



Carolina[®] Bacteria Cultures: Growing Strong

- Over 100 different cultures
- For every level of study
- Pure and high-quality
- Easy-to-use media

Bacteria: Essential Tools for Today and Tomorrow

Our top-quality products make it easy to incorporate bacteria into your science curriculum. Not only do we have more than 100 bacteria cultures to choose from, but the selections are suitable for use at multiple skill levels—from beginner to graduate study. Variety offers another advantage, giving you the choice of economical tube culture, freeze-dried MicroKwik Culture[®], or convenient plate culture.

The benefits of working with these bacteria cultures extend well beyond the classroom. The aseptic techniques needed to transfer cultures and streak plates are fundamental workplace skills needed for many of today's medical and technical careers. Bacteria also have wide applications in the food and chemical industries because of their highly diverse metabolic activities. Foods as dissimilar as yogurt and chocolate depend upon bacterial fermentations in their production.

Students can learn about the impact of bacteria on carbon and nitrogen cycles as well. Bacteria are involved in many of the events that make life possible for other organisms, including humans. Fossils of prokaryotes similar to today's bacteria have been found in 3.5 billion-year-old rocks. A mastery of bacteria is the key to understanding life on earth in the past, present, and future.

About Our Cultures

Bacteria cultures are labeled by genus and species name, media on which they are cultivated, and temperature for optimal growth. All Gram staining is based on 24-hour cultures. All cultures are guaranteed as to species and purity. Special packing and transportation costs are extra for animal and human pathogens.

Carolina[®] MicroKwik Culture[®]

Since a MicroKwik Culture[®] can be refrigerated, you can order it ahead of time for use on short notice. These freeze-dried cultures are listed with our regular bacteria cultures on the following pages. **Note:** Each MicroKwik Culture[®] comes with 5 mL of rehydration medium.

RESTRICTED BACTERIA

†Plant Pathogen. Customers at all shipping locations outside NC must obtain USDA PPQ Form 526, Application and Permit to Move Live Plant Pests or Noxious Weeds, at Carolina.com/usda, or call Customer Service at 800.334.5551. Approval may take up to 30 days. International customers may need other permits.

‡Pathogen (Human or Animal). Cannot be shipped to high schools, preparatory schools, or individuals, in accordance with guidelines of the US Department of Health and Human Services.

For culture media, see the Media & Supplies section beginning on page 72.

Individual Cultures



Escherichia coli

Gram— rods. The most widely studied bacterium, *E. coli* can be used in combination with *Bacillus megaterium* or *Micrococcus luteus* for Gram staining.

155065 Per tube **\$11.85**



Micrococcus luteus

Gram+. Excellent as an example of cocci or spherical-shaped bacterial cells, *M. luteus* colonies are yellow pigmented.

155155 Per tube **\$11.85**



155155 *Micrococcus luteus*



155300 *Rhodospirillum rubrum*



Rhodospirillum rubrum

Gram—. An example of a spiral-shaped bacterium, *R. rubrum* is photosynthetic and requires light. Colonies are pink to gray.

155300 Per tube **\$11.85**

Organism	Description	Medium	Temp	Catalog No.	Pkg	Each
Acinetobacter calcoaceticus Str[®] (streptomycin resistant)‡	MicroKwik Culture [®] : freeze-dried cells plus medium; Gram—, nonmotile rods; used with item #154821A in transformation experiments	Brain Heart Infusion Agar	37° C	154820A	Vial	\$19.05
Acinetobacter calcoaceticus Str[®] (streptomycin sensitive)‡	MicroKwik Culture [®] : freeze-dried cells plus medium; Gram—, nonmotile rods; used with item #154820A in transformation experiments	Brain Heart Infusion Agar	30° C	154821A	Vial	\$19.05
Agrobacterium tumefaciens[†]	Gram—, motile rods; causes crown gall disease on many plants	Nutrient Agar	25° C	154825	Tube	\$11.85
Alcaligenes faecalis‡	MicroKwik Culture [®] : freeze-dried cells plus medium; Gram—, motile cocci, or coccal rods; intestinal flora	Nutrient Agar	37° C	154835A	Vial	\$19.05
Aquaspirillum itersonii	Gram—, motile spirals; isolated from pond water	Nutrient Agar	25 to 30° C	154837	Tube	\$11.85
Aquaspirillum serpens	Gram—, motile spirals; isolated from fresh water	Nutrient Agar	25 to 30° C	154838	Tube	\$11.85
Bacillus cereus	Gram+, motile rods; common spore forming	Nutrient Agar	30° C	154869	Plate	\$14.70
Bacillus cereus	Gram+, motile rods; common spore forming	Nutrient Agar	30° C	154870	Tube	\$11.85
Bacillus cereus	MicroKwik Culture [®] : freeze-dried cells plus medium	Nutrient Agar	30° C	154870A	Vial	\$19.05
Bacillus cereus	Gram+, motile rods; common spore forming	Nutrient Agar	30° C	154872	Tube	\$11.85
Bacillus coagulans	Gram+, motile rods; acid tolerant; causes food spoilage; recommended for college level and above	Tryptic Soy or Nutrient Agar	37° C	154885	Tube	\$11.85
Bacillus megaterium	Gram+, motile, very large rods	Nutrient Agar	30° C	154900	Tube	\$11.85
Bacillus megaterium	MicroKwik Culture [®] : freeze-dried cells plus medium	Nutrient Agar	30° C	154900A	Vial	\$19.05
Bacillus sphaericus	Gram variable, motile, spore-forming rods	Nutrient Agar	30° C	154908	Plate	\$14.70
Bacillus stearothermophilus	Gram+, motile, thermophilic rods	Tryptic Soy Agar	55° C	154910	Tube	\$11.85
Bacillus subtilis	Gram+, spore-forming, motile rods; antibiotic producer	Nutrient Agar	30° C	154921	Tube	\$11.85
Bacillus subtilis	MicroKwik Culture [®] : freeze-dried cells plus medium	Nutrient Agar	30° C	154921A	Vial	\$19.05
Bacillus subtilis	Gram+, spore-forming, motile rods; antibiotic producer	Nutrient Agar	30° C	154922	Plate	\$14.70
Bacillus thuringiensis	Gram+, motile rods; crystals within cell body pathogenic to some insects (Lepidoptera)	Nutrient Agar	30° C	154926	Tube	\$11.85
Branhamella (Moraxella) catarrhalis	Gram—, nonmotile, encapsulated, paired cocci	Tryptic Soy Agar or Brain Heart Infusion Agar	37° C	154928	Tube	\$11.85
Branhamella (Moraxella) catarrhalis	MicroKwik Culture [®] : freeze-dried cells plus medium	Tryptic Soy Agar or Brain Heart Infusion Agar	37° C	154928A	Vial	\$19.05
Chromobacterium violaceum‡	MicroKwik Culture [®] : freeze-dried cells plus medium; Gram—, motile rods; violet pigment	Nutrient Agar	30° C	154931A	Vial	\$19.05

Color Key:

Red: Pathogen (human, animal, or plant).
Blue: Carolina[®] MicroKwik Culture[®].

All Gram staining is based on 24-hour cultures.

See more Carolina[®] Bacteria Cultures on the next page.



Prokaryotes

Carolina® Bacteria Cultures (continued)

Organism	Description	Medium	Temp	Catalog No.	Pkg	Each
<i>Citrobacter freundii</i>	Gram–, motile rods; intestinal flora	Nutrient Agar	30° C	154941	Tube	\$11.85
<i>Clostridium acetobutylicum</i>	Gram+, motile, anaerobic rods; <i>recommended for college level and above</i>	Thioglycollate Medium	37° C	154960	Tube	\$11.85
<i>Clostridium butyricum</i> (C. beijerinckii)	Gram+, motile, anaerobic rods	Reinforced Clostridial Medium	37° C	154965	Tube	\$11.85
<i>Clostridium sporogenes</i>	Gram+, motile, anaerobic rods; putrid odor	Thioglycollate Medium	37° C	154995	Tube	\$11.85
<i>Clostridium sporogenes</i>	MicroKwik Culture®: freeze-dried cells plus medium	Thioglycollate Medium	37° C	154995A	Vial	\$19.05
<i>Corynebacterium diphtheriae</i> †	MicroKwik Culture®: freeze-dried cells plus medium; Gram+, nonmotile rods	Rabbit Blood Agar	37° C	155009A	Vial	\$19.05
<i>Corynebacterium pseudodiphtheriticum</i>	Gram+, nonmotile rods; normal throat flora	Brain Heart Infusion Agar	37° C	155010	Tube	\$11.85
<i>Corynebacterium xerosis</i>	Gram variable, nonmotile rods; inhabits skin and mucous membranes of humans	Brain Heart Infusion Agar	37° C	155015	Tube	\$11.85
<i>Deinococcus radiophilus</i>	Gram+, nonmotile, cocci, forms red-orange colonies	TGYM Agar	30° C	155019	Tube	\$11.85
<i>Enterobacter aerogenes</i>	Gram–, motile rods; intestinal flora; for culturing <i>Dictyostelium discoideum</i> , <i>Didymium nigripes</i> , and <i>Stemonitis flavogentia</i>	Nutrient Agar	30° C	155030	Tube	\$11.85
<i>Enterobacter aerogenes</i>	MicroKwik Culture®: freeze-dried cells plus medium	Nutrient Agar	30° C	155030A	Vial	\$19.05
<i>Enterobacter aerogenes</i>	Gram–, motile rods; intestinal flora	Nutrient Broth	30° C	155031	Tube	\$11.85
<i>Enterobacter cloacae</i>	Gram–, motile rods; found in soil, water, sewage	Nutrient Agar	30° C	155032	Tube	\$11.85
<i>Enterococcus faecalis</i> (Streptococcus faecalis)†	MicroKwik Culture®: freeze-dried cells plus medium	Dextrose Starch Agar or Brain Heart Infusion Agar	37° C	155600A	Vial	\$19.05
<i>Escherichia coli</i>	Gram– rods; common, widely studied intestinal organism; K–12 strain	Nutrient Agar	37° C	155065	Tube	\$11.85
<i>Escherichia coli</i>	MicroKwik Culture®: freeze-dried cells plus medium; K–12 strain	Nutrient Agar	37° C	155065A	Vial	\$19.05
<i>Escherichia coli</i> (nonmucoid)	Gram– rods; for culturing <i>Dictyostelium discoideum</i>	Lactose Agar	37° C	155066	Tube	\$11.85
<i>Escherichia coli</i>	K–12 strain	Nutrient Agar	37° C	155067	Plate	\$14.70
<i>Escherichia coli</i>	K–12 strain	Nutrient Agar	37° C	155068	Tube	\$11.85
<i>Escherichia coli</i> B	Gram– rods; T-series phage host	Nutrient Agar	37° C	155070	Tube	\$11.85
<i>Escherichia coli</i> B	MicroKwik Culture®: freeze-dried cells plus medium	Nutrient Agar	37° C	155070A	Vial	\$19.05
<i>Flavobacterium capsulatum</i>	Gram–, nonmotile: encapsulated rods; psychrophilic	Skim Milk	25° C	155083	Tube	\$11.85
<i>Klebsiella pneumoniae</i> †	MicroKwik Culture®: freeze-dried cells plus medium; Gram–, nonmotile, encapsulated rods	Nutrient Agar	37° C	155095A	Vial	\$19.05
<i>Lactobacillus acidophilus</i>	Gram+, nonmotile rods; used in production of <i>acidophilus</i> milk; <i>recommended for college level and above</i>	Tomato Juice/Yeast Extract/Milk Broth	37° C	155110	Tube	\$11.85
<i>Lactobacillus acidophilus</i>	MicroKwik Culture®: freeze-dried cells plus medium; <i>recommended for college level and above</i>	Tomato Juice/Yeast Extract/Milk Broth	37° C	155110A	Vial	\$19.05
<i>Lactococcus lactus</i> (Streptococcus lactis)	Gram+, nonmotile cocci in chains; common in milk	Tomato Juice/Yeast Extract/Milk Broth or Brain Heart Infusion Agar	37° C	155610	Tube	\$11.85
<i>Lactococcus lactus</i> (Streptococcus lactis)	MicroKwik Culture®: freeze-dried cells plus medium	Tomato Juice/Yeast Extract/Milk Broth or Brain Heart Infusion Agar	37° C	155610A	Vial	\$19.05
<i>Micrococcus luteus</i>	Gram+, nonmotile cocci in clusters; yellow pigment	Nutrient Agar	25° C	155155	Tube	\$11.85
<i>Micrococcus luteus</i>	MicroKwik Culture®: freeze-dried cells plus medium	Nutrient Agar	25° C	155155A	Vial	\$19.05
<i>Micrococcus luteus</i>	Gram+, nonmotile cocci in clusters; yellow pigment	Nutrient Agar	25° C	155156	Plate	\$14.70
<i>Micrococcus luteus</i>	Gram+, nonmotile cocci in clusters; yellow pigment	Nutrient Broth	25° C	155157	Tube	\$11.85



Carolina® Bacteria Cultures (continued)

Organism	Description	Medium	Temp	Catalog No.	Pkg	Each
Micrococcus roseus	Gram+, nonmotile cocci in clusters; rose pigment	Nutrient Agar	25° C	155160	Tube	\$11.85
Mycobacterium phlei †	MicroKwik Culture®: freeze-dried cells plus medium; not readily stainable, nonmotile, acid-fast rods	Brain Heart Infusion Agar	37° C	155170A	Vial	\$19.05
Mycobacterium smegmatis †	MicroKwik Culture®: freeze-dried cells plus medium; not readily stainable, nonmotile, acid-fast rods	Brain Heart Infusion Agar	37° C	155180A	Vial	\$19.05
Neisseria sicca	MicroKwik Culture®: freeze-dried cells plus medium; Gram–, nonmotile cocci; <i>recommended for college level and above</i>	Brain Heart Infusion Agar	37° C	155209A	Vial	\$19.05
Neisseria subflava	MicroKwik Culture®: freeze-dried cells plus medium; <i>recommended for college level and above</i>	Brain Heart Infusion Agar	37° C	155210A	Vial	\$19.05
Proteus mirabilis ‡	MicroKwik Culture®: freeze-dried cells plus medium; Gram–, motile rods	Nutrient Agar	37° C	155239A	Vial	\$19.05
Proteus vulgaris ‡	MicroKwik Culture®: freeze-dried cells plus medium; Gram–, motile rods; intestinal flora	Tryptic Soy Agar or Broth	37° C	155240A	Vial	\$19.05
Pseudomonas aeruginosa ‡	MicroKwik Culture®: freeze-dried cells plus medium; Gram–, motile rods; diffusible pigment produced	Nutrient Agar	37° C	155250A	Vial	\$19.05
Pseudomonas fluorescens	Gram–, motile rods; associated with food spoilage	Nutrient Agar	25° C	155255	Tube	\$11.85
Pseudomonas fluorescens	MicroKwik Culture®: freeze-dried cells plus medium	Nutrient Agar	25° C	155255A	Vial	\$19.05
Pseudomonas fluorescens	Gram–, motile rods; associated with food spoilage	Nutrient Agar	25° C	155256	Plate	\$14.70
Rhizobium leguminosarum	Gram–, motile rods; nodules in roots of legumes; fixes nitrogen	Rhizobium X Agar	25° C	155270	Tube	\$11.85
Rhodococcus (Mycobacterium) rhodochrous	Gram+, nonmotile rods; rose pigment; not acid-fast	Nutrient Agar	25° C	155175	Tube	\$11.85
Rhodospirillum rubrum	Gram–, motile, photosynthetic spirals; pink to gray pigment; light exposure necessary	Tryptic Soy Agar/ Nutrient Agar	25° C	155300	Tube	\$11.85
Rhodospirillum rubrum	Gram–, motile, photosynthetic spirals; pink to gray pigment; light exposure necessary	Nutrient Agar	25° C	155301	Plate	\$14.70
Rhodospirillum rubrum	Gram–, motile, photosynthetic spirals; pink to gray pigment; light exposure necessary	Nutrient Broth	25° C	155302	Tube	\$11.85
Salmonella enteritidis (S. choleraesuis subsp. choleraesuis serotype Enteritidis) ‡	MicroKwik Culture®: freeze-dried cells plus medium; Gram–, motile rods	Nutrient Agar	37° C	155350A	Vial	\$19.05
Salmonella typhimurium (S. choleraesuis subsp. choleraesuis serotype Typhimurium) ‡	MicroKwik Culture®: freeze-dried cells plus medium; Gram–, motile rods	Nutrient Agar	37° C	155351A	Vial	\$19.05
Sarcina aurantiaca	Gram+, nonmotile cocci; strain of <i>Micrococcus luteus</i> ; orange colonies	Nutrient Agar	25° C	155400	Tube	\$11.85
Sarcina aurantiaca	Gram+, nonmotile cocci; strain of <i>Micrococcus luteus</i> ; orange colonies	Nutrient Agar	25° C	155401	Plate	\$14.70
Sarcina lutea	Gram+, nonmotile cocci; strain of <i>Micrococcus luteus</i> ; yellow colonies	Nutrient Agar	25° C	155420	Tube	\$11.85

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See our Gram staining supplies and reagents on page 74.

RESTRICTED BACTERIA

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155240A *Proteus vulgaris*

See more Carolina® Bacteria Cultures on the next page.



