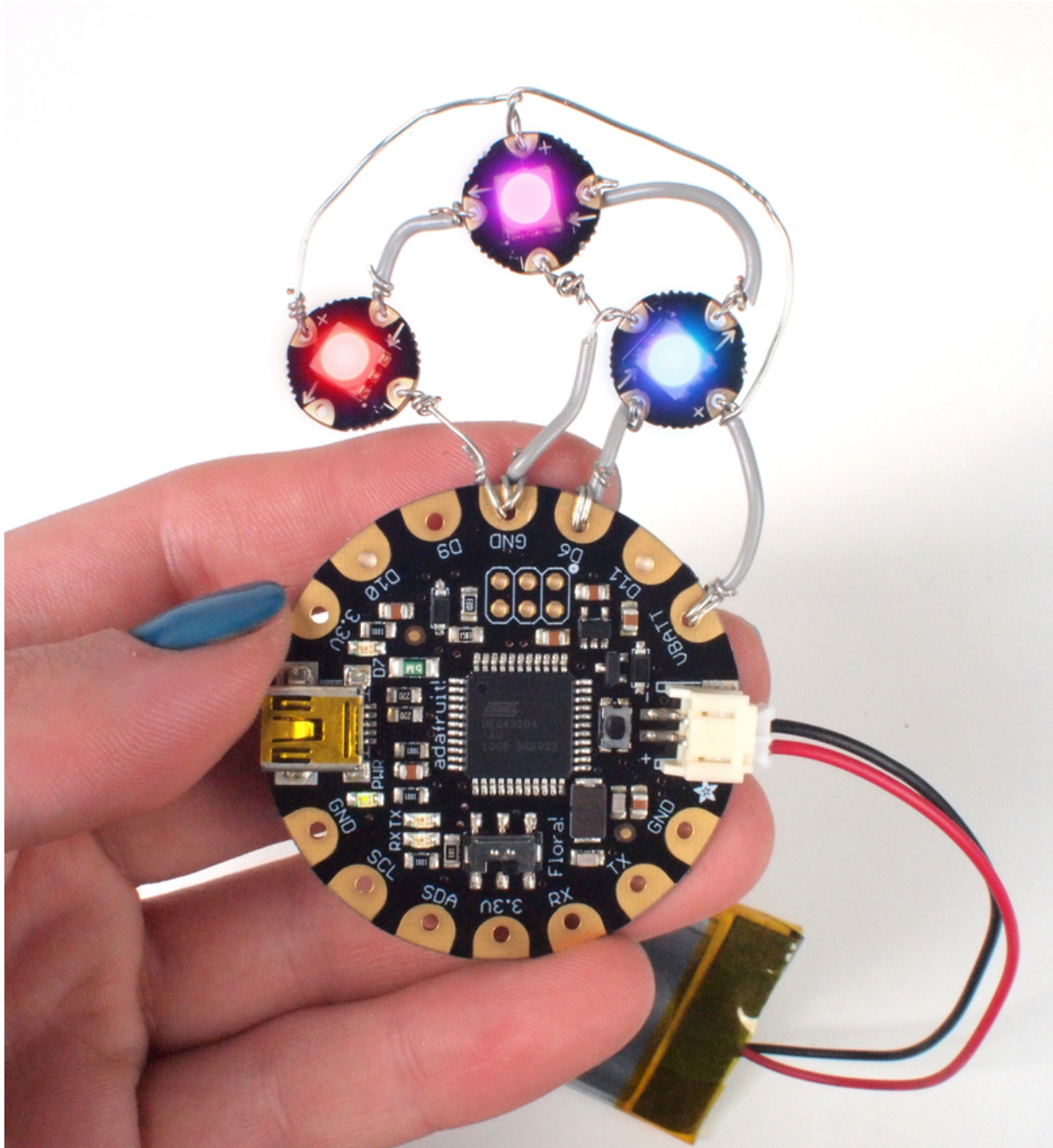




# FLORA Pixel Brooch

Created by Becky Stern



<https://learn.adafruit.com/flora-pixel-brooch>

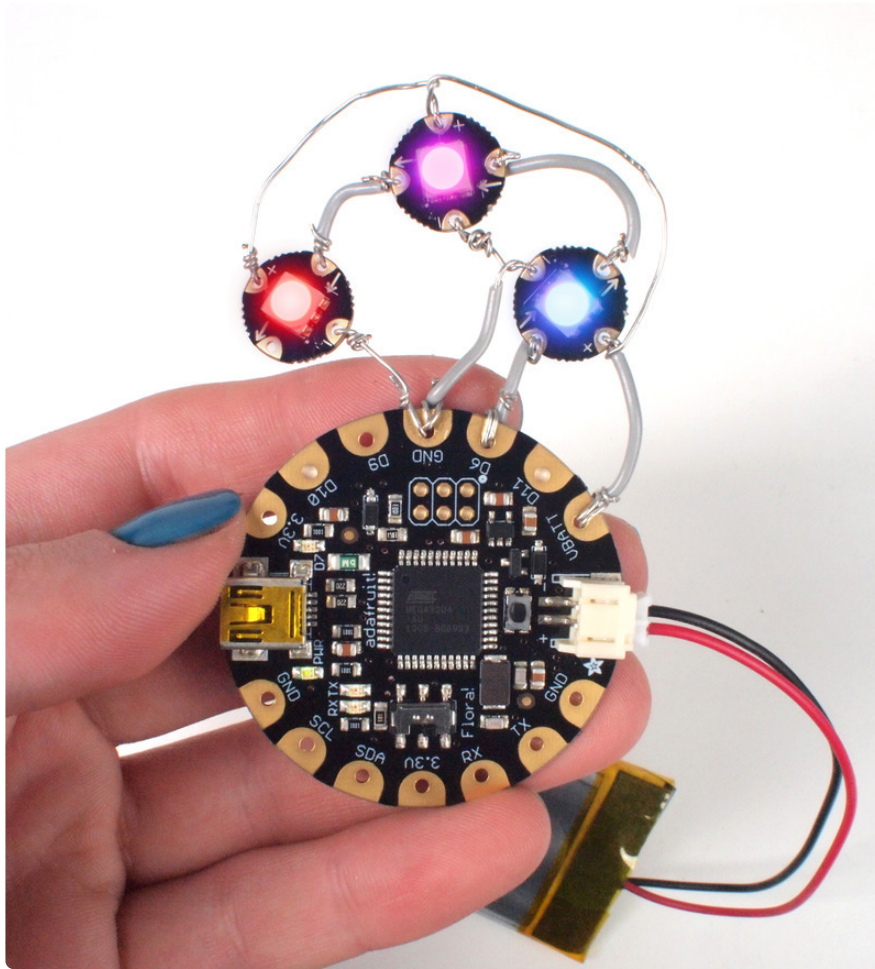
Last updated on 2024-06-03 01:13:19 PM EDT

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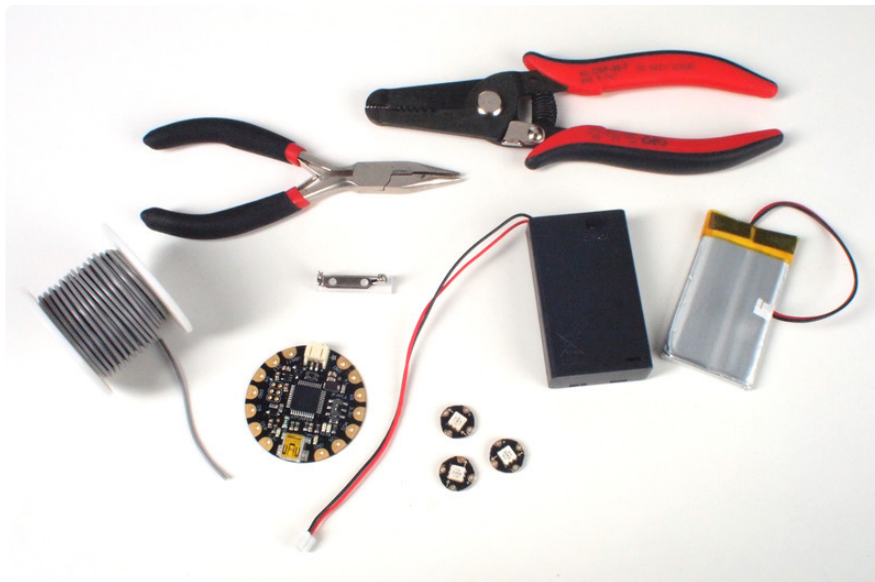
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# Overview

