

Oklahoma Innovations Radio Show

Air Date: May 2-3, 2015

Guests: **Chad Mullen**, OCAST; **Frank Wang** and **Alice Pinney**, Oklahoma School of Science and Mathematics (OSSM); **John Aubrey Ice**, Oklahoma Medical Research Foundation (OMRF)

>> 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 science and technology. The OCAST mission is to identify and fund promising research and technologies that allow Oklahoma to compete in a global market economy from our own backyard. This program features some of Oklahoma's most gifted scientists, inventors, entrepreneurs, manufacturers, educators 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 Tessa North.

[Music]

>> Welcome to this week's edition of *Oklahoma Innovations*. We are delighted. Tess and I are delighted to be at OSSM. What does this stand for, Tessa?

>> That is the Oklahoma School of Science and Mathematics.

>> That's right and we have a reason. We're going to be interviewing our guests today, the GE Foundation. Philanthropic Organizations of GE held a news conference recently with the Oklahoma Center for the Advancement of Science and Technology, OCAST, where Tessa works and they sponsored the show. And also with the Oklahoma School of Science and Mathematics, big announcement recently, a 400,000-dollar donation to fund STEM Empowers OK, an initiative to engage and inspire greater interest among high school students in Science, Technology, Engineering and Mathematics. And that's a big deal for the school, isn't it?

>> I think that's a huge deal, not only for the school and for OCAST, but for all of the students that are here in Oklahoma.

>> That's right.

>> I think there's a lot of good things that come out of this.

>> That's right because there are going to be a select few of very intelligent students who want to be involved in the Science and Mathematics, Technology and we have some examples of that. We have some guests later in the show, one that is a student now and we have an alumni that has gone on to do wonderful things and so you're going to kind of get a book end of success stories here of why the school, educational institution is so important to our state. Let me set up the guest we have. First of all, we have one of your colleagues, Chad Mullen, Director of Government Relations with OCAST and Dr. Frank Wang, President of OSSM. We have Alice Pinney who is a senior whose interest is in the mechanical engineering. She's a senior and going to this school. And we also have, later in the program, John Aubrey, who is now--who was an alumni but now is a doctor. I want to find out what that is. Ice MD.

>> It's actually John Ice MD.

>> Oh, I read it wrong. So it's John Aubrey Ice?

>> Yes.

>> Oh, heck. I thought he was going to talk about Ice and MD. No, I'm just kidding. Yes, John Aubrey Ice is his name and we're going to find out what he's doing. So, got lots of stuff to talk about. First of all, let's turn on the microphone and go to Chad Mullen with OCAST. Chad, you've been on the program in the past but we don't get to talk to you very often. Now, you're involved at the state capital quite a bit with government relations. So bring us up to date on what's going on at the capital.

>> Well, Gary, Tessa, thanks for having me on the show today. I'm excited to talk about a couple of initiatives that are going on at OCAST. But first, as you alluded to, I've been spending a lot of time at the capital this year. We've got a bit of a budget and a whole deficit to make up. For those of you that may not be aware that the state began this legislative session with about a 611 million dollar budget short falls. Our legislators will have a very challenging time writing and crafting a budget this year and there are many entities in the state, our agency, Dr. Wang with the OSSM and many others across-state that will be trying to figure out creative ways to meet the--or our service levels and demand for our products and services given the budget constraints. So we've spent a lot of time communicating our value and the importance that science and technology plays both in our economy and in our schools as well as far as encouraging students to pursue STEM degrees and then turn around and employ those skills here in Oklahoma with our companies. So it's been an interesting year. There is about six weeks approximately left of the session. They might get out a little bit early. But--So we've--I've spent a lot of time and we have a lot of activities surrounding promoting science and technology and their importance down at the capital.

>> No, we talked about how important it is to have science and technology in Oklahoma. We've already proved that with the programs that OCAST obviously has offered through the years. And when you look at the success rate, what is our return right now with the investment of tax dollars versus business in science and technology?

>> Well, that's a great question, Gary. We have essentially a cumulative return of 20 to 1 so for every one dollar of taxpayer funds invested, we're able to leverage that into 20 additional dollars. Some of that's federal but a large part of it is private funding. Over the past eight years, we've been able to raise 500 million dollars in private capital through our various entities and brought into the state and that's tremendous for a state-size of Oklahoma. That allows us to actually compete with--I want to kind of give you an example. When OCAST started, we competed really with the Silicon Valley in Boston predominantly, but now we have Boulder in our backdoor, we have Austin in our backdoor. There's a lot of organized capital and states surrounding us. So for a state the size of Oklahoma to be able to raise that amount of private capital is really tremendous and it's--it has a lot to do with the team in OCAST, the team in I3, the New Product Development Center, the Manufacturing Alliance, the universities, OMRF. So it's been a tremendous network that's been able to accomplish this in Oklahoma.