Carolina® Bacteria Cultures (continued)

Organism	Description	Medium	Temp	Catalog No.	Pkg	Each
Serratia liquefaciens	Gram—, motile rods; colorless; most prevalent <i>Serratia</i> species found	Nutrient Agar	30° C	155448	Tube	\$11.85
Serratia marcescens	Gram—, motile rods; pigment varies from pale pink to bright red	Nutrient Broth	25° C	155449	Tube	\$11.85
Serratia marcescens	Gram—, motile rods; pigment varies from pale pink to bright red	Nutrient Agar	25° C	155450	Tube	\$11.85
Serratia marcescens	MicroKwik Culture®: freeze-dried cells plus medium	Nutrient Agar	25° C	155450A	Vial	\$19.05
Serratia marcescens	Gram—, motile rods; pigment varies from pale pink to bright red	Nutrient Agar	25° C	155451	Plate	\$14.70
Serratia marcescens D1	Gram—, motile rods; stable red pigment; suitable for UV light experiments	Nutrient Agar	25° C	155452	Tube	\$11.85
Serratia marcescens D1	Gram—, motile rods; stable red pigment; suitable for UV light experiments	Nutrient Broth	25° C	155453	Tube	\$11.85
Serratia marcescens 933	Gram—, motile rods; colorless mutant	Brain Heart Infusion Agar	25° C	155454	Tube	\$11.85
Serratia marcescens D1	Gram—, motile rods; stable red pigment; suitable for UV light experiments	Nutrient Agar	25° C	155455	Plate	\$14.70
Serratia marcescens WCF	Gram—, motile rods; colorless mutant	Brain Heart Infusion Agar	25° C	155456	Tube	\$11.85
Shigella flexneri†	MicroKwik Culture®: freeze-dried cells plus medium; Gram—, nonmotile rods	Nutrient Agar	37° C	155470A	Vial	\$19.05
Spirillum volutans	Gram—, actively motile; large spirals; <i>recommended for college level and above</i>	Peptone-Succinate Medium	30° C	155512	Tube	\$11.85
Sporosarcina ureae	Gram+, motile, endospore-forming cocci	Nutrient Agar	25° C	155518	Tube	\$11.85
Staphylococcus aureus (coagulase positive)‡	MicroKwik Culture®: freeze-dried cells plus medium; Gram+, nonmotile cocci in irregular clusters; clots blood plasma	Brain Heart Infusion Agar	37° C	155554A	Vial	\$19.05
Staphylococcus simulans (S. aureus) (coagulase negative)‡	MicroKwik Culture®: freeze-dried cells plus medium; Gram+, nonmotile cocci in irregular clusters; does not clot blood plasma	Nutrient Agar	37° C	155555A	Vial	\$19.05
Staphylococcus epidermidis	Gram+, cocci, nonmotile, clusters	Nutrient Agar	37° C	155556	Tube	\$11.85
Staphylococcus epidermidis	MicroKwik Culture®: freeze-dried cells plus medium	Nutrient Agar	37° C	155556A	Vial	\$19.05
Staphylococcus epidermidis	Gram+, cocci, nonmotile, clusters	Nutrient Broth	37° C	155557	Tube	\$11.85
Streptococcus agalactiae‡	MicroKwik Culture®: freeze-dried cells plus medium; Group B streptococcus; beta hemolytic, Gram+, nonmotile cocci in pairs	Tryptic Soy Agar with 5% Sheep Blood	37° C	155690A	Vial	\$19.05
Streptococcus pneumoniae‡	MicroKwik Culture®: freeze-dried cells plus medium; Gram+, nonmotile pairs of cocci; for best results use a CO ₂ incubator when culturing this bacterium	Tryptic Soy Agar with 5% Sheep Blood	37° C	155620A	Vial	\$19.05
Streptococcus pyogenes‡	MicroKwik Culture®: freeze-dried cells plus medium; Gram+, nonmotile pairs or chains of cocci	Tryptic Soy Agar with 5% Sheep Blood	37° C	155630A	Vial	\$19.05
Streptococcus salivarius	MicroKwik Culture®: freeze-dried cells plus medium; Gram+, nonmotile cocci in chains; <i>recommended for college level and above</i>	Tryptic Soy Agar with 5% Sheep Blood or Dextrose Starch Agar	37° C	155640A	Vial	\$19.05
Streptomyces griseus	Gram+, nonmotile, coenocytic hyphae; produces antibiotic streptomycin	ISP Agar 2	25° C	155705	Tube	\$11.85
Vibrio anguillarum	Gram—, motile, curved rods; marine and freshwater organisms; <i>recommended for college level and above</i>	Enriched Nutrient Agar	25° C	155721	Tube	\$11.85
Vibrio fischeri	Gram—, motile, curved rod; bioluminescent	Photobacterium Agar	25° C	155722	Tube	\$11.85
Vibrio fischeri	Gram—, motile, curved rod; bioluminescent	Photobacterium Agar	25° C	155723	Plate	\$14.70

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Teacher's Choice



Carolina Exclusive



More Information Available Online

Cyanobacteria (Blue-Green Algae)

Sets & Kits

Cyanobacteria Mixture

Five representative cultures in one bottle: *Gloeocapsa*, *Oscillatoria*, *Anabaena*, *Fischerella*, and *Gloeotrichia*. Enough material for a class of 30 students.

199980 Per culture **\$16.45**

Cyanobacteria Set

Six individual, representative cultures.

Anabaena
Eucapsis
Fischerella
Spirulina
Merismopedia
Tolypothrix

151515
Per set **\$48.25**



154635 NASA AMES: Grow Your Own Microbial Mat



NASA AMES: Grow Your Own Microbial Mat ¹

Looking for an activity that demonstrates the sulfur cycle and introduces your students to diverse types of prokaryotes? This kit allows students to observe layers of microbes by growing their own microbial mat. They learn about the biogeochemical sulfur cycle and draw connections between the sulfur cycle and microbial activity in the microbial mats. Students share their individual observations and discoveries with classmates, and gain experience in slide making and microscopy. For a classroom of 30 students working in groups of 3; conducted weekly for 4 weeks. **Note:** Kit includes prepaid coupon for perishable material. Contact us or return the coupon to request delivery of perishable material.

154635 Per kit **\$83.95**

Cyanobacteria Cultures

Each cyanobacteria culture contains enough material for a class of 30 students. For your convenience, we list culture media, optimum growth temperature, and light level. Low light level: 50 to 100 foot-candles of fluorescent light or fluorescent light from the ceiling.

Organism	Description	Medium	Light Level	Temp	Catalog No.	Each
Anabaena	Shows heterocysts and akinetes	Alga-Gro® Freshwater	Low	22° C	151710	\$8.30
Eucapsis	Cubed colonies	Allen's	Low	22° C	151768	\$8.30
Fischerella	Branching filaments	Soil-Water	Low	22° C	151770	\$8.30
Gloeocapsa	Cells in gelatinous sheath	Allen's	Low	22° C	151800	\$8.30
Gloeotrichia	Tapered filaments	Alga-Gro® Freshwater	Low	22° C	151810	\$8.30
Lyngbya	Unbranched filaments	Alga-Gro® Freshwater	Low	22° C	151830	\$8.30
Merismopedia	Flat-celled sheet	Soil-Water	Low	22° C	151835	\$8.30
Nostoc	Contorted filaments	Alga-Gro® Freshwater	Low	22° C	151845	\$8.30
Oscillatoria	Long, unbranched filaments	Alga-Gro® Freshwater	Low	22° C	151865	\$8.30
Spirulina major	Spiralled trichomes; marine	Alga-Gro® Seawater	Low	22° C	151900	\$8.30
Synechocystis nigrescens	Model organism for carbon and nitrogen assimilation	Enriched Sea-water Media	Low	22° C	151910	\$8.30
Tolypothrix	False branching	Soil-Water	Low	22° C	151935	\$8.30



151710 *Anabaena*




151800 *Gloeocapsa*



151865 *Oscillatoria*

¹ California Proposition 65

 WARNING: Cancer – www.P65Warnings.ca.gov

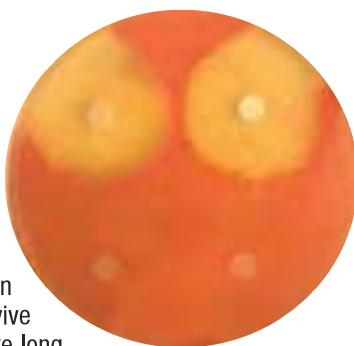


Archaea

Take Science to Extremes With Our Exclusive Model Microbe

- Safe
- Simple to use
- Great for teaching biology, genetics, and lab skills

Halobacterium sp. NRC-1 is what you've been waiting for! This colorful model microbe and member of Archaea, the 3rd domain of life, is ideal for classroom study. Non-pathogenic and easy to manipulate, *Halobacterium* grows in medium so salty that few other conventional microbes can survive it. The organism's love of salt and its ability to survive extremes of desiccation, radiation, and oxygen stress have long made it a fascinating subject of study.



From 154776 Antibiotics in Action

We offer a wide range of kits that contain everything you need to use *Halobacterium* in your classroom. Our kits were developed in conjunction with Dr. Shil and Priya DasSarma of the University of Maryland Biotechnology Institute, Center of Marine Biotechnology. We have created a website to support your classroom studies with *Halobacterium*: Carolina.com/halobacteria.

Archaea (Halobacterium) Kits



154776 Antibiotics in Action



154770 Introduction to Life in an Extreme Environment



Antibiotics in Action

Intermediate—Easy to perform; requires some basic training in microbiology.

Introduce your students to antibiotics and a technique that tests microbes for antibiotic resistance. Students create a lawn of *Halobacterium* sp. NRC-1 and determine which antibiotics the microbe is susceptible to by looking for a lack of microbial growth around antibiotic-impregnated disks. *Halobacterium* sp. NRC-1 is ideal for this application since it can only grow in high-salt conditions that virtually eliminate the possibility of creating antibiotic-resistant microbes pathogenic to humans. Designed for 32 students working in pairs.

Kit includes:

Antibiotic Disks	<i>Halobacterium</i> Agar
Liquid <i>Halobacterium</i> Culture	Rulers
Petri Dishes	Blank Disks
Cotton Applicator Sticks	Forceps
Pipets	

154776 Per kit **\$119.45**

Introduction to Life in an Extreme Environment

Beginning—Easy to perform; requires no experience in microbiology.

This kit introduces students to the colorful life of Archaea and helps students learn about microbes and their natural habitat—in this case, the extremely salty areas of the world, such as the Great Salt Lake and Dead Sea. Students culture the extreme halophile (salt-loving) microbe *Halobacterium* sp. NRC-1 from a safe grain of salt. Developed by Dr. Shil and Priya DasSarma in collaboration with Carolina Biological Supply Company. Designed for 32 students.

Kit includes:

Halobacterium Liquid Media
Salt Crystals with *Halobacterium* sp.
NRC-1 Brine Inclusions
Graduated Cylinder or Bulb Pipet
Test Tubes with Caps

Needed but not included:

Microscopes or Hand Lenses
Sterile Forceps

154770 Per kit **\$61.30**

Pipets
Microscope Slides
Coverslips
Teacher's Manual with Masters for
Student Worksheets



Archaea (Halobacterium) Cultures & Media

Halobacterium sp. NRC-1 Cultures

Gram-negative (difficult to stain due to high salt content); motile rods. An aerobic, pink-pigmented halophile; culture at 42° C. (May also be cultured at 37° C.)

154800	Tube Culture (<i>Halobacterium</i> broth)
Each	\$11.85
154801	Plate Culture (<i>Halobacterium</i> agar)
Each	\$14.70
154777	Culture Packet of Brine Salt Inclusions
Each	\$15.45
775950	<i>Halobacterium</i> Agar, 135-mL Bottle
Per bottle	\$9.00
821449	<i>Halobacterium</i> Broth, 5-mL Tube
Pack of 10	\$21.10
10+ Packs Each	\$19.40

**Integrate a safe, simple
microbe into your classroom.**



154771 Basic Microbiology Skills Part 1



Basic Microbiology Skills Part 1

Beginning—Easy to perform; requires no experience in microbiology.

Teach your students how to grow microbes on an agar plate using the safe, visually stimulating microbe, *Halobacterium* sp. NRC-1. Students learn the sterile and plate-streaking techniques used in biotechnology and the food and medical industries by following step-by-step instructions. This kit allows students at any level to practice sterile technique with a safe microbe. Your students will enjoy seeing the exciting results of their newly found skills. Can be used to teach AP[®] biology, biotechnology, and microbiology. Developed by Dr. Shil and Priya DasSarma in collaboration with Carolina Biological Supply Company. Designed for 32 students. Contains perishable materials.

Kit includes:

Halobacterium Agar
Halobacterium Culture
Inoculation Loops for Streaking

Petri Dishes
Teacher's Manual with Masters for Student Worksheets

Needed but not included:

Hand Lens or Dissecting Scope
Bunsen Burner

Resealable Plastic Bags or Boxes

154771 Per kit \$92.65



154772 Basic Microbiology Skills Part 2

Basic Microbiology Skills Part 2

Beginning—Easy to perform; requires no experience in microbiology.

Teach your students how to grow a lawn of microbes on an agar plate using the safe, visually stimulating microbe, *Halobacterium* sp. NRC-1, and step-by-step instructions. *Halobacterium* is an earthly model of organisms that could be found on Mars. This kit is a great way to introduce your students to this novel model microbe and can be used as a precursor for the Extremely Easy DNA Extraction Kit (item #154773). Developed by Dr. Shil and Priya DasSarma in collaboration with Carolina Biological Supply Company. Designed for 32 students. Contains perishable materials.

Kit includes:

Halobacterium Agar
Liquid *Halobacterium* Culture
Petri Dishes
Pipets
Spreaders

Salt
Tubes for Serial Dilutions
Teacher's Manual with Masters for Student Worksheets

Needed but not included:

Hand Lens or Dissecting Scope
Bunsen Burner

Resealable Plastic Bags or Boxes

154772 Per kit \$97.80



Extremely Easy DNA Extraction Kit

Obtain DNA from the new model microbe—the extremely halophilic Archaeon, *Halobacterium* sp. NRC-1 (see item #154772 Basic Microbiology Skills Part 2)

Intermediate—Easy to perform; requires some basic training in microbiology.

This kit meets National Science Education Standards in Life Science. Using kit materials, students extract and spool out DNA from living microbes using techniques similar to those in top research laboratories. This kit helps students visualize DNA and its properties. Good for teaching at all levels including AP[®] biology, biotechnology, and microbiology. Developed by Dr. Shil and Priya DasSarma in collaboration with Carolina Biological Supply Company. Designed for 32 students. **Note:** Requires purchase of item #154772 as a source of *Halobacterium* sp. NRC-1.

Kit includes:

15-mL Test Tubes
Pipets
Wooden Spooling Sticks

Spreaders
Funnels
Teacher's Manual with Masters for Student Worksheets

Needed but not included:

Tap Water 95% Ethanol or 70% Isopropyl Alcohol

154773 Per kit \$105.00



Help your students understand the connection between genotypes and phenotypes by using the colorful model microbe *Halobacterium* sp. NRC-1. It's part of our Genotype-Phenotype Connection Kit (items #211217 through #211219P) on page 273.

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Algae

Collected Algae

Each culture contains enough material for a class of 30 students. **Note:** *Collected algae are not necessarily free of unidentified organisms.* Each order of algae includes a FREE Carolina® *Culturing Algae* manual.

Freshwater

151214 *Chara*151287 Field-Collected
Mixed Diatoms151321 *Spirogyra*

Chara

Each culture contains enough material for a class of 30 students.

151241 Per culture **\$10.25**

Field-Collected Mixed Diatom

Contains unidentified genera. This culture of locally collected freshwater specimens provides enough material for a class of 30 students.

151287 Per culture **\$10.80**

Spirogyra

Collected from our ponds. Each culture contains enough material for a class of 30 students.

151321 Per culture **\$9.95**

Tropical Marine

Acetabularia

Attached to natural substrate. Other algae also present. Can be kept in saltwater aquarium. Freshly collected and shipped from Florida (*allow 2 weeks for delivery*). Each culture contains enough material for a class of 30 students. **Note:** *Cannot be shipped into AK. Cannot be exported.*

151448 Per culture **\$32.90**

Tropical Marine Algae Collection

At least 6 different genera of marine algae freshly collected and shipped from Florida (*allow 2 weeks for delivery*). Each culture contains enough material for a class of 30 students. **Note:** *Cannot be shipped into AK. Cannot be exported.*

151450 Per collection **\$95.30**

151445 *Sargassum*

Sargassum

A generous portion, freshly collected and shipped from Florida (*allow 2 weeks for delivery*). Each culture contains enough material for a class of 30 students. **Note:** *Cannot be shipped into AK. Cannot be exported.*

151445 Per culture **\$32.90**

Terrestrial

Protococcus

Pleurococcus. Grows on trees. Each culture contains enough material for a class of 30 students.

151311 Per culture **\$9.30**



Cold Water

Seaweed

A generous portion of marine algae, freshly collected and shipped from Maine. Each culture contains enough material for a class of 30 students. **Note:** *Allow 2 weeks for delivery. Ulva cannot be shipped into WI. Cannot be exported.*

151410	<i>Chondrus</i>	Each	\$30.85
151415	<i>Fucus</i>	Each	\$44.95
151420	<i>Laminaria</i>	Each	\$44.95
151425	<i>Porphyra</i>	Each	\$47.65
151430	<i>Ulva</i>	Each	\$30.85
151435	Set (our choice of 6 genera)	Each	\$252.30

151415 *Fucus*151420 *Laminaria*

Cultured Algae (Unialgal Cultures)

We culture and maintain a large selection of different unialgal strains under rigidly controlled conditions. A unialgal culture contains a single, pure alga initially isolated as a single clone. While bacteria may be present in a unialgal culture, there are no other algal contaminants. Each unialgal culture is guaranteed for purity and genus and includes enough material for a class of 30 students. Each order of algae includes a FREE Carolina® *Culturing Algae* manual.

