

RECEIVED
2/2/15

COLLEGE of
CHARLESTON

UNDERGRADUATE RESEARCH
AND CREATIVE ACTIVITIES

Application Cover Page

Application for Summer Undergraduate Research with Faculty (SURF) Grant

Applicants should refer to the SURF Program Description and Guidelines and the SURF Application Check List to ensure a complete application.

Incomplete applications will not be considered for funding.

PROPOSAL TITLE: But Is It a Bottle? Quantitative and Qualitative Study of Roman Glass Vessels

PRIMARY MENTOR APPLICANT*:

NAME: _____

CofC Email: _____

Department: Classics

Faculty Status:

- Tenured/Tenure-track
 Instructor
 Visiting
 Adjunct
 Other (please specify _____)

UNDERGRADUATE APPLICANT**:

NAME: _____

CofC Email: _____

CofC ID Number: _____

Primary Major: Classics

Current Enrollment Status:

- Full-time (12 hours or more)
 Part-time (less than 12 hours)

*Please note in the guidelines the eligibility criteria for faculty mentors and limits on number of grants per faculty mentor.

**If more than one student will work on a project, separate applications must be submitted for each student.

SECONDARY MENTOR APPLICANT:

NAME: _____

Institutional Affiliation: _____

Department: _____

Title: _____

Email: _____

Project Information Page

REQUESTED DATES OF PROJECT SUPPORT (mm/dd/yy): From 06/10/ To 08/14/

TOTAL AMOUNT REQUESTED FROM URCA: \$ 6500

1. Does the proposal involve research on human subjects? Yes No
If yes, status of the IRB request (no funds can be awarded without IRB approval):
 Submitted Approved
2. Does the proposal involve research with live vertebrate animal subjects? Yes No
If yes, status of the IACUC request (no funds can be awarded without IACUC approval):
 Submitted Approved
3. Have student or faculty applicants received URCA support for this or any other project since September 2013 or do they currently hold funding through the URCA program?
 Yes No
If yes, which type? SURF MAYS RPG AYRA
If the applicant holds funding in the current cycle, specify name of applicant and award amount:
4. Does the student have another proposal under consideration by URCA during the current cycle? Yes No
If yes, what type of grant proposal is it? SURF MAYS RPG AYRA
5. Does the faculty mentor have another proposal under consideration by URCA during the current cycle? Yes No
If yes, what type of grant proposal is it? SURF MAYS RPG AYRA
6. Is there another internal proposal current or pending for this research/creative work?
 Yes No
If yes, please list the source(s) as well as amount of request and dates of award:
7. Is there an external proposal current or pending for this research/creative work?
 Yes No
If yes, please list the source(s) as well as amount of request and dates of award:
8. Does the project involve biohazards or other safety issues? Yes No
9. Does the project have potential for copyright or invention? Yes No

FERPA WAIVER

The Family Educational Rights and Privacy Act (FERPA) of 1974 establishes the rights of students with regard to educational records. The act makes provision for inspection, review and amendment of educational records by the students and requires, in most instances, prior consent from the student or their parent/guardian if under the age of 18 for disclosure of such records to third parties. The consent must be in writing, signed and dated by the student and must specify records to be released, reason for release, and the names of the parties whom such records shall be released. The act applies to all persons formerly and currently enrolled at an educational institution. Access to educational records does not give permission to make changes to the student's record. For more information visit:

<http://www2.ed.gov/policy/gen/guid/fpco/ferpa/index.html>

I hereby give permission for the College of Charleston Undergraduate Research and Creative Activities personnel and committee members to obtain

- information concerning my academic transcript
- information concerning my academic advising notes
- information concerning my in-class performance and grades

This waiver will be in effect as long as I am a student at the College of Charleston, or seeking the services of faculty and staff on the College of Charleston campus.

Signatures (Required for All participants): Please read the SURF Guidelines prior to signing this page. Signatures below indicate awareness of and intention to follow appropriate Program, FERPA Waiver, Departmental, School, College and State rules and regulation for conducting projects, travel, and expenditure of funds.

Undergraduate Applicant:

Signature

Date

Faculty/Mentor Applicant:

Signature

Date

Faculty/Mentor Applicant:

Signature

Date

Chair: I acknowledge that the above student and faculty mentor(s) are applying for URCA Funding and that the funds for successful proposals will be transferred into the departmental R & D account for dispersal based on the budget included in this proposal.

