PALLADIN CENTRE OF CORE FACILITY

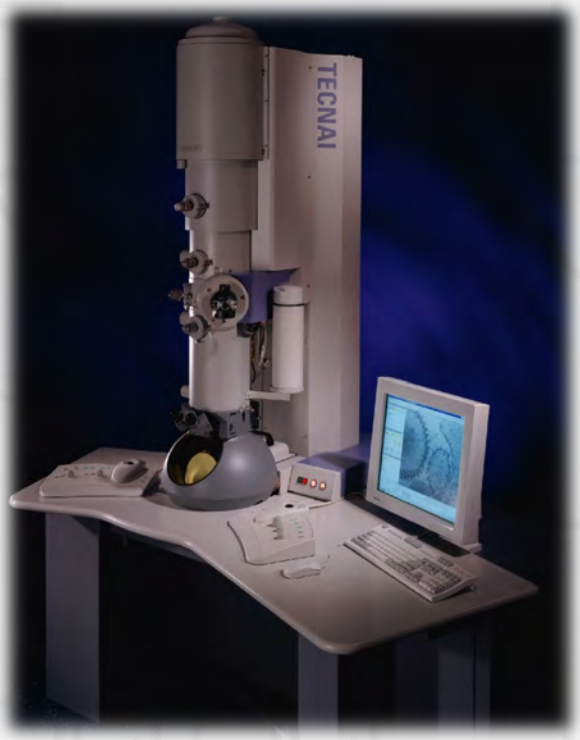
experience and accuracy

Scientific expertise and highly trained personnel The Palladin Centre of Core Facilities is supported by the long-standing scientific schools of the Palladin Institute of Biochemistry of the National Academy of Sciences of Ukraine. Generations of researchers have developed expertise in diverse areas of biochemistry, molecular biology, protein science, cell biology, structural biology and analytical chemistry. This scientific environment provides the Centre with a highly qualified and experienced team capable of much more than routine operation and maintenance of sophisticated analytical equipment. Our specialists can design and optimize experimental approaches, select appropriate analytical methods, interpret complex datasets and provide scientifically grounded solutions to challenging research questions. This combination of advanced instrumentation and expert scientific support allows users to obtain not only high-quality measurements, but also meaningful biological and biochemical conclusions.

High-precision microscopy and flow cytometry The Centre provides access to advanced imaging technologies for the structural, morphological and functional characterization of biological samples, ranging from cellular and subcellular organization to quantitative analysis of individual cell populations. The Institute has a long tradition in electron microscopy. Among its historically important instruments is the Hitachi H-600 transmission electron microscope, one of the oldest continuously operating TEM instruments in Ukraine.

Hitachi H-600 transmission electron microscope

The Centre is planning its replacement with a modern Thermo Scientific Tecnai TF20 transmission electron microscope, significantly expanding capabilities for high-resolution structural analysis of biological macromolecules, cells and tissues.



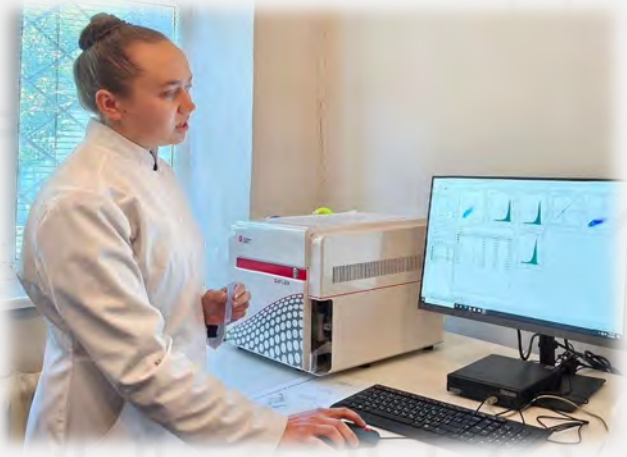
Thermo Scientific Tecnai TF20 transmission electron microscope

The microscopy platform also includes confocal laser scanning microscopy, enabling high-resolution optical imaging, three-dimensional reconstruction, colocalization studies and visualization of fluorescently labelled biological structures.

LSM 510 META confocal laser scanning microscope

Complementary flow-cytometry facilities provide rapid multiparametric analysis of individual cells, including immunophenotyping, assessment of cell populations, viability and functional cellular parameters. Together, these technologies enable researchers to move from high-resolution structural visualization to quantitative cellular analysis within a single core facility environment.

DxFLEX flow-cytometer



Chromatography and protein characterization facilities The Chromatography and Protein Facility provides an integrated platform for the separation, purification, identification and characterization of proteins and other biomolecules. The facility combines HPLC and FPLC technologies with mass spectrometry, allowing researchers to perform a complete workflow from crude biological material to highly purified and characterized protein preparations.

Akta Prime FPLC

Agilent 1100 HPLC

Depending on the research objective, the platform supports protein purification, fractionation, molecular characterization, purity assessment and analytical identification.

Voyager DE Pro mass spectrometer

A large number of requests come from physicians and patients who require amino acid analysis for diagnostic and prognostic purposes. This is particularly relevant for patients with phenylketonuria, connective tissue dysplasia, and autism spectrum disorders.

Amino acid analyzer T-339 "Mikrotekno"

In phenylketonuria, elevated phenylalanine levels in blood or urine are quantified for early diagnosis and therapy monitoring. In tissue dysplasia, abnormal amino acid profiles reveal altered protein composition, helping assess developmental or structural abnormalities. This method provides a reliable tool for both clinical diagnostics and research.

This year, it is planned to purchase a new amino acid analyzer (High-Speed Amino Acid Analyzer LA8080 AminoSAAYA), that will allow for analysis of more than 100 samples per month.

Automatic Amino Acid Analyzer AAA 500

The workflow can be completed with lyophilization, and sterilization providing stable preparations suitable for subsequent biochemical, structural or functional studies. The facility is also equipped to support gas chromatography (GC) for the analysis of volatile and derivatized compounds, metabolites, lipids and other small molecules.

Basic Research Freeze Dryer LyoQuest

'Clean room' with aseptic conditions

The combination of chromatographic separation, mass spectrometric characterization and expert biochemical interpretation creates a full-cycle analytical and preparative platform, particularly valuable for protein science, biotechnology, biomarker research and the development of biologically active substances.

7890A GC

Workshops for future scientists

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CALL FOR SCIENTIFIC COLLABORATION

Scientific institutions and organizations of the National Academy of Sciences of Ukraine that require research to be carried out using the scientific equipment of the Palladin centre of core facility, after coordinating their request with the Head of the Center, shall submit an official letter on the institution's letterhead to the Deputy Director of the Institute, specifying:

- ✓ the full names and contact telephone numbers of the staff members who will be involved in the joint work;
- ✓ the scientific task to be addressed as part of the work;
- ✓ the estimated time required to complete the work.

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