2023.003
FF

Student Technology Fee
Grant Proposal Request Form
Fiscal Year 2022-23
Northwestern State University of Louisiana

ALL BLANKS MUST BE FILLED COMPLETELY

Prepared by: Joseph Straub For: Biology Department

Department/Unit: SoBPS College: Arts and Sciences Campus: Natchitoches

Which NSTEP Goals/Objectives does this project meet? 1, 2, 3, 8

Requested equipment will be located/installed/housed? Building Bienvenu Hall Room 226

Does the department receive lab fees? Yes

Are department property policies and procedures in place for requested equipment? Yes

Which individual will be responsible for property control of the requested equipment?

Signature: Joseph Straub Digitally signed by Joseph Straub Date: 2022.11.02 15:33:19 -05'00' Date: 11/02/2022

Proposal Requested Amount:$ 2,850.00 Budget Attached: Yes

Proposal delivered to Student Technology located in Watson Library, Room 113. Date_____

Incomplete proposals will be returned

Funding from the Student Technology Fee is allocating funds to departments and individual grants, awarded on a competitive basis, which advance the **teaching/learning process** within the mission of the University. All requests will be considered in this context, as articulated herein and as reflected in the unit's technology plan. Proposals should enable or enhance the ability of Northwestern students to access and assimilate large amounts of information, further their professional competence, and provide state of the art technologies in their field. The nature of, and rationale for, a request for student technology fee allocation must be consistent with the University's and requesting unit's technology plan.

- **Funding decisions will be made during the month of December 2022.**
- **If your grant is approved by STAT, you will be informed via email.**

The proposal must include all specifications, description, model number, quotation, cost, state contract number, and vendor for each item. If the proposal does not include all requested information, it will be returned.

1. Describe target audience.

2. Describe project/initiative for which you are requesting funds.

3. State measurable objectives that will be used to determine the impact/effectiveness of the project.

4. Indicate how each project objective will be evaluated.

5. If funded, which NSTEP objective(s) will this funding of this project advance? How will funding of the project advance the University and College/unit technology plan?

6. Provide a justification for funding of this project. Estimate the number of student that will be served per academic year and in what ways. Please indicate also any unique needs of the target group.

7. List those individuals who will be responsible for the implementation of the project/initiative and indicate their demonstrated abilities to accomplish the objectives of the project.

8. Describe any personnel (technical or otherwise) required to support the project/initiative.

9. Provide a schedule for implementation and evaluation.

10. Estimate the expected life of hardware and software. Explain any anticipated equipment/software upgrades during the next five years.

11. Explain in detail a plan and policy that will be in place to ensure property security/controls for any equipment received through a Student Technology Fee.
If you are requesting equipment that will be either/or checkout to students or moved within the department, you must provide a checkout/loan policy.

12. Does the department that is requesting equipment receive lab fees? If so, please provide a justification for requesting funds from tech fee funds over using lab fees from your department.

13. Attach a detailed budget.

14. Attach two (2) letters of support for the project from the following individuals: the requesting department's Dean, the appropriate Vice President or for student request, the SGA President from the requesting campus.

1. **Describe target audience.**

The target audience of this project is the undergraduate biology students working on research projects in Bienvenu Hall (JOVE and QEP) and the students who take BIOL 3270 Genetics and BIOL 4300 Molecular Biology.

2. **Describe project/initiative for which you are requesting funds.**

These research projects exist in two forms: JOVE (voluntary research with stipend awards) and Quality Enhancement Program (QEP; BIOL 4970 Capstone Course for Biology for senior student credit and graduation requirements). With the increase in capstone students, we need to increase our available thermal cyclers to allow more students to perform critical PCR to continue molecular biology projects. These machines are utilized department-wide and for teaching purposes.

3. **State measurable objectives that will be used to determine the impact/effectiveness of the project.**

A measurable objective of the project is the expected increase in the volume of polymerase chain reaction (PCR) data being generated by students in JOVE and Capstone courses.

4. **Indicate how each project objective will be evaluated.**

The above objective will be evaluated based on the number of new publications and presentations created by JOVE students. Further evaluation will be based on the increase in the number of simultaneous Capstone students our department can support from the equipment we have available.

5. **If funded, which NSTEP objective(s) will this funding of this project advance? How will funding of the project advance the University and College/unit technology plan?**

NSTEP Objectives advanced:

1. To improve access to technology by students, faculty, and staff at Northwestern State University.
2. To provide classrooms with updated technology and multimedia
3. To upgrade laboratories with modern technology
8. To encourage innovation and research.

