HARVARD UNIVERSITY
Office of Technology Development

Detection of Solid Tumor Signatures in Blood of Cancer Patients

Principal Investigator

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Technology

The current invention describes a non-invasive, individual-specific assay for detecting tumor-forming cancers. This diagnostic assay compares, from within one patient, two endogenous populations of cells, one that absorbs cancer cell DNA and another that does not. By measuring DNA, RNA, lipid, and protein content from phagocytic white blood cells that engulf cancer cells and subtracting a baseline from non-phagocytic white blood cells, one can create a unique profile for each patient. This profile can then be compared to DNA, RNA, lipid, and protein known to be affected by specific cancers, thus generating a patient-specific solid tumor signature. This assay has successfully identified signatures from multiple cancers, including ovarian cancer, lung cancer, prostate cancer, colon cancer, melanoma, and squamous cell carcinoma.

Market and Applications

Current methods of cancer detection rely on presentation of pathological symptoms, which may occur late in the disease, and/or invasive biopsies and scans. The few available diagnoses based on molecular markers depend on averages from large populations, and the molecular markers from an individual patient may be undetectable.

This assay, would enable cancer detection, diagnosis and treatment to be closely coupled by:

- Detecting solid tumors prior to the manifestation of pathologic signs and symptoms
- Detecting disease recurrence
- Predicting response to routine or experimental treatments
- Identifying subpopulations of patients who respond favorably to certain drugs and therapies

Product Advantages

Unlike current detection assays which compare patients' profiles to population-derived average profiles from "healthy" controls, this assay compares cell populations from within a single patient. This strengthens the sensitivity of the assay, enabling earlier detection of cancer than currently possible with available diagnostics and moves meaningful interventions to a much earlier point in the path of tumor progression. In addition, whereas other technologies can identify profiles for single types of cancers, this invention has successfully identified signatures from multiple cancers. Furthermore, the assay is able to differentiate between these different types of cancers. Dr. Kassis has already obtained human data with impressive results.

Licensing Opportunity:

This technology is available for worldwide, exclusive licensing.

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