Jay Walsh Interview

Vice President for Economic Development and Innovation, University of Illinois – Urbana Champaign

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SPEAKERS
Jay Walsh, Jessie Knoles

Jessie Knoles 00:00
Before we do go into that, I'll just go ahead and introduce myself and let you introduce yourself and then record the day and time. And we'll go from there.

Jay Walsh 00:09
Yeah, that sounds perfect.

Jessie Knoles 00:11
Great. My name is Jessie Knoles and I'm a project research associate with the COVID-19 documentation project by the University Archives and the University System. And I will go ahead and let you introduce yourself and your role - your title.

Jay Walsh 00:30
Right. So, I'm Jay Walsh, I'm the Vice President for Economic Development Innovation through the University of Illinois System. And I'm also a faculty member in bioengineering at UIUC. I joined the University in May of 2020 during the pandemic but have been a bioengineer for decades. Previously, was a faculty member at Northwestern. My basic area is in medical device, so my background fit reasonably well with the movement of a laboratory idea more into a clinical device in a clinical application, which is really what COVID SHIELD was. So, there was significant overlap there.

Jessie Knoles 01:44
Great. And just for documentation's sake, we are meeting over Zoom today. It is Wednesday, October 5. And yes, there's that. I am going to get right into it. Before you started as Interim Vice President for the Economic Development and Innovation, you were at Northwestern, doing quite a few leadership roles over the years -- you'd been there for several decades. How was this position that you're taking on with the University System different than other leadership roles you've had in the past?

Jay Walsh 02:22
The biggest difference was moving, frankly, from a private university to a public university. I had been a faculty member in the Dean's office in the Engineering school, and as the Vice President for Research at Northwestern. As you indicated, I had been there for several decades, like three plus. So, the biggest change was moving to a public university. And that actually played out pretty significantly, immediately. Because I arrived, and within a short period of time, was introduced to the SHIELD project. Which at that point, had moved from the idea that what we wanted to do was bring our students back safely in the fall, because everybody in March of 2020, went home. Then the question was, how do we bring the students back in August and have them come back safely and stay here safely? So, there were faculty who generated a

method for rapid detection of the virus, with the idea that if you detected the virus before people became infectious, then you could take folks, detect the virus in them, and isolate those folks before they could initiate spread across the campus. There were a number of challenges at that time period. The most significant of those challenges was that you wanted a test that didn't run into supply chain problems. So, there were modifications made to standard PCR tests. Polymerase Chain Reaction tests, that's what PCR stands for, which looks for the nucleic acids in the in the virus. The virus actually doesn't have DNA, it has RNA, but you look for the RNA in that virus. That was a test that had supply chain issues when looking at most of the tests that were available at the time. So, we couldn't run lots of those tests and the goal on campus was to run lots of those tests. A typical test required a nasal swab, which would require a lot of medical folks to be available to take those nasal swabs. So, the other supply chain issue was not just materials. Reagents were in limited supply, but nasal swabs were in a limited supply at the time. And people, the medical personnel were in limited supply. So, the tests needed to be redesigned so that you got around those broad supply chain issues. That's why saliva was picked. Saliva was also picked because there was an intuition that this virus, with some data behind it, would be present in the saliva. And as it turned out, the virus is present in the saliva before and can be detected in saliva before it can be detected in nasal cavities. So, a little bit there may have been luck with that and a little bit, there may have been intuition based upon knowledge of physiology, that would lead one to think that saliva was a good way to go. Also, saliva got around this issue of needing medical personnel to be involved, because we can all drool without somebody being right there for us. There were some good reasons to go with saliva. We went with PCR, because you needed a test that was sensitive, and PCR is very sensitive. In the end, if you actually look at how we run the test, and the amount of saliva that we actually put into the test system, we can detect one copy of DNA that's in there. So, one viral copy we can detect. We're really pretty sensitive. And we needed it to be sensitive, we needed it to be accurate. In other words, only look at SARS COV-2, the Coronavirus that causes COVID 19. And we didn't want to have other coronaviruses be interfering. Turned out this was the case for PCR, this was almost assuredly going to be the case. We needed the test to be something that would turn over quickly. We could do the test relatively quickly. So, there was a modification made that got around not only supply chain issues, but also sped the test up a little bit. In lab takes less than two hours to run the whole thing, which is pretty quick. And it turned out that that's actually not the limiting factor in us turning around your results. So, when you were drooling on a regular basis, you probably didn't get the results in two hours and definitely never got it in two hours. But that's in part because of logistics of just getting the sample from where you drool to the lab and then getting the results into the electronic system and then out to you. So, it definitely helped that things went quickly in the lab. Also, it cut some of the costs down to get rid of the reagents that we got rid of, by going through a heating phase that was a key scientific finding is that you could heat this virus. And by heating the virus, you expose the RNA, the nucleic acids, within the virus. So that heating phase, that 30 minutes of heating at 95 Celsius, just below boiling. So, it's pretty hot. That heating phase released the RNA and allowed us to be able to detect that RNA. That was a really key scientific discovery and is actually the basis of the patent that was submitted for this test. As you're going through and trying to find documents here, you might look for the patent. I can sort of lead you to the right person. The right person to talk to you there is Nate Hoffman, who runs the Office of Technology Management in Urbana, and he can help you find that that material.

