

*Oklahoma Innovations* Radio Show

Air Date: April 2-3, 2011

Guests: **James Jarvis**, Department of Pediatrics, OU College of Medicine

[ 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 focus is technology, its development, transfer, and commercialization. OCAST's mission is to locate and fund promising technologies and 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 and 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.

>> **Gary Owen:** Welcome to another edition of Oklahoma's Science Radio Magazine, *Oklahoma Innovations*. As we begin this week, our 16th year.

>> **Steve Paris:** We do, Gary. Can you believe that?

>> **Gary Owen:** Our 16th year. So, Tom, you don't want to run our 15 year bumper. We forgot to tell you about that. But, we're now 16 years in the making, by the time you hear this program.

>> **Steve Paris:** Let me tell you, it's gone by so quickly. You know, for our listeners, you want to make sure you stay with us for the rest of the show. Because we have a subject I think you'll find fascinating. The, if you've ever had a child or witnessed children who deal with rheumatoid arthritis or other types of illnesses and situations like that, we have a gentleman, who's Dr. James Jarvis, who's going to be talking with us in a little bit about, what is being done in the state of Oklahoma to help children who are afflicted with these issues. And we're going to introduce him in just a little bit. But before we do, we've got some other things to talk about.

>> **Gary Owen:** I tell you, I live with someone who has rheumatoid arthritis as an adult, so seeing a child with this disorder, this just, I just can't imagine being a parent [inaudible].

>> **Steve Paris:** But the good news is, things are getting better [inaudible].

>> **Gary Owen:** They are getting better and that's what you're going to love to hear about this show. Because some wonderful things going on. So, looking at your website, have you got anything that we need to know about? Calendar of events. Of course, we do have the governor's.

>> **Steve Paris:** Governor's Cup.

>> **Gary Owen:** Governor's Cup coming up this month.

>> **Steve Paris:** Yes. I2E sponsors the Governor's Cup competition.

>> **Gary Owen:** That's right.

>> **Steve Paris:** And that's where college students who usually are connected with some very intelligent faculty members, put together business plans that we think will work. So some of them are going to win those, the competition and they'll wind up going to Las Vegas, not to visit the casino's, but that's where they will be competing with students from several other states to

win some pretty large awards. A lot of money to help them further their cause in the businesses they're trying to start. This is entrepreneurship at it's best.

>> **Gary Owen:** By the way, the annual Health Research Conference is coming up this next week. You want to talk a little bit about that?

>> **Steve Paris:** Yes, let me just explain that. The legislature requires OCAST to conduct the Health Research Conference every year. What we do is showcase the many health research projects that have been funded throughout the years. You will have, it's not really, it's open but it's not something that we normally invite the public to, because it's pretty much an in-house type thing. However, you know, we wouldn't kick you out if you wanted to come by. But at any rate. Yes. And if you're going to be there you can register on the OCAST website at [OCAST.OK.gov](http://OCAST.OK.gov). But let me just tell you about it. What we do is we feature some of the best research that's going on in the state of Oklahoma in the area of health research. And this is basic research. It's one of the few areas of basic research that OCAST funds. And so what, what it does for me every year, it validates the quality of the research that's going on in the state of Oklahoma, by researchers predominantly at our universities, who are doing health research and some of the things that they come up with wind up being companies or being new medical devices or therapeutics. Any number of things that are beneficial not only to the health and welfare of the people of Oklahoma and the people around the world, but also to the economy. And so.

>> **Gary Owen:** Very important.

>> **Steve Paris:** It's a very important part of it and health research is one of our, one of our largest areas in our programs division.

>> **Gary Owen:** And I see you've got more than 90 current health research award recipients going to attend this conference right.

>> **Steve Paris:** That's right. They'll have, we call it a poster session. They develop some very interesting posters. Some of which may be challenging for people like me to understand.

>> **Gary Owen:** A lot of them are over our heads. Yes, I've been there, yes.

>> **Steve Paris:** Obviously. But some of them are pretty basic, too.

>> **Gary Owen:** They are. They are.

>> **Steve Paris:** It's hard not to walk through that line of posters and not learn something.

>> **Gary Owen:** But it's one of those conferences, even for a lay person, when you look at the posters and you see the collaborations going on, yes a lot of it's over our head because it's not our language. But when you know what the research is about.

>> **Steve Paris:** Right.

>> **Gary Owen:** It's pretty interesting stuff.

>> **Steve Paris:** It's fascinating and everyone you know, if you haven't had a relative who's had a health issue, you will have. It's just a matter of time.

