

Unit 731 of Japan: Reconstructing History —Science, Atrocities and the Postwar Truth

Jyh-Woei Lin

Department of Electrical Engineering, Southern Taiwan University of Science and Technology,
Tainan, 710301, Taiwan

*Corresponding Author

DOI: <https://doi.org/10.51583/IJLTEMAS.2026.150900076>

Received: 26 September 2026; Accepted: 01 October 2026; Published: 14 October 2026

ABSTRACT

Unit 731 remains one of the most controversial and disturbing examples of the misuse of modern science for military purposes during the twentieth century. Established by the Imperial Japanese Army during the Second Sino-Japanese War and World War II, Unit 731 operated under the official title of the Kwantung Army's Epidemic Prevention and Water Purification Department while secretly conducting biological warfare research and human experimentation in occupied Manchuria. This study reconstructs the history of Unit 731 by examining its origins, organizational structure, scientific activities, ethical violations, and postwar legacy. Through historical analysis of archival materials, survivor testimonies, war crimes records and previous academic studies, this research explores how medical knowledge was transformed into instruments of violence and how political circumstances shaped postwar accountability. Particular attention is given to the role of the United States' decision to obtain biological warfare data from former Unit 731 personnel rather than prosecute all involved individuals, contributing to decades of controversy regarding justice and historical memory. The study argues that Unit 731 represents not only a military atrocity but also a profound crisis in scientific ethics, demonstrating the dangers of separating technological advancement from human rights, morality and legal responsibility.

Keywords: Unit 731; Imperial Japanese Army; Biological Warfare; Human Experimentation; War Crimes Records

INTRODUCTION

The history of Unit 731 represents one of the darkest chapters in the relationship between science, warfare, and human morality (Johnson, 2022; Cranmer, 2023; Kimura, 2023; Matson, 2024; Resnik, 2024; Hertrich and Kempka, 2026; Park and Kim, 2026). During the twentieth century, advances in medicine, biology, and technology created unprecedented possibilities for improving human life. However, these same scientific developments were also exploited by authoritarian states to develop weapons, conduct experiments, and justify violence against individuals considered politically, ethnically, or militarily expendable. Among the most extreme examples of this phenomenon was Unit 731 of the Imperial

Japanese Army (Tan, 2025; Fukumoto, 2026; Orbach, 2026), a secret military research organization responsible for large-scale biological warfare experiments and systematic human experimentation during Japan's invasion of China (Dong, 2024; Patel, 2024; Jing, 2026; Yoshida et al., 2026). Contemporary scholarship identifies Unit 731 as a central case in the global history of medical atrocities, comparable in ethical significance to the Nazi medical experiments conducted in Europe. Operating primarily between 1936 and 1945 in Pingfang, near Harbin in Japanese-occupied Manchuria, Unit 731 was commanded by Lieutenant General Ishii Shirō, a military physician who promoted biological warfare as a strategic weapon. Although publicly described as an epidemic prevention and water purification unit, its actual mission involved developing biological weapons, testing infectious diseases, and conducting experiments on prisoners of war and civilians. The victims, referred to by Japanese military personnel as *maruta*, included Chinese civilians, Korean prisoners, Soviet detainees and others who were subjected to lethal experiments without consent (Johnson, 2022). The crimes committed by Unit 731 challenge traditional understandings of scientific progress and medical responsibility. Unlike ordinary battlefield violence, the atrocities of Unit 731 were conducted within laboratories, hospitals, and research facilities by trained medical professionals (Han, 2026). Physicians and scientists who had sworn ethical commitments to preserve life instead became participants in systematic torture and murder. The case therefore raises fundamental questions concerning the relationship between scientific knowledge and moral responsibility: Can research be considered legitimate if it produces useful information through unethical means? What obligations do scientists have when working under military or political authority? How should societies remember and judge scientific crimes committed in wartime? The postwar history of Unit 731 is equally complex. Unlike many Nazi doctors prosecuted during the Nuremberg Doctors' Trial (Craig and Desai, 2015), numerous members of Unit 731 avoided extensive punishment. Some received immunity from American authorities in exchange for providing information about biological warfare research (Grunden and Tuovinen, 2025). This decision remains controversial because it placed geopolitical interests during the emerging Cold War above comprehensive accountability for wartime medical crimes. Scholars have examined this issue as a significant example of how international politics influenced the pursuit of justice after World War II. For decades, discussion of Unit 731 was shaped by political tensions, incomplete documentation, and competing national memories. In China, Unit 731 became a symbol of Japanese wartime aggression and the suffering of civilians under occupation (Zhang and Fong, 2026). In Japan, public discussion developed gradually, involving historians, journalists, activists, and medical professionals who investigated previously suppressed information (Ando, 2025). Recent scholarship emphasizes that Unit 731 research has expanded from simple documentation of atrocities toward broader interdisciplinary studies involving medical history, ethics, international law, collective memory, and the history of science. This study aims to reconstruct the history of Unit 731 through three major perspectives. First, it examines the historical and political conditions that allowed the establishment of the organization. Second, it analyzes the scientific practices and ethical failures that transformed medical research into mechanisms of destruction. Third, it evaluates the postwar struggle over truth, justice, and historical memory. By integrating historical evidence and ethical analysis, this study argues that Unit 731 should be understood not merely as a wartime crime committed by a military institution but as a warning about the consequences of scientific knowledge separated from humanity and moral accountability.

