

The Black Death And The Peasants' Revolt (History In Depth)

A spine-chilling saga of virulent racism, human folly, and the ultimate triumph of scientific progress. For Chinese immigrant Wong Chut King, surviving in San Francisco meant a life in the shadows. His passing on March 6, 1900, would have been unremarkable if a city health officer hadn't noticed a swollen black lymph node on his groin—a sign of bubonic plague. Empowered by racist pseudoscience, officials rushed to quarantine Chinatown while doctors examined Wong's tissue for telltale bacteria. If the devastating disease was not contained, San Francisco would become the American epicenter of an outbreak that had already claimed ten million lives worldwide. To local press, railroad barons, and elected officials, such a possibility was inconceivable—or inconvenient. As they mounted a cover-up to obscure the threat, ending the career of one of the most brilliant scientists in the nation in the process, it fell to federal health officer Rupert Blue to save a city that refused to be rescued. Spearheading a relentless crusade for sanitation, Blue and his men patrolled the squalid streets of fast-growing San Francisco, examined gory black buboes, and dissected diseased rats that put the fate of the entire country at risk. In the tradition of Erik Larson and Steven Johnson, Randall spins a spellbinding account of Blue's race to understand the disease and contain its spread—the only hope of saving San Francisco, and the nation, from a gruesome fate.

A Rural Society after the Black Death is a study of rural social structure in the English county of Essex between 1350 and 1500. It seeks to understand how, in the population collapse after the Black Death (1348-1349), a particular economic environment affected ordinary people's lives in the areas of migration, marriage and employment, and also contributed to patterns of religious nonconformity, agrarian riots and unrest, and even rural housing. The period under scrutiny is often seen as a transitional era between 'medieval' and 'early-modern' England, but in the light of recent advances in English historical demography, this study suggests that there was more continuity than change in some critically important aspects of social structure in the region in question. Among the most important contributions of the book are its use of an unprecedentedly wide range of original manuscript records (estate and manorial records, taxation and criminal-court records, royal tenurial records, and the records of church courts, wills etc.) and its application of current quantitative and comparative demographic methods.

Sweeping across the known world with unchecked devastation, the Black Death claimed between 75 million and 200 million lives in four short years. In this engaging and well-researched book, the trajectory of the plague's march west across Eurasia and the cause of the great pandemic is thoroughly explored. Inside you will read about... ? What was the Black Death? ? A Short History of Pandemics ? Chronology & Trajectory ? Causes & Pathology ? Medieval Theories & Disease Control ? Black Death in Medieval Culture ? Consequences Fascinating insights into the medieval mind's perception of the disease and examinations of contemporary accounts give a complete picture of what the world's most effective killer meant to medieval society in particular and humanity in general.

In the middle of the fourteenth century a devastating epidemic of plague, commonly known in European history as the "Black Death," swept over the Eurasian continent. This book, based principally on Arabic sources, establishes the means of transmission and the chronology of the plague pandemic's advance through the Middle East. The prolonged reduction of population that began with the Black Death was of fundamental significance to the social and economic history of Egypt and Syria in the later Middle Ages. The epidemic's spread suggests a remarkable destruction of human life in the fourteenth century, and a series of plague recurrences appreciably slowed population growth in the following century and a half, impoverishing Middle Eastern society. Social reactions illustrate the strength of traditional Muslim values and practices, social organization, and cohesiveness. The sudden demographic decline brought about long-term as well as immediate economic adjustments in land values, salaries, and commerce. Michael W. Dols is Assistant Professor of History at California State University, Hayward. Originally published in 1977. The Princeton Legacy Library uses the latest print-on-demand technology to again make available previously out-of-print books from the distinguished backlist of Princeton University Press. These editions preserve the original texts of these important books while presenting them in durable paperback and hardcover editions. The goal of the Princeton Legacy Library is to vastly increase access to the rich scholarly heritage found in the thousands of books published by Princeton University Press since its founding in 1905.

