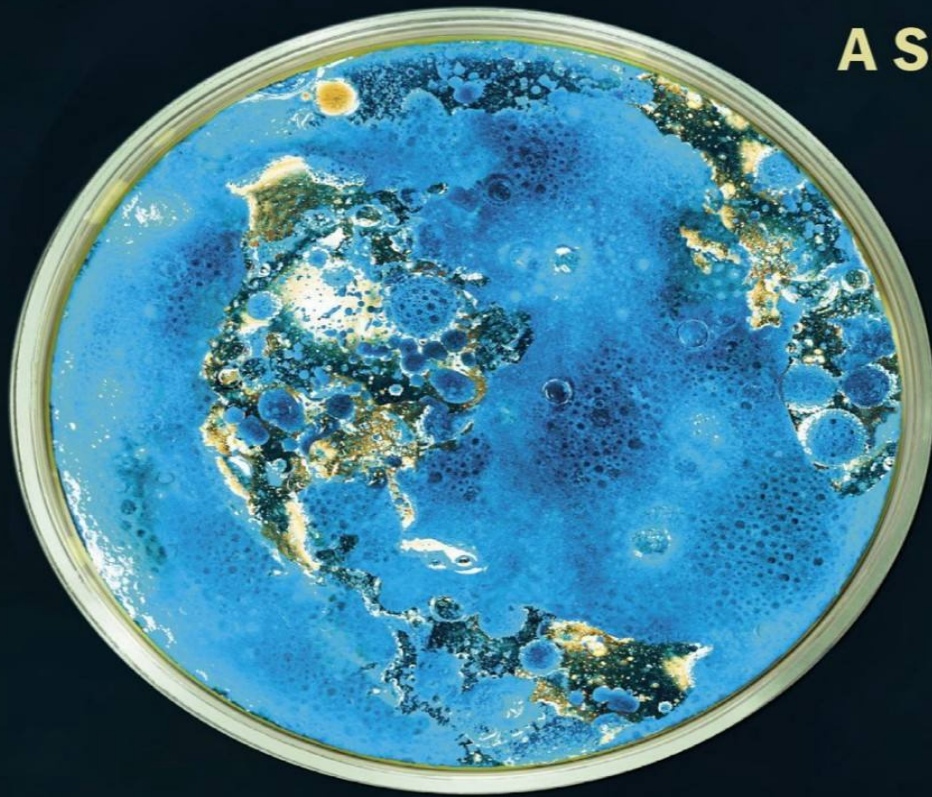


Biological War

A Scenario



Annie Jacobsen

New York Times bestselling author of *Nuclear War*

ALSO BY ANNIE JACOBSEN

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Biological War

A SCENARIO

**Annie
Jacobsen**



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For Kevin

“War happens to people, one by one. That is
really all I have to say...”

—**Martha Gellhorn**

AUTHOR'S NOTE

Biological warfare is illegal. Biological weapons are illegal. And yet biological weapons exist. The biological weapons that exist include genetically modified weapons designed for hypervirulence and human-to-human transmission. Weapons with a high lethality rate, and no known cure.

The use of such a biological weapon would trigger a global pandemic, causing mass death, total societal breakdown, widespread insurrection, and anarchy, leaving behind a plague-ravaged wasteland that no longer resembles modern civilization. Everyone in the business of preventing biological warfare knows this to be true.

“Very much like nuclear war, there is no real homeland defense against a large-scale biological attack, only things you can do to mitigate extermination,” says Dr. Thomas Ehrhard, a retired air force colonel. Ehrhard served as the military assistant to Andrew W. Marshall, the legendary director of net assessment in the Office of the Secretary of Defense, where he led a team that designed and executed war games involving large-scale nuclear and biological attacks.

Over 100 years ago, the international community banned the use of biological weapons with the Geneva Protocol of 1925, but by World War II, various nations were developing robust biological weapons programs, including the United States, the Soviet Union, Nazi Germany, and Imperial Japan. After the war, biological weapons work continued unabated around the globe, despite postwar scientific knowledge that the use of a biological weapon could unleash an unstoppable pandemic with a global death toll not seen since the Black Death, which killed between one-third and one-half the population of medieval Europe.

And then, in November 1969 and without much warning, President Richard Nixon renounced America's biological weapons program. This led to the 1972 Biological Weapons Convention—the BWC—an international treaty prohibiting the development, production, acquisition, transfer, stockpiling, and use of biological and toxin weapons.

In the treaty's preamble, biological weapons are referred to as “repugnant to the conscience of mankind.” And still, there was, and remains, a catch. A loophole that imperils all of us on this Earth.

The Biological Weapons Convention treaty allows for “defensive” biological weapons research, meaning scientists can conduct research involving the same pathogens that could be used for biological warfare—so long as the research warrants to be “for prophylactic, protective, or other peaceful purposes.” In other words, offensive biological weapons research can masquerade as “defensive” in scope.

“The treaty has no protocols for enforcement,” former assistant secretary of state Mallory Stewart tells us. The treaty is a worthy declaration, but a cross-your-fingers-and-hope approach.

