Oklahoma Innovations Radio Show

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Guests: **Curtis McMurtrey**, University of Oklahoma Health Sciences Center

[Music]

>> From the OCAST radio network, this is Oklahoma Innovations; a weekly science and technology radio magazine, brought to you as a service of OCAST the Oklahoma Center for the Advancement of Science and Technology. OCAST is the state's only agency whose sole focus is technology, it's development, transfer, and commercialization. OCAST's mission is to identify and find promising research and technologies that allow Oklahoma to compete in a global market economy from our own backyard. This program features some of the state's most gifted and talented scientists, inventors, entrepreneurs, manufacturers, and business leaders who all have one common goal: developing technology based economic growth for all Oklahomans. Now here are your hosts Gary Owen and Steve Paris.

>> And Steve and I are back in the studio after weeks of being on the road. Man I'm worn out!

>> I know Gary, and I tell you what... it has nothing to do with science and technology, or very little to do with it. I might as well tell everybody, I saw Gary perform... just a short week ago at the Poncan Opry. All of our friends in Ponca City. Bet some of them saw you perform up there with the Ponca Opry, and I'll tell you what it was a lot of fun. My wife and I both thoroughly enjoyed that trip, so anybody can look on Gary's website. Just look up Gary Owen and...

>> Won't be on my website. It will be on the Poncan Opry website. Just go to Poncan Opry.com.

>> And you're up there about once a month right?

>> Once a month, that's right... and been producing and MC'ing that show now for the last several months. Great show and we've had a lot of fun. I'm glad you got to come up and see what we do.

>> Thoroughly enjoyed it Gary. I really did.

>> If you like Branson you're gonna love this show. We get a lot of comments about... oh don't have to go to Branson anymore, this is really good! So what's going on at OCAST this week?

>> You know Gary, right now we're just coming off our regular health research review, and we're going to have... I don't know how many. We're going to have several health research projects that will be approved by our board of directors, oh in about a week or so. And we'll be announcing those and talking about those on a future program, but as we've talked about in the past, our health research has been... is one of our, actually if not the first program OCAST has had in it's 21 year history, but it's a very important part of what we do as far as both developing a healthier society for both here in Oklahoma and around the world, but also improving the economy because of all the research that's done here. A lot of the researchers who are attracted to Oklahoma because of our investment, and various researchers, specifically health research. So we're gonna be talking about that in a very near future show, probably 2 weeks out.

>> Look forward to it.

>> Okay!

>> We've all the... big science story this week in the news of course, is the concern about swine flu in the United States, and of course causing a lot of concern in Mexico. And Dr. Richard Besser, who's the acting chief of the Centers for Disease Control and Prevention, said this past week that well the best way we can protect ourselves is just use some common sense. But found a couple of Q and A things that I thought would be of interest to our listeners this week on the show, and perhaps some stuff that you're not getting off of the mainstream media. And one of those things of course, everybody knows the best way you can protect yourself and your family is to again, just use some common sense precautions. Cover your coughs and sneezes with a tissue that you throw away, or by sneezing... get this, not into your hand but into your elbow.

>> Yeah. And why would that be? Because we shake hands.

>> Because we shake hands, we touch doorknobs and those kinds of things. Wash your hand frequently. If soap and water are unavailable, obviously use hand gels as a substitute. And if you think you've got the flu, stay home. Don't go to work and don't let your kids go to school if you think they're ill. I tell you, the scary one's about New York public schools up there.

>> Yeah.

>> You know, this past week in the news was like what... 40 or 50 kids?

>> Right. I think... were they talking about, or did they shut down the schools?

>> I don't recall, but it was something else. How easy is it to catch this virus? Scientists don't yet know if it takes a fairly close or prolonged contact with someone who is sick, or if it's a more easily spread. But in general, flu viruses spread through uncovered coughs and sneezes, and this is important - by touching your mouth or nose with unwashed hands. Flu viruses can live on surfaces for several hours, like a doorknob as we just mentioned, just touched by someone who sneezed his hand. And this is something you need to know, that viruses like that can live for quite a while on countertops and surfaces, and stuff like that. By the way, we want to tease our guests this week while we're on this subject. We're gonna be talking about West Nile virus, but we'll be talking about probably a little bit about this as well. And you kind of get a sense of what kind of research they're doing in the labs about how to help treat these illnesses. Is swine flu treatable? Yes, with drugs like Tamiflu and Relenza, but not with 2 older flu medications. Is there enough? Yep. The federal government has stockpiled enough of the drugs to treat 50 million people, and many states have additional stocks. So don't freak out there okay?

>> That's right.

