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Application Summary

Competition Details

Competition Title: MSFT Applications for 2020-2021

Category: Internal Funding

Award Cycle: 2020-2021

Submission Deadline: 4/10/2020 3:00 PM

Application Information

Submitted By: David Gillespie

Application ID: 296

Application Title: Chemistry: aging equipment refresh & cell-culture improvements

Date Submitted: 3/2/2020 7:25 PM

Personal Details

Applicant First Name: David

Applicant Last Name: Gillespie

Applicant Department: Chemistry

Email Address: Blake.Gillespie@csuci.edu

Phone Number:

Who is the Staff Support for Project/Activity?: Gina Matibag

Staff Support email: gina.matibag@csuci.edu

Application Details

Proposal Title

Chemistry: aging equipment refresh & cell-culture improvements

Brief Project Description

The Chemistry Department needs to replace a substantial amount of damaged or broken equipment. These tools are some of the most best pieces of hardware we use, and affect every last chemistry lab course. Likewise, the Department's Biochemistry curriculum is stymied by a lack of basic cell-culture equipment, which limits the range of experiences we can offer our students. From hot plates to centrifuges, our students' experiences and outcomes are affected by their ability to work efficiently in the lab. Students from Chemistry, Biology, ESRM, Nursing, Health Sciences, and range of other programs will benefit from these purchases.

Amount of MSFT Funding Requested

57,299

Project/Activity Budget Detail

Again, this equipment is standard in many chemistry courses. The details below give examples of courses and experiments in which students use each item.

- **stirring hot plates** - Students use them to make solutions and perform chemical reactions of many kinds. Every single lab course we offer uses this basic tool. We are currently down to about 10 functioning hotplates across all lab sections.
- **visible wavelength spectrophotometers** - These instruments measure color; that is: how matter interacts with light. In some kinds of reactions, solutions change color and reactant concentration and spectrophotometers allows measurement of that change. Every single lab course we offer uses this basic tool. Including recent loss of 3 instruments last term, we are down to 4 functioning visible spectrophotometers.
- **analytical balances, high and low precision** - In most introductory labs, students routinely measure masses of reagents to a precision of ± 1 milligram. On the other hand, advanced labs usually require 10-fold higher precision, at ± 0.1 milligram. Currently students in all labs must queue up at existing weigh stations for extended periods, limiting the time available for experiments. 5 new balances will improve students' ability to perform their work across all lab sections.
- **microcentrifuges** - All biochemistry-orientes lab courses require frequent small-volume separation of suspensions and mixtures. At this time all our microcentrifuges are disabled and we borrow instruments from the Biology program for each lab section. As Biology itself needs that same equipment, this practice is unsustainable. We need 4 new microcentrifuges for Biochemistty I Lab, Advanced Biochemistry, Molecular Structure Determination, Fermentation, and various special topics elective courses.
- **centrifuge rotor** - Chemistry frequently uses the Biology Program's RC-6 floor model centrifuge for Biochemistry-related, large volume separations. However, that instrument does not have a rotor appropriate to our cell-culture needs. The F-12-6x500 rotor will allow to quickly separate multi-liter volumes using Biology's existing instrumentation, which would otherwise cost in excess of \$60,000 for Chemistry to procure. Biochemistry I lab, Advanced Biochemistry, Molecular Structure Determination, Fermentation, and various special topics elective courses will routinely use this rotor.
- **shaking incubator** - Chemistry frequently uses one of the Biology Program's instruments for Biochemistry-related cell-culture tasks. As Biology itself needs that same equipment, this practice is unsustainable. The incubator will support Biochemistty I Lab, Advanced Biochemistry, Molecular Structure Determination, Fermentation, and various special topics elective courses.
- **digital incubator** - This device warms petri dishes supporting microbial growth, and is used in most Biochemistry-related cell-culture tasks. Currently Chemistry has no such device for instructional purposes, and this will support Biochemistty I Lab, Advanced Biochemistry, Molecular Structure Determination, Fermentation, and various special topics elective courses that routinely performs temperature-controlled cell culture.
- **micropipettes** - These devices are a staple of many advanced labs and allow students to dispense volumes in the microliter to milliliter range. This thousand-fold range requires 5 different pipettes. Only 4 of our original 6 sets are complete; 5 new individual micropipettes will complete these, so that 6 students groups will be able to complete their tasks without waiting. Biochemistry I lab, Advanced Biochemistry, Molecular Structure Determination, Fermentation, and various special topics elective courses will routinely use these devices.
- **micropipette calibration** - To be used successfully, micropipettes must be professionally calibrated every 6-12 months. None of our ~40 micropipettes have ever been recalibrated. Student work will become easier and students will be more confident, successful, and satisfied as a result. This expense will cover the on-site calibration of all our pipettes without significantly disrupting classes.

