

## **Meirav Meiri**

Email: [meiravme@tauex.tau.ac.il](mailto:meiravme@tauex.tau.ac.il), [meirav.meiri@gmail.com](mailto:meirav.meiri@gmail.com)

<https://scholar.google.com/citations?user=adlfp94AAAAJ&hl=en>

## **Summary**

I am a biologist specializing in the analysis of ancient and degraded DNA to investigate species evolution. I am a researcher at the Steinhardt Museum of Natural History, and the Head of the Paleogenomics Laboratory at the Museum.

My research centres on unravelling the intricate evolutionary relationships among animal and plant species. I focus on their taxonomy, biogeographical distribution, population dynamics, and evolutionary trajectories across time. Utilizing advanced techniques in ancient and modern DNA analysis, I aim to uncover genetic changes and patterns across both temporal and spatial scales.

## **Qualifications**

### **Degrees**

- Ph.D, Royal Holloway University of London, United Kingdom, 2006 - 2010
- M.Sc., the Weizmann Institute of Science, Rehovot, Israel, 2002-2004
- B.Sc., Tel Aviv University, Israel, 1998 – 2001

## **Employment history**

### **Academic**

- Research Associate, The Steinhardt Museum of Natural History, Tel Aviv University, Tel Aviv, Israel, 2021 – ongoing.
- Facility Director, Paleogenomics laboratory, The Steinhardt Museum of Natural History, Tel Aviv University, Tel Aviv, Israel, 2017-ongoing.
- Research Associate, Museums Victoria, Melbourne, Australia, 2019-2020.
- Research Assistant, Institute of Archaeology, Tel Aviv University, Tel Aviv, Israel, 2016- 2017
- Postdoctoral fellow, The Steinhardt Museum of Natural History, Tel Aviv University, Israel, 2013- 2016.
- Postdoctoral fellow, Institute of Archaeology, Tel Aviv University, Tel Aviv, Israel, 2010- 2013.

## **Projects**

### **Taxonomy and phylogeography of extinct Israeli species**

- *Hartebeest (Alcelaphus sp.)*

We employ ancient DNA analysis and morphological studies to clarify the species-level taxonomy of the extinct Levantine hartebeest. Additionally, we utilize

environmental niche modelling to evaluate the availability of suitable habitats for this species in Israel, under both historical and contemporary environmental conditions.

- *Water Vole (Arvicola amphibius)*

The southernmost population of Eurasian water voles (*Arvicola amphibius*) resided in Lake Hula in the Upper Jordan Valley until the lake was drained in the 1950s. Our research examines the morphological and genetic relationships between the extirpated Hula water voles, modern populations in Eurasia, and local Pleistocene specimens.

- *Crested rat (Lophiomys imhausi maremortum)*

We conducted ancient DNA and morphological analysis, combined with ecological modelling, on a crested rat dated to between ~42,000 and at least 103,000 years ago, discovered in a cave near the Dead Sea. The findings reveal a genetic connection to the eastern African crested rat, suggesting that the Judean Desert was greener in the past and that continuous habitat corridors linked eastern Africa with the Levant. This evidence strengthens the hypothesis that early human dispersals were driven by climatic changes and Late Pleistocene intercontinental connectivity.

### **Revealing lost diversity of Byzantine grapevines in the Negev Desert**

Our research focuses on the historical wine economy of the arid Negev Desert during the 3rd–8th centuries CE. This study seeks to revitalize ancient viticulture by extracting ancient DNA from grapevine seeds to uncover the genetic heritage of these legacy cultivars. By understanding their genetic past, we aim to restore these cultivars to their original terroir and adapt them to their historical climate conditions.

For more information, visit the project website: <https://www.negevwinerevival.com>

### **Unravelling the enigma of date palm cultivation in the southern Levantine region**

The project objective is to characterize date palm (*Phoenix dactylifera*) populations in the southern Levant and uncover their origins of cultivation. This includes an in-depth analysis of modern and ancient genomes from across the region, complemented by morphometric studies of seeds from both contemporary and archaeological contexts. By integrating biological, ecological, historical, and anthropogenic factors, we aim to shed light on the complex interactions that have shaped the diversity and distribution of date palms in the southern Levant.

This work is part of an ERC-funded project led by Prof. Guy Bar-Oz, University of Haifa. For more information, visit the project website: <https://www.bostantree.com>

### **Modelling Anthropocene trophic cascades of the Judean desert ecosystem: a hidden dimension in the history of human-environment interactions**

This project aims to investigate the impact of human settlement on mammalian community structure, with a particular focus on trophic cascades in the Dead Sea region during the Middle and Late Holocene (approximately 4,500 BCE to 2,000 CE). The study focuses on key species native to the desert ecosystem, including the leopard (*Panthera pardus*), ibex (*Capra nubiana*), and hyrax (*Procavia capensis*). By sequencing both modern and ancient DNA from these species, we aim to unravel

their genetic histories and assess the influence of human activities on their populations.

This work is part of an ERC-funded project led by Prof. Nimrod Marom at the University of Haifa. For more information, visit the project website:  
<https://sites.google.com/view/deadsea-eco/home>.

### **Using Paleogenomics as a Tool to Identify the Contents of Ancient Pottery**

One of the challenges in archaeology is identifying the contents of vessels. Traditionally, this has been approached by analysing the vessel's shape, archaeological context, and residue analysis.

Our research explores whether paleogenomic techniques can enhance our ability to identify the contents of these vessels. We extract and sequence DNA from pottery used for various purposes, such as wine storage and oil lamps, to determine if ancient DNA from specific sources, like grapes or olives, can still be detected.

### ***Courses taught***

- “Quaternary Extinctions- Why? How many? Where? and how do we know it?”, The Steinhardt Museum of Natural History, Tel Aviv University, Israel, 2024.

[https://smnh.tau.ac.il/research-at-smnh/academic\\_courses/extinction/](https://smnh.tau.ac.il/research-at-smnh/academic_courses/extinction/)

- MSc. and PhD course: “Human and Animals relationship: bones & ancient DNA”, Institute of Archaeology, Tel Aviv University, Israel, 2021-2022.

### ***Facilities***

#### ***Paleogenomics Laboratory***

Opened in 2021, the Paleogenomics Laboratory at the Steinhardt Museum of Natural History is a state-of-the-art clean room designed for the extraction and amplification of genetic material from a wide range of archaeological and museum specimens.

### ***In the news***

<https://www.ynet.co.il/environment-science/article/rjdhvih000>

[https://www.mako.co.il/news-science/2023\\_q2/Article-de1be2b0cc0e781027.htm?sCh=31750a2610f26110&pId=1098721663](https://www.mako.co.il/news-science/2023_q2/Article-de1be2b0cc0e781027.htm?sCh=31750a2610f26110&pId=1098721663)

<https://www.ynet.co.il/environment-science/article/bkkbkqk4h>

<https://www.israelhayom.co.il/tech/article/13996791>

[https://www.maariv.co.il/news/viral/Article-1003613?utm\\_source=whatsapp](https://www.maariv.co.il/news/viral/Article-1003613?utm_source=whatsapp)

<https://www.jpost.com/archaeology/article-741446>

[https://smnh.tau.ac.il/learn/maned\\_rat/](https://smnh.tau.ac.il/learn/maned_rat/)

<https://www.ifat.com/InfoBuzzerItemPage/?resourceId=12433450&appUser=0&infoTypeID=10>