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Teamwork Makes the Dream Work for People and Bacteria

An interview with the **2023 Canada Gairdner International Award laureates: Bonnie L. Bassler, E Peter Greenberg, and Michael R. Silverman**

Michael R. Silverman

Genetics is a very powerful tool. It's almost like cheating.

Bonnie L. Bassler

So bacteria are really puny, right, so the question that my lab always had is: how do they get any bang for their buck? They do all these terrible things, and they do all these miraculous things, but they're so small — so how could they make a difference? And so what we and others have shown are that they communicate with a chemical language; they count their numbers; they recognize when they have the right numbers; that if they all do something together, they can be successful at tasks that they couldn't accomplish if they acted as individuals. Because individually, they're too small to make a difference. So that's what we work on.

E Peter Greenberg

There was a 10-year period where we thought this was happening but nobody knew how. And then one of my co-recipients, Mike Silverman, together with one of his graduate students, discovered the genes responsible for light production by this bacterium.

Bonnie L. Bassler

TODAY'S RESEARCH. TOMORROW'S REALITY.



When I was a finishing graduate student, Mike Silverman gave this talk about this bioluminescent bacterium that only turned on light when it was in a group. And he had just found the genes that controlled this group behaviour. And so in sort of the only spontaneous moment of my whole life, after he gave this mesmerizing talk, I literally ran up to the podium and said, "You have to let me be your post-doc."

Michael R. Silverman

Bonnie and I worked together, and we isolated the genetic components that control this signalling, and it turned out to be very complex and very interesting. And I'm very proud to have been associated with her.

E Peter Greenberg

Now we know it's true, and I immediately threw everything else aside and decided I'm going to put all my efforts into this. I had this idea that we'd find this in other organisms if we knew enough about it. For a long time in the beginning, Mike's lab — which was always very small — and my lab were the remaining standing labs working on this, and then Bonnie launched her lab. And so we've known each other for decades, and um — it's, it's fun.

Michael R. Silverman

Winning the Gairdner was a very happy surprise. Of course, science is sort of its own reward.

E Peter Greenberg

I have to say, I was gobsmacked. I knew about the award, and I knew it was a big deal, in part because I'd nominated somebody else for the award.

Bonnie L. Bassler

And it's funny that the prize is for figuring out how groups of microbes in our case work together and optimize behaviours, because that's what we're trying to do in the lab. And so I find that ironic and kind of magical about the prize.