

## 2019-20 INVESTMENT FUNDS FULL APPLICATION ▶ #170

**PROPOSAL SUMMARY**

<b>Project Lead Name</b>	Sarah Bolton
<b>Project Lead email address</b>	sbolton@brockport.edu
<b>Project Lead Division</b>	Academic Affairs
<b>Project Lead Department</b>	Biology
<b>Proposal Title</b>	Increasing Accessibility of Hands-on Learning within Anatomy & Physiology Laboratories

**A. PROPOSAL DESCRIPTION****A-1. Describe the proposed project/initiative**

Service courses in Anatomy & Physiology (A&P), function as the foundation for every student interested in pursuing careers in health professions such as medical school, exercise science, occupational therapy, social work programs, etc. Additionally, many students choose to take these courses as an elective to further their knowledge about how the human body works as a whole. Within the Biology department, we have over 1,000 students pass through our BIO 221, 321 & 322 courses in each academic year, that utilize our scarce supply of anatomical models and resources. Access to anatomical models allows students ability and opportunity to take content they learn from the book and lecture, and convert their "book knowledge" into "practical knowledge" – a skill that takes practice to develop, and is fundamental to student success in all health care professions. At this time, our resources are scarce to teach the volume of students taking A&P courses in the Biology Department (BIO 221, 321, 322), and do not provide them with enough resources to promote academic success to the highest level.

Due to the demand for anatomical models in our A&P teaching laboratories, resources are often divided – simply because there are two large courses that require access to one set of anatomical models. Furthermore, within individual laboratories, we often have at least six students often sharing a single model (or less). In these cases, we typically find that only 1-2 students really spend the necessary quality time with the models, while the remaining 4-5 students often do not. When the appropriate number of models are available (i.e., 2 per group of six), students often work together in a more collaborative way, and in doing so enhancing their overall understanding of the material and their peers.

As of September 2018, Brockport has 7,056 undergraduate students, bringing around 1,500 new students (between first-time freshman and transfer students) into our doors each year. After being at this institution since May of 2017, I have quickly realized the enormous impact of our Anatomy & Physiology courses (BIO 221, 321, 322) have on the entire student body. In one academic year, we enroll nearly 1,000 students in our A&P courses, of which 35% of our student body takes as a requirement for their Bachelor's degree (see Brockport's website for matriculation data by major), and the remaining students as an elective or as a pre-requisite course for nearly all graduate programs in the health professions.

Due to the number of students these courses directly impact, having sufficient resources are a necessity not only for the success of our A&P courses, but also for the Department of Biology and University as a whole.

**B. TYPE OF FUNDING**

**B-1. What type of funding have you been invited to apply for?**

**Core Needs, Facilities & Alterations** - to provide one-time temporary funds to support pressing unbudgeted or under-supported academic/operational/administrative needs, facilities and alterations, and initiatives that build long-term capacity, such as staff development, investment in infrastructure, and risk management initiatives.

**B-2. Applications for Strategic Priorities funds must indicate which ONE of the following measures of success the project/initiative addresses:****C. STRATEGIC ALIGNMENT****C-1. Outline the ways in which the proposed project will contribute to the College Strategic Plan, and the specific Measure of Success you selected in question B-2.**

Your narrative must:

- (1) Identify the measure of success you selected in question B-2 above, and
- (2) Be explicit in describing *how* the project contributes to that measure.

**D. OBJECTIVES & ASSESSMENT MEASURES**

Successful applications must include well-defined assessment plans that include clear measurable objectives and specify the measures/data that will be used to determine if each objective has been met.

**D-1. Short-term Goals/Objectives:**

**What measurable goals or objectives do you hope to achieve with this project in the short-term, meaning within the one-year time frame for which funds are available (fiscal year 2019-20)?**

(1) First, this project aims to obtain the necessary anatomical models to meet the demand that already exists in our A&P courses. At the university and departmental level, we strive to ensure that our students have every opportunity to receive a quality education while achieving academic success. Obtaining adequate resources is to serve our students, and ensure that they are leaving A&P at Brockport well prepared for their programs and careers ahead. We hold our students to highest standards, and wish to have laboratories that are equipped with ample resources that will allow us to reinforce high standards while better engaging our students.

(2) In addition, we aim to obtain models so we can enhance and diversify the content covered in our current A&P courses so that they are on-par with other institutions and to better prepare our students for their majors, careers, and life as a whole.

