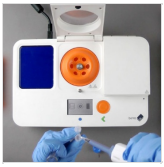

Oct 06, 2020

Protocol 2: Know Your BentoLab

In 1 collection

1

[1]UCSC

1 *Works for me* This document is published without a DOI.

UCSC BME 22L

Alyssa Ayala

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COLLECTIONS

Protocols for Materials

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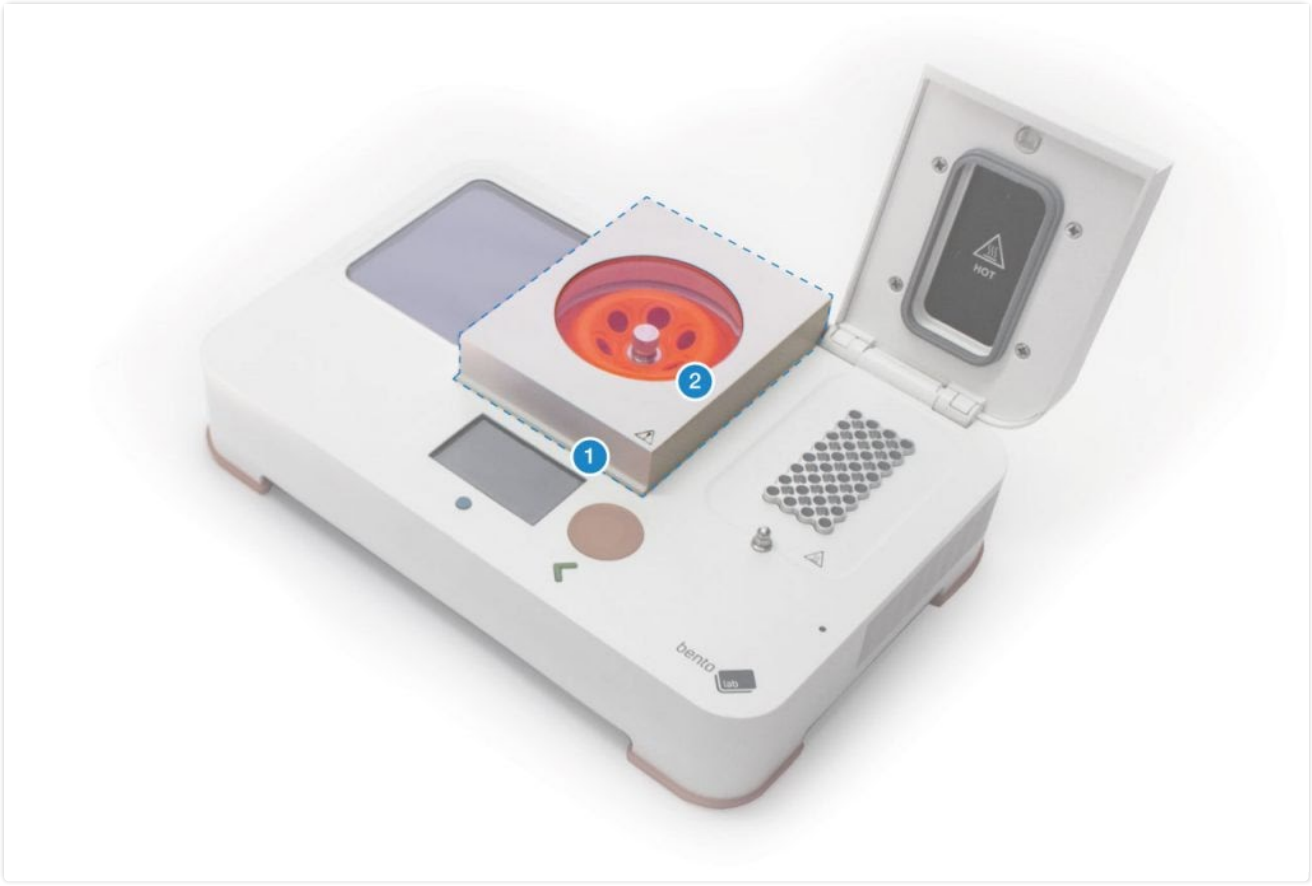
PARENT PROTOCOLS

