

TSET Better Health Podcast Transcript

Episode 18: Oklahoma Center for Adult Stem Cell Research

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Summary: Explore the exciting world of stem cell research with Courtney Griffin, Ph.D., Scientific Director at the Oklahoma Center for Adult Stem Cell Research. This innovative approach to regenerative care shows promise in areas across the medical spectrum from blindness to COVID-19. Join your hosts and TSET Executive Director Julie Bisbee to learn about this state-of-the-art research facility right here in Oklahoma that is helping TSET fulfill its mission.

[Theme music]

[0:01]

James Tyree: Hello and welcome to the TSET Better Health Podcast. This is your host James Tyree, a health communication consultant at TSET.

Cate Howell: And this is Cate Howell, TSET podcast producer.

Today's episode is actually a continuation of Episode 8: TSET Research Impact. In that episode, we shared a 30,000 foot-high view of all the research centers that TSET supports: the Stephenson Cancer Center, the Health Promotion Research Center and the Oklahoma Center for Adult Stem Cell Research. Today, we're going to dig into one of those research centers for a little more insight into what they do, why they have TSET's support, and the positive impact they have on our state.

J. Tyree: That's right. The topic for today's show is the Oklahoma Center for Adult Stem Cell Research, or OCASCR. OCASCR was founded in 2010 through TSET funding specifically for the development of research into adult stem cell technology. But why did TSET make such an investment? Well, TSET Executive Director Julie Bisbee shares the history and philosophy of this partnership.

[01:18]

[Upbeat music [["King of the World"](#) by Peter McIsaac Music]]

Julie Bisbee: Hi. I'm Julie Bisbee and I'm the Executive Director of TSET.

So the Oklahoma Center for Adult Stem Cell Research, or OCASCR for short, was established in 2010. It was TSET's first research grant and it was really about using some of the funding from the Tobacco Settlement Endowment Trust to put something innovative, unique and cutting edge in our state. The board at the time, put out a request for proposals for, you know, this early stage biomedical research and got proposals back from the University of Oklahoma Health Science Center, Oklahoma State University, and the Oklahoma Medical Research Foundation. And what was really unique

about that and very remarkable was that our board at the time took a look and said, “Do you think you guys could work together?” And the entities said, you know, “Let us go back and put pencil to paper and bring you something.” And they did. And so what we have with OCASCR is a collaboratively governed research institute that has members from OUHSC, OSU and OMRF all on a steering council that help to guide this research, but also makes Oklahoma a destination for scientists that want to learn and do more with adult stem cells.

C. Howell: This unique multi-agency partnership has facilitated impressive results. Between recruiting reputable scientists from all over the country to generating a massive return on investment through outside grants, OCASCR has been a game changer in the field of medical research in Oklahoma.

J. Bisbee: So our partnership with OCASCR has really helped to establish OCASCR as a center for national research. Since OCASCR was founded, 21 scientists have been recruited to Oklahoma to study stem cells and regenerative medicine. OCASCR has been awarded grants and has been able to pull in national funding, and that's really a key thing that we look at as well. In the first decade, OCASCR funded 140 research proposals – and that's about \$25 million over time for TSET funds – but to add to that, they were able to leverage outside dollars up to \$176 million. So those are national research funds coming to our state, establishing and promoting a research center that is incubating discovery for what that next generation medicine looks like.

C. Howell: TSET’s mission is to improve the health of Oklahomans through environmental factors, messaging and long-term investments that foster individual behavior change on a statewide scale. So how does OCASCR fit in with this goal? The simple answer is this: TSET has the ability and the responsibility to take a bird’s-eye view approach to improving public health, and scientific research is an important piece in a long-term plan.

J. Bisbee: Research is among the top things that the voters of Oklahoma approved us doing when we were created by a constitutional amendment. Research on cancer and other tobacco-related diseases were the very first thing in that constitutional language. We take that very seriously and the board over the years has made a significant investment that has helped elevate care, scientific research and the quality of life for people in Oklahoma.

Endowments are something that lasts for a very long time, but they also have the benefit of being able to invest in long-term funding, things that take 10 or 15 years to really see progress. Because sometimes for other investors, you know, they want a quick turnaround. The beauty of an endowment is that the longer we survive and continue to thrive, the longer those long-term programs have to really change and shape either medicine or behavior. So it was important that TSET could be a partner in that understanding that our main things that we focus on, which would be preventing tobacco use and obesity, lead to diseases such as heart disease, cancer, COPD.

