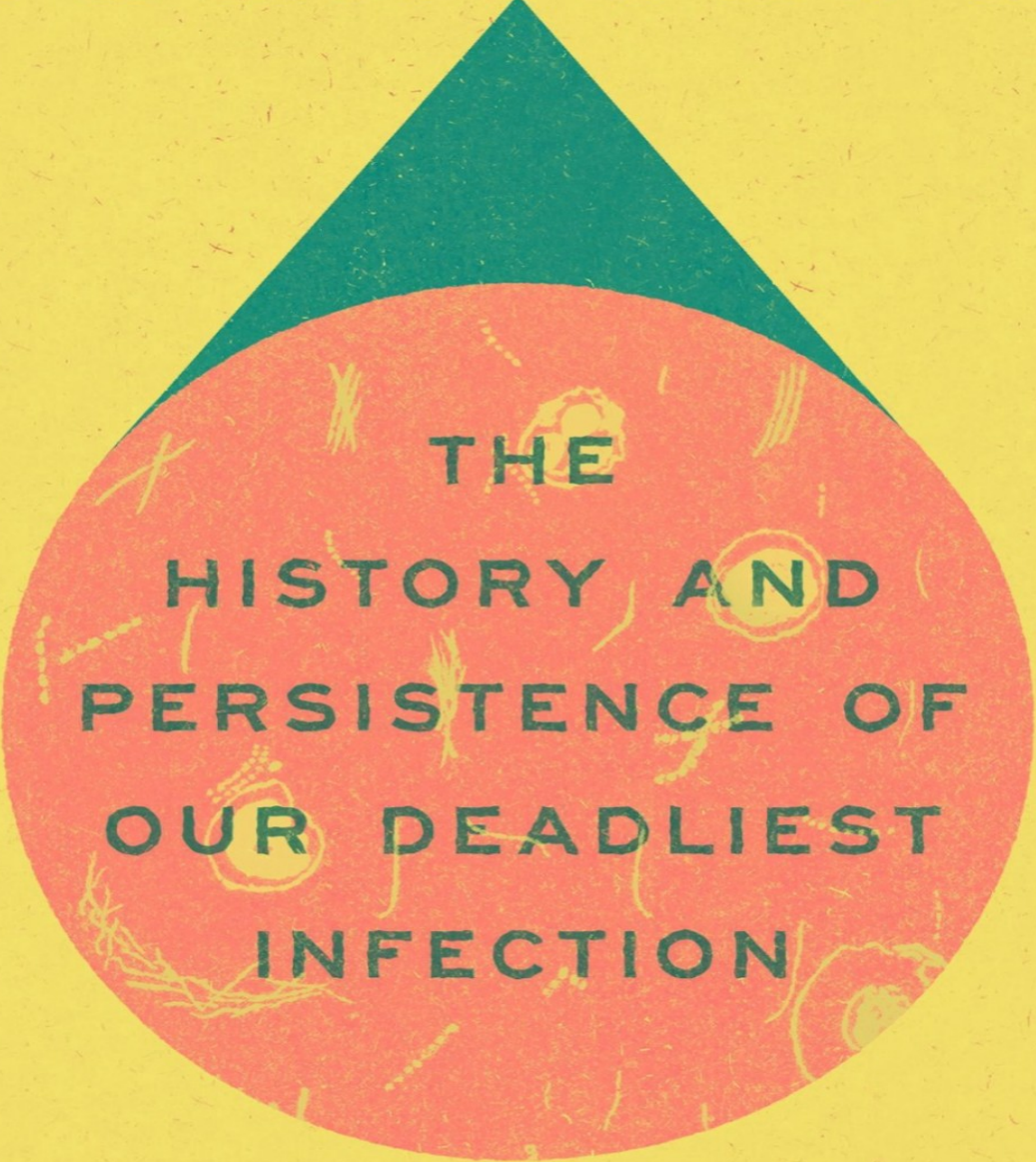


# EVERYTHING IS TUBERCULOSIS

A red circle with a teal triangle on top, containing text about tuberculosis. The circle has some faint, yellowish, circular patterns inside, possibly representing bacteria or cells.