Part of collection
Protocols for Materials

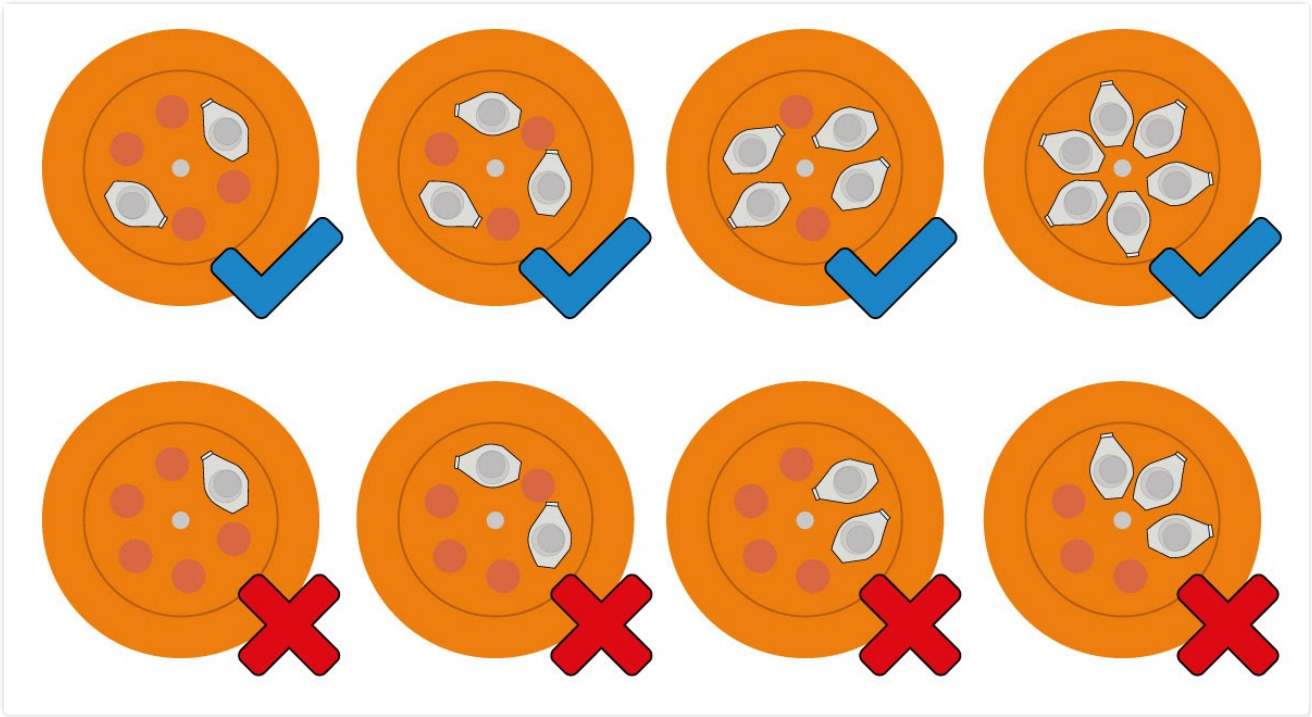
Equipment

BentoLab User manual

- **Microcentrifuge:**



- The microcentrifuge is used for the separation of solutions and suspensions in a 1.5 mL Eppendorf tube. It achieves this by applying centrifugal force to its contents by rotating at a great speed. This will separate the contents inside of the tube by bringing down denser solutions to the bottom of the tube, while less dense solutions get brought to the top.
- The two settings that come with the centrifuge are **Burst Spin** and **Time Spin.**
- **Burst Spin:** This mode is used for short spins and doesn't have a pre-set time. This is primarily used when you need to spin something for a number of seconds in order to bring a certain solution to the bottom of the tube.
- **Time Spin:** This setting will give you the option of setting how much centrifugal force you want to be applied to your sample, as well as the duration you want the force applied to it. This is primarily used when a protocol asks you to spin something for a set amount of time.
- When operating the centrifuge the key thing to keep in mind is **ALWAYS MAKE SURE THAT YOUR SAMPLES ARE BALANCED.** This means that you balance the samples out with other tubes of equal volume opposite them. This **VERY, VERY IMPORTANT.** Failure to adhere to this instruction can result in permanent damage to the centrifuge. So please make sure that everything is perfectly balanced when using this piece of equipment.



- **Specifications**

Rotor Capacity	6 x 1.5mL Eppendorf tubes
Min Centrifugal Force	500 x g
Max Centrifugal Force	8,000 x g
Modes	Burst SpinTime Spin: Duration 1 hour

- **Blue LED Transilluminator and power supply:**

- The Bento Lab comes with a power supply and gel box attachment, allowing the user to do Gel Electrophoresis. It comes with a gel box and acrylic lid to store the gel in. This box also has cables which can be hooked up to a power supply that is attached to the Bento Lab itself. The Bento Lab also includes a blue LED transilluminator light to allow visualization of the DNA migrating through the gel in their individual lanes.

