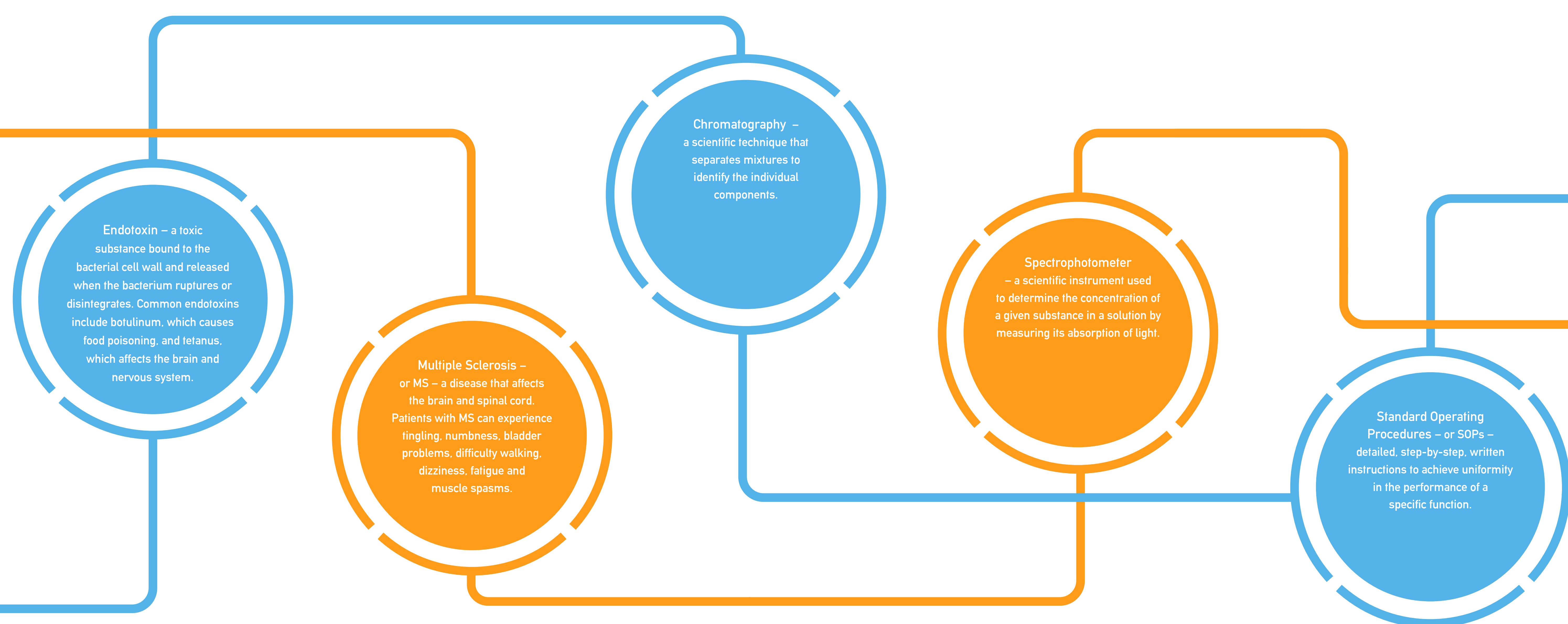


# Clean or Contaminated?

## HOW TO TEST



# Drug Purity



From aspirin to antibiotics, the medicines we take are vital to our everyday health and well-being. But what if bacteria, viruses or toxic substances accidentally contaminate a drug during manufacturing?

Scientists play a critical role in ensuring that our medicines are both pure and safe. In this lab, students will act as a quality control team in a manufacturing facility by testing whether a mock drug – GrapeX, for multiple sclerosis – is pure or contaminated with an ‘endotoxin’ that causes allergies and illness.

Students will analyze samples of GrapeX using reverse phase chromatography to separate out the drug colors and look for additional yellow molecules, which signal the presence of an endotoxin. They will verify their results using a spectrophotometer and then decide whether their batch is safe to be released to the market for public use.