Chair:

Signature

Date

Proposed Budget Table

	I	II	III	IV	V
	SURF Funding Requested*		Dept/School Other Internal Support for Project	External Support for Project	Total Cost of SURF Project (Add Columns I-IV for each row)
	For Use Prior to June 30	For Use After July 1			
A. Student Salary (taxable amount)	1050	2450			3500
B. Faculty Salary (taxable amount)	750	1750			2500
C. Student Travel**	0	0			0
D. Faculty Travel**	0	0			0
E. Supplies & Materials	500	0			500
F. Other					0
G. Total Costs Per Column (Add values from cells A-F for each column)	2300	4200	0	0	6500
TOTAL SURF REQUEST: (Add values from cells G-I + G-II)	6500				

COLLEGE of
CHARLESTON

UNDERGRADUATE RESEARCH
AND CREATIVE ACTIVITIES

Summer Undergraduate Research with Faculty (SURF) Grant Application

PART II

**To be submitted electronically as a PDF to urca@cofc.edu by 5pm,
February 2, 2015**

**Part I and Part II of the application must be submitted in order to be considered for
funding. Part I of the application can be accessed at www.urca.cofc.edu.**

PROPOSAL TITLE: But Is It a Bottle? Quantitative and Qualitative Study of Roman Glass
Vessels

PRIMARY MENTOR APPLICANT: ██████████

UNDERGRADUATE APPLICANT: ██████████

SURF Application Instructions

A complete description of the application requirements and instructions can be found on the
URCA website (www.urca.cofc.edu) in the SURF Description and Guidelines handbook.

1. STUDENT STATEMENT OF INTENT

When I first decided I wanted to be an archaeologist at the age of seven, I only had a vague idea of what archaeology was about. I always assumed that most of archaeology was digging a field up and writing about the findings. As I grew up and learned more about archaeology, my understanding of the discipline became clearer and I realized that fieldwork is only a small fraction of what archaeologists do. Most of the important and useful information is gleaned from processing materials in a lab after their initial excavation.

My first real archaeological experience was working in the glass lab with ██████████. I'm currently in my third semester of volunteering in the glass lab and I have gained skills like drawing and cataloging artifacts, as well as knowledge of the glass industry in the ancient Roman world. Once I started the glass lab, I knew that I wanted to pursue an independent study and my Honors Bachelor's Essay project with the glass. I have begun this research as part of Classics 399 and I expect to continue it through the support of the SURF grant during the summer. This research builds on my current experience volunteering in the glass lab as well as my current introductory statistics course and my independent study. Through analysis of a major archaeological assemblage of glass as well as prominent museum collections, ██████████ and I will attempt to create a quantitative model that will enable other archaeologists to more easily identify fragmentary glass. According to our preliminary review of literature, this type of research is unique in the world of glass studies and rare in other types of archaeological analysis. As such, our project represents an opportunity to contribute new methodology and research results to the field. Since I intend to apply to graduate programs in archaeology, and pursue a Ph.D., this research experience through the SURF grant will allow me to gain necessary skills such as research, data analysis, and writing. I want to focus completely on the research, so I will not have any other commitments this summer that will prevent me from fully focusing my time and energy on this project.

Using the quantitative model from our research, we will be able to identify vessels in our own categories and contextualize them in terms of Roman descriptions. This will allow archaeologists to have a better grasp of the types of vessels present at a site. Through identification of the vessels, archaeologists can piece together how glass was used at the site and perhaps even make comparisons to sites across a larger region and the Roman world. We intend to represent the College of Charleston and the SURF Grant program by presenting the findings at the International Association for the History of Glass (AIHV) triennial conference in Switzerland this September and publishing the written results in either the *Annales of the AIHV* or the *Journal of Glass Studies*, both of which are highly-read, peer-reviewed publications.

2. NON-TECHNICAL PROJECT ABSTRACT

Archaeologists analyze fragmentary pieces of antiquity, like broken glass, to answer questions about aspects of daily life. To do this, archaeologists study “diagnostic” pieces--recognizable parts of fragmentary glass vessels such as bases, rims, and handles. Such studies record formal characteristics (shape, size, color, and decoration) and functional categories of the pieces. They then compare the fragments to objects with similar forms and functions to contextualize individual objects.

Problems arise when vessels are extremely fragmentary and are compounded when fragments share formal characteristics with many different types of vessels. This is a consistent problem for archaeologists studying Roman glass of the Imperial period (ca. 50 C.E. to 450 C.E.), because the Roman glass industry was international and industrial in scale. While formal features of a fragmentary vessel can reflect its functional category (drinking cup, bottle, plate, etc.), in many cases poor preservation prevents such precision.

Our current research project will propose a statistical model for determining the functional category of glass vessel fragments which are not diagnostics. Using the techniques of statistics and probability, we will test our proposed model for viability on both fragmentary and complete vessels. Our project employs a contextual component as well: studying glass from ancient perspectives to understand Roman categories for vessels. Combining quantitative mathematical study with ancient literary and visual evidence offers a new avenue for archaeologists studying the creation and use of glass in antiquity. Such a model may provide new methods for archaeologists studying many different time periods and materials.