Special Mixtures

The following are special mixtures of algae (our choice) in 1 bottle. Each culture contains enough material for a class of 30 students.

Desmid and Diatom Mixture

Special mixture contains 4 of the following 6 cultures: *Closterium*, *Cosmarium*, *Staurastrum*, *Netrium*, *Synedra*, and *Navicula*. Culture mixture contains enough material for a class of 30 students.

151211 Per culture **\$9.95**

Marine Diatom Mixture

Special mixture of *Cyclotella* and *Thalassiosira* shipped in a 2-oz bottle. Enough material for a class of 30 students.

151367 Per culture **\$17.75**

Diatom Mixture

A culture mixture of *Navicula* and *Synedra*. Each culture contains enough material for a class of 30 students.

151366 Per culture **\$9.95**

Desmid Mixture

A special mixture of 3 of the following 4 cultures: *Closterium*, *Cosmarium*, *Netrium*, and *Staurastrum*. Each culture contains enough material for a class of 30 students.

151261 Per culture **\$9.95**

Volvocales Mixture

A mixture of *Chlamydomonas*, *Eudorina*, *Gonium*, *Pandorina*, and *Volvox* showing development of colonial organization, with enough material for a class of 30 students. Includes a simple dichotomous key to the genera for each student. **Note: Should not be shipped over a weekend.** Carolina recommends that you request your order to arrive on a Wednesday, Thursday, or Friday (or even a Saturday) to avoid weekend shipping.

151221 Per culture **\$16.00**

Kits & Sets



151498 Algae Observation Kit

Algae Observation Kit

Grade 8–College. Observe various species of algae. Includes 5 tube cultures of algae, assorted slides, and pipets.

Kit includes:

<i>Volvox</i>	5 Concavity Glass Slides
<i>Closterium</i>	5 Concavity Plastic Slides
<i>Synedra</i>	5 Deep-Well Slides
<i>Oedogonium</i>	15 Pipets (3 mL)
<i>Ulothrix</i>	

151498 Per kit **\$51.25**



151500 Algae Culture Kit

Algae Culture Kit

Introduces the techniques of culturing algae. Sufficient material to allow students to grow 4 cultures of 5 different algae. Includes *Oscillatoria*, *Oedogonium*, *Closterium*, *Synedra*, and *Volvox*. With instructions.

151500 Per kit **\$60.50**



Algae Survey Mixture

A mixture of 6 representative genera, with enough material for a class of 30 students. Includes a simple dichotomous key to the genera for each student.

151216 Per culture **\$16.00**

Green Algae Mixture

Five representatives of green algae: *Chlorella*, *Scenedesmus*, *Selastrum*, *Ulothrix*, and *Volvox*. Enough material for a class of 30 students.

151370 Per culture **\$14.70**

Marine Dinoflagellate Mixture

Three representative dinoflagellates: *Amphidinium*, *Gymnodinium*, and *Prorocentrum*. Enough material for a class of 30 students.

151372 Per culture **\$16.45**

Red Algae Mixture

Special mixture of *Acrochaetium*, *Agardhiella*, and *Polysiphonia* shipped in a 2-oz container. Enough material for a class of 30 students.

151380 Per culture **\$18.50**



151521 Algae Representative Set

Algae Representative Set

A selection of 8 algae cultures.

<i>Lyngbya</i>	<i>Spirogyra</i>
<i>Closterium</i>	<i>Euglena gracilis</i>
<i>Synedra</i>	<i>Peridinium</i>
<i>Vaucheria</i>	<i>Synura</i>

151521 Per set **\$64.95**

See more kits and sets
on the next page.



High School Algae Sets

High School Algae Sets contain those algae most often used in teaching introductory or advanced biology. A booklet containing culture instructions and background information is included with each set. Sets contain sufficient materials for 30 students.

Basic High School Algae Set

Five cultures; the basic minimum for an introductory biology course.

Chlamydomonas *Volvox*
Oedogonium *Spirogyra*
Oscillatoria Teacher's Manual

151505 Per set **\$40.75**

High School Algae Set

Ten cultures selected to give a brief survey of algal types.

Anabaena *Oscillatoria*
Chlamydomonas *Spirogyra*
Chlorella *Synedra*
Closterium (desmid) *Volvox*
Euglena Teacher's Manual
Oedogonium

151507 Per set **\$79.95**

Advanced High School Algae Set

Twenty cultures selected to meet the needs of any biology course. Excellent survey of algal types and diversity.

Anabaena *Nostoc* *Spirogyra*
Chlamydomonas *Oedogonium* *Synedra* (diatom)
Chlorella *Oscillatoria* *Ulothrix*
Closterium (desmid) *Pandorina* *Ulva* (seaweed)
Ectocarpus (seaweed) *Peridinium* (dinoflagellate) *Volvox*
Euglena *Polysiphonia* (seaweed) Teacher's Manual
Gloeocapsa *Scenedesmus*
Microcystis (desmid)

151510 Per set **\$159.95**



151507 High School Algae Set



151510 Advanced High School Algae Set

Carolina BioKits®: Algae Bead Photosynthesis

For a class of 30 students working in groups of 3. Looking for a way to brighten your photosynthesis lessons? Use algae beads! In this activity, students learn how to make their own algae beads and get hands-on experience developing and testing a hypothesis. They begin by learning about the correlation between light wavelength and photosynthesis. From there, student groups form hypotheses about how different colored light filters affect photosynthesis rate. Finally, they test their hypotheses using colored filters, their algae beads, and a bicarbonate indicator solution. This lab activity addresses the following Next Generation Science Standards*: HS-LS1-5 and MS-LS1-6. Visit Carolina.com for complete lists of kit materials. **Note:** Order the kit with the perishable material included or with a prepaid coupon to request perishable material later at your convenience. Contact us or return the coupon to request delivery of perishable material. The algae must be grown in a lab for 2 weeks prior to use.



206100P Carolina BioKits: Algae Bead Photosynthesis (with perishable)

206100 Kit (with prepaid coupon) Each **\$102.95**
206100P Kit (with perishable) Each **\$102.95**

*Next Generation Science Standards® is a registered trademark of Achieve. Neither Achieve nor the lead states and partners that developed the Next Generation Science Standards were involved in the production of, and do not endorse, these products.

Chlamydomonas Mating Kit

Mating strains for demonstration of isogamous reproduction.

151610 Per kit **\$29.25**



151520 Unialgal Survey Set

Unialgal Survey Set

Fifteen cultures demonstrate the diversity of morphology and habit found in all the major groups.

Acrochaetium *Euglena* *Ulothrix*
Anabaena *Gloeocapsa* *Vaucheria*
Chlamydomonas *Oedogonium* *Volvox*
Closterium *Scenedesmus* Instructions
Cosmarium *Sphacelaria*
Eudorina *Tolypothrix*

151520 Per set **\$120.00**

California Proposition 65

WARNING: Reproductive Harm – www.P65Warnings.ca.gov

Algae Culture Media

REMEMBER!

Algae should be cultured within 5 days of receipt. Be sure you have ordered your algae culture media, too!

Alga-Gro® Freshwater Medium

Rapidly gives dense cultures and is nearly universal for culturing freshwater algae. Buffered at pH 7.8. Sterile. Available in 1-qt and 1-gal sizes.

153752 1 qt Each **\$22.15**

153753 1 gal Each **\$67.20**



153752 Alga-Gro Freshwater Medium, 1 qt

Alga-Gro® Seawater Medium

Excellent for culturing marine algae. Pasteurized. Available in 1-qt and 1-gal sizes.

153754 1 qt Each **\$22.15**

153755 1 gal Each **\$67.20**



153751 Alga-Gro Concentrated Medium

Alga-Gro® Concentrated Medium

Sterile enrichment for seawater and springwater. Almost a universal algal medium. Available in a **Pack of 12 Tubes** (1 tube makes 1 L) and in a sterile **500-mL Bottle** (1 bottle makes 25 L).

153751 Pack of 12 Tubes Each **\$46.10**

153758 500-mL Bottle Each **\$72.05**

Chlamydomonas Medium

A sterile, liquid medium for culturing *Chlamydomonas* in the flagellated stage. 1qt.

153760 Each **\$22.15**



153760 *Chlamydomonas* Medium

Bioluminescent Dinoflagellate Medium

Specifically formulated to keep bioluminescent dinoflagellates healthy in your classroom or research lab. 1 L.

153757 Each **\$23.65**



153790 Soil-Water Supernant

Soil-Water Supernant

Concentrated extract of garden soil for use as an enrichment in algal culture media. 8-oz jar.

153790 Each **\$9.95**

Soil-Water Medium

Ready to use for culturing algae. 8-oz jar.

153785 Each **\$9.95**



153785 Soil-Water Medium

Carolina Teacher Tips

How to Maintain Algae in Your Classroom

Do

- Keep at room temperature (22° C)
- Loosen caps on tubes
- Use sterile culture vessels
- Use sterile pipets
- Subculture within 5 days of receiving
- Provide correct light intensity
- Use suitable medium
- Read Carolina® *Culturing Algae* manual

Don't

- Put in refrigerator
- Wash glassware in detergent
- Keep temperature over 30° C (lethal to algae)

Algae as Food

Algae Food Source

Freshwater *Nannochloropsis* grown in Alga-Gro® Freshwater Medium. Excellent for filter feeding organisms such as *Daphnia* sp. and *Moina* sp. 1 qt.

142337 Each **\$27.05**

Algae: Live Food for Freshwater Invertebrates

Four individual cultures for feeding freshwater invertebrates such as daphnia, rotifers, and filter feeders. Includes *Ankistrodesmus*, *Chlorella*, *Scenedesmus*, and *Selenastrum*.

151590 Per set **\$32.90**



142337 Algae Food Source



151590 Algae: Live Food for Freshwater Invertebrates



First-Class Cultures

Over 50 Years of Reliable, Available, Pure Unialgal Cultures

- Always pure
- Always viable
- Always available

Unialgal Cultures

Cultures You Can Count On

Our unialgal cultures are teaching resources you can count on. We maintain the largest inventory of cultures in the industry, each guaranteed for purity and genus, available for immediate delivery. You can always depend on getting the alga you need when you need it. Our algae are grown at optimal light and temperature levels and are transferred to fresh media under rigidly controlled conditions to ensure purity and quality.

Carolina Teacher Tips

How to Maintain Algae in Your Classroom

Do

- Keep at room temperature (22° C)
- Loosen caps on tubes
- Use sterile culture vessels
- Use sterile pipets
- Subculture within 5 days of receiving
- Provide correct light intensity
- Use suitable medium
- Read Carolina® *Culturing Algae* manual

Don't

- Put in refrigerator
- Wash glassware in detergent
- Keep temperature over 30° C (lethal to algae)

About Our Cultures

We have been providing unialgal cultures to educators for over 50 years and were the first to offer many of the common algae used in classrooms around the world today. Our professional staff has decades of hands-on experience in producing pure, quality cultures and giving educators world-class technical support. Each unialgal culture contains enough material for a class of 30 students. For your convenience, we list culture media, optimum growth temperatures, and either Low or High light levels (Low: 50 to 100 foot-candles of fluorescent light or fluorescent light from the ceiling; High: 200 to 400 foot-candles of fluorescent light 18 to 24" from the culture). Each order of algae includes a FREE Carolina® *Culturing Algae* manual.

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Carolina Teacher Tips

Look throughout the Protozoa section for helpful hints and answers to frequently asked questions about protozoa. If you have any additional questions, please call our toll-free technical support number (800.334.5551) or e-mail us at carolina@carolina.com. We will try our best to either answer your questions or direct you to the appropriate source.



Individual Cultures

Green Algae

Each unialgal culture contains enough material for a class of 30 students. For your convenience, we list culture media, optimum growth temperatures, and either Low or High light levels (Low: 50 to 100 foot-candles of fluorescent light or fluorescent light from the ceiling; High: 200 to 400 foot-candles of fluorescent light 18 to 24" from the culture).

Organism	Description	Medium	Light Level	Temp	Catalog No.	Each
Ankistrodesmus	Spindle-shaped cells	Alga-Gro® Freshwater	High	22° C	151955	\$8.30
Chlamydomonas	Large form	Soil-Water	High	22° C	152030	\$8.30
C. moewusii (+)	Bacteria-free, crosses with item #152035	Proteose Agar	High	22° C	152034	\$12.30
C. moewusii (-)	Bacteria-free, crosses with item #152034	Proteose Agar	High	22° C	152035	\$12.30
C. reinhardi (+)	Wild type, crosses with item #152041	Soil Extract Agar	High	22° C	152040	\$12.30
C. reinhardi (-)	Wild type, crosses with item #152040	Soil Extract Agar	High	22° C	152041	\$12.30
Chlorella	On liquid; best for teaching	Alga-Gro® Freshwater	High	22° C	152069	\$8.30
C. vulgaris	Bacteria-free	Proteose Agar	High	22° C	152075	\$12.30
Chlorococcum hypnosum	Nonmotile; unicellular; prominent chloroplasts and pyrenoids	Bristol's Medium	High	22° C	152091	\$8.30
Cladophora	Freely branched; marine	Alga-Gro® Seawater	High	22° C	152105	\$8.30
Closterium	Elongated, single-celled desmid	Alga-Gro® Freshwater	High	22° C	152115	\$8.30
Coleochaete	Disk with unbranched seta	Alga-Gro® Freshwater	High	22° C	152128	\$8.30
Cosmarium	Desmid	Alga-Gro® Freshwater	High	22° C	152140	\$8.30
Dunaliella salina	Halophilic flagellate; marine	Alga-Gro® Seawater	High	22° C	152160	\$8.30
Eudorina californica	Old genus <i>Pleodorina</i>	Alga-Gro® Freshwater	High	22° C	152230	\$9.00
E. elegans	Free-swimming colony	Soil-Water or EREM	High	22° C	152235	\$8.30
Gonium pectorale	4- to 32-cell colony	Soil-Water	High	22° C	152264	\$8.30
Haematococcus	Unusual flagellate	Alga-Gro® Freshwater	High	22° C	152280	\$9.00
Hydrodictyon	Nets of multinucleated cells	<i>Chlamydomonas</i>	Low	22° C	152300	\$8.30
Micrasterias	Large desmid	Soil-Water	High	22° C	152345	\$8.30
Mougeotia	Related to <i>Spirogyra</i>	Alga-Gro® Freshwater	High	22° C	152360	\$9.00
Oedogonium	Macrandrous; homothallic	Alga-Gro® Freshwater	High	22° C	152400	\$8.30
Pandorina morum (+)	Crosses with item #152415 (available at Carolina.com)	Soil-Water or EREM	High	22° C	152414	\$8.30
Pediastrum	Interesting polygonal cells	Soil-Water	High	22° C	152430	\$8.30
Platymonas	Four flagella in pairs; marine	Alga-Gro® Seawater	High	22° C	152475	\$8.30
Scenedesmus	Four cells with spines	Alga-Gro® Freshwater	High	22° C	152510	\$8.30
Selenastrum capricornutum	Lunate cell	Alga-Gro® Freshwater	High	22° C	152520	\$8.30
Selenastrum capricornutum	Lunate cell; bacteria free	Bristol's Agar	High	22° C	152521	\$12.30
Spirogyra*	Spiral chloroplasts	Alga-Gro® Freshwater	High	22° C	152525	\$8.30
Staurostrum	Triangular desmid	Alga-Gro® Freshwater	High	22° C	152540	\$8.30
Tetraselmis	Food organism; 4 flagella; marine	Alga-Gro® Seawater	High	22° C	152610	\$8.30
Ulothrix	Unbranched filament	Alga-Gro® Freshwater	High	22° C	152640	\$8.30
Ulva	Young germlings; marine; Note: Cannot be shipped into WI	Alga-Gro® Seawater	High	22° C	152645	\$8.30
Volvox aureus*	Cytoplasmic connections the size of flagella	Alga-Gro® Freshwater or Soil-Water	High	22° C	152655	\$8.30
V. barberi*	Thick cytoplasmic connections	Soil-Water	High	22° C	152660	\$9.00
V. globator*	Thick cytoplasmic connections	Alga-Gro® Freshwater or Soil-Water	High	22° C	152665	\$8.30
Zygnema	Cells with 2 stellate chloroplasts	Alga-Gro® Freshwater	High	22° C	152695	\$8.30


152069
Chlorella


Chlorella

A nonmotile freshwater green alga that is spherical in shape. Used in AP® Biology Lab 12 to measure primary productivity under different light conditions. Interesting history as a potential human food source.

152069 Per culture **\$8.30**


152525 *Spirogyra*


Spirogyra

Probably the most widely known of all freshwater algae, we recommend this filamentous green alga as a means of introducing students to making and viewing slides of algae. The name *Spirogyra* refers to its chloroplasts, which form spirals in each of its cells. **Note: Should not be shipped over a weekend.** Carolina recommends that you request your order to arrive on a Wednesday, Thursday, or Friday (or even a Saturday) to avoid weekend shipping.

152525 Per culture **\$8.30**


152655 *Volvox aureus*


Volvox aureus

This colonial green alga forms spherical colonies consisting of hundreds of biflagellate cells. The coordinated beating of the flagella propels the colony through the water with a graceful rolling motion. Recommended as an example of colonial algae. **Note: Should not be shipped over a weekend.** Carolina recommends that you request your order to arrive on a Wednesday, Thursday, or Friday (or even a Saturday) to avoid weekend shipping.

