



Materials and Lab requirements

All units require:

- Student bring paper and pencil/pen
- Computer(s) and/or Ipads, tablets with Quick Time player, Word, and Power Point
- Access to the internet.
- Projector or video display for the full class to participate.
- Printed student handouts/ assignments

Special notes:

Unit 4

“Hands-on” Gel Electrophoresis Labs will require ordering and purchasing an electrophoresis chamber or making one of your own.

This unit does have a virtual lab option.

Units 6 & 7

Be sure to prepare ahead of time and check out the suggested video links or place the order for the free DVDs before the unit begins.

Unit 1

STEMfuse Class Activity / Lab Materials and Alternate Commercial Kit Ordering Information					
Class Activity / Lab	Materials	Ordering Company	Product Number	Cost	Comments
Class Activity 1.1	Register Tape (or Masking tape)	Office Max	20805461	\$.79/roll	1 ply, 2 1/4" X 128"
Biotechnology Timeline	Tape Measure with Metric Readings	Amazon	33-725	\$16.67/ each	25 ft., FatMax Tape by Stanley
	Copies of 3 Stages and Milestone Contributions	N/A	-----	-----	-----
	Tape	Office Max	20054548	\$6.39/2 pack	Scotch Magic, 1/2" X 1296"
	String (or Yarn)	Amazon	46171	\$4.99/roll	White, cotton, 10 ply, 275 ft.
	3" X 5" index cards	Office Max	22504951	\$1.00/100	Ruled, white
	Internet or Encyclopedias	N/A	-----	-----	-----
Laboratory Safety 1.2	Copies of Student Handout and Student Acceptance	N/A	-----	-----	-----
Class Activity 2	Copies of Student Handout	N/A	-----	-----	-----
Understanding the Scientific Method (Dry Lab)					
Class Activity 1:4	Copies of Student Handouts	N/A	-----	-----	-----
Practicing the Scientific Method (Mythbusters Dry Lab)					

Class Activity / Lab	Materials	Ordering Compal	Product Numnb	Cost	Comments
Yeast Fermentation Lab #1					
(Option #1)	Dry Active Yeast	Walmart	9257	\$37.92/3 pack	Available in stores and online
	250 mL beakers	Fisher Scientific	FB-100-250	\$57.10 / 12 pack	Slightly flared spout for accurate pouring
	250 mL flask	Fisher Scientific	FB-500-250	\$69/80 / 12 pack	Narrow mouth
	Table sugar packets	Walmart	4920004091	\$47.12 / 100 packets	In stores only, not available online
	Graph paper	Office Max	20805194	\$4.29 / 50 sheets	8 1/2 " X 11"
	Rulers (or Meter sticks)	Office Max	22548165	\$1.19 / each	Non-shatter, flexible
	String	Amazon	46171	\$4.99/roll	White, cotton, 10 ply, 275 ft.
	Round ballons	Walmart	*See comments	\$3.29 / 36 balloons	* Search: Balloons Round 7" 36/Pkg- Assorted Colors
	500 mL Graduated Cylinder	Fisher Scientific	03-007-35	\$44.30 / each	5 mL graduations
Yeast Fermentation Lab #2					
(Option #2)	Dry Active Yeast	Walmart	9257	\$37.92/3 pack	Available in stores and online
	250 mL beakers	Fisher Scientific	FB-100-250	\$57.10 / 12 pack	Slightly flared spout for accurate pouring
	250 mL flask	Fisher Scientific	FB-500-250	\$69/80 / 12 pack	Narrow mouth
	500 mL Graduated Cylinder (to measure 400 mL water)	Fisher Scientific	03-007-35	\$44.30 / each	5 mL graduations
	10 mL graduated cylinders	Fisher Scientific	03-007-30	\$17.88 / each	0.2 mL graduations
	Bottled water	*Local store	-----	-----	-----
	Soda (regular non-diet)	*Local store	-----	-----	-----
	Soda (diet)	*Local store	-----	-----	-----
	Fruit juice	*Local store	-----	-----	-----
	Rulers (or Meter sticks)	Office Max	22548165	\$1.19 / each	Non-shatter, flexible
	String	Amazon	46171	\$4.99/roll	White, cotton, 10 ply, 275 ft.
	Round ballons	Walmart	*See comments	\$3.29 / 36 balloons	* Search: Balloons Round 7" 36/Pkg- Assorted Colors
	Graph paper	Office Max	20805194	\$4.29 / 50 sheets	8 1/2 " X 11"

