# Customer Statements

## Sanofi R&D Drug Discovery

**Dr. Alexey Rak**

*"We are routinely assessing affinity of interaction for small molecules and biologics project where NanoTemper Technologie's Microscale Thermophoresis is taking the most modern part in our department since recently. It has been confirmed to be a valuable technology for small molecules-protein and protein-protein interactions characterization as well as for protein aggregation concentration determination. We find very good agreement with other technologies like Surface Plasmon Resonance (SPR) and Isothermal Titration Calorimetry (ITC) and we appreciate this new technology due to the extremely low protein consumption and relatively short time required for the assay setup. NanoTemper customer support has been recognized as a key factor to get acquainted with the new technology. We like to deploy new numbers of gradually growing applications based on MST technologies and interact with highly dynamic and deeply scientifically oriented NanoTemper Technologies Company."*

Dr. Alexey Rak

Head of Structural biology - BBC, SDI Paris/LGCR, Sanofi R&D, France.

*www.sanofi.com*

## Structure Based Drug Design

**Prof. Dr. Gerhard Klebe**

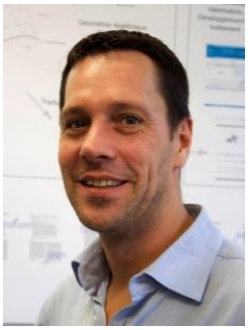
*"The main focus of our work lies on structure based-drug design. In this context, we study the interaction of the bacterial tRNA modifying enzyme tRNA-guanine transglycosylase (Tgt) with small molecule inhibitors and with tRNA. Although we were unable to measure any interaction of this enzyme with its small molecule substrates guanine and 7-deaza-7-aminomethyl guanine via MST, a strong influence on the thermophoretic behaviour of Tgt was noticed upon binding of the Macromolecular tRNA substrate allowing determination of the respective Kd value.* ***In addition, MST yielded Kd values for lin-benzoguanine-based Tgt inhibitors (300-500 Da), which were excellently consistent with Ki values previously determined in enzyme kinetic studies.*** *Accordingly, this fast and easy to use method provides a highly welcome alternative to the radioactive enzyme assay we used so far to figure out binding affinities of Tgt inhibitors. Furthermore, we investigate the interaction of a chaperone of the Shigella type III secretion system with its protein interaction partners or rather with synthetic peptides thereof to identify the respective recognition motifs.* ***Via MST, we determined with low amounts of protein material Kd values which were in nearly perfect agreement with those measured via isothermal titration calorimetry.****"*

Prof. Dr. Gerhard Klebe

Institut für Pharmazeutische Chemie, Philipps-Universität Marburg, Germany

*http://www.agklebe.de/*

## Small Non-coding RNA in Epigenomic Regulation



**Dr. Arndt Benecke**

*"We use systems biology to study transcription regulatory phenomena on a genome-wide scale in the context of host-pathogen interactions and cancer. Microscale Thermophoresis (MST) thereby has been extremely useful to rapidlyquantify relevant protein-nucleic acid and protein-protein interactions directly in cellular lysates without going through the hassles of purification."*

Dr. Arndt Benecke

Centre National de la Recherche Scientifique, Paris, France

*http://seg.ihes.fr*

## Specificity in Tyrosin Kinase-mediated Signal Transduction

**Prof. John E. Ladbury**

*"In my group we explore the structural, biophysical, and cellular outcomes of protein complex formation at membrane-bound receptors.*
*We use Microscale Thermophoresis (MST) in addition to other methods including isothermal titration calorimetry and surface plasmon resonance and find a good agreement between the methods. We are very pleased with the low material consumption, short measurement times and broad application range of MST."*

Prof. John E. Ladbury

Department of Biochemistry and Molecular Biology
The University of Texas M. D. Anderson Cancer Center, Houston, TX, USA

*http://faculty.mdanderson.org/John_Ladbury*

## Structural Molecular Biology of Bacterial Cell Surfaces

**Prof. Han Remaut**

*"We study the structural and molecular biology of bacterial adhesins and cell-surface filaments with respect to their function in bacterial pathogenesis, with the ultimate aim of developing a new generation of virulence-targeted antimicrobials.*
*MST really is opening up the easy determination of some Kd's that were hard to get to with other methods. So far, we measured protein-protein, protein-glycan, protein-small compound and protein-cofactor interactions with the Monolith NT.115."*