>> Should I take Tamiflu as a precaution if I'm not sick yet? No. Don't do that. Wait till you need it. How big is my risk for most people? Very low outside of Mexico. So far clusters of illness seem to be related to Mexican travel, and of course New York City's cluster for instance consists of students and family members at one school. This is the story we're talking about where some students came back ill from spring break in Mexico, and that's how it started. Let's see... why are people dying in Mexico and not here? That is a mystery. First understand that no one really knows just how many people in Mexico are dying of this flu strain, or how many have it. Only a fraction of the suspected deaths have been tested and confirmed as swine flu. So sometimes things tend to get a little blown out of proportion. Should I cancel my planned trip to Mexico? The U. S. issued a travel advisory this past week, discouraging non essential travel there, so that would probably be a good idea. Just a precaution. And if the symptoms are similar to regular human flu - fever, cough, sore throat, body aches, headaches, chills, and fatigue. Some people

also have some other problems, but probably should go to the doctor if you think you might have the symptoms. Is there a vaccine to prevent this new infection? No, and CDC's initial testing suggests that last winter's flu shot didn't offer any cross protection either. So there you go. Just a couple little tips there I thought might make you feel a little better.

>> There you go.

>> In some other science news this week, archeologists have unearthed a cache of pharaoh era mummies in brightly painted wooden coffins near Egypt's little known Lahun. I believe that's the way you pronounce that, Lahun pyramid, the sight says that... well the scientists who uncovered the sight said the mummies were the first to be found in the sand covered desert rock surrounding the mud brick Lahun pyramid. Believed to be built by the 12th dynasty pharaohs who ruled 4,000 years ago. Isn't that interesting?

>> Wow.

>> Now you know, we talk about... nanotechnology, how strong it is.

>> Things very small.

>> Scientists now have found spider silk is already tougher and lighter than steel, and have made it 3 times stronger by adding small amounts of metal. The technique may be useful for manufacturing super tough textiles and high tech medical materials including artificial bones and tendons. It could make very strong thread for surgical operations, and they say that they found that adding zinc, titanium, or aluminum to a length of spider silk made it more resistant to breaking or deforming. The user process, called atomic layered deposition, which not only coated spider dragline silks with metal, but also caused some metal ions to penetrate the fibers and react with a protein structure. And they're saying they're thinking about adding other materials including artificial polymers like Teflon.

>> So you're suggesting to me that spiders are my friends?

>> That could be, you never know. Here's one for you: we talk about all of the biotechnology synthetics that they're using to try to develop more fuels for our vehicles. Get this - U. S. scientists have combined a discovery from a French garbage dump with breakthroughs in synthetic biology to come up with a novel method for turning plant waste into gasoline, without the need of any food sources. A synthetic biology lab at the University of California San Francisco identified a compound able to use biomass to produce a gas that can be converted into gasoline, chemically indistinguishable from fossil fuel based petroleum. Their method allows for a variety of feed stocks to be used that are non food sources such as agricultural waste products like corn stover and sugarcane. The scientists said the gasoline they were able to produce carried the same chemical and molecular make up as gasoline from oil refineries. How about that? Ladies, listen to this. If you like walnuts, it could help you reduce your risk for breast cancer. That's right. By eating walnuts, women could reduce their risk of breast cancer according to scientists this past week at Marshall University School of Medicine in Huntington West Virginia. They released a report that said they found that lab mice bred to develop breast cancer had a significantly lower risk of breast cancer, if fed the human equivalent of a handful of walnuts a day. Walnuts of course are better than cookies, French fries, or potato chips when you need a snack. They say the study was done with laboratory animals, likely the same mechanisms would work on people.

>> Very good.

>> Steve has some really interesting innovations in history.

>> I do Gary, thank you. This is for April.

>> I think you got one there for the first week of... here we are the first week in May.

>> Well you're absolutely right. I'll tell you about that in just a minute. April 25th marks the 26th anniversary of the day the first earthly object left the solar system, as the Pioneer 10 spacecraft crossed the orbit of Pluto. Robert Noyce of Intel Corporation was awarded a patent for the integrated circuit on April 25, 1961. And it was April 26 of 1930 the twin Popsicle was introduced. It was a depression era invention designed so... get this - 2 children could split one. Now you know where that came from, the depression era. April 26, 1954 was the date that a U. S. wide testing program began for the new Salk polio vaccine. 200 cases of the disease were caused by a bad batch of the vaccine and 11 people died. It was 56 years ago the U. S. Air Force's X15 rocket plane took off for the first time. The experimental aircraft was made 199 flights before it was retired 10 years later. And the Crosley Car Company introduced the first American compact automobile on April 27, 1939. The Crosley Miniature, smaller than a Volkswagen Bug and priced at 800 dollars, was too expensive for most consumers and didn't catch on. April 29 marks the 96th anniversary of Gideon Sundback's patent for the hookless number 1 fastener. Today we call it a zipper. Thomas Hughes patented the shaving mug on May 1 of 1860. And that Gary, is your innovations in history.