>> **Gary Owen:** That's right. Well, it's time for our science and radio news this week. After an intense search, a crew of amateur satellite sleuths, sleuths, that's a tough word, has spotted the US Air Force's second X-37B space plane. Basically it's a robotic space craft that launched into

orbit in early March. The mission of the un-manned X-37B space plane, which is known officially as the Orbital Test Vehicle 2 or OTV2 for short, is shrouded in secrecy. The Boeing built space craft is believed to be involved in reconnaissance, perhaps testing powerful sensors for a new generation of spy satellites. It looks much like a small version of NASA space shuttles and blasted off from the space launch complex 41 at Cape Canaveral Air Force Station in Florida, on March the 5th. In bio-technology news. Progress seen in creating eye cells from stem cells, pushing the theoretical promise of stem cell research into the world of viable treatments. Scientists has successfully fashioned adult stem cells into the kind of eye cells that fall victim to the onset of age-related macular degeneration or AMD. The work did not involved embryonic stem cells, which have been the subject of much debate in recent years, but rather so-called human-induced, I think the correct pronunciation is pluripotent stem cells. And the aim according to the researchers was to develop a therapeutic response to the death caused by AMD. Retinal pigment epithelium, is that correct? OK. A cell layer that is critical to the health of retina's vision cells. We have a guest who here is giving me thumbs up that I'm pronouncing some of these right.

>> **Steve Paris:** You're getting them right.

>> **Gary Owen:** Researchers from Georgetown University Medical Center, Washington DC, stress that this was a preliminary move toward that goal of achieving solely in a laboratory setting. They say that the numerous complex obstacles must be tackled before such newly created cells could be transplanted into the diseased eyes. But at least we're on the road to hopefully some success there. Canadian oil sands, a vast expanse of tar and sand being mined for crude oil, yielded treasure of another kind this past week, when an oil company worker un-earthed, get this, a 110 million year-old dinosaur fossil that wasn't supposed to be there.

>> **Steve Paris:** Well.

>> **Gary Owen:** Yes. The fossil is an anklyosaur. A plant eating dinosaur with powerful limbs, armor plating and club-like tail. According to a Canadian researcher, finding it in this region of northern Alberta, was a surprise. Because millions of years ago, the area was covered by water. Donald Henderson, a curator at Alberta's Royal Tyrrell Museum, which is devoted to dinosaurs, said we've never found a dinosaur in this location because the area was once a sea. Most finds are invertebrate's such as clams and ammonites. The anklyosaur was found by the oil worker, expected to be about sixteen and a half feet by six and a half feet. So sixteen and a half feet long by six and a half feet wide. So it doesn't look like it's that big compared to other [inaudible].

>> **Steve Paris:** Somebody forgot to tell him he wasn't supposed to be there.

>> **Gary Owen:** I guess so. Anyway, Henderson went on to say that, it's pretty amazing that it survived in such good condition, noting the fossil was three dimensional, not flattened by the heavy rock sediment and said, it's the earliest complete dinosaur that's ever been found in that province. Isn't that interesting?

>> **Steve Paris:** Fascinating.

>> **Gary Owen:** Steve has our Innovations in History.

>> **Steve Paris:** Thank you, Gary. It was March 27, 1860, that the device which officially is a covered gimlet [assumed spelling] screw with a T handle or the corkscrew, was patented by M. L. Byrn of New York City. Imagine where we would have been without the corkscrew. We probably would be pulling corks out of wine and Champaign bottles with our teeth.

>> **Gary Owen:** Probably so.

>> **Steve Paris:** Oh. On the same date in 1841, the first steam fire engine was tested in New York City. It was March 27, 1958, CBS Laboratories announced a new stereophonic record that was playable on ordinary LP phonographs. Meaning monaural. In stereo, on the proper equipment, a new rich and fuller sound was heard. It eventually became a standard for record and equipment buyers. His name was Nathaniel Briggs of New Hampshire and on March 28, 1897, Mr. Briggs patented a device we commonly call the washing machine. March 30, 1858, Hyman L. Lipman patented the writing device we call the pencil. The first US weather satellite was launched April 1, 1960. TIROS I was put into orbit and soon meteorologists saw the first pictures of a mid-latitude cyclone over the northeastern United States. Samuel Morey of Oxford, New Hampshire, patented the internal combustion engine on April 1, 1826. It was pretty much the kind of engine we still use in cars and trucks, but not as complicated and they need less maintenance than those of today. And that Gary, is our Innovations in History for this week.

>> **Gary Owen:** Hey, I want to talk about our radio link. Because we have people that say, you know what, I missed the show last week or missed the show a couple of weeks ago or you know, I heard that show but I can't remember the guest. I want to tell you that, when you go to the OCAST website, click on the radio show link. There not only will you find the shows, but you can also get a transcript of the show. It's in pdf form. So if you have a colleague or if you're looking to do some research on a particular topic of a show that we've done in the past, all you do is just go to OCAST and if you can't remember the link, to their website, just type in OCAST and you hear our promos talk about that all the time. And just go to the public information link there and scroll down and you'll see radio show and right there it is. And we post those shows the Monday following the show that the weekend that you hear that.

>> **Steve Paris:** Absolutely, Gary. And remember, if you, if you didn't pick up the show, we keep these shows on our website for about a year.

>> **Gary Owen:** Really?

>> **Steve Paris:** And you're welcome to link to them.

>> **Gary Owen:** Wow.

>> **Steve Paris:** Do whatever you like.

>> **Gary Owen:** You must have one whale of a server there.

>> **Steve Paris:** Well, the state of Oklahoma has some pretty good resources.

>> **Gary Owen:** So, if again, if you have some information related to this, this show or any shows we've done in the past, check it out. And also, if you want to see what we look at like, there's a picture on there.

>> **Steve Paris:** Scary thought.

