Sample tracking software at the Institute of Cell and Molecular Science

Lauren Young explains how the Institute of Cell and Molecular Science has utilised sample-tracking software in order to improve productivity and organise the ICMS freezer facilities.

The Institute of Cell and Molecular Science (ICMS) at Barts and The London School of Medicine and Dentistry offers staff and students the opportunity to conduct pioneering biomedical research in a range of areas. Chris Pelling is one of four laboratory managers within the Institute who run a total laboratory space of 9250 square metres.

Originally, there were eight large research centres in various locations, which made communication and collaboration problematic.

Chris explains: "Each group that moved into this building was doing its own thing in terms of the systems they used. Primarily, one of the things that we looked at was cryogenic storage. Each centre had multiple Dewars and we wanted to get them consolidated into a vapour-phase system. More than that, we wanted to manage the system so that there was a consistent approach to storage and sample tracking."

As a solution, a sample-tracking program was initiated that worked alongside a racking system. Chris continues: "We had 40 Dewars with an average of 1000 to 2000 samples, and we wanted a system that was wholly configurable so that we could tailor it to how we would eventually use it and be able to respond to any other changes that came along.

Chris and his colleagues worked closely with the ItemTracker team to develop the ItemTracker program to cater specifically for ICMS needs, resulting in a sample-tracking solution that could be incorporated into the existing workflow.

Each tube has an individual barcoded label and, when scanned, this provides all the necessary information about the sample.

The sheer number of samples held in the ICMS freezer units meant that locating a specific sample could be difficult and this resulted in freezer doors being left open for prolonged periods of time, as well as samples being taken out of the freezer in order to facilitate further searches. This is a particular problem, as the freezer temperature will increase during this time.

Chris adds: "It was almost impossible to find samples easily and quickly without taking the samples at the front out and putting them on the floor – they are then defrosting which may degrade them."

There was also the issue of sample ownership, as the liquid nitrogen store holds over 60,000 samples and each sample needs to be easily identifiable. Chris continues: 'We need to manage and track exactly what happens to the samples, and, moreover, we need to know who owns them. In a large institute you get people coming and going. They store samples and then leave to work elsewhere, and nobody knows who owns these samples."

Each tube has an individual barcoded label and, when scanned, this provides all the necessary information about the sample. This allows staff to identify the sample owner, check its status and discard unwanted samples, thereby freeing space. The system provides an exact location for the required sample – freezer number, shelf number, and the

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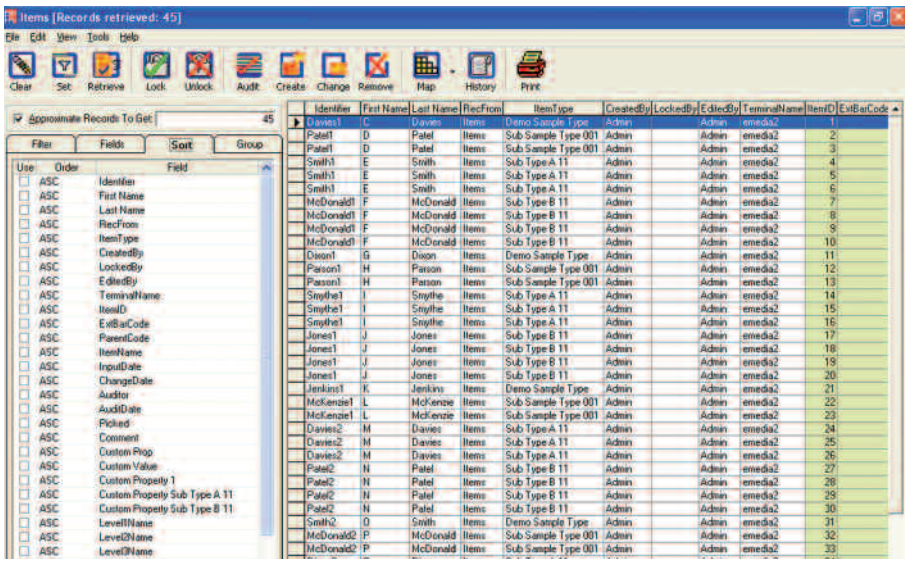

For those who want to use all the features of ItemTracker, the ICMS provides additional training, either in-house or through the ItemTracker team.

location within a specific box. This means that you already know where your sample is located, even before you open the freezer door.

Configuration

The system set-up was easy – configuration takes place at a supervisory level, where you can configure the system to suit the needs of the organisation. A template form is created in which fields are placed and these can be either required or non-required fields. The ICMS decided to have three mandatory fields: owner name, sample name and date of entry. This means that samples cannot be stored without inputting this data.

With the introduction of the *Human Tissue Act 2004*, the ICMS research staff had concerns about the confidential nature of the data being handled. ItemTracker allows permissions to be set which dictate who can access information, and these access privileges can be restricted or expanded in order to suit the needs of the specific group.

Training

Owing to the nature of the ICMS, the system had to be simple and easy to use, Chris explains: "We have a number of staff who are only in for a short period of time and they did not want to spend too much time learning how to use the system." Basic training for ItemTracker only takes 10–15 minutes and is comprehensive enough to allow the user to complete all the main functions (eg inputting data and printing tube labels). Chris found that for 90% of people this basic training is enough. For those who want to use the many other features within ItemTracker (eg the search facility), the ICMS provides additional training, either in-house or through the ItemTracker team.

More information is available at the ItemTracker website.

Converting to ItemTracker

Once the sample-tracking program was initiated, there was the issue of transferring existing frozen samples held in the cryogenic Dewars to the new cryogenic store – how do you stick a label on a tube at –150°C? The solution was to print the barcodes on specially designed labels that wrap around the frozen sample tube and adhere to themselves. Chris explains: "We've had no issues with labels falling off and it enabled people to label all the samples they had previously frozen and put them in our new cryogenic store."

As with the introduction of any new software, there were some concerns about how the sample-tracking program would work alongside the many existing systems within the Institute. This proved to be a relatively easy procedure – researchers simply imported their data into a spreadsheet and ItemTracker imported the spreadsheet and populated the grid or box that was being set up.

Increasingly, sample-tracking software is replacing traditional manual methods of data handling. Software such as ItemTracker and the use of barcode labels and scanners can ensure the positive identification of samples as well as the security of data back-up. Sample-tracking software also assists in compliance with new and existing regulations that cover data security. There are many 'from the box' sample-tracking packages on the market, but ItemTracker provided the ICMS with a comprehensive and flexible solution for their sample managing needs. P

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For more information about ItemTracker, please visit www.itemtracker.com