Healthcare Tech OUTLOOK TOP 10
PRECISION MEDICINE
SOLUTION PROVIDERS - 2021

SEngine Precision Medicine

Empowering Personalized Cancer Treatment with Functional Cancer Organoids Testing

Robust and validated biomarkers are needed to guide the development of safer and targeted therapies for various chronic diseases. While they have been impactful in drug discovery and development, the process of identifying and validating disease-specific biomarkers has been quite challenging. In diseases like cancer, genomic biomarkers allow oncologists to decide the most effective treatment for the patient. However, in the absence of them, a treatment that is led by functional organoid testing helps oncologists prescribe a personalized treatment model for each cancer patient.

Dr. Astrid Margossian,
Chief Medical Officer at Sengine

Employing the 3D organoid technology and AI for accelerated drug development is Seattle-based biotechnology company SEngine Precision Medicine, empowering patients and oncologists with more informed treatment options. SEngine's high-throughput technology could test more than 200 cancer drugs against a patient's unique tumor organoid outside the body. What's a patient derived organoid? It is a three-dimensional structure derived from live tumor cells obtained from a biopsy or surgical specimen that maintains the functionality of the original tumor. The results decode the most effective and least toxic treatment options that DNA sequencing alone cannot reveal. The AI-optimized platform also leverages the aggregated, anonymized test results to develop new cancer-fighting drugs.

"At SEngine Precision Medicine, we remain committed to our mission of bringing hope and effective treatments to cancer patients by identifying the right drug for the right patient," says Dr. Astrid Margossian MD PhD, CMO at SEngine Precision Medicine.

Personalized medicine begins with the recognition that no two tumors are the same and that each tumor is distinct and must be treated accordingly. To this end, Dr. Carla Grandori MD PhD, SEngine's CEO, has developed the PARIS® Test to find the hidden vulnerabilities of the patient's cancer. The biotechnology company employs high-throughput screening to test selected drugs on cancer cells extracted from tumors and combine the results with advanced bioinformatics to prioritize drugs that match each tumor profile. When compared to DNA sequencing, which only predicts effective therapy 15 percent of the time, the PARIS® Test gives effective treatment options for solid tumors up to 80 percent of the time.

The published presentation at the ASCO 2021 summarizes the strong clinical value of the PARIS® Test analyzed across a pan-cancer cohort of 419 patients and 513 tumor samples. The analysis was focused on five cancer types—breast, colorectal, ovarian, pancreatic, and bile duct cancers— concluding the test as a powerful tool for the treating physician in improving the patient outcomes. PARIS® Test drugs responses can predict clinical outcome in 71.2% of cases, showing a very strong predictive value in the clinical setting.

The 61.7 percent physician adoption rate of the PARIS® Test demonstrates the utility and commercial viability of the test in therapeutic decision-making based on the reported top-scoring drugs.

An efficient mode of determining drug sensitivities helps doctors choose a standard of care best suited for the patient. To elaborate on this, Astrid comments that "more than 90% of our patients present cancer in late stages and we found that 67% were alive after 10.7 months of median follow up when treated with the PARIS® Test guided treatments; this is a message of hope."

SEngine's patient-centric approach to research has been the driving factor behind their innovations in the precision medicine space. For the journey ahead, they are coming up with five cancer-specific test analyses—breast, colorectal, ovarian, pancreatic, and bile duct cancers—with a curated 44 drugs tested in a turnaround time of approximately three weeks for commercializing.

SEngine is also working in the direction of the genomic correlation. "For example, KRAS is a gene that is mutated in many cancers. PARIS® Test responses have shown high concordance with the sensitivity of drugs like MEK inhibitors in these cases. The test results can be used by doctors for expanding the indication of genomics biomarkers," concludes Astrid. HT