TSET’s investment in OCASCR, in research like this, is really about planning for that next generation, and that's really in line with all of the programs that TSET has funded over

the years. We want to change the environment to help change and sustain behavior change. And we want to understand how the body works so that we can help make that change and improve quality of life.

[06:14]

[Upbeat hopeful music (“[Newborn Life](#)” by Peter McIsaac Music)]

J. Tyree: Adult stem cell research is a complex but fascinating area of medical research. New breakthroughs in innovative treatments are exciting and life-changing. But what are exactly are stem cells, and how do they work? Here to answer those questions and more is OCASCR Scientific Director Courtney Griffin.

[06:42]

Courtney Griffin: For OCASCR, I am the scientific director and in my other world, I'm also a research scientist myself at the Oklahoma Medical Research Foundation, where I study cardiovascular research. So I sort of straddle research in my own lab with directing the OCASCR Agency.

J. Tyree: Courtney Griffin has been with OCASCR as scientific director for 3 years. She began at Harvard and received her Ph.D. in Biomedical Sciences at the University of California San Francisco. She currently holds multiple leadership positions in the public health community in Oklahoma and nationally. But when it comes to the work she does with OCASCR, it's best to start with the basics: what exactly are stem cells?

C. Griffin: I like to describe stem cells as being kind of fundamentally starter cells for the body. They kind of seem plain and boring maybe at first glance, but they have this really amazing capacity to become any of the 200 different types of specialized cells within our body, like our heart cells or our brain cells or liver cells. And human embryos are really rich in stem cells when they first begin to develop, and as the embryo keeps getting bigger inside the mom, these stem cells start acquiring the characteristics that differentiate them and give them all these specialized functions within the heart or brain or liver, for example. And fortunately, humans, even after they're born, continue to have some stem cells in their body, and scientists have even learned how to kind of set back the clock on our differentiated cells from adults and return them to a stem cell-like state, kind of the starter-like state. So it's very important to realize that both these natural and these kind of so-called induced stem cells within adults can theoretically be helpful sources of starter cells that we can use to replenish our organs and our tissues when they get damaged throughout life.

And so one of the goals of stem cell scientists is to understand how to identify stem cells and then how to harness them to become the cells that we want to replenish when they become damaged in our organs. And these scientists also want to understand how to make these harnessed and differentiated stem cells play nicely with their existing cells in our organs, so that they can kind of integrate and coordinate their activities and characteristics in a way that can really heal a damaged organ.

J. Tyree: This approach is called “regenerative medicine,” and it’s different from traditional medicine because it trains the cells and molecules of damaged organs to repair or regenerate the affected tissues. This acute treatment works with the body’s natural healing processes and provides the damaged organs with new cells that can be customized to the organ’s needs.

C. Griffin: Regenerative medicine is really just the study of how to take those tissues and organs that do get damaged throughout our life, either by disease or by injury, and then how to restore them back to their uninjured or healthy state. So you can see how stem cell biology and regenerative medicine, they're really tightly interconnected because stem cells can theoretically provide really great templates for making those healthy cells that we need to renew or regenerate a damaged organ. And regenerative medicine can also incorporate other factors besides stem cells. For example, scientists can bioengineer scaffolds that stem cells need to grow on in the shape of an organ or other scientists can harness molecules that help healthy tissues compensate for diseased ones.

And so as scientists around the world are finding just those right formulas of cocktails of drugs to push stem cells in the direction of healthy cells, that opens the door to then applying this stem cell knowledge and research toward any disease that we can imagine within the body.

So I really wanted to incorporate this concept, this field of regenerative medicine, under the OCASCR umbrella, because it includes even more scientists at the table than just stem cell scientists, all of whom have this common goal of reversing diseases and making us healthier, ultimately.

J. Tyree: This field of study has generated promising research breakthroughs in treatments for many medical conditions such as blindness, cardiovascular disease and even COVID-19.

