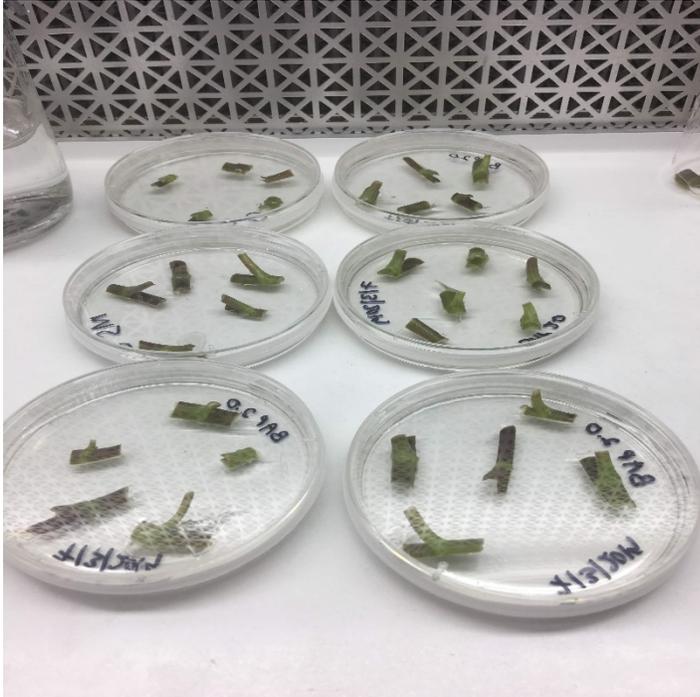


Update on Tissue Culture Project at Washington State University

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Tissue culture is a technique that involves growing plants or thin sections of plant parts such as stems or



leaves on artificial media that contains different nutrients and has been optimized to sustain growth of that specific plant type. Tissue culture is conducted under highly sterile conditions in a laminar flow hood to avoid contamination. This technique offers several advantages that include clonal propagation and production of pathogen-free plants. Virus elimination from infected plants is made possible by the fact that the vascular tissue in which the virus moves does not extend to the shoot apex, as such excision and culture of the shoot apex could yield virus-free plants. This is the logic behind meristem culture of dahlias to produce virus-free plants.

The process of regenerating whole plants from tiny stem segments or leaf pieces is a relatively long process that could take

anywhere from 4 to 6 months – from petri plates to pots with soil. The process involves triggering shoot formation and root formation. These two developmental stages need different types of growth media. The first step in establishing and streamlining the process involves identifying the optimal combination of source material, growth media, and growing conditions (temperature, light, and humidity). The last and critical step would be to test the resulting plantlets for ‘true to type’ compared to the source plant. If all goes well, the pipeline would be in place by early next year.

The tissue culture project was initiated at WSU early this year with the goal of developing and optimizing protocol for tissue culture-based propagation of dahlia and ultimately to produce virus-free plants through meristem culture. Pictures of the different stages of the tissue culture process are available in the version of this article on the ADS website, dahlia.org.

The material below would be included in the article on the website but not included in the Bulletin.

Plant material is sourced from the parent plant (virus-infected plant) by cutting with a sterile blade. The picture shows cut stem segments with axillary buds.



The process starts with excising stem segments



The stem segments are sterilized and then were cut into small pieces and placed on artificial growth media.



The cultured stem segments grow from which meristems are then excised and cultured



Growth from cultured dahlia meristems after which all the tissue will be tested for virus infection