

## Application Details

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### Manage Application: Textbook Transformation Grants: Round Eleven

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**Award Cycle:** Round 11

**Internal Submission Deadline:** Tuesday, January 23, 2018

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**Application Title:** 370

**Application ID:** 002094

**Submitter First Name:** Sharryse

**Submitter Last Name:** Henderson

**Submitter Title:** Professor of Biology

**Submitter Email Address:** shenders@highlands.edu

**Submitter Phone Number:** 678-872-8112

**Submitter Campus Role:** Other

**Applicant First Name:** Jacqueline

**Applicant Last Name:** Belwood

**Applicant Email Address:** jbelwood@highlands.edu

**Applicant Phone Number:** 678-872-8416

**Primary Appointment Title:** Associate Professor of Biology

**Institution Name(s):** Georgia Highlands College

**Co-Applicant(s):** Kimberly Subacz

**Submission Date:** Tuesday, January 23, 2018

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**Proposal Title:** 370

**Proposal Category:** OpenStax Textbooks

**Final Semester of Instruction:** Fall 2018

**Are you using an OpenStax textbook?:** No

#### Team Members (Name, Email Address):

Jacqueline Belwood, Associate Professor of Biology, jbelwood@highlands.edu

Kimberly Subacz, Instructor of Biology, ksubacz@highlands.edu

Lisa Branson, Associate Professor of Biology, lbranson@highlands.edu

Thomas Harnden, Professor of Biology, tharnden@highlands.edu

Mark Knauss, Professor of Biology, mknauss@highlands.edu

Sharryse Henderson, Professor of Biology, shenders@highlands.edu

Karin Bennedsen, Assistant Librarian of Public Services, kbenneds@highlands.edu

**Sponsor, (Name, Title, Department, Institution):**

Renva Watterson, Ed.D.

Vice President of Academic Affairs

Georgia Highlands College

**Course Names, Course Numbers and Semesters Offered:**

BIOL 2107K - Principles of Biology I - offered every fall, spring, and summer semesters

BIOL 2108K - Principles of Biology II - offered every fall, spring and summer semesters

**List the original course materials for students (including title, whether optional or required, & cost for each item):** Required:Campbell Biology, 11th edition; plus MasteringBiology with Pearson eText - Access Card Package; ISBN 13: 978-0-13-408231-8Estimated Cost: \$247

**Average Number of Students per Course Section:** 24

**Number of Course Sections Affected by Implementation in Academic Year:** 22

**Average Number of Students Per Summer Semester:** 96

**Average Number of Students Per Fall Semester:** 192

**Average Number of Students Per Spring Semester:** 204

**Total Number of Students Affected by Implementation in Academic Year:** 528

**Requested Amount of Funding:** \$30,000

**Original per Student Cost:** \$247

**Post-Proposal Projected Student Cost:** \$0

**Projected Per Student Savings:** \$247

**Projected Total Annual Student Savings:** \$130,416

**Creation and Hosting Platforms Used ("n/a" if none):**

D2L Brightspace

MERLOT II

GALILEO Open Learning Materials website

LibGuides via USG Libraries

**Project Goals:**

The United States Public Interest Research Group (USPIRG) surveyed college students across the US and concluded that the rising cost of college textbooks has a direct impact on student enrollment in, and progression through, college (1). In their report, *Fixing the Broken Textbook Market*, 65% of those surveyed decided not to purchase a textbook for at least one class and of those students, 94% believed that not purchasing a textbook would hurt their grade. Nearly half the students surveyed stated that the price of textbooks directly impacted their decision regarding the number and type of courses in which to enroll. Studies have also shown a correlation between not purchasing textbooks and increased likelihood of failure or withdrawal from courses (2). Furthermore, the Bureau of Labor Statistics reports that the cost of college textbooks has risen three times faster than the rate of inflation in the last 30 years - far outpacing health care expenses and home prices (3). Exacerbating this issue is the fact that only five publishers currently control 85% of the textbook market and the majority of publishers market textbooks to faculty rather than to the students who face numerous financial barriers to success in college (4). Obviously, there is a great need to remove the barriers that students face in pursuing higher education particularly in STEM courses.

In this project, we propose to engage in a department-wide effort to transform two of our gateway STEM courses, Principles of Biology I (BIOL 2107K) and Principles of Biology II (BIOL 2108K). In the lecture component of the course, we will adopt OpenStax *Biology* and

produce supporting instructional learning materials such as chapter outlines, detailed lecture PowerPoints (currently not available through OpenStax), and guided reading activities. In short, this project strives to improve student access to outstanding course materials thereby reducing one of the many barriers students face to achieve academic success.

Our project goals are to:

Identify and adopt an appropriate Open Educational Resource (OER) to best compliment student-learning outcomes for BIOL 2107K and BIOL 2108K. Preference will be given to OpenStax *Biology* for the lecture component of the course.

Redesign current ancillary materials for BIOL 2107K and BIOL 2108K using the OER framework (images, tables, etc.). When needed, purchase copyright-free images from on-line sources and/or create new images using one or more graphic designers from among GHC students, faculty, or staff.

Create supplemental course materials to support instruction with the new OER. Supplemental course materials will include chapter outlines, detailed instructional PowerPoints, and guided reading activities.

Create a complementary LibGuide for both BIOL 2107K and BIOL 2108K. Each LibGuide will serve as a repository for any instructional materials created as part of this grant but also house links to videos, animations, tutorials and other ancillary materials that faculty currently use in the instruction of their courses.

