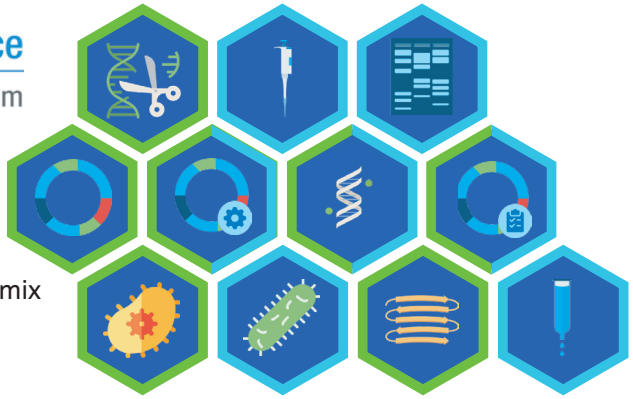
LabXchange™

AMGEN® Biotech Experience
Scientific Discovery for the Classroom



Using LabXchange to Enhance the ABE Labs

What is LabXchange?

LabXchange is an online platform that allows you and your students to remix science content to create your own learning journey called a pathway.

How does LabXchange fit in with ABE?

In collaboration with the Amgen Foundation and ABE teachers, LabXchange has created a collection of pathways designed to enhance the ABE lab experience. The pathways are modular to allow you to mix and match concepts and practice with lab techniques in the way that best supports your students.

HERE ARE SOME OF THE TOURS WE SUGGEST:

TEACH WITH A THEME

Introduction to Genetic Engineering
Provide an overview of gene cloning, emphasizing the design process and molecular tools.

THE PROCESS | RECOMBINANT PLASMIDS | THE ROLE OF CELLS | THE PRODUCT

Tools & Techniques in Biotechnology
Build foundational lab skills that will prepare students for a variety of wet lab programs.

MICROPIPETTING | GEL ELECTROPHORESIS | BACTERIAL TRANSFORMATION | COLUMN CHROMATOGRAPHY

Building a Recombinant Plasmid
Walk students through the process of designing and creating a recombinant plasmid.

RESTRICTION ENZYMES | DNA LIGASE | VERIFICATION BY GEL ELECTROPHORESIS

ALIGN WITH AN ABE LAB

Labs 1.1 & 1.2: Tools of the Trade
Preview and practice micropipetting and gel electrophoresis while exploring their applications.

TECHNIQUES: MICROPIPETTING | TECHNIQUES: GEL ELECTROPHORESIS

Lab 2/2A: Preparing to Clone the rfp Gene
Introduce plasmids and restriction enzymes as molecular tools and practice using them in the lab.

GENETIC ENGINEERING: THE PROCESS | GENETIC ENGINEERING: RECOMBINANT PLASMIDS | RESTRICTION ENZYMES

Lab 3: Building the pARA-R plasmid
Highlight the roles of DNA ligase in DNA replication and gene cloning.

BUILDING A RECOMBINANT PLASMID: DNA LIGASE

Lab 4/4A: Verification of Restriction and Ligation using Gel Electrophoresis
Preview and practice gel electrophoresis before applying it to plasmid verification.

TECHNIQUES:
GEL ELECTROPHORESIS

VERIFYING A RECOMBINANT PLASMID:
GEL ELECTROPHORESIS

Lab 5/5A/5B: Transforming Bacteria with Ligation Products
Explore bacterial cells as model organisms and practice carrying out transformation.

INTRODUCTION TO GENETIC ENGINEERING:
THE ROLE OF CELLS

TECHNIQUES:
BACTERIAL TRANSFORMATION

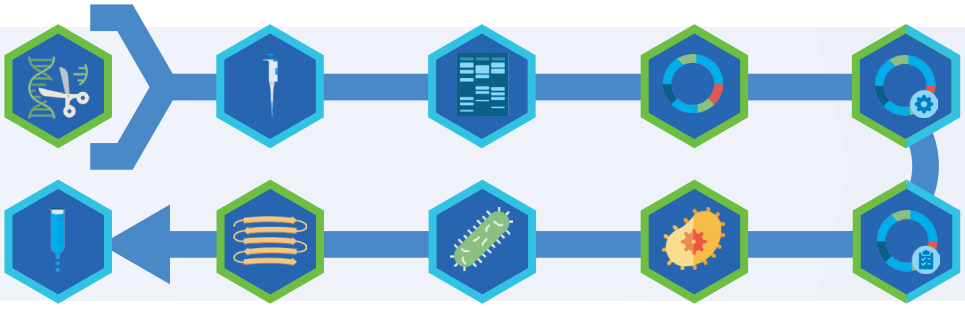
Lab 6: Purifying the Fluorescent Protein
Emphasize the link between protein structure and function while practicing protein purification.

INTRODUCTION TO GENETIC ENGINEERING:
THE PRODUCT

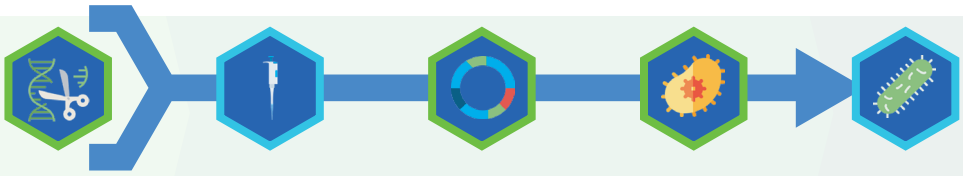
TECHNIQUES:
COLUMN CHROMATOGRAPHY

CREATE YOUR OWN NARRATIVE

Labs 1, 2A, 4A, 5A and 6:
Follow the process of gene expression and protein production, omitting a discussion of ligation.



Labs 1 & 5B:
Focus on recombinant protein production in transformed cells as a process common to many labs.



Labs 1 & 6:
Connect protein structure with chemical properties to support biology or chemistry classes.