SCIENCE FOR THE BENEFIT OF HUMANITY

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Recovery of High Quality RNA and DNA From Biofluids

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Technology Summary

Ribonucleic acids (RNA) play a unique role in human diseases because of their ability to regulate the stability or rate of protein synthesis. Because of this, RNA has the potential to be used in routine diagnosis or prognosis of various types of diseases including cancer, cardiovascular, kidney or autoimmune diseases. Detection of RNA in body fluids can in principle predict disease and correlate to patient outcome, which makes them excellent minimally-invasive diagnostic and prognostic markers. However, current methods of extracellular RNA (exRNA) isolation from cell-free biofluids are known to result in significant discrepancies in downstream sequence analysis, caused by low isolation efficiencies and remaining nuclease activities. Furthermore, most conventional methods cannot be applied using automated liquid handling systems and they do not allow isolation of exRNA/exDNA from the same sample.

Dr.Thomas Tuschl and colleagues have developed an efficient method to isolate high-quality exRNA/exDNA from nuclease-rich and RNA/DNA-poor human clinical biofluids (serum, plasma and urine). This new method efficiently denatures ribonucleases and other proteins throughout the entire isolation procedure improving the integrity of exRNA/exDNA that is recovered and maximizing their yield from biofluid samples. This method yields consistently homogeneous exRNA and/or exDNA extracted from multiple samples, enabling their use as biomarkers in clinical practice, and can be adapted to high-throughput equipment.

Area of Application:

- Novel method to isolate ex RNA and/or exDNA from cell-free clinical samples.
- Biomarker screening and identification.

Advantages:

- Isolate exRNA and exDNA separately from the same sample.
- Improves RNA/DNA intactness; avoids degradation during isolation and subsequent analysis
- Allows both manual and automated processing modes.
- Allows use of standard low-throughput and high-throughput equipment
- Simplifies automatic aspiration of aqueous phases containing nucleic acids using automated liquid handling equipment.

Stage of Development: Available for non-exclusive licensing

Lead Inventors:
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