

Open Science Prize Goes to Tracking Viral Outbreaks



By Julianna LeMieux — February 28, 2017



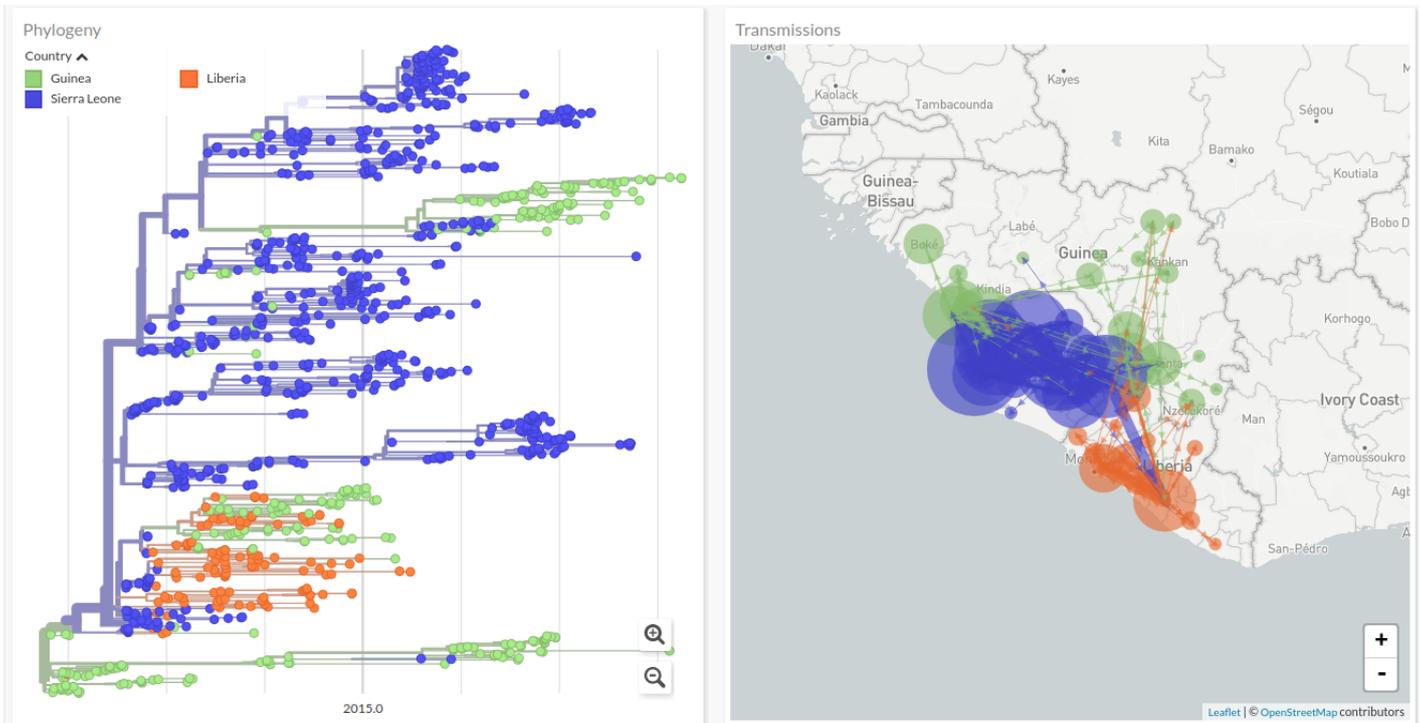
The winners of the 'Open Science Prize' are two scientists who developed an online tool that will use the changes, or mutations, that occur in viral genomes (DNA or RNA) to track an outbreak as it happens.

Dr. Trevor Bedford from the Fred Hutchinson Cancer Research Center and Dr. Richard Neher of the University of Basel designed the tool to provide open access to a 'tracker' of how an epidemic is growing and spreading. They will receive \$230,000 to make the platform a reality.

Viruses mutate, or alter their genomic material, very quickly. In doing so, certain properties can change — such as how lethal they are or how easily they are spread. Knowing which changes are occurring and being able to have access to the information — as the virus spreads — will give the people working to contain the outbreak an important new tool.

This tool, as can be seen in the figure below, will be able to follow a virus as it moves through a population or region. The figure is color coded by country (blue - Sierra Leone, green - Guinea and red - Liberia.)

The figure on the left is called a phylogenetic tree. Using it, we are able to analyze how similar the genomes from each virus are to one another. You can look at the phylogenetic tree from left to right. If the dots (each one represents a virus) come off the same branch point, their genetic sequences are similar. If, however, they are on branches that are far from each other, their genetic sequences are less similar. Even from this one piece of information, we can see that the Ebola viruses that are infecting people in Sierra Leone are, for the most part, similar in genetic sequence. Then, one of the viruses branched off those and then went on to infect people in Guinea (the green dots.)



Having this information to look back on is interesting. Having this information in real time could stop an epidemic and save countless lives. The information, which is accessible at www.nextstrain.org [1], will be continually maintained and updated by adding data being generated from various research groups across the globe.

The Open Science competition, a global contest that inspires new solutions for public health that use open access to digital content, is sponsored as a collaboration between three major players in the science funding world - the National Institute of Health, the Wellcome Trust and the Howard Hughes Medical Institute.

The other finalists, all of whom presented truly innovative ideas, can be found on the prize's website - <https://www.openscienceprize.org>. [2]

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Links

[1] <http://www.nextstrain.org/>

[2] <https://www.openscienceprize.org>.