Each year when I begin the infectious disease unit in my AICE Biology class, we begin with the "Simulation of disease transmission" a version of the preparation notes for this activity may be found online:

http://serendip.brynmawr.edu/sci_edu/waldron

I prepare one test tube with a dropper for each student. In only 1 of the test tubes, I use a solution of dilute NaOH. All other test tubes are water only. All solutions look the same.

I tell students that the solutions in their test tubes represent their bodily fluids. One person in the room is infected with HIV. We discuss the fact that many people who are infected with HIV may not even be aware that they have been exposed to the virus, so they may have no idea they are infected. We then discuss lifestyle choices which impact ones likelihood of becoming infected. I then randomly pass out lifestyle cards to each student, and each student receives one vial of body fluids. The life style cards describe different behaviors like abstinence, monogamy, promiscuous behavior, prostitution & intravenous drug use. I then tell students that they have 30 seconds to "play their role" without being too obvious about who they are. (i.e., the average sexually promiscuous teenage girl does not brag about it, but her friends can figure out based on her behavior.) I also ask students to keep track of who their partners were & the order in which they exchange fluids.

At the end of 30 seconds, I add 1 squirt of Phenolphthalein or Methylene blue pH indicator to each vial. The intense color change indicates infection. We then pretend to be immunologists and try to track back to determine who was the person originally infected, and determine who infected each person in turn.

Usually, this works out beautifully. Occasionally I let the time run too long & we have the whole class infected or I accidently give the infected solution to the student who is abstinent & we have to do another round to get good results. In any case, the students enjoy role playing, and this simulation always opens the door to a great discussion about how diseases move through populations, lifestyle choices etc. It also gets the students asking lots of questions about particular diseases, immunity and the topics we will be discussing over the next several class sessions; thereby piquing their interest.