

Cancer Biology Kit – Overview and Teacher Background

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Overview and Teacher Background for the Cancer Biology Kit

This section contains general information about the Cancer Biology kit including:

- synopsis of the kit
- information about how the kit curriculum is organized
- learning objectives
- patient data summary/key
- other resources

A. Kit Synopsis and Organization

The Cancer Biology: Diagnostics and Therapies curriculum scenario provides a foundation in cancer biology using a hypothetical case study of 12 breast cancer patients.

The curriculum is designed for students to work in 8 groups of 4, with each group conducting tests and analysis (ELISA, PCR, etc) on 3 patient samples, resulting in test results for each of the 12 fictional patients in duplicate. An ELISA tests is used to determine the probability that a patient's cancer has metastasized. Other labs address biomarkers of breast cancer including PCR (HER2 amplification), bioinformatics (BRCA1 mutations), and fluorescent cell staining (membrane estrogen receptor expression). The results are used to determine the potential causes of each patient's cancer.

Background information is provided regarding: the causes of cancer in general, an overview of breast cancer, antibodies, the ELISA test, ELISA test applications, PCR, fluorescent cell staining, bioinformatics, breast cancer therapies (general and targeted), and the use of big data repositories such as TCGA (The Cancer Genome Atlas) and OncoKB to study cancer.

Cancer Biology Kit Synopsis and Timeline

B. Learning Objectives and Standards Alignment

Cancer Biology curriculum standards alignment

Documents prepared by participating teachers that summarize the major lab activities and list learning objectives.

[Cancer Biology_BRCA1 BLAST_Summary_Learning Objectives](#)

[Cancer Biology_Cell Staining_Summary_Learning Objectives](#)

[Cancer Biology_Cn3D_Summary_Learning Objectives](#)

[Cancer Biology_ELISA_Summary_Learning Objectives](#)

[Cancer Biology_PCR_Summary_Learning Objectives](#)

C. Patient Diagnosis Key and Patient Summary Worksheet

[Cancer Biology Kit Patient Diagnosis Key](#)

[Cancer Biology Kit Experiment and Patient Summary](#)

D. Other Resources

[Cancer Biology Glossary](#)

[Cancer Biology Resources](#)