**Course Title:** SIPM610 Systems Pharmacology Laboratory I

**Topic:** Cancer Biomarker Discovery

**Course Description:** This course will provide an overview of the principles and methods for cancer biomarker discovery. Students will learn about the different types of cancer biomarkers, how to identify and validate them, and how to use them for early detection, diagnosis, and prognostication of cancer. The course will also cover the ethical and regulatory considerations of cancer biomarker development.

**Learning Objectives:**

* Define cancer biomarkers and their role in cancer diagnosis and treatment
* Identify different types of cancer biomarkers
* Describe the steps of biomarker development
* Discuss the ethical and regulatory considerations of cancer biomarker development
* Analyze gene expression profiles of transcriptomics data obtained from basal and luminal breast cancer patients using Galaxy platform

**Learning Methods:** on-site, hand-on practices

**Assessment:** none

**Course Materials:**

* Lecture slides Introduction to Cancer Biomarkers
* Galaxy subscription

**Additional Notes:**

* Please download the followings and upload into your Galaxy server
  + Breast cancer transcriptome data (https://www.dropbox.com/sh/ppjzanz5idg4c4y/AACie2-GSI6hxGwDOeeFja-Pa?dl=0)
  + Reference genome data (https://www.dropbox.com/sh/dnr3qjbkc2ghe99/AACfBydnIsluQcoPL8fdY7J3a?dl=0)
  + DEG analysis workflow (https://usegalaxy.org/u/scipt/w/workflow-constructed-from-history-tech-appl)