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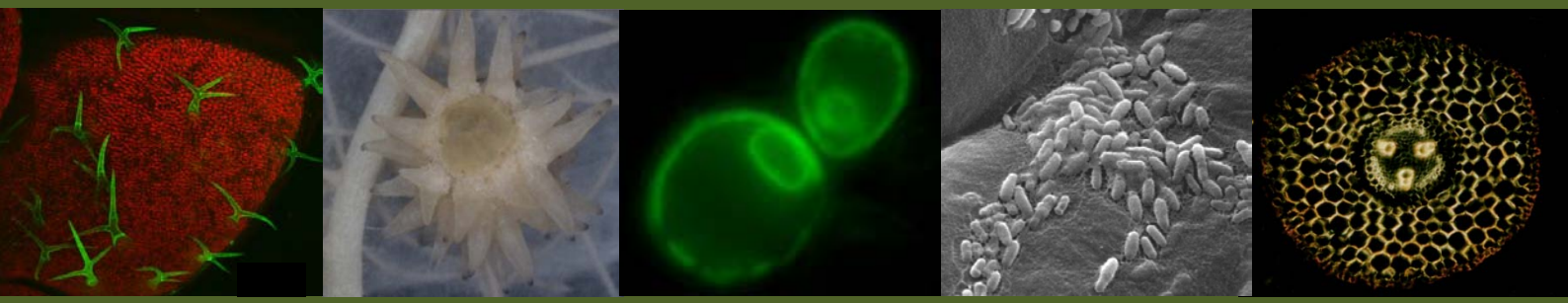
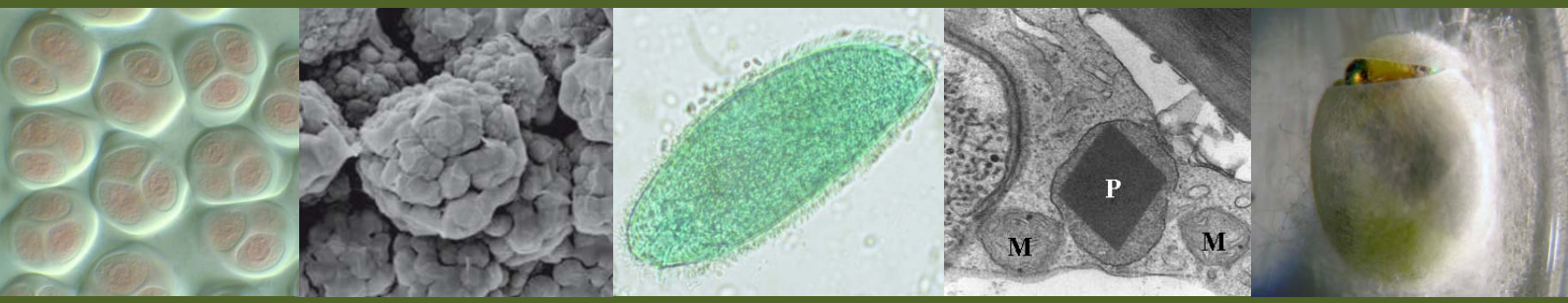


30 years of (e-) microscopy at the EEZ in images



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30 years of (e^-) microscopy at the EEZ in images

Edited by Antonio J. Castro and Juan de Dios Alché

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Editors: Antonio Jesús Castro López
Juan de Dios Alché Ramírez

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Profesor Albareda 1
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Microscopy to study plant sexual reproduction

Juan de Dios Alché*, Antonio Jesús Castro, Mª Carmen Fernández, Juan David Rejón, Krzysztof Zienkiewicz, Sonia Morales, Mohamed M´rani, José Carlos Jiménez-López, Agnieszka Zienkiewicz, José Angel Traverso, Adoración Zafra, Mª José Jiménez-Quesada, Estefanía García-Quirós, Concepción Martínez-Sierra and Mª Isabel Rodríguez-García

Department of Biochemistry, Cell and Molecular Biology of Plants, Estación Experimental del Zaidín, CSIC, Profesor Albareda 1, 18008 Granada, Spain

*corresponding author: juandedios.alche@eez.csic.es

- **Pollen development under an ultrastructural view: first TEM studies at the EEZ**

