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**Civics 101**

**Episode 126 : National Institutes of Health (NIH)**

**Nick:** [00:00:16] I'm Nick Capodice.

**Hannah:** [00:00:17] Hannah McCarthy.

**Nick:** [00:00:18] This is Civics 101.

**Hannah:** [00:00:20] Today.

**Nick:** [00:00:21] Yes.

**Hannah:** [00:00:21] Our episode is on the NIH.

**Nick:** [00:00:24] The National Institute of Health.

**Hannah:** [00:00:25] The National Institutes of Health.

**Nick:** [00:00:27] The 'tutes'? OK, so what does that mean?

**Hannah:** [00:00:29] That means that within the NIH there are other institutes that are doing specialized research.

**Nick:** [00:00:34] OK. And so how and how are they a Civics 101 topic?

**Hannah:** [00:00:37] Well we pay for the research done by NIH institutions and the institutions that the NIH funds.

**Nick:** [00:00:46] So who is going to explain it to us?

**Dr. Wolinetz:** [00:00:48] So my name is Dr. Carrie Wolinetz and I am in the office of the director at the National Institutes of Health, where I serve as both the Associate Director for Science Policy as well as the acting chief of staff to the NIH director.

**Hannah:** [00:01:01] So why don't we just start very basic... What is the primary role of the NIH in the United States?

**Dr. Wolinetz:** [00:01:10] So the mission of the National Institutes of Health is to seek fundamental knowledge about the nature and behavior of living systems and then we apply that knowledge in order to enhance health, lengthen life, reduce illness and disability. So essentially we are a research funding agency whose goal is to improve the length and quality of human life and health.

**Nick:** [00:01:34] And when you say Institutes of Health, Hannah told me that the N IH institutes, not institute. How many institutes comprise the NIH?

**Dr. Wolinetz:** [00:01:41] So there are 27 institutes and centers which range from institutes that are disease focused, so for example the National Cancer Institute, to institutes that are more focused around organ systems, like the National Heart Lung and Blood Institutes, to institutes that are really about engineering fundamental discovery and the research pipeline itself for example our National Center on Advancing Translational Sciences.

**Nick:** [00:02:10] And where does the NIH get the money for all these institutes?

**Dr. Wolinetz:** [00:02:13] So we are a federal agency, so we get appropriations from Congress and the institutes and centers each get their own congressional appropriation and so that funding comes directly from Congress and the American taxpayers.

**Nick:** [00:02:30] Can you tell me about how much money the bridge gets, year to year?

**Dr. Wolinetz:** [00:02:34] So our current appropriation is right around 37 billion dollars. But importantly between 1998 and 2003 there was a significant investment in the National Institutes of Health, the budget of the research agency doubled at that time and that was a reflection of a strong bipartisan support in Congress that remains to this day.

**Nick:** [00:03:00] So when something like an Ebola outbreak happens in the US, you know we did an episode actually on the CDC, and I think of that as the organization that takes care of an infectious outbreak. But it sounds like the NIH is the institution conducting the research, so how does that work? Are you are you guys developing the the vaccines, the medication, the new information?

**Dr. Wolinetz:** [00:03:24] That's exactly right. So there are a couple of roles and I might play depending on the shape of the outbreak. Certainly we are very involved in working closely with the CDC for the next stage of developing medical countermeasures, and those might be vaccine,s they might be medications, they might be diagnostic technologies. In addition, if it is a emerging virus or or a disease that we don't know much about, for example when S ARS first became a public health issue, NIH might be involved in some of the very fundamental identification and characterizing of whatever that infectious agents or disease causes.

**Nick:** [00:04:11] So is the head of the NIH appointed, is this a political appointee by the president, like the heads of other agencies?

**Dr. Wolinetz:** [00:04:18] Yes so NIH has two presidential appointees and only two, the head of the National Institutes of Health is a presidential appointee and so is the head of the National Cancer Institute.

**Nick:** [00:04:30] I'm also very interested in what extent politics can guide the kind of research that you're doing. Let's take something slightly controversial like stem cell research, or maybe research for the opioid crisis. How do politics play into the kind of funding you get?

**Dr. Wolinetz:** [00:04:45] I think certainly NIH has been very fortunate in that we are a largely apolitical agency and that we do have this strong bipartisan support. But certainly if you look at how things rise to sort of the level of national consciousness, like the opioids crisis, that can be translated into additional funding for the agency. Sometimes, as in the other example you mentioned stem cells, that becomes a policy conversation where we think about the framework and the terms and conditions we might put on our researchers about the kinds of research that that we fund. But for the most part I would say the NIH tends to stay outside the political fray. And we've been very fortunate to have this widespread support to really focus on our mission of science and improving human health.

**Hannah:** [00:05:41] So I'm curious how the public does benefit from the research that the NIH funds. Can you point to any specific discoveries or advances in medical science that have come out of NIH funded research?

**Dr. Wolinetz:** [00:05:55] Oh sure, some of the rapid improvement we've seen in death rates from cardiovascular disease were they're down significantly can be traced back to things like the use of statens for control of cholesterol, which stems directly from NIH supported fundamental research. Recent cancer therapy is like the cutting edge immunotherapies, CAR-T cells are a term you may hear a lot... The antiretroviral therapies that have really transformed HIV-AIDS from a sort of death sentence terminal illness to a chronic condition to which people are living to a normal lifespan... All of those discoveries have the roots in NIH supported research.