>> And Tessa, you being involved with the programs at OCAST obviously through the years, OCAST has become kind of a model for other states based on your format, right?

>> Absolutely. Our processes that we employ in making the decisions as to who ultimately gets the taxpayer funding that we give out, it's really a national model like you said. We are actually

preparing for our big review season and we're bringing in experts from academia and industry from throughout the country over the next two months to review our projects. So it's as unbiased as a process can possibly be and people look to us often and we get many calls and have lots of meetings with people from other states trying to implement what we do here.

>> That's great. So give us some other bullets of what's going on and then perhaps I know you have an agenda that you wanted to share with us this morning and we should have it today. Can we can talk more about that?

>> Sure, sure. And we had a very exciting announcement and we'll get into more detail about one particular aspect but OCAST received a 400,000-dollar grant from the GE Foundation on Tuesday or on April 21st and we're very excited, very honored to be thought of and considered eligible for this grant. This grant will be used to launch a program called "STEM Empowers Oklahoma" and for those of you on social media, the hashtag STEM Empowers OK to talk about some of the initiatives that we have on but essentially, there's a handful components to the grant. It's \$200,000 a year for two years. And the main focus of the grant will be to really encourage students to pursue STEM education, STEM degrees and ultimately STEM careers. And so the first thing that we'll do is we'll be issuing an open innovation challenge in the fall that could be for all students across the state in Grade 6 through 12, to be able to compete. Similar to a science fair, there'll be a call to solve a real-world problem with a new invention, a new process, a new technology and then there'll be some regional events to recognize and award those students that excel to that and probably culminate in some sort of final program in the fall and or in the following spring here in Oklahoma City. So we're very excited about that and more details to come on that. We're also developing our program right now where we're going to provide scholarships and internships to students and then we're also looking at a way to bring teachers and to work with the companies all across Oklahoma and really get a good idea of what goes on in the industry and how they can relay that back to the students in the class or anywhere else--

>> So kind of get a feel what the demand is--

>> Exactly, exactly. I mean it's, you know, I don't know how you felt in school but sometimes I felt why am I learning this and how will I use it? And this really gives our teachers an opportunity to learn exactly how to be used and provide that information back to other students and other teachers in the school. So we're very excited about that. We're also excited that we're going to partner with GE to do a couple of regional innovation forums a year. And the idea behind this is to really encourage an area to come together with all the resources and talk about ways that they'll tackle the innovation economy in their district. So it would be universities in the areas, economic development professionals, industry in the area, government leaders in the area. We've--We'd come in and we do a one-day really kind of a round-table discussion almost and talk about what are the assets in your area that we can leverage to build a new economy as they say, an innovation economy. And we've done a couple of these in the past. And the most recent one was in Lawton. It was very successful and that actually led to them organizing around the idea of building a STEM community in their network. And the STEM community was a bill that came out of the legislature last year, last session. And the idea is that the career text, the schools, the colleges in the area will come together and align with the industry in there to make sure their curriculum is aligned, kind of beginning to end. So we're very excited about that and then the final part of it and I think what we're here to talk about today is the summer academies that we held at the Oklahoma School of Science and Math, OSSM, and with Dr. Wang's group and I will let him talk more about it but GE will be sponsoring summer academies to bring the

brightest students in, into the--a week-long program and with the idea of really encouraging, not only encouraging them to, well, enabling them I should say to do better at their schools, but encouraging them to look forward to their STEM type career.

>> By the way, people may be asking themselves how did GE get involved in this? For those who don't know unless you've been under a rock somewhere, I think most of the state is aware that GE is building a new global research facility and in fact, it's located right across the street from the schools, isn't that right? It's under construction right now. So that's kind of a unique opportunity for both to partner together and look at down the road at growing Oklahoma's future in Science and Technology. Anything else that you wanted to add to that before we go into Dr. Wang?

>> No, not at all.

>> Sure.

>> Just I would say to bring--to kind of round up your point, GE could have located their new global research facility anywhere so we'll honor that they have global research centers all across our planet and to have it here in Oklahoma is really I think speaks volumes about that the world of technology that's developing right here in our state.

>> Does it--

>> And I think--Oh, even along those same lines, you know, GE could have easily picked any agency or organization, any school or--

>> Absolutely.

>> --other entity to participate in this grant. So I think it also speaks very highly of both OCAST and certainly OSSM that those were the two entities that were chosen to be--to participate in this grant or receive this grant so.

>> Oh, and it certainly reflects well of the school's students and their education and--

>> Absolutely.

