UW-Madison’s Nobel Prize Winners
Script for movie (audio only)

Slide 1:
Lederberg: when I was telephoned by a newspaper reporter wanting to know my reactions to having been awarded the Nobel Prize.

Slide 2:
Lederbeg: I said, “Ha, ha, ha, what kind of a joke is that?” and he tried to reassure me that it was authentic, I thought somebody was pulling a practical joke on me

Slide 3:
Temin: And then the king came down and shook everyone’s hand, because it is consider the laureates are above the king at this time. And then there’s a grand march down, mine, I think the minister of housing, who was a pleasant enough woman. I sat opposite one of the princesses, who was more sparkly.

Narrator:
University of Wisconsin Madison is proud that 18 Nobel Prize winners have been connected to the College in some way, either as students or faculty.

Slide 4:
Narrator: In this video, Campus Voices focuses on four of these luminaries, who, in their breakthrough scientific work conducted here on campus have revolutionized

Slide 5:
Narrator: not only their field, but how the world is understood. In this, they exemplify the Wisconsin Idea.

Slide 6:
Narrator: Born in Montclair New Jersey in 1925, Lederberg found his calling very early.

Slide 7:
Lederberg: I’m not sure that my own experience was entirely typical, at least judging from what I’ve heard about others. So far as I’ve been interested in science from my earliest recollection and I’ve always know what I wanted to do, at least in general terms and I’ve been incredibly lucky in being able to do it.

Slide 8:
Narrator: His intelligence and focus led him to attend Columbia at age 16. While there, he took a leave of absence to join the military, which granted him his first opportunity to study microscopic organisms in the form of Malaria.
After the military, he continued on at Columbia as a Medical Student, but took a leave of absence for two years to work at Yale. There, he first began studying sexual reproduction in e. coli, work which led eventually to his Nobel Prize. Lederberg explains more:

Lederberg: Well the approach to analyzing sexuality in bacteria was as you pointed out one that did not require seeing what was going on. It meant looking for evidence of genetic recombination by the exchange of hereditary traits.

in 1946, at age 21, he received his PhD from Yale and also married his first wife, Esther. Right after receiving his PhD, he was offered a job at Wisconsin as a professor of Genetics within the College of Agriculture

Lederberg: There were NO other jobs in that area – that was the whole point. I mean, the choice between taking this job and going back to medical school was going back to medical school and not being sure that there was going to be another job in this area in the foreseeable future. That may seem ludicrous today in the hottest part of biological research, but that’s the way it was at that time.

Lederberg: I think I could say I wanted the job in Madison as soon as we were greeted there. The Wisconsin stereotype is really quite quite right, very congenial, friendly easy going kind of outlook.

At Madison, he started the College of Medical Genetics. However, in 1958, he decided to take an offer from Stanford. Here’s Lederberg on why:

Lederberg: Well, it had everything going for it. I mean, first of all, to be really wanted, a real understanding of the program that I wanted to develop, that it interdigitated with the ideals of the school, a very progressive attitude, spirit of growth.
Narrator: As he was preparing to leave Madison, Lederberg received surprising news: At age 33 he had just won the Nobel Prize.

Slide 17:

Lederberg: The whole country is involved in Nobel week. It’s a week of celebration and they could use a little encouragement in mid-winter (laughing). There was the formal ceremony in this very beautiful structure of the town hall, wonderfully decorated, and ceremonial like you couldn’t believe.

Slide 18:

Narrator: Lederberg left to teach at Stanford very soon after he won his Nobel Prize. There, he continued the work he started at Wisconsin, furthering the field of biology for the greater good and embodying the Wisconsin Idea. Lederberg was the first full time faculty member to win a Nobel Prize.

Slide 19:

Narrator: but he was soon joined by H. Gobind Khorana, another geneticist, who came to Madison by way of India, England, and Canada.

Slide 20:

Khorana: My brothers and sisters are in India. I was the only one who was fortunate to get education.

Slide 21:

Narrator: After receiving his education, he led the Organic Chemistry branch of the British Columbia Research Council until 1960, when Madison lured him away with the promise of a solely research position.

