

1154-92-2450

**Jeffae Schroff\*** (jeffae@schroff.com), **Sergiy Koshkin** (koshkins@uhd.edu) and **Michael Tobin** (tobinm@uhd.edu). *Optimal water flow through plants and the segmentation hypothesis.*

We study a model of water transport through plants that optimizes the water flow given the pressure-dependent conductance functions (vulnerability curves) of stem and leaves. The model predicts bottleneck behavior where the leaf segments limit the overall optimal flow through the plant in agreement with the hydraulic vulnerability segmentation hypothesis. We derive explicit conditions of such segmentation and test vulnerability curves of a number of plants for displaying it. (Received September 17, 2019)