Dissimilar Similitudes

The Great Mortality of 1348-1350: A Brief History with Documents

The World the Plague Made

A Comparative Study

From the Black Death to the Present

The Black Death in the Middle East

***Black Death* Simon and Schuster**

If the twenty-first century seems an unlikely stage for the return of a 14th-century killer, the authors of Return of the Black Death argue that the plague, which vanquished half of Europe, has only lain dormant, waiting to emerge again—perhaps, in another form. At the heart of their chilling scenario is their contention that the plague was spread by direct human contact (not from rat fleas) and was, in fact, a virus perhaps similar to AIDS and Ebola. Noting the periodic occurrence of plagues throughout history, the authors predict its inevitable re-emergence sometime in the future, transformed by mass mobility and bioterrorism into an even more devastating killer.

Throughout the fourteenth century AD/eighth century H, waves of plague swept out of Central Asia and decimated populations from China to Iceland. So devastating was the Black Death across the Old World that some historians have compared its effects to those of a nuclear holocaust. As countries began to recover from the plague during the following century, sharp contrasts arose between the East, where societies slumped into long-term economic and social decline, and the West, where technological and social innovation set the stage for Europe's dominance into the twentieth century. Why were there such opposite outcomes from the same catastrophic event? In contrast to previous studies that have looked to differences between Islam and Christianity for the solution to the puzzle, this pioneering work proposes that a country's system of landholding primarily determined how successfully it recovered from the calamity of the Black Death. Stuart Borsch compares the specific cases of Egypt and England, countries whose economies were based in agriculture and whose pre-plague levels of total and agrarian gross domestic product were roughly equivalent. Undertaking a thorough analysis of medieval economic data, he cogently explains why Egypt's centralized and urban landholding system was unable to adapt to massive depopulation, while England's localized and rural landholding system had fully recovered by the year 1500.

In the era of COVID-19, the memory of the Black Death, the fourteenth-century plague, speaks to us in new and urgent ways. This book explores parallels, similarities, and divergences between the Black Death and the coronavirus outbreak for readers with their own experience of a global pandemic. B. E. Whalen received his PhD in medieval history from Stanford University in 2005. He currently resides and teaches in North Carolina.
Black Death at the Golden Gate: The Race to Save America from the Bubonic Plague
Medicine from the Black Death to the French Disease

Essex 1350-1525

Myths and Memories of the Black Death

The Black Death And Its Aftermath In Late-Medieval England

New Light on the Black Death

The worst pandemic in recorded history, it is estimated that the Black Death infected two in three Europeans, resulting in the deaths of around 25 million, or a third of the population of the continent. Author Don Nardo explores the complex moral, economic, and scientific implications of the Black Death. Chapters facilitate critical conversations from diverse perspectives to provide a broad understanding of the plague, including the origin of the disease, the hysteria and panic that consumed entire populations, the effects to the economy and culture of the areas affected, and recurrences of plague in later ages.

A fascinating work of detective history, The Black Death traces the causes and far-reaching consequences of this infamous outbreak of plague that spread across the continent of Europe from 1347 to 1351. Drawing on sources as diverse as monastic manuscripts and dendrochronological studies (which measure growth rings in trees), historian Robert S. Gottfried demonstrates how a bacillus transmitted by rat fleas brought on an ecological reign of terror -- killing one European in three, wiping out entire villages and towns, and rocking the foundation of medieval society and civilization.

A fascinating account of the phenomenon known as the Black Death, this volume offers a wealth of documentary material focused on the initial outbreak of the plague that ravaged the world in the 14th century. A comprehensive introduction that provides important background on the origins and spread of the plague is followed by nearly 50 documents organized into topical sections that focus on the origin and spread of the illness; the responses of medical practitioners; the societal and economic impact; religious responses; the flagellant movement and attacks on Jews provoked by the plague; and the artistic response. Each chapter has an introduction that summarizes the issues explored in the documents; headnotes to the documents provide additional background material. The book contains documents from many countries - including Muslim and Byzantine sources - to give students a variety of perspectives on this devastating illness and its consequences. The volume also includes illustrations, a chronology of the Black Death, and questions to consider.

The plague, aptly known as the Black Death, swept through Europe in the 1300s, killing more than 20 million people. Not only deadly but incredibly painful, the disease was characterized by black boils all over the body that oozed blood and pus. While providing more details about the plague, this book, an asset to any social studies collection, also addresses where the lethal outbreak originated and whether it could return. Aided by striking illustrations, sidebars, and fact boxes, readers will discover the conditions in the Middle Ages that made it possible for such an appalling disease to spread so easily.

