

Albrecht Lab New Member Information

- Please label, with tape, a plastic box to store all of your worms in. This box can be stored in a drawer, also labeled with your name
 - Keep your worm plates and any other materials of yours (lab notebook, worm pick etc...)
 - If there are no empty drawers, drawers will have to be shared
- You will be provided with a notebook for your data. This notebook should be properly labeled and stored.
- A worm pick will be made for you with two parts: a glass Pasteur pipette and a small piece of platinum wire
 - There are pencil grips available to make the pick more comfortable
 - Picks DO break and it is ok if it does, just throw away the glass in the glass disposal container and most importantly **SAVE THE PLATINUM WIRE.** This part will be used again because it is expensive.
- In order to get comfortable with the lab and locations of supplies:
 - Take a walk around the lab and see the most things are labeled. If you need something that you do not see, just ask someone.
 - Make sure to take note of where the proper waste disposal containers are:
 - **Large Biohazard Bag:** Located under silver counter by the windows. Used to dispose of things such as gloves, old worm plates, and any other larger non-sharp biohazard materials. Red bag in a cardboard container.
 - **Small Biohazard Bags:** Located on top of benches all around the lab. Used to dispose of things such as small pipette tips, micro-centrifuge tubes and any other small, non-sharp biohazard material. Red colored.
 - **Biohazard sharps container:** Located at the end of the first bench space, close to the entrance of the lab. Used to throw away serological pipettes and other similar “sharp” biohazard materials. Red Colored.
 - **Small biohazard sharps container:** Located at the end of the bench space on the floor in the lab. Used to throw away things such as syringes, razor blades and any other biohazard sharps of similar size. Red colored.
 - **Broken Glass container:** Located at the end of the bench space away from the windows in the lab. Used to throw away broken glass such as pasture pipettes, broken containers etc. Cardboard, white and blue colored.
 - **Regular trash:** Located in various plates throughout the lab. For throwing anything non-sharp and non-biohazard. Looks like normal trash cans.
- Worm plates are located on the second bench space in the lab. These are the plates you will use to maintain your worm strains.
 - “Seeded” plates have food on them. This food is visible as a circle in the center of the plate. Worm food is a non-pathogenic *E. coli* strain called OP50.
 - “Unseeded” plates do not have food on them. These plates need to be seeded before normal use, unless no food is necessary (for example, for an experiment or a certain application).

- Lab rules are posted on the corkboard. Any questions, please do not hesitate to ask! A new WPI rule requires everyone wearing safety glasses at all times. Please take note! Lab access can be pulled without notice (and by external parties) if rules are not followed.
- **WORM MAINTENANCE (Adapted from www.wormbook.org)**
 - **HOW TO PASS WORMS:** Worms should be transferred using a stereomicroscope. There are 5 around the lab that can be used to transfer or pass worms. Worms can be passed using a worm pick or by chunking.
 - **To use the worm pick method:** Use the worm pick provided. The end of the pick has been flattened into a sort of spatula shape so it is flat and easier to pick up worms. First, take the end of the pick and flame it in a fire so that it is sterilized. The platinum wire will cool immediately as you take it out of the flame. Once the end is sterilized, you can go to the plate where the worms are, gently take the tip of the pick and swipe the worm to lift it up. Then place it onto the new plate by touching the surface of the agar and holding it there until the worm crawls off. You can also use a glob of OP50 bacteria to help the worm “stick” to the pick. Make sure to use sterile technique and keep the plates closed as much as possible to avoid contamination. Always flame the worm pick in between transfers. This method is the best way to be specific about which worms you want to transfer onto the new plate.
 - **To use the chunking method:** Use a metal spatula that is provided. Take one end of the spatula and dip it into ethanol. Then, run the ethanol soaked spatula through a flame to sterilize. The ethanol will light the spatula on fire, but the fire will go out once the alcohol is burned out. Take the sterilized spatula and literally cut a chunk of the agar out of the old plate. Place it worm side down onto the new plate. Flame the spatula in between each agar transfer in the same manner as described above. This method is good for a quick worm transfer, when you want a higher quantity of worms, and if you are transferring a worm population that is homozygous. Don’t use this method if the worms are heterozygous or not all worms carry the characteristics you are looking for.
 - **WHY AND WHEN TO PASS WORMS:** Worms need to be passed in order to keep the strain alive and healthy. Passing frequency depends on several factors including type of worm, temperature they are grown at and the purpose you are using them.
 - The most important and easy rule of thumb is that they should never run out of food. You should always transfer worms BEFORE the OP50 lawn is completely eaten up. You should check your worms every day, but you might find that they only need to be passed every 2 or 3 days. How much food is on the plate and how many worms on the plate play a huge factor.
 - Temperature affects how fast the worms grow. Worms grown at 15°C will grow slower than those kept at room temperature and will need to be passed less often. Worms kept at 25°C will grow faster than those kept at room temperature and will need to be passed more often. You can place your room at

one of these three temperatures (15°C, room temperature, or 25°C) depending on what you need for your experiment.

