 ± 97 μg Kg^{-1} (*Sf*) and 164 ± 50 μg Kg^{-1} (*Fa).* AMPA content in plants was 2385 ± 726 μg Kg^{-1} (*Sf*) and 575 ± 87 μg Kg^{-1} (*Fa*). In control pots, differences on contaminants content were not significant along the assay. Since *Fa* treatment showed decreased values of Gly and AMPA both in plant and soil, and five of different bacterial morphotypes were able to grow using Gly as source of P and C, bioassays combining both bacterial inoculant and *Fa* are currently in course. The microbial-plant system could be considered as promising tool for phytoremediation of Gly and AMPA.

BT-P13

GOAT MILK CHEESE ENRICHED WITH *SMALLANTHUS SONCHIFOLIUS* (YACON) ATTENUATES REDOX STATUS IN ANIMAL MODEL OF OBESITY

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Oxidative stress is a critical factor linking obesity with its associated complications such as diabetes, cardiovascular and hepatic dysfunctions. Excessive visceral fat increases oxidative stress in several organs leading to insulin resistance. Nowadays, focus has been geared towards new functional foods to avoid the progression of metabolic complications. Cheese provides a valuable option as a food vehicle for prebiotic delivery. Also, phenolic compounds have been proposed as nutritional ingredients to improve the functional properties of milk and dairy products. This work investigated the effects of the addition *Smallanthus sonchifolius* (yacon) roots, a natural source of fructooligosaccharides (FOS) and