



Hunt

for the oldest DNA

A lost world in a spoonful of dirt.

A PRODUCTION OF TANGLED BANK STUDIOS AND HANDFUL OF FILMS
WRITTEN & DIRECTED BY NIOBE THOMPSON CINEMATOGRAPHY ATHAN MERRICK & RYAN WILKES PRODUCED BY ALLY BARRY & SANDRA TOBER
ART DIRECTION & ANIMATION BY BRUCE ALCOCK COMPOSER JONATHAN KAWCHUK EDITED BY JAY MACMILLAN & JEN RANDALL
EXECUTIVE PRODUCERS SEAN B. CARROLL, JOHN RUBIN, CHRIS SCHMIDT, JULIA CORT, NIOBE THOMPSON

 Handful of Films

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Bank Studios

NOVA

NOVO
nordisk
fonden

DR

A man wearing a heavy, fur-lined parka, a fur hat, and glasses stands in a snowy, mountainous landscape at sunset. He is holding a brown leather bag in his right hand. The background features snow-covered hills and evergreen trees under a golden sky with falling snow.

THREE MILLION YEARS AGO,
**CAMELS ROAMED THROUGH
GREENLAND'S ENDLESS FORESTS**
AND OUR ANCESTORS LIVED IN
THE TREES.

It all came to an end with the Ice Ages. What died and what survived, as natural selection shaped the evolutionary tree during this epochal shift from hot to cold? Until now, scientists have known less about the natural world before the Ice Age than they did about the age of dinosaurs, which ended 64 million years ago. A new discovery is set to reveal this lost world, species by species.

Led by Danish gene-hunter Eske Willerslev, a team of scientists for the first time in history is sequencing DNA from before the Ice Age. The picture that emerges is of a hot planet, when forests blanketed the Arctic and carbon levels matched those in our atmosphere today. Is this a portrait of our own climate future?

The pre-title sequence opens with aerials of a barren Ice Age landscape, and the words of renowned climate scientist *Maureen Raymo*:

How can we travel back in time? Is there a time machine? Yes. It's DNA. It's ancient DNA.

- Eske Willerslev

Three decades ago, the promise of ancient dinosaur DNA that inspired Jurassic Park went up in flames, as scientists realized their samples were contaminated. In the aftermath, no one could have predicted how ancient DNA science would rise from the ashes in spectacular fashion, transforming what we know about our human origins, the evolution of life, and the nature of distant lost worlds.

At that time, a 20-year-old Danish fur trapper returned home from Siberia and enrolled in biology classes. What followed became one of the most remarkable careers in science, a career that perfectly tracks the resurrection of ancient DNA science. The fruits of his work sparked a scientific revolution. Now, he is turning the page on the next chapter in genetic research.

THIS IS THE STORY OF HOW VERY OLD GENOMES ARE RE-WRITING OUR UNDERSTANDING OF LIFE ON EARTH,

following the inspiring career of one of its central authors: gene hunter and evolutionary biologist Eske Willerslev.

Decades ago, Willerslev's core insight was that living DNA is all around us, falling continually from living organisms. He calls it "dirt DNA", and while others have fought for access to precious fossil bones, he has quietly invented ways to piece together entire genomes from the fragments lying in the ground below us.

While everyone else was looking for DNA in fossils, and discovering one species at a time... I was looking in the dirt for everything!

- Eske Willerslev

Willerslev's core obsession was to recover DNA older than any yet recovered – to use ancient DNA as a time machine, opening a window on the deep past. Until now, the oldest DNA ever recovered was from a mammoth that lived 1 million years ago. Most scientists agreed that this was the hard outer limit of survival for molecules of DNA. But not Willerslev. 17 years ago, he began taking dirt samples from the most remote and forbidding corner of Greenland: an arctic desert called Cape Copenhagen, where the remnants of life from before the Ice Age littered the frozen ground. They were far older than one million years.

TODAY, WILLERSLEV'S MAVERICK MOVE HAS PAID OFF IN A SPECTACULAR WAY, WITH THE GREATEST DISCOVERY OF HIS CAREER.

