A Novel RFID* and Barcode Sample Tracking System for Room Temperature and Ultra Low Temperature BioBank Samples

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OVERVIEW

A scalable sample tracking system specifically designed for hierarchical storage of both room temperature and low temperature biobank specimens is described. The CSols RFTrackIT™ software system can be configured to automatically register any sampling sub-sampling regimens, label type and storage locations. The system can be used with MS SQL Server or Oracle relational databases in a single or multi-user configuration for biobanks of different sizes, and can be deployed nationally or internationally as a Cloud based system using MS Azure.

LABELLING

The sample tree also allows for the storage of biographical details such as the biobank donation identifier and label types (combined RFID/2DQR or 2DQR) and label designs that have been assigned by default to specific sub sample types. A large number of sample fields are available for uploading historical data.

CSols RFTrackIT™ software supports all types of label technologies including 2DQR barcodes and RFID based labels to ensure the right label type and right label size is used for the right storage/temperature combination. All labels are printed with selectable sample field text, 2DQR container and sample type and unique SystemID. All RFID unique tag identities are paired with generated sample identities and are stored in the database to allow for the easy locating of stored materials. In addition specially developed RFID labels can be supplied which will support a variety of uses and containers, including storage in Liquid Nitrogen, with paraffin wax cassettes and labelling of plastic bags.

The low temperature compatible labels feature an adhesive that supports storage in ultra low temperature freezers including -80°C, -120°C, -150°C and Liquid Nitrogen. These special RFID labels can easily be used to over-label existing frost covered vials whilst still frozen. They have been used successfully to over-label sample vials on six continents and 60 year old vials held in liquid nitrogen freezers for long term storage.

DISCUSSION & CONCLUSION

To support the use of RFID labels, workstations can consist of readers and, if required antennae, external to freezers. Collecting Sample IDs in this way is much faster than scanning barcodes and allows for the rapid scanning of boxes or plastic bags containing multiple samples. This helps support e.g. Human Tissue Act (HTA) audits, allowing for a 100% inventory to be performed in just a few hours instead of months. The ability to read RFID labels without having to handle containers means that inventory can be rapidly checked without removing material completely from the freezers thereby reducing freeze/thaw cycles. Specimens can also be more quickly located in storage once an external request has been made. An added bonus is a reduction in freezer electricity use due to faster sample handling capabilities. In combination with industry standard RFID scanners, printers and special labels, the RFTrackIT™ software solutions allow biobanks to freely use both 2D barcode and RFID labels for simple or complex dissection protocols on an extensive range of container types. Moreover the flexible design helps support both new and existing numbering and nomenclature systems to allow the system to be used in any type of biobank.

ABOUT CSOLS LTD.

CSols is a well-established and successful company producing, delivering and supporting software solutions that dramatically improve costs, quality and compliance in laboratories. CSols clients include - University of Bristol / MRC UK Brain Banks, Central Manchester NHS Trust (Manchester Royal Infirmary MRI), Charing Cross Hospital, Fulan Hospital, Galway University Hospital, Heart of England NHS Trust (Heartlands Hospital), Imperial College Healthcare Trust (Charing Cross Hospital), Leeds Teaching Hospitals NHS Trust (St. James Hospital), Lund University Hospital & Oxford University Hospital Trust (John Radcliffe Hospital), Royal Surrey County Hospital (NHS Trace Element Centre UKNECAS for Trace Element).

Further Information

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