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The Amphi Foundation is a 501(c)(3) organization. Please contact us directly for our Tax ID number.

7 March 2018

Mark Pincus  
Ironwood Ridge High School

Dear Mark,

Since 1983, our mission has been to promote academic excellence through the expansion of resources that enrich the education, development, and well-being of the students of the Amphitheater Public School District. The Amphi Foundation has, for most of its history, focused primarily on services that help make it possible for students to attend school and participate in activities and in recent years we have added Classroom Grants to support our students' teachers and their classrooms. Our Scholarships & Grants committee is proud to honor your grant request. Congratulations!

Funding for this grant was provided by the Nova Home Loans Arizona Bowl. Our hope with this partnership is that funding will be matched in 2018 and that the Amphi Foundation will receive this gift again next year and beyond. You can help us by sharing photos, thank you notes and success stories about the impact of this funding so that we can share with our partners at the Arizona Bowl.

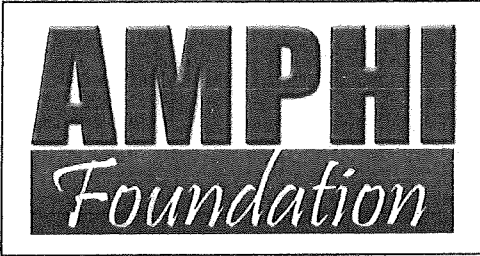
Please keep the following items in mind as you move forward with implementing your project and purchasing materials.

- If, for some reason, you do not proceed with this project, we ask that you return this money to the Amphi Foundation so that we can assist another classroom in need.
- Please be sure to follow district and school procedures for procurement.
- For any equipment or durable goods that have been purchased with this funding we ask that you consider gifting items to an Amphi colleague or teaching partner should you choose to leave the district.

On behalf of the Amphi Foundation Grants & Scholarships Committee, thank you for all that you do!

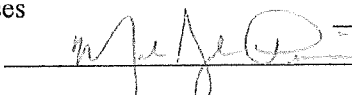
Best Regards,

Leah Noreng



### Classroom Grant Application

Please complete, sign, and return to amphifnd@amphi.com

Project Title:	Restriction Digestion, Purification of DNA Fragments, and Cloning into Plasmids		
Applicant(s):	Mark Joseph Pincus, M.S.		
Project Director:	Mark Joseph Pincus, M.S.		
Telephone Numbers:	520-407-4211		
Project Site/School:	Ironwood Ridge High School		
Project Duration:	Start Date:	March 2018	Ending Date: March 2019
Impact:	# of Students: 40 - 60		# of Teachers: 1
Ages/Grades:	13 – 19/ Freshman, Sophomores, Juniors, and Seniors		
		Total Cost:	\$999.55
		Less Funding from Other Sources*:	\$0.00
		Total Grant Request:	\$999.55
*List Other Funding Sources			
Signature and Date:	 February 06, 2018		

**TECHNOLOGY CERTIFICATION – required for grants requesting technology components**

We CAN / CANNOT (circle one) support the technology and other infrastructure required for successful implementation outlined in this grant.

Technology Integration Specialist Signature: NOT APPLICABLE Date: \_\_\_\_\_

**PRINCIPAL APPROVAL:**

After reviewing this application (*principal please initial one*),

*MB*

No additional resources (including maintenance and repairs) are necessary to fully implement the goals of this application

**OR**

Additional resources are necessary in the approximate amount of \$ \_\_\_\_\_ (total, per year, etc.) and will be funded by other sources.

This project  is /  is not eligible for extra-curricular tax credit funds. (*select one*)

Applicant has shared this application with me and I  DO /  DO NOT (*circle one*) support this application.

Principal's Signature:

*Natalie Bennett*

Date:

*2/16/18*

## Grant Proposal

**Project Title:** Restriction Digestion, Purification of DNA Fragments, and Cloning into Plasmids

**Summary:** Brief, succinct overview of the project, including the estimated number of students directly impacted. Describe in lay terms. Do not assume the Committee knows the programs, technology or other topics you are discussing. Statement that could be used to explain project in a news release.

