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# PIPE Pharmaceuticals

## Technology offers:

### Assays for drug development and biological testing

These technology offers originate from the different partners of the project PIPE. If you are interested in one or more of these offers, please contact the responsible person named below. We are looking forward to provide you more detailed information.

#### ***Substances Kit for identification of catalase inhibiting substances (ZEE20051212a)***

A new method was developed for identifying potential anti-cancer drugs and simultaneously resolving their reaction mechanism. It is based on influencing the ROS- (reactive oxygen species) signal pathway as a ROS-increase leading to inactivation of the catalase of tumour cells and thus to apoptosis of these cells. Such an increase can be induced, amongst others, by inhibition of NO-dioxygenases or arginases hence a so caused increase of NO leads to an increase of the ROS-level. The developed kit can be used to identify especially such substances that inactivate dioxygenases on the surface of tumour cells and therefore lead to an increase of ROS in cells and, as a consequence, to apoptosis.

**Status:** European patent and US-patent was applied for.

#### ***Metallo-Matrix-Proteasen (MMP) for High-Throughput-Screening MMPace (2008/33)***

An innovative cell based MMP bioassay was invented, enabling high throughput screening of novel MMP inhibitors. The method is based on the heterologous expression and immobilization of biologically active forms of MMP - 2 and MMP - 9 on the cell surface of *Pichia pastoris*. The so called MMPace cells can be easily produced by fed-batch fermentation in a bioreactor or as batch culture in an Erlenmeyer flask. This procedure is very cheap. After manufacturing, the cells can be used directly just as they can be stored for several months after freeze-drying. A commercial gelatinase assay (Invitrogen) was appropriately altered and adapted to match the special requirements of a cell based system, thus providing an efficient tool for quantification of MMP inhibitor activities via a simple and standardized bioassay.

**Status:** German patent was applied for.

***MicroRNA maturation  
Assay for Screening of  
miRNA Maturation  
Inhibitors (07054 BB)***

The micro RNA maturation assay offers the opportunity to screen for small molecules influencing the dicer-mediated maturation process of miRNAs. miRNAs are molecules regulating the expression of about 30% of the human genes. The dicer protein catalyses the last step of maturation from pre-miRNA to active miRNAs. If the dicer-mediated cleavage of the individual pre-miRNA is inhibited, the miRNA remains in the immature state and is inactive. Molecules that interfere specifically in the dicer-pre-miRNA interaction can be used as new agents to modulate gene regulation. The new assay allows for screening of molecules that specifically bind to a specific pre-miRNA and prevent the dicer-mediated cleavage of the pre-miRNA. The fast assay is based on microtiter plate technology and real-time fluorescence and allows for high throughput screening of compound libraries (e.g. small molecules or RNA aptamers).

**Status:** US patent was applied for.

***Method to manipulate the  
growth of living cells via  
cell-surface-interaction  
(2006/10)***

The invention consists in a development, owing to which it is possible to affect living cells with cell surface interaction and, in particular, to induce stem cell differentiation. A high variability of the system can be attained by using magnetic substrates (thin films), which possess a certain domain structure and whose form and size is affected by external magnetic fields. The use of chip technology gives opportunity to produce substrates with variable (electro) magnetic structures, which can interact with electric current.

**Status:** European and US patent was applied for.

***Enabling Technology:  
Assessment of antigen-  
specific T cell functions  
(09038 JG)***

The presented technology offers a highly sensitive, non-radioactive method for the functional detection of antigen-specific T-lymphocytes *ex vivo*, based on Plasmid Transfection Fluorolysis (PTF) Assay. It can be applied to determine immunocompetence for specific antigens during vaccination and transplantation, immunosuppression of autoimmune patients or clinical studies of novel antigens and their epitopes.

**Status:** An European patent application was filed.

***A novel method for detection and quantitative identification of genetic materials (Lufa fE)***

The newly developed method for genetic analysis in a qualitative as well as quantitative manner is based on biomolecular interaction analysis. Therefore, a nucleotide sequence is immobilised on a sensor chip. By blending the sample with a nucleotide sequence complementary to the one, fixed on the chip that binds to the present DNA molecules, it becomes possible to detect the DNA molecules. The procedure carries an amount of advantages over the PCR-methods so far used: Only small volumes of samples are needed, they don't need to be marked (as necessary in the PCR), and the entire process grows shorter. The greatest benefit is that any biological material can be analysed.

**Status:** European patent has been granted.

***Nucleic fluorescent probes for the specific detection of DNA (09060JG)***

The present invention enables an easy-to-use assay with numerous possible applications, for instance in genetic diagnostics, disease predisposition or pharmacogenetics. Therefore, nucleoside analogues modified with fluorescent artificial nucleobases are incorporated into DNA or RNA in place of a single native base. As the probe can be used without prior purification of nucleic acids it works very well for point-of-care diagnostics.

**Status:** An European application was applied for.

***Screening method for agents suitable for the therapy of Alzheimer's Disease (07081RK)***

So far, only symptomatic but no causative therapies for the treatment of Alzheimer's disease are available. The present invention offers a screening method that enables the detection of novel drug candidates for the prophylaxis und causative therapy of Alzheimer's disease. The identified drugs achieve that less Amyloid- $\beta$ -peptide, which is in the form of senile plaques the main cause of the disease, is produced. Furthermore, the invention allows diagnosing Alzheimer's disease already at an early stage of disease. As the method only consist in screening of blood samples, an easy and fast detection kit can be given.

**Status:** An international patent application was applied for.

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