University Technology Plan Goals advanced:

- Provide non-credit instructional programs for individuals to allow the fullest possible use of information technology resources

6. **Provide a justification for funding this project. Estimate the number of students that will be served per academic year and in what ways. Please indicate also any unique needs of the target group.**

JOVE is a long-running undergraduate research initiative for highly motivated students intent on gaining research experience prior to attending professional school. Several JOVE research projects require the use of PCR to obtain molecular biology and genetics data as is the present-day standard for

any research involving DNA and gene expression. The following faculty with JOVE research students who use these thermal cyclers are Dr. Li Ma, Dr. Jerry Brunson, Dr. Cynthia Doffitt, Dr. Trenton O'Neal, and Dr. Joseph Straub.

The volume of students entering Capstone is increasing, and we must provide equipment for these students to use in data gathering. A single PCR takes at least 2 hours to complete not including any prep-work for which a thermal cycler is not necessary. Currently, Bienvenu Hall only has two of these machines. Equally sized departments, such as Louisiana Tech University's biology department, has six thermal cycler machines.

Between JOVE, Capstone, and laboratory courses, we estimate that approximately 60 unique students will be served by the introduction of a third thermal cycler per academic year.

7. **List those individuals who will be responsible for the implementation of the project/initiative and indicate their demonstrated abilities to accomplish the objectives of the project.**

Dr. Joseph Straub will oversee the implementation of the new equipment. He has operated thermal cyclers and run PCRs regularly for 12 years.

8. **Describe any personnel (technical or otherwise) required to support the project/initiative.**

None.

9. **Provide a schedule for implementation and evaluation.**

Implementation will begin as soon as a new thermal cycler is acquired. Evaluation will be performed after the next full academic year after the new thermal cycler arrives. Special education pricing from Bio-Rad is available until the end of December (see attached quote).

10. **Estimate the expected life of hardware and software. Explain any anticipated equipment/software upgrades during the next five years.**

Kept in good care, the thermal cycler will last 15 to 20 years. No equipment or software upgrades will be required during the thermal cycler's functional lifespan.

11. **Explain in detail a plan and policy that will be in place to ensure property security/controls for any equipment received through a Student Technology Fee. If you are requesting equipment that will be either/or checked out to students or moved within the department, you must provide a checkout/loan policy.**

The thermal cycler will be kept within laboratory spaces which are locked by faculty. Only students and faculty working in those areas have access to the equipment contained therein. The thermal cycler will not be moved from its location by either students or faculty unless required by departmental consensus. Thermal cyclers are comparable in bulk to microwave ovens and are not easily moved.

12. **Does the department that is requesting equipment receive lab fees? If so, please provide a justification for requesting funds from tech fee funds over using lab fees from your department.**

The Biology Department collects lab fees from students. These lab fees are required to provide supplies that are consumed on a regular basis in biology laboratory courses. Since the basic operation of

