



# 2019 AWSEF Scholarship Awards

# The 2019 AWSEF Scholarship Recipients:

Jaclyn Fiola, PhD Candidate at Virginia Tech University\*

Suzanne Fleishman, PhD Candidate at Pennsylvania State University

Alex Fredrickson, PhD Candidate at University of Missouri\*

Andrew Harner, PhD Candidate at Pennsylvania State University

Sarah Mayfield, PhD Candidate at University of Arkansas\*\*

Conor McCaney, Masters Candidate at Pennsylvania State University

Joshua VanderWeide, PhD Candidate at University of Michigan

Rachael White, Masters Candidate at University of Georgia\*\*

\* Former scholarship recipient

\*\* Advisor is a former scholarship recipient



# Jaclyn Fiola, PhD Candidate

## Virginia Tech University

### AWSEF Endowment Fund

#### Scholarship

My graduate research involves vineyard soil hydrology and fertility management for increasing the economic and environmental resilience of the North American wine industry. Many East Coast soils provide excessive potassium to grapevines due to historical fertilizing and/or the geology from which the soil formed, which can negatively impact wine quality. My research addresses soil potassium management and calibration of soil tests to indicate potassium uptake. I am also monitoring and modeling vineyard hydrology to maximize fruit quality and prevent the negative effects of excess rainfall and water availability on the East Coast. I believe that vineyard site selection and soil management is essential to maintaining the resilience of our industry. Thank you AWSEF!

**Suzanne Fleishman, PhD Candidate**  
**Pennsylvania State University**  
**South Eastern PA Region Scholarship**  
**In Memory of Eileen Tobias**

My research examines how to improve grapevine production by combining rootstock grafting practices with under-vine cover crops. While rootstocks have long been used to improve pest tolerance or regulate growth, cover cropping is an increasingly popular practice. Cover crops are low-growing plants (e.g. grasses) planted alongside vines as an alternative to removing weeds with herbicide. In addition to reducing herbicide in vineyards, cover crops can improve soil quality and help regulate vine growth. Competition between cover crops and vines can lead to desirable or undesirable reductions in grapevine growth. It remains unclear what conditions allow for desirable impacts on growth or what influence cover crop roots have on bacteria and fungi associated with grapevines. To improve adoption of rootstock and cover cropping practices, my research aims to improve understanding of belowground competition. At the Penn State University research vineyard, I am examining cover crop applications with Noiret grapevines grafted to two different rootstocks. In particular, I am focusing on how the practice alters resource competition and root microbiology.





# Alex Fredrickson, PhD Candidate

## University of Missouri South Carolina (Tuller) Scholarship In Memory of Hal Kohn

My PhD research focuses on improving tannin content in low-tannin reds. Tannin is crucial in red wines because it leads to improved mouth feel and complexity of the wine. Most importantly, tannins also associate with anthocyanins, called copigmentation. Anthocyanins on their own are not very stable and after about a year in wine conditions the red/purple color of wine turns brown, but with copigmentation that red color can last for 10+ years. Without much copigmentation occurring, the color in low tannin wines is not as stable as the color in wine with excess tannin. I am using HPLC-MS to identify proteins and other polymers that may be interacting with tannins, thus causing them to either fall out of solution or become inactive. The goal is to come up with new processing methods or additives that could increase tannin content in red wines (hybrids and *V. vinifera*) which could then be shared with winemakers.

Andrew Harner, PhD Candidate

Pennsylvania State University

Columbus, OH Chapter Scholarship

In Appreciation of the Strength & Vitality of the Columbus  
Chapter

As a graduate student at Penn State University, my research has and continues to be guided by a strong interest in the complex interplay between localized environmental conditions and wine grape aroma compounds and the means by which viticultural practices can affect these interactions. My first project focused on analyzing climatic and viticultural influence on the production of rotundone—a compound responsible for ‘black pepper’ aromas in wines—in New York and Pennsylvania-grown Noiret wine grapes. Ongoing projects are investigating Pennsylvania Grüner Veltliner grape and wine production, and include an analysis of differential early-season leaf removal intensity and its effects on crop load and wine grape aromatics. Additionally, another project seeks to analyze the regional typicity of Pennsylvania-grown Grüner Veltliner grapes and wines, in order to better understand the possible regional variation in important grape and wine characteristics. Overall, my research has been rooted in a close relationship with the local industry, as these projects have involved collaborations with numerous commercial growers and have sought to advance viticultural knowledge within the context of Northeast wine grape production.



