

THEMATIC NETWORK CREA

Research and Innovation Platforms and Infrastructures

PLATFORM NAME / INFRASTRUCTURE

Electron and Confocal Microscopy Platform



S/TEM Microscope
Apreo 2 S – ThermoFisher

BRIEF DESCRIPTION OF THE INFRASTRUCTURE

The Electron Microscopy Platform at the CREA DC headquarters in Florence is a technological infrastructure dedicated to the morphological and ultrastructural analysis of biological specimens. The instrumentation suite includes a Jeol NeoScope JCM-5000 benchtop SEM, a Jeol JEM-1011 TEM, and a Thermo Scientific Apreo 2S S/TEM equipped with the VolumeScope module for 3D cellular reconstruction.

Complementing the electron microscopy suite, the facility features a Nikon A1 confocal microscope for optical sectioning and multidimensional imaging, alongside a complete equipment set for sample preparation (including an ultramicrotome and a cryostat).

Designed to explore nanoscale biology, the core mission of the facility is to decode cellular architecture, map complex host-pathogen interactions at the microscopic level, and evaluate the effects of insecticide treatments. State-of-the-art 3D technologies enable high-resolution volumetric reconstruction of complex tissues and organs while preserving their native morphology, even in minute organisms.

In addition to ultrastructural characterization, key applications include antibody localization (immunolabeling) and the observation of nanomaterials within plant, animal, and fungal tissues.

The facility provides an open-access service to the scientific community, offering specialized expertise across the entire experimental workflow: from experimental design and sample preparation to image acquisition and data analysis.

The platform's versatility makes it a benchmark for both basic and applied research in entomology, plant pathology, and microbiology, driving the development of sustainable crop protection strategies.

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