Historical Research on Unit 731

Academic research on Unit 731 developed gradually after World War II. Early investigations were limited because many official documents were destroyed when Japan surrendered in 1945. In addition, former members of the organization often avoided public discussion of their activities (Yang, 2026). One of the earliest major sources was the Soviet Khabarovsk War Crimes Trial of 1949, which examined Japanese biological warfare activities and included testimonies from former Unit 731 personnel (Serscikov, 2026). These records provided important evidence regarding the structure of Japan's biological warfare program and the experiments conducted under Ishii Shirō's leadership. During the Cold War period, research on Unit 731 remained politically sensitive (AlHadhrami et al., 2026). The United States' decision to grant immunity to some members of Unit 731 in exchange for biological warfare information contributed to disputes over whether justice had been sacrificed for strategic interests. Historians have examined this decision as part of the wider transformation of wartime enemies into Cold War partners. The controversy demonstrates how international politics influenced the legal treatment of scientific war crimes (Cranmer, 2023). From the 1980s onward, research expanded significantly. Japanese scholars, journalists, and civil organizations investigated archival materials, interviewed survivors and former personnel, and challenged earlier attempts to minimize or deny Unit 731's activities. International scholars also placed Unit 731 within comparative studies of twentieth-century medical atrocities, examining similarities and differences between Japanese biological warfare experiments and Nazi medical crimes (Brody et al., 2014; Wald and Ehrenfeld, 2025; Renshaw and Dziuban, 2025). A major theme in existing literature concerns the collapse of medical ethics under militarism. Before and during World War II, international standards regarding human experimentation were less developed than modern bioethical principles. However, the scale, organization, and intentional nature of Unit 731's experiments represented a severe violation of fundamental medical responsibilities. Researchers emphasize that the issue was not simply the absence of regulations but the deliberate abandonment of human dignity in pursuit of military objectives. The history of Unit 731 has contributed to broader debates about research ethics, informed consent, and the limits of scientific inquiry. Similar to the lessons drawn from the Nuremberg Doctors' Trial (Ernst, 2026), Unit 731 demonstrates that scientific capability does not automatically correspond to moral legitimacy. Scientific research requires ethical boundaries because knowledge gained through exploitation and suffering raises profound questions about human rights and justice.

REVIEW METHODOLOGY

This study reconstructs the history of Unit 731 by examining its origins, operational structure, scientific activities, wartime crimes, postwar accountability, and continuing significance for contemporary bioethics and global security. The findings demonstrate that Unit 731 was not an isolated case of individual misconduct but a state-supported military institution that emerged from the intersection of Japanese imperial expansion, militarized science, and colonial domination. Established in 1936 under the Kwantung Army, Unit 731 represented Japan's systematic attempt to transform biological research into a strategic military capability. Although publicly presented as an epidemic prevention and sanitation organization, its primary objective was the development and application of biological weapons. A major finding of this study is that Unit 731 illustrates the transformation of scientific knowledge into a tool of

destruction when ethical limitations are removed. The organization employed highly trained physicians, microbiologists, and researchers whose expertise was redirected toward human experimentation, pathogen development, and biological warfare. Research involving plague, cholera, anthrax, and other infectious diseases demonstrated that scientific advancement was subordinated to military objectives. Human beings, particularly prisoners and occupied populations, were dehumanized and treated as experimental materials rather than individuals with inherent dignity and rights. The study further finds that the crimes of Unit 731 involved both laboratory experimentation and field operations. Experiments on living prisoners, including vivisection, infectious disease exposure, and extreme environmental testing, represented profound violations of medical ethics. Beyond the walls of the Pingfang complex, biological warfare operations caused suffering among civilian populations in occupied China. The destruction of evidence at the end of World War II complicated historical investigation, but survivor testimonies, archival research, military records, and later historical scholarship have provided substantial evidence confirming the scale and nature of these activities. Another important finding concerns the complexity of postwar justice. Unlike the Nazi medical crimes addressed through the Nuremberg Doctors' Trial, many leading Unit 731 personnel avoided prosecution. The exchange of biological warfare information for immunity by American authorities reflected Cold War strategic priorities but created lasting controversy regarding justice, accountability, and the rights of victims. This decision contributed to decades of silence and delayed international recognition of Unit 731's crimes. Finally, this study finds that the legacy of Unit 731 remains highly relevant to modern discussions of scientific responsibility, medical ethics, and biological security. The case demonstrates that scientific capability without moral accountability can produce catastrophic consequences. The historical lessons of Unit 731 reinforce the necessity of informed consent, institutional oversight, transparency, and international cooperation in contemporary biotechnology and medical research. Remembering Unit 731 is therefore not only an act of historical reconstruction but also a warning about the ethical responsibilities accompanying scientific progress.

