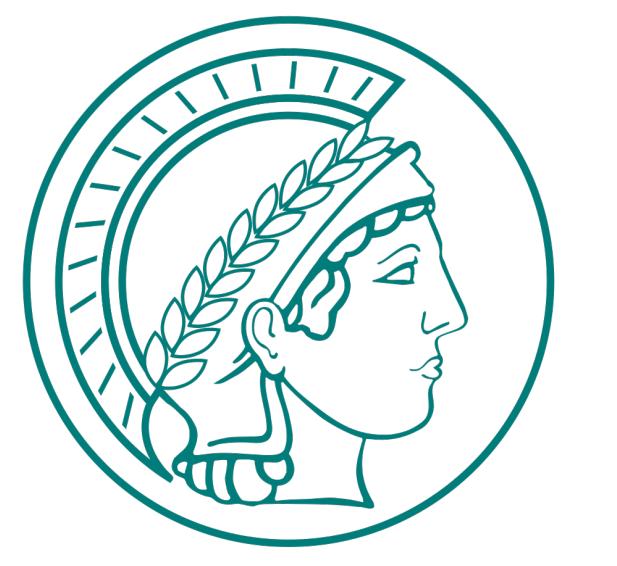


# mitoBench & mitoDB: Novel interactive methods for population genetics on mitochondrial DNA



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† See <http://bit.ly/2vB8wKx> for full author-list.

\*These authors contributed equally to the work.