>> **Gary Owen:** It is a scary thought and you can figure out which one is which. I'm the good looking one by the way.

>> **Steve Paris:** He's right.

>> **Gary Owen:** OK, well listen, I want to just kind of tease a little bit about what we're going to talk about on our show this week. If you or someone you know who has a child who's had been

diagnosed with juvenile arthritis or juvenile rheumatoid arthritis, this disease effects about 300,000 children under the age of 18. And when we start talking to our guest, Dr. Jarvis is going to have some great information about this. Because what they are doing at the OU Health Sciences Center, is amazing. You know, we've had several guests on from the Health Sciences Center.

>> **Steve Paris:** We have over the years. It's been one of our mainstays of sources for good information. And you know, I had, I had a friend of mine tell me not long ago, he said, I listen to your show every week and he said, sometimes it gets a little over my head. Well he said sometimes and obviously we have professionals that deal in subjects that are quite deep. But our job is to try to bring it down to the level where you and I, Gary, can understand it and everybody else can, too.

>> **Gary Owen:** And if we walk away here understanding it, that's a miracle in itself. I'm telling you.

>> **Steve Paris:** That's true.

>> **Gary Owen:** Well, we're going to be visiting with OU physician, Dr. James Jarvis, when we come back and learn more about what they're doing with juvenile rheumatoid arthritis. When we return on your Oklahoma Science Radio Magazine. *Oklahoma Innovations*.

[ music ]

>> SUV's, hamburgers, TV's, it's the American way. Go big or go home. Well my friend, when it comes to science, bigger isn't necessarily better. The next big advancement to impact science is smaller than an atom. Nanotechnology is improving our daily lives by making products stronger, smaller, faster and more durable. Sunscreen, clothing, airplanes, cancer treatments and cosmetics are just a few examples of products improved through the application of nanotechnology. With the support of the Oklahoma Center for the Advancement of Science and Technology, Oklahoma companies are quickly being recognized as global leaders in the industry. Geo chip, an OCAST funded project at the University of Oklahoma, was named among the top 100 most outstanding technology developments of 2009 by R&D Magazine. Developing new products and treatments, supporting innovation, that's what OCAST is all about. For more information, call OCAST toll-free at 866-265-2215 or visit their website at [OCAST.OK.gov](http://OCAST.OK.gov).

>> You're listening to *Oklahoma Innovations* with Gary Owen and Steve Paris. On the OCAST radio network.

[ music ]

>> **Gary Owen:** Researchers at OU Health Sciences Center, recently received a \$1.25 million grant from the National Institutes of Health. The money will fund study of remission in juvenile idiopathic arthritis, formerly known as juvenile rheumatoid arthritis. The disease affects about 300,000 children under the age of 18. And one of those doing the research is an OU physician, Dr. James Jarvis. Glad to have you along. You're an interesting gentleman. We've been talking, Steve and I have been talking to you off mike and so our listeners are going to get to hear a little sample of your personality. Because you've got such broad interests. But welcome to the show.

>> **Dr. James Jarvis:** It's a pleasure to be here.

>> **Gary Owen:** Now, I've got to point out, I wish this was television, because this is one of those gentleman, this is what I call true personality. He's wearing a bow tie.

>> **Dr. James Jarvis:** Right.

>> **Gary Owen:** You don't see many guys wear bow ties today.

>> **Steve Paris:** Well, there's a reason I'm sure and it's probably just a matter of just probably something you prefer. Is that right?

>> **Dr. James Jarvis:** Well, actually it's a fairly popular among pediatricians.

>> **Gary Owen:** Really?

>> **Dr. James Jarvis:** Because it doesn't get in your you know, babies don't drool on it or other things.

>> **Steve Paris:** Oh, that's a good one. Yes.

>> **Gary Owen:** There's a practical application.

>> **Dr. James Jarvis:** There's actually a practical application and it's interesting, if you look around, at particularly popular with people who trained at either Boston Children's Hospital or St. Louis Children's Hospital. Don't ask me why, but there you go.

>> **Gary Owen:** Interesting.

>> **Steve Paris:** And you, speaking of hospitals, you've had some experience there. Of course right now you're located at OU Children's Physicians Building and of course you have two roles, research and physician. We'll talk about that in just a minute. But you went to medical school at the University of Vermont. Your residency was at the St. Louis Children's Hospital. The Barnes Hospital. And you have fellowship at what they refer to as Wash U, Washington University, St. Louis. Your interests, rheumatoid arthritis and here's a word here I'm going to let you pronounce, Lupus. I'm not even going to try it. What is that word? Erythematosus.

>> **Dr. James Jarvis:** Oh yes. Lupus erythematosus. It's, people just know it as lupus.

>> **Steve Paris:** Lupus, OK.

>> **Dr. James Jarvis:** Yes.

>> **Steve Paris:** OK, rheumatology and arthritis.

>> **Dr. James Jarvis:** But if we just said lupus you know, then we wouldn't be able to you know, impress people with our [inaudible].

>> **Gary Owen:** Big words.

>> **Dr. James Jarvis:** Yes.

>> **Gary Owen:** He's not telling the truth there folks, there's a reason for these names.

