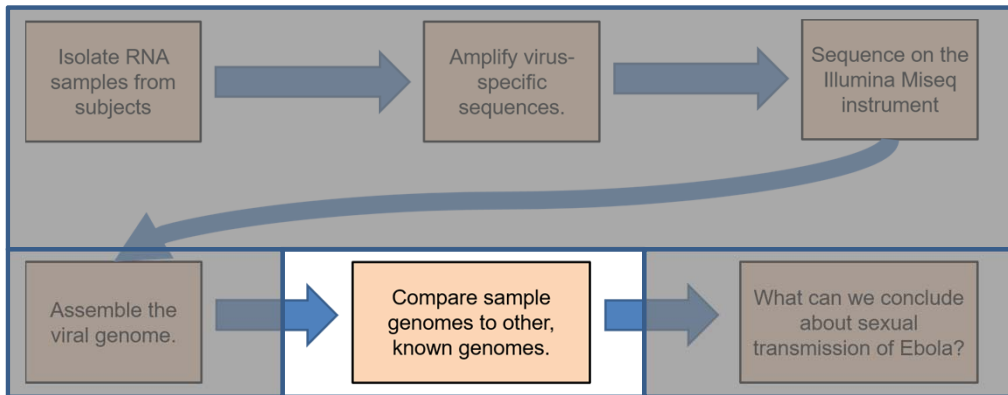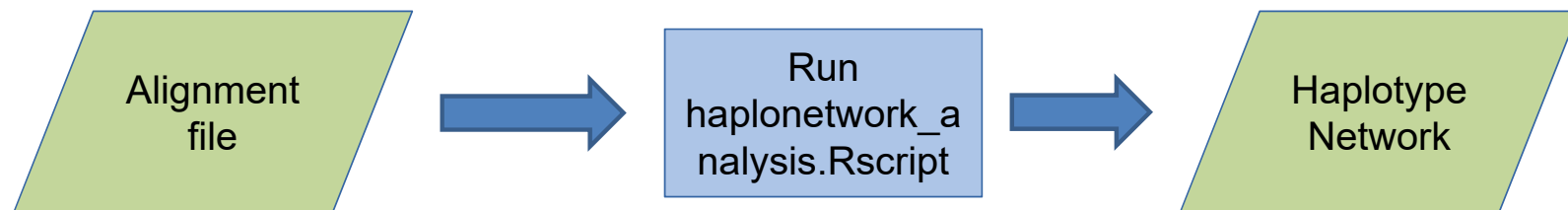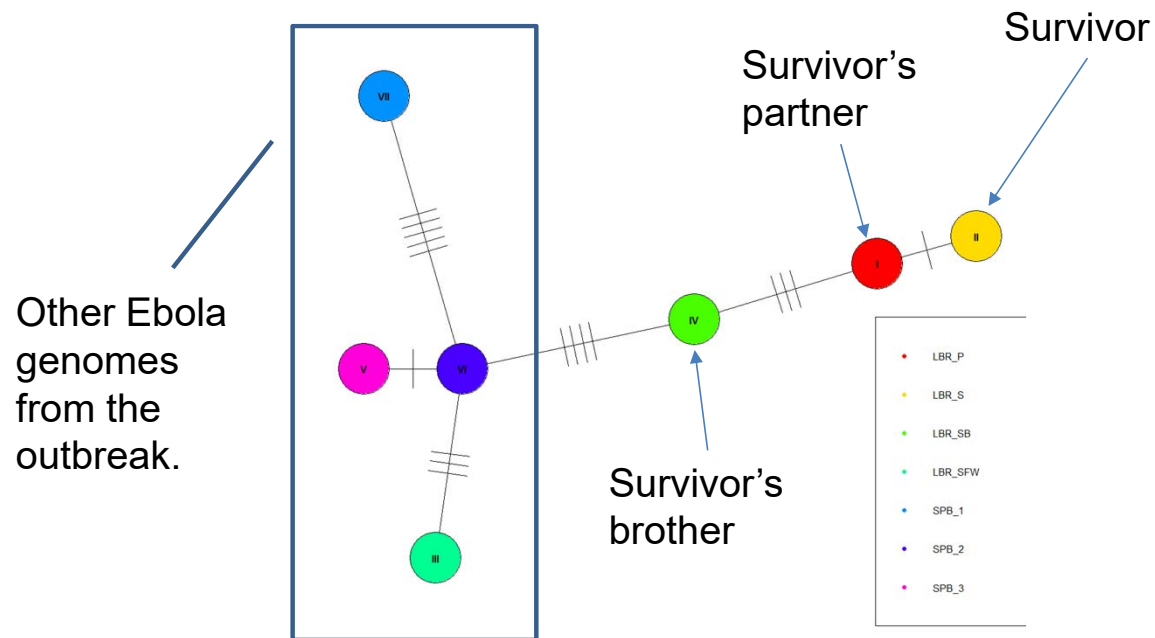# Haplotype Network Analysis