Jessie Knoles 09:52
Great. Thank you.

Jay Walsh 09:53
The test that was set up was set up to be sensitive, it was set up to be specific for SARS COV-2, it was set up so that you could have fast turnaround time, which meant that you could test

people relatively frequently. And the cost was also lower because we cut out some of the reagents, we cut out the medical personnel, and it was noninvasive, you didn't have to stick something deep within your nose, you just had to have people drool. So, there were all those components to this. That may have been more of an answer, than you were really looking for, but that's sort of -

Jessie Knoles 10:39
That's great. No that's great.

Jay Walsh 10:40
- the outline of everything. And that was absolutely the thought process, in this, it wasn't serendipity. This was thought out ahead of time: sensitive, specific, fast turnaround, you know, low cost, noninvasive. Those were all the parameters that needed to be in there - and there may be a few others - but they needed to be in there for this to be successful.

Jessie Knoles 11:07
And were these thoughts March 2020 thoughts? Or were you at all thinking about this? Were some people in the system thinking about this even before lockdown? At what point in time did SHIELD really take off and start preparing for testing?

Jay Walsh 11:25
So, I was not here in March of 2020, I was here two months later. I started May 16, of 2020. I am told that what happened was that when everybody was running home in mid-March of 2020, that there was a conversation among the leadership to get the students back on campus in August. And a charge was put out to the faculty to figure out a way to do that. And there were certain faculty, in particular a number of chemists, who stepped forward to figure out how to do the chemistry side of this, which is really what I've outlined at a high level was happening. And there is no doubt they were thinking about that. There were a number of other components to this, that are non-trivial. There were a lot of IT issues and logistics issues. So, there was the sort of chemistry, the lab chemistry component that had to work, there was the logistics component that had to work, and there was an IT component that needed to work. And then there were a bunch of other things that were non-trivial that needed to come together, you know to run the human subjects' samples in a laboratory. You needed that laboratory to be certified to run human samples. We didn't have that on campus at Urbana. You had a laboratory that could handle all other species on Earth, in the veterinary school, but not human subjects. So, we had to go through a process of getting that certification. And it's called CLIA, C-L-I-A, clinical laboratory, I don't remember what the I and the A stand for [Clinical Laboratory Improvement Amendments]. But that had to happen, you had to go through that process of getting that lab appropriately designated. So, on the logistics side we were basically aiming to test 10,000 people a day: ballpark number. And we had to have enough collection sites, we had to have enough test tubes to drool into, you had to be able to cap those test tubes, you had to put them into a transport device, you had to get them over to the Veterinary Diagnostic Lab, which I'm going to call the VDL from now on, so I don't have to keep saying that longer sentence. All of that logistics had to happen. So, we set up, I don't know, what was it, 10 sites across the campus, maybe it was 20, I forget. It was a lot. And then you had to move all those samples around. And remember, some of those samples have virus in it, that are infectious. So, you have to do this safely. And all those tents had to be set up in a way that it was safe for people to take their masks off. And when you showed up? Now we're going to get to the IT part. We had to know it was you -

Jessie Knoles 14:44

Right.

Jay Walsh 14:44
- who showed up. We had to give you a test tube that was assigned only to you, so that had to be barcoded. Then you had to drool on this, and we had to sort of instruct you how to drool in this. Wasn't hard, most people know how to drool, like it or not. And then that test tube had to be tracked the whole way. And you know, it sounds easy, it's a barcode, you just scan it. But you get 10,000 of these things and then eventually, what you're going to do is you're going to take the saliva out of that test tube and put it into something else. And you had to be able to continue to track this until the result came out at the end. The way this works is saliva comes out of the test tube, and it goes into a reaction chamber, and there's 90ish wells in this plate, and there's a reaction that occurs, and then it comes out of those, and it goes into another set of wells which has 384 of them in there. And then that goes in, and you actually drive the reaction in there to see whether there's any virus in it. And then you had to be able to take that result out of that machine and link it back to you. So, there was all these IT components that had to work. Oh, and that's human subjects' data. And it's your healthcare data. So that all has to sit within an electronic environment where it's protected. All of that had to be built. So, what we focus on often is the actual test, but there was all these logistics and IT components that were non-trivial. That had to be all implemented within about two and a half to three months.