Historical Background and Establishment of Unit 731

Japanese Military Expansion and the Development of Biological Warfare

The emergence of Unit 731 was closely connected to Japan's imperial expansion during the early twentieth century. Following the Meiji Restoration, Japan rapidly modernized its military and political institutions, seeking recognition as a major global power. By the 1930s, Japanese militarism had intensified, leading to the invasion of Manchuria in 1931 and the establishment of the Japanese-controlled state of Manchukuo in 1932. This occupied territory became a strategic base for military experimentation because of its geographic distance from mainland Japan and its colonial administrative structure. Within this context, Japanese military leaders increasingly viewed biological warfare as a potential strategic weapon. Compared with conventional weapons, biological agents offered the possibility of causing mass casualties through infectious diseases while requiring fewer material resources. Japanese military physicians argued that research into bacteria, epidemics, and disease prevention could provide significant advantages in future conflicts. Lieutenant General Ishii Shirō played a central role in promoting biological warfare research. A physician and military officer, Ishii studied international developments in bacteriology and became convinced that biological weapons represented the future of warfare. After

returning from visits to Western countries, including observations of international biological research programs, Ishii persuaded Japanese military authorities to support large-scale biological warfare projects. In 1936, the Kwantung Army officially established the Epidemic Prevention and Water Purification Department, commonly known as Unit 731. Although its public mission involved protecting soldiers from infectious diseases and improving sanitation, its hidden purpose was the development and testing of biological weapons. The organization received substantial military funding and operated as a highly secretive institution directly connected to Japan's military command structure (Gałwa-Widera, 2025).

Organization and Structure of Unit 731

Unit 731 was not merely a small experimental laboratory but a large military research complex containing thousands of personnel, including physicians, microbiologists, engineers, military officers, and support staff. The main headquarters was constructed at Pingfang, approximately twenty kilometers south of Harbin. The facility contained laboratories, prisons, animal-testing areas, production facilities, and experimental chambers. The organization was divided into specialized sections responsible for different aspects of biological warfare research. Some departments studied infectious diseases, including plague, cholera, typhoid, and anthrax. Others focused on the mass production of pathogens, methods of dissemination, and the effects of biological agents on human populations. Unit 731 also operated networks beyond the Pingfang headquarters. Branch facilities were established throughout occupied China, allowing Japanese forces to conduct additional experiments and field tests. These activities demonstrated that Unit 731 was part of a broader biological warfare program rather than an isolated research institution. The scale of the organization reflected the Japanese military's commitment to biological warfare. Thousands of personnel were involved directly or indirectly, and resources were allocated to develop weapons that could be deployed against enemy populations. The pursuit of military advantage ultimately transformed medical research into a system of organized human exploitation (Grunden and Tuovinen, 2025).

Scientific Research and Human Experimentation

The Misuse of Medical Science

One of the most significant aspects of Unit 731 was the involvement of trained medical professionals in systematic human experimentation. Physicians and scientists who possessed specialized knowledge of anatomy, microbiology, and pathology used these skills to investigate methods of causing and spreading disease. Rather than applying medicine to preserve life, they applied scientific methods to increase the effectiveness of military destruction. The experiments conducted by Unit 731 were characterized by several fundamental ethical violations. Victims were selected without consent, intentionally infected with deadly pathogens, subjected to invasive procedures, and frequently killed after experiments were completed. The research environment eliminated any recognition of individual humanity, reducing prisoners to experimental objects. The term *maruta*, meaning "logs," reflected this dehumanization. According to historical accounts, Japanese personnel used this term to conceal the identity of victims and psychologically distance themselves from the consequences of their actions. The language itself represented a moral transformation in which human beings were categorized as materials rather than

persons (Hosseini, 2025).

Biological Warfare Experiments

A central objective of Unit 731 was the development of biological weapons. Researchers investigated methods for cultivating, preserving, and distributing infectious agents. Diseases such as plague, cholera, and anthrax were studied because of their potential military applications. Plague research was particularly significant. Unit 731 developed techniques involving infected fleas, which were considered effective carriers for spreading disease. Historical evidence indicates that Japanese forces conducted biological warfare experiments in China, including attempts to release pathogens into civilian areas. These operations caused outbreaks of disease and resulted in civilian deaths. Other experiments examined the effects of extreme environmental conditions, infectious diseases, and physical trauma. Prisoners were exposed to freezing temperatures to study frostbite and methods of treating cold injuries. These experiments were conducted without anesthesia or medical justification intended to protect victims. The purpose was military knowledge rather than patient care ((AlHadhrami et al., 2026).