User Interface

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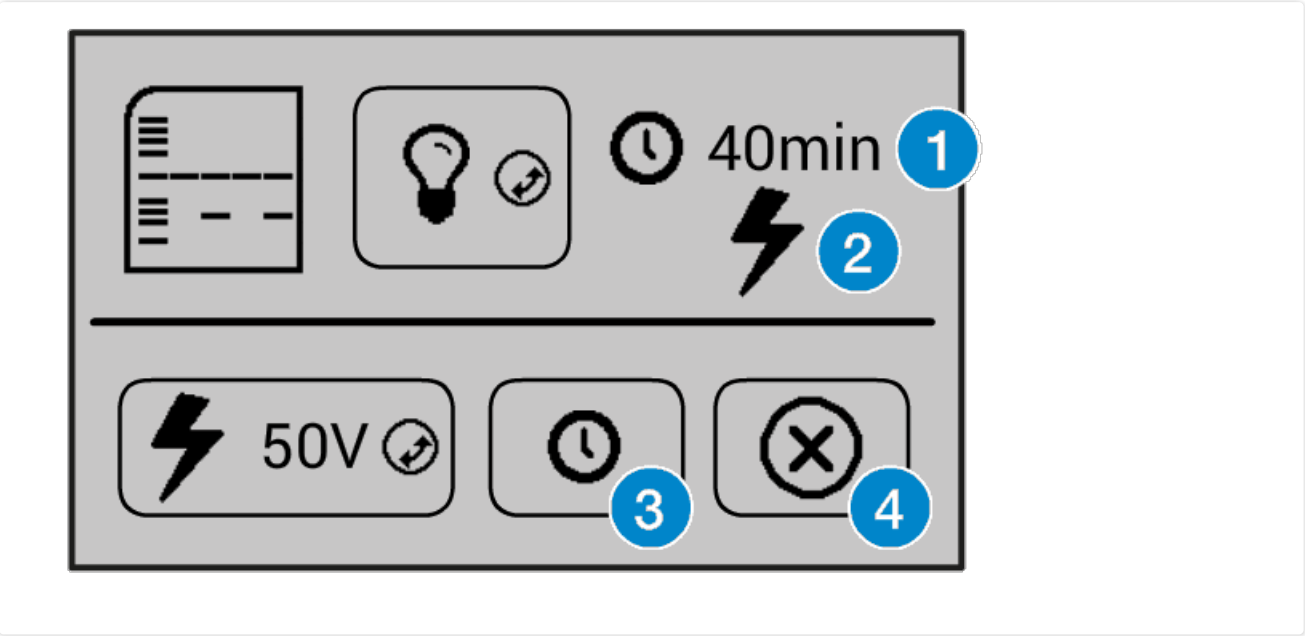


