

## Cancer Human Biobank (caHUB) Initiative

### Background

Biospecimens are materials taken from the human body, such as tissue, blood, and urine that can be used for cancer diagnosis and analysis. Biobanks are repositories or “libraries” where these biological materials, along with any associated clinical, pathological, or molecular information, are managed, stored, and distributed.

Biospecimens are critical to cancer research because they contain an extraordinary amount of biological information, written in the language of cells, genes, and proteins that can identify the biological characteristics of cancer cells over time. Researchers can compare these biological patterns with the clinical picture of how different patients experience progression of their disease or how their disease responds to therapies. Critical to making progress in our fight against cancer is the availability of high-quality biospecimens, which is dependent upon standardized handling processes, removal of competitive barriers to biospecimen access, and biospecimen research science that explores how collection, processing, storage, and transport procedures impact the biospecimen’s molecular characteristics and ultimate usefulness in cancer research. Because the current biobanking system has fallen short in all of these areas, there is a considerable and problematic shortage in the availability of high-quality, well-documented biospecimens for cancer research. As a result, the progress and pace of research is hindered as researchers often question the quality of the specimens available to them and, therefore, the reliability of their research results and/or restrict the scope of their projects due to limited availability of specimens fit for their purposes. These issues must be addressed urgently in order to enable advances in cancer research and patient care.

To address this challenge, the National Cancer Institute (NCI) is planning to implement a national, standardized human biospecimen resource called the cancer Human Biobank (caHUB). Currently, no centralized, standardized infrastructure of this type exists in the United States, and this national biobank will serve as a continuous and reliable source of high-quality human biospecimens and associated data for the broad cancer community, including basic and clinical researchers and the biotechnology and pharmaceutical industries that rely on biospecimens for cancer diagnostics and drug development. The caHUB initiative capitalizes on resources already developed by the NCI, including the Biospecimen Research Network (BRN)

and the NCI Best Practices for Biospecimen Resources, both of which were developed to address challenges around biospecimen quality and process standardization.

caHUB will modernize the field of biobanking by acquiring and making available to the research community biospecimens that have been collected according to the highest technical, ethical, and privacy standards, providing biospecimen reference samples that can serve as benchmarks for specimen integrity and molecular type, developing a database of information associated with these biospecimens, conducting research that supports evidence-based biospecimen best practices, and creating opportunities for collaboration and information exchange across the research enterprise. This unique, centralized, public resource will ensure the adequate supply of high-quality human biospecimens to accelerate cancer research and product development without compromising patient privacy or threatening competitive interests, ultimately allowing all stakeholders to contribute to and benefit from the resource.

Only through such infrastructure improvements will the cancer research and development enterprise be able to support advances in personalized medicine. The importance of these goals is underscored by the call from Federal policymakers for improved practices in the collection, monitoring, and tracking of biospecimens. By creating a national human biobank, the National Cancer Institute will be laying a firm foundation for both continued progress in cancer research, prevention, and treatment and progress in other diseases as well, especially those that increase the risk of cancer.

For more information about caHUB and the NCI Office of Biorepositories and Biospecimen Research, go to <http://biospecimens.cancer.gov>.

**More links for information about biospecimens and caHUB:**

- View a video and listen to a podcast about the importance of biospecimens to cancer research: <http://biospecimens.cancer.gov>
- View an interactive timeline that explains the history and milestones to the development of a national human biospecimens resource: <http://biospecimens.cancer.gov/about/timeline.asp>

- Learn more about the best practices developed by the NCI to address the lack of availability of high-quality biospecimens:  
<http://biospecimens.cancer.gov/bestpractices/>
- Find answers to frequently asked questions:  
<http://biospecimens.cancer.gov/patientcorner/>  
<http://biospecimens.cancer.gov/practices/faq.asp>