Vivisection and Anatomical Experiments

Among the most horrifying activities associated with Unit 731 were vivisections performed on living prisoners. These procedures were conducted to examine the effects of diseases and injuries on human organs. Victims were often dissected while still alive because researchers believed that this would provide more accurate medical observations. Such practices represented a complete rejection of medical ethics. Modern medicine depends on the principle that patients are individuals deserving protection, dignity, and care. Unit 731 reversed this principle by treating human beings as disposable research materials. The participation of medical professionals in these acts remains one of the most troubling aspects of Unit 731's history. The case demonstrates that scientific expertise alone cannot guarantee ethical behavior. Without moral principles and institutional safeguards, scientific knowledge can become a mechanism for systematic harm (Zhang and Fong, 2026).

The Scope of Victims and Human Cost

The exact number of victims associated with Unit 731 remains debated among historians because of destroyed records and wartime secrecy. However, scholars generally agree that thousands of people were directly subjected to experiments within Unit 731 facilities, while many more civilians died as a result of biological warfare operations conducted by Japan. The victims included Chinese civilians, prisoners of war, Korean residents, Soviet nationals, and individuals from other occupied populations. Many were selected because they lacked political protection under Japanese occupation. Their identities were often erased from official records, creating additional suffering for survivors and descendants seeking recognition. The human cost of Unit 731 extended beyond physical deaths. Survivors faced trauma, social stigma, and difficulties receiving acknowledgment of their experiences. Communities affected by biological warfare outbreaks continued to experience the consequences long after the end of World War II. Understanding the victims' experiences is essential because historical analysis should not focus only on institutions and perpetrators. The central reality of Unit 731 is the suffering of thousands of individuals

whose lives were sacrificed in the pursuit of military and scientific objectives (Grunden and Tuovinen, 2025).

The End of Unit 731 and the Destruction of Evidence

The collapse of the Japanese Empire in 1945 brought an end to Unit 731's operations, but the conclusion of the organization did not immediately produce justice for its victims. As Soviet forces advanced into Manchuria in August 1945, Japanese military authorities ordered the destruction of evidence connected to biological warfare research. Buildings were demolished, documents were burned, and remaining prisoners were killed in attempts to conceal the activities of the unit. Lieutenant General Ishii Shirō and other senior officers instructed personnel to destroy the facilities and maintain secrecy regarding their research. The destruction of records significantly complicated postwar investigations because much of the direct documentation concerning experiments, biological weapons production, and military operations disappeared. However, surviving testimonies from former personnel, recovered documents, and later historical investigations provided substantial evidence regarding the organization's activities. The destruction of Unit 731 was also accompanied by efforts to eliminate witnesses. Many prisoners who remained alive at the end of the war were executed to prevent disclosure of the experiments. This final act demonstrated that the leadership of Unit 731 recognized the criminal nature of its activities and attempted to avoid accountability. Despite these efforts, the existence of Unit 731 gradually became known through several channels. The Soviet Union captured some Japanese military personnel involved in biological warfare and presented evidence during the Khabarovsk War Crimes Trial in 1949. Former Unit 731 members also provided information during postwar investigations, although many details remained hidden for decades due to political circumstances. The destruction of evidence created lasting challenges for historians. Unlike conventional military operations with extensive records, Unit 731's history required reconstruction through fragmented evidence. This process demonstrates the importance of historical methodology in studying crimes committed under authoritarian systems, where perpetrators often attempt to erase traces of their actions (Seaton, 2025).

Postwar Justice and the Question of Accountability

The Khabarovsk Trial and International Recognition

The Khabarovsk War Crimes Trial, conducted by the Soviet Union in December 1949, represented one of the earliest formal attempts to address Japanese biological warfare activities. The trial focused on captured Japanese military personnel involved in Unit 731 and related biological warfare programs. During the proceedings, defendants provided testimony concerning the structure of Japan's biological warfare system, the experiments conducted on prisoners, and the development of disease-based weapons. The trial revealed important information about Unit 731, including the involvement of military physicians and the connection between scientific research and military planning. However, the Khabarovsk Trial received limited attention in many Western countries during the early Cold War. Some governments questioned Soviet motivations, viewing the trial through the lens of geopolitical competition. As a result, international awareness of Unit 731 remained limited for several decades. Later historical research confirmed many elements of the evidence presented during the trial. Although debates continue regarding

specific details, the broader conclusion that Unit 731 conducted systematic human experimentation and biological warfare research has become widely accepted among historians (Seaton, 2025).