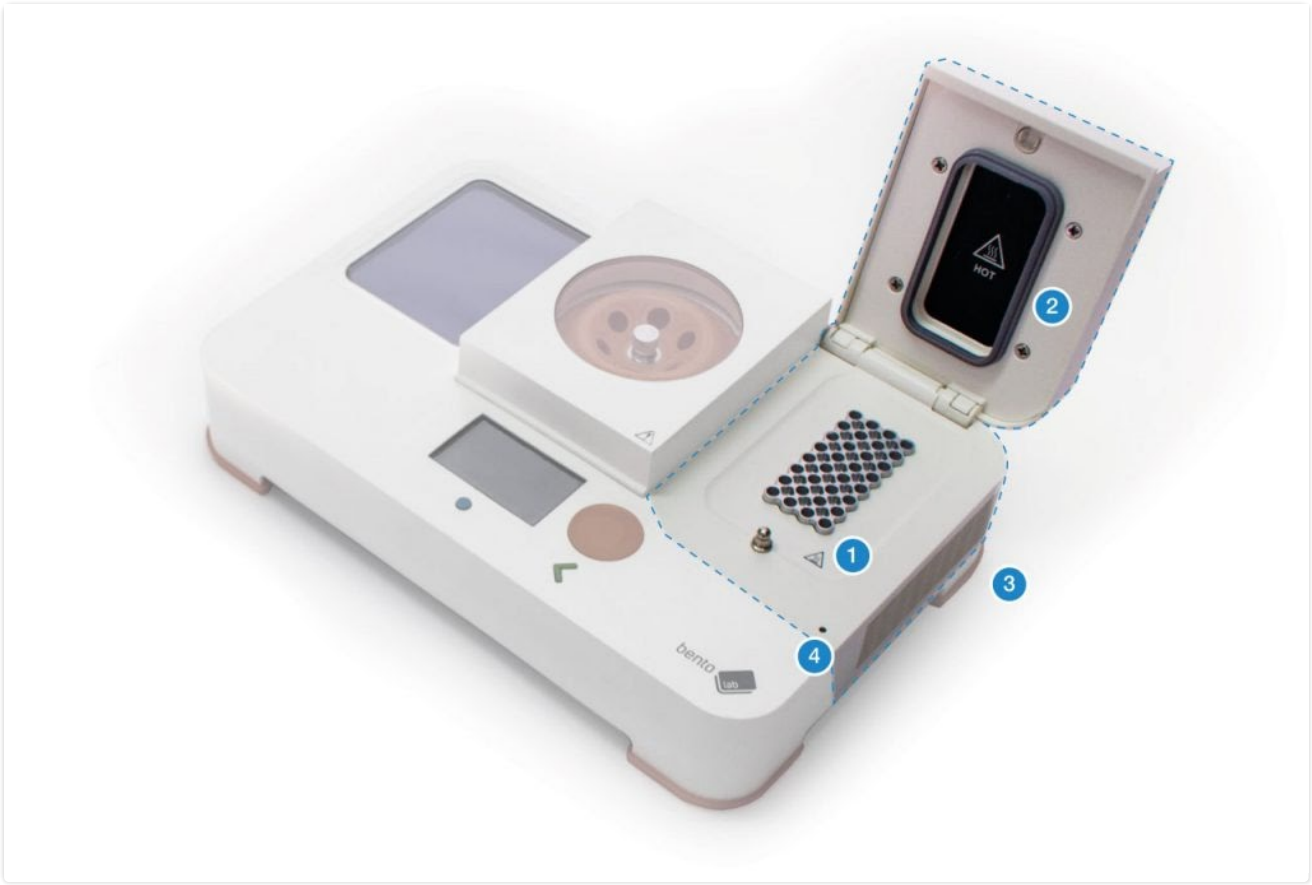
- When accessing the gel settings, the user interface gives you the options of adjusting the brightness of the transilluminator light, and a timer for how long you want the gel to run. You can access each of these by spinning the orange navigation wheel until you

come across the icon for the setting you wish to adjust. When you are at your desired setting, press down on the wheel and rotate it until you have adjusted it to a setting you like.

- **Specifications**

Voltage	50V-120V
Box Dimensions	91mm x 78mm
Visualisation	470nm blue light and diffuser
Viewing Window	As box dimensions
Filter	Amber Acrylic

- **Thermocycler:**



- The Bento Lab's thermocycler is easy to program and use. It contains a heating block for 32 0.2mL tubes in 4 x 8 arrangement. The heated lid will automatically adjust to fit tubes inside.
- It's worth noting that the way the thermocycler cools the samples is by using a built in fan to push cool air over the sample which then gets vented out through air vents on the right side of the Bento Lab. **It is very important** that when operating the thermocycler that you make sure that no objects are obstructing the vents as this can greatly affect the way that the sample is cooled.

