The first challenge of any population-scale research study is building a cohort of engaged participants. But once that major feat is accomplished, there’s a new hurdle: Processing, storing and managing a massive volume of valuable biological samples.

Q&A with Mark Beggs of U.K Biocentre

That’s the expertise of Mark Beggs, the new Managing Director of the U.K.’s largest bio-sample facility, the National Institute of Health Research National Biosample Centre. The 60,000-square-foot state-of-the-art facility, which opened in January 2015 in Milton Keynes, U.K., stores amongst other projects samples of rare disease and cancer patients taking part in U.K.’s 100,000 Genomes Project. It also handles processing and storing of samples for many other government-supported research projects, and works on a fee-for-service basis with academic intuitions, nonprofits and industry groups.

JOPM: Where does your facility fit into the precision medicine landscape?

BEGGS: We have seen an increasing interest in the U.K. around building significant-sized patient cohorts to support both the understanding of chronic disease and the development of capabilities required to deploy precision medicine into routine healthcare. However, when sample processing and storage is distributed across multiple clinical sites, it can introduce confounding errors into clinical data. This is a problem, but has been the accepted norm, as the capability has not existed to receive, process and store large numbers of samples centrally. Further, the management of clinical samples within universities has historically lacked the level of investment required to support effective back-up facilities with secure containment. These are the issues UK Biocentre is helping to solve.
**JOPM:** What other benefits come with a central facility?

**BEGGS:** Our model avoids each investigator team having to establish the same set of capabilities within their own organization, where the budget, space and experience base may not be at hand. We have the ability to link the U.K.’s academic and medical centres together with a common set of infrastructures, which is key to enabling biomedical research in the precision medicine sphere. Our capacity (up to 20 million samples) and our extensive infrastructure ensures that existing studies can be managed more efficiently and it enables new studies, those that were previously unaffordable or not feasible, to be undertaken. Further, the Biosample Centre allows nationally important research collections to benefit from the highest standards of bio-sample storage and processing.

**JOPM:** Explain the day-to-day work that goes on at the Biosample Centre.

**BEGGS:** The strapline “we do the bit in the middle” is appropriate for us. The investigator team remains responsible for the study design and recruitment, as well as generating most of the clinical measures, and we manage the rest of the study’s activities—from sample receipting, aliquotting, storage and DNA extraction during the recruitment phase of the study through to cherry picking investigator-requested samples and finally to long-term storage of the samples at the end of the study. With the 100,000 Genomes Project, we receive, store and processes biological samples collected from across the U.K.’s network of 24 Genomic Medical Centres. Samples include blood, tumour tissue and saliva. UK Biocentre performs a range of precision analyses, including extraction and quantification of DNA prior to the samples being shipped to Genomics England’s sequencing partner, Illumina.

**JOPM:** What other projects are keeping you busy?

**BEGGS:** Another major ongoing initiative in the UK is the Biobank, a well-known major national health resource aimed at improving the prevention, diagnosis and treatment of a wide range of serious and life-threatening illnesses. It has recruited 500,000 people between 40-69, who have provided blood, urine and saliva samples for future analysis and have agreed to have their health followed. This will build into a powerful resource to help scientists discover why some people develop particular diseases and others do not. UK Biocentre provides logistical and back up support to UK Biobank when required.

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