

Section A:

Name of Requestor: Ryan A. Shanks, PhD (PRINT)

Date of Request: January, 22, 2008 Semester of Implementation: Fall 2008

Project Title: **Development of cell/tissue culture technology for classroom application and skill development**

Description of Request: As precisely and completely as possible, indicate exactly what you are requesting, i.e. computers, printers, scanners, other forms of hardware, or software. Include the cost of each item, required specs and other supporting details. Indicate whether the request is for new equipment/software or to upgrade existing equipment/software.

Attached to this document is a quote from VWR including all of the materials needed to install a cell/tissue culture facility. This facility will be a new technology to this campus and will not replace any existing equipment.

Equipment also listed in VWR quote attached:

Item # 1. Two incubators in one unit which allows flexibility in use for multiple classes. Incubators maintain constant and tight regulation of temperature, humidity and CO₂ levels for growth of tissue and cells. Incubators also contain shelving for further division of classroom specific experiments. Quoted price of \$8,120.00

Item # 2. and 3. This is a biosafety cabinet and stand that provides space for two students to work at the same time. Biosafety cabinets provide a sterile environment for cell and tissue culture work. The stand is necessary to hold the unit off the floor at a height necessary for working. Unit is complete with filtration devices and secondary sterilization lights. Quoted price of \$9,473.83

Item # 4. This is a microscope which is specifically designed for visualizing cells and tissues during their growth and to analyze cells for the effective culture. Microscope includes six LWD (long working distance) objectives: three brightfield planachromatic (10x, 25x, and 40x magnification) and three phase contrast planachromatic (10x, 25x, and 40x magnification). Quoted price of \$2,859.14

Item # 5. and 6. This is a refrigerated centrifuge necessary for normal cell and tissue culture techniques. The unit comes with a rotor specific for cell and tissue culture, but can be easily changed to be adapted for multiple uses. The rotor that is included with this centrifuge needs adapters so you can centrifuge specific size tubes. Quoted price of \$7,717.73

I have assurances from the department head that we can utilize departmental funds to sustain disposable supplies necessary for this facility and for items such as a small refrigerator for storage of cell/tissue media.

How will the requested technology support the education of NGCSU students?

"The academic program of the Biology Department is designed to prepare students for professional careers in the biological sciences." – NGCSU Biology Home Page

Incorporating this cell/tissue culture technology into the instructional curriculum of Biology students will provide a more complete educational and technical background to pursue a biological career. The acquisition of this technology would provide student's with the following educational advantages.

1. Despite recent advances in computer aided teaching, hands-on learning remains an invaluable part of scientific education. Having this equipment at NGCSU would provide students the opportunity to learn how to perform the techniques necessary for cell/tissue culture. These techniques are recommended and often required for many employment positions available to our graduating students.

2. This technology would also provide a resource that could prove to be not only cost efficient, but also advantageous to several required courses in Biology. This equipment is capable of maintaining and processing many different cells and tissues. Classes including Cell Biology, Introductory Biology (both 1107 and 1010), Immunology (currently without a lab) and others on a more limited basis, would have direct use of cells grown with this technology. This would provide students with the advantage of observing and analyzing human and animal cells. Currently, Immunology, a 4000 level class, is taught without a lab in-part due to the lack of this type of technology available for students.

Furthermore, experiments providing insights into the functions of human and animal cells would now be feasible. This would expand the repertoire of designed labs for these classes.

3. This equipment is versatile. Not only would this equipment provide biology students access to many different types of cells and tissues, but also provide:

- a working environment for manipulation of any items which require completely sterile conditions not available with current equipment
- a centrifuge which with the future purchase of rotors can be adapted for use with a wide array of plates and tubes for a variety of lab experiments
- experience with an inverted microscope
- an environment conducive to the dissection and manipulation of plant tissues as well as animal tissues
- multiple storage areas in the incubators so that multiple classes could be provided with space simultaneously

In short, this technology would provide ample learning opportunities which are currently unavailable at this university.

