

Testing Apparatus Construction

Step-by-Step Instructions

- Get a 28.8 cm x 20.3 cm x 12 cm box
- Assemble the box by folding it



Tape the bottom and sides of the box



Tape down the bottom flaps on the inside



Tape the top and sides of the box



Make sure all the sides are covered with tape to keep out ambient light



Cut a circle the size of a petri dish
Place this template on the top of the box



Use a clamp and ring stand to secure a UV flashlight upright in the center of the template



Place the light sensor probe (also secured upright by using a clamp and ring stand) next to the UV flashlight on the round template



Remove the round
template and
trace the ends of
the UV flashlight
and light probe on
the top of the box



Notice the traced shapes below ↓



Use a box cutter to *carefully* cut out the traced circles



Sketch a door
on the side of
the box,
away from the
cut holes

See the next
slide for exact
door size and
location →

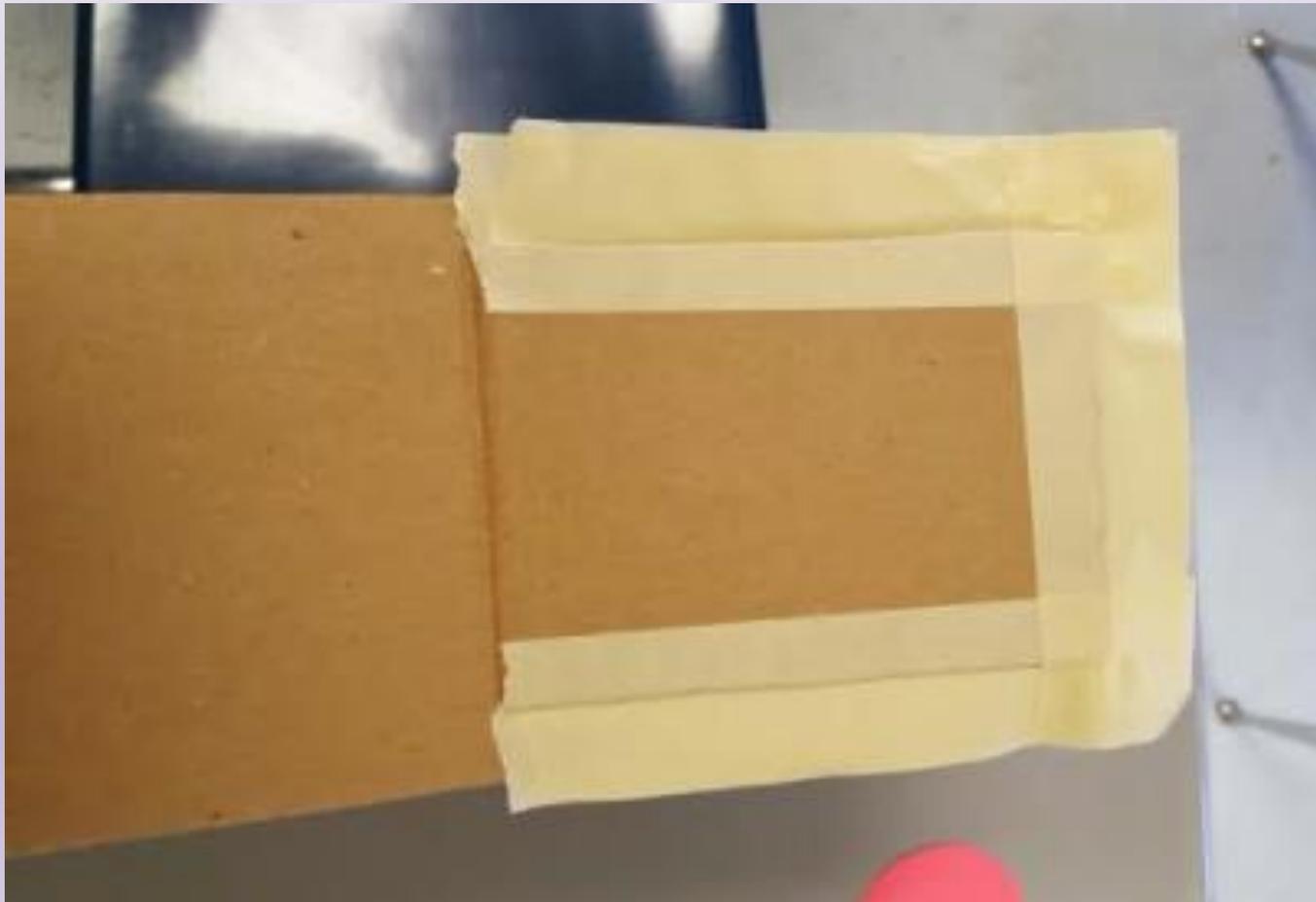


Door location and dimensions



- Locate the door 1 cm from the top of the box
- Make the top and bottom sides of the door 14 cm long
- Make the right side of the door 10 cm side
- Locate the bottom of the door 2 cm from the bottom of the box

