

# Transcript Fireside Charla 010: SDSU's Research Is Making an Impact

**Adela 0:09**

Welcome I'm so happy to be here today with great guests for this particular Charla. Today we're going to talk about research at SDSU. Now many people seem to think research is something new at SDSU. But it's something that has been part of our culture for a long time. In fact, this goes way back to the early 1960s when a certain historical figure played a major part in our journey. My colleagues, Vice President of Research and Graduate Dean Stephen Welter and Associate Vice President for Research and Innovation Stanley Maloy are here to talk with us a bit about where SDSU has been on the research front, and where we are going. Stanley, welcome to today's Charla, can you please talk a bit about SDSU's unique history and research?

**Stanley Maloy 1:06**

Well, thanks very much. You know, SDSU has been involved in research to some extent since we were very initially founded. But there was a real kick in 19 to the early 1960s. And that kick came about from this historical figure, John F. Kennedy. John F. Kennedy was invited to San Diego and some faculty members realized that maybe if San Diego State University could give John F Kennedy an honorary doctorate degree, we could gain a lot of credibility with our colleagues at other universities in the state. And in fact, he came here, he was awarded an honorary doctorate, and he gave an amazing commencement speech that really focused on building equity in the education system across the United States. So, it's wonderful that that speech happened here on our campus at San Diego State University. But the other thing that happened was that set the stage so that within two years after that, we had our first joint doctoral program in chemistry. So that shifted us from only being able to offer master's degrees to being able to offer doctorate degrees. And that had a profound impact on our research emphasis.

**Adela 2:23**

Boy, what a wonderful history to know that we were started by a speech from JFK in the 60s. And now our 50-year-old doctoral program and chemistry is a direct result of that wonderful, wonderful introduction to research. So now I'd like to turn to another important observation It's clear that over the last few decades, research has been a priority and SDSU. But it may not be obvious to all the listeners about how important it is for our university. So, let's talk about this

today. How does our research impact our local community and the world? And I'm turning now to our Vice President of research, Stephen Welter. And he'll give us a few examples.

**Stephen Welter 3:14**

Thank you, Adela you're right and that resources have been a long part of our history and certainly part of the ethos that drives San Diego State. And probably in particular, I think, where one of the areas that we like to focus on is that moving very fundamental information into the translational aspect, and especially with working with a lot of our local communities. And we've had spectacular results, I think with a group called the Institute of behavioral and community health, which has a number of faculty. They're focused a lot on minority health disparities, Latino health disparities, and one of the aspects about health issues in sometimes underrepresented communities the ability to generate the trust and the relationship in order to gain access to the patient to the information and for being to get the competence that they need. So, we have a group of faculty that are working on dietary questions, availability of healthy foods in underserved communities Minority Health Disparities relative to cancer, we have collaborations with some other major universities in the region. And looking at how these factors and access to healthcare changes. In particular, we recently got a grant under the direction of Dr. Sue Jai Ella and Kristen Wells. That basically is building large, interdisciplinary, cross disciplinary groups that are connecting with community health programs and finding ways to build an infrastructure that connects the university into the actual framework of the city. As far as international, I think we could speak to a variety of them. For instance, that just came out of story this week that was on a local Condor population, they basically showed that the condors along the coast in the San Diego region are struggling much more because of they are feeding on marine mammals which have a higher level of pollutants in them that are extremely persistent in the environment compared to some of the inland Connor populations. So, you can see the touch run from the very basic to the very translational.

**Adela 5:18**

Well, that's really exciting news, when you think about the fact that we're not only writing engaged in the community with this important research that can transform lives, but also that we're looking at the impact of pollutants. So, issues affecting the ecology of the environment, our center front, and really fit well with a lot of interest of their of our students. So, then I want to turn to Stanley about asking a very specific question. How does research transform the educational experience of our students?

**Stanley Maloy 5:48**

SDSU has a strong focus on student success. And people have done lots of research that shows that students involved in research, while they're undergraduates get a tremendous boost in the rate of graduation, how long it takes them to graduate, and the kinds of positions they can get after they finish. So, having that research experience, it helps them solve critical problems that gives them experience working with complicated processes that they'll need for subsequent positions. And it really sets the stage for them to go on and contribute in a real-world way right after graduation, to do things that you can't learn from simply sitting and listening in a classroom. But in addition, the research has a profound role in training graduate students at the master's level at the PhD level. And those students really play a key role in solving these fundamental problems that Steve Walter just mentioned, those graduate students are the ones who actually work on these projects together closely with professors, and think about, and do this study that solve problems in our community, in our nation and in the world.