# Sarah Mayfield, PhD Candidate

## University of Arkansas

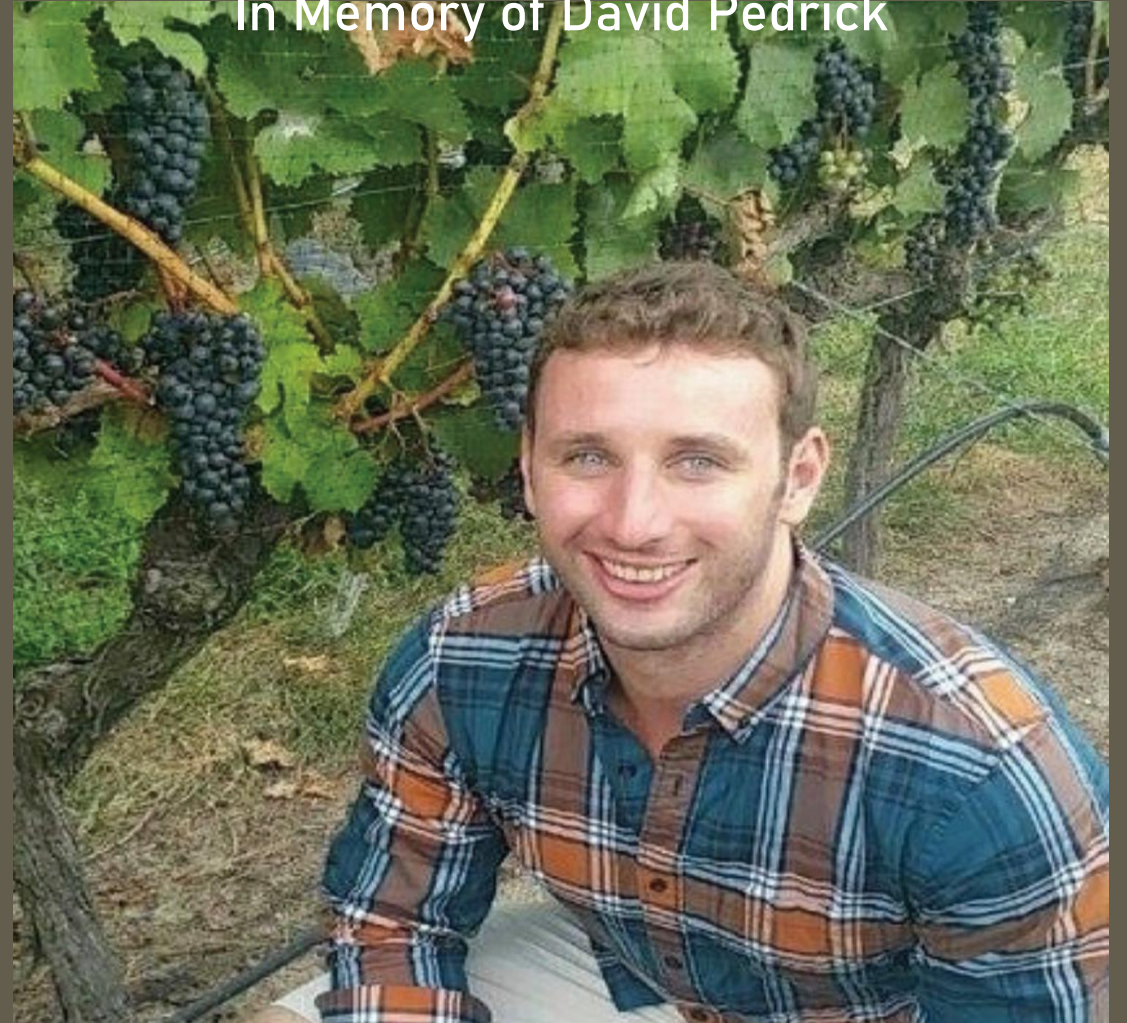
### Banfi Scholarship



I earned bachelor's of science degrees in Food Science and Biochemistry from the University of Arkansas and was then offered a position to pursue a PhD in Food Science at the University of Arkansas. The science of enology and viticulture caught my attention, so I began working in the Grape and Wine Laboratory for my advisor, Dr. Renee Threlfall, Research Scientist. My research dissertation, "*Physicochemical Properties of Wines Produced from Grapes Grown in the State of Arkansas*", focuses on improving the quality of wines produced from grapes that grow well in Arkansas and the surrounding regions and identifying their unique attributes. This research involves analyses of physicochemical attributes of grapes and wine from *Vitis* hybrids and muscadine grapes. For a portion of this work, I travelled to Graz Technical University (Graz, Austria) and used a combination of analytical techniques, including gas chromatography-olfactometry, to build comprehensive aroma profiles of my research wines. Through this research, I hope to provide information on how the quality of wines produced from non-*vinifera* grapes can be improved, whether this is accomplished through wine grape breeding, winemaking techniques, or vineyard treatments. In addition, I aim to contribute to a greater understanding of the qualities of non-*vinifera* grape varieties, such as the characteristic muscadine aroma, which make them truly unique.