Slide 22:

Khorana: Easily the most important reason was the, this offer of being able to work at this very special place, the enzyme institute, with no administrative duties,

Slide 23:

Khorana: the facilities and laboratories, there are not very many places, in fact it’s difficult to think of another one that really have a comparable situation.

Narrator: The unique atmosphere of the Enzyme Institute allowed Khorana to pursue his main interest: decoding genes.
Khorana: And we are trying to find out how genes direct protein synthesis. How genes that we contain, how they direct, or specify, or enable the manufacture of proteins.

Khorana: And it's really basically everything that anyone, human beings, all living animals, do is done by proteins molecules, and

Khorana: therefore the kind of proteins that one has, and therefore the ability one has is determined by the genes that one has.

Narrator: Khorana completed his work with protein synthesis by 1965...

Narrator: And quickly moved onto the task that would occupy him most of his life: the creation of a fully functioning laboratory constructed gene. Khorana’s work helped unlock the gene, paving the way for modern gene therapy. For this, he won the Nobel Prize in 1968. However, as he explains, he was the last to be notified.

Khorana: Well, I find it very difficult sometimes to get enough time to think, I need really to just be myself,

Khorana: I get away and use a place in the country where I get away from the telephone and seem obligated not to make any response to anything around me. And this was the occasion. I was out last night and this morning my wife who’s the only one who knows this telephone number

Khorana: and she tried to contact me and I, this is a fact, I was watching sunrise and taking a walk and thinking about some of things I should try and do and she missed me twice, so she drove out. So I heard from her at about 8:30 this morning.
Narrator: Khorana eventually succeeded in creating an artificial yeast gene after leaving UW Madison for MIT.

Narrator: Through his landmark discoveries, fostered here at Madison, Khorana also embodied the Wisconsin Idea. Madison’s Agricultural and Medical Schools have a history of excellence. Both Khorana and Lederberg found the support they needed working for these departments.

and Madison’s third Nobel laureate faculty member, Howard Temin, was no different. Born in 1934 in Philadelphia, Temin, like Lederberg, had an early interest in science but only started pursuing experimental microbiology, his main field, as a PhD student at Cal Tech.

Temin: I had been fortunate enough to have really been in the starter of work with, quantitative work with onry tumor viruses and cultures. So these were viruses that had the ability to cause a transformation, which is like a cancer, in the cell culture. And so what I was interested in doing was understanding how that virus causes cancer.

Narrator: Due to his focus on Viruses at Cal Tech, UW Madison’s McArdle laboratory recruited him in 1960 to help build their microbiology department.

Temin: Dr. Potter decided they needed a virologist they offered the job I have to every, practically every young virologist, and none would come.

And I was very young. I’d gotten my degree at Cal Tech in ’59 and stayed on as a post-doc and only had a post-doctoral position at the Wistar Institute in Philadelphia and McArdle, as a job offer.

And I had wanted to do the work that I was doing and wanted a place where I would be completely independent, and I knew that would be here.
Narrator: At Madison in the early 1960’s Temin proposed that in certain Viruses, now called retroviruses, reproduce using RNA, not DNA. This went against what was currently believed by the scientific community, however, and his hypothesis was derided.

Temin: Yes, they were rejected, in some cases publicly. I was told by, I think Dr. Rusch that they had come from a meeting and there Harry Rubin, who I’d worked with at Cal Tech, gave a talk.

and in the question period, someone said to him why didn’t you refer to Temin’s work. And he said I’ve given Temin’s work the amount of attention it deserves.

Narrator: In 1970, Temin finally captured images of RNA creating DNA, a process called reverse transcriptase. This discovery changed his life.

Temin: I would have to say that I was much more affected by the discovery of reverse transcriptase. I went from being a rebel to establishment, went on study sections, got invited to all kinds of things and so forth.

Narrator: After this discovery, rumors began to swirl about a Nobel Prize,

Temin: And it turned out you need to wear white tie, and so they had supplied this to me, but the pants were very baggy to everyone’s amusement.