Devotional Objects in Late Medieval Europe

The History and Legacy of the Middle Ages' Deadliest Plague

Rethinking the Black Death

The World's Greatest Serial Killer

A New History of the Great Mortality in Europe, 1347-1500

**Includes pictures *Includes accounts of the plague written by survivors across Europe *Includes a bibliography for further reading "The trend of recent research is pointing to a figure more like 45-50% of the European population dying during a four-year period. There is a fair amount of geographic variation. In Mediterranean Europe, areas such as Italy, the south of France and Spain, where plague ran for about four years consecutively, it was probably closer to 75-80% of the population. In Germany and England ... it was probably closer to 20%..." - Philip Daileader, medieval historian If it is true that nothing succeeds like success, then it is equally true that nothing challenges like change. People have historically been creatures of habit and curiosity at the same time, two parts of the human condition that constantly conflict with each other. This has always been true, but at certain moments in history it has been abundantly true, especially during the mid-14th century, when a boon in exploration and travel came up against a fear of the unknown. Together, they both introduced the Black Death to Europe and led to mostly incorrect attempts to explain it. The Late Middle Ages had seen a rise in Western Europe's population in previous centuries, but these gains were almost entirely erased as the plague spread rapidly across all of Europe from 1346-1353. With a medieval understanding of medicine, diagnosis, and illness, nobody understood what caused Black Death or how to truly treat it. As a result, many religious people assumed it was divine retribution, while superstitious and suspicious citizens saw a nefarious human plot involved and persecuted certain minority groups among them. Though it is now widely believed that rats and fleas spread the disease by carrying the bubonic plague westward along well-established trade routes, and there are now vaccines to prevent the spread of the plague, the Black Death gruesomely killed upwards of 100 million people, with helpless chroniclers graphically describing the various stages of the disease. It took Europe decades for its population to bounce back, and similar plagues would affect various parts of the world for the next several centuries, but advances*

in medical technology have since allowed researchers to read various medieval accounts of the Black Death in order to understand the various strains of the disease. Furthermore, the social upheaval caused by the plague radically changed European societies, and some have noted that by the time the plague had passed, the Late Middle Ages would end with many of today's European nations firmly established. The Black Death: The History and Legacy of the Middle Ages' Deadliest Plague chronicles the origins and spread of a plague that decimated Europe and may have wiped out over a third of the continent's population. Along with pictures and a bibliography, you will learn about the Black Death like never before, in no time at all.

*This ground-breaking book brings together scholars from the humanities and social and physical sciences to address the question of how recent work in the genetics, zoology, and epidemiology of plague's causative organism (*Yersinia pestis*) can allow a rethinking of the Black Death pandemic and its larger historical significance.*

This series provides texts central to medieval studies courses and focuses upon the diverse cultural, social and political conditions that affected the functioning of all levels of medieval society. Translations are accompanied by introductory and explanatory material and each volume includes a comprehensive guide to the sources' interpretation, including discussion of critical linguistic problems and an assessment of recent research on the topics covered. From 1348 to 1350 Europe was devastated by an epidemic that left between a third and one half of the population dead. This source book traces, through contemporary writings, the calamitous impact of the Black Death in Europe, with a particular emphasis on its spread across England from 1348 to 1349. Rosemary Horrox surveys contemporary attempts to explain the plague, which was universally regarded as an expression of divine vengeance for the sins of humankind. Moralists all had their particular targets for criticism. However, this emphasis on divine chastisement did not preclude attempts to explain the plague in medical or scientific terms. Also, there was a widespread belief that human agencies had been involved, and such scapegoats as foreigners, the poor and Jews were all accused of poisoning wells. The final section of the book charts the social and psychological impact of the plague, and its effect on the late-medieval economy.

The first paperback edition of this unique and shocking guide to the Black Death in Europe.

The Black Death and the Rise of Europe

King Death

A Brief History with Documents

Remembering the Black Death

The Black Death

The Black Death 1348 - 1350: A Brief History with Documents

A series of natural disasters in the Orient during the fourteenth century brought about the most devastating period of death and destruction in European history. The epidemic killed one-third of Europe's people over a period of three years, and the resulting social and economic upheaval was on a scale unparalleled in all of recorded history.

Synthesizing the records of contemporary chroniclers and the work of later historians, Philip Ziegler offers a critically acclaimed overview of this crucial epoch in a single masterly volume. The Black Death vividly and comprehensively brings to light the full horror of this uniquely catastrophic event that hastened the disintegration of an age.