Improve student success in BIOL 2107K and BIOL 2108K and reduce drop/fail/withdraw (DFW) rates in courses that currently have among the highest DFW rates at GHC.

Increase retention, progression, and graduation (RPG) rates of STEM students at Georgia Highlands College.

Survey students enrolled in the redesigned courses and faculty who teach them to assess adopted OERs with regard to 1) convenience and ease-of-use, 2) effectiveness and quality, and 3) attainment of student-learning outcomes.

### **Statement of Transformation:**

Georgia Highlands College (GHC) is a limited four-year college in the University System of Georgia that serves more than 6000 students in northwest Georgia and Northeast Alabama. GHC offers transfer associate degree programs, career associate degree programs, and targeted baccalaureate degree programs as well as instruction on five diversified campuses, which provides the opportunity to develop, implement, and compare new teaching materials and pedagogies across campuses.

Mean annual household income in the geographic areas served by GHC is about \$61,927 (5). According to the 2015-2016 Georgia Highlands College Fact Book, the average student at GHC is a 23.9 year-old female. Moreover, approximately 45.4% of GHC students are eligible for Pell Grant and many of our students have full-time jobs in addition to undertaking a full course load of at least 12 hours (6). Low-cost course materials will increase access to STEM

courses taught at GHC and should lead to a higher rate of utilization of the resources (7). Currently, most sections of BIOL 2107K and BIOL 2108K use proprietary textbooks at a cost of over \$247 for each student. Furthermore, students who use the electronic version of the textbook lose access to it after 12 months. The price of course materials makes these courses an unnecessarily expensive barrier to the first years of college rather than a valued entry level science course that builds study skills. This course transformation will save students at Georgia Highlands College over \$130,416 and provide them with a valuable, peer-reviewed, up-to-date textbook at no-cost and ancillary instructional materials that complement the textbook that have been fully vetted through GHC faculty.

BIOL 2107K and BIOL 2108K constitute a science sequence in Area D for all STEM majors and serves as an option for non-STEM majors to complete their Area D science requirements. Both courses are offered in fall, spring, and summer semesters at three of the five Georgia Highlands College instructional sites. Currently both are offered in a face-to-face environment only. Therefore, course materials will be designed to enhance innovative face-to-face instruction techniques such as the flipped-classroom design and active learning modules. Additionally, the primary student-learning outcomes of BIOL 2107K and BIOL 2108K are to improve student understanding of the basic concepts of biology and biochemistry (cell theory, cell structure, cell metabolism and cell reproduction) before proceeding to a detailed study of the evolution and diversity of life, comparative anatomy and physiology of body systems, and ecology. A major part of accomplishing these student-learning outcomes and developing related course materials is the use of current technologies. The Pearson Student Mobile Device Survey published in 2015 suggests 8 out of 10 college students surveyed use smartphones and other electronic devices in class on a regular basis (8). College students are more likely this year than last to feel that tablets make learning more fun (79%) and help students perform better in class (68%). Both of these measures are up significantly from last year (74% and 62%, respectively). This project will address the increasing use of technology by students by creating LibGuides to distribute all grant-generated course materials electronically and to house links to numerous online instructional aids such as videos, animations, and tutorials currently available online. Moreover, the LibGuides will provide instructors a more effective means to engage students, administer course content, and assist students in gaining a deeper understanding of the key principles being taught.

### **Transformation Action Plan:**

The action plan will consist of adoption and adaptation of OpenStax *Biology* and the creation of supporting instructional materials. Quantitative and qualitative data will be collected to determine the efficacy of the OpenStax *Biology* and grant-created materials. The following activities will be conducted during the project to support implementation:

**Approval:** Team members will submit a formal proposal to the GHC Institutional Review Board (IRB). Pre- and post-course surveys will be generated and presented to the IRB for approval prior to administration. Semester updates and a final report will be submitted to the IRB so that

the college is fully informed about the progress and impact of this project.

**Training:** Team members will participate in various forms of training prior to and during implementation of this project. At least two team members will travel to Macon to attend the Kick-Off Meeting. Team members will participate in webinars hosted by USG staff on the Galileo Open Learning Materials repository. Team members will receive training from and collaborate with OpenStax staff. Team members will view archived videos from adaptive and authoring software companies available on the ALG Textbook Transformation website in order to identify appropriate software sources and prepare for the creation of multimedia instructional resources. Graphic artists will receive training on Adobe software available through a site license held by GHC.

**Review and Selection:** Although preference will be given to OpenStax *Biology* in the lecture component of the course, other OERs may be considered for adoption and adaption if individual content needs to be developed to meet current student-learning outcomes. Other possible sources for acceptable OERs may include Merlot II, Saylor Academy, GALILEO, Lumen Learning, CNX, Cool4Ed, and others. Final decision will be made on the basis of current student-learning outcomes for the transformed course(s), applicability in the classroom, and teaching experience of team members.

**Evaluation of Selected OER:** Once an appropriate OER is selected, we will examine how and if these materials can be used in both lecture and lab settings. Materials will then be organized into various areas of specialty and assigned to individual team members for review. Team members will determine if the content area needs to be adapted or if additional resources need to be created.

**Adaptation and Creation:** Each team member will adapt instructional materials in the content areas to which they are assigned. Any instructional materials found to be lacking, will be created and then evaluated by the team.

**Course Syllabi:** Master syllabi for each course will be created and made available to faculty and students on D2L. The master syllabi will 1) provide consistency of instruction and assessment in all sections of the course, 2) provide clear instructions on how to access newly created course materials, 3) provide a list of assigned readings and associated deadlines from the OER textbook, and 4) a list of assigned multimedia videos/animations and dates of use.