The treaty that came out of the Biological Weapons Convention has been violated in the past. In the second half of the Cold War, after signing the treaty, the Soviet Union secretly and illegally developed and stockpiled massive arsenals of biological weapons, including genetically engineered germs. This is but one historical example, with flagrant violations continuing today. A 2025 U.S. State Department compliance report assesses that Russia and North Korea each “maintains an offensive BW [biological weapons] program” in violation of the treaty, while China and Iran are engaged in biological research and activities that raise unresolved compliance issues. Russia is particularly problematic. “The United States maintains that the Soviet program was absorbed, not dismantled, by the Russian Federation,” says the State Department's special representative to the Biological Weapons Convention, Kenneth D. Ward, “and that program has continued and evolved in violation of Article I and Article II of the BWC.”

What makes biological warfare so sinister isn't just its ability to deliver mass casualties and deaths, but its capacity to create unbridled chaos. In planning documents, the Department of Defense warns that the widespread release of a biological weapon, even by accident, will not only kill millions, it will unravel the fabric of society. "The secondary effects...includ[e] the potential for large-scale social unrest due to fear of infection."

"Trust will collapse," Dr. Ehrhard tells us, "fear will govern. The line between order and anarchy is thin."

The scenario that follows—chronicling the hours, days, and weeks after the release into society of a genetically modified biological weapon—is based on facts and projections sourced from exclusive interviews with presidential advisors, Defense Department officials, medical doctors, microbiologists, epidemiologists, diplomats, congresspeople, CIA officers who work to counter weapons of mass destruction, Federal Emergency Management officials, and first responders who train for mass-casualty biological incidents and attacks.

It ends in dystopia.

And it echoes biological war scenarios run by the Pentagon.

"Unlike nuclear war," former Senate majority leader Tom Daschle tells us, the result of a major biological attack will be "a long, painful, slow death." Daschle is one of two U.S. senators whose office was the subject of a biological attack in October 2001. "Death physically. Death governmentally. Death in virtually every context. Biological war...will be deeply nightmarish," he warns. "People doing inhuman things, just to survive."

It is precisely this kind of warning that *Biological War: A Scenario* builds upon.

A deadly germ—genetically modified to be human-to-human transmissible, hypervirulent, able to defeat countermeasures, and with no known cure—could be twenty-first-century humans' last invention.

INTERVIEWS

(Government positions are formerly held unless indicated)

William J. Perry, PhD: U.S. secretary of defense

Honorable Thomas A. Daschle: U.S. senator from South Dakota; Senate majority leader; target of 2001 anthrax attack

Rose Gottemoeller: deputy secretary-general of NATO; U.S. under secretary of state for arms control and international security

William Craig Fugate: administrator of Federal Emergency Management Agency (FEMA)

Admiral Brett Giroir, MD, PhD: assistant secretary for health, U.S. Department of Health and Human Services, led Covid-19 testing; director, Defense Sciences Office, DARPA

Lt. Gen. Charles L. Moore Jr.: deputy commander, U.S. Cyber Command

Robert P. Kadlec, MD: assistant secretary of war for nuclear deterrence, chemical, and biological defense policy and programs (current); led Operation Warp Speed

Honorable Andrew C. Weber: assistant secretary of defense for nuclear, chemical, and biological defense programs

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Henry S. Heine, PhD: lead research microbiologist, USAMRIID; team lead on key strains of biowarfare and bioterrorism bacterial agents

Michael V. Callahan, MD, MSPH: chief, Accelerated Biodefense Therapeutics initiative, DARPA; U.S. biodefense and global health advisor; veteran virus hunter

James Lawler, MD, MPH: deputy medical director, Nebraska Biocontainment Unit; biodefense advisor to the White House and Department of Defense; field-deployed for Ebola, Marburg, Covid-19

Jeffrey D. Sachs, PhD: special advisor to the UN secretary-general

Ambassador Ettore Francesco Sequi: secretary-general of the Ministry of Foreign Affairs and International Cooperation, Italy

Sam Altman: CEO (current) and cofounder of OpenAI

Lt. Gen. Bong Su Kim: vice chairman, Joint Chiefs of Staff, Republic of Korea

Edgar D. Mitchell: lunar module pilot for Apollo 14; sixth person to walk on the Moon (deceased)

Colonel Kenneth D. Collins: A-12 Oxcart spy pilot, CIA (deceased)

Milton Leitenberg: scientist and senior research scholar on Soviet biological weapons, arms control, and weapons of mass destruction

Mariana Matus: biologist and computational epidemiologist, CEO and cofounder of Biobot Analytics; pioneered wastewater surveillance and analysis used by HHS during Covid-19

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Steven Siqueira: deputy director, United Nations Counter-Terrorism Centre

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Jimmy H. Hara, MD: Los Angeles fire commissioner (current)

Kayla Sossin: manager, Chemical, Biological, Radiological, Nuclear, and Explosives Planning Program, New York City Office of Emergency Management (current)

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Tess van Stekelenburg: science partner, Lux Capital; cofounder, Valthos

Hayden Metsky: developer of genomic tools to detect and track pathogens at scale; Valthos product development

PROLOGUE

The Demon Germ

Day Four of This Scenario

Frankfurt, Germany

An American traveler is in Frankfurt, at a crowded disco. He has no idea that, days earlier, he became infected with a highly contagious, genetically modified, biological weapon engineered to kill human beings in the most atrocious ways. He is still in the incubation period, with the germs present and multiplying. He is not yet fully symptomatic.