Prof. Han Remaut

VIB Laboratory of Structural and Molecular Microbiology
Vrije Universiteit Brussel, Belgium

*http://www.vib.be/en/research/scientists/Pages/Han-Remaut-Lab.aspx*

## Virus Infection

**Dr. Maria G. Vizoso Pinto**

*"Our lab is developing diagnostic tools based on protein biochips and is studying the basic mechanisms underlying herpes virus infections" We are using MST for elucidating the function of viral proteins and its interaction with other viral and host cell proteins.*

*MST is simple to use and was quickly established in our lab. In particular we do appreciate the low instrument, consumables and maintenance costs associated with this new technology"*

Dr. Maria G. Vizoso Pinto

Max-von-Pettenkofer Institute, Munich, Germany

*www.mvp.uni-muenchen.de/virologie-ag2-forschung.html*

## Signal Transduction – targeting Rho family GTPases

**Yi Zheng, PhD**

*"We are studying the molecular mechanisms of signal transduction processes involving Rho GTPases and are developing small molecule inhibitors and other strategies that interfere with specific Rho protein functions in leukemia, lymphoma and lung cancer*
*We are very enthusiastic about MST as it quickly enabled us to measure protein:protein and protein:small molecule interactions that have been difficult to detect and quantify with standard biomolecule interaction technologies in the past years. MST provides us with a unique tool to validate the lead inhibitors that bind to specific sites of Rho GTPases or their regulators/effectors "*

Yi Zheng, PhD

Director, Division of Experimental Hematology and Cancer Biology;
Katherine Stewart Waters Endowed Chair, University of Cincinnati College of Medicine, USA

*www.cincinnatichildrens.org/svc/find-professional/z/yi-zheng.htm*

## Functionality of Polysaccharides

**Prof. Jens Stougaard**

*"We are interested in understanding the interactions between cells and organisms by investigating the role of polysaccharides exposed on cell surfaces and secreted polysaccharide signal molecules. We are applying MST to determine structural requirements for recognition of complex polysaccharides and the role of ligand-receptor interactions in the relationships between different cells and organisms.*
*MST is very useful for my lab since it allows to measure interactions in solution even in complex samples of membrane proteins. Also the small amount of sample material needed and the broad range of applications are very advantageous."*

Prof. Jens Stougaard

Director of CARB, Department of Molecular Biology
Laboratory of Gene Expression, Aarhus University, Denmark

*http://www.carb.dk/*

## Structure and Function of Membrane Proteins

**Prof. Dr. Joachim Heberle**

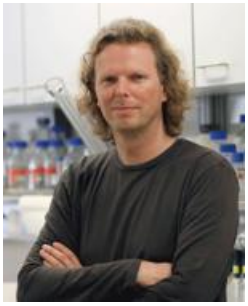
*"My lab focuses on the elucidation of the structure and function of membrane proteins. This topic includes the investigation of protein-protein and protein-substrate interactions. We are employing MST in binding studies of membrane sensors to their transducers as well as soluble transcription factors to DNA. We also plan for investigations of receptor – ligand interactions with this exciting new technique. MST turned out to be an extremely useful method in our lab to determine binding constants. It is advantageous that the fast and handy experiments require only few amounts of protein."*

Prof. Dr. Joachim Heberle

Exp. Molecular Biophysics, FU Berlin, Germany

*http://www.physik.fu-berlin.de/en/einrichtungen/ag/ag-heberle/arbeitsgruppe/heberle/index.html*

## Chromatin Dynamics and Nuclear Architecture



**Prof. Gernot Längst**

*"Our lab focuses on the mechanisms and organization of DNA packaging inside the cell nucleus. We study the biochemical properties of molecular machines, the chromatin remodelers that regulate DNA accessibility and switch between 'on' and 'off' states of genes.*
*We are using MST for studying the activity of chromatin remodeling enzymes and to quantify their affinities towards DNA, RNA and other proteins.*
*MST is a big step forward towards quantitative biochemistry. MST is simple to use and was quickly established in our lab. It is a good alternative to the traditional electrophoretic mobility shift assays".*