- **Start with the alignment file made in the previous step.**
- **Arrange the genomes in a haplotype network: where each genome is connected by a line to the genomes it is most similar to.**
- **This allows us to visually depict the differences between several genomes.**
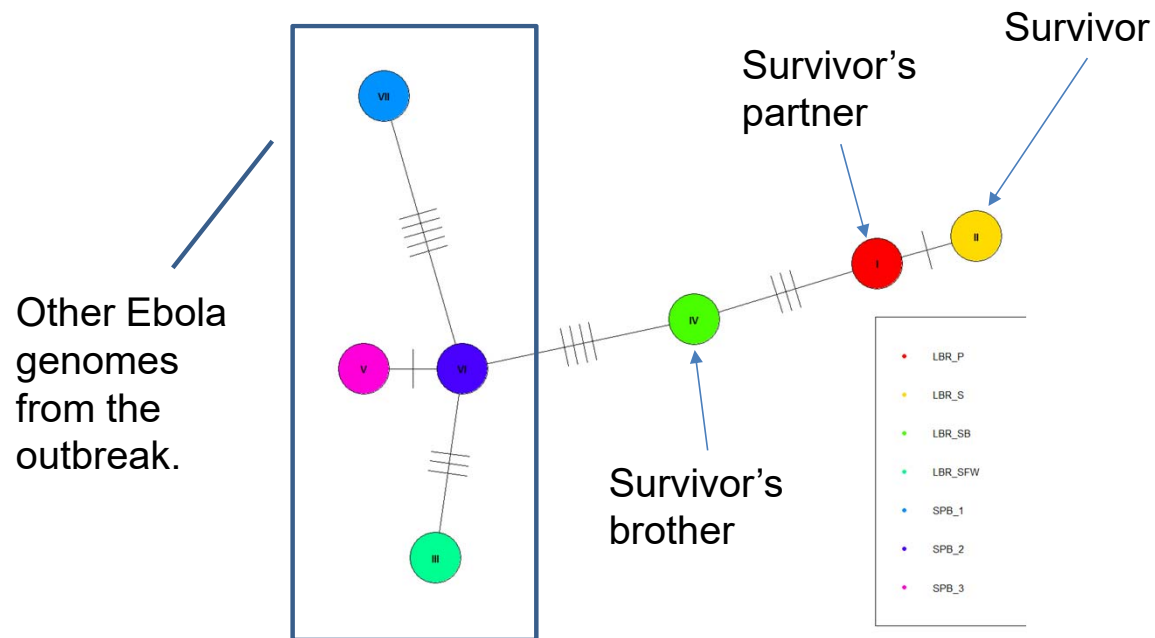
Compare the genomes in the study and other Ebola genomes using a haplotype network

Survivor

Survivor's partner

Other Ebola genomes from the outbreak.

