



# **Biological & Health Sciences**

**Program Review - Annual Update**

2022 - 2023

# Biological & Health Sciences - Annual Update

2022 - 2023

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## Annual Update Questions - Disciplines

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**1. Describe any changes or updates that have occurred since you last submitted program review. If there haven't been any changes or updates since your last program review, enter N/A.**

N/A

**2. Provide a summary of the progress you have made on the goals identified in your last program review.**

Goal 1: Future of the Health Science Discipline - No progress yet to report.

Goal 2: Institutionalization of the EPIC tutoring program - The college has integrated EPIC tutoring into the Learning Center and is supported by Fund 1.

Goal 3: Improve Instructional outcomes by investing in equipment for funding in FY 2022-23 - Approved equipment has been or is in the process of being ordered.

Goal 4: Increase department budget for FY 2022-23 - The college approved our budget augmentation request to support at-home biology lab kits.

Goal 5: Update equipment and expand use of Molecular Techniques in the laboratory - We've only just begun taking small steps. In BIOL 260 we've begun teach students how various medical lab tests (urinalysis, blood typinc) work. In BIOL 240 we've tried using Caseitproject.org to provide simulated laboratory equipment that provides actual molecular data for use in answering an epidemiology case study.

Goal 6: Create opportunities for students to gain experience with anatomy dissection - We are experimenting with the use of a 695 course for students who previously completed anatomy. In Fall 2022 there are 4 students enrolled in the 695 course who are actively performing dissection that is significantly enhancing instruction for students in the standard anatomy course.

Goal 7: Develop exercise physiology-related laboratory curricula - Equipment has been acquired in Fall 2022 and integration into curriculum is underway.

Goal 8: Evaluate optimal modality for biology courses - No progress yet to report.

**3. If your goals are changing, use this space to provide rationale, or background information, for any new goals and resource requests that you'll be submitting that were not included in your last program review.**

The new resource requests we are making this year are simply an addendum to our Goal 3 from 2021-22. The same justification applies.

## Supporting Information

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# Biological & Health Sciences - Goals and Resource Requests

## Goals

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### Goal Status

2 - Continuing (PR)

### Goal Title

Enhance the hands-on lab learning experience through the purchase of new equipment and/or the repair/replacement of old equipment.

### Goal Description

Effective learning in the laboratory requires a continual investment in maintaining and replacing instructional equipment. Without replacing equipment our existing curriculum is compromised and we cannot ensure students are achieving their learning objectives. Without purchase of new equipment our curriculum cannot grow and improve to better meet student and industry needs.

### Program Review Cycle When the Goal Begins

2022 - 2023

### Who's Responsible for this Goal?

Doug Hirzel, Mike Limm, Julie Luu, Nathan Staples, Ellen Young, Angela Gibson

### Mapping

- CAN College Goals: (X - Selected)

CAN College Goals

- Accessible Infrastructure and Innovation: X
- Student Access, Success and Completion: X

## Resource Requests

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### Item Requested

Visual Stimulus LED Generator - Biopac Inc.

### Item Description

The visual stimulus indicator will allow us to enhance our existing human reaction time labs to include both auditory and visual stimuli. <https://www.biopac.com/product/visual-stim-led-via-analog-out>  
Need 6 at \$245/unit not including taxes or shipping

### Status

New Request - Active

### Type of Resource

Supplies (Items less than \$5000)

### Cost

\$1470 excluding tax and shipping

### One-Time or Recurring Cost?

One - Time Cost

### Critical Question: How does this resource request support closing the equity gap?

All students regardless of their identity status benefit from hands-on learning experiences.

### Critical Question: How does this resource request support Latinx and AANAPISI students?

All students regardless of their identity status benefit from hands-on learning experiences.

