Demonstrating Transfer of Antibiotic Resistant Genes in the Rhizosphere and Experimenting with Auxins on the Rate of Transference

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Antibiotic resistant bacteria, containing antibiotic resistant genes, are created from overuse of antibiotics. These bacteria can cause untreatable infections in the masses, and before we can take effective action to stop this, the scientific community needs to understand all factors that can contribute to this phenomenon. It was because of this that I designed my experiment. I hoped to find how, and the significance of how, generally instituted farming practices affected the transfer of antibiotic resistant genes (ARGs) through plasmid transfer in soil bacteria. Though it may not seem immediately apparent, soil is a breeding ground for bacteria, with millions upon millions of microbes in a single square centimeter. These bacteria can naturally, quickly, and effectively transfer specific traits and even abilities through plasmid transfer, and the faster they can achieve this, the more dangerous it is to humans. To test this, I used E. coli HB101 and Rhizobium trifolii as donor and recipient, respectively, of plasmid BLK1-2. pBLK1-2 is the plasmid responsible for Kanamycin resistance, a common antibiotic. I used multiple sets of controls and a growth medium that ensured that only Rhizobium trifolii (pBLK1-2)—a microbe of the recipient with the donor's plasmid—could grow on in an effort to demonstrate and study any differences in rates of transference of plasmids when exposed to auxins.

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