>> --and I mean because that for at the--for you to have that kind of traction to an organization like GE that speaks loudly of how well you're out there. You're kind of a--you know, we don't hear about your school much but you're kind of a silent giant out there and it's nice that we have the opportunity to bring to our listeners more information, more details about this wonderful educational institution. And today we're really got about 30 seconds here before the break and so, Chad, I want to thank you very much for bringing some news to the table because we don't get to talk to you obviously very--you've kind of worked behind the scenes at OCAST and I know you and Tessa work closely together along with our producer, Debbie Cox. And we would encourage our audience. I know if you're a regular listener to this program, if you haven't looked on the OCAST website, I encourage you to do that. A lot of great information there and also if you missed some previous shows, there's a big radio link there. You can go and you can listen to previous shows and learn more and we would encourage you to do that. We've got to a little break. When we come back, we're going to introduce you to Dr. Frank Wang who is the President of OSSM, the Oklahoma School of Science and Mathematics. When we return in *Oklahoma Innovations*.

[Music]

>> Pancreatic cancer is the fourth leading cause of cancer deaths, with a median survival range of only six months. As an oncologist, I see far too many families suffer from the effects of this terrible disease. We need better treatment options for patients.

>> With the support of the Oklahoma Center for the Advancement of Science and Technology, the researchers at COARE Biotechnology have what they hope will eventually be a treatment, even a cure for pancreatic cancer. They have identified a protein that if blocked may prevent tumors or keep them from growing. With help from OCAST and i2E, the team at COARE was recently awarded an SBIR Research Grant to enable them to continue their research and move closer to a treatment for pancreatic cancer. If you're a researcher or a small business in Oklahoma and are considering applying for a federal SBIR funding, contact OCAST toll-free at 866-265-2215 or visit us on Facebook or our website at ocast.ok.gov.

>> Now back to *Oklahoma Innovations* with Gary and Tessa on the OCAST Radio Network.

[Music]

>> Tessa and I are coming to you from OSSM, the Oklahoma School of Science and Math. We're recently a big announcement, OCAST and OSSM together, 400,000-dollar donation to fund STEM Empowers OK. I know you just recently got an update on all that.

>> That's right. So we're going to talk to Dr. Frank Wang, the President of OSSM next. He is actually only the school's second president and he has been here since August of 2012. So fairly new to the school, well, new-ish to the school. He has a Bachelor in Arts--Bachelor of Arts in Math from Princeton and also a Doctor in Pure Math from MIT. I did not even know that Pure Math was this thing that you can study so I'm interested to hear more about that. Prior to coming to OSSM, he taught at OU. He also taught at OSSM. He worked at Saxon Publishers where he was the chairman and he also has started or head started a special after-school school for middle school students in Norman. Dr. Wang, we are excited to have you here on the show today.

>> Sure, I'm delighted to be here and anytime I have the opportunity to share about the Oklahoma School of Science and Math with the public and the people of the State of Oklahoma, I jump at that chance so I thank you for the opportunity to come and share. I want to give particular thanks to OCAST and the Executive Director Michael Carolina for working with us in terms in the--in bringing General Electric to our campus. We are greatly honored to have there Chairman and CEO Jeff Immelt. I jokingly was telling him that this is a probably the closest thing to a visit by a head of state, like coming to our campus. And I think it's wonderful, wonderful to have the students here. They were able to do some laboratory demonstrations for him. And for our students to be able to look across the street and see what is possible through a drive for innovation and application of the book learning that they're doing here. Because, you know, it's also saying we're here about building a solid academic foundation and what GE does is to take that solid foundation and through entrepreneurship, through a drive for innovation, look for ways of improving the life for people in this country and the world. GE is truly a global company. We have a young woman, a student here, Alice Pinney, that's been working with General Electric and I hope the audience, members or listeners get a chance to hear from her about the exciting work that she's done. But there was a reference made earlier to a summer program that we're thinking of doing and so what GE is going to allow us to do is to be able to have schools throughout the state, so listeners, please take note if you're an educator in a school, you can nominate students from your school, we're going to take students from all over the state and bring them here to our campus and give them a taste of what our system is like. It's a very

rigorous academic program they have here, eight a.m. to five p.m. A lot of--A heavy duty course work and also a laboratory work that they do here and so it gives the chance for young people throughout the state to really get to experience that work. Just a background for the audience members who may not know, we were founded in actually 1983 by the legislation. We opened our doors in 1990 and just brought out our 25th class. We're relatively a small size, graduated about 400 students but those students have economic impact, have an impact in society far disproportionate to their small numbers. And we also have one of our alumnus here today, Dr. John Ice, who's going to be here and share about his experience at the school. We are tremendously, tremendously proud of him. He's working as a post doctor fellow at the OMRF, Oklahoma Medical Research Foundations. Our young people come here. They receive a very rigorous education, some say the most rigorous on any school of its kind in this country. In fact, of just the quickest slide, last night, I stumbled across an article by Jay Matthews who came--he was the inventor of the one that came up with the idea of ranking high schools, actually a friend of mine and then to my home before, I [inaudible] thanks for recognizing the Oklahoma School of Science and Mathematics. We do, you know, we're proud of what we do here. We--I want to also make a mention that we thank the State of Oklahoma, we thank the Oklahoma legislator for supporting us. We are, I believe, a gem, a true gem in the State of Oklahoma. And we want to make a positive difference in the lives of Oklahomans and you can see that through our current students and through our alums.