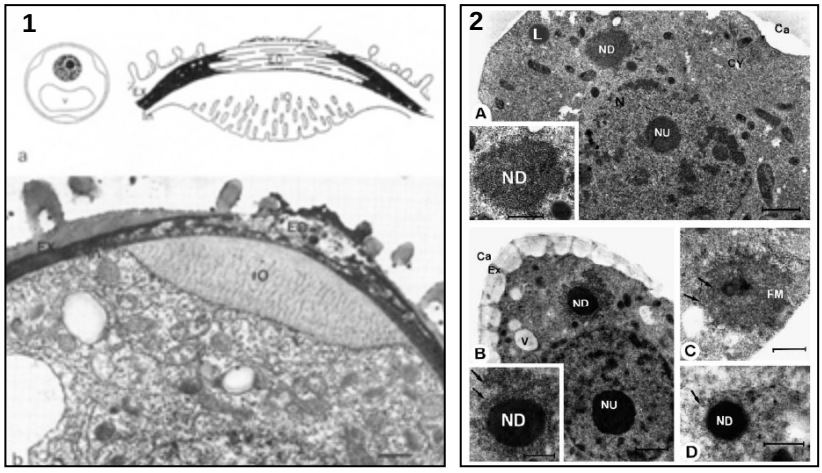

Figure 1. (A) Aperture formation in the olive pollen [Fernández and Rodríguez-García (1989) New Phytol. 111: 717]. (B) Cyto-chemical features of nucleoloids in olive microsporocites [Alché *et al*. (1994) J. Cell Sci. 107: 621].

- **Bright field and fluorescence microscopy applied to the study of pollen development**

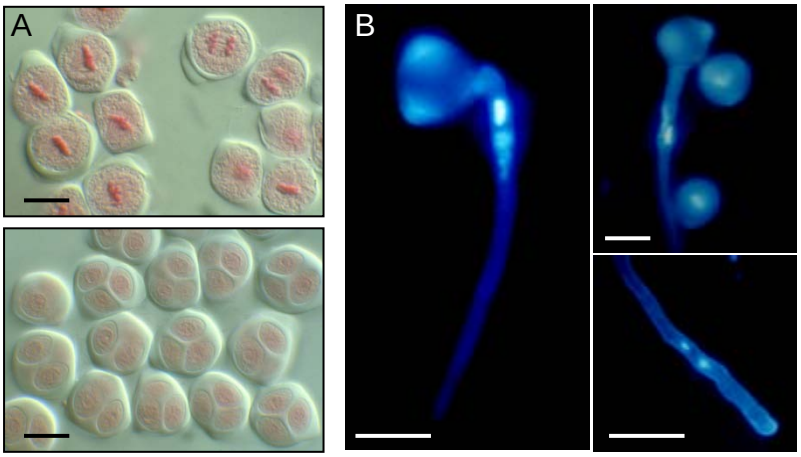

Figure 2. (A) Study of olive male meiosis by orcein staining and differential interference contrast (DIC) microscopy [Alché JD (1991) PhD thesis]. (B) Study of nuclear dynamics in the olive pollen tube by DAPI staining and fluorescence microscopy.

- **Scanning Electron Microscopy (SEM): surfing on the surface**

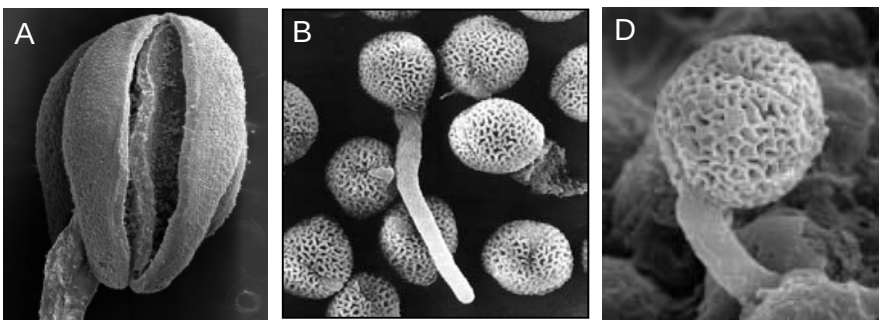

Figure 3. (A) SEM photomicrograph of an olive dehiscent anther. (B-C) SEM photomicrograph of olive pollen grains germinating *in vitro* (B) and *in vivo* through the stigmatic papillae (C).

