ARCHER®

NEW HORIZONS
in cancer monitoring

Cancer is a complex disease of the genome

While advances have been made in cancer treatment with the introduction of targeted therapies[1], the same advances have yet to be applied to cancer monitoring.

(NGS) **Next generation sequencing (NGS) is a technology used to study cancer genomes in their entirety. NGS can discover gene mutations, identify hereditary cancer mutation carriers and provide a reliable molecular portrait of a wide range of cancers.[2]**

Limitations of current cancer monitoring technologies:

ACCESS
Accessing solid tumor tissue is invasive and can be difficult to routinely collect. Limited ability to monitor low levels of cancer in blood.

SPECIFICITY
With inadequate specificity, frequent testing is more likely to result in false positives, raising patient safety concerns. This could result in inappropriate treatment and may lead to long delays between testing, allowing recurrent disease to go undetected.

SENSITIVITY
Limited sensitivity can result in false negatives, meaning recurrent cancer may remain undetected until the recurrence is more advanced.

1 in 10 **patients could be falsely diagnosed with recurrence within the first year if using tests with only 97% specificity at 4 tests per year [3]**

Enter personalized cancer monitoring

Personalized Cancer Monitoring (PCM™) is being developed as an individualized molecular assay designed to identify variants based on the number of mutations found in the patient's tumor sample. With this individualized molecular assay, blood samples may be tested at the discretion of the patient's oncologist for circulating tumor DNA (ctDNA), which are pieces of tumor DNA shed into the bloodstream.

The NGS data from each blood test is analyzed by Archer's cloud-based software and a result is returned to the patient's care team, indicating the presence of absence of ctDNA.

The future of cancer monitoring

While NGS is a significant advance, there are elements of the current technologies that are unable to comprehensively detect the nuances of cancer and the effects of innovative treatments that are now available. New tools are needed to:

- **Efficiently sequence the entire cancer genome over time: Currently, cancer is sequenced once for cancer patients. A longitudinal serial monitoring of how cancer is evolving over time allows healthcare professionals to have better understanding of the patient's individual cancer.**
- **Potential to reframe staging of disease: Standard of care for early-stage solid tumors uses pathology to stage tumors and determine adjuvant therapy beyond surgical resection. Staging is determined by a standard measurement and location of cancer in the body that doesn't provide information about the cancer itself to understand how an individual's tumor may evolve over time.**

(MRD) **Molecular Residual Disease: The detection of residual disease based on the presence of molecular biomarkers that are derived from the primary tumor.[4]**

We believe early-stage cancer patients may benefit from cancer monitoring:

Recurrence Monitoring of Residual Disease: *to measure disease progression*

PCM may detect recurrence before it is symptomatic, allowing earlier intervention than standard of care.

Therapy Response Monitoring: *to measure therapy effectiveness*

Cancers are complex and contain multiple cell types. Longitudinal monitoring with PCM may identify if a therapy is truly effective or ineffective against all cell types in a person's tumor.

Therapy Optimization: *to determine treatment regimen*

Patients who fail to respond to standard of care are high-risk. PCM may identify previously undetectable high-risk patients in the adjuvant cancer setting earlier to bring therapies currently approved for late-stage patients into the early-stage setting, when the cancer is most curable.

Therapy Modulation: *to refine therapy*

We believe a future application of PCM could be to identify patients cured by surgical resection of their cancer, thereby preventing unnecessary and potentially harmful adjuvant therapy, which could further limit long-term adverse events and healthcare costs.

Measure Novel Surrogate Clinical Trial Endpoints: *to accelerate clinical trial endpoints*

PCM can potentially reduce the cost and length of clinical trials and accelerate drug development, which may bring life-saving therapies to market faster and allow biopharmaceutical companies to complete more trials in the same finite time period.

References:
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2. Next Generation Sequencing in Clinical Oncology: Applications, Challenges and Promises: A Review Article. Accessed May 5, 2020. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6277731/
3. Chris Abbosh et al. Phylogenetic tracking and minimal residual disease detection using ctDNA in early-stage NSCLC: A lung TRACERx study. AACR Annual Meeting 2020 Virtual Meeting I, CT023
4. Cescon, D., et al. Circulating tumor DNA and liquid biopsy in oncology. *Nature*. 2020:276-290.

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