

UNIVERSITY OF LOUISIANA AT LAFAYETTE

STEP Committee

Technology Fee Application

**Upgrading an Autoclave for Student
Research in Biology**

Title

**Yi-Hong Wang/ Sherry Krayesky-
Self**

Name of Submitter
(Faculty or Staff Only)

Department of Biology

Organization

Title: Upgrading an Autoclave for Student Research in Biology Date: January 16, 2018
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ABSTRACT (250 words or less):

A portable autoclave as requested in this proposal applies steam and pressure to sterilize tools used in molecular biology as well as cell and tissue culture research in Biology. This equipment and solutions that are not sterilized will introduce foreign cells or contaminants that destroy ongoing research. Commonly autoclaved items include pipet tips, microtubes, reagents, media, culture vessels, dissecting tools etc. The sterilized materials are used in molecular biology research such as DNA extraction from biological samples, polymerase chain reaction, DNA cloning, DNA sequencing, as well as cell and tissue culture research allowing media preparation, sample disposal and container sterilization. The Biology Department has a Tomy Seiko ES-315 autoclave purchased in 1997 and housed in Billeaud Hall. The autoclave is barely functional and needs to be replaced. There are about 54 students (24 graduate and 30 undergraduate students) whose research is dependent on sterile techniques. If the very old autoclave breaks down, a lot of work will be lost. The autoclave we have is nearing a point where it will not be safe to use and replacing it with a new one will benefit student research in Biology for the next 20 years. Like the current autoclave, the new machine will be used for a long time before it must be replaced. Unlike the current machine, a new autoclave will come with a service plan that will allow for necessary upkeep and inspections that we don't have.

PROPOSAL DESCRIPTION:

Purpose of grant and impact to student body as a whole

A portable autoclave heats water to generate steam and pressure which sterilizes any materials/objects in it. The sterilized lab materials/objects typically include pipet tips used to transfer minute amount of liquid/solution (1 – 1,000 µl in volume), glassware/vessel and media for growing microbes, plant and animal cells, reagents such as water and buffers for polymerase chain reaction, DNA extraction, DNA cloning, DNA sequencing, and many other molecular biology applications. An autoclave is also commonly used to neutralize potentially harmful biological samples before disposal.

The autoclave used in the Biology Department in Billeaud Hall was purchased in 1997 (Model: ES-315; Serial No.: 31112336; Capacity: 50 L; manufactured by Tomy Seiko Co. Ltd.; Tag No.: USL 94000084850). Individual users in the department have provided good maintenance and the current autoclave is still usable. However, it is showing the sign of physical deterioration, i.e., the control board is no longer reliable. This causes the autoclave to siphon off all water from reservoir during operation and empties it, which may cause bigger problems down the road. This problem started in the last two months or so. A breakdown of the autoclave is dangerous because heat and high pressure are involved. The loss of the autoclave will negatively impact the research of about 54 students in Billeaud Hall (24 graduate and 30 undergraduate students).

The purpose of the grant is to upgrade the autoclave by replacing with a Kinematica 20001 (also 50 L capacity) manufactured by Kinematica USA and distributed by Fisher Scientific. The current online price is \$19,270.00 (<https://www.fishersci.com/shop/products/kinematica-hmc-vertical-autoclaves-hv-series-4/p-4122930>).

Projected lifetime of enhancement

The replacement will provide reliable autoclave needs for our student researchers for the next 10 to 20 years.

Person(s) responsible for Implementation, Installation, Maintenance, Operation, Training

The PI and Co-PI will be responsible for implementing, installing, maintaining, operating and training of the equipment. Both proposers have experience and skills to perform these tasks.

Budget Proposal

1.	Equipment	\$ 19,270.00
2.	Software	\$
	N/A	
3.	Supplies	\$
	N/A	
4.	Maintenance	\$
	N/A	
5.	Personnel	\$
	N/A	
6.	Other	\$
	N/A	
TOTAL:		\$ 19,270.00
