

<b>120 kV TEM FLUORESCENCE MICROSCOPY</b>	Allow the analysis of cellular ultrastructure, organelles, molecules, viruses, etc and the correlative characterization with fluorescence microscopy. Enables 3D characterization by tomographic methods. It also operates in cryogenic conditions.	High resolution 3D characterization of different cell types .Capacity to acquire fluorescence images and transmission electron microscopy in a single instrument.
<b>100 kV TEM ROUTINE</b>	Allow the analysis of cellular ultrastructure, organelles, molecules, viruses, etc.	Fundamental ultrastructural characterization of various biological phenomena.
<b>BIO AFM WITH FLUIDIC CELL</b>	High resolution characterization of surfaces of different sources (biological and non-biological). Can be used for the characterization of hydrated materials.	Used in the characterization of surfaces of different cells types. Nanoparticles and nanocapsules used in rational drug delivery (nanoencapsulation).
<b>HIGH-PERFORMANCE AFM (FAST SCAN)</b>	High resolution characterization of surfaces of distinct sources (biological and non-biological).	Used in the characterization of surfaces of different cells types, allowing the characterization of dynamic events.
<b>HIGH RESOLUTION AFM</b>	High resolution characterization of surfaces of distinct sources (biological and non-biological).	Used in the characterization of surfaces of different cells types. Nanoparticles and nanocapsules used in rational drug delivery (nanoencapsulation).
<b>3 LASERS CONFOCAL MICROSCOPE</b>	Used for analysis and quantification of fluorescent samples. 3D characterization.	Applied in projects related to different areas of health research (parasitology, virology, cell therapy, etc.).
<b>4 LASERS CONFOCAL MICROSCOPE</b>	Used for analysis and quantification of fluorescent samples. 3D characterization.	Applied in projects related to different areas of health research (parasitology, virology, cell therapy, etc.).
<b>TOTAL INTERNAL REFLECTION FLUORESCENCE MICROSCOPE (TIRF)</b>	Allow analysis and fluorescence quantification (super-resolution) of cell surface events.	Used in adhesion assays, secretion and cell signaling.
<b>MULTIPHOTON FLUORESCENCE MICROSCOPE</b>	Used for analysis and quantification of fluorescent thick samples. 3D characterization.	Used in 3D tracking of particles in the intracellular environment and characterization of thick samples.
<b>ALBA SYSTEM SPECTROSCOPY</b>	It allows the analysis, quantification and fluorescence spectroscopy of labeled samples.	Used in the quantification of fluorescence in the intracellular environment.
<b>SUPER-RESOLUTION FLUORESCENCE MICROSCOPE</b>	Allow the analysis and quantification of super-resolution fluorescent images.	First equipment of this type in Brazil. Enables a qualitative leap in images obtained by fluorescence microscopy.
<b>FLUORESCENCE AND APOTOME STEREO-MICROSCOPE</b>	Allow the analysis, quantification and characterization of bulky 3D samples (embryos, tissues, etc.).	First equipment of this type in Brazil. Enables a qualitative leap in images obtained by fluorescence stereomicroscopy.



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**CENABIO**  
CENTRO NACIONAL DE BIOLOGIA  
ESTRUTURAL E BIOIMAGEM

**UNIT 1**

EQUIPMENT	USE	NOTES
NMR – 400 MHz	Characterization of organic compounds. Metabolomics - Detection of phosphorous compounds.	Characterization of organic compounds.
NMR – 500 MHz	Characterization of biomolecules. Dynamics of proteins.	Biomolecules quality control.
NMR – 600 MHz	Detection of diluted samples.	Equipped with cryogenic probe for intracellular studies.
NMR – 700 MHz	Characterization of biomolecules.	Liquid or solid samples.
NMR – 800 MHz	Structure of complex proteins.	High resolution.
NMR – 900 MHz	Macromolecular complexes and structure of membrane proteins.	Characterization of macromolecular complexes and bulky proteins.
LIQUID CHROMATOGRAPHY	Purification of biomolecules.	Meet highest standards for research

