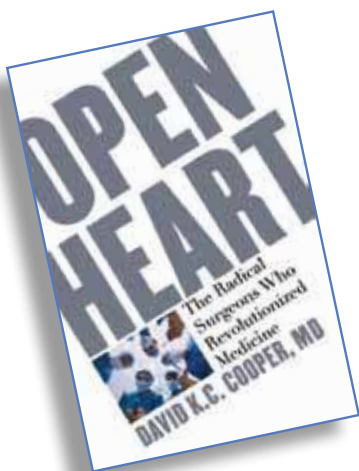


Reviews and reflections

David A. Bennahum, MD, and Jack Coulehan, MD, Book Review Editors



Open Heart: The Radical Surgeons Who Revolutionized Medicine

David K. C. Cooper, MD
New York, Kaplan Publishing, 2010

Reviewed by Taylor Prewitt, MD

The intense, focused eyes of a surgeon, in a scrub cap with mask dangling from his neck, stared straight through me as I saw the cover of the current issue of *Time* Magazine in the spring of 1957—“Inside the Heart: Newest Advances in Surgery.” Having just started a premedical curriculum, this image and its accompanying article convinced me that my primary interest in medical school would



be heart disease. Charles Bailey of the Hahnemann Hospital in Philadelphia was the surgeon, and this particular cover is reproduced in David K. C. Cooper’s *Open Heart: The Radical Surgeons Who Revolutionized Medicine*.

Dr. Cooper, a cardiac surgeon himself, bases his account on personal interviews with many of the pioneer surgeons still living when he began writing the book in 1987. Otherwise he interviewed associates, coming away with a history that is strongly personal—a significant advantage in that medicine in general, and surgery in particular, remains a personal endeavor despite current trends that tend to emphasize the team, the group, and the institution.

Large portions of the story are told by the participants themselves; the author refers to it as an oral history. This is the stuff of legend, passed on in reminiscences at meetings and courses and kept alive by those who trained under these innovators who had the “right stuff.”

Some thirty cardiac surgeons are featured, from Robert Gross, who performed the first closure of a patent ductus arteriosus in 1938, to William DeVries, who was featured on the cover of *Time* in 1984 for carrying out

the first clinical trial on the artificial heart. The chapters are organized according to surgical milestones, such as the concept of the heart-lung machine and heart transplantation. This format created the problem of where to place surgeons who figured in several chapters of the story. The author includes Michael DeBakey and Denton Cooley in the chapter on mechanical hearts, even though DeBakey was also known for aortic aneurysm surgery, and they were both known for innovations in coronary bypass surgery.

Some of the stories go beyond legends I had previously heard. One of the trainees under DeBakey told of being in the ICU for ninety days at a stretch—you slept in the ICU, meals were brought in. A former resident of John Kirklin in Birmingham reports that routine morning rounds began at 4:00 a.m., and a call had to be made to Dr. Kirklin to report on his patients at exactly 6:00 a.m. Call a few minutes early, and he would hang up. Call a few minutes late, and you were in trouble.

Their methods were sometimes extreme, but the stakes were high. Patients often died. These were brilliant and daring young men, many of whom had finished at or near the top of their medical

school classes, but with steep learning curves for performing new operations. How did they get away with it? The more lenient medico-legal climate of the time permitted Dr. James Hardy of Mississippi to perform the first heart transplant with only a one-paragraph consent form, signed by the patient's next of kin and not mentioning that the heart donor would be a chimpanzee. The relatively small threat of being sued for malpractice also helped fuel their determination to persist with a new procedure in the face of a "bad run" of operative or postoperative deaths. But persistence came with a price. Dr. Lillehei admitted that sometimes he was "almost ready to quit." His remedy was "a good night's sleep, and maybe a few belts at the local bar." p200 Dr. Kirklin said that often he went home and cried. "Surgeons are people who cry in movies," p230 he once said.

