

Portable and Disposable, Single-Use Snap Freezing Device to Preserve Biospecimen Integrity

Business Opportunity

Exclusive license
Non-exclusive license
Sponsored research

Technology Type

Device

State of Development

Prototype developed

Patent Information

US patent pending

Investigator

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Tech ID

20-026

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Brief Description

Tissue freezing device to ensure biopsy samples can be rapidly frozen in a clinical or field setting.

Technology Overview

Collection and processing of high-quality tissue biopsy samples are critical steps for accurate diagnosis, monitoring, and treatment. The current gold standard of snap-freezing tissue specimens in liquid nitrogen has multiple limitations, including access to liquid nitrogen, trained personnel, and/or the infrastructure to support this method. As a result, biospecimens are subjected to prolonged warm ischemia, leading to changes in the activation states of biological pathways and compromising biospecimen integrity. These potentially altered biological pathways can be direct targets of anti-tumor agents and may be important clinical biomarkers. Moreover, variation in freezing protocols affects freezing rates that can also alter the specimen's integrity. Dr. Paulovich has designed a simple, economical, and single-use biospecimen snap-freeze device that has demonstrated favorable performance characteristics compared to the traditional liquid nitrogen method.

Applications

- Rapid cooling of samples in various clinical and field settings (e.g., intraoperatively, outpatient clinics, radiology suites, military field)
- Bridging device to long-term freezing

Advantages

- Reduces ischemic time between collection and preservation of tissue to ensure the integrity of the biospecimen
- Does not require trained personnel or infrastructure
- Device is stable at room temperature and can be activated at point of care

Market Overview

The global biopsy devices market was valued at \$2.7B in 2018 with a compound annual growth rate (CAGR) of 5.9%. Biopsies are collected for many types of downstream analyses, including proteomics, which has a market anticipated to reach \$72.4M by 2025, with an expanding CAGR of 14.5% by 2025.