Cancer Detectives | Students Ask Scientists

Transcript

[cyber beeping]

[cyber beeping]

- I was wondering what type of research do you exactly do at the lab?

- Melissa Skala: My lab is an imaging lab so we use light and microscopes to try to understand cells and diseases in humans. We like to do both biology and engineering. So, it's kind of a fun bridge between two disciplines.

- Amani Gillette: One of the main goals of this lab is to try and get a better understanding of how medicines help cancer. And so, part of that is getting samples, treating them with different medicines, and seeing what's working.

- What tools do you use to figure out if the cell has cancer?

- Amani Gillette: So, a simple microscope will help you, basically, make something small, bigger. Our microscope is set up attached to a laser that also allows us to look at the metabolism without having to add anything to a cell. It is really fun to use because you're looking at things in a way that you can't normally look at things.

- Tiffany Heaster: With the scope that we have, I mean, we can take movies of cells like moving over 24 hours and you know, we can just like kind of park, like at a particular place in our dish and then just monitor how it changes. So we, we watch how it grows, how it divides, like in real time, which is super cool.

- How do you get cancer cells out of the body and put them on a microscope?

- Dan Gil: So, we work with a lot of doctors, oncologists, and surgeons to get biopsies from patients' tumors. And they're kind of gross little chunks of tissue. It kind of looks like a slug. And you chop them up and then put them in a dish and grow them.

- Tongcheng Qian: When we get the tissue, it needs to be fresh and the cells still need to be alive. Otherwise, we cannot culture them anymore.

- How do cancer cells develop in the first place? Where do they come from and how do they start?

- Tiffany Heaster: So, cancer cells are actually come from just like your normal healthy cells that have mutated in some way.

- Melissa Skala: Every time your cells divide, you have trillions of cells in your body. They make mistakes every so often. And most of the time those mistakes are benign. So, they don't hurt you and they don't turn

into cancer. But probabilistically, every so often, one of those mistakes is a malignant mistake and it turns into cancer.

- When you're looking at the cells, what type of things do you look for and then do you also look for patterns or do you look for maybe other things?

- Dan Gil: This is a really great question. Um, so, yes, we're looking for similarities and patterns. Cells have their unique signatures and markers and we will oftentimes look at those signatures and markers to figure out how many different kinds of cells do we have in a dish.

- Amani Gillette: We all look for patterns. That is one of the big things about science is you're trying to find things that fall into pattern or that are outside of the pattern. So, the patterns I look for are the shape of cells, how big they are, how small they are. Are they super flat, are they really round? So, patterns like that help us figure out whether something is working or not or if something might be doing something we never expected.

- I want to become a biologist. How can I start learning now?

- Dan Gil: Being a biologist and being a scientist, in general, means being curious about everything. You can start on that anytime. And I'm guessing if you already think you want to be a biologist, you're, you already have a ton of curiosity.

- Amani Gillette: A lot of people don't know what science is really like for a long time because it's not an easy subject, you know. But one of the biggest takeaways I've learned from being in science is that we actually don't know that much. You think we know a lot, but the more you're in it, the more you realize we have no idea what's going on. And there's so many questions that are left to be answered and so, if you're someone who's curious and you don't know if you're interested in science, but you think you might be, start trying stuff out, start seeing if there's anything that piques your interest. Because my bet is that there's something out there that you've never thought about and no one else has either. So you can be the person to discover it.