



## Biotechnology Explorer™ Educational Products

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## Captivating Science Education

The centerpiece of the Bio-Rad education program comprises the Biotechnology Explorer™ kits — labs “in a box” — which provide the comprehensive applications that teachers need to update their syllabi and keep their content current. The objective of the Biotechnology Explorer program is to support and revitalize life science education.

Biotechnology Explorer kit applications align with current life science education standards and performance indicators and meet the most rigorous college preparatory requirements.

For more information about the products listed here, see Ordering Information (page 344), request the current Biotechnology Explorer catalog (bulletin 2112), or visit [explorer.bio-rad.com](http://explorer.bio-rad.com).



## Classroom Kits

### Biotechnology Explorer™ Kits Order Info: Pg 344

Biotechnology Explorer kits address the critical need for inquiry-based activity — an important component of scientific literacy for an educated citizenry and a launch point of experience and practical training for students interested in careers in biotechnology. The kits range from introductory to advanced topics, including courses guiding students through entire molecular biology workflows.

Areas of biotechnology applications covered include:

- Transformation and microbiology
- Protein analysis and chromatography
- DNA analysis
- PCR amplification
- Fully developed course series in DNA and protein

### Biofuel Enzyme Kit Order Info: Pg 344

Reveal the power of enzyme kinetics by illustrating the theory through a real-world application to biofuels. Help your students learn how an enzyme influences the rate of a reaction. Discover how enzymes work and what makes them so powerful. Through guided inquiry activities, your students will determine how temperature, pH, the concentration of a substrate, and the concentration of an enzyme affect an enzymatic reaction.

- Guides instruction on enzyme kinetics and biofuel energy sources
- Contains no caustic reagents
- Enables both qualitative and quantitative measurement of reactions

### Cloning and Sequencing Explorer Series Order Info: Pg 344

From DNA extraction to computer-based sequence analysis, this modular kit is designed as a 6–8 week series of lab activities in which students clone and analyze *GAPDH*, a plant housekeeping gene that encodes glyceraldehyde-3-phosphate dehydrogenase.

This lab course provides students with the opportunity to perform novel scientific research, allowing them to clone and sequence a gene from an uncharacterized plant

species and to add to the body of scientific knowledge around the world. The series provides a fully developed and ready-to-go lab course, including relevant background, protocols that work, and student assessment.

Students will experience firsthand the satisfaction that comes from a completed and successful research project, which may encourage them to pursue a career in research.

**New Protein Expression and Purification Series**

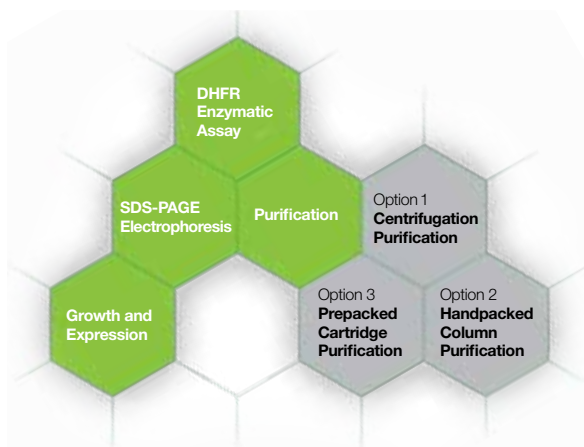
Order Info: Pg 344

Biotechnology Explorer™ makes it easy for you and your students to purify proteins. Teach the core process of expression and purification of bioengineered proteins using this clear and concise modular lab series. Help your students gain hands-on experience and give them the confidence they need.

The modular design of the new protein expression and purification series allows you to teach the basics of protein purification, then proceed to more advanced concepts. The scalability of this particular affinity purification process provides an adaptable set of techniques and content to match the goals of any teacher, from the beginning protein educator up to an advanced college level instructor in biomanufacturing. The series provides a fully developed and ready-to-go lab course, including relevant background, protocols that work, and student assessment.

