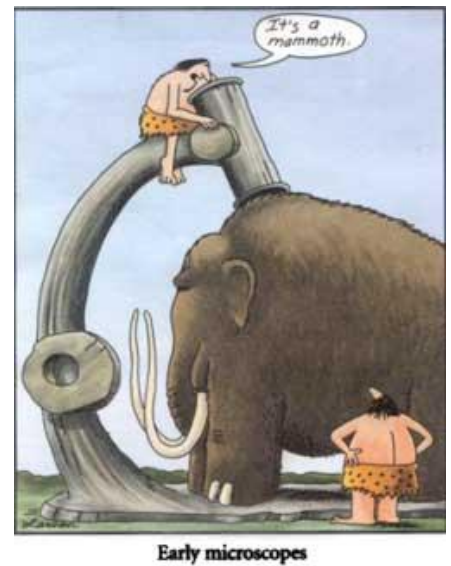


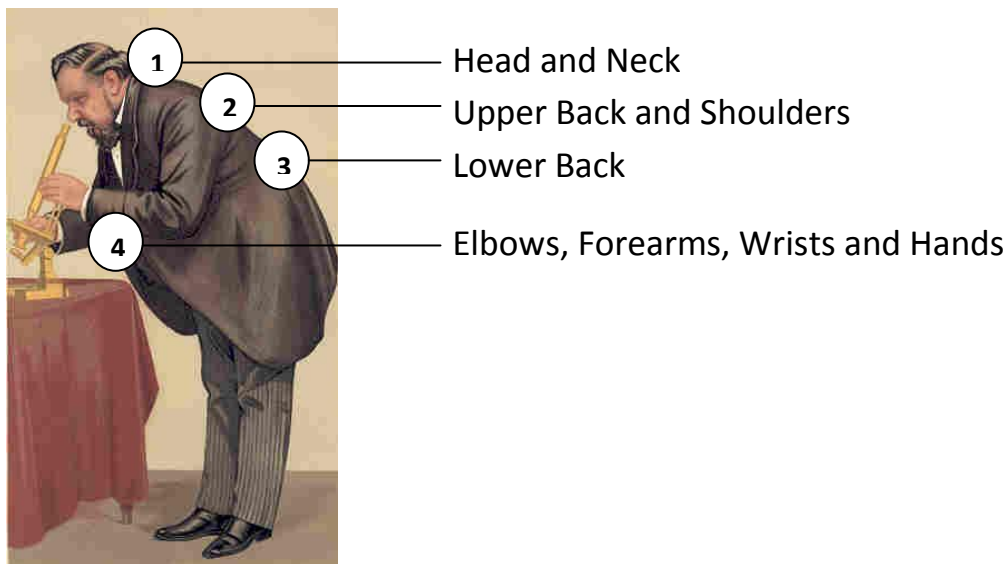
Microscopy and Ergonomics:

Recommendations and Simple Tips for Adjusting your Microscope Workstation



Why is this important?

Microscope use can lead to injury. According to research, over 80% of employees who use microscopes more than 5 hours per day report some job-related musculoskeletal pain in the:



Planning a New Microscope Workstation:

- Get the Ergonomists involved. Request assistance and input by sending an email to ergo@lbl.gov.
- When purchasing microscopes, consider microscopes with adjustable eyepieces to allow for improved head and neck posture.

Setting up a Microscope Workstation:

- Select an adjustable ergonomic chair. The chair should provide adequate back support, adjustable height and seat angle.
- Place the microscope as close as possible towards the edge of the work surface to minimize forward bending at the low back and neck.
- Ensure that sufficient knee and leg space under the microscope is available. If necessary, open or remove cabinet doors to create leg and knee room so you can get closer to your work.
- Provide gel pads or other supports to minimize contact with desk edges and hard surfaces.
- Consider the use of a camera and television system to minimize use of the microscope eyepieces.



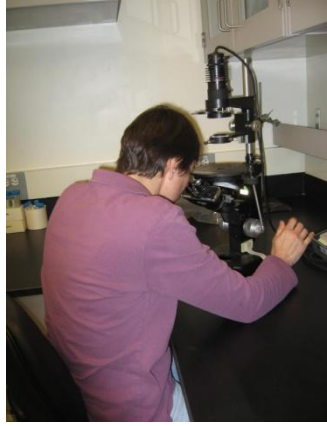
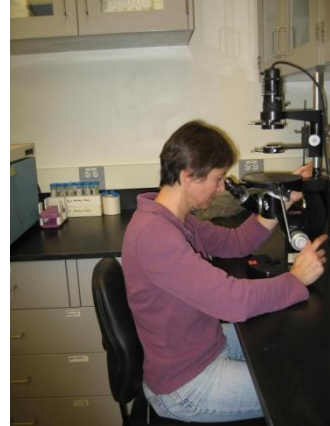
Using the Microscope:





- Don't use a microscope for more than 5 hours per day.
- Spread the use out over the entire work day.
- Take regular breaks. Consider a timer to help remind you to take a break.
 - Every 15 minutes, close your eyes or focus on something in the distance.
 - Every 30-60 minutes, take a few minutes to get up from the microscope and move.
- Adjust the height of the microscope and chair and/or the angle of observation and eyepieces to minimize forward bending of the neck. The neck should be bent forward as little as possible (no more than 10-15° below the horizon) with the eyes looking downward approximately 30-45°.
- Try to keep your elbows close to your sides.
- Use padding to protect your elbows and forearms.
- Sit as close to the microscope as possible.
- Adjust the chair to maximize back support.
- Use a footrest if your feet do not touch the floor.

Aches and pains:

- Report aches and pains to your supervisor as soon as you notice them.

A Few Before and After (or Work In Progress) Solutions:

Before	After	Problem	Solution
		<p>Microscope too low – which causes:</p> <ul style="list-style-type: none"> • Forward bending at the waist • Excessive forward flexion of the neck and head 	<ul style="list-style-type: none"> • Raise height of the microscope using reams of paper, plastic monitor risers, or even a height adjustable monitor arm. • Pictured Solution: IS-MM CRT Monitor Stand Vendor: www.ergomart.com Estimated Cost: \$330
		<p>Microscope too low (in this case caused by use of a bench-height lab chair) – which causes:</p> <ul style="list-style-type: none"> • Forward bending at the waist • Excessive forward flexion of the neck and head <p>Microscope pushed away from desk edge also causing forward bending at the waist and neck.</p>	<ul style="list-style-type: none"> • Reposition microscope so it is close to the edge of the desk. • Switch to a desk height lab chair (appropriate for this microscope).

		<p>Microscope too low – which causes:</p> <ul style="list-style-type: none"> • Forward bending at the waist • Excessive forward flexion of the neck and head 	<ul style="list-style-type: none"> • Try sloping angle of microscope toward the user • Pictured solution: Microplate Positioning Plate Vendor: www.marketlabinc.com (#ML8350) Cost: \$100
		<p>Resting elbows on hard surface or the edge of a desk which can irritate the elbow</p>	<ul style="list-style-type: none"> • Use circular ulnar gel pads Vendor: Alimed Cost: \$55/pair
		<p>Resting elbows on hard surface or the edge of a desk which can irritate the elbow</p>	<ul style="list-style-type: none"> • Use gel edge protectors Vendor: Alimed Cost: \$25