>> You know, some questions, some of our listeners may be asking you. What sets you apart from say a higher-learning institution of a university or college?

>> Well, these are high school students, juniors and seniors. There are other similar types of schools in the country where they're located on a college campus. But we have made the decision early on, not me personally but those who are the visionaries that founded the school made the decision to make this a standalone campus so that you would have--the faculty are a world class general university level faculty but they're teaching high school juniors and seniors. And we're heard that there has been problems with schools that are located on a college campus. Sometimes, the young people there end up picking up some of the bad habits of, there may be a drinking problem, other problems that you know, that afflict young people. We want to have the chance to really be able to focus on the young people on their particular stage of social emotional development. You know, and I think it's working out very well. It's worked out very well. Our students here that leave the school and graduate, I think one of the important things in addition to the academics is we imbue them with great habits, great life habits. I have that one alum, his wife told me that he goes to sleep early at night by 11 p.m., that's our lights out. You know, he's a successful attorney now in the Dallas area and said that she can see the effect of OSSM on her husband.

>> That's wonderful, wonderful.

>> And this is really like it's more than just a school. This is a--It's a whole lifestyle, really, these are residential campus, correct?

>> That's correct.

>> All the students live here and--

>> That's relatively unusual for Oklahoma not necessarily in the East Coast, you know, where there might be schools, residential schools or boarding with the co-boarding schools are more

common here at the State of Oklahoma. I think there may only be three such schools. I think the one is for Native American students, the Tahlequah area and then we have the school for the deaf, right? But you know, for Oklahoma, it's kind of unusual--

>> Right.

>> --for a residential campus. I should add into, if students do not come here to the residential campus, we have satellite locations throughout the state where they come to us for half a day. And so this is a means for young people who maybe they're working in a family farm. They're in a family business. They're unable to come here but they can come to us for half a day and we're located in Afton and Tahlequah and Wayne and Enid, in Poteau, at Stilwell and so forth.

>> That's great. We're visiting with Dr. Frank Wang. He's the President of the Oklahoma School of Science and Mathematics in Oklahoma City. When we come back, we're going to talk to a student that I know he's really proud of and later on in the program, we're going to hear from Dr. John Aubrey Ice and he was an alumni from the school and you're going to find out why this organization is so wonderful to have in Oklahoma. When we return on *Oklahoma Innovations*.

[Music]

>> Don't go away. There's a lot more to learn on *Oklahoma Innovations* with Gary and Tessa on the Oklahoma Radio Network.

>> Oklahoma is leading energy producer with an economy closely tied to oil and gas. One in four jobs in the state are tied to energy.

>> Nitro-Lift Technologies of Oklahoma manufactures equipment for the oil and gas industry with the support of the Oklahoma Manufacturing Alliance and OCAST, Nitro-Lift is developing new technologies that will enhance energy production, provide a safer work environment and leave a smaller environmental footprint. With a development of new technologies, the company plans to double in size and triple sales in five years, adding jobs and improving Oklahoma's economy. As one of OCAST's strategic partners, the Oklahoma Manufacturing Alliance works with manufacturers around the state to develop new products, streamline operations and grow business. The alliance is keeping manufacturing jobs in Oklahoma. For more information, call OCAST toll-free at 866-265-2215 or visit us on Facebook or our website at ocast.ok.gov.

>> As a police officer, one of the most dangerous parts of my job is arriving on a scene where an armed suspect has barricaded himself or where we suspect some type of booby trap. We're most vulnerable when we don't know what kind of explosives or weapons are on the other side. It can be deadly.

>> Tactical Electronics, an Oklahoma-based company, invents, manufactures and sells tools such as under door cameras and video fiberscopes that are used by law enforcement officers, military and counterterrorism personnel around the globe, the tools allow areas and packages to be inspected from a safe distance which reduces the risks of injuries and death. With the support of OCAST, the company is developing image recognition software that scans packages and within milliseconds, identifies what's inside. OCAST is advancing science and technology that not only improves but also saves lives. For more information, call OCAST toll-free at 866-265-2215 or visit us on Facebook or our website at ocast.ok.gov.