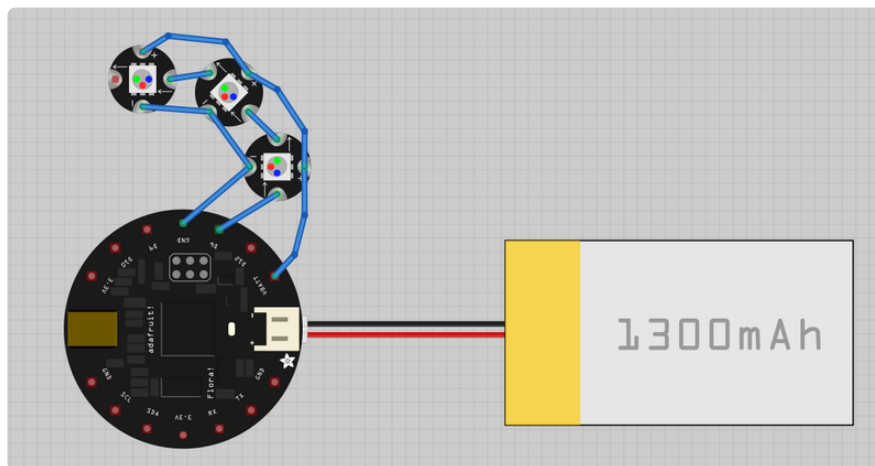


Make this color-changing LED brooch with FLORA! It's a quick project with no soldering, just free-hand wiring to make the connections. Use our sample code or change it up to display whatever colors or fading effects you like! If you're new to FLORA, check out [the Getting Started guide \(https://adafru.it/aSZ\)](https://adafru.it/aSZ) and the [FLORA FLORA RGB NeoPixels guide \(https://adafru.it/aRT\)](https://adafru.it/aRT) prior to beginning this project.



Gather materials and tools:

- [FLORA main board](http://adafru.it/659) (<http://adafru.it/659>)
- [FLORA RGB NeoPixels](http://adafru.it/1260) (<http://adafru.it/1260>) (any number you like)
- [solid-core hookup wire](http://adafru.it/290) (<http://adafru.it/290>)
- [3xAAA battery holder](http://adafru.it/727) (<http://adafru.it/727>) or [LiPoly battery](http://adafru.it/258) (<http://adafru.it/258>) (requires separate [charger](http://adafru.it/259) (<http://adafru.it/259>))
- [magnetic pinback](http://adafru.it/1170) (<http://adafru.it/1170>)
- [pliers](http://adafru.it/146) (<http://adafru.it/146>)
- [wire strippers](http://adafru.it/527) (<http://adafru.it/527>)



Here's a Fritzing diagram for the circuit we will build!

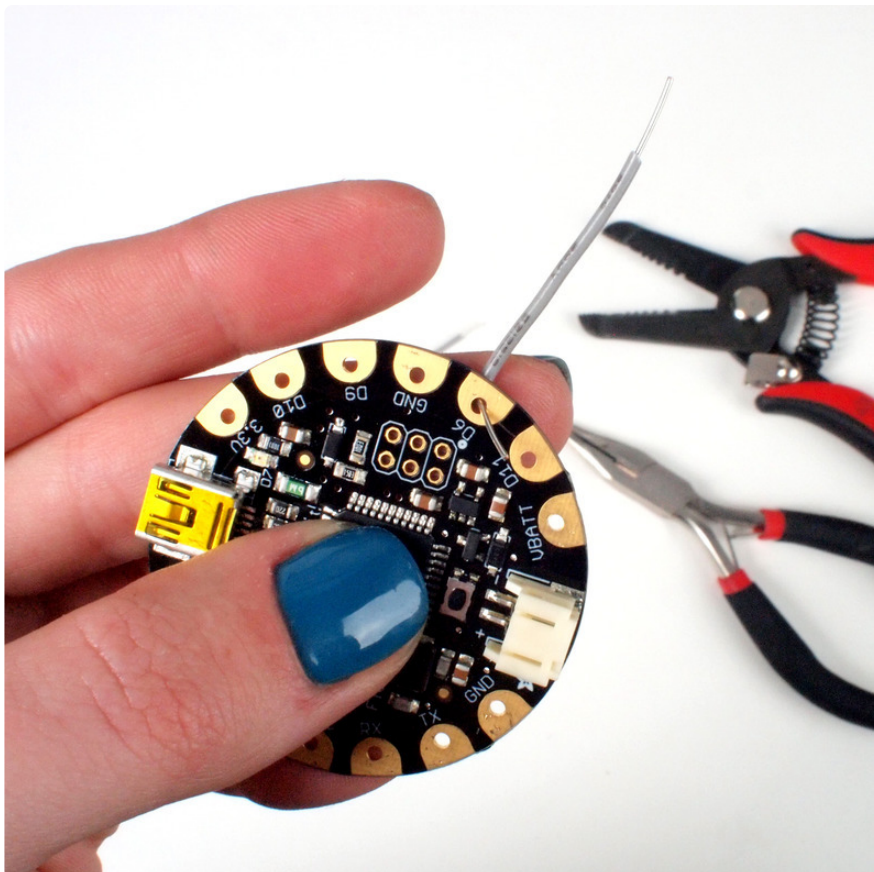


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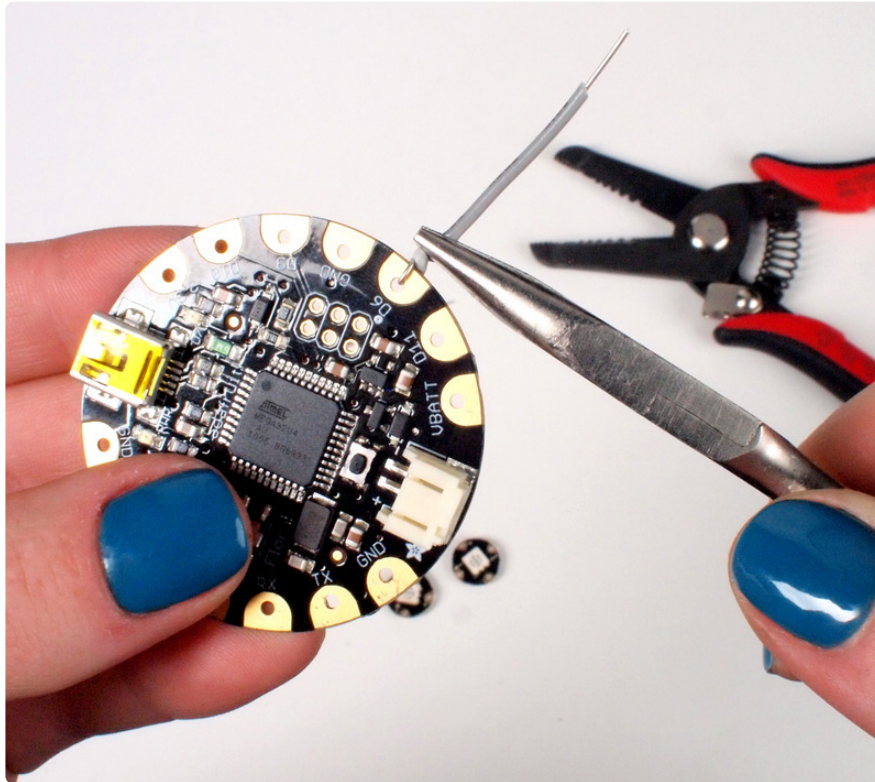
## Connect first signal wire



Cut a small piece of hookup wire and use wire strippers to remove about 1/2 inch of the plastic coating at one end.



feed the bare wire end through the hole marked D6 on your FLORA.



