

Preface to the Second Edition

In the preface to the first edition of this book I asked myself why was I writing about horseshoe crabs when three thousand people had just died in the rubble of the World Trade Center. I discovered that John Steinbeck had asked the same question when he was writing about fish dying in tidepools while Europe was being bombed during World War II. He decided that none of it was very important or all of it was, and I felt the same way.

Today I find myself finishing the second edition of this book in the midst of the worst pandemic in a hundred years, during the most momentous election in my lifetime, and on the day that Denmark decided to euthanize 17 million mink to prevent a new pandemic, for which we might not be able to make vaccines.

Denmark's decision suggests that COVID-19 was not the result of natural selection, but was rather the result of what is called gain-of-function research in ferrets. After all, minks are just larger first cousins of ferrets, with nicer fur coats.

Be that as it may, I could be asking myself the same question. Why am I still writing about horseshoe crabs when over a million people have just died from COVID-19, with almost a quarter of them in the United States alone?

But things have radically changed since 2001. Then I was about the only nontechnical person writing about horseshoe crabs and the public was unaware how important they were becoming to modern medicine.

Today the medical uses of horseshoe crabs are almost common knowledge. Since 2018, the *New York Times*, the *New Yorker*, and the *National Geographic* magazine have all carried major stories about horseshoe crabs in modern medicine, and more recently journalists have written stories about how crucial horseshoe crabs will be in ensuring that both the antibody tests and COVID

vaccines will not be contaminated with endotoxins from Gram-negative bacteria—bacteria that are as lethal and ubiquitous as they sound.

But the big change is that in 2003, Dr. Ling Jaek Ding from the National University of Singapore discovered a way to use gene-splicing techniques to replicate the factor in horseshoe crab blood that allows the arachnids to detect and isolate endotoxins. If this method is widely adopted, pharmaceutical companies will not have to rely on a species of crabs that are declining around the world.

But there are debates about the sensitivity and cost of this artificial new product, and to date pharmaceutical companies have been loath to adopt it because only two companies have licenses to produce the recombinant factor and the Food and Drug Administration doesn't want to give them permission to switch to an untried product in the midst of an ongoing pandemic.

So I decided to write this new edition of *Crab Wars* to explore the role that horseshoe crabs will play in this medical saga to rid ourselves of the present pandemic and help us move on to a more healthy world.

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