152655 Per culture **\$8.30**

*These species should not be shipped over a weekend. Carolina recommends that you request your order to arrive on a Wednesday, Thursday, or Friday (or even a Saturday) to avoid weekend shipping.



152995 *Vaucheria*



153095 *Synedra*



153290 *Peridinium*



153360 *Ectocarpus*

Euglenoids

Organism	Description	Medium	Light Level	Temp	Catalog No.	Each
<i>Euglena acus</i>	Slow swimmer	Soil-Water + Pea	Low	22° C	152785	\$8.30
<i>E. gracilis</i>	Active, good grower	Soil-Water + Pea	Low	22° C	152800	\$8.30
<i>E. gracilis</i> "Z"	Bacteria-free; B12 assay	<i>Euglena</i> Agar	Low	22° C	152802	\$12.30
Phacus	Flattened, heart-shaped cell	Soil-Water	Low	22° C	152845	\$8.30

Yellow-Green Algae

Organism	Description	Medium	Light Level	Temp	Catalog No.	Each
<i>Vaucheria</i>	Siphonaceous tubular coenocyte	Alga-Gro® Freshwater	High	22° C	152995	\$8.30

Diatoms

Organism	Description	Medium	Light Level	Temp	Catalog No.	Each
<i>Chaetoceros gracilis</i>	Marine centric diatom; used in shrimp and mollusk mariculture as a food source	Erdschreiber's	High	22° C	153111	\$8.30
<i>Cyclotella</i>	Small marine centric diatom	Alga-Gro® Seawater	High	22° C	153020	\$8.30
<i>Navicula</i>	Pinnate diatom	Alga-Gro® Freshwater	High	22° C	153045	\$8.30
<i>Synedra</i>	Pinnate diatom	Alga-Gro® Freshwater	High	22° C	153095	\$8.30
<i>Thalassiosira</i>	Auxospores in culture; marine	Alga-Gro® Seawater	High	22° C	153110	\$8.30

Golden-Brown Algae

Organism	Description	Medium	Light Level	Temp	Catalog No.	Each
<i>Isochrysis</i>	Flagellate; marine	Soil Seawater	High	22° C	153180	\$8.30
<i>Nannochloropsis</i>	Food organism; nonmotile cells; marine	Alga-Gro® Seawater	High	22° C	153220	\$9.00
<i>Synura</i>	Radially arranged colony of cells	Soil-Water	High	22° C	153210	\$8.30

Dinoflagellates

Organism	Description	Medium	Light Level	Temp	Catalog No.	Each
<i>Amphidinium</i>	Flagellate; marine	Alga-Gro® Seawater	Low	22° C	153240	\$8.30
<i>Gymnodinium</i>	Naked; marine	Alga-Gro® Seawater	Low	22° C	153260	\$8.30
<i>Peridinium</i>	Large freshwater form	Soil-Water	High	22° C	153290	\$8.30
<i>Prorocentrum</i>	Compressed, free-swimming; marine	Alga-Gro® Seawater	Low	22° C	153300	\$8.30
<i>Pyrocystis</i>	Bioluminescent dinoflagellate; marine	Bioluminescent Dinoflagellate	High	22° C	153305	\$8.30

Brown Algae

Organism	Description	Medium	Light Level	Temp	Catalog No.	Each
<i>Dictyota</i>	Ribbonlike blades; marine	Alga-Gro® Seawater	High	22° C	153354	\$8.30
<i>Ectocarpus</i>	Branched thallus; zoospores; marine	Alga-Gro® Seawater	High	22° C	153360	\$8.30
<i>Sphacelaria</i>	Large-celled, branched thallus; marine	Alga-Gro® Seawater	High	22° C	153420	\$8.30

Red Algae

Organism	Description	Medium	Light Level	Temp	Catalog No.	Each
<i>Acrochaetium</i>	Monaxial thallus; marine	Alga-Gro® Seawater	Low	22° C	153465	\$8.30
<i>Agardhiella</i>	Cylindrical, branched thallus; marine	Alga-Gro® Seawater	Low	22° C	153480	\$9.00
<i>Batrachospermum</i>	Freshwater	Soil-Water	Low	22° C	153515	\$9.00
<i>Callithamnion</i>	Monaxial with free filaments; marine	Alga-Gro® Seawater	Low	22° C	153525	\$9.00
<i>C. byssoides</i>	Mated to demonstrate sexual reproduction; marine	Alga-Gro® Seawater	Low	22° C	153520	\$9.00
<i>Gracilaria verrucosa</i>	Notable for its economic importance as an agarophyte	Alga-Gro® Seawater with Soil	Low	22° C	153550	\$8.30
<i>Polysiphonia</i>	Polysiphonous construction; marine	Alga-Gro® Seawater	Low	22° C	153580	\$8.30
<i>Porphyridium</i>	Liquid culture; marine	Alga-Gro® Seawater	Low	22° C	153599	\$8.30
<i>Rhodomenia</i>	Branched blades; marine	Alga-Gro® Seawater	Low	22° C	153635	\$9.00

Protozoa

Protozoa Sets

Flagellate Set

Includes 5 individually labeled cultures of our choice selected from the following listing. With culturing instructions.

<i>Chilomonas</i>	<i>Euglena</i>	<i>Paramecium</i>
<i>Chlamydomonas</i>	<i>Gonium</i>	<i>Volvox</i>
<i>Eudorina</i>	<i>Pandorina</i>	

131050 Per set **\$41.25**



131050 Flagellate Set



131040 Ciliate Set

Ciliate Set

Includes 7 individually labeled cultures of our choice selected from the following listing. With culturing instructions.

<i>Blepharisma</i>	<i>P. caudatum</i>
<i>Colpidium</i>	<i>P. multimicronucleatum</i>
<i>Didinium</i>	<i>Spirostomum</i>
<i>Dileptus</i>	<i>Stentor</i>
<i>Euplotes</i>	<i>Vorticella</i>
<i>Paramecium aurelia</i>	
<i>P. bursaria</i>	

131040 Per set **\$57.50**

Sarcodina Set

Includes 4 individually labeled cultures (our choice) selected from the following listing. With culturing instructions.

<i>Actinosphaerium</i>	<i>Diffugia</i>
<i>Amoeba</i>	<i>Chaos (Pelomyxa)</i>
<i>Arcella</i>	

131030 Per set **\$32.25**



131030 Sarcodina Set

Paramecium Comparative Study Set

Help students identify anatomical differences useful in taxonomic classification. Set includes *P. multimicronucleatum*, *P. aurelia*, and *P. bursaria* in 3 separate cultures. Instructions included.

131060 Per set **\$24.95**



131060 Paramecium Comparative Study Set

Preying Protozoa Set

Our choice of 2 forms (*Bursaria*, *Didinium*, or *Chaos*) that prey on *Paramecium*. Individually labeled cultures contain sufficient food organisms for students to observe the capture and ingestion process. For additional food, order a culture of *Paramecium* (item #131540). With instructions.

131004 Per set **\$16.75**

LIVING ORGANISMS WHEN YOU NEED THEM

Carolina typically ships live materials on Mondays–Wednesdays and uses the most economical shipping methods to ensure proper delivery. However, to meet your needs we can ship on any weekday and, when requested, use a premium shipping method (some of which are not available to all locations).



131000 Basic Protozoa Set



Basic Protozoa Set

Includes *Amoeba*, *Euglena*, and *Paramecium* in 3 separate cultures. With culturing instructions.

131000 Per set **\$24.98**

131008 Protozoa Survey Set



Customer Review

"Use this every year to study protists, cell structure, and diversity. Populations are good in quality and quantity."

High School Biology Teacher



Protozoa Survey Set

Consists of 6 individually labeled cultures and culturing instructions.

<i>Amoeba</i>	<i>Paramecium</i>	<i>Stentor</i>
<i>Euglena</i>	<i>Spirostomum</i>	<i>Volvox</i>

131008 Per set **\$48.25**

Easy-View Protozoa Set

The 5 organisms in this set are specially selected for easy viewing under older, low-resolution microscopes. *Chaos (Pelomyxa)* is stained with Vitachrome®; other cultures are not stained. With culturing and care instructions.

<i>Blepharisma</i>
<i>Spirostomum</i>
<i>Stentor coeruleus</i>
Vitachrome® <i>Chaos (Pelomyxa)</i>
<i>Volvox globator</i>

131025 Per set **\$39.95**



131025 Easy-View Protozoa Set



Carolina Gallery of Images™—Protists

Explore the microscopic and macroscopic world of this single-celled kingdom. Find information, images, and videos on common protists such as *Amoeba*, *Paramecium*, *Euglena*, and *Volvox*. See video footage of phagocytosis, cytoplasmic streaming, ingestion, locomotion, and more. Various protists throughout the kingdom are represented as video and/or stills. CD-ROM includes a 10-question student quiz and a teacher test bank of 100 questions. A surprise video will show after the student quiz if all questions are answered correctly. System requirements: Windows® 95, NT 4.0 or higher; Macintosh® 7.0 or higher; and 8 MB of RAM.

401321 Each **\$63.80**





Brown Planaria



General Invertebrate Set Tiny aquatic wonders

- Recommended for comparative studies
- Includes representatives from a variety of invertebrate phyla
- Perfect for dichotomous key exercises

These 8 individually labeled cultures represent invertebrates commonly used in high school and college biology courses. Includes instructions.

<i>Aeolosoma</i>	<i>Daphnia</i>
<i>Amoeba</i>	<i>Paramecium</i>
Brown Hydra	Rotifers
Brown Planaria	Vinegar Eel

132575 Per set **\$65.00**

View distinct colors with these protozoa



131001 Protozoa Pigmentation Set

Protozoa Pigmentation Set

Includes 3 protozoa, each exhibiting vivid color variations because of pigmentation differences. One culture each of *Blepharisma* (rose), *Euglena* (green), and *Stentor* (blue). With instructions.

131001 Per set **\$25.95**



Protozoa Classification Set

Includes 9 individual cultures representing the 3 main classes of protozoa. With instructions.

Sarcodines:

Amoeba
Arcella
Actinosphaerium

Flagellates:

Euglena
Pandorina
Peranema

Ciliates:

Blepharisma
Paramecium bursaria
Euplotes

131055 Per set **\$72.95**



130900 Basic Microorganisms Set

Basic Microorganisms Set

A selection of living microorganisms representing algae, protozoa, bacteria, and fungi. Set includes 16 organisms, in appropriate containers, plus 3 booklets: *Carolina® Protozoa and Invertebrates Manual*, *Techniques for Studying Bacteria and Fungi*, and *Culturing Algae*.

<i>Amoeba proteus</i>	<i>Paramecium</i>
<i>Bacillus subtilis</i>	<i>Penicillium notatum</i>
<i>Chlamydomonas</i>	<i>Rhizopus stolonifer</i>
<i>Coprinus cinereus</i>	<i>Rhodospirillum rubrum</i>
<i>Euglena</i>	<i>Saccharomyces cerevisiae</i>
<i>Micrococcus luteus</i>	<i>Saprolegnia</i>
<i>Oedogonium</i>	<i>Spirogyra</i>
<i>Oscillatoria</i>	<i>Volvox</i>

130900 Per set **\$189.95**



Euglena



Volvox

Protozoa Set

Includes the following 15 individually labeled cultures and culturing instructions.

<i>Actinosphaerium</i>	<i>Euglena</i>
<i>Amoeba</i>	<i>Euplotes</i>
<i>Arcella</i>	<i>Paramecium</i>
<i>Blepharisma</i>	<i>Spirostomum</i>
<i>Chlamydomonas</i>	<i>Stentor</i>
<i>Didinium</i>	<i>Volvox</i>
<i>Dileptus</i>	<i>Vorticella</i>
<i>Eudorina</i>	

131020 Per set **\$120.00**



131020 Protozoa Set



Teacher's Choice



Carolina Exclusive



More Information Available Online

Protozoa Review Sets



Amoeba, Paramecium, and Euglena Review Set

For a class of 30. A separate culture of *Amoeba*, *Paramecium*, and *Euglena* and a pad of 30 Bioreview® Sheets for each. With instructions for culturing each form.

131085 Per set **\$48.25**

Customer Review

"The protists were all healthy on arrival. Amoeba were a bit hard for my 7th graders to catch with a pipette, but using the Carolina slideshow about careful pipetting and locating amoeba in the sample helped alot. My kids loved watching all 3 types move about . . ."

Middle School Biology Teacher

Feed Your Protozoa

One simple and exciting activity associated with protozoa observation is actually feeding protozoa. The slow-moving *Amoeba* and the blue ciliate *Stentor*, when fed *Chilomonas*, provide hours of enjoyment and education.



131101 Feed Your Amoeba

Feed Your Amoeba

All ages can enjoy watching *Amoeba* use pseudopodia to slowly creep toward its food source, *Chilomonas*. Students will be intrigued to see how the pseudopodia can bulge from virtually anywhere to consume the fast-swimming flagellate. Set includes living *Amoeba* and *Chilomonas* cultures. With instructions.

131101 Per set **\$18.30**



131102 Feed Your Stentor

Feed Your Stentor

Easily observed by all ages, the blue ciliate, *Stentor*, is exciting to watch when *Chilomonas* is added as a food source. Observe as *Stentor*'s adoral zone creates a vortex to pull food particles into its cytostome. Set includes living *Stentor* and *Chilomonas* cultures. With instructions.

131102 Per set **\$18.30**



131092 As the Colony Turns Set

As the Colony Turns Set

For a class of 30. Set contains one culture of *Volvox*, a pad of 30 Bioreview® Sheets, and a tube of Alga-Gro® Concentrate. An excellent set for studying the *Volvox* life cycle while also observing the plant- and animal-like characteristics of this protist under a microscope. With instructions.

131092 Per set **\$24.20**

Carolina® Protozoa Slide Sets

Each Carolina® Protozoa Slide Set includes a living protozoan culture and a prepared microscope slide (w.m.) of the same protozoan. The living culture is enough for 30 students. Each set also includes 30 plastic concavity (culture) slides, 100 unbreakable plastic coverslips, and a disposable plastic pipet. Some sets include Protoslo®, a clear liquid for slowing motile protozoa.

Catalog No.	Set Name	Description	Set Includes	Each
130803	Amoeba Set	Our most popular protozoan culture; great for demonstrating amoebae structure and locomotion	Live culture (item #131306) Prepared slide (item #295384)	\$37.00
130824	Euglena Set	Phytoflagellate that possesses chlorophyll and exhibits autotrophic nutrition; set includes Protoslo®	Live culture (item #131768) Prepared slide (item #295666) Protoslo® (item #885141)	\$37.00
130827	Mixed Protozoan Set	Single culture containing <i>Amoeba</i> , <i>Paramecium</i> , <i>Chilomonas</i> , <i>Euglena</i> , <i>Stentor</i> , and <i>Volvox</i>	Live culture (item #131934) Prepared slide (item #295276)	\$37.00



130803 Carolina Protozoa Amoeba Slide Set



Protozoa Kits

**Carolina® Minipond Ecosystem Kit**

An outdoor habitat for microorganisms. This maintenance-free habitat simulates a pond, yet can be brought into the classroom for study of microscopic algae and protists. Activities include discovering pond traffic and observing the organisms' shapes and feeding habits. Kit requires the use of a microscope and can be modified for younger students by incorporating the inexpensive item #972767 Carolina® Student Microscope (30×). Kit includes a mini pond container, pond substrate, protozoan mixture, algae mixture, pH test strips, nutrient solution, slides, and coverslips. With instructions.

131207 Per kit **\$63.35**



View plant and animal cells, and develop slide-making skills

131194 Cell Study BioKit

Cell Study BioKit®

For a class of 30. Introduces the cell, its basic structure, and general concept. Includes *Amoeba*, *Euglena*, onion, *Elodea* tips, cork, microscope slides, coverslips, forceps, razor knives, toothpicks, Protoslo®, stain, student guides, and teacher's manual. **Note:** *Elodea tips cannot be shipped into AL, CA, MA, ME, MI, NH, OR, VT, WA, or WI. Restricted states will be shipped E. canadensis, E. najas, or Chara, depending on availability. Canadian orders require a permit from the Canadian government.*

131194 Per kit **\$57.40**



131154 Homeostasis and the Amoeba: An Exploration of Osmoregulation

Homeostasis and the Amoeba: An Exploration of Osmoregulation

Teach your students about homeostasis as a requirement for life. Vitachrome®-stained *Amoeba proteus* allow students to easily visualize and count contracting vacuoles. Students explore how *Amoeba* responds to environments of differing osmolarities. Materials are sufficient for 30 students working in pairs.

131154 Per kit **\$60.70**



Observe the adaptation of protozoan cysts

131206 Hay Infusion Kit

Hay Infusion Kit

For a class of 30 students. Includes all materials for producing a gallon of hay infusion. The infusion can be used to mass culture many species of protozoa and other microinvertebrates. Includes timothy hay (*Phleum pratense*), plastic culture aquarium, springwater, and instructions.

131206 Per kit **\$33.75**



131190 Carolina BioKits: Symbiosis

Carolina BioKits®: Symbiosis

For a class of 32 students working in 8 groups. Looking for real-life examples of symbiosis to share with your students? This kit allows students to view 4 sets of organisms engaged in different symbiotic relationships, including mutualism, parasitism, and commensalism. Students then complete a game in which they are tasked with matching organisms based on their specific symbiotic relationship. Kit includes supplies, updated teacher's manual, and reproducible student guides. **Note:** Due to termites' natural life cycle, they are often fragile in early fall and may not ship well. Cannot be shipped into AK and NV. Canadian customers must apply for a Canadian Department of Agriculture permit.