>> I gotta tip for you folks out there, that you're always looking for ways to preserve fruits and vegetables. One of the biggest discoveries, you've seen these green bags?

>> Yes I've got some in my home.

>> Well here's one that I didn't know. Another way to keep celery fresh for weeks in the refrigerator. A little tip here, and I won't tell you my source, but it says wrap celery in aluminum foil and it will keep for weeks.

>> I didn't know that.

>> I'm gonna try that.

>> I'm gonna try that too.

>> Maybe I guess because it keeps out the moisture?

>> I don't know.

>> I wouldn't know about that, but you see folks? When you listen to this program, you're gonna find all kinds of neat little tips and tricks and so forth. Well now when we come back, we're gonna be going to the break here momentarily, and we have a guy here who... recent graduate student, and here he is working doing research on flu viruses, West Nile in particular, and we're gonna talk about that with this young man. We had... Dr. Hildebrand was gonna be here, but...

>> We did Gary, but you know what? The swine flu kind of kept him away from us today. He's involved as we speak, in a... a telephone conference call with the National Institutes of Health I believe it was. And their subject was how are we gonna deal with this swine flu? So he had a very important call that kept him away from our studio today, but we understand that. Hey you did a great job, you got Curtis McMurtrey. We're gonna introduce you to Curtis in just a minute.

>> We'll take a break, we'll be right back on Oklahoma Innovations.

[Music]

>> It began more than 100 years ago, making buggy whips in the small rural community of Hobart, Oklahoma. Today that same company is still in business, turning out nearly 40 million wheel and axel seals a year. That's a lot of change in 100 years. The Oklahoma Center for the Advancement of Science and Technology, or OCAST, in association with organizations like the Oklahoma Alliance for Manufacturing Excellence, helps manufacturers across the state compete in a global economy; while at the same time developing a technology driven economy for Oklahoma communities. Armed with information, education, resources, and partnerships that improve manufacturer productivity and profitability with cutting edge technologies, OCAST and it's affiliates work hard for Oklahoma's technology based economic development. Investing, partnering, and promoting the development of science and technology; that's what OCAST is all about. For more information, call 866-265-2215. OCAST, whipping technology into shape so Oklahoma manufacturers can seal up business.

>> You're listening to Oklahoma's science radio magazine, Oklahoma Innovations on the OCAST radio network.

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>> This program is all about science and technology, and we talk about a wide range of subjects. If you're a new listener to our program, we're delighted to have you with us. And we hope you stick around! By the way you can... on our bumpers you'll hear this. You can go to the OCAST website and the OCAST... their address is real long. Typically have a lot of state agencies and federal agencies, but if you just go to your search window on your browser and type in OCAST, it'll take you to OCAST; really nice website, and right there on the homepage you'll find a link to our radio shows and you can go back and find other shows that we've done, over several months as a matter of fact.

>> Yeah exactly. So if Gary says something that you question, and you wonder, did he really say that?

>> Yeah, a while ago I said West Nile flu virus. There's no such thing, I don't know, I had flu on the brain. So it's West Nile virus, not the flu because there's a difference and we're gonna talk about that.

>> We're gonna learn a lot about that. Are we ready to introduce?

>> Yeah, let's do it.

>> Okay we have in studio with us today Curtis McMurtrey. Now as we said earlier, Dr. William Hildebrand was supposed to be here, but he's involved in a very important conversation, a conference call, with a lot of people across the country and with the NIH having to do with swine flu and how we're going to deal with that. So we had to let him off for that reason. But he sent Curtis in his place, and I'm starting to understand. Curtis is probably as well versed, if not more so, we shouldn't say that about Dr. Hildebrand should we? But at least he's very well versed on the subject of West Nile virus and some other related issues. Curtis is about 2, 3 months away from getting his PhD. So he's there, it's just a formality right? Right Curtis?

>> Well yeah.

>> Got a few things maybe to defend huh?

>> A few.

>> Well let's hear about you - who you are, where you came from, your education, and what brought you to this field of endeavor?

>> Okay, well... I'm Curtis, I went to undergrad at SNU, Southern Nazarene University in Bethany Oklahoma. I've always been interested in science, since I was a little kid. My parents got me a little chemistry kit, and I'm sure everyone who is interested in science tells you this is how they started. Well this is really how I started.