Wrap the wire around the edge of the board and around itself to secure the wire. Pinch the D6 pad with your pliers to be sure the wire is making good contact to the metal.

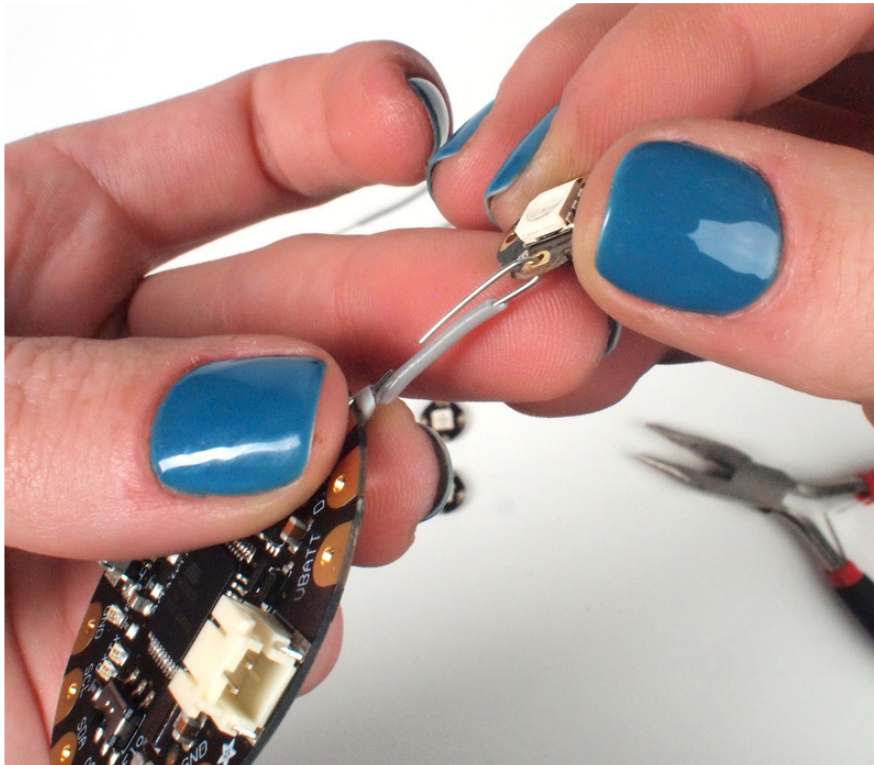




Strip off the shielding off the wire at the desired length.

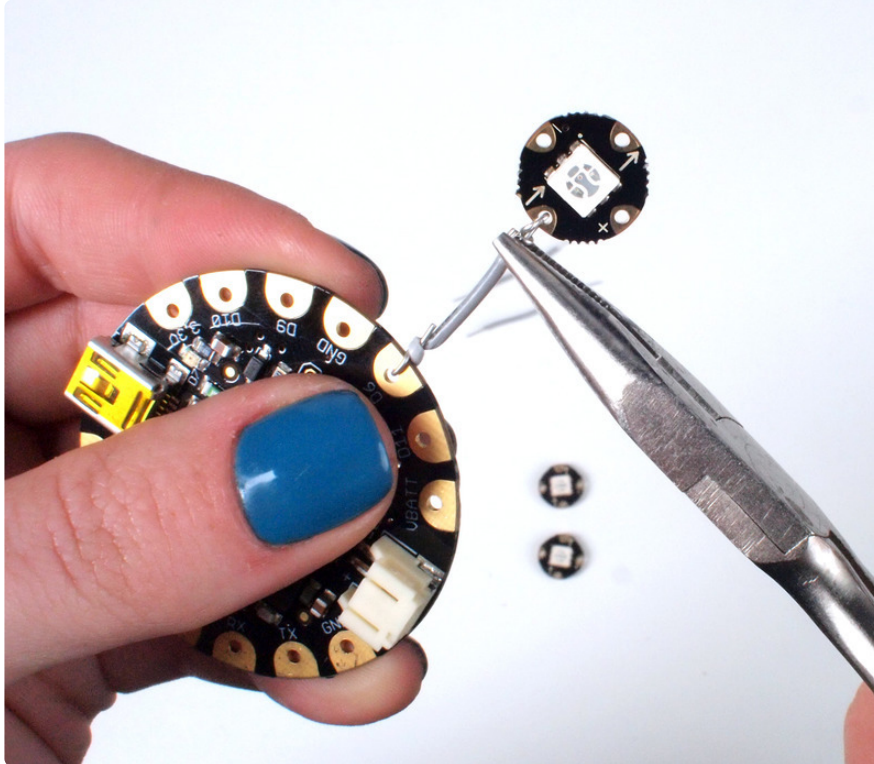


Slide the pixel onto this wire, using the hold next to the inward-pointing arrow.

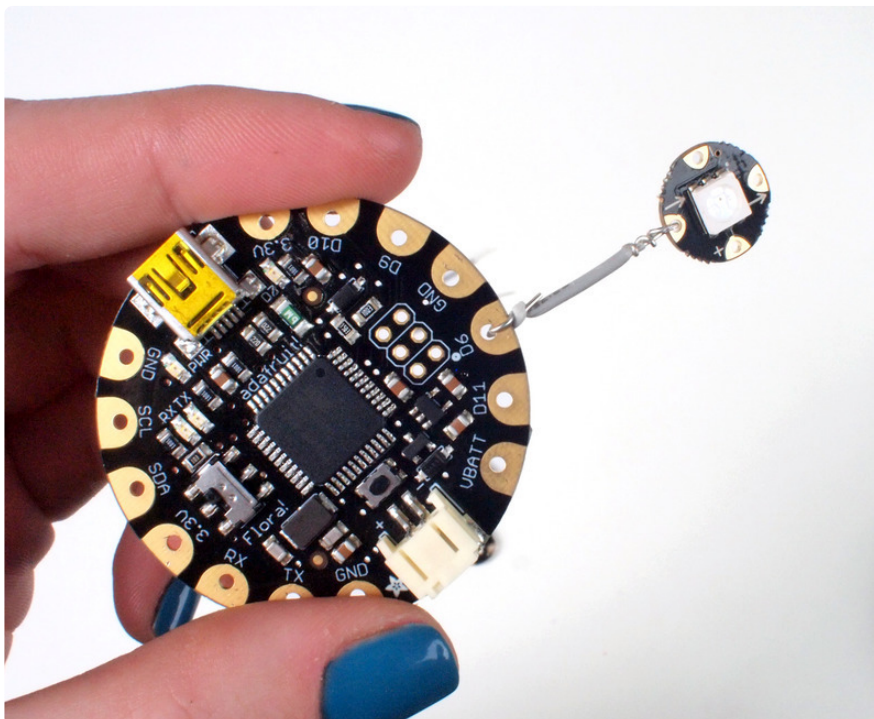




Fold the bare wire around the pixel board.



