

## Timeline: Biological Weapons

1763 - 1945 | [1946 - 2003](#)

**1763** British soldiers, besieged by American Indian tribes during Pontiac's Rebellion, give blankets infected with the smallpox virus to tribal representatives.



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**1882** February 10: [Paul Fildes](#), son of noted painter Samuel Fildes, is born in London.

**1892** June 25: [Shiro Ishii](#) is born near Tokyo.

**1895** August 20: [Ira Baldwin](#) is born on an Indiana farm.

**1904** Fildes enters medical school to study to become a surgeon, but soon transfers to bacteriology.



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**1916** The British establish a secret facility at Porton Down to deal with the threat of chemical weapons.



KEYSTONE/STRINGER/GETTY IMAGES

**1920** Ishii receives his medical degree from Kyoto Imperial University; he soon develops an interest in bacteriology.

**1925** June 17: Spurred by the horrors of World War I, delegates in Switzerland create a Geneva Protocol banning the use of chemical and bacteriological methods of warfare. However, countries are still allowed to research, develop, and produce these weapons. Thirty-nine countries sign the protocol, including the United States. Although the Senate refuses to ratify the treaty, the U.S. government says it will still abide by the terms.

**1928** Spurred by his interest in biological weapons, Ishii begins a two-year fact-finding trip around the world, visiting Europe and America.

**1930** Upon his return, Ishii is appointed professor of immunology at the Tokyo Army Medical College. He is promoted to the rank of major in Japan's Army Medical Corps and begins to advocate for a Japanese biological weapons program.



**1931** Fildes edits a nine-volume treatise on bacteriology that is published by the Medical Research Council, whose Bacteriological Chemistry Unit he heads.

**1932** The Japanese Army gives Shiro Ishii control of three biological research centers, including one in Manchuria, a Chinese province that the Japanese had invaded a year earlier.

**1933** March: U.S. Army Medical Corps Major Leon Fox publishes an article in the magazine *Military Surgeon* dismissing the idea of biological weapons. "Practically insurmountable difficulties prevent the use of biologic agents as effective weapons," Fox writes.

**1934** Great Britain begins taking steps towards establishing its own biological weapons research project. Although the Medical Research Council is cool to the idea, Fildes agrees to assist the government.

**1937**

Construction commences on a large Japanese biological weapons complex called Ping Fan near the Manchurian city of Harbin.

**1939**

September 1: [World War II](#) begins in Europe with the invasion of Poland by [Nazi Germany](#).



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September 19: In a speech German Chancellor [Adolf Hitler](#) boasts of fearsome German weapons against which his enemies would be defenseless. This fuels speculations among Allied leaders about what weapons German scientists may be developing.

**1940**

The Japanese biological weapons complex Ping Fan begins operations. It employs some 3,000 personnel under Ishii's direction, working on a wide variety of biological agents, including bacteria that cause plague and anthrax. Over the next five years, Unit 731, as it becomes known, conducts horrific tests on Chinese



prisoners and, allegedly, some Allied POWs. Victims are injected with, forced to eat, and made to breathe deadly pathogens. Often prisoners are killed before the diseases have become terminal so autopsies can be performed. Ishii's men also create bacteriological bombs, and later that year Japanese warplanes repeatedly drop porcelain bombs containing fleas infected with plague over Chinese towns, resulting in several outbreaks of plague among the human population.

Meanwhile, in England, a new biology department is established at Porton Down with Fildes as its head. His initial research focuses on botulism and anthrax.

**1941**

November 18: A committee of nine eminent American biologists convenes at Secretary of War Henry Stimson's request to investigate the possibility of germ warfare.

December 7: The Japanese attack Pearl Harbor, bringing America into the war. That same day British Prime Minister [Winston Churchill](#) receives a top-secret memo summarizing developments at Porton Down and reporting that cattle cakes laced with anthrax bacteria are the only biological weapons that currently can be deployed.