131190 Per kit **\$92.65**

Phagocytosis and Vacuole Formation in *Tetrahymena* Kit

Advanced—For students with moderate experience in microbiology.

For a class of 30. Developed by Donna Bozzone, Saint Michael's College. *Tetrahymena* is ideal for studying phagocytosis and vacuole formation. This cell behavior is quite dramatic and easy to observe with a compound microscope (not included). When hungry *Tetrahymena* encounter food, they use their moving cilia to maintain a current of extracellular fluid and sweep material into each cell's buccal cavity (mouth). The receiving vacuole fills with food particles and fluid and pinches off. *Tetrahymena* ingest a wide variety of materials—including but not limited to bacteria, yeast, India ink, carbon particles, carmine, latex beads, polystyrene beads, and heat-coagulated egg albumin. Teacher instructions included.



Kit includes:
Tetrahymena
Tetrahymena Medium
 Protoslo®
 Centrifuge Tubes
 Culture Tubes
 Microscope Slides/Cover Glasses
 India Ink
 Graduated Plastic Pipet

131182B Per kit **\$89.35**

Structure and Function Kit: The Evolution of Eukaryotes, Prokaryotes, and Viruses

For a class of 30 working in groups of 3. This kit contains 3 activities that highlight the structure and function of eukaryotes, prokaryotes, and viruses. In the first activity, students design a cell or virus by selecting traceable structures and organelles, and then name the type of drawn cell or virus and describe its characteristics. Next, students trade drawings and practice classification using a dichotomous key. In the second activity, students practice microscope techniques and hone their observation skills by documenting various morphologies of bacteria and the parasitism of tobacco mosaic virus on a leaf. In the third activity, students observe *Amoeba* feeding on *Chilomonas*, allowing them to visualize functioning organelles and the concept of endocytosis. Provided background information illuminates the leading theories of evolution and the relationship among eukaryotes, prokaryotes, and viruses. **Note:** Order the kit with the perishable materials (all items) included or with a prepaid coupon to request perishables later at your convenience. Contact us or return the coupon to request delivery of perishable materials.



131210 Structure and Function Kit: The Evolution of Eukaryotes, Prokaryotes, and Viruses

Kit includes:

Chilomonas®
 Vitachrome® *Amoeba*®
 Tracing Paper
 Pencils

Dropping Pipets
 Structure and Function
 Slide Set
 Microscope Slides

Coverslips
 Teacher Instructions and
 Reproducible Student Guide

131210 Kit (with prepaid coupon) Each **\$80.85**

131210P Kit (with perishables) Each **\$80.85**



131196P Asexual and Sexual Reproduction Kit (with perishable)

Asexual and Sexual Reproduction Kit

Grades 9–12. Students explore asexual and sexual reproduction with this kit. Over the course of 2 weeks, they observe asexual reproduction in planaria and sexual reproduction in C-FERN®. They also use beads to model the processes of asexual and sexual reproduction at the chromosomal level. Materials are sufficient for 30 students working in groups of 3. **Note:** Order the kit with the perishable material (item) included or with a prepaid coupon to request perishable material later at your convenience. Contact us or return the coupon to request delivery of perishable material.

Kit includes:

Planaria Culture®
 C-FERN® Spores, wild type
 C-FERN® Medium
 Culture Dome (top and bottom)
 Petri Dishes (60 × 15 mm)

Single-Edge Razor Blade
 2-Way Beads
 Clear Bead Connectors
 Toothpicks
 Paper Clips

Alcohol Prep Pads
 Microscope Slides
 Coverslips
 Pipets
 Teacher's Manual and
 Reproducible Student Guide

Needed but not included:

Hot Water Bath
 Stereomicroscopes
 Compound Microscopes

1 gal Springwater (use with *Planaria*)
 1 gal Distilled Water (use with C-FERN®)

131196 Kit (with prepaid coupon) Each **\$82.15**

131196P Kit (with perishable) Each **\$82.15**



Teacher's Choice



Carolina Exclusive



More Information
Available Online

Protozoa Cultures

- **Quality:** Products are pure and uncontaminated.
- **Service:** We can ship most orders the day they are received.
- **Preparation:** Cultures arrive ready to use.
- **Care:** We supply complete care guides.

We
GUARANTEE
safe arrival
of all
living materials

Protozoa: The Key to Learning How It All Works

Our company was founded on the development and shipment of protozoan cultures, and we continue to refine this process. We have a reputation for pure, high-quality cultures and few replacements. Product diversity is a priority. Helpful resources are another way we extend exemplary service. Every protozoan order includes the *Carolina® Protozoa and Invertebrates Manual*, which provides complete care instructions. This tradition of innovation and excellence defines our efforts to help teachers—and students—succeed.

Protozoans play a significant role in life science education. These single-cell organisms demonstrate all the essential life processes—feeding, digestion, growth, movement, and reproduction—normally associated with multicellular eukaryotic organisms such as animals. These microscopic organisms show students the basic properties of living matter.

When ordering, make sure you order a sufficient quantity of each culture based on the number of students in your class or classes. For example, if you are ordering for a class of up to 30 students, order 1 culture; for 31 to 60 students, order 2 cultures; for 61 to 90 students, order 3 cultures; etc.

Download our
**Protozoan
Identification App**
for **iPhone®, iPad®,
and iPod touch®**



- **Topical content**—On identification and anatomy of selected protozoans
- **Innovative practice tool**—Interactive practice sections for initial learning and reinforcement
- **Quality review tool**—Stunning Carolina images, videos, study sheets, and a game to reinforce concepts
- **Affordable**—Lite version is FREE

Available from the App StoreSM—Search for
“Carolina Biological Supply”

CAROLINA
www.carolina.com



Please give us the expected use date for your cultures and allow sufficient time for proper handling. If no delivery date is given, our department will contact you to obtain a delivery date.

Individual Cultures


131306 *Amoeba proteus*


Amoeba proteus

This organism is excellent for demonstrating movement by pseudopodia, action of the contractile vacuole, and protoplasmic streaming.

131306 Per culture **\$8.30**


131554 *Paramecium caudatum*


Paramecium caudatum

A good choice for a first experience in culturing a protozoan, *P. caudatum* is used to demonstrate feeding on bacteria, yeast, and other small particles. It shows avoidance responses to stimuli including touch and chemicals.

131554 Per culture **\$8.30**


131768 *Euglena*


Euglena

This organism is photosynthetic and shows positive phototaxis. When enclosed by an opaque cover with a hole in it and exposed to light, the rich culture will develop a green spot where the light enters.

131768 Per culture **\$8.30**

Sarcodines

Each culture contains enough material for a class of 30 students. Please state the expected use date and allow sufficient time for proper handling.

Helpful Ordering Hint: To ensure you order enough living materials for the number of students in your class, order 1 culture for up to 30 students, 2 cultures for 31 to 60 students, 3 cultures for 61 to 90 students, etc.

Organism	Description	Medium	Temp	Catalog No.	Each
Actinosphaerium	An interesting heliozoan with radiating axopodia	Carolina® Springwater	22° C	131302	\$8.30
Amoeba proteus	Great for demonstrating amoebae structure and locomotion	<i>Chilomonas</i> + Wheat Seed with Carolina® Springwater	22° C	131306	\$8.30
Arcella vulgaris	Secretes a shell and has lobose pseudopodia	Carolina® Springwater	22° C	131310	\$8.30
Chaos (Pelomyxa) carolinensis	Large multinucleate amoebae	<i>P. multimicronucleatum</i> with Carolina® Springwater	22° C	131324	\$8.30
Diffugia lobostoma	Feeds on single-chloroplast <i>Spirogyra</i> by attaching to the ends of fragmented strands and pulling out and engulfing the chloroplasts	Carolina® Springwater and Single-Chloroplast <i>Spirogyra</i>	22° C	131334	\$8.30

Carolina Teacher Tips

The Amoebae Are Hiding!

Because they are amorphous (shapeless) and nonpigmented, *Amoeba proteus* (item #131306) can be difficult to find in the shipping container. To find them, remove the lid from the shipping container and allow the bottle to remain undisturbed for 30 minutes. The amoebae suspended in the liquid medium will settle to the bottom. After 30 minutes, quickly pour three-fourths of the liquid from the shipping container into another vessel (use a clean vessel as the decanted liquid may contain amoebae). Using a dissecting microscope or stereomicroscope, focus on the bottom of the shipping container. The amoebae should be easily observed moving along the bottom of the container.



Carolina Gallery of Images™—Protists

Explore the microscopic and macroscopic world of this single-celled kingdom. Find information, images, and videos on common protists such as *Amoeba*, *Paramecium*, *Euglena*, and *Volvox*. See video footage of phagocytosis, cytoplasmic streaming, ingestion, locomotion, and more. Various protists throughout the kingdom are represented as video and/or stills. CD-ROM includes a 10-question student quiz and a teacher test bank of 100 questions. A surprise video will show after the student quiz if all questions are answered correctly. System requirements: Windows® 95, NT 4.0 or higher; Macintosh® 7.0 or higher; and 8 MB of RAM.



401321 Each **\$63.80**



131000 Basic Protozoa Set



Basic Protozoa Set

Includes *Amoeba*, *Euglena*, and *Paramecium* in 3 separate cultures. With culturing instructions.

131000 Per set **\$24.98**



131008 Protozoa Survey Set



Protozoa Survey Set

Consists of 6 individually labeled cultures and culturing instructions.

Amoeba
Euglena
Paramecium
Spirostomum
Stentor
Volvox

131008 Per set **\$48.25**



Blepharisma

An excellent choice for use by amateur microscopists! Moves more slowly than paramecia and the rosy color makes it easy to observe. Coloration is dependent on exposure to light during the culture process.

131430 Per culture **\$8.30**



131430 *Blepharisma*



Stentor coeruleus

Vivid blue pigmentation and sessile nature make this protist hard to miss. Students will want to observe its adoral zone membranelles, a ciliated organ that creates a vortex to pull food particles into the cytostome.

131598 Per culture **\$8.30**



131598 *Stentor coeruleus*

Ciliates

Each culture contains enough material for a class of 30 students. Please state the expected use date and allow sufficient time for proper handling.

Helpful Ordering Hint: To ensure you order enough living materials for the number of students in your class, order 1 culture for up to 30 students, 2 cultures for 31 to 60 students, 3 cultures for 61 to 90 students, etc.

Organism	Description	Medium	Temp	Catalog No.	Each
Blepharisma	Two interesting features can be studied in this rose-colored ciliate: the effect of light on pigmentation and the normal occurrence of giants	Wheat Seed + Carolina® Springwater	22° C	131430	\$8.30
Bursaria truncatella	One of the largest ciliates known; feed ciliates such as paramecium or <i>Spirostomum</i> and digestion can be studied	Carolina® Springwater + Ciliates (e.g., <i>Paramecium</i> or <i>Spirostomum</i>)	22° C	131434	\$8.30
Colpidium striatum	A small ciliate, easily cultured in large numbers in simple media; one of the chief food organisms for many other protozoa	Protozoan Pellet + Wheat Seed + Carolina® Springwater	22° C	131452	\$8.30
Didinium	One of the better-known examples of a predator-prey relationship, as it feeds exclusively on paramecia	<i>Paramecium multimicronucleatum</i>	22° C	131460	\$8.30
Dileptus sp.	A striking ciliate that uses toxicysts on its long, flexible proboscis to capture prey	Carolina® Springwater + Wheat Seed	22° C	131466	\$8.30
Euplotes	An interesting ciliated protozoan with a bandlike macronucleus and regionally grouped cirri	Carolina® Springwater + Wheat Seed	22° C	131480	\$8.30
Paramecium sp.	<i>P. multimicronucleatum</i> is generally supplied; the organism is characterized by a single macronucleus and 3 or 4 micronuclei	Carolina® Springwater + Wheat Seed (Protozoan Pellets can be added as extra nutrients)	22° C	131540	\$8.30
Paramecium multimicronucleatum, Conjugating	Two separate cultures, each containing a mating type for conjugation	Protozoan Pellets	22° C	131558	\$17.25
Paramecium aurelia	One of the smaller species with a macronucleus and 2 small micronuclei	Carolina® Springwater + Wheat Seed (Protozoan Pellets can be added as extra nutrients)	22° C	131546	\$8.30
Paramecium bursaria	An excellent example of symbiosis; green in color because of zoochlorella in its cytoplasm	Protozoan Pellets	22° C	131548	\$8.30
Paramecium caudatum	Has a massive macronucleus and a compact micronucleus	Carolina® Springwater + Wheat Seed (Protozoan Pellets can be added as extra nutrients)	22° C	131554	\$8.30
Paramecium tetraurelia	Used extensively in research for genetic studies; large in size (as large as 120 µm) with a macronucleus and micronucleus	Protozoan Pellets and Carolina® Springwater	22° C	131560	\$8.30
Spirostomum	Has highly developed lengthwise myonemea	Carolina® Springwater + Wheat Seed	22° C	131590	\$8.30
Stentor coeruleus	The blue stentor with its macronucleus	<i>Chilomonas</i> + Wheat Seed	22° C	131598	\$8.30
Tetrahymena pyriformis	Bacteria-free tube culture	<i>Tetrahymena</i> Medium	22° C	131620	\$10.50
Vorticella	A stalked, bell-shaped, peritrichous ciliate	Field collected (may contain other organisms), not recommended for culturing	22° C	131660	\$9.45

The Competitive Paramecia!

For competition studies between species of paramecia, we suggest using *Paramecium multimicronucleatum* (item #131540) and *P. aurelia* (item #131546). Both are hardy species, easily cultured on wheat seed medium. The 2 paramecia are also easily distinguished because of the drastic difference in their size.

Shooting Trichocysts!

Did you know you could induce paramecia (item #131540) to discharge their trichocysts? Add a small drop of vinegar to a drop of liquid medium containing active cells on a slide. Trichocysts are capsule-like organelles that paramecia extrude in response to certain environmental stimuli (e.g., chemical, mechanical, or electrical). Although their exact function is unknown, trichocysts may act as anchoring devices or defense mechanisms.

Customer Review

"Specimen arrived on time and was of great quality. They were very lively and suited my purposes perfectly."

High School Biology Teacher

Flagellates

Each culture contains enough material for a class of 30 students. Please state the expected use date and allow sufficient time for proper handling. **Note: Volvox (items #131860 and #131864) should not be shipped over a weekend.** Carolina recommends that you request these items to arrive on a Wednesday, Thursday, or Friday (or even a Saturday) to avoid weekend shipping.

Organism	Description	Medium	Temp	Catalog No.	Each
Chilomonas	One of the main food organisms of many other protozoa, particularly <i>Amoeba proteus</i>	Carolina® Springwater + Wheat Seed	22° C	131734	\$8.30
Chlamydomonas	Single, biflagellated cells	Soil-Water	22° C	131738	\$8.30
Dinoflagellates	A cellulose envelope covers the body and the brown chromatophores	Soil-Water	22° C	131750	\$8.30
Eudorina	A colonial species characterized by 16 to 32 spherical, biflagellated cells	Soil-Water	22° C	131760	\$8.30
Euglena	Single, biflagellated cells	<i>Euglena</i> Medium Concentrate	22° C	131768	\$8.30
Pandorina	Free-swimming colony of 4 to 32 cells in the form of a hollow sphere	Soil-Water	22° C	131830	\$8.30
Peranema	An interesting, nonphotosynthetic flagellate that feeds on decaying organic matter	Wheat Seed + Egg Yolk (small amount) + Carolina® Springwater	22° C	131838	\$8.30
Pyrocystis	Bioluminescent dinoflagellate; marine	Bioluminescent Dinoflagellate	22° C	153305	\$8.30
Trichonympha and Pyrsonympha**	Flagellated protozoa living symbiotically in the hindgut of termites; shipped in live termites	Not recommended for culturing	22° C	131850	\$19.85
Volvox sp.	Multicellular colony differentiated into somatic or reproductive cells that represent a distinct labor division and may represent a transition linking unicellular animals and the metazoa; daughter colonies are released when mature	Alga-Gro® Freshwater or Soil-Water	22° C	131860	\$8.30
Volvox globator	Large colonies with thick, cytoplasmic connections	Alga-Gro® Freshwater or Soil-Water	22° C	131864	\$8.30


131760 *Eudorina*

131864 *Volvox globator*

**Residents of OR must apply for a USDA permit to receive this material; Canadian customers must apply for a Canadian Department of Agriculture permit.

Vitachrome®—Prestained Living Organisms

Carolina's Vitachrome® living organisms are *prestained* for classroom use. The sharp, clear staining of these cultures provides a dramatic means for the presentation of internal structure. The prestained living organisms are excellent for teaching and photomicrography.

Individual Cultures

Vitachrome® Amoeba proteus
131308 Per culture **\$9.30**

Vitachrome® Chaos (Pelomyxa)
131326 Per culture **\$9.30**

Vitachrome® Paramecium
131542 Per culture **\$9.30**

Vitachrome® Hydra
132796 Per culture **\$11.25**

Vitachrome® Planaria
132912 Per culture **\$14.00**



View
internal
structures
more easily
with these
cultures

Vitachrome® Set

A set of 3 cultures: Vitachrome® *Amoeba*, Vitachrome® *Paramecium*, and Vitachrome® *Hydra*. Complete with instructions.