(3) Lastly, in an increasingly digital world, there is a critical need for students to gain hands-on experience in a way that compliments the digital resources available in modern society. Having the opportunity to provide our students, graduate teaching assistants, and faculty with adequate resources in our A&P labs, motivates a healthy culture of curiosity, learning, and overall academic excellence. In addition, 80% of polled students (n=20) preferred using anatomical models over online modules to master the content of A&P. Therefore, the final objective of this request is to make hands-on learning more accessible to our students in the classroom.

**D-2. In the previous question, you identified the measurable short-term objectives you hope to achieve with your project. For each objective listed, explain what measures or data you will use to determine if that goal has been met.**

The short term goals are simply to provide the necessary anatomical models to meet our current needs, diversify content for future course development, and increase student

accessibility to hands-on learning in BIO 22, 321, and 322. In order to assess the students' thoughts on the availability of models, I will conduct a survey where the students will assess their thoughts about the relative quality, need, and availability for various models. This survey will be conducted at the end of the Fall 2018 semester, Spring 2019 semester, and Fall 2019 semester in BIO 221, 321, and 322. The surveys will contain questions that will assess the following:

- (1) Models and resources to meet current needs – do students feel as though the obtained models improve their learning?
- (2) Diversify and expand new areas of learning – do students feel as though the obtained models improve their learning of a newly introduced topic? (i.e., the eye using eye models?)
- (3) Evaluate hands on verses online resources – do the students prefer one style of learning over the other? Online resources vs. Models? Online resources may include Model photos, textbook photos, photos obtained from "Google" searches. I have personally made photos of our models available to our students to use for studying purposes, and plan to use as a reference point for "online resources".

Please note, that I have attached a "Sample Model Assessment Survey" that would be aimed at A&P I (BIO 321) (see H-2. Supplemental Materials).

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### **D-3. Long-term Goals/Objectives:**

**What measurable long-term goals or objectives (if any) do you hope to achieve with this project in the long-term, meaning beyond the one-year time frame for which funds are available (fiscal year 2019-20)?**

The long-term goals are aimed to grow and maintain our service courses with integrity as 1,000 students complete these courses annually. Funds would benefit students for years to come, where quality models can last 10 – 20 years if maintained properly, of which as the A&P Instructional Support Technician, I will personally oversee is done. In addition, I plan to conduct surveys at least once a year (per course), in order to receive direct feedback from the students about our needs for resources in our teaching laboratories. After the bulk of our needs are met using funds from "Core Needs, Facilities & Alteration Fund", maintenance and replacement of our anatomical models can be done over time in small increments using annual departmental equipment replacement funds from the School of Arts and Sciences.

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## **E. IMPLEMENTATION PLAN**

**E-1. Identify the specific activities to be funded from the Investment Fund along with an estimated timeline for implementation. All activities and expenditures must occur within the stated one-year period of fiscal year 2019-20.**

The implementation plan for this initiative remains to be relatively straight forward for our needs. If the proposed funds were granted, I would be able to make purchases using the itemized list of models present in this proposal as soon as funds became available. I have spent a considerable amount of time in the last 12 months, preparing, organizing, and assessing our needs, and planning with both fellow faculty and sales representatives about the availability of the models outlined in the requested funds (Evan Mendola, ThermoFisher Scientific & Carolina Biological). Therefore, if the funds were available July 2019, I would be able to place the orders immediately, and would do so for the reason that the requested funds are for resources that we are currently lacking. Lastly, I am also aware that all purchases over \$25,000 must be submitted no later than April 2020 in order to allow for adequate processing time.

As for short and long term assessment, a questionnaire will be administered to students for each course (BIO 221, 321, 322), in every semester during the 2019-2020 fiscal year, as well as Fall 2018 and Spring 2019. These questionnaires will address all three objectives of this funds request.

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## **F. CONSULTATION & AUTHORIZATION FORMS**

**F-1. This proposal includes (check all that apply):****F-1b. Upload the signed Stipend Authorization Form here.****F-2. For requests involving technology. The Chief Information Officer (Bob Cushman or his designee) has reviewed this proposal.**

✔ Not Applicable

**F-3. For requests involving alterations of facilities, the Vice President for Administration & Finance (Jim Wall or his designee) has reviewed this proposal.**

✔ Not Applicable

**F-4. Upload the signed Technology and/or Facilities Consult Form(s) here.****G. BUDGET****G-1. Upload your itemized budget here. Use the Excel Budget Spreadsheet sent to you in your notification email.** 2019-20 Investment Fund Budget (bolton).xlsx**G-2. Total Amount Requested from Investment Funds**

\$27950.00

**G-3. Please provide a narrative explanation for your budget. Provide further detail than what is included in the spreadsheet and offer a justification for expenses.**

The itemized budget includes items that are necessary to meet the demands of BIO 221, 321, and 322 – for both the sustainability of the course, and its progression. Here, I will present the justification for each individual request. Please note that all models are shared among at least two courses at any given time, thus exacerbating our model shortage issues.