**UNIT 2**

EQUIPMENT	USE	NOTES
NMR - 7 Tesla	Morphological and functional studies in small animals.	Only equipment in Latin America. High resolution images to characterize anatomical and functional biomarkers.
PET-SPECT- $\mu$ CT	Morphological and functional studies with nuclear medicine.	Metabolic, functional and morphological characterization using different radiopharmaceuticals.
ULTRASONOGRAPHY -VEVO 2100/770	High resolution images of specific organs. Doppler mode; fine assessment of cardiovascular function.	Equipment resolution (30 microns). Allows quantification of blood flow and visualization of specific organs.
FLUORESCENCE AND LUMINESCENCE DETECTION SYSTEM	Detection and monitoring of cells/molecules with fluorescence and/or luminescence	Equipment widely used in the study of infectious diseases, oncology and cell therapies.
ANIMAL BEHAVIOR	Rooms containing the latest equipment for the evaluation of animal behavior.	Widely used in translational research of development neuropathology.
HIGH THROUGHPUT SCREENING AND HIGH CONTENT ANALYSIS PLATFORM	Automated sample pipetting, imaging and characterization.	Allow automated testing of several molecules simultaneously - wide application in pharmacology.
IN VIVO CARDIOVASCULAR EVALUATION	Evaluation of functional parameters of the cardiovascular system.	ECG, arterial pressure and cardiac frequency monitoring (as required by FDA).
hERG SAFETY ASSAY	Validation of the direct effect of new molecules in the hERG ion channel.	Biosafety electrophysiological studies (as required by FDA).
FLOW CYTOMETRY (FACS)	Isolation of labeled cell populations.	Useful for diagnosis and prognosis.
BIOTERIES	Rats, mice and transgenic mice bioterics.	These facilities have the proper CEUA-UFRJ certification.

**UNIT 3**

EQUIPMENT	USE	NOTES
CONVENTIONAL SEM	Characterization of processed surfaces for SEM (anhydrate).	Used for characterization of surfaces of large samples (insect vectors, dental material, alloys for use in prosthetics).
FIELD EMISSION SEM WITH CRYOSTAGE	High resolution characterization of different sources surfaces (biological and non-biological). Can be operated for the characterization of hydrated materials in cryogenic conditions.	Used in the surface characterization of different cell types. The cryostage allows the characterization of frozen and fractured samples (intracellular environment).
ENVIRONMENTAL SEM WITH X-RAY MICROANALYSIS	Allow characterization of surfaces of hydrated materials and chemical analysis of samples by detecting emitted X-rays.	Used in cellular adhesion assays and host-parasite interaction after treatment with specific chemotherapy, without previous stages of sample preparation for SEM. Can be used for localization of ions and compounds on different surfaces.
VARIABLE PRESSURE SEM	Allow characterization of surfaces in low vacuum conditions (semi-hydrated samples).	Used in bacterial and fungal biofilm assay on different models of infectious colonization of catheters, probes, etc.
DUAL BEAM SEM WITH NANO MANIPULATOR.	Acquisition of images in ultra-high resolution and 3D characterization by tomographic methods.	Used in the 3D characterization of different cell types (bulky and multiple cells).
80 kV ROUTINE TEM	Allow the analysis of cellular ultrastructure and organelles, molecules, viruses, etc.)	Fundamental ultrastructural characterization of diverse biological phenomena.
ELECTRON ENERGY LOSS TEM 80 kV	Allow the analysis of cellular ultrastructure, organelles, molecules, viruses, etc. and chemical spectroscopic characterization by electron energy loss.	Screening and localization of ions and compounds in different cell types. Allow the distribution map of chemical elements.
SCANNING TRANSMISSION ELECTRON MICROSCOPY (STEM) WITH MICROANALYSIS X-RAY	Allow the analysis of cellular ultrastructure, organelles, molecules, viruses, etc.) and chemical spectroscopic characterization by x-ray dispersive energy. It also can be used for characterization of crystalline samples by electron diffraction.	Screening and localization of ions and compounds in different cell types. Allow the distribution map of chemical elements.
200 kV SCANNING TRANSMISSION ELECTRON MICROSCOPY (STEM) WITH CRYOTOMOGRAPHY	Allow the analysis of cellular ultrastructure, organelles, molecules, viruses, etc. and characterization by 3D tomographic methods. Can be operated in a cryogenic condition.	High resolution 3D characterization of different cells models in bulky and multiple cells.
200 kV SCANNING TRANSMISSION ELECTRON MICROSCOPY (STEM) WITH FIELD EMISSION AND CRYOTOMOGRAPHY	Allow the analysis of cellular ultrastructure, organelles, molecules, viruses, etc and characterization by 3D tomographic methods. Can be operated in a cryogenic condition. High resolution analysis (1.1 Å).	High resolution 3D characterization of different cell types in bulky and multiple cells. High resolution images that enable the analysis of the map distribution of atoms.