>> **Dr. James Jarvis:** Right.

>> **Steve Paris:** At any rate.

>> **Dr. James Jarvis:** It's like pluripotent. I mean, who uses that word. You know.

>> **Steve Paris:** Very good. As you see, Dr. Jarvis has a great sense of humor. He also has a history that connects him with Canada. He was telling me about it as we were on the elevator earlier and I'm wondering, give us a little bit about your past and how you came to be here.

>> **Dr. James Jarvis:** Yes, I know you know, if I lived in the state of Arizona, they'd probably pack me back. Because the, my grandparents walked across the border from Quebec, about 1897. People don't know that about almost a quarter of the population of Quebec, left to find work in the late 1800's, early 1900's and my grandparents were part of that. They spoke French at home, not English and I, and of course we grew up watching French TV because the nearest TV stations were in Montreal.

>> **Gary Owen:** Now when you were growing up, where did you live?

>> **Dr. James Jarvis:** I lived in St. Albans, Vermont. Which was about 75 miles south of Montreal.

>> **Gary Owen:** OK.

>> **Dr. James Jarvis:** I mean, if you were good with a three iron, you could hit Canada from the hills outside my house.

>> **Gary Owen:** Oh really?

>> **Dr. James Jarvis:** Yes, most, I mean, most people would need, would need their driver, but a really good, somebody good with a three iron could have hit it.

>> **Steve Paris:** So you came from Vermont and you had a good connection with Canada. And you talk about people walking across the border, this was in the 1800's.

>> **Dr. James Jarvis:** Yes.

>> **Steve Paris:** Back in a time when the United States was a little better known for immigration. For receiving people from other parts and most everybody, including people in this room, have relatives they can trace back to Europe and Canada and different places. And so, things were different at that time weren't they?

>> **Dr. James Jarvis:** Yes, it's very interesting. If you look at the history of St. Albans, although there was some melting pot experience here, actually the Irish and the French didn't get along with each other at all. So my town was about 40% Irish, 40% French Canadians, but they had two separate Catholic parishes.

>> **Gary Owen:** Oh, I see. So there were differences.

>> **Dr. James Jarvis:** There were differences.

>> **Steve Paris:** Very good. Well welcome to *Oklahoma Innovations*. We want to talk to you about your specialty subject, rheumatology and especially as it relates to pediatric rheumatology. Talk to us a little bit about your research and we want to also blend in here the work you do as a physician. Because you do both.

>> **Dr. James Jarvis:** Yes, it's really been an exciting, an exciting 30 years for me to take care of children with juvenile arthritis. First of all, juvenile arthritis can be understood as a tumor of the joint lining. For reasons we don't understand, white blood cells get into the joint lining tissue and then the tissue begins to grow, much like a cancer, except it doesn't spread through the rest of the body. Most children don't express pain when they first have their disease. In fact, what we tell our young trainees is, if a child is complaining of pain, the one thing you can be pretty sure they don't have is juvenile arthritis.

>> **Gary Owen:** Really?

>> **Dr. James Jarvis:** Yes. So when you ask, when you ask a girl with arthritis when she first comes to see you, why are you here? What she'll say is my hands are swollen or my knees are swollen or my ankles are swollen. They don't initially express pain, which we've always found quite interesting.

>> **Gary Owen:** Really? Yes, I mean most of us, as we age do, some of us I guess, I'm not going to say most of us, some of us do have a little bout with arthritis and afflictions such as that. I mean, I can say from personal experience, I felt it. I know what it's like.

>> **Dr. James Jarvis:** Yes.

>> **Gary Owen:** Not severe, but you do feel it. It feels like your joints are stiffening up. They don't bend quite as easily.

>> **Dr. James Jarvis:** Yes and what you'll hear kids say is, I didn't know how bad I felt until I started feeling better.

>> **Gary Owen:** That's one of the things as I was reading your material, you, there's been some improvements made the last 20 years and you know, you were seeing children come into, into the hospital with or into the medical facility with in wheelchairs. You're seeing less of that now? Is that's what you're saying?

>> **Dr. James Jarvis:** Yes, I think that's part of why I led off with how much fun it's been to be doing this for 30 years. Is that when I first started this field, lots and lots of our waiting rooms around the United States were filled with kids in wheelchairs and now they're mostly filled with rambunctious toddlers and teenagers.

>> **Gary Owen:** And can you, we don't have just a little bit of time in this segment. But can you kind of give us a quick overview of what's happened? What made the difference?

>> **Dr. James Jarvis:** We have two classes of drugs that made a huge difference. One of them is called methytrexate [assumed spelling], which was initially used as an anti-cancer agent. And then we have this other set of, set of drugs called biologics, generically and they attack particular proteins that we know are involved in the disease process.

>> **Steve Paris:** Interesting stuff.

>> **Gary Owen:** Fascinating.

>> **Steve Paris:** I tell you, there just so much to cover here and we've got a couple of segments that we could get into some symptoms that parents maybe can recognize, pay closer attention to. You don't want to ignore when your child seems not quite as energetic or perhaps you know, discomforts is symptoms going on. We'll talk more about that when we return with Dr. Jarvis on *Oklahoma Innovations*.