>> You didn't blow up the garage did you?

>> Well no, but I... I remember sticking wires into the electrical outlet and shorting the circuit breaker one time.

>> That's like me, only I wasn't quite as bad, but I made microphones out of tinker toys.

>> Yeah, right!

[laughter] Same thing.

>> And you got your master's degree at the OU Health Sciences Center?

>> Yes sir.

>> And that's a degree in what now?

>> So it's microbiology and immunology. In our PhD program, once you pass your classes then you get your masters.

>> Okay. So you're about to become a doctor? The title's gonna change here in just a short while.

>> Yeah, sure.

>> Very good. Well now your area of expertise... by the way, where's home to you originally?

>> I'm originally from Phoenix Arizona.

>> Okay.

>> And I went to SNU because my parents went to SNU as well. So they suggested that I apply and I liked what they had to offer, so I came out here and they actually followed me out here. So they're out here, probably listening right now.

>> So that's good news. When we get more people to move to Oklahoma, that's a good thing. Okay well let's talk about the West Nile virus. In a recent news release, said the research team at the University of Oklahoma Health Sciences Center has identified the first target for a possible West Nile virus vaccine. Now we're not there yet, but we may be getting close. Tell us about where we are in that continuum.

>> Okay. What we specifically work on is... the immune system when it tries to fight off West Nile virus. So this is what we identified. West Nile virus can infect your cells, infects your body and infects your cells, and your immune system cannot see inside of your cells. So it needs a way to see that. So what we did is we identified something that's unique, that's on the surface of the cells that allows the immune systems to fight off West Nile virus. So when we identified this target, it allows people who are developing vaccines to see if their vaccine also makes this target available on the surface of the cell. So in case you see it again, your immune system can act.

>> I'm gonna ask you an unfair question, because I know in research you never know when this is going to actually be approved and all that. But give us kind of a concept, your concept, of where we are. I mean, if you had to make a wild guess - we're not gonna hold you to this. When's this vaccine gonna be out on market?

>> It's hard to say, and I know of one vaccine, ChemeriVax, and it's made from yellow fever virus which we have a vaccine for. It's made off of the vaccine strain, and what they've done is taken pieces of West Nile virus and added it to yellow fever virus. Right now it's in phase 2 clinical trials, so that's the most advanced vaccine we have so far for West Nile virus and it seems to work.

>> Just a little fact I'm gonna drop on you here. According to the U. S. Centers for Disease Control and Prevention, more than 3,500 people in the United States contracted West Nile virus in 2007. I guess we don't quite have the data yet for 2008. Colorado, North Dakota, Texas, California, and Montana have the highest incidence of West Nile virus. Of course we had some cases here in Oklahoma too I'm sure.

>> Yes. In 2007... Oklahoma had about 100 cases and 8 fatalities. And actually I do have the data for 2008.

>> You do?

>> Yeah, right. So the CDC has released the data for 2008 and it was a relatively mild year. In 2007 you said 3,500 cases. In 2008 it was 1,300 cases.

>> Oh really?

>> Yeah, it went down and this is probably one of the lowest years since the big outbreak in 2003.

>> But we do anticipate it will come back?

>> Yeah, it's endemic. So it will come back and it's just a question of... there's really no predictable... no one really knows when it would come back.

>> I think we're down to just a few seconds in this segment. Can you very quickly give us the definition of what is West Nile virus?

>> Okay. West Nile virus is a virus that was originally discovered in the West Nile district of Uganda, which is where it gets it's name. It's related to viruses like Dengue virus, yellow fever virus, and it's primarily transmitted by mosquitoes. So you need to get bitten by a mosquito in order to get West Nile virus. So if you have the fever, you cannot cough on someone and give them West Nile virus. You get it from the mosquito.

>> You gotta get it from the insect, right?

>> Yes sir, you have to get it from the mosquito.

>> I guess what really throws people off is how... this evolves from a faraway country like that, and migrates to the United States and winds up like, in Oklahoma for example, and we go how did this happen? Well it's probably through the imports that we receive from goods, or is it possible they came in on a produce or something like that?

>> Or mosquito larvae?

>> They don't know for certain what caused the outbreak. There are studies to see what... viruses are related.

>> I'll tell you what, let's talk about that when we come back from the break. We're talking with Curtis McMurtrey and we're talking about West Nile virus on Oklahoma Innovations.

[Music]

>> Now in it's 13th year, this is Oklahoma Innovations on the OCAST radio network.

