

# Module 3: Overview



## Module Overview

In this module, we will be learning about the X chromosome and mechanisms by which chromosome X genes have an effect on tumor biology. We will be learning about X chromosome inactivation and how the XIST gene is central to it, both in healthy tissues using the Genotype-Tissue Expression (GTEx) data set and in cancer tissues using the Cancer Cell Line Encyclopedia (CCLE) data set. We will begin working with the CCLE dataset using template R code to explore the data set and determine XIST expression levels across the cell lines.

## Module Learning Objectives

### 3.1 Biology/Stats (2 hours)

1. Understand how XIST gene functions in X chromosome inactivation
2. Understand known connections between chromosome X genes and cancer

### 3.2 Coding (2+ hours, dep on coding experience)

1. Identify and visualize annotated information given for CCLE cell lines
2. Visualize XIST gene expression across CCLE cell lines
3. Determine thresholds that could be used to predict sex based on XIST expression

### **3.3 Research/Professional development** (30 min)

1. Identify ways debug errors in your code