*Alternate Yeast Fermentation Commercial Kits (Option #3)					
Kit Name	Description	Ordering Company	Product Number	Cost	Comments
Wine Fermentation Demonstration Kit	Fermentation of grape juice in varying concentrations with different percentages of sugar using a	Carolina Science	LJ-202210	\$84.50 / Kit	Demonstration kit includes wine yeast, grape juice, sugar, hydrometer, and all materials except tape or rubber bands, weighing balance, six 100 mL containers, and a 100 mL graduated cylinder.
Basic Fermentation BioKit	For a class of 30 students to investigate the basic aspects of fermentation, including rate measurement and analysis of gas products	Carolina Science	LJ-202200	\$59.20 / Kit	Kit includes 17 large vials, 17 small vials, packets of sucrose (10 g, and 5 g), packet of glucose (5 g), 4 packets of yeast, 15 rulers, 5 stirring sticks, 5 - 100 mL cups, 5 - 30 mL cups, 30 student guesdes, and teacher's manual. <i>Note: Sold only to schools and businesses.</i>

Company Information		
Company	Website	Address and Contact Information
Office Max	www.officemax.com	
Amazon	www.amazon.com	
Walmart	www.walmart.com	
Fisher Scientific	www.fishersci.com	Fisher Science Education 4500 turnberry Drive Hanover Park, IL 60113 Phone: 800-955-1177 Fax: 800-955-0740
Carolina Science	www.carolina.com	Carolina Science PO Box 6010 Burlington, Nc 27216-6010 US: Phone: 800-334-5551 Fax: 800-222-7112 International: Phone 336-584-0381 Fax: 336-584-7686

Unit 2

STEMfuse Class Activity / Lab Materials and Alternate Commercial Kit Ordering Information					
Class Activity / Lab	Materials	Ordering Company	Product Number	Cost	Comments
Lab Exercise 2.1 DNA Extraction from Kiwi and / or Onion (Option 1)	4-Cup measuring cup container with (1,000 mL beaker) with mL markings	Carolina Science	RE-721253	\$19.95/each	Pyrex, Corning (6+ quantity \$17.40/each)
	1-Cup measuring cup (250 mL beaker) with mL markings	Carolina Science	RE-721249	\$6.70/each	Pyrex, Corning (12+ quantity \$15.90/each)
	Kiwi, strawberries, or onions	*Local store			
	Large spoon	*Local store			
	Knife for cutting	*Local store			
	Measuring spoons	*Local store			
	Food processor or blender (optional)	*Local store			
	#6 Coffee Filters	*Local store			
	Thermometer that will measure 60°C	Carolina Science	RE-652309	\$33.95/each	LCD, battery included
	Hot tap water bath 60°C	Carolina Science	RE-216244	\$475/each	A container with hot tap water can be used or a commercial hot water bath is listed
	Ice water bath	*Local store			A container with cold tap water + ice
	Distilled Water	*Local store			
	95% ethanol	*Local store			
	Clear-colored detergent (or shampoo)	*Local store			
Table salt	*Local store				
Test tubes with a cap	Carolina Science	RE-215088	\$10.25/pack of 25	Disposable	
Pasteur pipettes (or medicine droppers)	Carolina Science	RE-736124	\$27.80/pack of 50	Disposable	
Glass Rods	Carolina Science	RE-77303	\$5.15/pack of 12		

