

Schemske RET Description, April 25, 2016.

Adaptation and Freezing Tolerance in *Arabidopsis* - bringing it to the middle and high school classroom

Part-time Research Experience for Teachers (RET). [Schemske Lab](#), summer 2016

We are seeking 2 teachers (1 middle school and 1 high school) to work at Michigan State University, East Lansing, summer 2016 (between June 1 - July 31 2016).

Description:

Study the genetics of the world's first model plant-- the entire genome of the tiny *Arabidopsis thaliana* or Mouse Eared Cress has been sequenced. Freezing tolerance is an adaptive trait of this European plant that is of interest to evolutionary biologists. What are costs and benefits of freezing tolerance? What genes are involved? Join the Schemske lab this summer to create a hands-on freezing tolerance assay experiment for the K-12 classroom. Lesson plans will incorporate several NGSS themes: evolution by natural selection, population shifts due to climate change, and adaptation. A 'Data Nugget' will be created from existing data sets, these worksheets are intended to build quantitative skills to solve scientific problems.

The Freezing Tolerance RETs will have responsibility for 1) developing lesson plans in collaboration with project personnel, 2) testing lesson plans in the classroom, 3) monitoring student performance, 4) gathering feedback from other teachers, and 5) and working with project personnel to modify the plans for final distribution. Once the lesson plans have been endorsed by the core partners, they will be presented at a Partnership workshop where the project PI will speak at a plenary session aimed at enhancing teachers' understanding of the research. At the same meeting, the core partners and project personnel will lead a workshop to discuss the themes of the project and demonstrate the lesson plans to K-12 teachers throughout Southwest Michigan who will add the plans to their curriculum. The final lesson plans will be made available to K-12 teachers on the Partnership website and will be updated regularly by the core partners and project personnel in response to teacher feedback.

Expectations:

1. At least 60 hours of work, between June 1 - July 31 2016 (most work will be done in the lab on main campus MSU, but office space can be made available at Kellogg Biological Station (KBS) if needed)
2. Present a session at the KBS K-12 Partnership Summer Institute, Aug. 17-19, 2016.
3. Two Reports -

Report 1 to be submitted at the end of summer, describing the research project (s) in which you were involved and how you might use the experience in your classroom.

Report 2 to be submitted after you have tried the experiment/lesson plan with students, describing what you did and any lessons learned. Also include any materials that you developed, describe your students experiences with the project (any assessments if appropriate), and provide pictures of you working with your students if possible.

4. Participation in KBS RET professional development opportunities (2-3 meetings over the summer)

Compensation:

\$1500 (\$750 after the completion of Report 1; \$750 after the completion of Report 2), \$250 for classroom supplies

Two positions available

How to apply:

Apply online by Friday, May 6: <https://kbsmsu.wufoo.com/forms/z311k8s17h3ztr/>

Questions? Please contact Kara Haas, Science Education & Outreach Coordinator, karaHaas@msu.edu or 269-671-2360