

Coalescent inference of HIV transmission history

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T-6: Theoretical Biology and Biophysics

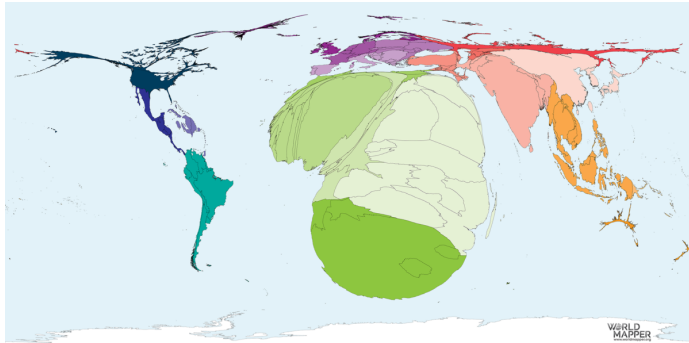
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Why this project?

- * Supplementing existing tracing methods
 - o Interviews
 - o Tracing contact pairs
- * Finding signal in genome sequences

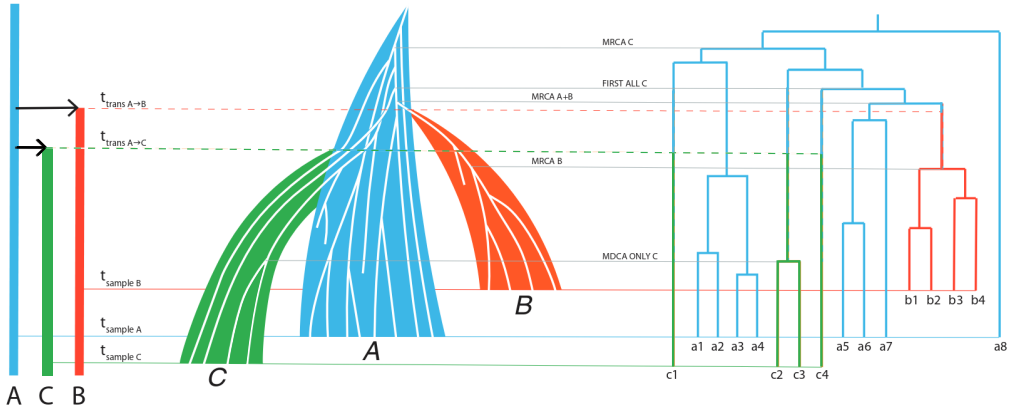


What are we looking for?

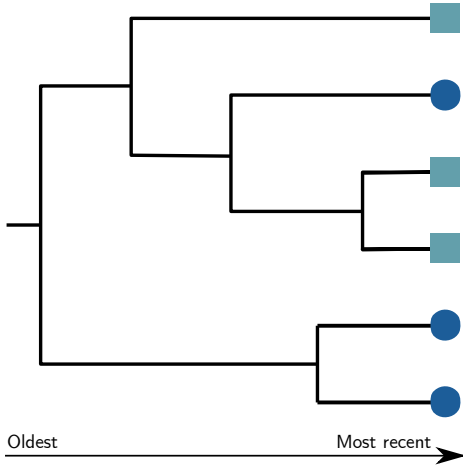
Transmission history

Virus population history

Joint virus phylogeny

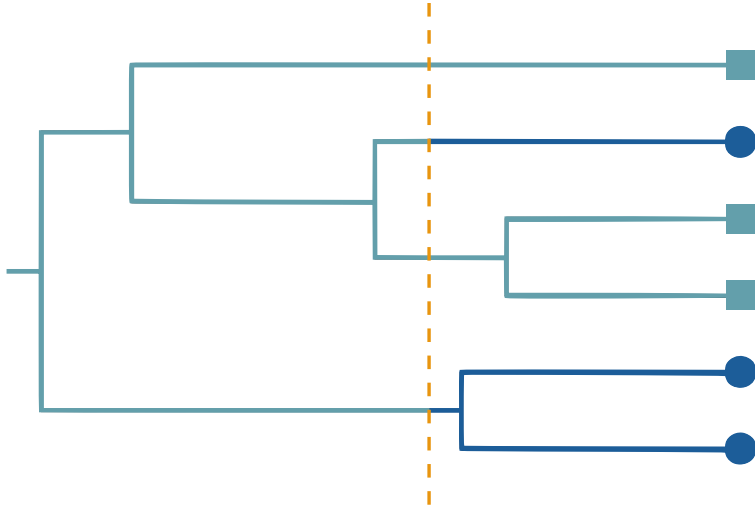


Inferring information from a tree

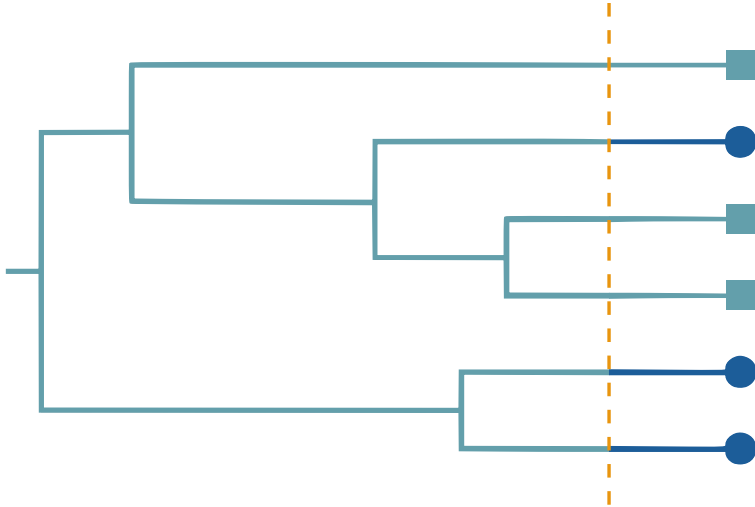


- * Tips represent individual viral sequences
- * Shows the evolutionary distance between individuals
- * What can we infer about a single transmission time?

