Science in the Real World: A Biotech Startup Video Transcript

Aaron Oppenheimer:
My name is Aaron Oppenheimer. I'm an electrical engineer who cofounded a biotech startup. Daktari Diagnostics is a company that builds medical diagnostics for resource-poor parts of the world. About ten years ago, I went to Africa, which inspired me to help start this company. Our idea was to create a new medical device that could meet the needs of a pressing emergency, accurately and quickly diagnosing the health of people with HIV wherever they are.

This is the Daktari CD4 system. It's meant to do a count of a patient's CD4 cells in the field, so this can be used by someone with very little training anywhere and gives a result while the patient and the doctor are still in the room together. The immediate challenge of bringing a product like this to the market is how to communicate the vision to other people, and then how to work with others to make it happen.

Woman:
What are we up to today?

Woman:
So we're going to do a capture experiment. We made a change in the functionalization process...

Oppenheimer:
We can't accomplish this goal of building a portable device without literacy skills. There's actually literacy embedded in everything that we do. Vocabulary's important because we have people from many different backgrounds working on this project.

Woman:
All right, I'm getting ready to prime my card.

Oppenheimer:
We spend a whole lot of time talking to each other about, "This is the problem that I'm seeing, these are the issues that I'm dealing with."

Man:
You know, as I was putting the drops on the cards, I noticed they're really hydrophobic.

Oppenheimer:
If you can't communicate to me, then I can't really help you.

Man:
They're changing it right now, and the new one's going to have a lower autofluorescence.

Woman:
Okay, it's ready.

Oppenheimer:
Writing skills and especially speaking skills are important in our staff.

Woman:
Each field or each project starts developing its own lingo.

Can you double-check the weld around the dog leg to make sure that we don't have that same problem we had before?

Man:
Absolutely.

Woman:
Thanks.

Oppenheimer:
In addition to speaking skills, in science, we need to be able to read and analyze a lot of data -- not just numbers and words, but sometimes we're reading and interpreting an image of cells. That's also scientific literacy.

Man:
So here, you can see the CD4 cells captured. And this is great. We see a homogeneous distribution of the cells.

Woman:
We still see some here.

Woman:
Okay, so today, Ivan and I are going to talk to you about our results from some of our recent lyophilized antibody experiments.

Oppenheimer:
Then we have to explain our analysis to our colleagues. That starts with writing the explanation of your results and then sharing them with your team. Sometimes, we say that if you didn't present the data, then you didn't do the experiment.

Woman:
A couple purposes of this experiment… First of all, in general, we wanted to compare the capture.

Oppenheimer:
This experiment was looking at two different possible chemical signatures that could give us a reading from the cards that go in our device. And we were looking to see which chemical would give us the most accurate results.

Woman:
Now, there's higher platelets in the ELV test group compared to the LVLV, and we don't actually understand that yet, but it has been something that we've been observing.

Woman:
The importance of any presentation of your data is really just to be able to get a lot of feedback.

Woman:
Yeah, I think that we need to reevaluate our thresholds, because...

Woman:
You can look at your data, you can stare at it all day, and sometimes you just don't see something someone else can see.

Man:
I mean, another theory could be that the antibody becomes slightly more degraded...

Oppenheimer:
It's important that everybody sees the data, everybody understands why you're concluding what you're concluding, and everybody at least agree that the next steps are probably the right next steps. In addition to speaking with each other,

we also need to communicate our goals to the public. That means writing proposals, press releases, and corresponding with people we'll work with in the field. There's a direct impact that we have on people who are currently sick and can't get this test. I'm hopeful that we can bring our device to the people who need it. It has taken and will take a lot of people communicating with each other to make diagnosing the health of people with HIV in order to quickly to get them proper treatment a reality.