Tape the door edges so when it is closed
it keeps out ambient light and
is easier to open between samples



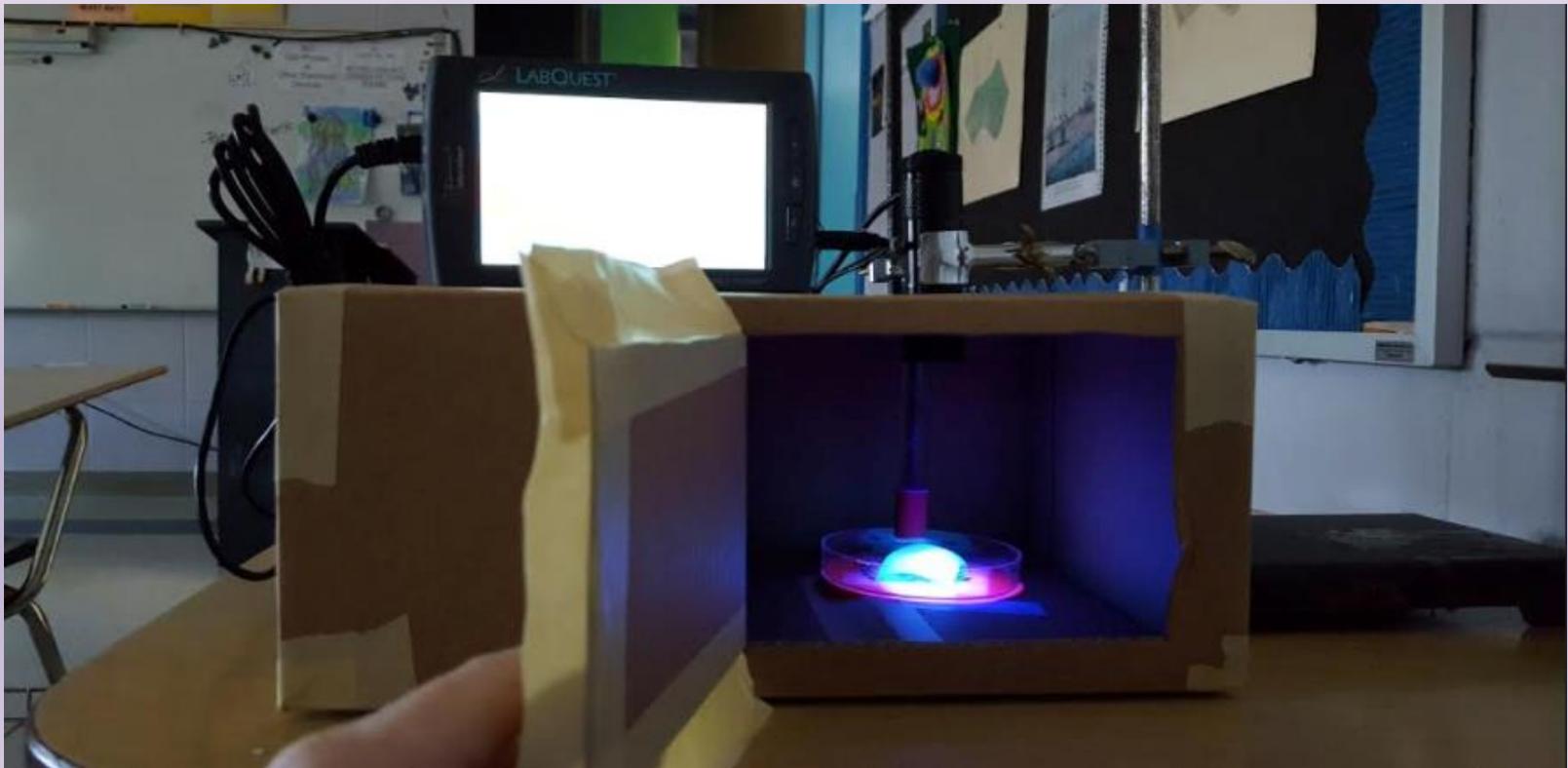
Open the door
and tape down the
top flaps on the
inside of the box