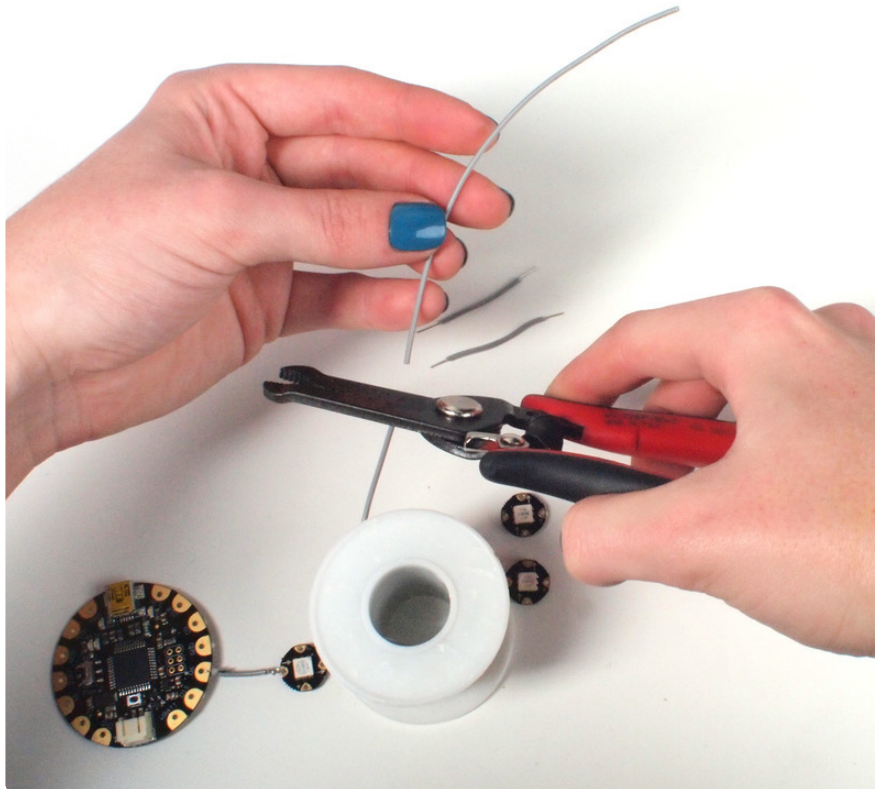
Like you did earlier, twist the wire around itself and crimp with your pliers to ensure a strong connection. The pixel should not wiggle.



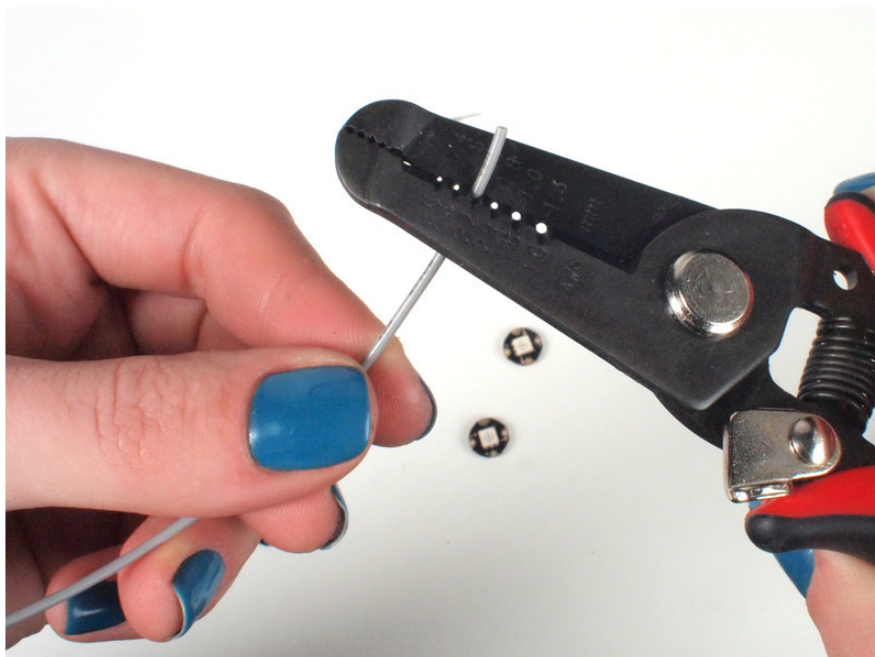
Done! Time to move on to the rest of the wiring...

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## Connect power and ground wires

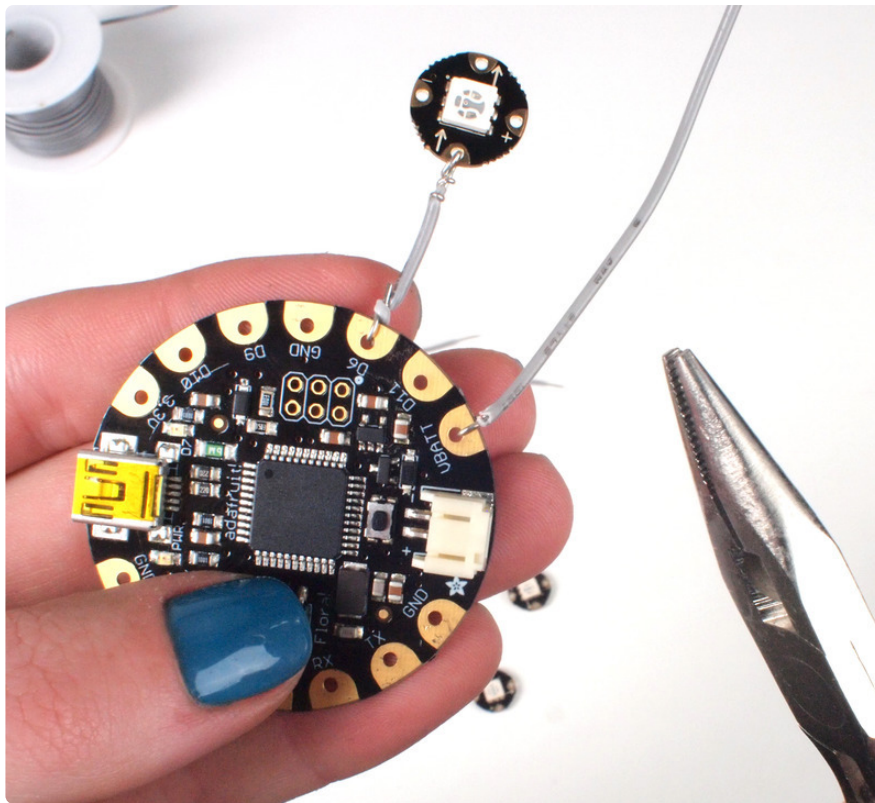


Cut a longer piece of wire-- about 6 inches. Remember: you can always make it shorter, but you can't make it longer!



Strip the end of the wire.





Attach this long wire to the FLORA pad marked VBATT in the same wrap-and-twist manner you used earlier.

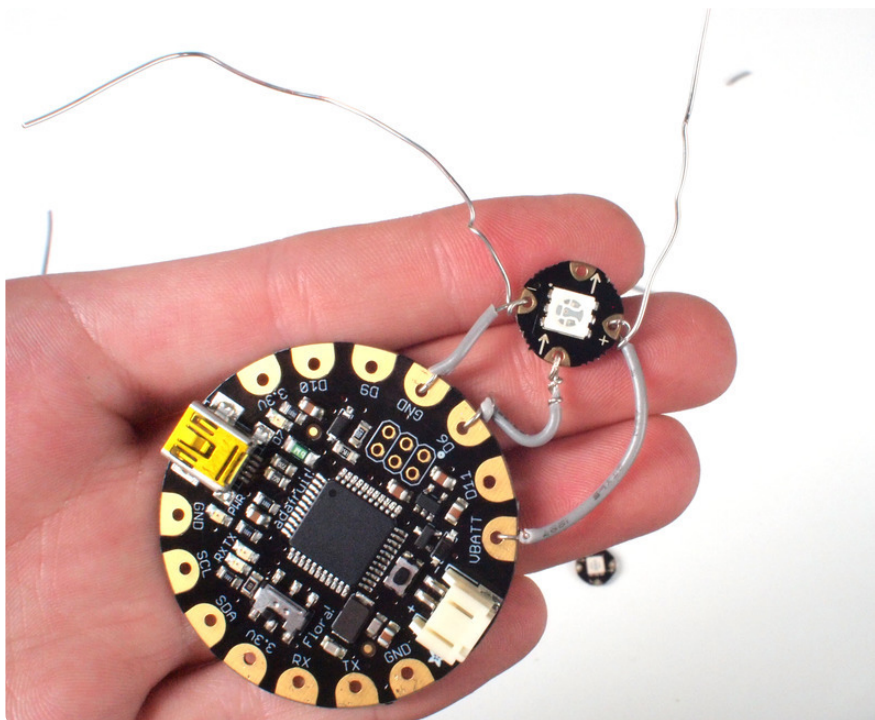


See where your power wire will meet up with the pixel pad marked +, and strip the casing off of the wire past this point.





