CALIFORNIA COMMUNITY COLLEGES
AND
BUTTE
COMMUNITY COLLEGE DISTRICT

#91-0034
**FISCAL YEAR** | **ID NUMBER** | **COLLEGE** | **DISTRICT**
---|---|---|---
1991-92 | 91-0034 | Butte | Butte

**PROJECT TITLE**

Laboratory Equipment for Incorporation of New Biotechnology and Related Exercises in the Butte College Biology Department Curriculum

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<th>FUNDING CATEGORY &amp; AWARD</th>
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<td>Loan  = $15,750</td>
<td>B --- Improving Teaching Abilities</td>
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<th>PROJECT PRODUCT</th>
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<td>Lab Exercises</td>
<td>Biotechnology</td>
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**PROJECT DIRECTOR**

Katya Yorosevich, Instructor

**PROJECT SUPERVISOR**

Milt Boyer, Dean Area III, Dean of Instruction

**PROPOSAL DESCRIPTION**

A laboratory improvement project which provided for several pieces of equipment: a ventilating hood, a high-speed refrigerated centrifuge, a microfuge, and a U.V. transilluminator with camera. This equipment is needed for harvesting cells in volumes necessary to perform protein and DNA quantification, for DNA isolation, genetic recombination and cell transformation, for detection of DNA in a gel, and for separation of mitochondria for enzyme study.

The lab exercises which use this equipment will be developed for a transfer program in Cell and Molecular Biology. In addition, certain aspects of this project will be used with students from Oroville High School who are enrolled in a Biology 10-equivalent class.
Laboratory Equipment for Incorporation of New Biotechnology and Related Exercises in the Butte College Biology Department Curricula

Butte College has offered a quality science program to its students for more than 20 years. The college would like to continue this trend in quality by offering its biology students the new techniques in biotechnology common in teaching laboratories today.

Biotechnology, including genetic engineering, has advanced our knowledge of biology and led to rapid changes in medicine and industry. A basic understanding of the technology and experimental techniques that enable molecular biologists to identify, isolate, and propagate DNA is essential to this generation of science students. Students gain a greater understanding of cell and molecular theory through lab exercises utilizing the new technologies.

This laboratory improvement project will help us to implement a new Cell and Molecular Biology course which includes some of these experimental techniques, to introduce this new technology to students in other courses of study, and to improve the current methods that our students use to study enzymes and cell functions. Our strategy for meeting our objectives is to redesign some of the laboratory exercises and introduce new exercises into the new course and into the Principles of Biology and Introduction to Microbiology courses. To implement these changes in our laboratories we need several pieces of equipment: a ventilating hood (to ensure the safety and health of the students), a high-speed refrigerated centrifuge, a microfuge (small centrifuge used for biotechnology work) and a U.V. transilluminator with camera. This equipment is needed for harvesting of cells in volumes necessary to perform protein and DNA quantification, for DNA isolation, genetic recombination and cell transformation, for detection of DNA in a gel, and for separation of mitochondria for enzyme study.

These lab exercises are particularly crucial for the new Cell and Molecular Biology class, in order to prepare the students adequately for transfer to 4-year institutions. The students will be expected to have received experience in these areas in Cell and Molecular Biology. Interested biology majors also may choose to use some of this equipment in the future for independent study. In addition, the students at Oroville High School who are enrolled in the Biology 10-equivalent class offered there will be able to utilize some of the materials and equipment for similar lab experiences.

Such hands-on instruction is critical for all students to better understand the theories they are
being presented in lecture. The equipment will simply contribute to bringing our teaching labs closer to the norm in standard teaching lab equipment. The Introduction to Microbiology class, a course populated primarily by (vocational) nursing students, will also benefit from the use of the ventilating hood during certain cell staining procedures which generate fumes which should not be inhaled; the hood will therefore be providing student protection.

As a spin-off to this, it will possible to update our full-time and part-time faculty in biotechnology techniques, so that they will understand these processes more completely. This is essential to the faculty being able to answer student questions, present information to the students more clearly and in the guiding of students into programs of study in the biological sciences.
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[NO “NARRATIVE” ACCOMPANIES THIS DOCUMENT.]

[SEE PRINT DOCUMENT --- PROBLEMS WITH SCANNING.]