

## PROJECT SUMMARY

**Instructions:**

The summary is limited to 250 words. The names and affiliated organizations of all Project Directors/Principal Investigators (PD/PI) should be listed in addition to the title of the project. The summary should be a self-contained, specific description of the activity to be undertaken and should focus on: overall project goal(s) and supporting objectives; plans to accomplish project goal(s); and relevance of the project to the goals of the program. The importance of a concise, informative Project Summary cannot be overemphasized.

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**Title:** Translating Solanaceae Sequence Diversity And Trait Variation Into Applied Outcomes through Integrative Research, Education, and Extension

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**PD:** Douches, David, S.

**Institution:** Michigan State University

**CO-PD:** Buell, C., Robin

**Institution:** Michigan State University

**CO-PD:** Francis, David, M.

**Institution:** Ohio State University

**CO-PD:** Van Deynze, Allen

**Institution:** University Of California- Davis

**CO-PD:** Stone, Alexandra, G.

**Institution:** Oregon State University

**CO-PD:** Mueller, Lukas, A.

**Institution:** Boyce Thompson Institute for Plant Research

**CO-PD:** De Jong, Walter, S.

**Institution:** Cornell University

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SolCAP focuses on two major Solanaceae vegetable crops: potato and tomato. We are using high throughput sequencing and bioinformatics to identify variation in elite germplasm for candidate genes of high value traits such as carbohydrate, sugar and vitamin content. These resources will ultimately be used to develop improved varieties. This 3-year project is a continuation of the Solanaceae CAP awarded in 2008 through USDA/NRI. This integrated Coordinated Agricultural Project addresses the research priority to fill knowledge gaps and adopt new genomic technologies that lead to breeding improvements in production and health. We are supporting centralized facilities for genotyping relevant germplasm and plant breeding populations and for databases to curate and share information. Germplasm panels consist of relevant varieties, breeding/parental lines, and wild species accessions that are broadly useful in breeding and to the scientific community. We established a network of cooperating breeding programs to collect standardized data. Through partnerships with the Solanaceae Genomics Network and Michigan State University, we will enhance access and availability of breeder-friendly analysis tools. A small grants program will leverage the genotyping resources for additional mapping of agronomic, disease/insect resistance and quality traits. Outreach efforts consists of integrated education and extension, through developing curricula for graduate students, offering a breeder practicum, and developing a community of learning for the breeding community via the eXtension.org web portal (Plant Breeding and Genomics Community of Practice) to amplify impact. Systematic and regular assessment by a designated evaluator is being used to improve effectiveness of our education and extension efforts.

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