>> It's a scientific fact. Plants have a positive effect on our world, creating oxygen, beauty, and a healthier environment. Plants make all kinds of chemical compounds that effects human health. Scientists like those at the Nobel Foundation, a biology research center in Ardmore Oklahoma, are examining how genetically enhanced plants can produce their own chemicals for greater potency, requiring fewer manmade chemicals. The end result will provide for more effective medicines and vaccines. This genetic study holds promise for plants and crops that will be naturally resistant to bugs and disease. The Oklahoma Center for the Advancement of Science and Technology, or OCAST, invests in projects like these at the Nobel Foundation to help Oklahoma scientists continue their quests for new discoveries and development of innovative technologies. Investing, partnering, and promoting Oklahoma science and technology. That's what OCAST is all about. For more information, call 866-265-2215 toll free. OCAST, planting seeds that blossom into technology based economic development for Oklahoma.

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>> Research and development, technology transfer, and commercialization. Creating high paying jobs in Oklahoma, is what OCAST is all about. This is Oklahoma Innovations on the OCAST radio network.

[Music]

>> One of the things we try to do on this program is not create fear, but create education and get you... the more educated you are the better prepared you are, and the better you can handle some of the things like the things you hear in the news with all of the flu viruses out there, and then you... West Nile virus, and then you hear about the flu's and all of that stuff. We hope that this program will give you a little better education. Pass it on to your family and friends, because there's a lot of misunderstanding, confusion, fear because people are not well educated about how to react and how to be proactive about all of these things that are out there. One of the

things we're talking about is the West Nile virus, which of course as most people know, is you get West Nile through transmission by a mosquito.

>> Another reason to dislike mosquitoes.

>> And that's the other thing, I guess this is a... I think most people, if they're in their yard or just in a community situation. As soon as they get a mosquito bite, I know that the media does a great job of educating people, but I wonder sometimes if we're overreacting sometimes when you get the mosquito bite - they say uh-oh! I'm gonna get West Nile. You know?

>> Well not all mosquitoes have it. So they're not born with it, they have to first bite a bird that's infected with it. So just because you get a mosquito bite doesn't mean you're gonna get West Nile virus. In fact you can get... you can get the virus and not have symptoms. In fact this is what most... well it happens in most people. They're really unsure of the numbers because how do you measure a person who doesn't have symptoms? But they think the majority of the people that get bitten by a mosquito with West Nile virus, their immune system does a very good job of clearing it and they don't actually get sick.

>> Is this a territorial... like in Oklahoma, are there particular geographical locations in Oklahoma where West Nile is more prominent than other areas? In other words, like rural as opposed to metro? Are there particular areas of the state where this has popped up?

>> No I don't think so. It could be in both the city and rural areas. Both have city dwelling mosquitoes, and rural dwelling mosquitoes can transmit West Nile virus. So it is... it's pretty well equal.

>> Now before the break you were getting ready to tell us about how this came to the United States.

>> They don't know. So it's a mystery. There are studies trying to figure out what other viruses it's related to, and people still don't know how it got to the United States.

>> Curtis, you were talking about focusing on vaccines and we're kind of not just looking at vaccines, but we're looking at other ways to combat West Nile virus. You mentioned that there's some research going on both here in Oklahoma and with a gentleman, I believe it was in Washington state?

>> Washington University.

>> Washington University, I'm sorry. Dealing with antibodies and that's kind of a whole different area of research than what we've been accustomed to. Talk to us about that and what we hope to have as an outcome?

>> Well antibodies are good because you can give them to people after they've become ill. And so they are not... a proactive treatment, but they're not before, after you get the...

>> They're not prophylaxis; they're something that you do to treat somebody who already has the illness. Is that right?

>> Right. And Washington University, at the Health Science Center, we are developing antibodies that are distinctly different - work in distinctly different ways, that we could perhaps bind them together and treat a person who's gotten West Nile virus.

>> And Dr. Hildebrand and you are leading in on some of this research are you not, here at the OU Health Sciences Center?

>> Yes sir. Actually we've just received an NIH grant at the Health Science Center that will allow us to continue the research into these particular kinds of antibodies, as treatments for West Nile virus.

>> Outstanding. So we're gonna hear more about that in a future show. Is that right?

>> Yes sir.

>> Alright. Well let's go back to some of the fact sheets about... we've touched on most of this, but I think you mentioned some of the symptoms but you didn't go through that whole list of... how do you know you have West Nile virus? I suspect the doctor's visit's gonna tell you that. Is that right?

>> What I always tell people is if you've been outside and you've got a mosquito bite, you pretty well know that you've gotten a mosquito bite because it itches, and if you develop a fever... 3 or 4 days later, chances are it's West Nile virus. So you probably should go to the doctor.