The United States and the Immunity Controversy

One of the most controversial aspects of Unit 731's postwar history was the decision by American authorities not to prosecute many leading figures involved in the organization. During the early occupation of Japan, the United States investigated Japanese biological warfare programs and recognized the potential military value of the information collected by Unit 731. American intelligence officials concluded that data obtained from Japanese biological warfare experiments could benefit the United States' own defense programs, particularly as tensions with the Soviet Union increased. As a result, Ishii Shirō and several other Unit 731 members reportedly provided information in exchange for immunity from prosecution. This decision generated significant ethical and historical controversy. Critics argue that the arrangement prioritized military intelligence over justice for victims and weakened the principle that crimes involving human experimentation require accountability. Unlike the Nazi medical professionals prosecuted at the Nuremberg Doctors' Trial, many Japanese medical researchers associated with Unit 731 avoided public trials and continued their professional careers after the war. The immunity agreement also affected historical memory. Because many perpetrators were not publicly examined in court, victims and their families struggled for recognition. The absence of a major international trial comparable to Nuremberg contributed to decades of silence and disagreement regarding the full extent of Unit 731's crimes. The case illustrates a broader dilemma in transitional justice: whether governments should exchange accountability for strategic information. The Unit 731 controversy demonstrates the long-term consequences when political interests influence responses to human rights violations (Grunden and Tuovinen, 2025).

Historical Memory, Denial, and the Search for Truth

The Struggle over Historical Interpretation

The memory of Unit 731 has remained politically sensitive because it involves questions of national responsibility, wartime identity, and historical interpretation. In China, Unit 731 is remembered as a symbol of Japanese aggression and the suffering experienced during the occupation period. Museums, memorial sites, and educational programs have preserved testimonies of victims and emphasized the importance of remembering wartime atrocities. In Japan, public discussion developed more gradually. For many years after World War II, information about Unit 731 received limited attention in mainstream society. However, from the late twentieth century onward, historians, journalists, and civil organizations increasingly investigated the subject. Court cases brought by Chinese victims and survivors also contributed to public awareness. The debate surrounding Unit 731 reflects broader conflicts over how nations remember difficult historical events. Some groups have attempted to minimize or deny aspects of Japanese wartime crimes, while others argue that acknowledgment of historical responsibility is necessary for reconciliation and peace.

Academic historians generally emphasize the importance of evidence-based research rather than political

interpretation. The goal of historical scholarship is not collective blame against contemporary populations but an accurate understanding of institutions, decisions, and individuals responsible for past actions (Zhang and Fong, 2026).

Museums, Testimonies, and Public Education

Memorial institutions have played an important role in preserving knowledge about Unit 731. The Unit 731 Museum near Harbin contains historical materials, photographs, archaeological evidence, and survivor accounts documenting the organization's activities. Such institutions serve as places of remembrance and education. Survivor testimonies are particularly valuable because official records were destroyed. Personal accounts reveal not only physical suffering but also the psychological experiences of individuals subjected to experimentation. These narratives challenge attempts to reduce history to statistics by emphasizing the human consequences of scientific and military abuse. However, historians must also evaluate testimonies carefully, comparing personal memories with documentary evidence. The combination of oral history and archival research provides a more complete reconstruction of the past. Public education about Unit 731 also contributes to discussions about contemporary bioethics. The case demonstrates why medical professionals require strong ethical standards and why scientific institutions must maintain independence from political and military pressures (Zhang and Fong, 2026).

Unit 731 and the Ethics of Science

The history of Unit 731 provides a powerful example of how scientific knowledge can become dangerous when separated from ethical responsibility. The researchers involved were not lacking in technical ability; many possessed advanced medical training and scientific expertise. The tragedy was that their knowledge was directed toward destruction rather than healing. Modern research ethics developed partly in response to twentieth-century medical atrocities. The Nuremberg Code of 1947 established principles emphasizing voluntary consent and protection of research participants. Later frameworks, including international bioethical guidelines, reinforced the idea that scientific progress cannot justify violations of human dignity.

Unit 731 demonstrates several essential ethical lessons. First, scientific researchers remain morally responsible for how their work is applied. Following orders or serving national objectives cannot eliminate individual responsibility. Second, institutions must create mechanisms preventing abuse of scientific authority. Third, societies must preserve historical memory to ensure that similar violations are not repeated. The case also raises questions about the relationship between military research and civilian science. While defense-related scientific research can contribute to national security, history shows that secrecy and lack of oversight can create conditions where ethical boundaries are abandoned. Transparency, accountability, and international cooperation remain essential safeguards (Lederman et al., 2025).