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**1942**

January 2: Churchill's Defense Committee meets and gives the go-ahead for production of these cattle cakes. Later that year the first of some five million cattle cakes are manufactured at Porton Down. The plan, named, "Operation Vegetarian," is to drop them from aircraft over Germany in the hope of wiping out its cattle. But it is never implemented.

February 17: Stimson's committee issues the first of its two reports, concluding that biological warfare is "distinctly feasible" and the United States should begin its own biological weapons program immediately.



NATIONAL ARCHIVES AND RECORDS ADMINISTRATION

April 29: Stimson writes to President [Franklin Roosevelt](#) conceding that biological warfare is "a dirty business" but arguing America must be prepared. In May Roosevelt approves the creation

of a U.S. biological weapons program.

May 27: British-trained commandoes ambush high-ranking Nazi leader Reinhard Heydrich near Prague. Although he suffers only minor wounds, Heydrich will die suddenly a week later. Fildes later claims to have "had a hand" in the assassination, perhaps by supplying the commandoes with grenades contaminated with botulinum toxin.

June-July: The Japanese test Salmonella on Chinese prisoners. Then they disperse the bacteria that cause typhoid, cholera, and other food-borne diseases over Chinese populations.

July 15: A team of Porton Down scientists led by Fildes begin outdoor testing of anthrax bacteria on the remote Scottish island of Gruinard. They set off anthrax-filled bombs and observe their impact on a group of sheep placed downwind. Within a few days, most of the sheep die.



AP/WIDEWORLD PHOTOS:  
MARTIN CLEAVER

September 26: Fildes' team has an anthrax bacteria bomb dropped from an airplane onto Gruinard. Although it lodges in a bog and does not infect any sheep, a similar test is more successfully repeated a month later on a beach in Wales.

November: Fildes arrives in Washington to meet with officials there. Recognizing U.S. superiority in mass production, he asks for American help in making biological weapons. Fildes' first request is for seven pounds of botulinum toxin (code named "Agent X"), which is a proteinaceous substance produced by the bacterium *Clostridium botulinum*. Later that month, [Ira Baldwin](#), now a professor and head of the bacteriology department at the

University of Wisconsin, receives a call from Colonel William Kabrich of the U.S. Army Chemical Warfare Service. Kabrich asks Baldwin to attend a meeting at the National Academy of Sciences in Washington. Once there, Baldwin and other scientists are sworn to secrecy and then asked whether they believe that the U.S. can produce mass quantities of biological agents. Baldwin says yes, and 10 days later Kabrich asks him to head up the program.

December 21: Baldwin arrives in Maryland and becomes scientific director and administrator of the U. S. Army's biological warfare research program. He soon begins recruiting colleagues from University of Wisconsin to join him.



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**1943**

February: Baldwin locates a site for his work at a little-used National Guard airfield in Frederick, Maryland, that becomes known as Camp Detrick. The Army officially takes it over in March and staff members begin arriving in April. The Army also acquires Horn Island, off the Mississippi coast, as a place to conduct outdoor biological tests.

May: Workers erect a two-story building dubbed "Black Maria" at Camp Detrick. The next month a group of scientists led by Harvard bacteriologist Alwin



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Pappenheimer begin work there on filling Fildes' request for seven pounds of *Clostridium botulinum*. Within two months they have succeeded. Later that year construction begins on two pilot plants for larger-scale production of biological agents.

July: Camp Detrick scientists begin outdoor biological



bomb testing, using yeast instead of pathogens for the initial trial runs.



August: The British conduct more anthrax bomb tests at Gruinard.

October 28: Testing of bombs containing botulinum toxin begins at Horn Island and continues for nine months. The tests lead the Army to conclude that such biological weapons are unlikely to be effective.

## 1944

March 8: Convinced that the Germans will use biological weapons if able to produce them and that the British must be able to retaliate in kind, Churchill places order for 500,000 "anthrax" bombs, i.e., bombs containing anthrax bacterial spores, with the Americans.