Looking beyond the view of the plague as unmitigated catastrophe, Herlihy finds evidence for its role in the advent of new population controls, the establishment of universities, the spread of Christianity, the dissemination of vernacular cultures, and even the rise of nationalism. This book, which displays a distinguished scholar's masterly synthesis of diverse materials, reveals that the Black Death can be considered the cornerstone of the transformation of Europe.

The Black Death is the name most commonly given to the pandemic of bubonic plague that ravaged the medieval world in the late 1340s. From Central Asia, the plague swept through Europe, leaving millions of dead in its wake. Between a quarter and a third of Europe's population died, and in England the population fell from nearly six million to just over three million. Sean Martin looks at the origins of the disease and traces its terrible march through Europe from the Italian cities to the far-flung corners of Scandinavia. He describes contemporary responses to the plague and makes clear how helpless the medicine of the day was in the face of it. He examines the renewed persecution of the Jews, blamed by many Christians for the spread of the disease, and highlights the bizarre attempts by such groups as the Flagellants to ward off what they saw as the wrath of God.

This new text offers a wealth of documentary material focused on the initial outbreak of the plague that ravaged the world in the 14th century. A comprehensive introduction providing background on the origins and spread of the Black Death is followed by nearly 50 documents covering the responses of medical practitioners; the social and economic impact; religious responses. Each chapter has an introduction that summarizes the issues explored in the documents and headnotes to provide additional background material. The book contains documents from many countries - including Muslim and Byzantine sources - to give students a variety of perspectives on this devastating illness and its consequences.

A Rural Society After the Black Death

The Black Death in London

Lessons from the Medieval Plague for the Modern Pandemic

Plague and Commemoration Among Iberian Jews

The Cosmic Connection

Encyclopedia of the Black Death

Yaron Ayalon explores the Ottoman Empire's history of natural disasters and its responses on a state, communal, and individual level.

Bologna is well known for its powerful university and notariate of the thirteenth century, but the fourteenth-century city is less studied. This work redresses the imbalance in scholarship by examining social and economic life at mid-fourteenth century, particularly during the epidemic of plague, the Black Death of 1348.

Arguing against medieval chroniclers' accounts of massive social, political, and religious breakdown, this examination of the immediate experience of the epidemic, based on notarial records--including over a thousand testaments--demonstrates resilience during the crisis. The notarial record reveals the activities and decisions of large numbers of individuals and families in the city and provides a reconstruction of the behavior of clergy, medical practitioners, government and

neighborhood officials, and notaries during the epidemic.

An explanation of the origins and spread of the plague through England and the continent and the social and economic consequences.

The Black Death in Europe, from its arrival in 1347-52 into the early modern period, has been seriously misunderstood. From a wide range of sources, this study argues that it was not the rat-based bubonic plague usually blamed, and considers its effect on European culture.

Bologna During the Black Death

The Black Death, 1346-1353

Communities and Crisis

Medieval Europe's Medical Response to Plague

Plague: The Black Death

A History From Beginning to End

The Black Death was the fourteenth century's equivalent of a nuclear war. It wiped out one-third of Europe's population, taking millions of lives. The author draws together the most recent scientific discoveries and historical research to pierce the mist and tell the story of the Black Death as a gripping, intimate narrative.

A wide-ranging study that illuminates the connection between epidemic diseases and societal change, from the Black Death to Ebola This sweeping exploration of the impact of epidemic diseases looks at how mass infectious outbreaks have shaped society, from the Black Death to today. In a clear and accessible style, Frank M. Snowden reveals the ways that diseases have not only influenced medical science and public health, but also transformed the arts, religion, intellectual history, and warfare. A multidisciplinary and comparative investigation of the medical and social history of the major epidemics, this volume touches on themes such as the evolution of medical therapy, plague literature, poverty, the environment, and mass hysteria. In addition to providing historical perspective on diseases such as smallpox, cholera, and tuberculosis, Snowden examines the fallout from recent epidemics such as HIV/AIDS, SARS, and Ebola and the question of the world's preparedness for the next generation of diseases.