>> 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]

>> Tessa and I are coming to you this week from OSSM, the Oklahoma School of Science and Math where they are so excited about a recent announcement. A 400,000 dollar donation to fund STEM Empowers OK and initiative to engage and inspire a greater interest among high school students in Science, Technology, Engineering, and Mathematics. It's a partnership between OSSM, OCAST, both are going to benefit from this wonderful program and GE There's no [inaudible], we talked about this on previous programs that OSSM has always the like of many entities like the struggle financially, right?

>> That's right. And as Chad mentioned, at the top of the show, you know, it's a--there's a very large hole in the state budget this year that's going to have to be dealt with in one way or another most likely by cuts for most if not all agencies and of course, OSSM is a state agency and the school is entirely state-appropriated so a cut like what is being tossed around could be pretty potentially devastating to a school your size. Can you talk a little bit about that?

>> Absolutely, absolutely. You know, we do face some funding challenges since 2009. Since 2009, our funding has been cut by nearly a quarter and we've had to lay off nearly a third of our faculty and staff--

>> Wow.

>> Wow.

>> Extremely painful. The--This particular year, the governor has recommended us for a cut of a six and a quarter percent that translates to a 390,000 of our five full-time employees but we've gone down from probably 77--78 full time employees down to 54.

>> Yeah.

>> Having to cut another five would just--it would kill us. I mean if people ask me what our biggest challenge is, it's basically staying open, you know, trying to be able to deliver these wonderful services of the State of Oklahoma. Some listeners may wonder how they can help and I would say please do contact your local legislator in your district, let them know how important the school is. I just came back from a talk by a State Representative Douglas Cox, Dr. Cox and he was--he's the Chairman of the Appropriations Sub-Committee in Public Health and Social Services and he told us this morning to a small group that if he gets 10 calls, 10 calls from constituents in this district, it makes a great impact on him. So I urge you please talk to your legislator, emphasize the importance of continuing to fund the school. I personally would be delighted. I mean we'd love to have an increase for three to 500,000 more. We can take every single Oklahoma student that wants to come, that has a desire to come, that has the ability to come, that has the ability to succeed here. But I would--And so, you know, I know that that might not be realistic given the \$611 million hole that we're in. But please do let me stay whole. That's what I'm asking, let me stay whole because this way we can bootstrap our way out of the hole, H-O-L-E. Let me stay whole, H--W-H-O-L-L-E and we're looking for ways. We're looking for ways to be more self-sufficient. We're going to run summer programs, we're paying students. We're going to be able to take students from out of state and charge them a premium so that our students, Oklahoma students can benefit and we keep education free for them. We

welcome any sort of corporate support. And the companies in Oklahoma, the private sector has been super-duper generous. Devon Energy pays for a biology teacher, OG&E pays for American History teacher. Now GE is going to help fund this summer program. We're very grateful. And I want to also say overall, I don't want to sound ungrateful for what the legislature has done so far. I mean we are grateful to the State of Oklahoma for funding us. But we believe we're not just simply an expense aligned on the spreadsheet. We represent an investment in the future of the State of Oklahoma. I don't want to take too much time because I want to give our current student Alice Pinney a chance to share about her experience here and I want to give Dr. Ice a chance to explain how OSSM has made a really great impact in his career.

>> That's great. Well Alice, let's get to know you a little bit. Now you're a senior right?

>> Oh, yes, that's correct.

>> OK. Now, you've--you are this--it made big news when G.E. made this wonderful donation. And you kind of opened up the program if I recall and had some opening remarks. And I understand you were--you impressed some people out there. So talk about your experience, that was great.

>> Oh well, being up there in the stage, it was a little nerve-wrecking since I was talking in front of the CEO of G.E., Chairman Jeff Immelt.

>> Yeah, I could see well that being a little intimidating, sure.

>> But I--overall I realize how beneficial these whole entire opportunity is for our school and for the State of Oklahoma because as Dr. Wang did mention before, this school is a great of--an amazing opportunity for Oklahoma students in general to be able to come here from my experience alone, to be able to come to these type of school and to receive this sort of education before college, it gives a great advantage in my future in terms of university days and in terms of career.

>> Now you've got quite a career goal. You want to be a mechanical engineer is that right?

>> Yes. I plan to major in Mechanical Engineering and minor in Computer Science.

>> Now, where do you hope to go to school?

>> I plan on attending Vanderbilt University.

>> On the National Tennessee.

>> Yup.

>> That's great. That's awesome.

>> And Alice you came here, you're from Oklahoma so you mention that, you know, having the opportunity to come here to study at OSSM is, you know, is opening up tremendous doors for you in the future. Can you talk a little bit about where you come and perhaps the differences that you might be experiencing here at OSSM versus what you could expect if had stayed in your home high school?