# Biological & Health Sciences - Goals and Resource Requests

**If requesting Personnel please complete the New Classified Hiring/Position Justification or the New Faculty Position Proposal Below.**

## **NEW CLASSIFIED HIRING/POSITION JUSTIFICATION**

### **Justification**

**This position has been reviewed by the department or division and is recommended for hiring.**

## **NEW FACULTY POSITION PROPOSAL**

### **C. Program Vitality and Viability**

### **D. What is the evidence of student demand to justify the proposed position?**

## **Resource Requests**

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### **Item Requested**

Life-Size Human Muscle Torso Model, 27 part - 3B Smart Anatomy

### **Item Description**

We have two torso models that are between 23-50 years old and have fallen into disrepair. Replacement models are needed to better instruct students about the musculature of the back. If we obtain new models we can make our older ones available to the Learning Center for student use outside of class.

[https://www.3bscientific.com/us/life-size-human-muscle-torso-model-27-part-3b-smart-anatomy-1001236-va16-3b-scientific,p\\_46\\_2216.html](https://www.3bscientific.com/us/life-size-human-muscle-torso-model-27-part-3b-smart-anatomy-1001236-va16-3b-scientific,p_46_2216.html)

Need 2 models at \$6352/unit not including tax or shipping

### **Status**

New Request - Active

### **Type of Resource**

Equipment (Items Over \$5000)

### **Cost**

\$12,704 excluding tax and shipping

### **One-Time or Recurring Cost?**

One - Time Cost

### **Critical Question: How does this resource request support closing the equity gap?**

All students regardless of their identity status benefit from hands-on and visual learning experiences. By obtaining new models we can move our older ones to the Learning Center making them available to students for study outside of class periods.

### **Critical Question: How does this resource request support Latinx and AANAPISI students?**

All students regardless of their identity status benefit from hands-on and visual learning experiences. By obtaining new models we can move our older ones to the Learning Center making them available to students for study outside of class periods.

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## **Resource Requests**

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### **Item Requested**

Safety wash bottles

### **Item Description**

Safety Wash Bottles will be used for maintaining quality of cadavers for Anatomy Lab and, moreover, for easier, more efficient, and safer preservation of prosected organs (i.e., organs dissected and removed from cadavers and placed in storage containers). These 500 mL Red LDPE Safety Wash Bottles are designed to be more leakproof (bottle and tubulation are one piece), are red for easier recognition that it contains preservative fluid, and provide more controlled output of preservative fluid.

<https://www.fishersci.com/shop/products/nalgene-unitary-red-ldpe-safety-wash-bottles/0340916D#500%20ml%20wash%20bottle>

### **Status**

New Request - Active

### **Type of Resource**

Supplies (Items less than \$5000)

### **Cost**

\$118.00 excluding tax and shipping

### **One-Time or Recurring Cost?**

One - Time Cost

### **Critical Question: How does this resource request support closing the equity gap?**

n/a

### **Critical Question: How does this resource request support Latinx and AANAPISI students?**

n/a

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## **Resource Requests**

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### **Item Requested**

Circulatory and Nervous System Models

## Biological & Health Sciences - Goals and Resource Requests

### Item Description

Nerves and blood vessels are very challenging to isolate in our cadavers. Which structures we are able to demonstrate/show varies substantially from year to year. We need an alternative way for students to consistently practice identifying nerves and vessels. Models provide this consistency.

[https://www.3bscientific.com/us/anatomy-set-nervous-circulatory-systems-8001092-3010309-3b-scientific,p\\_1527\\_32271.html](https://www.3bscientific.com/us/anatomy-set-nervous-circulatory-systems-8001092-3010309-3b-scientific,p_1527_32271.html)

1 unit at \$807 excluding tax and shipping

### Status

New Request - Active

### Type of Resource

Supplies (Items less than \$5000)

### Cost

\$807.00 excluding tax and shipping

### One-Time or Recurring Cost?

One - Time Cost

### Critical Question: How does this resource request support closing the equity gap?

All of our students regardless of race/ethnicity will benefit from a consistent method of identifying nerves and vessels.

