Bringing the Bacon Home

Jonathan D. Kaunitz

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There is therefore much ground for hoping that there are still laid up in the womb of nature many secrets of excellent use, having no affinity or parallelism with anything that is now known, but lying entirely out of the beat of the imagination, which have not yet been found out. They too no doubt will some time or other in the course and revolution of many ages come to light of themselves, just as the others did, only by the method of which we are now treating they can be speedily and suddenly and simultaneously presented and anticipated.

But we have also discoveries to show of another kind, which prove that novel inventions may be lying at our very feet, and yet mankind may step over without seeing them [1].

With these words, written four centuries ago, the great English philosopher Francis Bacon emphasized the importance of drawing conclusions on the basis of painstaking observations of the natural world, a process now taken for granted but revolutionary in his day. In his book *The New Organon*, Bacon described the origins of the scientific method, the meticulous process of forming progressively more detailed and narrow interpretations of natural phenomena until unambiguous conclusions can be reached, a method that helped end the Dark Ages and which has formed the basis of our current stunning technical progress.

In the second installment of the series “Paradigms Shifts in Perspective,” in an excellent example of the power of Bacon’s method, Steven Moss beautifully describes in his commentary the immense impact that Robin Warren’s seemingly simple discovery of the bacterium *Helicobacter pylori* has made on science, not only in foregut injury but in widely diverse fields, for example oncology, epidemiology, evolutionary biology, and genetics. Indeed, the burgeoning field of host–microbiome interactions traces its origins to this discovery, in that *H. pylori* infection has characteristics, pathobiology, and remote effects different from those of just about any bacterial infection previously described. It took the perceptive skills, the far-reaching insight, the courage, and the persistence of Robin Warren to recognize the importance of these organisms and to bring them to the attention of a talented young scientist to generate the data that would eventually shake the foundations of the scientific world.

As a junior member of the “acid Mafia” in the mid-1980s, I experienced first-hand the initial disbelief followed by the rapid change in thinking that, with the prior discovery of proton-pump inhibitors, converted peptic ulcer disease from a common, difficult-to-treat scourge to a minor ailment in less than five years, cementing the importance of scientific innovation and discovery in the quest to tame disease.

By highlighting major scientific advances and by describing their subsequent impact, I hope that these accounts will inspire future generations to shed preconceived notions, to have the courage to question established archetypes, to persist through criticism and failure, and to engage those with similar beliefs to act on their convictions so that they can get a chance at changing the world.

But if there be any man who, not content to rest in and use the knowledge which has already been

J. D. Kaunitz (✉)
West Los Angeles VAMC, Bldg. 114/Room 217E, Los Angeles,
CA 90073, USA
e-mail: jdkaunitz@gmail.com

J. D. Kaunitz
Departments of Medicine and Surgery, UCLA School of
Medicine, Los Angeles, CA 90073, USA

discovered, aspires to penetrate further; to overcome, not an adversary in argument, but nature in action; to seek, not pretty and probable conjectures, but certain and demonstrable knowledge—I invite all such to join themselves, as true sons of knowledge, with me, that passing by the outer courts of nature, which numbers have trodden, we may find a way at length into her inner chambers [2].

References

1. Bacon F. In: Jardine L, Silverthorne M, editors. *The New Organon*, vol. 1. Cambridge: Cambridge University Press; 2000. p. CIX–CX.
2. *Ibid*, Introduction.