[ music ]

>> This is Oklahoma's Science Radio Magazine. *Oklahoma Innovations*. With Gary Owen and Steve Paris. On the OCAST radio network.

>> Pancreatic cancer often goes undiagnosed until stage three, because there are no early symptoms of this disease. By the time some are diagnosed, there's only about a 5% survival rate after 5 years. With the support of the Oklahoma Center for the Advancement of Science and Technologies Oklahoma Health Research Program, an Oklahoma researcher is developing a

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>> **Gary Owen:** For some 30 years, Dr. James Jarvis of the University of Oklahoma Health Sciences Center has been dealing with juvenile rheumatology and I want to mention here that Dr. Jarvis has been the director of pediatric rheumatology at the Children's Hospital at OU Medical Center since 1997. He's also been working as a consultive rheumatologist at the WW Hastings Indian Hospital in Tahlequah, Oklahoma since October 2003. He's won multiple awards and his research interests include using genomic technologies to understand complex interaction that occurs through the immune system in juvenile arthritis and other inflammatory disorders, including infection in newborn infants. Which brings me to this question. Obviously, this is somewhat genetic. Where does it start in a family tree? Is it and is that a good question I guess is probably a good place to start?

>> **Dr. James Jarvis:** Yes, that is a good place to start. It's very interesting that for example, we see in indigenous American communities, first nations and Canada, Alaska natives, American Indians here in the USA, about a five times higher prevalence rate of almost any rheumatic disease you care to name, including juvenile arthritis. And on the other hand we don't oh, and these illnesses tend to cluster in families in indigenous peoples. On the other hand, we don't see that same, quite the same kind of clustering in the, in European descended children. So for example, there was an attempt to characterize all the sibling pairs with rheumatoid arthritis, about ten years ago and they only came up with about 235 sibling pairs. So there's obviously something going on in the indigenous communities that is not going on in the same way in the broader European population.

>> **Gary Owen:** It's probably all that wine they drink.

>> **Dr. James Jarvis:** Could be that. It could be that. A little Bordeaux at night would be just about the right thing.

>> **Steve Paris:** But you've got a theory you mentioned during the break a while ago, about what's happened the last several hundred years, with the Native American populations.

>> **Dr. James Jarvis:** Right, so we have to, we have to understand that all that runs in families is not, is not genetic per say. That is it happens that I speak French, my grandfather spoke French, many of my cousins speak French, but it doesn't mean that we have a genetic predisposition to speak French. Our environment influenced that considerably. So in the same way we, there's evidence now, some of the, a lot of it work being done in my lab, that suggests that the way the environment has impacted on indigenous peoples may in fact account for the high prevalence rate of these diseases. We call these epigenetic changes. These are changes that occur to the DNA as a result of interaction with the environment. Doesn't change the coding sequence, it doesn't change the blueprint, it changes how the cells use the blueprint.

>> **Gary Owen:** So, what happened to the Native American populations and the way they were treated possibly, could have an impact of why there's a prevalence of different types of arthritis.

>> **Dr. James Jarvis:** Yes, it turns out.

>> **Gary Owen:** We don't know that, but it's a possibility.

>> **Dr. James Jarvis:** Right, it turns out that dislocating people from their lands, their cultures, hunting them down, starving them out and marginalizing them, it turns out that's not very good for people.

>> **Steve Paris:** Yes.

>> **Dr. James Jarvis:** Who knew?

>> **Steve Paris:** Who knew? Not very healthy.

>> **Gary Owen:** Let's talk about, let's talk to our listeners while we're in this early stage, let's talk to our listeners about the symptoms. Things to recognize from infants on up to teenagers. What are the things to look for?

>> **Dr. James Jarvis:** Typically, small children will come to the notice of their parents one of two ways. One, they'll have a big, swollen joint and they may or may not be walking funny. As I mentioned before, they don't typically complain of pain. They very seldom verbalize pain. If you were to look at preschool children, I don't know anything other than juvenile rheumatoid arthritis that causes painless swelling in a lower extremity joint of a toddler. I don't know anything other than that, that causes that. And yet, 60% of children with that form of juvenile arthritis see an orthopedic surgeon before they see a rheumatologist.

>> **Gary Owen:** Interesting.

>> **Dr. James Jarvis:** An older girl, when you ask her why she came to see the doctor, she'll say, my hands are swollen or my knees are swollen or my ankles are swollen and her parents may also notice that she's walking funny and that it gets better the more she walks. But if she sits down for a long time, she'll say she feels stiff, that rest actually makes her symptoms worse, not better.

>> **Gary Owen:** And sometimes, if I'm correct, in certain areas those symptoms also, well depending on were those hands or knees, also may generate a little heat, too. Right?

>> **Dr. James Jarvis:** Oh yes, you'll feel, I mean you can feel the warmth.

>> **Gary Owen:** Because you'll notice, you touch them and you know, wow your hands are hot. Don't, don't mistake that as a fever or that's actually the inflammation. Right?

>> **Dr. James Jarvis:** Yes, in fact, it's one of the primary things we look at when we examine a child and it's one of the things I make sure our medical students in resident, in fact our parents, I make them feel the joint and say, you feel how warm that is and you see how that's different from the shin or the upper arm or whatever.