**Adela 7:05**

You know, Stanley, I really do think it's important for our listeners to understand that the fact that students who enroll in San Diego State have this important opportunity to work with our scientists and labs or work with our faculty and business, at the launch pad, develop new businesses are able to the arts develop interesting production designs, and create the kind of intersections across disciplines, all that's translational into their lives in so many different ways. So I think it's wonderful that we've been able to do that. Now I want to turn again to Steve Welter to ask some, some specific information about the trends and funding at SDSU. And what's been very, very exciting, is that we've seen this big uptick in funding. And I wanted to you explain to our listeners today, and what ways has our research enterprise grown? Where's it going? So if you're looking at the crystal ball, where do you think will be in 10-15 years? And why are we going in that way? And why is that important to us?

**Stephen Welter 8:11**

So I think I think Stanley actually introduced the topic in the sense that research is a big part of the educational experience, I think it provides our students opportunities to get positions to reach out to the community to be impactful as an economic driver of our region. But research is also a

big part of what universities do, which is that fundamental discovery of knowledge. So it's that marriage of the two that I think is what we bring to our student population. So we really tried pretty deeply to invest in our students at all levels, our undergraduates, and our graduate students, and our new faculty. And I might point out that 40% of our faculty have recently been hired in the last six years, which represent a tremendous demographic shift for us. So probably the biggest investment a campus can make is in who you hire, how you support them when they get here. So the campus has done a lot in terms of investing in core facilities, investing in graduate student funding, investing in undergraduate funding as well to engage them in the reaches experience. And all of these things have seen an uptick, as you alluded to, but we had a 10% increase in our total research funding this last year was just finalized about a week ago, we have more faculty engagement research that we've had in a long time, and the number of grants that are being submitted. So you're seeing a much more pervasive effect of research, and spans all fields, not just those in the grant active areas across our campus. And so we're really pleased to see how we're able to help support our faculty and our student interests. So how much do we have for this year in terms of grants and contracts, and because I think people would be really amazed about that number. So this year, we have 148.5 million. Most of our funding comes from two federal agencies, the National Institutes of Health and the National Science Foundation. Both of those are some of the most competitive money that you can fight for, if you will, at the national level. So we're very pleased to see that our faculty are slightly more successful than many other universities. And I think we punch above our way clearly.

**Adela 10:20**

Well, what's exciting about that is that we have all these new faculty who are also engaged. But let me ask you another question. How are we going to keep them going? In other words, are we really going to be able to prime the pump with these new faculty? And how what's our strategy in order to ensure that they'll be successful as they submit these proposals?

**Stephen Welter 10:40**

Yeah, I don't know. I don't so much worry about, can I keep them going? but could I possibly stop them? I mean, that the truth is, this is what they came to do. This is why they got their PhDs. And so our obligation, I think, is, is to provide them the resources that they believe that they can build their research careers here that they can engage in the students, that they recognize that San Diego State both are valued equally, and that they can build a lifetime career here. So I actually, I don't see us losing faculty, and certainly the number that leave every year is shockingly small.

**Adela 11:14**

Well, that's great news for us, because we do want to move forward in our capacity to support these promising faculty. So I'm also really excited about the opportunity SDSU has with building an Innovation Campus in Mission Valley, and the impact it will have on our community. So I want to turn to you, Stanley, because I think as somebody who has been focusing on the innovation district has been engaged in conversations with faculty, community leaders, business folks as well. How will our research help shape the Mission Valley campus? And why is it important?

**Stanley Maloy 11:51**

Well, so the whole idea behind this campus is that we're going to develop public private partnerships. And what that means is that we're going to have university faculty and students right next door, to bring in companies that are doing innovative and important work. And by bringing them together provides a tremendous opportunity. It allows our students to do internships right there so that they can get that experience that they may need for future jobs. It allows our faculty research to immediately move in to commercialization so that that research instead of just being theoretical, has practical applications and in a very short term. And in addition, the companies can help researchers see where their important problems to be addressed, that, if they're commercialized will be out there in impacting many, many people's lives. The San Diego Community has so many companies that do great things, and that converge with the interest of our faculty and students, that this should really add an additional layer of excitement to university, and open up many, many new opportunities for us, as well as impacting the economy of our community.

**Adela 13:09**

You know, another interesting thing about the innovation district, it's really going to help particularly our students who are in graduate programs as well. So, Steve, what do you think will be the the benefits of having these types of partnerships for our graduate students?

**Stephen Welter 13:27**

Well, I, I think one of the bigger advantages of having private partners is that you often get to immerse your research and in sort of the real world construct, and you know, occasionally, you'll see integration is criticized for being to ivory tower, I think what this does is it builds that bridge directly between our students, and the needs that are facing our community, and also the needs that are facing our industries. So you are able to link your programs and your ideas into a much more rapid implementation. And also so given that, the truth is that princess and doctoral students, most doctoral students do not work in universities, most doctoral students work in the corporate environment, they work in government environments, and they have to be able to work with a diversity of people. So I think this kind of environment for both our undergrads and graduate students will be invaluable.