>> And they say that people over 50 are higher at risk?

>> Yes sir.

>> ... getting more severe...

>> They're not more at risk at actually contracting the disease, because... everyone has an equal chance of getting bit by a mosquito depending on whether you're outside or not. But their symptoms seem to be more severe, and that's when they get a neuroinvasive disease where the virus infects the brain and causes encephalitis, and that's when people die.

>> You mentioned earlier that a lot of us may be carrying this and not realize it, because our immune systems help us sometimes... and other people do get all the full blown case of West Nile. About 1 in 150 people infected with West Nile virus will develop severe illness, and these symptoms can include high fever, headaches, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness, and even paralysis. None of us want any of those.

>> Yeah, I don't think you can get all of those but yeah, those are probably the list of...

>> Thanks Steve! Appreciate that, rest well tonight. Well there's something you can do about it.

>> There is something you can do about it, and that's to make sure in your lawn, in your yard, around your house, that you don't let water stand in places.

>> Yes sir. Number one, number one is to stop mosquitoes from breeding in your area, and that's to keep the standing water.

>> Make sure you have good screens on your windows and doors to keep the mosquitoes out, and get rid of those breeding sights by emptying standing water from flower pots, buckets, and barrels, change the water in pet dishes, and replace the water in bird baths weekly. Drill holes in tire swings so the water drains out. You never would think about that would you? And keep children's wading pools empty and on their sides when they aren't being used. Those are just some of the things we can do to protect ourselves. As we try to go about dealing with this horrible disease, we don't need to operate from a position of fear. We need to operate from a

position of knowledge so that we know how to deal with it. Give us kind of your idea of... is this something that in the not too distant future, we're probably not going to have to worry about as much as we have now, or we're going to have some solutions to some of these problems?

>> I think as far as the progress of science being done on this virus, I think it's progressing very well. It's acting like we thought it was. It's not like HIV, where HIV is a moving target. We don't know what's gonna happen to it. West Nile seems to be, so far, very predictable. So it seems like the research is progressing very well, and I think it will remain endemic in the United States. The birds are already infected so the natural reservoir will still be around, but I think as far as treatments, it shouldn't be too far out because like I said, West Nile virus is working like we think it should.

>> Now this is a seasonal?

>> Yes, and it goes with the seasons of the mosquito breeding.

>> Yeah, you don't have mosquitoes in the winter time. Not unless it's a warm winter.

>> I hope not. But my understanding is that there was... in looking at some of the documented stories here, we talked about like in New York where some of these mosquitoes survived over the winter, that carry the disease? Over wintering, I guess, is what they... this is back I guess in early 2000, where one of the species of mosquitoes found to carry West Nile, was the Culex... of the virus, is that right?

>> Culex is the genus of the mosquito that transmits the West Nile virus. I am not familiar with the... mosquito surviving. I do know that the virus stays... what we call a natural reservoir in birds. So regardless of whether the mosquitoes dies or not, the birds are still gonna remain infected. So when you get a new batch...

>> So what you're saying is, the birds are actually the host when the mosquitoes...

>> Yes sir.

>> ... attack the birds and they carry the virus, and then they are transmitted to humans.

>> Yes.

>> Jog my memory. It seemed like a few years ago we were really worrying about a lot of dead birds. Was that West Nile virus that was killing the birds?

>> It could have been. So West Nile will kill birds, and it primarily kills crows and blue jays.

>> Crows and blue jays.

>> But they're on the ground, there has not been a known documented case of someone in contracting West Nile virus from handling a dead bird, but I think it's generally not a good idea to touch dead animals. This could possibly be it, yes. Birds can die and get encephalitis just like humans.

>> Well we're gonna come up here on a break. In our next segment, I think what we would like to do if we can, is better educate our listeners the difference between a virus and flu, because I know that there's a lot of confusion about that as well. We just talked about that.

>> Maybe we'll talk about, can you get this through a blood transfusion too?

>> That's another good one.

>> We'll answer that question when we come back from the break.

>> That's a very interesting one, I don't...

>> Curtis has the answer.

>> He does?

>> Yes he does.

>> You been talking to him...

>> He's got the answer, I know he does.

>> All that stuff, okay. Alright, interesting guy - Curtis McMurtrey from the OU Health Sciences Center, talking about West Nile virus. More to come on Oklahoma Innovations.

[Music]

>> This is Oklahoma's science radio magazine, Oklahoma Innovations with Gary Owen and Steve Paris on the OCAST radio network.