**Hannah:** [00:06:42] We're going to take a quick break. But stay tuned for more NIH. Coming up on civics 101.

**Nick:** [00:06:52] Welcome back to Civics 101, we're talking to Dr. Carrie Wolinetz about the NIH. So are there any fun new projects that the NIH is working on that we should keep her eyes out for?

**Dr. Wolinetz:** [00:07:02] Well certainly we're very excited about the new opportunities presented by gene-editing technologies and the ability to create the next generation of gene therapies to cure genetically based diseases. So for example, sickle cell anemia, which was one of the first diseases identified from a molecular level. It's Been a century now that we've known the cause of sickle cell anemia. We are almost at the cusp of actually being able to cure that disease through gene therapy.

[00:07:37] And you know we hope that within the next five maybe 10 years or so we will actually see a cure for sickle cell anemia or other similar diseases that we could potentially approach with a new gene editing technologies.

**Nick:** [00:07:52] So I'm so curious, when there are all of these research studies going on, and for example with sickle cell anemia you say that you're getting close to a cure, where are these results going? And are private sector institutions accessing these results and then furthering those studies, getting you even closer?

[00:08:10] Yes, so the way it essentially works is most of the money the NIH gets does not actually reside at NIH. So 80 percent of our budget goes out from NIH to research institutions, universities, academic medical centers all over the country. And it really is the best and brightest scientists from all over the United States and all over the world who are using that money to address research questions to help us understand the fundamentals of disease, and how to how to use that knowledge to actually lead to therapies and treatments and cures for those diseases. There is then a often a hands off to the private sector who essentially depends on that federally funded publicly supported research to be able to move the ball forward and develop whether it's vaccines or drugs. A lot of that is facilitated by the research funded by NIH.

**Nick:** [00:09:15] So who has access to this sort of open source information? Do I, does Hannah? Can we go to a website and see this research?

**Dr. Wolinetz:** [00:09:22] Yes. So NIH is a very transparent agency. Certainly all of the projects that we fund are available on our website through a site called NIH reporter, and you can get as into the weeds on those projects as you want to get. And some of them are very weedy indeed. In addition we require all of the publications that come out from NIH funded research to be available to the public through our National Library of medicines pub med sites.

**Taylor Quimby:** [00:09:54] I've got a quick question I'm sort of curious about, do you guys mind if I jump in?

**Nick:** [00:09:58] Oh go ahead.

**Taylor Quimby:** [00:09:59] OK. So I just remember a few years ago when then Vice President Joe Biden, he had lost his son and he made this big call for the sort of moonshot of cancer this idea that there is going to maybe be this huge injection of funding. And I read, I think I read an article back then that sort of talked about this grant based-process and that it makes it hard in some ways to maybe have this big coordinated push and I'm just wondering are there any downsides or limitations to that sort of funding model where you're you know you're putting lots of different ideas and projects out there and you're funding lots of different things. But it's maybe a little bit scattershot, right?

**Dr. Wolinetz:** [00:10:35] So. So the cancer moonshot is still going strong. So let me start with that but you know it's a little bit like managing your investment portfolio. It's making sure that you've got the appropriate balance of both soliciting from kind of the best and brightest scientists across the country, their original ideas on kind of a grant by grant basis, while at the same time as a agency and an institution that has this overarching view, paying attention to when the time is right to put in a big bolus of funds. So it's really making sure we've got this balanced portfolio of sort of big centralized initiatives, like The All of Us research program, like the cancer moonshot, like the brain initiative which we didn't talk about, with that portfolio of really bright individual ideas from scientists across the country.

**Nick:** [00:11:36] So how important do you think it is this public handoff? How important do you think it is that this is a public biomedical health research institution?

**Dr. Wolinetz:** [00:11:45] Incredibly important. I think one of the reasons that NIH has been fortunate enough to have such strong public support is because there has been long recognition that the government plays a critical role in supporting basic research discovery and fundamental science that is frankly too high risk for the private sector to necessarily get involved in. Because you don't know where it's going to lead you at the end of the day, although history shows us that in fact that basic research is ultimately what leads us down the road to medical advancements. But it is really a sort of critical government role to be able to support that fundamental research and build that foundation of knowledge that can then be taken by private industry and turns into the next generation of therapies and technologies and approaches to really improve human health.

**Hannah:** [00:12:51] That was Dr. Carrie Wolinetz, Associate Director for Science Policy at the NIH. Today's episode was produced by Taylor Quinby, our executive producers Erika Janik. Our team includes Jimmy Gutierrez ,Justine Paradis, Ben Henry and Jacqui Helbert music in this episode is from David Hilowitz.

**Nick:** [00:13:08] We don't have more than one institution but we do have lots of past episodes to check out. They do tend to pop up on the news cycle don't they?

**Hannah:** [00:13:15] They do don't they.

**Nick:** [00:13:16] You could set your watch watch to it. So if you're ever feeling especially bamboozled by something you've read the headlines check out our list of previous topics at Civics101podcast.org. Or you can leave us a question and we'll see if we can get to the bottom of it pronto.

**Hannah:** [00:13:30] I'm Hannah McCarthy.

**Nick:** [00:13:31] And I'm Nick Capodice.

**Hannah:** [00:13:32] Civics 101 is a production of new Hampshire Public Radio.