Newsletter

4-2024

About this edition:

With 2024 ending soon, we want to thank our customers for their confidence in our products and services and highlight this year's research papers, supported by our QconCATs.

It has been a busy year for us, and our new LC-MS/MS system, and we will go on a Holiday Break (Dec. 23rd, 2024 – Jan. 6th, 2025) to re-charge our batteries.

Watch out for special issues and promotions next year, as we will celebrate 20 years of QconCATs.

Research Highlights

We are always proud to see how our customers apply our QconCAT technology.

Here are the highlights of 2024:

OXFORD ACADEMIC

Effects of lysine deacetylase inhibitor treatment on LPS responses of alveolar-like macrophages

Russo S, Kwiatkowski M, Wolters JC, Gerding A, Hermans J, Govorukhina N, Bischoff R, Melgert BN.
J Leukoc Biol. 2024 Feb 23;115(3):435-449.

Russo et al., investigated if the anti-inflammatory effect of lysine deacetylase inhibitors correlated with metabolic changes in macrophages. Though a first exploratory proteome analysis indicated changes in metabolism of alveolar-like macrophages by inhibition of LPS and/or KDAC, a targeted proteomic analysis of 59 proteins, encoded on QconCATs from PolyQuant, involved in the major metabolic pathways showed no significant alterations of their proteins levels. However, their data indicates that protein ubiquitination may be the driver of the anti-inflammatory effects of lysine deacetylase inhibitors, requiring further studies.

Circulation: Genomic and Precision Medicine

Novel Multiplexed Plasma Biomarker Panel Has Diagnostic and Prognostic Potential in Children With Hypertrophic Cardiomyopathy

Captur G, Doykov I, Chung SC, Field E, Barnes A, Zhang E, Heenan I, Norrish G, Moon JC, Elliott PM, Heywood WE, Mills K, Kaski JP.
Circ Genom Precis Med. 2024 Jun;17(3).

In their study, Captur et al. examined if a previously published biomarker panel for diagnosis of Hypertrophic Cardiomyopathy (HCM) through adult plasma proteomics could also be used for pediatric HCM. They spiked their plasma samples with a QconCAT reference standard from PolyQuant and used targeted liquid chromatography-tandem/mass spectrometry-(LC-MS/MS) to confirm the diagnostic 7-biomarker proteomics panel and to identify a 4-biomarker prognostic panel for determining the risk of sudden cardiac death (SCD).

Journal of proteome research

Multiplex Assay to Determine Acute Phase Proteins in Modified Live PRRSV Vaccinated Pigs

Tor M, Fraile L, Vilaró F, Pena RN.
J Proteome Res. 2024 Aug 2;23(8):3515-3523.

In their study, Marc Tor et al., examined the effect of vaccination against porcine reproductive and respiratory syndrome virus (PRRSV) in pigs by monitoring the levels of five acute phase proteins (APP). As antibodies directed against these proteins are often not pig-specific, they developed an alternative method, using a QconCAT from PolyQuant as reference standard for targeted mass spectrometry. This enabled them to quantify several different isoforms of APP and to detect pigs with positive viremia independent of classical immunoenzymatic or spectrophotometric assays.

BCP Biochemical Pharmacology

Tankyrase1/2 inhibitor XAV-939 reverts EMT and suggests that PARylation partially regulates aerobic activities in human hepatocytes and HepG2 cells

De Vos K, Mavrogiannis A, Wolters JC, Schlenner S, Wierda K, Cortés Calabuig Á, Chinnaraj R, Dermesrobian V, Armoudjian Y, Jacquemyn M, Corthout N, Daelemans D, Annaert P.
Biochem Pharmacol. 2024 Sep;227:116445.

In their study, De Vos et al aimed at improving hepatic *in vitro* models by using the small molecule XAV-939 and testing the impact on mitochondrial function and CYP405-mediated metabolism. They identified downstream actors at the protein level and discovered novel PARylation targets. In their study, they performed both untargeted proteomics and targeted proteomics, supported by QconCATs.

ASPET | DRUG METABOLISM AND DISPOSITION

Absolute Membrane Protein Abundance of P-gp, BCRP and MRPs in Term Human Placenta Tissue and Commonly Used Cell Systems: Application in PBPK Modeling of Placental Drug Disposition

Al-Majdoub ZM, Freriksen JJM, Colbers A, Heuvel JVD, Koenderink J, Abduljalil K, Achour B, Barber J, Greupink R, Rostami-Hodjegan A.
Drug Metab Dispos. 2024 Oct 21.

Al-Majdoub et al., examined the impact of placental transporters function on drug disposition. They used a QconCAT-based proteomic assay to measure the abundance of several efflux transporters (P-gp, BCRP, MRPs), including transporters that had not been measured before (i.e., MRPs) in placenta samples and associated cell lines. The abundance data were used in a PBPK model for IVIVE-based prediction of fetal drug exposure.