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Characterization of Autoinducer Production in Bradyrhizobium japonicum

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Quorum sensing allows bacteria to communicate with each other and coordinate their behavior with their surroundings. This communication uses autoinducers, such as Acyl-homoserine lactones (AHLs), which is produced and secreted by several strains of *Bradyrhizobium japonicum.* This study characterizes the production of AHL in specific strains of *B. japonicum* and describes the relationship between AHL production and a supposed AHL synthase gene in the *B. japonicum* genome. Polymerase Chain Reaction (PCR) was performed on various bacterium strains to amplify the synthase gene. Extraction of AHLs from *B. japonicum* culture supernatants were used to analyze AHL production using thin-layer chromatography (TLC). The results indicate that some strains of *B. japonicum* produce detectable AHLs of different sizes while other strains do not produce as much AHLs. Surprisingly, AHL production does not appear to correspond precisely with the presence of an AHL synthase gene, indicating more than one pathway for AHL synthesis.

Ashley is a senior attending the University of Missouri-Rolla majoring in chemical engineering. She is the daughter of Russell and Joyce Boudria and is from Jefferson City, Missouri. On campus she is actively involved in Chi Omega, Tau Beta Pi, Omega Chi Epsilon and the American Institute of Chemical Engineers. Ashley plans to pursue a master's degree in Chemical Engineering after she graduates from UMR in December.