>> **Gary Owen:** Now, we clarify the condition, but we don't know what causes the condition. Is that right or do you know?

>> **Dr. James Jarvis:** No, I don't think we do. And quite frankly, I think we've been working on an outmoded model for about 20 years. This used to be considered an autoimmune disease. That is the idea that the immune system was recognizing a self protein inappropriately and attacking it. The trouble with that theory is that it was based on the fact that children with juvenile arthritis seemed to be making a lot of what we call auto-antibodies. Antibodies against self tissue. The trouble is a third of perfectly healthy children do that. So that turns out probably not to be an abnormality in kids. That's probably a normal thing for kids to do. We think this illness is a lot more like cancer. We think this illness is an illness where the white blood cells lose their ability to turn genes off and on. Oh and by the way, one of the things that does that are these so-called epigenetic changes that I was just mentioning previously.

>> **Steve Paris:** Oh, wow.

>> **Gary Owen:** Now the treatments, Steve and I have been looking at some of your material, the treatments have improved quite a bit over the last decade.

>> **Dr. James Jarvis:** Yes, it's not you know, I hate to say this but.

>> **Gary Owen:** Go ahead. We'll let you.

>> **Dr. James Jarvis:** It's kind of fun to treat kids with arthritis now, because so many of them do so well in terms, compared to what I remember 30 years ago.

>> **Steve Paris:** Sure.

>> **Gary Owen:** Yes.

>> **Dr. James Jarvis:** I can remember a particular case of a young lady who came into my office about a year and a half ago, almost two years ago now and literally was in a wheelchair. And just three weeks ago, she was in a big competition with a very, very, very high functioning marching band here in Oklahoma.

>> **Steve Paris:** Really?

>> **Dr. James Jarvis:** And is nothing other than a sparkling, bright, wonderful teenager. So these kinds.

>> **Gary Owen:** That's rewarding though doctor.

>> **Dr. James Jarvis:** Yes, you can.

>> **Steve Paris:** Why wouldn't you be happy about it?

>> **Dr. James Jarvis:** Yes. I mean.

>> **Gary Owen:** Absolutely.

>> **Dr. James Jarvis:** Yes, I mean this is fun stuff to do.

>> **Gary Owen:** Wow.

>> **Steve Paris:** I bet.

>> **Gary Owen:** We'll talk a little bit about your research here. Your most recent award, if I read this correctly, is a \$1.25 million from the National Institutes of Health?

>> **Dr. James Jarvis:** Yes.

>> **Gary Owen:** And that happened just like when? Just?

>> **Dr. James Jarvis:** We got the award letter February 1st.

>> **Gary Owen:** OK. I want to, I'm going to read a quote here. This is from Dr. M. Duane Andrews, Executive Dean of the OU College of Medicine. Here's what he said. This grant is a tribute to the great work being done by Dr. Jarvis and his team. It will help our researchers make the advances that allow us to unravel the medical mysteries behind diseases like juvenile idiopathic arthritis and ultimately to improve treatments and find a cure. That's quite a, quite a tribute to you. Now talk about your team. You've got several people who, several physicians you're working with.

>> **Dr. James Jarvis:** Right. My core team consists of my research associate, Kau [assumed spelling] Jang [assumed spelling] and his wife Yaming [assumed spelling] Chen. And they do a lot of the hands on work in the lab. I have, there are three scientists over at Oklahoma Medical Research Foundation, Bart Frank, Nick Nolton [assumed spelling] and Igor Dosmorov [assumed spelling], who do a lot of our data analysis. And then I've recruited three physicians from different parts of the country, Carol Wallace in Seattle, Lynn Pinaro [assumed spelling] in Dallas and Terry Moore in St. Louis.

>> **Gary Owen:** And they've come here?

>> **Dr. James Jarvis:** Well, they send us samples from their patients out there.

>> **Gary Owen:** So they're working in their state.

>> **Dr. James Jarvis:** So they're working in their states. And like most research, it's a team effort. It takes a lot of people to do something like this.

>> **Steve Paris:** And as you just mentioned or you indicated, they don't all have to be here, they don't all have to be in one location. They can be at different places around the country or around the world.

>> **Dr. James Jarvis:** Yes.

>> **Steve Paris:** And still be on the same team.

>> **Dr. James Jarvis:** Sure and I mean, the Internet has made a lot of things possible.

>> **Gary Owen:** Absolutely. Well you know, you've given us a great history and I know it's not totally complete, because we haven't had time to talk about everything, but your, where you are

now and the success that you've had over the last couple of decades, it makes me have to wonder. Where do you think we're going to be five, ten years from now?

>> **Dr. James Jarvis:** I'm glad you asked that.

[ laughter ] Because, here's what we, we still have a lot of work to do. One, we don't, we don't get, this grant is to find out what remission really means at the biological level. We know what it is clinically, but not biologically. We're going to develop a road map to let us to get to remission, so kids don't have to take shots every day, don't have to come in for IV medicines, etcetera.

[ music ] That's where we're going.

>> **Gary Owen:** That's wonderful stuff. Dr. James Jarvis, our guest from the University of Oklahoma Health Sciences Center, talking about juvenile rheumatology. We've got more to come on *Oklahoma Innovations*.

