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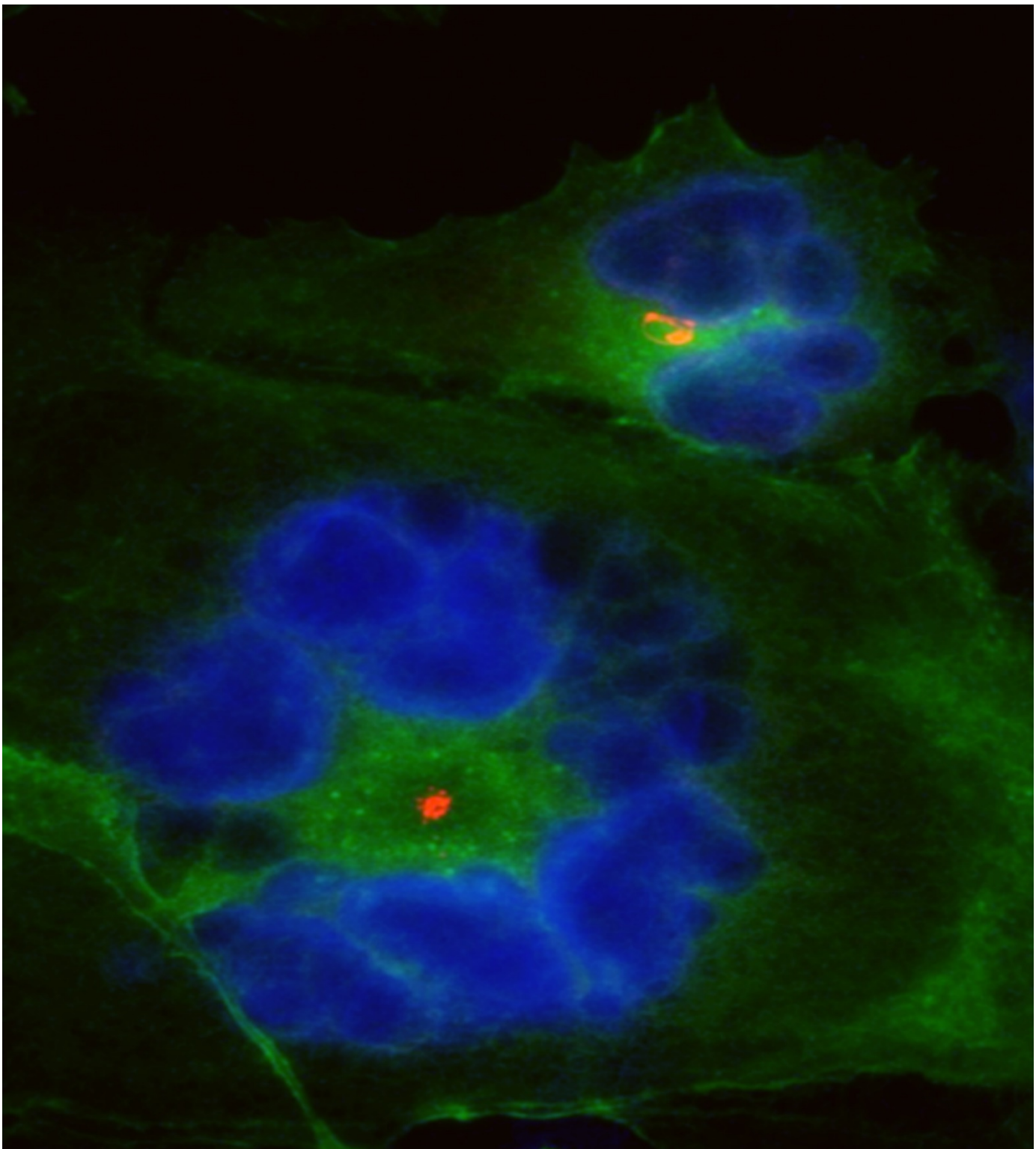

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Cover page: The Synthetic Lethal Rosette

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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IN MEMORIAM

HORACIO G. PONTIS
(1928–2019)

Horacio Guillermo Pontis, born in Mendoza (1928), graduated in chemistry and obtained the Ph.D. (1953; Dir.: V. Deulofeu) from the University of Buenos Aires. After working for three years with Dr Luis F. Leloir—where he approached to carbohydrate metabolism—he stayed successively at King College (UK), Durham University (UK) and finally at Karolinska Institutet and University of Stockholm—where his attention turned to enzymology studies. After returning to Leloir´s lab (1960), he embarked on plant biochemistry studies. In his search for clues about fructans, Dr. Pontis´ lab synthesized not only UDP-fructose but also fructose-2-phosphate, which two decades later cleared the way for the chemical synthesis of fructose-2,6-bisphosphate (a key glycolysis modulator).

From 1968 to1977, he was the director of Dept. of Biology – Fundación Bariloche. In Nov. 1971, Bariloche hosted the SAIB Annual Meeting, being elected Dr. Pontis the President of SAIB (1972).

This reunion was followed by the Symposium "*Biochemistry of the glycosidic linkage*" with the presence of four Nobel Prizes (C. Cori (1947), G. Cori (1947), F. Lynen (1964), L. F. Leloir (1970)). However, his "*mi mejor experimento y experiencia de formación"* came to a halt-in when the Bariloche lab was closed (1977).

In 1979, Dr. Pontis moved to Mar del Plata where over time his outstanding capacity for innovation launched Instituto de Investigaciones Biológicas (IIB) – U. N. Mar del Plata, Fundación de Investigaciones Científicas (FIBA) and Centro de Investigaciones Biológicas (CIB).

