MICROTOME AND CRYOSTAT SAFETY

UTHealth Houston Environmental Health & Safety Biological Safety Program

#UTHealth Houston

Intro to Microtomes and Cryostats: What are they used for?

• Used to cut extremely thin section of tissue for a microscopic study



Cryostats Cuts frozen tissue (unfixed)

Microtomes Cuts paraffin wax embedded tissue (fixed)

Intro to Microtomes and Cryostats: Components



Microtome

Cryostat



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Hazards Present

- Laceration/Cut
 - Sharp blade
- Infectious agents
 - Human samples present Bloodborne pathogen risk
- Cold temperature

UTHealth Houston Injuries

- Average four injuries per year with Microtome or Cryostat
- <u>Most common injury:</u> cuts to the finger or hand while repositioning tissue block
- Bloodborne Pathogens can be transmitted via any unfixed tissue or organ from a human (living or dead)
- Tissue may not always be fixed or processed optimally. Therefore, paraffinprocessed tissue may be biologically active even after processing
- Use cryogenic gloves for cold temperature operations

Prior to using a Microtome or Cryostat for the first time....

- Review the operation manual and training materials
- Prepare your workstation
- · Gather all supplies needed
- Have a sharps container near for proper blade disposal

Engineering Controls

- Safety Locks
 - Locks block holder in place
 - Locks blade in place
- Blade guard
- Additional tools
 - Paintbrushes
 - Wooden rods
 - Forceps/tweezers
 - Sharps disposal container
 - If desired, cut-resistant gloves





Administrative Controls

- Safety lock and blade guard before any modification or reposition!
- Use a tool to hold cut tissue sections
 - Wooden rod
 - Paintbrush
- Use a paintbrush to brush wax/ice stuck to blade
- Use forceps, wooden rods, or magnet to change or reposition blade
- Decontaminate equipment after every use (use caution!)

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Use Personal Protective Equipment (PPE)

- Safety glasses or Goggles
- Lab Coat
- Face mask
- Gloves
- Other PPE as appropriate
- If desired, can use surgical grade cut-resistant gloves (i.e. Kevlar gloves)

Always wash hands after removing PPE!



How to Use a Microtome Safely (video)



Please select the YouTube link to watch: https://youtu.be/ImZhUd9PyIM

How to Use a Cryostat Safely (video)



Please select the YouTube link to watch: https://youtu.be/UnCLhowHucU

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How to Change Blades on a Cryostat (video)



Please select the YouTube link to watch:https://youtu.be/aAJ6cTMUH-Y

How to Report an Injury

- Apply First Aid
 - 1. Clean the exposed area with soap and water for at least 15 minutes.
 - 2. Flush mucous membranes with water or saline for at least 15 minutes.
- Supervisor's First Report of Injury

Online Form:

https://app.smartsheet.com/b/form/93f4e098ab46493fba5659079b36c7e9

• Employee Health (or Emergency Room)

UT Health Services Clinic UT Professional Building 6410 Fannin, Suite 100 713-500-3267 (select Ext. 1) Hours: Monday-Friday, 7 a.m.-4 p.m. *If after-hours, call Needlestick Hotline: 800-770-9206

• Follow-up Review with EHS

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Additional Videos

Microtome: Safety Features and tools



Please select the YouTube link to watch: <u>https://youtu.be/MRIQZPCX45I</u>

Please select the YouTube link to watch: <u>https://youtu.be/XFgPfs_RY14</u>



Biological Safety Program







BSL-2 & BSL-3 Laboratory

- Safety Surveys
- 3 Biohazard Spill Response



Biohazard Exposure Response, Follow-up & Reporting



Infectious Substance Shipping Training



Biosafety Consultation & Hands-on Training



(713) 500-8170 For more information, please visit:

https://www.uth.edu/safety/biological-safety