THE  
HISTORY AND  
PERSISTENCE OF  
OUR DEADLIEST  
INFECTION

## JOHN GREEN

#1 BESTSELLING AUTHOR OF  
*THE ANTHROPOCENE REVIEWED*

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**JOHN GREEN**

*Looking for Alaska*

*An Abundance of Katherines*

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Essays on a Human-Centered Planet*

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*This book is dedicated to  
Shreya Tripathi, Henry Reider,  
and TB Fighters everywhere*

## INTRODUCTION

# GREGORY AND STOKES

AROUND THE TURN OF THE nineteenth century, the Scottish tinkerer and chemist James Watt began working on a new project.

He had already achieved fame and success for making steam engines more efficient, helping to fuel the industrial revolution that would radically reshape human history. The steam engine would lead to everything from air-conditioning to air travel to AirPods, while also unleashing over a trillion tons of carbon dioxide into the atmosphere, reshaping the planet's climate. Watt's innovation carried within it so much power that we named a measurement of power after him. Watt also made other important contributions to the human collection of tools and knowledge, inventing a machine that could copy sculptures and developing new strategies for manufacturing chlorine to bleach textiles.

But Watt hoped this new project would be his most important yet. He became obsessed with finding some kind of chemical solution to treat the lung disease known to physicians as phthisis.

Watt's daughter Jessy had died of phthisis at the age of fifteen in 1794. And now his son, Gregory, was ill with the disease, suffering from the classic symptoms of a persistent cough, night sweats, fever, and the physical wasting of the body that gave the disease its colloquial name: consumption. Gregory was in his early twenties, a skilled orator known for being phenomenally attractive—one friend described him as "literally the most beautiful youth I ever saw."



In a furious attempt to save Gregory, Watt helped invent a device that delivered nitrous oxide to the lungs, believing that shifting the amount of oxygen available to the body might help it heal. But the treatment proved unsuccessful. After many years of suffering, Gregory died of consumption in 1804 at the age of twenty-seven.

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By 1900, phthisis had come to be known by a new name: tuberculosis. My great-uncle Stokes Goodrich was born that year in rural Tennessee. He was raised in a wood-frame house built by my great-grandfather Charles, a country doctor who rode his horse night and day around Franklin County delivering babies and dispensing medicine.

Stokes was a sickly child. In those days—and in these ones, too, I suppose—it was common to connect illness to some kind of deficiency, failure, or past mistake. A physician might conclude, as one German doctor did in the early eighteenth century, that a woman's life-threatening illness was brought on "by a dog which barked loudly at her." For baby Stokes, being given coffee and sweets by a family friend was thought to be the inciting incident. Thereafter, Stokes "developed the worst case of typhoid fever I ever saw recover," my great-grandfather later reported in a short memoir he wrote for our family.

In 1918, when Stokes was eighteen, he again nearly died during the Great Influenza pandemic when he became ill while working at a munitions factory. He survived, and in 1920 went to work for Alabama Power and Light, laboring as a lineman. As the 1920s progressed, Stokes experienced frequent bouts of what he hoped might be bronchitis. But the stubborn cough would not go away, and eventually, after coughing up blood, he sought medical attention.

Here is how my great-grandfather reported what happened next: "Stokes went to see a fine doctor in Gadsden, Alabama, who X-rayed

him and discovered tuberculosis in the apex of his right lung. The X-ray technician who made the film told me, 'Dr. Goodrich, your son has miliary tuberculosis, and I have never seen a case that lived over two months.'"

