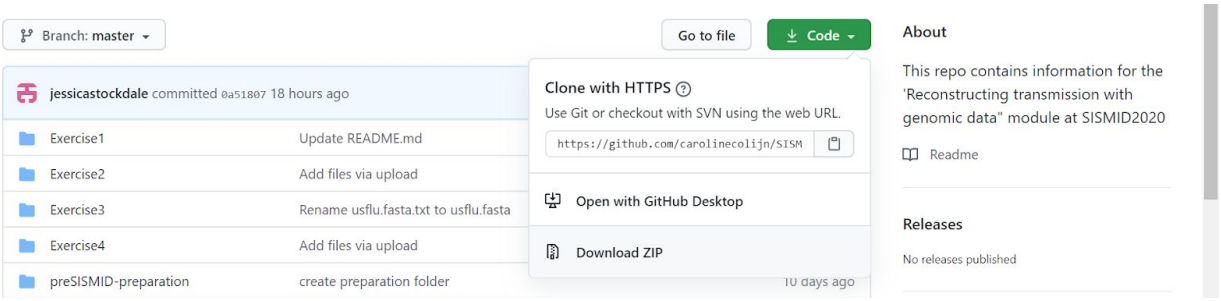
Module 4: Reconstructing Transmission with Genomic Data

Schedule

Time	Monday	Tuesday	Wednesday
8:00-8:50	An introduction to reconstructing transmission with genomic data (video lecture)	Phylogenetic trees and methods to build them (video lecture)	Research forefronts 2 (video lecture + live session)
8:50-9:05	Break	Break	Break
9:05-9:55	Welcome and exercise 1: reconstructing paths of transmission (live session)	Exercise 3: phylogenetic tree reconstruction (live session)	A COVID-19 perspective (live session)
9:55-10:10	Break	Break	Break
10:10-11:00	Introduction to genomics (video lecture)	TransPhylo and the math behind it (video lecture)	Group discussion: what methods work when and why? (live session)
11:00-11:30	Break	Break	End of the course
11:30-12:20	Non-phylogenetic transmission reconstruction (video lecture)	Exercise 4: TransPhylo for outbreak reconstruction (live session)	
12:20-12:35	Break	Break	
12:35-1:15	Open work and discussion session (live)	Open work and discussion session (live)	
1:15-1:30	Break	Break	
1:30-2:20	Exercise 2: computational methods for outbreak reconstruction (live session)	Research forefronts 1: Applications of TransPhylo (video lecture)	

Course Outline

All course materials will be provided in a github repository for this module, https://github.com/carolinecolijn/SISMID2020-transmission-genomics
If you are unfamiliar with git, you can download individual files from the github website without an account, by navigating to the file you want, right-clicking on 'Raw' and selecting 'Save link as' (or a similar process based on your OS). **You can also download the whole repository by clicking the link above, hovering over the green 'code' button at the top right and selecting 'Download zip' - this is much easier than downloading each file individually**!
Or, you can sign up for an account if you don't have one, and clone the repo locally.



'Open work and discussion sessions' will be informal time for questions, discussion, catching up on any incomplete exercises. You can use this time as you best see fit. We will be collecting your questions, on the video lectures or otherwise, through slack, and answering them in the main zoom session during this time. Live questions are also welcome of course. We will have breakout rooms available in zoom for group work/discussion, or if you need a break from zoom you can use this time to catch up on lectures/exercises on your own.

You will notice that we have split each video lecture up into smaller video chunks, just to make them a bit more manageable and to encourage you to pause and note down any questions you might have. Please ensure to watch all parts of each video! (The default video quality seems to be unavoidably 360p - but you should be able to set it up to 1080)

We will have the zoom meeting open 30 minutes before the start of each scheduled day (7:30am) and for 30 minutes after the end of each day, if you want to come and chat with your fellow participants. The meeting will also remain open during all of the breaks.

Day 00 – To prepare for the week

- Follow the computational preparation instructions: https://www.dropbox.com/scl/fi/py8luku0h3i5tpsie3m1k/Computational_instructions.gdoc?dl=0&rlkey=e7f00szs9yew4irw1mfirrrl3 (this is also available in the github repo)

Day 01 – Monday 13/07

Zoom link:
https://sfu.zoom.us/j/95368181939?pwd=Q3VUK3lBWDVTSWNQRHlmS0dyVDV2UT09
(password 550678)

Agenda:

- 8:00 - 8:50 An introduction to reconstructing transmission with genomic data (video lecture)
- 9:05 - 9:55 Welcome and exercise 1: reconstructing paths of transmission (live session)
- 10:10 - 11:00 Introduction to genomics (video lecture)
- 11:30 - 12:20 Non-phylogenetic transmission reconstruction (video lecture)
- 12:35 - 1:15 Open work and discussion session (live)
- 1:30 - 2:20 Exercise 2: computational methods for outbreak reconstruction (live session)

Please note that although the zoom meeting is scheduled to start at 7:30am, our first live session will begin at 9:05am. You should spend the 8:00 - 8:50 session watching 'An introduction to reconstructing transmission with genomic data' (or you can watch this in advance). We will be available on slack and zoom during this time to assist with any problems.

Resources:
Video 1 (intro): part 1 part 2 part 3
Exercise 1
Video 2 (genomics) part 1 part 2
Video 3 (non-phylo) part 1 part 2 part 3
Exercise 2

Day 02 – Tuesday 14/07

Zoom link:
https://sfu.zoom.us/j/94254060785?pwd=czJhL1VnQUp2U0pWVURjb0tjV2lyQT09
(password 550678)

Agenda:

- 8:00 - 8:50 Phylogenetic trees and methods to build them (video lecture)
- 9:05 - 9:55 Exercise 3: phylogenetic tree reconstruction (live session - zoom)
- 10:10 - 11:00 TransPhylo and the math behind it (video lecture)
- 11:30 - 12:20 Exercise 4: Transphylo for outbreak reconstruction (live session - zoom)
- 12:35 - 1:15 Open work and discussion session (live - zoom)
- 1:30 - 2:20 Research forefronts 1: Applications of TransPhylo (video lecture)

Resources:

Video 4 (phylo trees) part 1 part 2 part 3
Exercise 3
Video 5 (TransPhylo) part 1 part 2
Exercise 4
Video 6 (applications) part 1 part 2 part 3

Day 03 – Wednesday 15/07

Zoom link: https://sfu.zoom.us/j/97229261639?pwd=cUpvcXVhVlc0R2tSc2lhL09QSEZkQT09 (password 550678)

Agenda:

- 8:00 - 8:50 Research forefronts 2 (video lecture + live session - zoom)
- 9:05 - 9:55 A COVID-19 perspective (live session - zoom)
- 10:10 - 11:00 Group discussion: what methods work when and why? (live session - zoom)

Resources:

Video 7 (forefronts 2) part 1 part 2

Additional Materials:

Additional reading list [link to come]