Class Activity / Lab	Materials	Ordering Company	Product Number	Cost	Comments
Lab Exercise 2.2 DNA In My Food?...And a Fruit Smoothie! (Option 2)	4-Cup measuring cup container with (1,000 mL beaker) with markings	Carolina Science	RE-721253	\$19.95/each	Pyrex, Corning (6+ quantity \$17.40/each)
	1-Cup measuring cup (250 mL beaker) with markings	Carolina Science	RE-721249	\$6.70/each	Pyrex, Corning (12+ quantity \$15.90/each)
	3 bananas	*Local store			
	Large spoon	*Local store			
	Knife for cutting bananas	*Local store			
	Measuring spoons	*Local store			
	Food processor or blender (optional)	*Local store			
	#6 Coffee Filters	*Local store			
	Thermometer that will measure 60°C	Carolina Science	RE-652309	\$33.95/each	LCD, battery included
	Hot tap water bath 60°C	Carolina Science	RE-216244	\$475/each	A container with hot tap water can be used or a commercial hot water bath is listed
	Ice water bath	*Local store			A container with cold tap water + ice
	Distilled Water	*Local store			
	95% ethanol	*Local store			
	Clear-colored detergent (or shampoo)	*Local store			
	Table salt	*Local store			
	Test tubes with a cap	Carolina Science	RE-215088	\$10.25/pack of 25	Disposable
	Pasteur pipettes (or medicine droppers)	Carolina Science	RE-736124	\$27.80/pack of 50	Disposable
	10 oz package of frozen strawberries, partially thawed	*Local store			
	Orange juice	*Local store			
	Honey	*Local store			
	5 oz cups	*Local store			

Class Activity / Lab	Materials	Ordering Company	Product Number	Cost	Comments
Lab Exercise 2.2 DNA In My Food?...And a Fruit Smoothie! (Continued)	*Additional materials if class pursues making a strawberry smoothie				
(Option 2)	Package of tofu	*Local store			
	Additional 10 oz packate of frozen strawberries	*Local store			
	1 ripe banana	*Local store			
	Orange juice	*Local store			
	Honey	*Local store			

*Alternate DNA Extraction Commercial Kit (Option 3)

Kit Name	Description	Ordering Company	Product Number	Cost	Comments
Strawberry DNA Extraction Kit	Students extract DMA from strawberry fruit and examine it.	Carolina Science	LJ-211338	\$59.95/kit	Includes plastic tubes, plastic bags, funnels, ethanol, detergent, pipets, cheesecloth, sodioum chloride, wooden sticks, teacher's manual, and reproducible student worksheets. Straberries not included. Designed for 32 students.

Class Activity / Lab	Materials	Ordering Company	Product Number	Cost	Comments
Lab Exercise 2.3 Extract Your Own DNA	Container with 500 mL and 100 mL markings (600 mL beaker) too measure / mark 5 oz cups	Carolina Science	RE-721251	\$10.45/each	Pyrex, Corning (6+ quantity \$17.40/each)
(Option 1)	Distilled water	*Local store			
	Clear-colored detergent (or shampoo)	*Local store			
	Table salt	*Local store			
	Food coloring (any color)	*Local store			
	Tablespoons	*Local store			
	70% ethanol	*Local store			
	Glass rods	Carolina Science	RE-77303	\$5.15/pack of 12	

Kit Name	Description	Ordering Company	Product Number	Cost	Comments
Genes In a Bottle	Introductory DNA classroom DNA study kit	Bio-Rad	166-2300	\$167.50/kit	Includes buffer, protease + salt, test tubes/holders, disposable pipets, curriculum, and all materials to make DNA necklaces, for 36 students

Class Activity / Lab	Materials	Ordering Company	Product Number	Cost	Comments
Class Activity 2.4 Origami DNA Model	Teacher Instructions, Student B&W Handout /or Student Colored Handout Obtained from websites	N/A	-----	-----	-----
Class Activity 2.4 DNA Structure / Biotech Tools Contributor "Who Am I"	Copies of Student Handous and Contribution Cards Supplement	N/A	-----	-----	-----