DISCUSSION

Unit 731 as a Case Study of Scientific Misconduct and Moral Collapse

The history of Unit 731 demonstrates that scientific advancement does not automatically produce ethical

progress. During the twentieth century, modern science achieved remarkable developments in medicine, engineering, and biological research. However, Unit 731 reveals that scientific expertise can also be transformed into an instrument of oppression when combined with militarism, authoritarian ideology, and institutional secrecy. The central tragedy of Unit 731 was not the absence of scientific ability but the deliberate misuse of scientific knowledge. Physicians and researchers involved in the organization possessed specialized training in microbiology, pathology, surgery, and epidemiology. Their expertise could have contributed to improving human health, yet it was redirected toward developing biological weapons and conducting lethal experiments. This contradiction challenges the assumption that scientific professionalism naturally guarantees ethical behavior. The organization also illustrates how institutions can normalize immoral practices. Unit 731 was not created by a single individual acting alone but developed within a military system that rewarded obedience, secrecy, and technological achievement. Researchers operated within a structure where victims were dehumanized and where military objectives were considered more important than human life. The gradual acceptance of unethical practices demonstrates how institutional environments can weaken individual moral judgment. This pattern has relevance beyond wartime history. Contemporary scientific research involves increasingly powerful technologies, including biotechnology, artificial intelligence, genetic engineering, and advanced medical experimentation. The history of Unit 731 reminds modern societies that ethical oversight must develop alongside scientific capability. Without effective safeguards, scientific innovation can create new forms of harm.

Comparison with Nazi Medical Experiments

Unit 731 is frequently compared with Nazi medical experiments conducted during World War II because both cases involved systematic human experimentation by trained medical professionals. The comparison highlights similarities in the collapse of medical ethics under totalitarian governments while also revealing important differences in historical context. The Nazi Doctors' Trial at Nuremberg resulted in international recognition of the need for research ethics and contributed to the creation of the Nuremberg Code, which established principles regarding informed consent and voluntary participation. By contrast, most leading members of Unit 731 avoided comparable international prosecution. This difference has influenced how the two cases are remembered globally. Both cases demonstrate the danger of ideological systems that classify certain populations as inferior or expendable. Nazi racial ideology justified experiments on prisoners, while Japanese imperial ideology contributed to the treatment of occupied populations as subjects without rights. In both situations, medical professionals abandoned their fundamental obligation to protect human life. However, Unit 731 had distinctive characteristics. Its primary focus was biological warfare research rather than the broad range of medical experiments conducted in Nazi concentration camps. The organization operated within a colonial military framework, targeting populations under Japanese occupation. Furthermore, the postwar political environment, particularly the early Cold War rivalry between the United States and the Soviet Union, strongly influenced the level of accountability. The comparison between Unit 731 and Nazi medical crimes emphasizes a universal lesson: ethical principles in science must apply regardless of nationality, political system, or military objective. Human dignity cannot depend on wartime circumstances or government priorities.

The Politics of Justice and Historical Accountability

The postwar treatment of Unit 731 raises important questions about the relationship between justice and political strategy. The decision to exchange immunity for biological warfare information demonstrates the tension between immediate national security interests and long-term historical accountability. From a strategic perspective, American officials viewed the scientific data possessed by Unit 731 researchers as valuable during the early Cold War. However, from an ethical and legal perspective, allowing individuals responsible for human experimentation to avoid prosecution created a perception of unequal justice. Victims and their descendants argued that scientific information obtained through torture and murder should not have been treated as legitimate research. This controversy illustrates the challenges faced by societies after mass atrocities. Governments must decide whether to prioritize punishment, reconciliation, intelligence gathering, or political stability. Similar dilemmas have appeared in many post-conflict situations throughout modern history.

The Unit 731 case demonstrates that incomplete accountability can influence historical memory for generations. Because many perpetrators were not publicly tried, survivors often struggled to gain recognition. The absence of comprehensive legal proceedings allowed uncertainty and denial to persist longer than would have occurred with a full international investigation. Simultaneously, historical research has gradually restored many forgotten aspects of Unit 731's activities. The work of historians, journalists, survivors, and human rights organizations has contributed to a more complete understanding of the events. Although legal justice cannot fully repair the suffering of victims, historical truth remains an essential component of moral responsibility.

Contemporary Significance of the Unit 731 Legacy

Lessons for Modern Medical Ethics

The legacy of Unit 731 continues to influence contemporary discussions about medical ethics. Modern principles of human-subject research emphasize informed consent, risk assessment, transparency and respect for individual autonomy (Sharma and David, 2026). These principles exist because history demonstrated the devastating consequences of unethical experimentation. Unit 731 shows that ethical failures often occur not because researchers lack knowledge but because institutions fail to establish meaningful restrictions. Scientific communities must therefore maintain independent review systems, professional accountability, and ethical education. Medical researchers today face new challenges involving genetic modification, artificial intelligence-assisted diagnosis, human experimentation, and biological security. While these technologies offer significant benefits, they also create possibilities for misuse. The historical experience of Unit 731 provides a warning that technological capability must always be accompanied by ethical responsibility. The case also reinforces the importance of international cooperation. Biological research can have consequences beyond national borders, particularly when related to infectious diseases and biological weapons. International agreements and monitoring systems are necessary to prevent the misuse of scientific discoveries.