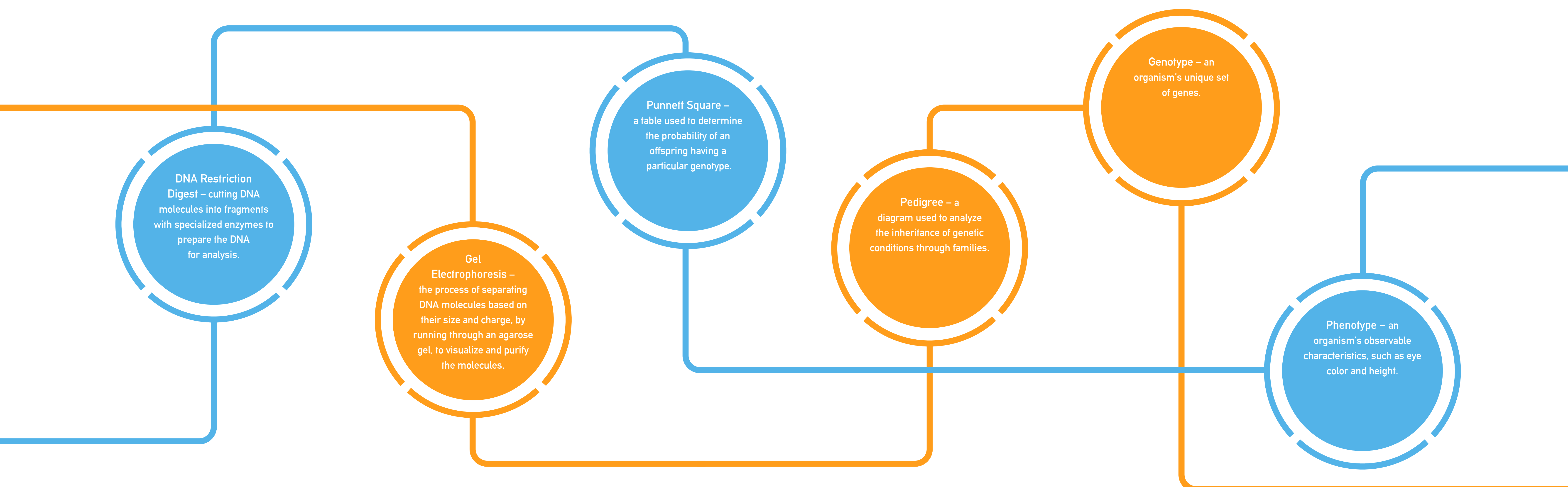


# When a Band-Aid Won't Stop the Bleeding:



A CASE STUDY OF

# Hemophilia



Small scrapes and cuts are the stuff of childhood. Falling off a bike, stubbing a toe or wrestling with siblings are all rites of passage for most youngsters. However, such minor injuries can be life-threatening for people with hemophilia, a rare disorder in which the blood fails to properly clot.

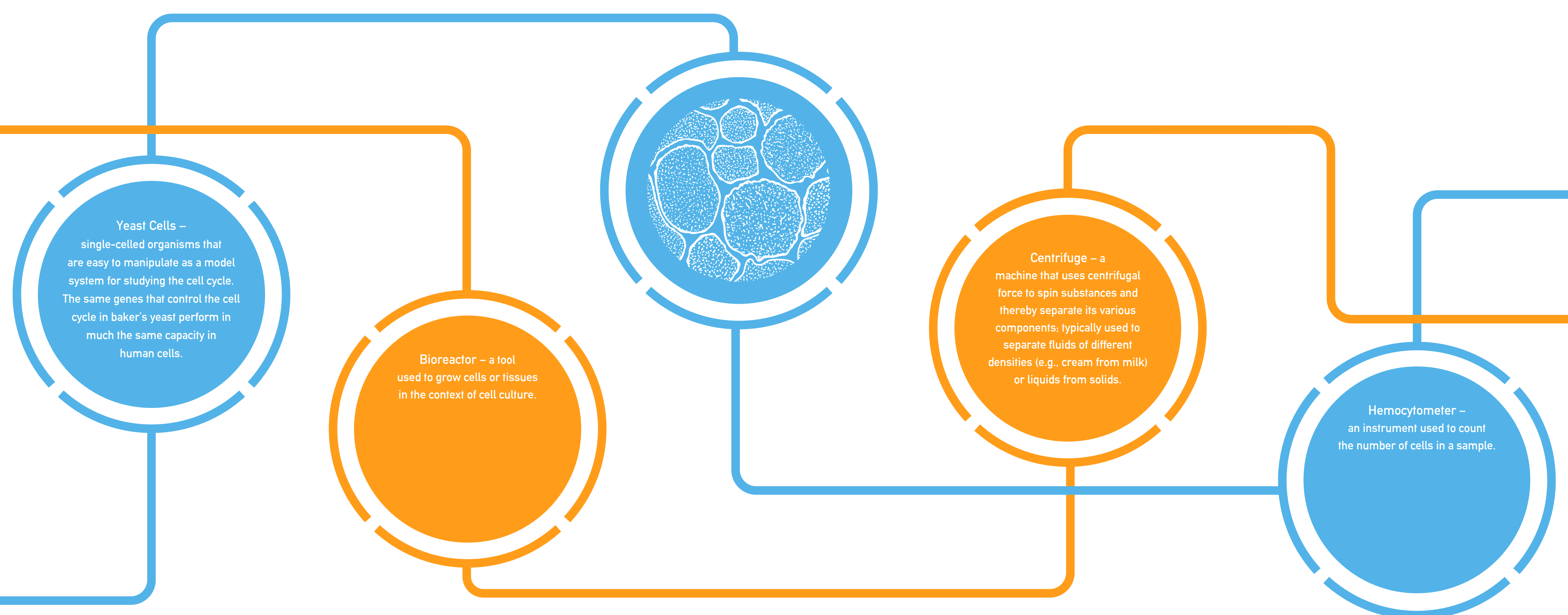
In this lab, students will learn about the symptoms of hemophilia, how it is inherited, and which proteins give rise to hemophilia A and B. Students will perform molecular biology techniques – DNA restriction digests, gel electrophoresis, pedigree analyses and Punnett Squares – to determine which members of a hypothetical family have the disease and how to predict their respective genotypes and phenotypes.



# Medicine Making Machines

SHEDDING LIGHT ON

# Cell Growth



Everyone knows that proper nutrition helps us grow and perform at peak levels. The same is true of the cells grown in a laboratory. By giving cells the proper nutrients and optimal growing conditions, they rapidly multiply and produce the specialized proteins needed to make life-saving medicines.

In this lab, students will work with yeast cells as a model for understanding how cells multiply and what they need to survive, thrive and produce therapeutic proteins. Acting as technical development scientists, students will observe and measure the quantity of yeast cells at each growth temperature using a hemocytometer and an automated cell counter. They will also use a centrifuge to determine cell mass. From this information, students will gain new appreciation for the complexity and importance of making medicines from cells.

