Hi everyone.

Welcome to the first week in our series of classes.

In this tutorial, we're going to take a look at how you can use a flatbed scanner, believe it or not, to create some very fine images of three-dimensional objects, like microfluidic devices, Petri dishes, and other sorts of material you're creating or working with in the lab.

Now you might be wondering why we're starting this course with a tool that you probably wouldn't think of for creating really fine images of your work.

Well, we want you to experience the fun part of creating images at first, and frankly, we wanted you to start off with some easy stuff-- well, relatively easy-- and not having to worry too much about technical issues, which believe me, will come later.

That's a promise.

This course is meant to encourage you to capture your material in a number of ways.

And probably most important, to learn to see in the process.

So you're seeing, and will continue to see, all sorts of images that I made on the flatbed scanner with different approaches.

I'll go into detail for a few of them in all of these tutorials and we'll call them case studies.

You'll see things that will surprise you and you'll discover new perspectives, that is new points of view, which might lead to new thinking about your work.

Try out your ideas about imaging.

It won't take long.

That's the nice part about the flatbed scanner.

Some of your ideas will work, and some won't.

Believe me, a lot of them won't, from my personal experience.

And emphasizing what I said in the general overview, most of this is about experimenting, or in a way playing.

The process, I hope, will become an active discovery, as it did for me when I made these images.

You should think of this process in a similar way as you do with your own investigations.

So using the scanner can, if you choose, come close to imaging with a microscope, if you make sure you capture your image at a high enough resolution.

You can start zooming in to your image on your screen and see things that you could not see with your eyes.

And I'll show you that a little more later on.

One thing-- I wanted to let you know that I digitally cleaned some of these images so that your eye wouldn't be distracted with dust particles.

That's important for you to know.

The decision of whether to use a flatbed scanner is yours.

First think of the size of your device or material.

I'd say a safe bet is, if you're planning to see details from a few millimeters up to a few centimeters.

But as you'll see in a few moments, you'll be able to capture detail in the 30 to 50 micron range.

What you'll see and show in your image will depend on how you set the resolution in the scanner setting.

For the time being, just think about it this way-- the higher your DPI setting, that is dots per inch, the more information you're sending to the sensor.

The more information you're sending, the more detail you'll be seeing and capturing.

You'll find all about this in our HOW-TO-DO-IT tutorial.

Take a look at that after you've completed this week's tutorial.

You'll see how changing the DPI settings, as we are seeing here in these three images, will have a direct effect on capturing details.

Why use it instead of a camera?

Well first of all, you can very quickly make some very fine images without going to more complicated setup with your camera, as you'll see later in the next few weeks.

You can show evidence that you've made something or that you're observing something.

You might want to show a part of something larger, a small structure for example.

You'll be able to share some observations quickly with your colleagues.

You can consider it as a draft image that you will eventually use in a figure for a submission.

Perhaps you can even use the image as a patent submission.

That's something to think about.

The wonderful surprise here is that you can put a three-dimensional object on the scanner and create images that suggest their three-dimensionality.

Yes, you will lose depth of field, which we'll discuss in the next tutorial about cameras and lenses.

But still, eventually you'll create sometimes a knock-your-socksoff image.

Hopefully you're interested in that sort of thing.