



## Beautifying Bacteria

Bob is a microbiologist who is convinced he's discovered what actually causes people to age---a bacterium he refers to as, an-dropausalophile. Due to grant cuts, he no longer has portable microscope equipment to show his live findings in an auditorium setting. He's also no longer allowed to travel with live bacterium, without top secret government clearance each time. He's submitting his grant proposal to seek additional funding for this project. The plan is to use this information in the graduate research classes he teaches. It is possible that he may be asked to travel to three other universities to provide presentations on his findings.

### Scenario

Bob would like to use software technology to create an onscreen interactive microscope. His primary focus will be on magneto photos of his specimens.

### Files Used in this Exercise

Bacteria.zip (Win)

Bacteria.sit (Mac)

**Objectives** After this exercise you will be able to:

- Place an image into a Canvas document
- Use the Oval tool to create a circle
- Apply a lens effect to an object
- Use scientific Colorize filter to colorize
- Change the magnification of a lens
- Lock an object
- Resample an image by changing its resolution

### Required knowledge to perform this exercise

- Open a file and change file types
- Save a file
- Use the Undo command
- Move an object
- Understand magnification
- Understand pixels
- Understand resolution

*If at any time your document is not in the middle of the window, press SHIFT+F3 (Windows) or CMD+F3 (Mac).*

### Narrative of this exercise

For this exercise, use the files found in the **Bactreria.zip** file (Win) and **Bacteria.sit** file (Mac).



Begin by launching Canvas; notice that the Startup dialog appears by default. Place the **specimen.tif** and change the resolution from 600 ppi to 72 ppi. Align the image horizontally and vertically on the document so that it is centered and lock the image so it doesn't get moved accidentally. Draw a 1.5 inch circle where X=3.0 and Y=4.5. Use the SpriteEffects palette to make this circle into a lens, and increase the magnification to 300%. Colorize the lens with the following density percentages: 0-20 is blue, 20-40 is purple, 40-60 is green, 60-80 is pink, and 80-100 is yellow. Save the file as lens.cvx.

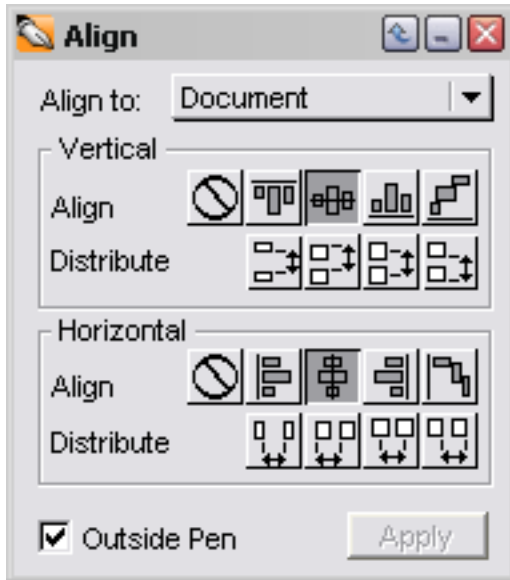
### Files used in this exercise



**Bacteria**\specimen.tif

A sample end result to this exercise can be found in the **Bacteria** file: answer\_lens.cvx



## TASK 1: Place and manipulate the bacteria image


1. Launch Canvas. Select an illustration document (8.5 X 11).
2. Choose **File > Place**. The **Place** dialog box appears.
3. Change **Files of Type** to TIF/TIFF.
4. Navigate to **Bacteria\specimen.TIF** and double-click the filename. The place pointer appears .
5. Click the center of the document. The bacteria image appears at 600 ppi.
6. Type 72 in the **Res** text box and press **Enter**. The image is resampled to 72 ppi and appears larger. You may need to expand the Properties bar by clicking .
7. Choose **Object > Align > Show Palette**. The **Align** palette appears.
8. From the **Align to:** options, select **Document**:




9. From the **Vertical** Align section, click .
9. From the **Horizontal** Align section, click .
10. Click **Apply**. The bacteria image is aligned vertically and horizontally on the document.
11. Close the **Align** palette.
12. Right-click (Windows) or Control-click (Mac) on the image. A shortcut menu appears.
13. Choose **Lock**.
14. Press **Esc** to deselect all objects.