**Course Evaluation/Redesign:** After use of OER and newly created instructional materials begin, the team will evaluate the effectiveness of the new materials and feasibility for students. This will include 1) a comparison of grades from semesters the previous textbook was used and during the incorporation of OER materials and 2) distribution of surveys to determine how students and faculty feel about the implementation and use of the OER and associated materials. It will also include adjustments in the course material and syllabi, omission of unnecessary material, and creation/adoption of new material where needed.

**Hosting:** All course materials developed in support of the ALG Textbook Transformation project will be stored within a master course on GHC's learning management system, currently Brightspace by D2L (<http://www.brightspace.com>). This will allow all GHC instructors who teach BIOL 2107K and BIOL 2108K to have free and unrestricted access for use in their courses. Furthermore, newly developed course materials will be uploaded to LibGuides by SpringShare (<http://springshare.com/libguides>), which serves as a comprehensive content management system used by thousands of libraries worldwide, and MERLOT II ([www.merlot.org](http://www.merlot.org)), a curated collection of free and open online teaching, learning, and faculty development services contributed and used by an international education community. Finally, at the conclusion of this ALG project, all newly developed course materials will be posted on the GALILEO Open Learning Materials website (<http://oer.galileo.usg.edu/>). Consequently, any student enrolled in BIOL 2107K and BIOL 2108K and any faculty at GHC, within the USG, or across the country or internationally will have 24-hour-access to our OERs and ancillary materials.

The following team members will play an active role in implementing the transformation action plan:

**Jacqueline Belwood:** Principle Investigator; will oversee project from start to finish including: assist in development of grant proposal, identification, and adoption of appropriate OERs, development of relate course materials; and creation of a master syllabus. She will also serve as a curriculum expert for both BIOL 2107K and BIOL 2108K.

**Kimberly Subacz:** Co-PI; will oversee project from start to finish including: assist in development of grant proposal, identification, and adoption of appropriate OERs, development of relate course materials; and creation of a master syllabus. She will also serve as a curriculum expert for both BIOL 2107K and BIOL 2108K.

**Mark Knauss:** Curriculum expert; will develop and/or modify open source ancillary materials to complement the selected OER in BIOL 2108K. These ancillary materials include but are not limited to chapter outlines, Powerpoints, and guided reading activities.

**Lisa Branson:** Curriculum expert; will develop and/or modify open source ancillary materials to complement the selected OER in BIOL 2108K. These ancillary materials include but are not limited to chapter outlines, Powerpoints, and guided reading activities.

**Tom Harnden:** Instructional designer; provide expertise in online instruction and online course development; assist with administration of surveys and data collection. He will also serve as a curriculum expert for BIOL 2108K

**Karin Bennedsen:** Library Support Staff; will collaborate with team members to identify and adopt OERs and make OER materials created during this project freely accessible on LibGuides, MERLOT II, Galileo Open Learning Materials.

**Sharryse Henderson:** Grant administrator and research analyst;

provide administrative support, writing and development of grant proposal, submission of application, administration of surveys, data collection and analysis, submission of progress report and final report, and provide expertise in carrying out the grant plan of action.

**Quantitative & Qualitative Measures:** Both quantitative and qualitative methods will be used to measure and gauge the success of our transition from the use of proprietary course materials to OpenStax Biology and no-cost ancillary materials. Quantitative data from 1) success rates on embedded assessment questions on the final exam, 2) DFW rates, and 3) RPG rates for semesters during which traditional texts were used in BIOL 2107K and 2108K will be compared to rates for the transformed courses. Furthermore, usage data will be gathered from the D2L content usage tool to determine how often students are accessing OpenStax Biology textbook. Qualitative methods will consist of pre- and post-course surveys that measure the number of students who use the textbook, the frequency in which they believe they access the textbook, the ways in which they use the textbooks, and reasons they accessed the textbook. Students will also be asked to compare their experiences in the redesigned course compared to classes using traditional texts. Similarly, pre- and post-course surveys will quantify faculty use of, and any problems associated with, the open source textbooks. Faculty will also be asked to provide detailed qualitative critiques of the new ancillary materials adopted/created for each course. An optional discussion forum on D2L will also be devised to elicit additional qualitative feedback from students with regard to ease of material access and use -- including text design, quality and readability, and appropriateness of ancillary materials. All qualitative and quantitative data will be compiled, analyzed and presented in a mid-project report and final project report.

**Timeline:**

<p>Spring 2018</p>	<ul style="list-style-type: none"> <li>• Attend required “Kick Off” Meeting</li> <li>• Review and adopt OpenStax <i>Biology</i> textbook or other appropriate OERs</li> <li>• Identify topics/concepts that require adaptation and creation of supplemental materials</li> <li>• Grant team members participate in training with OpenStax staff, attend webinar(s) hosted by USG staff on the use of Galileo Open Learning Materials website, and view archived web events offered by adaptive and authoring software companies</li> <li>• Identify Graphic Designers from among GHC students, faculty or staff</li> <li>• Begin to create BIOL 2107K and BIOL 2108K ancillary materials and instructional resources</li> </ul>
<p>Summer 2018</p>	<ul style="list-style-type: none"> <li>• Redesign BIOL 2107K and BIOL 2108K master syllabi for OpenStax Biology textbook</li> <li>• Continue development of BIOL 2107K and BIOL 2108K instructional materials for lecture components of the courses</li> <li>• Develop pre- and post-course surveys for students and methodology for delivery and analytics</li> <li>• Meet with all full-time and part-time biology faculty staff to train and prepare for implementation of Openstax <i>Biology</i> textbook and all newly created ancillary materials</li> <li>• Upload newly created course materials into the college’s Learning Management System (D2L) for dissemination and delivery to division faculty and students</li> </ul>