131002 Per set **\$28.80**


131308 Vitachrome *Amoeba proteus*

Customer Review

"I like the Vitachrome® amoebas. They are much easier for the students to find and lead to many 'Oh, wow' exclamations."

University Biology Professor



Protists

Protozoa Mixtures

Each mixture contains enough living organisms for a class of 30 students.

Customer Review

"My students and I were absolutely thrilled with this product! The protozoans were beautiful, healthy, and easy to see, and I was able to use it for almost a week with several classes . . . I will definitely order this again and would recommend to any colleague!"

High School Biology Teacher



Amoeba from 131934 Protozoan Mixture

Protozoan Mixture

A single culture containing *Amoeba*, *Paramecium*, *Chilomonas*, *Stentor*, *Euglena*, and *Volvox*.

131934 Per culture **\$14.70**

Sarcodina Mixture

A single culture containing our choice of 3 forms.

131970 Per culture **\$14.15**

Flagellate Mixture

A single culture containing our choice of 5 forms.

131990 Per culture **\$14.15**

Infusoria Mixture

A mixture of ciliates, flagellates, and other microinvertebrates for use in inoculating an infusion. Order 1 culture for each gallon of infusion.

132000 Per culture **\$15.25**



131940 Protozoa Survey Mixture

Protozoa Survey Mixture

Mixture includes a single culture containing 6 representative genera and a simple dichotomous key to the genera for each student.

131940 Per culture **\$16.00**

Carolina EcoKits®: Biodiversity

- Study the biodiversity of a simulated pond
- Identify organisms using a dichotomous key
- Calculate the Simpson index of diversity for different pond levels



187102 Carolina EcoKits: Biodiversity (with prepaid coupon)

Grades 9–12. Students create a simulated pond using 2 culture mixtures and then identify the protists and algae found in their pond using a dichotomous key. Sampling the top, middle, and bottom of the pond, students compare the biodiversity of the various layers using both species richness and the Simpson index for biodiversity. Kit accommodates a class of up to 32 students working in pairs. **Note:** Order the kit with the perishable materials included or with a prepaid coupon to request the perishables later at your convenience. Contact us or return the coupon at least 2 weeks prior to requested delivery date to ensure prompt arrival of materials.

187102 Kit (with prepaid coupon)
Each **\$87.95**

187102P Kit (with perishables)
Each **\$87.95**



132010A Carolina Pond Mystery Mix

Carolina® Pond Mystery Mix

Investigate the diversity of pond microorganisms with this unique dried mixture—just add springwater to bring it to life! The mixture contains a variety of materials and nutrients to support microorganism growth and food chains. Your students can observe bacteria and other single-celled organisms within 24 hours after adding water; larger microinvertebrates will appear within a week. Mix includes bacteria, protozoa, algae, rotifers, ostracods, and others. Comes with instructions and illustrations of some of the more commonly seen organisms. Safely stores for years in dried form without special handling.

132010A Each **\$12.65**

View
predator-prey
relationships
in action



Pond Mixture

A single culture containing *Volvox*, *Hydra*, planaria, or *Daphnia* (our choice), diatoms, and many unicellular plants. **Note: Should not be shipped over a weekend.** Carolina recommends that you request your order to arrive on a Wednesday, Thursday, or Friday (or even a Saturday) to avoid weekend shipping.

132060 Per culture **\$15.25**

Debris and Plankton Collection

Unidentified. From an established pond.

132050 Per culture **\$15.25**

Protozoan Mystery Mixture

A single culture containing 3 or more unidentified forms.

131950 Per culture **\$14.70**

Ciliate Mixture

A single culture containing our choice of 5 forms.

131980 Per culture **\$14.15**



From 131544 Bag of *Paramecium*

Bags of Protozoa

For setting up a mass culture in a plastic bag. Each includes a living culture, a plastic bag, pasteurized springwater, and all necessary culture supplies and instructions.

131544 Bag of *Paramecium* Each **\$21.10**

131770 Bag of *Euglena* Each **\$21.10**

Culture Media & Ingredients

Catalog No.	Item Name and Description	Qty	Each
132315	Tetrahymena Medium A sterile medium in a screw-cap tube for culturing bacteria-free <i>Tetrahymena</i> . Unit of 10 tubes.	Per unit	\$22.15
132320	Euglena Medium Concentrate One vial of concentrate for making 1 gal of medium.	Per vial	\$5.30
132350	Liquid Protozoan Nutrient Concentrate An excellent medium for most ciliates, developed and used in our own labs. A unit contains 100-mL bottle of sterile concentrate, which makes 1 L of medium.	Per bottle	\$13.45
132360	Protozoan Pellets For culturing paramecia and other protozoa. Add to distilled water or springwater. Unit of 25 pellets.	Per unit	\$12.95
132375	Cereal Grass Medium Dehydrated cereal leaves used as culture medium for various protozoa. 100-g bottle.	Per bottle	\$18.00
132376	Cereal Grass Medium Dehydrated cereal leaves used as culture medium for various protozoa. 500-g bottle.	Per bottle	\$24.65
132385	Timothy Hay Used to prepare the classical hay infusion or for use with wheat seed as a medium for protozoa. 4-oz bag.	Per bag	\$7.60
132425	Wheat Seed Wheat seed autoclaved to prevent germination (devitalized). Used in media for protozoa, turbellaria, and oligochaetes. 4-oz jar.	Per jar	\$4.85
132450	Carolina® Springwater The water we use for making protozoan and algal media and for maintaining hydra, planaria, and aquaria. Does not contain lethal metal ions often present in tap water. 1-gal bottle.	Per bottle	\$8.45
132458	Pasteurized Springwater Used to culture protozoa. 1-qt bottle.	Per bottle	\$9.00

ATTENTION!

Use only springwater or filtered, unpolluted pond water for new organisms. Heat water to 150° F, then let cool to room temperature. (P.S. Don't use city water! Too many minerals.)

Download our Protozoan Identification app for iPhone®, iPad®, and iPod touch® from the App Store™—search for “Carolina Biological Supply”



132290 Culture Media Set

Culture Media Set

Includes 4 gal of Carolina® Springwater (item #132450), 12 tubes of Alga-Gro® Concentrated Medium (item #153751), and 1 oz each of hay, rice, and wheat seed. From these materials media can be prepared for culturing a wide variety of protozoa, other invertebrates, algae, and water molds. With instructions.

132290 Per set \$53.50

See page 1051 for our selection of culture dishes.



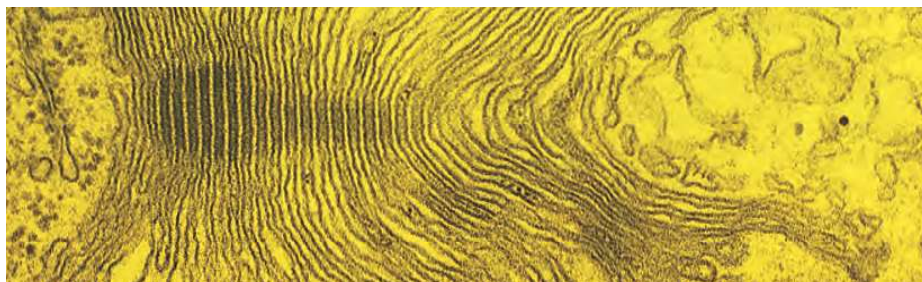
Image from 401321 Carolina Gallery of Images—Protists

Carolina Gallery of Images™—Protists

Explore the microscopic and macroscopic world of this single-celled kingdom. Find information, images, and videos on common protists such as *Amoeba*, *Paramecium*, *Euglena*, and *Volvox*. See video footage of phagocytosis, cytoplasmic streaming, ingestion, locomotion, and more. Various protists throughout the kingdom are represented as video and/or stills. CD-ROM includes a 10-question student quiz and a teacher test bank of 100 questions. A surprise video will show after the student quiz if all questions are answered correctly. System requirements: Windows® 95, NT 4.0 or higher; Macintosh® 7.0 or higher; and 8 MB of RAM.

401321 Each \$63.80

Teacher Resources



Close-up of a Golgi apparatus from 491002D *An Introduction to the Living Cell*

An Introduction to the Living Cell

Grade 6–College. Take a visual tour of the living cell and learn why all organisms rely on cells to grow, reproduce, and generate energy. Discover how subcellular organelles work together to meet the continuously changing needs of the cell. Full-motion computer animation, art, and microscopic images help describe the wondrously complex and dynamic world of the living cell. 30 minutes.

491002D DVD Each \$53.05



Slime Molds (Myxomycetes)

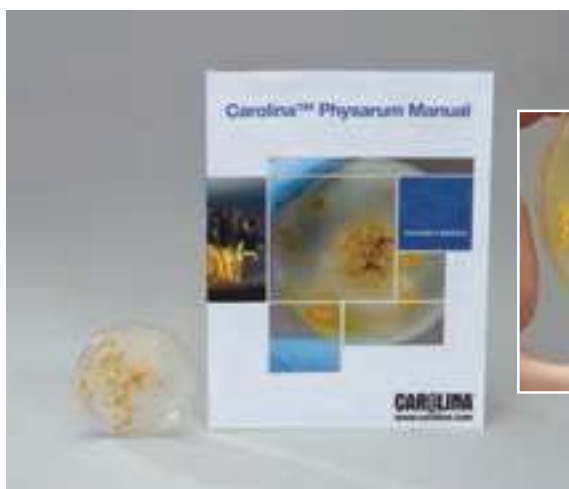
Slime Mold Review Sets

Beginning—Easy to perform; requires no experience in microbiology.

For a class of 30. Each set includes a living slime mold culture and culturing instructions. The **Physarum Review Set** includes a printable *Physarum* life cycle review sheet. The **Dictyostelium Review Set** includes a pad of 30 *Dictyostelium* life cycle Bioreview® Sheets.

155770 *Dictyostelium* Review Set Each **\$23.20**

155774 *Physarum* Review Set Each **\$23.20**



155774 *Physarum* Review Set

Slime Mold Cultures

Each culture contains enough material for a class of 30 students.

Helpful Ordering Hint: To ensure you order enough living materials for the number of students in your class, order 1 culture for up to 30 students, 2 cultures for 31 to 60 students, 3 cultures for 61 to 90 students, etc.

Organism	Description	Medium	Temp	Pkg	Catalog No.	Each
Dictyostelium discoideum	Pseudoplasmodium composed of separate cells	Lactose Agar + <i>E. coli</i> (nonmucoid)	25° C	Tube	155995	\$11.85
Dictyostelium discoideum	Pseudoplasmodium composed of separate cells	<i>Dictyostelium</i> Agar + <i>E. coli</i> (nonmucoid)	25° C	Plate	155996	\$14.70
Physarum polycephalum Sclerotium	Inactive, dried <i>P. polycephalum</i>	2% Agar with Old Fashioned Quaker® Oats	25° C	Box	156190	\$14.70
Physarum polycephalum Plasmodium	Active <i>P. polycephalum</i> ; yellow plasmodium exhibits protoplasmic streaming	2% Agar with Old Fashioned Quaker® Oats	25° C	Plate	156193	\$14.70



156190 *Physarum polycephalum* sclerotium

Slime Mold Kits



155775 Slime Mold Growing Kit

Slime Mold Growing Kit

Grade 3 and up. Is it a plant, an animal, or a fungus? Scientists don't agree on how to classify the slime molds, but regardless of their classification, they are fun critters to study in the classroom. Feed this slime mold oat flakes and watch it creep across its petri dish! This kit will leave an indelible impression on your students. With instructions and enough materials for starting 5 cultures.

155775 Per kit **\$46.10**



Supporting Your 3-Dimensional Instruction

Carolina offers some of the best high-value science kits available.

The labs in these kits allow students to apply science concepts while engaging in science and engineering practices.

Kits include:

- Teacher's manual with instructional materials that support 3-dimensional learning and the NGSS
- Student guide with sense-making questions and artifacts
- Materials for the hands-on activities
- Subscription to digital resources


FREE
Digital
Assets

155825 *Physarum* Culture Kit

Physarum Culture Kit

Beginning—Easy to perform; requires no experience in microbiology.

For a class of 30. What is it? A protist? An animal? Despite its confusing taxonomic status, the creeping slime mold *Physarum polycephalum* is still an attention getter for your students. Students can follow through the life cycle observing the active plasmodial stage and the inactive sclerotial stage. With teacher instructions. Visit Carolina.com for complete lists of kit materials. **Note:** Upon receipt of kit, break seal on plate culture and store at room temperature away from direct light. For best results, use plate culture within 2–3 days of receipt. FREE 1-year access to digital resources that support 3-dimensional instruction included.

155825 Per kit **\$43.75**


155824P *Dictyostelium* Culture Kit (with perishables)

Dictyostelium Culture Kit

Intermediate—Easy to perform; requires some basic training in microbiology.

Dictyostelium discoideum, a cellular slime mold, has been studied by mycologists, molecular and cellular biologists, and those who enjoy observing unusual microorganisms. The exercise requires 3 to 5 days from setup to completion. **Note:** Order the kit with the perishable materials included or with a prepaid coupon to request perishables later at your convenience. Contact us or return the coupon to request delivery of perishable materials. Keep bacteria and fungus cultures at room temperature; do not incubate or refrigerate.

155824 Kit (with prepaid coupon) Each **\$74.10**

155824P Kit (with perishables) Each **\$74.10**

Chemotaxis in Slime Molds


155825B Chemotaxis in *Physarum polycephalum* Kit

Chemotaxis in *Physarum polycephalum* Kit

Advanced—For experienced high school and college classes; requires some technical skill.

For a class of 30. Developed by Donna Bozzone, Saint Michael's College. With this kit, students design experiments to test the ability of *Physarum* to respond to various chemical stimuli. *P. polycephalum*, a plasmodial slime mold, is an excellent organism for exploring chemotaxis. Many microorganisms, and certain specialized cells in complex multicellular organisms, respond to chemical cues and either move toward or away from chemical signals. With teacher instructions.

155825B Per kit **\$57.95**


FREE
Digital
Assets

155850P Discovering Movement and Chemotaxis in a Slime Mold Kit (with perishables)

New! Discovering Movement and Chemotaxis in a Slime Mold Kit

Grades 9–12. In this 2-part kit, students observe 2 phenomena: cytoplasmic streaming and the locomotive movement of *Physarum polycephalum* plasmodium. Based on these observations, students make claims about how *Physarum* responds to its environment. They are asked to consider the mechanisms that drive the movement of *Physarum* and predict how it will respond to several different substances. Students work as a class to design a testing strategy to determine the effects of the 5 substances on the locomotion of the plasmodium. They use the evidence to evaluate their predictions. Kit accommodates 10 student groups and includes FREE 1-year access to digital resources that support 3-dimensional instruction. Visit Carolina.com for complete lists of kit materials. **Note:** Order the kit with the perishable materials included or with a prepaid coupon to request perishables later at your convenience. Contact us or return the coupon to request delivery of perishable materials.

155850 Kit (with prepaid coupon) Each **\$97.80**

155850P Kit (with perishables) Each **\$97.80**

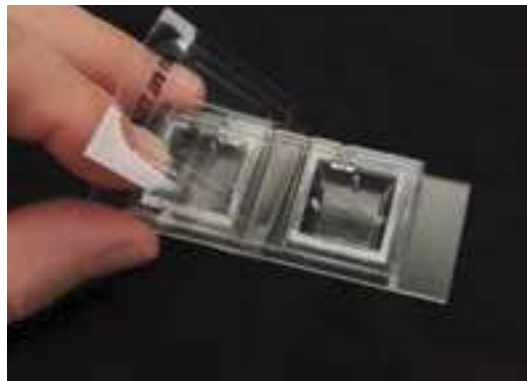


131016 MicroAquarium

MicroAquarium™
Use with a microscope, hand lens, or as a photographic chamber!

This innovative chamber allows for maintaining and studying a great variety of small aquatic organisms for extended periods of time. Organisms can be viewed with a hand lens (not included). The ease and versatility of this chamber allows students of all ages and ability levels to observe behaviors of both protozoans and macroscopic animals. Size, 75 × 50 × 4 mm. With stand and instructions.

131016 Each **\$8.75**
131017 Pack of 10 **\$81.30**



131018 Protist Observation System

Protist Observation System

This revolutionary, patented system allows safe and easy observation of pond microlife. A dual see-through, breathable chamber provides an ideal environment for viewing; fits any compound or stereomicroscope stage. Includes complete instructions. Size, 3" L × 1" W × 5/16" H.

131018 Each **\$12.65**

For Quieting Protozoa

Protoslo® Quieting Solution

This clear solution slows the movement of protozoa to keep them in focus and in the field of view, while preserving characteristic motion. In 15-mL dropper bottle.

885141 Per bottle **\$7.55**



All you do is remove the cover.



Add the specimen to be projected.



Replace the cover. The slide is now ready to view. When using liquid specimens, overfill the well to eliminate trapped air bubbles.

Carolina® Deep-Well Slide
The Deep-Well Slide is easy to use

Students can easily make their own slides from specimens they find. Material placed in the viewing well of these specially constructed slides is easily viewed with compound microscopes, stereomicroscopes, overhead projectors, microvideo systems, and even 35mm slide projectors.

603730 Set of 20 Each **\$68.75**
603730E Set of 5 Each **\$17.25**



652223 Basic Set Laboratory Sifting Mesh

Laboratory Sifting Mesh

Designed for cleaning or separating organisms in an aquatic field collection. Sifters also have a wide range of other lab uses such as separating fern spores from ruptured sporangial cases. Made of durable monofilament nylon, each sifter is 30 cm (12") square. **Basic Set** includes 1 of each mesh size except 70-µm Mesh (item #652222N).