3. PROJECT DESCRIPTION

(a) Technical Project Abstract

Typological studies of glass from archaeological sites are predicated largely on assessing a given vessel's function and form. Only after forms have been determined is it possible to characterize the nature of the glass assemblage and to answer archaeological questions about the material. But categorizing fragmentary vessels based on form and function is itself an act of archaeological knowledge acquisition; thus it demands the application of a rigorous, or at least transparent, methodology. When the assemblage consists of complete vessels or vessels whose profiles can be reconstructed from multiple fragments, this process of classification can be fairly straightforward. Yet most excavated objects do not have a complete profile, and thus form and function are decided based on fragmentary vessels and comparison with published examples. Problems arise when glass fragments are very small, undecorated, or simply made. Dividing fragmentary, undecorated, fire-rounded rims into functional categories such as beakers, bottles, and bowls frequently challenges the archaeological glass expert.

Archaeologists address this heuristic problem by establishing guidelines for forms; a definition of a beaker as "an open vessel around 10 cm in diameter" seems to be generally agreed (e.g. Cool and Baxter 1999). Incorporating analysis of Roman literary mentions of glass and published archaeological and museum collections of well-preserved Roman glass from Karanis in Egypt, the Corning Museum of Glass, and other assemblages, this study investigates the quantitative characteristics of Roman glass vessels. We then evaluate whether internal Roman definitions for vessels can help archaeologists in the field to distinguish between functional categories of glass. We propose a preliminary model of categorical and quantitative variables—including diameter, stance, manufacturing treatment, and shape—that assist archaeologists to more easily describe the formal and functional characteristics of fragmentary glass assemblages.

(b) Project Objectives and Expected Outcomes

Objectives

- test techniques of statistics and probability on previously-collected data from archaeological sites and museum collections (some data collected in Spring 2015 during CLAS 399)
- determine relationship between a variety of single formal characteristics (shape of diagnostic pieces, stance and shape of vessel body, size of diagnostic fragments) and functional categories (for example, the probability that a bottle will have a rounded rim or a folded rim; the frequency of various base forms in items considered to have functioned as drinking cups)
- develop a quantitative model for determining functional identification of fragmentary diagnostic vessels
- compare the significant formal characteristics from the quantitative model with formal characteristics mentioned by the Romans in literature and depicted in visual representations of glass vessels

Anticipated outcomes

- We will be able to test the quantitative model on the fragmentary glass vessels from the Carthage Circus currently under study at College of Charleston in the Center for Social Science Research. Testing on this large and uncategorized group of vessels will allow us to determine the accuracy and precision of our model in comparison to its accuracy and precision on assemblages of whole vessels.
- Presentation of our preliminary findings at upcoming research meetings of the International Association for the History of Glass ([AIHV] in Fribourg, Switzerland, in September 2015) and perhaps also at the Archaeological Institute of America meeting in San Francisco, Ca in Jan 2016 or other appropriate venues.
- Publication of our findings in a highly-read, peer-reviewed journal or series such as the Annales of the AIHV or the Journal of Glass Studies

(c) Project Significance

This research project will allow us to address both immediate problems and long-standing issues in glass studies. In the short term, we hope that our model will be sufficiently robust to allow us to assign functional categories—and thus comparable objects and dates—to a large number of problematic pieces in the glass assemblage we are currently studying from the Circus in Carthage. Closely classifying these problematic fragments will, in turn, allow us to draw more accurate conclusions about the nature of activity at the Circus in the Roman period (for example, whether food and drink may have been served at the Circus during the horse-racing contests, or whether the vessels we have found may instead have been used for lighting the tunnels into the seating areas).

In the longer-term, we hope that our model will provide an alternative to the intuitive approach that is currently integral to the classification of vessels, and to the inherent bias that accompanies such intuition. Though expertise in the field is valuable, and intuitive identification frequently proves correct, even experts can be stumped. A quantitative, probabilistic model may provide a valuable scientific tool to add to the art of identifying fragmentary glass vessels. The second part of our research that explores the internal (emic) characteristics that Romans used to identify and classify their vessels will provide a valuable context for the quantitative conclusions we reach.