As a cardiac surgeon himself, Cooper addresses the issue of the importance of manual dexterity to a surgeon. Atul Gawande, a surgeon and well-known writer on current medical issues, has emphasized that rigorous training and sound habits are more important than technical prowess in achieving surgical success. Those who spend a lot of time in the operating room know who the technically good surgeons are. (As a cardiologist, I knew the best surgeons by results and reputation, though I was unable to fully appreciate their elegant work on my rare visits to the O. R.) Cooper, however, quotes a description by Dwight Harken, a legendary pioneer in his own right, of the virtuosity of Denton Cooley, a surgeon who "operates with Woolworth volume and Tiffany quality." p374 And when DeBakey and Cooley were operating together, their synchronicity was "wonderful to see," according to Viking Bjork, another of the greats. Observing DeBakey and Cooley was described by another as "like watching an octopus operate. There were hands everywhere." p377

And yet, some of the most skillful surgeons, such as Denton Cooley, spent

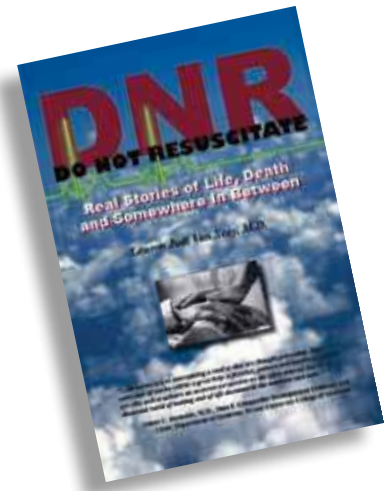
so much time in the operating room that postoperative care was often left to others. Another hero, Dr. Brian Barratt-Boyes of New Zealand, was critical of Cooley's early work: "His results were not good, and never comparable to those of the Mayo Clinic." p375

Cooley enjoyed operating, made it look easy, and did so calmly and without intemperate language. Some other surgeons were notorious for cursing and throwing instruments. Not all were blessed with great manual dexterity. Alfred Blalock and Russell Brock, two of the early innovators, are said to have had "technical limitations in the operating room" p52 that accounted for their "difficult behavior," p52 but did not prevent them from making significant contributions.

Perhaps, as Lewis Thomas wrote some forty years ago, coronary artery bypass surgery is a "halfway technology," the best we can do until we learn to prevent or reverse coronary disease by nonsurgical means. But the development of the heart-lung machine, which allowed open heart surgery to become almost commonplace, must stand as one of medicine's great advances, surely worthy of the Nobel Prize that never came.

Charlie Bailey and William DeVries were not the only ones to arrive on the cover of *Time*. As illustrated in *Open Heart*, Michael DeBakey did so in 1965 for his work "toward an artificial heart," and Christian Barnard was featured in 1967 after he performed the first human-to-human cardiac transplant. In this enjoyable book, David Cooper has given us their stories, along with those of their colleagues who dominated a surgical era that captured the imagination of the world—not just that of a young premedical student in Arkansas in 1957.

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DNR: Do Not Resuscitate— Real Stories of Life, Death and Somewhere in Between

Lauren Jodi Van Scoy, MD (AQA, Drexel University, 2010)
Van Scoy Consulting and Publishing, 2011

**Reviewed by Walter Forman, MD,
FACP, FAAHPM**

As I finished reading *DNR* by Lauren Jodi Van Scoy, MD, I felt so very sad for those people for whom this book was written, "as a glowing inspiration for patients and their families as they struggle with approaching mortality." The writer herself struggles with the difficult question that patients and families so often ask: "What should I do?" The author answered: "It is up to you." I suggest that while it is rarely the physician's role to directly answer this question, she can assist the patient and families in their moment of crisis by having a thoughtful discussion that starts by asking, "What do you understand about your loved one's situation?" To do this well, the physician must be aware of the cultural background of the families and any internal conflicts. She must always ask if there are documents indicating what the patient would have wanted. The physician should refrain from offering an opinion unless the patient or surrogate decision makers insist or it is in the patient's best interest. The art of medicine truly lies in how well the physician communicates with patients and families, but the acquisition of this

skill depends on thoughtful mentoring and repeated practice.

DNR contains five stories, each about a person with an illness that in the usual course of events ends in death.

Bruce's story concerns a man in his early fifties with severe progressive cardiac failure. Details about his clinical course are elucidated, but Dr. Van Scoy questions the continued treatment of this "terminally ill" person. Yet the story ends happily after Van Scoy meets the patient after he has received a cardiac transplant and is about to ride off on his motorcycle. The reader is left to "think about" the difficulty of accurate prognosis.

