

A Visit to Washington State University

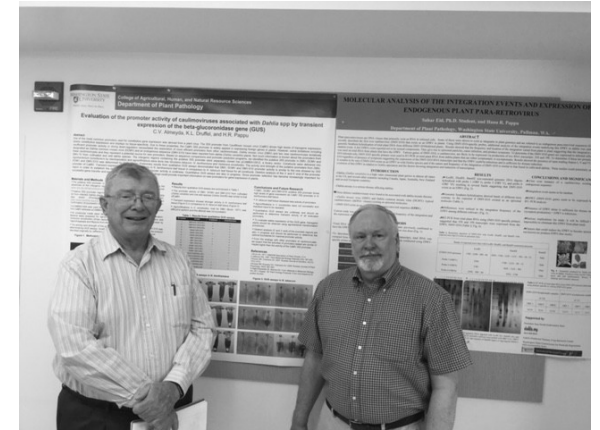
Two members of your ADS Executive Committee visited Professor Hanu Pappu at Washington State University in April. The purpose of the trip was to represent Mr. Jim Chuey in reviewing the re-search work that Mr. Chuey has been sponsoring at the University and to discuss the potential benefits of additional future investments. Perhaps the most interesting and exciting observation was that there is a tremendous amount of knowledge and expertise on dahlias at WSU. One key future challenge is extracting the pieces of that knowledge that are of practical significance to us in our dahlia gardens.



WSU has been gathering knowledge on dahlias and dahlia viruses since the early-1990s when Evie Gullikson initiated a program to study dahlia viruses. She committed \$125,000 to the project and with a lot of time and effort under the leadership of Bill McClaren, the ADS matched her donation. The combined \$250,000 was to have been matched by the State of Washington; but those matching funds never came to fruition. Much of the early work at WSU focused on the development of reliable ways to detect viruses in dahlias. It is important to recognize that WSU is Washington's land-grant university, established in 1890. As such, it has a tremendous investment in support of agriculture in the state. In that context, viruses and plant pathology are just small pieces of the broad agricultural expertise available to us there.

The university is located in Pullman, Washington, a small town on the eastern edge of the state. It is a one hour plane ride over the mountains from Seattle. Professor Pappu met us at the tiny airport in Pullman and served as our host for the visit. We drove to Moscow, Idaho, for dinner (a 10 minute ride by car) after we arrived.

The next day was spent immersed in the technology of dahlia viruses. We started in the Plant Pathology classroom building where the halls were covered with posters illustrating the research projects underway by the graduate students working for Professor Pappu. The title of the project on the poster behind us on the left is "Evaluation of the promoter activity of caulimoviruses associated with Dahlia spp by transient expression of the beta-glucuronidase gene." Needless to say, we did not end the day with a clear understanding of the details of that project!



It is nevertheless illustrative of both the depth of the knowledge available there and the importance of having a way to translate the sophisticated technology to the practical needs in our gardens. Professor Pappu has been investing a lot of time and effort in that translation process and will continue to do so. It was nevertheless clear that much could be gained by more investment in that effort! A key conclusion from our discussions was that additional support of communication of the practical consequences of the research projects would be very worthwhile to our ADS members.

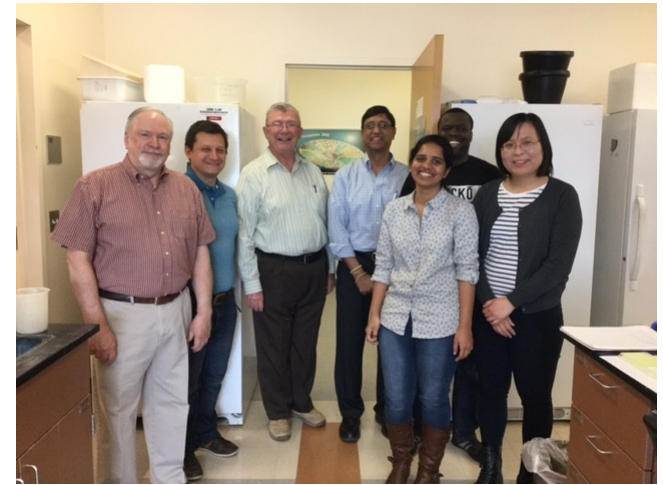
Most of the rest of the day was spent with Professor Pappu and his graduate students in their laboratories and greenhouses. Brad has already described the basic virus testing procedures in his Dahlias of Today 2017 article. The facilities and the sophisticated procedures are making it possible for us to test for the six important dahlia viruses in our gardens again this year. An important addition to the results this year will be the evaluation of the G1 samples from last year. That data will clarify the extent to which dahlia plants that are free of virus in 2016 will yield plants that are free of virus in 2017. If that premise is true, it will be a practical and valuable tool to help us reduce virus in our dahlia patches!

Professor Pappu is collaborating with Professors Walbot at Stanford and Professor Saar at Murray State in an NSF proposal for the mapping of the dahlia genome. Hopefully that project will be funded and will become the fulfillment of the precursor work that was described in the March Bulletin by Kristine Albrecht. When the genome information is in hand, it will be a valuable tool in improving our understanding of virus in dahlias.

One of Professor Pappu's PhD students is using genome technology in his research. He used recombinant DNA techniques to modify the virus by inserting a piece of DNA that codes for a gene which fluoresces when exposed to ultraviolet light. As the virus infects and multiplies in the plant, its movement within the plant can be followed and studied. The picture at the right shows him illuminating the location of the virus in the plant.

In addition to visiting the virology labs and classrooms, we had the opportunity to meet with a number of the managers of the research and the education activities at the University. Our discussions with Dr. Ron Mittelhammer, Dean of the College that includes Professor Pappu's department, was particularly memorable. One key message was that stakeholders who stay involved in the research get the most attention of the researchers. His bottom line was most appreciated: "You will not be disappointed in your interactions with WSU."

Ron Miner, Brad Freeman, and Professor Hanu Pappu



Brad Freeman (first from left), Ron Miner (third from left), Prof. Hanu Pappu (fourth from left) with Prof. Pappu's PhD students and post-doctoral fellows