Jessie Knoles 16:40
Right. Yeah. Wow. So, what was your specific role as the Vice President for Economic Development and Innovation?

Jay Walsh 16:49
Yeah, so you know, my role. Probably the easiest way for me to describe it is to describe it temporally. I got here on the 16th of May, which happened to be a Saturday. So great start on a Saturday. But by the time the next week rolled around, I was trying to figure out really what the job was. And it wasn't till the end of the next week. So, I don't know give or take a few days, it was something like the 30th at max, that Marty Burke gave a talk on the SHIELD project to the leadership of the University. I sat and I listened to that and within a few minutes after that, I wrote an email to him. I said, "Do you have NIH, National Institutes of Health, federal money to do this?" And he goes, "No." I had worked in my previous job with a group at Northwestern to get federal money because there was a whole bucket load of federal money. And I use the B word because there was over a billion dollars of federal money to look at testing. That had been stood up by NIH, and there were groups around the country, including at my former institution that were trying to access that. For better or for worse, UIUC hadn't thought of this yet. That happened on a Friday evening, because that talk was four to five. By the next Thursday, we had a proposal in to NIH. So, six days later, we had a proposal in to NIH. The long and the short of that is that proposal process usually is submit proposal to NIH and you wait nine months. They had set up a process that was pretty quick. And within three weeks, they said, "No, we're not going to fund you." You can't just stop there, because the reason that they didn't fund us is because we were far enough along, we had met most of the milestones that had been set out by the program. We had developed the test; we were already testing it on people. We were way ahead of where this program was set up for. Two weeks later, the agent - the group that was running this called us back and said, "We couldn't fund you with this mechanism, but maybe we can help you in a different way. And we really would like to work with you." So, that was how we got connected with the National Institutes of Health. And in particular, the program that they had stood up was the rapid acceleration of diagnostics. So rapid is R, acceleration is A, and diagnostics in the medical world is abbreviated Dx, capital D small x. So, the RADx program is what was the funding mechanism. Very candidly, we didn't get a ton of money from them. That wasn't really the whole purpose of being involved with RADx program. That RADx program also

not only provided funding for mostly companies, but we in this case, we're sort of acting like a company because we were developing a product, a test. It came with a bunch of other services that helped us move the test forward. They had groups that were consulting on supply chain issues. They had groups that were consulting on regulatory issues. They had groups that were consulting on information technology. Groups that consulted on quality assurance. So, there was all these subgroups. And we really utilized in a significant way their regulatory team. That regulatory team was fantastic. They connected us very quickly, and I worked very closely with the head of that regulatory team. That allowed us to move through the regulatory process, reasonably smoothly. Having said that, we did have an initial hiccup there, we got advice and went down a pathway that, really wasn't a pathway. You know, if you're going to keep that metaphor going, we ran into a dead end very quickly. So, we had to backtrack and go back to the fork and go the other route. Once we got going down that route, we connected with RADx after we had screwed up. The RADx, we weren't involved with them when we went down the wrong pathway. When we got back and RADx regulatory team helped us, then we moved appropriately forward. That was a long answer to your question. Did I answer the question?

Jessie Knoles 22:03
You did? So that role that you took on? How long would you say that working with RADx and the regulatory team? Was that over the course of a year? Or was this still in a pretty short amount of time before we actually started testing students?

Jay Walsh 22:22
I'll get to the answer to the question, but I have to back up a little bit. In the pandemic, and actually, even outside of a pandemic. If you have a certified lab, a CLIA certified lab, then the director of that lab can develop laboratory developed tests, so they can develop a test in the laboratory. They can use that test for the diagnostic for diagnosing a human condition. So, what we were doing initially, was we had developed the test on campus, and we were running the test only in one laboratory on campus. And that is fully allowed by regulatory processes. We had a laboratory developed test, and we were testing in students and faculty and staff from the beginning. We had actually published the assay, the method by which you do the detection of the virus in the laboratory, we had published that. And we found out later that there were laboratories around the country that had read that publication and were doing the same thing. So, they had -- this is how science and medicine works -- laboratory directors look at something, go hey, and they adapt - they develop the test within their own laboratories. That's perfectly allowed, in a regulatory way for us to be testing on campus. We had thought - when we went down this wrong pathway – we had thought we had a way of moving beyond our campus. And we ran down this pathway that I said was a dead end. We were told that that was a dead end and somewhere in the mid-September timeframe. So, the test was developed in the laboratory in April and May. We set up the logistics and the IT systems in June and early July. We started actually testing in early July. You can go to the website now and you can see that we were testing in early July. The students came back in mid-August, and we were trying to ramp things up during July and August. We were also developing two other companies to roll this outside of the university. One would roll it across the state of Illinois, and one would roll it across the world. One inside of Illinois was SHIELD Illinois and the rest of the world was SHIELD T-3. So, we had what I called SHIELD on campus, SHIELD Illinois, and SHIELD T-3. SHIELD on campus was certainly the one that was ramping up quickly in the process that I just mentioned to you. June, we were doing IT and started the logistics. July, we were really trying to grow that and scale it so that we could move things forward. And then in August, we were ready for the students. You asked a question before, and I didn't answer it directly; the difference between moving from a public to a private. The big difference, there is that in the public university, there is a mission to serve a larger community than just your own campus. It's right in the mission statement of the University of Illinois. That's what was really interesting to me, to move over to a public university,

