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CLASSROOM PRACTICAL INSTRUCTION GUIDE: INTRODUCTION TO PIPETTING

PURPOSE:

This is a practical exercise to be used in the classroom to demonstrate an individual's ability to apply biosafety principles and practices in operation of an Eppendorf-type pipettor.

Persons taking the training will first observe a demonstration, and then attempt to repeat the procedure in various scenarios in a manner that conforms to all biosafety regulations and practices.

No handout is provided with this demonstration.

Training Packet Contents:

Biorisk Manual
Classroom Practical Instruction Guide

Equipment/Supplies:

Waste bag (small)
1-single channel Eppendorf-type pipette for each volume
1-multi channel pipette
1-Pipet-Aid
Pipette tips
Centrifuge, mini
Waste container (small)
Capillary tubes (optional)
Light Cycler / RAPID carousel (optional)

Procedure:

Pipetting Risk Assessment and Risk Mitigation

Introduction of pipette – show and explain each function to participants

Features and functions of Eppendorf-type pipettor

- Volume groups (i.e.1-5uL, 2-10uL, 2-20uL, 20-200uL, 200-1000uL, 1-10 ml)

  Each range has a specified pipettor. Automated pipettors have ranges as well.

- Two-stop plunger

  First stop to aspirate, second stop to dispense.

- Tip ejector

- Volume wheel

  Controls volume of aspiration and is dependent on volume (and pipettor)

- Volume lock (if available)

Operation / adjustment

- Demonstration

  Pick several volumes (i.e. 4 uL, 5 uL, 140uL, 205uL, 5.2 mL) and tell the participants which pipettor you'd use and how you'd set it

- Examples for participants

Pick several volumes (i.e. 802uL, 17 uL, 9.8 mL, etc.) and have the participants tell you which pipettor they'd use and how they'd set it

- Have participants practice setting pipettes

Good pipetting techniques – accuracy and avoiding contamination

- Right pipette for right range

  Instruct to avoid upper and lower limits of a pipettor (i.e. not use P10 to pipette 10uL, use P20; not use P200 to pipette 5 uL, use P10; etc.)

- Using barrier tips / changing tips (when to use same tip; when to change)

  Instruct on proper ways to select and use correct barrier tips per pipettor. Instruct to change tips after every dispensation when pipetting non-identical material, identical material into multiple tubes that are not empty, or when bubbles or other interference is found inside the tip. Instruct to keep the tip for maximum of five dispensations when pipetting identical material into empty tubes.

- Pipetting down the side of tubes

- Capping tubes and closing lid during vortex/centrifugation

- Proper risk assessment

  Is the template material live or inert? What threat would breaking a post-amplification tube pose?