He feels absolutely fantastic.

He most certainly should not.

Multiplying rapidly inside his body are loads of *Yersinia pestis* bacteria, the causative agent for plague. Under favorable conditions, a bacteria cell grows by copying its DNA, then splitting into two identical daughter cells, each of which can divide again, and again.

Plague has been responsible for several of the most fatal pandemics in human history, including ones in the sixth, fourteenth, nineteenth, and early twentieth centuries. From around 1347 to 1352, the disease killed 150 million people. Countless men, women, and children have died an appallingly painful death from plague.

With the early twentieth-century discovery of antibiotics, plague became a scourge of the past, but with the advent of genetic engineering in the late twentieth century, plague has returned.

And now, in this scenario, it has been engineered into a biological weapon capable of exterminating humans at scale.

The American traveler sweats profusely, the dance music and the people around him thumping and pumping, everyone hot and sticky and breathing all over one another. He is sweating because he has a fever of 102 degrees Fahrenheit (38.9 degrees Celsius). Under normal circumstances, he'd feel extremely unwell—terrible enough to be at home, in bed, under the covers in isolation—but instead, he's out here dancing hard and breathing heavily because he feels euphoric.

What makes all this so terrifying is that what is happening here is not *just nature's way*. It is the nefarious work of biological weapons engineers.

A biological weapon is a living munition. A microscopic organism that causes disease. Silent, invisible, and self-replicating, it is the tiniest weapon in modern *Homo sapiens'* vast war chest. Forty thousand plague bacteria can fit side by side on the head of a pin.

The biological weapon replicating in the American traveler's lungs was first developed during the Cold War. This new, twenty-first-century variant infects the lungs with a degree of lethality so intense, and will lead to a level of unfolding pain so horrific, it is almost impossible for the mind to comprehend. And yet, in the present moment, all the American traveler feels is endorphin-induced euphoria. This particular plague weapon has been genetically engineered to initially deliver a neurochemical high.

“When we first heard Soviet scientists were inserting the endorphin gene [for euphoria] into *plague*,” says Dr. Henry Heine, a former U.S. Army bacteriologist, “we were appalled. That they would purposefully engineer the *Y. pestis* bacteria to behave this way...to make you want to go out and socialize...this was some horrifying stuff.”

Y. pestis is shorthand for *Yersinia pestis*, the bacterium that causes plague, and Dr. Heine is one of the world's subject-matter experts. Starting in the late 1990s, he spent eleven years working on biological warfare countermeasures at the U.S. Army Medical Research Institute of Infectious Diseases, in Fort Detrick, Maryland. USAMRIID, or “you-sam-rid” as it's

known, is the Defense Department's flagship center for high- and maximum-containment infectious disease research and its only Biosafety Level 4 (BSL-4) laboratory. In the event of a biological attack against America, USAMRIID scientists will be at the fore.

"When you are sick [with plague], *normally*, you feel lethargic," Heine explains. "You isolate. You stay at home. But if you have plague and you feel euphoric, you go out and socialize. And you contaminate a lot of other people with recombinant plague."

Which is what is happening with the American traveler, dancing in the crowded Frankfurt discotheque. From a moral standpoint, that anyone would do such a thing seems difficult to fathom.

"It seems evil," Heine contextualizes.

Former assistant secretary of defense Andy Weber agrees. "I grew up thinking Reagan's phrase 'Evil Empire' was an exaggeration," he tells us. "Then I learned what the Russians were doing [with biological warfare]." He pauses for effect. "It was evil."

Weber debriefed several of the Soviet bioweapons engineers after the program became public in the 1990s. He visited Russia's BSL-4 maximum-containment facilities and its armaments factories in Russia and Kazakhstan, where many of these Soviet scientists worked.

The Defense Department considers plague an especially dangerous pathogen. "Because of the severity of the disease, the rapid onset of symptoms, sepsis, and multi-organ system failure followed by 100% mortality in untreated patients," retired colonel Bret Purcell, the former chief of the Division of Medicine at USAMRIID, tells us, "the U.S. military recognizes *Yersinia pestis* [as] one of the highest bacterial threat pathogens to our military and civilian populations."

The Centers for Disease Control and Prevention, the CDC, considers plague one of more than a dozen "Tier 1 Select Agents and Toxins" representing the highest risk for use in a biological incident or attack. "Tier 1" means plague is among the most menacing of all pathogens, a top public health threat. "Select Agent" means plague is on the government's