to look at scale, because it's a bigger operation, and to look at that public facing mission. That's definitely what we had within the pandemic. When we started SHIELD Illinois, and we started SHIELD T-3 we were serving the mission of the University by taking a test that we had developed and propagating it across the state and across the rest of the world. So, that was what was interesting to me to move. And that's what I found immediately in ways that I hadn't fully expected to find immediately. But it was, sheer, frankly, perfect. It was delightful, and totally within my concept of what I wanted to do when I got into academia three decades ago. So, we started SHIELD Illinois, we started SHIELD T-3. My role was to allow us to get authorization from the FDA, so that those two units could be able to do the testing beyond the lab. Laboratory developed tests you can do in one lab. If you want to go beyond that you have to have FDA authorization to do that. And my role was to get that FDA authorization.

Jessie Knoles 27:55
Great. I think that leads me to my next question, which was is could you please describe the process of getting that FDA emergency use authorization?

Jay Walsh 28:06
Going into way more detail than you want. Because it basically was October, November, December, January, February -- it was five months, nonstop. Every day for five months. I did take off Christmas, I did take off New Year's and I did take off the day before New Year's. That's it in that time period. I'm not saying that about me. There were lots of people who were doing the same thing. Okay, I mean it was an all-out effort to do this. A lot of the [unintelligible] and authorization requires essentially two major components. One is laboratory work, and the other is a clinical study. The laboratory work was largely done already, the clinical study had not been done. Having said that, about the laboratory work, there was sort of more lab work that needed to be done. So, we worked on that. The really challenging part was the clinical studies part. In the usual way, in retrospect, it's straightforward, but as you're going through the process, it's not. And the biggest challenge that exists -- and I say that in the present tense verb -- is that the FDA looks to show that a new test has equivalence with a test that they trust. Gold standard, if you wish. The gold standard is a nasal pharyngeal swab with PCR. This is a swab that's five to seven inches long that is stuck through your nose to the back of your throat. Most of us look at our nose and think it goes up -- actually, the hole is pretty much straight back. You don't want to think about it too much, but if you tip your head back, you can stick this swab all the way back into the back of your throat. People don't like nasal pharyngeal swabs. For us to run that study on campus was going to be difficult to get people to do that. That's number one, people don't like it. Number two, from a technical point of view, you're getting a sample from a different place than when you're getting a saliva sample. The virus goes through a dynamic where it infects different parts of our bodies at different times. Having a discordance between the gold standard and the saliva sample is not something that was going to be helpful to anybody. We had to design a study that would give us a good correspondence between the two different compartments. What we knew and certainly what we have seen is that there is no doubt that the COVID SHIELD test is a really good test for detecting SARS COV-2 in human saliva. If it's in your human saliva, we'll detect it. I can I feel very confident stating that we have done so many tests. I have been the skeptic in the room many times and we have done many tests and I feel very confident about that. Frankly, the FDA has come back and asked us, "Can you try this? Can you try that?" And every time it's worked out quite well. But the challenge is that you've got virus that seems to hang up in the nose for a period of time. So, you don't want somebody who had Corona, had COVID, two weeks ago, to come in and have a nasal swab done and have no more virus in their saliva, but still have it hung up viral particles. Maybe they're not capable of replicating, but they're up in the nasal cavity and they'll be detected by a nasal pharyngeal swab, PCR based test. So, we had to design the study so that it made sense. We also had to recognize that we had at the time we were running the study, which was sort of November,