### Critical Question: How does this resource request support Latinx and AANAPISI students?

All of our students regardless of race/ethnicity will benefit from a consistent method of identifying nerves and vessels.

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### Resource Requests

### Item Requested

Simulated Blood for Testing Familial Relationships

### Item Description

Students use safe and non-toxic Simulated Blood to determine the blood types of two set of parents and two children and ascertain which child belongs to which family.

<https://www.wardsci.com/store/product/10424346/ward-s-testing-familial-relationships-using-simulated-blood-kit>

1 unit at \$50 excluding tax and shipping

### Status

New Request - Active

### Type of Resource

Supplies (Items less than \$5000)

### Cost

\$50.00 excluding tax and shipping

# Biological & Health Sciences - Goals and Resource Requests

## One-Time or Recurring Cost?

One - Time Cost

## Critical Question: How does this resource request support closing the equity gap?

Students benefit when concepts are applied to real life contexts.

## Critical Question: How does this resource request support Latinx and AANAPISI students?

Students benefit when concepts are applied to real life contexts.

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## **Resource Requests**

### **Item Requested**

Electrophoresis Gel boxes and power supplies. (HIGH PRIORITY!)

### **Item Description**

GEL BOXES: Thermo Scientific" Owl" EasyCast" B1A Mini Gel Electrophoresis System -- with 2 UVT fluor. Ruler gel combs! 09-528-110 Thermo Scientific" B1A EasyCast  
<https://www.fishersci.com/shop/products/owl-easycast-b1a-mini-gel-electrophoresis-systems/09528110>

POWER SUPPLIES: BIO-RAD: PowerPac Basic Power Supply #1645050EDU.

<https://www.bio-rad.com/en-us/sku/1645050EDU-powerpac-basic-power-supply?ID=1645050EDU>

Justification: This equipment is needed to perform molecular biology experiments. We need to replace our existing 20+ year old electrophoresis gel boxes, which are cracking and developing faulty wiring. Students use these multiple times each semester in BIOL 230 and BIOL 110, and they have uses for BIOL 240, BIOL 132, and BIOL 225 as well.

We need 8 gel boxes with power supplies for BIOL 230 and 8 gel boxes with power supplies for BIOL 110/225

Gel Boxes: 16 units at \$735/unit = \$11,760 excluding tax and shipping

Power Supplies: 16 units at \$321/unit = \$5,136 excluding tax and shipping

### **Status**

New Request - Active

### **Type of Resource**

Equipment (Items Over \$5000)

### **Cost**

\$16,896 excluding tax and shipping

### **One-Time or Recurring Cost?**

One - Time Cost

### **Critical Question: How does this resource request support closing the equity gap?**

Having appropriate and modern lab equipment helps all students learn skills and produce reliable experimental results that prepares them for upper division courses and science careers.

### **Critical Question: How does this resource request support Latinx and AANAPISI students?**

Having enough current and working equipment available to each student helps Latinx, AANAPISI, and all students learn the lab skills and data analytical skills they need for science careers.

## Biological & Health Sciences - Goals and Resource Requests

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#### **Resource Requests**

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##### **Item Requested**

Model bones - Ulna & Fibula

##### **Item Description**

We need 2 additional ulna bones (R&L) and 1 additional fibula bone in order to be able distribute 1 model per pair of students.

[https://www.3bscientific.com/us/orthobones-standard-ulna-right-1019606,p\\_1462\\_27318.html?searchinput=ulna&searchword=ulna](https://www.3bscientific.com/us/orthobones-standard-ulna-right-1019606,p_1462_27318.html?searchinput=ulna&searchword=ulna)

<https://anatomywarehouse.com/axis-scientific-fibula-bone-a-105665>

##### **Status**

New Request - Active

##### **Type of Resource**

Supplies (Items less than \$5000)

##### **Cost**

\$54.00 excluding tax and shipping

##### **One-Time or Recurring Cost?**

One - Time Cost

##### **Critical Question: How does this resource request support closing the equity gap?**

Students learn anatomy best when they are able to handle and manipulate specimens/models. We need a few additional bones in order to distribute them evenly among the class.