Prof. Dr. Gernot Längst

Biochemistry III, University of Regensburg, Germany

*www.uni-regensburg.de/laengst*

## Epigenetics – Histone Code

**Prof. Axel Imhof**

*"We are interested in the basic mechanisms in epigenetics which define and maintain the histone code and are using MST to measure the binding of "reader"-proteins to modified histone peptides as well as the activity and inhibition of* "writer" enzymes including kinases, demethylases and methylases.
*The new MST technology is easy to use and a good alternative to our standard enzymatic assays which are radioactive and measure endpoints only. It allows us to easily measure affinities for protein-peptide interactions in solution"*

Prof. Dr. Axel Imhof

Head of the Chromatin Modification Group, Adolf Butenand Institute, LMU, Munich, Germany

*www.molekularbiologie.abi.med.uni-muenchen.de/ueber_uns/imhof/projects/index.html*

## Matrix Signaling in Inflammation and Fibrosis

"*The work of our group gave rise to the novel concept that under certain conditions matrix components may act as endogenous "danger" signals, which are recognized by innate immunity receptors, and are capable to trigger an inflammatory response reaction.*
*We are using MST to measure the interactions of endogenous and in vitro mutagenized proteoglycans of the extracellular matrix with their receptors and are very satisfied with the results obtained so far. The affinities are consistent with the biological readouts and confirm previous results gained with immunprecipitation and binding assays.*
*MST is a new technology we can definitely recommend for obtaining robust quantitative affinity data.*"

Prof. Dr. med. Liliana Schaefer
Pharmazentrum/ZAFES, Frankfurt a.M., Germany

*www.pzf.de/allg/research/schaefer.php*

## miRNA Biogenesis in Drosophila

**Prof. Dr. Klaus Förstemann**

*"We are studying the processing of microRNA precursors In Drosophila and are using MST to measure the binding of nucleolytic Enzymes and their specificity factors to RNA substrates.*
*The small amount of protein sample needed and the much faster measuring time compared with e.g. gel-shift assays are particular strengths of this new technique. It enables us to ask questions that we could not address before."*

Prof. Dr. Klaus Förstemann

Gene Center of the LMU, Munich, Germany

## Membrane Vesicle Interaction

**Prof. Dr. Andreas Janshoff**

"*Membrane interaction and fusion plays a fundamental role in many cellular processes such as intracellular trafficking, fertilization, tissue formation or viral infection. With the new MST technology we were able to measure the interaction of membrane vesicles, mediated by coiled coil-forming peptides. The technology requires only little sample material and is enabling for this type of experiments"*

Prof. Dr. Andreas Janshoff

Dept. of Physical Chemistry. University of Göttingen, Germany

## Synthetic Biomolecules

**Prof. Dr. Ulf Diederichsen**

*"We are interested in the biophysical properties of soluble and membrane bound biomolecules and are using MST to measure binding affinities and complex formation.*
*MST is straightforward and fits well in our technology portfolio to cover a broad spectrum of synthetic biomolecules including proteins, peptides and nucleic acids"*

Prof. Dr. Ulf Diederichsen

Institute for Organic and Biomolecular Chemistry, Georg-August-Universität Göttingen, Germany

*www.diederichsen.chemie.uni-goettingen.de/*

## Drug Discovery Service

**Dr. Ismail Moarefi**

*“Together with Nanotemper Technologies we have optimized Microscale Thermophoresis for fragment screening applications which are difficult to access with standard technologies. Access to accurate information on fragment KD, binding mode and aggregation behaviour of compounds enable informed decision making. Together with a proprietary fragment collection, this technology forms now the core of the CRELUX fragment based drug discovery service offerings.“*

Dr. Ismail Moarefi

Chief Scientific Officer of CRELUX in Martinsried, Germany.

*www.crelux.com/HTMLs/Crystal_Chronicle_23/Crystal_Chronicle_23.html*