# **Evaluation of AmtDNA Database**

Mihir Samdarshi and Emma Young LMU Biology Department Loyola Marymount University Seaver 120, October 1, 2019

- AmtDB is a database of ancient human mitochondrial DNA
- AmtDB fills a crucial niche in the field of biological archaeology/anthropology
- AmtDB provides an easy-to-use, simple interface for scientists to be able to find the right sample(s) for their needs
- AmtDB contains high quality information, but may not be the most complete database

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#### AmtDB is a database of ancient human mitochondrial DNA

#### Ancient mtDNA Database (AmtDB)

- Database of ancient mitochondrial DNA
- Built with secondary sources
- Curated by a select group of researchers

#### AmtDB is a database of ancient human mitochondrial DNA

- Maintenance:
  - Dr. Ehler Czech Academy of Sciences, Czech Republic
  - Anna Juras Adam Mickiewicz University, Poland
- Funding:
  - The Ministry of Education, Youth and Sports of the Czech Republic
  - The Polish National Science Center



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#### AmtDB fills a niche in the field of biological archaeology/anthropology

- No other database exists specifically for ancient human mitochondrial DNA
  - Ancient genetic data from multiple populations and multiple points in time can allow for the study of populations in space and time using phylogenetic and population genetic methods (Ramakrishnan & Hadley, 2009)
- Mitochondrial DNA is particularly useful:
  - Often the only genetic material that can be recovered from samples
  - Particularly suited to population-level studies because of maternal inheritance, high mutation rate, and absence of recombination and population-level variability

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#### The AmtDB contains important information and links regarding the database

#### AmtDB About Database FAQ & Help Contact

#### Welcome to Ancient mtDNA database!

This is the place where you can find an updated list of the published mitochondrial sequences coming from the ancient DNA samples (aDNA). The main interest of our database lies in the anatomically modern Homo sapiens samples, ranging from the late Paleolithic to roughly Iron Age times, focusing on an Euroasian geographical area. We provide both the *mtDNA sequences* (in FASTA format), and the *metadata* for the samples (IDs, dates, geolocation, site, culture, mtDNA haplogroup etc., available to download in a tab-delimited text file). You can:

- Search and download the database immediatelly.
- Display the selected samples on an interactive map.
- Read through the database documentation, FAQs or cite us.
- Check out links to other interesting (ancient) mtDNA tools and databases, or the list of references.
- Contact the authors if you have any more questions or maybe you want your samples to be included in AmtDB!
- Read our Terms of Service.

#### AmtDB in Czech media:

- sciencemag.cz
- novinky.cz
- eurozpravy.cz
- 24zpravy.com
- radio.cz



## Links to other sites on AmtDB

- The ELIXIR Czech Republic
- The Institute of Molecular Genetics of the Czech Academy of Sciences
- An individual reference to each source of mitochondrial DNA





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### **Advance Search**

- Allows the data to be narrowed down very specifically
- You can just download the data you need

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#### Maps can be easily modulated to display in different formats

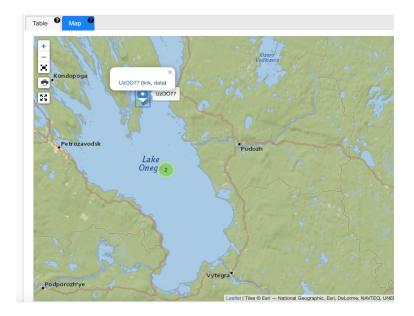
• The maps can be changed the samples can be viewed geographically or topically





## Individual samples can be pinpointed and accessed

You could even select a single mitochondrial DNA sample off the map and access its profile on the site, link to primary data and its journal article



#### Easily download individual entries or the entire database

Actions 😧			
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Show on map	All	Selected	

#### Users may download data entries with various options

• Download sequences in the common FASTA (.fasta) format

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Download sequence metadata in a tabular (.csv) format

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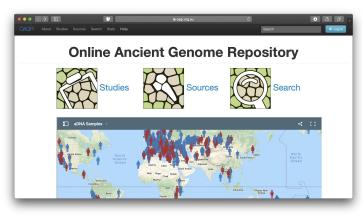
#### **AmtDB Terms of Service**

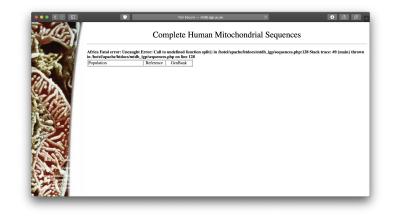
The content of the AmtDB is the sole responsibility of researchers at the Institute of Molecular Genetics, Academy of Sciences of the Czech Republic. Authors make no representations or warranties of any kind, express or implied, concerning the content of the database, including, without limitation, warranties of merchantability, fitness for a particular purpose, non-infringement, validity of any intellectual property rights or claims, whether issued or pending, and the absence of latent or other defects, whether or not discoverable.

- AmtDB is a database of ancient human mitochondrial DNA
- AmtDB fills a crucial niche in the field of biological archaeology/anthropology
- AmtDB provides an easy-to-use, simple interface for scientists to be able to find the right sample(s) for their needs
- AmtDB contains high quality information, but may not be the most complete database

# AmtDB contains high quality information, but may not be the most complete database

Competitors:





Online Ancient Genome Repository ancient human genome database maintained by University of Adelaide, Australia mtDB: Human Mitochondrial Genome Database - maintained by Uppsala University, Swedent

# AmtDB contains high quality information, but may not be the most complete database

Lack of data:



#### In conclusion, AmtDB is a fairly new, but thorough and easy to use database

- The database fills a particular thus-far unfilled niche in its particular area of usage
- The clean and modern interface, along with host of options make it an easy to use database
- Manual curation is to the benefit of the database because of the relatively small size of total samples

### Acknowledgements

This week, the two partners for this project are Mihir Samdarshi and Emma Young. Both partners worked with each other outside of class to assist each other in finding and synthesizing the necessary information required to complete this assignment.

We would like to acknowledge Dr. Dahlquist for her instruction on this topic and how to give a presentation.

### References

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