Discover more about this unique series, including how dihydrofolate reductase, DHFR, is a target for certain cancer treatments and how the protein expression and purification process can be relevant to the world of biomanufacturing.

- Real research workflow
- Unique modular design



- Centrifugation and chromatography instrumentation-based purification options
- Optional assessment module includes formative and summative assessment guides and questions
- Meaningful introduction to cancer research and biomanufacturing
- Based on patented technology

**New Biotechnology: A Laboratory Skills Course**

Order Info: Pg 344

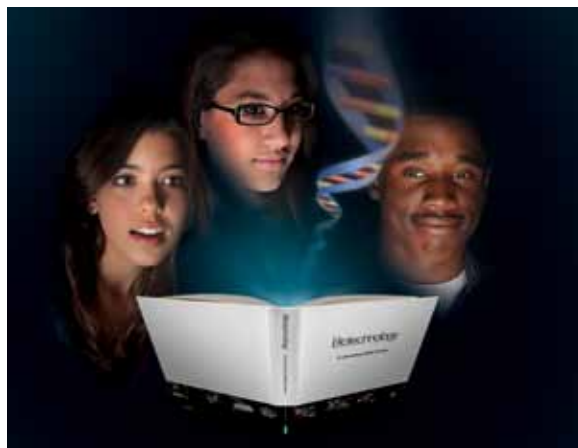
This laboratory textbook blends textbook theory with hands-on laboratory activities and real world applications for your biotechnology course and incorporates Biotechnology Explorer™ kits for easy implementation supported by live technical support. This textbook encourages the next generation of biotechnologists by:

- Developing key skills with multiple activities
- Encouraging students to consider the broader implications of biotechnology with bioethics case studies
- Broadening occupational awareness with profiles of careers in biotech
- Letting students answer a research question using independent research

The teacher's supplement provides a thorough background on preparation, setup, results analysis, and assessment. It also provides guidance on how to implement and build your biotechnology course.

Chapters include:

- The Biotechnology Industry
- Laboratory Skills
- Microbiology and Cell Culture



- DNA Structure and Analysis
- Bacterial Transformation and Plasmid Purification
- Polymerase Chain Reaction
- Protein Structure and Analysis
- Immunological Applications
- Research Projects

## Captivating Science Education

### Classroom Kits

Catalog # Description

#### Biotechnology Explorer Kits Pg 342

166-0003EDU	<b>pGLO Bacterial Transformation Kit</b> , provides materials for 32 students or 8 workstations
166-0013EDU*	<b>pGLO Kit SDS-PAGE Extension</b> , provides materials for 32 students or 8 workstations
166-0005EDU*	<b>Green Fluorescent Protein (GFP) Chromatography Kit</b> , provides materials for 32 students or 8 workstations
166-0006EDU*	<b>Secrets of the Rainforest Kit</b> , provides materials for 32 students or 8 workstations
166-5030EDU	<b>Microbes and Health Kit</b> , provides materials for 32 students or 8 workstations
166-0500EDU	<b>Long-Wave UV Lamp</b> , requires 4 AA batteries
166-0530EDU	<b>Long-Wave UV Penlight</b>
166-0008EDU	<b>Size Exclusion Chromatography Kit</b> , provides materials for 32 students or 8 workstations
166-2900EDU*	<b>Got Protein? Kit</b> , provides materials for 320 students or 80 workstations
166-2400EDU*	<b>ELISA Immuno Explorer Kit</b> , provides materials for 48 students or 12 workstations
166-2700EDU*	<b>Comparative Proteomics Kit I: Protein Profiler Module</b> , provides materials for 32 students or 8 workstations
166-2800EDU*	<b>Comparative Proteomics Kit II: Western Blot Module</b> , provides materials for 32 students or 8 workstations
166-5035EDU*	<b>Biofuel Enzyme Kit</b> , provides materials for 32 students or 8 workstations
166-0007EDU*	<b>Forensic DNA Fingerprinting Kit</b> , provides materials for 32 students or 8 workstations
166-0001EDU*	<b>Analysis of Precut Lambda DNA Kit</b> , provides materials for 32 students or 8 workstations
166-0002EDU*	<b>Restriction Digestion and Analysis of Lambda DNA Kit</b> , provides materials for 32 students or 8 workstations
166-2300EDU	<b>Genes in a Bottle Kit</b> , includes 1 DNA extraction module (166-2000EDU) and 2 DNA necklace modules (166-2200EDU); provides materials for 36 students or 9 workstations
166-2600EDU*	<b>Crime Scene Investigator PCR Basics Kit</b> , provides materials for 32 students or 8 workstations
166-2660EDU*	<b>Crime Scene Investigator PCR Basics Real-Time PCR Starter Kit</b> , provides materials for 32 students or 8 workstations plus additional real-time reagents for further studies
166-2100EDU*	<b>PV92 PCR Informatics Kit</b> , provides materials for 32 students or 8 workstations
166-2500EDU*	<b>GMO Investigator Kit</b> , provides materials for 32 students or 8 workstations
166-2560EDU*	<b>GMO Investigator Real-Time PCR Starter Kit</b> , provides materials for 32 students or 8 workstations plus additional real-time reagents for further studies

