

### Rethinking the idea of scientific discovery

I enjoyed reading Alison Li's recent *CMAJ* article on the discovery of insulin, in which she noted that the life-saving insulin injected into a 13-year-old boy with type 1 diabetes, Leonard Thompson, was not solely the outcome of Banting's eureka moment.<sup>1</sup> Rather, the experiments conducted in Banting's laboratory were based on the foundational work of international researchers, and were ultimately brought to fruition by the persistence of an interdisciplinary team. The public needs to see more such articles about how science works to help them understand that apparent breakthroughs are usually based on small steps of research that advance knowledge incrementally.

The history of mRNA vaccines parallels that of insulin.<sup>2</sup> If one were to conduct a public survey, asking how long the development of effective mRNA vaccines for

SARS-CoV-2 took, I suspect that most respondents would answer between 2 to 5 years. The correct answer is closer to 30–50 years, if all stepping-stone research were to be acknowledged.

One of the oft-cited objections to taking the mRNA vaccine is that it is “experimental,” that is, very new. Were the public to understand that mRNA vaccines against influenza were proven effective in an animal model in the 1990s,<sup>2</sup> there may have been higher acceptance.

Science and technology play such an important role in our society. Fraudulent schemes, attempted cover-ups and individual bad actors may cast a shadow on some scientific achievements, but the open discussion and intense scrutiny that accompany presentations of new findings mean that scientific truth will emerge in the end. An engaging writer, such as Alison Li, can guide the public to ultimately place more confidence in the scientific process.

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■ Cite as: *CMAJ* 2022 January 31;194:  
E129. doi: 10.1503/cmaj.80554

#### References

1. Li A. Rethinking the “discovery” of insulin. *CMAJ* 2021;193:E1636-7.
2. Dolgin E. The tangled history of mRNA vaccines. *Nature* 2021;597:318-24.

**Competing interests:** None declared.

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