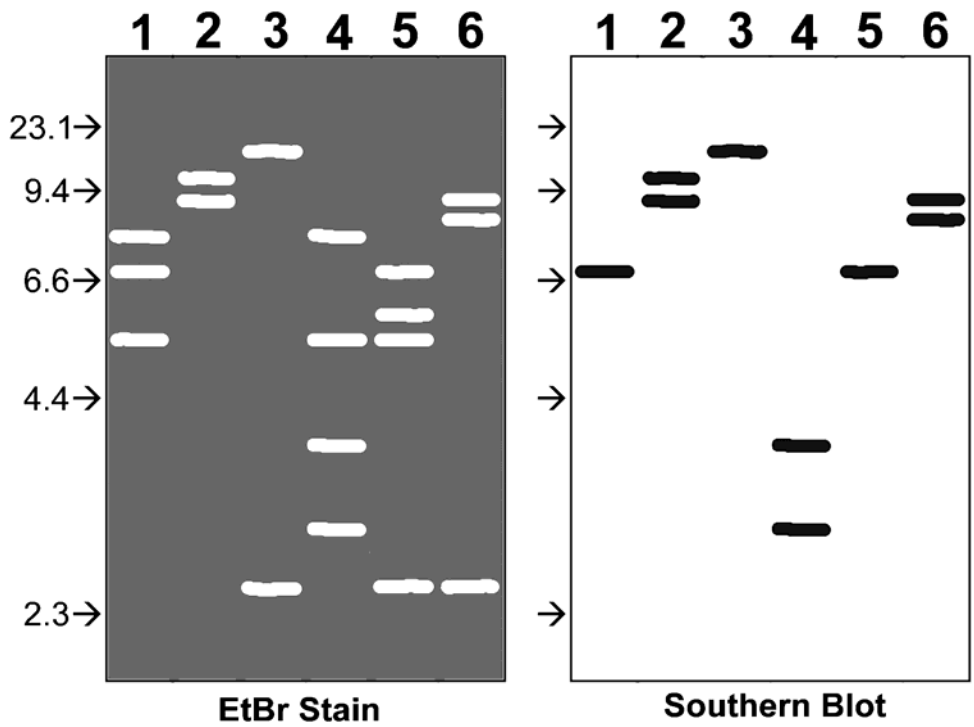


### HOMEWORK #8

You have isolated the DNA of a virus with a 20 kb linear genome and would like to make a restriction map. (A restriction map indicates the relative positions of restriction sites with respect to one another.) The viral DNA is digested with 3 different restriction enzymes or pairs of restriction enzymes (as indicated in box) and subjected to gel electrophoresis and ethidium bromide staining (left panel). The DNA from this gel is then transferred to a nylon membrane and probed with a cloned DNA fragment from a related virus. The cloned fragment is a nucleocapsid protein and is 2 kb in length. The autoradiograph from this Southern blot is shown on the right. The positions of molecular weight markers in kb are indicated on the left.

Lane 1	<i>Bam</i> HI
Lane 2	<i>Xba</i> I
Lane 3	<i>Kpn</i> I
Lane 4	<i>Bam</i> HI + <i>Xba</i> I
Lane 5	<i>Bam</i> HI + <i>Kpn</i> I
Lane 6	<i>Xba</i> I + <i>Kpn</i> I



1. Draw a restriction map of the 20 kb DNA fragment. In other words, make a drawing representing the virus genome which shows the relative positions (ie, order) of the restriction sites. Include a scale (in kb) to indicate the approximate distances between restriction sites. (Lecture notes contain brief discussion about restriction mapping.)
2. Indicate on the restriction map the region where the nucleocapsid gene can be found.
3. Is the map you drew the only possible map for the data? Why or why not?