A groundbreaking history of how the Black Death unleashed revolutionary change across the medieval world and ushered in the modern age In 1346, a catastrophic plague beset Europe and its neighbours. The Black Death was a human tragedy that abruptly halved entire populations and caused untold suffering, but it also brought about a cultural and economic renewal on a scale never before witnessed. The World the Plague Made is a panoramic history of how the bubonic plague revolutionized labour, trade, and technology and set the stage for Europe's global expansion. James Belich takes readers across centuries and continents to shed new light on one of history's greatest paradoxes. Why did Europe's dramatic rise begin in the wake of the Black Death? Belich shows how plague doubled the per capita endowment of everything even as it decimated the population. Many more people had disposable incomes. Demand grew for silks, sugar, spices, furs, gold, and slaves. Europe expanded to satisfy that demand—and plague provided the means. Labour scarcity drove more use of waterpower, wind power, and gunpowder. Technologies like water-powered blast furnaces, heavily gunned galleons, and musketry were fast-tracked by plague. A new "crew culture" of "disposable males" emerged to man the guns and galleons. Setting the rise of Western Europe in global context, Belich demonstrates how the mighty empires of the Middle East and Russia also flourished after the plague, and how European expansion was deeply entangled with the Chinese and other peoples throughout the world.

This encyclopedia provides 300 interdisciplinary, cross-referenced entries that document the effect of the plague on Western society across the four centuries of the second plague pandemic, balancing medical history and technical matters with historical, cultural, social, and political factors. • 300 A–Z interdisciplinary entries on medical matters and historical issues • Each entry includes up-to-date resources for further research

The Complete History

In the Wake of the Plague

The Complete History of the Black Death

Epidemics and Society

The Black Death and the World It Made

Doctoring the Black Death

The Black Death of 1348-50 devastated Europe. With mortality estimates ranging from thirty to sixty percent of the population, it was arguably the most significant event of the fourteenth century. Nonetheless, its force varied across the continent, and so did the ways people responded to it. Surprisingly, there is little Jewish writing extant that directly addresses the impact of the plague, or even of the violence that sometimes accompanied it. This absence is particularly notable for Provence and the Iberian Peninsula, despite rich sources on Jewish life throughout the century. In *After the Black Death*, Susan L. Einbinder uncovers Jewish responses to plague and violence in fourteenth-century Provence and Iberia. Einbinder's original research reveals a wide, heterogeneous series of Jewish literary responses to the plague, including Sephardic liturgical poetry; a medical tractate written by the Jewish physician Abraham Caslari; epitaphs inscribed on the tombstones of twenty-eight Jewish plague victims once buried in Toledo; and a heretofore unstudied liturgical lament written by Moses Nathan, a survivor of an anti-Jewish massacre that occurred in Tàrrega, Catalonia, in 1348. Through elegant translations and masterful readings, *After the Black Death* exposes the great diversity in Jewish experiences of the plague, shaped as they were by convention, geography, epidemiology, and politics. Most critically, Einbinder traces the continuity of faith, language, and meaning through the years of the plague and its aftermath. Both before and after the Black Death, Jewish texts that deal with tragedy privilege the communal over the personal and affirm resilience over victimhood. Combined with archival and archaeological testimony, these texts ask us to think deeply about the men and women, sometimes perpetrators as well as victims, who confronted the Black Death. As devastating as the Black Death was, it did not shatter the modes of expression and explanation of those who survived it—a discovery that challenges the applicability of modern trauma theory to the medieval context.

The Black Death of 1348-49 may have killed more than 50% of the European population. This book examines the impact of this appalling disaster on England's most populous city, London. Using previously untapped documentary sources alongside archaeological evidence, a remarkably detailed picture emerges of the arrival, duration and public response to this epidemic and subsequent fourteenth-century outbreaks. Wills and civic and royal administration documents provide clear evidence of the speed and severity of the plague, of how victims, many named, made preparations for their heirs and families, and of the immediate social changes that the aftermath brought. The traditional story of the timing and arrival of the plague is challenged and the mortality rate is revised up to 50%-60% in the first outbreak, with a population decline of 40-45% across Edward III's reign. Overall, *The Black Death in London* provides as detailed a story as it is possible to tell of the impact of the plague on a major medieval English city.

Published in 1998, covering the period from the triumphant economic revival of Europe after the collapse of the Western Roman Empire, this book offers an examination of the state of contemporary medicine and the subsequent transplantation of European medicine worldwide.