Survivor's brother

VII

V   VI

III

IV

I   II

- LBR_P
- LBR_S
- LBR_SB
- LBR_SFW
- SPB_1
- SPB_2
- SPB_3

- A haplotype is a region of DNA inherited from the parent.
- NOTE: for viruses, the haplotype is the full genome.
- Each circle (node) represents a genome sequence.
- Hash marks on the lines show the number of differences between the genomes connected by the lines.
- Remember our original question: Is the partner sample more similar to the survivor sequence? Or to the other samples from this outbreak?

Compare the genomes in the study and other Ebola genomes using a haplotype network

Survivor

Survivor's partner

Other Ebola genomes from the outbreak.

Survivor's brother

- LBR_P
- LBR_S
- LBR_SB
- LBR_SFW
- SPB_1
- SPB_2
- SPB_3

- The Survivor and Survivor's Partner have one difference between them.
- There are at least three differences between the Survivor's Partner and the next most similar genome.

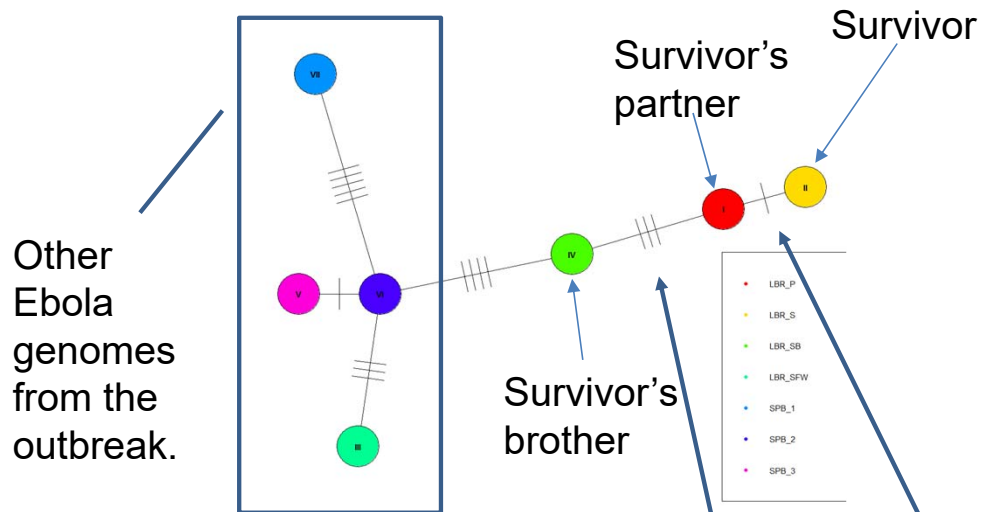# What can we conclude about sexual transmission of Ebola?

Other Ebola genomes from the outbreak.

Survivor's partner

Survivor

Survivor's brother

LBR_P
LBR_S
LBR_SB
LBR_SFW
SPB_1
SPB_2
SPB_3

Table 1. Distinct Ebola Virus Genome Substitutions in the Patient, the Survivor, and the Survivor's Older Brother.☆

Position†	Reference	Alternative	Samples with Alternative	Survivor-Corrected Depth‡	Nature of Substitution§
4,107	G	A	P, S	1	VP35, V327I
8,592	A	T	P, S	1	VP30, synonymous
16,636	G	A	P, S	5	L, G1686S
4,384	A	C	P, S, SB	3	Noncoding
12,996	C	A	P, S, SB	1	L, synonymous
18,399	AAAAAA	AAAAAAA	P, S, SB	2	Noncoding
11,263	C	T	S	1	Noncoding

- We see a similar pattern from the chart we previously produced.
- There is one position unique to the Survivor.
- There are three positions shared by the Survivor and Survivor's partner, but different in the Survivor's brother.

- **This data is consistent with sexual transmission from the Survivor to the Survivor's Partner.**