>> Oh yes, of course. I come from Tulsa Oklahoma. I used to attend Jenks High School. And the major difference I see is, one, the class, the class opportunities and the different classes that we're able to take. Unlike most high schools where the math level maybe stops at Calculus 2 of maybe Calculus 3. Here, we are able to experience more of a diverse feel. Currently, I'm taking

special topics in Mathematics with Dr. Wang. I'm actually in his class every Tuesday and Thursday.

>> Awesome.

>> You are?

>> And I'm also taking classes such as Differential Equations which is not typically offered in most high schools. It's mostly offered in college campuses.

>> Right.

>> And there are also other courses such as Modern Physics Theoretical that are just unheard of in typical high schools on Oklahoma. So I think that's a major, major breakthrough for an Oklahoma high school like this.

>> Right.

>> So would you say the courses that you're taking are a bridge between high school and college or are they actually college level courses?

>> Instead of saying it's a bridge, I would say it's a bit of intermix. They understand that we are high school students so they're as harsh on these but they also want to give us the rigorous curriculum that we would be expecting in college. So while they give us a feel for what it's like and they let us--I guess say dip out toes in the water, we still have a little bit of more leniency as oppose to a college course like this.

>> Got it.

>> And I actually think it's really interesting. I know when I was in college, it was such a big deal to be able to take a course in Political Science with the president of the universities, I think that's an amazing opportunity that you have here. Obviously the courses that you're taking are just a mind-blowing. But to have--be able to take them from your president, I think that's really cool. That's--I didn't know that was an opportunity at OSSM.

>> Our professors here are mostly are PhD trained staff. They've been here for quite a number of years and they have quite a lot of experience. I know that a lot of our professors here not only teach on this campus but they also teach in OSU or O.U. campuses as well. And getting to learn from such experience and such knowledgeable people really kind of mind blow--mind--blows you away.

>> Yeah.

>> Yeah, I can imagine

>> What does this done for you self-esteem wise? I mean this is got to be a super charged opportunity for a student like you.

>> Being able to come here, I would definitely say it has changed my self-esteem and self-confidence. Before I came here, going to Jenks it was such a big high school.

>> Right.

>> I wasn't very well known. I was, sadly to say, a little bit of an introvert back then. But coming here, since it's a boarding school environment, everyone's so friendly, the teachers and staffs are all very cooperative. They come here every night to help students out when they have

problems. And being able to live in such a friendly environment has definitely opened me up. Personality wise and I think like this is the best decision I made.

>> Well and you're challenged with students on your level as well as far as where your education level is, so you're all are kind of compatible, aren't you? In that regard?

>> Yes. I would definitely say there's a bit of a competitive side into this school--

>> I'll bet. Yeah.

>> --since everyone is living together, everyone has relatively the same classes and everyone gets to receive their grades at the same time as well. I would say that the competitiveness is more like a friendly competition. It definitely powers us and charges us to do better academics. But at the same time we also realize that we are not completely closed off to each other, that if we need help we can always go to other person and ask.

>> Great.

>> Then--Great.

>> What about other opportunities are there besides, you know, the very impressive coursework that you're undertaking, are there sports, or clubs, or activities, things that you participated outside of your schoolwork?

>> Apart from the academics, there's also a sport we--I know that OSSM has a rowing team on board, and we won championship I think last year and I think this year as well.

>> It's the only athletic trophy that we have in our whole--

>> Awesome.

>> --history. So they--we're the only ones that cancel practices that they have, you know, physics lab.

>> Right.

>> So we don't get to practice as much as the other schools.

>> Very cool. So there are opportunities for, you know, socializing and, you know, other things that--

>> Definitely. We also have Fine Arts Night where I think we cooperate with the local university and they have the Fine Arts teacher come and teach us every week for a night. And we have great opportunities like dancing, and drawing and mixed media, and also--

>> So it's a balance course. It sounds like. Listen guys, we're running out of time on this part of the program. So we're talking to a student here like Alice Pinney who's obviously gutter size to be a mechanical engineer and she's getting wonderful opportunities here at OSSM. So what it's like after you graduate and you evolved into a doctor for example. You're going to be talking in the next segment with John--Dr. John Aubrey Ice who is an alum from this school when we return on *Oklahoma Innovations*.

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>> I might look like an adult, like a person who could possibly be a parent, but I have no idea how to talk like one. And everyone knows that if you want to be a parent, you have to sound good when you say things like, "Don't make me turn this car around" or "Because I said so," or "Don't make me come back there." I don't even really know what those things mean, but I know that I actually believed my parents when they said them to me. How did they manage to sound so convincing? Here we go. "Don't make me come back there." No, that's not tough enough at all. Kids can sense weakness. "Don't make me come back there." Ooh, yeah, that's better. In fact, that kind of sounded like my dad. Weird.