652222K	0.12-mm Mesh	Each	\$42.50
652222F	0.5-mm Mesh	Each	\$41.25
652222C	1.18-mm Mesh	Each	\$42.50
652222R	37-µm Mesh	Each	\$42.50
652222N	70-µm Mesh	Each	\$42.50
652222M	95-µm Mesh	Each	\$42.50
652223	Basic Set	Each	\$216.25

Fungi

Kits & Sets

Fungal Survey



Fungi Survey Set

Four tube cultures representing 4 classes of fungi: Oomycete (*Saprolegnia* or *Achlya*), Zygomycete (*Rhizopus stolonifer*), Ascomycete (*Sordaria fimicola*), and Basidiomycete (*Coprinus cinereus*).

155817 Per set **\$44.95**



155817 Fungi Survey Set



Basic Mold Showplate Set

Plate cultures of 3 of the more common fungi: *Aspergillus niger*, *Penicillium notatum*, and *Rhizopus stolonifer*.

155823 Per set **\$40.95**



155823
Basic Mold
Showplate
Set



155796 High School Fungi Set (plate culture not pictured)

High School Fungi Set

Eleven tube cultures and 1 plate culture representing 11 orders and 12 different families. Demonstrates the diverse morphology found among the fungi.

<i>Achlya</i>	<i>Penicillium</i>	<i>Saccharomyces</i>
<i>Aspergillus</i>	<i>Phlyctochytrium</i>	<i>Sordaria</i>
<i>Chaetomium</i>	<i>Phycomyces</i>	
<i>Coprinus</i>	<i>Physarum</i>	
<i>Dictyostelium</i>	<i>Rhizopus</i>	

155796 Per set **\$134.95**



(left to right) 155779 and 155781 Student Independent Fungi Study Kits

Student Independent Fungi Study Kits

Beginning—Easy to perform; requires no experience in microbiology.

Each kit consists of a microscope slide of the specimen with holder, card with labeled drawings, text, a photomicrograph, and a living culture.

155779 *Aspergillus niger* Study Kit Each **\$29.80**

155781 *Rhizopus stolonifer* Study Kit Each **\$29.80**



155822 Ascomycete Fruiting Set

Ascomycete Fruiting Set

The presence or absence of a fruiting body, or ascocarp, is used to classify the Ascomycetes. Set includes 1 example of each type of ascocarp (plate culture): apothecia (*Anthracoia muelleri*), cleistothecia (*Eurotium chevalieri*), naked asci (*Schizosaccharomyces octosporus*), and perithecia (*Sordaria fimicola*). A microscope is required.

155822 Per set **\$56.60**



Teacher's Choice



Carolina Exclusive



**More Information
Available Online**



Grow Your Own Mushroom Garden

Grow your own gourmet mushrooms!

In just 10 days, grow up to 1½ pounds of tasty oyster mushrooms right out of this little brown box. You can also use this unique kit to integrate topics such as recycling, composting, and sustainability. Recycled coffee grounds act as the soil; just open the box, mist twice a day, and watch nature do its thing. Multiple crops can be harvested from each kit. Makes a terrific gift for teachers, family, and friends. Includes misting bottle. Made in the USA.

155896 Per kit \$24.20



Edible!

Integrate recycling and composting into your lessons.

Edible!



155883 Mushroom Farm-in-a-Box

Mushroom Farm-in-a-Box

Complete, ready-to-grow kit contains inoculated mushroom compost, casings, and instructions. A 12" L x 10" W x 8" H box containing precisely balanced culture medium and white button mushroom (*Agaricus bisporus*) spawn. Will produce first crop in 30 days. **Note:** Available September to March (not viable after March). Shipped on Mondays only. Not for export. FOB Marysville, CA. Wt, 12 lb.

155883 Per kit \$39.95

Not Edible!



155819 Basidiomycete Set (large fungi are shipped in jar cultures)

Basidiomycete Set

Representing 3 orders are 3 jar cultures ready to fruit: *Coprinus cinereus* (mushroom); *Nidularia pulvinata* (bird's nest fungus); and *Schizophyllum commune* (bracket fungus). You may need to allow time for fruiting bodies to appear. An illustration of gill fungus life cycle and instructions are included. **Note:** These fungi are not edible.

155819 Per set \$53.50

Carolina® MicroKwik Culture®

Since a MicroKwik Culture® can be refrigerated, you can order it ahead of time for use on short notice. These freeze-dried cultures can be found on pages 69–71.

Edible!



From 155890 Gray Oyster Mushrooms in Nature Kit



From 155894 Shiitake Mushrooms in Nature Kit

Mushrooms in Nature Kits

Students have fun growing their own gourmet mushrooms, while learning about the role mushrooms play in the natural environment. Each kit comes complete with detailed instructions, growing medium, humidity tent, growing tray, and cooking instructions. Also included is a useful teacher's guide with activity ideas, life cycle information and overhead, and a quiz master sheet. Two varieties are available: **Gray Oyster** and **Shiitake**. Depending on growing conditions, the kits yield 1 to 3 lb of mushrooms over a 1- to 3-month period. **Note:** Not for export. FOB Missoula, MT.

155890 Gray Oyster Each \$58.45

155894 Shiitake Each \$58.45

Life Cycle Studies



155800P *Pilobolus* Kit
(with perishables) (right)



Pilobolus Kit

Beginning—Easy to perform; requires no experience in microbiology.

The popular “shotgun” fungus, *Pilobolus crystallinus*, grows on herbivore dung. Herbivores will not graze near their own dung, so the spores must be propelled beyond this “zone of repugnance.” The sporangia bend toward the sun and “shoot” their spore mass in that direction. Students grow *Pilobolus* until sporangia are mature. Then they place the culture inside a container with a small hole to allow in light. The sporangia will all be propelled toward the hole. Requires about 10 days to conduct the exercise. The adaptation of this interesting fungus to its unique habitat is explained in the teacher’s instructions. **Note:** Order the kit with the perishable materials (all \diamond items) included or with a prepaid coupon to request perishables later at your convenience. Contact us or return the coupon to request delivery of perishable materials. Keep fungus culture at room temperature; do not incubate or refrigerate. Keep agar plates refrigerated until use; do not freeze.

Kit includes:

<i>Pilobolus crystallinus</i> Plate Culture \diamond	10 Aluminum Foil Sheets
10 Plates Rabbit Dung Agar \diamond	10 Containers with Lids
Sterile Disposable Scalpel	Autoclave Disposal Bag
	Teacher Instructions

155800	Kit (with prepaid coupon)	Each	\$50.40
155800P	Kit (with perishables)	Each	\$50.40



From 155806 Zygospore Demonstration Plate (*Phycomyces blakesleeenanus*)

Zygospore Demonstration Plates

Show your students how conjugation fungi reproduce sexually by the fusion of gametes from 2 opposite mating types (+ and –) to form zygospores. Choose a plate culture showing the zygospores formed at the junction of the + and – mycelia of *Phycomyces* or *Rhizopus*.

155806	<i>Phycomyces</i>	Each	\$26.75
155807	<i>Rhizopus</i>	Each	\$26.75

Zygospore Kit

Beginning—Easy to perform; requires no experience in microbiology.

The Zygomycetes (or conjugation fungi) reproduce sexually by the fusion of gametes from 2 opposite mating types (+ and –) to form zygospores. Our zygospore kit is excellent for demonstrating both zygospores and the asexual stages of these fungi. A stereomicroscope is required. The exercise will take up to 7 days from setup to completion. With culturing instructions, 2 tube cultures of *Rhizopus stolonifer* (+ strain and – strain), life cycle illustration, 10 plates of appropriate mating agar, fixing solution, an inoculating needle, and an autoclave disposal bag.

155827	Per kit	\$39.10
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Genetic Studies



Sordaria Demonstration Cross Plate

Intermediate—Easy to perform; requires some basic training in microbiology.

A cross of *Sordaria fimicola* wild type and the mutant tan strain for demonstrating genetic crossing over. For use with classic Advanced Placement® Biology Mitosis and Meiosis Lab or as a separate refresher demonstration from the exercises found in our *Sordaria* genetics kits (item #155847 and item #155848). **Note:** The culture is shipped on Fridays only and is ready to use the following Wednesday, Thursday, or Friday. Please allow 2 weeks’ advance notice with specific Friday shipping date.

155846	Per plate	\$28.60
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Carolina Teacher Tips

QUESTION: How do I know when my *Sordaria* plate is ready for use?

ANSWER: Use a wooden toothpick to scrape a few perithecia from the plate periphery, where the 2 strains have grown together. Place the perithecia on a microscope slide, add a drop of water, and gently press down on them with a coverslip. The perithecia should break open with gentle pressure and you should see asci with spores (they resemble bubblegum balls in a wrapper). You also should see a color difference between the 2 spore types in their crossover arrangement.

Here are some signs the *Sordaria* asci are not ready to be used:

- You must use a lot of pressure to break open the perithecia (the black spheres).
- The spores are greenish in color.
- You see only the dark, sac-like perithecia and no asci with spores.

If the culture is not ready, continue to incubate the plate at 25° C (77° F) and repeat the testing process until the asci mature and rupture easily on the slide. If the culture is still not ready on Friday, the plate can be refrigerated over the weekend. Allow the plate and culture to come to room temperature before rechecking on Monday.



Sordaria Genetics Kit

Intermediate—Easy to perform; requires some basic training in microbiology.

For a class of 30. Students culture the 3 *Sordaria* strains and then set up cross plates of wild type × mutant tan and wild type × mutant gray. The gene to centromere distance for tan and gray genes can then be calculated. Visit Carolina.com for complete lists of kit materials. **Note:** Order the kit with the perishable materials included or with a prepaid coupon to request perishables later at your convenience. Contact us or return the coupon to request delivery of perishable materials. Keep fungi cultures at room temperature; do not incubate or refrigerate.

155848	Kit (with prepaid coupon)	Each	\$87.80
155848P	Kit (with perishables)	Each	\$85.25

Visually
observe the
genetics of
fungi with
this kit.



155848P Sordaria Genetics Kit (with perishables)

Sordaria Genetics Set

Includes the 3 *Sordaria fimicola* strains (wild type, mutant gray, and mutant tan) for genetic crossing studies.

155849	Tube Culture Set	Each	\$33.95
155858	Plate Culture Set	Each	\$41.15



155849 Sordaria Genetics Tube Culture Set

Sordaria Genetics BioKit®

Intermediate—Easy to perform; requires some basic training in microbiology.

For a class of 30. Students cross the wild-type *Sordaria* strain with the mutant tan strain. Hybrid asci are produced containing 4 dark- and 4 light-colored ascospores. Students then use tetrad analysis to calculate the gene to centromere distance in map units for the mutant tan gene. The exercise requires about 10 to 14 days from setup of cross plates to completion. Visit Carolina.com for complete lists of kit materials. **Note:** Order the kit with the perishable materials included or with a prepaid coupon to request perishables later at your convenience. Contact us or return the coupon to request delivery of perishable materials. Keep fungi cultures at room temperature; do not incubate or refrigerate.

155847	Kit (with prepaid coupon)	Each	\$135.90
155847P	Kit (with perishables)	Each	\$135.90



155847P Sordaria Genetics BioKit (with perishables)

Biochemical Studies



202271
Exploring the Scientific Method with Baker's Yeast Kit

Exploring the Scientific Method with Baker's Yeast Kit

Learn and apply the scientific method! Observe yeast in a solution of sugar water and formulate questions derived from observations of the suspension. Students choose their own investigative topic, or the teacher guides them toward 1 of several questions provided. Students form hypotheses, identify variables, and design and conduct experiments based on their questions. Students evaluate their hypotheses and reach conclusions based on their results. Materials are sufficient for 30 students working in groups of 3. Visit Carolina.com for a complete list of kit materials. **! WARNING: CHOKING HAZARD—Children under 8 yrs. can choke or suffocate on uninflated or broken balloons. Adult supervision required. Keep uninflated balloons from children. Discard broken balloons at once.**

202271	Per kit	\$81.10
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Yeast Observation Kit

Beginning—Easy to perform; requires no experience in microbiology.

For a class of 30. Students learn that yeast have many uses in our everyday lives, including the baking of bread and the production of alcoholic beverages. They observe the process by which these simple microorganisms produce energy from an ordinary item such as sugar. As the yeast cells feed on the sugar, carbon dioxide gas is released as a waste byproduct. Students observe the production of carbon dioxide by watching a balloon expand as it traps gas. When the balloon is removed from the test tube, students can smell the yeast container for the distinct odor of alcohol. Exercise can be completed in 1 class period. With teacher instructions. **! WARNING: CHOKING HAZARD—Children under 8 yrs. can choke or suffocate on uninflated or broken balloons. Adult supervision required. Keep uninflated balloons from children. Discard broken balloons at once.**

Kit includes:
Fleischmann's® Baker's Dry Yeast
30 Balloons
Sugar

30 Test Tubes
30 Pipets
Autoclave Disposal Bag

155853	Per kit	\$63.80
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155798 Bioluminescent Fungus Kit

Bioluminescent Fungus Kit

Beginning—Easy to perform; requires no experience in microbiology.

For a class of 30. Dubbed “foxfire” by hunters in the Appalachian Mountains, the fungus *Armillariella mellea* emits a low-level bioluminescence. The phenomenon can be observed 1 to 2 weeks after subculturing and lasts about 8 weeks. Room must be completely dark to observe the bioluminescence. Includes a plate culture of *Armillariella mellea*, 10 plates of bread crumb agar, a sterile disposable scalpel, an autoclave disposal bag, and culturing instructions.

155798 Per kit **\$42.50**



155802P Carolina Carnivorous Fungus Kit (with perishables)


From 155802 Carolina Carnivorous Fungus Kit (*Arthrobotrys conoides*, the nematode-trapping fungus)

Carolina® Carnivorous Fungus Kit

Intermediate—Easy to perform; requires some basic training in microbiology.

For a class of 30. Students subculture and then observe the growth of the soil fungus *Arthrobotrys conoides* on cornmeal agar plates. When *Rhabditis*, a nematode, is inoculated onto these plates, the fungus traps, digests, and absorbs the nematode’s internal contents. Illustrates absorptive nutrition of the fungi. The exercise requires 10 days from setup to completion. **Note:** Order the kit with the perishable materials (all ◊ items) included or with a prepaid coupon to request perishables later at your convenience. Contact us or return the coupon to request delivery of perishable materials. Keep fungus culture and nematode culture at room temperature; do not incubate or refrigerate.

Kit includes:

Arthrobotrys conoides Plate Culture◊
Rhabditis Tube Culture (on potato plug medium)◊
 4 Bottles Cornmeal Agar
 20 Sterile Petri Dishes

Metal Inoculating Loop
 Autoclave Disposal Bag
 Metal Scalpel
 Teacher Instructions

Needed but not included:

Stereomicroscope

155802 Kit (with prepaid coupon) Each **\$55.95**

155802P Kit (with perishables) Each **\$55.95**

 California Proposition 65

 WARNING: Cancer and Reproductive Harm – www.P65Warnings.ca.gov

100% satisfaction guaranteed

CAROLINA®

67



From 155820 Carolina Air Pollution Assay Kit



Carolina® Air Pollution Assay Kit ³

Illustrate the effects of air pollution on lichens

Intermediate—Easy to perform; requires some basic training in microbiology.

For a class of 30. Lichens are extremely sensitive to air pollution. A decrease in their numbers in a particular location is an indication of increasing air pollution. Students stain a lichen sample and then subject it to various cation solutions. The speed with which the dye is leached out of the lichen correlates with the speed at which these cations from polluted air are taken up by lichen in nature. The exercise can be completed in 2 class periods. A paper punch is required, but not included. With teacher instructions.

Kit includes:

Foliose Lichen Sample
 Screw-Cap Test Tubes
 Methylene Blue Solution
 Cadmium Chloride Solution
 Lead Chloride Solution

Lithium Chloride Solution
 Manganese Chloride Solution
 Sodium Chloride Solution
 Zinc Chloride Solution
 Windex® (control)

155820 Per kit **\$81.30**

Simulate
 air pollution
 in
 2 class
 periods!



155820 Carolina Air Pollution Assay Kit



Fungi Cultures

- Wide selection of cultures
- Available in tube culture, plate culture, or MicroKwik Culture®
- In stock when you need them

Pure Cultures—Guaranteed

Every culture is guaranteed for purity and genera. Our wide selection includes Chytrids, Zygomycetes, Ascomycetes, and Basidiomycetes. Cultures are available in an economical tube culture, a convenient plate culture, or a freeze-dried MicroKwik Culture® for easy storage. We maintain a large inventory of cultures in stock for immediate delivery, so you can always depend on getting the one you need when you need it. Our cultures are also available in kits and sets.

A Versatile Teaching Tool

Fungi can help you teach many topics in ecology, genetics, biochemistry, and other disciplines. They are important decomposers, helping recycle organic materials in food webs, which makes them great subjects for ecological studies. Students can culture them for genetic studies. For studies in biochemistry, students can investigate the role yeasts play in the production of wine, beer, and baked goods.

Fungi cultures are labeled by name and media on which they are cultivated. All cultures are guaranteed for purity and genera. Each order of fungi includes a **FREE** Carolina® *Techniques for Studying Bacteria and Fungi* manual.



Carolina® MicroKwik Culture®

Since a MicroKwik Culture® can be refrigerated, you can order it ahead of time for use on short notice. These freeze-dried cultures are listed with our regular fungi cultures on the following pages.