May: Camp Detrick produces a first batch of 5,000 anthrax bombs for the British, but it is clear that filling the whole order (plus another 500,000 bombs for American use) exceeds its capacities. The Americans decide to construct a new production facility near Vigo, Indiana, and begin safety testing there that summer.

## 1945

August: The Army closes the Horn Island site, declaring it "excess." The Vigo production plant, still in safety tests, has manufactured four tons of an anthrax bacterium simulant, but nothing that could actually be used as a biological weapon.

August: In Manchuria, Unit 731 is blown up ahead of the advancing Russian Army, destroying most but not all records of Ishii's activities.

September 2: Japan officially surrenders to the United States, after [atomic bombs](#) are dropped on Hiroshima and Nagasaki, ending World War II.





September 3: A committee is formed to oversee the demobilization of the Vigo plant. Later that month, the Camp Detrick administration begins slashing work schedules and Baldwin heads back to Wisconsin. Meanwhile, a Camp Detrick scientist named Murray Sanders arrives in Japan to pursue reports of a Japanese biological weapons program.

October 9: Sanders begins interrogating Tomosada Masuda, a colleague of Ishii's at the Ping Fan facility.

November 10: The mayor of Ishii's hometown announces his death; the funeral takes place a few days later.

December 3: A confidential U.S. intelligence report suggests Ishii is not, in fact, dead but has gone into hiding.

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[1763 - 1945](#) | **1946 - 2003****1946**

January 3: The U.S. War Department releases a report on the nation's wartime biological weapons program, keeping many key details obscure.

January 9: The U.S. demands that the Japanese government produce Ishii, who is in fact alive; he is handed over to American forces eight days later.



January 22: Another Camp Detrick operative, Lieutenant Colonel Arvo Thompson, begins interrogating Ishii, who lies repeatedly about his wartime activities. Thompson does not press him, but returns to America and writes up a report.

**1947**

April 15: A third investigator from Camp Detrick, Norbert Fell, arrives in Japan. [War crimes trials](#) are about to be held, and the Soviets have shown interest in Ishii. Fell and his colleagues therefore think Ishii may now be more cooperative.

May 6: General [Douglas MacArthur](#) sends a request by radio to the State-War-Navy Coordinating Committee in Washington, D.C. for documentary immunity for Shiro Ishii and his colleagues and urges them to grant it. He writes "information about vivisection useful."

May 8: Ishii tells Fell that he is willing to share what he knows, including details of his human experiments, in exchange for immunity from prosecution. Hopeful of gathering useful information, the Americans agree and even coach Ishii on how to avoid questioning by the Soviets. Although Ishii's information is eventually judged to be of little worth, the U.S. honors its immunity deal and no mention is made of biological weapons at the Japanese war crimes trials.

**1948**

October: Baldwin, who has remained an advisor to the U.S. military even after returning to University of Wisconsin, gives a



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report on American vulnerability to biological attack from enemy agents. He suggests the only way to properly assess the risk is to simulate such attacks through widespread [tests](#) across the U.S.

December: At Fildes' suggestion, the British begin three months of biological testing near the tropical island of Antigua.

**1949**

May: The U.S. Army Chemical Corps sets up a Special Operations Division at Camp Detrick to carry out the tests Baldwin has proposed.

August: The Special Operations Division sets up its first test at the Pentagon. Operatives spray harmless bacteria into the building's air conditioning system and observe as billions of these microbes spread throughout the Pentagon.

1950

April: [Secret testing](#) continues as Navy warships spray the cities of Norfolk, Hampton and Newport News with an allegedly harmless anthrax simulant.

September: Ships release three-mile long clouds of *Serratia marcescens* bacteria while sailing off San Francisco. Bacteria are detected as far as 23 miles inland, and Camp Detrick scientists estimate that nearly all of San Francisco's 800,000 residents have inhaled them.



COURTESY CHUCK DASEY

Work is completed on a massive sphere for testing biological agents at Camp Detrick; it is named the "Eight Ball."