Mrs. Chandler is an elderly woman with a strong family, whose members insist that everything that is medically possible be done for her. The author quotes one relative: "It's the need to help. It's the need to be there for your family member. Maybe it's guilt. But it is almost certainly love." Mrs. Chandler dies after intensive intervention and with multiple medical devices in place. While love certainly played a very prominent part in her care, Van Scoy regrets that her suffering was prolonged at the end of her life. Could this have been avoided with more explicit discussions about exactly what interventions would entail?

Patrick is a young man of nineteen with cystic fibrosis, entering hospice care. Oddly, Van Scoy recounts that caring for him "was a nice change of pace from the chest pain patients and the confused elderly patients with pneumonia." This is the story of a mother who gave birth to a child with a fatal congenital illness. Her story is told to the author some two years after Patrick's death. One feels that Van Scoy missed the opportunity to tell the important story about the bereavement period and how it affected the family.

Walter is a twenty-nine-year-old man who sustained a major intracranial bleed and is "brain dead," although his heart and lungs function "normally." Here Van Scoy renders a fine description of how brain death is determined. She follows

that up with the procedure in her institution for making that determination, valuable information for any physician.

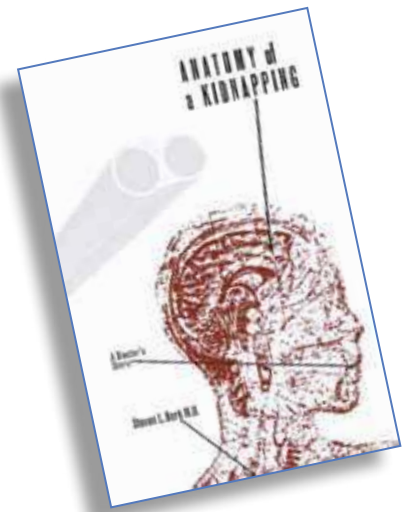
The final case presentation is Victoria's story. Here we find an elderly woman taken to the hospital with what she thinks is an allergy attack. A chest roentgenogram makes it clear that she has a malignancy with metastasis to both lungs. Van Scoy then describes a wonderful presentation to the family, some forty members of whom are gathered in a small conference room, about the options for whether or not to begin resuscitation efforts if the patient's status worsens, or whether to keep her pain free and allow the disease to progress along its expected clinical course to death. The family decides not to request resuscitative efforts. Victoria is intubated, administered intravenous morphine, which allowed her to expire quietly. Here the question might be raised as to why the intubation, when intravenous morphine alone would have resulted in the same end with far less discomfort.

The last sentence summarizes the entire book: "I backed out the door, retreating into the unit and back into the world of science and medicine."

DNR serves the purpose of allowing a physician to express her thoughts and feelings about critically ill people for whom she had cared. In my view it would have been helpful if an interdisciplinary team had been brought in to consult on each case. Thankfully, currently over fifty percent of medical institutions in the United States now have an interdisciplinary palliative care team that is available to consult on these most difficult situations. I recommend that every physician and health care worker learn how to establish contact with his or her team.

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Anatomy of a Kidnapping: A Doctor's Story

Steven L. Berk (AQA, Tennessee State University, 1986)
Lubbock, Texas, Texas Tech University Press, 2011, 248 pages

Reviewed by Charles S. Bryan, MD
(AQA, University of South Carolina, 1992)

A South Carolina clergyman was dictating his next sermon into a tape recorder when a robber burst into his study, put a gun to his head, and said, among other things, "Give me three reasons I shouldn't kill you." The clergyman's third reason: "Because you'll have to answer to the Lord." He survived and later described a surrealistic calm that embraced him during his moment of peril.

Steven L. Berk found a similar calm in William Osler's motto, *aequanimitas*. About 7:00 AM on the morning of Sunday, March 6, 2005, Berk, then regional dean of a campus of the Texas Tech University Health Science Center School of Medicine, made himself a cup of coffee and went upstairs to his study. At about the same time, a fugitive criminal entered the residential subdivision of Amarillo, Texas, turned into a back alley, found an open garage door, and entered Berk's home. He found Berk in his study, pointed a shotgun at his head, and said, "I will kill you if you don't do what I say." Berk spent the next four hours riding around Amarillo and the

surrounding countryside at the mercy of a desperate, emotionally unstable armed robber.