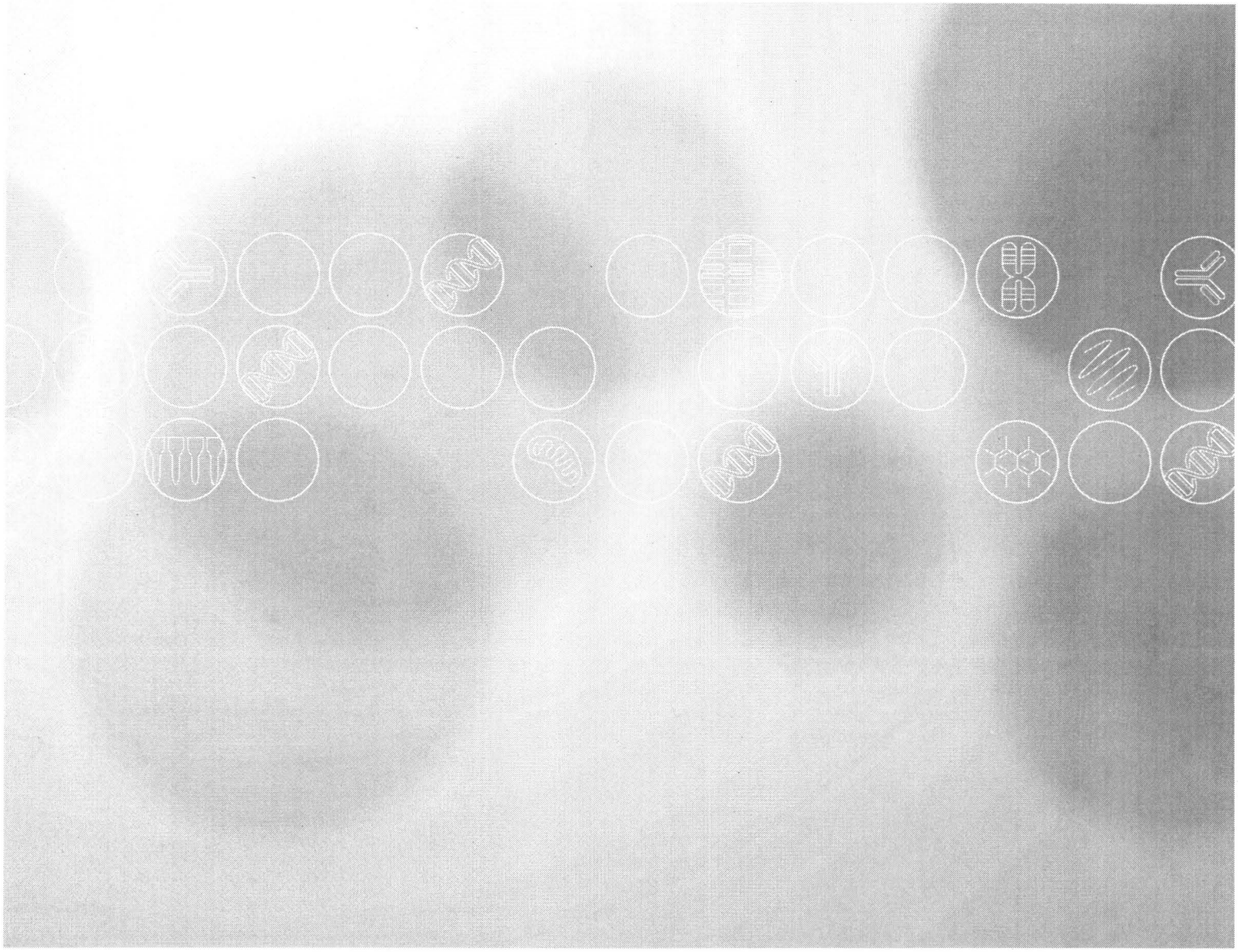
laboratories depends on the availability of student lab fees, and are often used up, such a large purchase as a thermal cycler cannot be supported through lab fees.

13. **Attach a detailed budget.**

Item	Equipment	Vendor	Cat. Number	Price
1	T100 Thermal Cycler	Bio-Rad	1861096EDU	$2849.98
Total				**$2849.98**

14. **Attach two (2) letters of support for the project from the following individuals: the requesting department's Dean, the appropriate Vice President or for student request, the SGA President from the requesting campus.**

BIO-RAD



NORTHWESTERN STATE UNIV NATCHITOCHE

Prepared by Daniel DeGennaro

QQ309975-CPQ22

11/08/2022

NORTHWESTERN STATE UNIV NATCHITOCHE

Dear Mr. Joseph Straub,

The following quotation relates to a portfolio of Bio-Rad systems, assays, and services. If this proposal meets your approval, please submit a purchase order to USOrders@bio-rad.com.

Upon receipt, we will finalize arrangements for the delivery and if applicable the installation of items on your order. An invoice will be issued upon shipment.

Please contact me with any questions or concerns.

Sincerely,

Daniel DeGennaro
Inside Sales Specialist
daniel_degennaro@bio-rad.com

BIO-RAD

Bio-Rad 2000 Alfred Nobel Drive, Hercules, CA 94547
Phone Number: 1-800-224-6723 (1-800-2BIORAD)
FAX #: 1-800-883-1887 or 1-510-741-6373
Email Address for Order Placement: usorders@bio-rad.com
Email Address for Order Inquiry: ask_customer_care@bio-rad.com

Quotation Number :

QQ309975-CPQ22

Date: 11/08/2022

Quote Expiration Date: 12/31/2022

Payment Terms: within 30 days Due net

Sales Rep: Daniel DeGennaro
daniel_degennaro@bio-rad.com

Mr. Joseph Straub

NORTHWESTERN STATE UNIV NATCHITOCHE

Sold To #: 0001015396

Ship To #: 0002018232

Phone:

Fax:

