

Modern equipment for your research

ABI Prism 7900 (Life Technologies)

- Optimized TaqMan QPCR assays
- TaqMan Open Arrays
- TaqMan Low-Density-Arrays or PCR plates
- MicroRNA profiling
- Gene expression profiling
- TaqMan SNP genotyping
- Digital PCR (Droplet PCR)

CEQ 8000 Capillary Sequencer (BeckmanCoulter)

- Gene sequencing for mutation and SNP detection
- Fragment analysis (STR, chimeric analysis)
- Gene expression profiling (GeXP)

Bio-Plex 100 (Bio-Rad)

- Cytokine profiling by multiplex-ELISA
- Phosphorylation status evaluation by multiplex-ELISA
- MicroRNA profiling by FlexmiR technology
- Gene expression profiling

DSX ELISA Pipetting Robot (Dynex)

- Automated processing of single parameter ELISA

Surgical Pathology Laboratory Equipment (Leica)

- Tissue embedding and paraffin block preparation
- Rotary microtome for paraffin sections
- Autostainer for histological stains
- Cryostat for cryo sections
- Light and fluorescence microscope
- Digital imaging analysis system

Gene expression analyses

(Life Technologies, BeckmanCoulter)

SNP genotyping by QPCR and sequencing

(Applied Biosystems, BeckmanCoulter)

MicroRNA profiling

(Life Technologies, Luminex)

Mitochondrial disorder diagnostics

Stem cell research

(Homing factors, Pluripotency)

Molecular virology

Cytokine profiling and phosphoproteins

(Biorad, Invitrogen)

Customer diagnostics

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Innovative Diagnostics

IKDT Innovative Diagnostics as one of the first service providers in Europe offers for customers the prompt access to three innovative research technologies – Taqman Low-Density-Arrays (Applied Biosystems) for gene expression studies or microRNA profiling, bead-based Luminex technology for multiplex measurement of cytokines, phosphoproteins, immunological profiles and microRNA sets and GeXP technology (BeckmanCoulter) for multiplex gene expression analysis by fragment length discrimination with test systems from different suppliers for research projects, clinical trials or molecular diagnostics.

Diagnostics of Mitochondrial Disorders

The mitochondria are of main importance for the energy production of our cells since they generate the energy carrier adenosine triphosphate (ATP). This is accomplished by passing electrons through a series of enzyme complexes, a process called oxidative phosphorylation. As a toxic by-product oxygen radicals are formed, known collectively as reactive oxygen species (ROS). These ROS have a high potential to damage the mitochondrial DNA (mtDNA) and, in turn, can cause mutations that lead to a declined mitochondrial energy production.

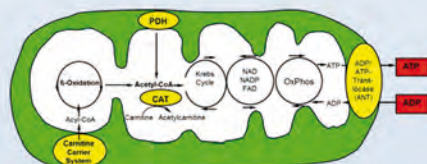


Fig. Scheme of energy metabolism in mitochondria

Until now over 150 mtDNA mutations and hundreds of mtDNA rearrangements that lead to disorders like cardiomyopathy, progressive muscle weakness, diabetes mellitus, blindness, deafness, movement disorders, dementia, epilepsy, strokes, renal dysfunction, short stature, neonatal hemochromatosis, and a variety of forms of cancer are known. The screening of these mtDNA pathogenic mutations and deletions has emerged as novel and essential molecular marker and we are now able offer the screening of main mtDNA related disorders. Established diagnostics is based on direct sequencing of mutated regions (tRNAs), QPCR based (SNPs, Common Deletion) and multiplex approach of disease-related alterations of mtDNA and gene expression profiling of mitochondrial genes.

Tools for Stem Cell Research and Therapy

Stem cell therapy is based of incorporation of own, stimulated modified or foreign cells. This research and therapeutic approach requires for the desired purpose pluripotent cells in highest purity and in optimal environment for binding and following proliferation of stem cells with a triggered potential to regenerate new cells, organs or whole organisms. We offer the multiplex measurement of homing factors, pluripotency markers in iPSC and purity testing of stem cell preparations by STR identity markers and molecular virology.

