



# RESEARCH2REALITY

Shining a light on research & innovation.

## Fighting Disease With Paper Power

An interview with Professor Frédérique Deiss  
Diagnostic Chemist, University of Alberta

### How is paper used to diagnose disease?

The idea is to take a piece of paper that currently everybody is giving up on, because you have all your iPads and computers and such, but try to give it a new generation. So now by using paper, you can actually try to develop some tools, for example, to measure glucose by using a glucometer. Or in our case, we actually tried to grow cancer cells in a 3D environment by layering multiple sheets of paper. And so all these elements will just allow you to do some original research, but because you work on a low-cost paper, you can have it accessible in remote settings or in developing countries.

I use paper and tape to develop some tools to detect bacteria in milk or in food, water, that can actually be done in resource-limited settings. What really excites me is to be able to have built something, and to have a tool, to have something applied. I like to be able to have something concrete to show someone, to say hey, this is what I did today. I've mixed paper, I've mixed some chemicals, but now you have a platform that will allow you to detect *E. coli* in milk, so you will not get sick.

### What does the future look like for your research?

I do have really an orientation towards global health, towards analysis of food and water to make sure people don't get sick, as much as we can prevent it. It's one thing to do a diagnostic and to try to see if people are sick, how we can cure them, but I'm really interested in going to a preventive level. How can we actually prevent them to get sick? So one part is yes, to detect a pathogen or to take anything that can make people sick in the food. But another element is to actually make sure that they have like a good level of iron, that they have all the vitamins they need, and so to really have a preventive aspect. And I think this is the future. It's not anymore to cure, but it's actually to prevent diseases to happen altogether