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The Road to Quick COVID Vaccines Began 50 Years Ago

An interview with **Pieter Cullis**

2022 Canada Gairdner International Award laureate

My name is Pieter Cullis. I'm a professor at the University of British Columbia in the Department of Biochemistry and Molecular Biology. And for the last 50 years — and I'm exaggerating there, 50 years — I've been trying to understand what lipids and membranes do.

What we did was we built what were termed model membranes, or little nanoparticles called liposomes, which were very simple versions of the biological membrane, and use those simple systems to understand what the roles of some of these different lipids were.

Now it turned out in the course of that, we found a way to those load cancer drugs into these lipid nanoparticles. This turned into an obvious way perhaps to deliver cancer drugs more specifically to tumours in the body.

And then of course in 2020, early 2020 when the pandemic hit, all efforts switched over to making a vaccine for COVID-19. And it just turned out that the lipid nanoparticle that we developed then got incorporated into the Pfizer/BioNTech COVID-19 vaccine. And this, all the rest is history of course. That turned out to be incredible, 95 percent effective. And then three billion doses, you know, that have been delivered in the last year. So really an incredible story that goes way back, as I said, to 50 years ago when we first started trying to figure out what all these lipids and membranes actually do.

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I'm often asked about the impact of getting the Gairdner Award. It's obviously huge. It's an amazing sense of honour with getting an award. When you go back and you look at the number, of the people who have been awarded the Gairdner International in the past, and to be amongst that group is amazing. And the level of achievements, you feel somewhat inadequate in that crowd, let's put it that way.

Getting an award like this, you never do anything by yourself. And so really I'm just, I'm taking credit for the efforts of literally hundreds of people. Sometimes I think we should give awards to groups of people as opposed to individuals. I just have the luck of leading this particular group, it's a large group.