

INFORMATION ABOUT THE PERSON FILLING THE FORM	
Name and family name	Tanja Mrak
Research organization	Slovenian Forestry Institute
Position in the organization	
Country	Slovenia
E-mail	tanja.mrak@gozdis.si
FACILITY <sup>1</sup>	
Name of the facility	MILAB - Mikroskopirnica GIS - Microscopy lab SFI URL address
Location of the facility	Slovenia Večna pot 2, 1000 Ljubljana
Start date	1988; renovated in 2012-2013
Type of facility	Motorized upright research microscope ZEISS AxioImager.Z2 Motorized stereomicroscope ZEISS StereoLUMAR.V12 Motorized invert microscope ZEISS AxioObserver.Z1 with PALM Microbeam laser microdissection system and VivaTome optical sectioning device Microscopes Olympus BX51 and Olympus BH2, stereomicroscopes Olympus SZH and SZX12 with image analysis software Scanner Epson Perfection V700 Photo WinRhizo (Regent Instruments) Software
Keywords	Laser microdissection, fluorescence microscopy, optical sectioning, imaging, fine root analysis
Scientific characteristics	Biodiversity and functional diversity studies in forestry Interest for users: Specialized for mycorrhiza and fine roots research, wood anatomy, forest tree diseases and forest pests Specialized in characterization of fine roots & fungi (Morphological and anatomical atlas), studies of wood anatomy, forest tree diseases and pests; laser microdissection unit Research projects in the frame of which the facility is used: Programme group Forest biology, ecology and technology
Technical characteristics	<b>Motorized upright research microscope ZEISS AxioImager.Z2</b> is suitable for contrast techniques bright field, dark field, differential interferential contrast, polarization and fluorescence (filters for UV, FITC and Rhodamin). It is equipped with motorized objective turret objectives (objectives 1.25x, 5x, 10x, 20x, 40x and 100x (oil)) and automatic objective recognition system. Reflector turret is motorized as well and also inserted filters are automatically recognized. Motorized Z-axis drive allows for the precision of focusing step of 10 nm. Specimen stage is rotatable for 240°. Highly sensitive AxioCam MRc5 camera is suitable for fluorescence applications. Installed software (ZEN pro 2012 blue edition) provides microscope control, time-lapse and multichannel image acquisition and merging of obtained images into panorama image and image with extended depth of focus. <b>ZEISS StereoLUMAR.V12</b> is completely motorized stereomicroscope suitable for fluorescence (filters for UV, Rhodamin and FITC), transmitted and reflected light

<sup>1</sup> Note: This information could be published in the webpage of FORESTERRA.

observations. High quality optics enables high resolution images and large specimen field. Magnifications of up to 80x can be achieved. Stereomicroscope is equipped with color AxioCamIcc5 camera and uses the same software equipment as AxioImagerZ2.

**Motorized invert microscope ZEISS AxioObserver.Z1 with PALM Microbeam laser microdissection system and VivaTome optical sectioning device:** Laser microdissection is a method for isolation of microscopic regions of interest from microscopy samples (tissue sections) prepared on common object slides and membrane slides, but also samples on certain types of filters and forensic adhesive tapes are suitable. Samples can be native, stained, formalin fixed paraffin embedded (FFPE) or prepared with cryomicrotome. The laser beam is so precise that single cells or even single chromosomes can be dissected. Dissected elements are contact free catapulted by laser beam pulse into collection cap situated above the object. Catapulting of dissected elements against gravity is advantageous relative to other microdissection systems and allows for absolutely pure and contamination-free collection of samples. System is equipped with collectors for one or two collection tubes and for single cap. Microdissected samples can be directly used for DNA, RNA and protein isolation.

Technical specifications:

- ZEISS AxioObserver.Z1 invert microscope (objectives 5x, 20x, 40x, 63x, 100x oil, filters for autofluorescence, FITC and TexasRed)
- Laser beam source PALM MicroBeam (355 nm)
- camera AxioCam Icc1
- fluorescent lamp HXP 120V
- halogen lamp HAL100
- PALM RoboStageII motorized object table with holder for three object slides and Cap Check position for checking of microdissected and captured samples in collection tube
- Motorized PALM CapMoverII for fast positioning of the collecting device, collector set SingleCap 500, SingleTube500 and TubeCollector 2x500, suitable for 500 µl collection tubes
- PALM RoboSoftware 4.6
- Additional equipment: VivaTome (system for optical sectioning of living objects), ZEN software, camera AxioCam MRm

**WinRHIZO** is an image analysis system specifically designed for measurement of scanned roots. It can do morphology (length, area, volume...), topology, architecture and colour analyses.

Measured parameters: image analysis parameters

SFI-stereomicroscope.jpg

SFI-laser microdissection.jpg

SFI-laser microdissection on membrane slide.jpg

SFI-microscope AxioImager.jpg

## SCIENTISTS AND/OR TECHNICIANS IN CHARGE OF THE FACILITY

Principal investigator	Prof.dr. Hojka Kraigher (hojka.kraigher@gozdis.si)
One line for each additional person	Dr. Tanja Mrak (tanja.mrak@gozdis.si)
	Dr. Tine Grebenc (tine.grebenc@gozdis.si)
	Melita Hrenko (melita.hrenko@gozdis.si)
	Dr. Peter Železnik (peter.zeleznik@gozdis.si)
	Dr. Jožica Gričar (jozica.gricar@gozdis.si)



# FORESTERRA

Enhancing FOREst RESEARCH in the MediTERRAnean through improved coordination and integration



Dr. Nikica Ogris ([nikica.ogris@gozdis.si](mailto:nikica.ogris@gozdis.si))

Dr. Maarten De Groot ([maarten.degroot@gozdis.si](mailto:maarten.degroot@gozdis.si))

## ADMINISTRATIVE INFORMATION

<b>Availability for participating in mutual measurements</b>	Yes
	<i>Prof.dr. Hojka Kraigher (<a href="mailto:hojka.kraigher@gozdis.si">hojka.kraigher@gozdis.si</a>)</i>
	<i>Conditions or Policy of use: Individual agreement</i>
<b>Availability for accessing the data collected</b>	<i>IPR conditions under development</i>
<b>Institution that manages the facility</b>	<i>Gozdarski inštitut Slovenije – Slovenian Forestry Institute</i>
	<i><a href="http://www.gozdis.si">www.gozdis.si</a></i>
<b>Structure or institution which manages the data</b>	<i>Gozdarski inštitut Slovenije – Slovenian Forestry Institute</i>
	<i><a href="http://www.gozdis.si">www.gozdis.si</a></i>
<b>Is the facility participating in a national or international Network?</b>	
<b>Is the facility open for transnational collaboration?</b>	<i>Yes – for research purposes.</i>