Email: jastraub167@gmail.com

	Part Number	Qty	Description	List Price	EDU Price	Unit Discount	Unit Net	Extended Price
1	1861096EDU	1	T100™ Thermal Cycler Thermal cycler system, includes 96-well thermal cycler, power cord, tube support ring; for educational use only (for research instrument, see 1861096)	$5,367.00	$2,850.00	46.90%	$2,849.98	$2,849.98

Sub Total:	$2,849.98
Estimated Packaging:	$0.00
Estimated Freight:	$0.00
Estimated Total:	$2,849.98

A Simple Way to Manage Your Business Online

My Bio-Rad is a convenient way to manage your Bio-Rad orders and activities. By registering online, you will have access to: online ordering, account prices, batch number visibility, stock availability, shipment tracking, downloadable invoices, and order history.

Click here to register

If you already have an account, you can redeem this quote by clicking here:

Add To Cart

Please mention the quotation number QQ309975-CPQ22 when placing an order.

Bio-Rad's Terms and Conditions of Sale shall govern the sale and purchase of the products quoted herein. Please see Terms and Conditions (https://www.bio-rad.com/terms-conditions) for additional details.

T100™ Thermal Cycler

Specifications

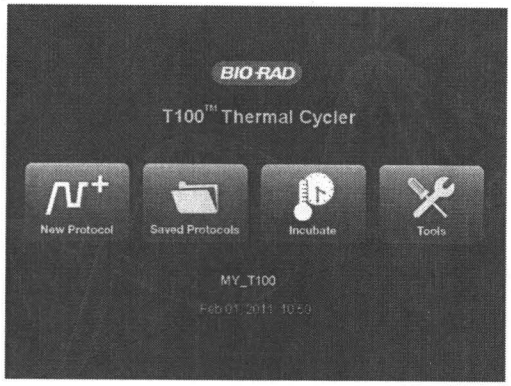
The T100 thermal cycler is the smart choice for your amplification needs. This modern and compact 96-well PCR instrument offers comprehensive features that make running PCR easier than ever. Start a PCR run or incubation in seconds. Manage your PCR protocols using the large, designed-for-simplicity, color touch-screen user interface. If protocol optimization is required, determine your optimal annealing temperature in a single run using the thermal gradient feature.

- Save time programming with the intuitive touch screen
- Get superior results faster by optimizing your PCR assays in a single run using a thermal gradient
- Save valuable benchspace with the compact design
- Keep your protocols organized using personalized folders or a USB flash drive
- Be confident in your results with the reliability you expect from Bio-Rad

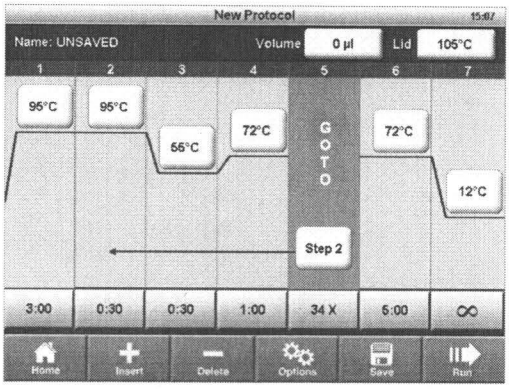
Specifications

Thermal Cycler	
Input power	100–150 VAC, 50–60 Hz; 220–240 VAC, 50–60 Hz; 700 W maximum
Display	5.7 in. VGA color touch screen
Port	1 USB A
Fuses	Two 10 A, 250 V, 5 x 20 mm
Memory	500 typical programs onboard; unlimited with USB flash drive expansion
Dimensions (W x D x H)	26 x 47 x 23 cm (10 x 18 x 9 in.)
Weight	9 kg (20 lb)
Temperature control modes	Calculated and block
PCR license	Yes
Programming options	Step-based graphical
Reporting	Exportable run logs, system logs
Instant incubation	Yes
Performance	
Sample capacity	96 x 0.2 ml tubes, 0.2 ml tube strips, or 1 x 96-well plate
Maximum ramp rate	4°C/sec
Average ramp rate	2.5°C/sec
Temperature range	4–100°C
Temperature accuracy	±0.5°C of programmed target
Temperature uniformity	±0.5°C well-to-well within 30 sec of arrival at target temperature
Thermal Gradient	
Gradient capability	Yes
Gradient range	30–100°C
Temperature differential range	1–25°C

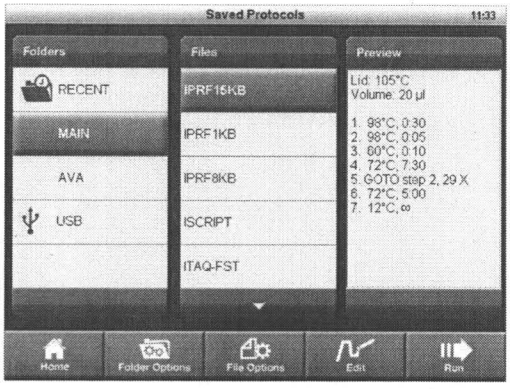
BIO-RAD



T100 thermal cycler Home screen.



