RESEARCH EXPERIENCE FOR TEACHERS

Developed by:
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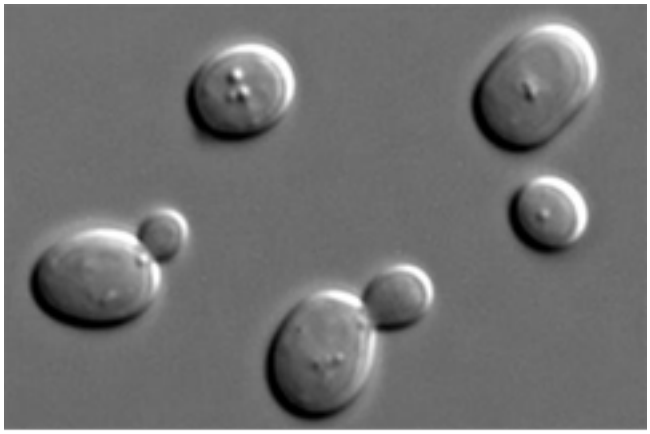
Yeast Asexual Reproduction Lab



Background Information:
Asexual reproduction is the production of offspring by only **one** parent. Asexual reproduction results in offspring that are **genetically identical** to the parent organism. There are many types of asexual reproduction. Mitotic cell division, budding, plant cuttings and animal regeneration are all types of asexual reproduction. Yeast are small, single-celled fungi. Mushrooms are also fungi. Yeasts are used in bread, blue cheese and antibiotics. Most yeast can live only by eating sugars and starches. Their metabolic by-products are carbon dioxide and alcohol. As you remember, this is due to cellular respiration. The yeast "breathe" in oxygen, we will feed them sugar and they will convert it into water and carbon dioxide through respiration. Yeast usually asexually reproduce by a method called budding. A small knob or bud forms on the parent cell, grows, and finally separates to become a new yeast cell. This new yeast cell is genetically identical to the parent cell.

Question: How do yeast reproduce?

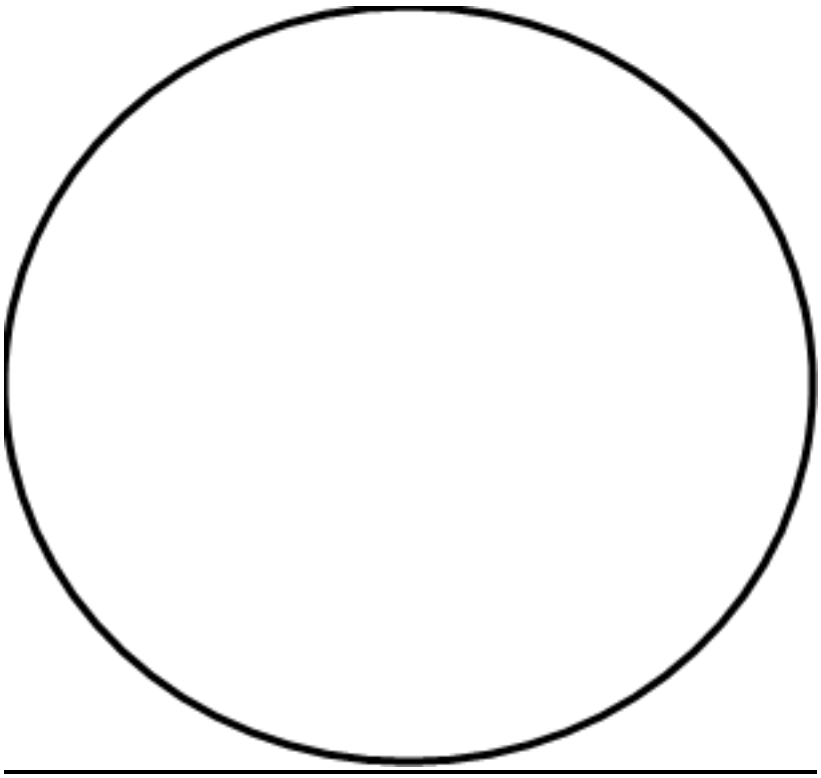
Materials:
warm water, yeast, sugar, slide, coverslip, microscope, pipette, beaker, weigh boat, timing device

Procedure:
1. Pour 25 mL of warm water into a beaker.
2. Add 1 g of sugar.

3. Have one person from your lab come and get 1 g of yeast added to your sugar water. Stir slightly.
4. **Record your observations below <u>after</u> the solution sits for 5 minutes below.**
5. **While you are waiting answer questions 2 and 3 on the back.**
6. Using a pipette, put **one drop** of yeast solution on a microscope slide. Place the coverslip over the drop.
7. View the yeast solution under a microscope while looking for budding cells. Start at low power.
8. **After viewing at low, medium and high powers, draw what you see at the highest power possible to see the budding easily. You may need to move the slide around until you see budding yeast cells.**

Data:

Write your observations of what you see in the beaker **<u>after</u>** 5 minutes.



Draw what you see under the microscope at the highest magnification possible. Be clear in your drawing and include details **AND labels**.

Total Magnification: _____

ALL ANSWERS MUST BE IN COMPLETE SENTENCES FOR FULL CREDIT!!!

Draw Conclusions and Communicate Results:

1. Describe evidence of yeast reproduction. What did you see under the microscope to let you know that yeast was being duplicated? Please be specific and use complete sentences.

2. What is asexual reproduction in your own words? Do not copy an answer from the book, notes or this sheet. Be specific enough that someone just learning about this could understand your explanation.

3. According to the background information in the first paragraph, why was sugar needed?

Acknowledgements

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