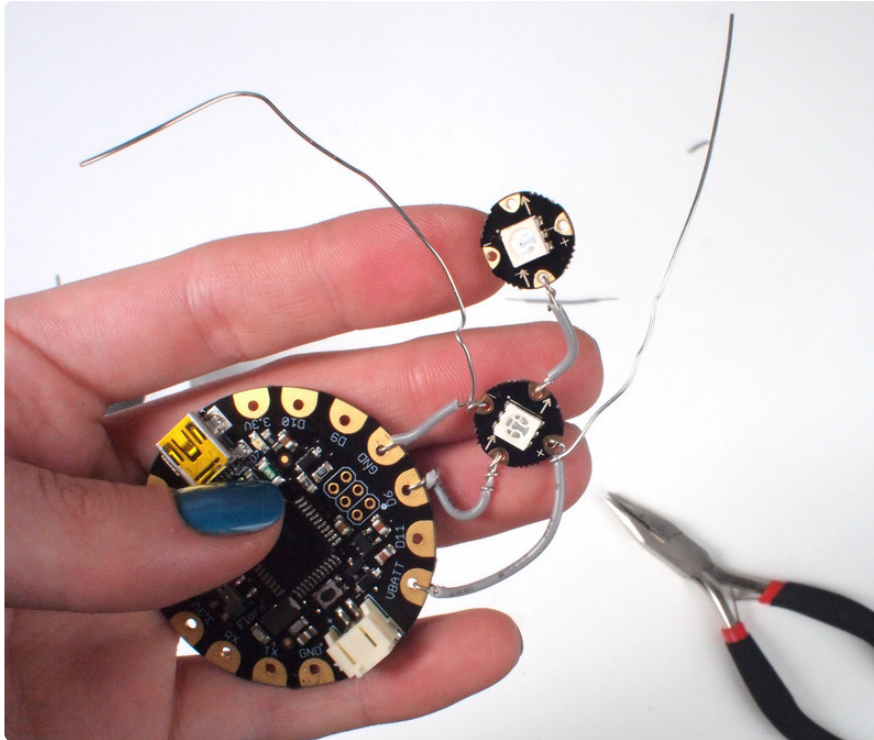
Thread the bare power wire through the pad marked +. Wrap it around the pad and crimp it to make a secure connection but **DO NOT CUT** the excess wire! You'll use it to chain to the next pixel's power pad.



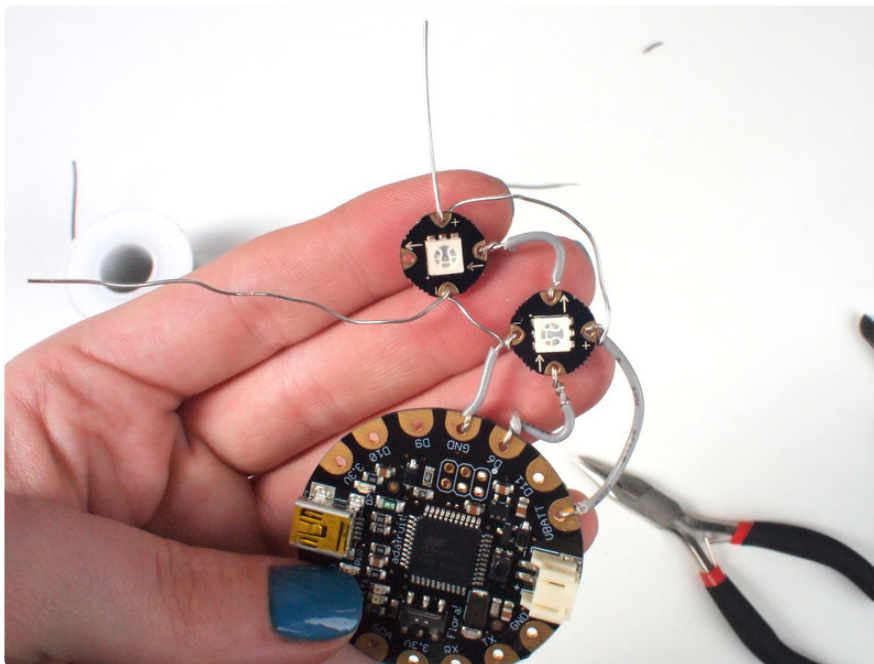
Repeat the above steps for the ground wire, connected to the FLORA pad marked GND. Remember to keep the excess wire to use for the next pixels! With three points of contact, the angle and direction of your pixel design will start to take shape. I chose to arrange my three pixels in a curve following the contour of the edge of the FLORA board, and so made the first power connection longer than ground. You can arrange your pixels in a straight line or however you like.

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## Add more pixels

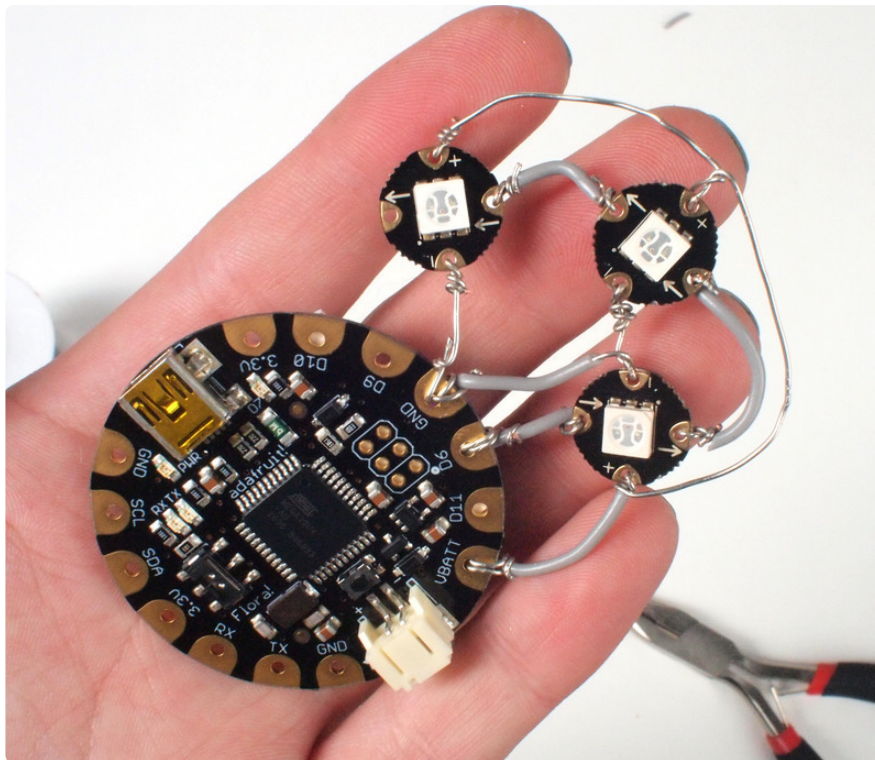


Chain another pixel to the first! Use another short wire to connect the pad on the first pixel marked with an outward-pointing arrow to the inward-pointing arrow on the second pixel with the same wire wrapping technique used throughout.