C. Griffin: My own lab is really becoming increasingly interested in the eye, and so I'm really impressed with all our OCASCR grantees who are making inroads and discovering ways of harnessing stem cells and regenerative medicine to restore parts of the eye that get damaged with diseases and then cause blindness. So I'm excited to see as we move forward here, if OCASCR-funded vision scientists are going to help find the sight-restoring solutions that patients are seeking from their research.

We also have several researchers using stem cells to study diseases of the gut, including Dr. Catherine Hunter at OUHSC. She’s studying this really terrible disease that affects premature infants in the NICU, it's called necrotizing enterocolitis. And she's part of a special network of seven groups across the country that are really making inroads to study this condition.

There's also some really great lung research being conducted by OCASCR scientists, including Dr. Lin Lu, who's up at OSU and Stillwater, and he's using stem cells to create artificial lungs that can be used to study infectious diseases like COVID-19 and understand how to prevent or heal the damage that these diseases cause to the lung.

C. Howell: In addition to these innovations in the scientific community, OCASCR has changed the game in Oklahoma as a frontier research facility with a high return on investment. Not only has the research shown promise, but so has the response and support from all over the country.

C. Griffin: I'm really excited about in particular, all the new scientists that OCASCR funding has helped draw into these fields of stem cell research and regenerative medicine. So to give you some perspective, OCASCR has funded 73 Oklahoma scientists since it began in 2010, and just in Fiscal Year '21, 12 of our 19 grants that we awarded were to first time OCASCR awardees. So it really shows you that there's just this kind of explosion of scientists kind of getting on onto these topics and really contributing to them in Oklahoma, so that's great.

And then I'm also excited about how OCASCR funding is really providing some serious seed money that Oklahoma scientists are then leveraging into bigger federal grants to help really propel their research forward. It takes a lot of money to do research. And so for every dollar that TSET investment has contributed to OCASCR, our OCASCR scientists have returned almost \$7 in the additional grants that they've secured building off of their OCASCR funding. So that's really terrific too, because this is what will help push their research toward the clinic.

You know, altogether there's a lot of exciting work going on. I'm just really proud that OCASCR is stepping in to fund a range of research that goes from really basic fundamental science all the way up to preclinical research. Because, you know, it really takes discoveries throughout that pipeline at all stages, to translate science into the drugs and devices that are really going to help Oklahomans improve their lives.

[15:30]

[Upbeat inspiring music (“[Clear Lake](#)” by Yan Perchuk)]

J. Tyree: OCASCR and TSET have a unique partnership that approaches public health from two different angles but with similar views. TSET addresses behavioral and environmental effects on health outcomes while OCASCR studies the inner workings of cellular behavior, but both work to improve public health using long-term strategies.

C. Griffin: Cardiovascular disease, which I study in my own lab, and cancers both have the capacity to damage almost all the organs in our bodies, including our hearts, our brains, lungs, liver, eyes, bones, kidneys, et cetera. And so while cessation of tobacco use and anti-obesity campaigns are critical, important measures for combating the onset of these diseases, unfortunately, it's too late for many Oklahomans who are already suffering from the effects of these diseases, right? So, OCASCR fits into the TSET mission by trying to identify healing options for individuals whose health is already compromised and negatively impacted by the damage that cardiovascular disease and cancer has caused to their organs.

And so I should point out that very importantly, when we ask scientists to apply to OCASCR, within their grant application, we ask them specifically to state how their project will address the TSET mission by tackling diseases associated with obesity and smoking, and their responses are part of the metrics that are considered when we award these grants. So we take this very seriously, not only as TSET's goal, but our goal to improve lives within Oklahoma.

[17:25]

C. Howell: The Oklahoma Center for Adult Stem Cell Research is an important part of TSET's mission to improve the health of all Oklahomans. You can learn more about this world-class agency by visiting OCASCR.org, and for more episodes of the TSET Podcast, visit TSET.ok.gov. Soon, we'll be visiting our other research facilities for an in-depth look at the Stephenson Cancer Center and the Health Promotion Research Center, so if you enjoyed this episode, be sure to watch our Facebook page [@OklahomaTSET](https://www.facebook.com/OklahomaTSET) and tune in.

J. Tyree: As always, we thank our gracious guests and you, our listeners, for joining us for this episode. Until next time, this is James Tyree –

C. Howell: And Cate Howell –

J. Tyree: Wishing you peace –

C. Howell: – and Better Health.

[Theme music]

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