Ironwood Ridge High School is in the midst of re-establishing its Biotechnology Program. One of the key hands-on-learning experiences that we can provide to students is the art of cloning. In cloning, pieces of DNA are joined together to enable the expression of a protein in bacteria. In this process, students are given the opportunity to witness the expression of a trait, first-hand, in a controlled laboratory environment. The laboratory techniques taught to the students will be useful in the Biotechnology II course where students will be given the opportunity to clone a human gene of interest, express this protein, purify the protein, and assess the concentration and purity of the protein. This will not only impact the current cohort of students (22) but will be used with the 2018-2019 cohort of students (approx. 20-25). The skills acquired in this experience will not only be transferred to Biotechnology II but will also impact students as they pursue college degrees in the life sciences.

**Project Need, Purposes and Objectives:** Describe how the project will enhance the learning environment and promote academic excellence. List the subject areas involved in the project and how the project will enhance the students' learning experience in these areas.

Students have been provided with the opportunity to express the green florescent protein in bacteria through other exercises in the Biotechnology I laboratory. In this experience, students were provided with all of the tools to complete the experiment. Using the reagents requested in this grant, students will be provided the opportunity to complete cloning experiments from the ground up where they will piece together the DNA and witness the time, talent, patience, and art that is required of scientists. This is a forward thinking experience allowing students the opportunity to develop skills that typically are not acquired until college.

**Project Activities:** Description of the activities the award will facilitate and that will produce the objectives stated in the proposal.

Students will be lead through the process of cloning where they will excise a piece of DNA from a plasmid, purify this DNA fragment, quantify this DNA fragment, ligate this DNA fragment to another piece of DNA, transform bacteria with this DNA, visualize the expression of this DNA, and purify this DNA.

**Plan for Evaluation and Follow Up:** The standards of measurement to be used to determine if goal(s) have been achieved and timeline for assessment of results.

This exercise should take roughly 2-3 weeks. Assessment of leaning will be through hands-on evaluation of skills acquired as well as written assessment. Demonstration of skills will be expected of students who continue to Biotechnology II. Students will log experiments in a laboratory notebook and will report results of the experiment in a laboratory report. This exercise will assess both short term and long term memory and understanding through two cohorts of students.

### Budget Worksheet

Catalog Number	Item Description	Quantity	Cost Per Item	Total Cost
K220001	PureLink™ Quick Gel Extraction and PCR Purification Combo Kit	2	119	238
K210011	Invitrogen™ PureLink™ Quick Plasmid Miniprep Kit	1	352	352
FERFD0274	Thermo Scientific™ FastDigest™ EcoRI	1	55.25	55.25
FERFD0054	Thermo Scientific™ FastDigest™ BamHI	1	55.75	55.75
FERFD0304	Thermo Scientific™ FastDigest™ Eco32I	1	69.25	69.25
FERFD0974	Thermo Scientific™ FastDigest NheI	1	69.75	69.75
15-224-017	Invitrogen™ T4 DNA Ligase (1U/μL)	2	76	152
S25223	Calcium Chloride, Anhydrous	1	7.55	7.55
			Total Expenses for entire project	999.55
			Funding from other sources	0
			Foundation grant request amount	999.55

## Donations by Amphi Foundation

School	Teacher	Amount	Project
AHS	Wendy Ousley	\$ 757.50	Folklore and Mythology Seminar
AMS	Tamara Paulson-Midgley	\$ 974.03	Percussion Power
Coronado	Terry Duggan	\$ 1,000.00	Steam-azing Lab
Coronado		\$ 967.16	Classroom Games
Donaldson	Rachelle Ferris	\$ 991.00	Donaldson Maker Lab
Harelson	Becky Cozart	\$ 704.95	PE Program
Harelson	Monika Arnold	\$ 435.78	Digital Microscopes in the Classroom
Holaway	Capella Hauer	\$ 995.00	Summer Home Visit Kits
Innovation	Danielle Swartz	\$ 1,000.00	STEM leveled readers for K-1 Guided Reading Library
IRHS	Jenny Een	\$ 1,000.00	Freshman Focus: Ninth Grade Transition
			Restriction Digestion, Purification of DNA Fragments, and
IRHS	Mark Joseph Pincus	\$ 999.55	Cloning into Plasmids
Nash	Michelle Martin	\$ 959.75	Choo! Choo! Full STEAM Ahead!
Painted Sky	Mercy Pemberton	\$ 953.10	Edison Robots for Painted Sky Second Grade
Rio Vista	Hilary Wiechert	\$ 849.00	Fifth Grade Novel Studies
Wilson	Beverly Teran	\$ 771.60	Collaborative Mixed Media Mural
Wilson	Karen Maspero	\$ 1,000.00	Middle School Math Manipulatives