Individual Cultures



Penicillium notatum



Penicillium notatum

Recommended for study as an Ascomycete and the source of penicillin, one of the early antibiotics. Discovered by Alexander Fleming, penicillin was first widely used in WWII and is credited with saving the lives of many wounded service members. Available in tube culture, plate culture, or MicroKwik Culture®.

156155	Tube	Each	\$11.85
156157	Plate	Each	\$14.70
156155A	MicroKwik Culture	Each	\$19.05



Rhizopus stolonifer



Rhizopus stolonifer (+)

Known as black bread mold, the Zygomycete *Rhizopus* is our recommendation for introducing students to fungi. It is also the best known of our cultures. Available in tube culture, plate culture, or MicroKwik Culture®.

156222	Tube	Each	\$11.85
156223	Plate	Each	\$14.70
156222A	MicroKwik Culture	Each	\$19.05



Pilobolus crystallinus



Pilobolus crystallinus

Known as the shotgun fungus because it discharges its entire mature sporangium a distance of several centimeters. That discharge is usually toward a source of light, so it is recommended for demonstrating phototropic response in a fungus. Plate culture.

156207	Each	\$14.70
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Fungi Cultures

Organism	Description	Pkg	Rank	Medium	Temp	Catalog No.	Each
Achlya	Reproduces sexually by oospores and asexually by zoospores	Tube	Oomycetes	Split Cucumber Seed in Lake Water	25° C	155900	\$11.85
Allomyces arbuscula	Alternation of generations	Tube	Chytrids	Split Cucumber Seed in Lake Water	25° C	155910	\$11.85
Allomyces arbuscula (n)	Gametophytic stage	Plate	Chytridiomycetes	Emerson YpSs Agar	25° C	155911	\$14.70
Allomyces arbuscula (2n)	Sporophytic stage	Plate	Chytridiomycetes	Emerson YpSs Agar	25° C	155912	\$14.70
Allomyces arbuscula Combination	n and 2n on same plate	Plate	Chytridiomycetes	Emerson YpSs Agar	25° C	155914	\$14.70
Armillariella mellea	Bioluminescent hyphae; demonstrates rhizoids	Plate	Basidiomycetes	Bread Crumb Agar	25° C	155928	\$14.70
Arthrobotrys conoides	Nematode-trapping fungus	Plate	Deuteromycetes	Cornmeal Agar	25° C	155930	\$14.70
Aspergillus flavus	Conidia yellow to yellow-green when young	Plate	Ascomycetes	Sabouraud Dextrose Agar	25° C	155935	\$14.70
Aspergillus niger	Common airborne contaminant, occasionally pathogenic on squash; black conidia	Tube	Ascomycetes	Potato Dextrose Agar	25° C	155945	\$11.85
Aspergillus niger	MicroKwik Culture®: freeze-dried spores plus medium	Vial	Ascomycetes	Potato Dextrose Agar	25° C	155945A	\$19.05
Aspergillus niger	Common airborne contaminant, occasionally pathogenic on squash; black conidia	Plate	Ascomycetes	Potato Dextrose Agar	25° C	155946	\$14.70
Candida albicans	Causes thrush, candidiasis; reproduces by budding; demonstrates dimorphism; forms germ tubes in serum cultures grown at 37° C	Tube	Ascomycetes	Yeast Malt Agar	25° C	155965	\$11.85
Chaetomium globosum	Cellulose-destroying fungus	Tube	Ascomycetes	V8® Juice Agar and Sterile Paper	25° C	155973	\$11.85
Coprinus cinereus	Inky cap mushroom	Tube	Basidiomycetes	Potato Dextrose Agar with Rabbit Dung	25° C	155979	\$11.85
Cyathus stercoreus	A bird's nest fungus; vase-shaped fruiting body; large culture ready to fruit	Jar	Basidiomycetes	Nutrient Straw/Dirt	25° C	155986B	\$19.05

Color Key:

Red: Pathogen (human, animal, or plant).
Blue: Carolina® MicroKwik Culture®.



155986B *Cyathus stercoreus*, a bird's nest fungus, showing the peridium and peridioles representing the fruit body of this genus

See more fungi cultures on the next page.



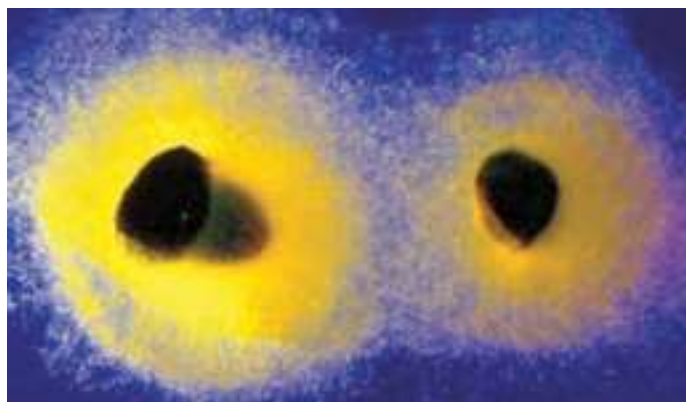
Organism	Description	Pkg	Rank	Medium	Temp	Catalog No.	Each
Eurotium chevalieri	Perfect stage of <i>Aspergillus chevalieri</i> ; demonstrates both cleistothecia and conidia; this organism is for use with the laboratory manual for Starr and Taggart's <i>Biology: The Unity and Diversity of Life</i> , 10th ed., J. W. Perry and D. Morton; Wadsworth Publishing Co., Belmont, CA	Plate	Ascomycetes	Honey Peptone Agar	25° C	156032	\$14.70
Fusarium oxysporum	Causes tomato wilt; conidia produced on sporodochium	Tube	Deuteromycetes	Potato Dextrose Agar	25° C	156033	\$11.85
Penicillium camemberti	Camembert cheese organism	Plate	Ascomycetes	Potato Dextrose Agar	25° C	156141	\$14.70
Penicillium chrysogenum	MicroKwik Culture®: freeze-dried spores plus medium	Vial	Ascomycetes	Potato Dextrose Agar	25° C	156145A	\$19.05
Penicillium chrysogenum	Common source of penicillin	Plate	Ascomycetes	Potato Dextrose Agar	25° C	156146	\$14.70
Penicillium italicum	Causes blue mold on citrus fruits	Tube	Ascomycetes	Potato Dextrose Agar	25° C	156152	\$11.85
Penicillium notatum	Source of penicillin; <i>high yield</i>	Tube	Ascomycetes	Potato Dextrose Agar	25° C	156155	\$11.85
Penicillium notatum	MicroKwik Culture®: freeze-dried spores plus medium; <i>high yield</i>	Vial	Ascomycetes	Potato Dextrose Agar	25° C	156155A	\$19.05
Penicillium notatum	Source of penicillin; <i>high yield</i>	Plate	Ascomycetes	Potato Dextrose Agar	25° C	156157	\$14.70
Penicillium roqueforti	Roquefort cheese organism	Plate	Ascomycetes	Potato Dextrose Agar	25° C	156161	\$14.70
Phlyctochytrium (Spizellomyces) dolichospermus	Posteriorly flagellated zoospores; produces apophysis and rhizoids within host wall; agar surface must be wet	Tube	Chytrids	Emerson YpSs Agar	25° C	156170	\$11.85
Phycomyces blakesleeana (+)	Phototropic; produces sporangiophores of up to 7 cm; mates with – strain (item #156181) to produce zygospores held by suspensors with horn-like projections	Tube	Zygomycetes	Potato Dextrose Agar	25° C	156180	\$11.85
Phycomyces blakesleeana (–)	Mates with + strain (item #156180) to produce zygospores held by suspensors with horn-like projections	Tube	Zygomycetes	Potato Dextrose Agar	25° C	156181	\$11.85
Phycomyces blakesleeana (+)	Phototropic; produces sporangiophores of up to 7 cm; mates with – strain (item #156183) to produce zygospores held by suspensors with horn-like projections	Plate	Zygomycetes	Potato Dextrose Agar	25° C	156182	\$14.70
Phycomyces blakesleeana (–)	Mates with + strain (item #156182) to produce zygospores held by suspensors with horn-like projections	Plate	Zygomycetes	Potato Dextrose Agar	25° C	156183	\$14.70
Pilobolus crystallinus	Shotgun fungus found on dung; phototropic; light exposure necessary	Plate	Zygomycetes	Rabbit Dung Agar	25° C	156207	\$14.70
Rhizopus stolonifer (+)	Black bread mold; laboratory contaminant; + mating strain	Tube	Zygomycetes	Potato Dextrose Agar	25° C	156222	\$11.85
Rhizopus stolonifer (+)	MicroKwik Culture®: freeze-dried spores plus medium	Vial	Zygomycetes	Potato Dextrose Agar	25° C	156222A	\$19.05
Rhizopus stolonifer (+)	+ Mating strain	Plate	Zygomycetes	Potato Dextrose Agar	25° C	156223	\$14.70
Rhizopus stolonifer (–)	Black bread mold; laboratory contaminant; – mating strain	Tube	Zygomycetes	Potato Dextrose Agar	25° C	156224	\$11.85
Rhizopus stolonifer (–)	MicroKwik Culture®: freeze-dried spores plus medium	Vial	Zygomycetes	Potato Dextrose Agar	25° C	156224A	\$19.05
Rhizopus stolonifer (–)	– Mating strain	Plate	Zygomycetes	Potato Dextrose Agar	25° C	156225	\$14.70
Rhodotorula rubra	Red yeast	Tube	Deuteromycetes	Yeast Malt Agar	25° C	156230	\$11.85

156180 *Phycomyces blakesleeana* (+)Plate showing line of zygospores formed at the juncture of plus and minus mycelia of 156180 and 156181 *Phycomyces blakesleeana*

Fungi Cultures (continued)

Organism	Description	Pkg	Rank	Medium	Temp	Catalog No.	Each
Saccharomyces cerevisiae	Baker's yeast	Tube	Ascomycetes	Yeast Malt Agar	30° C	156250	\$11.85
Saccharomyces cerevisiae	MicroKwik Culture®: freeze-dried cells plus medium	Vial	Ascomycetes	Yeast Malt Agar	30° C	156250A	\$19.05
Saccharomyces cerevisiae var. ellipsoideus	Wine yeast	Tube	Ascomycetes	Yeast Malt Agar	30° C	156251	\$11.85
Saccharomyces cerevisiae	Baker's yeast	Plate	Ascomycetes	Yeast Malt Agar	30° C	156252	\$14.70
Saprolegnia	Some parasitic on aquatic organisms; reproduces sexually by oospores and asexually by zoospores	Tube	Oomycetes	Split Cucumber Seed in Lake Water	25° C	156270	\$11.85
Saprolegnia	Some parasitic on aquatic organisms; reproduces sexually by oospores and asexually by zoospores	Plate	Oomycetes	Cornmeal Agar	25° C	156271	\$14.70
Schizosaccharomyces octosporus	Naked asci	Tube	Ascomycetes	Yeast Malt Agar	30° C	156280	\$11.85
Schizosaccharomyces octosporus	Naked asci	Plate	Ascomycetes	Yeast Malt Agar	30° C	156281	\$14.70
Schizosaccharomyces pombe	Model organism in molecular and cell biology; fission yeast	Tube	Ascomycetes	Yeast Malt Agar	30° C	156282	\$11.85
Sordaria fimicola Wild Type	For genetic studies	Tube	Ascomycetes	Cornmeal-Glucose-Yeast Agar	25° C	156290	\$11.85
Sordaria fimicola Wild Type	MicroKwik Culture®: freeze-dried spores plus medium	Vial	Ascomycetes	Cornmeal-Glucose-Yeast Agar	25° C	156290A	\$19.05
Sordaria fimicola Wild Type	For genetic studies	Plate	Ascomycetes	Cornmeal-Glucose-Yeast Agar	25° C	156291	\$14.70
Sordaria fimicola Mutant Gray	For genetic studies	Plate	Ascomycetes	Cornmeal-Glucose-Yeast Agar	25° C	156293	\$14.70
Sordaria fimicola Mutant Tan	For genetic studies	Tube	Ascomycetes	Cornmeal-Glucose-Yeast Agar	25° C	156294	\$11.85
Sordaria fimicola Mutant Tan	MicroKwik Culture®: freeze-dried spores plus medium	Vial	Ascomycetes	Cornmeal-Glucose-Yeast Agar	25° C	156294A	\$19.05
Sordaria fimicola Mutant Tan	For genetic studies	Plate	Ascomycetes	Cornmeal-Glucose-Yeast Agar	25° C	156295	\$14.70

Color Key:
Red: Pathogen (human, animal, or plant).
Blue: Carolina® MicroKwik Culture®.



156270 *Saprolegnia*



Our *Sordaria* Genetics BioKit® allows students to study crossing over in meiosis. The results are striking. Students collect data on the number of crossover vs. non-crossover events and calculate a map distance from the gene locus involved to the centromere of the chromosome. See our item #155847 *Sordaria* Genetics BioKit® on page 66.



Media

- Free of antibiotics, pesticides, and other chemicals
- Sterility tested
- Quality assured

We offer microbiological media and animal blood products for laboratory use only. Blood used is free of antibiotics, pesticides, and other chemicals. All media are quality assured before shipment, and media and blood products are thoroughly sterility tested.

All generally used formulations are available; however, we will be glad to quote on additional products and custom formulations. We urge that, whenever possible, items be set up on standing orders. Media are usually shipped by ground and occasionally by motor freight. Blood, sera, and plasma are shipped for overnight delivery on Tuesday of each week. **If you do not specify a delivery date, we will ship at once.**



Melt to about 60° C.

Carolina® “Long-Life” Media Kits

- No autoclave needed
- No special equipment or training required
- No wasted media

Each bottled media kit contains petri dishes and prepared bottled media for pouring 20 plates. Unopened media bottles have a 9- to 12-month shelf life. Pour as needed to reduce amount of expired media.



Pour and let cool—plates are ready for use in minutes.



Inoculate and incubate. Results obtained in 18 to 24 hours.



Nutrient Agar Media Kit

This economical, all-inclusive kit is perfect for science fair projects. An industry standard for nearly a century, nutrient agar supports a broad spectrum of microorganisms, including yeasts and molds. Kit contains prepared, bottled media and petri dishes to pour 20 plates. No autoclaving required!

821045 Per kit **\$33.95**

Great for science fair projects!



821040 Tryptic Soy Agar Media Kit

Tryptic Soy Agar Media Kit

Another science fair favorite, this economical, all-inclusive kit features tryptic soy medium, a general, all-purpose cultivation medium. Although suitable for aerobes and anaerobes, it is not the medium of choice for anaerobes. Kit contains prepared, bottled media and petri dishes to pour 20 plates. No autoclaving required!

821040 Per kit **\$33.95**



Teacher's Choice



Carolina Exclusive



More Information Available Online

Classroom Media Kits



766300 Carolina Environmental Microbiology Kit

Carolina® Environmental Microbiology Kit

Introduces the student to the study of microbes in the immediate environment. Suitable for a class of up to 30 students and may be used at any educational level. Students learn to pour plates, isolate molds and bacteria from a variety of sources, make plate counts of bacterial colonies, and prepare slides for microscopic examination. With student instructions and teacher's manual. **Note:** A microscope, preferably with an oil-immersion lens, is needed but not included.

Kit includes:

72 Microscope Slides	2 Sterile Splints
4 Sterile Collection Tubes	2 Tubes Sterile Water
5 Sterile Pipets	100 Wooden Applicators
40 Sterile Petri Dishes	Crystal Violet Solution
Nutrient Agar Bottled Medium	2 Disposal Bags
50 Sterile Swabs	

766300 Per kit **\$76.75**



821041 College Tryptic Soy Agar Media Kit

College Tryptic Soy Agar Media Kit

Order for your lab in bulk and save!

This economical kit comes with bottles of prepared tryptic soy agar and materials for 60 plates. This is a general, all-purpose cultivation medium, but it is not the medium of choice for anaerobes. Simply melt and pour the agar, allow students to use the applicators to inoculate the plates, and incubate. Results are obtained in 18 to 24 hours. Visit Carolina.com for complete lists of kit materials.

821041 Per kit **\$98.85**



652704 Carolina Bacterial Pollution of Water Kit

Carolina® Bacterial Pollution of Water Kit

Students learn about the importance of clean water in human health, water treatment for microbial contamination, and 1 of the methods used to test the safety of water for human use. They then collect water samples and test them for chlorine and chloramines, bacteria, and coliform bacteria. Students next do research to discover the number of coliform bacteria allowed in water for various human activities. They gain valuable skills and experience in sterile technique and plating and culturing bacteria. This kit is designed for 10 groups of students working in groups of 3. Visit Carolina.com for complete lists of kit materials.

652704 Per kit **\$66.90**

College Nutrient Agar Media Kit

Order for your lab in bulk and save!

This economical kit comes with bottles of prepared nutrient agar and materials for 60 plates. Nutrient agar supports a broad spectrum of microorganisms, including yeasts and molds. There is no autoclaving required; simply melt and pour the agar, allow students to use the applicators to inoculate the plates, and incubate. Results are obtained in 18 to 24 hours. Visit Carolina.com for complete lists of kit materials.

821046 Per kit **\$98.85**



Need an easy and convenient way to sterilize loops, needles, and culture tube mouths without using an open flame? See the Carolina® Infrared Bacteria Sterilizer on page 87.

703400 Carolina Infrared Bacteria Sterilizer



Ordering for multiple sections? Contact our Quotations Team for the best prices on large orders. Call 800.334.5551 or e-mail quotations@carolina.com.