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Office Max	www.officemax.com	
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Carolina Science	www.carolina.com	Carolina Science PO Box 6010 Burlington, Nc 27216-6010 US: Phone: 800-334-5551 Fax: 800-222-7112 International: Phone 336-584-0381 Fax: 336-584-7686
Bio-Rad Laboratories	www.bio-rad.com	Bio-Rad Laboratories, Inc. 200 alfred Nobel Drive Hercules, CA 94547 Phone: 1-800-424-6723

Unit 3

STEMfuse Class Activity / Lab Materials and Alternate Commercial Kit Ordering Information					
Class Activity / Lab	Materials	Ordering Company	Product Number	Cost	Comments
Class Activity 3.1 Transcription --> Translation --> Amino Acids	Copies of Student Handouts	N/A	-----	-----	-----
Class Activity 3.2 Codon Bingo	Copies of Student Bingo Cards, Student Codon Bingo Game Pieces	N/A	-----	-----	-----
Class Activity 3.3 The Cell Will Survive	Copies of Student PowerPoint Answer Sheet	N/A	-----	-----	-----
Class Activity 3.4 DNA, RNA, and Snorks	Copies of Student Activity	N/A	-----	-----	-----

Unit 6

STEMfuse Class Activity / Lab Materials and Alternate Commercial Kit Ordering Information					
*Note: Labs highlighted in yellow require the "Early Alert" purchase of an Electrophoresis Chamber and Power Supply.					
Class Activity / Lab	Materials	Ordering Company	Product Number	Cost	Comments
Class Activity 6.1 "HGP Chromosome Investigation"	Copies of Student Handouts	N/A	-----	-----	-----
*Alternate Class Activities Unit 6					
Kit Name	Description	Ordering Company	Product Number	Cost	Comments
Wards Detection of Leukemia Lab Activity	Identify Genetic Mutations that Reveal the Presence of Cancer	Ward's Natural Science	88W8505	\$115.39/kit	Enough material to run 3 gels Note: Also requires purchase of 10 mL micropipettes sold separately below
	Adjustable-Volume Digital Micropipets (2-20 µL)	Ward's Natural Science	15W4805	\$269.00/ea	Adjustable 2-20 µL
Wards Detection of Breast Cancer Lab Activity	Identify Genetic Mutations that Reveal the Presence of Cancer	Ward's Natural Science	88W8506	\$115.39/kit	Enough material to run 3 gels Note: Also requires purchase of 10 mL micropipettes sold separately below
	Adjustable-Volume Digital Micropipets (2-20 µL)	Ward's Natural Science	15W4805	\$269.00/ea	Adjustable 2-20 µL
Wards Detection of Colorectal Cancer Lab Activity	Identify Genetic Mutations that Reveal the Presence of Cancer	Ward's Natural Science	88W8507	\$116.39/kit	Enough material to run 3 gels Note: Also requires purchase of 10 mL micropipettes sold separately below
	Adjustable-Volume Digital Micropipets (2-20 µL)	Ward's Natural Science	15W4805	\$269.00/ea	Adjustable 2-20 µL
Wards Detection of Sickle Cell Anemia Lab Activity	Identify Genetic Mutations that Reveal abnormal hemoglobin	Ward's Natural Science	36W6064	\$115.39/kit	Enough material to run 3 gels Note: Also requires purchase of 10 mL micropipettes sold separately below
	Adjustable-Volume Digital Micropipets (2-20 µL)	Ward's Natural Science	15W4805	\$269.00/ea	Adjustable 2-20 µL

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Carolina Science	www.carolina.com	Carolina Science PO Box 6010 Burlington, Nc 27216-6010 US: Phone: 800-334-5551 Fax: 800-222-7112 International: Phone 336-584-0381 Fax: 336-584-7686
Bio-Rad Laboratories	http://www.bio-rad.com	Bio-Rad Laboratories, Inc. 200 alfred Nobel Drive Hercules, CA 94547 Phone: 1-800-424-6723
Ward's Natural Science	www.wardsci.com	Ward's Natural Science PO Box 92912 Rochester, New York 14692-9012 US: Phone: 800-962-2660 Fax: 800-635-8439 International: Phone: 585-359-2502 Fax: 585-334-6174