>> You don't have to be perfect to be a perfect parent. There are thousands of teens in foster care who would love to listen to you practice your dad voice. Call 1-888-200-4005 or visit adoptuskids.org for more information. This message brought to you by the U.S. Department of Health and Human Services, Adopt Us Kids and the Ad Council.

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[Music]

>> The Oklahoma School of Science and Mathematics is a state-funded residential high school for junior and senior students with exceptional ability in science and math who's planning to pursue careers in STEM-related fields. Students from across state have the opportunity to apply to OSSM during their sophomore year at their home high schools. Admission to the school is a highly competitive process. Approximately 250 to 300 young adults apply each year for some 70-80 placements. So that tells you how competitive it is. 85% of OSSM alumni have remained in technical scientific fields in their career pursuits and most have chosen to remain in Oklahoma. In here momentarily we're going to talk to one Dr. John Aubrey Ice, but first Tessa you had a question for our previous guest?

>> That's right we're talking to one of OSSM's exceptional students, Alice Piney who is finishing up her senior years. Just that like four or five weeks left. Oh my goodness, that's so soon. So we mentioned at the top of the show that one of the big events that happened recently is that G.E. has an award--has awarded the grant to OCAST and OSSM but this is not the first time that G.E. has been involved with the OSSM, particularly the students. Because Alice you are

actually participating in a G.E. funded internship. Can you tell us a little bit about that experience and what you're working on?

>> Oh yes, of course. I'm the first student to participate in the internship with G.E. actually. And I worked under Dr. Joan Bruner [assumed spelling] in the Water Department at the G.E. facility downtown on Oklahoma City. And currently, I'm doing an individual research literature project on the alternative methods of shell fracturing apart from hydraulic fracturing and I get to speak with different engineers and get to understand the different aspects of what being an engineer is like and what it's like to work under G.E. And I also get to have--to cooperate with different people who actually specialized in my topic. And so I get to hear all the professional insights on how this works, although, I don't quite understand everything, all the mechanics that I get but I'm hoping soon that I'll be able to learn more.

>> What an excellent opportunity.

>> I bet her adrenalin runs all the time.

>> Oh, I can imagine.

>> --that something. All right let's move on and talk to our next guest. Now, this gentleman, I was having fun with his name a while ago, Dr. John Aubrey Ice and he is alumni from the school. Nice to have you on the program--

>> Thank you. It's a pleasure to be here.

>> --and when did you graduate?

>> I graduated in 2000 so it's been 15 years now.

>> Wow, 15 years.

>> Just astonishingly how quickly it goes.

>> Yes and you're looking back going where did the time go right?

>> Exactly.

>> Well, tell us a little bit about first of all your experience at OSSM back on those days and how your career has evolved since then?

>> Yeah so my experiences with OSSM, I knew right away when I first saw a table at a--an academic team competition in seventh grade that OSSM was absolutely the place for me. I knew that--so I knew for several years even before applying to the school that it was a place where good things were happening and that I wanted to really be a part of. So I came to OSSM knowing full and well that I was participating in a community where I was learning the skills that would help me, help me develop myself in life. Learning about collaboration and about teamwork and about understanding that you may not be the very best at one particular thing but you can absolutely be the best version of yourself and do everything you can to learn and grow every single day and OSSM has taught me a lot of those skills that have helped me evolve as a professional and as a person.

>> What a testimony.

>> So speaking of your professional career now, where do you find yourself 15 years after you graduation?

>> Well, actually so in my year book, I wrote that I wanted to work on solving problems of disease with a large pharmaceutical company and now I'm actually not too far off from that even though my trajectory has been a little unusual, but I'm a post-doctor of fellow with the Oklahoma Medical Research Foundation and I work in a lab where we study the genetics of autoimmune diseases primarily Sjogren's syndrome and lupus. And so we are determining the genes that are associated with diseases and then unraveling their molecular mechanisms that are determining how these diseases come to fruition and really identifying ways to diagnose and to treat these complex diseases.

>> And so where did you--Immediately after graduating, what was your next step? Did you leave Oklahoma or did you come back?

>> You know. I went to Vanderbilt--

>> Oh, interesting.

>> --like I was. I went to Vanderbilt for year and a half and, you know, I realized that wasn't quite a place for me so, you know, that's one really great thing I think that OSSM taught me was if you try something and something isn't necessarily working out, don't be afraid to change paths and really to take bold initiatives to really build the kind of life that you want to see. So Vanderbilt wasn't quite the place for me, I needed a good support and I worked and I had such a great support and I worked here and it was the same and I realized how crucial that was to a person's success so I came back and went to the University of Oklahoma where I majored in Biochemistry in French and then I went on to a medical school at the University of Oklahoma, so we're just across the street and now working OMRF so I've been kind of focused around the Lincoln area for a while now.

