Cidlowski, John 2017

Dr. John Cidlowski Oral History 2017

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Interview with John Cidlowski, Ph.D.

Conducted on September 8, 2017 by John Maruca

National Institute of Environmental Health Sciences

Research Triangle Park, NC

JC = John Cidlowski, interviewee

JM = John Maruca, interviewer

JC: I'm John Cidlowski, and I'm currently chief of the Signal Transduction Laboratory here at the National Institutes of Environmental Health Sciences in Research Triangle Park.

JM: Well, John, thank you for helping us today. I guess to get started, have you always been interested in science?

JC: Yeah, that's a great question. I had to think back about that a little bit. In fact, I think my interest in science developed in high school as a helper in a biology lab, starting as a sophomore in high school, and it continued on from there, all the way through college and graduate school.

JM: Well, picking up on that, tell me a little bit about your academic background, where you went to school, what you did.

JC: I grew up Florida. I graduated from high school in Saint Petersburg, Florida, and then went to the University of South Florida in Tampa, Florida. I had a strong interest in marine biology at that time, and I worked all four years for an endocrinologist who was interested in hormones in fish. That was a lot of fun, and I really enjoyed it. I then went to graduate school at the Medical College of Georgia in a very small department of endocrinology, and that expanded my thinking to beyond fish into mammals and humans and the role of the endocrine system in both of those.

JM: Then how did that lead into your research that you're doing currently?

JC: After graduate school, I took a postdoc at Dartmouth Medical School in Hanover, New Hampshire with a man named Allan Munck. He discovered the glucocorticoid receptor. I went to work with him because that was a new discovery, and it turned out to be a great place for me to work. He was a wonderful mentor. He taught me a lot about trying to do new research rather than research that's the next step and to discover novel things, and that's helped me a lot. I then went from there to the University of Vermont and took my first job as an assistant professor in the Department of Biochemistry and also in the Cancer Center at the University of Vermont. After that, largely for family reasons, my wife and my child, my son, and I moved to UNC Chapel Hill where I spent about 12 years working at that university. After that, the opportunity came to be that a position was open for someone with my expertise at the NIEHS, and I really have enjoyed the move here after all these years.

JM: What is your current area of research?

JC: We work on stress hormones in the lab and how environmental factors and how stress hormones carry out the actions of the environmental insults. We do molecular biology. We do genetically modified animals. We work on cells. We also work on how hormones kill cells, and that's important in the cancer field. We study apoptosis.

JM: So that's how this relates to human health.

JC: Yes, yes, that's correct. It's one of the mechanisms that we study, and one of the drugs that we study is directly used in the treatment of leukemias and lymphomas, directly used in the treatment of lots of cancers. Even breast cancer today has a role with glucocorticoids. These are steroid hormones. They're also synthetic drugs. A Nobel Prize was given away perhaps about 60-something years ago for the discovery of these hormones. We still don't understand everything today about how they work, but they are, indeed, one of the most prescribed drugs in the world. About 3% of the world's population actually has been given glucocorticoids at some time in their life. They're used in the treatment of asthma extensively, which gives them an environmental touch. In the U.S., there are about 80 million prescriptions written each year. They're one of the top classes of drugs used in medicine today.

JM: The steroids seem to help with pulmonary issues.

JC: Steroids help with pulmonary issues. Steroids help with immunological issues. They're widely used in dermatology. They're widely used in ophthalmology. They're only limited by long-term, high-dose use that can have side effects, but most drugs have side effects.

JM: Thinking of all of your research, is there something that was most startling or something completely unexpected that you discovered?

JC: Oh, almost everything is unexpected, and that's the good part about doing research here at NIEHS. I think one of the more recent things that comes to mind is the work of one of my colleagues, Robert Oakley, a staff scientist in the lab. Robert's shown that stress hormones are actually necessary for a healthy heart. Removing stress hormones leads to heart disease in mice. Back in the 1800s, a man named Thomas Edison actually showed that the inability to make this steroid hormone was associated with feeble hearts, as he discussed. So, we've rediscovered something that Thomas Edison discovered in the 1800s.

JM: Is stress and stress hormones the same thing?

JC: Stress is a little different than stress hormones. Stress hormones mediate the actions of most stresses. They go up in response to stress. What's important is that a little bit of the hormone is good. Too much of the hormone for a long-term use is really much worse.

JM: Is there something you'd like to see happen in the next five or 10 years, some discovery or area?

JC: I would like to see us develop mechanisms to treat human disease genetically for all kinds of diseases, and to move away from drugs and to move to genetics to improve human health. That would be a wonderful goal. I think it's achievable. The technology is there. We do that kind of thing in mice, and it would be nice to have it translated to humans.

JM: You touched on this before, but why did you choose NIEHS? Why not stay in the college environment?

JC: Well, for me, NIH gave me the opportunity to do riskier research, to take bolder steps in terms of what we do and how we do it. The system in universities requires you to accomplish specific aims that are put forward in a grant that you had, and I was very successful at getting grants, but there was a requirement that you fulfilled those aims. Here at NIH, if you discover something and you think it's important or you know it's important, you can follow that lead because you have the money and the resources to do that.

JM: Alright, well changing gears here, what skill do you think every scientist should have? What's important?

JC: To be self-critical. I think that's the most important goal, to be able to recognize when something is good and when something is bad, to use more controls than are necessary in their research, but I think that's really important. I think the ability to speak about your research to the lay public is also very important. Unfortunately, it's my impression that the public doesn't truly appreciate the research that's done at the NIH because they don't know, and we need to do a better job of that.

JM: If you hadn't become a scientist and followed that career, what would you have done?

JC: Well, I was steered in that direction by my father. That's an interesting question. He was a commercial fisherman in Florida, and I probably would have been a commercial fisherman in Florida, and that would not have been a particularly lucrative career to follow.

JM: To wrap up, what advice would you give young people who want to get into science and follow a career?

JC: I think hard work is the key. I think scientific discovery is wonderful. It, perhaps, seems a little egotistical, but discovering something new that no one else in the world knows is just a great high. I think they need to work hard. Not everybody has to be a genius to be a scientist. If they follow their gut and do solid experiments, then they will discover something new if they pick an important problem, so picking something that's important is necessary. In our case, this stress hormone that we know that we work on, glucocorticoids, is a hormone that's essential for life. If you don't make the hormone, you die at birth or shortly after birth. If you don't have the signaling mechanisms that are involved in allowing the hormone to do physiological things, you also die at birth. So, pick an important problem, make sure it's medically relevant, and explore.