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| **TEA CTE**  **Advanced Biotechnology**  **Student Resources** | Power Point Project Share | eBook | Lesson Activity | Lab | PODCAST |
| Module 1 | 1.1 Overview of Biotechnology | Chapter 1 | 1.1A Biotech Timeline  1.1C Movie Maker  1.1D Current Events | 1.1B Root Beer | Introduction to Biotechnology |
|  | 1.2 Cell Structure and Function | Chapter 2 | 1.2A Cells Alive  1.2 C Virtual Electron Microscope | 1.2B Microscope | Cell Structure and Function |
|  | 1.3 DNA Structure and Function | Chapter 3  Chapter 4 | 1.3C DNAi Timeline  1.3D DNA Replication  1.3BDNA origami | 1.3A DNA Extraction | DNA Replication |
|  | 1.4 Protein Synthesis | Chapter 4 | 1.4A Transcription and Translation |  | Protein Synthesis: Translation  Protein Synthesis: Transcription |
|  | 1.5 Protein Structure and Fuction | Chapter 5 |  | 1.5A DNA to Disease  1.5B Mapping the Human Genome | Protein Structure  Control of Gene Expression  Mutations |
|  | 1.6 Math for the Scientist | Chapter 6 | 1.6A Math Skills  1.6B Excel Tutorial | 1.6C Making Solutions and Dilutions |  |
|  | 1.7 Lab Basics | Chapter 7 | 1.7B Keeping a Lab Notebook | 1.7A Training Lab Tech: Safety  1.7C Micropipette  1.7D Calibrating Lab Equipment | Using the Electric Balance  Using the pH Meter  Using the Micropipettor  Using the Centrifuge  Preparing an Agarose Gel  Electrophoreis |
| Module 2 | 2.1 Recombinant DNA Technology |  | 2.1C DNA Sequencing  2.1D Making Recombinants | 2.1A Dye Electrophoresis  2.1B Restriction Enzymes  2.2E GFP Transformation |  |
|  | 2.2 DNA Analysis |  | 2.2C PCR Web  2.2A PFLP Web | 2.2C PCR  2.2B VNTR  2.2A RFLP |  |
|  | 2.3 Therapeutic Proteins (column, SDS) |  | 2.3A Module organisms | 2.3C SDS GFP  2.3BColumn Chromatography |  |
|  | 2.4 Bioinformatics |  | 2.4A Bioinformatics: The Basics  2.4B Bioinformatics: Understanding Disease |  |  |
| Module 3 | 3.1 Cloning Methods |  | 3.1A History of Cloning  3.1B Cloning methods  3.1C Cloning in the Movies | [STEM CELL Module](http://learn.genetics.utah.edu/content/tech/stemcells/) |  |
|  | 3.2 Advancements in Animal BT |  | \*RNAi  \*SNPs | 3.2A Transgenics  3.2C RNAi  3.2B SNPs |  |
|  | 3.3 Plant Biotechnology |  | [Harvest of Fear](http://www.pbs.org/wgbh/harvest/) | 3.3A Plant Tissue Culture  3.3B GMO Ethics |  |
|  | 3.4 Environmental Biotechnology |  |  | 3.4A Bioremediation |  |
| Module 4 | 4.1 Regenerative Medicine |  | 4.1A Future in Biotech  [EXPLORAVISION](http://www.exploravision.org)  [Biogenius Challenger](http://www.biotechinstitute.org/go.cfm?do=page.view&pid=2) | STEM CELLS |  |
|  | 4.2 Molecular Diagnostics |  |  | 4.1B ELISA  4.1A Microarrays |  |
|  | 4.3 Pharmaceuticals |  | [Epigenetics](http://learn.genetics.utah.edu/content/epigenetics/)  4.3 A Careers in Biotech |  |  |
| Extensions Explorasvision: <http://www.exploravision.org>   * Entries due late January   DNA Day Essay: <http://www.ashg.org/education/dnadaycontest.shtml>  Biogenius Challenge: <http://www.biotechinstitute.org/go.cfm?do=Page.View&pid=2>   * Entries due mid March   Citizen Science: <https://www.zooniverse.org>  Citizen Science: <http://www.scientificamerican.com/citizen-science/>  Siemens Competition: <http://www.siemens-foundation.org/en/competition.htm> | | | | | |