>> Very cool. Well, we're glad we'd been able to keep you here in Oklahoma.

>> Absolutely.

>> Did your career paths shift gears from where you thought you would go when you're in high school?

>> You know, I really don't know what I expected in high school. I think all of this going to with somehow blinded with a bit of faith that what we're doing is really just listening to ourselves. It's a tremendous sacrifice for students to come to OSSM because it is a bit of a controlled environment where we are allowed to grow and allowed to participate in experiences that most high school students don't have in terms of education and living in an environment with students 24 hours a day, seven days a week. But what that really teaches you is the importance of that community and relying on each other and really growing, and every student at OSSM, it just represents a diverse spectrum of society.

>> Sure. What would you say to a student like Alice when you looked back and what kind of advice could you pass on to her? As she is--Because she is looking at her vision doors right now going, "Where does this going to lead me?" So.

>> Yeah, it's absolutely a great question. And I would tell Alice just listen to your heart. You know, you've gotten to where you are by listening to your heart and by taking bold risks so don't be afraid to take those bold risks. I am fortunate to get the see now 15 years out from OSSM graduating that a number of my peers are just having wonderful professional successes. You know, all kind of doors, fields many of them related to Science and Technology and Math but

plenty of other individuals working, you know, every day professional jobs that make up the core fabric of our society.

>> One of the things that I think Dr. Wang we should look--help our listeners understand is, is we all know this is highly a technical world today and that it requires engineers and people like this two to help us evolve even more. When we look at where technologies come between computers, softwares, robotics, all of those kind--that's engineering, that's mechanical engineering, that's science technological advancements. Where do these people come from? They come from the root to schools like OSSM, right?

>> Absolutely. I want to point out a remarkable statistic, you know, we of our graduates, most are actually still in school because our type--our students are the types that to continue to graduate school, to medical school and so forth. Of the 600 or so graduates who are now working, half of them are now practicing engineers. Really a remarkable number considering that their typical university may graduate just 5% of its graduates will go into engineering. So we are really doing our part to populate the state and populate the country with engineers, of doctors. I think of the 600 who have graduated, a hundred them are practicing doctors. We jokingly say from--if a young person here becomes ill and has to go over to children's hospital, they have about one in three chance of getting one of our graduates. I did want to mention something really quickly because Dr. Ice is a very modest but in 2009, he won the Leonard Tow Award for Humanism and I think we're not just about scholarship, we're about serving the community and giving back.

>> Yes.

>> And our young people are the ones that do give back to the community and I know that one thing that has--have been a point about the school as a criticism is that students do leave the state, but I should mention I'm a case of someone who is a product of Oklahoma schools, went to Preston, went to MIT, came back, raising my family, serving the school here. I've actually personally gone out and done reunions in New York City, in Boston, Washington D.C. and I remind the young people of the great investment the State of Oklahoma has made in them. And to remind them that life is not all about living in a big house and driving a nice car, it's not about those type of things, it's about going back, educating the next generation. I fully expected that OSSM alum, perhaps Alice, perhaps one of her classmates will come and take my place at the school. So--And I very much more the state to know that we are young people of--this is a school of young people of ambition, of very high quality and not just in terms of academics but in terms of character.

>> Well, what an honor and congratulations to you in OCAST for--from G.E. for getting this wonderful donation to fund the STEM Empowers OK Program. And going to be interesting to see how it goes in December because I know you're excited about this program.

>> Absolutely, we're excited for you.

>> Absolutely, very excited and we hope to engage not only just your own faculty are going to be involved but maybe have Dr. Ice come and talk to the kids and other alums come and share with the kids, young people and let them know what's possible, what's possible with some hard work, with some, you know, in terms of commitment to learning.

>> So Tessa, don't you wish you could be a student in come to this. I mean would you be in heaven here or what?

>> Absolutely, I hope so much that one of my two boys will be interested in going to school in a place like this or at least following a career path that you two students are looking like you're heading down toward.

>> Well, thank you so much first of all to our students, Alice Pinney and the alumni Dr. John Aubrey Ice and congratulations on where you're going and of course Dr. Frank Wang, you're doing a wonderful job in heading up the school and I know you have many challenges ahead of you but you're also taking it all with enthusiasm. And Chad, thanks again for being on the program, we'll have you back again. And to our audience, we hope you learned a little bit more about OSSM or where our future's going in terms of education. Have a good week.

[Music]

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