## Viewpoint: The unreported dark side of James Watson's DNA structure discovery

or the past several years, I have taught a seminar called The Literature of Science to a dozen or so honors students at the University of Texas. These clever undergraduates are all majoring in the hard sciences, and most of them already have some experience doing research. We read stories, both fiction and nonfiction, and discuss how authors communicate science and depict scientists, whether real or imagined. We are trying to understand, beyond our particular experiences, what science is and what scientists do.

During a recent meeting, my students and I discussed what <u>many people</u> consider to be the greatest memoir ever written by a Nobel laureate: "The Double Helix," by James Watson. During the early 1950s, Watson illuminated the structure of DNA with Francis Crick, thanks to the light of an <u>unpublished</u> <u>photograph</u> taken by Rosalind Franklin and one of her students. Although Watson had met Franklin only a <u>few times</u>, he mocked her throughout his memoir as a <u>dowdy</u> and bitter <u>feminist</u> who refused to collaborate with men. Watson and Crick received the Nobel Prize in 1962, alongside Franklin's colleague Maurice Wilkins, and Watson felt licensed to tell the story as he pleased. Franklin died of cancer in 1958, a brilliant Jewish scientist unheralded for her painstaking research.

photo-x-ray-diffraction-image X-ray diffraction image of the double helix structure of the DNA molecule, taken 1952 by Raymond Gosling, commonly referred to as "Photo 51", during work by Rosalind Franklin on the structure of DNA

Thanks to the careful scholarship of <u>several women</u>, we can now appreciate the role that Rosalind Franklin played in the discovery of DNA, despite the sexist and racist environment in which she labored. And thanks to James Watson's <u>own mouth</u>, we know that his chauvinism toward Franklin bespoke his broader prejudices against women and also people of color.

filesutjjlzound or type unknown Rosalind Franklin. Credit: Jenifer Glyn/Wikimedia Commons

During our discussion of Watson's memoir in seminar, my students debated whether science could ever be truly objective, given the brazen iniquities of some of its leading contributors. One of the students broached a disturbing thought experiment: What if a pediatric oncologist developed a cure for a ravenous cancer but, before he published, he was arrested for sexually abusing his patients? What if he refused to release the cure unless he was offered immunity from prosecution? Is there any scientific discovery important enough, any medical advance virtuous enough, that we could acquit a despicable man for the common good?

I interjected, a bit too curtly, that this is not a choice we will ever have to make. The thought experiment fundamentally misunderstands how science proceeds. My clever student was drawing a crude, albeit common, picture of science based on the fallacious premise of individual genius. Science simply does not

issue from singular minds. It is a chorus, a community that thrives on fellowship and collective skill. So, the answer is simple. We indict the abuser, immediately.

Even James Watson would have understood that.

## [Read article by GLP's Ricki Lewis on Watson's 'dark side' here]

In his memoir, Watson described himself as merely one of a half dozen biologists who were converging on the double helix model of DNA. They were all competing to understand the structure of heredity, but they all relied on each other's ideas and experiments to strengthen their own arguments. And every one of them was collaborating with several other colleagues and students. The resonance of their knowledge is what spurred their progress.

In his memoir, as in the years since, James Watson has made much — <u>too much</u> — of the flimsy efforts to link genetics and human intelligence. But he rightly admitted that no single intelligence discerned the structure of genes. That is why his memoir is so vibrant, despite its rank bigotry. Although we already know the conclusion to his story, Watson heightened the tension of scientific discovery by not simplifying how it occurred. He told us about the many players and their clever ideas, but also their many misses and false starts.

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Because that is how science proceeds: ploddingly, even fitfully, and with plenty of errors, like a full season of baseball. And that is why the pageantry of science can be so exciting. It is a team sport, with talented individuals who nonetheless fail most of the time. And yet, at any moment, these players may transcend their failures and inspire us with moments of indelible beauty, when they compete fairly and well.

Had Watson and Crick not realized the structure of DNA from Franklin's photograph, another group of biologists would have, likely within weeks. Watson admitted as much in his book. And perhaps these other competitors would be even more deserving of our adulation because of how they played.

So, if the cure to a horrific cancer existed, we need not bend to one vile man to procure it. In fact, we need never elevate the scoundrels and cheats of any science to holy idols. There are always other contributors and supporting players whom we can commend.

The history of physics, on which I am writing a book, is flush with examples. Richard Feynman crafted elegant diagrams and a profound theory, but he was also a <u>philanderer</u> who <u>abused</u> his spouse. A <u>cluster</u> <u>of physicists</u> in war-torn Japan developed an equivalent theory, yet few people recognize their names today. Albert Einstein was certainly a genius, but he neglected his children and <u>abandoned</u> his wife, whose thankless labor allowed his mind to flourish. Robert Millikan quantified the charge of the electron, but he <u>embroidered</u> his data and snubbed a graduate <u>student</u> who did much of the work. He also supported an openly racist <u>eugenics movement</u> and has been rightly denounced as a <u>white supremacist</u>.

A building is still named after him on the campus of Caltech.

Science is great despite some of the wretched men who helped make it. It would be even greater if we reckoned with its racist and misogynist past, reclaimed its forgotten players, and acknowledged how science is collectively done. That is the only way to create a more inclusive present.

Early last year, the trustees of Cold Spring Harbor Laboratory, where Watson was once the chancellor, took the first step. They <u>revoked</u> his honorary titles. This summer, they also <u>removed</u> his name from the graduate school and voted to create a program on the social implications of biology.

And earlier this month, the Nobel Prize Committee rightly awarded a share of the Prize in Physics to Andrea Ghez and the Prize in Chemistry to Emmanuelle Charpentier and Jennifer A. Doudna. In the future, scholars will not have to reclaim the contributions of these brilliant women from erasure, as they once did Rosalind Franklin.

But the Nobel Prize does not canonize saints. The Prize does not even reflect how science is done; it merely hardens the fiction of individual genius. And that is dangerous, in an era of global pandemics and climate change. Because the collective effort of the full congregation of scientists, from all races and creeds and genders, may be the only way to ensure the survival of us all.

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