Fall 2018	<ul style="list-style-type: none"> <li>• Conduct BIOL 2107K and BIOL 2108K courses using OpenStax <i>Biology</i> textbook and newly created instructional materials</li> <li>• Administer student pre- and post-surveys</li> <li>• Revise and edit instructional materials based on student and faculty feedback</li> <li>• Compile and analyze Fall 2018 data at the conclusion of the semester</li> <li>• Generate final report to summarize study findings</li> <li>• Upload newly created instructional materials to MERLOT II, OpenStax CNS, and Galileo Open Learning Materials repository</li> </ul>
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### **Budget:**

We are requesting funding according to the **Large-Scale Transformation** category for department-wide adoption of OER textbook or for sections with enrollments of 500 students or more per academic year. The total funds requested to support this project are **\$30,000**.

### **Release Time for Faculty - \$15,000 TOTAL**

Jacqueline Belwood, Associate Professor of Biology and Principal Investigator: \$5000

Kimberly Subacz, Instructor of Biology and Principal Investigator: \$5000

Mark Knauss, Professor of Biology and Content Expert: \$1500

Lisa Branson, Associate Professor of Biology and Content Expert: \$3500

### **Staff Support - \$11,200 TOTAL**

Tom Harnden, Professor of Biology and Instructional Designer: \$1000

Sharryse Henderson, Professor of Biology and Grant Administrator: \$3700

Karin Bennedsen, Assistant Librarian at Paulding Campus: \$500

TBA, Graphic Designers: \$6000

### **Technology - \$3000 TOTAL**

Computer programs and Internet aids to support graphic designers: \$1000

Shutterstock for purchase of stock images: \$2000 (1 year subscription @ \$169/month)

### **Travel to Grant Kick-Off Meeting - \$800 TOTAL**

Jacqueline Belwood, Associate Professor of Biology and Principal Investigator: \$400

Kimberly Subacz, Instructor of Biology and Co-PI: \$400

**Sustainability Plan:**

Principles of Biology I (2107K) and II (2108K) is offered every semester at GHC, as they fulfill the Area D lab science requirement for both STEM and non-STEM majors. All course materials generated by funding from this grant will be made freely available under the Creative Commons license for public access and usage. Course materials will be reviewed annually (three times per year January, May, September) and any needed updates will be made. Surveys will be conducted each semester to determine student satisfaction and recommended improvements will be made as needed. In addition, we will contribute to the quality of the OpenStax project by continuing to monitor and report any and all errors found in the OpenStax *Biology* textbook to the editor-in-chief (David Harris). Once the transformation of BIOL 2107K/2108K is complete, we will explore the possibility of expanding some of the successful changes to other courses at GHC including ASTR, GEOL, PHYS, and ENV5. These courses are also frequently taken by both STEM and non-STEM majors to fulfill the Area D science requirements but currently have high-cost textbooks and lab manuals rather than OERs.

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# GEORGIA HIGHLANDS



## COLLEGE

FLOYD CAMPUS  
3175 Cedartown Highway  
Rome, GA 30161

VICE PRESIDENT  
FOR ACADEMIC AFFAIRS

January 22, 2018

Dear ALG Grants Committee Members:

I am pleased to write this letter in support of this splendid group of Natural Science and Physical Education professors, as they seek grant funding to incorporate free and open texts and other instructional materials for two courses, BIOL 2107K and BIOL 2108K. There are numerous reasons of efficiency, pedagogy, and instructional transformation which compel me to support this initiative.

First, this outstanding team of collegiate educators will engage in a thoughtful process that will broadly affect the student body at Georgia Highlands College. We expect to affect approximately 500 students per year through redesign of these courses. Specifically, it would directly impact about 8% of our entire college population.

Second, money saved through this plan's implementation would provide opportunity for enhanced teaching and learning. Case in point, with textbook costs rising at an unheard of rate, our students could be saving nearly \$131,000 by replacing current textbooks with open educational resources and through the generation of open learning materials that will be freely available to all students. We know this affects our students' foundational learning, tenacity, and ability to thrive in this class.

Finally, this affordable learning grant will serve as a catalyst for enhanced teaching and learning. It will serve as a springboard for innovation on the part of faculty who work to make those materials more creative, applied, and relevant in today's biology classrooms. It will send the message that GHC faculty members care about their students economically, socially, and intellectually. It will urge students to persist and to complete in a discipline that too often is a stumbling block to college completion.

I wholeheartedly endorse this ALG Transformation Grant application from these forward-thinking, action-oriented professors. Their plan is noteworthy and laudable. Please allow them to continue their essential work through the approval of the grant.

