

EDVOTEK® Quick Guide: Culturing Microorganisms



What are BactoBeads™?

BactoBeads™ are non-pathogenic, freeze-dried microbes (bacteria and lower eukaryotes) that are easily cultured for use in the classroom. Each bead contains microorganisms, buffer, salts and nutrient broth in an instantly soluble pellet.



What is so special about BactoBeads™?

1. BactoBeads™ are stable for at least nine months at room temperature, making them easy to ship to your school and store in your classroom.
2. BactoBeads™ are instantly soluble in water, Luria Broth or any other microbial growth medium.
3. BactoBeads™ are color-coded for easy strain identification.

How do I culture microorganisms in my classroom?

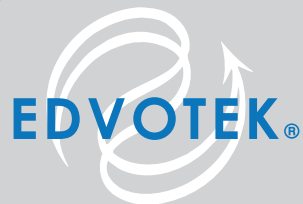
First, the microbiological culture media is prepared. The culture medium provides all of the water, food, vitamins and minerals required for microbial growth. It is sterilized to prevent the growth of unwanted microbes. After the sterile culture medium is inoculated, the culture incubated overnight to allow for cellular growth and division.

BactoBeads™ make culturing microorganisms fast and easy. They are stable for over nine months, unlike perishable slants and plates that spoil in 3-5 days. Since BactoBeads™ can be stored at room temperature, there is no requirement for a refrigerator or a freezer.

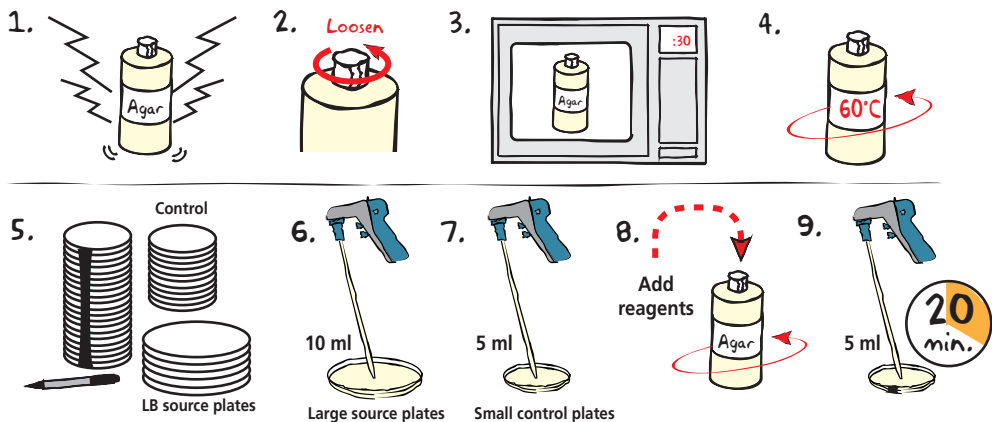
We recommend culturing BactoBeads™ in the following ways:

Liquid media is used to grow large numbers of microorganisms for plasmid or recombinant protein purification. One BactoBead™ can be used to inoculate 10 – 1000 mL of a liquid culture medium (like Luria Broth). The culture is incubated overnight at a temperature appropriate for the microbe (usually 30°C – 37°C).

Solid media (pg. 2) is used to isolate single cells. When the microbes are plated on a solid surface, each cell gives rise to a visible mass of cells called a colony. A single BactoBead™ is carefully streaked across a nutrient agar plate to produce individual colonies (see pg. 3 for detailed instructions). The culture is incubated overnight at a temperature appropriate for the microbe (usually 30°C – 37°C).



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POURING AGAROSE PLATES



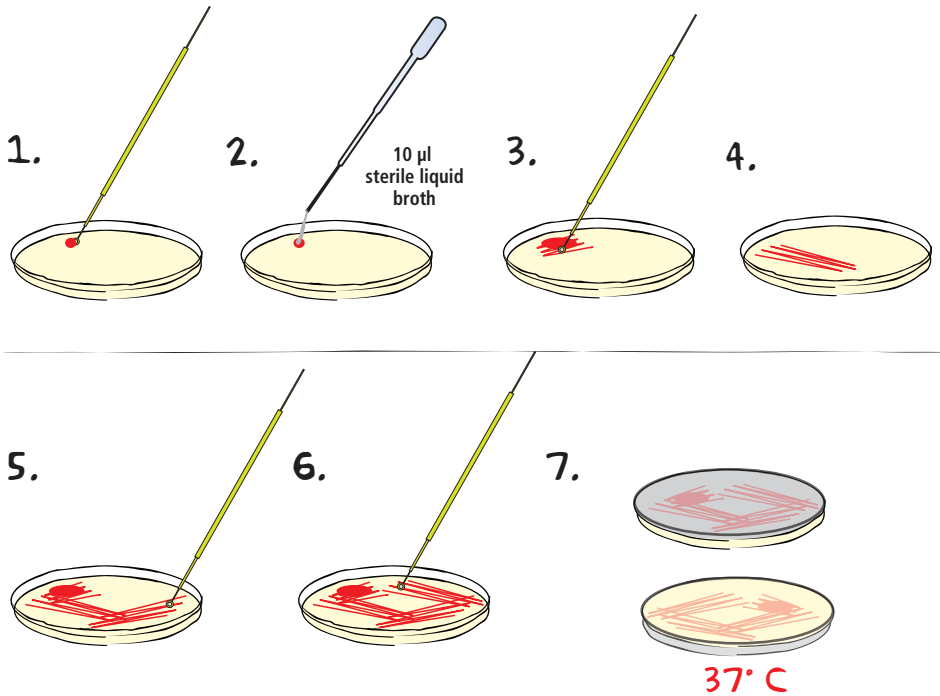
Wear Hot Gloves and Goggles during all heating steps.