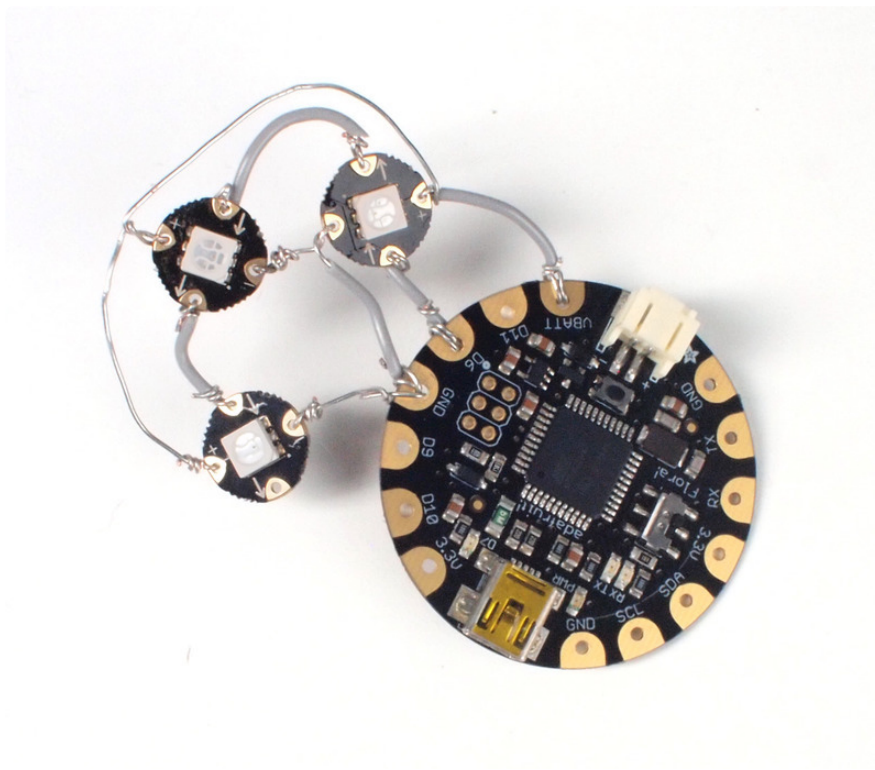


Connect the + and - pads on the second pixel with the power and ground wires trailing off of the first pixel.





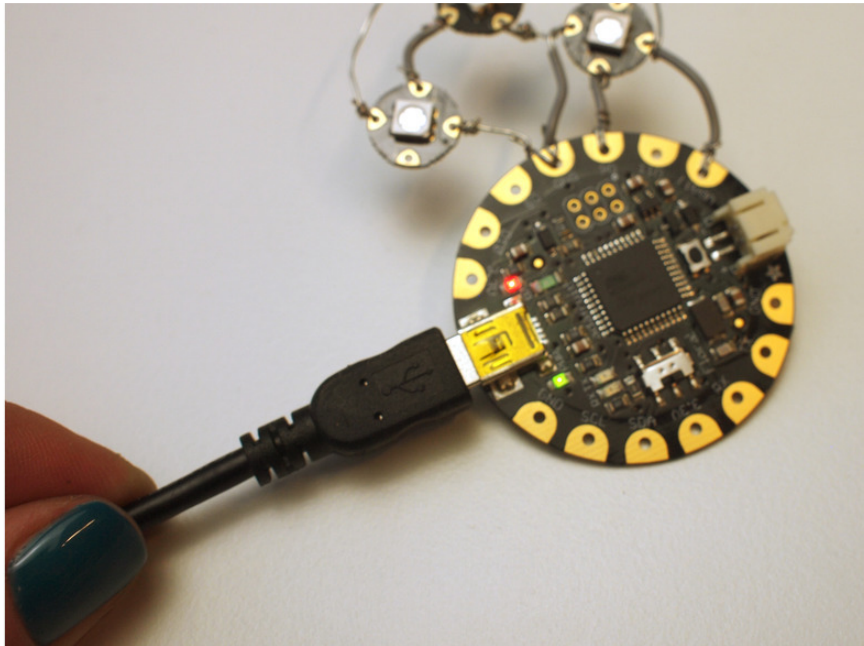
Add a third pixel in the same manner as the second. I connected the third pixel's ground (-) to the FLORA's GND pad to anchor the curved design, but it can also be connected to the second pixel's ground (-) pad.



You're done wiring! This is just one way to arrange the pixels. Make the design your own! You can use more or fewer pixels and have them arranged in any linear fashion you like.



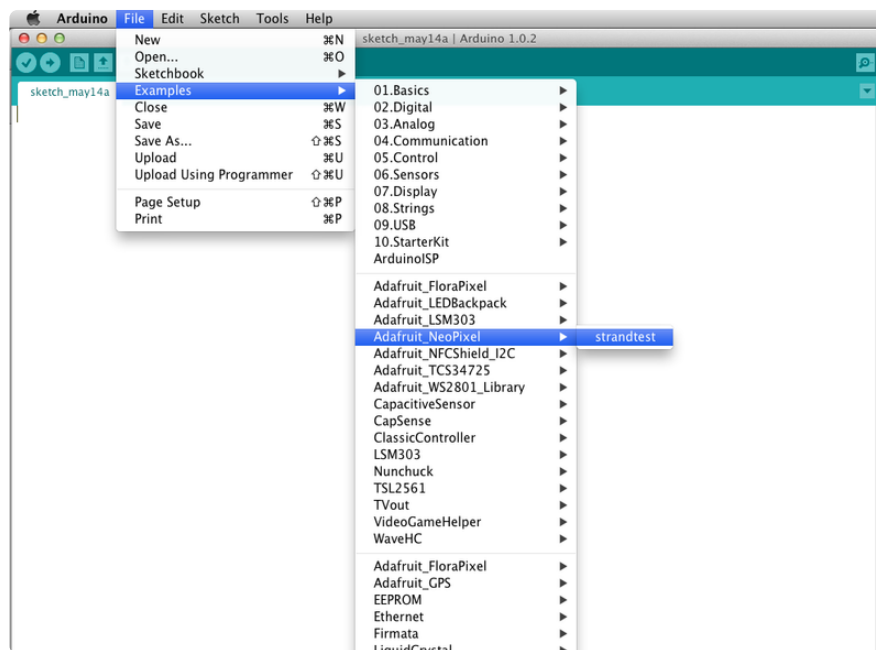
# Program

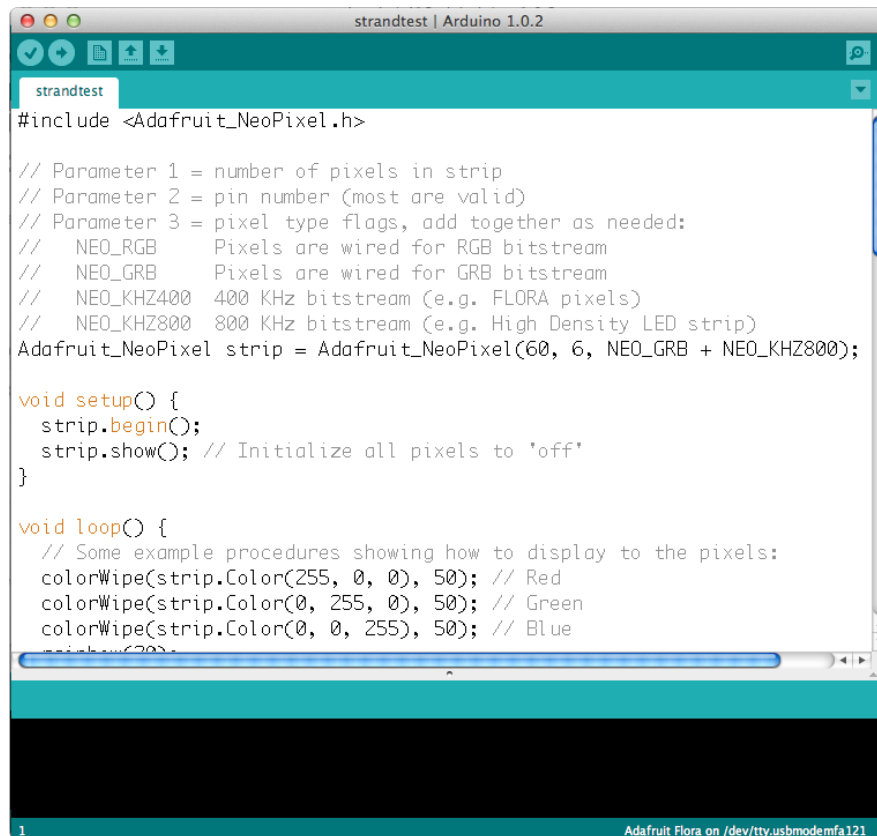


Connect the FLORA to your computer with a USB cable.