Sincerely,

Renva Watterson, Ed.D.

highlands.edu

Affirmative Action / Equal Employment and Educational Opportunity Institution

CARTERSVILLE CAMPUS  
678-872-8000

DOUGLASVILLE SITE  
678-872-4200

FLOYD CAMPUS  
706-802-5000

MARIETTA SITE  
678-872-8501

PAULDING SITE  
678-946-1100

**Affordable Learning Georgia Textbook Transformation Grants  
Rounds Ten and Eleven  
For Implementations beginning Spring Semester 2018  
Running Through Fall Semester 2018**

**Proposal Form and Narrative**

<b>Submitter Name</b>	Sharryse Henderson
<b>Submitter Title</b>	Professor of Biology
<b>Submitter Email</b>	shenders@highlands.edu
<b>Submitter Phone Number</b>	678-872-8112
<b>Submitter Campus Role</b>	Other: Science Coordinator
<b>Applicant Name</b>	Jacqueline Belwood, Ph.D.
<b>Applicant Email</b>	jbelwood@highlands.edu
<b>Applicant Phone Number</b>	678-872-8416
<b>Primary Appointment Title</b>	Associate Professor of Biology
<b>Institution Name(s)</b>	Georgia Highlands College
<b>Team Members</b>	<p>Kimberly Subacz, Instructor of Biology, Division of Natural Science and Physical Education, Georgia Highlands College, <a href="mailto:ksubacz@highlands.edu">ksubacz@highlands.edu</a></p> <p>Lisa Branson, Associate Professor of Biology, Division of Natural Science and Physical Education, Georgia Highlands College, <a href="mailto:lbranson@highlands.edu">lbranson@highlands.edu</a></p> <p>Sharryse Henderson, Professor of Biology, Division of Natural</p>

	<p>Science and Physical Education, Georgia Highlands College, <a href="mailto:shenders@highlands.edu">shenders@highlands.edu</a></p> <p>Thomas Harnden, Ph.D., Professor of Biology, Division of Natural Science and Physical Education, Georgia Highlands College, <a href="mailto:tharnden@highlands.edu">tharnden@highlands.edu</a></p> <p>Mark Knauss, Ph.D., Professor of Biology, Division of Natural Science and Physical Education, Georgia Highlands College, <a href="mailto:mknauss@highlands.edu">mknauss@highlands.edu</a></p> <p>Karin Bennedsen, Assistant Librarian of Public Services, Paulding Instructional Site, Georgia Highlands College, <a href="mailto:kbernde@highlands.edu">kbernde@highlands.edu</a></p>				
<b>Sponsor, Title, Department, Institution</b>	Renva Watterson, Ed.D., Vice President, Academic Affairs, Georgia Highlands College				
<b>Proposal Title</b>	ALG Textbook Transformation Project to Adopt an Open Educational Resource by OpenStax for Principles of Biology I and II (BIOL 2107K and 2108K) at Georgia Highlands College.				
<b>Course Names, Course Numbers and Semesters Offered</b>	BIOL 2107K – Principles of Biology I and BIOL 2108K – Principles of Biology II. Both courses are intended for STEM majors and are offered in fall, spring, and summer semesters. Project will begin Spring 2018 and conclude Fall 2018				
<b>Final Semester of Instruction</b>	Fall 2018				
<b>Average Number of Students Per Course Section</b>	24	<b>Number of Course Sections Affected by Implementation in Academic Year</b>	22	<b>Total Number of Students Affected by Implementation in Academic Year</b>	528
<b>Average Number of Students Per Summer Semester</b>	96				

Average Number of Students Per Fall Semester	192
Average Number of Students Per Spring Semester	240
Award Category (pick one)	<input checked="" type="checkbox"/> No-or-Low-Cost-to-Students Learning Materials <input type="checkbox"/> Specific Core Curriculum Courses
Are you planning on using an OpenStax textbook?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
List the original course materials for students (including title, whether optional or required, & cost for each item)	<p><b><u>REQUIRED COMPONENTS:</u></b></p> <p><i>Campbell Biology</i>, 11<sup>th</sup> edition; Plus MasteringBiology with Pearson eText -- Access Card Package; ISBN 13: 978-0-13-408231-8; Estimated Cost: \$247</p>
Requested Amount of Funding	\$30,000
Original Per Student Cost	\$247
Post-Proposal Projected Per Student Cost	\$0
Projected Per Student Savings	\$247

<b>Projected Total Annual Student Savings</b>	\$130,416
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## NARRATIVE

## 1.1 PROJECT GOALS

The United States Public Interest Research Group (USPIRG) surveyed college students across the US and concluded that the rising cost of college textbooks has a direct impact on student enrollment in, and progression through, college (1). In their report, *Fixing the Broken Textbook Market*, 65% of those surveyed decided not to purchase a textbook for at least one class and of those students, 94% believed that not purchasing a textbook would hurt their grade. Nearly half the students surveyed stated that the price of textbooks directly impacted their decision regarding the number and type of courses in which to enroll. Studies have also shown a correlation between not purchasing textbooks and increased likelihood of failure or withdrawal from courses (2). Furthermore, the Bureau of Labor Statistics reports that the cost of college textbooks has risen three times faster than the rate of inflation in the last 30 years - far outpacing health care expenses and home prices (3). Exacerbating this issue is the fact that only five publishers currently control 85% of the textbook market and the majority of publishers market textbooks to faculty rather than to the students who face numerous financial barriers to success in college (4). Obviously, there is a great need to remove the barriers that students face in pursuing higher education particularly in STEM courses.

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- Identify and adopt an appropriate Open Educational Resource (OER) to best compliment student-learning outcomes for BIOL 2107K and BIOL 2108K. Preference will be given to OpenStax *Biology* for the lecture component of the course.
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- Create supplemental course materials to support instruction with the new OER. Supplemental course materials will include chapter outlines, detailed instructional PowerPoints, and guided reading activities.
- Create a complementary LibGuide for both BIOL 2107K and BIOL 2108K. Each LibGuide will serve as a repository for any instructional materials created as part of this grant but also house links to videos, animations, tutorials and other ancillary materials that faculty currently use in the instruction of their courses.
- Improve student success in BIOL 2107K and BIOL 2108K and reduce drop/fail/withdraw (DFW) rates in courses that currently have among the highest DFW rates at GHC.

