

Argon to Improve Bioanalyte Stability in Fixed Tissue Specimens

Summary (1024-character limit)

The National Cancer Institute (NCI) seeks research licensees for a process that reduces nucleic acid (RNA and DNA) degradation and improves protein integrity in tissue preserved as fixed paraffin embedded specimens.

NIH Reference Number

E-052-2013

Product Type

- Diagnostics

Keywords

- RNA, DNA, Formalin Fixed Paraffin Embedded, FFPE, Formaldehyde, Paraffin Embedded, Argon, Anatomic Pathology Tissue Handling Improvements, Hewitt

Collaboration Opportunity

This invention is available for licensing.

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Description of Technology

The degradation of archival surgical and biospecimen limits the utility of many biomarkers that may have prognostic or predictive significance in guiding a patient's therapy. Previous methods at preventing the degradation of RNA and proteins in formalin fixed, paraffin embedded (FFPE) tissue blocks & slides have no protective benefit.

Researchers at the National Institutes of Health (NIH) and American Air Liquide have demonstrated that dissolved reactive gasses entrapped in the fixative and solutions used in tissue preparation contribute to this degradation. Removal of these reactive gasses, and replacement with argon, improves biomolecule stability. The primary evaluation was based on measurements of RNA stability, however the investigator's work demonstrates the relationships between RNA, protein, and DNA quality.

Potential Commercial Applications

NCI Technology Transfer Center

<https://techtransfer.cancer.gov/pdf/e-052-2013.pdf>

- This novel technology may be used to generate new argon-containing fixatives to improve specimen quality without affecting traditional histopathology methods
- The novel technology includes the fixation of tissue in solutions that have been sparged with argon, as well as technology for the impregnation of tissue with solutions sparged with argon

Competitive Advantages

- The addition of argon to FFPE procedures has been shown to improve RNA integrity by over 40% over standard FFPE procedures
- The use of the new argon FFPE procedure has been demonstrated to improve protein integrity in tissue fixed with FFPE compared with non-argon FFPE procedures

Inventor(s)

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Development Stage

- Prototype

Patent Status

- **U.S. Patent Issued:** U.S. Patent Number 9,714,409, Issued 25 Jul 2017

Related Technologies

- [E-139-2015 - Novel Fixative for Improved Biomolecule Quality from Paraffin-Embedded Tissue](#)
- [E-128-2017 - A Specialized Tissue Collection Device for the Preservation and Transportation of Needle Biopsies](#)

Therapeutic Area

- Cancer/Neoplasm
- Immune System and Inflammation
- Eye and Ear, Nose & Throat
- Cardiovascular Systems
- Gastrointestinal
- Kidney and the Genitourinary
- Musculoskeletal
- Reproductive
- Skin and Subcutaneous Tissue