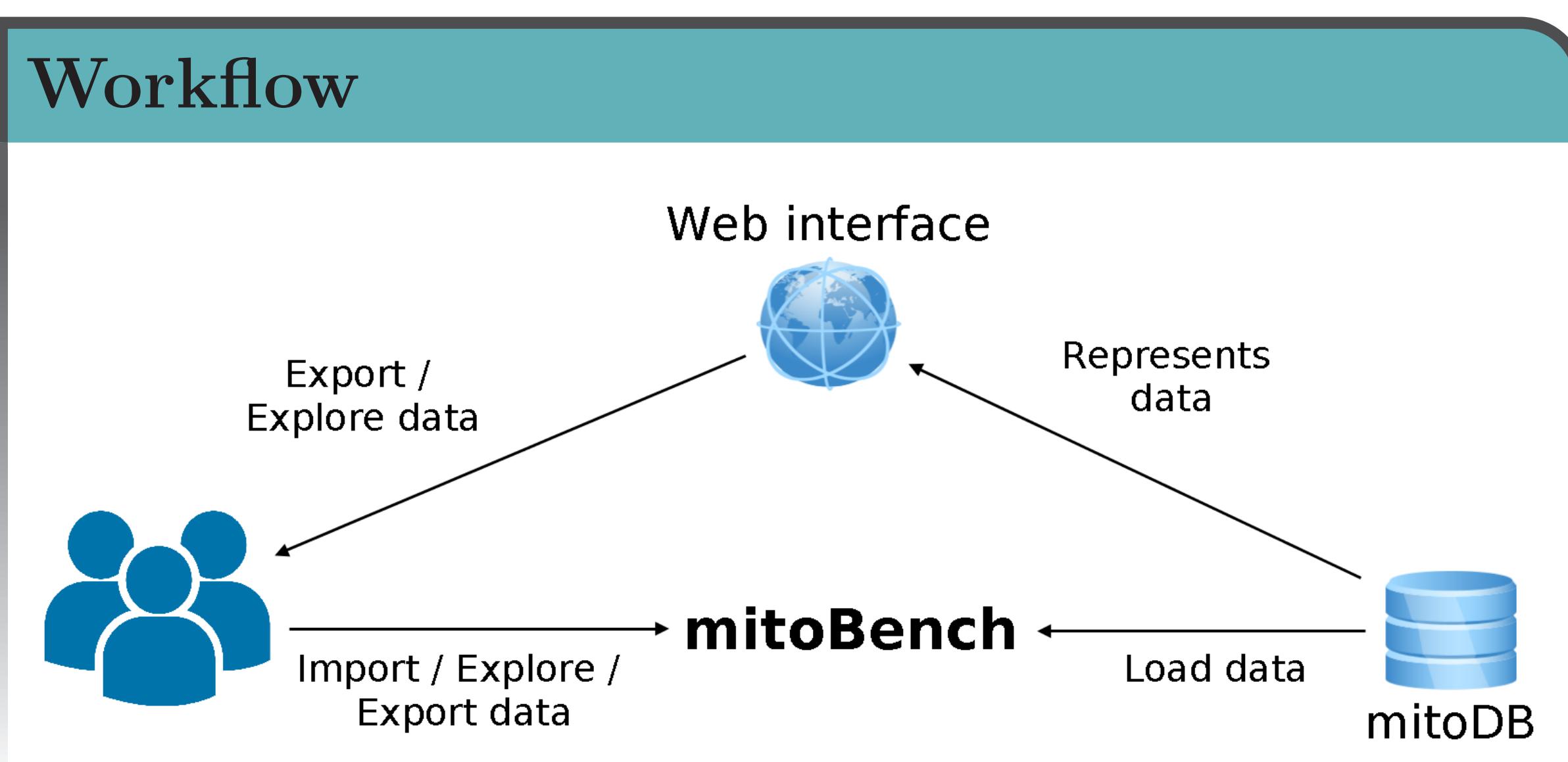


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## Motivation & Goals

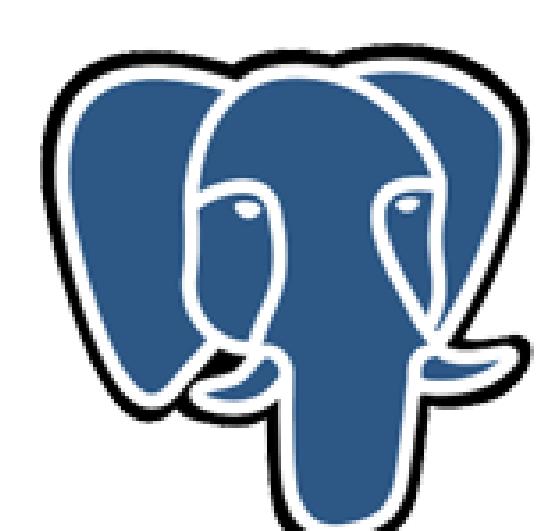
- Mitochondrial DNA (mtDNA) is often the only proxy available to study extinct populations and their relationship with modern populations
- Tools for the analysis typically rely on different file formats → requiring manual interaction with the data for downstream analysis
- mitoBench: workbench to ease file conversions, methods to interactively analyze and visualize human mitochondrial data
- mitoDB: database for human mitochondrial genomes to provide a central reference that can be easily accessed via the workbench and a web-frontend

