



Kings College London move to Achiever LIMS for longitudinal cohort study, TwinsUK

TwinsUK project background

A team from Kings College London, Department of Twin Research & Genetic Epidemiology have employed Interactive Software's Achiever LIMS as a laboratory information management system to replace their decades old, Microsoft Access database. The new LIMS was needed for their prestigious TwinsUK cohort, the UK's largest adult twin registry and the most clinically detailed in the world.

The TwinsUK cohort was established by Professor Tim Spector in 1992 and initially, recruited 500 postmenopausal women to study osteoarthritis. The decision was made to use twins to give researchers the unique perspective of being able to separate nature versus nurture.

In 1996, following the success of this early trial, it was decided to build a cohort of twins, looking at them longitudinally as opposed to researching one disease or condition in particular. Identical twins were recruited as healthy volunteers and then followed throughout their lifetime to see how they aged and accumulated certain diseases.

The Department of Twin Research & Genetic Epidemiology now has 60 clinical researchers with experts in genetics and state-of-the-art omics technologies. Their international collaborations have led to over 800 publications. Major successes include identifying the genes behind some of the most common and often fatal conditions such as cardiovascular disease, diabetes, obesity, fractures, and osteoarthritis.

The TwinsUK cohort now holds data on more than 17,000 identical and non-identical twins. Twins involved with the project are asked to come for a clinical visit every three to four years. During these sessions, scientists take samples and clinical data and ask the volunteers to complete a range of questionnaires. The study has generated and continues to produce a large amount of both samples and data which are then used as a resource for the global scientific community.

When the project turned into a longitudinal cohort population study, two distinct Microsoft Access databases were set up, an administrative database and a laboratory database to manage and store the large amounts of information produced by the cohort.



The problem

Over time, the increasing complexity of study data had resulted in many iterations of the study database. The Department of Twin Research & Genetic Epidemiology at Kings College London had employed a series of dedicated database developers to update the database structure and ensure that scientists had access to the data and samples they needed as part of their research, however, the database was evolving into an unwieldy tool that was difficult to manage.

As such, in 2020, Sam Wadge, Biobank Laboratory Manager for TwinsUK was given the remit to move the department away from using the Microsoft Access database and finding a suitable laboratory information management system to replace it.

The solution

Sam began the search for a new LIMS by seeking recommendations from peers within the college, taking advice from industry representatives and searching on the internet for suitable suppliers. Via this process, the department compiled a shortlist of five systems, one of which was Interactive Software's Achiever LIMS. Following an evaluation process, Achiever LIMS was selected to replace the existing system.

One of the key features of Achiever LIMS is the ability of the system to log multiple samples at the same time. This was a critical requirement for the TwinsUK Biobank, as they needed a data management tool which could securely store a large amount of information that is also accessible by a number of users at any one time.

The issues of patient consent and sample security were also vital considerations as data is managed and accessed by multiple users within the university and across the UK and abroad. It was important to ensure that the administrative functions of the system were kept separate from the laboratory database, as it has been historically. In this way, electronic patient consent forms can be removed from laboratory sample data. Different researchers, scientists and administrative staff can then be allowed access only to the information that they need.

The team responsible for selecting the LIMS with Sam were reassured in their decision to select Achiever LIMS as Interactive Software is an established company with many years of experience in working with biobanks and research institutions such as Kings College London. They were able to provide case studies and work history that reinforced this expertise and technical competence during the decision making and procurement process.



The outcome

Interactive Software's Achiever LIMS for the TwinsUK cohort is set to go live this summer (2024).

All the involved parties, including the laboratory and IT departments at Kings College and team at Interactive Software have had regular meetings and system demonstrations to keep the development on track.

The software developers at Interactive Software have been liaising closely with the IT personnel within the college, building the environment to host the new software. The cross over between the technical IT and laboratory staff has been a useful and important one and has ensured that system useability has not been compromised and that the IT structure is in place to run the new software as soon as it goes live. Interactive Software have been instrumental in this process, providing a 'translation' service between the IT and laboratory functions, identifying potential issues before they arise.

The project is now in the acceptance testing phase and TwinsUK laboratory staff are now starting to test the system. Specifically, they are looking at how the software is designed in relation to how it works, how the workflows will be used, how and who will access different areas of the software etc. The final testing phase will see the staff at Kings College have full access to the system for a period of time to identify any opportunities to further streamline workflows before the system goes live.

"It's been great, because it's been quite a long process. Interactive Software have shown patience. They've been accommodating when we've come back with queries and changes. We set out a plan at the start, but it's changed over the months, and they've been really accommodating. What's is refreshing as well, because I do have previous experience of setting up of a LIMS system, is the people that we're working closely with, know that we are not all IT people and explain things in a language that we can all understand."

Sam Wadge, Biobank Laboratory Manager, TwinsUK