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Applying systems biology and predictive genomic analytics on patients with lung squamous cell carcinoma and RNA-Seq gene expression

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The future of healthcare will be transformed by flexible frameworks designed to discover complex signals in rich datasets through the merger of predictive genomic analytics and systems biology. Smart machine learning algorithms designed to incorporate information about molecular and cellular systems can revolutionize our ability to discover complex hierarchical genomic effects driving disease pathogenesis or severity and treatment response patterns. To meet modern research demands, Precision for Medicine has engineered PATH™ to provide a secure, scalable, cloud-based solution for predictive genomic analytics and an intuitive graphical user interface for interactive data visualization and exploration. This case study will show the power of using a novel combination of machine learning algorithms with a systems biology based approach for identifying genes and the subsequent exonic regions driving prognosis for patients with lung squamous cell carcinoma (SQCC). PATH™ will be applied on 553 lung SQCC patients with survival outcomes and RNA-Seq exon-level mRNA expression data obtained from The Cancer Genome Atlas. This webinar will focus on two of the PATH™ Analytics Platform's suites:

- PATH™ Select: A novel predictive analytics engine, built on a combination of machine learning algorithms fused with a systems biology approach provides for high-throughput feature selection
- PATH™ Explore: A secure, web based data visualization suite enables real-time, “what-if” data exploration to accelerate research and support decision making

Big data has the potential to enable a precision medicine focused drug development process, resulting in increased benefit-risk profiles for patients with a particular biomarker profile and smaller, shorter clinical trials. Navigating the process from biomarker discovery to a companion or complementary diagnostic requires that researchers get the support necessary to make sense of big data being generated in NGS pipelines. Ultimately, it will be demonstrated how a cloud-based solution powered by a predictive analytics engine and an intuitive, user interface driven by interactive graphics can deliver to the needs of precision medicine programs.

Biography

Scott Marshall, PhD, is Managing Director of Biomarker and IVD Analytics at Precision for Medicine. He has extensive industry experience in a leadership role, consulting in the pharmaceutical, biotechnology, and biodefense industries, specializing in the analytical component of personalized medicine, biomarker R&D, analytical methods, and strategy development, as well as medical device/diagnostic development.

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