

17 November 2020

Dear IMPACTS Trainees and Trainers,

This letter serves to provide additional information about the IMPACTS' internship requirement and address some of the questions that arose at the recent Trainee Retreat. We aim to share both the program's perspective about the value of internships as well as some of the diverse options trainees may pursue to fulfill their internship requirement.

***Why do an internship?***

A broad goal of the IMPACTS program is to prepare trainees for careers that traverse disciplinary and contextual boundaries. Participation in the work of industry, government, nonprofit sectors, or other research institutions will broaden trainees' experience and develop skill sets beyond what they can obtain from their degree-granting program alone. This can improve their abilities to communicate and collaborate with diverse partners and prepare them to address complex and emerging problems that require both a deep understanding of plant biology and fluency in computational and data science approaches. As a result, trainees will enter the STEM workforce better prepared to address grand challenge problems in a rapidly-changing world.

***What is the goal of including internships as part of the IMPACTS training model?***

In principle, internships enable trainees to connect what they learn in their classrooms and labs to practical issues in applied contexts. These training components complement the requirements of the degree-granting departments to ensure trainees acquire essential core knowledge while enriching their experience with real-world skill development and meaningful interactions with relevant mentors. Internships can develop professional skills in decision-making, communication, teamwork, problem solving, and applications of data analyses. These skills are often underdeveloped in standard graduate training as programs vary considerably in their emphasis on professional development and the infrastructure available to support it. Internships additionally serve to expand trainees' professional networks and familiarize them with the practices and cultures of work outside of academia and can therefore impact trainees' career choices.

***How long does the internship need to be? Can I do an internship remotely? When should I plan to do the internship?***

In general, internships range from 6-8 weeks, but can be longer or shorter depending on trainee needs and the specific goals of the proposed internship. In addition, because of the inordinate constraints on travel imposed by the Covid pandemic, we encourage trainees to consider remote internships when in-person experiences are unfeasible or pose unnecessary risk. We recommend completing your internship during the summer semester of your funded year. However, alternative arrangements may be made to accommodate a trainee's program of study and/or internship availability.

***What are some possible avenues to pursue an internship?***

**Industry.** Companies in technology, agriculture, and biotechnology sectors actively seek individuals with experience in computation who are capable of analyzing large-scale datasets, and are thus keen to recruit employees with expertise in plant biology and computation. We have liaised with colleagues at Corteva Agriscience, as well as companies with a focus on big data analytics, such as IBM Research and Microsoft Research to facilitate short (3-6 month) internships. This will allow Trainees to be exposed to corporate research paradigms and generate useful connections with scientists in industry.

· **Government and policy institutions.** We have established collaborative arrangements with Jacob Courville, Assistant Director of Governmental Affairs in the MSU Washington Office, to assist trainees wishing to pursue internships with the federal government. This study tour will include a one-week rotation in the office of a Senator/Congressperson, interacting with organizations and policy developers working with federal agencies and Congress, and attending congressional hearings and briefings on topics related to plant and computational sciences. Trainees will gain a greater understanding of how federal policy impacts science and communicate with policymakers to shape future scientific programs.

Government internships can also be arranged at the state or local levels. For example, trainees can work with the Michigan State House Committees in Agriculture, Communication & Technology or Natural Resources. Trainees will participate in public committee hearings and conversations with Representatives and/or aids in mission, interests, and practices in the policy-making process.

· **Nonprofit sectors, research organizations, or other universities.** Trainees interested in internships with nonprofits, research corporations, or applied experiences at other universities are encouraged to pursue opportunities that best serve their specific career goals. We are happy to work with trainees to establish connections with organizations of interest and to work with partners to negotiate an appropriate experience.

For additional information about internship opportunities, organizational contacts, and local trainers that can provide assistance in establishing connections, please see the [Internship Resource Database](#). We will continue to add to this document as new opportunities become available.

If you have additional questions about internships, expectations of the IMPACTS internship requirement, or would like to propose an internship experience, please do not hesitate to reach out to Program Coordinator, Jyothi Kumar ([kumarjy1@msu.edu](mailto:kumarjy1@msu.edu)) or myself ([longta@msu.edu](mailto:longta@msu.edu)). We are happy to help.

Sincerely,

Tammy M. Long, Ph. D.  
Associate Professor  
Acting Director, NSF NRT-IMPACTS