This engrossing book provides a comprehensive history of the medical response to the Black Death. John Aberth has translated plague treatises that illustrate the human dimensions of the horrific scourge, including doctors' personal anecdotes as they desperately struggled to understand a deadly new disease.

Natural Disasters in the Ottoman Empire

Return of the Black Death

Pandemic Disease in the Medieval World

The Black Death and the Transformation of the West

The Black Death Transformed

After the Black Death

An ideal introduction and guide to the greatest natural disaster to ever curse humanity, replete with illustrations, biographical sketches, and primary documents. Presents medieval and modern perspectives of this disturbing yet fascinating tragic historical episode.

Over the years doubts have been expressed about the accepted view that the Black Death was caused by bubonic plague. By looking at the evidence of tree-rings and ice cores, Mike Baillie, professor of dendrochronology, has identified a series of natural catastrophes at the beginning of the 14th century caused by meteor strikes. On the basis of the current scientific evidence and of contemporary accounts of the nature and spread of the disease, he is convinced that the disease was airborne, not carried by rats. This fascinating book reveals the detective that led to this revolutionary conclusion.

Completely revised and updated for this new edition, Benedictow's acclaimed study remains the definitive account of the Black Death and its impact on history. The first edition of *The Black Death* collected and analysed the many local studies on the disease published in a variety of languages and examined a range of scholarly papers. The medical and epidemiological characteristics of the disease, its geographical origin, its spread across Asia Minor, the Middle East, North Africa and Europe, and the mortality in the countries and regions for which there are satisfactory studies, are clearly presented and thoroughly discussed. The pattern, pace and seasonality of spread revealed through close scrutiny of these studies exactly reflect current medical work and standard studies on the epidemiology of bubonic plague. Benedictow's findings made it clear that the true mortality rate was far higher than had been previously thought. In the light of those findings, the discussion in the last part of the book showing the Black Death as a turning point in history takes on a new significance. OLE J. BENEDICTOW is Professor of History at the University of Oslo.

From an acclaimed historian, a mesmerizing account of how medieval European Christians envisioned the paradoxical nature of holy objects. Between the twelfth and the sixteenth centuries, European Christians used in worship a plethora of objects, not only prayer books, statues, and paintings but also pieces of natural materials, such as stones and earth, considered to carry holiness, dolls representing Jesus and Mary, and even bits of consecrated bread and wine thought to be miraculously preserved flesh and blood. Theologians and ordinary worshippers alike explained, utilized, justified, and warned against some of these objects, which could carry with them both anti-Semitic charges and the glorious promise of heaven. Their proliferation and the reaction against them form a crucial background to the European-wide movements we know today as "reformation" (both Protestant and Catholic). In a set of independent but interrelated essays, Caroline Bynum considers some examples of such holy things, among them beds for the baby Jesus, the headdresses of medieval nuns, and the footprints of Christ carried home from the Holy Land by pilgrims in patterns cut to their shape or their measurement in lengths of string. Building on and going beyond her well-received work on the history of materiality, Bynum makes two arguments, one substantive, the other methodological. First, she demonstrates that the objects themselves communicate a paradox of dissimilar similitude—that is, that in their very details they both image the glory of heaven and make clear that that heaven is beyond any representation in earthly things. Second, she uses the theme of likeness and unlikeness to interrogate current practices of comparative history. Suggesting that contemporary students of religion, art, and culture should avoid comparing things that merely "look alike," she proposes that humanists turn instead to comparing across cultures the disparate and perhaps visually dissimilar objects in which worshippers as well as theorists locate the "other" that gives their religion enduring power.

The Black Death in Egypt and England

Disease and Culture in Early Renaissance Europe

Black Death

This illustrated survey examines what it was actually like to live with plague and the threat of plague in late-medieval and early modern England.; Colin Platt's books include "The English Medieval Town", "Medieval England: A Social History and Archaeology from the Conquest to 1600" and "The Architecture of Medieval Britain: A Social History" which won the Wolfson Prize for 1990. This book is intended for undergraduate/6th form courses on medieval England, option courses on demography, medicine, family and social focus. The "black death" and population decline is central to A-level syllabuses on this period.

"A higher education history book on the Black Death, giving not just a narrative account but also a thorough examination of the latest forensic, historical, and DNA evidence to date"--