>> Science and technology affects nearly every aspect of our daily lives. Everything we use had to be developed or invented. What would our lives be like without science, research, and development? We'd most likely still be living in the Dark Ages. OCAST, the Oklahoma Center for the Advancement of Science and Technology, provides competitive funding for cutting edge Oklahoma research and development. In fact, OCAST is Oklahoma's only agency whose sole focus is technology, it's development, transfer, and commercialization. Our goal is to diversify and improve Oklahoma business, while helping build a solid technology based economy. The technology developed by world class Oklahoma researchers is a major component of the message to the rest of the world, that Oklahoma is open for business. To learn more about how OCAST investments help our state compete and profit from Oklahoma Innovations, visit our website. Just type OCAST in the search window of your browser. You'll be linked to a world of fascinating discoveries being developed in your own backyard. OCAST, an investment in Oklahoma's future.

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>> This past week President Obama, talking to the National Academy of Sciences, vowed that we need to implement a stronger precedence in the United States and make more investment in science research. Obama told hundreds of scientists and researchers and educators that science is more essential for our prosperity, our secure, our health, our environment, and our quality of life, than it has ever been. And of course with the fear of the swine flu out there and things like that, I think that's one of the things that stimulated those initiatives.

>> You're exactly right Gary, and of course he was talking about not only just the swine flu. He was talking about...

>> Science in general.

>> ... our nation's future in general, and that's one of the things Oklahoma is doing. We were talking about that during the break about... there has been a kind of critical mass if you will, of people both in higher education, the OU Health Sciences Center, and the other 2 campuses OU and OSU and TU among others, and there's been a lot of focus in the private sector and research foundations, and the state of Oklahoma has created an atmosphere that we didn't have just a few

decades ago. So we have kind of that critical mass that's happening here in Oklahoma, and what President Obama said there has a lot of potential for our future because we're kind of positioned now where we can attract some of those research dollars to this state. That's what we want to do, and of course we have a good example of that right here in our studio today, with Curtis McMurtrey who is just a couple months away from having his PhD from the OU Health Sciences Center. And who wouldn't want that? What a tremendous accomplishment. Congratulations my friend. Which brings up the question... here you are just, you've done some outstanding work, you're about to be awarded your PhD, and I've got to ask you - for a guy who got here by way of Phoenix Arizona but now you're in Oklahoma, where you gonna be 5, 10 years down the road? I know you don't know the answer, but give us kind of some conjecture where you think you might be.

>> I hope to be in science. I know that for sure. So I hope to be doing research.

>> Infectious diseases and immunology, right?

>> Yes sir.

>> Well, and your research has the potential to help us all. So we hope you stay there, and we hope you can do it in Oklahoma if you can. I mean, that is our goal and of course that doesn't always work out that way. We understand that. But we hope that that's where you're gonna be. Gary? Do you have any questions you wanted to ask too?

>> I was just admiring his smile here, because it's kind of like yeah, I've got some things back there that I want to do, but I'm not gonna share those right now.

>> Well he did tell me earlier he wanted to teach, and he wanted to do research. Those 2 fit together well.

>> What a great honor to be working with Dr. William Hildebrand. I'm sure that is... got to be a big feather in your cap, and I'm sure that it's an exciting opportunity for somebody like you.

>> Yes, it's been very interesting and one of the good parts about him is he lets a scientist's mind wander, while keeping them focused. So he's really good at that.

>> I wanted to ask you... there's always a confusion among the general public sometimes, the difference between what a virus is and influenza? Can you talk a little bit more about that? Because you know, when people hear like West Nile virus they think about flu symptoms, or the reverse. So separate the 2.

>> Okay. There's a difference between what causes the symptoms and then the symptoms. So the West Nile virus and influenza virus infection can cause some of the same symptoms. So you wouldn't know the difference, and it mainly has to do with the way your immune system responds to the virus. They respond in similar ways. Influenza is the name of the virus that causes flu. So it's the influenza virus, whereas West Nile virus is the virus that causes West Nile fever, or West Nile encephalitis.

>> I think a lot of the public, because of the media coverage, are concerned about the pandemic issues. Here in the United States though, we seem to be very proactive and take measures to protect the public by education, by just good common sense proactiveness among ourselves. How does the United States, based on what you know about the research, how do we stand up against other countries when it comes to these kinds of problems? We're in pretty good shape aren't we?

>> Yes sir. I think we're in excellent shape. The CDC does a very good job. They monitor then they publish every week the results of the infections and the deaths, and so they do a very good job of monitoring the entire health of the United States. Now somebody who wants to get educated, and wants to go get some stuff... really do your homework on this, you can go to the Department of Health and Human Services and there's a website that people can go to, to get information. Can you share that with us? I guess the CDC would be one good place to do that?

