つくば機能植物イノベーション研究センター
形質転換植物デザイン研究拠点
研究セミナー（90）

日時 ：2026 年 10 月 1 日(水) 14:00 –

場所：遺伝子実験センター2F セミナー室

演者： Prof. Ricardo Antonio Ayub, PhD

（Universidade Estadual de Ponta Grossa (UEPG)）

Ripening of non-climacteric fruits: the yellow melon case.

Understanding the physiology of non-climacteric fruit ripening is a fascinating subject, given the diversity of fruits and the multiple factors involved genetic, physiological, and biochemical pathways, which leads us to consider the processes driving ripening in individual fruits. Indeed, due to modern techniques, we now speak of "suppressed-climacteric" behavior; in the case of melons, various lines have generated distinct ripening and post-harvest responses. I have developed a hypothesis, which I hope you will find interesting, that we are close to elucidating.

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演者： Ana Montserrat Martín Hernández, PhD

（IRTA- CRAG）

Niemann-Pick C1 protein: a hub for plant viral infections

Plant viruses are obligate parasites that exploit host cellular mechanisms to complete their infection cycle. Among these, host proteins play a particularly critical role. Identifying proteins targeted by viruses and understanding their contribution to infection are crucial steps toward developing effective antiviral strategies.
We have identified a specific domain of a Niemann-Pick C1 protein (NPC1) in melon as an interactor of the Cucumber mosaic virus (CMV) movement protein (MP). NPC1 is a transmembrane sterol transporter protein that, in mammals, is involved in cholesterol transport and is also associated with the infection of viruses such as SARS-CoV-2, Ebola, and Zika. However, its function in plants remains largely uncharacterized and has never been related to plant virus infections. Using Virus-Induced Gene Silencing (VIGS) we have determined that CmNPC1 contributes to the movement of viruses of several families. Moreover, NPC1 plays the same role in tomato and in Arabidopsis, indicating that it is a central hub for viral infections, exploited by viruses of different families and across multiple plant families. Our results also suggest that NPC1 affects virus movement by regulating callose deposition at plasmodesmata.
Given its role in viral infection, NPC1 represents an attractive target for genome editing aimed at generating virus resistant plants. Melon encodes two NPC1 genes, both involved in viral infection. We are currently editing CmNPC1 from chromosome 11, which has a major role in viral infection. For that, we have developed a new CRISPR vector optimized for cucurbits, incorporating melon promoters to drive sgRNA expression.

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