Reviews and Resources

BOOKS

The Annotated and Illustrated Double Helix

For most of us, a dog-eared and marked-up paperback copy of Jim Watson’s 1968 classic The Double Helix: A Personal Account of the Discovery of the Structure of DNA is still best. However, now 60 years after the Nature letters reporting the structure of DNA and 45 years after Watson’s memoir (earlier titled, as shown by photos here, Honest Jim), this annotated version with tons of photos, scanned letters, and appendices is just great for all college, university, and science-interested high school libraries. It is a must read and have.

As the primary values of this reprint edition are to complete history and for teaching of those too young to have been around 60 years ago, another wonderful resource has just become available: http://wellcomelibrary.org/using-the-library/subject-guides/genetics/makers-of-modern-genetics, which includes papers of Francis Crick, James Watson, Rosalind Franklin, Maurice Wilkins, Sydney Brenner, and other active participants in the early days of DNA. Have a look. This is an excellent resource. The story of the race for the structure of DNA involved five primary characters, Watson and Crick (the winners), Franklin and Wilkins (the losers, who sometimes acted as if they did not understand they were in a race), and Linus Pauling (who commanded the other “race team” and had full understanding), plus a large supporting cast, well and fairly described by Watson in The Double Helix. Watson, Crick (What Mad Pursuit: a Personal View of Scientific Discovery, Basic Books Publishers, New York, 1988), and Wilkins (The Third Man of the Double Helix, an Autobiography, Oxford University Press, 2003) wrote their own versions of the story. Rosalind Franklin died very young and missed most of the public understanding of the importance of the double helix. Brenda Maddox wrote the best overview of Franklin’s life and science, although I see nothing “dark” (as the phrase was used by Shakespeare and later) in how Franklin viewed herself or in her behavior (Rosalind Franklin: The Dark Lady of DNA, Harper Perennial, 2003). It is a bit of a surprise that Pauling, who like Crick was “never seen…. in a modest mood” (p. 3) and could readily have written a wonderful page-turner, never wrote a personal memoir. In the absence of that, we have Thomas Hager’s biography of Pauling that is full of understanding (Force of Nature: The Life of Linus Pauling, Simon & Schuster, New York, 1995).

One more book is listed here, and that is Watson’s The Molecular Biology of the Gene, published three years before The Double Helix. It revolutionarily changed teaching of molecular biology, and therefore genetics, biochemistry, and biology, more broadly. It is amazing that Jim Watson, who at the time of his Ph.D. thesis was a terrible writer (according to his own candid assessment), had become a wonderful author and communicator. He might credit his Ph.D. mentor Salvador Luria for that, along with the many other things Luria taught him.

More asides (as Watson loves to add informative asides): Watson was often uniquely insightful and ahead of the field, as he was in realizing the importance of a structure for DNA. I remember just before mRNA was discovered that I failed to understand why the Watson lab was studying the boring assembly and disassembly of ribosomal subunits as magnesium cation varied. He was right (although Crick, in his memoir, just ignores Watson’s participation in the additional race for mRNA); and he much later rescued the American efforts on the Human Genome Project from probable total failure (but he is often not credited for that), before being fired (in 1992) by the head of the National Institutes of Health for being a crude, disobedient loudmouth. These attributes were apparent decades earlier in The Double Helix, where Watson is spot-on accurate but often offensive to, and about, other people involved. His accurate first teacher Luria once wrote him “you goddam bastard, you wrote the silliest….” (and that letter is reproduced here on p. 48). Luria’s and Watson’s acute vision is in stark contrast to his other major teacher, Max Delbrück, about which it was said “Max was always wrong”; and indeed Delbrück frequently was, for example in being overly skeptical about the double helix model (suggesting that the strands would become hopelessly tangled if they needed to unwind every duplication). Watson’s candid and frequently gauche and crude statements are famous, and famously have offended others, not just in The Double Helix but later when he irritated his boss at the NIH Human Genome Project and still later when “put his foot in it” and was fired from leadership at the Cold
Spring Harbor Laboratory as recently as 2007. As former Texas Governor Ann Richards once said of another speech-unreliable person, “Poor [ ]… He can’t help it—he was born with a silver foot in his mouth.” Watson should agree; this works well for him.

Simon Silver
Chicago, Ill.

Case Studies in Food Safety and Authenticity: Lessons from Real-Life Situations

To those working in the food safety field, the breadth of issues that confronts the modern food production and distribution system can seem similar to the universe itself; immense in its current measure and continuing to expand. Microbiology is a, if not the, key player in the food safety arena. Case Studies in Food Safety and Authenticity: Lessons from Real-Life Situations, an ambitious book edited by Danish microbiologist J. Hoorfar, undertakes to cover the field of food safety and authenticity using a structured case study approach. Hoorfar recruited a cadre of highly regarded experts to author the 38 chapters that comprise the book. Every chapter provides a narrative of a situation that has arisen in food safety. This narrative is presented in a structured, subsection format that deals with: how the issue arose, why it was significant (including market and regulatory implications), how the situation progressed, commentary and reflection by the chapter author, the final resolution of the problem, discussion questions, and references. This is accomplished with brevity in mind, and most chapters run 8–12 pages inclusive of figures, tables, and references.

The book is organized into six sections, with each section containing between four and nine chapters. The six sections are: Outbreak Investigations, Source Tracking, Crisis Management, Farm-Level Interventions, Safe Food Production, and Food Adulteration and Authenticity. There is a heavy emphasis on microbiology, with 28 of the chapters dealing with microbial issues. The cases are from across the globe, but are weighted towards cases from Europe (27 of 38 chapters). This should be taken into account by those for whom the discussion of the regulatory environment has special interest, as the differences in food safety regulations between the European Union and the United States can be significant (e.g., regulations covering Listeria monocytogenes and raw milk).

The organisms covered range from hepatitis virus to parasites, with multiple chapters dedicated to each of the major foodborne bacterial pathogens (Listeria, Salmonella, and pathogenic Escherichia coli). In addition to covering the range of taxonomic kingdoms of concern, a diverse array of points of contamination are touched upon including contamination on farm, at the food production plant, at community events, and by street cart vendors.

Despite containing only eight chapters, the last section of the book (Food Adulteration and Authenticity) succeeds in bringing to light a wide array of issues. The chapters on adulteration deal with sabotage, dioxin in animal feed, milk adulteration, and melamine in infant formula. Chapter 35 deals with substitution of pine nuts from edible species with inedible pine nuts and serves as a bridge to the final three chapters dealing with food authenticity.

The short narratives and consistent structure of the chapters make this book both easy to read and easy to use when trying to find specific information. As would be expected in a text covering a broad area, the depth with which each incident is covered is limited; however, references given at the end of each chapter provide an easy route to in-depth information if desired by the reader. There a few disappointments. Chapter 29 deals with trying to develop faster detection methods to boost exports; this is an economic drive for a faster, not safer, testing and its inclusion seems gratuitous. In chapter 20, a real-world example of on-farm vaccination of animals to protect against pathogen exposure of humans (such as immunization of laying hens for Salmonella, or immunization of cattle to reduce E. coli O157 shedding) would have been preferable to the theoretical proposal for Campylobacter vaccination that was given. For those using the book in the United States, exposition of the differences in regulations between the United States and the European Union would have been helpful. Even with these minor drawbacks, Case Studies in Food Safety and Authenticity: Lessons from Real-Life Situations is an informative, well-structured, and well-referenced work that can serve admirably as an introductory book for students of food safety. The book’s narrative approach and readability also make it a good choice for those wishing to learn about food safety in a less formal manner.

Frank R. Burns
DuPont
Wilmington, Del.