"Target Mapping and Quantification for Therapeutic Diagnosis" VCU #16-112

Applications

- Chromosomal cancer analysis
- Whole genome sequencing analysis
- Personalized medicine (tool)

Advantages

- Highly sensitive, single molecule analysis
- Quick and inexpensive sequencing of all lengths and genetic variations
- Unprecedented spatial resolution between labels

Inventors

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Technology Summary

Personalized medicine, along with molecular profiling of diseases, has allowed physicians and patients to choose the most efficient therapeutic plan for the individual. A key attribute to success of personalized medicine is the development of such diagnostics which measure levels of proteins, genes or specific mutations. The results from these diagnostic tests are used to provide a specific therapy for an individual's condition by stratifying disease status, selecting the proper medication, and tailoring dosages to that patient's specific needs.

Researchers at VCU have created a method for detecting genetic variations that is inexpensive, fast and highly sensitive and can be used to detect variations in complex diseases - such as cancer. The invention consists of a method (hardware, software and know-how) for labeling and purification of particular DNA sequences. Through single molecule analysis, this method allows for identification and quantification of chromosomal translocations, inversions, duplications and deletions. It is substantially faster and more accurate than conventional techniques such as karyotyping and Fluorescence In Situ Hybridization (FISH). This sequencing can be used as a drug screening test for cancer and other complex diseases to provide a therapeutic diagnostic link to inform patients of their therapy choices.

Technology Status

Method developed and preliminary testing completed.

Patent Pending: U.S. and Foreign rights available
This technology is available for licensing to industry for further development and commercialization.