December timeframe, there was only about 1% of our, our students who were testing positive at that time. We didn't want to have to do this on 1000 people. That would only get you 10 positives at 1%. We had to figure out how to do this in a way that worked better. Eventually, we ended up doing the study off campus. We went to UIC, and they have health clinics in the Chicago area, called Miles Square Health Facilities. There was also a health clinic in Pilsen. We've worked with UIC Health, who was doing this testing in neighborhoods where when we did the testing, it was somewhere between 20 and 50% positivity rates. Those folks who are coming in, the patients who are coming in to have the tests done, were coming in with symptoms. They weren't feeling well, and they were already getting nasal pharyngeal swabs. What we did is we asked them, "Would you like to provide a saliva sample for us?" We went through the whole human consent process, a lot less formal than what I just said. But essentially, we got people who came in to provide saliva. Now, some of them had symptoms and it wasn't SARS COV-2, it wasn't Coronavirus, and some of them did. That's how we got the study done is we went to a place where at the time that we conducted the study, there was a high prevalence of COVID-19. That was a key component to that. Having said that, one of the challenges we ran into is that a lot of those patients had a lot of viruses. The FDA wants to know that you can detect low viral loads. Great, you have a test that can detect a whole lot of viruses. But can you detect it when it's not so prevalent in somebody's mouth or nose? They did ask us when we were done to go back and do another study on this. Fortunately, we were already doing another study for NIH and some of those patients had low viral loads. We were able to use those patients and the low viral load cases that they had. In particular, I only want the low viral load cases, because we were actually early in the study. We didn't have the whole study done. I said, "Can I just have the data for the low viral load cases?" They just gave me the data for the low viral load cases that they had for like two, three weeks of data, something like that. Was a lot of data. They took months of data for that study, it's completely different study. We took those and those supplemented that data from the clinic where there were high viral loads, so that we could prove to the FDA. I told you, there were a number of times the FDA came back, this is one of them, where they came back and said, "Does it work for low viral loads?" The answer was, yep, it did. That gets us through January. So, the data was taken. I really started on this in mid-September, talked to the regulatory team in September and early October. Designed the clinical study. Started on campus. The prevalence was so low, it was a pain in the neck to really do. It was too many -- we just weren't getting enough positives. We switched over to UIC in late November. In December, we – November and December, we took the data, the UIC Health claims, submitted it to the FDA, had this other study going on UIUC's campus that happened to have a low viral load. We added those in early January. We submitted that in mid-January. We went back and forth with the FDA over a number of smaller issues in late January, early February timeframe. And then in late February, they gave us the emergency use authorization.

Jessie Knoles 37:44
Great.

Jay Walsh 37:45
Not that any of those timeframes are seared into my brain. That's over two years ago now and --

Jessie Knoles 37:53
Yeah.

Jay Walsh 37:55
Yeah. Yep.

Jessie Knoles 37:59

Wow.

Jay Walsh 38:01
Yeah. It was pretty much a full-time job for five months.

Jessie Knoles 38:06
Right. And you were simultaneously also involved in another study for the NIH? Was that for the University System? Or was that for another project you were involved with?

Jay Walsh 38:19
Yeah. If you hang around in academia for more than three decades, you know people. I got a call from NIH is National Institutes of Health. Institutes -- it's plural. One of the institute directors I've known him since we were both graduate students. We weren't in the same place as graduate students. But we had known each other as graduate students. He gave me a call one day and he said, “Hey, I know you're doing all this work on campus, you're testing all these people. Can you help us figure out a challenge that we have with all the testing? And can you do this study for us -- a comparison between saliva and nasal? That's the simplest way to describe it. It’s a little more complex than that. Can you help us with that? There was more than one NIH director in the room. Some of them you may know by name like, Fauci. But that wasn't who called me, it was one of his counterparts. I connected him to the right people within UIUC who could do that test, that whole study. That was Becky Smith and Chris Brooke, were the two folks who are doing that study. That was a study that was a multi-institutional study. We were the site where the folks were involved. We would find the patients, we would find the human subjects, the participants, however you want to call them, who were positive. We were already isolating them. We were also isolating their close contacts. Remember, we're putting people in quarantine. Remember that part too? If you knew somebody, you would go to the hotel for 10 days. Charming, I'm sure. We were already doing that. And what you could get for low viral loads is those people who were in quarantine, who had been suspected of maybe going to get it. We started testing them right away before they tested positive. So, we had people who had tested negative, negative, negative for several days and then started testing positive. We were testing them every day with saliva and nasal. We could follow the dynamics of this, we could see when the saliva turned positive, and when the nasal turned positive. For the people who would come in and were put in isolation, we could see when everything dropped off. And NIH was interested in the viral dynamics. So, they had come to us. We worked with UMass Amherst, and we worked with Johns Hopkins. There were those three major institutions that were working together on this study. That was separate from the EUA, except that there were low viral load patients in that cohort. I wrote to that team, and I said, “Look, if you've got -- I told them what low viral load meant, by definition what the FDA told me it was -- if you have patients with these parameters on the nasal, tell me, and then we will go check their saliva.” And we did that. We matched those two together and sent all that data off to the FDA.

Jessie Knoles 41:52
Great.

Jay Walsh 41:54
Yep.

Jessie Knoles 41:55
So, after receiving emergency use authorization, what sort of role or responsibilities did you have after that? How?