Will you receive funds from any other source(s)?

No

Other Funding Sources

Student lab fees are explicitly not allowed for the purchase or repair of non-disposables. Chemistry's operating budget is already at maximum with no excess for repair or replacement of such a range and number of basic instruments. While it has been suggested that a new 'six year plan' may allow more flexibility, the administration has given Chemistry no sense of the timeline or magnitude of any possible budget increases.

Has this project or activity previously received MSFT funding?

No

Acknowledgment

Fiscal Management

Project applicant/sponsor's unit or department may be responsible for incurred over and above what is funded through the MSFT. If support is requested for costs beyond initial award, or for use on activities or materials not included in approved proposals, the project sponsor must seek approval from the MSFT committee. The project applicant/sponsor will be responsible for managing purchases, transfers of funds, and all transactions related to approved projects

Please review MSFT webpage for information about the fund and its objectives before submitting your application.

**CSU Channel Islands
MSFT Proposed Budget
2020-2021**

Please layout in detail when various components of your plan will be complete in order to achieve key milestones. This information will be use to forecast the spending of MSFT within the fiscal year.
PS: all purchases/services need to be received and billed to CI before June 30th to account for the current fiscal year.

SAMPLE

Project or Activity Title

**Total Requested
\$\$**

Chemistry Laboratory Instrumataion Refresh

\$452,000

MSFT Planning Budget Calendar 2020-2021

Items or services requested to be funded	July 2020 -Period 1	August 2020-Period 2	September 2020 -Period 3	October 2020 -Period 4	November 2020 -Period 5	December 2020 -Period 6	January 2021 -Period 7	February 2021 -Period 8	March 2021 -Period 9	April 2021 -Period 10	May 2021 -Period 11	June 2021-Period 12	Grand Total
Purchase of UPS Power Conditioner				\$ 9,000.00									\$ 9,000.00
Purchase Glove Box			\$ 42,000.00										\$ 42,000.00
Purchase of Spectrohometer						\$ 156,000.00							\$ 156,000.00
Purchase of Fluorimeter							\$ 39,000.00						\$ 39,000.00
Purchase of Analytical Ultracentrifuge			\$ 198,000.00										\$ 198,000.00
Lab. Student assistant hours to set up equip.								\$ 2,000.00	###	\$ 2,000.00	###		\$ 8,000.00
Total	\$ -	\$ -	\$ 240,000.00	\$ 9,000.00	\$ -	\$ 156,000.00	\$ 39,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ 2,000.00	\$ -	\$ 452,000.00

CSU Channel Islands
MSFT Proposed Budget
2020-2021

Please layout in detail when various components of your plan will be complete in order to achieve key milestones. This information will be use to forecast the spending of MSFT within the fiscal year.
 PS: all purchases/services need to be received and billed to CI before June 30th to account for the current fiscal year.

Project or Activity Title

Total Requested
\$

Chemistry: aging equipment refresh & cell-culture improvements \$57,299

*formulas will calculate totals

MSFT Planning Budget Calendar 2020-2021

Items or services requested to be funded	July 2020 -Period 1	August 2020-Period 2	September 2020 -Period 3	October 2020 -Period 4	November 2020 -Period 5	December 2020 -Period 6	January 2021 -Period 7	February 2021 -Period 8	March 2021 -Period 9	April 2021 -Period 10	May 2021 -Period 11	June 2021-Period 12	Grand Total
12 - stirring hot plates	\$ 5,400.00												\$ 5,400.00
6 - Genesys 30 spectrophotometers	\$ 15,719.82												\$ 15,719.82
3 - Metler ME2040 analytical balances	\$ 6,328.56												\$ 6,328.56
2 - Ohaus AX523 analytical balance	\$ 6,148.00												\$ 6,148.00
1 - 500mL Centrifuge rotor	\$ 11,391.83												\$ 11,391.83
4 - microcentrifuges	\$ 6,000.00												\$ 6,000.00
1 - Corning LSE shaking incubator	\$ 2,321.00												\$ 2,321.00
1 - Quincy digital incubator	\$ 1,000.00												\$ 1,000.00
5 - Gilson micropipettors	\$ 2,270.00												\$ 2,270.00
pipette calibration	\$ 720.00												\$ 720.00
* you can add lines to your budget by inserting lines here													\$ -
Total	\$ 57,299.21	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 57,299.21