



OBRR Office of Biorepositories
and Biospecimen Research

Biospecimen Basics: An Overview of the National Cancer Institute Best Practices for Biospecimen Resources

The Role of Biospecimens in Cancer Research

Biospecimens are materials from the human body, such as tissue, blood, plasma, and urine, that can be used for cancer diagnosis and analysis. When cancer patients have a biopsy, surgery, or other procedure, often a small amount of the tissue specimen removed from the patient can be stored and used later for research. Many patients give permission for the unused portions of their biospecimens to be taken and used in research, in the hope that new knowledge might help other patients in the future. These biospecimens are stored in “libraries,” called biorepositories, with other biospecimens for cancer researchers to use in their work. In the United States, there are thousands of biorepositories, which vary widely in their size, nature of biospecimen collections, and purpose.

Scientists can now study cancer at the most basic level, identifying genes and their functions in the body (genomics) and studying the corresponding set of proteins programmed by the genetic code (proteomics). Other areas of study include pharmacogenetics, which is the study of genetic differences in patients and how these differences

affect one’s response to drugs. Recent scientific advancements in these fields have allowed greater understanding of how cancer begins and grows in the human body and have provided a foundation of knowledge to begin developing personalized treatments and interventions. Scientists are also analyzing a vast amount of clinical information from patient records and clinical trials. From these data, it is possible to identify patterns that provide a pathway to understanding disease subtypes and potential strategies for diagnosing and treating disease in new and more effective ways.

Human biospecimens play a critical role in these studies and in our emerging understanding of cancer. However, the manner in which biospecimens are collected from patients and subsequently handled, the quality of the biospecimen-associated information, and ethical, legal, and policy parameters can affect biospecimen quality and usefulness in cancer research. Scientific advances depend on the availability of biospecimens that have been collected according to the highest scientific and ethical standards.

The Office of Biorepositories and Biospecimen Research and the NCI Best Practices for Biospecimen Resources

Currently there are no standardized procedures for collecting, processing, storing, and distributing biospecimens. The National Cancer Institute (NCI) of the National Institutes of Health (NIH) has created a plan to address this roadblock to progress in cancer research. The NCI established the Office of Biorepositories and Biospecimen Research (OBBR) in 2005 to guide, coordinate, and develop the Institute's biospecimen resources and capabilities. The OBBR's mission is to ensure that human specimens available for cancer research are of the highest quality.

Using input from researchers, physicians, ethics and legal experts, and patient advocates, the OBBR developed the *NCI Best Practices for Biospecimen Resources*, a document that outlines technical and operational best practices for the use of biospecimens in research. This document also outlines best practices for biospecimen-related ethical, legal, and policy issues. For example, one issue is to ensure that potential research participants are given enough information to make an informed decision about donating their unused tissue to research projects, and that the privacy of the patients who donate biospecimens is protected.

The *NCI Best Practices for Biospecimen Resources* will be updated as new technology and clinical practices emerge and as policy and legal standards evolve.

How Can You Learn More About Biospecimens and Cancer Research?

The NCI welcomes community involvement in its mission to improve the quality of biospecimens for cancer research. If you are interested in learning more about the NCI's efforts to improve the quality of biospecimens for cancer research, please contact us. You may also request more information about the OBBR, the *NCI Best Practices for Biospecimen Resources*, and upcoming community events.

Web site: <http://biospecimens.cancer.gov>

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