
The True Liquid Biopsy

At Exosome Diagnostics, we are focused on developing and commercializing innovative, biofluid-based diagnostics to deliver personalized, precision healthcare that improves lives. We offer the industry’s most versatile biofluid-based technology platform. Using this technology, we are developing a suite of sophisticated liquid biopsy tests that we believe will provide the most accurate, sensitive molecular information about numerous cancers, transforming the way the disease is detected, diagnosed, treated, and monitored.

**EXOSOMAL RNA ANALYSIS**

Our liquid biopsies in development leverage the rich molecular information found in exosomal RNA (exoRNA). We can analyze stable, high-quality exoRNA to detect cancer mutations, such as gene arrangements and splice variants, which are difficult or impossible to detect utilizing circulating DNA analysis.

**First and Only Combined exoRNA + cfDNA Analysis**

We are the first and only company that can simultaneously isolate and analyze exoRNA + cell-free DNA (cfDNA) in a single step to achieve the highest sensitivity for detecting rare cancer mutations.

**BLOOD- AND URINE-BASED LIQUID BIOPSY TESTS**

**MUTATION DETECTION**

**ExoDx**

Lung (ALK)

- **EML4-ALK test:** (Now Available)
  Analyzes stable, high-quality exoRNA to detect the EML4-ALK mutation and specific associated RNA fusion transcripts

**ExoDx**

Lung (T790M)

- **T790M test:** Simultaneously analyzes exoRNA + cfDNA in a single step to enhance sensitivity of detection of this low-abundance mutation, which can often be missed when analyzing cfDNA alone

**ExoDx**

Solid Tumor

- Targets actionable mutations in the most significant pathways of cancer, including EGFR, MAPK and PI3K; analyzes exoRNA + cfDNA
- Covers 26 of the most important genes and 1000 associated mutations
- Initially available to pharma companies as a clinical development tool

**SCREENING**

**ExoDx**

Prostate (IntelliScore)

- Helps to identify men who are least likely to have high-grade prostate cancer and who may be able to avoid unnecessary tissue biopsy.
- Using a proprietary algorithm that integrates a three-gene signature on exoRNA, the test assigns an individual risk score.
- Large clinical validation study completed (NPV = 91%)
AN IMPORTANT NEW APPROACH FOR GAINING MOLECULAR INSIGHTS

Given the need for and increasing availability of targeted cancer therapies, molecular diagnostics are becoming an integral component of patient care. These diagnostics inform the most appropriate treatment approaches, helping physicians match patients to approved therapies or potential ongoing clinical trials.

Our diagnostics in development do not rely on analyzing tissue. Instead, they can extract comprehensive molecular information, including RNA and DNA, from exosomes carried in biofluids. Gaining access to molecular information about cancer from biofluids without needing direct access to the tissue itself will have far-reaching implications in the treatment of cancer.

These diagnostics will be invaluable tools for clinicians – yielding critical molecular insights through serial, longitudinal monitoring as a complement to tissue biopsy or an important alternative when tissue biopsy is not practical or possible.
KEY ADVANTAGES OF OUR EXOSOME-ENABLED DIAGNOSTICS

- Combine RNA and DNA; can utilize fresh or frozen/archived biofluid samples
- Enable detection of fusion transcripts, splice variants and other RNA-based biomarkers
- Complement tissue biopsy for enhanced mutation detection and serial, longitudinal monitoring
- Enable molecular analysis when tissue biopsy is impractical or impossible; can help avoid unnecessary tissue biopsies
- Access fluids more easily (vs. an invasive surgical procedure)
- Enable a comprehensive understanding of molecular makeup; a tissue sample may not reflect the heterogeneity of all cells in a tumor
- Leverage routine sample handling to easily fit into clinical lab workflow
- Enhance access to cost-effective diagnostics and healthcare
- Enable more informed, individualized treatment decisions

COMBINING exoRNA + cfDNA: SUPERIOR MUTATION DETECTION

Data have demonstrated that single capture and analysis of exoRNA + cfDNA from plasma:

- Detected actionable mutations (KRAS, BRAF and EGFR) in various cancers, such as melanoma, colorectal and lung cancer
- Increased detectable rare mutations in cancer patients versus cfDNA only

VARYING CAPABILITY AND UTILITY AMONG BIOFLUID-BASED DIAGNOSTIC TECHNOLOGIES

With the field of biofluid-based diagnostics poised to rapidly expand in the near-term, it is critical for physicians to understand important differences in the underlying technologies of these tests.

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<tr>
<th>TOP-LINE COMPARISON</th>
<th>Exosome Dx’s Platform (exoRNA/DNA + cfDNA)</th>
<th>Cell-Free DNA (cfDNA)</th>
<th>Circulating Tumor Cells (CTCs)</th>
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<tr>
<td><strong>ANALYSIS CAPABILITY</strong></td>
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<td>Combines exosomal RNA and DNA (exoRNA/DNA) with cfDNA for increased mutation detection sensitivity</td>
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<td>Detects fusion transcripts, splice variants and other RNA biomarkers</td>
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<td>Detects stromal, inflammatory response and other systemic disease changes</td>
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<td>Enables analysis of RNA, DNA, and protein profiles from tumor cells</td>
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<td><strong>CLINICAL APPLICATION</strong></td>
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<td>Simple workflow of sample acquisition, handling and processing</td>
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<td>Enables extraction from fresh and biobanked samples</td>
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SCIENTIFIC & CLINICAL LEADERSHIP

Exosome Diagnostics is led by a team of seasoned, highly respected leaders in academic research, clinical diagnostics, biopharma, and personalized medicine. They are applying their knowledge of exosome biology, disease pathology and molecular medicine to advance diagnostics that will be highly effective tools for physicians, helping inform treatment decisions and enhance patient care. Key scientific and medical leadership includes:

Johan Skog, PhD
Chief Scientific Officer and Founding Scientist
• Pioneered breakthrough discoveries about exosomes and other microvesicles and their vital role as cell messengers and disease proliferators
• While at Massachusetts General Hospital/Harvard Medical School, discovered that tumor-derived mutations can be detected in exosomal RNA from serum and other biofluids; findings were published in *Nature Cell Biology* in 2008
• Continues to pioneer critical advancements in diagnostics and expand the field of exosome biology

Mikkel Noerholm, PhD
Vice President, Product Development
• Leads European operations for Exosome Diagnostics from the company’s office in Munich, Germany
• Served as Research Scholar at Massachusetts General Hospital/Harvard Medical School, where he worked closely with Dr. Skog to develop exosome technology
• Additional previous experience includes establishing Exiqon, Inc., where he held the role of Director of Technical Support, as well as R&D Project Manager at Exiqon A/S in Denmark, where he led the development of what is now that company’s miRCURY LNA Arrays

Raaj Venkatesan
Vice President, Regulatory Affairs & Quality
• Brings more than 10 years of experience in regulatory affairs, regulatory compliance and quality engineering in the medical device and In Vitro Diagnostics industry
• Prior to joining Exosome Diagnostics, Raaj served as Director of Regulatory Affairs and Quality at Bio-Rad Laboratories, where he was responsible for leading the regulatory affairs and compliance for a next-generation sequencing in vitro diagnostic product
• Raaj is Regulatory Affairs Certified (RAC-US, RAC-EU) by the Regulatory Affairs Professionals Society (RAPS) and is also an ASQ Certified Manager of Quality, Reliability Engineer, Quality Auditor, Biomedical Auditor and Quality Engineer