- Increase retention, progression, and graduation rates of STEM students at Georgia Highlands College.
- Survey students enrolled in the redesigned courses and faculty who teach them to assess adopted OERs with regard to 1) convenience and ease-of-use, 2) effectiveness and quality, and 3) attainment of student-learning outcomes.

## 1.2 STATEMENT OF TRANSFORMATION

Georgia Highlands College (GHC) is a limited four-year college in the University System of Georgia that serves more than 6000 students in northwest Georgia and Northeast Alabama. GHC offers transfer associate degree programs, career associate degree programs, and targeted baccalaureate degree programs as well as instruction on five diversified campuses, which provides the opportunity to develop, implement, and compare new teaching materials and pedagogies across campuses.

Mean annual household income in the geographic areas served by GHC is about \$61,927 (5). According to the 2015-2016 Georgia Highlands College Fact Book, the average student at GHC is a 23.9 year-old female. Moreover, approximately 45.4% of GHC students are eligible for Pell Grant and many of our students have full-time jobs in addition to undertaking a full course load of at least 12 hours (6). Low-cost course materials will increase access to STEM courses taught at GHC and should lead to a higher rate of utilization of the resources (7). Currently, most sections of BIOL 2107K and BIOL 2108K use proprietary textbooks at a cost of over \$247 for each student. Furthermore, students who use the electronic version of the textbook lose access to it after 12 months. The price of course materials makes these courses an unnecessarily expensive barrier to the first years of college rather than a valued entry level science course that builds study skills. This course transformation will save students at Georgia Highlands College over \$130,416 and provide them with a valuable, peer-reviewed, up-to-date textbook at no-cost and ancillary instructional materials that complement the textbook that have been fully vetted through GHC faculty.

BIOL 2107K and BIOL 2108K constitute a science sequence in Area D for all STEM majors and serves as an option for non-STEM majors to complete their Area D science requirements. Both courses are offered in fall, spring, and summer semesters at three of the five Georgia Highlands College instructional sites. Currently both are offered in a face-to-face environment only. Therefore, course materials will be designed to enhance innovative face-to-face instruction techniques such as the flipped-classroom design and active learning modules. Additionally, the primary student-learning outcomes of BIOL 2107K and BIOL 2108K are to improve student understanding of the basic concepts of biology and biochemistry (cell theory, cell structure, cell metabolism and cell reproduction) before proceeding to a detailed study of the evolution and diversity of life, comparative anatomy and physiology of body systems, and ecology. A major part of accomplishing these student-learning outcomes and developing related course materials is the use of current technologies. The Pearson Student Mobile Device Survey published in 2015 suggests 8 out of 10 college students surveyed use smartphones and other electronic devices in class on a regular basis (8). College students are more likely this year than last to feel that tablets make learning more fun (79%) and help students perform better in class (68%). Both of these measures are up significantly from last year (74% and 62%, respectively). This project will address the increasing use of technology by students by creating LibGuides to distribute all grant-generated course materials electronically and to house links to numerous online instructional aids such as videos, animations, and tutorials currently available online. Moreover, the LibGuides will provide instructors a more effective means to engage students, administer

course content, and assist students in gaining a deeper understanding of the key principles being taught.

### 1.3 TRANSFORMATION ACTION PLAN

The action plan will consist of adoption and adaptation of OpenStax *Biology* and the creation of supporting instructional materials. Quantitative and qualitative data will be collected to determine the efficacy of the OpenStax *Biology* and grant-created materials. The following activities will be conducted during the project to support implementation:

**Approval:** Team members will submit a formal proposal to the GHC Institutional Review Board (IRB). Pre- and post-course surveys will be generated and presented to the IRB for approval prior to administration. Semester updates and a final report will be submitted to the IRB so that the college is fully informed about the progress and impact of this project.

**Training:** Team members will participate in various forms of training prior to and during implementation of this project. At least two team members will travel to Macon to attend the Kick-Off Meeting. Team members will participate in webinars hosted by USG staff on the Galileo Open Learning Materials repository. Team members will receive training from and collaborate with OpenStax staff. Team members will view archived videos from adaptive and authoring software companies available on the ALG Textbook Transformation website in order to identify appropriate software sources and prepare for the creation of multimedia instructional resources. Graphic artists will receive training on Adobe software available through a site license held by GHC.

**Review and Selection:** Although preference will be given to OpenStax *Biology* in the lecture component of the course, other OERs may be considered for adoption and adaption if individual content needs to be developed to meet current student-learning outcomes. Other possible sources for acceptable OERs may include Merlot II, Saylor Academy, GALILEO, Lumen Learning, CNX, Cool4Ed, and others. Final decision will be made on the basis of current student-learning outcomes for the transformed course(s), applicability in the classroom, and teaching experience of team members.

**Evaluation of Selected OER:** Once an appropriate OER is selected, we will examine how and if these materials can be used in both lecture and lab settings. Materials will then be organized into various areas of specialty and assigned to individual team members for review. Team members will determine if the content area needs to be adapted or if additional resources need to be created.

**Adaptation and Creation:** Each team member will adapt instructional materials in the content areas to which they are assigned. Any instructional materials found to be lacking, will be created and then evaluated by the team.

