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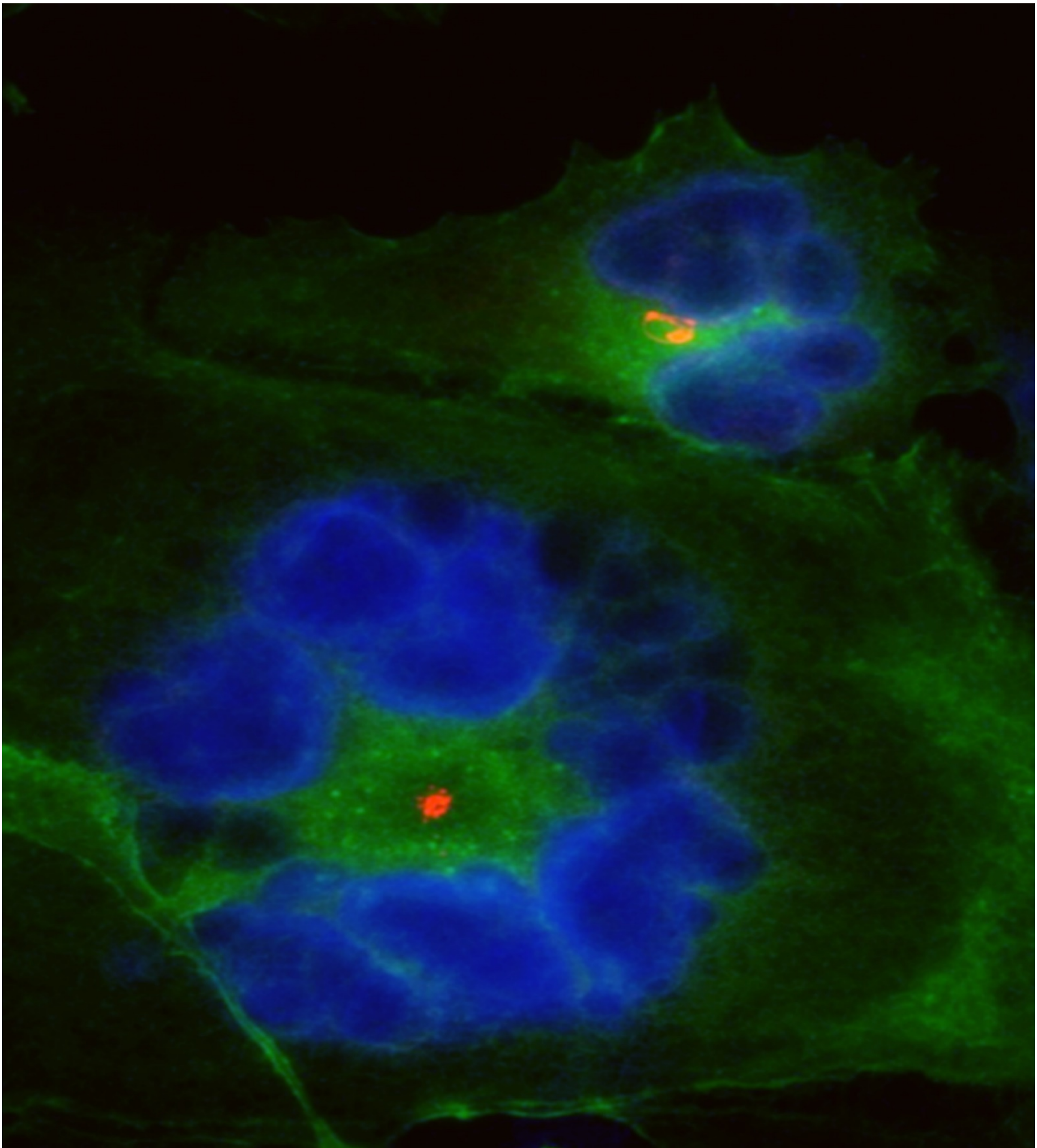

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Cover page: The Synthetic Lethal Rosette

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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Granoleico, exhibited oxidative damage (thiobarbituric acid reactive substances (TBARs) accumulation). Pre-treatment with exogenous proline or its analogue gave a contrasting response: proline and hydrogen peroxide accumulation and TBARs reduction. Both cultivars showed increased proline biosynthesis genes expression (*P5CS1, P5CS2a, P5CS2b, P5CR*) when exposed to water stress, but showed opposite responses in the relative expression of proline catabolism genes (*ProDH1, ProDH2*), which increased only in the sensitive cultivar. The drought tolerant EC-98 cultivar exhibited unique changes when pretreated with T4C, with mRNA levels of genes coding for proline biosynthesis (the four analyzed) and catabolism (*P5CDH*), significantly up-regulated even in the absence of water stress. Thus, higher proline metabolism in the drought tolerant cultivar, EC-98, relative to the sensitive cultivar (Granoleico), may contribute to the tolerant phenotype. Finally, T4C may be a potentially useful protecting agent in drought stress conditions for specific cultivars.