Under the UV light
and light probe
holes, tape down
the round petri
dish template to
help with sample
placement



- Use a ring stand and clamps to put the UV flashlight and light sensor probe into place
- Place the light probe close to the sample, yet far enough away so that petri dish samples can be exchanged without disturbing the light probe



~ the testing process~

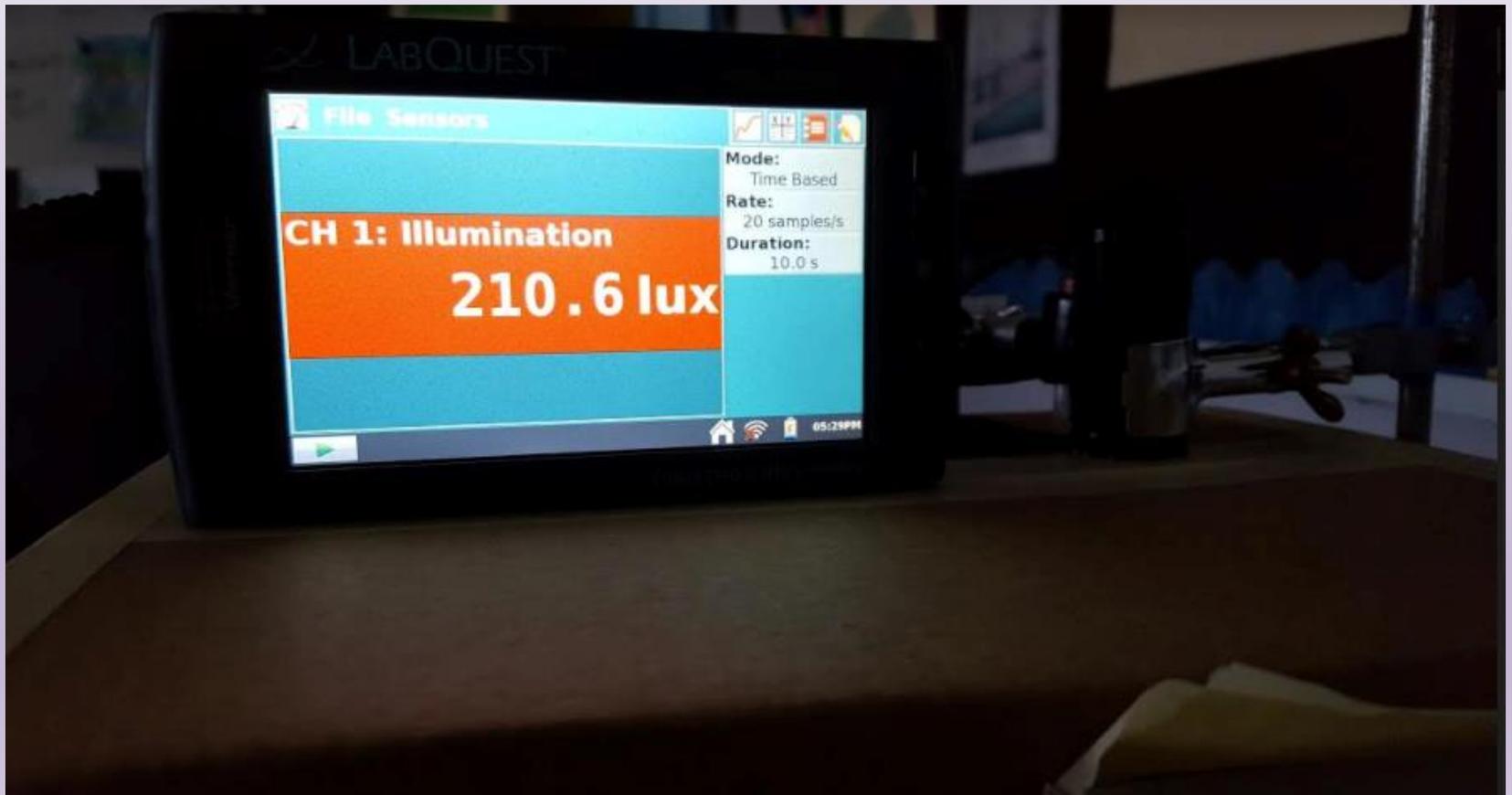
Quantitative Analysis Instructions

1. Turn on the LabQuest and light probe
2. Set a timer for 2 minutes
3. Put a testing sample in place in the testing apparatus
4. Close the door (to shut out ambient light)
5. Turn on the UV flashlight
6. After 2 minutes, turn off the UV light and *quickly* record the first 5 numbers from the light probe and LabQuest
7. Average the 5 readings to get 1 quantitative measurement of the bioplastic's phosphorescent glow