Intuitive graphical programming. The thermal cycler's onboard software displays an editable thermal profile of the PCR protocol, making it easy to create and run new protocols.



Saved Protocols screen showing the preinstalled library of standard protocols in the MAIN folder.

Ordering Information

Catalog #	Description
186-1096	**T100 Thermal Cycler**, includes 96-well thermal cycler, power cord, T100 tube support ring
170-8870	**iTaq™ DNA Polymerase**, 5 U/µl, includes 250 U polymerase, 1.25 ml 10x PCR buffer (200 mM Tris-HCl, pH 8.4, 500 mM KCl), 1.25 ml 50 mM $MgCl_2$ solution
170-8890	**iScript™ cDNA Synthesis Kit**, 25 x 20 µl reactions, includes 5x iScript reaction mix, iScript reverse transcriptase, nuclease-free water
172-5301	**iProof™ High-Fidelity DNA Polymerase**, 2 U/µl, 100 U, includes 5x reaction buffers, $MgCl_2$ solution, DMSO
HSS-9601	**Hard-Shell® High-Profile 96-Well Semi-Skirted PCR Plates**, clear shell, clear well, 25
MLP-9601	**Multiplate™ 96-Well Unskirted PCR Plates**, clear, 25 plates
MSB-1001	**Microseal® 'B' Adhesive Seals**, optically clear, 100
TBS-1201	**12-Tube Strips without Caps (0.2 ml)**, clear, 100 strips (1,200 PCR tubes)
TCS-1201	**Domed 12-Cap Strips**, for 0.2 ml PCR tubes and plates, clear, 20
TWI-0201	**PCR Tubes with Domed Caps (0.2 ml)**, clear, 1,000

For more information, visit
www.bio-rad.com/web/T100Specifications.

Bio-Rad's thermal cyclers are covered by one or more of the following U.S. patents or their foreign counterparts owned by Eppendorf AG: U.S. Patent Numbers 6,767,512 and 7,074,367.

Practice of the patented 5' Nuclease Process requires a license from Applied Biosystems. The purchase of iProof and iTaq DNA polymerases includes an immunity from suit under patents specified in the product insert to use only the amount purchased for the purchaser's own internal research when used with the separate purchase of Licensed Probe. No other patent rights are conveyed expressly, by implication, or by estoppel. Further information on purchasing licenses may be obtained from the Director of Licensing, Applied Biosystems, 850 Lincoln Centre Drive, Foster City, California 94404, USA.

Hard-Shell plates are covered by one or more of the following U.S. patents or their foreign counterparts owned by Eppendorf AG: U.S. Patent Numbers 7,347,977; 6,340,589; and 6,528,302.

BIO-RAD

Bio-Rad Laboratories, Inc.

Life Science Group

Web site *www.bio-rad.com* ***USA*** *800 424 6723* ***Australia*** *61 2 9914 2800* ***Austria*** *01 877 89 01* ***Belgium*** *09 385 55 11* ***Brazil*** *55 11 3065 7550* ***Canada*** *905 364 3435* ***China*** *86 21 6169 8500* ***Czech Republic*** *420 241 430 532* ***Denmark*** *44 52 10 00* ***Finland*** *09 804 22 00* ***France*** *01 47 95 69 65* ***Germany*** *089 31 884 0* ***Greece*** *30 210 9532 220* ***Hong Kong*** *852 2789 3300* ***Hungary*** *36 1 459 6100* ***India*** *91 124 4029300* ***Israel*** *03 963 6050* ***Italy*** *39 02 216091* ***Japan*** *81 3 6361 7000* ***Korea*** *82 2 3473 4460* ***Mexico*** *52 555 488 7670* ***The Netherlands*** *0318 540666* ***New Zealand*** *64 9 415 2280* ***Norway*** *23 38 41 30* ***Poland*** *48 22 331 99 99* ***Portugal*** *351 21 472 7700* ***Russia*** *7 495 721 14 04* ***Singapore*** *65 6415 3188* ***South Africa*** *27 861 246 723* ***Spain*** *34 91 590 5200* ***Sweden*** *08 555 12700* ***Switzerland*** *026 674 55 05* ***Taiwan*** *886 2 2578 7189* ***Thailand*** *1800 88 22 88* ***United Kingdom*** *020 8328 2000*