## Workflow



## mitoDB

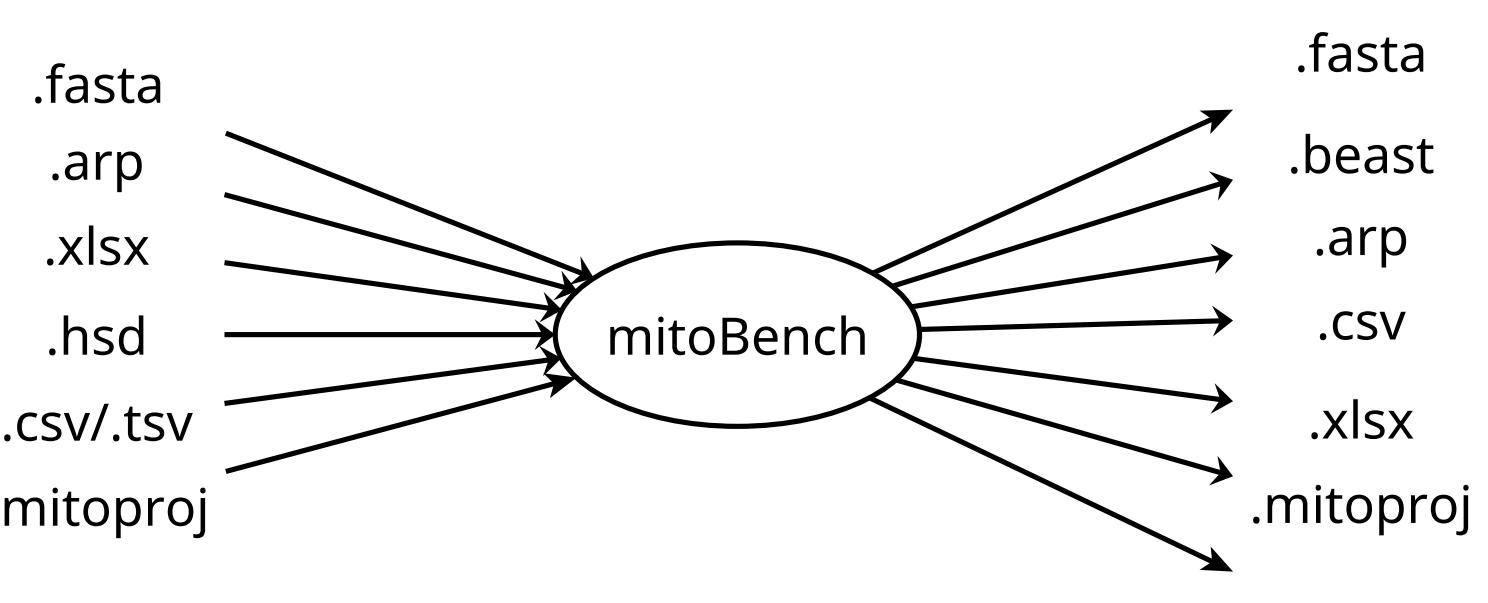
- Database: Providing meta-information (Location, language, Sequence data, ...)
- Data Curation: Users can rate samples in the web based on their experiences with data
- Web-Frontend: Browsing data, searching for locations, quick look at database contents
- Access: Web-Frontend (exporting) and mitoBench (analysis)



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## mitoBench

### File conversions



⇒ connect the workbench with existing analysis methods/resources such as BEAST<sup>1</sup>, Arlequin<sup>2</sup>, PhyloTree<sup>3</sup> and others

### Data representation as Table

ID	MTSequence	Haplogroup	Time Period	continent	country	country_region	culture_type
K2975	GATCA...	R	Roman Period	Africa	Egypt	Beni Suef	Ancient
K2976	GATCA...	U	Ptolemaic Period	Africa	Egypt	Beni Suef	Ancient
K2977	GATCA...	T1a5	Ptolemaic Period	Africa	Egypt	Beni Suef	Ancient
K2978	GATCA...	R0	Pre-Ptolemaic Period	Africa	Egypt	Beni Suef	Ancient
K2979	GATCA...	IV1a2a	Roman Period	Africa	Egypt	Beni Suef	Ancient
K2980	GATCA...	J2a2b	Roman Period	Africa	Egypt	Beni Suef	Ancient
K2981	GATCA...	T1a5	Ptolemaic Period	Africa	Egypt	Beni Suef	Ancient
K2982	GATCA...	R0a1a	Ptolemaic Period	Africa	Egypt	Beni Suef	Ancient
K2983	GATCA...	M1a1	Pre-Ptolemaic Period	Africa	Egypt	Beni Suef	Ancient
K2984	GATCA...	R2Y	Pre-Ptolemaic Period	Africa	Egypt	Beni Suef	Ancient
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K2999	GATCA...	R2Y	Pre-Ptolemaic Period	Africa	Egypt	Beni Suef	Ancient
K3000	GATCA...	R2Y	Pre-Ptolemaic Period	Africa	Egypt	Beni Suef	Ancient
K3001	GATCA...	R2Y	Pre-Ptolemaic Period	Africa	Egypt	Beni Suef	Ancient
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