**Course Syllabi:** Master syllabi for each course will be created and made available to faculty and students on D2L. The master syllabi will 1) provide consistency of instruction and assessment in all sections of the course, 2) provide clear instructions on how to access newly created course materials, 3) provide a list of assigned readings and associated deadlines from the OER textbook, and 4) a list of assigned multimedia videos/animations and dates of use.

**Course Evaluation/Redesign:** After use of OER and newly created instructional materials begin, the team will evaluate the effectiveness of the new materials and feasibility for students. This will include 1) a comparison of grades from semesters the previous textbook was used and during the incorporation of OER materials and 2) distribution of surveys to determine how students and faculty feel about the implementation and use of the OER and associated materials. It will also include adjustments in the course material and syllabi, omission of unnecessary material, and creation/adoption of new material where needed.

**Hosting:** All course materials developed in support of the ALG Textbook Transformation project will be stored within a master course on GHC's learning management system, currently Brightspace by D2L (<http://www.brightspace.com>). This will allow all GHC instructors who teach BIOL 2107K and BIOL 2108K to have free and unrestricted access for use in their courses. Furthermore, newly developed course materials will be uploaded to LibGuides by SpringShare (<http://springshare.com/libguides>), which serves as a comprehensive content management system used by thousands of libraries worldwide, and MERLOT II ([www.merlot.org](http://www.merlot.org)), a curated collection of free and open online teaching, learning, and faculty development services contributed and used by an international education community. Finally, at the conclusion of this ALG project, all newly developed course materials will be posted on the GALILEO Open Learning Materials website (<http://oer.galileo.usg.edu/>). Consequently, any student enrolled in BIOL 2107K and BIOL 2108K and any faculty at GHC, within the USG, or across the country or internationally will have 24-hour-access to our OERs and ancillary materials.

The following team members will play an active role in implementing the transformation action plan:

- **Jacqueline Belwood:** Principle Investigator; will oversee project from start to finish including: assist in development of grant proposal, identification and adoption of appropriate OERs, development of related course materials; and creation of a master syllabus. She will also serve as a curriculum expert for both BIOL 2107K and BIOL 2108K.
- **Kimberly Subacz:** Co-PI; will oversee project from start to finish including: assist in development of grant proposal, identification and adoption of appropriate OERs, development of related course materials; and creation of a master syllabus. She will also serve as a curriculum expert for both BIOL 2107K and BIOL 2108K.
- **Mark Knauss:** Curriculum Expert; will develop and/or modify open source ancillary materials to compliment the selected OER in BIOL 2107K. These ancillary materials include but are not limited to chapter outlines, PowerPoints, and guided reading activities.

- **Lisa Branson:** Curriculum Expert; will develop and/or modify open source ancillary materials to compliment the selected OER in BIOL 2108K. These ancillary materials include but are not limited to chapter outlines, PowerPoints, and guided reading activities.
- **Tom Harnden:** Instructional designer; provide expertise in online instruction and online course development; assist with administration of surveys and data collection. He will also serve as a curriculum expert for BIOL 2108K.
- **Karin Bennedsen:** Library Support Staff; will collaborate with team members to identify and adopt OERs and make OER materials created during this project freely accessible on LibGuides, Merlot II, and Galileo Open Learning Materials.
- **Sharryse Henderson:** Grant administrator and research analyst; provide administrative support, writing and development of grant proposal, submission of application, administration of surveys, data collection and analysis, submission of progress report and final report, and provide expertise in carrying out the grant plan of action.

## 1.4 QUANTITATIVE AND QUALITATIVE MEASURES

Both quantitative and qualitative methods will be used to measure and gauge the success of our transition from the use of proprietary course materials to OpenStax *Biology* and no-cost ancillary materials. Quantitative data from 1) success rates on embedded assessment questions on the final exam, 2) DFW rates, and 3) RPG rates for semesters during which traditional texts were used in BIOL 2107K and 2108K will be compared to rates for the transformed courses. Furthermore, usage data will be gathered from the D2L content usage tool to determine how often students are accessing OpenStax *Biology* textbook. Qualitative methods will consist of pre- and post-course surveys that measure the number of students who use the textbook, the frequency in which they believe they access the textbook, the ways in which they use the textbooks, and reasons they accessed the textbook. Students will also be asked to compare their experiences in the redesigned course compared to classes using traditional texts. Similarly, pre- and post-course surveys will quantify faculty use of, and any problems associated with, the open source textbooks. Faculty will also be asked to provide detailed qualitative critiques of the new ancillary materials adopted/created for each course. An optional discussion forum on D2L will also be devised to elicit additional qualitative feedback from students with regard to ease of material access and use -- including text design, quality and readability, and appropriateness of ancillary materials. All qualitative and quantitative data will be compiled, analyzed and presented in a mid-project report and final project report.