PL-P24
CHARACTERIZATION OF CALCIUM TRANSPORTERS DURING POLLEN TUBE GROWTH IN *ARABIDOPSIS THALIANA*

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In plants, calcium signals are involved in multiple physiological processes such as stomatal opening, stress responses, and polarized growth of root hairs and pollen tubes. These signals are given as repetitive oscillations of cytosolic free Ca^{2+} where the intensity and amplitude correlate according to the stimulus. Pollen tube growth occurs through the concerted action of different factors such as pH, ROS, actin and calcium gradient. Any imbalance between these factors causes aborted pollen tubes and therefore, defects in fertility. In this work, we propose to perform a functional study of the P2B type calcium pumps (Autoinhibited Ca^{2+}-ATPases, ACAs), in pollen tubes of *Arabidopsis thaliana*. These pumps are mainly located in vacuole, endoplasmic reticulum and/or plasma membrane and are involved in removing calcium from the cytoplasm. Studies conducted with ACA insertional mutants have shown that these pumps have a role beyond the maintenance of Ca^{2+} homeostasis. Since some Arabidopsis ACAs are specifically expressed in mature pollen, we propose to explore pollen-pistil interactions of ACA mutant plants. We will also study calcium dynamics during pollen tube growth. These results will provide new perspectives about how pollen tube growth is regulated and it will be also applicable to other cellular polar growth models.

PL-P25
PARTICIPATION OF POLYAMINES IN THE RESISTANCE MECHANISM INDUCED BY PHOSPHITES AGAINST *PHYTOPHTHORA INFESTANS* IN POTATO

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Potato is the main horticultural crop in Argentina. Late Blight, caused by the oomycete *Phytophthora infestans*, is the most important potato disease that seriously affects crop yield. A strategy to diminish the use of toxic agrochemicals is the use of biocompatible compounds. Phosphites are metallic salts of phosphorous acid (H_3PO_3) nontoxic for the environment or human health. They are effective in increasing potato tolerance against various diseases, UV-B radiation, and also cause positive effects on physiological parameters related to crop quality and yield. These compounds would have a broad spectrum of action, however, their mode of action have not been completely elucidated yet. Previous results in our laboratory have shown that these compounds induce enzymes related to the antioxidant system and the reinforcement of the cell wall in potato. Polyamines (PAs) are aliphatic amines present in almost all organisms, including plants. Most common PAs in plants are: Putrescine (PUT), Spermidine (SPD) and Spermine (SPM). They are involved in many growth and development processes and also in the response to biotic and abiotic stresses. PAs can scavenge reactive oxygen species or directly modulate the activity antioxidant enzymes. In addition, the can also act as a source of hydrogen peroxide in response to stress through the activity of the catabolic enzymes such as diamino oxidases (DAO) and polyamino oxidases (PAO). The objective of the present work was to study the participation of PAs in the resistance mechanism induced by phosphites against *P. infestans* in potato plants. The results indicated that PAs differentially accumulate in potato leaves depending on the treatments. In the absence of infection, an increase in the content of SPD and SPM was observed in leaves 3 days after potassium phosphite (KPhi) treatment. Upon pathogen challenge, the content of PUT, SPD and SPM increased in KPhi treated leaves 48 h post-inoculation, compared to non-treated inoculated leaves. The expression of different genes involved in PA metabolism showed that many of both biosynthetic and catabolic genes decreased in non-treated inoculated leaves 48 hpi, compared to non-treated and non-inoculated leaves (control). However, this was not observed in KPhi treated and inoculated leaves, where an increase in the expression of various genes was observed. At this time, PAO enzymatic activity also increased in KPhi treated and inoculated leaves respect to the control. These results suggest that polyamine metabolism could be involved in the resistance mechanisms induced by phosphites in potato plants inoculated with *P. infestans*.