Biological Warfare and Global Security

Unit 731 remains relevant to modern discussions of biological weapons and global security. The COVID-19 pandemic and advances in biotechnology have renewed international attention toward biological risks (Gao et al., 2025). Although naturally occurring diseases and intentional biological attacks are fundamentally different issues, both demonstrate the importance of preparedness, transparency, and international collaboration. The history of Unit 731 illustrates why biological warfare is uniquely dangerous. Unlike conventional weapons, biological agents can spread unpredictably and affect civilian populations far beyond intended targets. The development of such weapons violates humanitarian principles because they transform disease, which should be treated as a medical concern, into a mechanism of destruction. International treaties, including the Biological Weapons Convention, reflect lessons learned from twentieth-century biological warfare programs. However, enforcement remains challenging because advances in biotechnology can create new security concerns. Historical awareness of Unit 731 contributes to ongoing debates about how societies should regulate scientific research while supporting legitimate medical progress.

Assessing the Possibility of Emerging Militarism in Contemporary Japan amid China–Taiwan Tensions

The intensifying strategic competition between China and Taiwan (Wu, 2025) has generated renewed debate over whether Japan may be experiencing the early stages of a return to militarism. This question is historically sensitive because Japan's twentieth-century imperial expansion and wartime aggression left profound memories of militarism throughout East Asia. However, evaluating contemporary Japan requires distinguishing between classical militarism, characterized by expansionist ideology, military domination of politics, and territorial ambitions, and a broader transformation toward a more proactive security posture. Current developments suggest that Japan is undergoing significant military normalization, but the evidence for a revival of pre-1945 militarism remains contested and requires careful analysis. Since the end of World War II, Japan's national identity has been strongly influenced by constitutional pacifism, particularly Article 9 of the Japanese Constitution, which renounces war as a sovereign right. For decades, Japan maintained a restrained defense policy based on the principles of exclusive defense orientation and reliance on the United States–Japan security alliance. Nevertheless, changing regional conditions, including China's expanding military capabilities, North Korea's missile programs, and uncertainty regarding long-term U.S. strategic commitments, have encouraged Japanese policymakers to reconsider defense limitations. Recent security reforms, increased defense spending, acquisition of longer-range strike capabilities, and expanded military cooperation with regional partners represent a substantial evolution of Japan's security policy. The Taiwan Strait crisis has become a particularly important factor influencing Japan's strategic thinking. Because Japan's southwestern islands are geographically close to Taiwan and because U.S. military forces stationed in Japan would likely be involved in any regional contingency, Japanese officials increasingly view cross-strait instability as directly connected to national security. Some Japanese political leaders have argued that a Taiwan conflict could constitute a situation threatening Japan's survival, potentially requiring closer security cooperation with allies. Such statements have intensified concerns in China that Japan is abandoning postwar restraint

and moving toward military intervention. However, the transformation of Japanese defense policy should not automatically be interpreted as a return to militarism. Contemporary Japan continues to operate within democratic institutions, civilian control of the military, constitutional constraints, and significant domestic opposition to excessive military expansion. Public memory of wartime history remains an important limitation on political attempts to normalize military power. Academic analyses have emphasized that while Japan's defense posture is becoming more active, formal abandonment of constitutional pacifism remains politically difficult. Nevertheless, concerns about "nascent militarism" cannot be entirely dismissed. The gradual expansion of military capabilities, reinterpretation of constitutional restrictions, increased arms exports, and stronger identification of regional security challenges with military solutions indicate a meaningful shift in Japan's strategic culture. The critical issue is whether these developments remain defensive adaptations within a rules-based international order or whether they evolve into nationalist mobilization and reduced democratic oversight. In conclusion, contemporary Japan does not currently exhibit the defining characteristics of historical militarism. Rather, it reflects a transition from postwar pacifism toward a more assertive defense identity shaped by regional threats. The future trajectory will depend on whether Japan maintains transparency, diplomatic engagement, and constitutional accountability while responding to the security challenges posed by China–Taiwan tensions. This is a perspective in this study.

Synthesise Specific Findings of This Study

This study reconstructs the history of Unit 731 through an integrated analysis of military expansion, scientific development, human experimentation, postwar accountability and contemporary ethical implications. The findings demonstrate that Unit 731 was not an isolated criminal organization but a state-supported military institution embedded within Japan's imperial expansion and biological warfare strategy. Established in 1936 under the Kwantung Army, Unit 731 represented the transformation of medical and scientific knowledge into instruments of military domination. Its existence reflected the broader relationship between militarism, colonial governance, and the pursuit of technological superiority during wartime. A central finding of this study is that Unit 731 revealed the potential for scientific expertise to be separated from ethical responsibility. The physicians, microbiologists, and researchers involved possessed advanced knowledge of medicine and biology, yet this knowledge was deliberately redirected toward the development of biological weapons and destructive experimentation. Human beings were systematically dehumanized through the use of terms such as "maruta," allowing victims to be treated as experimental materials rather than individuals with rights and dignity. The study therefore identifies Unit 731 as a significant historical example of scientific misconduct caused by the collapse of professional ethics under authoritarian and militarized conditions. The investigation also finds that the activities of Unit 731 extended far beyond laboratory experimentation. The organization operated as a comprehensive biological warfare program involving pathogen research, weapon development, field testing, and civilian targeting. Experiments involving plague, cholera, anthrax, frostbite, and vivisection demonstrated that the purpose of the institution was not humanitarian medical advancement but the creation of biological capabilities for military use. The large scale of its facilities, personnel, and operations confirms that Unit 731 was an essential component of Japan's wartime biological warfare system. Another significant finding concerns the challenges of postwar justice and historical