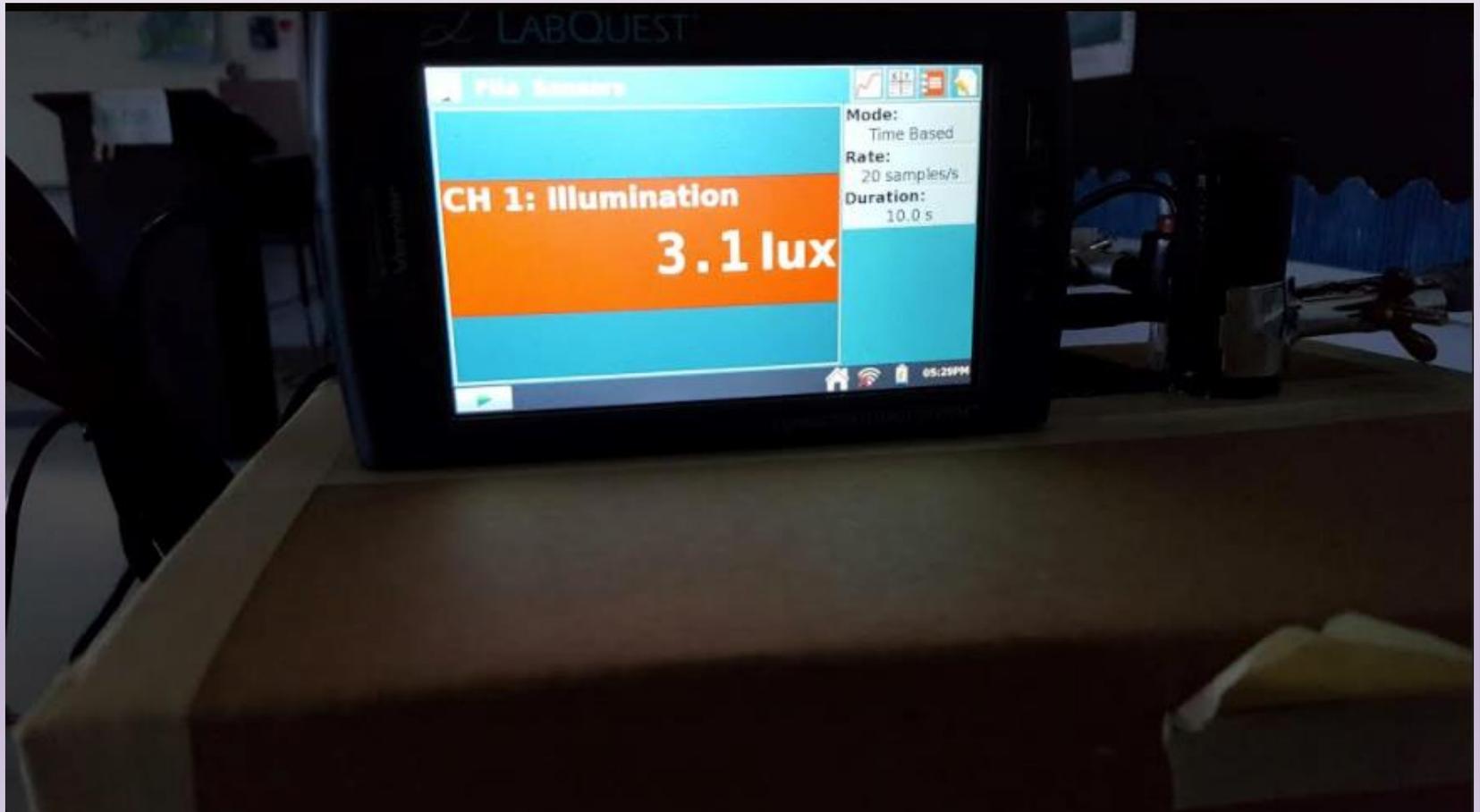
Lab Quest reading of UV flashlight



Lab Quest reading of UV flashlight



Lab Quest reading after
the UV light is turned OFF,
so the reading is the glow of the plastic



Reading while door is still closed