**Adela 14:18**

Absolutely. And one of the things that I'm so proud of is so many of our doctoral students and our grad students go directly into industry, as well as a lot of our undergraduates. So the fact that they come from this kind of environment, this incubator environment, it's going to be accelerated with the opportunities that Mission Valley. So I want to now turn to some exciting research projects that are in the horizon. So I wanted to ask each of you, giving your background and experience working with an array of programs, what are some of the new innovative, exciting research projects that are on the horizon? So let me turn to you Stanley. First.

**Stanley Maloy 14:57**

Well, let me start with just one example sample from one of our younger faculty that you mentioned earlier in the show. And that is Nick de Kuma. So Nixa. Kuma has just published a paper with some colleagues from outside the university and many of his own graduate students, that that show us that some kinds of bacteria make what looks like a little tiny syringe that can inject things into different organisms. And when it injects things in the organisms that can completely change the properties of the other organisms. This is really important, both for understanding biology. But even more important, because those little syringes might be able to be modified, so that we could develop the ability to inject our own cells, the cells of humans or the cells of animals in a way that would allow us to change our own physiology to improve human health. And a way of doing that without using a lot of injections, with syringes, or are

other kinds of approaches that pierce through your body. These are things that could actually enter through swallowing and food and getting into our guts. So I think that's really exciting, both because of what they've learned. And because of the potential for what at this point in time seems like science fiction, but may be a reality just a few years down the road

**Adela 16:26**

for somebody who hates having injections. I love this opportunity. Let's get that to market quickly. So Steve, what about you? What about some of the ideas that you feel as an exciting research?

**Stephen Welter 16:37**

Yeah, you know, I think one of the trends we certainly have seen in a lot of research is that all disciplinary lines really haven't always worked is supposed to solve many of the more complicated, more complex issues that are facing us. You know, I already alluded to one, which was the health link and minority health disparities, which includes backing from across the entire campus and is the largest grant money ever got in our university's history at \$20 million. But instead, what I'd like to pivot to is Brazil program. And our Brazil program has faculty from across again, the entire campus, and it spans issues in sustainability, human rights, children's rights, it includes people from the language and arts. And it also brings people together sometimes from departments, you never would have thought would have maybe known each other even. So for instance, we have a faculty member who's a mathematician who's looking at health issues and Dengue fever in particular, and he's modeling the epidemiology of it. He's looking how it spreads, he's predicting it. And then he combines those kinds of data with geographers who are able to use a sophisticated mapping system to watch the spread of these disease. So in the end, it's really bringing in disciplines and ideas and expertise in a way that's quite unique. And in fact, while it sounds like it may have little applicability to San Diego, one of the groups of researchers that were just funded by the National Science Foundation in Brazil, are looking at how a deforestation and land use change is affecting the water stress of systems. And if there's anything that San Diego understands is water, stress, and water under conservation, and watersheds, and how our land use practices are going to be changing those. So you can see why understanding other systems in other countries, we can take many of those findings and I think apply them back to our own community.

**Adela 18:29**

Well, I think this is a wonderful opportunity for students to be engaged in these projects. Again, having the opportunity to work on trans disciplinary teams have the opportunity to work with faculty that are really solving global problems that affect not only the local community, but internationally affecting communities across the world. We couldn't ask for a better education for SDSU students. Now, Steve, you are also going to speak about another important program that has emerged. And that is a Center for Autism. So if you could frame that, for us today on why this is important, why it's important to community, this would be a wonderful introduction to our next guests.

**Stephen Welter 19:11**

Well, certainly Autism is a situation that a lot of parents are facing, in that the number of children that are getting diagnosed with autism seems to be increasing over time. We do have a new center in autism and developmental disabilities that I think if you look at it is, in a way, maybe the example that I was looking for, and that they have some incredibly fundamental research with looking at actual brain structure, using a variety of brain imaging techniques and looking at the structure of the brain and how it's wired to understand issues like autism, but it also has groups about early diagnosis for children, and bringing kids into our campus facilities and helping parents get a much better sense of where their child is, as far as being on the spectrum. Where are they developmentally, you then take it out again, and it's about community engagement. There's an educational program, they run workshops for children and workshops for families. And then finally, you have the training aspect, which I think is a big part of what makes San Diego State the kind of university is where you're training doctoral students, you're training clinicians, you're taking that information that started with very fundamental brain imaging and walking us through that entire spectrum, to actual delivery on the ground again, and I think you'll be exceptionally pleased with the guests that will be following us.

**Adela 20:32**

Well, I have to say I'm very excited about the fact that when we look at the kind of research that we do at San Diego State, it starts perhaps with the science, but it doesn't end there. It's then goes into the community and engages our community members. And then of course, it brings our students in so that they can have this wonderful opportunity with the faculty and the community.

And they begin to understand the importance of how research is critical and transforming lives. Stanley Steve, thank you so much.

**Stephen Welter & Stanley Maloy 21:04**

Thank you.

**Narrator 21:06**

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