Opinion

EMBO reports

Do scientists read enough fiction?

David R Smith*

If asked to imagine the typical workday of an academic scientist, most people would probably think of teaching, experiments, grant writing and meetings. What they would not envision is someone sitting on a comfortable chair enjoying a novel. In fact, if in the middle of the day, a well-paid scientist or tuition-ridden student were caught reading John le Carré, they would likely be accused of wasting their time. However, I would argue that reading fiction can be just as (if not more) important as any other activity for the development, well-being, creativity and productivity of a scientist. Reading literature—and I do not mean the scientific literature—has been an integral part of my academic life, one which I believe has helped me progress as a researcher. But it was not always this way.

You could count on two hands the number of books I read throughout high school and college. Indeed, the only good fiction in my rucksack during that time were my book reports for English classes. My reluctance to read was largely a reflection of my struggles with dyslexia as well as my obsession with sports. Consequently, when I found myself enrolled as a graduate student in genetics, I was grossly unprepared for the amount of reading and writing that lay ahead and immediately began to fall behind in my course work and research.

I remember driving home for Thanksgiving during the first semester of my PhD and crying at the kitchen table as I showed my parents all the papers and textbooks I was trying to decode. Parents know their children best, and my dad suggested that I approach this challenge like I approached running—train hard and master the fundamentals. He went to the living room and came back with a handful of books. "Look," my father said, "you need to get comfortable reading for a few hours each day, if not a bit more." He started placing hardcovers and paperbacks on the table: Hemingway, Steinbeck, Atwood, Chekhov … Many of these were novels I was supposed to have read in high school. My dad then pointed at the stack of research articles. "You are trying to run a sub-three-hour marathon without even having learned to jog steady for 45 minutes." That same evening, I forced myself to get through the first 50 pages of *The Old Man and the Sea*, and the next morning I picked up where I left off. By the end of the weekend, I was starting my third novel.

My parents did one other important thing to help me at this juncture: They bought me subscriptions to a daily newspaper (*The Globe and Mail*) and a weekly long-form magazine (*The New Yorker*) and encouraged me to read every issue front to back. And so began my apprenticeship into the world of words. Soon I was spending all of my spare time reading. When I was not at the laboratory bench or in class, my face was buried in a book, usually some piece of classic literature or a spy novel; I even brought books to the gym to read between weight-lifting sets. A few months into this new regime, I had developed a genuine love of reading, one that persists to this day. And, sure enough, my ability to understand complex research papers improved, as did my writing.

Admittedly, this must have all seemed quite strange to my supervisor and grad-school classmates. While they were dissecting the most recent *Nature* paper, I was making my way through *The Brothers Karamazov* or the complete works of Henry Miller. It is hard to explain but immersing myself in fiction during this stage of my academic journey had a profound effect on my psyche. Up to this point in my life, I would not have described myself as a particularly artistic or imaginative person. But having steeped my mind in these fictional worlds, I felt a definite enhancement in my creativity.

A number of studies have shown that reading novels improves brain function on a variety of levels (Mar *et al*, 2006; Berns *et al*, 2013; Kidd & Castano, 2013; Kidd & Castano, 2017). For instance, a now famous paper out of Emory University (Berns *et al*, 2013) showed that delving deep into a work of fiction can enhance connectivity in the brain and improve brain function, particularly a "reader's ability to put themselves in another person's shoes and flex the imagination in a way that is similar to the visualization of a muscle memory in sports" (Bergland, 2014). Similarly, other researchers have found a positive relationship between empathy and reading literature (Kidd & Castano, 2013; Kidd & Castano, 2017), although the reproducibility of some of these findings have been questioned (Panero *et al*, 2016). Of all the skills a scientist should possess, I would think creativity and empathy are near the top of the list.

Perhaps Charles Darwin, in his autobiography, described it best: "Up to the age of thirty, or beyond it, poetry of many kinds, such as the works of Milton, Gray, Byron, Wordsworth, Coleridge, and Shelley, gave me great pleasure, and even as a schoolboy I took intense delight in Shakespeare, especially in the historical plays … But now for many years I cannot endure to read a line of poetry: I have tried lately to read Shakespeare, and found it so intolerably dull that it nauseated me … My mind seems to have become a kind of machine for grinding general laws out of large collections of facts, but why this should have caused the atrophy of that part of the brain alone, on which the higher tastes depend, I cannot conceive. … If I had to live my life again, I would have made a rule to read some poetry and listen to some music at least once every week; for perhaps the parts of my brain now atrophied would thus have been kept active through use. The loss of these tastes is a loss of

University of Western Ontario, London, ON, Canada
*Corresponding author. E-mail: dsmit242@uwo.ca
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happiness, and may possibly be injurious to the intellect, and more probably to the moral character, by enfeebling the emotional part of our nature" (Darwin, 1958).

I can relate to Darwin. As I have progressed through my career and taken on more responsibilities, there seems to be less time for reading anything that is not directly related to my work. This is why once a week you will find me locked in my office—the laptop shutdown and schedule blocked off for 2 hours—deeply engrossed in a piece of fiction. I find this activity to be especially useful when I am trying to write papers or grants. Like many scientists, I can procrastinate for weeks on upcoming deadlines, but there is something about reading imaginative literature by masterful word smiths that helps me overcome these tendencies and inspires me to write. Scientific papers, at their very best, can approach great literature. Just read Watson and Crick's one-page article on the structure of DNA (Watson & Crick, 1953). The genius of great writers is that they can take complex ideas and intricate narratives and make them accessible to a diverse audience. Is this not what scientists should be striving for with their own writing?

When making small talk at conferences, I habitually ask the question: Have you read any good books lately? The answer I usually receive is something like, "Books! I wish. I'm so busy that I don't even have enough time to watch a movie, let alone read a novel." However, I have noticed an interesting trend. It is nearly always the people I perceive to be the busiest, like renowned stars in their field, who answer back with long lists of books they have recently enjoyed. The point here is that if these highly productive individuals can find time to read, we all can, and maybe the energy they devote towards reading is contributing to their success.

If any good has come from the current COVID-19 pandemic, it might be that more people are reading novels: when you're stuck at home there are only so many things to keep you occupied. Unfortunately for me, the presence of a 3-year-old has put a damper on my revisiting of *War and Peace*, and I'm looking forward to getting back to work where I can read in solitude. More than anything, reading has become one of the most enjoyable and rewarding aspects of my life and has helped me cope with the challenges of dyslexia. If I stop reading regularly for even a week, I notice an immediate regression in my ability to write and spell. I only wish I had listened to my teachers and parents earlier and read more when I was younger. But it is never too late to start. So the next time you find yourself feeling uncreative or unproductive, stop what you are doing, silence the smartphone, put down the to-do list, and pick up a good book. Trust me, it is time well spent.

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