Speaker 1 ([00:03](https://www.temi.com/editor/t/qZvbTTH8rH1ufja2-Tu-Q58RQJGaRKZDdjWDteRhM9abJ87Y61oJGgTuzhb5-npTHfQGHV6NsuO4Mz7NbOGuNVRlO94?loadFrom=DocumentDeeplink&ts=3.5)):

The Missouri state journal, a weekly program, keeping you in touch with Missouri state university.

Nicki Donnelson ([00:09](https://www.temi.com/editor/t/qZvbTTH8rH1ufja2-Tu-Q58RQJGaRKZDdjWDteRhM9abJ87Y61oJGgTuzhb5-npTHfQGHV6NsuO4Mz7NbOGuNVRlO94?loadFrom=DocumentDeeplink&ts=9.98)):

We all know we need to drink lots of water to stay hydrated and feel well. Therefore we need our water sources to be dependable and clean, right? That's why the center biomedical and life sciences in the center for applied science and engineering at the Jordan valley innovation center are working on a collaborative research project involving water sensors. I'm Nicki Donnelson. Today I'm joined by Dr. Paul Durham and Sarah Woodman of CBLS.

New Speaker ([00:38](https://www.temi.com/editor/t/qZvbTTH8rH1ufja2-Tu-Q58RQJGaRKZDdjWDteRhM9abJ87Y61oJGgTuzhb5-npTHfQGHV6NsuO4Mz7NbOGuNVRlO94?loadFrom=DocumentDeeplink&ts=38.04)):

Water sensors are developed to go into ponds rivers, LA lakes and drinking water sources to detect metals and other contaminants. Woodman explains the lab's research of these sensors.

Sarah Woodman ([00:50](https://www.temi.com/editor/t/qZvbTTH8rH1ufja2-Tu-Q58RQJGaRKZDdjWDteRhM9abJ87Y61oJGgTuzhb5-npTHfQGHV6NsuO4Mz7NbOGuNVRlO94?loadFrom=DocumentDeeplink&ts=50.76)):

One of the main concerns, especially in more natural water sources is that there are different kinds of bacteria, different kinds of algae present in the water that can start to grow on the sensors and they can create what we call bio fouling. So they can create basically a layer surrounding this sensor that would prevent it from actually being able to properly detect the types of compounds that it's supposed to detect. So we are tech, we're collecting various different water sources. So tap water, well water pond, water, river water. And we are taking some of the materials that these sensors would be made of and putting them in these water sources long term to simulate what it would be like if you had a sensor in a pond or some sort of natural body of water. And then over time, we are looking and seeing what's actually growing on these sensors and what can we do to prevent this growth so that these sensors will actually continue to function long term. And how long can these sensors be reliably used? Can it be a month? Is it six months? Is it several years? And so we're doing some shorter term and also some longer term studies on really what the effects are on these sensors and what we can do to prevent malfunctioning of these sensors due to growth.

Nicki Donnelson ([02:12](https://www.temi.com/editor/t/qZvbTTH8rH1ufja2-Tu-Q58RQJGaRKZDdjWDteRhM9abJ87Y61oJGgTuzhb5-npTHfQGHV6NsuO4Mz7NbOGuNVRlO94?loadFrom=DocumentDeeplink&ts=132.6)):

Before beginning the project, they looked into what research had been done on bio fouling. They found that there had been quite a bit done on the Marine vessel side, but very little in freshwater environment. Durham explains more.

Dr. Paul Durham ([02:27](https://www.temi.com/editor/t/qZvbTTH8rH1ufja2-Tu-Q58RQJGaRKZDdjWDteRhM9abJ87Y61oJGgTuzhb5-npTHfQGHV6NsuO4Mz7NbOGuNVRlO94?loadFrom=DocumentDeeplink&ts=147.55)):

So it's really kind of novel research looking at like, what are the different organisms that can actually stick, you know, and adhere to this? The important question is, is whether or not they're gonna actually adhere with the functioning of that device, cuz ultimately what they want to do is build up a sensor profile, right? That would actually like a network of these that can actually sense all the different types of metals. And then you really have an idea and an assessment of like the water quality. And if there's changes in the water quality to alert, you know, uh, people to actually maybe, you know, maybe stop drinking the water or you know, things that we have to do to change.