##### **Critical Question: How does this resource request support Latinx and AANAPISI students?**

Students learn anatomy best when they are able to handle and manipulate specimens/models. We need a few additional bones in order to distribute them evenly among the class.

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#### **D. What is the evidence of student demand to justify the proposed position?**

#### **Resource Requests**

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##### **Item Requested**

Quartz and Glass cuvettes and Cuvette Racks for 23-333 (BIOL 230). (HIGH PRIORITY!)



## Biological & Health Sciences - Goals and Resource Requests

### Item Description

Quartz and Glass cuvettes and Cuvette Racks for 23-333 (BIOL 230).

Justification: Now that we have brand new and very high-quality spectrophotometers for BIOL 230, we have need for more glass cuvettes (for visible light-range readings) and quartz cuvettes (for UltraViolet light-range readings: DNA and RNA nucleic acids). These will help us get higher quality and more consistent readings for each group on quantitative measurements of biochemical reactions and the quality and concentrations of nucleic acids and proteins in solution. We also need to replace a few broken ones, as our current sets are 16+ years old.

\*\*Quartz Cuvettes: (packs of 4 for 8 lab benches) \$69 per pack of 4 x 8 = \$552. (HIGH PRIORITY!)

<https://www.amazon.com/Spectrophotometer-Standard-Capacity-190-2500-Wavelength/dp/B00914AE5W/>

\*GLASS Cuvettes (Packs of 4 for 8 lab benches) at \$37 per set of 4: \$37 x 8 = \$296.

[https://www.amazon.com/Standard-Spectrophotometer-cuvettes-pathlength-Spectrometer/dp/B07XSC8CMJ/ref=d\\_pd\\_di\\_sccai\\_cn\\_sccl\\_3\\_20/130-7909086-0690739](https://www.amazon.com/Standard-Spectrophotometer-cuvettes-pathlength-Spectrometer/dp/B07XSC8CMJ/ref=d_pd_di_sccai_cn_sccl_3_20/130-7909086-0690739)

\*\* 8 Cuvette racks/carriers for 23-333 (BIOL 230).

Justification: With more use of expensive and fragile glass and quartz cuvettes, we need a safer and more stable way for students to carry and handle them.

Autoclavable Cuvette Racks (x8); \$45 each and pack of 6 for \$260, plus 2 more to make 8 for \$350.

<https://www.fishersci.com/shop/products/bel-art-sp-scienceware-cuvet-racks/11124102>

$\$552 + \$296 + \$350 = \$1,198.$

### Status

New Request - Active

### Type of Resource

Supplies (Items less than \$5000)

### Cost

\$1,198 before taxes & shipping

### One-Time or Recurring Cost?

One - Time Cost

### Critical Question: How does this resource request support closing the equity gap?

Having appropriate and modern lab equipment and supplies helps all students learn skills and produce reliable experimental results that prepares them to be successful in upper division courses and science careers.

### Critical Question: How does this resource request support Latinx and AANAPISI students?

Having enough current and working equipment and supplies available to each student helps Latinx, AANAPISI, and all students learn the lab skills and data analytical skills they need to successfully prepare for science careers.

# Biological & Health Sciences - Goals and Resource Requests

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## **Resource Requests**

---

### **Item Requested**

Microscope digital cameras for Student Microscopes (8) -- BRESSER digital Eyepiece , HD. (HIGH PRIORITY!)

### **Item Description**

Eyepiece Digital Cameras for Student Microscopes for 23-333 (BIOL 230/240).

Justification: We instructors and students need to be able to show and take good images of cellular and microbial samples to better understand and explain structures, cellular activities, and cellular/molecular interactions happening to live samples under the microscope. ?? Most importantly, students can get high resolution images to document their observations as data for their notebooks and lab reports, and share with lab classmates.

