

Media Release

[Proteomic Profiling of 3D Liver Microtissues Provides New Insight Into Acetaminophen Toxicity](#)

Schlieren-Zurich, Switzerland March 10, 2015 – InSphero, Biognosys paper reveals relevant proteomic changes in liver at sub-toxic doses.

InSphero AG, a leading supplier of 3D microtissues for in vitro safety and efficacy testing, and Biognosys AG, a leader in next-generation proteomics have teamed up to publish research in Molecular & Cellular Proteomics entitled "[Extending the limits of quantitative proteome profiling with data-independent acquisition and application to acetaminophen treated 3D liver microtissues](#)". The paper represents the latest milestone in characterizing InSphero's 3D microtissues as a superior model system for in vitro toxicity testing. The study was co-authored by researchers from Purdue University and ETH Zurich, and will be presented at the upcoming [Society of Toxicology](#) meeting in San Diego, California.

In the study, proteomic changes in acetaminophen (APAP)-treated [3D InSight™ Human Liver Microtissues](#) were quantified with [HRM-MS™](#), a next-generation proteomics technology developed by Biognosys that is based on data-independent acquisition (DIA) performed on new generation mass spectrometric systems. The abundance of 2,830 proteins was quantified over an APAP physiological concentration range with a starting material of 12,000 cells per sample. Proteins from all three phases of drug metabolism were identified as regulated. Moreover, for the first time the exact NAPQI-cysteine adduct sites were mapped on proteins possibly relevant for the toxicity of APAP.

Dr. Jens M. Kelm, CSO and co-founder of InSphero stated "the combination of our organotypic 3D microtissue model system and the HRM profiling technology proved to be a powerful approach for discovery experiments, revealing novel modes-of-action, toxicity upon drug treatment, and new biomarkers. HRM-MS makes yet another useful endpoint available to our customers for extracting high-value information from our microtissues, particularly global proteomic changes in response to drug treatment."

Dr. Kelm noted the enhanced longevity and more native metabolic phenotype of 3D microtissues made them suitable for such long-term, repeat-dose toxicity studies, and importantly, the HRM approach was able to identify and quantify for the first time human protein targets of drug-adducts in sub-toxic APAP concentrations. InSphero's 3D InSight™ Human Liver Microtissues are established using primary human hepatocytes (PHH) and other non-hepatocyte liver cells using a proprietary process and the company's hanging drop platform.

For more information about InSphero, visit www.insphero.com.

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About InSphero

InSphero is a leading supplier of organotypic, biological in vitro 3D microtissues for highly predictive drug testing. The company, headquartered in Zurich, Switzerland, with subsidiaries in the USA and in Germany, currently counts all of the top ten global pharmaceutical and cosmetics companies as customers. InSphero 3D Insight™ Microtissues enable more biologically relevant in vitro applications in efficacy and toxicology. The spin-off company of the Swiss Federal Institute of Technology (ETH) Zurich and the University Zurich has been recognized for its scientific and commercial achievements with a number of national and international awards, including being named the #1 Swiss Startup and ACES Award Winner for 2014. InSphero is certified to the ISO 9001:2008 standard for its Quality Management System.

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About Biognosys

Biognosys is the leading proteomics company offering services and products for highly multiplexed protein quantification. Founded in 2008 as a spin-off from the lab of proteomics pioneer Ruedi Aebersold at ETH Zurich, Biognosys is dedicated to transform life science with superior technology and software.

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