Speaker 1 ([00:00](https://www.temi.com/editor/t/KGGED8owaRs-jxxogeGwNBsJ0BF_52lV9r-DOUog2KWWVBjB0tKAnXpr_jD6mTNmw024emxKPcnaKl8g562AI0TrFLg?loadFrom=DocumentDeeplink&ts=0.66)):

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

Nicki Donnelson ([00:07](https://www.temi.com/editor/t/KGGED8owaRs-jxxogeGwNBsJ0BF_52lV9r-DOUog2KWWVBjB0tKAnXpr_jD6mTNmw024emxKPcnaKl8g562AI0TrFLg?loadFrom=DocumentDeeplink&ts=7.32)):

Everyone knows that for migraine suffers, a migraine is more than a pain in the head. The throbbing radiating pain rages and shows up in many other symptoms. I'm Nicki Donnelson today, the Missouri state journal. I have Dr. Paul Durham and Sarah Woodman from the center for biomedical and life sciences at Missouri State University. In the migraine field. People often talk about the most bothersome symptoms. It's not just the pain. Durham elaborates.

Dr. Paul Durham ([00:37](https://www.temi.com/editor/t/KGGED8owaRs-jxxogeGwNBsJ0BF_52lV9r-DOUog2KWWVBjB0tKAnXpr_jD6mTNmw024emxKPcnaKl8g562AI0TrFLg?loadFrom=DocumentDeeplink&ts=37.94)):

Yeah. So a lot of, uh, focus in the research world has been on photophobia and trying to come up with ways to actually minimize the impact of like flashing lights and strobing lights and even bright lights. So there's actually special glasses, you know, migrainers can wear and stuff, but really the, a lot of patients will actually say that phonophobia, which is sensitivity to sounds is actually more of a bothersome symptom to them. It's kind of crazy to think that migrainers can actually hear like a fluorescent light all of a sudden. So like where you don't normally perceive that now all of a sudden you have that buzzing in your, or they can develop tinnitus, right. That ringing in the ear. They can also, um, have sensitivity just to loud sounds. It's like the children's volume hasn't turned up. Right. But your sensitivity to it has turned up. And so now all of a sudden you can't those, you know, those louder sounds out. And so that becomes very bothersome to you and can actually impact your, you know, quality of life and stuff. So what we're wanting to do is actually, um, to study basically in the migraine context, what changes are happening to the auditory system? What the long term goal, that if we can understand the basic mechanisms or what's happening, then we can have hopefully come up with treatment paradigms

Nicki Donnelson ([01:44](https://www.temi.com/editor/t/KGGED8owaRs-jxxogeGwNBsJ0BF_52lV9r-DOUog2KWWVBjB0tKAnXpr_jD6mTNmw024emxKPcnaKl8g562AI0TrFLg?loadFrom=DocumentDeeplink&ts=104.81)):

To get a better picture of what's going on. Durham's lab has partnered with Dr. Wafaa Kaf from the audiology program at Missouri State University with seed money. The two areas have been able to purchase a piece of equipment that allows them to study the connection between sounds and brain activity during migraines, Woodman explains more.

Sarah Woodman ([02:07](https://www.temi.com/editor/t/KGGED8owaRs-jxxogeGwNBsJ0BF_52lV9r-DOUog2KWWVBjB0tKAnXpr_jD6mTNmw024emxKPcnaKl8g562AI0TrFLg?loadFrom=DocumentDeeplink&ts=127.48)):

So there are some sound producers that you put in the ears and you can detect you. There are other probes that you can place basically in the neck and forehead region. And those probes will detect how various parts of the brain and the spinal cord responding to different loudness as a sound and different tones of sound. And so we can set the machine to produce different pitches of sound different loudness is, and see, at what level do we lose that ability to detect that sound? So how soft can we really go before we don't have that ability to detect that sound anymore? And does that change over various pitches? So maybe the hearing is fine in one range, but then when you go into a certain other range, you're losing those ability to detect those soft sounds. And so we can compare that with and without migraine. And that will give us an idea of what kind of changes in hearing we're seeing during migraine with the ultimate goal, of course, being to look at different therapeutics and see if we can see those changes, reversed or diminished so that we can have a more healthy hearing system.