Berk was unarmed—indeed, he could not distinguish between a shotgun and a rifle—but proved a poor choice of victim. He had little cash in his possession. He did not know how to use an ATM machine. He did not know his PIN. He was, however, quite capable of memorizing the ten numbers and four letters of the vehicle identification number on the left lower windshield. This information led to arrest, conviction, and sentencing.

In this can't-put-it-down memoir, Berk elaborates on *aequanimitas*, defined by Osler as the mental counterpart to the physical attribute of imperturbability. "Being calm is what we do," Berk later told a newspaper reporter.⁶²⁰⁴ He quotes from Osler's 1889 address to graduating medical students:

Imperturbability means coolness and presence of mind under all circumstances, calmness amid storm, and clearness of judgment in moments of great peril, immobility, and impassiveness.

Berk also reminds us that, properly understood, *aequanimitas* implies emotional response appropriate to the circumstances. We must seek balance between detached objectivity with humanistic empathy. Osler exhorted students to cultivate

such a judicious measure of obtuseness as will enable you to meet the exigencies of practice with firmness and courage, without, at the same time, hardening "the human heart by which we live."

Chasing such balance is a lifelong endeavor, never complete.

In the end, such balance probably saved Berk's life. He was able to establish rapport with his kidnapper, to explore his feelings, to empathize with his descent into alcohol, drugs, domestic

violence, and crime. Such empathy no doubt resulted in his roadside release somewhere in the Texas prairie, minus his billfold but unharmed.

Berk artfully weaves into this wrenching story the tapestry of his autobiography, the making of a doctor, a teacher, a husband, and a father. He avoids the major pitfall of autobiography—narcissistic self-justification—in part by relating how he, too, has made mistakes, including a warfarin interaction that cost a man his life. He reminds us that we are all of the same clay. As one of my teachers used to say after each encounter with a down-and-outer, "There but by the grace of God go I."

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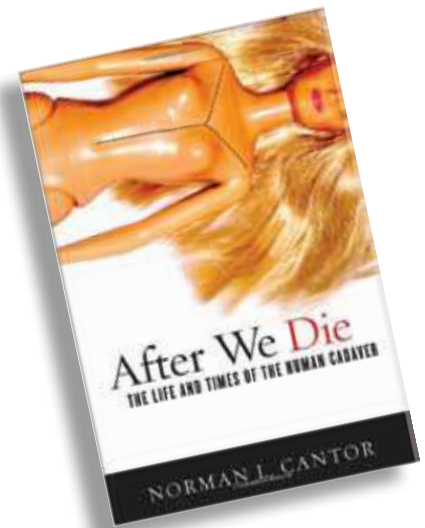
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After We Die: The Life and Times of the Human Cadaver

Norman L. Cantor
Washington, DC, Georgetown University Press, 2011

**Reviewed by Jack Coulehan, MD
(AΩA, University of Pittsburgh, 1969)**

The title of Norman Cantor's new book is intriguing. Most books that tackle "after we die" topics deal with theology, spirituality, or the world of the paranormal. Cantor, however, approaches "after we die" from a more (literally) down-to-earth perspective. He surveys what he terms "the life and times" of human corpses, including their legal status and rights, methods of disposal, natural history of decomposition, social roles, and the various types of desecration and abuse cadavers are



subject to. A distinguished law professor and author of such books as *Legal Frontiers of Death and Dying* and *Advance Directives and the Pursuit of Death With Dignity*, Cantor tackles this vast array of material with insight, elegance, and wit. For those of us not turned-off by the topic, this is an engaging book to read.

The author begins at the beginning, the diagnosis of death and physical characteristics of the corpse. He then investigates the legal status of the "postliving." The common assumption that cadavers are, at least in some sense, property that can be disposed of according to the preferences of relatives has little basis in American law. To the contrary, cadavers have legal rights, justified under a concept Cantor calls "prospective autonomy," which allows decisions made by the person when alive to be enforced after death. The author also reviews the right to a decent burial, to "quiet repose," and to privacy of personal information, although clear legal exceptions exist to each of these.