1951

May 8: North Korea accuses the U.S. of dropping smallpox bombs over Pyongyang; American General Matthew Ridgway calls these accusations "deliberate lies." Despite the U.S. denial and the independent debunking of several of North Korea's biological weapons claims, they will be repeated over the course of the Korean War.

1952

March: Chinese foreign minister [Chou En-Lai](#) claims that the U.S. is using bacteriological bombs over China. The Chinese form the International Scientific Commission to investigate.



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Their report concludes that "The peoples of Korea and China have indeed been the objective of bacteriological weapons. These have been employed by units of the U.S.A. armed forces."

August 9: The U.S. begins large-scale field testing of bombs filled with *Brucella bacteria*, dropping them over a mock enemy city populated by 3,000 guinea pigs at the Dugway Proving Ground in Utah. Similar tests will be repeated over the next two months.

1953

In the St Jo Program, operatives stage mock anthrax attacks on St. Louis, Minneapolis, and Winnipeg, releasing simulant bacteria from



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aerosol generators placed on top of cars. The Air Force officially adopts a plan for use of *Brucella* bombs in warfare, and a plant for producing the bacteria is completed in Pine Bluff, Arkansas.

1955

January: Camp Detrick scientists begin studying the effects of biological agents on human volunteers.



COURTESY CHUCK DASEY

The recruits for "[Operation Whitecoat](#)," which will continue for the next 18 years and involve some 2,200 people, are Seventh-Day Adventists whose beliefs forbid the bearing of arms but who are willing to serve the military in non-combatant, often medical roles.

July 12: Outdoor experiments subject 30 Whitecoat recruits to Q fever bacteria aerosol at Dugway Proving Grounds; those who get sick are given antibiotics, and all subsequently recover.

**1956**

February 3: Now a permanent institution, "Camp Detrick" is renamed "Fort Detrick."



FORT DETRICK PUBLIC AFFAIRS OFFICE AND THE DETRICK CENTER FOR TRAINING AND EDUCATION EXCELLENCE

March 15: The National Security Council abandons American policy forbidding a bioweapons first-strike; henceforth their use is at the President's discretion.

**1957**

December 2: As part of "Operation Large Area Concept," the Chemical Corps begins releasing aerosolized particles from airplanes to see just how wide an area they can impact. The first experiment involves a swath from South Dakota to Minnesota, and some of the particles eventually travel 1200 miles. Further tests cover areas from Ohio to Texas and Michigan to Kansas.

**1959**

Shiro Ishii dies, never having to answer for his war crimes. Other leading Japanese biological warfare scientists with responsibility for heinous crimes lead successful professional lives as industry leaders and academics.

**1961**

New Secretary of Defense [Robert McNamara](#) orders a review of the U.S. chemical and bioweapons program, leading to an expansion in field testing and more research on the feasibility of distributing biological agents through spraying from airplanes rather than dropping



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bombs.

**1965**

May: Members of Fort Detrick's Special Operations Division simulate bioweapons attacks on Washington, D.C.'s bus terminal and National Airport.

**1966**

June: Fort Detrick Special Operations tests are conducted in the New York subway; bacteria-filled light bulbs are dropped onto the tracks from moving trains.



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**1968**

March 13: The Air Force mistakenly releases a chemical weapon, VX nerve agent, outside the Dugway Proving Ground, apparently resulting in the death of 3,000 sheep in nearby Skull Valley.

Summer: The culmination of four years of biological tests both at sea and on islands in the Pacific occurs at Eniwetok Atoll, a former nuclear bomb test site. Tests on pathogen distribution reveal that the bacteria sprayed from one airplane can eventually cover more than 900 square miles.

**1969**

Spring: Newly inaugurated President [Richard Nixon](#) asks National Security Advisor Henry Kissinger to lead a review of the U.S. biological and chemical warfare programs. A number of papers submitted for the review process, such as that written by Kissinger's Harvard colleague [Matthew Meselson](#), argue against keeping an offensive biological weapons program.