NORTHWESTERN STATE

Office of The Provost

To: Student Tech Fee Committee
From: Dr. Greg Handel, Provost, and Vice President of Academic Affairs
Re: School of Biological and Physical Sciences Student Technology and Fee Grant
Date: November 2, 2022

It is my pleasure to write this letter in support of Dr. Joseph Straub's Student Technology Fee grant proposal for a new thermal cycler.

One of the goals of Northwestern State University is to prepare students for careers beyond their undergraduate education. Dr. Straub's proposal presents a clear need for more essential laboratory equipment to alleviate the burden of a STEM-based QEP on limited laboratory resources. In turn, increased student access to thermal cyclers allows more students to receive the training they need in polymerase chain reaction (PCR), a ubiquitous biology technique. This is training consist of both classroom exercises and faculty-directed research like JOVE.

The Biology Department already has two of these machines. However, with a surge of students seeking capstone (QEP) along with the students who already undertake JOVE research, the department would benefit from increased parallelism. Their familiarity with these thermal cyclers translates into the new machine's immediate utility without the need for faculty training, and they are virtually maintenance-free.

I consider Dr. Straub's grant proposal a forward-thinking investment in our university that aligns with the university's current and future goals. I remain grateful for the opportunity to support.

Sincerely,

Greg Handel
Provost & Vice President of Academic Affairs
Dean of the Graduate School
Professor of Music Education

NORTHWESTERN STATE
COLLEGE OF ARTS AND SCIENCES

November 7, 2022

Dear Student Technology Grant Committee:

I am writing this letter in support of Dr. Joseph Straub's proposal for a student technology fee grant. This proposal specifically entails the procurement of a thermal cycler which is essential for the amplification of specific DNA sequences, an important precursor to most genetic/molecular biology experiments. With this equipment, our programs in biology and microbiology will be enhanced. Our students with biomedical, clinical laboratory science, natural science, and forensic science concentrations will receive additional hands-on, laboratory training that will enhance their preparation for future careers in STEM fields. The experiences gained from using such equipment will make them more attractive employees in industrial positions and stronger candidates for graduate/professional schools.

At Northwestern State University, one of our highest priorities is maximizing student learning experiences. Two of the most crucial learning experiences we offer in STEM are research experiences in the JOVE scholarship program as well as in the senior capstone courses which is required of all students within the School of Biological and Physical Sciences. The capstone courses aim to sum the total undergraduate educational achievement of our students and apply them to a rigorous, semester-long research project. Often, the quality of these research projects rests on the quality and quantity of available tools/resources. Thermal cyclers are one of many tools used by biologists to investigate DNA, an essential component in most of our students' capstone projects. Having an additional thermal cycler would allow more of the undergraduate research students to complete their projects in a timely manner. The requested thermal cycler would be used for laboratory classes and research projects, effectively making the machine communal among the School of Biological and Physical Sciences.

The School of Biological and Physical Sciences does currently collect lab fees for some courses, but those fees are used to purchase consumables that are used in educational laboratories, and those fees have not been adjusted for inflation in over 15 years. The funds are not sufficient to purchase larger pieces of equipment like a thermal cycler. Additional funding sources are required to keep our laboratories outfitted with current technologies to provide our students with the best educational experience. These devices will be used by the roughly 200 students each year who are either performing independent research with faculty members, taking laboratory courses that require DNA analysis, or completing their senior capstone project.

Dr. Straub has my full support in the submission of this grant proposal. I trust that you will give him every consideration as he works diligently to improve the student experience in the School of Biological and Physical Sciences. If you have any questions regarding my recommendation or support, please do not hesitate to contact me.

Sincerely,

NORTHWESTERN STATE
COLLEGE OF ARTS AND SCIENCES

Francene J Lemoine

Francene J. Lemoine, Ph.D.
Dean, College of Arts and Sciences
Professor of Biology
Northwestern State University of Louisiana
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Phone (318)357-5805
Fax (318)357-4255
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