

# COPENHAGEN UNIVERSITY BIOBANK FOR EXPERIMENTAL RESEARCH

## Company Background



The Copenhagen University BioBank for Experimental Research (CUBE) is an umbrella BioBank that stores biological specimens (both human and animal) from multiple experimental research projects associated with the University of Copenhagen in Denmark, one of Europe's leading universities. The materials archived in the BioBank have a high potential for future explorative use, beyond their original application, due to the high quality of studies for which they were collected and the rapid development of emerging analytical technologies for biological science. By deploying LABVANTAGE® BioBanking Solution, CUBE fosters collaboration and access to collected materials that can spur additional explorative research, generate more research output and boost breakthrough results.

## Key Challenges

Several faculties, including The Faculty of Life Sciences (LIFE), were supporting smaller, siloed BioBanks for various projects. This was true for the departments of Small Domestic Animals and of Human Nutrition at LIFE. In addition, individual researchers on campus also maintained their own sample materials and managed sample tracking. These disparate methods left little room to achieve the university's goal of collaboration to enhance explorative research. Building a single BioBank with uniform sample handling, centralized data, and web access would maximize data visibility, reduce manual efforts, and ensure regulatory compliance and quality. Importantly, a centralized BioBank for university and guest researchers could potentially generate more research output than the siloed projects.

Ultimately, LIFE researchers decided to create CUBE, a centralized BioBank to store valuable samples from project entities within the university. These samples would be available for use by university researchers and external collaborators, particularly those involved in research using profiling or fingerprinting technologies. Deploying novel information technologies, such as LABVANTAGE BioBanking Solution, a part of LABVANTAGE Laboratory Information Management Suite (LIMS), would enable researchers to further utilize collected samples in more studies for explorative research.

According to Dr. Lars Dragsted, CUBE administrator and professor of biomedicine in nutrigenomics, the pace of analytical development is moving so swiftly that methods not yet imagined can be later applied to properly BioBanked samples. "We will be able to get so much more out of our samples by saving them, and having a single repository to query and

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access those samples. For researchers who have developed new methods, we will have high-quality, well-documented samples.” Optimizing the use of already-collected samples also delivers cost-savings, whether for researchers to perform additional experiments using new methods or to take full advantage of samples collected for larger-scale studies. This far more efficient use of samples, beyond the scope of the original basis for collection, helps reduce the number of animal samples taken and maximize the life cycle of human specimens.

Because of the collaborative nature of CUBE, Professor Dragsted sought a software solution that would accommodate the demands of this multiple sample-source BioBank. Instead of a single source for samples, CUBE receives samples from multiple inputs, with numerous sample owners, projects, studies and experiments. The software must uniformly handle sample registration, bar coding and label printing, storage location, ad-hoc queries, sample identification and markers, derivatives and aliquots, and results analysis. In addition, the system must assist CUBE in complying with the Danish Data Protection Agency’s regulations, including privacy and other rights for human donors.

## Solution

After ruling out a self-built system and considering traditional commercial BioBanking solutions, CUBE compared two finalists and decided that LABVANTAGE was best suited for their needs. The software provides out-of-the-box functionality with the flexibility to meet the unique needs of CUBE’s complex system. For instance, LABVANTAGE was readily configured to match the organizational hierarchy and workflows at CUBE. LABVANTAGE also accommodates security and role-level access for three different types of users: administrators, sample owners and guest researchers. Moreover, its zero-footprint architecture enables remote users to securely access the system from anywhere over a secure web browser, with no plug-ins, downloads or applets required on the end-user client. Reference institutions using the software solution, including two within the European Union, proved it was a good value for the investment. LABVANTAGE’s Nordic business partner, Software Point, offers local presence and opportunities for co-development implementation services and ongoing support. The partner enabled the system to go live within an aggressive timeline. Software Point assessed CUBE’s needs and configured the software to address unique functionality gaps to meet Nordic hospital/research organization’s requirements. Within a short period of three months, the LIMS application was successfully implemented, tested, and accepted by the end users.

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## Advantage: LABVANTAGE

LABVANTAGE satisfied the criteria CUBE sought for its BioBanking software. Specifically, LABVANTAGE serves the variety of BioBank users and supports the workflow for sample owners and guest researchers to view, query, request, grant or deny permission, and retrieve and ship samples. It provides the basis for uniform sample handling and storage and retrieval, putting in place a single system for specimen management. Because LABVANTAGE provides zero-footprint web access, the system enables university users and approved guests to have remote access to the system, thus broadening visibility to ongoing studies and experiments and increasing collaboration. In addition, the software can be configured to ensure compliance with Danish regulations.

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Dr. Dragsted said, “We like that LABVANTAGE, the company behind our informatics solution, has strong expertise in labs and quality assurance.” He was also impressed that modules can be easily preconfigured for future development of the system, and that, because LABVANTAGE designs and deploys laboratory information management systems (LIMS), any future need to expand to a full LIMS could be accommodated.

## Measuring Success

Having accepted the system in December 2009, CUBE opened to sample owners for uploading samples and accessory information. Upon anticipated approval from the Danish Data Protection Agency, CUBE will open to guest researchers. The success of CUBE, and the basis for future funding, will be measured by its use. Therefore, LABVANTAGE will play a critical role in helping administrators to report the numbers of samples stored, samples requested, studies, experiments within studies, requests fulfilled, and so on.

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Although the primary goal in creating CUBE and deploying LabVantage is fostering collaboration, a secondary result has been the unification of Standard Operating Procedures for everything from sample registration to quality assurance for long-term sample storage. Future explorative research, using the latest analytical methods, benefits significantly from the availability of uniformly registered and stored sample materials at CUBE that can now be easily viewed, queried, requested and tested.

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