

# Genomics Training Module

# Molecular Evidence of Sexual Transmission of Ebola Virus

Suzanne E. Mate, Ph.D., Jeffrey R. Kugelman, Ph.D., Tolbert G. Nyenswah, L.L.B., M.P.H., Jason T. Ladner, Ph.D., Michael R. Wiley, Ph.D., Thierry Cordier-Lassalle, M.B.A., D.E.S.S., Athalia Christie, M.I.A., Gary P. Schroth, Ph.D., Stephen M. Gross, Ph.D., Gloria J. Davies-Wayne, R.N., M.P.H., Shivam A. Shinde, M.B., B.S., Ratnesh Murugan, M.B., B.S., et al.



- In Liberia, the partner of an Ebola survivor became sick.
- Did the partner contract Ebola through sexual transmission? Or through some other means?
- How can we tell?
- **These questions can be answered by sequencing.**

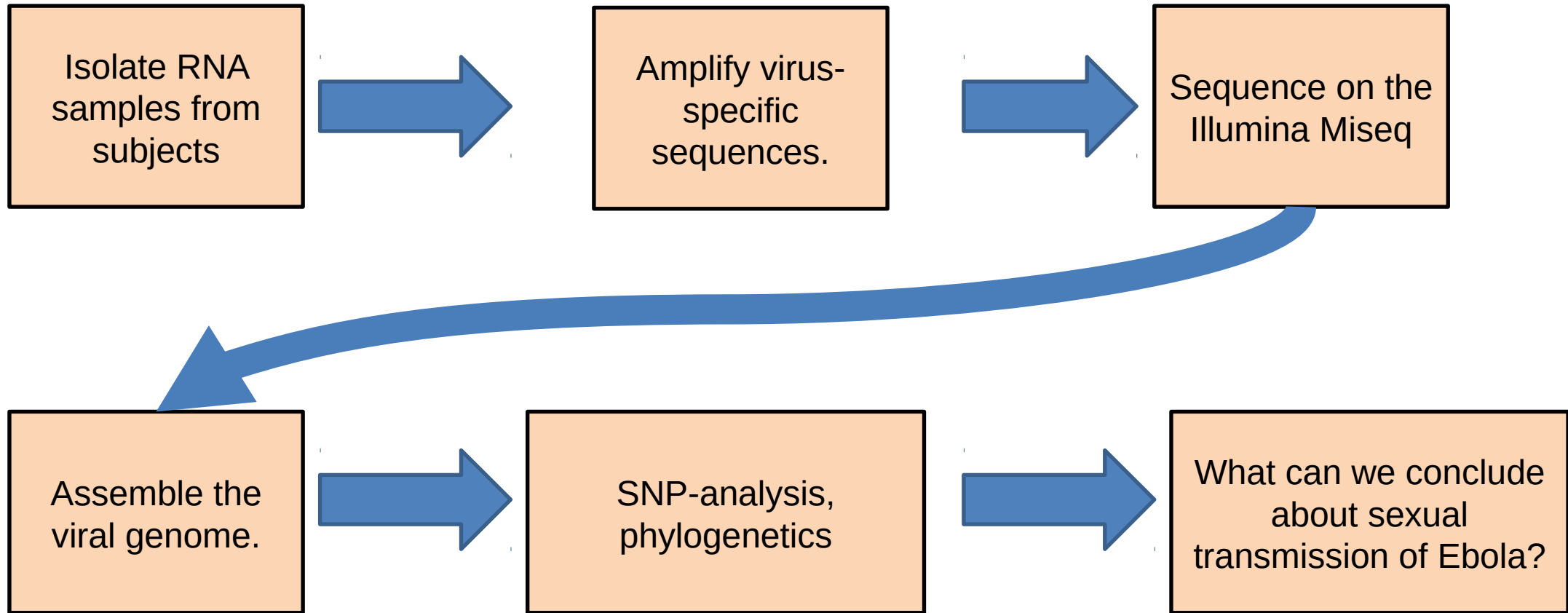
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- Isolate virus from the survivor and their partner.
- Sequence the virus to discover the complete, accurate genome of each sample.
- Compare these sequences to each other and to other virus samples from this outbreak.
- Is the partner sample more similar to the survivor sequence? Or to the other samples from this outbreak?

