

The background of the cover is a dark, reddish-brown color. It features several large, detailed images of bacteria, likely Bacillus anthracis spores, which are oval-shaped and covered in fine, hair-like flagella. These bacteria are scattered across the frame, with some appearing in the foreground and others in the background, creating a sense of depth. The overall aesthetic is scientific and ominous.

GERMS OF WAR

KETAN DESAI

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Prologue

Tracy stared at the biological weapon for a long time. The vial looked so innocuous, sitting quietly in the ventilated hood. Few would have suspected the pretty pink tube contained a biological weapon. Fewer still would have suspected it had enough power to destroy a large portion of humanity.

"Why is destruction so much easier than creation?" she mused softly.

Tracy had re-created this monster so she could create an antidote to it. And this was just the beginning, the first biological weapon she had created out of the hundreds of possibilities. There were many more weapons to make, many more antidotes to create.

"Time to take a break," she murmured to no one in particular.

As she stood up, she reflected on the events that led to her to work on biological weapons and she reflected on Afghanistan.

Like the vial in front of her, Afghanistan personified some of the most villainous violence as its citizens and myriad invaders were locked in perpetual warfare spanning centuries. And the violence seemed to have escalated in the past half-century. In fact, the word "savagery" would best describe human behavior over the past twenty-five years.

Lost in thought, she remembered the conversation with her mentors, "In late 1979, the Soviet Politburo, desperately trying to support a puppet communist government, ordered the invasion of Afghanistan. Leonid Brezhnev, the Soviet President, expected the Red Army to cruise easily through the Hindu-Kush Mountains.

"The Afghans did not roll over for the Red Army, and their fiercely independent spirit soon became evident. Various resistance groups, collectively called Mujahideen, sprang up. They went after the Red Army like piranhas attacking a big water buffalo helplessly thrashing about in the water. The Mujahids had powerful friends in America, Pakistan, and Iran and Islamic mercenaries from Sudan, Saudi Arabia, and Egypt joined them. Money, arms, and combatants poured into the battle as fast as refugees staggered out. Fired by faith and hate, the Mujahideen ripped open the belly of the Soviet war machine. Kabul became an open-air morgue displaying the corpse of the Red Army for the entire world to see. By the time the tired, dispirited Red Army limped out of Afghanistan in February of 1989 thirteen thousand Soviet soldiers had died futile deaths."

"One would think after a victory like that, Afghanistan would become a truly united country. Just like we did after we kicked out the British," Tracy had observed.

"Unfortunately, that isn't what happened," her mentors noted. "As the last Soviet soldier sought the solace of his homeland, the Mujahideen turned their weapons and animus on each other with a vengeance. The country was ravaged,

rent asunder. Out of the resulting turmoil came religious fundamentalism and terrorism. All kinds of terrorism. Including bioterrorism."

It was bioterrorism that had caught Tracy in its tangled web. She was still dazed by the sequence of events, but the end result of it was very clear.

She turned out the light. The laboratory became quiet and dark.

Chapter 1

On a quiet and dark night at the beginning of May 1997, Dr. Tariq Bukhari struck. He silently entered the restricted P3 unit of Mayo Clinic's Microbiology Department at 11:00 pm.

"Deserted on Sunday night. Just as I expected," he muttered. "Now the difficult part."

A clumsiness which had afflicted him since childhood usually caused the doctor to move as though perpetually inebriated. During his post-doctoral research at the clinic, for three years Bukhari had orbited between his desk and the P3 room hundreds of thousands of times, inevitably crashing or bumping into anyone or anything within six feet of his path.

"Had too much of a good thing last night?" his colleagues would jokingly ask. In return, Bukhari would curse, blaming everyone else for his ataxic behavior.

At first, his colleagues tried their best to make sense of his pugnacity. However, Bukhari's outbursts of temper, matched only by his inability to handle any piece of equipment without threatening its immediate ruin and, by extension, the health and safety of anyone near him, led to his isolation. By his third year, the faculty and students of the entire Microbiology Department avoided all contact with him, with the sole exception of Dr. Dan Howard, his sponsor, and staunchest supporter.

But this night was different. Like a cardiac surgeon operating on coronary arteries, Bukhari was a study in concentration, though none of his colleagues were privy to this superlative performance.

Slow and easy does it, Bukhari reminded himself.

He strode toward the door to the P3 facility, where work on dangerous bacteria and viruses were performed, stopping briefly at his desk for the necessary keys. Surreal blue rays from a UV lamp burned within the P3 room as a constant warning of great danger.

Urgently, as though possessed, Bukhari proceeded through the P3 room's outer door. In the antechamber, he stopped to don his blue laboratory coat, a filtration mask, and two pairs of latex gloves. Confidently flinging open the interior door, he stepped into the heart of the P3 facility, a space barely large enough for one person to work in.

Bathed in the eerie blue light, a bacterial incubator stood to his left. To the right was a small, 4° C refrigerator, reserved for storing reagents. Next the refrigerator, a humming liquid nitrogen-cooled freezer stored bacteria and temperature-sensitive chemicals at a frigid minus 70° C. Before him was a tissue culture hood, where experiments with bacteria and viruses were conducted under sterile conditions. A fan blew air through the hood to ensure neither the hood's air

nor the room's air contaminated each other. A small stool facing the hood provided the only place to sit.

With a degree of skill he had never exhibited to his American colleagues, Bukhari rubbed down the hood's interior with the laboratory antiseptic, seventy percent alcohol, to reduce the possibility of inadvertent contamination. He then turned off the UV light and switched on an overhead incandescent lamp.