Smashing the 1-million-year limit, his team has recovered the DNA of a lush forest ecosystem, populated by surprising creatures that flourished in the High Arctic well over two million years ago. From the dirt of Cape Copenhagen, his team has reconstructed the genomes of nine land and sea animals, from fleas and lemmings to horseshoe crabs

and big mammals. They have recovered the DNA of 102 plants, from mosses to cedar trees, and nearly 2000 other organisms, from bacteria to plankton. Many of these plants and animals are now extinct, and some have never been detected in the Arctic. He has even discovered the genetic fingerprints of mastodons, whose remains have until now never been found north of New England, 4000 kilometres to the south.

With exclusive access to the work of Willerslev's team over many years,

HUNT FOR THE OLDEST DNA BRINGS VIEWERS INSIDE A BREAKTHROUGH THAT SIGNALS A NEW ERA IN DNA SCIENCE.

For the first time, we can use DNA to travel back millions of years and piece together the ecosystems of lost worlds. Using exquisite 3D animation, we visit the weird Arctic

forests that blanketed the Arctic before the Ice Age, where the sun never set for months on end and where the ancestors of bears, camels, beavers and horses survived 24-hour darkness through the long Arctic winter.

These creatures lived in the Pliocene: the last hot epoch on Earth, when Arctic temperatures were 20 degrees Celsius warmer than today. In a final twist, we learn how much this strange lost world aligns with our own. The Pliocene was the last time atmospheric carbon reached the levels in our atmosphere today.

WILLERSLEV'S ANCIENT DNA IS GIVING US A GLIMPSE OF OUR CLIMATE FUTURE. COULD THE GENETIC CODES OF LIFE IN THE PLIOCENE GIVE US THE TOOLS TO SURVIVE WHAT IS TO COME?

Filmmaker Biography

The documentaries of anthropologist and filmmaker Niobe Thompson reach back to our human origins, explore the mysteries of evolution, and tackle the environmental dilemmas of the Anthropocene. As a science and adventure host, he has made a laboratory of his body and mind. As a Producer and Director, he brings unique and powerful moments in the human experience to the screen, from Siberian reindeer herders, to ancient DNA laboratories, to organ transplant surgeries. Raised by a canoe-building family in the northern Canadian Cree community of Wabasca-Desmarais, Niobe's fascination with indigenous experiences and knowledge led to his doctoral training in anthropology at the University of Cambridge. Niobe's work as a Director and Producer has been awarded Canada's highest honour for "Best Science and Nature Documentary" three times, as well as wins at Sundance and Jackson Hole, and two Emmy nominations. After co-directing and co-producing Canadian-Australian feature documentary *Carbon - The Unauthorised Biography* (2022), Niobe is now collaborating with Tangled Bank Studios for the first time as Director of *Hunt for the Oldest DNA*.



Production Schedule

MARCH - JULY 2022	PRE PRODUCTION
AUGUST 2022 - FEBRUARY 2023	PRODUCTION
MARCH - DECEMBER 2023	EDIT & ANIMATION
EARLY 2024	FINAL DELIVERY

Our Company

Specialist science and nature producer **Handful of Films** is known for intelligent, ambitious, and impactful documentary storytelling. Winner of 7 Canadian Screen Awards for “Best Science and Nature Program”, “Best Cinematography” and “Best Original Score” for the recent documentaries *The Great Human Odyssey*, *The Perfect Runner*, and *Equus - Story of the Horse*. We reached new heights in 2019, with a win at Sundance for *Fast Horse* and our second Emmy nomination for *Transplanting Hope*.

Our 2022 feature documentary *Carbon - The Unauthorized Biography* is now touring film festivals and broadcasting on CBC, ABC and ARTE. Alongside our co-production with **Tangled Bank Studios** of *Hunt for the Oldest DNA*, for PBS NOVA, we are currently producing two one-off documentaries for **CBC's The Nature of Things**: *True Survivors*, *Animal Pride* and *Frozen in Time*.

A CO-PRODUCTION OF TANGLED BANK STUDIOS AND HANDFUL OF FILMS, FOR PBS NOVA, DR AND ZDF.
DELIVERY IN EARLY 2024. AVAILABLE IN FEATURE-LENGTH AND ONE-HOUR VERSIONS, HD AND UHD.

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