Jay Walsh 42:05
Oh, no. Yes. So, a couple things I would say: first of all, when you get authorization -- or in a normal world – when you get approval for drugs or devices, you're not done talking to the FDA. Okay, so that's a continuous process. That letter that I showed you early on, that you probably clicked on, that had my name on it. There's a role that goes with that and that's the Responsible Official. And that word is capitalized on both of those letters. And the reason it's capitalized, is that it has a legal meaning. I have a responsibility to report to the FDA, and they can contact me. It isn't over yet Jessie, is my point. That's number one. Number two, the other big role was -- remember I told you about those two companies SHIELD T-3 and SHIELD Illinois. So, SHIELD Illinois, we had started to put together the whole infrastructure. Frankly, in the summer because we -- remember I told you; we had this path that turned into a dead end?

Jessie Knoles 43:27
Right.

Jay Walsh 43:28
Yeah. Well, we started ramping things up. And it was really smart that we ramped things up, even though we ended up ended up in a dead end and had to go a different path to get authorization. Because we had to build this infrastructure. The state was really interested not only in the University of Illinois, Urbana Champaign coming back, but all the other universities. There are 12 public universities, there's 48 community colleges, the city colleges in Chicago, there's several thousand K-12 schools. It would be great if everybody could go back to school. And in part, it was good for the students to go back to school. And in part, you also have to remember, it was hard for parents because their kids were all home. We learned in this whole process, that K-12 is not only education, but it's, I mean don't take this wrong this isn't negative, it's childcare. If the kids aren't going to school, then the parents can't work, or at least can't work very efficiently. It was a way to open up our economy and let people get back to what they need to do their work and to and for kids to be able to go to school. So that was what SHIELD Illinois was all about, was getting the state back to as much function as possible. I was involved with that. Now we hired somebody to run SHIELD Illinois. That's Ron Watkins. You should probably talk to Ron.

Jessie Knoles 45:05 45:05
Yeah, I talked with him.

Jay Walsh 45:07
Okay. If you've already talked to him, then he can talk in much more depth than I can about SHIELD Illinois. But that became really successful. And we were in over 1700 schools, we had a lot of students that we were testing. We were part of the program that led to the nationwide -- we had the data that showed that it made sense to test to stay. If you're regularly testing and somebody turned positive, then not everybody has to go. If you keep testing everybody, then you can quickly stamp out any spread of that virus. Remember, all of this is happening before there was a vaccine. When people got sick, they got really pretty sick. Now we're having this conversation and a vaccine is out there. Most people who get this, most people, not everybody, most people who get this now, it's a bad cold or a mild flu. Now, having said that, there's still several hundred people a day who are dying, either with or from this disease. That's a whole other debate. But this was all pre-vaccine, people got sick, and it was not a good scene. Anyway, SHIELD Illinois came along, and then SHIELD T- 3 also came along. I helped oversee, and I worked with Ron on a regular basis to oversee SHIELD Illinois, and we ran most of it. But every once in a while, there were problems. We worked very closely with the Governor's office. The Governor's office was a phenomenal partner in this whole thing. So why did we get into this

business? We got into this business early on, because we had state legislators who were saying it's great that you're doing this on campus, can you help my constituents? And that was a driving force for us, as they said we're a public university with a public mission. That was really a driving force for us. Shield T – 3 was a different issue. That was, can we spread it across the country and across the world? I played some role in that on the Board of Managers. I oversee some of that. But really, that was driven by Bill Jackson. He's the director of the Discovery Partners Institute DPI, located in Chicago. Bill was the driving force behind that. Bill was the driving force behind a whole lot of stuff. He was involved in a lot of these other things. He didn't get into the weeds on the EUA but we talked on a regular basis. We talked about logistics, we talked about IT things. There were lots of lots of things. Bill was a great partner in this whole thing, too. Bill was there. Ron Watkins was there. It was a bunch of people on campus that were there.

Jessie Knoles 48:17
Okay, yeah.

Jay Walsh 48:19
The big group.

Jessie Knoles 48:22
Yeah. As of now, October 2022, what is the status? And also, what does the future look like for SHIELD? Campus SHIELD Illinois and SHIELD T - 3?

Jay Walsh 48:37
Yeah, I'm going to ask you a question.

Jessie Knoles 48:43
Sure.

Jay Walsh 48:44
Where's the pandemic going?

Jessie Knoles 48:46
It seems like we're almost out of the weeds perhaps.