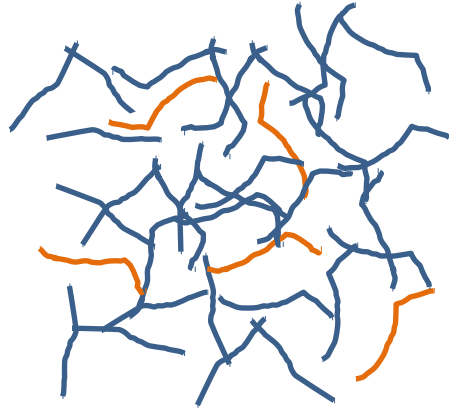
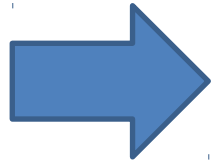
# Study overview



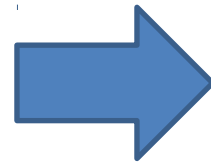
# Sequencing Library Prep



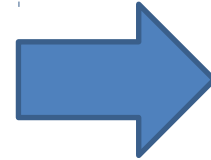
Collect blood sample



Extract RNA,  
convert to DNA.  
Most will be from  
the host.



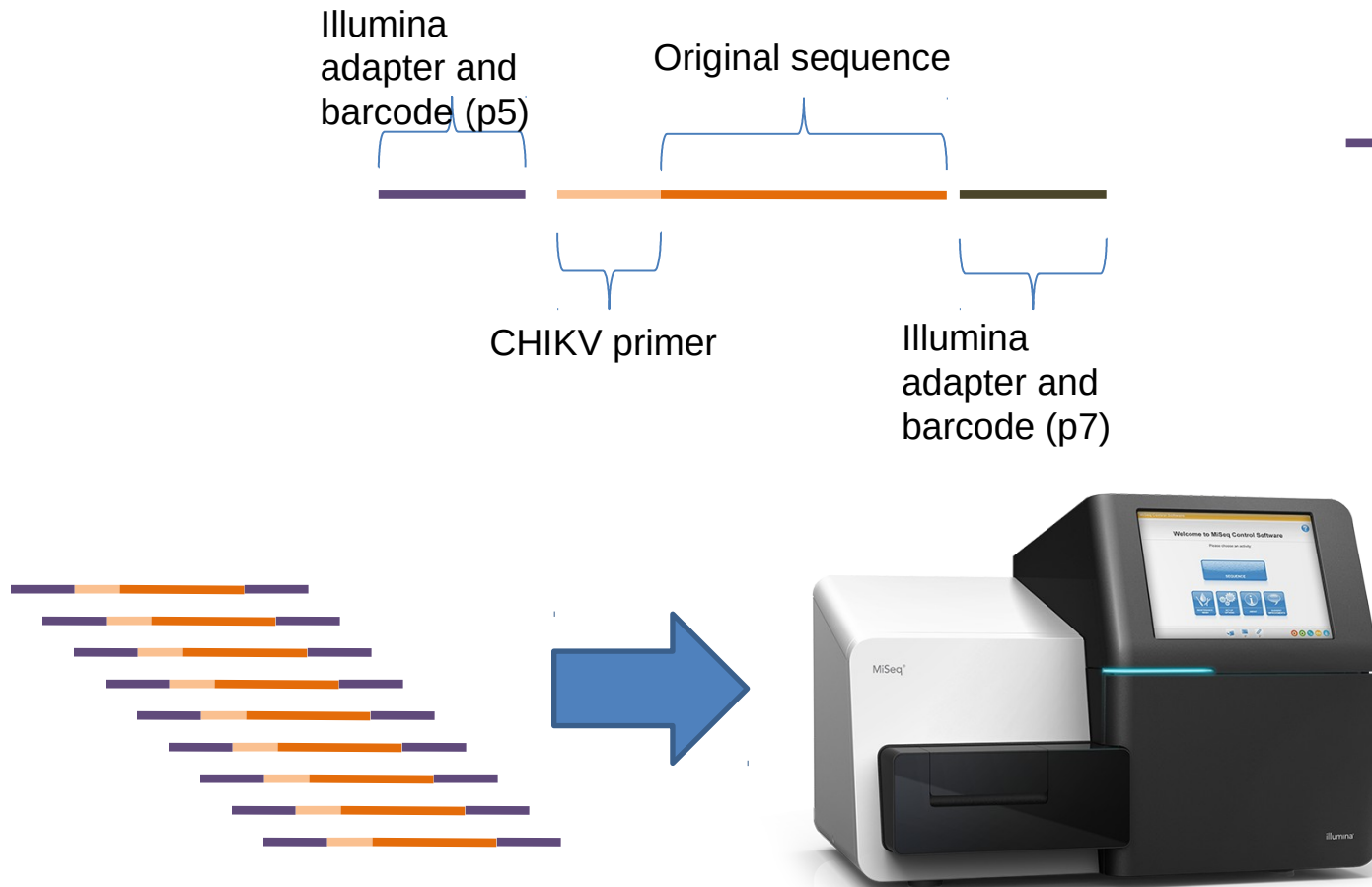
Amplify viral DNA,  
using primers  
specific to the  
CHIKV genome.



Make primers that  
span known filoviruses  
(including Ebola)



# Library Preparation



Each piece of DNA is sequenced, starting from either end (Paired end sequencing). The products of a sequencing run are called “reads.”