



Mayo Clinic is building an early warning system for airborne viruses, bacteria, fungi and allergens

VIDEO	AUDIO
Connie Chang, Ph.D. Physiology and Biomedical Engineering Mayo Clinic	"Hi, I'm Connie Chang. Welcome to my laboratory. Let me show you around."
	"So here, we do a lot of work with microfluidics, which are tiny chips that fit in the palm of your hand. Here's an example of a microfluidic chip, right here, that we've engineered."
	"We don't know what's in the air, and we can't see any of these particles, and therefore, if we can actually collect them and detect what's in them, we can alert, and we can protect people who might be in that particular space."
	"In indoor air, there can be so many different pathogens. So there can be viruses, there can be bacteria, there can be allergens, there can be mold. We can't see it, and so we're building a biosensor that can detect, say, up to 100 different of these various species."
	"I work on what's called microfluidic devices, and they are tiny chips. They have small, tiny channels on the chip that allow fluids to flow through in these microscale channels."
	"We are building a biosensor, which will collect small, tiny droplets of aerosols in the air, collect those into a tiny drop that we then feed into our microfluidic system, which will then partition all that aerosol into thousands of different drops."
	"We can also detect nucleic acids, so say from viruses, and we can within those drops put in kind of a bright fluorescent marker, so that the drops are either bright or dark, depending on whether or not they have a virus inside of them."

	“So the biosensor will be continuously sampling the air; however, it will probably give you a readout or a result every 45 minutes.”
	“The idea is to put these biosensors, they can be in the hospital, but they can also be in schools or daycares or any sort of indoor environment. And the idea is, yes, it would potentially, it would detect whatever is in the air and then sound an alarm or, say, notify a building manager ... if a new virus outbreak would occur, as long as we knew the gene sequence of the virus, we could very rapidly adapt our system to detect for that virus.”
	“I think the rapid response would be incredible. So knowing results right then and there, and especially if some pathogens that are highly transmissible, I think it could really decrease the amount of people getting sick within these spaces.”