## For version 2 pixels:

Install the [NeoPixel library \(https://adafru.it/aZU\)](https://adafru.it/aZU) and go to File-->Examples-->Adafruit\_NeoPixel-->strandtest.





```
strandtest | Arduino 1.0.2

strandtest
#include <Adafruit_NeoPixel.h>

// Parameter 1 = number of pixels in strip
// Parameter 2 = pin number (most are valid)
// Parameter 3 = pixel type flags, add together as needed:
//   NEO_RGB      Pixels are wired for RGB bitstream
//   NEO_GRB      Pixels are wired for GRB bitstream
//   NEO_KHZ400   400 KHz bitstream (e.g. FLORA pixels)
//   NEO_KHZ800   800 KHz bitstream (e.g. High Density LED strip)
Adafruit_NeoPixel strip = Adafruit_NeoPixel(60, 6, NEO_GRB + NEO_KHZ800);

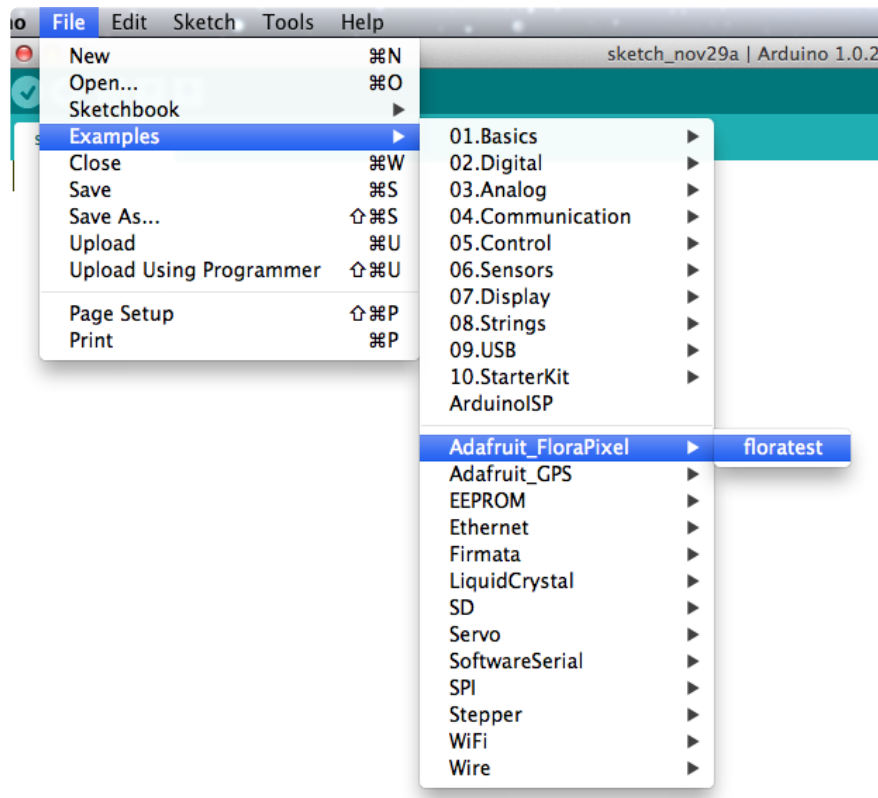
void setup() {
  strip.begin();
  strip.show(); // Initialize all pixels to 'off'
}

void loop() {
  // Some example procedures showing how to display to the pixels:
  colorWipe(strip.Color(255, 0, 0), 50); // Red
  colorWipe(strip.Color(0, 255, 0), 50); // Green
  colorWipe(strip.Color(0, 0, 255), 50); // Blue
  // ... (rest of the code is obscured by a scrollbar)
}
```

The example sketch is set for 60 pixels, so you can change "Adafruit\_NeoPixel(60...);" to "Adafruit\_NeoPixel(3...);" if you like, but it will still work just fine with the defaults. This sketch will animate through all colors and is a good test. Be sure this sketch lights up your pixels before making any modifications to the code.

## For version 1 pixels:

In the Adafruit IDE, open up the Smart Pixels sample code-- go to File-->Examples-->Adafruit\_FloraPixel-->floratest. Check out our "[Getting Started with Flora](https://adafru.it/aRM) (<https://adafru.it/aRM>)" tutorial for more info on the software.

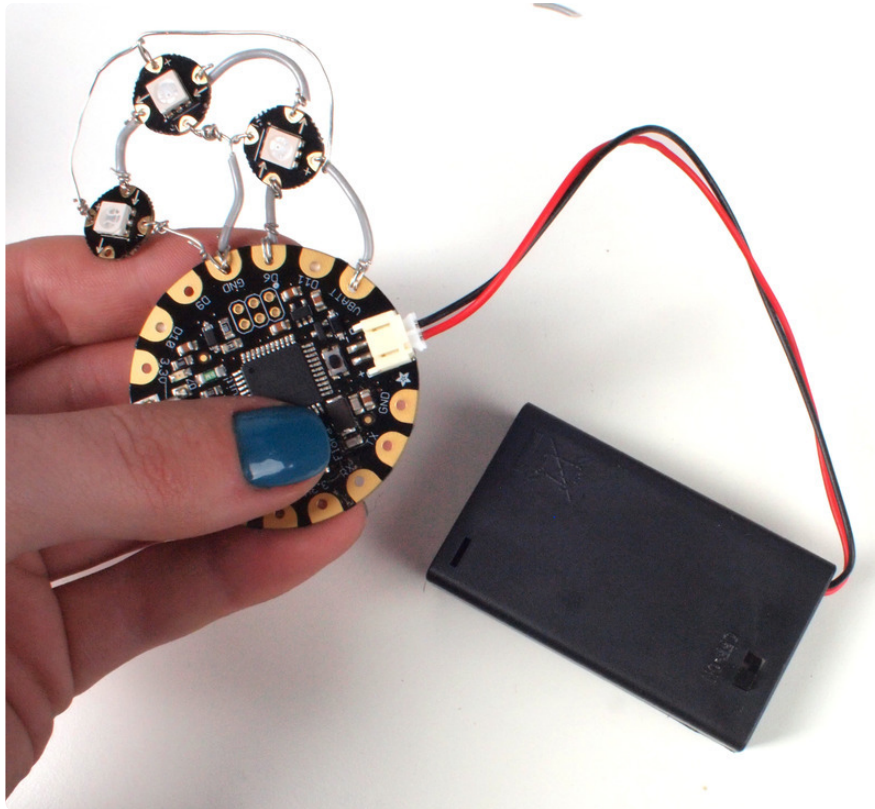


The example sketch is set for eight pixels, so you can change "Adafruit\_FloraPixel(8);" to "Adafruit\_FloraPixel(3);" if you like, but it will still work just fine with the defaults. This sketch will animate through all colors and is a good test. Be sure this sketch lights up your pixels before making any modifications to the code.