Temin: And then, when the King gave me the prize, I asked him if my children could meet him later. He said yes, and everyone was, of course, very curious what I talked about to the King.

Narrator: After the ceremony, all new Nobel Laureates make a toast, usually thanking people who helped them in their research. Temin, however, chose a different approach.
Slide 46:

Temin: I gave a very short response saying that I’m -- laureates were very appreciative of the honor and that the prize was given for our work relation to cancer research, but that we had realized that this, that these researchers had not directly affected cancer incidents and that

Slide 47:

Temin: we realized that the thing that really could have a large affect on that was cigarette smoking. And therefore the really important thing was stopping cigarette smoking. And then I sat down, and everyone in the audience, including the royalty, put out their cigarettes.

Slide 48:

Narrator: After his Nobel Prize, Temin continued to teach and research at Madison until his death in 1994. He began an anti-smoking campaign with Governor Lucey, and, in his final years, became an HIV research advocate.

Slide 49:

Narrator: His passion and devotion to both Madison and the health of the world truly exemplify the Wisconsin Idea. Out of the five Nobel prizes awarded to permanent faculty for work conducted at Madison, four have been in Medicine and Physiology.

Slide 50:

Narrator: The odd man out is John Van Vleck. Though born in Connecticut, Van Vleck spent most of his childhood in Madison,

Slide 51:

Narrator: where his father taught mathematics. He attended Madison for his undergraduate, where he began his exploration of physics.

Van Vleck: I’d say my whole career, in a certain sense has been an opportunistic one,

Slide 52:

Van Vleck: I’m not a person that had physics written in front of me in electric light, so to speak. I just found which field I seemed to be best qualified for and that was it.

Slide 53:
Narrator: Van Vleck received his PhD at Harvard for his dissertation on quantum theory, the first written about this topic at an American university.

Van Vleck: Kemble gave me a problem to work on, it was a good problem, it was the same model of the helium atom that Niels Bohr suggested,

Slide 54:

Van Vleck: Kemble did independently. America was not so far behind Europe as sometimes represented in those days. Kroemer did the calculation for Bohr and I made the calculation from Kemble.

Slide 55:

Narrator: Van Vleck soon took a position at the University of Minnesota, where began to work on applying quantum theory to practical, applied problems. However, in 1928, he got an offer to work at Madison. He explains his reasoning for the move:

Slide 56:

Van Vleck: Wisconsin was my alma mater, my parents lived there, and Wisconsin did have the additional bait of having a distinguished foreign physicist as a visitor for a semester each year.

Slide 57:

Narrator: His work at Madison includes his completion of his book on electromagnetism which still remains a classic.

Van Vleck: Yes some of the best work I did was while I was in Madison. I’d already published while I was at Minnesota some basic problems on the general structure of electromagnetism and quantum mechanics,

Slide 58:

Van Vleck: but while in Madison I finished my book on electric and magnetic susceptibilities.

Slide 59:

Narrator: Van Vleck left Madison in 1934 for Harvard. Here he built on the foundations he started at Madison, continuing to apply his theories to practical problems

Slide 60:

Narrator: For all of this, in 1977, he won the Nobel Prize in physics.
On top of his work in Physics, Van Vleck donated a great deal to the Madison campus, including a huge collection of Japanese prints to the Chazen art museum.

Van Vleck, through both his science, his passion for the community and his philanthropy, represented the Wisconsin Idea.

In addition to Lederberg, Khorana, Temin, and Van Vleck, a total of 14 people, whose names appear here, have taught or received a part of their education at UW Madison and have gone on to win the Nobel Prize.

Their prizes range from literature to chemistry and all of them deserve recognition.

And Finally, Our most recent Nobel prize winner, Oliver Smithies, who won for his huge contribution to understanding how different genes control the body by creating the knockout gene method in mice. All of these men discussed today left their mark on the world through their dedication to discovery, experimentation, and the Wisconsin Idea.

More of their inspiring stories and other fascinating history can be found by visiting the University archives and the Oral History project of UW Madison, either physically or online.

This is Kate Hill for campus voices, Thank You for listening.