[ music ]

>> From Oklahoma City to Duncan, from Clinton to Tulsa, your tuned to *Oklahoma Innovations* on the OCAST radio network.

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[ music ]

>> **Gary Owen:** Thank you for joining us on this week's edition of *Oklahoma Innovations*. If your child has complaints of pain in the musculoskeletal system, like joints, muscles, bones or tendons, other symptoms of arthritis or autoimmune disorders, your doctor may recommend that you take your child to a pediatric rheumatologist. Or your children's physicians has three board pediatric rheumatologists, the only ones in central and south Oklahoma. Now children are not just small adults. Their bodies are growing and have their unique medical needs like we adults and pediatric rheumatologists are experienced in interpreting what may be going on. We've been talking before the break about some of the missions that you have. I wanted you, because we kind of had to stop you there, I want you to go back and elaborate a little bit about that.

>> **Dr. James Jarvis:** Yes, our new NIH funded grant is to create a road map for what remission is in juvenile arthritis. We can define remission clinically, but we don't know really what that is at the cell and molecular level. So as I said in my application to NIH, we're basically like a bunch of people trying to get somewhere, but we don't know where we're trying to get. Now although we can treat rheumatoid arthritis in children very, very, very well, we don't do a good job of getting kids off medication. So for example, five years after diagnosis, only 5% of children are in complete remission and off medication. So that's a big challenge we still face. The other challenge is that we don't get kids into remission quickly enough and by remission we

means absolutely no disease activity at all. A recent study that was also sponsored by NIH, found that we still, about a third of children are still not in remission a year after diagnosis. And remember, a year is a long time for a kid. If you're five years old, a year is 20% of your life.

>> **Gary Owen:** Right.

>> **Dr. James Jarvis:** So, we have, we really, that's our big challenge and that's what we're trying to do with this grant. Is to create a molecular model of what remission is so we can get there faster and stay there longer.

>> **Gary Owen:** But you are making their lives more manageable, more productive, as you just demonstrated with the teenager who was in wheelchair, now you know, doing sports. And one side we haven't talked about is the impact it has on parents.

>> **Dr. James Jarvis:** I think this must be very, very difficult for parents, having been a parent myself. Because watching your child, I mean, I can remember the time, the first time I had to watch one of my children get stitches you know.

>> **Gary Owen:** Sure.

>> **Dr. James Jarvis:** I was a basket case.

>> **Gary Owen:** Sure, sure.

>> **Dr. James Jarvis:** So, trying to go through this kind of thing with your child must be very difficult. And then you get into these developmental programs right. What is a teenager supposed to do? A teenager is supposed to become independent, right. So now you have this illness that impacts on a major developmental program and I think for a parent that must be extremely difficult.

>> **Gary Owen:** What about psychologically for an adolescent to survive in school with this disorder?

>> **Dr. James Jarvis:** Well I think that, here's what I try to do. I try to keep the adolescent on their developmental program. Right? Their thing is to become independent. The first time your twelve year old daughter rolls her eyes at you, that is actually for you a triumph as a parent. It means that she feels comfortable enough, is beginning to feel comfortable enough in her own skin to have an opinion different from yours.

>> **Gary Owen:** Yes.

>> **Dr. James Jarvis:** And remember, I was the stupidest man in Edmond, Oklahoma for eight years running.

[ laughter ] It was amazing how stupid I was.

>> **Steve Paris:** Just ask your daughter, right?

>> **Dr. James Jarvis:** Yes, but I also understood as that was going on, how that that was my kids establishing their independence. So we try, we try to keep teens on that track and we try to help parents understand that, that their roles as parents has not changed, even though their child has arthritis. That is to say, their roles is still to try to nurture an independent, self-sufficient human being.

>> **Gary Owen:** When you talk about the research going on in your labs right now and the progress that's been made, looking down even ten years from now and based on the progress of your research, are you hopeful that we will eventually find a cure for this disease?

>> **Dr. James Jarvis:** Well you know, the great Bill Gates once said, people tend to over-estimate the amount of change that will occur in five years and under-estimate the amount of change that will occur in ten years. But, that being said, I really do, I see a day when, when a patient I diagnose next Monday, which is my clinic day, a patient I diagnose sometimes in my tenure here in Oklahoma, is going to be the recipient of a cure, not just treatment. I really, I'm really very hopeful about that.

>> **Steve Paris:** But you said something earlier. You indicated, this is acts more like cancer than an autoimmune disorder.

>> **Dr. James Jarvis:** Yes.

>> **Steve Paris:** I don't think you were saying it's cancer. You were saying it acts like cancer.

>> **Dr. James Jarvis:** Yes. Because the growth of the joint lining tissue looks like, behaves in some ways like a cancer. But also the genes that get turned on in the white blood cells. So we find a lot of cancer genes turned on in the white blood cells of children with juvenile arthritis. Very interestingly. Which we think means that the programs that are intended to tell the cell what genes to turn on or off, are bugged up in one way or. Can I say that on the radio?

>> **Gary Owen:** Yes you can.

>> **Dr. James Jarvis:** One way or another in juvenile arthritis.

