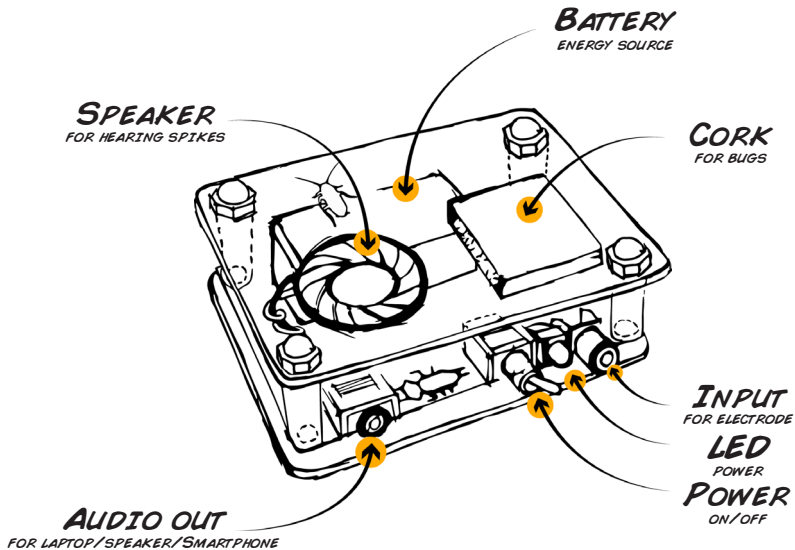


# WELCOME TO THE **NEURO**REVOLUTION!

CONGRATULATIONS! YOU ARE NOW A PROUD OWNER OF THE SPIKERBOX.

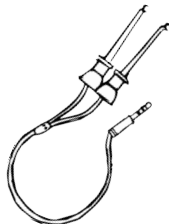


**LAPTOP CABLE**



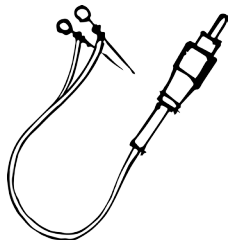
Use it to connect SpikerBox to your laptop.

**STIM CABLE**



Plug into your music player, place hooks on the cockroach leg electrodes and watch it dance!

**ELECTRODE**



Place pins into your insect to hear and record living neurons!

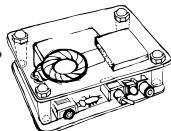
**SMARTPHONE CABLE**



Use it to record spikes on your smartphone.

**FLIP OVER TO GET STARTED WITH YOUR FIRST EXPERIMENT...**

# GETTING STARTED WITH YOUR



You just got an amazing device that can help you discover a whole new world inside of a living creature. The SpikerBox is a “bioamplifier” that allows you to hear and see spikes (i.e. action potentials) of real living neurons in invertebrates.

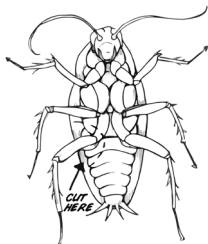
## LET'S GET STARTED!

This is a great introductory experiment to get you started with spikes! By the end of this experiment, you will understand what neurons are, how they communicate, and how to record spikes using a SpikerBox!

### PROCEDURES:



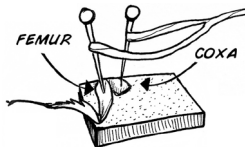
Anesthetize the Cockroach. Put it in a jar of ice water. Wait a few minutes until it stops moving.



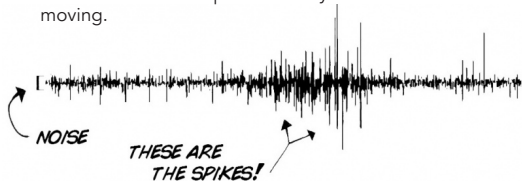
Neurosurgery! Remove the cockroach from ice, and cut off one of his legs near the body.



Place the leg on the cork of your SpikerBox, allowing a bit of the leg to overhang, like this.



And put the two electrodes in. It doesn't matter which pins are where.



Turn your SpikerBox on! If you hear a popcorn sound, congratulations, you have just heard the spikes from your first neurons! Now let's see what the electrical discharge looks like. Plug in the cable from the SpikerBox into your smartphone (green cable) or into the microphone input of your computer (blue cable). Turn on our free “Backyard Brains” app (Android or iPhone) or, if on a laptop, our Backyard Brains PC app or Audacity.

Using your smartphone, Zoom in with your fingers, the spikes will look like this:



This is due to ion channels opening and closing in the neurons, causing a spike, or Action Potential.

Note: You can also do this experiment on crickets if you do not have access to cockroaches! These can easily be found at pet stores or your backyard!



DOZEN OF OTHER EXPERIMENTS AT [BACKYARDBRAINS.COM](http://BACKYARDBRAINS.COM)