The chapter on decomposition is very graphic. I was surprised to learn that the practice of embalming covers a wide range of methodology and potential results. One early example of high-grade embalming was that of Mrs. Van Butchell, who died in 1775. She and her husband had a prenuptial agreement that said he could control

her estate “as long as she remained above ground.” Thus, after she was embalmed, he kept her above ground in a glass case in his drawing room. I learned that extreme chemical embalming can prevent decomposition almost indefinitely, but the trade-off is a much less lifelike appearance of the corpse, generally unacceptable and unnecessary given the usual goal of a prompt burial after viewing. Other methods of preventing decomposition include cryopreservation, mummification, and plastination, a very expensive new process made notorious by traveling commercial exhibitions like Body Worlds. Perhaps with tongue-in-cheek, Cantor also mentions sainthood as a “possible antidote to bodily decomposition,” citing numerous stories of saints miraculously preserved for hundreds of years.

Cryopreservation, or cryonics, based on the idea that freezing the corpse could preserve it sufficiently that future scientific advances might someday allow its resurrection, made a big splash when introduced in the early 1960s. Although the process has increased in chemical sophistication over the years, there is widespread skepticism that “cryonauts” could ever be resuscitated, due to widespread cellular damage during the freezing process. At present there are fewer than two thousand cryopreserved bodies in the United States. The other end of the spectrum, in terms of bodily preservation, is cremation, a process that has rapidly increased in popularity in recent decades. In 1963 only four percent of dead bodies were cremated, but by the year 2003, twenty-eight percent were disposed of in this way, and a 2005 survey indicated that forty-six percent of Americans would elect to have their bodies cremated.

Perhaps organ donation is the most desirable social role for today’s cadavers. Cantor traces the development of laws and practices governing organ donation, including the relatively recent practice of organ removal after pronouncement of death by cardiac criteria. His discussion of proposed methods for increasing

the chronically insufficient pool of cadaveric organs is particularly interesting. He argues that permitting a market in organs—allowing dying patients or their families to sell them—would be unlikely to substantially enlarge the pool. His favored approach, based on a communitarian rationale, is to presume consent and routinely remove usable organs, giving individuals the option (obviously prior to death) of informed refusal. Several countries in Western Europe have successfully adopted this system. Cantor reviews several possible constitutional arguments against the enactment of laws allowing routine use of cadaver organs for transplantation, but (surprisingly, in my opinion) he discounts them all, while at the same time admitting that “donation” in the face of family objection would probably be unacceptable in practice.

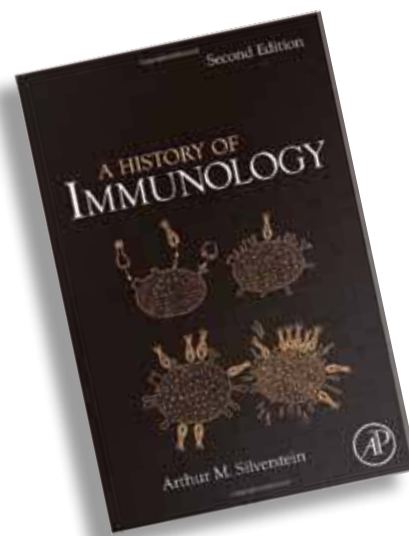
Two of the other roles that cadavers might perform are those of teacher and parent. Cantor considers the common use of recently dead persons by students to practice intubation and other medical procedures. He supports these practices, but only with explicit pre-mortem consent, or postmortem consent by family members, since such procedures violate the right to “quiet repose.” He suggests that pre-mortem consent might be included in routine hospital admission forms, which to me is ethically questionable, since the *pro forma* admissions process would necessarily include insufficient information disclosure to allow any such consent to qualify as “informed.” Cadavers might serve as parents in a variety of ways, ranging from extraction of sperm, to be frozen and used later, from a recently dead man to gestating a live fetus in a brain-dead woman being maintained on a ventilator. According to Cantor, the key issue in each case is the likelihood that producing a postmortem child reflects the actual wishes of the deceased person.

In summary, the author covers almost every conceivable aspect of “the life and times of the human cadaver.” *After We Die* is a masterful work that

should be of interest to a broad range of practicing physicians, as well as to specialists in medical ethics, health law, and organ transplantation.