My research focuses on investigating the application of pre-fermentative novel maceration techniques on white-fleshed interspecific hybrid grapes (*Vitis ssp.*) and their effects on final wine quality and oxidative stability pre- and post-bottling. Interspecific hybrid grapes are of particular interest to the Pennsylvania wine industry for their high productivity, disease resistance, and ability to produce high-quality wines in the harsh climate of the Northeastern United States. While *vinifera* varieties have had extensive studies conducted on how processing parameters affect their final wine quality and stability, hybrid varieties have not been subjected to a similarly thorough investigation. These maceration techniques include variable duration extended skin contact, rapid and controlled rate cryogenic macerations. Additionally, we are exploring the use of different cryogens and cryogenic production methods and evaluating the feasibility and scalability of adapting techniques used in large scale industrial food processing operations to small scale wineries. Quality and stability are being assessed on the basis of conventional juice and wine parameters, color, total phenolics, specific phenolic content, glutathione concentration, aroma profiling, redox status, antioxidative capacity, and in bottle resistance to oxidation. It is our hope that these investigations will help to elucidate mechanistic variables that affect final wine quality and post-bottling stability in white-fleshed hybrid grape varieties.

**Conor McCaney, Masters  
Candidate  
Pennsylvania State University  
Dayton/Springfield, OH Chapters Scholarship  
In Memory of David Pedrick**





# Joshua VanderWeide, PhD Candidate

Michigan State University

Susan Luckan Scholarship - In Honor of Lois  
& David Edwards, AWS Members from  
Cooperstown, NY



The first objective of my PhD program addresses two prominent issues faced by cool climate viticulture in the Eastern United States. First, fruit maturation in *Vitis vinifera* wine grape cultivars is limited by short seasons in the Great Lakes growing region. Secondly, precipitation occurring during ripening leads to the proliferation of bunch rot disease, specifically in tight clustered cultivars, which renders infected fruit inadequate for winemaking. As a result, my research projects have focused on the viticulture practice of early leaf removal in (*Vitis vinifera* L.) Merlot and Pinot Grigio. This is a tool widely used to decrease fruit set in grapevine clusters, which subsequently controls crop yield and lowers bunch rot damage; improving fruit quality. However, early leaf removal is time consuming and expensive to implement manually, leading growers to explore mechanization options. Previous reports calculated that mechanization of leaf removal saved growers approximately \$100 per acre in labor, and also significantly reduced the time per acre to complete this practice. The primary finding from our studies was that only the mechanical leaf removal treatment performed at the pre-bloom stage increased fruit sugar concentrations in both cultivars across two seasons. Additionally, anthocyanins and flavonol concentrations were approximately 30% higher in this treatment compared to others. My current projects follow up on these results and look more in depth into the mechanisms governing fruit ripening in response to early leaf removal, which may allow researchers and growers to fine-tune the timing and severity of this practice to reach desired viticultural goals.

# Rachael White, Masters Candidate

## University of Georgia

### Grand Cru, SC Chapter Scholarship - In Honor of Hal Kohn

The Georgia wine industry is a vibrant and growing community of talented growers and winemakers with over 60 vineyards producing everything from Muscadine to traditional *V. vinifera* cultivars. My research focuses on optimizing wine grape production for the humid southeastern US climate by retrofitting an established Vertical Shoot Positioned (VSP) canopy with spur pruning. While maintaining vineyard row spacing, we divided the canopy with additional cross arms and doubled the fruit zone through quadrilateral cane pruning. The goal was to increase sunlight interception in the canopy and increase yield in low cropping cultivars like Petit Manseng. By expanding sunlight interception with a divided canopy and doubling the fruit zone, we increased yield substantially without altering wine quality potential when compared to standard VSP with spur pruning. With the early success of this training system from our vineyard collaborators, there is the potential to increase crop in *V. vinifera* cultivars and their hybrids to support the expanding industry and increase wine output in the southeastern US.



...and *thank you* to all our donors who made these  
2019 scholarships possible:

Banfi Corporation  
Columbus, OH AWS Chapter  
Dayton/Springfield, OH AWS Chapters  
Grand Cru, SC Chapter  
South Eastern PA Region AWS Chapters  
South Carolina (Tuller) AWS Chapter  
Susan Luckan Scholarship

Members who participate in the Annual Silent Auction  
And all the contributors to the AWSEF Endowment Fund