1. Skeleton with Origins & Insertions: This is an articulated skeleton with hand painted sections on the bones, that shows the two points of muscle attachment. The students are required to spend 3 lab periods leaning these features. However, at this time we have only 2 skeletons that demonstrate these features, which means 12 students are simultaneously using the same model. The request is for funding for 2 additional skeletons so that each lab bench (group of 6) has a single Origin and Insertion Skeleton.
2. Hip ligament model: This hip model is requested so that we can teach our students the major ligaments of the hip. Currently, we have 2 older and broken models that show the intended ligaments, which is not sufficient to teach a lab section of 24 – 26 students. Therefore, I am requesting for 4 additional hip models.
3. Spinal cord cross section (with spinal serves): The request for 4 spinal cord cross sections is in order to teach a laboratory on the intersection of the central and peripheral nervous systems in detail. We currently have 4 models, but unfortunately that is not enough for 6 students to share simultaneously.
4. Spinal cord cross section (with vertebrae): This model does not currently exist in our labs. However, this is a model I have used extensively at other instructions and demonstrates the functional organization of where the central and peripheral nervous system, meninges, and skeletal system all meet. Therefore, I am requesting funds for 4 models.

5. Reflex arc: At this time, we have a single reflex arc model. I am requesting funds for 4 of the same reflex model so each group of 6 can share a single model.

6 & 7. Eye model (Altay) and Eye model in Orbit (Somso): We have newly introduced teaching about the special sense in both BIO 221 & 321. Currently, there are only 4 eye models that are shared between two courses. That means there is usually 12 students trying to use a single model. This request is for two different brands and 4 models each, so our student have sufficient access to their lab material.

8 & 9. Ear model (3B) and Ear model (Somso): We have newly introduced teaching about the special sense in both BIO 221 & 321. Currently, there are only 4 ear models that are shared between two courses. That means there is usually 12 students trying to use a single model. This request is for two different brands and 4 models each, so our student have sufficient access to their lab material.

10. Circulatory System model: This model is an excellent and comprehensive depiction of the entire human circulatory system. At this time, we only have 2 models, and I would like to purchase 2 more to have a full set of 4 (one for each lab bench).

11. Microanatomy of Gastrointestinal Tract: This model represents the external and internal microanatomy of the gut, and the layers that contribute to understanding the overall function of the GI tract. Currently, we only possess a single model. I am requesting funds for 4 of the model so each group of 6 can share a single model.

12. Larynx, Trachea, Bronchi model: This model represents the pathway air takes from the throat and conducts it to the lungs. Currently, we only possess a single model, and is key for students understanding the structure and function of the respiratory system.

13. Cranial Nerve model: This model is used for all A&P courses, for systems such as nervous system, special senses, digestive, respiratory, and skeletomuscular system. At this time, our current inventory of this model (4) is split between two courses each week, leaving 12 students to share a single model. This request is for 4 additional models.

14. Altay Deluxe Human Male & Female Torso: The torso features a 28-piece human body model. Torsos are an essential component to teaching students about the individual organ systems, as well as how all of those systems come together and to make our bodies function as one unit. These torso models are one of the greatest and most vital resources there is in an anatomy laboratory. Given the breadth of organ systems present in torsos, these would singlehandedly be the most utilized model in all A&P laboratories.

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**G-4. Does your budget include an application for an internal loan?** No

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**G-5. Please explain why the proposed project cannot be self-funded from existing Department, School or Division resources.**


Anatomy & Physiology labs require considerable resources when maintaining our resources as enrollment for service courses increases, while making well manufactured models available to our students. Unfortunately, funds available for replacement for these anatomic models are limited, typically to no more that \$5,000, including equipment replacement funds provided by the School of Sciences and Mathematics. Because of the fund limitation, I am not able to the quantity or diversity of models I often need, leaving the students sharing as few as one or two models in the entire class. Therefore, it would be impossible for the Department of Biology to undertake this project without significant assistance from the College.

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## H. ADDITIONAL INFORMATION

**H-1. Use this space to provide any additional information to assist in the review of the proposal.**

**Upload up to 3 supplemental files here.**

 sample model assessment survey (bolton - IF2 2018).pdf

**Project Lead Signature**



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