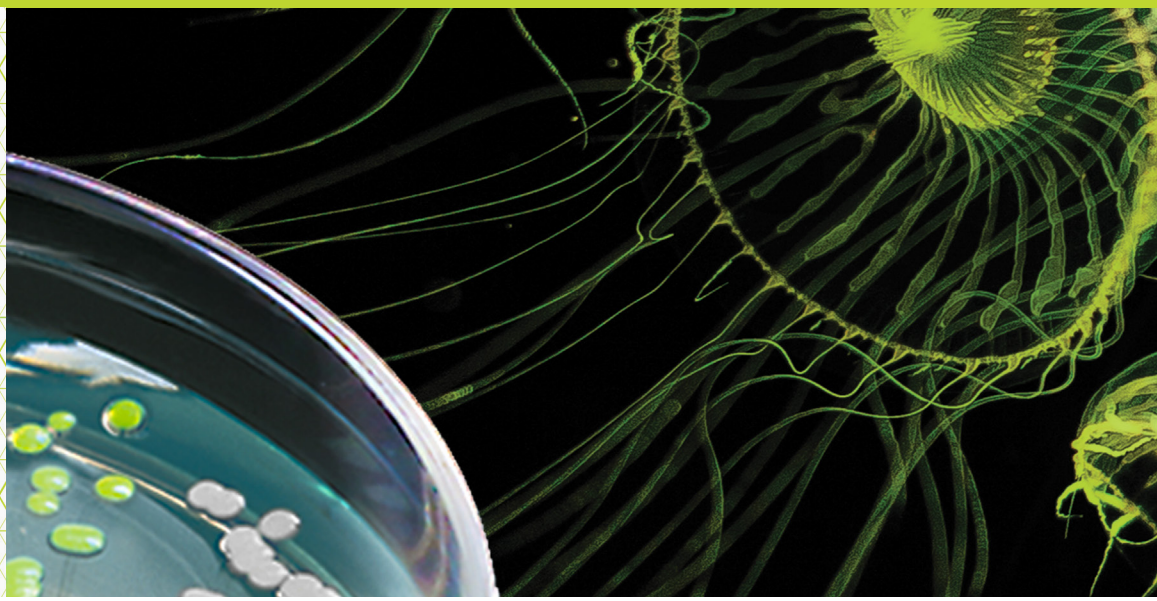
BIO-RAD Explorer

pGLO Bacterial Transformation Kit
For General Biology



A three-dimensional approach to pGLO bacterial transformation

CONCEPTS

- *Central Dogma*
- *Genetic Engineering*
- *Gene Expression*
- *Microbiology*

SKILLS

- *Bacterial Transformation*
- *Microbial Culturing*
- *Data Collection and Analysis*
- *Experimental Design*

This scaffolded approach to the classic pGLO transformation lab teaches core genetics concepts — including gene expression and gene regulation — using a student-driven experimental design experience. Students use bacterial transformation to investigate the role of antibiotic selection markers, then they design and conduct another experiment to switch on the *GFP* gene in transformed bacteria. Finally, they apply what they've learned to design a biosensor, based on bacterial transformation, to solve a real-world problem.

Visible, Dramatic Phenotype

Bacteria transformed with the pGLO plasmid glow a brilliant fluorescent green under UV light. Once students perform this transformation, they never forget the central dogma of molecular biology: DNA > RNA > Protein > Trait — Green Fluorescence.

Aligned to NGSS

The activities in this kit include modeling, experimental design, and design engineering that align to the Next Generation Science Standards (NGSS) and modern teaching methods.

Gene Expression and Regulation

Students transform bacteria with the pGLO plasmid and determine whether transformants are resistant to the antibiotic ampicillin. Then they design and run a second experiment to use arabinose to switch on the *GFP* gene and see the bacteria glow under UV light.

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pGLO in three dimensions!

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Activities include

- Pre-lab activity — transfer of genes between species
  - — Observe fluorescent organisms
  - — Model the processes that occur in green fluorescent bacteria
  - — Analyze the pGLO plasmid
- 2 laboratory activities
  - — Transform bacteria with the pGLO plasmid
  - — Switch on the *GFP* gene
- Post-lab activity — bacterial transformation/biosensor design challenge

Kit contents support 32 students

- pGLO plasmid and *E. coli* strain HB101 K-12
- Everything you need for plating and transformation (includes reagents and plastics)
- UV pen light
- Foam floats
- Curriculum, including teacher's guide, student manual, and quick guide, available online

Required accessories not included in kit

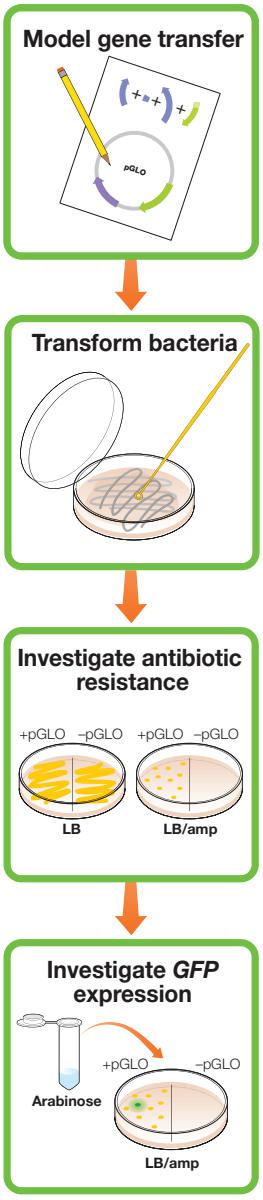
- Incubation oven (for growing the bacteria)
- Water bath or dry bath (for the heat shock step)
- Microwave oven, autoclave, or hotplate (for agar preparation)

Timeline

Complete all activities in three to five 50-minute class periods.

Ordering Information

Catalog #	*Description*
17006991EDU	**pGLO Transformation Kit for General Biology**
1660555EDU	**Transformation Reagent Refill Kit**



Call **1-800-4BIORAD** (1-800-424-6723) or visit **bio-rad.com/pglo** for more information and classroom supports.

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