

**EXECUTIVE SUMMARY [NON-CONFIDENTIAL, 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. Do not include proprietary or confidential information. This may be distributed before the funding decision has been finalized.

Thermal tolerance is the ability of an organism to withstand high temperatures. Thermal tolerance is particularly important in plants as they are not able to move away from stress, but rather must adapt in place. Plants like other organisms have a heat shock response that is “turned on” in response to high temperature stress. The protein HSP100 is part of this heat shock response and in the plant *Arabidopsis thaliana* is encoded by the gene HSP101. Recent studies have shown that HSP101 is necessary for thermal tolerance in *A. thaliana*. *A. thaliana* is a model species that is widely used in plant biotechnology studies and is frequently used in place of more difficult to study crop species in preliminary or early examinations of crop traits such as thermal tolerance. I propose to examine natural populations of *A. thaliana* in order to identify individuals with increased thermal tolerance. The sequence of HSP101 from these individuals will be determined and this information can then be applied to the improvement of thermal tolerance in crop species.