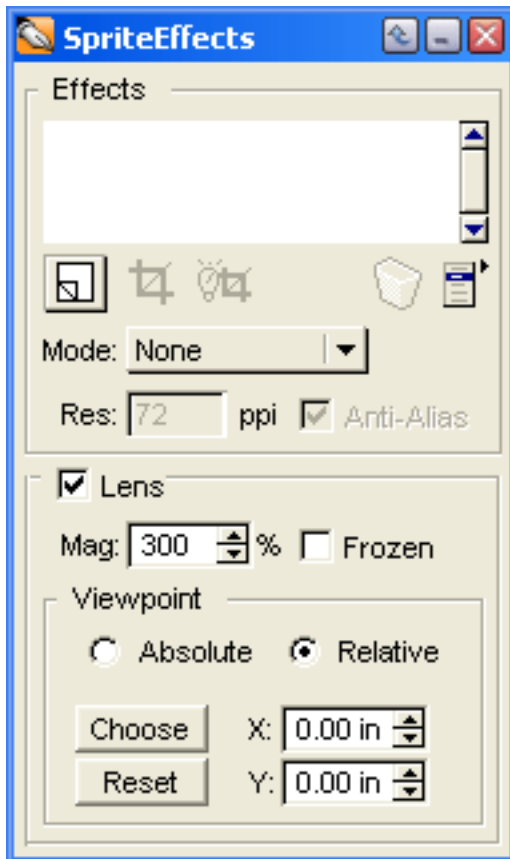
## TASK 2: Use the Oval tool and Properties bar to create a circle

1. Press **O**. The pointer becomes a crosshair.
2. In the Properties bar, type the following:  
X=3.000  =1.500  
Y=4.500  =1.500

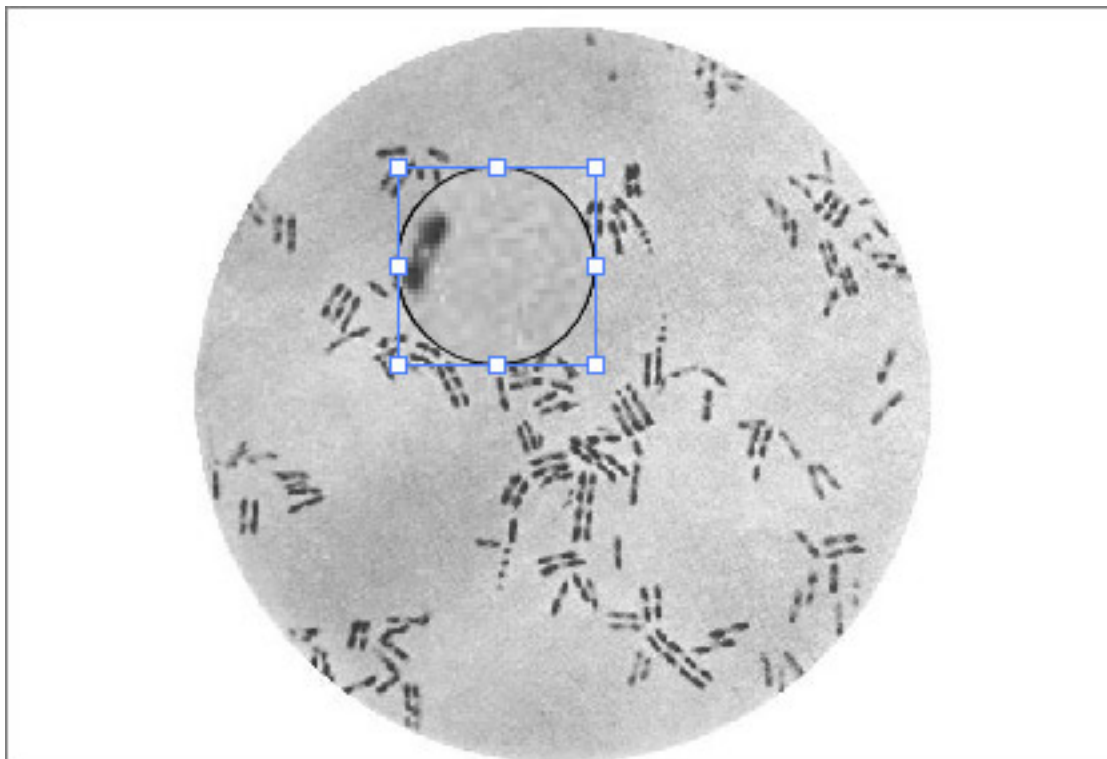
1. Choose the left-of-center  **Bounds XY Reference Point**.
2. Click **Create**. A circle appears.

