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**Award Abstract #1222869**

**Building High School Students' Understanding of Evolution--Both Common Ancestry and Natural Selection--Through Mathematical Arguments, Evidence-Based Explanations, and an Understan**

**NSF Org:** [DRL](#)  
[Division of Research on Learning in Formal and Informal Settings \(DRL\)](#)

**Initial Amendment Date:** August 30, 2012

**Latest Amendment Date:** August 30, 2012

**Award Number:** 1222869

**Award Instrument:** Standard Grant

**Program Manager:** Julia Clark  
DRL Division of Research on Learning in Formal and Informal Settings (DRL)  
EHR Directorate for Education & Human Resources

**Start Date:** September 1, 2012

**Expires:** August 31, 2014 (Estimated)

**Awarded Amount to Date:** \$405,000.00

**Investigator(s):** Louisa Stark [louisa.stark@utah.edu](mailto:louisa.stark@utah.edu) (Principal Investigator)  
Jo Ellen Roseman (Co-Principal Investigator)  
Kevin Pompei (Co-Principal Investigator)  
Dina Drits-Esser (Co-Principal Investigator)

**Sponsor:** University of Utah  
75 S 2000 E  
SALT LAKE CITY, UT 84112-8930 (801)581-6903

**NSF Program(s):** DISCOVERY RESEARCH K-12

**Program Reference Code(s):** SMET, 9177, 9150

**Program Element Code(s):** 7645

**ABSTRACT**

The University of Utah will develop a plan for a model curriculum and associated assessments project that integrates science practices, crosscutting concepts, and core disciplinary ideas through the integration of mathematics and science and the application of appropriate educational technologies. The unit plan and prototype lessons will model ways in which quantitative literacy and the Common Core Standards of Mathematics can be addressed in the biology curriculum. This two-year exploratory research project will take place in the general biology classrooms of teachers in Utah, Maryland and

Washington, DC.

The project will develop the following: a detailed plan for a new, 5-week curriculum replacement unit for high school biology that helps students build a coherent understanding of evolution; a valid and reliable set of test items to assess students' understanding of the unit's learning goals using Project 2061 and to refine these measures using an iterative process of development, testing, expert review and revision; prototypes of five evolution lessons from the planned unit. In addition the researchers will conduct a small-scale pilot test of the prototype lessons with diverse student populations.

The unit plan and prototype lessons will be developed using a learning-goals-driven design model that includes iterative rounds of development, analysis for content coherence using American Association for the Advancement of Science (AAAS) Project 2061's valid and reliable analysis procedure, reviews by scientists and teachers, and revision.

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**The National Science Foundation, 4201 Wilson Boulevard, Arlington, Virginia 22230, USA**  
**Tel: (703) 292-5111, FIRS: (800) 877-8339 | TDD: (800) 281-8749**