BRESSER digital Eyepiece , HD. \$60 each for 8 units (one per lab group or lab bench)

[https://www.bhphotovideo.com/c/product/1404429-REG/bresser\\_59\\_13650\\_microocular\\_full\\_hd\\_eyepiece.html](https://www.bhphotovideo.com/c/product/1404429-REG/bresser_59_13650_microocular_full_hd_eyepiece.html)

### **Status**

New Request - Active

### **Type of Resource**

Supplies (Items less than \$5000)

### **Cost**

\$480 excluding tax and shipping

### **One-Time or Recurring Cost?**

One - Time Cost

### **Critical Question: How does this resource request support closing the equity gap?**

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## **Resource Requests**

---

### **Item Requested**

Microscope lens mounts for cell phone cameras for 23-333 (BIOL 230/240).

### **Item Description**

Microscope lens mounts for cell phones. 23-333 (BIOL 230/240) -- 16 units (1 per every pair of lab students)

Justification: Inexpensive way to help EVERY student take more of their own images and record data from microscopic observations of cellular structures and microorganisms.

SMART PHONE CAMERA ADAPTER for MICROSCOPE: \$15 x 16 units = \$256.

<https://www.amazon.com/Roxant-Metal-Universal-Smartphone-Adapter/dp/B095JF6342/>

### **Status**

New Request - Active

### **Type of Resource**

Supplies (Items less than \$5000)

### **Cost**

\$256 excluding tax and shipping

### **One-Time or Recurring Cost?**

One - Time Cost

### **Critical Question: How does this resource request support closing the equity gap?**

Having appropriate and modern lab equipment helps all students learn skills and produce reliable experimental results that prepares them to be successful in upper division courses and science careers. These lens-mounts will help EVERY student use their own devices to record good images of microscopic data for their notebooks, lab reports, and to share with lab classmates.

### **Critical Question: How does this resource request support Latinx and AANAPISI students?**

Having enough current and working equipment available to each student helps Latinx, AANAPISI, and all students learn the lab skills and data analytical skills they need to successfully prepare for science careers. These lens-mounts will help EVERY student use their own devices to record good images of microscopic data for their notebooks, lab reports, and to share with lab classmates.

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### **Item Requested**

6 large, non-slip floor mats – cushioned & protective for 23-333 (BIOL 230/240). (HIGH PRIORITY!)

### **Item Description**

6 large, non-slip floor mats – cushioned & protective for 23-333 (BIOL 230/240).

Justification: The floors in front of our lab sinks, wet lab areas, and chemical hood get wet and slippery often, and some chemicals stain the floor – even with good cleaning. We can really use some non-slip foot mats that prevent people from slipping on wet spots and also help prevent staining the nice tile floors in our Building 23 labs, particularly by the 3 sinks, water bath bench, and 1 chemical fume hood in Lab 333.

Anti-Fatigue Mat - 3D8" thick, 2 x 3' GRAY -- \$19 each for 6+ (x6)

H-651GR 2 x 3' 3/8". \$19 x 6 = \$114 not including tax & shipping.

<https://www.uline.com/Product/Detail/H-651GR/Anti-Fatigue-Mats/Anti-Fatigue-Mat-3-8-thick-2-x-3-Gray?model=H-651GR&RootChecked=yes>

### **Status**

New Request - Active

### **Type of Resource**

Supplies (Items less than \$5000)

### **Cost**

\$114 not including tax & shipping

### **One-Time or Recurring Cost?**

One - Time Cost

### **Critical Question: How does this resource request support closing the equity gap?**

Having appropriate SAFETY equipment and protecting our laboratory floors helps all students have a positive learning experience that prepares them to be successful in upper division courses and science careers.

### **Critical Question: How does this resource request support Latinx and AANAPISI students?**

Having enough current and working equipment available to each student helps Latinx, AANAPISI, and all students learn the lab skills and data analytical skills they need to successfully prepare for science careers.

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