NATIONAL ARCHIVES AND RECORDS ADMINISTRATION

November 10: The Interdepartmental

Political-Military Group, which on Kissinger's orders had undertaken an assessment of the U.S. biological and chemical warfare programs, issues its Top Secret report. In effect, it does not provide any answers, but does clarify various options and their consequences for the president.

November 25: Nixon announces that "the United States will renounce the use of any form of deadly biological weapons that either kill or incapacitate," adding, "Mankind already carries in its own hands too many of the seeds of its own destruction." Although Nixon's initial statement does not mention toxins such as botulinum toxin, on February 14, 1970, he makes clear that those weapons will also be abandoned. As a result of Nixon's Executive Order, the U.S. offensive [bioweapons program is terminated](#); further biological research by the military is limited to defending and immunizing against such weapons.



NATIONAL ARCHIVES AND RECORDS ADMINISTRATION

**1971**

Paul Fildes dies.

**1972**

April 10: The Biological Weapons Convention, which bans all bioweapons, is completed and opened for signature. Seventy-nine nations immediately sign the treaty.

**1974**

December: The U.S. Senate ratifies the Biological Weapons Convention.

**1975**

March 26: The Biological Weapons Convention officially goes into force. That same year the U.S. Senate also finally ratifies the 1925 Geneva Protocol.

Senate hearings reveal that the CIA has kept two cans of shellfish toxin; they are handed over to a former Fort Detrick microbiologist who in turn distributes them to a number of private scientists for research purposes.

**1979**

April: Nearly 70 people die of anthrax in the Soviet city of Sverdlovsk. The government of the U.S. S.R. claims the deaths



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resulted from people consuming infected meat. The U.S. suspects that anthrax bacterial spores were accidentally released from a Soviet military biological facility (Compound 19), and that the victims contracted inhalation anthrax. If the U.S. view was correct, the Soviet Union was violating the Biological Weapons Convention, which it had ratified in 1975.

**1980-1988**

The Iran-Iraq War features the widespread use of chemical weapons; first by Iraq, then by both sides.

**1988**

March - August: As part of a wide-ranging military campaign against the Kurds, the Iraqi government uses chemical weapons



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against Kurdish cities, such as Birjinni and Halabja. It has been estimated that more than 5,000 Kurds are killed by nerve and mustard agents dropped on them by Iraqi aircraft.

**1989**

A Soviet defector from Biopreparat, Vladimir Pasechnik, reveals the existence of a continuing offensive biological weapons program in the U.S.S.R.

**1991**

April: The U.N. Security Council orders Iraq to stop all biological, chemical, and nuclear weapons programs, and inspectors are authorized to ensure compliance.

**1992**

April: Russian President Boris Yeltsin admits the 1979 outbreak was caused by the Soviet military, although he gives few details. He also admits that the Soviet Union had operated an offensive biological warfare program in violation of the Biological Weapons Convention. That same year Meselson leads a team of U.S. scientists on a fact-finding mission to the site of the 1979 Sverdlovsk anthrax outbreak.



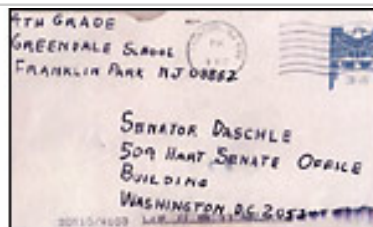
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(DVIC)

**1999**

August: Ira Baldwin dies just a few weeks shy of his 104th birthday.

**2001**

Fall: Envelopes filled with anthrax bacteria spores are sent to various media and political figures in the U.S., including then Senate Majority Leader Tom Daschle and NBC News anchor Tom Brokaw. Twenty-two people from Florida to Connecticut, are infected including several postal workers; five of them die. As of 2006, the origin of the envelopes is yet to be identified.



U.S. DEPARTMENT OF STATE

**2003**

March: The United States leads an invasion of Iraq. President George W. Bush and Vice President Richard Cheney insist that Saddam Hussein's government possesses weapons of mass destruction, but no such weapons have been found.



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