

TRACK Tracking ancient global epidemics

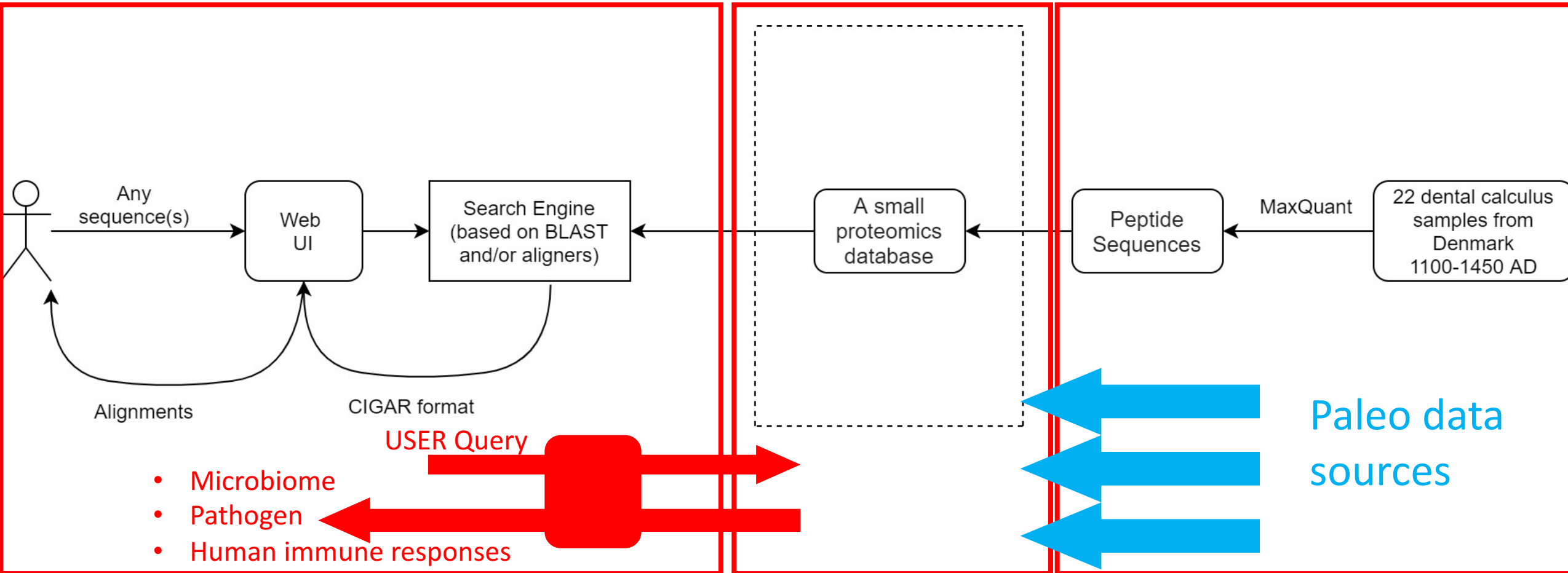
- Towards snapshotting in real-time **the first human quarantine samples ($n > 1000$)** in history
- Obtain one of the first **human fossil human oral microbiome**
- Minh will present a **general-purpose pipeline** for ancient archeology study

Team TRACK is creating a paleo-omics nexus

3) a query gateway

1) a paleo data central

2) a data repo pipeline



Team TRACK: A Paleo-omics Nexus

A query gateway

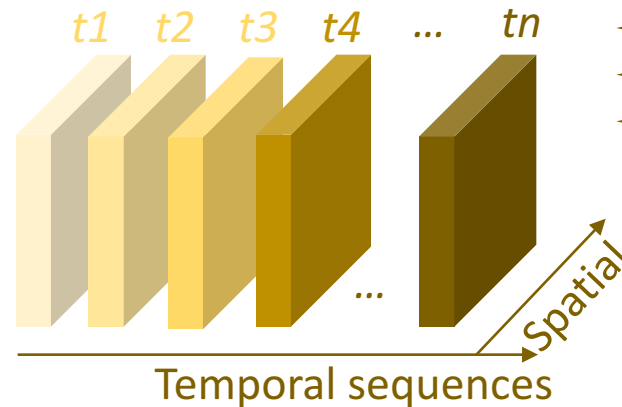
From query to
ancient microbiomes,
pathogens and immunity

USER Query

- Ancient Microbiomes
- Ancient Pathogens (e.g. Malaria, TB, plague, flu etc.)
- Human immune responses

A paleo data central

Archeological database



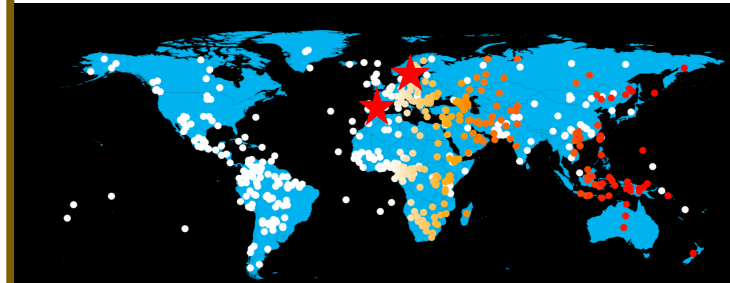
A data repo pipeline

Paleo data sources

Danish study: 22 dental calculus samples from 1100-1450 AD

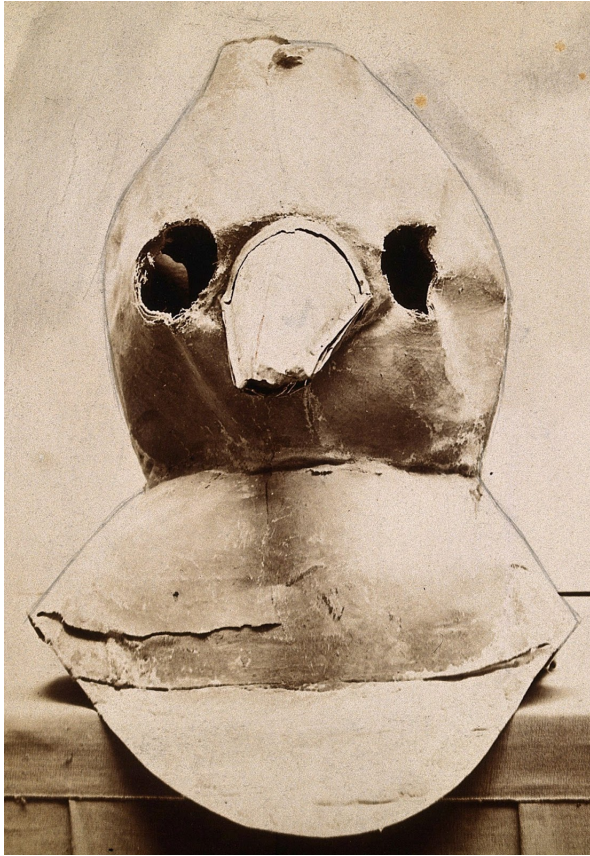
Venetian quarantine study (in planning) : >1000 dental calculus samples from 1200-15 00AD

Fossil oral microbiome
One of the most abundant archeology samples($n \sim 1$ billion)



TRACK Tracking ancient global epidemics

An archeological omics data central and search engine



- Track ancient microbiomes
- Uncover historical pathogens
- Search for human immune responses

Pictures: left, original mask worn by doctors visiting the quarantine in Venice to protect themselves (since 1423). Right, drawing of doctor wearing the mask from manuscript.