

Apparatus for Rapid and Accurate Slicing of Fresh Tissue Specimens

ICR Licensing Opportunity November 2012

- A novel tissue slicing apparatus for preparation of fresh tissue samples for histopathological diagnosis and molecular pathology research.
- Eliminates need for prior fixation where slicing is difficult eg. radical prostatectomy specimens.
- Post-processing of sliced samples is possible within 20 minutes of surgical resection.
- Provides for integration of preoperative imaging data with data derived from histopathological and molecular pathology analyses.
- Straightforward and practical to use in a routine Pathology Laboratory setting.

Background

Modern analytical techniques used in molecular pathology often require fresh as opposed to chemically fixed tissue specimens. Tissue samples have then to be rapidly transferred to an appropriate storage medium in order to preserve the specific molecular analytes (eg. RNA, DNA, and proteins) whilst maintaining the integrity of all remaining tissue used for diagnostic histopathology.

Prostate cancer is the most common male malignancy in Western Countries. Radical prostatectomy specimens are a potentially valuable source of material for research into new molecular markers, the use of which effectively diagnose and treat the disease.

Many of the techniques used to identify molecular markers (used to determine which patients can be treated) require carefully preserved tissue samples.

Diagnostic sampling of a whole fresh prostate gland poses a great challenge because it is difficult to slice evenly and the gland distorts during cutting requiring prior fixation which in addition to being time consuming results in degradation of proteins and nucleic acids in the process. The result is that the time it takes to cut the sample is high and therefore protein degradation is high.

Development

A new technique has been developed to slice fresh tissue, in particular prostate glands, using a specially designed holder and multi-bladed knife. The apex and base of the prostate gland can be sampled while 3-4mm slices go directly into their respective fenestrated plastic containers and are formalin fixed through the containers. Slices selected for further research can be kept flat by storing between foam gel pads. The whole procedure which normally takes 3-4 days can now be done in 1 day and good histopathology is maintained. The complete labelling and slicing procedure takes 15-20 minutes making it possible to immediately store alternate tissue slices for research purposes with preserved RNA and DNA without losing the in-situ gene expression profile of the tumours. This technique also allows tumour volume assessment and correlation with radiological data.

The market for this product is worldwide as it can be used by any hospital/ histopathology laboratory working in histopathological diagnosis and molecular pathology research.

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Inventors

Dr Sameer Jhavar is the principal scientist leading the work at the ICR. He is based in the cancer genetics and molecular carcinogenesis teams. Dr Ros Eeles is a reader in clinical cancer genetics at the ICR and an honorary consultant in cancer genetics and clinical oncology for the Royal Marsden NHS Foundation Trust. Other inventors are Dr Stefan Reinsberg, Dr Andrew Jackson, Mr Craig Cummings, Dr Alison Falconer and Professor Martin Leach.



Key Publication

S G Jhavar et al.

“Processing of radical prostatectomy specimens for correlation of data from histopathological, molecular biological, and radiological studies: a new whole organ technique,”
J. Clin. Pathol. (2005) 58, 504-508.

Intellectual Property

The ICR has filed a patent in the UK (GB2404607) which has been granted. In addition, the ICR and Royal Marsden have a considerable body of expertise and know-how in the area of molecular pathology, being at the forefront of scientific knowledge in the field.

Commercial Opportunity

Currently the apparatus is being used by a selected group of research centres and the feedback has been very positive. In order to roll this out further the ICR is seeking a partner with manufacture and/or distribution capabilities to take a commercial product, based on this technology, to a wider audience. The partner would receive exclusive commercialisation rights to the technology.

ICR The Institute of
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In partnership with

The ROYAL MARSDEN
NHS Foundation Trust

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