Leveraging Next-Generation Protein Sequencing™ in the CRO Setting with Platinum®

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Ozan Fidan, PhD, is the founder and CEO of Gipfel Life Sciences, a new contract research organization (CRO) supporting the biopharmaceutical industry. He has integrated Quantum-Si's Platinum® Next-Generation Protein Sequencer™ into his lab to enhance Gipfel's capabilities in a wide range of applications, including identifying novel biomarkers, uncovering deeper insights into non-druggable disease pathways, and phenotyping neglected diseases. We recently spoke with Dr. Ozan about his plans for Platinum.

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Q: How do you use Quantum-Si's Platinum benchtop Next-Generation Protein Sequencer™ as part of the discovery services you provide to clients?

A: Biomarker identification is a core offering, and we plan to utilize the technology to ensure batch-to-batch consistency of recombinant antibodies for our biopharmaceutical clients. We will also be providing assessments of *in vivo* stability for recombinant antibodies. This area is often overlooked; when people think of stability, they typically focus on shelf stability. However, post-translational modifications and *in vivo* stability are crucial, especially when dealing with bispecific antibodies and antibody-drug conjugates.

One very interesting area we are working in, and for which we believe Platinum may prove to be advantageous, is the field of allergo-oncology. Allergo-oncology is an emerging field of study that explores the interactions between allergies (immune responses to allergens) and cancer. It focuses on how the immune mechanisms involved in allergic reactions, such as heightened immune surveillance and inflammation, might influence cancer development, progression, or suppression. Some research in this field suggests that people with certain allergies

may have a reduced risk of developing specific types of cancer, while others may experience increased risks, depending on the immune responses involved. The goal of allergo-oncology is to understand these relationships better and potentially leverage allergic mechanisms or immune pathways in novel cancer therapies.

We also plan to use the system for immunopeptidomics studies in which the peptides presented by major histocompatibility complex (MHC) molecules on the cell surface are identified and quantified. These MHC-associated antigens are recognized by T cells and trigger an immune response. The ultimate goal for one of our initial clients is to phenotype allergy using immunopeptides and then identify a possible target for recombinant antibody development for therapeutic purposes. Currently, liquid chromatography and tandem mass spectrometry (LC-MS/MS) are used for immunopeptidomics analyses, which can be time-consuming and resource intensive.

We will also be working with a client that produces human platelet lysate for use in culturing CAR T cells and stem cells. This project is focused on identifying which peptides are present in the formulations to help ensure batch-to-batch consistency of various media products. Interestingly, platelet lysate has a wound-healing effect, and the identification of possible transcription factors in lysate is another application for Platinum.

Q: What advantages do you feel Next-Gen Protein Sequencing offers?

A: The Platinum instrument is very user-friendly. The experimental steps are easy to handle. With appropriate enrichment, we can work with very low levels of proteins in samples. Another motivating factor for integrating the NGPS platform is the cloud-based technology. I travel quite a bit, but I can still access the data anywhere in the world, which is crucial for our business.

Q: As a new user of the NGPS platform, how would you describe your experience with the Quantum-Si's technical support teams?

A: The application scientists, the sales team, and the post-sale service are all excellent. I'd rate them a ten out of ten. I cannot say enough about them. They have been great in helping us understand what we can do with the technology and how we can use it to expand our CRO services.

Q: If a prospective customer is interested in exploring Next-Generation Protein Sequencing for their research, how can they contact Gipfel for services?

A: www.GipfelLifeSciences.com