



Genetically Modified Organisms and the Regulation of Gene Expression

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Science and Global Issues: Biology

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Booth # 306

Science Education for Public Understanding Program



- Science curriculum design and professional development
- Based at the Lawrence Hall of Science, University of California at Berkeley
- Designing science curriculum, working with teachers, and supporting quality science instruction since 1983
- Major funding for curriculum work from the National Science Foundation

Lab-Aids, Inc.



- Publishes and supports the use of SEPUP materials in classrooms across the United States
- Publishing quality science curricular materials, providing curricular support since 1963
- Based in Ronkonkoma, New York



Science and Global Issues (SGI)

- NSF curriculum development project
- Uses sustainability as the unifying context for studying important biological concepts
- Inquiry-based, issue-oriented science...
 - Students talk, think, and discuss content as it relates to personal, societal, and global issues
 - Students learn to use evidence in the decision-making process
- Embedded assessments and literacy strategies
- Research-based and extensively field tested

Science and Global Issues: Biology

Unit	Content focus	Sustainability focus
Sustainability	Interdisciplinary	Sustainability from a personal, community and global perspective
Living on Earth	Ecology	Human influence on ecosystems
World Health	Cell Biology	Global health issues
Feeding the World	Genetics	Use of genetically modified organisms
Maintaining Diversity	Evolution	Changes in and threats to biodiversity



Sustainability

- In the context of human development:
 - Meeting the needs of the present without compromising the ability of future generations to meet their own needs
- Examined through three perspectives:
 - Environmental, economic, and social
- Considered on three levels:
 - Personal, community, and global



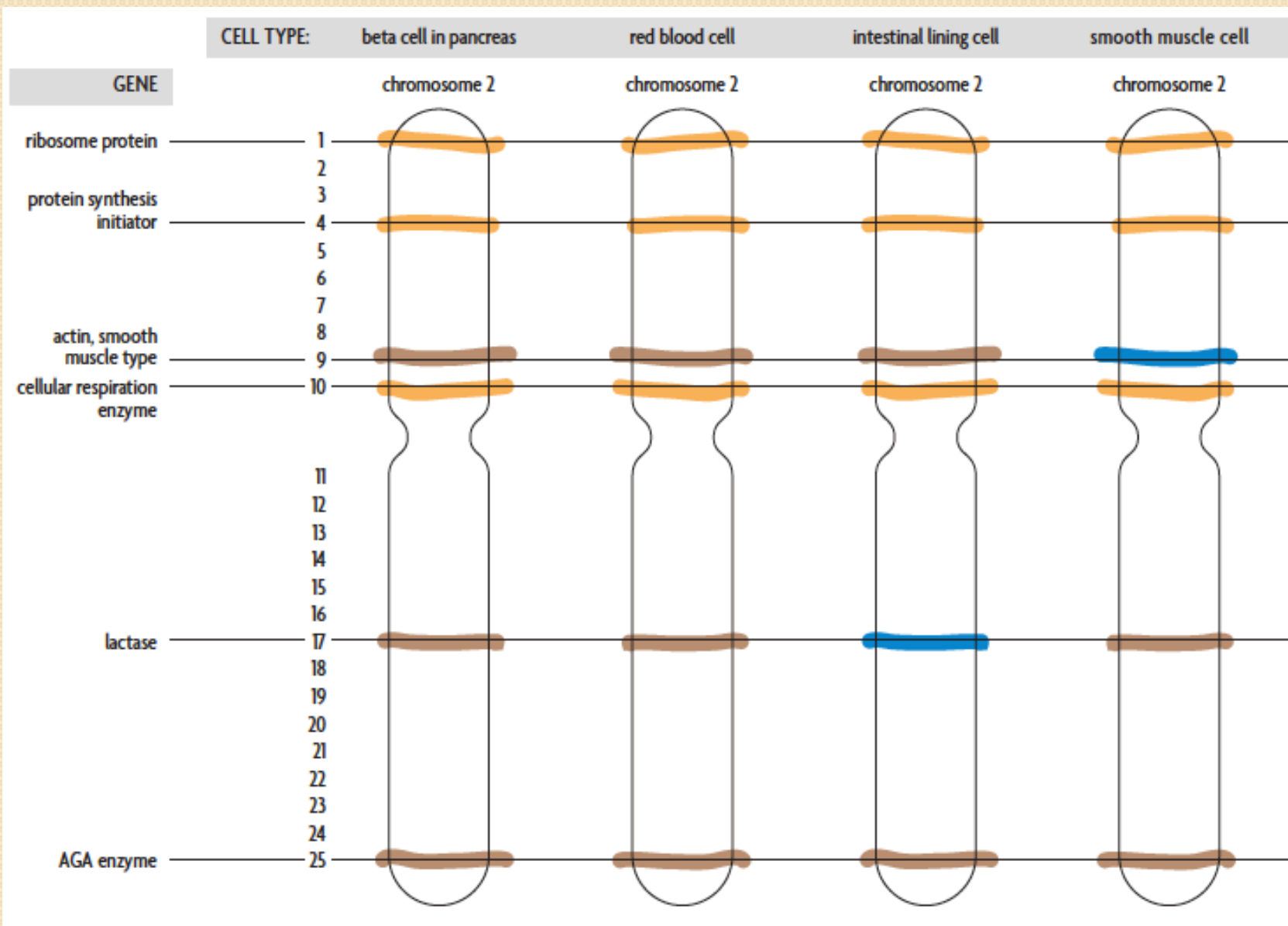
Activity: Cell Differentiation and Gene Expression