User Interface

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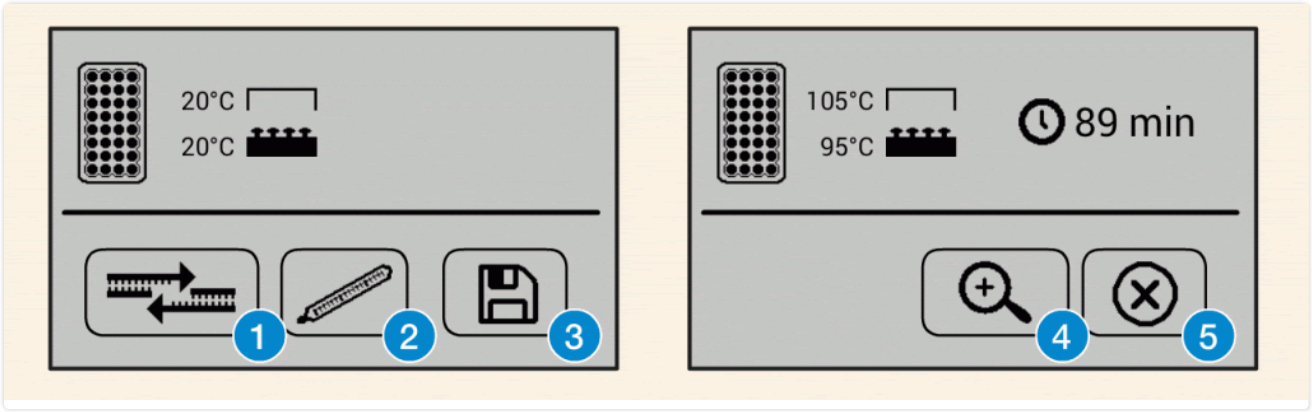
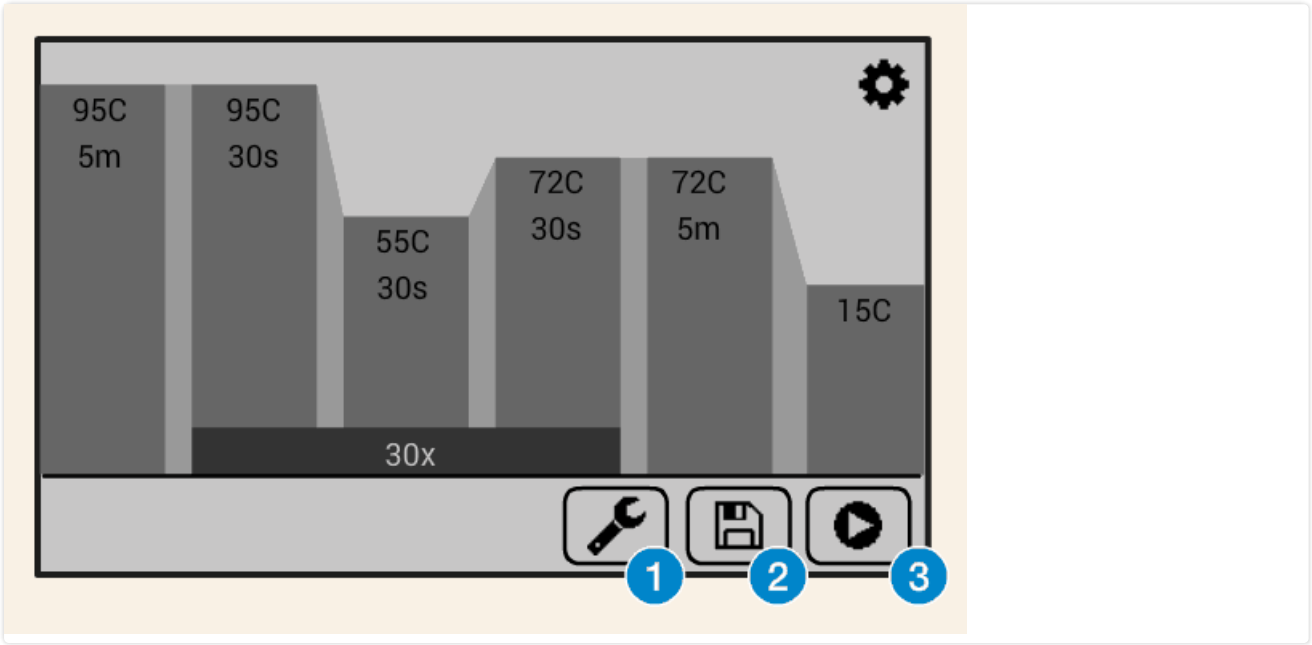


- The Bento Lab's user interface for accessing and editing thermocycler protocols makes operating the thermocycler quite simple. There is an option designated for a default PCR protocol(1), a default heat block protocol(2), and an option to access pre saved protocols(3). Above, you can see two different screens for the PCR option. The screen on the left displays the thermocycler idle and not being used whereas the screen on the left shows the thermocycler being used.



- Creating and editing PCR protocols is also quite simple too. Once you have selected the protocol you want to use, you'll be brought to a screen that gives you a preview of the protocol as well as the options to edit(1), to name and save the selected protocol(2), and the option to execute the selected protocol(3). To see instructions on how to set up these protocols, visit the link here.

- **Specifications**

Capacity	32 x 0.2mL
Thermal Cycling System	Peltier Temperature Control,Active cooling
Temperature Range	15o-99o C
Heated Lid	120o C/Ambient off

Protocol
Introduction to the Microcentrifuge

The centrifuge provided by the Bento Lab is very a useful tool. It allows users to use centrifugal force to separate the samples based on their density, by spinning the sample at a very high speed. It can spin up to 14,500 rotations per minute which equates to 240 rotations per second. For this lab, you will get a first-hand experience of how powerful this device is by centrifuging three items you are probably very familiar with, ketchup, mustard, and milk. All three of these things are liquids that are composed of other liquids of varying densities. If you do not have these 3 reagents at your disposal you can use other forms of liquids for test; such as juice, sauces, and condiments. When you centrifuge these down, you will notice the more dense liquid will fall to the bottom of the tube whereas the less dense liquids will rise to the top. You can access the protocol to help conduct this experiment here.