Duke University
Office of Licensing & Ventures
Technology Opportunity

GENOMIC PREDICTORS OF CHEMOTHERAPEUTIC RESPONSE

File #2635

Application

Duke University is seeking a company interested in commercializing a novel and versatile panel of genomic predictors of chemotherapy response. Each year, over 700,000 cancer treatment decisions are made in the US. Decades of clinical investigation have resulted in established guidelines for many cancer decisions across types of cancer and stages of disease. However, only 30% of patients typically respond to a given chemotherapy protocol, and in cases where there are multiple standard of care regimens from which the oncologist can, there is little or no guidance available upon which to base those choices.

The development of a panel of genomic predictors of chemotherapy response that includes many of the very commonly used chemotherapies and chemotherapy combinations, provides an opportunity to guide these decisions. Importantly, the application of these predictive tools to aid decisions regarding the use of available drugs has the potential to improve the efficacy of treatment while likely adding minimal risk to the patient over current practice.

Advantages

- Offerings address large unmet need
- Works across multiple cancer indications, multiple tumor types
- Robust scientific foundation
- Demonstrated interest by oncologists
- Clinically validated technology
- Provides clear clinical and economic benefit

Technology

The value of the Chemotherapy Response Panel can be illustrated by using data from a study conducted at Duke University. The figure below depicts the probability of response to a given chemotherapeutic (red is high, blue is low) as calculated by the Panel for seven therapeutics across 171 breast cancer tumors.

5-FU
Paclitaxel
Docetaxel
Adriamycin
Topotecan
Cytoxan
Etoposide

Optimal Choice
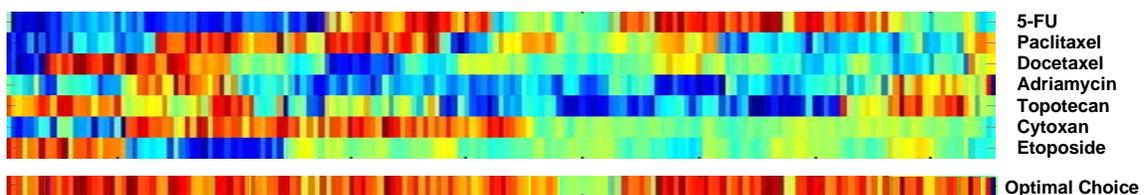
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Looking at the response profile of each agent across all patients (a row in the figure above), our data shows that fewer than 30% of the patients would be anticipated to respond to any given therapy. (In fact, these data are consistent with clinical outcome studies.) However, the response profile of each individual patient for all of the chemotherapy agents (each column above) is very different: **a majority of the patients have at least one treatment option with a high predicted probability of response.**

Currently, the oncologist must decide which of the therapeutic options to administer but does so without any knowledge of how the patient may respond. The Chemotherapy Response Panel will provide an opportunity to guide the selection of the most appropriate agent from the available standard-of-care therapies approved for a given indication. Since the intended use is solely for directing chose among standard-of-care regimens, there is no inherent risk to the patient as a result of employing this test.

Inventors

Anil Potti, MD, is an Assistant Professor in the Department of Medicine and IGSP. He is a recipient of Robert Silber Research Prize and the AACR Translational Research Excellence Award. Prior to accepting his current position, he was a fellow in the laboratory of Dr. Joseph Nevins at Duke, where he was involved in peripheral blood profiling and the development of genomic strategies to improve prognosis and treatment, with specific relevance to lung cancer.

Joseph Nevins, PhD, is Barbara Levine Professor of Breast Cancer Genomics and Director of the IGSP's Center for Applied Genomics & Technology at Duke University. His research focuses on the use of genome-scale measures of gene expression, employing DNA microarrays, to identify expression profiles that characterize oncogenic pathways and that define tumor phenotypes of importance in determining clinical outcomes.

Contact

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