Jay Walsh 48:54
I asked that not totally facetiously, because we still have SHIELD Illinois, and SHIELD T – 3 up and running. We'd still do testing on campus. In fact, the testing on campus was just crazy high positivity rates in September, in early September. The highest we've seen. Not only were the positivity rates highest, but we also weren't requiring testing. A lot of people without symptoms probably weren't being tested. The number of people who tested positive was higher than any other time. I mean, just the sheer number of people who are testing positive. So, we've clearly reached a stage in this pandemic where the virus spreads really well. As we all know, most folks who get this have a relatively mildish, cold - flu type thing. So, we've got SHIELD Illinois still doing testing in schools all across the state. And we're ready to ramp up if we need to. SHIELD T – 3 still has testing sites around the country and also can ramp up if it needs to. SHIELD T – 3 is pivoting to looking at other things that they're testing. In particular, they're testing water, wastewater, so that's a reasonably good surveillance technique. We're seeing it definitely with Coronavirus. We're seeing in other cases, too. I mean, you can read about polio being detected in New York. So that's still there. And that is another sort of line of business that they're looking at, is looking at wastewater. So, the idea being that this is a platform for them. The original

platform was based upon SARS COV-2 detection, and now you're expanding this to maybe looking at other things that you could detect. Either with saliva, or in wastewater.

Jessie Knoles 51:18
Great.

Jay Walsh 51:19
Yeah. So, in the usual way, it wasn't going to end with just one problem. The virus, it's other things too.

Jessie Knoles 51:28
Right. Okay. I have three more questions, if that's okay.

Jay Walsh 51:35
Sure.

Jessie Knoles 51:37
So, I did do a little bit of research on you, and I noticed, or I saw an article about how, in September 2020, you testified in front of a subcommittee at the US House of Representatives?

Jay Walsh 51:50
Yeah, I did.

Jessie Knoles 51:52
Can you talk about perhaps what that subcommittee was discussing, or any sort of information that you're allowed to convey about what you're testifying? And -

Jay Walsh 52:02
Well, yeah. It was totally public thing.

Jessie Knoles 52:06
Okay.

Jay Walsh 52:07
You probably can find it online. The key issue was funding of research in the United States. That's at a high level, I would actually have to go back to my testimony. I mean it's two years ago - to remember all the details. At the high level, the question is, what's the role of the federal government and how much funding should be there for basic research in the United States? Without going into a long lecture on this, the short version of this is that part of the success of this country, is that we have a means to create new knowledge on a regular basis, a way to detect SARS COV – 2 is a good example. That is largely funded with public funds from the federal government. Most people recognize the impact on health. So, the National Institutes of Health is well funded. Is it really well funded -- we can have an argument about that. But it has a reasonable amount of funding, and it has impacted our health greatly. You can give many, many examples. The response to COVID-19, depending on your point of view was either great or terrible. But there is no doubt without the National Institutes of Health it would have been worse. There are many diseases that we now have that we live with that don't do us in at least immediately. So, my argument was not only NIH but also the National Science Foundation, Department of Energy. The list goes on. The DoD provides a lot of funding for basic research as well. The Department of Energy has improved batteries and allows you to use a phone or a

watch on your wrist that's run with lithium-ion batteries that are way better now than when they first were invented. Lithium-ion batteries for what it's worth really had their genesis in Department of Energy funding back in the 80s. Pretty much every drug that we take in this day and age, I can probably point to federal funding that led to that drug. Yes, it's companies that now sell it to you. But the original basis for lots of what we do is based in it. Google. Google was NSF funded. That's how it started. It was a National Science Foundation funding for basically library work. How do you catalog stuff? And they just happen to figure out how to catalog web pages and do web search as well, as opposed to card catalog searches. Jessie, you're probably not old enough to remember card catalogs. But some of us are.

Jessie Knoles 55:30
I work in a library so that we have so we have some still hanging around.

Jay Walsh 55:34
Yeah, yeah. But you know it used to be that was the only way to find stuff. Now, there's this thing called the web, maybe you've heard of it. And, anyway, that started with NSF funding. If you look at the original patent that the Google guys had, they cite NSF funding. My testimony was all about the impact of research on society, and why providing more funding -- and I think there was a particular thing that I was arguing for, why that would have had a significant impact.

Jessie Knoles 56:09
Great, thank you. Besides working with SHIELD, were there any other initiatives or developments produced by the University System that were aided by your support as Vice President?