>> **Gary Owen:** So your point is or at least the point maybe I'm trying to make is that, you indicated it was like cancer, although it's not cancer.

>> **Dr. James Jarvis:** Right.

>> **Gary Owen:** But we all know how challenging it's been to find cures for cancer.

>> **Dr. James Jarvis:** Right.

>> **Gary Owen:** It's been one of the biggest challenges in the medical world. And so your area probably has some connections to the difficulty and you know, some day it will happen. We have faith, but we don't know.

>> **Dr. James Jarvis:** Yes, it's interesting. Some of my new research collaborations are actually with people at the Dana Farber Cancer Institute up in Boston.

>> **Gary Owen:** Is that right?

>> **Dr. James Jarvis:** Yes, because we're beginning to see a lot of likenesses in how we're going to approach getting, getting the answers we want.

>> **Gary Owen:** Wow. Well we mentioned earlier the WW Hastings Hospital in Tahlequah, how did you get connected there? How did that come about?

>> **Dr. James Jarvis:** Actually I came to Oklahoma to work with indigenous people's.

>> **Gary Owen:** OK, natural connection.

>> **Dr. James Jarvis:** Yes, my great granny is Mohawk. She was born on the Aguiasne [assumed spelling] reservation in upstate New York. I've always had an interest in the health challenges of indigenous peoples, so it was a natural fit to come down here.

>> **Steve Paris:** Very good.

>> **Gary Owen:** By the way, I want to give a website early before we close out the segment. If you'd like to learn more about juvenile arthritis, there is a website that has a wealth of information. It's [www.Arthritis.org](http://www.Arthritis.org), [www.Arthritis.org](http://www.Arthritis.org) and it talks a lot about the different forms of arthritis related in children and teenagers. So check that out. Do you have a website that our listeners can go to learn more about your research?

>> **Dr. James Jarvis:** God, I thought you were going to ask me, I thought this was going to be the segue into the website about my rock and roll band.

>> **Steve Paris:** Oh, I forgot about the rock and roll band.

>> **Gary Owen:** Well you just did that. Tell us about the rock and roll band.

>> **Dr. James Jarvis:** [www.V8Band.com](http://www.V8Band.com).

>> **Gary Owen:** And what is that?

>> **Dr. James Jarvis:** Be there. We're rock and roll stars.

>> **Gary Owen:** Rock and roll stars.

>> **Dr. James Jarvis:** We play 1950's and 60's rock and roll. I play with a bunch of guys from Sprout, Oklahoma and our drummer lives up in the rural areas of north Oklahoma County, yes.

>> **Gary Owen:** And their emcee, as I understand, an Ed Sullivan impersonator.

>> **Dr. James Jarvis:** You never know. Right here, on our stage. Like that kind of thing, yes.

>> **Steve Paris:** He is good, isn't he. Very good.

>> **Dr. James Jarvis:** Just had to get that on the radio.

>> **Steve Paris:** Do you have time for me to make a?

>> **Gary Owen:** Sure.

>> **Dr. James Jarvis:** Right, let's actually behave like adults for a minute.

>> **Gary Owen:** No, no. You make this fun. But I wanted to mention. Just very briefly. Back in 2007, you received a \$135,000 award from OCAST on our health research program, to study neutrophil biomarkers in polyarticular JRA, so.

>> **Dr. James Jarvis:** And that was actually the seed grant that led to this \$1.25 million NIH grant. So it really is important, I mean so the state of Oklahoma just got a ten to one.

>> **Steve Paris:** There you go.

>> **Dr. James Jarvis:** Pay off on it's investment.

>> **Steve Paris:** On your project alone.

>> **Dr. James Jarvis:** Right, absolutely. Even Donald Trump doesn't get a ten to one pay off on his investment, so.

>> **Steve Paris:** Well and you make a great point is that what we invest in today in the area of health, we wind up multiplying. I mean, in your case, many times over.

>> **Dr. James Jarvis:** And particularly health for children. I mean, children are our future. Children are the hope of our future. Children are what makes it OK to grow old.

>> **Gary Owen:** There you go.

>> **Dr. James Jarvis:** So I think that what we invest in children means everything.

>> **Steve Paris:** Absolutely.

>> **Gary Owen:** We've got less than a minute left. Just quickly talk about OU Children's Medical Center and the Health Sciences Center. Talk about the Physicians Building and the wonderful things doctors are doing over there.

>> **Dr. James Jarvis:** We have a really exciting place to work. Brand new building, wonderful chair, Dr. Terry Stowe. It is just a fabulous environment to work with great people, great resources and I feel like the luckiest man in the world, if I can quote Lou Gehrig.

>> **Gary Owen:** Dr. James Jarvis, you've been wonderful. I think we have a lot more insight into rheumatology in particularly with pediatric studies that you're doing and we commend you for this research and I know a lot of parents out there are probably going to take a little closer look at some of the disorders that they may have dismissed and maybe thought well, the kid fell and you know maybe we should take a little serious, more serious look at that. We thank you so much and Steve, I guess we'll see you next week.

>> **Steve Paris:** We'll see Gary.

>> **Gary Owen:** Have a good week.

[ Music ]

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