

Key

1. Main point: measure the proportion of infected mice along a horizontal line across the US over a period of several years. If the wave of infection retains its shape, then the traveling wave model is valid.
2. r is the growth rate, the rate of infection. It can be determined in the lab by monitoring the proportion of infected mice in a given area over time. Once r is known, the diffusion equation can be solved for μ . Monitor the population and find $u(t,x)$ for specific t and x and plug it into the diffusion equation.
3. (c) Inoculate mice in the border states, the area where the virus is spreading the most. You can stem the spread of the virus. Keep in mind that inoculating east of the line of infection is impractical because the area is too large.
4. Slow waves are steep because if infection travels slowly, there's more time for organisms to become infected in a particular area and thus there's a greater proportion of infection. On the other hand, less of the population has a chance to become infected before a fast wave passes, so fast waves are less steep.