The sense of history, greatness, and total power, which had guided him since his earliest school days, now shaped his thoughts with overwhelming force and intensity.

"Where so many have failed, I -- Tariq Bukhari -- have succeeded. The weapon that so many have dreamed of, I have created! A few years from now, crowned with the thanks and praise of a grateful nation, I will be the brightest star of a new, eternal empire."

Turning around slowly in a tight circle, Bukhari surveyed the assorted racks, shelves, and equipment within the P3 room the way a conductor inspects his orchestra before raising his baton to signal the first note. As Bukhari began assembling his materials, every vial he touched leaped into his grasp. Every step he took landed securely upon the floor. His torso and limbs kept plumb to each other, instead of akimbo.

As he initiated preparations for testing his toxin, Bukhari allowed himself to enjoy the full rapture of his imagination. A sense of poetic speculation came over him as he withdrew a vial, known as an Eppendorf tube, from the minus 70° C refrigerator. The vial contained his invention, harmless in its frozen form. His mind played with numbers inside his head.

"The volume of the vial is...One milliliter of the toxin can slay... Therefore, the contents of the vial can kill.."

With great care, Bukhari placed the frozen Eppendorf tube to thaw in a rack inside the tissue culture hood, the metallic hum of the hood's fan providing a soundtrack as the doctor marveled at the pure beauty he perceived in his creation.

The superbug should come to life after twenty-five minutes.

At exactly the thirty-minute mark, he poked a small hole into the cap of the Eppendorf tube and connected it to a lyophilizer, a small machine designed to powderize liquids. The lyophilizer transformed the liquid medium, with swarming bacteria and its swirling cesspool of toxins, into a seemingly innocuous dry white powder, no different in appearance from table salt. Bukhari looked at his creation like a proud father looking at his newborn son. He quickly transferred the weapon, as he now preferred to think of it, unequally into two other vials with intact caps. He wrapped parafilm, a scientific version of Saran Wrap, around each one. Then he placed each vial within a larger vial and sealed the larger vial again with parafilm.

This insured no organism would escape from either vial unless he intended it. One tube, carrying less than a tenth of the initial powder, would be used tonight. The other, carrying the remainder, would return to Pakistan with him. He

instinctively looked out the grilled window to see if anything or anyone was stirring. All was quiet.

Bukhari congratulated himself on his cleverness in the final phase of the experiment. A few weeks earlier, he had tested the concoction on guinea pigs and watched as the unfortunate rodents drowned in their own lungs. But that had not been enough.

"It's great it worked on guinea pigs, but will it work on humans? That's the question I want answered," Ghazni, his mentor, demanded. The head of the bioweapons project for Pakistan's secret service, the ISI, Ghazni was a perfectionist. Bukhari had wracked his brain for weeks trying to perfect such a human test.

With an innate gift for software manipulation, Bukhari had reconfigured his personal computer at home to penetrate every department of Mayo Clinic and its affiliated hospitals. From his off-campus apartment, he spent many late-night hours painstakingly scanning the illegally accessed in-patient registers of Methodist and St. Mary's Hospitals.

"Only airborne agents, Bukhari. Only those that can be disseminated by air," Ghazni had commanded.

To test such a pathogen, Bukhari would need a victim breathing through a ventilator and suffering from only one malady with no biological connection to his weapon. The doctor-agent would have only one chance to test this toxin in the measured confines of Mayo Clinic. According to the plan, Bukhari would place a telephone call to Ziad, his ISI control agent.

"When you start, say the journey has begun. If the test is successful, call again and say the end is near." Ziad had instructed.

Within a few hours of the second call, Ziad would meet Bukhari in his apartment, and the two would proceed to the laboratory to pick up the vial. They would then leave via the first flight to Pakistan from Chicago's O'Hare international airport.

Fate had finally delivered a suitable subject to St. Mary's on Saturday night. A sudden, severe asthma attack had afflicted Dr. Neil Kavesh, an otherwise healthy, middle-aged attending physician, with such sudden force he had been admitted to his own hospital's Medical Intensive Care Unit or MICU. In the course of treatment, the hospital staff had placed their ailing colleague on a ventilator, commonly known as a breathing machine.

Bukhari had made it a habit to scan the in-patient registers online as soon as he returned to his apartment each night.

Seeing a new admission, he cried out in excitement, "That's it! It's got to be him."

His heart began pounding as he recognized Kavesh's name. Though he did not know the doctor personally, he knew the staff would spare no effort to save him, especially since he was one of their own. However, should Kavesh perish, Bukhari doubted an autopsy would be performed, out of fear of its results and the

potential backlash within the facility and the medical community. Thus, his tracks would never be uncovered.

With extraordinary enthusiasm, Bukhari prepared himself for both the experiment and his imminent return to Pakistan. After the successful tests of the toxin on guinea pigs, he had purged all personal effects and information from his apartment and a travel kit stood at the ready. Earlier in the day, as calmly as possible, Bukhari had called Ziad, who was masquerading as a taxicab driver and dropped the necessary code words into a conversation, signaling the experiment would soon take place.

Usually, students and faculty could be found working late into the evening every night of the week. Except for Sunday. No one, Bukhari was sure, had seen him enter the building, take the elevator up to the fifth floor, get the keys from his desk, or prepare the toxin in the P3 room.

The triumphant doctor cleaned up the P3 room with great fastidiousness. He discarded both layers of his gloves, stripped off his blue laboratory coat, and washed his hands thoroughly. He stepped out from the P3 room's outer section very slowly, carefully scanning the corridor ahead of him, and headed for the elevator, clutching the vial of poison tightly.

It was almost midnight.