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14. ABSTRACT The purpose of this grant was to purchase a laser scanning confocal microscope to be used by multiple laboratories at Xavier University of Louisiana for research purposes. In addition, the microscope was also to be used for educational purposes in new curricula that was being developed for undergraduate education. Over the course of the funding period, the microscope was purchased and installed, multiple training sessions for users were held, and the microscope is now fully functional and in regular use. In addition, the undergraduate course (Pathology: Principles and Techniques) that was proposed was indeed taught in the Spring 2016 semester. Xavier University's					
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Report Title

Final Report: Purchase of a Laser Scanning Confocal Microscope at Xavier University of Louisiana

ABSTRACT

The purpose of this grant was to purchase a laser scanning confocal microscope to be used by multiple laboratories at Xavier University of Louisiana for research purposes. In addition, the microscope was also to be used for educational purposes in new curricula that was being developed for undergraduate education. Over the course of the funding period, the microscope was purchased and installed, multiple training sessions for users were held, and the microscope is now fully functional and in regular use. In addition, the undergraduate course (Pathology: Principles and Techniques) that was proposed was indeed taught in the Spring 2016 semester. Xavier University's commitment to this proposal was evidenced by the renovation of a room as a cell culture and imaging suite to house the new equipment.

Enter List of papers submitted or published that acknowledge ARO support from the start of the project to the date of this printing. List the papers, including journal references, in the following categories:

(a) Papers published in peer-reviewed journals (N/A for none)

<u>Received</u>	<u>Paper</u>
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TOTAL:

Number of Papers published in peer-reviewed journals:

(b) Papers published in non-peer-reviewed journals (N/A for none)

<u>Received</u>	<u>Paper</u>
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TOTAL:

Number of Papers published in non peer-reviewed journals:

(c) Presentations

Liautaud Prophete, Khari Gilmore, Davon Carter, Chelsea Kelland, and Thomas Huckaba. "Analysis of Human Disease-Causing Mutations at the Kinesin-Microtubule Interface". Annual Meeting of the American Society for Cell Biology, San Diego CA, December 2015.

Number of Presentations: 1.00

Non Peer-Reviewed Conference Proceeding publications (other than abstracts):

Received Paper

TOTAL:

Number of Non Peer-Reviewed Conference Proceeding publications (other than abstracts):

Peer-Reviewed Conference Proceeding publications (other than abstracts):

Received Paper

TOTAL:

Number of Peer-Reviewed Conference Proceeding publications (other than abstracts):

(d) Manuscripts

Received Paper

TOTAL:

Number of Manuscripts:

Books

Received Book

TOTAL:

Received

Book Chapter

TOTAL:

Patents Submitted

Patents Awarded

Awards

N/A

Graduate Students

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
FTE Equivalent:	
Total Number:	

Names of Post Doctorates

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
FTE Equivalent:	
Total Number:	

Names of Faculty Supported

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
FTE Equivalent:	
Total Number:	

Names of Under Graduate students supported

<u>NAME</u>	<u>PERCENT SUPPORTED</u>
FTE Equivalent:	
Total Number:	

Student Metrics

This section only applies to graduating undergraduates supported by this agreement in this reporting period

The number of undergraduates funded by this agreement who graduated during this period: 0.00

The number of undergraduates funded by this agreement who graduated during this period with a degree in science, mathematics, engineering, or technology fields:..... 0.00

The number of undergraduates funded by your agreement who graduated during this period and will continue to pursue a graduate or Ph.D. degree in science, mathematics, engineering, or technology fields:..... 0.00

Number of graduating undergraduates who achieved a 3.5 GPA to 4.0 (4.0 max scale):..... 0.00

Number of graduating undergraduates funded by a DoD funded Center of Excellence grant for Education, Research and Engineering:..... 0.00

The number of undergraduates funded by your agreement who graduated during this period and intend to work for the Department of Defense 0.00

The number of undergraduates funded by your agreement who graduated during this period and will receive scholarships or fellowships for further studies in science, mathematics, engineering or technology fields:..... 0.00

Names of Personnel receiving masters degrees

NAME

Total Number:

Names of personnel receiving PHDs

NAME

Total Number:

Names of other research staff

NAME

PERCENT SUPPORTED

FTE Equivalent:

Total Number:

Sub Contractors (DD882)

Inventions (DD882)

Scientific Progress

Since this was an equipment grant, the scientific progress and accomplishments related to this specific proposal are somewhat limited.

The initial portion of the budget period was spent going through the demo process and negotiation with vendors of laser scanning confocal microscope systems. Based on 1) the needs of our researchers, 2) the flexibility of the potential systems, 3) deliverables from each of the companies (both equipment and service), and 4) potential for future expandability we chose to purchase the Nikon A1RSi laser scanning confocal system. Since this was the system that was proposed in the original funding request, we moved forward.

The intermediate portion of the budget period was spent renovating an underutilized space in the Pharmacy building into an imaging and cell culture suite. In showing its commitment to this proposal, the Xavier University had promised space and infrastructure support for the microscope. Xavier's NIH-funded Research Centers at Minority Institutions core facility purchased the additional equipment necessary to have a functional cellular imaging facility (cell culture incubator, tissue culture hood, -20 and 4 degree celsius storage). The renovation of this space took place while Nikon was delivering the assorted microscope components. The imaging suite is in a central (controlled) location that is convenient to the researchers that need access, as well as the staff of the core facility that is tasked with maintaining the microscope and training users.

The final portion of the budget period involved training and utilization. Nikon has a team of local support that has already held four formal training sessions and is committed to continual support of the needs of our users. The microscope has been added to our internal iLab database for reservation of microscope time, which also allows us to track use. Multiple laboratories are already using the microscope on a regular basis, and new users have shown interest in getting trained on its utilization. The microscope was also successfully used for undergraduate education in the Spring 2016 semester, as the proposed Pathology: Principles and Application course that was mentioned in the proposal was taught this semester. Senior-level undergraduate students used the confocal microscope to perform immunofluorescence studies of stained pathology specimens to further identify pathologies associated with unknown biopsied tissue. This gave them a hands-on experience with sophisticated microscopy equipment in a way that simply can not be simulated in the classroom.

Although there are no formal publications yet from data generated by this equipment, images were used as part of a presentation at the Annual Meeting of the American Society for Cell Biology (by undergraduate students), and there are two manuscripts that are currently under review from the laboratories of two of the co-PIs (Davenport and Bhattacharjee) that include data generated using this microscope.

Technology Transfer

N/A