Bioethics Book Club

Nova Scotia Health Ethics Network

Pandora's Lab – Seven Stories of Science Gone Wrong
By Paul A. Offit, MD
Blackstone publishing, 2017

Summary[1]

How do we recognize if a scientific idea is good or bad? In Pandora's Lab, Paul A. Offit discusses seven examples of scientific ideas and ideas presented as science that have been misused/used uncritically and therefore resulted in disaster. These are seven very different ideas that have had major effects on human health. They include: the discovery of opium's pain-relieving effect; the discovery of trans fats and its use in production food; the banning of DDT due to its environmental impact; the discovery of how to synthesize ammonia from nitrogen gas; and now-discredited ideas such as racial purity and lobotomy to cure psychiatric illness.

Ethical Issues

Critical thinking

Good/bad science

Scientific evidence

Scientific discovery

Precaution

Risk taking

Accountability in conduct of research

Discussion questions:

- Which of the seven stories made the biggest impression on you? Why?
- What characterizes "good" science?
- What characterizes "bad" science?
- Should we expect scientists to anticipate ways in which their discoveries might be used for ill?
    - If so, what ethical obligations, if any, do they have to prevent misuse?
- Offit argues against the use of screening tests for cancers that are non-fatal. He says, "in the process of detecting these non-fatal cancers, we are probably doing more harm than good". Do you agree with his statement?
    - Can society become too cautious about being cautious?

[1] Adapted from publisher's summary.

- Offit argues against the opponents of genetic modification technologies, claiming that their concerns are unfounded and that genetic modification technologies have fallen victim to the zeitgeist (see page 216-225). Do you think his critique is fair?
- Why do you think people continue to be skeptical towards the use of genetically modified organisms (GMOs)?
- Peer review is meant as a means to ensure that only good quality science is published. Yet the process is flawed. Discuss different ways to improve the peer review system to make it more transparent and more effective.

Discuss the following passages from the book:

- "The point being that there's always a price to pay. The challenge is figuring out whether a particular technology is worth the price. And we shouldn't grandfather in certain technologies just because they've been around for decades, or even centuries." (page 216)
- But Tom Frieden, director of the CDC, had enough. "For the vast majority of patients with chronic pain," he countered, "the known, serious, and far too often fatal risks far outweigh the transient benefits. We lose sight of the fact that prescription opioids are just as addictive as heroin." Today, 80 percent of the world's opioid prescriptions are written in the United States, even though only 5 percent of the world's population lives there. (page 38).
- "Beware of scientific biases that fit the culture of the time – **beware the zeitgeist**. Imagine that a study has just been published in a prestigious medical journal claiming that a certain constellation of genes predisposes to violent behavior, like rape and murder." (page 128).
- "All Kennedy had to do was to ask to see others who had been lobotomized. But he didn't want to see them. He wanted to believe in the magic. And for that, his daughter paid an enormous price. As did the thousands of other patients and their families who wanted to believe that complex psychiatric disorders could be treated with a five-minute surgery. As we'll see in the final chapter, when it comes to children with autism, the lesson of the quick fix remains unlearned." (page 160)
- "Many of those polled wanted foods to contain GMO warning labels to they could know which ones to avoid. This poll showed that not only are we willing to ignore science, but we're also willing to ignore history. Due to selective breeding and cultivation, the crops we raise today "naturally" have little resemblance to their ancestors." (page 221)
- "In the end, although we hold on to the hope of a better life through science, we need to approach scientific advances cautiously and with eyes wide open – and to make sure that we learn from our mistakes and aren't simply paralyzed by them." (page 242).