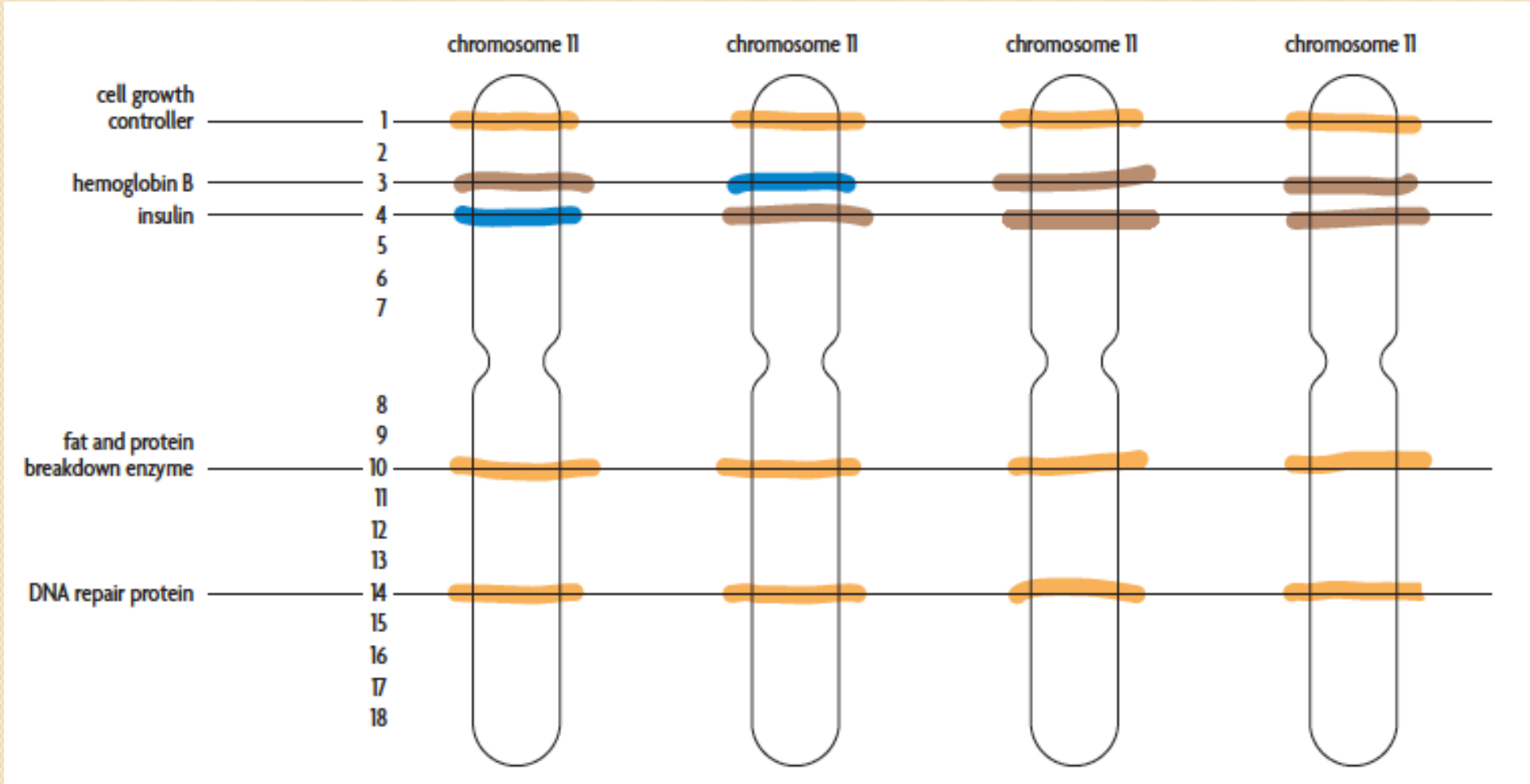
- Occurs late in the unit (17)
- Students have basic understanding of major genetic concepts
- Students comfortable with 4-2-1 model and literacy strategies
- Several case studies already covered



Activity: Cell Differentiation and Gene Expression

- Read Introduction
- Part A: Work in groups of four







Activity: Cell Differentiation and Gene Expression

- Part B: Complete Procedure steps 8-16
- Part C: Read Procedure steps 17-20, skim case study - “Terminator Technology”

Read, Think, and Take Note

Read, Think, and Take Note: Guidelines

As you read, from time to time, write one of the following on a sticky note:

- Explain a thought or reaction to something you read.
- Note something in the reading that is confusing or unfamiliar.
- List a word that you do not know.
- Describe a connection to something you learned or read previously.
- Make a statement about the reading.
- Pose a question about the reading.
- Draw a diagram or picture of an idea or connection.



Genetics Topics

- Basic genetic concepts
 - Genotype and phenotype
 - Punnett squares
 - Mono- and dihybrid crosses
 - Genes, alleles, chromosomes & DNA
- Mendel's work
- Mechanisms of inheritance
- Selective breeding
- Mitosis and meiosis
- Genetic modification
- Gene expression
- DNA structure & replication
- Protein synthesis



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