Prices listed by catalog number on page 363.

#### Cloning and Sequencing Explorer Series Pg 342

166-5000EDU*	<b>Complete Cloning and Sequencing Explorer Series</b> , includes all 8 modules and curriculum resource CD
166-5005EDU*	<b>Nucleic Acid Extraction Module</b>
166-5010EDU*	<b>GAPDH PCR Module</b>
166-0451EDU	<b>Electrophoresis Module</b>
732-6300EDU	<b>PCR Kleen Spin Purification Module</b>
166-5015EDU*	<b>Ligation and Transformation Module</b>
166-5020EDU	<b>Microbial Culturing Module</b>
732-6400EDU	<b>Aurum Plasmid Mini Purification Module</b>
166-5025EDU*	<b>Sequencing and Bioinformatics Module</b> , includes sequencing primers, control plasmid, and iFinch bioinformatics subscription; sequencing service not included
166-5001EDU	<b>Curriculum Resource CD</b>
166-5002EDU	<b>Cloning and Sequencing Explorer Series Instruction Manual</b> , printed in full color

#### Protein Expression and Purification Series Pg 343

166-5040EDU*	<b>Protein Expression and Purification Series</b> , centrifugation purification process
166-5045EDU*	<b>Protein Expression and Purification Series</b> , hand-packed purification process
166-5050EDU*	<b>Protein Expression and Purification Series</b> , prepacked purification process
166-5070EDU	<b>Protein Expression and Purification Series Assessment Module</b> , formative and summative assessment tool
166-5055EDU*	<b>Growth and Expression Module</b>
166-5060EDU*	<b>SDS-PAGE Electrophoresis Module</b>
166-5041EDU	<b>Centrifugation Purification Module</b>
166-5046EDU	<b>Hand-Packed Purification Module</b>
166-5051EDU	<b>Prepacked Purification Module</b>
166-5065EDU*	<b>DHFR Enzymatic Assay Module</b>

#### Biotechnology: A Laboratory Skills Course Pg 343

166-1025EDU	<b>Biotechnology: A Laboratory Skills Course</b> , student edition
166-1027EDU	<b>Biotechnology: A Laboratory Skills Course</b> , teacher edition, includes one student edition and one teacher supplement

\* Ships with both temperature sensitive and room temperature components. Immediately store temperature sensitive items at 4°C or –20°C as indicated.

EDU price discounts are for qualified educational institutions and educators only. Items are available at list price for noneducators (must be ordered without an EDU suffix).