The chemical from the disc diffuses into the semi solid gel and as it spreads out from its central location, it dilutes itself as well. Antibiotic discs can be purchased or can be made by purchasing the antibiotic, dissolving it and then treating a cloth or paper disc with a drop of it.

Bacteria growing next to an antibiotic disc or mutagenic chemical are usually killed by the high concentrations next to the disc. The farther away from the disc, the more dilute the chemical becomes and the less toxic. A halo of cell growth forms around the disc when the toxic concentration drops to a level where it no longer kills all the cells. In a normal growth of cells on a culture plate with an antibiotic disc, growth improves as you get further away from the toxic chemical disc. (See page 180 Volume 6-A Bacteria based weapons for an example of an antibiotic sensitivity disc and growth)

In this method, you can mix a very small amount of the desired antibiotic (if you want to produce antibiotic resistant strains directly) into the Jell-O. The culture is streaked onto the plate and the result should be no colony growth because all the cells are inhibited by the antibiotic. In this case, we add the disc with a drop of the chemical mutagen in the center. The mutagen dilutes out into the medium with the cells and causes mutations. It kills the closest cells because it is toxic, but at a sub-lethal level of mutagen, a halo forms around the disc. In this area, cells have survived the mutagen and mutated into antibiotic resistant strains. These cells begin to grow and form colonies. As the chemical dilutes even further, fewer and fewer cells are mutated so that fewer antibiotic resistant strains are produced. The portion of the plate that receives no diluted mutagen chemical from the disc will have no growth at all because no cells have mutated to a resistant form and are killed or prevented from growing by the antibiotic.

The photos below illustrate this method using a medium filled with dilute antibiotic and a mutagen drop on a disc placed in the center.