This project will provide both ██████████ and ██████████ with avenues for professional development. ██████████ will learn techniques of archaeological research, develop her skills in data analysis, and receive an introduction to the world of professional archaeology, which she hopes to join. The current project may also provide material for ██████████ Bachelor's Essay at the College of Charleston. For ██████████, this project represents a new avenue for research and an opportunity to delve deeper into the use of quantitative methods in archaeology, a tool-set that is becoming increasingly significant for assemblage studies. For both of us, the project provides an opportunity to learn to work collaboratively and to present significant original research in a variety of venues to different audiences.

(d) Methods of Work

██████████ will continue data collection and analysis (begun in Spring 2015 in CLAS 399) on published glass assemblages. She will test individual factors and combinations of factors

using a variety of probabilistic, descriptive, and multivariate statistical techniques. She will use standard data organization and analysis programs available in the Computing Lab in the Center for Social Science Research (SPSS, Access, and/or Excel as appropriate).

██████████ will work with new data from the Carthage Circus glass to prepare that dataset for testing and analysis. ██████████ will then test the Circus glass using the models and techniques developed in the first phase of this project.

Both mentor and student will research and review archaeological literature related to typology and classification. ██████████ will review literature in English, and ██████████ will also review literature in other languages of scholarship. Discussion of the scholarly literature will form the basis of the literature review for the presentation of this research. This research will use the resources of the Addlestone Library frequently.

Both mentor and student will study ancient evidence of glass use, including Greek and Roman literature, especially from the Roman Imperial period, and visual representations of glass in domestic and other use contexts from the Roman Imperial period. This research will offer essential insight into the features that Romans used for classifying their own glass vessels. We will make use of College of Charleston database subscriptions such as ArtStor in this phase of the research.

Timeline

Time period	██████████	██████████ Research
Spring 2015 (CLAS 399)	Data collection and background reading. Preliminary data analysis on whole vessels using skills from Introduction to Statistics.	Background research and reading on quantitative modeling in archaeological assemblages. Data entry from Carthage Circus project (with assistance of other research assistant volunteers).
June 2015	Complete data analysis on whole vessels. Begin data analysis on fragmentary vessels from Carthage Circus. Reading on quantitative modeling in archaeological assemblages.	Monitor data analysis. Background research and reading on internal (emic) categories in archaeological classification systems. Research examples of Roman visual representations of glass.
July 2015	Complete data analysis on fragmentary vessels from Carthage Circus. Write up results of data	Monitor data analysis. Research literary evidence for Roman glass. Begin writing literature review.

	analysis. Background reading on internal (emic) categories in archaeological classification.	
August 2015	Background reading and research on visual and literary representations of Roman glass vessels. Editing literature review. Writing/editing contextual evidence. Writing/editing conclusions. Prepare oral and/or visual presentation of results.	Write and edit draft of article: literature review, contextual evidence, data analysis, conclusions. Prepare oral and/or visual presentation of results.

(e) Faculty Mentor and Student Participant Roles

During the 10 weeks of the project, both mentor and student will be mostly in Charleston. Student ██████████ will devote approximately 40 hours/week to the project; mentor ██████████ will devote approximately 15 hours/week to the project (alongside other research obligations outlined below). We will meet two or three times weekly in person and will also work collaboratively on writing and data analysis using Google Docs.

(f) Current and Pending Support

none

(g) Student Development

████████ will gain significant experience in conducting archaeological quantitative research. She will further develop the skills learned in classes (including Introduction to Archaeology and Statistics) and those learned in previous research experience (volunteer work in the Archaeology Lab with ██████████). These skills are essential to the working archaeologist, who regularly categorizes, quantifies, and analyzes individual objects. ██████████ will also gain more experience with reading Latin (and Greek) texts and with the challenges of applying text to the archaeological record. Since ██████████ intends to apply to graduate school, these research activities will provide her with significant and meaningful experience that will set her apart from peers.

(h) Project Dissemination

In addition to the SURF Poster Session on August 24, 2015, we have submitted an abstract to present this research at the triennial meeting of the International Association for the History of Glass (AIHV) in Fribourg, Switzerland in September 2015. Submission of an abstract for the

annual meeting of the Archaeological Institute of America in San Francisco, Ca in January 2016 is also envisioned. Following our initial research presentation(s), we will seek publication in a peer-reviewed journal in the field such as the *Annales* of the AIHV or the *Journal of Glass Studies*.

(i) Student Involvement in Application Process

After extensive discussion about the project in Fall 2014 and a preliminary literature review, we co-authored the technical project abstract (which we have submitted for the AIHV meeting in September 2015). For the SURF project grant, [REDACTED] wrote the Student Statement of Intent. [REDACTED] drafted the remainder of this proposal, and [REDACTED] extensively revised it, in conversation with [REDACTED]. We employed Google Docs to work collaboratively on the proposal, a successful first test for using this platform to share the work of writing, data analysis, and editing during the grant period.