

Applications

- Molecular diagnostic assays
- Pathogen detection and identification
- Gene expression quantification
- Potential use in drug screening

Advantages

- High sensitivity (single-cell level)
- Analysis of multiple targets in one sample (up to 1000)
- Reduces costs of testing
- Fast and accurate results
- Validated in multiple human samples

Inventors

[Jason Reed, Ph.D.](#)
Andrey Mikheykin, Ph.D.

Contact

Magdalena K. Morgan, Ph.D.
Director of Licensing
mkmorgan@vcu.edu
Direct (804) 827-6095

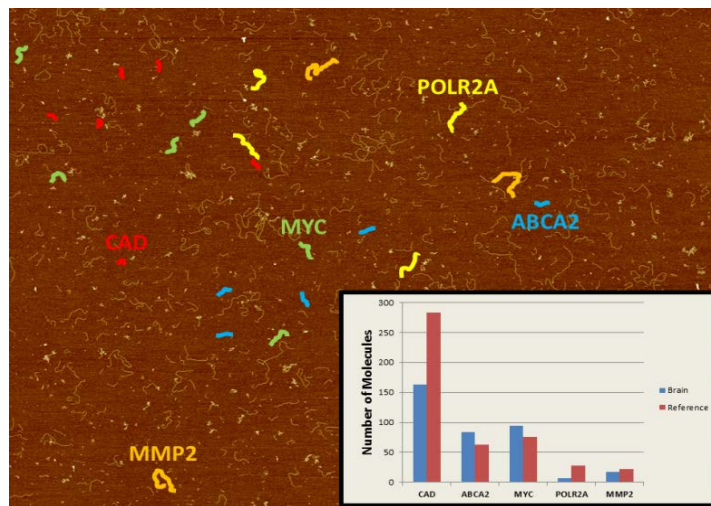
Market Need

Currently there is **no** technology that allows for a fast, accurate and low cost analysis of multiple nucleic acid targets (up to 1000) in biological samples. Researchers are dependent on tests that are time consuming, expensive or have severe limitations. qPCR the “golden standard” for quantification of nucleic acid implementation in some biomedical applications (such as tumor profiling) is limited due to an insufficient level of multiplexing (up to 5 targets in the same tube) and microarrays, which can analyze thousands of targets in one sample, take a very long time and are expensive to run.

Technology Summary

This invention combines the powers of two widely used approaches from molecular biology (qPCR) and nanotechnology to fill the gap between low- and high-throughput techniques to profile gene expression and other genetic variations.

This technique can be used to quantify multiple nucleic acids targets such as gene expression, copy number variations, protein isoforms, gene translocation, microRNA and other genetic variations at up to the single-cell level. In addition, it is very sensitive, accurate, fast and easy to use thus decreasing costs and expanding potential biological and biomedical applications such as molecular diagnostic assays, pathogen detection and identification or gene expression quantification in cancer diagnostics and tumor profiling.



Single-cell molecular profiling.

Technology Status

Has been successfully applied to test multiple targets in various human samples.
Patent pending; U.S. and foreign rights available.

This technology is available for licensing to industry for further development and commercialization.