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A Planet of Viruses

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> in a political vacuum. The key to navigating the new world that bioethics finds itself in—the public arena, which is a stormy, unpredictable, and even dangerous place to be—is to admit these facts. Once it has conceded, there is no turning away from them. Bioethics will, like economics, political theory, and sociology before it, have to learn to live with power. One way to do so is to operate from explicitly ideological perspectives.
>
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Progress in Bioethics provides an important contribution to the movement, profession, and industry of bioethics. This volume accurately identifies progressive values and progressive bioethical commitments in a systematic way. Such systematization, I think, will be instrumental in mounting a more organized and persuasive progressive voice in policy debates and in the political arena, which is mostly dominated by conservative voices. My hope—and also my concern—is that such systematization of progressive values will not hinder meaningful thought about bioethical issues by these very voices. It would be a shame if thoughtful reflection were replaced by less-than-rational adherence to core principles—a criticism often lodged against conservatives.

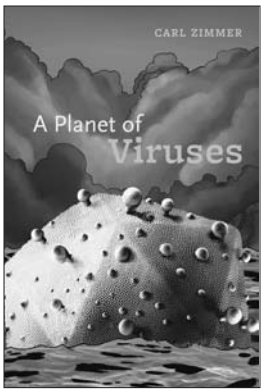
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PACK YOUR BAGS FOR THE VIRUS PLANET

A Planet of Viruses. Carl Zimmer. University of Chicago Press, 2011. 128 pp., $20.00 (ISBN 9780226983356 cloth).

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The latest offering from prolific science writer Carl Zimmer, entitled *A Planet of Viruses*, provides an eye-opening overview of just how intertwined viruses are with the daily business of life on Earth. Virology as a field is spread over a broad array of disparate subdisciplines: disease prevention, vaccine development, population genetics, microbial ecology, bioinformatics, epidemiology, and modeling, to name just a few. It is easy to lose sight of the forest for the trees, but at just over 100 pages, Zimmer's slim volume provides an amusement-park sky ride view of the whole



field—and reinvigorates my excitement about viruses in the process. Zimmer is a lecturer at Yale University, where he teaches graduate and undergraduate courses in science writing. His interests are broad and include topics such as parasites, the brain and consciousness, and evolution. As are Zimmer's previous works, *A Planet of Viruses* is intended for an educated lay audience, so it offers a gateway to the realm of viruses, particularly for those unfamiliar with this territory.

The book is organized into logically chosen sections, beginning at the beginning, with the discovery of the first-known virus—tobacco mosaic virus. From there, Zimmer considers viruses that have been coevolving with humans for millennia, such as influenza and the common cold, and emerging viral diseases, such as West Nile virus and Ebola virus. He includes substantial coverage of HIV (human immunodeficiency virus), with some basic explanations of the modeling used to trace its origins. I was particularly pleased to find an entire chapter dedicated to describing the ecological impacts of viruses that infect bacteria—the bacteriophages. Although the average reader will be familiar with some of the viral diseases that infect humans, bacteriophages tend to be lesser-known denizens of the viral world. However, as a result of their utility in treating bacterial diseases and their natural roles in the ecology of planet Earth, bacteriophages may have impacts on our well-being as powerful as those of any viral disease—a point that Zimmer conveys with a succinct punch. *A Planet of Viruses* closes with the most recently discovered virological curiosity, Mimivirus. Mimivirus has a genome larger and more complex than those of some bacteria, and its existence raises anew the question of whether viruses can be considered *alive*. This focal point also serves as the perfect, unresolved ending for a book that attempts to summarize the last century of virology—a rapidly evolving field that continues to produce incredible and unanticipated discoveries.

What I liked most about this book was its approach to its subject. Zimmer presents science as the human endeavor that it is, always naming the specific researchers involved in a given line of work and tracing their steps from initial discovery to puzzling results. This is important. Working with viruses is a formidable challenge because these microbes break many biological conventions. For example, although all cellular life on Earth uses a DNA genome, some viruses use RNA as their genetic material. As a result, the mechanisms by which these RNA viruses replicate can differ drastically from our understanding of cellular replication. In terms of fostering a public understanding of science, it is crucial to communicate these complexities effectively, especially when it comes to explaining why we wait so long for answers to some of our important questions (e.g., Where is the cure for cancer?). Chapter by chapter, Zimmer excels at underlining the

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specific set of challenges posed by each virus and recreating the frustration of those researchers who work with novel virus-related phenomena.

In describing each virus and its related set of challenges, Zimmer keeps the reader hooked by using analogy, poetic turns of phrase, and familiar imagery. For example, in the chapter on papillomaviruses, Zimmer invokes the jackelope—a mythical rabbit with antelope horns sprouting from its head. Anyone who has taken a road trip in the western United States and perused the junk for sale at the gift shops along the way will recognize this cultural icon. But wait, there is a connection: Papillomavirus must keep generating infected cells at the same rate that old skin cells are sloughed off—a situation Zimmer likens to a treadmill. But the virus will often "outrun" its host, leading to hardened growths or warts. So, as a result of its specific mode of replication, papillomavirus can quite literally cause rabbits to grow horn-like protuberances from their heads—real-life jackelopes. And with that, I am mesmerized: How many real, scientific explanations are hiding behind other popular myths? And what other tricks do viruses play on their hosts?

Because *A Planet of Viruses* targets the general public, experts in the field might find some of the descriptions overly simplistic, although I applaud Zimmer for including so much complexity in his streamlined explanations. And because historical perspective is not typically emphasized in the trenches of cutting-edge research, even experts may appreciate the interesting backstories of the viral discoveries presented in the book. My biggest complaint is the surprisingly high number of typographical errors for a volume already in print, but this did not detract from my enjoyment.

Overall, Zimmer has done a fantastic job condensing a huge volume of viral information into bite-size nuggets that whet the appetite for more, and a handy reference section provides the reader with direction on where to get their next helping. *A Planet of Viruses* will serve as an excellent supplementary text in undergraduate microbiology or virology courses (I plan to use it in my virology course this fall) or as an engaging introduction for anyone curious about the world of viruses.

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