Jay Walsh 56:26
Oh, there's a whole bunch of other stuff I had. I actually had a day job too. I oversee, I help drive forward the Illinois Innovation Network, which is a network of all 12 Publix across the state. And each of them has at least one hub, and a couple of them have two. There are 15 hubs in this network. They're all over the state, from Chicago and Northern Illinois. And they're at the public universities, Northern, Southern, Eastern, Western, Northeastern, Governor's State, Chicago State, Illinois State, and the three that are within the University of Illinois system. Chicago, Springfield, and UIUC. That's a network and it was an idea that was growing before I got here, and now we're actually doing a lot of work. The idea has been to pull that group together, and help it drive forward. It's run by a council that is chaired by somebody out of Northern Illinois University. That council has somebody from every university on it. And that's what really drives it is the Illinois Innovation Council, and I provide, at the least, I provide administrative support. It is, to some extent, my day job to make sure that that really runs well. There are international components of what I do. We have a Great Lakes Higher Education Consortium that includes three universities in the United States: Michigan, Wisconsin, and the University of Illinois, as well as three in Canada: Queen's, McGill, and Toronto. So, we're sort of standing that up and looking at the Great Lakes region as a region where there can be cooperation and an effort there. I also work a lot with a number of organizations across Illinois, to build particular sectors. I work with a group called MXD. That's one of the manufacturing institutes in the United States, I think 14 of them stood up across the United States. This one focuses on digital manufacturing, as well as cybersecurity. I work with a group called Current that looks at water. We're lucky we're in a water rich area of the country. But the question is, what can we do to improve water quality and water usage? I work a little bit with M-Hub, which is a manufacturing hub that accelerates manufacturing ideas. And I mean, the list -- I'm on the Argon Board of Governors, so work with Argon to help them at the DOE lab. You get the idea. There's a lot of interactions where the University of Illinois -- and I'm the representative there -- has either gotten something

from these organizations or provides something to the organizations and its actually always both. So that's no small part of my role.

Jessie Knoles 1:00:07
And have you noticed any impacts that the pandemic had on these organizations in terms of prioritizing or shifting focus on projects or research?

Jay Walsh 1:00:20
Sure. I mean, Current is water. And they've been involved with the wastewater.

Jessie Knoles 1:00:28
Okay, yeah, okay.

Jay Walsh 1:00:30
You know, all of these organizations have an educational component, big surprise. There's a lot more hybrid and a lot more online education that's occurring. So, yeah, everybody was impacted, and everybody adjusted, and everybody is coming out of this with a slightly different way of operating.

Jessie Knoles 1:00:50
Right, right, definitely. So as far as you as a person and you and your roles, what have you learned after two years of dealing with this pandemic, and its many changes and waves and variants and constantly changing guidelines?

Jay Walsh 1:01:16
So first, I've learned that coming to a public university, has been, I mean, for me personally, has been really enlightening. How it's different in its mission from a private, not saying better or worse, it's different. It turned out -- for the pandemic -- that being at a public was a really great thing to be involved with. The impact that we were able to have across the state. Being in more than 1700 schools, and allowing students to go back to school, was really just fantastic. The ability to focus on the world beyond the campus, as part of the mission of the university has been really good. I think we've learned that we have tremendous resources here. We have a lot of smart people. A lot of people who are willing to work really hard on hard problems. A lot of people who are passionate about what they're doing. And I kind of knew that about academia before, but it was incredibly heartening. And something that is really now deep within me that we can look at our universities and recognize that they can solve some of the most significant problems we have in society. I knew that intellectually before; I now have a real example of that. Yes, I was involved with it, but there were lots of other people involved with it. And everybody rowing in the same direction really was just fantastic. There are so many other big problems that society has, human society. That the world has, and that goes beyond humans. That we as a university tackle on a regular basis. And we have the people that can do that. A lot of what our response was sounds like a sort of a technical response, a scientific response, but there was a lot of human elements to this: communications issues, legal issues, sociologic issues, and then we're dealing with humans. The humanists played a role in this as well. The idea that this was just about science gives it short shrift. This was about the whole of university. Very few organizations that humans have set up, have humanists and artists and scientists and engineers and lawyers and businesspeople all under one roof. And there are some real advantages that we saw from that. You asked me what I learned. I learned that this sort of organization that we've set up called the University is capable of solving really challenging problems. And UIUC, and UIC, and UIS really handled this impressively well. I say that in part, because the I'm in it and in part because I came from the outside. I wasn't there in the first two

months. And I was impressed from the word go and continued to be impressed with the people who have been honored to join with over the last two and a half years.

Jessie Knoles 1:05:38
Great. Is there anything else that we didn't cover that you would like to talk about? Or any final reflections or notes?

Jay Walsh 1:05:50
I've said a lot in the last hour and a half. Yeah, I think I've covered most of what I needed to say.

Jessie Knoles 1:05:57
Great. Thank you, Jay. I really appreciate it.

Jay Walsh 1:05:59
Jessie. This has been wonderful. I only wish we could have been face to face. It really would have been good to see all three dimensions, but we do this now.

Jessie Knoles 1:06:13
We do. Yes, we do.

Jay Walsh 1:06:15
We do. Thank you for doing this.

Jessie Knoles 1:06:17
Yeah. Thank you. Your experiences are important to us and we're happy to be able to preserve them for future research.

Jay Walsh 1:06:25
Yep. Thank you for doing this Inbar also. Thank you very much.

Jessie Knoles 1:06:29
Thank you.