## 1.5 TIMELINE

Spring 2018	<ul style="list-style-type: none"> <li>• Attend required “Kick Off” Meeting</li> <li>• Review and adopt OpenStax <i>Biology</i> textbook or other appropriate OERs</li> <li>• Identify topics/concepts that require adaptation and creation of supplemental materials</li> <li>• Grant team members participate in training with OpenStax staff, attend webinar(s) hosted by USG staff on the use of Galileo Open Learning Materials website, and view archived web events offered by adaptive and authoring software companies</li> <li>• Identify Graphic Designers from among GHC students, faculty or staff</li> <li>• Begin to create BIOL 2107K and BIOL 2108K ancillary materials and instructional resources</li> </ul>
Summer 2018	<ul style="list-style-type: none"> <li>• Redesign BIOL 2107K and BIOL 2108K master syllabi for OpenStax <i>Biology</i> textbook</li> <li>• Continue development of BIOL 2107K and BIOL 2108K instructional materials for lecture components of the courses</li> <li>• Develop pre- and post-course surveys for students and methodology for delivery and analytics</li> <li>• Meet with all full-time and part-time biology faculty staff to train and prepare for implementation of Openstax <i>Biology</i> textbook and all newly created ancillary materials</li> <li>• Upload newly created course materials into the college’s Learning Management System (D2L) for dissemination and delivery to division faculty and students</li> </ul>
Fall 2018	<ul style="list-style-type: none"> <li>• Conduct BIOL 2107K and BIOL 2108K courses using OpenStax <i>Biology</i> textbook and newly created instructional materials</li> <li>• Administer student pre- and post-surveys</li> <li>• Revise and edit instructional materials based on student and faculty feedback</li> <li>• Compile and analyze Fall 2018 data at the conclusion of the semester</li> <li>• Generate final report to summarize study findings</li> <li>• Upload newly created instructional materials to MERLOT II, OpenStax CNS, and Galileo Open Learning Materials repository</li> </ul>

## 1.6 BUDGET

We are requesting funding according to the Large-Scale Transformation category for department-wide adoption of OER textbook or for sections with enrollments of 500 students or more per academic year. The total funds requested to support this project are **\$30,000**.

### **Release Time for Faculty - \$15,000 TOTAL**

- Jacqueline Belwood, Associate Professor of Biology and Principal Investigator: \$5000
- Kimberly Subacz, Instructor of Biology and Principal Investigator: \$5000
- Mark Knauss, Professor of Biology and Content Expert: \$1500
- Lisa Branson, Associate Professor of Biology and Content Expert: \$3500

### **Staff Support - \$11,200 TOTAL**

- Tom Harnden, Professor of Biology and Instructional Designer: \$1000
- Sharryse Henderson, Professor of Biology and Grant Administrator: \$3700
- Karin Bennedsen, Assistant Librarian at Paulding Campus: \$500
- TBA, Graphic Designers: \$6000

### **Technology - \$3000 TOTAL**

- Computer programs and Internet aids to support graphic designers: \$1000
- Shutterstock for purchase of stock images: \$2000 (1 year subscription @ \$169/month)

### **Travel to Grant Kick-Off Meeting - \$800 TOTAL**

- Jacqueline Belwood, Associate Professor of Biology and Principal Investigator: \$400
- Kimberly Subacz, Instructor of Biology and Principal Investigator: \$400

## 1.7 SUSTAINABILITY PLAN

Principles of Biology I (2107K) and II (2108K) is offered every semester at GHC, as they fulfill the Area D lab science requirement for both STEM and non-STEM majors. All course materials generated by funding from this grant will be made freely available under the Creative Commons license for public access and usage. Course materials will be reviewed annually (three times per year January, May, September) and any needed updates will be made. Surveys will be conducted each semester to determine student satisfaction and recommended improvements will be made as needed. In addition, we will contribute to the quality of the OpenStax project by continuing to monitor and report any and all errors found in the OpenStax *Biology* textbook to the editor-in-chief (David Harris). Once the transformation of BIOL 2107K/2108K is complete, we will explore the possibility of expanding some of the successful changes to other courses at GHC including ASTR, GEOL, PHYS and ENVS. These courses are also frequently taken by both STEM and non-STEM majors to fulfill the Area D science requirements but currently have high-cost textbooks and lab manuals rather than OERs.

## 1.8 REFERENCES & ATTACHMENTS

In addition to the attached Letter of Support, the following articles were cited in this proposal:

1. United States Public Interest Research Group. 2014. Available at:  
<http://www.uspirg.org/sites/pirg/files/reports/NATIONAL%20Fixing%20Broken%20Textbooks%20Report1.pdf>
2. Florida Distance Learning Consortium. September, 2011. Florida Student Textbook Survey. Tallahassee, FL. Available at:  
<http://www.openaccesstextbooks.org/projectInfo.html>
3. Bureau of Labor Statistics. 2015. Available at: <http://www.bls.gov/news.release/cpi.htm>
4. Everard, A. and St. Pierre, K. A Case for Student Adoption of Open Textbooks. Journal of the Academy of Business Education. 2014, 66-76.
5. United States Census Bureau – American Community Survey. 2015. Available at:  
[https://factfinder.census.gov/bkmk/navigation/1.0/en/d\\_dataset:ACS\\_15\\_5YR/d\\_product\\_type:DATA\\_PROFILE/](https://factfinder.census.gov/bkmk/navigation/1.0/en/d_dataset:ACS_15_5YR/d_product_type:DATA_PROFILE/)
6. Georgia Highlands College Fact Book: Academic Year 2015-2016. Available at:  
<https://sites.highlands.edu/paar/wp-content/uploads/sites/9/2017/03/201516factbook.pdf>
7. B.L. Lindshield and K. Adhikari, 2013, Online and Campus College Students Like Using an Open Educational Resource Instead of a Traditional Textbook MERLOT Journal of Online Learning and Teaching, 9(1), 26 – 38.
8. Pearson Student Mobile Device Survey. June 2015. Available at:  
<https://www.pearsoned.com/wp-content/uploads/2015-Pearson-Student-Mobile-Device-Survey-College.pdf>