Nicki Donnelson ([03:01](https://www.temi.com/editor/t/qZvbTTH8rH1ufja2-Tu-Q58RQJGaRKZDdjWDteRhM9abJ87Y61oJGgTuzhb5-npTHfQGHV6NsuO4Mz7NbOGuNVRlO94?loadFrom=DocumentDeeplink&ts=181)):

Although the water sensor project is ongoing, Durham says the preliminary findings are revealing some unexpected differences.

Dr. Paul Durham ([03:09](https://www.temi.com/editor/t/qZvbTTH8rH1ufja2-Tu-Q58RQJGaRKZDdjWDteRhM9abJ87Y61oJGgTuzhb5-npTHfQGHV6NsuO4Mz7NbOGuNVRlO94?loadFrom=DocumentDeeplink&ts=189.31)):

What we're seeing between pond and river and well water, well, water actually is fairly clean. I mean, there's not as many microorganisms and stuff that are sticking on the substrates and such, but the pond is definitely probably the worst. And the other thing that we did that, which was kind of novel is we just, we took actually water during the different times of the year. So like you can imagine that like the pond water in April is not the same pond water in August, you know, during the dog days. And the rivers seemed to be a little bit more consistent maybe, but it also have temperature changes, right? So we're, we're also simulating those types of environmental things within our system as well. And we're seeing clear differences. What's been really, really nice is that they've actually done some encapsulation. So they've actually done some coding of some of the substrates already and actually shown that that actually reduces the bio following. So we're moving fairly it quickly. I think to identifying what kind of substrates are gonna be better in the, you know, for future design. Um, so this is really at some of the most basic science level

Nicki Donnelson ([04:09](https://www.temi.com/editor/t/qZvbTTH8rH1ufja2-Tu-Q58RQJGaRKZDdjWDteRhM9abJ87Y61oJGgTuzhb5-npTHfQGHV6NsuO4Mz7NbOGuNVRlO94?loadFrom=DocumentDeeplink&ts=249.9)):

While this research project strays from some of the ongoing pain research Durham directs in his lab, he is glad to be working alongside the scientists, a case to find optimal conditions, to keep the sensors in prime working order.

Dr. Paul Durham ([04:24](https://www.temi.com/editor/t/qZvbTTH8rH1ufja2-Tu-Q58RQJGaRKZDdjWDteRhM9abJ87Y61oJGgTuzhb5-npTHfQGHV6NsuO4Mz7NbOGuNVRlO94?loadFrom=DocumentDeeplink&ts=264.86)):

So we need to come in as biologists and say, okay, what are the things that are actually going to adhere? And can we actually reduce that? Um, and then design, you know, a strategy to actually minimize bio following. So the sensors can stay in the water longer and actually do their job.

Nicki Donnelson ([04:39](https://www.temi.com/editor/t/qZvbTTH8rH1ufja2-Tu-Q58RQJGaRKZDdjWDteRhM9abJ87Y61oJGgTuzhb5-npTHfQGHV6NsuO4Mz7NbOGuNVRlO94?loadFrom=DocumentDeeplink&ts=279.91)):

That was Dr or Paul Durham and Sarah Woodman. I'm Nicki Donnelson for the Missouri state journal

Speaker 1 ([04:46](https://www.temi.com/editor/t/qZvbTTH8rH1ufja2-Tu-Q58RQJGaRKZDdjWDteRhM9abJ87Y61oJGgTuzhb5-npTHfQGHV6NsuO4Mz7NbOGuNVRlO94?loadFrom=DocumentDeeplink&ts=286.81)):

For more information contact the office of strategic communication at 4 1 7 8 3 6 6 3 9 7. The Missouri state journal is available online@ksmu.org.