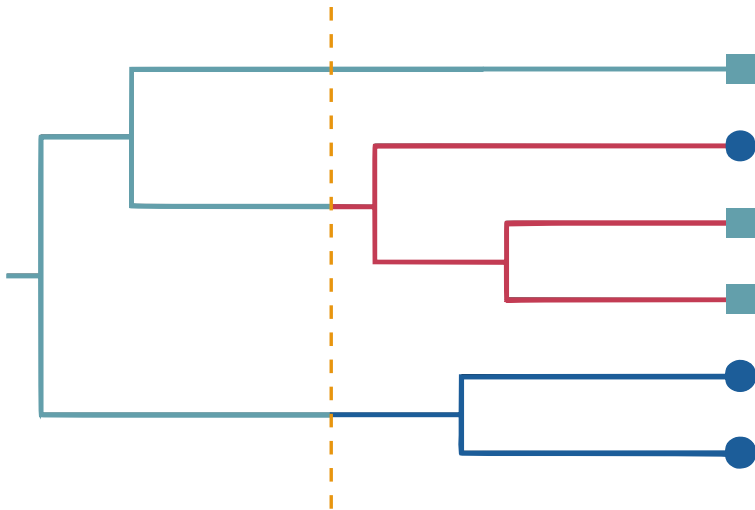
Inferring information from a tree



Inferring information from a tree



Inferring information from a tree

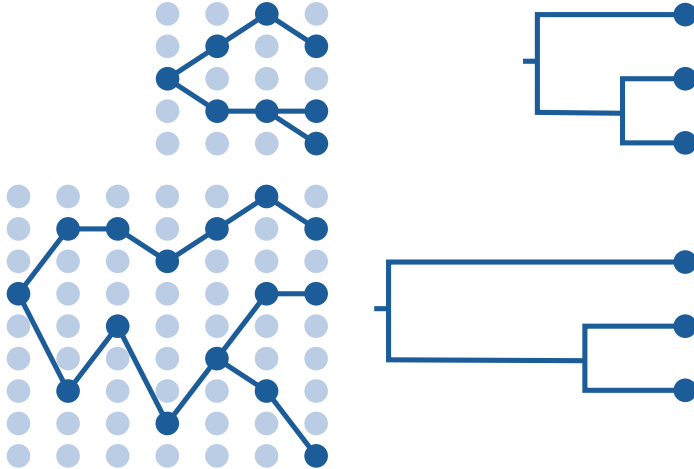


Coalescent modeling:

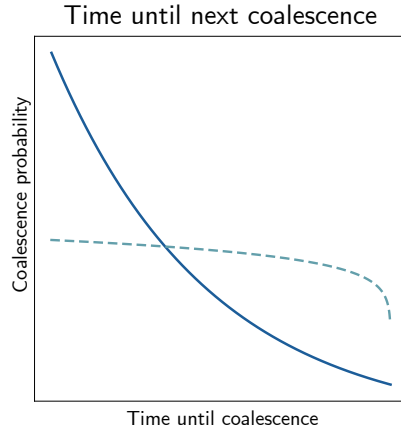
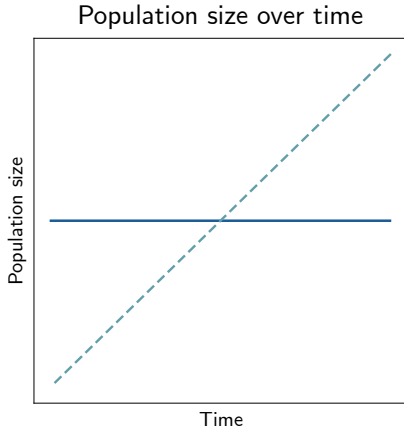
Node times as a function of population

Relationship between population and samples

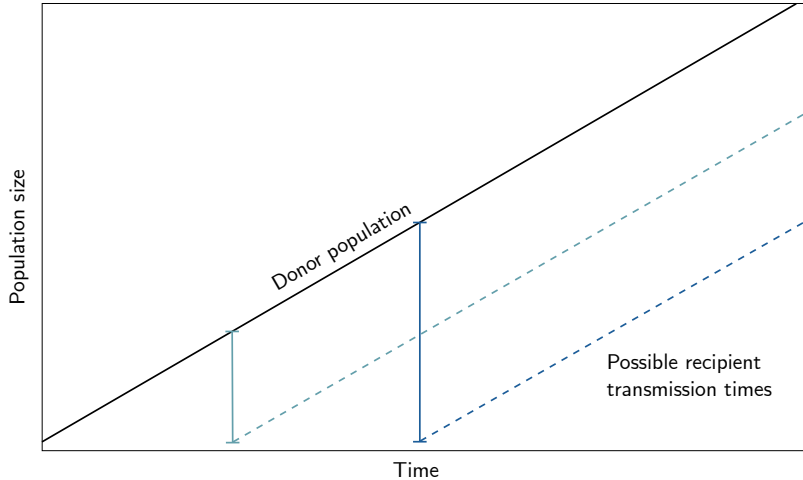
Large N causes node times to be further apart, stretching the tree



Effect of changing population size



Predicting transmission time on a changing population



Results

What I did...

In this, I could show what's going on for my



Next steps

In the coming weeks...

- * Getting linear population to...um, work.
- * What else was I even thinking about lol



Next steps

Next year (and later)...

