

## Laboratory of applied Medical and Clinical Biochemistry

It is the free association of workers within the department in order to extend modern analytical (mainly spectral and fluorescent) and the molecular-biochemical techniques in the field of applied biochemistry and material analysis of complex mixtures of natural and synthetic origin as well as the analysis of DNA (RNA).

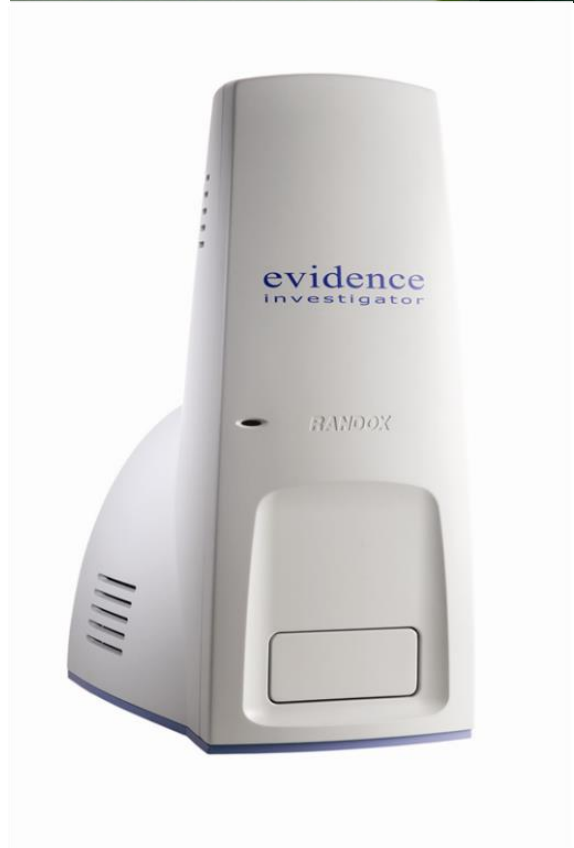
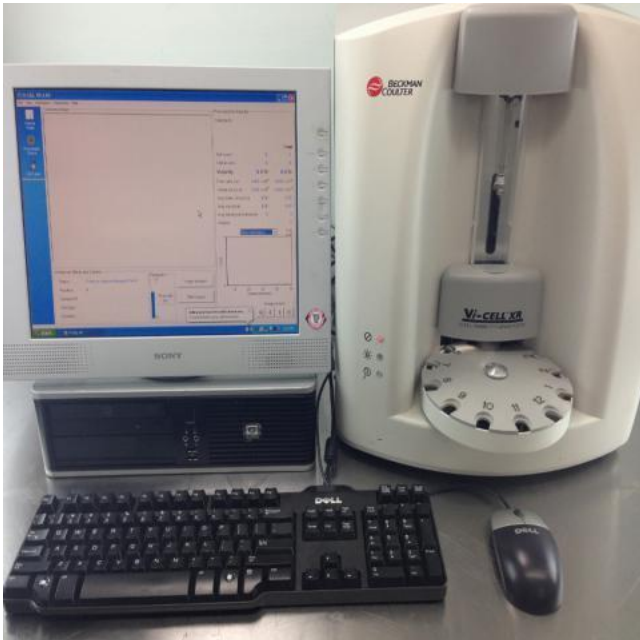
### Crucial instruments and devices:

