

## **Mastery Series: Endospores**

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1. Which two medically significant bacteria produce endospores?
2. What is the shape of both of these bacteria?
3. What is the Gram reaction of both of these bacterial genera?
4. What kinds of conditions stimulate a bacterial cell to produce an endospore?
5. What is the name for this process?
6. What happens to the bacterial (vegetative) cell when the endospore is fully formed?
7. What is the stimulus for the endospore to become a vegetative cell?
8. What is the name for this process?
9. How can you destroy endospores effectively?
10. What are two species of *Bacillus*?
11. What is the significance of the name *Bacillus cereus*?
12. Why is it best to cool rice in the refrigerator in small batches?
13. Why was it possible for *Bacillus anthracis* to survive in a dry envelope through the mail (in 2001, there were a few scares regarding this method of biological terrorism)?

## **Mastery Series ANSWERS: Endospores**

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1. Which two medically significant bacteria produce endospores? *Clostridium* and *Bacillus*
2. What is the shape of both of these bacteria? **Long rods**
3. What is the Gram reaction of both of these bacterial genera? **Gram positive**
4. What kinds of conditions stimulate a bacterial cell to produce an endospore? **Bad ones! Lack of water, lack of food, too cold, too crowded**
5. What is the name for this process? **sporulation**
6. What happens to the bacterial (vegetative) cell when the endospore is fully formed? **It dies as it ejects the endospore**
7. What is the stimulus for the endospore to become a vegetative cell? **Good conditions! Food, warm temperature, adequate water**
8. What is the name for this process? **germination**
9. How can you destroy endospores effectively? **Boil them for 20 minutes; soak them with bleach for 20 minutes; autoclave them (high heat)**
10. What are two species of *Bacillus*? ***Bacillus anthracis*; *Bacillus cereus***
11. What is the significance of the name *Bacillus cereus*? **Rod-shaped bacteria that grow on cereal grains—can cause food-poisoning**
12. Why is it best to cool rice in the refrigerator in small batches? **So that it cools down rapidly enough that bacteria don't have time to be reproducing (and producing endospores) for very long.**
13. Why was it possible for *Bacillus anthracis* to survive in a dry envelope through the mail (in 2001, there were a few scares regarding this method of biological terrorism)? **Its endospores are dehydrated and can last indefinitely without water.**