



# School of Environmental and Forest Sciences

UNIVERSITY of WASHINGTON

College of the Environment

2 December 2013

Grant Application Committee,

I am writing to confirm my availability to serve as a mentor for the “Green Liver Research Project” grant proposal. I am a faculty member in the School of Environmental and Forest Sciences, and have a research focus on beneficial plant-microbe interactions especially in the area of pollutant reduction. I teach a course on “Environmental Applications of Plants: Bioremediation and Bioenergy” (ESRM325/SEFS523) in which I discuss phytoremediation, the use of plants to remove environmental pollutants. The topic is also part of one of my lectures in “Pacific NW Ecosystems” that includes a field trip to the Seattle Edge Alternatives neighborhood and its positive impact on the watershed for Piper’s Creek in Carkeek Park. It would be an excellent addition to both of these courses to have an example of phytoremediation right on the UW campus.

More directly, I am excited about the possibility of having a phytoremediation research site where graduate and undergraduate students could gain experience in a real application of this technology. Although I have conducted phytoremediation research since 1995, the majority of it has been laboratory research. I currently have three Ph.D. graduate students and six undergraduate students doing phytoremediation projects in my lab. They could all benefit from being engaged in the proposed UW campus project. A focus of my research is on endophytes, the microbes that live within plants. Some of these endophytes can detoxify pollutants including PAHs (phenanthrene, pyrene, and naphthalene), solvents (trichloroethylene), and explosives (RDX and TNT). Plants colonized by these natural endosymbionts suffer less from the phytotoxic effects of the pollutants. By being able to continue growing in polluted areas, the plants should have an increased capacity to remove the pollutant as it is being degraded within by the endophytes to less toxic compounds. Since these microbes evolved naturally in other polluted sites, there would be no restrictions to their use and they could have profound impacts on pollutant removal. The opportunity to quantify these effects in a practical situation such as that proposed in this research project would help us greatly in getting this technology into common use.

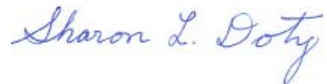
Education and outreach are important aspects of my laboratory. I have mentored over 85 undergraduate researchers in my lab, providing valuable experience that the students have been able to use in graduate school and in careers. My lab has also been involved annually in the “Expanding Your Horizons” workshops that encourage high school girls to enter



fields of science or engineering, the Pacific Science Center “Paws on Science” days where we run a booth on plant microbiology, and we participated in the first College of the Environment “Science Inside Out” outreach event. These are a few examples to demonstrate that my lab can effectively inform the public about the exciting things that scientific research can achieve. I will gladly help the students involved in this project over the years to convey its meaning and importance to the general public.

I am looking forward to working with the students on this profoundly beneficial project!

Sincerely,

A handwritten signature in blue ink that reads "Sharon L. Doty". The signature is written in a cursive style with a large, elegant 'S' at the beginning.

Sharon Doty, Ph.D.  
Associate Professor

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<http://depts.washington.edu/envaplab/index.html>