accountability. The destruction of evidence in 1945, the killing of witnesses, and the immunity agreements granted to some researchers created substantial obstacles to achieving justice. Although the Khabarovsk Trial and later historical investigations revealed important evidence, many perpetrators avoided international prosecution. This study finds that political priorities during the early Cold War significantly influenced the treatment of Unit 731 personnel, producing an unequal pattern of accountability compared with other wartime medical crimes, particularly the Nazi Doctors' Trial. Furthermore, this study highlights the continuing importance of historical memory. The preservation of survivor testimonies, museum collections, archival research, and academic investigations has been essential in reconstructing events that perpetrators attempted to conceal. The struggle over Unit 731's historical interpretation demonstrates that acknowledging past atrocities is necessary for protecting human rights, supporting victims, and preventing future abuses. Finally, this study concludes that the legacy of Unit 731 remains highly relevant to contemporary debates regarding medical ethics, biotechnology, and biological security. The case provides enduring lessons that scientific progress must be guided by ethical principles, institutional oversight, and respect for human dignity. Unit 731 illustrates that scientific advancement without moral responsibility can produce catastrophic consequences, reinforcing the necessity of global cooperation and ethical governance in modern scientific research.

CONCLUSION

This study has reconstructed the history of Unit 731 by examining its origins, organizational structure, scientific activities, wartime operations, postwar accountability, and continuing ethical significance. The findings demonstrate that Unit 731 was not an independent or accidental criminal enterprise but a state-supported military institution deeply connected to Japanese imperial expansion and the development of biological warfare during the twentieth century. Established under the Kwantung Army in 1936, Unit 731 represented the transformation of scientific and medical knowledge into instruments of military power. Its creation reflected a broader pattern in which colonial domination, militaristic ideology, and technological ambition combined to produce systematic violations of human rights. A major conclusion of this study is that Unit 731 illustrates the dangers of separating scientific capability from ethical responsibility. The physicians, microbiologists, and researchers involved in the organization possessed advanced knowledge of medicine and biological sciences, yet their expertise was redirected toward destructive objectives. Instead of protecting human life, scientific methods were used to develop biological weapons, conduct lethal experiments, and maximize military effectiveness. The systematic dehumanization of victims, including the use of the term "maruta," reveals how institutional ideology can undermine fundamental principles of medical ethics. Unit 731 therefore represents one of the most extreme examples in modern history of scientific knowledge being corrupted by authoritarian power. This study also concludes that Unit 731 functioned as a comprehensive biological warfare program rather than merely a research facility. Its activities included pathogen cultivation, weapon development, field testing, and experiments involving diseases such as plague, cholera, anthrax, and typhoid. The scale of its facilities, personnel, and military support confirms that the organization was an important component of Japan's wartime strategy. The suffering caused by these activities extended beyond laboratory victims to wider civilian populations affected by biological warfare operations. The postwar history of Unit 731 further demonstrates the complexity of achieving justice after large-scale atrocities. The destruction of

evidence, elimination of witnesses, and immunity agreements granted to some researchers significantly limited accountability. Although the Khabarovsk Trial and later historical investigations exposed important information, many individuals associated with Unit 731 avoided prosecution. This uneven process highlights the tension between political interests and moral responsibility in the aftermath of war. Finally, the legacy of Unit 731 remains highly relevant to contemporary discussions of bioethics, scientific governance, and biological security. The case provides a lasting warning that scientific progress must always be accompanied by ethical oversight, transparency, and respect for human dignity. The history of Unit 731 demonstrates that technological advancement without moral constraints can result in catastrophic consequences. Remembering this history is therefore essential not only for honoring victims but also for ensuring that future scientific achievements serve humanity rather than become instruments of destruction.

ACKNOWLEDGMENTS

The author is grateful to Southern Taiwan University of Science and Technology.

Data availability statement: Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.

Conflicts of interest: The author declares that there are no conflicts of interest.

Author Contributions: The author contributed to the conceptualization, writing, review and editing of this manuscript.

Funding statement: There is no funding "Not Applicable"

Compliance with ethical statements consisting of conflicts of interest Funding statement: There is no funding "Not Applicable"

Compliance with ethical statements consisting of conflicts of interest statements and informed consent

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

The author declares that there are no conflicts of interest.

Informed consent was obtained from all individual participants involved in the study.

This work does not include animals as subjects.

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Figure Captions



Figure.1 Japan's Unit 731 conducting biological warfare research in Jilin province, China, in 1940