Proteomics at Scale – Actionable Insights to Drug Discovery & Translational Research

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Proteomics as a discipline has steadily matured over the past 25+ years. More recently, proteomics is enjoying a renaissance of sorts with wide adoption and embrace of various methodologies that include reagent-based profiling approaches (antibodies / aptamers-based profiling techniques) in addition to mass spectrometry. Like all technologies, mass spectrometry based proteomics has been through it's own Gartner hype cycle over the past ~25 years. As LC-MS platforms and technologies have matured we are certainly on the plateau of productivity and continue to rapidly build on the successes.

Even with this advances the discipline is still not quite as mature as genomics. There are still barriers (technical, training & others) that curtail the wide adoption across the biological and biopharma research continuum. However, the significant value proteomics investigations bring when performed with appropriate rigor is undeniable.

The objective of this presentation is to share how transformative technological leaps in LC-MS and robust deep learning data analytics pipelines when coupled with experimental scale / rigor provides a vigorous framework to deliver "just-in-time" actionable insights to drug discovery & translational research. The technological advances are awe inspiring in and of themselves. However, coupling these advances to address complex questions and generate new hypotheses at the intersection of disease pathophysiology & biopharma research brings into focus the indelible impact of proteomics.

Borrowing from the famous quote by Winston Churchill … "…but it is perhaps the end of the beginning" of what is possible with Proteomics.

Biography:

Ashok joined Bristol-Myers Squibb Company in 1998 and is currently the Scientific Director & Head of Proteomics in the Research & Early Development organization. He also manages and leads the Genetically Modified Animal (GMA) Alliances group. The GMA group partners with scientific CROs to develop and deliver genetic animal models to all disease areas across the BMS research organization.

Ashok earned his Bachelor's (B.Sc. Chemistry) & Master's (M.Sc. Physical Chemistry) degrees from University of Mumbai. He received his Ph.D. in Analytical Chemistry and trained under Prof. Vicki Wysocki at Virginia Commonwealth University. The work led to the development and formulation of the "Mobile Proton Model" which elucidates peptide ion fragmentation mechanisms in the gas-phase. As Howard Hughes post-doctoral fellow at University of Washington, he trained under Prof. Alexander (Sasha) Rudensky (Member Nat. Acad. Sci.) and Prof. John Yates III (Scripps La Jolla) to profile the immunopeptidome, particularly MHC class II peptide presentation on antigen presenting cells.

During his extended tenure at Bristol-Myers Squibb, he has been singularly focused on innovating, developing, and applying proteomics methodologies to address challenging questions at the intersection of disease pathophysiology and bio-pharmaceutical research. He has served as an ad hoc member for several years on the NIH as well as NIAA review panels. He continues to be a peer reviewer for several scientific journals.

His current research interests include applying Next-Generation Proteomics methodologies to the rapidly maturing novel therapeutic modality of Targeted Protein Degradation. This innovative modality garners the potential to unlock and exponentially expand the druggable proteome bringing novel therapies to patients with great unmet medical need. He and his group continue to apply proteomics methodologies to develop innovative biomarker hypothesis for therapeutic targets across pathologies ranging from cancer to auto immune disorders to heart failure.

He has authored / co-authored over 46 peer reviewed scientific publications (includes three book chapters & Ph.D. thesis) and numerous (>60) scientific presentations. He has three issued US Patents each with foreign equivalents.