- *Luminescent spectrophotometer Perkin Elmer LS55* (with a certificate for GLP) – equipped with fluorescent polarizers, additional device for bio kinetics, optical fiber for measuring in the exterior of the device.
- *Perkin Elmer Fluorescence Spectrometer Model 3000* – older device after extensive modernization with additional connection to a computer. By applying its own measuring and evaluation software "Spectra" for unique fluorescence techniques has become a high-tech device. It serves as additional supporting equipment.
- *Randox Monza RX* – semi-automatic biochemical analyser allows the determination of a wide spectrum of clinical and biochemical parameters in serum, plasma, urine and CSF of patients
- *Quantimetrix LipoPrint* – electrophoretic separation of lipoproteins, which allows to identify and determine the percentage of atherogenic sub fractions in patients' blood
- *Becker Coulter Optima MAX-XP* – ultracentrifuge is used for the preparation and isolation of subcellular particles, mostly mitochondria
- *HPLC (Shimadzu)* – UV/VIS and fluorescent detector
- *PCR cycler TECHNE TC/3000 (Barloworld Scientific )* – device for classic PCR
- *Real-time BIORAD CFX96* – instrument for quantifying gene expression with an additional head for measuring of temperature gradient of primers for classic PCR
- *Qiagen Rotor-Gene Q* – Real-time PCR cycler with a highly sensitive analyser of melting temperatures of oligonucleotide fragments - device for quantification of gene expression
- *ROCHE LightCycler® 480 Instrument II* – qualitative and quantitative detection of nucleic acids, mutation scanning and SNP analysis
- *Beckman Coulter Vi-Cell XR* – cell viability analyser, detection of size distribution and counting of cells
- *Randox evidence investigator-Biochip Array* – immunoassay, SNP genotyping, monitoring gene expression, detection of pathogens and mutations
- *Elisa immunoanalyser Dynex DS2* – automatic pipetting and evaluating ELISA for quantification of specifically label proteins
- *Syngene G:Box system* – detection and documentation system for the visualization and evaluation of chemiluminescent and UV signals with the possibility of record by cooled camera
- *Biorad Trans-Blot SD* – device for the transfer of DNA/RNA/proteins from the gel after separation into the NC membrane
- *Spectrophotometer NanoDrop 2000c* – spectrophotometer capable of measuring in range 190 - 840 nm, the sample volume 1-2 ml, suitable for the measurement of the isolated nucleic acid, or proteins
- *Fluorescent spectrophotometer NanoDrop 3300* – Innovative fluorescence spectrophotometer for quantification of micro volume samples, the minimum parameters: wavelength range 300 to 750 nm, absorbance measurements in small volumes (0.5 to 1 ml)
- *Hansatech Oxygraph Plus (Clark oxygen electrode)* – device for measurement of cell respiration

## Do you want to cooperate with us?

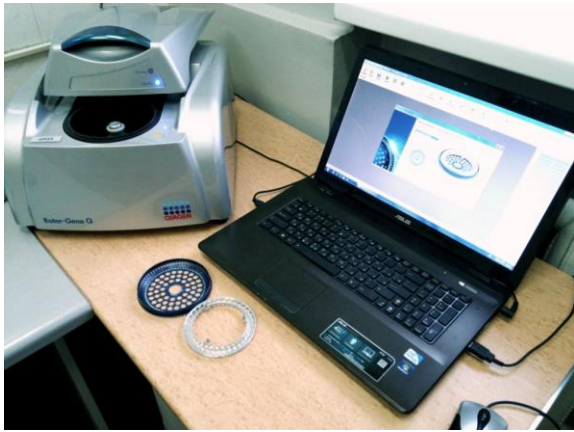
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- **Other supporting equipment** – precision analytical balance, electrophoresis apparatus, gel chromatography, spectrophotometers, pH-meters, thermostats, equipment for purified water etc.



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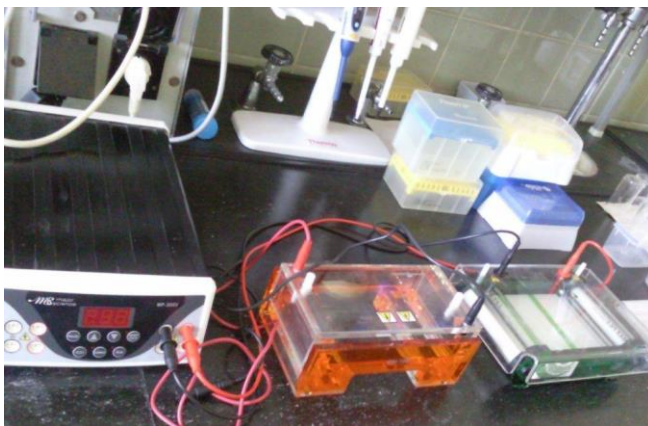
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**The laboratory offers for cooperation (for faculty and university departments):**

- Comparative analysis of biological fluids of different origins (e.g. urine, saliva, tears, sweat) on metabolomics principle (profile of present metabolites) with very fast recognition of pathological changes
- Monitor and analytically assess the biochemical changes in the composition of natural and pharmaceutical products caused, for example by aging, by the effects of storage and other conditions
- Detect the analyze on experimental level changes in gene expression of specific genes (e.g. TVM, apoptotic genes) in the biological material using real time RT-PCR
- Analyze the changes in the levels of the corresponding proteins in the samples with altered mRNA expression by Western blot and ELISA
- Perform additional analysis based on an individual assessment and consultations