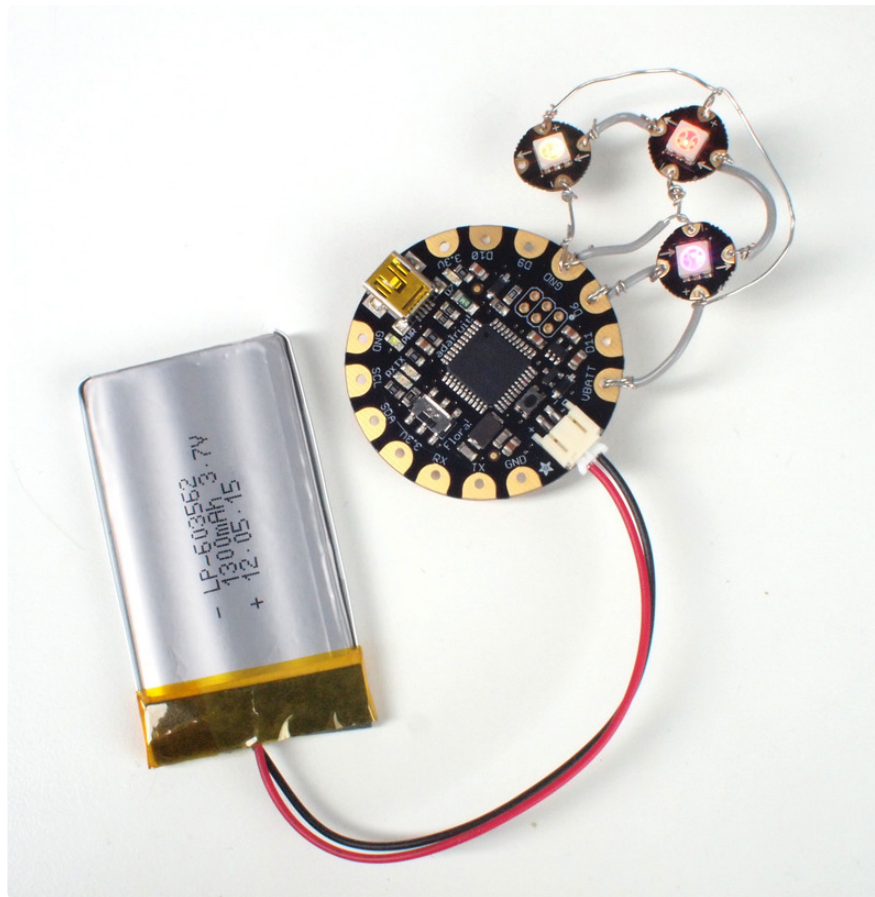


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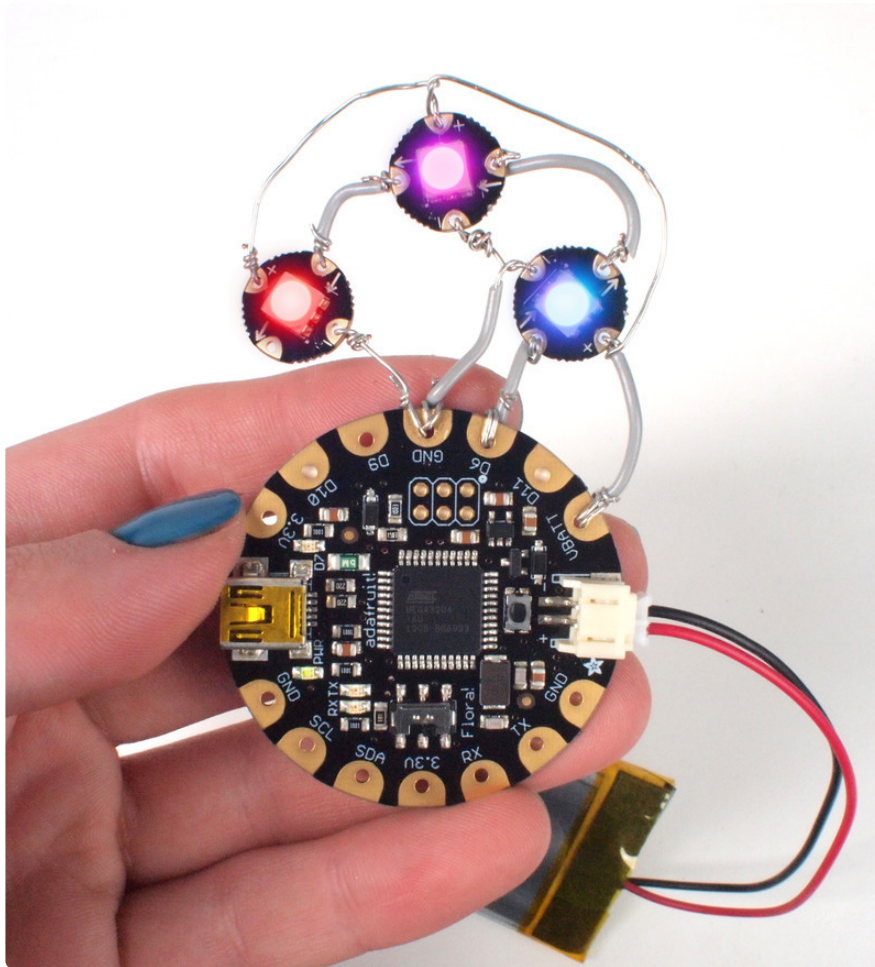
## Power it up



The easiest and safest way to power your FLORA brooch is with a 3xAAA battery holder.



You can also power your FLORA project with a rechargeable lithium polymer battery which is slimmer and can be taped to the back of the FLORA.



The new bootloader instantly runs your program when battery power is supplies, but earlier versions takes about eight seconds for the FLORA to "boot." You'll see the red onboard LED pulse during this time, then your pixels should light up. Oohh, blinky! If your pixels don't all light up, crimp your wire connections again to ensure they are making good contact.

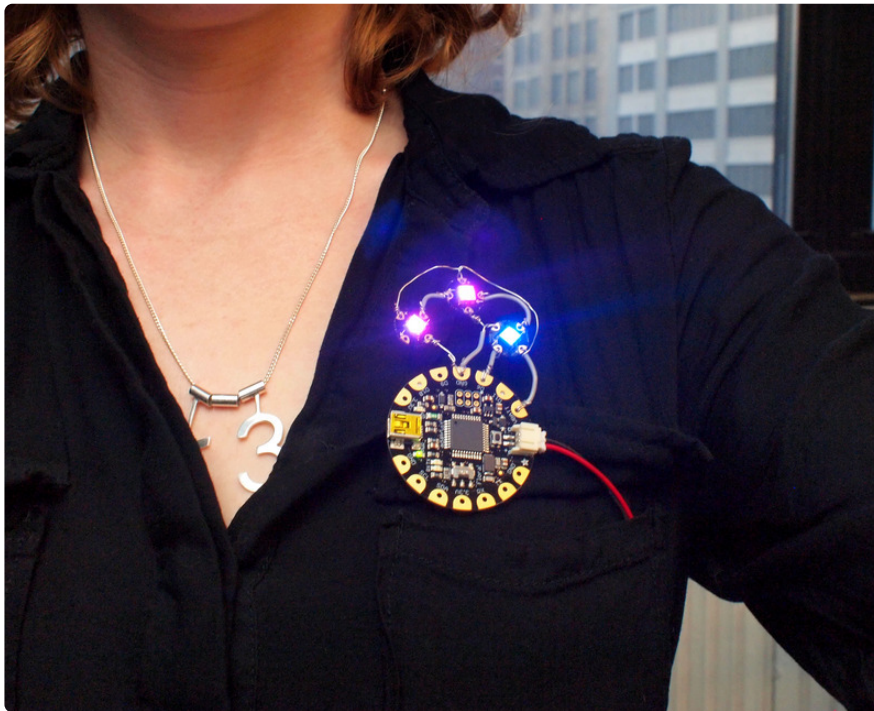


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## Wear your Pixel Brooch!



Affix an adhesive or magnetic pinback to your FLORA so you can wear it as a brooch!





Pin it on and tuck the battery in your pocket, or use double-stick tape to affix it to the back of FLORA.



Wear and enjoy!