In any site, Dr. Pontis maintained active research groups that trained graduate and post-graduate students generating a steady flow of important contributions to plant biochemistry. The research international community acknowledged these accomplishments, such as American Society of Plant Biologists that named him Correspondent Member. In his scientific activities, Dr. Pontis has been member of the National Research Council of Argentina (1961; CONICET), and Biochemistry Professor –at the UBA and at Universidad Nacional de Mar del Plata. The former and the later institutions recognized his academic performance designating him Emeritus Investigator and Emeritus Professor, respectively.

Dr. Pontis' story rose from limited beginnings—in Deulofeu´s and Leloir´s labs—to international scientific prestige. In this context, the challenge to overcome adversity during shameful periods in Argentine history honors not only his willingness but also his enthusiasm.

Ricardo Wolosiuk

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THE *ARABIDOPSIS* TRANSCRIPTION FACTOR ATHB40 INHIBITS ROOT ELONGATION AND THE RESPONSE TO GRAVITROPISM

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Homeodomain-leucine zipper I (HD-Zip I) transcription factors (TFs) are unique to plants and have been mainly associated with developmental processes and also related to abiotic stress responses in several species. It was previously reported that *AtHB40,* an *Arabidopsis* member of this TF subfamily, is expressed in roots, particularly in the tip of the main and lateral roots. Such expression circumscribed to the quiescent center, columella cells, and the vascular system. The obtaining and characterization of *AtHB40* mutants (*athb40*) and overexpressors (*OE40*) as well as plants transformed with *AtHB40* promoter driving *GUS* expression (*PrAtHB40:GUS*), allowed us to determine that AtHB40 is a repressor of main root elongation in an ABA-dependent manner. Regarding the inhibition of root elongation produced by AtHB40, we stated several hypotheses: (a) AtHB40 regulates cyclins, (b) AtHB40 regulates auxin transporters, (c) AtHB40 inhibits root elongation when seedlings are subjected to abiotic stress such as high salinity, (d) the gravitropic response is altered in *athb40* and *OE40* plants. To investigate our hypotheses, we obtained crossed plants in which the promoters of the putative target genes fused to the reporter *GUS* were expressed in *AtHB40* mutant or overexpressor backgrounds. The analyses of these crossed lines indicated that *LAX2* is downregulated by AtHB40 in 3-day-old seedlings. Moreover, *CYCB1* (cyclin) was repressed by AtHB40 in the root tip of 7-day-old plants. *AtHB40* mutant plants exhibited longer main roots than controls in the presence of ABA, Fluridone (an inhibitor of ABA synthesis), auxin (IAA) or NaCl indicating certain insensitivity to the growing media. Moreover, *athb40* mutants showed a larger survival percentage when seedlings were grown in high salinity medium. The response to gravitropism was also investigated indicating that *athb40* lines exhibited enhanced positive gravitropism whereas *OE40* a reduced response compared to WT plants. Altogether, our results suggest that *AtHB40* is a repressor of main root elongation and has a functional role in the gravitropic response as well as in cell division and auxin transport in the root tip.

PL-C12
PROLYL HYDROXYLATION IS NECESSARY FOR PROPER LOCALIZATION OF CELL WALL PROTEINS AND POLLEN GERMINATION IN *ARABIDOPSIS THALIANA*

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To produce fertilization, pollen tubes have to travel along the pistil and then deliver sperm cells upon reaching the ovules. To sustain the polarized growth of pollen tubes, the role of the cell wall, which is constantly being remodeled in the apical region, is crucial. Different polysaccharides such as callose, pectin, and cellulose together with structural proteins that belong to the family of hydroxyprolyl-rich glycoproteins (HRGP) are involved in cell wall organization. Members of HRGPs family are the Leucine-rich repeat extensins (LRXs), hybrids proteins that contain an N-terminal domain involved in protein-ligand interactions and a C-terminal extensin-like domain with Ser-$Pro_{(3-5)}$ repetitions plausible to be glycosylated. We have previously demonstrated that *Arabidopsis* pollen-specific LRXs (LRX8-11) are necessary to maintain cell wall integrity since polarized growth of pollen tubes in loss of function *lrx9-2 lrx10-1 lrx11-1* triple mutant is altered both *in vitro* and *in vivo*. The lack of LRXs caused severe abnormalities in pollen tube morphology, a decrease in pollen germination rate and a skewed pollen segregation ratio. Moreover, microscopy analysis showed an altered deposition of polysaccharides, such as callose and pectin, in the cell wall of triple mutant pollen tubes. To determine whether post-translational modifications are required for the functionality of LRXs, we aim to study the importance of proline hydroxylation, catalyzed by prolyl-4-hydroxylases (P4H), necessary to define future *O*-glycosylation sites. We hypothesize that pollen-specific P4H4 and P4H6 catalyze the hydroxylation of prolines at the extensin domain of LRXs. Simple loss of function *p4h4* and *p4h6* mutants and *p4h4p4h6* double mutant showed a reduction in pollen germination rates; similar results were obtained by applying specific P4Hs inhibitors to the pollen germination medium. Transgenic plants expressing the construction pP4H4::P4H4-YFP showed that P4H4 is localized in the Golgi apparatus and/or endoplasmic reticulum. In addition, pollen tubes from transgenic plants expressing pLRX11::LRX11-GFP in the *p4h4p4h6* background showed a re-localization of LRX11-GFP from the tip to the cytoplasm. Together these results suggest that LRXs are putative targets of the P4H4 and P4H6 enzymes since the lack of hydroxylation and subsequent glycosylation in the *p4h4ph6* double mutant, prevents LRX11 from proper cross-linking at the pollen tube cell wall.

PL-C13
STUDY OF RALF4/19 PEPTIDES ROLE DURING POLLEN TUBE GROWTH IN *ARABIDOPSIS THALIANA*

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