- **Cellular localization of biological molecules: what, where and when**

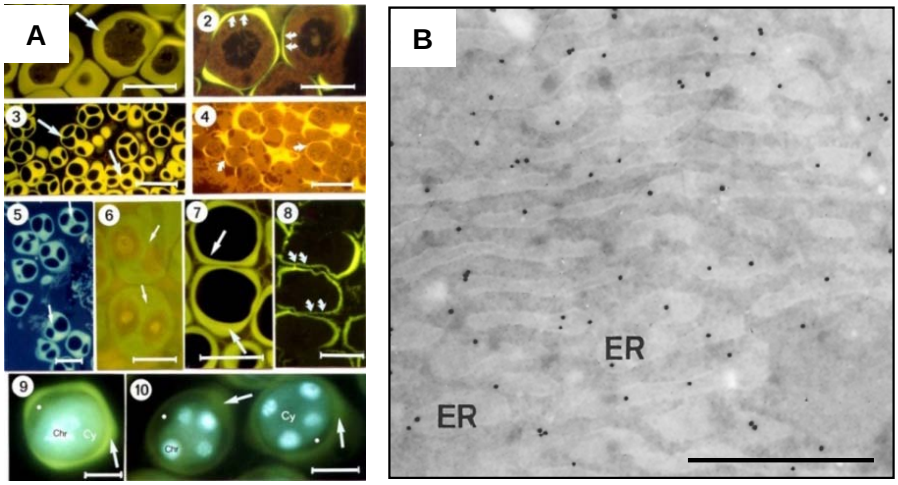

Figure 4. (A) Localization of callose by aniline blue in olive meiocytes [Alché and Rodríguez-García (1997) Biotech. Histochem. 72: 285]. (B) Immunolocalization of Ole e 1 protein in mature olive pollen grains. ER, endoplasmic reticulum [Rodríguez-García *et al*. (1995) Planta 196: 558].

- **Confocal Laser Scanning Microscopy (CLSM): deep tissue imaging and 3-D reconstruction**

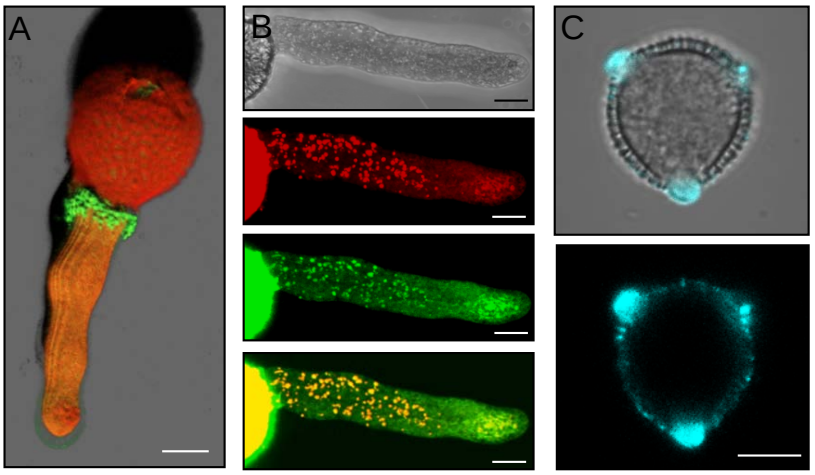

Figure 5. (A) Localization of galactans (green fluorescence) in germinating olive pollen [Castro *et al*. (2013) Ann. Bot. 112: 503]. (B) Co-localization of caleosin (green) and oil bodies (red) in olive pollen tubes [Zienkiewicz *et al*. (2010) J. Exp. Bot. 61: 1537]. (C) Localization of profilin in olive pollen [Morales *et al*. (2008) J. Microsc. 231: 332].

- **Beyond structure: microscopy and function**

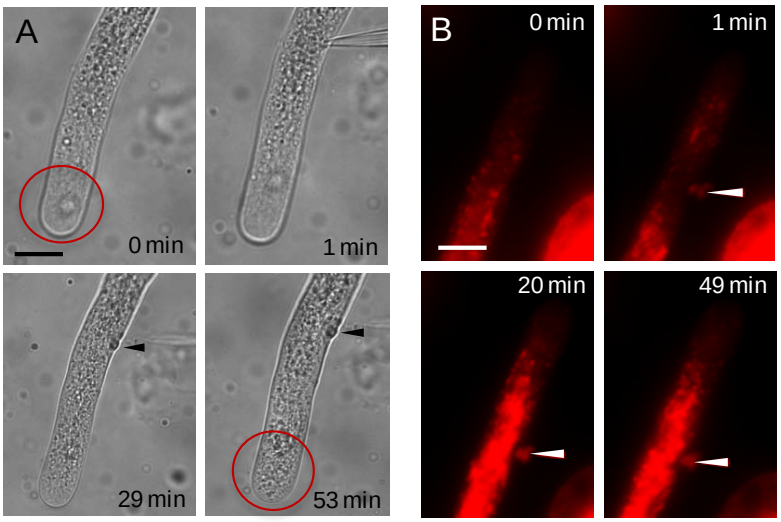

Figure 6. (A) Time course transmitting light microscopy analysis of pollen tube behaviour after antibody microinjection. After 1 h, the pollen tube growth stopped and the clear zone was not longer visible (red circle). (B) Time course fluorescence microscopy analyses of organelle distribution, motility and behavior after vital stain + antibody microinjection [Zienkiewicz *et al*. unpublished].

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