

**EXECUTIVE SUMMARY [NON-TECHNICAL ABSTRACT FOR PUBLIC INFORMATION OR PROGRAM PROMOTION]:**

State **in layman's terms** the application's broad, long-term objectives and specific aims, making reference to the potential public benefits of the project relevant to California.

Acidic soils, which are prevalent in northern temperate and tropical regions of the world, are a significant problem for agriculture. Because most crops grow poorly in acidic soils, many developing countries in the tropics struggle to establish the sustainable agricultural systems that can support their populations. We will use the plant *Arabidopsis thaliana* as a model to study the effects of acidic soils on crop productivity. Toward this end, we will screen a geographically diverse collection of *A. thaliana* ecotypes to identify differences in their sensitivity to soil acidity. In addition, we will examine how changes in soil acidity affect global patterns of gene expression in a single *A. thaliana* ecotype. The results of these preliminary studies will form the basis of a National Science Foundation grant application that will be focused on a comparative analysis of the molecular biology and physiology of acid-tolerant and acid-susceptible ecotypes of *A. thaliana*. Ultimately, this work may contribute to the development of acid-tolerant crop plants for use in tropical and northern temperate regions.