Indicate who will have use of the requested technology and the approximate number of students involved.

This technology would be primarily for the students enrolled in courses offered by the Biology department. Biology maintains one of the higher enrollments among departments, and any student receiving a degree in Biology is required to take multiple classes (Biology 1107/1108 – 450 students a year and Cell Biology – 125 students a year) which will contain labs enhanced by this technology. Biology students will also be given the opportunity to learn an invaluable technique which is widely used in modern science. Furthermore, students enrolling in the Biology 1010 classes (450 students a year) will also have opportunities to investigate biologically relevant topics in lab using cells grown with this equipment.

Signature of Requestor: _____

Date: _____

Section B:

If the requested technology will be housed in a particular department or program, the department head or program director must compete and sign this section.

What are your projections of the annual cost of maintenance and supplies? (i.e. Lab assistants, paper and toner, software licensing, etc.)

Annual costs for maintenance of the equipment are negligible. Supply costs include the following, but will vary depending on usage:

- \$500 – media (VWR)
- \$350 – plastic, sterile flasks (VWR)
- \$250 – plastic, sterile plates (VWR)
- \$300 – plastic, sterile pipettes (VWR)
- \$300 – CO2 tanks (quote from Cylinder Central)

How will you allocate the necessary funds for maintenance and supplies?

Funds that will cover the costs of these supplies are available in the annual departmental budget. Furthermore, funds from lab fees will also offset these annual costs because this technology will be used by students in these labs. Lab fees from Biology 1107/1108, Biology 1010L and Cell Biology

What security procedures will be implemented for this technology?

This equipment will be isolated from normal lab areas in a separate room designated for tissue culture. This room will remain locked unless students are under the supervision of faculty utilizing this technology. This will not only provide an environment conducive to cell/tissue culture, but controlled access to the equipment.

Department: _____

Head/Director signature: _____

Date: _____

Submissions must be received in at least electronic form by midnight, Friday, January 25, 2008 for consideration in this round of requests. The Student Technology Fee Committee will meet on Monday, January 28, 2008 from 3-5 pm, in the bottom floor Library Seminar room. If you submit a funding request, you may be asked to attend the meeting, as a guest, to answer questions regarding your request. If you have questions, contact: Carol Huczek, Administrative Assistant to the CIO, chuczek@ngcsu.edu, 706-864-1814.



Prepared for:
 Customer #: 2029089
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Prepared by:
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Date: 1/18/2008

Requestor :
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Customer Reference:
 VWR Quote #: VBQ-2785413

VWR Line#	Cust Line#	Qty	UOM	Product	List	Disc	Net	Total
1		1	EA	98000-000 VWR CO2INCUBATOR DUA STK TC6.5 203074 stacked co2 incubator	\$11,600.00	30.00%	\$8,120.00	\$8,120.00
2		1	EA	97000-832 CABINET,BIOSAFETY B2 4FT 115V 3441000 4 ft biosafety cabinet. This is a labconco unit	\$12,225.00	26.14%	\$9,029.83	\$9,029.83
3		1	EA	43100-014 STAND BASE TEL LEG F/3'MDL 37303003726 stand for the biosafety cabinet	\$600.00	26.00%	\$444.00	\$444.00
4		1	EA	82026-630 VWR MICROSCOPE INVERTD VISTAVN 11389-210 Inverted microscope. I think you had this one at BCM	\$4,084.49	30.00%	\$2,859.14	\$2,859.14
5		1	EA	MP022627023 5810R / 4 X 250ML ROTOR PK 120 022627023 refrig unit , comes with rotor	\$9,885.00	24.07%	\$7,505.85	\$7,505.85
6		1	EA	47745-392 ADAPTER CONCICAL TUBES 4X50ML 022638351 50 ml conical adapters	\$265.00	20.05%	\$211.88	\$211.88