One bottle of ReadyPour™ medium will make 5 large LB source plates and 40 small plates.

1. **BREAK** solid ReadyPour™ medium into small chunks by vigorously squeezing and shaking the plastic bottle.
2. **LOOSEN**, but **DO NOT REMOVE**, the cap on the ReadyPour™ medium bottle. This allows the steam to vent during heating.
CAUTION: Failure to loosen the cap prior to heating may cause the bottle to break or explode.
3. **MICROWAVE** the ReadyPour™ medium on high for 30 seconds to melt the agar. Carefully **REMOVE** the bottle from the microwave and **MIX** by swirling the bottle. Continue to **HEAT** the solution in 30-second intervals until the agar is completely dissolved (the amber-colored solution should be clear and free of small particles).
4. **COOL** the ReadyPour™ to 60°C with careful swirling to promote even dissipation of heat.
5. While the medium is cooling, **LABEL** the petri dishes. Consult your protocol for specific instructions.
6. **POUR** 10 mL of the cooled ReadyPour™ into each of the five large petri dishes (source plates) using a 10-ml pipet and pipet pump.
7. Using a fresh 10 mL pipet, **POUR** 5 mL of the medium into the small petri plates.
8. **ADD** the reagents as specified in your protocol. **RECAP** the bottle and **SWIRL** to mix the reagents. **ONLY ADD REAGENTS TO COOLED MEDIUM.** Reagents like ampicillin and IPTG degrade at high temperature.
9. Using a fresh 10 mL pipet, **POUR** 5 mL of the medium into the labeled small petri plates.
10. **WAIT** at least twenty minutes for the LB-agar to solidify. For optimal results, leave plates at room temperature overnight.

Store the plates at room temperature for no more than two days. Plates should be placed in a sealable plastic bag to ensure that they do not dry out. If plates are prepared more than two days in advance, they should be stored inverted in a plastic bag in the refrigerator (4°C). Warm the plates in a 37°C incubator for 30 minutes before use.

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PREPARING SOURCE PLATES

1. **REMOVE** a single BactoBead™ from the vial using a sterile inoculating loop. Using aseptic technique, **TRANSFER** the bead to the edge of a large petri plate (LB source plate) and replace lid. **CAP** the vial immediately after using to limit exposure to moisture in the air.
2. Instantly **DISSOLVE** the bead in a 10 µL of sterile liquid broth or sterile water.
3. **STREAK** the loop back and forth through the dissolved BactoBead™ to make a primary streak at the top of the plate. Try not to gouge the loop into the medium.
4. **STREAK** the loop through primary streak to a clean part of the agar several times to create a secondary streak.
5. **ROTATE** the plate. **STREAK** the loop through the secondary streak to a clean part of the agar several times.
6. **ROTATE** the plate once more. **STREAK** the loop through the third streak to a clean part of the agar. This should produce isolated colonies.
7. **COVER** the plate and **INCUBATE INVERTED** at 37°C for 16 to 18 hours. If you do not have an incubator, colonies will form at room temperature in approximately 24 - 48 hours.
8. **REPEAT** the above steps for each of the LB source plates.

Related Equipment

See the **EQUIPMENT** section in our Resource Guide for our full range of equipment or visit our website at:
www.edvotek.com



Cat. #539
1.8L Digital Waterbath
Features digital temperature control from ambient to 95°C (with included cover).



Cat. #969
Long Wave UV Light
A hand-held UV light useful for observing fluorescence.



Cat. #558
Midrange UV Transilluminator
7x14 cm UV filter.



Cat. #545
Incubation Oven
Thermostatically controlled and ideal for growing bacteria on agar plates at 37° C. Temperature can also be raised to 65° C for plating of thermophilic bacteria and for Southern or Western Blot analysis.



Cat. #5067 **Classroom PCR LabStation™**
Supports up to 25 students!