>> Yep. You could just go to CDC.gov and there you can get any information you want on anything. And generally on their front page they have something that's particular to what's happening now.

>> Interesting.

>> Very good. I got a question Gary, because I know somebody out there, maybe several people, are listening to this program and saying, when are you guys gonna ask him about the risk of medical procedures and blood transfusions and things like that? We haven't asked you that yet Curtis, so what kind of risk is there for getting the West Nile virus through a blood transfusion? Everybody wants to know that.

>> You can get it. You can have virus in your blood, but they know this now. So the institutions that draw your blood will screen the blood for West Nile virus. So then when they transfuse it to you, it should not contain West Nile virus. So your risk is very, very low.

>> Don't worry about it.

>> ... contracting West Nile virus through a blood transfusion, because they screen for that.

>> I know the Oklahoma Blood Institute; they do a very good job.

>> Yes, right. The Oklahoma Blood Institute, I know for certain screens their West Nile virus blood samples... their blood samples for West Nile virus.

>> Sure. You know, I've been accustomed for all my life to understanding that mosquitoes did not live over winter? And now I'm reading some material in here that says, there's one that you all talked about earlier, this Culex mosquito that overwinters in New York, which is a relatively cold part of the country in the winter time.

>> Yeah. I'm not really certain...

>> Where'd that come from?

>> Yeah right! I'm not certain about that, but...

>> That's the super mosquito!

>> I guess some have to survive. If they all were dead, then we probably wouldn't have any...

>> We're gonna have to do some research on that one, because I've been laboring all my life under the theory that mosquitoes kind of go away in the winter time. And now I find out that there's some of them that are getting by.

>> Yeah, maybe a little bit stick around to cause trouble later.

>> Okay, one of the things we've already decided here, that the only way we can prevent ourselves from getting West Nile, obviously is to prevent the mosquito bites, and one of the best ways to do that when you're out in the yard this spring and summer, is to wear long sleeved

clothing, pants, don't wear shorts, anything... minimize skin exposure as much as possible, even though it's hot out there... you still, if you're gonna be around where you know there are mosquitoes, do your best. Wear repellants.

>> There you go.

>> Repellants is probably the best way to do it. I've... I think the mosquitoes can still, depending on your clothing, can still bite through your clothing if they so desire.

>> Especially if it's a white t-shirt.

>> By the way, this is something a lot of people don't know. Do not wear colognes or perfumes. Mosquitoes are attracted to that. Did you know that?

>> Yeah, unless you want to attract mosquitoes.

>> So avoid... even like when you take a shower in the morning. Use soaps that don't have any kind of perfume or anything like that, because those, believe it or not, tend to attract mosquitoes. But again, wear the repellants and cover your skin as much as possible... and minimize your exposure.

>> And part of this too, this is something that most of us would not deal with, but just in case you do, the Centers for Disease Control and Prevention says what happens if you find a dead bird, maybe in your yard or wherever, what do you do? Well first of all, you don't handle the body with your bare hands. And what they would like for you to do, and this most people probably won't but maybe as good citizens we should, contact your local health department for instructions on reporting and disposing of the body. And they may tell you to dispose of the body after they log your report, which you've helped a little bit there, you've helped them kind of track what is happening in the bird population. If you remember just a few years ago, we were all told don't touch those dead birds and if you see a bunch of them out there, call the Center for Disease Control.

>> And here's one other little tip: avoid being outdoors at dusk and dawn, because that's when mosquitoes are also very active.

>> Same times you shouldn't be swimming with the sharks.

>> Okay, I'm glad we only have a minute left folks. Let's... once again, and can learn Curtis, about your research online?

>> Actually I published one of my results in the proceedings of the National Academy of Sciences Journal. So if you... the government has a database, pub med. If you just Google pub med, then you can, if you so desire, you can look up my name, type in my name there and...

>> Is there any link on the OU Health Sciences Center website about the research that's going on there?

>> Dr. Hildebrand has a webpage. I don't know if it's been updated or not.

>> That's okay. That's right. And if you want to learn about the OU Health Sciences Center in general, just go to their website and type that in your browser, because those are really fascinating things going on at that wonderful facility out there. And Curtis and Dr. Hildebrand just one example of some of the great science going on here in Oklahoma. Curtis, you've been a wealth of information.

>> Thank you.

>> Dynamic young man, we certainly have enjoyed having you here, and even though he's from Phoenix we've adopted him.

>> That's right, and you're a lot more fun than Dr. Hildebrand.

>> Okay!

>> Steve, I'll see you next week on Oklahoma Innovations. Have a good week.

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