### TASK 3: Apply a Lens filter and change Lens magnification


20. Click  in the Properties bar. The SpriteEffects palette appears:

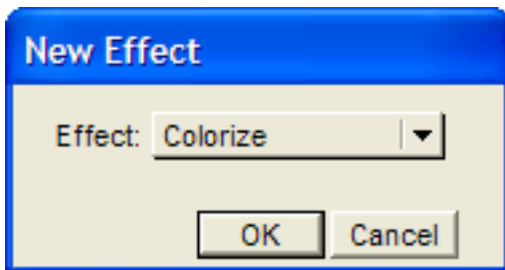


1. Select the **Lens** checkbox.
2. Change the **Mag** to 300. Here is a sample of your project up to this point:

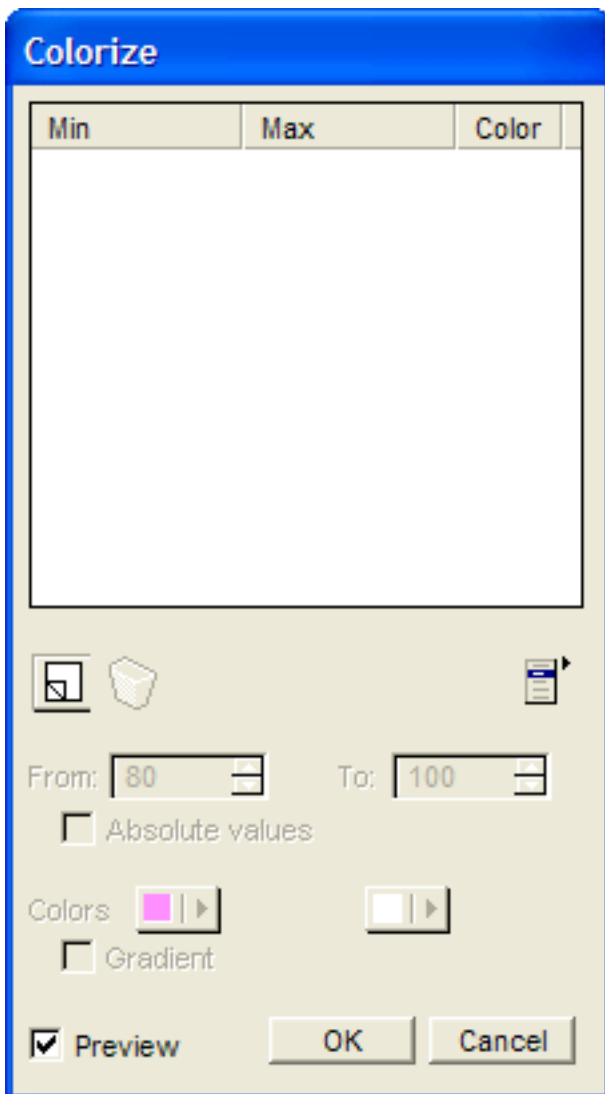





#### TASK 4: Colorize an object



23. Click on  **Apply a new filter effect**. The **New Effect** dialog box appears:



24. Choose **Scientific > Colorize**.  
25. Click **OK**. The **Colorize** dialog box appears:



26. Click . A new color line item appears where Min=0% and Max=100%.  
27. Type **0** in the **From** and **20** in **To**. Choose a shade of blue from **Colors**.  
28. Click . A new color line item appears where Min=0% and Max=100%.  
29. Type **20** in the **From** and **40** in **To**. Choose a shade of purple from **Colors**.  
30. Click . A new color line item appears where Min=0% and Max=100%.

31. Type **40** in the **From** and **60** in **To**. Choose a shade of green from **Colors**.
32. Click  A new color line item appears where Min=0% and Max=100%.
33. Type **60** in the **From** and **80** in **To**. Choose a shade of pink from **Colors**.
34. Click  A new color line item appears where Min=0% and Max=100%.
35. Type **80** in the **From** and **100** in **To**. Choose a shade of yellow from **Colors**.
36. Click **OK**. A colorized lens appears. Close the **SpriteEffects** palette.
37. Use the arrow keys to slowly shift the lens. Notice the change in what is magnified.
38. Save the file as **lens.cvx**.