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A History of Immunology, Second Edition

Arthur Silverstein
London and New York, Academic Press, 2009, 530 pages

Reviewed by Carla C. Keirns, MD, PhD, MSc

When Arthur Silverstein, a specialist in immunological diseases of the eye, published the first edition of his impressive intellectual history, *A History of Immunology* in 1998, he explained that he had become concerned that too many of his colleagues think “the entire

history of immunology could be found within the last five years' issues of the most widely read journals." He recounts that his historical interests became serious when he was asked to review a paper that essentially replicated a study published by Paul Ehrlich some eighty years before, using modern techniques but giving the same results. Silverstein wrote that he hoped to provide modern practitioners of immunology with some perspective on the development of their field. In the original edition he predominantly explored acquired immunity to infectious diseases, though he also included chapters on allergy, autoimmunity, and transplantation with references almost exclusively to original scientific literature in English, French, and German, and some archival sources. His introduction, entitled "History and Historians," is perhaps the best short introduction to historical method I've ever seen, as he cautions contemporary scientists that the past is just as full of wrong turns, wasted effort, and blinkered funders as is the present, and therefore historical progression is hardly as neat and orderly as it appears in later textbooks.

When Silverstein published the first substantive monograph on the history of immunology in 1989, he was at the lead of a now wide-ranging historical literature. In just the first decade after his book appeared, the field grew dramatically, with the publication of books on the work of Élie (Ilya) Metchnikoff, father of cellular immunity; Macfarlane Burnet's clonal theory; the development of bacteriology; antibodies; recognition of self and non-self; humoral and cellular immunity; monoclonal antibodies; transplantation; and serum therapy for diphtheria. The next decade saw Silverstein's own new book on Paul Ehrlich's receptor theory, biographies of Emil von Behring and Niels Jerne, and books on the history of allergy, multiple sclerosis, interleukin-2 treatment, and stories about the development and use

of vaccines in many countries across more than two centuries, not to mention a steady stream of books on AIDS. Given all of that activity, revising *A History of Immunology* promised to be a massive undertaking. Some would have given up. Instead, Silverstein has taken on the project of including much of this substantial new work, adding two chapters to the intellectual history section and eight chapters on developments in the realms of public response (notably vaccination and anti-vaccination movements), research funding and funders' priorities, scientific societies, and technological change.

Two of these new chapters deal with the generation of antibody diversity and the clonal selection theory, drawing on the work of Alfred Tauber, Scott Podolsky, and Pauline Mazumdar, among others. The social history section starts with a revised chapter on vaccination, the "Royal Experiment" to test smallpox inoculation, and the promise and problems with "magic bullets." Other social history chapters are new to this edition, including one on the impact of scientific meetings and societies, drawing on insights about the importance of networks for innovation and dissemination of ideas and practices. A chapter on Metchnikoff, Burnet, and Darwin explores the resurgence of evolutionary thinking in this most molecular of sciences, a field where studies of mechanism once largely eclipsed broader thinking about biological systems.

Silverstein's sections on autoimmunity highlight the contrast between basic immunologic theory and the history of clinical immunology. Silverstein meticulously traces Ehrlich's idea of *horror autotoxicus*, and the difficulties that many immunologists had in accepting that the immune system could cause, as well as protect from, disease. He illustrates the value of considering autoimmunity to explain the curious case of *sympathetic ophthalmia*,

in which penetrating injury to one eye can later cause blinding inflammation in both eyes, illustrating the importance of antigenic sequestration—the immune system had never "seen" proteins from the lens of the eye and therefore didn't recognize it as "self." This disease nicely illustrates the importance of clinical examples to the development of ideas in immunology. However, Silverstein spends relatively less time exploring the immunologic basis of lupus and other traditional autoimmune diseases, leaving the complexity of clinical observations, pathological findings, laboratory testing, and therapeutic options in the individual autoimmune diseases to other historians. He has set circa 1970 as the end of his narrative and, as the mechanisms of diseases like lupus, multiple sclerosis, and inflammatory bowel disease are still being worked out, this is a sensible historical choice. A number of scholars are actively working in this area, and much like Silverstein's first edition, the second can expect to inspire and guide a new generation of scholarship in the history of immunology.

Given Silverstein's focus on the history of scientific ideas in immunology, the text will be of greatest interest to readers with scientific or medical training in immunology, as well as medical historians, but physicians with a strong personal interest in immunology or medical history should also find this an engaging and intellectually satisfying book.

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