TaqMan Low-Density-Arrays (TLDA) for microRNA profiling, SNP screening and gene expression analysis

IKDT Innovative Diagnostics is offering its service on performing SNP screening, gene expression studies and microRNA profiling by validated TaqMan OpenArrays or TaqMan QPCR Low-Density-Arrays on Micro-Fluidic-Cards (Applied Biosystems) for simultaneous detection of up to 384 genes and SNPs or 750 microRNAs in a single sample, including RNA isolation, preamplification technologies and final evaluation of expression data.



Fig. Micro-Fluidic-Card (Source: Applied Biosystems®)

Advantage of TaqMan Low-Density-Arrays for Gene expression studies

- Optimized TaqMan QPCR systems for quantification of gene expression (currently available more than 4.000.000 systems)
- Sets for different species (human, mouse, rats, C. elegans)
- fast, precise, reliable

Quantitative measurement of microRNA profiles with Taqman Low-Density-Arrays

The TaqMan Array Human MicroRNA Card Set is a two card set containing a total of 384 microRNA assays per card. The OpenArray plate enables accurate quantitation of 754 human microRNAs in as little as 3 hours. Confirmation of regulated microRNAs can be performed by individual TaqMan microRNA assays (more than 1.800 systems for human).



Fig. ABI Prism 7900 and screenshot of TLDA analysis

SNP genotyping by TaqMan QPCR assays

Applying optimized TaqMan SNP Genotyping Assays (Applied Biosystems) we will be able to detect specifically SNPs in your purified genomic DNA. Today are more than 4.5 million pre-designed TaqMan SNP assays are available for most of all published SNPs in human and other species. This is an ideal method for validating and screening a low to medium number of SNP markers or few SNPs in a large number of samples.

Gene sequencing and fingerprinting for SNP screening and fragment analysis

Capillary electrophoresis for genetic analysis allows the direct read out of genomic sequence for mutation and SNP detection.

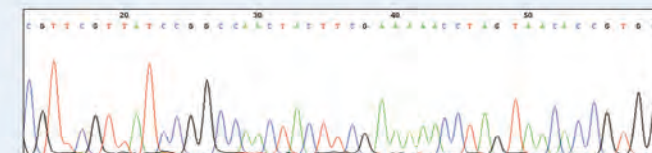


Fig. Sequence fragment Coxsackievirus

Extending the full power of this technology IKDT Innovative Diagnostics is offering additionally fingerprinting analysis for authentication and quality control of your cell lines and biological samples for your biomedical research. Adapted fragment analysis protocols can be used for gene expression studies, pathogen typing and search for genetic alterations.

Multiplex technology for protein or microRNA profiling

IKDT Innovative Diagnostics open you the direct access to Luminex's xMAP Technology. It is a bead-based multiplexing technology which allows to measure multiple parameters in one sample quickly, cost-effectively and accurately. Colored microspheres can be coupled with proteins, antibodies or nucleic acids and used in different biomedical applications.

Cytokine expression and phosphor-protein detection in patient plasma or sera

Immune response induced by injury, inflammation or infectious agents is managed by a complex network of cytokines and chemokine. Measurement of cytokine profiles is offered by conventional, single parameter ELISA or Multiplex-ELISA for various scientific questions. Upto 57 human chemokines and cytokines in one sample could be measured quantitatively by bead-based multiplex-ELISA.

Multiplexing is a optimal tool for fast evaluation of the phosphorylation status of phosphoproteins and target proteins for analysis of signaling pathways in lysates derived from cell culture or tissue samples.

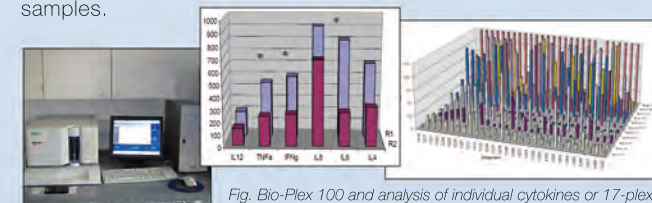


Fig. Bio-Plex 100 and analysis of individual cytokines or 17-plex

MicroRNA profiling by FlexmiR

The FlexmiR v2 multiplex microRNA assay (Luminex) is an easy-to-use, highly sensitive and specific method for microRNA detection and quantitation based on xMAP technology. Panels of upto 50 customer selected microRNAs could be detected in parallel in one sample within in 4-5 hours. MicroRNA profiling is possible in total RNA isolated from tissue, blood cells or sera.