



# A Look at Books

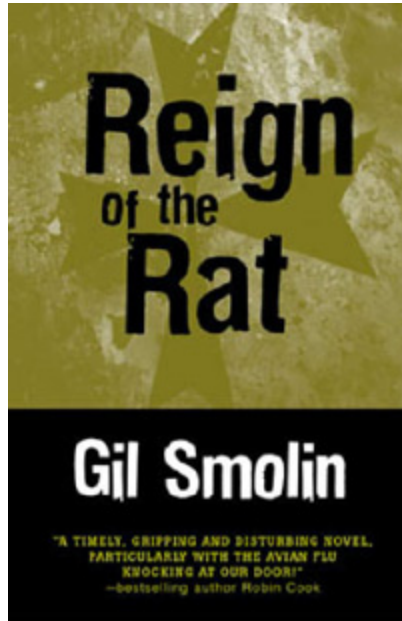
By Barry A. Schlech, Ph.D.

## THIS ISSUE'S SELECTION

As threatened, here's another review of a novel about an infectious disease, its peculiar history, and cautions for the future. Like my last review, *The Demon in the Freezer*, it is a mystery that focuses on the potential of a microbe to get out of hand. It is a story of microbiologists diagnosing and battling a mysterious disease with the ability to exterminate the entire human race.

### Reign of the Rat by Gil Smolin

By the title, I guessed that this book was either a) an allegory, like George Orwell's 1945 *Animal Farm*, in which animals personify well-known figures from our society or b) an anti-animal research book parading the horrors of animal research. Alas, Dr. Smolin created neither here. It is a scientific fictional work and is what I call "near non-fiction" because it portends a future of serious antibiotic resistance and infection. It has similarities to Michael



Crichton's 1969 novel, *The Andromeda Strain*, that details the plight of several infectious disease experts as they battle an increasing contagion. As many of you know, I am a microbiologist, and I enjoyed the microbiological references and settings, but I also liked the novel because it was

so well done. The character development and subplots were nicely parsed out of the main theme and kept my interest from beginning to end. The startling first page was an interesting touch and plunged the reader into the dark, dangerous past of the 13<sup>th</sup> Century when diseases (and rats)

ran rampant. It quickly moved to the year 2004, but the Black Plague episode lingered throughout the rest of the book.

### SUMMARY

The story begins in September 1354 in Jerusalem in the middle of the Bubonic or Black Plague era. The 2 pages devoted to this timeframe provide a compelling description of "life with" and "death by" this terrible disease. During this time, the Black Death and another disease, leprosy, were considered God's vengeance against His people. Those inflicted were avoided,



despised and even hated. The plague was highly contagious, spread by fleas on rats and had a fast onset with respiratory consequences. On the other hand, leprosy, a chronic infectious disease, had a slow onset and no respiratory elements. Leprosy is usually spread from person to person by

### The Author,

### a Friend of Alcon

Gil Smolin, M.D. is a clinical professor and research ophthalmologist at the University of California Medical School, San Francisco. He has been a long time friend and productive collaborator



constant exposure to respiratory droplets, not by fleas on rats. The transmission rate is very low and a majority of the present population is naturally immune. The disease in the novel is neither pure plague, nor pure leprosy, but was an admixture of the symptoms of both. This combination of two devastating infections left the patient with pneumonia-like symptoms, fever, stomach cramps, bloody diarrhea, rashes, lost fingers and toes and ultimately death in a very short period of time.

## CRITIQUE

As an Alcon anti-infective researcher, I enjoyed the mentions of trachoma, *Chlamydia*, and ciprofloxacin in Smolin's novel. The text was comfortable and familiar. His descriptions of Nepal and the interworkings of CDC and WHO were intriguing and enlightening. It was interesting to see the politics play out as key characters juggled the possible consequences of a devastating disease to the established societies and morays. The looming and growing catastrophic effects of the mysterious disease permeated the novel. I especially liked Smolin's analogy of Saddam Hussein to a microorganism . . . both becoming more virulent with time. Smolin gave realistic and detailed descriptions of death from the elusive disease that was a combination of



*Yersinia pestis*  
"Black Plague"

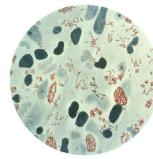
## Black Plague, 1348

The Black Plague originated in the Gobi Desert in the 1320s and reached the shores of Italy in the spring of 1348. It unleashed a rampage of death and pestilence across Europe unprecedented in recorded history. By the time the epidemic played itself out three years later, it had killed ONE-THIRD to ONE-HALF of Europe's population. It was a time when "the rats ruled the world" and when "brother abandoned brother". The disease was characterized by buboes or swellings, black or purple spots that appeared on a victim's neck,



armpits or groin and pneumonia-like symptoms foretelling death within a week. Men, women and children caught in its onslaught were bewildered, panicked, and finally devastated.

leprosy and the plague. The novel also had a bit of intrigue and spicy romance sprinkled in amongst the science. I liked that. His vocabulary was excellent and the reading was fairly easy. I enjoyed colorful expressions like "if there was an anger pheromone, Michael was certain he was smelling it". Or Lao-tzu quotes, such as, "not knowing is true knowledge; presuming to know is a disease". In criticism, I wish Dr. Smolin had been more accurate in his taxonomic references. Calling the causative organism of the



*Mycobacterium leprae*  
"Leprosy"

plague incorrectly as *Yersinia pestes* instead of *Yersinia pestis* would have bothered Carl Linnaeus [1707-1778], the father of taxonomy. Also, the first letter of a genus should always be capitalized: not *bartonella*, but *Bartonella*, not *legionella*, but *Legionella*, not *rattus*, but *Rattus*. I may be crazy, but the misspelling of *pestes* and *Rattus* really bothered me since they were the main characters of the book. Nevertheless, it is a work of fiction and the author can change the names at his discretion. These are small details that wouldn't bother anyone else, I presume. The novel is more than this and well worth your money buying it and your time reading it.

## An Old Nemesis: The Rat

The Black Plague is caused by the microorganism, *Yersinia pestis* (a.k.a. *Pasteurella pestis*), carried by the rat flea *Xenopsilia cheopis* which preyed on the black rat, *Rattus rattus*. So, the plague was carried on the backs of the rat. There are over 60 different



species of rats, but the black rat is the culprit of this story. It is one of the old world rats and originated in Asia but was brought to Europe on the ships of the Crusaders returning from the Holy Land. It grabbed a few infected fleas and the rest is history.

### Size:

Length of Head and Body: up to 9 in.

Length of Tail: up to 10 in.

Weight: 5-7 oz.

### Breeding:

Sexual Maturity: 3 months

Breeding Season: Throughout the year in warm climates

Gestation: 3 weeks

Number of Young: 5-10

### Lifestyle:

Habit: Sociable, forming colonies near human habitations

Diet: Mostly vegetable matter; prefers grain and fruit

Lifespan: Average 1 year