Nicki Donnelson ([03:19](https://www.temi.com/editor/t/KGGED8owaRs-jxxogeGwNBsJ0BF_52lV9r-DOUog2KWWVBjB0tKAnXpr_jD6mTNmw024emxKPcnaKl8g562AI0TrFLg?loadFrom=DocumentDeeplink&ts=199.47)):

Durham explains how they instigate migraines for the use of the study.

Dr. Paul Durham ([03:23](https://www.temi.com/editor/t/KGGED8owaRs-jxxogeGwNBsJ0BF_52lV9r-DOUog2KWWVBjB0tKAnXpr_jD6mTNmw024emxKPcnaKl8g562AI0TrFLg?loadFrom=DocumentDeeplink&ts=203.93)):

One of the major things that humans report is actually having neck muscle tension and stiffness prior to a migraine attack. So we consider this a risk factor, but another one that actually is really relevant is sleep deprivation. And that is pretty much a pandemic in and of itself within in our culture is that, you know, people don't get enough quality, good quality sleep. And so what we did is we decided to combine those two things, those two risk factors of sleep deprivation and neck muscle attention that sensitizes the trigeminal system, which is the system that gets activated during a migraine attack and causes the pain. And what we do to trigger the migraine is actually, all we have to do is introduce a punch of an odor. So it's kind of what we call the perfect storm. So this actually happens in humans as well. So they have the ongoing neck muscle tension and stiffness. They have our sleep deprived, so their system is more hypersensitive. And then they get on an elevator with a really someone with really pungent perfume or something. And all of a sudden it can trigger their migraines, or maybe they start preparing some food

Nicki Donnelson ([04:19](https://www.temi.com/editor/t/KGGED8owaRs-jxxogeGwNBsJ0BF_52lV9r-DOUog2KWWVBjB0tKAnXpr_jD6mTNmw024emxKPcnaKl8g562AI0TrFLg?loadFrom=DocumentDeeplink&ts=259.65)):

Durham is proud that students get opportunities to participate in all of his research projects. And he is especially pleased with this interdisciplinary research.

Dr. Paul Durham ([04:29](https://www.temi.com/editor/t/KGGED8owaRs-jxxogeGwNBsJ0BF_52lV9r-DOUog2KWWVBjB0tKAnXpr_jD6mTNmw024emxKPcnaKl8g562AI0TrFLg?loadFrom=DocumentDeeplink&ts=269.88)):

And this is actually really kind of fun because it's the cross pollination that allows you sometimes to unlock, you know, mysteries of things like really understanding how things are really happening. And it's kind of fun because we're combining our students, right. Artwork efforts with her doctoral students. So we're collecting all this data, these wave forms that you would, if you were going in front of an audiology exam, you know, so that you get all these little wave forms and then what they can do is they can look at that and see if they're delayed. And in some cases we're finding there's some of these wave forms are actually missing. So there's actually looks like there's hearing loss. So the term goal of course, would be to submit an NIH grant, you know, to get further funding for this. And then really combine the in, you know, the animal studies with the human studies, with the idea long term of basically coming up with some way to maybe treat this.

Nicki Donnelson ([05:16](https://www.temi.com/editor/t/KGGED8owaRs-jxxogeGwNBsJ0BF_52lV9r-DOUog2KWWVBjB0tKAnXpr_jD6mTNmw024emxKPcnaKl8g562AI0TrFLg?loadFrom=DocumentDeeplink&ts=316.01)):

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

Speaker 1 ([05:22](https://www.temi.com/editor/t/KGGED8owaRs-jxxogeGwNBsJ0BF_52lV9r-DOUog2KWWVBjB0tKAnXpr_jD6mTNmw024emxKPcnaKl8g562AI0TrFLg?loadFrom=DocumentDeeplink&ts=322.12)):

For more information, contact the office of strategic communication at 4 1 7 8 3 6 6 3 9 7.