- Passing a group of worms every 1-2 days will allow you to have a healthy stock of worms at every stage of development. If you fail to pass your worms at a frequency where they have enough food, they will become starved. Starved worms are not good for experiments. They can be recovered, but will cause a huge gap in time that could be used for experiments. Try to avoid this.
- **LABELING YOUR PLATES:** Worm plates need to be labeled appropriately with several things. Plates should be labeled on the bottom and not on the cover. If the cover falls off, you will still know what exactly is on the plate.
 - Date
 - Worm strain
 - Initials
 - Any other important information (example: hermaphrodites only, or 15°C if you are growing them in a temp other than room temperature)
- **MAINTENANCE TIPS:** Here are some general tips that will help you in your worm maintenance skills
 - Always plan ahead for an experiment. For example, if you need worms to grow faster for an experiment, place them in 25°C. Or, if you need worms at an adult life stage for an experiment tomorrow, pick L4 worms today in advance so that they are at the right life stage.
 - Keep your plates covered as much as possible, as mentioned above to avoid contamination. Bacteria and fungus love to grow on the NGM worm plates just like the worms do, but having contaminated plates can mess up experiments.
 - If you have a stack of the same worms, label appropriately and use a rubber band to place them all together. Then you can manage several strains without them getting confused.
 - Try and store your plates in your box upside down. This will prevent them from drying out as quickly. You can also see your label easier.
 - If your worms become contaminated with bacteria or fungus, they can be bleached to be cleaned. See the bleaching protocol to do so.
- **FIRST STEPS IN GETTING COMFORTABLE IN THE LAB:**
 - **Practice your worm picking/passing.** This sounds easy, but actually takes a lot of time to master. For the first few days this will be your focus. You will know you are comfortable with worm picking when:
 - You don't puncture the agar of either the plate you are passing to or passing from
 - You can transfer the exact amount of worms you want without getting any extra
 - You don't accidentally kill any worms in transfer
 - You don't accidentally contaminate either the plate you are passing to or passing from

- **Identify both sexes and all life stages of the worm comfortably.** This will also take time. Use the reference pictures in the lab/provided to compare the worms on the plates. You can also try practicing picking a specific stage of worm to combine sex identification and worm passing. Here are some general tips:
 - Males are smaller than hermaphrodites when they are adults. They also occur in a very, very low frequency. Their tails are their easiest identifying features as they look like a spade rather than tapered like the hermaphrodites.
 - Hermaphrodites will be the primary sex you will see unless the strain is genetically modified to have more males. They are large with pointy, tapered tails and a visible vulva.
 - Eggs are the easiest to identify for obvious reasons. L1 is also easy because they are the smallest worms on the plate. Adults are the largest worms on the plate. L2-L3 are the most difficult to identify and are easiest to identify in comparison to other stages when visualized on the plate. Worms in the L4 and young adult stage should have the vulva visualized.
 - Everything comes with practice, so spend a lot of time on worm identification.
- **Get comfortable with any equipment you will be using.** Practice with the microscopes, behavior set-ups, devices etc. before you do an actual experiment. This will allow you to work out any problems you have before spending all the time to prep an experiment and then not actually be able to do one.
- **Read up on any background information pertaining to your experiments.** This is pretty self-explanatory, but there are always helpful papers and reviews that will assist you in designing your experiments or recreating something someone else has already done for preliminary data purposes.
- **Go to www.wormbook.org.** This website will tell you everything you need to know about *C. elegans* (if you are working with them). If you have a *C. elegans* question, this is also the resource to use.
- **Other resources:**
 - www.wormbase.org
 - <https://sites.google.com/site/dirkalbrechtphd/>
 - www.wormatlas.org
- **Lab Contact Information:**
 - Emergency information is listed by the phone in the lab but here is some important contact information:
 - Campus police **emergency**: 508-831-5555 **OR** just 5555 on a WPI phone
 - Campus police **non-emergency**: 508-8315433 **OR** just 5433 on a WPI phone
 - Laura Aurilio: 603-470-5166 (call or text) or laurilio@wpi.edu
 - Dr. Dirk Albrecht: dalbrecht@wpi.edu
 - Lab email alias: albrechtlab@wpi.edu