

Seeing Cells Lab

Today we will make slides of different cells and look at them under the microscope:

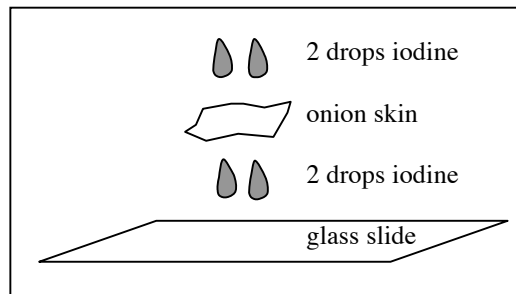
1. Onion skin cells
2. Human cheek cells

Microscope rules

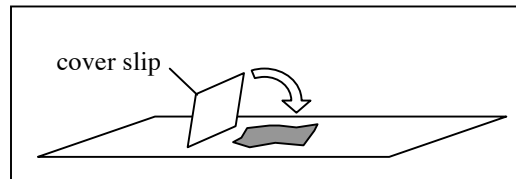
1. Always carry or move a microscope with two hands, one on the arm, and one on the bottom.
2. Always use the lowest power lens (the shortest lens) when you take a slide on and off the stage.
3. Always start with the lowest power lens (the shortest lens). Get the slide in focus there, first using the coarse focus knob (the large knob) to get it close, THEN using the fine focus knob (the small knob) to get it perfectly in focus. From there, you can switch to a higher power lens.
4. Always look from the SIDE of the microscope, not through the eyepiece, when switching lenses to avoid hitting the lens on the slide.
5. Only use the coarse focus knob (the large knob) when you are using the lowest power lens (the shortest lens). Using the coarse focus knob on a higher power can crack the lens!
6. Please turn off the light and cover the microscope when you are finished.

Onion skin cells

1. Add 2 drops of iodine to the center of a glass slide. **Be careful! Iodine can stain your clothes.**
2. Take a small piece of onion. Use tweezers to peel off the skin from the underside (the rough, white side) of the onion.
3. Carefully lay the onion skin flat in the center of the slide on top of the iodine.



4. Add 2 drops of iodine to the top of the onion skin.
5. Stand a thin glass cover slip on its edge near the onion skin, next to the drop of iodine.
6. Slowly lower the other side of the cover slip until it covers the onion skin completely. **If there are air bubbles, gently tap on the glass.**
7. Make sure the lowest power lens (the shortest lens) is in place over the stage and the microscope light is turned on. Place the slide onto the stage of the microscope.
8. Look through the eyepiece and turn the coarse focus knob (the largest knob) until an image comes into focus. It should look like a brick wall or like lizard skin.
9. Now use the fine focus knob (the smallest knob) to make the image as focused as possible.
10. **Draw a picture of what you see. Label as many parts of the cell as you can see.**



11. Looking from the SIDE of the microscope, NOT through the eyepiece, rotate the lenses to the next highest powered lens (100x). If you need to, use the fine focus knob (the smallest knob) to get the image into focus. DO NOT USE THE LARGE KNOB!! You may see a small dot in the middle of each cell.
 12. Again, looking from the SIDE of the microscope, rotate the lenses to the highest powered lens (400x). If you need to, use the fine focus knob (the smallest knob) to get the image into focus. You should see a dark blob in the middle of each cell.
 13. Draw a picture of what you see. Label as many parts of the cell as you can see.
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14. Switch to the lowest power lens and THEN remove the slide. Set it aside for now.

Human cheek cells

1. Add one drop of methylene blue to the middle of a clean slide. Be careful! Methylene blue will stain your clothes and skin.
2. Use the flat side of a toothpick to gently scratch the inside of your cheek. DO NOT GOUGE YOUR CHEEK - you don't need chunks of skin and definitely don't want to draw blood.
3. Gently touch the toothpick to the drop of dye on the slide. Some of your cheek cells should drift off into the dye.
4. Throw the toothpick away.
5. Stand a thin glass cover slip on its edge near the drop of dye.
6. Slowly lower the other side of the cover slip until it covers the dye completely. Make sure there are no air bubbles.
7. Make sure the lowest power lens (the shortest lens) is in place over the stage. Place the slide onto the stage of the microscope.
8. Look through the eyepiece and turn the coarse focus knob (the largest knob) until an image comes into focus. It should look like scattered blobs. Move the slide around until a nice cluster of blobs moves into the center of your image.
9. Use the fine focus knob (the smallest knob) to make the image as focused as possible.
10. Draw a picture of what you see. Label as many parts of the cell as you can see.

11. Looking from the SIDE of the microscope, NOT through the eyepiece, rotate the lenses to the 100x lens. If you need to, use the fine focus knob (the smallest knob) to get the image into focus.

12. Again, looking from the SIDE of the microscope, rotate the lenses to the 400x lens. If you need to, use the fine focus knob (the smallest knob) to get the image into focus.
 13. Draw a picture of what you see. Label as many parts of the cell as you can see.
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14. Switch to the lowest power lens and THEN remove the slide.

Conclusion questions

Answer the following questions in your lab notebook. Use your pictures to answer the questions but feel free to look at your slides again if you need to remind yourself what you saw.

1. Why do we need to stain some of the cells with a dye like iodine or methylene blue? What color do you think the cells would be without the dye?
2. List the parts of a cell you could see in the cheek cells at 40x magnification.
3. List the parts of a cell you could see in the cheek cells at 400x magnification.
4. What might you be able to see at 4000x magnification that you couldn't see with these microscopes?
5. Describe the shape of the plant cells. Describe the shape of the animal cells. What makes them different?
6. What other differences did you notice between onion and cheek cells?
7. The onion skin cells are plant cells. Why didn't you see chloroplasts?

Finally, clean up! Rinse off all your slides in the sink. Throw the cover slips away!