

DRUG DELIVERY EXPERTS AND PROTEA BIOSCIENCES AT PEGS BOSTON 2017

San Diego, CA – May 2, 17 Drug Delivery Experts and Protea Biosciences to present a poster at the 13th Annual Protein Engineering Summit in Boston MA on May 1-5, 2017. The poster, entitled “Sequencing of Polyethylene Glycol Conjugation Site on a Protein by High-Resolution Mass Spectrometry”, will be presented at Session A.

This work represents a collaboration between Drug Delivery Experts and Protea Biosciences to determine the specific site of PEG attachment using HPLC with high-resolution mass spectrometric analysis. DDE designs PEG-protein conjugates to provide prolonged half-lives and improved efficacy due to the ability of the PEG moiety to reduce renal clearance, improve stability to proteases, and alter immunogenicity for polypeptide therapeutics. Site-specific PEGylation is essential to produce a homogenous biotherapeutic agent. For this project, DDE conjugated 20KDa PEG to a defined site and provided the purified PEGylated protein as a substrate for demonstration of a new methodology to unequivocally determine the site of PEGylation. Protea Biosciences utilized high resolution mass spectrometry analysis of PEG conjugates by in-source collision induced dissociation and higher energy collisional dissociation mass spectrometry to sequence the tryptic peptide and determine the definitive location of PEG conjugation.

About Drug Delivery Experts

Drug Delivery Experts (DDE) is a drug product development firm that specializes in the research, development, and translation of drug delivery systems from preclinical to clinical development and commercialization. DDE has specific expertise with peptides, proteins, oligonucleotides, formulation, process, and development of combination drug products. Leveraging over 200 years of pharmaceutical development experience, the team at DDE has worked across nearly all routes of administration, from injection devices to non-invasive delivery technologies, at a broad range of companies. Drug Delivery Experts brings a unique perspective to drug product programs and understands the value proposition for each stakeholder, from startup company, delivery technology provider, to pharmaceutical company, along with investors and board members. Christopher A. Rhodes, Ph.D., founded the DDE in 2014 after his 22-year tenure in pharmaceutical, biotechnology, and drug delivery industries, translating delivery technologies from R&D to product development. Drug Delivery Experts is located in San Diego, California.

About Protea Biosciences

Protea Biosciences is an innovative bioanalytics technology organization offering Mass Spectrometry Imaging and LC-MS services focused on protein characterization, proteomics, metabolomics, and small molecule analysis. Using state-of-the-art instrumentation including high resolution, accurate mass (HRAM) mass spectrometry systems, MALDI, and the LAESI[®]DP-1000 Direct Ionization System, Protea supports researchers' projects by providing information to accelerate drug discovery and development. Protea's infrastructure and workflows enable the identification, quantification, characterization, and spatial distribution of biomolecules such as proteins, metabolites, and lipids from biological matrices. Protea's analyses include proprietary sample preparation methods, method



development, and data analysis, with applications in the fields of pharmaceutical, clinical, academic, and industrial research. Protea also offers a line of mass spectrometry standards and protein sample preparation products, which include Progenta Acid Labile Surfactants, Ultrapure MALDI Matrices and mass spec grade protein standards. Protea is located in Morgantown, West Virginia.