Stokes was placed in a sanatorium in Asheville, North Carolina, one of many American cities that functioned as a tuberculosis colony of sorts. "Stokes had the best of care in the sanatorium but steadily grew worse, and on May 18, 1930, passed over the river to his Lord."

My great-uncle was twenty-nine years old. I often wonder what it must have been like for my great-grandfather, having trained as a doctor, to be unable to save his own son from disease.

We are powerful enough to light the world at night, to artificially refrigerate food, to leave Earth's atmosphere and orbit it from outer space. But we cannot save those we love from suffering. This is the story of human history as I understand it—the story of an organism that can do so much, but cannot do what it most wants.



Now we are two centuries removed from the deaths of Jessy and Gregory Watts, and nearly a century removed from the death of my great-uncle Stokes. Still, over a million people died of tuberculosis in 2023. That year, in fact, more people died of TB than died of malaria, typhoid, and war *combined*.

Just in the last two centuries, tuberculosis caused over a billion human deaths. One estimate, from Frank Ryan's *Tuberculosis: The Greatest Story Never Told*, maintains that TB has killed around one in seven people who've ever lived. Covid-19 displaced tuberculosis as the world's deadliest infectious disease from 2020 through 2022, but in 2023, TB regained the status it has held for most of what we know of human history. Killing 1,250,000 people, TB once again became our deadliest infection. What's different now from 1804 or

1904 is that tuberculosis is curable, and has been since the mid-1950s. We know how to live in a world without tuberculosis. But we choose not to live in that world.

In 2000, the Ugandan physician Dr. Peter Mugenyi gave a speech about the rich world's refusal to expand access to drugs treating HIV/AIDS. Millions of people were dying each year of AIDS, even though safe and effective antiretroviral therapy could have saved most of their lives. "Where are the drugs? The drugs are where the disease is not," Dr. Mugenyi said. "And where is the disease? The disease is where the drugs are not."

And so it is with TB. This year, thousands of doctors will attend to millions of TB patients, and just as my great-grandfather could not save his son, these physicians will be unable to save their patients, because the cure is where the disease is not, and the disease is where the cure is not.



This is a book about that cure—why we didn't find it until the 1950s, and why in the decades since discovering the cure, we've allowed over 150,000,000 humans to die of tuberculosis. I started writing about TB because I wanted to understand how an illness could quietly shape so much of human history. But along the way, I learned that TB is both a form and expression of injustice. And I learned that how we imagine illness shapes our societies and our priorities. James Watt understood consumption as a mechanical failure by the lungs to ingest the proper ratio of gases. My great-grandfather understood his son's sickliness to have been driven by ingesting coffee and sweets in childhood. Others would understand TB as an inherited disease that affected certain types of personalities. Still others would argue that the illness was caused by demon possession, or poisoned air, or God's judgment, or whiskey. And each of these ways of understanding tuberculosis shaped not

just how people lived and died of TB, but also *who* lived and died of it.

Today, we understand tuberculosis as an infection caused by bacteria. TB is airborne—it spreads from person to person through small particles contained in coughs, sneezes, or exhalations. Anyone can get tuberculosis—in fact, between one-quarter and one-third of all living humans have been infected with it. In most people, the infection will lie dormant for a lifetime. But up to 10 percent of the infected will eventually become sick, a phenomenon we call “active TB.” People are especially likely to develop active TB if they have a weakened immune system due to other health problems like diabetes, HIV infection, or malnutrition. In fact, of the ten million people who became sick with TB in 2023, over five million also experienced malnutrition. And because the disease spreads especially well in crowded living and working conditions like slums and poorly ventilated factories, tuberculosis has come to be seen as a disease of poverty, an illness that walks the trails of injustice and inequity that we blazed for it.

The world we share is a product of all the worlds we used to share. For me at least, the history and present of tuberculosis reveal the folly and brilliance and cruelty and compassion of humans.

My wife, Sarah, often jokes that in my mind everything is about tuberculosis, and tuberculosis is about everything. She’s right.